



# Navy Tailors Best Commercial Practices for Military Use

## The C-40A Clipper Aircraft

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**W**ithin the Department of Defense, in order to take advantage of an industry commercial best practice, the program office must be clear on the rules that permit or forbid the use of best practices, such as statutory or regulatory restrictions; Service or DoD policies; or, one of which we have all heard in this business, industry proprietary. All of these aspects can greatly impact the success of any commercial best practice implementation within a government program acquisition strategy.

Because most commercial best practice candidates come to light as part of the programs' interface with industry, it would appear that the real ability of both sides to reach the full potential available of a particular best practice is dependant upon collaboration. In fact, the success is ultimately determined by the ability of the government program office and its industry partner(s) to jointly

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and objectively characterize and evaluate these practices against the specific areas in which a potential return on investment may be realized.

For the practices that show merit, the government must be prepared to develop a plan for implementation.

We'd like to highlight an example of a program office that has successfully leveraged commercial best practices into its acquisition strategy: the Navy's C-40A Clipper, overseen by a program office located at the Naval Air Systems Command. Although the examples provided in this article are Navy-specific, all services and agencies can benefit from the lessons learned.

### **C-40A Clipper Overview**

Before we get into the actual accomplishments, let's briefly look at the background of the program. The C-40A Clipper replaces the older C-9B/DC-9 aircraft, which were aging and were difficult to repair. The older aircraft also didn't meet Federal Aviation Administration requirements for noise, and the outdated aircraft avionics meant the C-9B/DC-9 aircraft would eventually no longer be able to operate from civilian airfields.

When looking to replace the C-9B/DC-9, the Navy realized there was a great potential for leveraging and adapting the commercial best practices currently in use by Boeing and the Federal Aviation Administration. The alternative was to squeeze the industry and FAA commercial best practices into the existing Navy framework for conducting operations, supply, and maintenance. The Navy wisely chose to develop a strategy and plan to target and capitalize on the applicable commercial best practice, and the C-40A Clipper was developed.

The C-40A Clipper provides Navy-unique intra-theater medium-lift capability for passengers and cargo located worldwide. The aircraft is made up of 98 percent Boeing 737 parts and 2 percent Navy-unique parts. The basic C-40A Clipper consists of a common Boeing 737-700C airframe that has modified landing gear (to accommodate any increased loads) as well as an added side cargo door and an aft passenger door and air stairs. The C-40A Clipper can operate in an all-passenger configuration; an all-cargo configuration; or a combination configuration that accommodates both cargo and passengers, with a portable wall that separates cargo from passengers.

### **Significant Hurdles to Overcome**

The C-40A Clipper program had a number of significant hurdles to overcome in order to navigate the gauntlet of rule changes and policy updates (from both the commercial sector and DoD) that were required if DoD was to realize the true potential of the aircraft. We will address five specific commercial best practice opportunities in which the C-40A Clipper program was able to use a joint team management approach between the government, the original equipment

manufacturer (OEM), and FAA to obtain the full possible measure of effectiveness and efficiency offered by the aircraft.

### **Aircraft Certification**

A naval aircraft would normally be given a flight clearance from the Naval Air Systems Command, which would allow the aircraft to operate in its intended operational environment. The FAA, on the other hand, awards a type certificate (flight clearance) to a class of aircraft (in this case, the Boeing 737). The C-40A Clipper has a Navy aircraft flight clearance; however, the clearance is based entirely on the FAA type certificate, similar to the one used by commercial airlines. In order to maintain the FAA type certificate, the Navy must operate and maintain the C-40A Clipper within the parameters for the aircraft type/model/series, or more simply stated, just like aircraft being acquired by United, Delta, American, Southwest Airlines, and other commercial airlines. Obviously, that is not the normal process for a military aircraft. In this case, the government obtained available flight and performance data from the OEM (Boeing) and the FAA, which the Navy flight clearance team and the program office used as the basis to justify the Navy flight clearance. This saved the Navy a significant amount of time and money, as the flight clearance team was not required to perform extensive flight testing to obtain flight and performance data.

### **FAA Maintenance Planning**

The OEM developed and defended the proposed aircraft maintenance plan to the FAA oversight group. Both commercial and Navy aircraft usage data, reported by to the OEM, drove the reliability-centered maintenance aspect of the maintenance plan. The plan, which was developed from a similar commercial airline variant (i.e., Delta) plan, capitalized on the use of Navy maintenance personnel with their associated qualification levels for use on the C-40A Clipper. The commercial best practices include enabling the Navy team to use any Boeing 737 depot worldwide as a possible candidate for Navy aircraft depot requirements. With a small number of Navy 737 aircraft mechanics, it is a tremendous benefit for the Navy to gain access to Boeing 737 mechanics worldwide. Not only did the use of commercial best practices allow the government to achieve improvements in manpower efficiency, it also enabled them to reduce aircraft maintenance requirements for depot and organizational maintenance requirements, which enabled the government to use a maintenance plan that was based on maintenance at the time of need and mirrored the approach used by commercial airlines. Thus, in this situation, the government gained potential additional aircraft utilization by adopting the benefits offered by the FAA maintenance plan—a first for Navy aviation.

