Multiservice Procedures for Antiradiation Missile Employment in a Joint Environment

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Executive Summary

Antiradiation missiles have an unparalleled ability to home in on enemy emitters and disrupt or destroy the elements of an integrated air defense system (IADS). However, they are not classic precision-guided weapons, such as laser-guided munitions. On the contrary, ARMs cannot be steered and under certain conditions may not guide on the target that they were originally fired. Also, they do not have the ability to discern friend from foe. Therefore, the precision detection capability of the launching platform and its human operator in the loop are key elements ensuring weapon effectiveness and the prevention of fratricide. The translation of what the launching aircraft sees to what the ARM sees is paramount.

Several unique factors effect ARM employment. Most significant are the ambiguities in the radar frequency spectrum which cause friendly, enemy, and neutral radar emissions to appear similar. Ambiguities make accurate platform targeting and missile guidance difficult. These ambiguities will continue to worsen as the frequency spectrum becomes more dense and overcrowded. A limited amount of frequencies is suitable for radar operations, and as newer systems evolve, more emitters will overlap. In some instances, high target area activity in a dense emitter environment may cause cockpit task saturation and decrease targeting efficiency. Now previously defined enemy emitters from the Soviet era cannot be exclusively classified as such. Potential partners in multinational combined operations may employ such systems, causing use of the same weapon system on both sides of a conflict. For example, in Desert Storm, coalition forces and Iraq both used the SA-6 and Hawk weapon systems. As systems intermingle during changing world political conditions, it will become increasingly difficult to detect friendly, enemy, and neutral radar emitters.

Rules of engagement (ROE) compensate for some of the above problems. Restricting weapons firing until specific conditions are met reduces potential fratricide as well as avoids inefficient weapons employment. However, ROE must be optimized for all platforms in theater and take into account each system's capabilities and limitations.

Each service employs ARMs with different objectives and philosophies. Individual service platforms can employ ARMs with varying degrees of accuracy. To improve integration during a joint campaign, each service must understand how the other executes ARM employment. Likewise, inaccurate targeting and fratricide is prevented by knowing how friendly ground and naval emitters operate.

Joint planners must extensively coordinate all aspects of ARM employment during a SEAD campaign. Critical to planning is the transmission of friendly emitter order of

battle information to the aircrews. Timely, accurate data, combined with appropriate ROE and knowledge of ambiguous theater systems, will overcome the obstacles presented by a dense frequency spectrum.