"A New World-Class Standard"

A "New World-Class Standard" defines the direction that Boeing's Maintenance Training department is headed with the new 787 Dreamliner airplane. Boeing's newest airplane incorporates some truly revolutionary technology - not only in its design, but also in its use of new, innovative concepts in maintenance training.

A New World-Class Standard in Maintenance Training

A sweeping transformation is taking place in regards to training the technicians who will be maintaining this new airplane.

In the past, a technician might travel to a Customer Training Center for OEM (Original Equipment Manufacturer) maintenance training for five, six, or even seven weeks. The associated costs involved not only the costs of the training itself, including travel, hotel and meal expenses, but also perhaps the bigger cost, having the technician off the job for that length of time. This can be an enormous burden, particularly for the smaller airline stations that operate with only a skeleton crew.

"Just in Case"

This traditional type of maintenance training embraced a “just in case” philosophy. We’ll train the technician on every possible aspect of the aircraft, “just in case” they ever encounter that particular situation. On the remote chance they ever do actually encounter that particular scenario; they will hopefully recall having covered it in class, right?! Maybe or maybe not…..

Maybe what is really needed is not “just in case training”, but “just enough" training, supplemented by “just in time” training.

PIVOT

This change in philosophy brought Boeing to a new approach for 787 maintenance training – the PIVOT approach. **PIVOT** represents **P**erformance-based **I**ntegrated **V**irtual **O**n-demand **T**raining.

Performance-based; which means that it simulates the work environment – Students will practice using a laptop to troubleshoot real-world scenarios. Since the laptop is the main troubleshooting tool on the 787, the classroom practice will replicate the actual work environment.

Integrated – we will use actual maintenance data (not training data) in class. The technician will learn to use the tools, by accessing real-time, current maintenance data, not training information that may no longer be up-to-date.

Virtual – (Internet – based). Portions of the course, such as a pre-course assessment, will be available over the World Wide Web. In addition, maintenance and training data will always be available through myboeingfleet.com.

On demand - or “Just-in-time”. Training where it is needed; when it is needed. Technicians will be able to review training media when and where actual maintenance occurs; we call this “point of use.”

Training.

By using the electronic tools in the classroom, the training directly carries over to the work environment. This facilitates the ability to review training media when and where actual maintenance occurs at the point of use.

This approach leads naturally to shorter, more relevant, courses; by reducing the amount of standup lecture, and focusing on using the electronic performance support tools, the courses can achieve the necessary objectives in much less time.

Three Pillars of Training

Boeing has developed a new model for maintenance training, encompassing a "three pillars of training" approach: Foundation Training, Formal Training, and Future Training.

Foundation training is done at the technician's home base, and is completed in the weeks prior to coming to the formal training at the Customer Training Center. It begins with an assessment to determine the technician's level of aviation-maintenance experience. From the results of the assessment, the technician takes the individual CBT (computer-based-training) modules necessary to bring him or her up to a predetermined "starting point". This "pre-training" allows the students to have baseline knowledge before coming to class; a baseline from which to learn the new concepts and technology specific to this new airplane.

Formal training consists of an instructor-led overview of all of the airplane systems, with an added emphasis on the technology that is unique to the 787 aircraft. This overview is then supplemented by practical, "hands-on" training. The student spends the remainder of class time learning and practicing using the powerful new electronic tools that have been developed to assist in diagnosing and correcting aircraft discrepancies.

The final pillar is the future training. The technician will be able to access training data or airplane information for just-in-time training on-the-job; where it is needed, and when it is needed. For example, the technician might access an interactive 3-dimensional model for a better look at an installation, review a CBT for a quick brush-up on a system, or retrieve an electronic version of a system schematic.

New Airplane, New Tools

The emphasis during the formal training will be on the student developing proficiency in the use of an extensive array of electronic tools. The interface for accessing these tools is based upon the Maintenance Performance Toolbox, available for purchase on other Boeing aircraft models. The “Toolbox” for the 787 however, will be even more robust, and will include many new and innovative electronic tools. Toolbox will be pro forma; included with the purchase of the 787 aircraft.

Included below is a sampling of the tools that the technician will be able to access through Toolbox:

- Synoptics (or “optical synopsis”) - graphical representations of aircraft systems, with hotspots, or hyperlinks, to related electronic documents. Some synoptics also provide links to simulations for additional research and training.
- Digital maintenance validation tools. 3-D animations have been developed to allow engineers to study accessibility and feasibility of performing certain maintenance tasks. These animations may be used by the technician to preview a maintenance task before actually performing it.
- Parts Information – a new electronic parts information system. Parts Information application allows the user to look up a part, view adjacent components, zoom in, disassemble, and rotate the part or assembly. It also includes functions that allow the user to check inventory, and order the part, if necessary.
- Dynamic Wiring Diagram Generation. This tool replaces the static wiring diagram with an overall view of the system, and displays it all on one screen. The tool provides for signal-path tracing. Selecting a wire, or several wires, will highlight and color-code the wire run. By manually changing the state of switches and relays, the signal-path tracing will follow the re-configured circuit. This program also allows the user to create queries of engineering data to generate electronic wiring diagrams based on ATA, wire ID’s, equipment, pin, or harness numbers. Hyperlinks provide quick access to related documents.
- Structural Decision Support Tool. This is an on-line SRM (Structural Repair Manual) that allows the user to electronically pinpoint the location of the damage on a 3D image of the aircraft, determine the type of damage, check for damage limits, consult the MEL/CDL for possible relief, and if none, determine the proper repair. The tool also includes features to collect and display historical information on previous repairs.

A New Airplane for a New World

The 787 Dreamliner was designed to meet the needs of a new world, with a commitment to improved airplane reliability, maintainability, and availability. With these new tools and training philosophies, 787 Maintenance Training will help Boeing deliver on this commitment by:

- Helping technicians do their jobs better
- Making their job easier
- Empowering technicians to effectively diagnose and treat maintenance discrepancies

This truly represents a new world-class standard in maintenance training.

This will allow the airline to complete scheduled and unscheduled maintenance quicker and return the aircraft to revenue service sooner, thereby increasing the availability of the aircraft to earn revenue. This represents a new world-class standard in maintenance training; a new world-class standard in aircraft optimization.