Obsolescence in Repair Parts Sustainment – Time for a New Paradigm

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Because of underlying rapid technological advancements in the electronics industry and relatively low density of Army fielded equipment, obsolescence issues are of great concern to the Army's Communications and Electronics Life Cycle Management Command (CELCMC). An examination of the Single Channel Ground and Airborne Radio System (SINCGARS) acquisition serves to highlight the parts obsolescence problem and further provide a solution to fund obsolescence redesigns. The solution proposed has great potential for many applications for DOD weapon systems and is a solution that anticipates change rather than just reacts to it.

SGT Christopher Gonzalez, from 3rd Brigade, 3rd Infantry Division, loads radio frequencies into the communications system of his Bradley Fighting Vehicle (BFV) prior to a mission in Baqubah, Iraq, Aug. 12, 2005. (U.S. Army photo by SSG Suzanne Day.)

SINCGARS is a mission-critical defense system providing commanders with a highly reliable, secure, easily maintained Combat Net Radio that has both voice and data handling capability in support of battle command operations. More than 250,000 SINCGARS radios have been fielded to date, and SINCGARS has faced its fair share of parts obsolescence problems over the years. These problems are expected to continue and accelerate as the system ages across the entire SINGCARS Family of Radios. As a result, lengthy procurement lead times have occurred because of the time to redesign and fund obsolescence problems.

Historically, on items with active contracts and production lines, the mechanism most often used to incorporate obsolescence fixes into equipment is a change to the contract by incorporating an Engineering Change Proposal (ECP). This entails delaying production, defining the change, communicating it to the contractor and identifying funding to execute the change. Production is not restarted until the redesign is complete and negotiated into the contract. This results in lengthy delays in getting spares to our warfighters.

Often, ECPs consist of both recurring and nonrecurring efforts. The recurring effort can be integrated into the contractual unit prices and the nonrecurring effort, paid in one lump sum. However, locating funding for the lump sum has always been an issue because those funds are never programmed or available at the critical time of need. Further complicating matters is using the Army Working Capital Fund (AWCF) during sustainment of a system to procure and repair spare parts. It is imperative to capture the nonrecurring costs in the price of an item to be able to recoup the investment when the part is "sold" to the field. The nonrecurring effort is a one-time expense and incorporating it into just the current order would astronomically inflate the actual item's cost.

The New Paradigm

To address SINCGARS obsolescence issues, an acquisition strategy was developed that put the risk on the contractor for configuration control and parts obsolescence management. A competitive solicitation for a 5-year Indefinite Delivery, Indefinite Quantity type contract was issued that required the contractor to incorporate the obsolescence costs into the contract unit prices. Competition would guarantee fair, reasonable and affordable prices, ensuring the government would have a best-case situation.

Because the contractor would still be required to meet scheduled deliveries, the time cost of previous obsolescence-induced changes would be solved. Also, the issue of AWCF pricing would be solved, as sales to Operation and Maintenance field accounts would already have the cost of obsolescence included in the unit prices. No more obsolescence price increases, no more searching for "lump sums of money" and no more delays in fielding spares to Soldiers on the front lines.

CELCMC's innovative approach to obsolescence will ensure that battlefield commanders don't pay the price when SINCGARS spare parts are needed in the future. Here, Soldiers from 1st Battalion, 15th Infantry Division, Fort Benning, GA, provide perimeter defense from their BFVs outside Samarra, Iraq, May 29, 2005. (U.S. Air Force photo by SMSG Kim M. Allain.)

SINCGARS is a mission-critical radio system providing battlefield commanders with highly reliable and secure voice and data communications capability. To date, more than 250,000 SINCGARS radios have been fielded DOD-wide. Here, Soldiers from the 502nd Infantry Regiment, 101st Airborne Division, search for insurgents along the Euphrates River southwest of Baghdad, Iraq, Dec. 6, 2005. (U.S. Army photo by 2LT Paul Fisher.)

Scottish Poet Robert Burns is often quoted, "The best-laid schemes o' mice an' men gang aft agley" (often go astray). This was the case here as the uncertainty and unknowns involved with obsolescence resulted in the contractor's proposal being unaffordable because of the contractor pricing in the obsolescence risk for the worst-case scenario. When the initial SINCGARS acquisition strategy did not result in an affordable option, the necessity to better support our warfighters became the mother of invention. Rather than just accepting the proposed fix as unaffordable and going back to the old way of doing business, Team Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) partnered with industry and developed an entirely new and innovative business solution that became the contractual clause titled "Internal Obsolescence Risk Reserve Fund."

