

Program Manager Interviews Philip Coyle

Meet DoD's Top Advisor on Operational Test and Evaluation

In May 1995 William Perry became the first Secretary of Defense to personally address the commanders of the military operational test agencies. In five separate themes, Secretary Perry laid out his vision for operational testing and evaluation in the new, more integrated world of acquisition. Assisting him in developing and now implementing those themes is the Director of Operational Test and Evaluation for the Department, Philip E. Coyle, III.

Coyle assumed his present duties in September 1994, having previously served in government as a deputy assistant secretary for defense programs in the Carter Department of Energy. In a separate career with Lawrence Livermore National Laboratory spanning more than 30 years, Coyle directed underground tests in Nevada and the Aleutians, served as the deputy director for the laboratory's laser program, and retired, in November 1993, as Laboratory Associate Director.

In the following interview, conducted at the Pentagon on March 5, 1996, *Program Manager* sought to elicit what it is that weapons developers, buyers, and users might expect from their other partner on the integrated acquisition team, the weapons tester. Coyle also took the opportunity to suggest how early involvement, modeling and simulation, and innovative combinations of tests and training may help to reduce costs and further streamline the acquisition process.



FROM LEFT: HON. PHILIP E. COYLE III, DIRECTOR, OPERATIONAL TEST AND EVALUATION, OFFICE OF THE SECRETARY OF DEFENSE, FIELDS QUESTIONS FROM *PROGRAM MANAGER'S* REPRESENTATIVE, MR. JAMES WITTMAYER, EDITOR, *ACQUISITION REVIEW QUARTERLY*, DSMC PRESS, ON MARCH 5, 1996.

Program Manager: How do you see the Director of Operational Test and Evaluation (DOT&E), and OT&E in general, fitting into the process of integration?

Coyle: The operational test community attempts to determine if a weapon system is operationally effective and suitable in combat – that is, does it fulfill its mission. The community wants to make that determination in

the most efficient manner possible, in a way that supports the acquisition process and gets good weapon systems into the hands of the users as quickly as possible. To accomplish that objective, operational testers, including our office, need to be involved early to ensure that requirements can be evaluated appropriately in the operational test process and that the program structure and acquisition strategy include all opportunities to

Mr. James Wittmeyer, Editor, Acquisition Review Quarterly, conducted the interview with Hon. Philip E. Coyle III, Director, Operational Test and Evaluation, Office of the Secretary of Defense, on behalf of the DSMC Press.

provide early assessments or to take advantage of all test activities. By early I mean before the Request for Proposal (RFP) first goes out on the street and during the development of the Operational Requirements Document. With early involvement my office and the Service operational test agencies can integrate operational testing into programs in the most effective way.



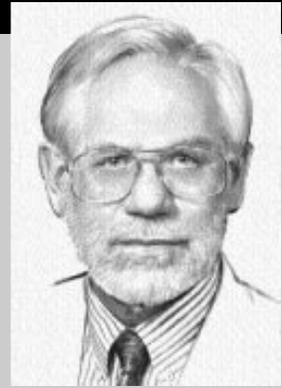
Program Manager: Is DOT&E being considered in the integration process? Do you sense that you are welcomed by the developers, users?

Coyle: DOT&E is very much being considered in the integration process. We have been involved in Integrated Product Teams (IPT) long before they were called IPTs. In the testing arena we have had test planning and test integration working groups that have included DOT&E for many years. The IPTs are a perfect vehicle for early tester involvement, and I support them fully. Our action officers bring a lot of DOT&E corporate experience to these IPTs. Our folks have always been wel-

PHILIP E. COYLE III

Director, Operational Test and Evaluation Department of Defense

Mr. Philip E. Coyle III was confirmed by the Senate as the Director, Operational Test and Evaluation, in the Department of Defense (DoD) on September 29, 1994. In this capacity, he is the principal advisor to the Secretary of Defense and the Under Secretary of Defense for Acquisition and Technology on operational test and evaluation in the DoD. Coyle is the principal operational test official within the senior management of the DoD.



Coyle has 20 years' experience in testing and test-related projects. From 1959 to 1979, and again from 1981 to 1993, Coyle worked at the Lawrence Livermore National Laboratory in Livermore, California. From 1981 to 1984, he served as the Laboratory's Associate Director for Test. Later, from 1987 to 1993, he worked as Laboratory Associate Director and a Deputy to the Laboratory Director. More recently, he served as an Associate Director of the Laboratory. In November 1993, Coyle retired from the Laboratory. In recognition of his 33 years' service to the Laboratory and to the University of California, President Jack Peltason recently named Coyle Laboratory Associate Director Emeritus.

