CNA Quarterly

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Operation Iraqi Freedom

At the request of the CNO, Dr. Larry Lewis, a CNA analyst, briefed the Chairman of the Joint Chiefs of Staff, General Myers, on December 3rd. Dr. Lewis briefed CNA's reconstruction of the F/A-18 fratricide by a Patriot battery on 2 April 2003, during Operation Iraqi Freedom. His analysis identified several causative factors that led to the fratricide. Dr. Lewis recommended corrections and suggested the establishment of a responsible agency within DoD that can act on findings from future testing. MGEN Urias, Army PEO for Air and Space Missile Defense, and VADM Keating, Director of the Naval Staff, were also present. (Contact: Dr. Jeffrey B. Miers, (703) 824-2126)

U.S.-Italy bilateral bioterrorism game

In November CNA and the Italian government conducted a COMUSNAVEUR-Italy bilateral consequence management (CM) game. CNA analysts designed the scenario and, with the Italian Ministry of Interior, led the game. The objective was to examine Naval ashore facility CM in a European host-nation environment. The game was designed to simulate the use of COMEUR CM plans, the Italian government bioterrorism response plans, and the joint response to an event affecting both the U.S. and Italy. Major issues that arose in this game were medical treatment of patients, allocation of resources (hospital beds, ventilators, anti-toxin), public statements and information, and decontamination of base and civilian airfield. In a follow-on project for COMNAVEUR, we will examine the implications of this exercise for COMNAVEUR planning and joint CM operations in the European theater. (Contact: Dr. Ed McGrady, (703) 824-2484)

Carrier and air-wing capacity

OPNAV N3/5 Deep Blue asked CNA to develop a method for describing carrier and air-wing capacity dependent on a wide variety of operating conditions, rather than simply in terms of sorties. The need for this methodology arose in part because of the long aircraft mission lengths encountered during both Operation Enduring Freedom and Operation Iraqi Freedom (OIF). Our methodology focuses on four primary constraints: aircraft availability, aircrew utilization, flight-deck operations, and the availability of tanking. Deep Blue intends to convert this methodology into a tool for use during both deliberate planning and ongoing operations, potentially with multiple CSGs. Further uses will include planning for the tailored CVW concept.

We recently applied the capacity methodology to carrier and air-wing operations in OIF. Although our approach is intended as a tool for planning future operations, we looked back to data from OIF to determine the use of carriers and air wings during that operation. The analysis revealed, by day, the percentage of capacity used by each of the five carriers during OIF. Future work will include consideration of severe winter conditions on carrier and air-wing capacity. (Contact: Dr. Timothy Roberts, (703) 824-2853)

Slider: A fleet scheduling tool

Several CNA projects involve fleet scheduling issues, and we have developed tools that aid in schedule development and analysis. We sought a faster, more natural way to compose and manipulate schedules—a task for which previously available tools were rather cumbersome. To that end, we developed *Slider*, a new fleet scheduling tool that displays, modifies, and analyzes a fleet employment schedule. Through a flexible interface, Slider's user can manipulate the schedule's display and automatically change the underlying data to create, change, and display ship schedules as needed. Slider offers a flexible, scrollable timeline, allowing the user to zoom out to view many years of a schedule or zoom in to view just a few days. To aid in

schedule building, it automatically calculates monthly, quarterly, or yearly statistics and displays them at the bottom of a chart. It includes an inventory of ships ready to be added to a schedule, a "ruler" tool for measuring time intervals on the schedule display, and a text listing of the schedule data that can be easily exported to a spreadsheet for further analysis. A few within CNA are currently using Slider on analytical projects, and we have briefed and/or distributed copies to Navy personnel in OPNAV and to some schedulers in the fleet. Active feedback is helping to guide the further development and refinement of the tool. (Contact: Dr. Jason W. Hinson, (703) 824-2135)

Blue force tracking

Radiant Blue is a rapid prototype R&D project aimed at achieving reliable Blue force tracking and improved Blue force situation awareness by exploring the tactical effectiveness of using current capabilities with Marine expeditionary units, special operations forces, and amphibious readiness groups via national overhead collections and line of sight airborne collection assets. These capabilities can support combat units with improved command and control, sustainability, maneuver, survivability, and force protection.

