1. BACKGROUND.

a. The Expeditionary Combat Support System was planned as a large-scale business systems transformation of AF logistics implemented through Enterprise Resource Planning, using a Commercial-Off-The-Shelf software solution. An Enterprise Resource Planning is a software methodology that traditionally combines all elements of an enterprise (logistics, finance, sales, etc.) into one shared data base solution. The philosophy at the time was to utilize the Commercial-Off-The-Shelf software to replace the legacy business system software and adjust the current Air Force business process to accommodate the Commercial-Off-The-Shelf software capabilities.

b. Market research indicated no single Commercial-Off-The-Shelf application could perform all of the functions necessary to accomplish the program, so the acquisition strategy allowed for “bolt-on” applications. The Expeditionary Combat Support System acquisition strategy also included implementing the Enterprise Resource Planning through two sequenced acquisitions. First, the Commercial-Off-The-Shelf product solution would be acquired. Next, the Air Force would select a Systems Integrator for the implementation and deployment of Expeditionary Combat Support System. Both acquisitions were made using General Services Administration Federal Supply Schedules and a Department of Defense Enterprise Software Initiative Blanket Purchase Agreement in accordance with Federal Acquisition Regulation Subpart 8.4. The contract type for both contracts was Firm Fixed Price. The Expeditionary Combat Support System program execution, as originally planned, would be divided into three releases or increments with no pilots.

c. In October 2005, Oracle, Inc. was awarded a task order as the Commercial-Off-The-Shelf software provider. The Commercial-Off-The-Shelf solution was called the Oracle Product Suite and consisted of Oracle E-business Suite, and two bolt-on
applications: Click Commerce (planning), and Industrial and Financial Systems (maintenance). This award was protested in late October 2005 by the competing vendor, SAP Public Services, Inc. The Government Accountability Office denied the protest in February 2006. The Air Force proceeded with its selection of the Systems Integrator award in September 2006 to Computer Sciences Corporation. This award was also protested that same month, and in March 2007, the protest was likewise denied.

d. Although Business Capability Lifecycle policy was yet to be official, the AF began applying the Business Capability Lifecycle methodology in mid-2007, prior to formal policy being issued. While in practice, the methodology was intended to “streamline” processes for business system acquisition, the program found itself subject to both the Department of Defense Instruction 5000.02 and Business Capability Lifecycle methodology throughout much of its existence. In the latter stages of the program, the Service Development and Delivery Process was introduced, and the program found itself attempting to comply with various elements of all three methodologies.

e. With both the Commercial-Off-The-Shelf and Systems Integrator vendors on contract, the Systems Integrator began work on major activities grouped into three phases or increments on the original task order. Phase or Increment 1 activities included Change Management, Blueprinting, Systems Analysis and Design (including legacy deconstruction), and pathfinders. All work relating to Phase/Increment 1 tasks was placed on contract. Phase 2 (configure and test) and Phase 3 (production) were established as options.

f. Blueprinting is a methodology to portray all of the eventual systems processes. The blueprinting effort was divided into two phases; enterprise level (to understand the entire architecture and major touch points) and process area level (more detailed focus on individual areas tied to the Commercial-Off-The-Shelf products). Concurrently, legacy deconstruction was being accomplished to understand both the “As-Is” legacy environment and the transition from this environment to the Expeditionary Combat Support System and assist with early risk and issue
identification. This effort, already behind due to the protests, fell further behind schedule, as both legacy deconstruction and blueprinting proved more difficult than envisioned. The program started generating significant amounts of Reports, Interfaces, Conversions, and Extensions, rather than changing current processes to accommodate the Commercial-Off-The-Shelf software. Also, integration issues internal to the Oracle Product Suite software drove program delays and were impacting the SI’s ability to deliver.

**g.** Requirements were later added to the contract for Product Lifecycle Management and Logistics Financials. Product Lifecycle Management accounted for long term system engineering of logistics systems. LogFins accounted for the unique Working Capital Funds financials used for supply chain support by the logistics community. These added requirements further exacerbated the blueprinting schedule.

