

[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 FAA participated as a cooperating agency with the U.S. Air Force (USAF) in the preparation of the March 2011 *Falcon 9 and Falcon 9 Heavy Launch Vehicle Programs from Space Launch Complex 4 East* (the EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code (U.S.C.) §§ 4321–4347 (as amended), Council on Environmental Quality NEPA implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508), and FAA Order 1050.1E, Change 1, to analyze the potential environmental impacts of operating the Falcon 9 and Falcon Heavy¹ launch vehicle programs from Space Launch Complex-4 East (SLC-4E) at Vandenberg Air Force Base (VAFB), California. The Falcon programs are a commercial venture by Space Exploration Technologies Corporation (SpaceX) to provide government and commercial space operations. The EA also considered modifications and new construction at SLC-4E to support SpaceX's launch and reentry operations at VAFB. The EA evaluated the potential environmental impacts associated with the Proposed Action and the No Action Alternative.

As the Proposed Action would require Federal actions (as defined in 40 CFR § 1508.18) involving USAF and the FAA, the EA was prepared to satisfy the NEPA obligations of both agencies. USAF was the lead agency, and the FAA served as a cooperating agency. The FAA's Federal actions in this matter pertain to its role in issuing licenses or permits to operate commercial launch and reentry vehicles at launch sites. USAF issued a FONSI on July 11, 2011, 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

¹ Although the USAF EA refers to the vehicle as the Falcon 9 Heavy, the FAA's FONSI/ROD refers to the vehicle as the Falcon Heavy because SpaceX has dropped the "9" from the vehicle name.

environment, and therefore the preparation of an Environmental Impact Statement (EIS) was not required.

SpaceX is required to obtain launch licenses from the FAA to conduct commercial launches of the Falcon 9 and Falcon Heavy launch vehicles at VAFB. SpaceX is also required to obtain reentry licenses for commercial vehicles that would reenter the Earth's atmosphere. Based on its independent review and consideration, 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 launch and reentry licenses to SpaceX for Falcon 9 and Falcon Heavy commercial launch operations at VAFB, provided the launch operations fall within the scope of the EA. If future proposed SpaceX launch operations would fall outside the scope of the EA, additional environmental analysis would be required prior to the FAA issuing a launch license.

In addition to the EA, the FAA is using a September 2011 U.S. Fish and Wildlife (USFWS) biological opinion, a 2011 Memorandum of Understanding (MOU) between USAF and the FAA, and recent Falcon Heavy sonic boom modeling to further support its environmental determination in this FONSI/ROD for issuing launch licenses to SpaceX for Falcon 9 and Falcon Heavy commercial launch operations at VAFB. These documents are available on the FAA's website at the link below. The biological opinion and MOU are discussed below under the heading "Biological Resources (Fish, Wildlife, and Plants)." The sonic boom modeling is discussed under the heading "Noise."

After reviewing and analyzing available data and information on existing conditions and potential impacts, the FAA has determined that issuance of launch and reentry licenses to SpaceX for Falcon 9 and Falcon Heavy commercial launch operations at VAFB 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 in 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/

aunch/ or contact Daniel Czelusniak, Environmental Specialist, Federal Aviation Administration, 800 Independence Ave., SW, Room 325, Washington, DC 20591; email Daniel.Czelusniak@faa.gov; or phone (202) 267-5924.

PURPOSE AND NEED: 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 the Proposed Action results from the statutory direction from Congress under the Commercial Space Launch Act 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 Proposed Action analyzed in the EA consists of SpaceX operating its Falcon 9 and Falcon Heavy launch vehicle programs to provide government and commercial space operations from SLC-4E at VAFB. The Proposed Action in the EA also includes modifications and new construction at SLC-4E to support SpaceX's launch and reentry operations. Modification and construction activities have been initiated since the EA was published. SLC-4E was previously used for the Titan IV program and has been non-operational since 2005. The Falcon launch vehicle programs are designed for minimal vehicle assembly and processing on the launch pad. The goal is to launch within a few days to several weeks of payload arrival at the launch site. The FAA's Proposed Action is to issue launch and reentry licenses to SpaceX for Falcon 9 and Falcon Heavy commercial launch operations at VAFB.