During the Carter Administration, Coyle served as Principal Deputy Assistant Secretary for Defense Programs in the Department of Energy (DOE). In this capacity he had oversight responsibility for the nuclear weapons testing programs of the Department.

Earlier in his career while at Lawrence Livermore, Coyle was directly responsible for many of the testing programs of the DOE and its predecessor agencies. He served as a Scientific Advisor on testing matters to the Nevada Operations Office. For many years he was a Test Director at the Nevada Test Site and at other testing locations. In 1971 he was the Test Director of the full-scale underground test of the Spartan warhead on Amchitka Island in the Aleutians. In the mid-1970s, Coyle also served as a Deputy in the Laboratory's laser program, developing high power lasers for fusion, isotope separation, and other applications.

Coyle has been active in community and educational programs. In 1991 he was named as a Commissioner of the East Bay Conversion and Reinvestment Commission, which has developed defense conversion plans for Alameda Naval Air Station and the East Bay. He was a member of the Alameda County Economic Development Advisory Board. He also served on the boards of several educational organizations.

During his last six years at the Laboratory, Coyle also held the position of Equal Opportunity Officer. This included responsibility for affirmative action and diversity programs. Coyle helped the Laboratory achieve substantial gains in diversity employment. Because of this work, the Laboratory received an Exemplary Voluntary Effort (EVE) Award from the Department of Labor. Coyle received personal commendation from the Office of Federal Contract Compliance Programs, and upon his retirement, the Laboratory established a new award for excellence in diversity in his name.

Coyle graduated from Dartmouth College with a B.A. (1956), followed by an M.S. in Mechanical Engineering (1957). His wife, Martha Krebs, currently serves as Director of Energy Research in the DOE. They have four grown children and live in Washington, D.C.

come, and they try to attend each and every meeting, though that's not always possible or even necessary. Test issues might come up in an IPT that was on budget or schedule, or performance or, of course, in the test working groups, the test planning groups themselves; but there are other IPTs where test issues might not come up at all. And it's not necessary to attend every single one.

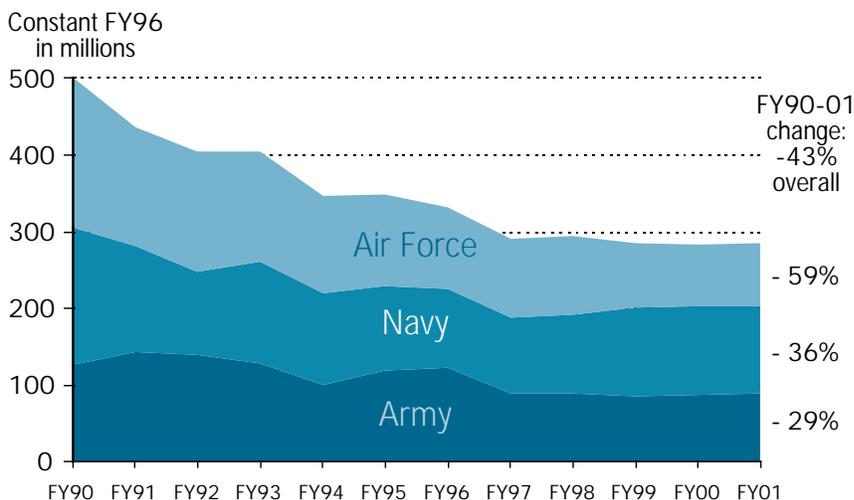
We are encouraging more discipline in the IPT process. By that I mean better advanced planning. If you find out that the IPT is in California tomorrow, sometimes it's a little bit of a problem. Those kinds of things do happen. We're trying to encourage just a little bit more planning, having an agenda, some kind of minutes that indicate what decisions were made.

An important issue for IPTs is empowerment. Sometimes empowerment can sound a little trendy or corny. I think it's real. I tell my action officers that they are, indeed, empowered to represent this office. And I think that the people that are running the IPTs recognize that our action officers are empowered and value that. That's part of the reason why they're effective on these IPTs.

Program Manager: We're looking again at a further reduction in the defense budget. Do you foresee any specific impacts from this reduction?