### **Commercial Parts Pool Sharing**

The C-40A logistics support structure uses Navy technicians to perform organizational-level maintenance. The

Naval Air Systems Command Program Office contracted for supply support to provide an onsite representative, 24-hour delivery of parts for the continental United States and 72-hours worldwide, as well as commercial parts pool sharing. Therefore, the Navy did not need to invest \$80 million in Boeing 737 common spare parts. There were, however, challenges to this approach. The government had to keep the operational aircraft in the same FAA configuration as their airline counterparts. This process was different from the normal organic parts purchase and management program in which the government allocates spare part dollars and a repair structure to repair spare parts. In the case of commercial parts pool sharing, the government had to ensure all applicable FAA safety and airworthiness directives and bulletins were incorporated in order to meet their obligation to participate in the parts pool sharing. This was a small price to pay to avoid an estimated \$80 million spare parts expense. The approach, while an accepted practice for commercial airlines, was new to the Navy team. There were challenges in implementing this best commercial practice, such as the generation and approval of the FAA Operational Service Improvement Program funding line so money would be available to incorporate the safety and airworthiness directives. However, even the annually incurred fee to participate in parts pool sharing made it a bargain compared with the Navy's purchasing \$80 million dollars of its own spare parts.

### Current NAMP Policy Constraints

Navy aviation has a governing policy document that provides policy and guidance to support the maintenance, supportability, and operations of more than 4,000 aircraft. This policy document is the COMNAVAIRFORINST 4790.2A, *The Naval Aviation Maintenance Program (NAMP)*, and it is managed by the commander, Naval Air Systems Command; the commander, Naval Air Force, has final disposition authority. Because the C-40A team desired to use the FAA-approved maintenance intervals as the core of their maintenance support plan, problems with the NAMP policy immediately came to light. Based on current policy, the operational squadrons would have had to request a waiver to use the commercial maintenance intervals on the C-40A. The program office realized that the C-40A would not be the last military aircraft to face this dilemma, and thus, took the approach of investigating a NAMP policy change that would allow other commercial type aircraft to enjoy the benefits of this commercial best practice.

The program office teamed with the NAMP policy team and developed a completely new NAMP policy chapter: Chapter 11—Contractor Maintenance, Commercial Derivative Aircraft Maintenance Programs, and Aspects of Aeronautical Weapons System Acquisition. The change was approved and implemented as NAMP policy. The easier approach would have been to request a waiver for this particular program, but the right approach was to capitalize on the current commercial best practices by making changes to the existing

policy. If the government had decided to request a waiver, it would not have allowed the Navy team to capitalize on the maintenance advantages made possible by the commercial best practices. Also, adoption of the waiver process would not have addressed the actual problem in that the current policy, which did not take into consideration the possibility that a government program office would attempt to merge commercial best practices into its normal policy practices.

### Online Digital Publications

The C-40A Clipper relies on Boeing, the OEM, for engineering and logistics support. When evaluating the possibilities for management of the myriad of publications and maintenance inspections required to support a commercial derivative aircraft, the program office saw another commercial best practice opportunity. Why not take advantage of the Boeing publication system known as MyBoeingFleet.com? But would there be any challenges to having interactive online publications to support the warfighter? Of course there would be challenges. The program office had to ensure that there was access to the publications regardless of operational environment, to include all contingencies dealing with accessibility, Internet availability, and password management. Not only were all of these challenges resolved, but by capitalizing on this commercial best practice, the Navy avoided the cost incurred with the manpower required to the update of paper publications.

The C-40A publications are not maintained by the government program office. While this is not a first for the government, the real difference in this particular situation was that the publications were not maintained by an outside source. Instead, the government program office and user purchased access to the master publication database at Boeing. Contractually, Boeing retains oversight and management, and provides all updates, printing, and distribution. The affected operational squadrons and other authorized personnel have access to the publications via a secured Web portal at MyBoeingFleet.com. Although training was needed by maintenance technicians in the online digital publications process, the cost savings and efficiencies offered by online digital publications more than made up for the expense.

### Customer Response

As we have shown, there can be great efficiencies gained by effectively capitalizing on commercial best practices, but achieving those objectives requires a complete understanding of the stakeholders, processes, policies, and the inevitable obstacles. But what of the customer? In this case, there are several customers: the commander, Naval Air Forces; the commander, Naval Air Reserve Force; the operational wing; and the three C-40A squadrons, VR-57, VR-58, and VR-59. Did adoption and implementation of these commercial best practices really enable them to achieve or exceed the desired mission requirements? In the case of the C-40A program, the answer is yes, absolutely. Let's look at some of the accomplishments of the C-40A Clipper.

