



The Fate of Sgt. Smith

Restriction on Non-DoD Conference Travel

*Col. Paul Barnes,
USAFR, Ph.D.*

The laboratories and testing centers in the Department of Defense (DoD) are primary sources of technological innovation in making our warfighters more mission-capable. A large number of facilities within each of the three Services—the U.S. Air Force, the U.S. Navy and the U.S. Army—are dedicated to providing the U.S. military with its technological edge through research, development, test and evaluation (RDT&E) centers. Although the U.S. Marine Corps (USMC) has activities in RDT&E, they are largely provided by the U.S. Navy.

There are various categories of research and development, but let's look at what is considered fundamental research. This refers to basic research and applied research. Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications in mind (6.1 funded). Applied research is the systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met (6.2 funded).

A great advantage of research, especially fundamental research, is that it enables our Services to start fighting the enemy on the battlefield 10 to 15 years in the future. As with most activities, the greater the funding the better;

Barnes is deputy director of technology integration in the Office of the Under Secretary of Defense for Policy and also is chief of power components at the Army Research Laboratory.

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however, budgets always are limited and it is necessary to get the most out of the funds available. This includes both adopting new policies/practices and shedding existing ones that interfere with generating great research in support of military systems development.

A current policy that is greatly detrimental to advancing fundamental research but readily fixable is the specific restriction on attending conferences not organized by DoD. This does not refer to the general DoD policy that reduces travel. The general restriction on travel is to reduce its relative proportion of the budget. Limited budgets mandate restricted expenditures. There can be debates on what is the proper size of a travel budget, and it will vary from one activity to another depending on mission requirements. This general restriction accounts for this by setting expenditure levels at a percentage of previously allotted expenditures. The specific restriction on attendance at any non-DoD conference is not

a budgetary issue since it is prohibited even if deemed important to fit in the reduced budget (more on exceptions later).

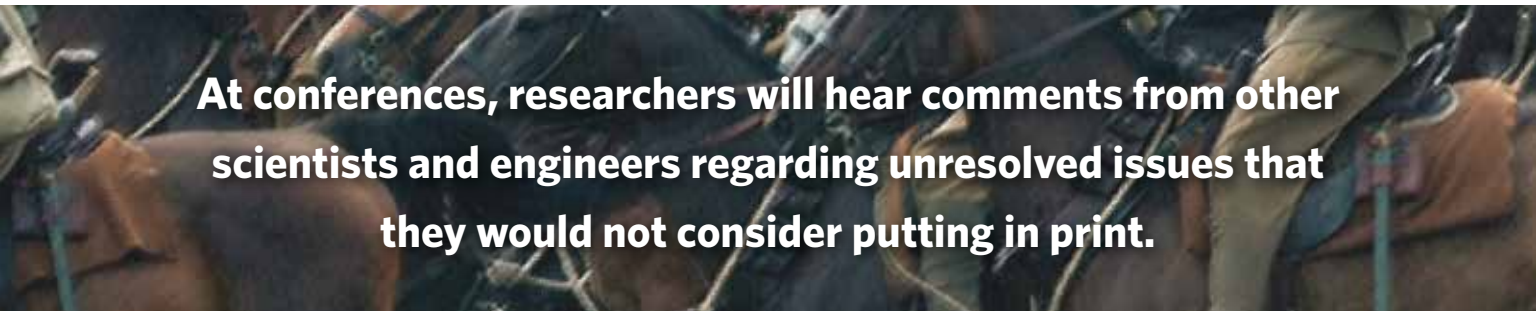
The restriction on non-DoD conference attendance may seem like a generally good idea on the surface. If it is not sponsored by a DoD agency, then it cannot have as great an importance to the DoD. However, this ignores the fact that some activities, specifically fundamental research activities, have very different needs than other activities. Non-DoD research conferences are critical to fundamental researchers. In fundamental research, the DoD does not generally provide appropriate conferences or forums since the best and most useful conferences largely are organized by well-established scientific and engineering societies or commissions. Conferences are organized by boards and panels consisting of peer-recognized experts in particular disciplines. These individuals come from academia, industry and government

agencies (including DoD, interestingly enough). I do not refer to conferences discussing applied technical directions, but the hard-core science and engineering conferences where detailed fundamental research is discussed in open forums.

Let's review the general advantages of attending these non-DoD conferences. Attendance allows researchers to efficiently assess other research that can be synergistically melded into their own research, allowing new discoveries. This can be simply phrased as putting all the puzzle pieces together; however, you must have all the pieces, or at least enough of them to see the picture clearly enough. Reviewing only the published literature is not sufficient. At conferences, researchers will hear comments from other scientists and engineers regarding unresolved issues that they would not consider putting in print. However, these issues provide incredible insights. They may occur during the formal presentation, the question-and-

from the previous 1 to 2 years. Conferences allow assessment of the latest "developments," especially since researchers often will vet their research at a conference before putting it in print. This enables researchers to ensure they covered every angle (based on feedback at the conference) before publication. As a result, these non-DoD technical conferences generally are superior, with excellent attendance by academia, by industry and (should I add "previously") by government.

