

# Training and Test Ranges — A 21st Century Partnership

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ALL OF THE PROGRESS OF CIVILIZATION IS DUE TO THE CONTRIBUTIONS OF PEOPLE. THE RECORD OF HISTORY IS BRILLIANT WITH THE DEEDS OF MEN AND WOMEN WHO SAID, "I CAN," WHILE IT IS SILENT FOR THE MOST PART CONCERNING THOSE WHO SAID, "I CAN'T." POSITIVE PEOPLE BELIEVE THAT IT IS BETTER TO FAIL IN CARRYING ON A PROJECT THAN NOT FAIL BECAUSE THEY HAVE NOT TRIED. I BELIEVE I KNOW THIS COMMUNITY [TEST AND TRAINING] WELL ENOUGH TO KNOW THAT IT IS POPULATED BY PEOPLE WHO SAY "I CAN."



—Dr. Patricia Sanders

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I would like to thank the National Training Systems Association and the International Test and Evaluation Association for the invitation to speak. Both of these organizations are fundamental in their role of providing a forum for dialogue on important issues facing our professions today.

And the theme of this workshop, "Training and Test Ranges: A Partnership for the 21st Century," is right on. Many of you heard me speak about partnerships at this year's ITEA Symposium in Orlando [Fla.], so you know how strongly I feel about the importance of partnering for our future. Let me focus your thoughts on three aspects of partnerships that I believe to be applicable to a joint venture between the test and training ranges.

## About Partnerships

And to do so, I will recall three quotes from my grandfathers — the source of most of my early wisdom. Some people learned everything they needed to learn in kindergarten, but growing up in a large, extended family, I learned most everything I needed to learn from my grandparents. And the three things I remember them telling me about partners are these:

- Cooperation is everything. Freckles would make a nice coat of tan if they'd get together.
- When two partners in business always agree, one of them is unnecessary.
- The fellow who wants you to play ball with him generally wants you to do the catching.

Now let me explain why I think these grandfatherly words of wisdom apply to our test and training communities. I would contend that —

- The challenges facing us today are sufficiently large that we must cooperate if we hope to successfully meet them.
- ...Our strength lies not only in our common areas — the ways in which we are alike — but also in our differences and the ways in which test and training complement each other.
- ...A partnership that is not based on mutual benefit is doomed from the beginning.

It's not like we don't have mutual challenges to wrestle with in the test and training communities. Just in case anyone here has not recognized the formidable task facing the Department of Defense today, let me describe it.

## Reductions, Deterrence, Readiness

Since the Berlin Wall came down and as a result of perceived diminished threat,

we have been able to reduce our active force by some 700,000 people — about a third of our active military. To put it in perspective, the 700,000 we cut is more than the number of troops in the British, the German, the Dutch, and the Danish armed forces together.

Or put another way, the force we cut is 200,000 people more than all the autoworkers in the United States. This reduction gave the American people a considerable peace dividend, because it allowed us to reduce our defense budget by nearly 40 percent. As a result, right now we spend less of a percentage of our national wealth on defense than any time since before World War II.

And with lots of hard work, we have managed this huge drawdown and created a significantly smaller, but pound for pound, an even more capable, ready force. And it's a good thing we did, because in the wake of the Cold War came not peace and stability, but ethnic and religious conflicts, failed states, widespread instability, humanitarian disasters, and that old standby, naked aggression.

As a result, over the past four years our armed forces have been asked to engage in over 40 separate operations around the globe. While some of these were small-scale operations, others like Bosnia have been quite significant. On any given day, the United States has about 40,000 soldiers, sailors, airmen, and Marines deployed on operations in support of our global interests. This is in addition to the 200,000 troops that we have permanently stationed overseas.

And in Bosnia, as in every other military operation these past years, our military forces have performed superbly. Whether maintaining a strong deterrent against aggression on the Korean Peninsula, ensuring that Saddam Hussein knows the penalty for turning his military against his neighbors or his own people, rescuing our citizens in places like Albania or in faraway Africa, providing humanitarian assistance in Rwanda, bringing an



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end to violence in Haiti, or extending the hand of friendship to former adversaries and new partners through NATO's Partnership for Peace, there is no doubt about the magnificent performance of our men and women in uniform.

But this does not imply that everything is perfect or that it ever was. America entrusts its military and civilian leaders with the lives of its sons and daughters, who are the ultimate source of our operational excellence.

We are committed to giving them a fair and decent environment in which to protect American interests wherever they might be challenged. And that's why readiness must be of great concern to all of us: *today's* readiness — training's emphasis; and *tomorrow's* readiness — the focus of our acquisition and testing. And

the first step in maintaining readiness in the future is to assess, as best we can, what the future will look like.

