USAF Air Mobility Command

Supplier Evaluation System

A Cooperative Approach to Improving Supplier Support

Air Mobility Command's Supplier Evaluation System

Supply Chain Operations and Management Awards for Excellence

February 2002

Executive Summary

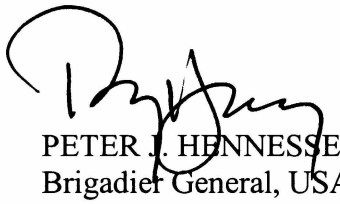
15 February 2002

This document contains the United States Air Force Air Mobility Command's (AMC) submission for the 2002 Supply Chain Operations and Management Awards for Excellence. The document describes the Supplier Evaluation System (SES)--AMC's cooperative effort to improve supply chain support.

Through the years, AMC and its suppliers pursued a plethora of "get-well" programs intent on improving supply support for mobility aircraft. However, the collective effect of these isolated "get-well" projects has not resulted in business process reform to the point where we've established stable, reliable supply support for our aircraft.

We designed the Supplier Evaluation System to help the entire logistics community refine its focus on improving supply support for mobility aircraft. The multi-year, ongoing SES project combines new and standard metrics to rate and rank supplier support…providing much needed feedback to our suppliers about how they impact our ability to perform our mission.

The Supplier Evaluation System is a cooperative approach to improving supplier support and expanding the customer's role in supply chain management. The program spans numerous DoD agencies and involves hundreds of individuals. The Supplier Evaluation System identifies key areas of supplier impact that offer the greatest benefit to the supply chain. The program targets business processes, not item improvements…with the ultimate goal of improving support to the warfighter.



PETER J. HENNESSEY
Brigadier General, USAF
Director of Logistics

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Section 1 General Information and Project Complexity

1. Submitting Organization: USAF, Headquarters Air Mobility Command (HQ AMC)

2. Responding Organizational Unit: USAF, Headquarters Air Mobility Command Logistics Directorate (HQ AMC/LG)

3. Provide a brief mission description of the overall business objectives, product lines, and mission of the organization.

AMC Mission: to provide airlift, air refueling, special air mission, and aeromedical evacuation for U.S. forces and our allies. AMC also supplies forces to theater commands to support wartime tasking. As the Air Force component of the United States Transportation Command, AMC is the single manager for air mobility.

4. Award Category: Award for Supply Chain Operational Excellence

5. Provide a brief description of the supply chain and processes the submission spans:

SUPPLY CHAIN

There are 12 AMC bases across the continental United States (CONUS) supporting over 400 possessed aircraft. AMC is unique from other major Air Force commands in that we have inventory points through the world (forward supply system) to support our global mission. Four CONUS primary supply points, located on the east and west coasts, serve as supply hubs for overseas locations supporting en route AMC aircraft.

Our seven principle suppliers, who fall under either the Air Force Material Command (AFMC) or the Defense Logistics Agency (DLA), support AMC aircraft. AMC installations have shelf stock to directly service AMC aircraft. Suppliers directly fill CONUS shelf-stock replenishment (including our primary supply points) and critical orders at all CONUS locations.

Pipeline velocity drives base stock levels. For this reason, we are in constant communication with our suppliers to ensure parts are available when needed. We stock only a minimum amount of assets at our forward supply locations resulting in heavy reliance on swift pipeline velocity and asset allocation from our suppliers.

SUPPLY-CHAIN OPERATIONS REFERENCE-MODEL (SCOR) PROCESSES

The Supplier Evaluation System (SES) spans AMC's entire supply chain. Specifically, the SES spans the SCOR Processes of Plan and Source.

PLAN - Through the assessment of supplier performance, the SES encourages suppliers to improve their planning and balance resources with requirements. The SES inspires suppliers to establish/communicate plans for the entire supply chain. The SES offers the wholesale logistics community a clear look through a customer's eyes to see how they are actually affecting the bottom line performance and capability of the air mobility mission area. It cultivates supplier management of supply chain performance…proper planning so resources are applied where they provide the biggest payback. To improve support to AMC, suppliers need to take the initiative to evaluate their own performance prior to our assessment.