**h.** In 2009, the Air Force executed a major restructure of the program to address the Product Lifecycle Management and LogFins additions, schedule slip (Milestone B was over a year late), and a new materiel solution of eliminating the “bolt-ons” in favor of an “Oracle-only” solution. The Oracle contract was modified in November 2009 to include the program converting to an Oracle-only footprint, with Oracle applications replacing Click Commerce (planning), and Industrial and Financial Systems (maintenance) functionality. The restructured Systems Integrator contract created four releases with six pilots, with the first release having three pilots to be fielded at Hanscom AFB prior to release worldwide. The restructure focused on the delivering the first release and three associated pilots in order to achieve Milestone B.

**i.** Despite the progress made in 2010, Milestone B was delayed, and the program eventually incurred a Critical Change determination in August of 2010. Following this event, the Office of the Secretary of Defense conducted a technical risk assessment. The design artifacts for the Pilot Baseline Review, one of the prerequisites for Milestone B, were insufficient. In response, the Air Force and Computer Sciences Corporation formed a “Recovery Plan” for meeting the success
criteria. However, it quickly became apparent that the Recovery Plan was failing to achieve its objectives. After a request to further restructure Expeditionary Combat Support System was denied, the Senior Acquisition Executive determined another Critical Change had occurred. Later, a series of Air Force leadership “Deep Dive” meetings concluded significant shortcomings in program progress had not yet been remedied.

j. Two Acquisition Strategy Panels were held to make a final attempt to salvage the program. The proposed schedule delayed delivery of Release 1 past the start of fiscal year 2017, putting Financial Improvement and Audit Readiness compliance at risk. AF/A4/7 did not concur with the accumulating schedule delay and began to withdraw support. This led to a strategic pause, in which three Courses of Actions were considered: stay the course; further de-scope the program; or cancel the program and establish a “best of breed” capabilities-type approach. Eventually, the AF recommended cancellation of the program and, Under Secretary of Defense for Acquisition, Technology and Logistics concurred.

k. In March 2013, HQ AFMC/CC appointed a multifunctional team, Acquisition Incident Review Team, to review the Expeditionary Combat Support System program; the team was charged with identifying contributing and root causes of Expeditionary Combat Support System failure and making recommendations on solutions to eliminate or mitigate similar failures on business system acquisitions in the future.

l. The Acquisition Incident Review Team took approximately 75 days from the date of the team appointment to review over 588K pieces of data, covering approximately 10 years and having an initial pool of more than 1000 persons for potential interviews. The team engaged in the following activities as part of its fact-finding process:

i. Building a fact-based chronology/timeline, ultimately composed of 261 events

ii. Creating an initial Fishbone Analysis consisting of more than 140 potential causes
iii. Conducting 71 “consultations” with persons having business system acquisition exposure

iv. Conducting 104 interviews with various personnel involved with the Expeditionary Combat Support System program

v. Analyzing the facts collected, including 27 main discussion points

vi. Arriving at its conclusion that 4 contributing and 6 root causes drove Expeditionary Combat Support System failure

vii. Crafting 18 specific recommendations on how to improve business systems acquisition

2. ANALYSIS AND CONCLUSIONS. A detailed analysis led the Acquisition Incident Review team to conclude there were four contributing causes and six root causes to the failure of Expeditionary Combat Support System. Each cause is summarized below:

a. Contributing Causes.
   i. GOVERNANCE - A confusing and, at times, ineffectual governance structure was evident throughout the life of the program. While starting out under the Department of Defense Instruction 5000.02 methodology as a Major Automated Information System with Networks and Information Integration Director as the Milestone Decision Authority, Expeditionary Combat Support System governance varied repeatedly during its existence. Elements of Department of Defense Instruction 5000.02, Business Capability Lifecycle, and Service Development and Delivery Process methodologies were all used as compliance/process tools at particular times on Expeditionary Combat Support System, and more commonly in combination with each other. There lacked coherent leadership guidance and coordination from process “owners” on how to seamlessly mesh and implement the intermingled methodologies, thereby driving needless delay, frustration,
uncertainty, and labor burden on the program office. This problem existed throughout the life of Expeditionary Combat Support System and is not yet resolved.