### Masters of Any Situation

This is exactly what we did in the Quadrennial Defense Review that we completed last spring. Out to the year 2010, our forces in the field will likely face a wide range of threats, from terrorists to rogue states equipped with weapons of mass destruction to potent regional powers. And beyond that period, we may even face a peer competitor — another power with the resources to challenge us on a global scale.

In such a world, with our considerably smaller forces, we must remain ready for threats to our interests and be prepared on short notice to execute a wide range of tasks, from assisting with humanitarian disasters here and abroad, to peacekeeping, to the most challenging regional conflicts. But first and foremost, our forces must remain ready, manned, and equipped to fight to win our nation's wars.

Our work on the QDR followed a path that led from threat to strategy to implementation, and finally to resource issues. We recognized that the world continues to change rapidly, and we cannot expect to comprehend fully or predict the challenges that might emerge from the world beyond the time lines covered in normal defense planning and budgets. Our strategy accepts such uncertainties and will prepare our armed forces to deal with them.

Our approach retains sufficient force structure to sustain American global leadership and meet the full range of today's requirements. At the same time, it invests in the future force with a focused modernization plan that embraces the Revolution in Military Affairs and introduces new systems and technologies at the right pace. It places much greater emphasis on the need to prepare now for the future, in which hostile and potentially hostile states will acquire new capabilities.

The programs we are undertaking now to exploit the potential of information technologies and leverage other advancing technological opportunities will transform warfighting. *We want our men and women to be the masters of any situation. In combat, we do not want a fair fight – we want capabilities that will give us a decisive advantage.*

*Joint Vision 2010* describes four new operational concepts. Together, they promise significant advantages in any operational environment, something we call “full-spectrum dominance.”

**Dominant maneuver** employs a full picture of the battlefield, advanced mobility platforms, and agile organizations to be able to attack enemy weak points directly throughout the full depth of the battlefield.

**Precision engagement** delivers the desired effects at the right time and place on any target.

**Full-dimensional protection** provides multiple layers of protection for U.S. forces and facilities at all levels [and] will enable U.S. forces to maintain freedom of action during deployment, maneuver, and engagement.

**Focused logistics** fuses information, logistics and transportation technologies, [and] U.S. forces to deliver the right support at the right place on the battlefield at the right time.

In sum, we will continue to seek the best people our nation can offer, and equip them with the best technology our scientists and engineers can produce.

### But Can We Afford It?

Perhaps the most difficult element of the way ahead is that our program must be fiscally executable. For the past several years, our defense program has suffered from unrealized expectations with regard to modernization. Therefore, an important corollary to the strategy and force choices in the QDR was a focus on balancing our overall defense program, improving stability within that program, and fixing deficiencies within Service

and Defense-wide budgets in order to ensure that modernization targets are met.

We require increased and stable investment in modernization in order to exploit the revolution in technology and transform the force toward *Joint Vision 2010*. We must fundamentally re-engineer our infrastructure and streamline our support structures by taking advantage of the Revolution in Business Affairs that has occurred in the commercial world. We must focus on the future and not on the past. Only through such efforts can we realize the cost efficiencies necessary to recapitalize the force.

### Critical Enablers

The implications of the QDR and *Joint Vision 2010* must be clear for the test and training communities. There are a number of critical enablers that are absolutely essential to our ability to shape the international security environment and respond to the full spectrum of crises. Those that are of particular importance and concern to us are:

- Quality people, superbly led – our most critical asset. Our soldiers, sailors, airmen, and Marines are the bedrock of the U.S. military. They will be the deciding factor in all future operations.

Continuously training them to be the best warriors in the world will remain among our top priorities. Advanced joint operational concepts and new technologies will increase the complexity of operations and require new and different skills.

The number of different skills required will also increase as U.S. forces are asked to be increasingly multimission-capable, able to transition from peacetime activities and operations to deterrence to war. In order to maintain proficiency in the wide variety of required missions and tasks in a joint environment, units will need more effective training and careful time management.

Units will be tasked to respond to crises more quickly and conversely, will have less time to prepare. *Joint Vision 2010* calls for all military organizations to become more responsive to contingencies, with less startup time between deployment and employment. Clearly we have a significant joint *training challenge*.

- Technology will need to be developed and tested that can profoundly affect the warrior and leader who will execute *2010* missions. Lightweight materials will enable ground forces to carry more equipment and ammunition, thereby increasing individual and unit firepower.