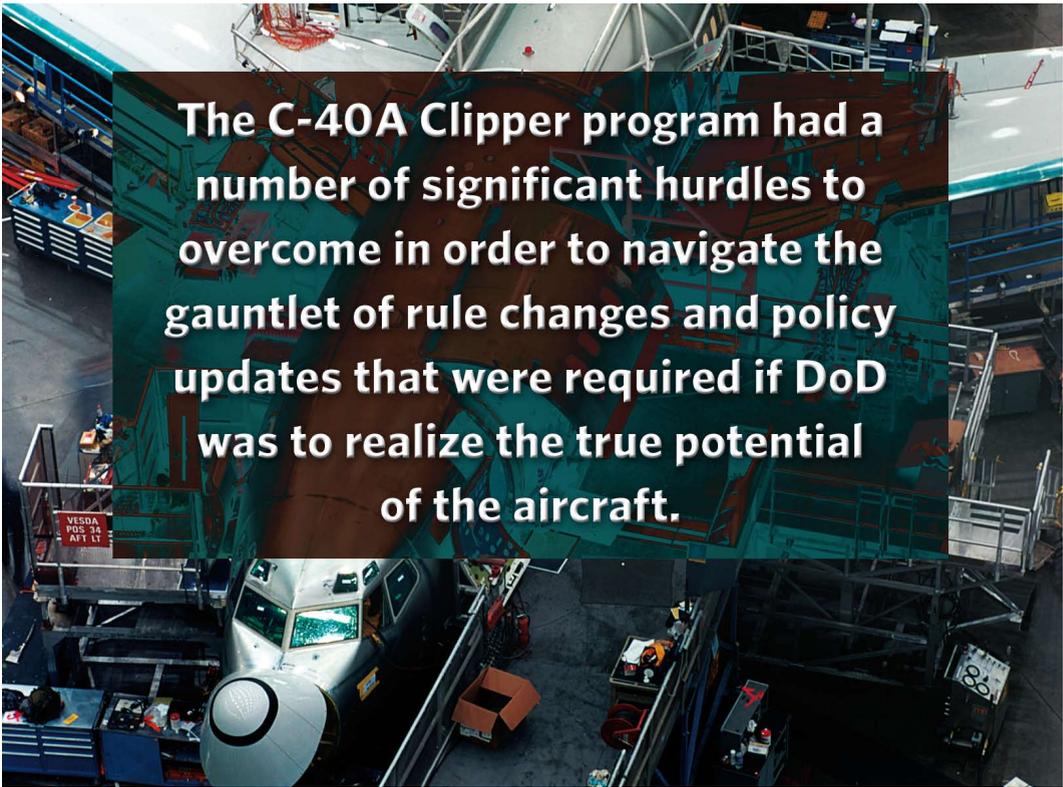
Like the legacy C-9B/DC-9, the C-40A's designated mission is to be the Navy-unique intra-theater medium-lift capability for passengers and cargo worldwide. However, the C-40A has significantly increased cargo-hauling capabilities as well as its operational range. This was very obvious during the C-40A's support for Hurricane Katrina recovery operations. Following the devastation that Hurricane Katrina caused to the city of New Orleans, La., and the surrounding area, C-40A aircraft were employed to support the evacuation. More than 117 missions were flown,

with 498 sorties accumulating more than 817 flight hours. More than 3,003 evacuees and 6,239 total passengers were transported. Also during this timeframe, an astounding 2,305,214 pounds of cargo were transported.

Recently, the C-40As were called upon to support the U.S. Navy efforts in Europe by providing daily humanitarian missions to aid the Georgian government. The C-9B/DC-9 aircraft would have required significantly more flights than the C-40A and thus a higher cost to the Services and taxpayer.

When interviewed, Rear Adm. Patrick E. McGrath, vice commander, Naval Air Forces; commander, Naval Air Forces Reserve; and deputy commander, Navy Region Southwest said: "The fielding of the C-40A has enabled naval aviation to not only meet its chartered mission, which is to provide Navy-unique intra-theater medium lift capability for passengers and cargo worldwide, but has also enabled us to expand the mission and operational capabilities of the warfighter."

We ventured into the fleet to ask a C-40A mechanic her thoughts on the aircraft. Aviation Structural Mechanic 1st Class Melissa Countryman of VR-59 is assigned to the aircraft maintenance department and is a member of the air crew. When we asked her how she liked working and flying on the C-40A, she responded, "I think the best thing about working on the C-40A is the flexibility to do just about anything; we can change missions at the drop of a hat. Any base, any branch of Service, anywhere, anytime! For instance, I got to fly on the mission transporting the disarmament commit-



tee into North Korea. We also stopped in Russia, and then China, where we had a guide who showed us restaurants, the China Wall, and Tiananmen Square. We then flew to the Philippines to deliver three pallets of humanitarian aid in support of the tsunami relief. As far as being a maintainer, I love turning wrenches knowing that we worked on it together. We have a great group of maintainers here at VR-59, and I know that whenever I fly, I'm safe. I think the most rewarding thing about flying the C-40A are those special missions bringing home the troops from the desert and seeing their faces [as they are coming home] after a long deployment."

It is our hopes that all of those within the DoD acquisition workforce who are faced with a potential commercial-derived solution for their acquisition program, will take a different look at how commercial best practices may lead to a more effective product for your customer. Will the process be easy? Probably not. Will it take some planning and management? Absolutely. Can you achieve greater success with a focused plan in this area? Most definitely.

As with the C-40A, obtaining the maximum benefits didn't happen by accident, but by planning and effective implementation.

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