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Radar System Analysis and Modeling



David K. Barton
566 pages.

A thorough update to the Artech House classic Modern Radar Systems Analysis, this reference is a comprehensive and cohesive introduction to radar systems design and performance estimation. It offers you the knowledge you need to specify, evaluate, or apply radar technology in civilian or military systems. The book

ON THE MONITOR

Coalition Demo Addresses Failure to Communicate

by [Ted McKenna](#)

Jun. 24, 2005

At least the six blind men in the old story about touching an elephant – the leg appears to be a tree, the trunk a vine, the tail a rope, and so on – were able to understand one another's words, if not the meaning of the object in question. In the context of military or law-enforcement situations, the difficulty of collective understanding can be not just about reconciling different interpretations of reality. Basic communications among people during a crisis – say, the terrorist attacks of September 11, 2001 – can itself be impossible, perhaps if National Guard soldiers and police use radios that don't operate on the same frequency.



Soldiers from Ft. Meade, MD, don hazardous-materials suits during an exercise. In times of crisis, the military may need to assist civil authorities, but are the technologies and procedures in place to communicate effectively? A recent joint service demonstration tested some possible solutions.

US Army

Looking to solve such communications problems, as well as improve other aspects of coordinating combined operations, whether among different military services, other countries, or domestic law enforcement and other civil agencies, the US Department of Defense on June 13-23 held its latest annual Coalition Warrior Interoperability Demonstration (CWID), hosted this year by US Northern Command in Colorado Springs, CO, and managed by US Joint Forces Command in Suffolk, VA. (For an account of a previous version of the exercise, see "[2003 Coalition C4 Tests Conclude.](#)")

Two basic types of scenarios formed the basis for this latest exercise: one focused on multi-party responses to fictional domestic crises – the derailment near Washington, DC,

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presents accurate detection range equations that let you realistically estimate radar performance in a variety of practical situations. With its clear, easy-to-understand language, you quickly learn the tradeoffs between choice of wavelength and radar performance and see the inherent advantages and limitations associated with each radar band.

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of a train carrying chlorine gas was one of the situations – and the other testing international response to a crisis involving the fictional, oil-rich African country of Lumbia, where two civil factions are attempting to destabilize the government.

In all, CWID 2005 connected five US and 11 international sites for the purpose of testing 41 different types of systems or software for sharing information or communications, with the sites including Hanscom AFB, MA; the Naval Surface Warfare Center in Dahlgren, VA, and sites in New Zealand, Norway, and the UK, among other countries. One of those 41 applications was a homeland-defense-type system called the Incident Commanders' Radio Interface (ICRI), designed to serve as a go-between for incompatible radio and communications equipment.

Following the crash of commercial aircraft into the World Trade Center, thousands of fire fighters, police officers, and other New York City law-enforcement and emergency personnel rushed to help, but the response was chaotic. Effective command and control was absent, radio communications among different departments was often ineffective, and more people than expected may have died as a result. It is exactly this type of situation that the ICRI is designed to aid, said participants at the Dahlgren, VA, Navy site of the exercise.

In the case of the domestic crisis arising from the chlorine gas spill, exercise participants, including officers from the Missouri National Guard, tested a system called Insta-Know, which operates like a search engine and provided information on the characteristics of chlorine gas and how weather might affect where it could spread, methods for cleaning it up, and other information that planners would otherwise need to collect through many phone calls in coordinating their response to the crisis. One of the systems tested in the multinational response to Lumbia's crisis, meanwhile, was MAJIC, which integrates airborne and ground intelligence collected from a number of different platforms, regardless of the service or nation that owns them.

What will be the result of this and other trials of technology that took place during CWID? They may or may not be developed into larger programs and put in the field, organizers said. Such is the point of such trials: to determine whether the technology shows promise. Interoperability trials, especially those with other countries, are also not done simply for the purpose of testing whether the technology works, but how different services can effectively communicate during a mission. Lt. Col. Tony Hill of the New Zealand Defense Force noted that effective communications means understanding that vocabulary may differ from one nation to another, even those whose mother language is English. "There's no technology that gets around that, that I know of," Lt. Col. Hill said.

Hosting CWID next year will be the US European Command, which is based in Stuttgart, Germany, and was one of the participants in this year's demonstration.

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