

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly or mishap). An anomaly on the launch pad could cause a fire on the launch pad and/or an explosion that spreads debris. While anomalies are not licensed activities, as part of evaluating a launch license or permit application, the FAA evaluates SpaceX's debris analysis to ensure the hazard area is of sufficient size to ensure public safety.

SpaceX has entered into a MOA with TPWD to mitigate and restore any impacts from anomalies at Boca Chica State Park, Brazos Island State Park, and other TPWD land (Appendix C). The MOA provides a protocol for responding to events, recovering debris, and implementing, monitoring, and adapting restoration efforts to restore impacts. In the event of an anomaly, a limited number of SpaceX staff would enter the debris field on foot and conduct an initial evaluation.

This is from the MOA:

### III. STATE PARK RESTORATION

3.1 The Parties agree that the appropriate mitigation for impacts to the state park will be coordinated efforts to restore damaged algal flat and loma habitats to pre-anomaly conditions. TPWD will identify subject matter experts to assist SpaceX or a contractor with development and implementation of a restoration plan. It is understood that restoration of these habitats is untested. SpaceX agrees to include monitoring protocols in the restoration plan, to adopt an adaptive management approach to restoration until the most beneficial restoration methodologies have been determined, and to apply those methodologies to restoration of habitats following any future impacts to the state park resulting from SpaceX activities.

3.2 The Parties anticipate that initial restoration efforts may include grooming of tracks and other scars using hand tools and native soils, establishing desired slopes and contours, and potentially inoculating the soils with appropriate species of algae and microbes, or other approach(es) as determined by the subject matter experts and TPWD and agreed to by SpaceX.

In addition, a good faith effort will be made to restore lost upland vegetation in state park uplands by seeding or transplanting appropriate grasses and other indigenous vegetation from seed or plant sources approved by TPWD. All recovery and restoration efforts will be monitored for introduction of non-native species, which will be removed by SpaceX using methods approved by TPWD. All soil disturbance resulting from anomaly impact or recovery efforts will be monitored for the presence and/or disturbance of cultural resources.

3.3 SpaceX agrees that in the event restoration measures prove impractical or agreed monitoring protocols indicate that restoration activities have not resulted in demonstrable recovery of native pre-anomaly species compositions and ecological services, the Parties will come together in good faith to agree on other means of compensating TPWD for loss of fish, wildlife and recreation values resulting from damages to the state park.

If an anomaly occurs, SpaceX will comply with its Anomaly Response Plan, Security Plan, and Fire Mitigation and Response Plan, as applicable.

In the event of an anomaly, SpaceX will evaluate the level of response based on the situation and notify the appropriate emergency personnel and land-managing agencies. Immediately following an anomaly, SpaceX may be required to continue to restrict public access in the vicinity of the VLA to address any impacts and ensure public safety. SpaceX will request an extension of the access restriction from Cameron County. The access restriction will be released when the area is deemed safe for the public by SpaceX and Cameron County. This determination by SpaceX and Cameron County would be made with input provided by public land-managing agencies (i.e., TPWD, TGLO, and USFWS).

SpaceX estimates up to 300 hours of access restrictions per year could be needed to address things such as ensuring public safety and debris removal on public land. The anomaly hours go beyond the 500 nominal operational closure hours. The hour count for nominal operations will stop when the launch operation is complete and the area is deemed safe for SpaceX or emergency personnel to enter. The anomaly-response hour count will start at that point to address debris removal and last until the area is deemed safe for the public and the access restriction is released. We need to make sure that we get hourly counts to track the 500 and the 300 hours.

## Mishaps on

### Reentry to the Pad

The launch pad and vehicle operators in the LLCC will coordinate together to determine when the area is safe for the Red Team (SpaceX staff) to enter. The Red Team will act on the direction of Flight Control I. Flight Control I or delegate will work with the Red Team to identify and safe any hazardous debris in accordance with the Hazardous Materials Emergency Response Plan and the regulatory agencies. Flight Control I or delegate will determine a plan for communicating safety state of pad to SpaceX personnel and regulatory agencies, including road and beach closure releases.

### Cleanup of Debris

A limited number of Red Team (typically four) will enter debris field first. They will survey the area, photograph the site, and locate hazardous components. Hazardous components may include the battery, the flight termination system, debris with stored energy, including components with valves and pressurized systems.

Following the initial evaluation of the area, SpaceX will coordinate with TPWD, THC, NPS, TGLO, and USFWS prior to any attempt of cleanup, in order to minimize damage to the refuge lands and sensitive historic, biological, and geological resources. The method of debris cleanup will be assessed on a case-by-case basis and will be approved by TPWD, USFWS and TGLO. Conditions that would be assessed include location and size of the debris, weather, condition of the soil, number of support staff, etc. Cleanup of debris on State Highway 4 will be the first priority, followed by Refuge or TPWD lands, and then SpaceX property. SpaceX will consult with TPWD and USFWS prior to any activity that may impact sensitive wildlife habitat and refuge lands during cleanup. SpaceX will enter on foot as much as possible and coordinate the use of vehicles with applicable landowners or land-managing agencies to minimize impacts. SpaceX will perform an initial assessment of the debris to geotag and pick up debris by hand and carry out on foot. If SpaceX cannot remove debris by hand, SpaceX will coordinate the use of equipment or vehicles with applicable landowners or public land-managing agencies. SpaceX will not use motorized vehicles on the tidal flats and will stay within established paths. Once removal is complete, restoration and monitoring efforts with respect to disturbed areas such as lomas and tidal flats, will be

coordinated with TPWD, TGLO, and USFWS.

## **Debris on Foreign Land**

If an anomaly occurs while the vehicle instantaneous impact point is over foreign land, there is a risk of a hazard to public safety due to falling debris. Key operators will be directed to stay on console to preserve all data and observations, including freezing console configurations and collecting logs, test procedures, maintenance, and training record. OSC will perform Section 8 State Vector Transmittal to Range Safety steps. SpaceX will take immediate action to save the vehicle or system or contain the event to prevent or limit damage.

## **Notifications and Points of Contact**

If it is suspected that debris may have fallen on foreign land, SpaceX will contact the US State Department Operations Center Senior Watch Officer at 202-647-1512. SpaceX will provide the latitude and longitude of the predicted impact location, and ask to notify the affected country through diplomatic channels, and provide the SpaceX point of contact information for any subsequent debris recovery or aid requests from the local government. The U.S. State Department will then lead in international coordination; SpaceX will provide assistance to the State Department upon request.

## **Notification to the FAA**

In the event of an anomaly, the method of FAA notification will be based on the following criteria: If the launch accident, launch incident, or mishap resulted in a fatality or serious injury OR a launch accident that causes greater than \$25,000 to property not associated with the flight that is not located at the launch site or designated recovery area and an unplanned event occurring during the flight of a launch vehicle resulting in the impact of a launch vehicle, its payload or any component thereof outside the designated impact limit lines, immediate contact must be made with the FAA Washington Operations Center: ((202) 267-3333). Report completion to FAA/AST Safety Officer on console and [StarshipRegulatory@spacex.com](mailto:StarshipRegulatory@spacex.com).