Some may state that such attendance still may be allowed within the present system, if approved for an exception. However, approval is required by Service secretaries and major commands (passing through an extensive chain of command along the way) accompanied by 1 to 2 inches of documentation gathered to support the reasoning. This is a tremendous effort that has demonstrated a small chance of acquiring an approval. We also should ask whether anyone completely



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answer period, or even at informal sidebars in the corridors. Often, a difficult issue may not be resolved without input from others, which spurs researchers to share such partial information at conferences.

There are other reasons for attending non-DoD conferences. Attending allows the researcher to steer the community toward research issues relevant to the DoD. Leading researchers have a strong influence on the direction of research, and it is in face-to-face discussions at these conferences and workshops where it is most effectively leveraged. In addition, the scientist or engineer can better assess the proper direction and/or appropriateness of their research by the response of their peers. This may occur during the presentation, but often on the side between sessions. On a simpler note, odd data may turn out to be just a collection issue, but identifying this allows the researcher to correct the issue and move on. A collective review by others with different insights either will help resolve the problem or validate the idea that there is no problem. Either way, the proper meaning of the information or data then is obtained.

As research is wrapped up in one particular aspect, attending non-DoD conferences sponsored by well-established scientific and engineering societies will allow the scientist or engineer to assess new development areas for exploration. Journal papers are very important in providing detailed documentation of what was accomplished; however, they consist of research

reads the documentation other than the people who assembled it. The exception process places on the researcher an administrative burden to be accomplished before the projected abstracts for the conference are issued. That unfortunately reduces the requests in general without ensuring the approval allowance to the more important requests (that doesn't mean this is intentional).

While the directors of the Service laboratories openly marvel at the lack of understanding of the scientific development process that caused such a restriction, it is unclear why the policy has not yet changed. It is not due to tight budgets since the laboratory directors would approve the travel as their top priority even with the tight budgets imposed. If controls are desired, it would be better to restrict attendance at non-DoD conferences to those who are giving a technical presentation. This often is an unspoken rule of thumb. Scientific organizations gauge in part a researcher's effectiveness by papers presented at a conference and the type of presentation that was made. There are even gradations as to the type of presentation or participation: plenary speaker, invited speaker, oral speaker, poster presenter, session chair or simply conference attendee. One could use these designations as well, or simply allow approval at the laboratory director level. These suggestions would provide a much more efficient process.

Since it may be difficult to see how this conference travel restriction could hurt the warfighter directly, I will provide the

following scenario. Dr. Lilly Prudence was invited to attend an international conference in Europe to discuss her groundbreaking work on device failure physics related to oxide trapping. She knew this research would necessitate a change in current reliability standards. However, she had to turn down the invitation due to the non-DoD conference travel restriction. Because she did not attend, she missed two talks that clarified a subtle but critically important secondary effect. When melded with her research, it more fully justified the need for better standards. It was not clearly obvious and was not pointed out by Lilly because she was not there. She was also unable to persuade the detractors of the critical need for improved standards and missed research presented that would have helped her own research efforts. Synergistic effects and a subsequent missed conference delayed that research by about 3.5 to 4 years.

Lilly eventually read the articles by the others and was able to communicate via written exchanges, slowly moving the research and interest along. With this accomplished, she identified how to initiate proper changes in the reliability standards for devices made with the new electronics material. Again, making the proper changes to the reliability standards was slow going since Lilly was unable to rapidly disseminate the information at conferences, but her persistence via communications and written papers eventually paid off. It was only an additional 2 years extra time to get the community energized to tackle the issue. With the community engaged, she established DoD forums outside of conferences to address the issue. A few were unable to attend, complaining that the DoD should have the forums as part of the disallowed non-DoD conferences to reduce their travel costs. Even so, that only slowed the effort by another few months.

With the new reliability standards finally in hand, manufacturers now were ready to gear up production of the electronic devices on the new-grade material based on effective reliability test standards advocated by Lilly. Meanwhile system contractors continued using the older technology since the military could not accept the new electronics due to reliability concerns. This delayed for several years the fielding of a new sensor array for detection of insurgents around outposts. In the meantime, the United States had initiated military action in the nation of Terrorist Haven due to a U.N. resolution. An army squad was positioned in an outpost established to inhibit a suspected enemy supply trail. Since the new detection system was not yet in place, insurgents were able to raid the camp and expel the U.S. forces, killing Sgt. John Smith during this action. The United States quickly responded and repulsed the insurgents a day later. Even though the United States won a tactical victory in this particular action, the insurgents were able to use the capture of the outpost (albeit temporary) to gather additional funding and recruits for their activities, which they then used on a domestic terrorist plot that ...

While the foregoing story is fictitious, it illustrates the potential unintended consequences of this non-DoD conference travel restriction. The death of a soldier in the future is just as bad as one in the past, unless by projecting it we can save his life, avoiding the subsequent consequences as well, especially when the solution is simple. Funds are limited and must go to various places and agencies to resolve ever-present issues, but let us spend those funds effectively and efficiently without a specific restriction on non-DoD conferences. &

The author can be contacted at paul.n.barnes.civ@mail.mil.



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