Coyle: Well, there's tremendous pressure on the defense budget in general. But we've seen strong support from both the Administration here in the Department of Defense, and from the Congress for the testing side of the budget. For the last year now, I've been speaking at national meetings, conferences, and so forth, advocating that it's time for some new investment in test and evaluation. People remember how in the mid-80s, spending for defense went up; it never did go up in T&E. It just went down and continued down. So it never enjoyed that boom of the mid-80s that the other parts of the budget did. The test and evalua-

T&E Funding History - RDT&E Investment



tion infrastructure has steadily declined. That's also true for so-called T&E investment funding. Research, Development, Test and Evaluation (RDT&E) investment funding in the three Services is down by a very large percentage. For these reasons, I've been arguing that it's time for some new investments in test and evaluation. I believe we can already see signs of support for this. A big issue, often ignored, is that adequate testing actually reduces the cost of ownership for weapon systems. We need modern T&E equipment and facilities which keep pace with the modern weapons being tested.

Program Manager: Can you give us a sense of how you feel about where you are now versus where you were on coming into this job in terms of the training and people that you have; do you have enough?

Coyle: We're having both funding problems and personnel problems in testing. Not only have the budgets been going down, but there are strong pressures on the people, too. For example, in the Army, they have soldier-operator-maintainer-tester-evaluators – these are military officers who support test work. The decline in the numbers of these soldiers who are available for testing has been very dramatic. Personnel cuts in the Operational Test Agen-

cies (OTA) is another area to which I'm trying to call attention.

Program Manager: Are you involved with the various Services in establishing that as a critical career field or specialty for those military personnel?

Coyle: Yes, I think testing is an important career field, and I've devoted most of my career to it. But I don't feel that you need to devote your entire life to it if you don't want to. In operational testing, operational experience is essential at all levels. You can go in and out of testing, you can be on the testing side for awhile, then you can work on the acquisition side. Everybody's trying to knock down stovepipes, not build them up.

Program Manager: You're now exercising direct responsibility for live-fire testing which, in years past, was managed elsewhere. How did this come about?

Coyle: The reason that live-fire testing has moved to our office is that the Congress passed a law which said that it should. My understanding is that they felt that not enough attention was being paid to live-fire testing, and they wanted to put all independent testing in one office. Live-fire testing is very closely linked to operational testing in that platform vulnerability and munitions lethality determinations from

live-fire testing are critical inputs to the platform survivability and munitions effectiveness determinations made in operational test and evaluation. Some of the links between live fire and operational testing, such as fuzing, are very close and fit in quite well with our other work. While live-fire testing is technical in nature, it is an important part of our mission.

Program Manager: There has been some discussion of whether the position of DOT&E should continue as a presidential appointment. Could you tell us why that is important?

Coyle: That issue was dealt with by the Congress with the passage of the FY 1996 Defense Authorization Act. The statutory requirement for DOT&E was sustained in the new law. This came about because a number of senators, both Republican and Democrat, supported the office quite strongly during the debate on the authorization bill. Support for the office was included in both Secretary Perry and Sen. Nunn's "veto" messages on the first version of the bill; and it was included in the White House's official statement in response to that version. DOT&E is really the first product of acquisition reform. We intend to stay at the cutting edge.

Program Manager: What input have you had to the acquisition reform movement in general?

Coyle: I was one of the approving authorities for the 5000 series along with Paul Kaminski and Emmett Paige. I don't know if you've seen it, but the new regulation has shrunk considerably compared to its predecessor, so it's apparent even at a glance that there's been progress toward streamlining. I participate in a number of acquisition reform activities, but my most important responsibility is to make testing as effective and efficient as possible.

Program Manager: That is the key for OT&E, as for everything else: to make it more efficient?



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Coyle: Yes. I just came back from a very interesting trip in conjunction with the deployment of Joint Surveillance Target Attack Radar System (JSTARS) to Europe in support of Operation Joint Endeavor. We had originally planned a classical operational test at Fort Huachuca, but the deployment raised an opportunity: Couldn't we make the deployment count, in the sense of using experience from it in place of some, or all, of the planned operational test? What we had was a way to save money as well as to take advantage of an opportunity to learn in a fairly realistic situation.

Program Manager: It sounds as if you're really out there seeking such opportunities...

Coyle: That's right. And in some cases, the environment may be better than what we could create in an operational test. With JSTARS, there were 13 ground stations deployed in Europe at different places; if we would have done the tests at Fort Huachuca we would have had only two. At Fort Huachuca aircraft tasking would have had to be contrived by the constraints of the territory available, where the two ground stations were, etc. That takes out a degree of the uncertainty and surprise that you might have in a real situation. In Bosnia, the tasking often was hour-by-hour, and the operators often didn't know what they were going to be asked to do next.