SOURCE - The Supplier Evaluation System encourages suppliers to drill down and evaluate their own secondary sources of supply. Fundamentally, the Supplier Evaluation System monitors key leading and lagging indicators to ascertain which specific supply chains are under performing when considered, relative to others, in the context of a reasonably common business environment. It then serves as a basis for working corporate solutions for problems like management processes, funding, and system/technology obsolescence. The supplier role in the Supplier Evaluation System is to use the metrics as indicators to where they need to drill down and analyze support to their customers and support from their secondary sources. Supplier drill down and analysis will result in improved processes and ultimately improved support.

6. External Supply Chain Partner Organizations Involved

The SES involves Defense Logistics Agency (DLA) Defense Supply Centers (DSC) in Richmond VA, Philadelphia PA, Columbus OH, and Air Force Material Command (AFMC) Air Logistics Centers (ALC) in Ogden UT (OO-ALC), Oklahoma City OK (OC-ALC), Warner Robins GA (WR-ALC), and Aeronautical Systems Center (ASC).

The Supplier Evaluation System involves all members of the above organizations in one form or another. Process improvements and supply chain management driven by the SES will eventually encompass all areas within these organizations.

7. Internal Functional Organizations Involved

The SES project origination and control lies completely with the Directorate of Logistics, Headquarters Air Mobility Command. Brig Gen Peter J. Hennessey (AMC/LG) leads the program, and the Supply Division (AMC/LGS) is responsible for program execution. Five individuals from the Command Supply Analysis Section (AMC/LGSPPA) execute the Supplier Evaluation System. They are responsible for data extraction, organization, analyses, and presentation of results relating to the SES, as well as proposals for improving both retail and wholesale processes.

8. Supply Chain Partner Points of Contact

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Section 2 Implementation

1. Explain why the supply chain initiative was undertaken and how it was selected.

Through the years, AMC and its suppliers have pursued a plethora of "get-well" programs intent on improving supply support for mobility aircraft. To their great credit, these efforts often restored supportability postures for individual problem parts…but they tend to concentrate on individual item resolution in lieu of process improvements. Therefore, the collective effect of these isolated "get-well" projects has not resulted in business process reform to the point where we've established stable, reliable supply support for our aircraft.

The distance yet to go is clearly seen in total not mission capable supply rates (TNMCS) as high as 12% on one weapon system; partially mission capable supply rates (PMCS) as high as 23% on another; cannibalizations exceeding 35 per 100 sorties on another; and hours waiting for critical parts (MICAP) that exceeded 27,000 hours across the command--with estimated delivery dates as far out as 2003.

AMC, as a customer, is an important ingredient in solving the problems outlined above. Hence, we developed a tool and process, the Supplier Evaluation System, to help the entire logistics community refine its focus on improving supply support for mobility aircraft.

2. Indicate the duration of the project. Note if the project was a pilot that is being rolled out. Note if the project is ongoing or still in development.

We started development of the Supplier Evaluation System in October 2000 and released our first official results in August 2001. New evaluations are released on a quarterly basis. This program is an ongoing effort between AMC and our suppliers. Although we are satisfied with the metrics to date, we are constantly looking for ways to refine our process based on supplier and user feedback.

3. Detail the process used to complete the initiative.

The initial step in the process to institute the Supplier Evaluation System was to develop the metrics against which we score and rank suppliers. Through much iteration, we developed two categories of metrics: operational and process improvement. The operational category focuses on direct supplier impact on AMC…those metrics with a direct impact on AMC's ability to complete our assigned

mission. The second group of metrics is more forward looking, concentrating on processes that have a direct impact on our future operational metrics.

Once we defined the individual metrics, we assigned each one a weight in terms of their relative importance to our total support. The first category of metrics reflects how much negative impact suppliers have on our mission, and thus we decided to weight it more heavily (75% of total score) than the second category (25% of total score), which is not about immediate mission impacts. We grade our two categories of metrics differently. For the operational category, suppliers compete against each other for the lowest score (ranked 0 through 6). For the process improvement category, suppliers are graded against their own performance from the previous quarter.