The Falcon 9 is a medium-lift launch vehicle, weighing approximately 693,000 pounds with an overall length of 178 feet. The Falcon Heavy is a heavy-lift launch vehicle with a gross lift-off weight of approximately 1,950,000 pounds and overall length of 180 feet. Both vehicles use liquid oxygen (LOX) and rocket propellant-1 (or refined petrolium-1; RP-1) as propellants to carry payloads into orbit. Ongoing modifications and construction activities at SLC-4E to accommodate the Falcon 9 and Falcon Heavy launch vehicles include the demolition of some existing facilities; improvements to the administrative building; installation of propellant tanks;

re-installation (or re-initiation) of utilities; resurfacing of the launch water deluge drainage and retention basin; resurfacing of the entrance road; and refurbishment of the security system, if required.

SpaceX plans to use existing facilities, structures, and utility connections where possible. As described in the EA, a new Integration and Processing Hangar has been constructed within the current perimeter of SLC-4E, utilizing approximately 30,000 square feet of space, plus requiring 7,500 square feet of paved area for vehicle maneuvering, and a 20 feet wide by 250 feet long access road by the side of the hangar. During the operational phase, SpaceX anticipates a maximum of ten launches per year, one-half being Falcon 9 and one-half being Falcon Heavy launches. Launch campaigns on a per-mission basis are expected to last from two to eight weeks.

In addition to standard payloads such as satellites, SpaceX's Dragon capsule could be carried on the Falcon 9 and Falcon Heavy launch vehicles. Upon completion of the mission, the Dragon capsule would reenter the Earth atmosphere on a pre-planned trajectory, make a soft landing in the Pacific Ocean, and be recovered. The potential environmental impacts of a Dragon reentry were first analyzed in USAF's 2007 EA and FONSI for the operation and launch of the Falcon 1 and Falcon 9 launch vehicles at Cape Canaveral Air Force Station, Florida. The FAA issued its own FONSI on January 15, 2009, to support issuing SpaceX a reentry license for the Dragon capsule. The FAA issued SpaceX a reentry license for the Dragon capsule on November 23, 2011. The license expires on May 24, 2013. The EA incorporated into this FONSI/ROD by reference also considers the potential environmental impacts of a Dragon reentry. The FAA could renew the Dragon reentry license if SpaceX submitted an application for renewal.

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 launch or reentry licenses to SpaceX for Falcon 9 or Falcon Heavy commercial launch operations at VAFB. The No Action Alternative would not meet the purpose and need for the action.

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.

Air Quality

During modifications to SLC-4E and new construction, fugitive dust emissions generated from equipment operating on exposed ground and combustive emissions from the equipment would cause adverse air quality impacts. During operation of the Falcon 9 and Falcon Heavy launch vehicle programs, emissions from employee vehicles, emergency generators, and the launch vehicles would cause adverse air quality impacts. Mitigation measures described in the EA would be implemented to minimize emissions during project activities. The EA concluded that emissions from the Proposed Action would not exceed any thresholds established under the Clean Air Act. Thus, the Proposed Action would not be expected to result in significant air quality impacts.

Biological Resources (Fish, Wildlife, and Plants)

The Proposed Action has the potential to result in temporary adverse effects to biological resources within the overpressure zone, overflight zone, and in areas within 7.4 miles of SLC-4E, which may experience noise levels up to 100 A-weighted decibels (dBA) during Falcon Heavy launches. Adverse effects in these areas would be limited to disturbance with no physical impacts to existing habitats or vegetation expected. Long-term or permanent vegetation impacts are anticipated within the SLC-4E complex and within 30 feet of the exterior fence line due to SLC-4E modifications and new construction (permanent loss of vegetation within the footprint of facilities) and the resumption of landscape maintenance practices. Compliance with the Migratory Bird Treaty Act would be accomplished through pre-construction surveys and protection of active nests as described in the EA.

Dragon capsules' soft-landing in the ocean would be preplanned, occur in the open ocean, and a salvage vessel would be positioned for recovery. Given the relatively low density of species

within surface waters of open ocean areas, it is unlikely that marine wildlife would be adversely affected by a Dragon landing. The residual propellant in the capsules would be contained in tanks and is not anticipated to result in any spills. However, in the unlikely event of a spill, the propellants would be expected to dissipate rapidly given their volatile nature. The recovery vessel would be equipped with containment equipment for transporting the capsules and for off-loading residual propellants, if required.

