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TECHNICAL REPORT

Methodologies in Analyzing the Root Causes of Nunn-McCurdy Breaches

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Prepared for the Office of the Secretary of Defense

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Summary

Background

Continuing program cost growth and observations by the Government Accountability Office (GAO) placing defense acquisition on the high-risk target list raised concern in Congress about the execution of major defense acquisition programs. This concern and the reality of shrinking defense budgets led Congress to enact statutory provisions that would increase the focus of senior policymakers on oversight of major defense acquisition programs (MDAPs) and other large costly programs.² The Weapon Systems Acquisition Reform Act (WSARA) of 2009³ established a number of requirements that affected the operation of the defense acquisition system and the duties of the key officials who support it, including the requirement to establish a new organization in the Office of the Secretary of Defense (OSD) with the mandate to conduct and oversee performance assessments and root cause analyses (PARCA) for MDAPs.

In March 2010, the director of PARCA determined that he needed support to execute his statutory responsibilities and turned to federally funded research and development centers (FFRDCs) and academia to provide that support for the research and analysis of program execution status. RAND was one FFRDC engaged to perform research and analysis and provide recommendations and was originally assigned responsibility for four programs.⁴ After completing that initial effort, RAND was assigned two additional programs for research and analysis: Excalibur and Navy Enterprise Resource Planning (ERP).

Purpose

This technical report documents the methodology RAND developed to carry out the root cause analyses (RCAs). In analyzing six programs, RAND has developed some expertise in what is required to carry out these analyses effectively. It is important

² Ike Skelton Defense Authorization Act for Fiscal Year 2011, December 20, 2010.

³ Public Law 111-23, May 22, 2009, Weapon Systems Acquisition Reform Act (WSARA) of 2009.

⁴ Blickstein et al., 2011.

to chronicle the approach used for all the analyses so that others may use it in their own analytic efforts. The report also gathers together extensive documentation on data sources that can be used for root cause analyses and for other purposes pertaining to the six specific programs RAND analyzed.

Observations on the Conduct of Root Cause Analyses

Each acquisition program is unique, and each RCA is unique. However, RAND's experience in conducting six root cause analyses indicates that a set of core activities is instrumental to a successful effort. These activities define a generic root cause methodology whose key components include the following:

- Gather and review readily available data.
- Develop a hypothesis.
- Set up long-lead-time activities.
- Document the unit cost threshold breach.
- Construct a time line of relevant cost growth events in the program history.
- Verify the cost data and quantify cost growth.
- Create and analyze the program cost profiles pinpointing occurrences of cost growth.
- Match the time line events with changes in the cost profiles and derive root causes of cost growth.
- Reconcile any remaining issues.
- Attribute unit cost growth to root causes.

Successful execution of this set of activities should enable the research team to create the primary deliverables and postulates for a root cause analysis: a summary narrative that includes clearly stated root causes of cost growth supported by a formal documentation of the cost threshold breach, a summary time line of program events leading to the Nunn-McCurdy breach, funding profiles, a completed PARCA office-generated root cause matrix, and a breakdown of the amount of cost growth attributable to each root cause; a briefing that corresponds to the narrative; and a full root cause report.

In addition to developing deliverables and postulates, the RCA process is designed to improve the research focus iteratively. At each stage of the RCA, information is both drawn from and contributed to the program archive. The RCA analytic team can use this insight not only to improve the interim products that result from successive stages of the RCA but also to advance the original hypothesis that guides the research. This process of regularly refining the guiding hypothesis with the insights gained during the production of key deliverables and postulates enables the research team to identify quickly the root causes of a program's failure.