[4910-13]
Department of Transportation

Federal Aviation Administration

Finding of No Significant Impact

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT)

ACTION: Finding of No Significant Impact

SUMMARY: The Federal Aviation Administration (FAA) prepared an Environmental Assessment (EA) to evaluate the issuance of experimental permits to applicants seeking to participate in the Vertical Rocket Challenge and the Lunar Lander Challenge at the X Prize Cup during October 2006 and to approve revisions of the Airport Layout Plan at the Las Cruces International Airport in New Mexico. The EA, which is hereby incorporated by reference, evaluated the potential environmental impacts associated with the proposed action and the alternatives to make an informed decision on whether to issue experimental permits and approve the Airport Layout Plan modifications. The scope of the proposed action is defined by activities associated with the issuance of the experimental permits, specifically the Vertical Rocket Challenge and the Lunar Lander Challenge suborbital launch activities regulated by the FAA under Title 49, United States Code (U.S.C.), Subtitle IX, Sections 70101-70121, as well as the activities associated with the approval of any revisions to the Airport Layout Plan that are required to support the X Prize Cup activities. After reviewing and analyzing currently available data and information on existing conditions, project impacts, and measures to mitigate those impacts, the FAA has determined that issuing experimental permits to the applicants seeking to participate in the Vertical Rocket Challenge and the Lunar Lander Challenge at the X Prize Cup and approval of the Airport Layout Plan modifications at the Las Cruces International Airport in New Mexico would not significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required, and the FAA is issuing a Finding of No Significant Impact (FONSI). The FAA made this determination in accordance with all applicable environmental laws.

FOR A COPY OF THE ENVIRONMENTAL ASSESSMENT: Visit the following internet address: http://ast.faa.gov/lrra/comp_coop.htm, or contact Ms. Stacey M. Zee, FAA Environmental Specialist, 800 Independence Avenue SW, Room 331, Washington, D.C. 20591. You may also send e-mail requests to stacey.zee@faa.gov or telephone (202) 267-9305.

DATES: The Draft EA was released for public review and comment on August 14, 2006. All comments received by September 14, 2006 were considered in the preparation of the Final EA.

PURPOSE AND NEED: The purpose of the proposed action is to issue experimental permits for the operation of reusable suborbital rockets in accordance with FAA's commercial space transportation regulations (Title 49, U.S.C., Subtitle IX, Sections 70101-70121) and to approve any revisions to the Airport Layout Plan that are required to support the X Prize Cup activities.

The purpose of the proposed action is to ensure safe and responsible operation of the reusable suborbital rockets for applicants seeking to participate in the X Prize Cup Vertical Rocket Challenge and the Lunar Lander Challenge and to implement the proposed revisions to the Airport Layout Plan in a manner consistent with the safe and efficient operation of the airport.

The need for the proposed action is to ensure safe commercial and general aviation activities and to accelerate the technology developments supporting the commercial creation of a vehicle capable of ferrying cargo or humans back and forth between lunar orbit and the lunar surface. Such a vehicle would have direct application to the personal spaceflight industry as well as the technology development goals of the Defense Advanced Research Projects Agency and the National Aeronautics and Space Administration (NASA). In addition, the need supports NASA's mission as directed by the President to return Americans to the moon by 2020 and to use the mission as a steppingstone for future manned trips to Mars and beyond.

PROPOSED ACTION: Under the proposed action, the FAA would issue experimental permits to applicants proposing to participate in the Vertical Rocket Challenge and the Lunar Lander Challenge, which would authorize the launch of the applicants' reusable suborbital rockets from the Las Cruces International Airport, New Mexico. An experimental permit is valid for one year and authorizes an applicant to conduct an unlimited number of suborbital launches from a specific location. However, the suborbital launches reviewed in this EA are associated with the Vertical Rocket Challenge and the Lunar Lander Challenge events at the X Prize Cup, and the Las Cruces International Airport would only allow the permitted applicants to test and launch their suborbital rockets for a period of one week prior to and during the X Prize Cup. Under the proposed action, the FAA may issue up to five experimental permits for 10 vehicles. Each applicant would bring two identical vehicles to compete in both the Vertical Rocket Challenge and the Lunar Lander Challenge events.