USAF formally consulted the USFWS per section 7 of the Endangered Species Act (ESA). The USFWS issued two biological opinions (December 10, 2010; updated June 24, 2011) that concluded the Proposed Action “may affect, but is not likely to adversely affect” the federally threatened western snowy plover, California red-legged frog, and southern sea otter, and the federally endangered California least tern. The USFWS also determined that the Proposed Action would not likely jeopardize the continued existence of the endangered El Segundo blue butterfly and issued an Incidental Take Statement for that species. USAF shall comply with all protective measures and terms and conditions included in the biological opinions.

Subsequent to USAF publishing the EA, the USFWS issued a programmatic biological opinion on September 22, 2011, based on its review of USAF’s programmatic biological assessment of routine mission operations and maintenance activities at VAFB and the effects on federally listed species. This programmatic biological opinion superseded many other biological opinions for project activities at VAFB. However, the biological opinion issued for the EA (i.e., modification and operation of SLC-4E) remains in place. Actions considered in the programmatic biological opinion include the following:

1. Mission operations
 - a. Space and missile launch operations
 - b. Security and antiterrorism operations
 - c. Air operations
 - d. Miscellaneous missile operations
2. Infrastructure support
 - a. Road maintenance
 - b. Utility installation, maintenance, and removal
 - c. Landscaping
 - d. Fencing installation, maintenance, and removal

3. Infrastructure development
4. Environmental management programs
 - a. Installation restoration program
 - b. Military munitions response program
 - c. Environmental compliance
 - d. Archeological support
 - e. Invasive and pest species management
 - f. Grazing and livestock
 - g. Sensitive species management
5. Fire management

After reviewing the current status of the beach layia, Gaviota tarplant, Lompoc yerba santa, El Segundo blue butterfly, vernal pool fairy shrimp, California red-legged frog, tidewater goby, unarmored threespine stickleback, California least tern, and western snowy plover; the environmental baseline; the effects of the action; and the cumulative effects, the USFWS concluded that the suite of actions considered in the programmatic biological opinion would not jeopardize the continued existence of these species. USAF has committed to implementing the avoidance and minimization measures, terms and conditions, and reporting requirements listed in the USFWS's programmatic biological opinion.

Regarding potential impacts on marine mammals protected under the Marine Mammal Protection Act (MMPA), the National Marine Fisheries Service (NMFS) issued the 30th Space Wing at VAFB a 5-Year Permit in 2009 for unintentional take of small numbers of marine mammals incidental to space vehicle launches, and a 1-year Letter of Authorization (LOA) on January 25, 2010, authorizing the take of small numbers of marine mammals incidental to space vehicle launches. The LOA was renewed on January 31, 2011, again on February 1, 2012, and again on January 31, 2013. The current LOA expires on February 6, 2014. The LOA includes activities conducted pursuant to the Falcon programs. The LOA establishes required monitoring of select pinniped species on VAFB and the Northern Channel Islands to document their behavioral response and other potential adverse effects as a result of launch noise and sonic booms. SpaceX shall fund, implement, and comply with all monitoring requirements established in the LOA.

On November 17, 2011, the FAA and USAF executed a MOU regarding compliance with the ESA and MMPA for activities conducted at VAFB. Per the MOU, USAF is responsible for ensuring that operations (government and commercial) conducted at VAFB comply with the ESA and MMPA. That is, if current or proposed operations would affect federally listed species protected by the ESA or marine mammals protected by the MMPA, USAF must consult with the appropriate agency (USFWS and/or NMFS). Therefore, USAF's compliance with the ESA and MMPA eliminates the need for the FAA to also consult the USFWS and/or NMFS for actions related to operations at VAFB.

Geology and Soils

All construction under the Proposed Action would occur within the SLC-4 fence line. This area has been extensively developed in the past and no adverse effects on geology or soils would be anticipated. Project construction would comply with seismic design standards as specified in Air Force Space Command Manual 91-710, Range Safety Requirements. Thus, the Proposed Action would not be expected to result in significant impacts on geology or soils.

Hazardous Materials, Pollution Prevention, and Solid Waste

Compliance with all applicable Federal, state, and local laws and regulations, and applicable VAFB plans would govern all actions associated with implementing the Proposed Action, and should minimize the potential for adverse effects. Hazardous materials and waste management regulations required by Federal, state, and local laws and regulations, and procedures outlined in the VAFB Hazardous Materials Management Plan, 30 SWP 32-7086, and VAFB Hazardous Waste Management Plan, 30 SWP 32-7043A, would be followed. Hazardous materials and wastes would be the same types as currently used and managed on VAFB during construction activities and launch operations.

