

# Air Force Adopts Standard Integrated Baseline Review Process



Photo courtesy U.S. Air Force

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**T**he Air Force's KC-46A (tanker) Program Office and the prime contractor, Boeing Defense Systems, recently completed an integrated baseline review (IBR) using a pilot process developed by the secretary of the Air Force's Acquisition Excellence and Change Office (SAF/AQXC). A closer review of this new IBR process reveals its distinctive approach and how the IBR team was able to complete the process 1 month earlier than contractually required.

Integrated baseline reviews have their foundation in EVM. IBRs have been required of earned value programs since the early 1990s when product divisions and acquisition centers had their own processes for conducting these reviews. Over the next decade, IBR guidance continued to evolve from a variety of sources. In 1996, the DoD *Earned Value Management (EVM) Implementation Guide (EVMIG)* was published. In 1999, an Air Force IBR pro-

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cess was released. In 2003, the National Defense Industrial Association's (NDIA) *Program Manager Guide to IBRs* was developed and subsequently endorsed by DoD. In 2006, the EVMIG was updated. In 2010, the NDIA IBR document was updated. While the IBR process evolved through a variety of guidance documents, the application of the process was far from uniform.

### IBR Problem Statement

SAF/AQXC began an initiative in early 2010 to improve the IBR process and developed several hypotheses. One was that IBRs were not conducted consistently across Air Force organizations. Second, process inconsistencies were leading to inefficiency and confusion. Additionally, there was concern that, while IBRs were successfully conducted, there were unacceptable levels of subsequent cost and schedule growth. Contractor and government expectations were not clearly understood. Industry was unsure how to prepare for each IBR. Joint programs were having trouble agreeing on which IBR process to utilize. An Air Force EVM query of product and logistics centers conducted in the spring and summer of 2010 confirmed these hypotheses.

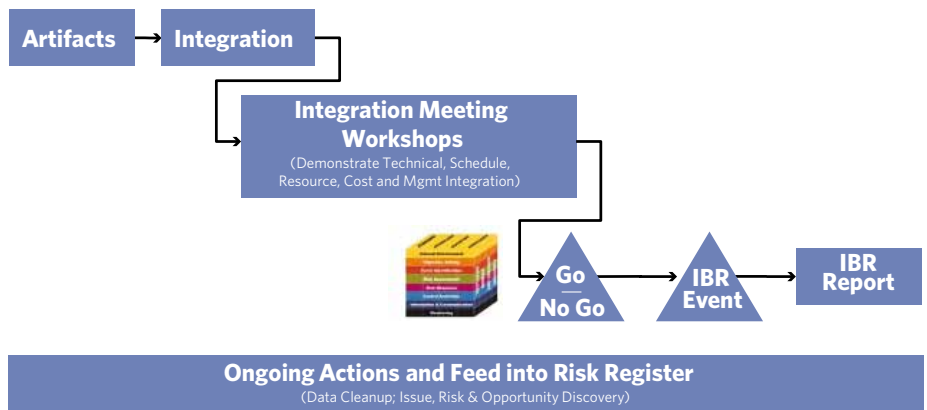
SAF/AQXC recognized several challenges to implementing a standard IBR process. The purpose and importance of an IBR was not clearly understood. Often, the focus of the IBR was on EVM compliance, not technical baseline achievability. There was little focus on how technical, schedule, and cost risk impact integration.

### Air Force IBR Process Development

In the summer of 2010, SAF/AQXC began developing a refined IBR process. The goals of the process were to provide a consistent IBR methodology that focused on program risks involving all functional experts—engineering, manufacturing, cost, logistics, contracts and EVM—and to be a collaborative process with industry. With these goals, the SAF/AQXC team planned to avoid the “big bang” IBR event approach, with significant action items taking months to close the IBR. Traditional IBRs begin with a data call, followed by an intense review of the data, conducted in 2 to 3 weeks by a large number of people. This process is often referred to as the “big bang.” Under the revised process, with increased government and contractor collaboration, the baseline would be developed and refined beginning shortly after contract award and the “big bang” event would be reduced to reviewing and approving a jointly understood achievable performance measurement baseline. A draft of the IBR process was completed in September 2010. Figure 1 shows the fundamental parts of the IBR process.

