Preparing air missile defense, joint force against near-peer threat

By Maj Bryan A. Card
In 2014, two events changed the global security environment: the Russian invasion of Crimea and China’s militarization of islands in the South China Sea. These events increased the probability of interstate war, which means the United States needs to reemphasize countering near-peer capabilities in a complex, joint environment. One area in particular that requires special emphasis is missile defense training because “against near-peer threats, today’s AMD [Air and Missile Defense] force is unfortunately far too susceptible to suppression.”

In order to mitigate risk against the near-peer threat, Patriot operators need to regularly participate in joint training and exercises such as Red Flag and United States Air Force Weapons School Integration (WSINT). These events provide complex, joint environments to learn about these advanced threats and friendly operating standards and capabilities, as well as provide the opportunity to develop and hone joint tactics, techniques and procedures (TTPs). Such training will ensure that both Patriot operators and the rest of the joint force are prepared to employ an integrated air defense system against a near-peer threat.

Currently, neither Patriot operators nor the joint force is postured to effectively employ the Patriot system against a near-peer threat. Last year, Capt. Michael Schwartz highlighted some of these challenges in a Fires Bulletin article. He posits that “The majority of Patriot battalion deployments to Central Command … have not likely tested leaders’ abilities to encounter a wide range of mixed air threats and complex, integrated attacks,” such as those that would be encountered in a conflict with a near-peer adversary.

Near-peer adversaries possess sophisticated airpower platforms and the ability to add more fog and friction to the operational environment by denying and degrading many of the systems and capabilities that the joint force has come to rely upon, thus creating a complex threat environment. Schwartz goes on to state “the norm produced in this unopposed, low air threat era has not flexed air defense artillery leaders’ tactical decision-making skills and highlights the need to prepare for a paradigm shift to the future battlefield.”

As a result, it is clear that Patriot operators need to train against the advanced threats posed by near-peer adversaries in a joint environment, on a regular basis.

The current lack of a joint training requirements for Patriot crews hurts the readiness of the entire joint force. First, the air battle scenarios that Patriot Soldiers certify and train with do not typically include advanced, complex threats incorporating near-peer tactics. Patriot training is based on air battle management levels (ABML), which specify a certain number of threats and different threat types — e.g. ballistic and cruise missiles, fixed- and rotary-wing aircraft, and unmanned aerial vehicles. However, there is no requirement to develop a comprehensive threat presentation using advanced adversary tactics, nor to incorporate joint TTPs. Lacking a realistic scenario presentation can make it difficult for Patriot operators to determine friend from foe in the ambiguity of a contested environment with electronic attack impacting communications, GPS, radar returns and identification, friend or foe receivers. Second, by failing to mandate recurring joint training for the Patriot unit, the joint force has little exposure to Patriot TTPs and limited opportunities to work with Patriot Soldiers to develop new, joint TTPs incorporating the Patriot system to contend with near-peer threat.

Joint training opportunities

Red Flag is the Air Force’s premiere air-to-air combat training exercise. It offers the opportunity to interact with the “air forces of the United States, its allies and coalition partners,” incorporating “all spectrums of warfare, including command and control, real-time intelligence, analysis and exploitation and electronic warfare.” WSINT is the capstone to the five-and-a-half-month Weapons Instructor Course, bringing all Air Force Mission Design Series together for joint integration and synchronizing effects. Of particular interest to the Patriot community is the defensive counter-air (DCA) mission, which presents “nearly an impossible problem where ‘blue’ forces are outnumbered nearly four to one.” Patriot planners develop defense designs alongside some of the most talented air defense

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planners in the Air Force. For instance, at WSINT in 2012, Patriot exercised advanced, integrated air defense in a complex air and missile threat environment, requiring detailed integration of friendly DCA aircraft—to include fifth generation fighters—into a joint engagement zone (JEZ). The defense planning and execution created a situation where “Patriot was considered a peer weapon system to fighters, versus a capability of last resort.” Red Flag and WSINT delivers at least five opportunities per year to learn about joint air operations, hone TTPs, and “experience realistic combat scenarios in order to prepare and train for future conflicts” such as those posed by near-peer adversaries.

Training at Red Flag and WSINT produces several benefits that prepare both Patriot Soldiers and the joint force for the near-peer threat. First, Patriot planners with their joint counterparts will work through the mission planning process against challenging, if not near impossible, threat presentations. They will help develop new tactics to counter these threats and execute them in practice, learning from their mistakes during the debrief process. They will also have the opportunity to brief Patriot capabilities and limitations to the joint audience and lead mission briefs, enhancing the credibility of the Patriot community.