ii. TACTICS, TECHNIQUES and PROCEDURES - Expeditionary Combat Support System suffered from instances where either the wrong “tool” was selected from the “acquisition toolbox” or the proper tool was selected but misapplied. In other cases, there appeared to be simply an underestimation of the sophistication needed in tackling the enormous and complex effort. For instance, especially with regard to the Systems Integrator contract, a Federal Acquisition Regulation Subpart 8.4 Federal Supply Schedule, fixed price effort utilizing an Enterprise Software Initiative Blanket Purchase Agreement was unwise in light of the significant development required, lack of defined requirements, and the consequential need for numerous modifications. The Air Force did not understand the magnitude of legacy system data leading to a Request For Quote which did not effectively communicate the Air Force need. Various other “toolbox” issues existed and are more fully explored in the report analysis, however, the use of wrong tool or inability to properly use an acquisition tool burdened Expeditionary Combat Support System to the extent that it was a contributor to the program failure.

iii. DIFFICULTY OF CHANGE - Expeditionary Combat Support System was attempting to accomplish a dual purpose of developing a strategic and disruptive technology to improve logistics business process, while at the same time obtaining “buy in” from a user community that was generally fearful of how Expeditionary Combat Support System would impact them personally. The lack of effective change management was a contributing cause and was made worse when, as time went on, the lack of successful implementation signaled to the field that Expeditionary Combat Support System was not worth supporting. A not yet fully known, but large number of “homegrown” legacy business systems exist for the Air Force. Most have likely been developed independently from other
systems. Each system may house similar or the same type of data, but the processes are many times different. Each “user” of a particular system is comfortable with it and relies upon it to get the task completed. Expeditionary Combat Support System was more strategic in nature, meant to subsume the logistics legacy systems. In a sense, it represented a large scale, disrupting technology that would change how each legacy system user would do business, including gaining efficiency. However, for the user that was concerned his or her job might be in jeopardy, resistance to change would naturally exist. The lack of early successes in Expeditionary Combat Support System would make change even more difficult.

iv. PERSONNEL AND ORGANIZATIONAL STRUCTURE CHURN - Expeditionary Combat Support System experienced six program manager changes in eight years; five Program Executive Officers in six years; ten different organizational constructs; and the Expeditionary Combat Support System Logistics Transformation Office was staffed with term positions, not permanent positions, leading to high turnover. A larger problem that affected Expeditionary Combat Support System is in the way the Air Force tends to organize for acquisition. The combination of these factors led to significant instability, uncertainty and churn, which served as a major distracting influence over the execution of the program. This in turn increased the difficulty of moving Expeditionary Combat Support System forward and made its success more elusive.

b. Root Causes of Expeditionary Combat Support System Failure
   i. UNDERSTANDING THE DATA - The AF must thoroughly understand its data. It didn't in Expeditionary Combat Support System. All of the data must be understood, not just the data we thought we had, and not just the data we wanted to address, but all of it. This matter cannot be solved by doing Legacy Deconstruction at the same time as blueprinting, at the same time as building the
new "To-Be" solution. It needs to be done first. It needs to be a coordinated effort combined with an understanding that accomplishing this will take time.