The Director, Navy TENCAP asked CNA to provide planning and analytical support for this Radiant Blue testing. Plans included the objectives, analytical approach, collection plan, measures of effectiveness, measures of performance, and coordination of participants. The focus of analyses included evaluations of reliability, accuracy, timeliness of the different collection and reporting architectures, the accuracy and utility of tactical displays for improved command and control and situational awareness, and CONOPs development. We have played a key role in six operational tests to date, including the latest test, performed during the Joint Staff's Special Project 03 Night Viper with the USA 25th ID in Hawaii in September 2003. (Contact: Dr. Edward F. Watkins, (703) 824-2743)

Support to the National Reconnaissance Office

A recent project for NRO involves demonstrating the technical feasibility of processing airborne radar data using a passive sensor remotely located from the illuminator. The emitter is an airborne early warning radar mounted on board an AWACS aircraft; the collector is a space-based platform. We participated in a demonstration of this novel bistatic collection scheme against airborne targets of opportunity during Operation Iraqi Freedom. By monitoring broadcast data in near real time, we were able to fine-tune the collector to focus on areas of significant air activity.

Throughout the operation, AWACS and other surveillance platforms tracked airborne contacts over Iraq. That information was reported periodically over tactical communications links. Friendly air units reported their location and identification on these links as well. The broadcast links served as our primary source of "ground truth" positions of targets of opportunity for the bistatic demonstration. We conducted our evaluation on a strictly non-intrusive basis with ongoing combat operations and are now reconstructing ground truth air activity over the performance period. We are measuring the accuracy, completeness, and commonality of the bistatic collection scheme relative to broadcast reported air activity. (Contact: Dr. Gary A. Federici, (703) 824-2506)

C4, ISR, and IT integration assessment

The Marine Corps advocacy system is designed to give each element of the MAGTF an advocate, but C4, ISR, and IT (information technology) integration and interoperability issues tend to cross these functional boundaries. The Assistant Commandant of the Marine Corps asked CNA to examine the current (and develop potential future) roles, responsibilities, processes, and organizational alignments for the management of technology integration within the Marine Corps. We will: examine the current processes, functions, and organizations that execute technology integration; examine the roles and responsibilities of the key players to derive the strengths and weaknesses of the current organization; and consider how other services, OSD, the Joint staff, and industry approach technology integration issues, focusing on strengths and weakness of these other approaches. (Contact: Mr. Mark Geis, (703) 824-2745)

CNA's expanding role in experimentation

CNA has supported Naval experimentation since its inception. One major example is the Marine Corps Warfighting Laboratory (MCWL), which we helped create in 1995. Since then, all the services have asked for our thoughts and advice in this area. Recently, we have been asked for more than advice. MCWL has increased the level of our support, and the Director of the Marine Corps Combat Development Command's Expeditionary Force Development Center has asked us to support its Seabased Future Marine Expeditionary Brigade experimentation.

Two foreign governments are interested in forging a relationship with CNA. First, the Australian Defense Science and Technology Organisation asked our advice on improving its experimentation program. Following some observation and analysis, we suggested adding live experimentation to its current simulation-driven program and indicated how we could help implement such a program. Officers from the Norwegian defense forces, who are working to establish a Norwegian Battle Laboratory, visited CNA and heard how we help set up and support MCWL experiments. Their response was that what we are doing is exactly what they are looking for. They are preparing a proposal to present to their Ministry of Defense recommending that they hire CNA to help them establish an analytical capability within their lab. (Contact: Mr. Dwight Lyons, (703) 824-2595)

DFAS flawed competition still benefited DoD

DFAS asked CNA to review a controversial public-private competition won by a private contractor to perform retiree and annuitant payroll services. After the work had begun, the DoD IG identified an error in the estimate of the in-house cost. The IG reported that, had the error not been made, DFAS would have kept the work in-house. In determining the courses of action, the CNA team concluded that terminating the current contractor would compound the problem. We found that: (1) the actual cost of the contract is less than projected and will continue to decrease based on fewer software changes requested by DFAS; (2) where comparisons can be made, performance is now as good or slightly better than prior to the contract; and (3) keeping the contractor has the least negative effect on the prior employees of the government. At the conclusion of the study, DFAS announced its decision to maintain its existing contract with a private firm managing retired pay. (Contact: Ms. Frances P. Clark, (703) 824-2303)