Each of the proposed reusable suborbital rockets would be wingless and generally cylindrical in shape with a height from 2 to 6 meters (6.5 to 20 feet) and a diameter from 0.4 to 2.9 meters (16 inches to 9 feet). The suborbital rockets would consist of a single stage rocket with liquid propellants and would use inert gases such as helium or nitrogen to provide overpressure for the propellants. The fuel and oxidizer combinations associated with the experimental permit applications that FAA has received were used to define the range of propellants that may be used in the Vertical Rocket Challenge and the Lunar Lander Challenge. As part of the proposed action, the FAA also would approve revisions to the Airport Layout Plan that would be required to support the X Prize Cup activities.

Up to nine new launch and landing pads, a new propellant staging pad, and three new access roads would be required to support launches of reusable suborbital rockets competing in the Vertical Rocket Challenge and the Lunar Lander Challenge. Up to three separate operating areas with three pads each would be constructed. Two of the pads in each operating area would be flat and featureless for the Vertical Rocket Challenge, and one pad in each area would be a simulation of the lunar surface. All of the launch and landing pads would measure 10 meters (33 feet) in diameter and be circular or octagonal in shape, and the propellant staging pad would measure 10 meters (33 feet) by 10 meters (33 feet). All of the new pads would be coated with heat-resistant gunnite, which is a mixture of cement, sand, and water. The surface of the pads

would be at or below the level of the runways. The existing concrete pad located south of the cross-runways would be used for static test firing. A temporary operation shelter (i.e., a steel shipping container) and a 5-kilowatt generator would be located with each set of launch and landing pads for a total of three shelters and generators. The generators would operate for up to 10 hours total during the Vertical Rocket Challenge and the Lunar Lander Challenge. In addition, the existing X-Racer propellant loading pad would be expanded from 37 square meters (400 square feet) to 149 square meters (1,600 square feet).

The access roads to each set of the launch and landing pads would be graded gravel roads approximately 6 meters (20 feet) wide. The access roads would lead from an existing road to each set of three launch and landing pads and would be constructed at the same time as the pads. A total of 3,941 square meters (42,380 square feet) of new access roads would be constructed.

To reduce fire hazard from engine exhaust, a 5-meter (16-foot) area would be cleared around each proposed launch and landing pad, and a 20-meter (66-foot) wide corridor would be cleared between each set of three launch and landing pads. The pads would be spaced 100 meters (328 feet) apart for a total area of 4,400 square meters (47,652 square feet). Brush and other vegetation would be cleared from this area, and the area would be covered with light paving (runway millings) to reduce the fire hazard and the amount of dust generated by high velocity rocket engine exhaust.

ALTERNATIVES CONSIDERED: Alternatives analyzed in the EA include (1) the proposed action and (2) the no action alternative. Under the no action alternative, the FAA would not issue any experimental permits to the applicants seeking to participate in the Vertical Rocket Challenge and the Lunar Lander Challenge and would not approve the revised Airport Layout Plan; therefore, there would be no launches of reusable suborbital rockets from the Las Cruces International Airport and no construction activities. The nine launch and landing pads, the propellant staging pad, and the access roads associated with the Vertical Rocket Challenge and the Lunar Lander Challenge would not be constructed, and the expansion of the X-Racer propellant loading pad would not occur. Because the FAA would not issue experimental permits, the Vertical Rocket Challenge and the Lunar Lander Challenge event would not take place; however, all the remaining X Prize Cup events would occur. This would include the flights of the X-Racer; however, propellant loading would have to be performed from the existing pad.

ENVIRONMENTAL IMPACTS

Air Quality

Less than 5 tons (10,000 pounds) combined of particulate matter with a diameter less than 10 microns (PM_{10}), particulate matter with a diameter of less than 2.5 microns ($PM_{2.5}$), and fugitive dust would be emitted during construction. The operation of the construction equipment would emit carbon monoxide (CO), PM_{10}, nitrogen oxides (NO_x), volatile organic compounds (VOCs), and sulfur oxides (SO_x), with PM_{10} and NO_x comprising the majority of the emissions. Because of the short construction period (two weeks) and limited number of construction vehicles involved in construction (i.e., excavator, grader, dump trucks, and concrete trucks), the emissions

from the operation of such vehicles would be negligible. In addition, the proposed action would meet the Best Available Control Measures and erosion ordinances outlined in Doña Ana County's Natural Events Action Plan.

