

Amendment 0002  
Solicitation Number N00014-15-R-BA014  
“Helicopter Active RPG Protection (HARP)”  
Date Published: September 25, 2015

The purpose of Amendment 0002 is to respond to questions submitted in response to the BAA.

**Question 1:** Are there defined goals to “*acceptable fratricide and collateral damage*”? Could you specify what damage is acceptable and at which confidence level?

**Answer 1:** The BAA does not use the term “acceptable” within the discussion of fratricide and collateral damage. It is recommended that offeror’s white paper address fratricide and collateral damage avoidance capabilities of their systems.

**Question 2:** Do you have an interception probability goal?

**Answer 2:** For purposes of this white paper interception probability is not defined by the government.

**Question 3:** The 1<sup>st</sup> criteria states “*launched from an AN/ALE-47*”, in other places compatibility is requested. A few questions arise in this regard:

**Question 3a.** Please elaborate on the request for compatibility.

**Answer 3a.** As stated in the BAA, the ALE-47 will be the launch system for the HARP expendable. For this BAA, no other launch system is desired by the government.

**Question 3b.** To what extent can the ALE-47 be modified for a proposed hard kill mechanism?

**Answer 3b.** The AN/ALE-47 will still be used for its primary purpose; as an expendable dispenser of flares and chaff. The ALE-47 dispenser assembly consists of three parts – the dispenser housing which remains in the aircraft, the block which presently houses thirty expendables, and the breech plate which provides the mechanical and electrical interface between the housing and the block. The breech plate provides the electrical contacts for the impulse cartridges. The dispenser housing shall not be modified, but the block and/or breech plate may be redesigned to house a different size or quantity of expendables so long as the loads requirement is not exceeded. No other ALE-47 components may be modified.

**Question 3c.** We assume that the existing AN/ALE-47 countermeasures will remain in use, so is your intention to add dispensers?

**Answer 3c.** At this time no additional dispensers are envisioned by the government.

**Question 3d.** If the answer is yes, how many and are there any restrictions regarding their location?

**Answer 3d.** See answer 3c.

**Question 3e.** If a system uses a different launcher concept and is not immediately compatible with the AN/ALE-47; will this eliminate the concept from consideration?

**Answer 3e.** As stated in the Program Objectives section of the BAA, “HARP's expendable countermeasure must be compatible with launch from the AN/ALE-47 Countermeasure Dispense System (CMDS), and while some modifications are allowable, the current aircraft set back load of 3,000 lbs shall not be exceeded.” The government is interested in receiving white papers that adhere to the objectives in the BAA.

**Question 4:** Is the government requesting to demonstrate a fully integrated system into a helicopter or a tethered drone helicopter with only the HARP system on it or another combination?

**Answer 4:** The HARP system developer will demonstrate the kill mechanism in dynamic live fire arena tests against live RPGs. The arena tests will not use a helicopter in tethered hover. The HARP expendable will require guidance and control to intercept and destroy the inbound RPG. For this test the guidance and control hardware and software for expendable vehicle control may be provided by a laptop and/or other representative hardware/software.

The HARP expendable countermeasure will also be demonstrated from a helicopter in tethered hover which exercises the expendable launch in a relevant environment such as rotor wash and vibration. In this test, inert RPGs will be fired at the helicopter in tethered hover. The HARP expendable will be required to intercept and destroy the inbound RPG. For this test the guidance and control hardware and software for expendable vehicle control is not required to be integrated into the helicopter in tethered hover.

**Question 5:** At what stage of the research is cooperation between contractors and offerors expected?

**Answer 5:** In the execution of the HARP program, technical and program reviews are required. ONR may use system integrators (SETA) and other contractors (CSS) to support the program. Cooperation between offerors and any contractors they are teaming with as well as ONR selected contractors and the system integrator is expected throughout program execution.

**Question 6:** What is the angular accuracy provided by the existing systems (AAQ-24) for RPG warning, detail the answer to each relevant platform and variants of the systems installed or planned to be installed for the HARP capability?