Some key characteristics of this process include the early formation of teams organized by the five standard IBR risk topic

**Figure 1. AF IBR Process**



areas (technical, schedule, resource, cost, and management systems), and an early start reviewing and refining the definition of the PMB. The PMB must trace from top-level requirements to the work performed at the control account level. The work has cost and schedule dimensions. Getting all documents to correctly reflect the PMB is essential for effective execution of the program. The various artifacts (data elements that may or may not be a standalone document) associated with the PMB are evaluated for quality as well as their integration with other artifacts. Where exceptions are discovered, artifacts are refined immediately by the joint government and contractor IBR team. Refined documents are checked again to validate the changes. As documents are reviewed, risks are identified, understood, and mutually agreed upon. After the PMB artifacts have reached an acceptable level for quality and integration, discussions with control account managers (CAMs) are held to ensure the PMB is executable and achievable at the lowest work level.

The IBR process document included a list of recommended IBR artifacts, integration points among the various artifacts, and recommended topics for CAM discussions. The IBR process document also included scoring criteria for artifacts and CAM discussions as well as action item tracking templates.

After the IBR process document was drafted, David Van Buren, as the Service acquisition executive (SAE), approved its use on a pilot program.

### KC-46A Pilot Process

The KC-46A program had contract award on Feb. 24, 2011. In March of that year, the KC-46A program accepted the opportunity to pilot the new SAF/AQXC process. The process was presented to Boeing the same month. A number of working-level meetings increased joint understanding of the new IBR process and all parties agreed to the pilot process at the KC-46A Program Startup Workshop on April 15, 2011.

The IBR process was executed in a very timely manner. Figure 2 shows the timing of major events.

At the Program Startup Workshop, the Joint IBR team (Boeing and the KC-46A Program Office) agreed to the artifact list for the IBR. In early May 2011, IBR training was conducted for the joint team at the contractor's facility. During that meeting, the joint team agreed upon artifact quality standards and artifact integration points. The individual topic area teams then began their evaluation of artifacts that define the PMB.

The chart shows the KC-46A Systems Requirements Review was conducted during the period of the documentation quality and integration reviews. The IBR was able to take advantage of the SRR timing by using the SRR activities to validate the flow of requirements from the capability development document (CDD) down through the system specification. Similarly, the integrated risk assessment (IRA) process contributed to the IBR process by identifying additional technical risks. One important lesson for any IBR is to take advantage, where possible, of any other program events. During the conduct of the IBR, adjustments were made to the pilot process based on feedback and lessons learned.

As the first phase of the IBR process (document quality and integration review) was coming to a close, a readiness review was conducted. The review presented the documents evaluated plus open and closed action items. Based upon the results, the program manager made the decision to go forward with the second phase, CAM discussions. Aeronautical Systems Center (ASC) conducted training on earned value, the pilot IBR process, and CAM discussion techniques. CAM discussions were conducted over several weeks. CAM selection criteria had been decided at the Program Startup Workshop, and individual CAMs were selected using the criteria as the responsibility assignment matrix (RAM) was developed and refined. CAM interviews took advantage of video teleconferencing where possible to minimize contractor and program office travel expenses.

**One important lesson for any IBR is to take advantage, where possible, of any other program events.**

Following the CAM interviews, an IBR exit briefing was conducted to conclude the IBR process. Program risks were reviewed as well as open action items. Risk ratings were discussed. At the conclusion of the IBR exit briefing, the PMB was approved and an IBR memorandum for record prepared.