Because all of the CO would be oxidized to CO_2, no NAAQS pollutants would be emitted by the reusable suborbital rockets. In addition, no hazardous air pollutants would be emitted by the reusable suborbital rockets. The water vapor and CO_2 that would be emitted would disperse into the atmosphere and would have no impact on air quality. The three 5-kilowatt generators that would be operating at each control shelter would emit CO, PM_{10}, NO_x, VOCs, and SO_x, with PM_{10} and NO_x comprising the majority of the emissions. The emissions associated with the generators would result in a negligible impact on air quality. The minimal emissions of the haze related pollutants associated with the proposed action (i.e., PM_{10} and $PM_{2.5}$) would have a negligible direct and indirect impact on the visibility at the designated Class I areas under the regional haze rule (64 Fed. Reg. 35714, July 1, 1999).

Biological Resources – Fish, Wildlife, and Plants

Up to 17,353 square meters (187,624 square feet) of previously disturbed desert scrub within the fenced-in boundary of the Las Cruces International Airport would be cleared for the purposes of the proposed action. The proposed action would have a negligible impact on the surrounding vegetation and wildlife. The vegetation has been subject to ongoing human disturbance associated with the active airport. The launch and landing pads would be covered with an impervious surface devoid of vegetation, and the area immediately surrounding the launch and landing pads, as well as the area between the launch and landing pads, would be cleared of vegetation. The wildlife species that exist are tolerant of the disturbances (e.g., noise, aircraft, and vehicular movements) and would avoid active construction areas. Adverse effects on birds protected under the Migratory Bird Treaty Act would not be likely to occur. No known state or federally listed threatened or endangered species would be impacted by the proposed action. The area affected by the proposed action would not affect suitable habitat or designated critical habitat for any federally listed threatened or endangered species.

Cultural Resources (including Historical, Architectural, and Archeological Resources)

The ground-disturbing activities associated with the proposed action would occur within the fenced boundary of the Las Cruces International Airport. The locations of all the ground-disturbing activities were surveyed for cultural and historic resources in accordance with the requirements of Section 106 of the National Historic Preservation Act and the New Mexico Historic Preservation Division. No cultural or historic resources or properties were identified during the survey, and the State Historic Preservation Office (SHPO) concurred that there would be no adverse effects to properties listed or eligible for listing on the National Register of Historic Properties or other cultural resources. In the unlikely event that human remains are encountered during site construction activities (excavation), the X Prize Foundation would stop construction activities in the area and notify the FAA and the SHPO. The FAA would comply with the Native American Graves Protection and Repatriation Act regulations and the National Historic Preservation Act as required.

Should the scope of the X Prize Cup change and require additional construction activities, the X Prize Foundation would complete additional cultural surveys and submit its findings to the FAA. FAA would consult with SHPO and the Ysleta del Sur Pueblo Tribal Council and obtain concurrence on the findings prior to approving a revised airport layout plan, which would authorize construction.

Geology and Soils

The proposed launch, landing, and propellant staging pads would not be anchored into the bedrock; therefore geology would not be impacted. The short-term impacts of pad construction would include the potential for increased erosion during construction, while the long-term soil impacts would include compaction and mixing of soil horizons. The short- and long-term impacts on soil from construction would be negligible. Best Management Practices as promoted by the New Mexico Water Quality Control Commission would be followed (e.g., the use of silt fences, check dams, and earthen dikes) to reduce sedimentation of surface waters and reduce soil erosion. Potential propellant spills and releases represent potential impacts on soils in the form of soil contamination. Because all spills and releases would be small based on the capacity of the reusable suborbital rockets, and such spills and releases would be immediately contained, removed, and remediated by trained personnel, resulting impacts would be considered negligible.