ii. UNDERSTANDING THE "AS-IS" AND "TO-BE" ARCHITECTURES - The Air Force didn’t understand the “As-Is” or the “To-Be” architectures. After exposing and understanding all the data, knowledge is needed on how it is connected or put together. This allows a better assessment on whether the “To-Be” architecture is complete. With Expeditionary Combat Support System, the lack of a detailed knowledge of the “As-Is” resulted in an incomplete assessment of what the “To-Be” represented for Expeditionary Combat Support System. As of the date of this report, the number of systems Expeditionary Combat Support System was to replace is unknown. Unlike traditional weapon system acquisition, which focuses primarily on the “To-Be” and increasing capability, in business systems, one must understand the “As-Is,” since much of it is critical in order for the field to accomplish the logistics mission.

iii. A TRANSITION PLAN FROM “AS-IS” TO “TO-BE” - The Air Force lacked a transition plan for resolving the differences between the “As-Is” and “To Be.” This resulted in an inability for Expeditionary Combat Support System to successfully accomplish its goal. As referenced in the report, the process is similar to a construction project where temporary structures must be built, then later torn down in order to make way for the new road. This transition is the heart of the effort, and takes time. However, since the Air Force did not understand the “As-Is” or “To Be” architectures, arriving at a transition plan was impossible.

iv. THE RIGHT EXECUTION PLAN - Even had the Air Force had a transition plan from the “As-Is” to the “To-Be” architecture, it lacked a way to properly execute it. The Air Force needed to obtain a software package that could accomplish the “To-Be,” however, the Air Force knew from market research that no single, stand-alone product could satisfy its need (the AF permitted “bolt on” applications), but there existed no follow through on exactly how Expeditionary
Combat Support System would achieve the “To-Be” utilizing a software product requiring bolt-ons that increased the number of interfaces. The detailed execution plan did not exist. Additionally, the Systems Integrator needed to have the ability to code the vision as described through the blueprinting process, and the Air Force needed a way to articulate how to execute from the “As-Is” to the “To-Be.” While the Air Force, as part of the Systems Integrator contract arrangement, provided hundreds of Subject Matter Experts to assist in this endeavor, the Subject Matter Experts had no single vision on how to accomplish this. All the Subject Matter Experts from the field had different processes they utilized, and yet these same individuals were asked to communicate a single vision to the Systems Integrator on how the transition would occur.

v. THE RIGHT DEVELOPMENT ENVIRONMENT - Expeditionary Combat Support System was trying to be developed in an unrealistic environment; one that did not mirror the reality of the operational environment. Although this issue doesn't get much play with Expeditionary Combat Support System alumni, it would have been a root cause to the program failure even if they made it through all of the other challenges. The software has to work in the expected environment.

vi. THE RIGHT CULTURE – The culture would have had to accept the new vision as designed into the code. That means that everyone would have had to understand the vision of Expeditionary Combat Support System and been convinced their equities were being taken care of on this program. There was universal agreement during interviews that this was not going to happen, but very little understanding as to why.

3. RECOMMENDATIONS - In order to help with implementation of the recommendations, the Acquisition Incident Review team classified the recommendations for each contributing and root cause analysis into three broad categories: Short-term, intermediate and long-term.
a. SHORT-TERM RECOMMENDATIONS

i. Create A Policy Traffic Cop for the Contributing Cause of “Governance” - Recommend a small team of people provide guidance to the field on how and when to implement the policies.

ii. Demystify Business Capability Lifecycle, Department of Defense 5000 Series and Service Development and Delivery Process for the Contributing Cause of “Governance” - The first task of the policy traffic cop should be to clear up the differences among Business Capability Lifecycle, the Department of Defense 5000 series and Service Development and Delivery Process.

iii. Create an Integrated Product Office for the Contributing Cause of ”Personnel and Org Structure Churn” - The organizational construct that was in place right before the program experienced its most difficult issues had combined the Logistics Transformation Office and the Program Office into an Integrated Product Office. When the program was cancelled this construct was abandoned. The Acquisition Incident Review Team believes that the Integrated Product Office structure should be restored.

iv. Properly Address Bad Data for the First Root Cause of “Understand the Data” - Once the Air Force recreates the Integrated Product Office, its first order of business can be to work on the Expeditionary Combat Support System data and curtail all of the other current effort.