After we established our metrics and scoring, we developed the format to display the system. We created a chart for each metric, displaying quarterly results and the points earned by each supplier. We developed a presentation explaining the metrics, scoring, and overall principles of the Supplier Evaluation System.

We first presented the Supplier Evaluation System at the May 2001 Supply Chain Manager's Conference, Wright-Patterson AFB OH. This presentation outlined the details of the SES and the metrics by which we measure supplier performance. We released our first official quarterly results in September 2001 covering the third quarter of fiscal year 2001.

4. Identify significant challenges encountered, the process for resolution, and the solutions. Identify any best practices employed or developed.

SPREADING THE WORD AND SUPPLIER BUY IN

The greatest challenge we faced was spreading the word and gaining supplier support for the program. With so many suppliers scattered across the country, we needed a forum to present the program to all involved. We chose to showcase the SES at the Supply Chain Managers Conference at Wright-Patterson AFB OH in May 2001. The conference provided the appropriate forum and level of management to communicate the program basics to our suppliers…gaining their buy in was a little tougher. To gain supplier support, we initiated some behind the scenes and up front networking at the general-officer level. Brig Gen Hennessey (AMC/LG) spread the word to high-level decision makers at our supply and logistics centers, convincing them of the value of this program and the improvements it could instill. With high-level buy in, program success was not only possible, but also inevitable.

Although we achieved supplier buy in at the top levels of management, it has taken some time to gain program acceptance at lower echelons throughout supplier organizations. We continue to communicate with the individuals involved at lower

levels to garner program improvements and broaden understanding. While there is still some minimal resistance on the part of a few of our suppliers, most have bought into this program, and we are starting to see process evaluation.

While networking behind the scenes with external organizations, we also presented the SES internally to several groups within AMC. We presented the SES to both the 2001 AMC Logistics Group Commander's Conference and the 2001 AMC Chiefs of Supply Conference. These presentations outlined the program and let our primary customers in on our efforts. We received positive feedback from our customers on our efforts to engage our supply chain. Their internal support for the program reinforces the SES effort throughout the supply chain.

DATA AVAILAIBLITY, ACCESS, AND COLLECTION

One other significant challenge was data availability, access, and collection. Our initial obstacle was with data availability. Some of the data was not readily available, requiring us to identify, locate, and coordinate with possible sources. Other times, the data was available, but we needed access. We teamed with numerous agencies, contractors, and internal organizations to obtain the necessary data. Once accessible, data collection became an issue. We needed to establish a method and routine for data extraction. Our solution involved pulling data at the same time each month for each metric. Recognizing a need for more powerful data manipulation capabilities, we built an Access data warehouse to store all SES data, sending several personnel to Access classes at a local community college to learn how to build and use the data warehouse.

MANPOWER REQUIREMENTS

Populating and evaluating the SES is very manpower intensive. While we post results on a quarterly basis, data extraction and evaluation is an ongoing process, absorbing approximately 40 man-hours per month. In addition, at the end of each quarter, compilation, documentation, and analysis of the results takes approximately 90 to 100 man-hours to complete.

Due to the manpower requirements of this program, we reorganized the workload among the members of the section responsible for SES execution. We designated one member of the section to work on the SES full time. Other section members assist in some of the monthly data extractions and the quarterly compilation, documentation, and analysis of the results. .

5. Indicate the metrics used to measure (a) progress and (b) success.

Because performance metrics are the essence of the Supplier Evaluation System, we use the same metrics to measure the progress and success of the program. Poor performance on certain metrics should encourage suppliers to evaluate their

processes. With improved processes, performance on the metrics will improve. Progress and success of the program will result in improved supplier performance on the metrics from quarter to quarter. Real world events such as Operation ENDURING FREEDOM offer an excellent opportunity to evaluate the success of our program as we drive process improvements. As we improve how we do business, we will see increased flexibility and spares availability throughout each successive surge in operational tempo.

The SES assesses supplier performance quarterly through two categories of metrics. First, it compares major supply management centers against each other, but only in terms of total impact their respective products are having on the AMC mission. This category is about readiness and customer burden; thus, it constitutes 75% of the assessment score. Second, we assess each supply management center in terms of whether or not the support posture of its products is improving. Because this category is not about immediate mission impacts, this section makes up only 25% of the score. It is important to note in the second category, we rate each supplier according to their own performance from the previous quarter. Those losing ground but still exceeding current standards will not lose points.

