

F-22 RECOVERY AND SITE RESTORATION EDWARDS AIR FORCE BASE, CALIFORNIA



SUMMARY:

Characterization, Clean-up and Restoration design and engineering support services for the March 2009, F-22A Raptor fighter jet crash in a remote area of the Mojave Desert, on Bureau of Land Management (BLM) property, 35 miles northeast of Edwards Air Force Base (AFB), California.



The F-22A contains materials that, when damaged, may pose environmental and human health risks. The aircraft recovery team working in the area was specially equipped and trained to handle these materials.

PSI'S OPERATIONAL HIGHLIGHTS:

PSI conducted recovery and site restoration activities following the F-22 Raptor crash. The overall project required timely response and coordination of over 50 personnel including 32 Super 10 dump trucks, and required numerous heavy, and support equipment at this remote the site in the Mojave Desert

PSI supported excavation of over 6,000 cubic yards of debris laden soil around the impact area. The excavated materials were transported to a secure storage area within Edwards AFB property property for subsequent bioremediation by PSI.



The pre excavation efforts required hand picking of debris over a 200 acre area. A majority of this debris was carbon fiber and heavier aircraft parts. PSI personell supported the ongoing evaluation of the debris area resutedg in a phased approach to strategic debris collection which maximized capture while meeting project deadline and budget requirements.

Subsequent mapping of debris area utilizing GPS field instruments produced data that supported the crash investigation team's efforts. This approach also helped verify that 100% capture of debris was achieved in the area surrounding the crash site leading to formal closure of the site, removal of security measures/personnel and to reopen this environmentally sensitive area for public access.

Contract No: FA3002-06-D-0006-0307

Project Highlights:

- Supported recovery of aircraft debris over remote 200acre area.
- Project Site was located on private land over 50 miles from Air Force property.
- Treated 600 cubic yards of JP-8 and hydraulic oil contaminated soil laden with aircraft debris including carbon fiber.
- Managed forensic measurements consisting of distances, angles, elevations, locations and identified site features specific Impact Crater, Composite Debris Field, Debris Scatter Range, and Personal Effects Zone
- Obtained formal closure of the site, remove security measures/personnel and reopen this environmentally sensitive area for public access.

PSI Team:

Joe Schratz – Program Manager
Brian O'Neill– Project Manager

Project Dates:

May 2009– April 2010

Project Value:

\$1,983,393.95

References:

John Hauenstein
3201 Airpark Drive, Santa Maria
California
(805) 739-2600

PSI Role:

Key Subcontractor

ENGINEERING DESIGN & CONSTRUCTION

SERVICES: The recovery area, popular with ATV and dirt bike riders, is concentrated in three washes that extend 10 miles east of Hoffman Road from the Fremont Peak Road, south to Lockhart Road, in San Bernardino County. The USAF 95th Security Forces Squadron has deployed a security team around the area, maintaining vigilance of the area until site closure and restoration is complete.



PSI Senior Management personnel oversaw the site characterization and collected detailed forensic measurements consisting of distances, angles, elevations, locations and identified site features specific to the F-22 Impact Crater, Composite Debris Field, Debris Scatter Range, Personal Effects Zone and many other unique site features.

Upon completion of the forensic survey, PSI designed the restoration of the recovery area to allow for grading and drainages to conform to preexisting (prior to the crash) conditions. This effort required calculating void space and contact forces associated with the F-22 impact to determine import fill quantities and to develop compaction specifications to support revegetation of the area. Site restoration design required formal consideration for preparing the site for natural re-vegetation and to support native seed capture.

Site Investigators determined that a power interruption of less than a second led to a flight-control software glitch that caused the jet to crash on takeoff. The interruption occurred when the F-22's engines were shut down for maintenance and power to the aircraft was being supplied by an auxiliary ground unit.

PSI developed a treatment process that included the introduction of a USAF prescribed reducing agent to the contaminated soils. PSI installed an engineered designed liner and supplemented the bioremediation effort with aeration and moisture control. The treatment area was located on a remote portion of Edwards AFB, within the perimeter of the current ammunition test range, requiring active involvement with USAF EOD personnel, increased training and awareness of all PSI site workforce. Upon completion of the treatment process, PSI restored the treatment area to engineering specifications.

Edwards AFB required strict adherence to the schedule outlined by the Statement of Work in order to meet site closure requirements. All phases were completed on time and within budget.

"The work we're doing there serves to not only tell us why the crash occurred, but also allows us to return the area as close to its natural state as is possible," said Col. Nancy Reeves-Flores, 95th Air Base Wing vice commander

PSI has a commendable and consistent level of quality associated with all aspects of their work and employees. Tetra Tech has often leaned on PSI (and continues to do so) when the chips are down and the project requires on-site ingenuity to get the work done. Regardless of the project's technical requirements, PSI has always exceeded our expectations ... without fail!

John Hauenstein, Tetra Tech VAFB Program, January