### Adjustments (Real-Time Lessons Learned)

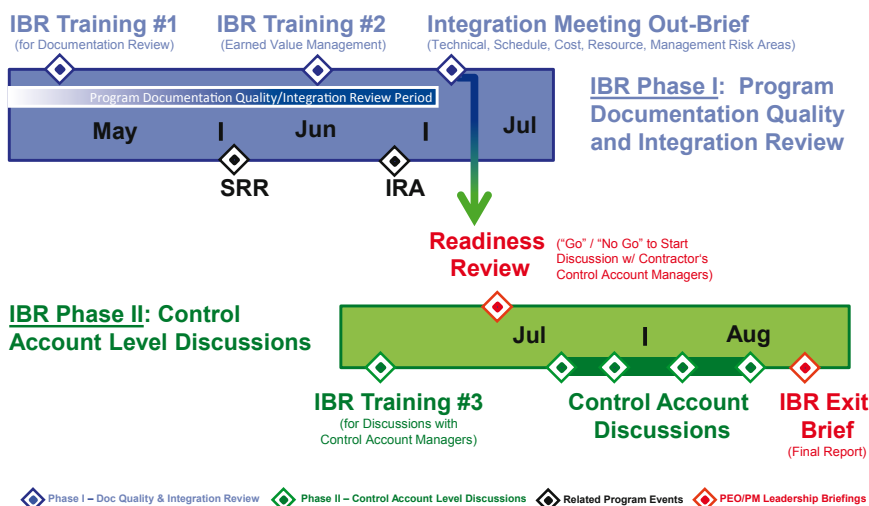
The pilot IBR process was drafted with five phases and entrance and exit criteria for each phase. Early in the KC-46A IBR process, it became apparent that holding to entrance and exit criteria could delay the process. The KC-46A Program Office and the SAF/AQXC IBR facilitators revised the process to two phases and allowed concurrency where artifact quality refinement would not impact CAM discussions.

The pilot process contained an extensive list of over 50 IBR documents. The list covered a variety of possible acquisition phases. During the Program Startup Workshop, the list was tailored to the specific program. Where multiple artifacts were addressed by a single program document, the list was reduced to 29 documents for the KC-46A EMD program. Most documents were contract deliverables, plus a few data call items such as control account plans or the program RAM.

The pilot process included quality acceptance statements for the artifacts. During the KC-46A process, this matrix was converted into a narrative document for ease of use by less IBR experienced team members.

The pilot process contained an integration matrix that listed integration points for various artifacts. For example, the IMS has integration points with the statement of work (SOW) and the integrated master plan (IMP). The integration matrix was

**Figure 2. KC-46 IBR Process**







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expanded during the IBR into a narrative format where the integration points were defined in more detail, source documents identified, and the standard for acceptance was included.

During the pilot IBR process, a running list of observations was maintained by the SAF/AQXC IBR facilitators. At the conclusion of the IBR, separate lessons-learned sessions were held with the KC-46A Program Office and members of the Boeing IBR team. Recommended changes will be considered and incorporated into the updated IBR process document.

### **Results/Benefits**


The results of the Air Force IBR pilot process are encouraging. The IBR was completed 1 month earlier than contractual requirements and with only three open action items.

Both contractor and program office IBR teams felt the incremental nature of this IBR process fostered teamwork. Both groups felt that program expectations were better understood as a result of the collaborative process of artifact reviews and PMB development. It was clear from the pilot that issues are discovered and resolved earlier with this approach. Risks are better understood, and action items are closed far faster than the “big bang” IBR method.

One of the ideas expressed from the KC-46A IBR team was to make the IBR event a “non-event,” meaning no surprises at the end of the process and minimal corrective actions after the IBR. The incremental collaborative approach of the Air Force IBR process makes that possible. There were no surprises on either side during the exit briefing.

Maj. Gen. (select) Christopher Bogdan, KC-46 program executive officer, said, “The new IBR pilot process developed by SAF/AQXC provided an excellent roadmap that allowed the KC-46 IBR team to execute a comprehensive, disciplined, and detailed baseline review. We understand the baseline and the cost, schedule, and performance risks inherent in that baseline as we move forward to execute the KC-46 EMD program. One key to this success was Boeing’s willingness to lean forward and accept the challenge of implementing a new pilot program with us. The extended Air Force and Defense Contract Management Agency team did a fantastic job, while completing the effort 1 month ahead of the contract requirement.”

The pilot Air Force IBR process is available on the Air Force Acquisition portal, at <https://www.my.fa.mil/gcss-af/USAF/content/ibr>. It is ready for use by any DoD organization with access to the portal.

For further information on the Air Force IBR process, please contact Amy Mercado at the e-mail address below or at (937) 656-7278. 

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