v. Relook at Other Air Force Enterprise Resource Planning Programs for the Third Root Cause of “A Transition Plan” - All remaining Enterprise Resource Planning programs should be given close scrutiny to ensure the interfaces amongst functions are covered.

vi. Improve Air Force-Wide Knowledge of the Capabilities of the Infrastructure for the Fifth Root Cause of “The Right Development Environment” - Organizations working
on the infrastructure need to improve external comprehension on the real capabilities of the infrastructure.

vii. Stop current Manpower Documentation Efforts for the Contributing Cause of "Personnel and Org Structure Churn" - Air Force Materiel Command should stop the manpower documentation with the 3 Letter Organization Structure Code and Personnel Accounting Symbol code combinations that were used for the Air Force Materiel Command 5 Center reorganization.

b. INTERMEDIATE-TERM RECOMMENDATIONS

i. Strengthen and Expand the Information Technology Governance Executive Board and Governance Executive Group for the Contributing Cause of “Governance” - A very positive outcome of previous challenges within the Air Force was the creation of this governance board. We recommend its use be expanded to better support the applications developers.

ii. Enforce Key Leadership Agreements for the Contributing Cause of "Personnel and Org Structure Churn" - The Air Force needs to improve its adherence to the Key Leadership Agreements to keep critical positions filled for specific amounts of time.

iii. Ensure Air Force Materiel Command Business Enterprise is the way for the AF to Understand the “As-Is” and “To-Be” for the Second Root Cause of “Understanding the “As-Is and “To-Be” Architectures” - Both “As-Is” and “To-Be” architectures must be understood and documented. If Air Force Materiel Command has chosen Air Force Materiel Command Business Enterprise as the solution, then it must effectively communicate that fact across the Air Force.

iv. Incorporate the Core Function Lead Integrator Construct for Business Systems for the Sixth Root Cause of “The Right Culture” - The Acquisition Incident Review Team believes the business systems programs could benefit from the more traditional four star level Core Function Lead Integrator construct.
v. Make Someone as Powerful as a CEO for IT Systems for the Fourth Root Cause of “An Execution Plan” The team recommends using the Air Force CIO for this role.

c. **LONG-TERM RECOMMENDATIONS**
   
i. Consider Significant Incentives for Up Front and Early Work for the Contributing Cause “Tactics, Techniques and Procedures” - The AF generally recognizes careful, early planning can go a long way in determining the success or failure of a program, but not much is done to incentivize people to perform this work.

   ii. Implement Suggestions From *The Innovator’s Solution* for the Contributing Cause “Difficulty of Change”

   iii. Rethink How the AF Organizes For Acquisitions for the Contributing Cause of “Personnel and Org Structure Churn” - The team recommends Air Force Materiel Command change philosophy on manpower documentation to help the Program Executive Officers execute their programs.

   iv. Do More Organically for the Fourth Root Cause of “An Execution Plan” - The AF must do more work organically, meaning with military and civil servants, rather than contracting out activity.

   v. Create Realistic Test and Development Environments for the Fifth Root Cause of “The Right Development Environment” - Another very positive outcome of previous Air Force challenges was the concept of the Integration Test Lifecycle Capability. This work needs to continue and expand.

   vi. Change the Culture for the Sixth Root Cause of “The Right Culture” - Change the culture, or the Air Force won't evolve.
The Acquisition Incident Review Team doesn’t want to leave the reader with a completely bleak outlook. Much of the work that was done on the Expeditionary Combat Support System effort *can be* reused. The progress made on legacy deconstruction and the spin ups to blueprinting can be the basis for the data work ahead. While reluctant to put a percentage on potential reuse, the Acquisition Incident Review Team suspects reusable data will be more than people think. Expeditionary Combat Support System wasn’t the failure people think it was; it was the first step to truly understanding the enormous task the Air Force has ahead of itself.