America's Next ICBM

It's time for the Air Force to go back to the future and diversify its ICBM portfolio

By Mark Stout

Note: this article originally appeared in the 22 January 2009 edition of Air University's The Wright Stuff.

Since the demise of the Cold War, the benefit associated with the land-based ICBM has diminished in the minds of many military, political, and policy leaders. What was once thought of as a useful tool is now often regarded as an unhelpful and even highly dangerous thing. While the military attributes of ICBMs are legend--cheap (relatively), fast (absolutely), and good (highly ready, survivable, and difficult to defend against), the fact they have nuclear weapons on top generally serves to focus attention on its unappealing ability to wreak havoc and destruction. However, another capability, generally unacknowledged, is the ICBM's inherent potential as a space launch vehicle.

As the Air Force endeavors to fully restore its nuclear enterprise, it is also looking at an upcoming Quadrennial Defense Review and an almost concurrent Nuclear Posture Review. Together, these events provide a compelling opportunity to improve the value, robustness, relevance, and utility of America's land-based ICBM force. One method to provide for these improvements would be for the Air Force to deactivate a portion of the existing Minuteman ICBM fleet and substitute a small number of modern, land-based, liquid fueled ICBMs, which could also contribute to meeting the nation's space launch needs.

Day-to-day, the new ICBMs would be emplaced in protective, but unhardened, above ground facilities within the Air Force's existing missile fields. Unlike the Minuteman fleet, the new missiles would normally be off-alert, meaning they would be unfueled, without targeting data, and would not be mated to a nuclear weapon. During higher states of readiness, like a B-52, these systems could be generated to alert status in a relatively short period of time. After several years of service as an ICBM--worldwide readiness conditions permitting--it would be "rotated out" of service and shipped to one of the Air Force's space launch bases in California or Florida.

There, the former ICBM would be used as a space launch vehicle to satisfy a scheduled or operationally responsive space launch need. Concurrently, a replacement missile, recently arrived from a continuous low-rate production line, would take the first one's place and rotate into ICBM service. When fully operational, this ongoing process of ICBM use, space launch reuse, and ICBM replacement, would require each missile to serve about four to five years of missile duty before it became a launch vehicle. As such, a standing force of six new missiles at each of the three strategic missile wings would be adequate for launch needs and for expected deterrence needs as well. Over time, the Air Force could consider additional ICBM "balancing" by deactivating more Minuteman ICBMs and replacing them with the new, liquid fueled

missiles. Because of the emotional baggage associated with ICBMs, the system should have a more descriptive and friendly sounding name--maybe the "multi-use rocket."

This concept creates a number of potential advantages. Primarily, the multi-use rocket could satisfy important military needs by fulfilling both deterrent and scheduled/responsive space launch requirements. Additional benefits would include enhanced safety and security during the normal off-alert ICBM configuration; the potential to create financial savings as a multi-use resource; the augmenting of the military relevance of ICBM operators and maintainers via concurrent experiences with an ICBM/space launch system; and, reasonable standardization, economies of scale, and continuity for manufacturing and training. Finally, generating the multi-use rocket to alert status in its ICBM role would provide clear signals to an adversary that the U.S. is concerned enough about a particular situation to increase the readiness of its nuclear forces.

Liquid fueled vehicles are preferred as the multi-use rocket, not only because they can be left off-alert, but they also tend to provide satellites a "smoother" ride to space without the high gravitational loadings associated with a solid rocket motor-type system. A hydrocarbon/liquid oxygen propulsion system would be favored to enhance safety and lessen environmental concerns versus storable (hydrazine/tetroxide) liquid fuels. The basic concept described reflects the early liquid-fueled Atlas ICBM, which was also the foundation for the Atlas Space Launch Vehicle, and was even man-rated for human space flight in NASA's Mercury Program.

Since the early 1990s, the Air Force has more than halved its ICBM fleet to 450 Minuteman ICBMs and has reduced its ICBM warhead count about 80 percent. Today, through a series of sustainment and life cycle extension programs, the Minuteman system is programmed to stay on line until at least 2020 and perhaps as long as 2030. From a risk management point of view, a Minuteman only fleet is analogous to designating the space shuttle as the nation's only "ride to space," having Lehman Brothers as the one stock in your 401k, or using Russia as your exclusive natural gas provider. While there is some benefit to a standardized Minuteman III fleet, a final advantage of the multi-use rocket would be to diversify--if only a little--the land-based ICBM portfolio by adding a dissimilar ICBM system.

The multi-use rocket approach is not without its own obstacles. Challenges--in approximate chronological order--will include: the expenditure of Air Force political capital in seeking DoD approval of the system; resistance from both Congress and industry, who tend to favor or even require the DoD to buy new, even when "recycling" makes sense; the significant initial funding to acquire the system (although "out year" funding needs to operate and sustain the system will likely be reduced by savings in the space launch arena); possible arms control/treaty concerns; and, the inevitable negative reaction rendered by anti-defense think tanks.

Because the world is a less dangerous place--in terms of thermonuclear war--than it has been in the past, fewer missiles and fewer nuclear weapons will be used to satisfy the nation's deterrent needs. Additionally, missile warning capabilities, as well as intelligence indications, have improved, so having all ICBMs maximally hardened and ready to launch is not as compelling an argument as it once was. Finally, the military has an on-going need for capable, robust, and standardized space launch vehicles. This confluence of events provides a compelling entering

argument to examine the potential costs and benefits of acquiring and operating a small fleet of liquid-fueled ICBMs.

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