Program Manager: Of course the assumption is that by involving real operators in a real situation you'll have high credibility...

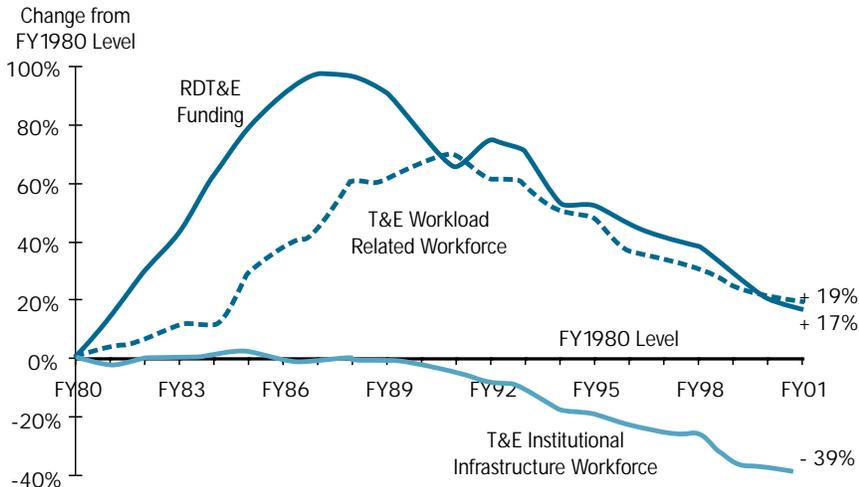
Coyle: Yes. This is not without an effect on the testers. Access is difficult in a truly operational situation. You have to do it on a noninterference basis. Also the field commanders have concerns that somehow they're going to get graded along with the system. Despite all the challenges, it's a great opportunity, and I think we're trying to make the most of it.

Program Manager: How would you describe the relationships between your office, the OTAs, and the Joint Interoperability Test Center (JITC)?

Coyle: We depend very heavily on the OTAs. They're our partners in all of this. They're the people who actually do the operational testing. Our little office doesn't conduct tests; the OTAs do that.

We get together regularly for meetings on particular systems and for more general discussions. We have a formal meeting with the commanders of all the OTAs every six months. The Director of JITC came to our last meeting, and I'm encouraging him to come to others in the future. So whether OTAs are large or small, I see them as part of

T&E Center Infrastructure - Budget - Workload Trends



the family, and I'm doing everything I can to have all of us work as a team.

Program Manager: What is the role of JITC?

Coyle: With all of the complex command, control, communications, and information aspects of modern military systems, you need an organization that is trained and has special expertise in those areas, and JITC provides that kind of service. They really supplement the capabilities of the Service-specific OTAs in a specialty area.

Program Manager: What are some of the initiatives you have undertaken?

Coyle: You may know that Secretary Perry came to one of these regular OTA meetings and gave a talk. This was, I believe, the first time in history that a Secretary of Defense met with the leadership of the operational test community, so it was truly a historic event from a test point of view, and evidence of his support for testing.

At that meeting he emphasized five themes. The first one we've already talked about a little bit...that's early involvement. It sounds easy. But it takes a lot of work. The idea is that operational testers will not be sitting back and just simply waiting for a production representative article to test, but that they're going to be involved

way before there are production representative articles.

The reason we test is for insight and understanding. Often people talk about testing being a pass or fail kind of thing. Nobody likes to get graded. Obviously, if the system does fail, we're not going to hesitate to report that, but the real motivation behind all testing is for insight and understanding and to try to get involved early enough to fix problems when it is relatively less expensive and complicated to do so. I am reminded of the mechanic says, "You can pay me now or you can pay me later..." That's really our situation. If we can get involved earlier it's going to be much less expensive and easier to fix problems. Waiting will only add to the misery and increase cost.

Another thing that the Secretary emphasized is making better use of modeling and simulation. What that means to me, and to the Secretary, and to Paul Kaminski, is that we need models that are more predictive; that, if you will, have a high probability of giving the right answer. We use a lot of models in this Department; many of them are not highly predictive. The way that being highly predictive is often characterized is as being "physics-based." Some people object to that characterization, but the point

is that there must be some real science behind the models. It's got to be more than just geometry, which is all that's in a lot of models that we use.