Vision enhancement technology will continue to improve operations after dark and in poor weather. Rapid advances will be made in the way we collect, communicate, and use information, allowing smaller staffs to perform more functions. Video technology and miniaturization such as video cameras on a chip, combined with navigation and targeting technologies, could provide the capability to fire smart personal weapons and select the specific point of impact while the round is in the air.

Four key technological areas are highlighted in *Joint Vision 2010*: low observable masking technologies, smarter weapons, long-range precision capability, and information technologies – all technologies that were unknown at the time most of our existing test and training capabilities were developed. Clearly, we also have a significant joint *testing challenge*.

### We're Reaching Our Goals

The goals set forth in *Joint Vision 2010* are the foundation for a broader effort to exploit the Revolution in Military Affairs. Indeed, the U.S. military is committed to realizing joint and Service



visions of modern warfare and is taking a number of steps to do so, including studies, war games, R&D [research and development], advanced concept technology demonstrations, and simulated warfighting experiments.

Through these efforts, the armed forces are identifying, developing, and testing concepts and capabilities that will ensure their ability to transform the future. In the joint world, there is a need to develop *Joint Vision 2010* capabilities by evolving and blending innovative concepts and emerging technologies. So we also clearly have a shared test and training – or experimenting – challenge if we are going to exploit technology, achieve dominance, and master a system-of-systems approach.

A fourth essential element for the strategy is the achievement of a 21<sup>st</sup> century defense infrastructure. As our military forces change dramatically, the way we support the warfighter must also change. The Department must be leaner, more efficient, and more cost effective in order to serve the warfighter better, faster, and less expensively. We not only have the opportunity to change, we have the requirement to change. In FY [fiscal year] 1997, 61 percent of the people employed in the Department are performing infrastructure functions.

The QDR proposes to realize \$6-7 billion annually in savings by trimming forces, streamlining infrastructure, and adjusting modernization schedules and

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plans; this money is to be redirected for force modernization investment.

This sets a high premium on finding ways to operate more efficiently. Our fourth challenge is, therefore, to accomplish the first three affordably, which means enhancing our productivity. What then are the requirements for those of us in the test and training professions? We are being called upon to provide testing and training capabilities that meet the increasingly complex needs of the evolving strategy – and we are being called upon to do so with fewer resources. To meet these requirements, I return to the three pieces of wisdom from my grandfathers:

- We must cooperate and take a more integrated test and training approach. Freckles are interesting but not compelling.
- We must more fully leverage our complementary capabilities. Test

and training bring different disciplines to the table – and that's to our mutual advantage.

- We must do these in ways that are of benefit to both the test and training communities, which means that we will need to occasionally compromise in order to meet broader objectives.

### Smart Utilization of Our Ranges

In order for the DoD to support its test and training functions, it maintains some of the most complex, technologically sophisticated, and largest facilities in the world. A large proportion of defense resources (real estate, instrumentation, facilities, personnel) is invested in ranges. There are at least 54 open air ranges in our test and training infrastructure.

We must use these assets wisely, capitalize on the re-engineering revolution, and focus on providing more efficient and affordable testing and training through better planning, better processes, and better business practices.

I would contend, and the theme of this workshop suggests, that greater integration of testing and training activities could result in more productive and efficient utilization of range resources with no loss in effectiveness to either function. Under the current mode of operations, open air ranges and other facilities are formally designated as having principally either a

testing or a training mission, which translates to separate command structures, funding rationales, and operating processes and procedures within each of the Services.

Despite their differing objectives, there is considerable functional commonality between these two disciplines as well as many shared resource requirements. This commonality is expected to increase as *Joint Vision 2010* warfighting concepts require more data collection and finer granularity of data to measure training performance. The more frequent use of integrated product teams with participation of testers and trainers throughout the development cycle is also expected to foster closer relationships between the two, as will more use of modeling and simulation.

While the conduct of training operations on testing ranges and of testing events on training ranges are fairly common occurrences at many ranges, the processes and procedures in place are not particularly conducive to promoting a substantially greater amount of integration.

Most of the integration that takes place is the result of ad hoc measures to optimize range schedules or to maximize the utility of expensive operations such as missile firings. *And all our hats ought to be off to the people in the field who are making this happen.* There is a substantial amount of nonconcurrent integration, e.g., use of range facilities by both groups but at different times or locations, but there are still relatively few examples of fully integrated testing and training events. These tend to be major joint activities like ROVING SANDS, where we have found that the combination of test and training can be very powerful.