Construction and launch operations associated with the Proposed Action would create pollution in the air and water and would generate hazardous and solid waste. Debris from any activities would be segregated to facilitate subsequent pollution prevention options. Pollution prevention options would be exercised in the following order: reuse of materials, recycling of materials, and then regulatory compliant disposal. With these options exercised, potential pollution impacts would not be significant under the Proposed Action. Thus, the Proposed Action would not be

expected to result in significant impacts related to hazardous materials, pollution prevention, and solid waste.

Historical, Architectural, Archeological, and Cultural Resources

Archaeological site complex CA-SBA-537/1816 extends slightly into SLC-4E. Based upon the Section 106 compliance study for the Proposed Action, USAF determined the Proposed Action would have no adverse effects on historic properties. The State Historic Preservation Officer concurred with this finding on November 16, 2010. Thus, the Proposed Action would not be expected to result in significant impacts on historical, architectural, archeological, or cultural resources.

Human Health and Safety

Potential adverse effects to human health and safety could occur during modification of SLC-4E and during operations conducted under the Falcon 9 and Falcon Heavy launch vehicle programs. Compliance with Occupational Safety and Health Administration (or OSHA) regulations and other recognized standards would be implemented during both the modification and operational phases of the Proposed Action. A health and safety plan would be developed and a formally-trained individual would be appointed to act as safety officer. The appointed individual would be the point of contact on all problems involving job site safety. Implementation of the environmental protection and minimization measures outlined in the EA should avoid or minimize potential adverse effects to human health and safety during implementation of the Proposed Action. Additionally, prior to being issued a launch license, SpaceX's proposal must meet all FAA safety, risk, and financial responsibility requirements per 14 CFR part 400. Thus, the Proposed Action would not be expected to result in significant impacts related to public health and safety.

Land Use (Including Farmlands and Coastal Resources)

The Proposed Action would not change land use or affect land use planning at VAFB. Additionally, there would be no conversion of prime agricultural land to other uses, and no decrease in its productivity. The Proposed Action would not conflict with VAFB environmental plans or goals, USAF regulations, permit requirements, or existing uses of the proposed project area or other facilities nearby. No adverse effects to the coastal zone, as defined by the Coastal

Zone Management Act and California Coastal Act, are anticipated. During preparation of the EA, SpaceX coordinated with USAF and the California Coastal Commission and requested concurrence with a Negative Determination, which is an explanation of why USAF concluded that the proposed activity does not affect the coastal zone. On November 16, 2010, the California Coastal Commission concurred with the Negative Determination. Thus, the Proposed Action would not be expected to result in significant impacts related to land use.

Light Emissions and Visual Resources

Based on the build up and facilities already present at the site, the proposed construction of the Integration and Processing Hangar would not be anticipated to adversely impact the scenic and visual qualities of the coastal area. Launch operations would generate light emissions and leave visible contrails, but they would be similar in visual impact from past and current operations at VAFB. Launch operations would not substantially degrade the existing visual character or quality of the site and its surroundings. Visual impacts from launch operations would be infrequent and temporary. Thus, the Proposed Action would not be expected to have significant impacts related to light emissions and visual resources.

Noise

Construction activities under the Proposed Action would temporarily increase the ambient noise levels within the proposed project area and in neighboring areas during project implementation activities. Relatively continuous noise would be generated by construction equipment. These continuous noise levels would be generated from equipment that have source levels (at 3.28 feet) ranging from approximately 72.7 to 112.7 dB. Adverse effects as a result of construction noise would be expected to be minimal and less than significant.

Operational noise would be intermittent. Ground acoustic levels modeling completed for the Falcon 9 and Falcon Heavy indicate that sound pressure levels fall below 100 dBA at 5.3 miles from the launch site for the Falcon 9, and 7.4 miles for the Falcon Heavy. Noise from a Falcon 9 or Falcon Heavy launch would be anticipated to be less than that from previous Titan IV launches at the launch site based on noise modeling and thrust factors. Hearing protection would be required for workers at the pad during a launch to ensure noise levels were reduced to below 115 dBA.

Sonic boom modeling conducted for the EA specifically addressed the Falcon 9 vehicle and did not include modeling for the Falcon Heavy vehicle. The EA stated that modeling for the Falcon Heavy vehicle would need to be completed prior to its first launch from VAFB. The Falcon 9 modeling falls within the range seen from previous and current launch programs at VAFB and is well below the 8.97 pounds per square foot (psf) level that occurred under the Titan IV program.