Hazardous Materials and Hazardous Waste Management (including Solid Waste, Pollution Prevention, and Natural Resources Energy Supply)

During pre-flight activities, minor amounts of other hazardous materials, such as oils, lubricants, and solvents, would be used to prepare the rockets for flight. All hazardous materials would be handled, stored, and used in compliance with all applicable regulations. Hazardous materials that would be used under the proposed action are similar to materials already handled at the airport. The transport, use, or disposal of hazardous materials associated with operations under the proposed action would not pose a substantial hazard to the public or the environment. Fuels and oxidizers would be stored in separate, secured containers in covered airport hangers. During the Vertical Rocket Challenge and Lunar Lander Challenge events, applicant-specific propellant trucks would leave the storage area and proceed to the launch/landing pad area and remain there (at a safe distance) and would return to the storage area after the applicant completes the event. If there were a spill, the applicant's personnel would be responsible for any necessary containment, removal, and remediation. In addition, emergency response and the local fire department would be on standby during the X Prize Cup to respond to accidents or fires.

Applicants would be required to comply with pollution prevention plans and practices in effect at the airport. The use of natural resources and energy associated with the proposed action would have no impact on energy demands or other natural resource consumption.

Health and Safety

Implementation of the proposed action would result in a negligible impact on health and safety. All transport of hazardous materials, including fuels and oxidizers, would be in Department of Transportation (DOT) approved packages and containers, and such shipments would meet all

applicable and relevant DOT Hazardous Material Regulations (49 CFR Parts 171 to 177). Trained ground crew personnel would follow established standard operating procedures during fueling operations in accordance with all applicable safety regulations. Spills of hazardous materials would be handled by trained ground crew personnel. An emergency response team would be available should it be necessary during a release or spill incident. The location of the public spectator area would be located more than 1 kilometer (3,281 feet) from the nearest launch and landing pads and would be the safety zone designated to contain the effects of a failed operation. Each reusable suborbital rocket would have an autonomous and human-controlled termination system that would be activated should the vehicle leave the designated operational area, preventing any errant suborbital rockets, debris, or failed operations from reaching the spectator area. In addition, the vehicle operators would be located in a portable steel shelter (safety bunker) located near each set of launch and landing pads. Emergency response and the local fire department would be on standby during each launch to respond to accidents or fires.

Land Use (including Department of Transportation 4(f) Resources and Farmlands)

The proposed action would have no effect on the existing land use at the airport or surrounding the airport. Implementation of the proposed action would not require the use or alteration of any land protected under Section 4(f) of the DOT Act or under the Farmland Protection Policy Act, which was confirmed by the U.S. Department of Agriculture Natural Resources Conservation Service with their determination that no prime or unique farmland exists at the Las Cruces International Airport.

Noise and Compatible Land Use

The operation of the rocket engines would result in short-term increases in the level of noise at the Las Cruces International Airport above the peak levels associated with the fixed- and rotary-wing aircraft stationed at the airport. Other than the spectators and the airport employees, there are no sensitive noise receptors near the airport. Because the location of the launch and landing pads would be more than 1 kilometer (3,281 feet) away from the spectators and administrative area of the Las Cruces International Airport, and the rocket engines would only operate for brief periods of time (up to 4 minutes), the elevated noise levels would not be expected to adversely affect spectators or employees. The proposed action would not result in an increase in noise in excess of the applicable thresholds of significance for noise or land use compatibility.

Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks (including Secondary (Induced) Impacts)

The proposed action would create an influx of no more than 25,000 people for the entire two-day X Prize Cup, with no more than 13,000 people per day in attendance. Approximately 230 employees would be required to host the X Prize Cup, and approximately 250 exhibitors would attend the event. Doña Ana County would experience positive impacts on socioeconomics. The additional services provided to the spectators and personnel would provide a temporary benefit to the local economy because of the increase in the amount of business conducted by the service industry, such as hotels, restaurants, and gas stations. The temporary increase in the local

population would not exceed the service capacity of the region in terms of lodging or services (i.e., public utilities or emergency care). Because Doña Ana County has a zoning ordinance that restricts residential development within a 4-kilometer (2.5-mile) radius of the Las Cruces International Airport, there would be no adverse impacts on socioeconomics, environmental justice populations, or on children's health and safety by the proposed action. Because the proposed action does not involve major development, it would not involve the potential for induced or secondary impacts on surrounding communities.

