Airborne Launch Control System (ALCS) Made Far More Effective with STK

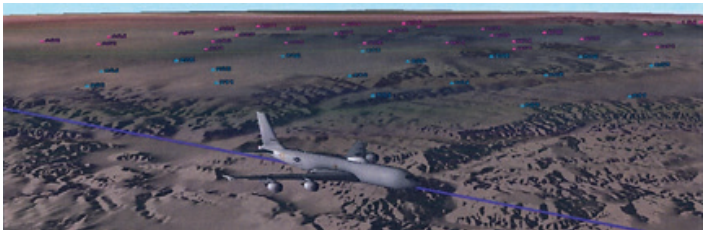
JFCC Global Strike Improves Reliability, Achieves Integration Goals

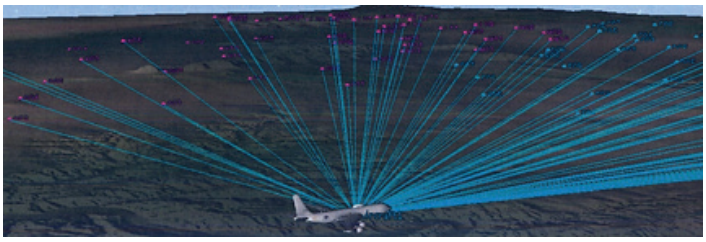
THE GOAL: Joint Functional Component Command (JFCC) Global Strike is part of the USAF 625th Strategic Operations Squadron. The mission of the 625th is to execute and support global strike through continuous, rapid, accurate, and survivable nuclear operations. The Airborne Launch Control System (ALCS) Operations Flight—one of six unique flights serving critical roles in the squadron's mission—uses Navy E-6B Mercury aircraft to provide a survivable means to launch the nation's (ICBM) force.

THE MISSION: Using outdated, legacy flight tracks; JFCC Global Strike had trouble maintaining constant line-of-sight communication between ALCS aircraft and fixed ground antennae on the ground using legacy flight tracks developed using a system for flights that was over 30 years old. They needed to find the best flight pass with the best connectivity for both voice and data—and they needed to include weather data in the analysis. To do this, they simulated ALCS tracks within STK. This allowed them to optimize tracks based on terrain data, RF communications, and aircraft orientation.

"With STK we are able to predict future ALCS behavior, understand the limitations, and incorporate that into direct mission success. Without STK, we were working in the blind."

— ERIC PEEK, 1ST LIEUTENANT, USAF





STK allowed JFCC Global Strike to increase the reliability of the ALCS weapon system. The team achieved their annual integration goals by importing a combination of multiple tools into STK. In addition, they have integrated radiation propagation with flight track analysis and are looking to bring the Nuclear Planning Execution System (NPES) and Hazard Prediction and Assessment Capability (HPAC). This will allow them to display both nuclear fallout and biological movement.

THE OUTCOME: With STK, JFCC Global Strike was able to determine the effectiveness of the ALCS flight tracks in terms of line-of-sight communication—including aircraft orientation and terrain/structure blocking models. They were also able to experiment with new flight tracks. This allowed them to optimize their effectiveness with greater signal strength between the aircraft and ground receivers—all while visualizing missile trajectories and performing access calculations. Overall, successfully combining multiple analysis tools allowed JFCC Global Strike to improve ALCS reliability and achieve their annual integration goals.

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