Since publication of the EA, the FAA has conducted sonic boom modeling for the Falcon Heavy. The modeling results indicate the Falcon Heavy could produce a sonic boom with an overpressure up to 5.25 psf, which is below the level that occurred under the Titan IV program. Based on noise modeling and sonic boom modeling for the Falcon 9 and Falcon Heavy launch vehicles, sonic boom impacts from the Falcon programs are anticipated to be less than those from the Titan IV program and are anticipated to be less than significant. Thus, the Proposed Action would not be expected to result in significant impacts related to noise.

Orbital Debris

To comply with the U.S. policy to minimize the creation of new orbital debris, SpaceX would implement all U.S. Government orbital debris mitigation standard practices for their spacecraft and upper stages that were relevant for the particular mission. The Falcon 9 and Falcon Heavy vehicles are designed to not generate any debris during flight or during orbit operations. Because the Falcon 9 and Falcon Heavy vehicles would use liquid propellants, the typical solid rocket motor aluminum oxide dust emission impacts to the space environment would not occur.

As applicable, structures that reach orbit would be programmed after spacecraft separation to burn residual propellants to depletion in a vector that would result in reentry in two to three months and result in a water landing. Upper stages going to higher orbits would not be subject to controlled reentry and would contribute to orbital debris. Their location would be tracked to permit avoidance with future launch trajectories. Up to ten launches per year could contribute orbital debris to the environment. However, with the implementation of the U.S. Government Orbital Debris Mitigation Standard Practices, the Falcon 9 and Falcon Heavy programs would not be anticipated to have a significant impact on the orbital debris environment. Thus, the Proposed Action would not be expected to result in significant impacts related to orbital debris.

Section 4(f) Properties

The Department of Transportation (DOT) Act of 1966 (49 U.S.C. § 303(c)), as amended, includes a special provision—Section 4(f)—that stipulates that DOT agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless (1) there is no feasible and prudent alternative to the use of such land and (2) the project includes all possible planning to minimize harm to the land resulting from such use. Because USAF is not a DOT agency, the EA does not include a Section 4(f) impact discussion and use determination, and the FAA provides an analysis here in this FONSI/ROD.

First, the FAA identified Section 4(f) properties that could be affected by the Proposed Action, either by temporary closure during launch events or noise (up to 100 A-weighted decibels [dBA]) generated during launches. Section 4(f) properties that could be temporarily closed during launch events and experience noise levels up to 100 dBA include Ocean Beach County Park and Jalama Beach County Park. Ocean Beach County Park is a 36-acre park located north of SLC-4E. It is a day-use only park, providing recreational opportunities such as bird watching, nature photography, and picnic facilities, from 8:00 a.m. to sunset. It is closed to the public from March 1 through September 30 due to the snowy plover nesting season. Jalama Beach County Park is a 23.5-acre park located southwest of the SLC-4E. A popular camping spot, Jalama Beach maintains 98 campsites overlooking the ocean or beachfront with peak attendance over the summer and holiday weekends. In 2007, the park averaged an annual attendance of 145,500 visitors. In addition to camping facilities, Jalama Beach offers picnicking, surfing, whale watching, bird watching, nature photography, and fishing. There are no other Section 4(f) properties in the vicinity of SLC-4E that would be affected by temporary closure or noise levels up to 100 dBA.

Next, the FAA determined if the 4(f) properties would be “used” by the Proposed Action’s operational or construction activities. “Use” in the Section 4(f) context has a very specific meaning and could fall into one of three categories: physical use, temporary occupancy, or constructive use. Under the Proposed Action, there would be no physical use of a Section 4(f) property via permanent use of land, and there would be no temporary occupancy of land.

When there is no physical use and no temporary occupancy, but there is the possibility of constructive use, the FAA must determine if the impacts would substantially impair² the 4(f) property. Impacts to Ocean Beach County Park and Jalama Beach County Park would result from their closure to the public during launch events, because these parks fall within some debris impact corridors. Although the parks are not directly over flown by the launch vehicles, a launch anomaly could impact them. Therefore, for the safety of park visitors, the County Parks Department and the County Sheriff close the parks upon request from VAFB. Since 1979, an evacuation and closure agreement has been in place between USAF and Santa Barbara County. This agreement includes closures of Ocean Beach and Jalama Beach County Parks in the event of launch activities, including commercial launches. Under this agreement, USAF must provide notice of a launch at least 72 hours prior to the closure, and the closure is not to exceed 48 hours.