Program Manager: To what extent have statutory restrictions affected your ability to develop and use models and simulations?

Coyle: Modeling and simulation is no substitute for real tests. Yet you can't possibly test every single aspect of how a system is going to be used. So the question is how to model the parts of a problem that are the most straightforward and tractable, and save precious test dollars for those areas where understanding is least. Paul Kaminski has said that with such models you can actually eliminate certain tests and focus test resources on areas where our understanding is less. There's nothing in the law that would restrict that. All of the Secretary's themes involve more modeling and simulation.

Program Manager: Two other themes set by Secretary Perry concern combining tests and combining tests and training...

Coyle: Combining tests where possible. That means doing developmental testing and operational testing together when appropriate. Some of this was happening before Secretary Perry gave his speech. About two-thirds of the couple hundred programs we have on oversight involve a combined development and operational test period. The degree varies according to the nature of the program; for example, it tends to happen more with strategic programs. You also can find ways to combine operational tests of two different systems. For example, you could test the Bradley at the same time you were testing the M-1 upgrades. So there are many opportunities for putting tests together. Early involvement comes in here too. If you're a developmental tester and I'm an operational tester, we need to be talking together early on. This interchange will enable both of us to do our jobs more effectively. It can also save time and money, for

example, by making the best use of data gathered in Developmental Testing to provide operational insight.

Combined testing and training is another theme for which there are lots of examples, including many in recent years. Again, from the same survey, about a third of the systems we have under oversight involve some degree of testing and training together. We're well aware of the concerns of the trainers regarding interference and negative training. But as operational testers we want realism ourselves, and so I think there's actually not the gulf between testing and training that many people assume. We see more and more examples of opportunities to do testing in training scenarios. For example, the Commanders in Chief (CINC) are using training exercises extensively to test Advanced Concept Technology Demonstration (ACTD) projects.

Program Manager: So you respect the integrity of the training?

Coyle: Of course. Some training exercises are very realistic. That's what operational testers want. We're looking for a realistic situation. In terms of the richness of the forces involved, the jointness, and the complexity of the scenario, training exercises will often produce operational situations that we'd have to spend a great deal of money to reproduce otherwise.

Remember, the Secretary asked us to do all the things we've just been talking about for ACTDs as well. His point is that they need operational testing just as much as the big ACAT ID programs do. We need to get in early, work out the problems, and develop every insight we can so that these programs can be successful also. ACTDs are highly variable in nature, ranging from simple software upgrades to things like Predator, which is a big system. The All Service Combat Identification Evaluation Team (ASCIET '95) exercises that I observed in the summer of 1995 were an excellent example.



I participate in a number of acquisition reform activities, but my most important responsibility is to make testing as effective and efficient as possible.

This is not a one-size-fits-all task. What you might do for a small ACTD program might be quite different from what you would do for a larger system. As I said before, the CINCs are already evaluating ACTDs in training exercises.

Program Manager: What criteria are used to place a program on the DOT&E oversight list?

Coyle: All ACAT ID programs go on the list by law and regulation. We also will put on oversight a system which, while not an ACAT ID, is central to several other systems. In the Army's Battlefield Digitization Program, for example, there are a lot of pieces that all have to play together. So we might put on oversight one of those pieces, because if it doesn't work, the overall system isn't going to work. We do not put systems on oversight just for the sake of it.

Program Manager: Has the DoD T&E mission presented new challenges to you?

Coyle: Yes it has. I came from the Department of Energy family which uses modeling and simulation extensively. Those experiences gave me a background into what was possible, and that's been very helpful. Of course, the DoD system is much more complex, much more hierarchical. By contrast, the Department of Energy and its laboratories operate in a much more informal way. Getting things done in a larger bureaucracy isn't always easy, but generally I think the principles, the basic ideas of how you do testing, are pretty much the same in either Department.

Program Manager: Do you have a vision for where you'd like to see DOT&E in five years?

Coyle: One of the things that operational testers need to do is develop much closer ties with CINCs, with the warfighters. It's going to be important, I believe, for us to develop closer ties with the operating commands. For example, the ACTDs which we've just been talking about are, in effect, products of the CINCs; ACTDs represent things CINCs say they need. To be working on those kinds of projects, we're going to need to be working more closely with CINCs. A different example will be upgrades of various kinds, some of which will be major programs in their own right, some of which will be quite modest; but the initiative for those upgrades, the motivation for those upgrades, will be coming from the warfighters. So we need to develop closer ties to the CINCs, and I'm trying to do that. That will mean that the OTAs also will all need to develop closer ties to the operating commands.