Navy can reap savings from meters in its largest buildings

Energy legislation before Congress would require the Navy and all federal agencies to install advanced, demand-interval meters where economically practical. We collected data from San Diego, where the Navy already has buildings with demand-interval meters and found that occupants in those buildings both reduce usage and shift demand out of peak consumption periods. Buildings with advanced meters reduced electricity consumption by 5 percent and saved 9 percent in overall electricity costs. We also found that 5 percent of the Navy's U.S. buildings account for 60 percent of the square-footage. Thus, if electricity consumption is roughly proportional to square-footage, the Navy could meter 5 percent of its buildings and get 60 percent of the savings. Conservative estimates indicate annual savings of $8 million to $10 million by metering the largest 5 to 12 percent of the buildings. (Contact: Dr. Glenn Ackerman, (703) 824-2612)

Several factors found related to fatal accidents

CNA analysts examined the nature and cause of off-duty accidental deaths among Marines and identified factors related to those deaths. Using statistical analysis, we examined risks associated with both individual characteristics and career events. We found that Marines with between 6 and 12 months of service are twice as likely as the average Marine to have a fatal accident and that fatal accidents also increase soon after Marines return from a deployment. We also found that Marines brought in under waivers for traffic violations, drug use, or serious offenses have higher fatality rates. Location matters as well, with Marines in rural areas having a 20-percent higher fatality rate than

others. We also looked across occupations and found significant differences in risk.

This work, which the Marine Corps has distributed to all of its general officers and SESers, will help the Marines focus programs on specific groups to reduce the accident rates. Because DoD wants to reduce accident rates by 50 percent, our analysis has been presented to an across-service working group addressing the issue. (Contact: Mr. Michael Bowes, (703) 824-2353)

Galleys ashore are often costly and could be outsourced

A CNA analyst recently examined the staffing, cost, and use of the Navy's ashore galleys. Food service is a highly developed, fiercely competitive commercial activity. Nonetheless, the Navy uses about 10,000 MS-rated sailors to cook, bake, and manage its galleys, and supplements them with about four times as many food service attendants. Cost per customer per day ranges from less than $15 to more than $75 across the shore installations. At the 50 percent of the installations with the highest costs, 40 percent of the business is with cash customers, mainly civilian and not the intended patrons of the galleys. Those meals are highly subsidized. More than 80 percent of the cost of serving them is borne by the Navy.

Proponents of continuing to staff the ashore galleys with sailors argue that the MS billets are needed for sea-shore rotation. MS retention has not, however, been a problem. More than 50 percent of MS-rated sailors are in their first tours and not subject to rotation policy. More than 50 percent of the shore billets for subsequent tour MS personnel are not in galleys. MS positions afloat are gradually being reduced, which should allow cutbacks ashore. We recommend that the Navy eliminate or outsource ashore galleys with more than 27 percent cash customers and cost of more than $32 per customer per day. (Contact: Mr. Perkins Pedrick, (703) 824-2747)

CNA analysts honored for field work

Mr. Tom Neuberger, the CNA analyst at U.S. Central Command, received the Joint Civilian Service Commendation Award for his work during Operation Iraqi Freedom. In February 2003 Mr. Neuberger deployed with the CENTCOM staff to the Contingency Forward Headquarters in Qatar. The citation highlighted Mr. Neuberger's contributions to the command's efforts to plan for the post-hostility phase, specifically his development of a tool to monitor civil services and public utilities throughout Iraq.

Dr. Annette Matheny earned the Department of the Navy's Meritorious Civilian Service Award for her work at U.S. Sixth Fleet. Dr. Matheny was cited, in part, for her contributions to maritime interdiction operations in the Mediterranean: "Using highly complex statistical analyses of intelligence data, Dr. Matheny accurately predicted the locations of suspected terrorist associated ships, and enabled the Fleet Commander to position scarce resources effectively on short notice, maximizing overall success of maritime interdiction operations."

The CNA Quarterly provides summaries of research conducted by the Center for Naval Analyses.
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