Under the Proposed Action, closure of the parks would have the potential to occur a maximum of ten times during the year. The closure would only last as long as necessary to assure the public is safe during a launch, with coastal access restricted for a short period of time (6 to 8 hours).

The Proposed Action would not substantially diminish the protected activities, features or attributes of Ocean Beach County Park and Jalama Beach County Park, and therefore would not result in substantial impairment of the properties, because there would be a maximum of only ten launches per year and the closures would be of short duration. Therefore, the Proposed Action would not be considered a constructive use of these Section 4(f) properties and thus would not invoke Section 4(f) of the DOT Act. This means that the FAA does not need to undertake a Section 4(f) Evaluation or determine whether the impacts are *de minimis*.

Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety
Modifications to SLC-4E and launch operations would result in a temporary and minor increase in the number of personnel on VAFB. Because approximately half of the workers used during the modification of SLC-4E and launch operations would come from the local area, and the remaining transient workers would only be in the area on a temporary basis, it is not anticipated that this workforce would alter the location or distribution of the local population, cause the population to exceed historic growth rates, or decrease jobs so as to substantially raise the

² Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished.

regional unemployment rates or reduce income generation. Additionally, the local housing markets and vacancy rates would not be substantially affected, and no need for new social services and support facilities would be required. The modifications could result in a minor increase in employment during its duration, generating a small positive impact in the local area. Because the Proposed Action and any potential effects would occur within VAFB boundaries, it 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 risks.

Transportation

Given the adequate level of service currently experienced on the roadways that would be affected during SLC-4E modification and the Falcon 9 and Falcon Heavy programs on VAFB, the slight increase in daily truck traffic anticipated under the Proposed Action would not result in adverse effects to their capacity. All VAFB roadway sections should continue to operate at an acceptable level of service with project-added traffic. No new access would be required under project activities, and no unsafe roadway conditions are anticipated. Thus, the Proposed Action would not be expected to result in significant impacts related to transportation.

Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Wetlands, Floodplains, and Wild and Scenic Rivers

No wetlands, floodplains, or wild and scenic rivers are present within areas affected by construction or landscape maintenance activities. Thus, the Proposed Action would not result in significant impacts on these resources.

Stormwater

Modifications to SLC-4E would require coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities because the total disturbed area would be greater than 1 acre. Similarly, operational activities associated with the Proposed Action would require coverage under a NPDES General Industrial Permit prior to any

discharge to grade of stormwater. The NPDES permits and related VAFB Storm Water Management Plan require best management practices (BMPs) to reduce and eliminate pollutants in stormwater and non-stormwater discharges associated with project activities. Compliance with BMPs should minimize potential adverse impacts to local water resources. Thus, the Proposed Action would not be expected to result in significant impacts related to stormwater.

Surface Waters

Activities during construction and launch operations would include the use of hazardous materials and generation of wastewater that could result in an adverse impact to water resources if not properly controlled and managed. Proper management of materials and wastes during project activities would reduce or eliminate the potential for contaminated runoff. As required by the NPDES General Permits, BMPs would be implemented to properly manage materials, and reduce or eliminate project-associated runoff to further reduce the potential for adverse effects, especially during the rainy season.

Because the Falcon 9 and Falcon Heavy launch vehicles use only LOX and RP-1 propellants, the exhaust cloud would consist of steam only and would not contain any hazardous materials. As the volume of water expected to condense from the exhaust cloud is expected to be minimal, the exhaust cloud would generate less than significant impacts on surface water quality near SLC-4E.

Upon impact with the ocean, the first stage of the launch vehicle and the Dragon capsule could expel residual propellant into the Pacific Ocean. Due to the small volume of this release into the open ocean, impacts on water quality would be less than significant. Thus, the Proposed Action would not be expected to result in significant impacts on surface waters.

Groundwater

Groundwater is unlikely to be encountered during excavation activities, because the depth of excavation would not exceed 16 feet below ground surface during modifications at SLC-4E. The greatest threat to groundwater is contamination from hazardous materials or waste releases during modifications to SLC-4E and operational activities that could infiltrate an aquifer. Proper management of hazardous materials and wastes during SLC-4E modifications and operational

activities would reduce or eliminate the potential for contaminated infiltration. Thus, the Proposed Action would not be expected to result in significant impacts on groundwater.