The first category of the SES, Operational Impact, has three subcategories of metrics:

MICAP HOURS: This subcategory of metrics tracks the total hours accumulated on orders for items grounding AMC aircraft (MICAPs) during the quarter by source of supply. Measuring MICAP hours is important as they directly impact our ability to perform our mission. In addition, MICAPs drive workarounds, increase workload, and have far reaching impacts on personnel across the DoD.

CANNIBALIZATIONS: This metric tracks the total number of cannibalization incidents by supplier. A cannibalization occurs when we remove working parts from one aircraft to fix a broken aircraft, returning it to mission capable status. Cannibalizations translate to increased workload for maintainers, increased likelihood of broken parts, and decreased asset life.

READINESS IMPACT: This metric identifies the number of items for which assets on-hand is less than our wartime requirement. A lack of these items impacts our ability to immediately respond to wartime taskings.

The second category, Impact Improvement Index, has four subcategories:

REQUISITIONS EXCEEDING THE STANDARD: This subcategory of metrics documents the number of orders unfilled for longer than the established standard. These metrics provide a measure of pipeline velocity. The metrics are a proactive measurement…suppliers still have the opportunity to engage their supply chain to improve delivery times.

LOGISTICS RESPONSE TIME (LRT): The LRT metric measures the growth in the number of orders that take over 10 days to fill. LRT measures how quickly our suppliers are providing us with required inventory.

ASSETS ON-HAND LESS THAN 25% OF THE REQUIREMENT: This metric reflects the change in the number of items with less than 25% of the identified requirement on-hand. This metric is proactive because it gives suppliers a chance to change the asset posture for the identified items before they impact support.

STOCKAGE EFFECTIVENESS: This metric reflects the change in the percent of stocked items available at time of customer demand and measures how well our sources of supply are supporting assets with known demands.

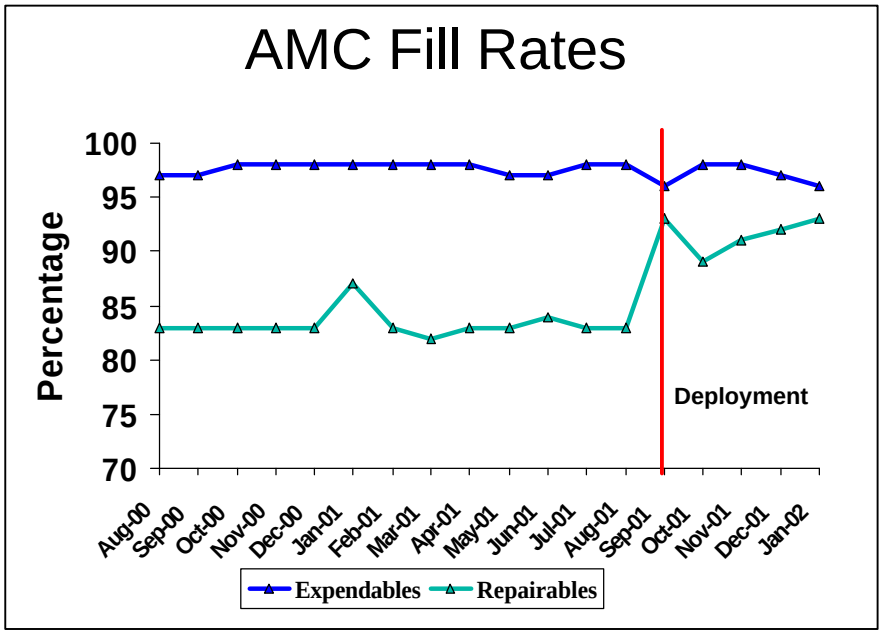
6. Document and quantify cost and performance benefits, including the project's return on investment and changes in the value of one or more of the SCOR Level 1 metrics (not all metrics must be captured or reported).

