

## **In-Sourcing Forum Remarks.**

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First, I'd like to express my appreciation to the Lexington Institute for the opportunity to participate in today's important forum.

As mentioned, my background is primarily program management not policy development. So in a sense, my perspective is from the trenches. I have worked on a number of Air Force acquisition programs and my recent experience prior to retirement was as part of the industry support to the sustainment of a nuclear system, the Minuteman ICBM.

So I have chosen today to address one piece of the in-sourcing/out-sourcing discussion, that is, those *activities*—or if you will *functions*—associated with complex weapon system sustainment.

But first, let me stress that I strongly endorse Air Force efforts to rebuild their nuclear workforce and DoD's similar efforts with the acquisition workforce. The initiatives underway are important and needed.

I have also followed with interest the *in-sourcing* initiative. I have noted that some advocates are moving towards in-sourcing key functions that are currently performed by prime contractors on complex weapon systems. I have reservations here, as I will explain.

Nuclear systems represent an extreme on the sustainment risk spectrum—nuclear missteps should not be tolerated and, as we have seen, are in fact not tolerated.

Let me narrow the discussion further, given limited time, and focus on what I will call the core sustainment functions.

The core functions on a mature complex system are *system engineering*, *integration*, and *life extension upgrade execution*. The three go hand-in-hand. Seams between them are very problematic because they blur accountability and limit timely management action. An exquisite knowledge of the system is also required—it's strengths, limitations, performance characteristics, and the interplay of its sub-systems.

Performing the core functions requires the ability to recognize any performance that is not just out-of-specification but also out-of-family to normal system performance. It involves a team of detectives, quick to spot a potential issue, apply the appropriate forensic engineering, and identify effective actions. The team must also be on the top of its game when responding to a crisis, where a misstep can lead to a disaster.

We've all suffered through the small errors that have led to major accidents—such as the Titan IV launch vehicle failures in the late 1990s. Alternately, when strong processes and capable engineering are applied, we see effective program execution as was the also the case during the last dozen or so highly successful Titan IV missions.

I've found the following six capabilities are needed to perform the complex weapon system functions of system engineering, integration, and life extension upgrade execution. They are:

- Mature, proven, and complete system processes that are externally audited
- Highly capable core engineering team with reach-back to responsive specialty engineering
- Detailed understanding of the system resulting from years of extensive domain experience

- Historical system data and the ability to re-engineer where it doesn't exist
- All necessary engineering tools and the ability to employ them
- And, an organization with a nuclear systems culture

With regard to the latter, I doubt that any organization can create a strong nuclear culture, even under the best circumstances, in less than a full decade.

I appreciate that DoD's primary motivation for in-sourcing is cost reduction. Let me suggest that the *least cost approach* is usually the one where program execution is most effective. Using the simple criteria of labor rates and overhead factors will not do here. For complex systems such as nuclear weapons, the strategies must address the political and budgetary risks associated with a significant incident or string of management failures.

Where DoD is not satisfied with out-sourced functions, alternates include better contracts, more aggressive oversight, and competition. I am skeptical that any organization that struggles to effectively manage an out-sourced function could more effectively perform that function if it were in-sourced.

However, if in-sourcing is the desired end state, DoD should not commit to it until the in-house capability is fully demonstrated.

One of my mentors once said, "The first rule of wing walking is: Don't let go of the strut you're holding on to until you have a firm grip on the strut you're moving to."

In this case, DoD cannot afford to allow the industrial base capability to vanish before the in-house capability is proven. Unfortunately, this can happen. As DoD moves towards an in-sourcing strategy, industry will realign resources accordingly and program assets will move elsewhere. Recovery actions would be expensive, and full recovery might be impossible. Regardless of length, a key capability gap on a strategic system should not be accepted.

It should be noted that the Navy's Fleet Ballistic Missile program, MDA's Ground-Based Missile Defense program, and the Air Force's Minuteman program have all benefited through effective government-industry relationships. In each case, a Prime contractor has a major role in performing system engineering, integration, and life extension functions for these missile systems. DoD has successfully mitigated key weapons system risks, and contract performance has been commendable.

In summary, I've narrowed my remarks to a discussion of complex, mature systems with frequent reference to nuclear systems. I'd like to leave you with three main points:

- First, I encourage continued actions to rebuild the Air Force's nuclear capabilities and DoD's acquisition workforce, needed regardless of sourcing strategies.
- Second, careful consideration should be given to key risks when developing sustainment strategies for complex systems. If dissatisfied with current performance, DoD should consider better contracts, more aggressive oversight, and competition as alternatives to in-sourcing.
- Last, and perhaps most important, for complex systems, do not commit to in-sourcing until required in-house capabilities are fully demonstrated. A plan to acquire these capabilities is not sufficient. Do not permit the corresponding industrial base to vanish until an in-house capability is fully proven.

Thank you.