Vehicles Analyzed in the Environmental Assessment

The Oklahoma Space Industry Development Authority identified three types of reusable launch vehicles that are considered typical of the vehicles that would operate from the Clinton Sherman Industrial Airpark (CSIA). Launch vehicles proposed to be launched from the CSIA would only use suborbital trajectories and therefore, would not repeatedly orbit the Earth. The vehicles would launch and land horizontally and would not require runway lengths in excess of existing infrastructure at the CSIA. The conceptual designs of the vehicles analyzed in the Environmental Assessment are described in this poster.

Representative Concept X Vehicle

Concept X Vehicles

Concept X launch vehicles would take off horizontally under turbojet power from the main runway at the CSIA. Following takeoff, the vehicle would ascend to an altitude where rocket engines would be ignited. The launch vehicle would climb under rocket power until the rocket propellants are consumed or the rocket engines are turned off. The vehicle would glide unpowered along a parabolic trajectory until reaching apogee (the highest point in the flight trajectory). The launch vehicle would then descend. Turbojet engines would be restarted at a specific altitude and the vehicle would fly to a powered, horizontal landing at the CSIA.

Concept Y Vehicles

Concept Y vehicles would launch horizontally from a runway at the CSIA and would fly northwest or southwest along a steep ascent trajectory until the propellants are expended or rocket engines are turned off. The vehicles would coast unpowered along a parabolic trajectory until reaching apogee. The launch vehicle would then coast down until pullout and glide to a descent to the CSIA. Upon reaching the CSIA it may be necessary to conduct additional maneuvers to manage altitude and airspeed before performing an unpowered horizontal landing.

Representative Concept Y Vehicle

Representative Concept Z Vehicle

Concept Z Vehicles

The carrier aircraft and launch vehicle would take off horizontally from the CSIA. The aircraft would ascend to an altitude where the launch vehicle would be released from the carrier aircraft. Rocket engines on the launch vehicle would be fired as the aircraft pulls away. The carrier aircraft would make a powered horizontal landing on the designated runway after releasing the launch vehicle. The launch vehicle would climb until propellants are consumed. The vehicle would glide unpowered along a parabolic trajectory until reaching apogee. The launch vehicle would then descend and glide unpowered, to a horizontal landing at the CSIA.