Due to the nature of the Supplier Evaluation System, we cannot yet quantify many of its benefits. The system encourages process improvements, which result in long-term solutions. Using several SCOR Level 1 metrics, we are able to show the initial results of the Supplier Evaluation System.

FILL RATE

Fill rate is the ratio of stock on-hand to authorized stock levels. AMC uses fill rates to look at general trends in the stock levels of our "go-to-war" spares kits. We place these kits at strategic locations to support our global operations. Figure 1 shows fill rates for expendable and repairable items from August 2000 to January 2002. Prior to September 2001, both rates were relatively stable. Shortly after the release of the Supplier Evaluation System in August 2001, AMC forces deployed to support Operation ENDURING FREEDOM, represented by the red line in Figure 1. After the September 11, 2001 attacks, the repairable item fill rate soared from an average of 83% to 92%. This dramatic rise in support is partially attributable to supplier awareness spurred by the SES…after SES introduction, suppliers had a new outlook on AMC support. The SES provided suppliers with specific areas to focus on, leading to improved support to AMC. Our suppliers stepped up to our increased requirements during Operation ENDURING FREEDOM.

FIGURE 1



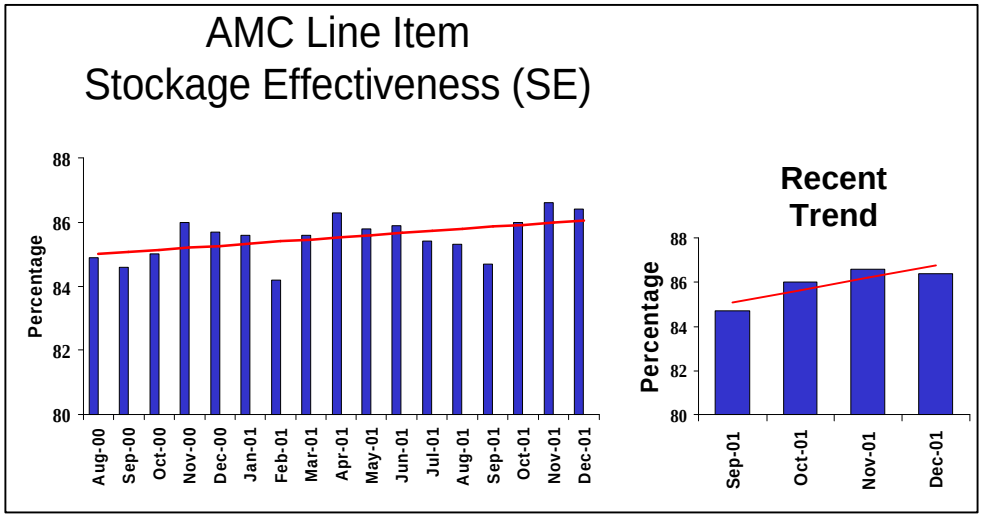
PERFECT ORDER FULFILLMENT

Stockage effectiveness is a commonly used metric to monitor order fulfillment. Perfect order fulfillment would result in 100% stockage effectiveness. Stockage effectiveness is the ratio of items issued to items ordered (with previous demand) and is a measure of how well suppliers are meeting demand--how often stock is on the shelf when requested.

Figure 2 shows stockage effectiveness for all AMC items, both expendables and repairables, from August 2000 to December 2001. After SES initiation, stockage effectiveness increased from an average of 85% to 86%. The red lines on the graphs in Figure 2 show an increase in the stockage effectiveness trend since September 2001. The period of September 2001 through December 2001 reflects a much steeper improvement in stockage effectiveness than for the prior timeframe.

Stockage effectiveness is one of the SES metrics we use to rank suppliers. This metric shows supplier response to the Supplier Evaluation System. Suppliers are focusing their attention on the areas identified by the SES, and the metrics demonstrate this.