Transportation

Under the proposed action, the influx of up to 13,000 spectators would result in increases in traffic congestion on the local roadways around the Las Cruces International Airport; however, there would be no notable travel delays associated with travel on the Interstate Highways I-10 and I-15. The range of average daily traffic on the Interstates (5,000 to 18,000 passenger cars and trucks per day) and the increase in traffic associated with the spectators may result in a change in interstate level of service from level A to level B, which is a change from a free flow condition where individual users are unaffected by the presence of others in the traffic stream to a stable traffic stream where individual users begin to notice others. Such a change would be a negligible change in the traffic flow on I-10.

Visual Resources (including Light Emissions and Visual Impacts)

Implementation of the proposed action would result in no change to the visual resources associated with the Las Cruces International Airport. The reusable suborbital launch vehicles would remain within 200 meters (656 feet) of the ground, would be similar in size to fixed-wing and rotary-wing aircraft that operate out of the airport, and any emission clouds would disperse within a short period of time.

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

Implementation of the proposed action would have no impact on water resources. No streams, wetlands, or floodplains are located within the proposed operational area of the reusable suborbital rockets, which includes the location of all the proposed launch and landing pads. In addition, existing municipal water supply sources would be used for all the X Prize Cup activities.

Cumulative Impacts

Cumulative impacts are "the incremental impact of the actions when added to other past, present, and reasonably foreseeable future action regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (40 CFR 1508.7) For this analysis, cumulative impacts include impacts from the permitted vehicles and the past, present, and reasonably foreseeable future activities that would affect the resources impacted by the events at the Las Cruces International Airport. Activities analyzed include the X-Racer flying up to four times per day during the two-day X Prize Cup; up to 12 launches of six amateur rockets; up to six rocket

engines being fired at the existing static rocket engine test pad; up to 1,000 model rockets launches; the operation of a rocket truck (a pick-up truck with a 2,000 pound-thrust hybrid rocket engine mounted on the bed of the truck); the Elevator Games; and the use of additional parking areas. The FAA found that the proposed action would have a less than significant impact on air quality, biological resources, health and safety, and land use. For the other resource areas, the impacts were found to be negligible or non-existent and would not result in a cumulative impact when assessed with other past, present, and reasonably foreseeable future activities.

Air Quality – Cumulative Impacts

In addition to the air quality impacts discussed under the proposed action, the other X Prize Cup activities would result in emissions of criteria air pollutants, hazardous air pollutants (air toxics), and air pollutants regulated by New Mexico. The X-Racer rocket engine operation, the operation of rocket motors with solid propellant (the amateur rockets), the static firing of rocket engines, the operation of the rocket powered truck, and up to 1,000 launches of model rockets would emit water, CO_2, and criteria pollutants (CO, PM_{10}, $PM_{2.5}$, NO_x, and SO_x). In addition, the operation of the amateur rockets would result in emissions of hydrogen chloride and aluminum oxide. Hydrogen chloride is a hazardous air pollutant regulated by the U.S. Environmental Protection Agency (EPA), and aluminum oxide is a toxic air pollutant regulated by New Mexico per 20.2.72 New Mexico Administrative Code Section 402.B.

The cumulative total emissions of any individual criteria pollutant (i.e., CO, PM_{10}, NO_x, VOCs, and SO_x) would be less than 2 tons (4,000 pounds), which would readily disperse, resulting in a negligible cumulative impact on regional air quality. Because the emissions of aluminum oxide and hydrogen chloride would be from the amateur rockets that would be launched from a temporary launch pad, the emissions would not be generated from a regulated source, and, therefore would not be subject to EPA or New Mexico Regulations. The emissions of hydrogen chloride and aluminum oxide would be up to 0.93 kilograms (2.04 pounds) and 1.68 kilograms (3.7 pounds), respectively, per launch. This amount of emissions would be from ground level up to approximately 914 meters (3,000 feet) above ground level and would readily disperse. Because a maximum of 12 launches of amateur rockets would occur over a two-day period and the amount of hydrogen chloride and aluminum oxide emitted would be small and would readily disperse, the impact on the regional air quality would be negligible.

