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ACQUISITION,
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INFO MEMO

FOR: UNDER SECRETARY OF DEFENSE (AT&L)

FROM: GARY R. BLISS, DIRECTOR, PERFORMANCE ASSESSMENTS AND ROOT CAUSE ANALYSES (PARCA) 9/13 12 Sept 11

SUBJECT: PARCA's Root Cause Analysis of the Joint Tactical Radio System Ground Mobile Radios (JTRS GMR) Program

- The JTRS GMR Program Manager reported a critical Nunn-McCurdy cost breach to USD(AT&L) on March 30th, 2011. The Army attributed the 90% growth in Program Acquisition Unit Cost (PAUC) over the current baseline to a reduction in quantity from 86,209 to 10,293 due to a revised Basis of Issue based on a new Operational Network Architecture and the cancellation of the Future Combat System.

- PARCA concludes that the root cause of the cost growth is that seams between the requirements and acquisition communities led to an inadequate analysis for an affordable quantity of JTRS GMR radios when the baseline was established.

    - The initial analysis of required quantities unrealistically assumed that all JTRS mounted requirements would be satisfied using the GMR.

        - Affordability has been a concern since program inception but cost data from the acquisition community were not factored into the initial analysis of required quantities. These costs were documented by the acquisition community when the baseline was established and are essentially the same as the current estimates which are now recognized as unaffordable.

        - The network architectural analysis when the baseline was established was not based on a detailed analysis of vehicular communications needs.

    - Technology and spectrum constraints were dominant factors in determining the network architecture and the number of Wideband Network Waveform (WNW) nodes that a network would contain. The exchange of this information between the acquisition and the requirements community was crucial information for building out the quantities and placement of GMRs within the Brigade.

        - When the baseline was established, the acquisition community had little relevant test data and so used modeling to assess achievable network size.

        - These models were not validated and ultimately proved to be inaccurate. Mobile

ad hoc networks are a new, challenging technology and the limits to their scalability are still not well understood and controversial.

- The following issues, while only indirect influences on cost growth, materially affected our ability to develop an affordable product.
    - Ill-defined requirements. The performance trades which are now being considered (e.g. wide band amplifier power and number of channels) would have reduced the cost of the program of record had they been implemented earlier.
    - Few incentives for the contractors to reduce the production cost of the radios. Boeing, as the prime contractor, was explicitly excluded from production and so was not directly affected by production cost. Moreover, the cost-plus contractual arrangements did not incentivize Boeing effectively to reduce production costs.
    - Late-to-need determination of network scalability. The wideband mobile ad hoc network technology was emerging, and consequently there was little experience (either defense or commercial) with the capability. The actual scalability of those networks was a key factor in determining the architecture, the required properties of the nodes, and the final quantity required.
    - Lack of definition in size, weight, and power (SWaP) requirements. The cancellation of the Future Combat System effectively reduced the time to address SWaP issues for legacy vehicles. Even now, significant uncertainty about SWaP requirements persists. This has significant implications for integration costs and whether vehicle power generation systems will have to be upgraded to support GMR or GMR alternatives.
- We note that considerable uncertainty still remains in achieving this capability.
    - The lack of a fully documented and vetted set of testable requirements continues to be a significant source of uncertainty.
        - A Capability Production Document (CPD) has not been approved although we are past the originally scheduled Milestone C review.
        - There continues to be ambiguity in the definition of the requirements (e.g. throughput, number of channels, and compatibility with jammers).
    - Technological advancements and how the war fighter will leverage them are still necessarily uncertain. This will affect our future acquisition of this capability.

COORDINATION: NONE

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