CUMULATIVE IMPACTS

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 and biological resources. This FONSI/ROD incorporates the EA by reference and is based on the potential impacts discussed in the EA that consider the past, present, and reasonably foreseeable future activities at and within the vicinity of VAFB that would affect the resources impacted by the Proposed Action.

VAFB evaluates the cumulative impacts on the environment of all space launches based on a maximum of 30 launches per year. This rate is not exceeded, and in most years, the number of launches does not exceed 15. Launches of the Falcon 9 and Falcon Heavy would be included in the maximum 30 launches per year; thus, they would not represent an additional effect on resources beyond that already analyzed by the various launch programs at VAFB.

To ensure that no significant cumulative impacts result from projects on VAFB that occur either concurrently or sequentially, VAFB includes environmental contract specifications and protective measures, when necessary, in all projects. Preventive measures are identified and defined by resource managers and actions are taken by project proponents and VAFB during the planning process to ensure adverse impacts are minimized, or avoided all together, as projects are reviewed under NEPA. Prior projects are also considered to ensure no levels of acceptable impacts are exceeded. With these practices in place, and given that all projects on VAFB are designed and implemented to be in full compliance with applicable statutes and regulations, and environmental protection measures are developed in coordination with appropriate regulatory agencies, the activities included under the Proposed Action, in conjunction with other foreseeable projects at VAFB, would not result in significant cumulative impacts.

Air Quality

The cumulative emissions from the Proposed Action and past, present, and future projects on VAFB would not exceed any thresholds established under the Clean Air Act. For those projects

outside of VAFB that would have a substantial amount of emissions, mitigation would be implemented to reduce the levels to less than significant. Therefore, no significant cumulative impacts to the region's air quality would be expected to occur.

Biological Resources

Potential cumulative impacts on biological resources from the Proposed Action and other past, present, and future projects on VAFB include those types of direct and indirect impacts discussed above (e.g., launch noise exposure, vegetation removal from construction projects). These potential cumulative impacts would be minimized with the implementation of mitigation measures described in the EA; avoidance and minimization measures and terms and conditions stated in USFWS biological opinions; identified in environmental documents completed for other projects; measures to be incorporated in environmental documents currently under development for future projects; and measures identified and established by VAFB for operations and maintenance projects. With these measures in place, no significant cumulative impacts on biological resources would be expected.

AGENCY FINDINGS: In accordance with applicable law, the FAA makes the following findings/determinations based on the appropriate information and data contained in the EA, as well as the other documents incorporated into this FONSI/ROD (i.e., 2011 biological opinion, 2011 MOU, and Falcon Heavy sonic boom modeling):

- No significant environmental impacts would be incurred as a result of the FAA's Federal actions.
- The FAA's Federal actions would not result in a physical use, temporary occupancy, or constructive use of a Section 4(f) property, and thus would not invoke Section 4(f) of the DOT Act.
- The FAA's Federal actions would not likely result in an adverse effect to species on the federally threatened or endangered list.

DECISION AND ORDER: The FAA is herein adopting the aforementioned EA. In so doing, the FAA has independently evaluated the information contained in the EA and takes full responsibility for the scope and content that 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 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 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.

The FAA has determined that environmental and other relevant concerns presented by interested agencies and private citizens have been sufficiently addressed in the EA, hereby acknowledged and fully and properly considered in the decision-making resulting in the FONSI/ROD. The FAA concludes there are no outstanding environmental issues to be resolved by it with respect to the Proposed Action.

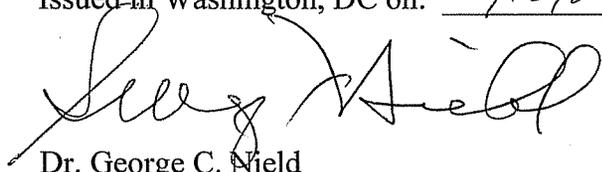
After reviewing the EA and all its related materials, the undersigned has carefully considered the FAA's goals and objectives in relation to various aspects of the proposed construction and launch activities described in the EA, including the purpose and need to be met, the alternative means of achieving 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, the undersigned finds 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: 3/12/2013

A handwritten signature in black ink, appearing to read "George Nield", written over a horizontal line.

Dr. George C. Nield
Associate Administrator for
Commercial Space Transportation