**Answer 6** The AAQ-24 system sensors can serve as a cueing source but will not provide RPG tracking. A HARP RPG sensing capability with appropriate angular accuracy will be required for that function which is expected to be part of the offeror's system. Launch detection data will be included with the GFI data package provided to offerors invited to submit full proposals.

**Question 7:** What is the respective timeline for the warning and tracking provided typical, best, and worst case?

**Answer 7:** Specific timeline for ATW cueing will be provided as part of the GFI data package to offerors invited to submit full proposals.

**Question 8:** What is the False Alarm Rate of the above detection capabilities?

**Answer 8:** HARP RPG sensing capability other than AAQ-24 system sensors is required. The AAQ-24 system sensors can serve as a cueing source, not as a false alarm rate source, a HARP RPG sensing capability is required for that function. Data on AAQ-24 system sensors RPG launch detection capability will be included with the GFI data package provided to Offerors invited to submit full proposals.

**Question 9:** Is the government interested in whitepapers that can: a. sense the inbound RPG, b. reject false alarms with high probability, and c. command expendable countermeasure launch when appropriate, but not actually develop the expendable that actually defeats the inbound ballistic threat? The sensor/processor is only a partial solution and that work with another company developing expendables would be required either at proposal submission or as a “forced marriage” post proposal to meet all objectives of HARP.

**Answer 9:** As stated in the BAA, “During the white paper evaluation, the overall programmatic approach will be reviewed to assess the extent to which the proposed program, schedule and teaming approach (as applicable) demonstrates that the Offeror has a vision for credibly achieving HARP goals...”

For this BAA the expectation of the government is that teaming arrangements would have already been resolved before white papers are submitted. White papers offering partial HARP solutions will not meet all of the evaluation criteria.

**Question 10:** Expound on the precise definition of "hard kill"?

a. In the Background section of the subject document you use the term "hard kill" expendables. In the Program Objectives section, you state you are looking for an RPG intercept at sufficient range to prevent helicopter damage, and to "defeat the RPG".

i. One implies complete destruction of the RPG projectile - perhaps via an explosive (warhead) engagement. The other implies a soft kill -perhaps a kinetic device that may pre-detonate the RPG projectile or veer it off course prior to impacting the intended target.

**Answer 10:** The BAA uses the expression "hard-kill" to distinguish between today's Aircraft Survivability Equipment's "soft-kill" solutions; jamming, degrading, spoofing or decoying guided anti-aircraft weapons. "Hard-kill" is intended to describe an expendable countermeasure which will physically interfere with an unguided threat. Offerors are free to propose physical interference technology / techniques which they believe will accomplish RPG defeat such that they protect the host helicopter. Obvious defeat options include, but are not limited to, one or a combination of the following; Destroying, Deflecting, Duds'ing, or Functioning the round. Functioning the round could mean causing it to function as designed, causing it to function high-order but off-axis, causing it to function low order, or a combination.

Obvious defeat mechanisms include, but are not limited to, one or a combination of the following; Kinetic (hit to kill), Overpressure, Fragmentation. The terminology "accomplish RPG intercept at sufficient range to prevent helicopter damage" is intended to provide offeror flexibility in defeat options and mechanization. For example, a defeat option/mechanism which deflects an RPG round by 90 degrees might require a different intercept range than a one which

deflects an RPG less than 10 degrees. Or, as another example, a defeat option/mechanism which functions an RPG 'as designed', resulting in a high speed / high temperature jet along the threat's flight path might require a different intercept range than one which causes low order warhead deflagration.

**Question 11:** Can a contractor modify interior of ALE-47?

**Answer 11:** The AN/ALE-47 will still be used for its primary purpose; as an expendable dispenser of flares and chaff. The ALE-47 dispenser assembly consists of three parts - the dispenser housing which remains in the aircraft, the block which presently houses thirty expendables, and the breech plate which provides the mechanical and electrical interface between the housing and the block. The breech plate provides the electrical contacts for the impulse cartridges. The dispenser housing shall not be modified, but the block and/or breech plate may be redesigned to house a different size or quantity of expendables so long as the loads requirement is not exceeded. No other ALE-47 components may be modified.