FIGURE 2

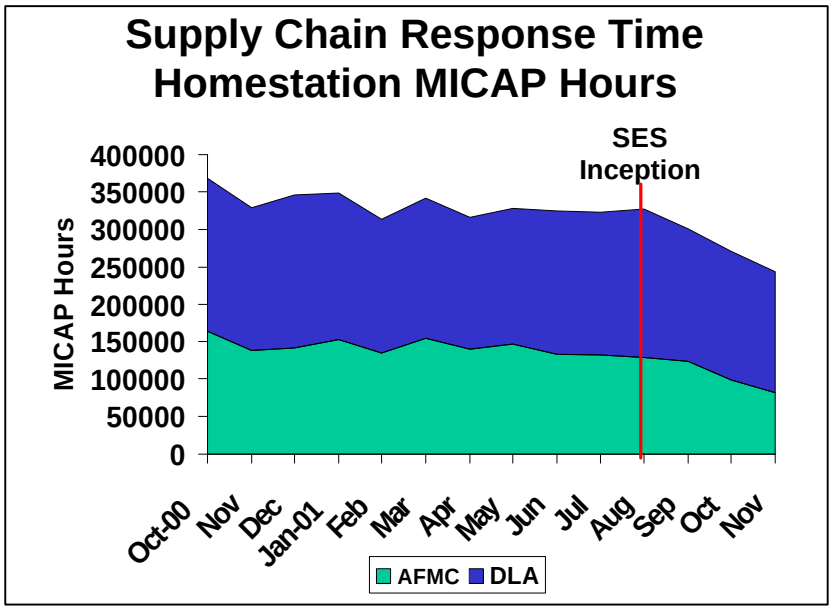


SUPPLY CHAIN RESPONSE TIME

One way we measure supply chain response time is through MICAP hours…how long it takes our suppliers to provide critical parts. When we classify a part as MICAP, we need the part immediately and not having it prevents us from completing our mission.

Figure 3 below shows monthly MICAP hours by supplier from October 2000 to present. The chart clearly demonstrates the impact of the SES on supply chain response time. MICAP hours decreased by 37% since SES inception!

FIGURE 3



7. Outline how the success of this effort supports the organizational objectives described in Section 1, Item 3.

The success of the Supplier Evaluation System not only enables AMC to complete its global mobility support mission, but it improves the efficiency with which we complete the mission. The process improvements spurred by the SES result in improved performance on the metrics. Improved performance on the metrics equates to more aircraft parts available when needed, leading to more missions flown, less time on the ground for aircraft, and more time spent supporting the mission. Without the support of our suppliers, we could not fulfill our mission.

Section 3 Knowledge Transfer

1. Describe the efforts to share lessons from this effort with other internal organizations.

During the 2001 AMC Chiefs of Supply Conference, we presented the SES to all AMC supply squadron commanders. All logistics group commanders received a presentation on the SES March 2001 and will receive a follow-on briefing during the 2002 AMC LG Conference in February 2002. We are presenting the SES to the Air Force Supply Executive Board (AFSEB) in May 2002.

The Supplier Evaluation System gained the support of the AMC Commander, the U.S. Transportation Command Commander, as well as the Deputy Commander of Air Force Installations and Logistics (AF/IL). We presented the SES to these individuals with enormous success. AF/IL buy-in of the program will enable adoption of the system by other Air Force major commands. In fact, U.S. Air Forces Europe (USAFE) adopted the SES and just released their first quarter's results (for FY01-4).

Our long-term goal is to share process improvements across suppliers, so that everyone can benefit from lessons learned through the SES. To begin this initiative, we will visit suppliers in the near future giving them an opportunity to share their processes improvements designed to increase customer support.

2. Explain how this initiative can be transferred to other organizations and specify the likely candidates for transference.

We can easily transfer the Supplier Evaluation System to other organizations. Because the SES provides the most impact when implemented at higher echelons within an organization, we recommend program implementation at other major commands. In a matter of a few months, we can teach others how to extract the data, score the metrics, and conduct the analysis necessary to implement the SES. HQ USAFE adopted the SES several months ago and now HQ Air Combat Command and HQ Air Education and Training Command show promising interest in the program.

We fully support transference of the Supplier Evaluation System across the entire Air Force and Department of Defense. The program's effectiveness increases with every organization that adopts it. With all DoD customers aboard, suppliers receive consistent feedback, allowing them to focus their efforts on exactly what matters to their customers. The ultimate goal of the Supplier Evaluation System is simple…consistent, reliable, and accurate warfighter support.