Some additional integration can be accomplished through process improvements at the range level, but substantial increases in integration will require changes – changes to range operations, infrastructure modernization planning, funding for operations and investment, and organizational structures – that may only be able to be effected at the command, Service headquarters, or DoD

level. To be sure, there are some technical hurdles. By and large, however, it is managerial and cultural limitations that prevent us from leveraging the power of our combined resources.

### Some Successes, Some Failures

If I were to grade us on our progress to date, our report card would contain some successes and some failures. On the positive side of the ledger are a number of successes:

- We talk to each other now – much more than before – at forums like this one and in various meeting settings. A conference on this theme would not have been likely just two years ago.
- There is a lot of grass-roots cooperation. I see evidence of it every time I visit a range. Good people, working together, making partnership work. I applaud them and you.
- Technology enablers are coming along. Testing requires precision; training needs volume. Both are largely achievable now with common solutions.
- We have an official governing body now. The Defense Test and Training Steering Group [DTTSG] was chartered by the Principal Deputy Under Secretary of Defense for Acquisition and Technology [PDUSD(A&T)] in a memorandum of September 1994 as “key to achieving the efficient acquisition and integrated use of all test and training associated range instrumentation and the developing of policy for...test and training capabilities.”
- The Range Commanders Council continues to broaden its membership of leaders of both test and training ranges and to address technical range operational issues.
- And we have been successfully addressing some mutual problems as a cohesive community: frequency spectrum encroachment, land



withdrawal, and active range clearance of unexploded ordnance.

But we have also had some failures. High on that list I would place the lack of a shared investment strategy.

- The same PDUSD(A&T) memorandum that chartered the DTTSG directed us to develop a “joint road map for achieving commonality and interoperability among training and test instrumentation.” That joint test and training range road map was due in October 1996. I reviewed the latest draft yesterday, and it still falls short of reaching that objective – despite the hard work of many members of our communities.
- We have not solved or even seriously tackled some of the tough issues – issues like equitable sharing of the cost of mutual and joint use of ranges.

But if these were easy tasks, we would have accomplished them a long time ago. They are hard. And we should not let the failures denigrate the many successes. Rather I challenge myself and our test and training leadership and all of you to step up to these challenges.



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### Those Who Hold the Future

The nature of products and processes demanded by today's global marketplace is changing. So are the products and processes required by our defense's warfighters and strategies. The future belongs to those who can make sense of the complex, to those that can take an idea from conception through the functional integration of many complex technologies and disciplines to product realization, to those who can put complex technologies and operational concepts "out the door" and into the hands of users.

Success in this era will occur when different approaches and perspectives are brought together. The final value added needs to be greater than the sum of the parts — needs to be more than just freckles.

This places a premium on qualities that we sometimes undervalue as a society — qualities like diversity, trust, and community — and it requires that we develop an ability to bring together and reconcile those differing perspectives and approaches.

Otherwise, we will never see beyond the limits of our individual perspectives and achieve the breakthroughs that occur only through the synthesis of widely different

skills and points of view. A strong sense of community — shared between testers and trainers — is also a prerequisite for success. True progress within an envelope of complexity occurs only through trust and an appreciation of mutual benefit.

Eliminating some of the current stovepiping and promoting integration of testing and training could result in more productive and efficient utilization of range resources with no loss of effectiveness for either. But it obviously only works if both communities see a clear advantage. It can't be a case like that of two brothers sharing the use of a sled — where one gets to use it going uphill and the other gets to use it to go downhill.

### Emphasis on Cooperation and Integration

In summary, cooperation and integration are the keys to success. Because of the unprecedented opportunities and challenges emerging from the rapidly changing technologies enveloping us today, emphasis on cooperation and integration stands out above the rest. We must rely on each other now more than ever before.

The Department faces a future characterized by uncertainty and the need for preparation and flexibility. Paul Strassmann, a former DoD official, used to say,

"You get what you had if you do what you always did." The QDR and *Joint Vision 2010* have crafted the strategy and operational concepts to meet that future.

You as test and training professionals must meet the challenges this strategy and concepts pose with cooperation, that leverages the diversity of our communities as well as our common areas, to our mutual benefit and that of the entire Department and the nation as a whole.

As we collectively face these challenges, I am confident because the one asset that will assure a good outcome is excellent people. Technology may hold the key to the Revolution in Military Affairs and our future strategy, but you are the key to its application.

All of the progress of civilization is due to the contributions of people. The record of history is brilliant with the deeds of men and women who said, "I can," while it is silent for the most part concerning those who said, "I can't." Positive people believe that it is better to fail in carrying on a project than not fail because they have not tried. I believe I know this community [test and training] well enough to know that it is populated by people who say "I can."