This contract clause clearly states that a Reserve Fund is established to proactively manage obsolescence-related efforts including, but not be limited to, the acquisition of lifetime or last-time component parts buys, the temporary acquisition of long-lead material and the conduct of obsolescence redesigns determined to be necessary to provide continuing support to SINCGARS per an Obsolescence Management Plan. This unique contractual clause represents a life-cycle management approach, the culmination of many hours of intense negotiations, a true partnering relationship between the contractor and the government and a willingness to acknowledge and manage risk.

The innovative approach establishes a contractual dual-pricing structure, with main contract pricing consisting of a base production price loaded with an obsolescence add-on amount and alternate contract pricing consisting of the base production price alone. The clause also explains the Reserve Fund's two trigger points, also known as lower (floor) and upper (ceiling) thresholds. When orders are initially issued, main contract pricing is used and the obsolescence add-on amount feeds directly into the Reserve Fund. All subsequent orders also contain this add-on until the fund ceiling is reached. Once the ceiling is reached, alternate pricing (production price only) is in effect and stays that way until the Reserve Fund is depleted down to the floor. At that time, the process reverts to charging the higher main contract price if funds for obsolescence are still needed. The funds accumulated into the Reserve Fund are then used to pay for parts obsolescence as needed.

In addition to providing upfront funding for obsolescence issues, this approach also requires the contractor to proactively research and resolve obsolescence issues on parts even before the parts are ordered. This process substantially reduces production lead times and ensures the fastest troop support possible.

Another interesting Reserve Fund feature is found in the contractually required annual review of fund expenditures and achievements. If needed, depending on the magnitude of the obsolescence problem, the ceiling and the floor could each be adjusted. That is, it is a flexible approach designed to stay flexible. The fund will also be monitored so that as the contract approaches close out, the fund is drawn down and any remaining funding could be used to acquire forecasted

SPC Adam Alford, 946th Forward Surgical Team, U.S. Army Reserve, uses SINCGARS during a field training exercise. (U.S. Army photo by SSG John Marlow.)

obsolete parts that can then be provided as Government Furnished Property for the follow-on contract.

One final aspect of this clause is that the contractor is paid to maintain configuration control and, as such, is responsible for obsolescence mitigation plans. This should prevent many future obsolescence problems and at least mitigate all others. The bottom line is that the Reserve Fund allows for the flexibility to proactively plan for obsolescence fixes with funds already on contract.

This approach provides two tremendous advantages for the government and our warfighters:

- Reduces procurement lead time for getting obsolescence issues resolved and necessary spare parts delivered to our warfighters quickly since funding for obsolescence redesigns will already be on contract.
- Reduces the cost of obsolescence priced into the initial proposal and actually makes the acquisition affordable because obsolescence is paid for across the entire system rather than paying the entire obsolescence bill in any given order or component out of budget cycle.

The SINCGARS team's evolutionary approach to obsolescence obtains delivery of fixes as they become available rather than waiting until all administrative obstacles are satisfied. It is analogous to spiral development with each dollar in savings representing a dollar available elsewhere to support warfighters.

Keys to the New Paradigm

Necessity and creative thinking can be a powerful combination benefiting our warfighters. To use the SINCGARS example, several key elements must be present:

Tactical radio communications are absolutely essential for units on the move. Here, a Joint Marine, Navy and Army convoy prepares to leave Camp Al Taqaddum for an engineer site at Mustafa Rock Quarry, Iraq, March, 14, 2005. (U.S. Marine Corps photo by CPL Marsha N. Garcia.)

- A true government/contractor partnership must be established. A high level of mutual trust, along with an absence of a litigious environment, is paramount. The contractor must proactively manage its databases for obsolescence and mutually ensure that mission creep does not leak into this effort. For example, the Reserve Fund is not intended to provide for enhancements — such actions would violate funding statutes. Obviously, given the sums of funding involved, certain audit checks and balances must be established, but these must not color the environment.
- It is critical that both the government and contractor establish action-oriented, extremely well-focused multifunctional teams. The Reserve Fund mechanism requires greater surveillance and partner involvement. This increased upfront effort greatly mitigates that which would normally follow, actually decreasing the overall program efforts.
- The government/contractor team must recognize the complex contract administration that is needed and resulting volume of administrative efforts as the contract term nears completion. The obsolescence team must essentially make best-value-type decisions as to when and how to make use of Reserve Fund dollars. The intent is to ensure that no obligated funds are left on contract so that the contractor receives an unintended windfall.

Clearly, this proposed paradigm shift may not work for every system. For example, it may not be applicable for equipment that may soon be replaced, for commercial applications or for low-density systems. However, for many systems suffering similar obsolescence problems, the innovative SINCGARS approach to obsolescence could be expanded for their use. Even for those systems where the SINCGARS Reserve Fund does not fit, the need to fully support our warfighters should give rise to the desire, willingness and creative atmosphere to develop other workable solutions.

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