Survivability/Vulnerability IAC (SURVIAC)

SURVIAC Story 1 Story 2

Joint Strike Fighter (JSF) Support

To determine Joint Strike Fighter maneuverability requirements, SURVIAC worked with the U.S. Air Force, U.s. Navy, and U.S. Marine pilots to develop new maneuver tactics for evaluation in the Enhanced Surface-to-Air Missile Simulation (ESAMS). To refine these maneuvers, the pilots visited Wright-Patterson AFB for two two-week periods and described their survival maneuvers to SURVIAC engineers. These tactics were then coded into ESAMS and BLUEMAX—two Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS) tools SURVIAC integrated for this effort. The results were then played back for the pilots through a simulation viewer for feedback and refinement. SURVIAC evaluated different airframes performing these maneuvers against surface-to-air missiles and helped the JSF Program Office and future JSF users define their requirements.

Continued on Story 1

Bosnia Support

U.S. Ground forces were deployed to Bosnia as peacekeepers for a region of that country. Ethnic groups within the country had long been in conflict. During this conflict, all sides had employed land mines as a defensive countermobility measure. When the U.S. troops occupied their peacekeeping zone, many of these mines remained. These buried mines are a hidden, lethal threat to U.S. forces as they perform their daily movements within their zone. SURVIAC assisted TACOM to reduce this threat and to save U.S. troop lives.

Continued on Story 2

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Joint Strike Fighter (JSF) Support (continued)

As additional support to the JSF program office, SURVIAC provided survivability and tactics information for the THUNDER campaign-level simulation. This force-on-force model helped define the role of JSF in future campaigns, and focussed the requirements analysis for the Joint Operational Requirement Document (JORD). Additionally, its output includes measures that allow decision makers to evaluate the impact of JSF on a war.

As part of this technical area task, SURVIAC also developed supporting analysis for the JSF JORD to include such characteristics as observables (signature), maneuverability, and offensive and defensive avionics.

SURVIAC also developed, enhanced, modified and/or maintained analytical tools specifically for JSF analysis, including THUNDER and ESAMS. This has included the development of a number of new missile simulations which the larger ESAMS community has been able to leverage.

Recently, SURVIAC analyzed surface-to-air survivability for the JSF Analysis of Alternatives (AoA), in coordination with the Institute for Defense Analysis.

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Bosnia Support (continued)

Soldiers inspect the HMMWV after the mine strike.

Land mines fall into two categories; anti-personnel and anti-vehicle. Known minefields are cordoned off to prevent soldiers from walking into antipersonnel mines. Main roads will be swept to remove anti-vehicle mines however, changing conditions cause vehicles to travel on new trails or to go around potholes or broken down vehicles. Maneuvering along these new routes coupled with the potential of terrorists to move mines into previously swept areas, puts U.S. troops in vehicles at risk.

Lightweight armor protection is necessary to stop shrapnel and spallation to limit U.S. casualties. Lightweight armor materials are available such as Kevlar. This material can be shaped to protect the most exposed positions of the vehicle or the locations most likely to result in casualties from a mine detonation. SURVIAC worked with TACOM to design the most practical and protective configuration of armor for the HMMWV and 5-ton trucks. The armor basically covered the floor and lower portion of the vehicle passenger compartments. SURVIAC personnel then deployed to Europe on a quick reaction program to install the armor and to train other Army personnel. The vehicles intended for use with the Bosnia peacekeeping force were protected.

The Army used these protected vehicles in its operations in Bosnia. During the course of operations one protected HMMWV hit a mine. The protection worked. The lives of three soldiers were assessed as being saved by the protective armor from the lethal mine blast. This is an example of an IAC assisting the government to provide direct support to the warfighter. This points out both the dangers to the warfighter even in the peacekeeper role and how those dangers can be successfully reduced with the assistance of IACs.

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