All of these benefits will in turn help build mutual understanding, trust and confidence between the Patriot and joint communities. This relationship building will then carry over to actual operations. By regularly training with the joint force in challenging threat environments, the confidence that is built will translate into trust during actual operations. Tactics developed during these training events will also carry over to TTPs used in theater to counter the near-peer threat. Furthermore, since each theater’s area air defense commander (AADC), usually a senior Air Force officer, sets the rules of engagement (ROE) for Army air and missile defense (AMD), greater exposure to the joint force during exercises can have a positive impact on theater ROE. By instilling trust in the Army’s ability to protect friendly aircraft and confidence in the Army’s ability to execute specific TTPs to counter advanced threats, the AADC may grant additional responsibility to Patriot units, treating Patriot as a peer-weapon system to DCA fighters, and not simply a counter-missile system.

Another benefit of this interaction with the joint air defense community is the knowledge gained can be brought back to improve in-house Patriot training. The more that is learned about friendly TTPs, the more accurately those TTPs can be represented in Patriot ABML training, leading to more realistic unit training. DCA combat air patrols can also be represented accurately based on the desired engagement zone with correct air-to-air intercept ranges. This will support realistic JEZ operations and DCA aircraft-to-Patriot engagement handoffs in ABML scenarios. Additionally, joint sensors such as the Control and Reporting Center’s TPS-75 radars and the E-3 AWACS can be better incorporated into training scenarios to more accurately represent the sensor network displayed on the tactical datalink network. Finally, the composite threat presentation at Red Flag and WSINT will help Patriot trainers create training scenarios that reflect the near-peer threat environment. By integrating knowledge gained on friendly operating standards and TTPs as well as the likely adversary threat presentation into daily Patriot training, Patriot Soldiers will be better prepared to identify and protect friendly aircraft in the ambiguity of a contested environment, while at the same time, engage advanced threats presented by near-peers.

Red Flag at Nellis AFB, Nev., occurs three to four times per year and WSINT is a biannual exercise, allowing multiple opportunities for Patriot Soldiers to train on a recurring basis. Ideally, Soldiers would train on actual Patriot equipment at these events. However, this is not cost effective or logistically feasible. Virtual training presents a realistic alternative to utilizing the actual Patriot system and, fortunately, the Air Defense Training Center at Fort Bliss, Texas, has supported both of these events with the Reconfigurable Table Top Trainer (RT3) and Virtual Patriot (vPat) on an ad hoc basis since December 2014. The RT3 and vPat allow Patriot Soldiers to participate in Red Flag and WSINT without having the actual Patriot system by utilizing the Nellis Test and Training Range Network, which tracks the location, speed and weapons state of nearly all aircraft on the Nellis range. This aircraft information is passed to the RT3 and vPat simulators, which in turn can display aircraft to the operator as organic Patriot radar tracks. These systems simulate terrain and actual detection ranges, and can participate on the tactical datalink network, further enhancing realism. This virtual training closely mimics the training that a real system affords, allowing operators to seamlessly interact with live aircraft and air controlling agencies operating on the Nellis range. Virtual training is an effective use of training dollars as it allows a greater number of Patriot Soldiers training opportunities than would be available if a Patriot battalion’s equipment had to be deployed to support every training event. Thus, the RT3

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and vPat simulators allow Patriot Soldiers to train with the joint force in a complex environment against near-peer threats on a regular basis and work with joint partners to plan missions, develop TTPs to deal with advanced threats, and to debrief what went wrong and what can be done better.

“Train as you fight” is a familiar phrase in the Army and for good reason—you will fight as you have trained. Currently, both Patriot Soldiers and the joint force are ill-prepared to utilize the Patriot system against the near-peer threat simply because Patriot Soldiers are not regularly training with their joint partners to combat this threat. In order to overcome this training shortfall, Patriot Soldiers should deploy to Nellis AFB to train at Red Flag and WSINT on a recurring basis. This will allow Patriot Soldiers to learn from other service partners and in turn, will teach joint partners about Army AMD while developing TTPs to counter the near-peer threat. Once validated, this practice can be adopted for use in theater and the relationships developed between the Patriot and joint communities during training will help build mutual understanding, trust and confidence, ultimately leading to the utilization of Patriot as a peer-weapon system to DCA aircraft.

In order to facilitate this increased joint training regimen, virtual Patriot training systems should be utilized to incorporate as many Patriot Soldiers as possible and grant the widest exposure to the joint community. The result of such joint training, whether using the actual or virtual Patriot systems, will be a joint force that is much better prepared to deal with the near-peer threat.

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