Airborne Electronic Attack Program Office Estimates Major Savings On Next Generation Jammer Components Based On SPA Analysis

Program Manager, Air (PMA)-234, the Navy's program office that provides combatant commanders with Electronic Warfare capabilities, is acquiring the Next Generation Jammer (NGJ), a major defense acquisition program, to close critical mission gaps for the Defense Department. In planning for the transition from the legacy system to NGJ, the program office must remain within funding constraints for acquiring spare components to maintain the new system. In response, the Veracity Forecasting Group (VFG) within Systems Planning and Analysis (SPA) has developed advanced modeling techniques that provide PMA-234 with accurate forecasting of component sparing levels, based on reliability and expected failure rates. Using SPA's analysis, the program office is now confident that it can mitigate known funding risks to spare component acquisition across the next 4 fiscal years. In fact, PMA-234 updated its plans based on SPA's analysis and now expects to save an estimated $166M to $228M in spare component acquisition across these years compared with failure rate and sparing forecasts from other modeling sources. PMA-234 is realizing an outstanding return on their investment in SPA models and services. Across the Future Years Defense Program, they have identified savings 417 times larger than what they expended on their contract with SPA.

The savings are based on a highly realistic view of future component need as opposed to more standardized views derived from generalized modeling factors. SPA's VFG achieves this realistic view by combining historical, squadron-level usage data with information from the Master Aviation Plan, future force structure, and transition business rules in a customer-centric model. This method of acquiring and merging detailed operational data (down to the component serial number) with program-specific policy and planning information is unique to SPA's modeling process. In this case, PMA-234 resource managers can now proceed with confident understanding of forecasted reliability and failure rate expectation, enabling accurate program, budget, and maintenance planning across multiple fiscal years.

The following page provides details about SPA's innovative modeling approach for this program. SPA uses differently purposed models and an array of detailed data to analyze (1) NGJ optimal transition schedule to squadrons, (2) future utilization, and (3) the NGJ subcomponent failure forecast, and then combines the results into a comprehensive, insightful prediction about subcomponent failure expectation.

Model Name	Description	Key Inputs	Outputs
NGJ Transition Model	Monthly discrete simulation to calculate optimal transition orders for squadrons	• Master Aviation Plan • Airborne Electronic Attack Force Structure • ALQ*-249 Delivery Profile • ALQ-249 entitlements • NGJ transition business rules	Optimal NGJ transition schedule by squadron
NGJ Augur	Daily discrete simulation to calculate future utilization of ALQ-249 pods	• NGJ transition schedule • Electronic Attack-18G flight rates by R-month • ALQ-249 pod carriage rates • ALQ-99 Mid Band (MB) radiation rates	Daily flight hours (FH) and radiated hours (RADH) for each pod
NGJ Subcomponent Model	Daily continuum simulation to forecast failures in populations of subcomponents	• Daily FH and RADH • Radiating and nonradiating Mean Time Between Failures • Depot repair rates • Spare transit rates	Daily fractional failures of subcomponents for each custodian

*Airborne Countermeasures Multipurpose/Special Equipment