The cumulative impact of the emission of all the activities occurring at the X Prize Cup would be negligible. The reusable suborbital rockets and the rocket engines that would be operated on the test stand would use similar types of propellants resulting in emissions of water and CO_2; however, the total amount would be less than double that from the proposed action because the number of static firings and the duration would be less than the number and duration of the rocket engine operations during the Vertical Launch Challenge and the Lunar Lander Challenge. In addition, the operation of the static test stand, the Vertical Launch Challenge, and the Lunar Lander Challenge would not occur at the same time; therefore, the emissions from one event would dissipate prior to the initiation of the next event and a new emission source.

Biological Resources – Cumulative Impacts

The X-Racer would take off from an existing runway and would maintain a flight plan typical of a fixed-wing aircraft operating from the airport and would not represent a new impact on the existing biological resources. The rocket truck would operate along the existing apron or runway and would not represent a new impact on the existing biological resources. The static testing of rocket engines would occur from an existing test pad and would not represent a new impact on the existing biological resources. The amateur rocket launches would occur from a temporary launch pad placed on an existing road, and the X Prize Foundation is in consultation with the Bureau of Land Management (BLM) to obtain the appropriate land use permit for a rocket recovery area and access to the area. The landing of the amateur rockets and the off-road access to the landing area would result in a negligible short-term impact on vegetation and wildlife in the area. The launch of model rockets would occur in a cleared area suitable for launch and recovery and would not impact vegetation or wildlife. These activities would result in a negligible cumulative impact on biological resources.

Health and Safety – Cumulative Impacts

Because the same transportation and operation measures associated with the proposed action would be implemented for the other activities occurring during the X Prize Cup, there would be no additional cumulative health and safety impacts. In addition, for the Elevator Games that involve the use of a laser or microwave beam, the beam would be directed at a specific target away from the spectators or any sensitive receptors; therefore, there would be no cumulative health and safety impact.

Land Use – Cumulative Impacts

Existing cleared areas at the airport or adjacent to the airport will be used for the launch and recovery of the model rockets. The X Prize Foundation must obtain written authorization from the BLM to use and access BLM land for the landing and recovery of the amateur rockets. These actions would have no cumulative effect on the existing land use at the airport or surrounding the airport.

Mitigation

The environmental impact analysis in this EA found no impacts in excess of applicable thresholds of significance for any impact category. Therefore, no mitigation is necessary. However, to ensure the health and safety of participants, spectators, and airport staff, the FAA recommends that the X Prize Foundation implement the following noise protection measures and monitoring during the X Prize Cup:

- Post noise information posters that inform the public spectators of the potential noise hazards.
- Ensure that noise protection devices (e.g., ear plugs) would be available to the public during the X Prize Cup.

- Monitor the level of noise at the perimeter of the spectator area during rocket engine operation.
- Provide noise monitoring summary report to the FAA to include the activity(ies), location(s), duration, date, time of day, weather condition, and recorded noise level in "A" weighted decibels (dBA).

Consistency with Community Planning

The proposed action has been reviewed and has been found to be consistent with state and local planning objectives from the state of New Mexico and Doña Ana County governments.

DETERMINATION: An analysis of the proposed action has concluded that there are no significant short-term, long-term, or cumulative effects to the environment or surrounding populations. After careful and thorough consideration of the facts herein, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives set forth in Section 101(a) of the National Environmental Policy Act of 1969 and that it will not significantly affect the quality of the human environment or otherwise include any condition requiring additional consultation pursuant to Section 102 (2) (c) of the National Environmental Policy Act. Therefore, an EIS for the proposed action is not required.

Issued in Washington, DC on: **September 27, 2006**

Patricia Grace Smith

Associate Administrator for Commercial Space Transportation