Program Manager: This is a different thing than interfacing with a military department...

Coyle: Yes, and my recent trip to Bosnia and Hungary demonstrated that very clearly. In the case of the CINC we were dealing with there, not only does he have the responsibility for coordinating the joint operations of

different U.S. military Services, but his responsibilities also extend to combined military operations involving the forces of other countries.

Program Manager: In your vision, do you foresee more people, more testing facilities?

Coyle: We are testing modern high-technology equipment which embed digital computers and microprocessors. In many cases we are using test hardware that is very old and badly in need of upgrade or replacement to test these most modern of systems. The average age of test equipment is worse than that for bridges and transportation infrastructure in the United States. I was out at Fort Bliss and they're still using old Nike radars for range radars. Serial number 001 is still in use, as is a prototype Nike radar, which is also still in service. Of course those are very good radars or else we couldn't still be relying on them. But eventually, we'll need new equipment.

We also need new investment to make the test ranges interoperable. We have to make it so that the test ranges can talk to each other. It's definitely needed. Given unavoidable test limitations, you have various kinds of synthetic situations, where people are mixing real tests with models on a computer. Various kinds of virtual situations are being mixed with real. All of the test

ranges are doing this to one degree or another at their own location. But more and more we don't have the ability to complete a test at a single location. So we have to make it so that the data taken at Test Range A can be used at Test Range B; in some cases, in real time. So Fort Bliss and White Sands have got to be able to talk to each other and perhaps the Yuma Proving Ground as well. There needs to be common range instrumentation. Obviously, these ranges have different missions, but in those areas where they need to be able to share data and talk back and forth, they've got to be joint and interoperable. That's not going to happen without some new investment.

Program Manager: Is there something we've not asked that you would like to say to the acquisition workforce?

Coyle: All of these things are about making it count, making what we do count the first time, and only having to do things once. All of Secretary Perry's themes are really directed at the same objective. Apply what you've learned from classical operational testing; get in earlier so you make everybody's work count; do Developmental Testing/Operational Testing; do Operational Testing with training. Other examples are the JSTARS deployment, piggy-backing Operational Testing on joint exercises (which we are doing more and more), and the partnerships

with CINCs. All of these things are, I think, examples of making it count.

In the future operational testers will also use information from a broader set of sources. We will take information from production lot testing, which we currently don't do, from stockpile returns, and stockpile reliability testing. I think you'll find that we will use information from a broader variety of sources than has been the tradition in the past.

Program Manager: Finally, can you tell us what is the best advice that you've ever received?

Coyle: The first thing that comes to mind is "Give it Away." What that means is, human nature being what it is, often our tendency is to hoard everything to our chest. This advice, from a boss of many years ago, was that, if you give it away, you can actually leverage your resources and get more things done. Of course, in a funny kind of way it comes back around.

We really have to do that in this office. I've got 40 people, not a big office by DoD standards. So we basically have to leverage the efforts of the OTAs, of the programs, and of the Services themselves. The only way we can do that is by "Giving it Away."

DSMC & ROYAL MILITARY COLLEGE OF SCIENCE TO CONDUCT INTERNATIONAL SEMINAR

The Eighth Annual Acquisition/Procurement Seminar focuses on international acquisition practices and cooperative programs. The seminar is sponsored by the International Defense Educational Arrangement (IDEA), an arrangement between defense acquisition educational institutions in the United Kingdom, Germany, France, and the United States.

Those eligible to attend are Defense Department/Ministry and defense industry employees from the four IDEA nations who are actively engaged in international defense acquisition programs. Other nations may participate by invitation. Nations participating in past seminars were Australia, Belgium, Canada, Denmark, Italy, The Netherlands, Norway, Portugal, Spain, and Switzerland.

This year the seminar will be held July 8-12, 1996, at the Royal Military College of Science (RMCS), Shrivenham, Wiltshire, United Kingdom (1.5 hours west of London or Heathrow Airport by train).

The last day of the seminar, July 12, will be an optional day for those interested in the educational aspects of international acquisition.

The IDEA Seminar is by invitation only. Those who have not attended past IDEA Seminars desiring an invitation should contact the IDEA team at DSMC. Those U.S. DoD personnel receiving an invitation should submit an approved DD Form 1556 with a copy to DSMC by telefax. Industry representatives should submit letterhead requests by telefax. Invitations and confirmations will be issued after May 1, 1996.

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