

Data equals quality in New England

Patrick Tremblay | DCMA Public Affairs

Parallel yellow lines run the floors of an aircraft engine plant in East Hartford, Conn., creating sidewalks for workers. Familiar red stop signs at intersections add to the illusion of a near spotless indoor city, rather than a modern defense contractor shop floor.

Defense Contract Management Agency quality assurance specialists travel these sidewalks along with contractor employees, observing both the physical product creation and, increasingly, the data used to ensure the final product meets customer needs.

Quality assurance and other contract

administration services for the East Hartford plant and other suppliers that build engines and engine components for military aviation assets fall under DCMA Aircraft Propulsion Operations. Unlike other contract management offices, rather than covering a geographical area or specific contractor, APO is focused on a type of product – aircraft engines and associated systems.

APO has offices in five states and a further presence in nine more. In New England alone, APO personnel oversee final production at plants run by Pratt & Whitney, General Electric and Hamilton Sundstrand. These three manufacturers



Rick Moskal, a quality assurance specialist with the Defense Contract Management Agency, points to a panel on a NASA space suit. (Photo by Patrick Tremblay, DCMA Public Affairs)

supply power plants used in advanced fighter and attack aircraft and numerous helicopters used by the U.S. and its allies.

These are advanced systems with critical safety threshold specification and very technical contract requirements. They are also integral subsystems which will be used in aviation systems critical to the warfighter, meaning customer delivery and overhaul schedules must be carefully coordinated and met. DCMA dedication to quality is shown in the final product, and in the pride quality assurance personnel display as they perform process reviews and system audits in their work.

SURVEILLANCE PLANNING

Using the agency's QA Instruction as a guideline, DCMA in-plant teams look to contract requirements and supplier

data to tailor a unique surveillance plan that meets specific customer technical compliance and cost oversight needs. These plans are created and implemented to manage and reduce faulty product risk and establish a basis of confidence that products meet contract requirements in accordance with the DCMA mission.

"We perform reviews based on risk impact," said Bonnie Pilch, a DCMA QA specialist in Lynn, Mass., adding the likelihood of risk drives the frequency and intensity of quality surveillance.

Pilch spent 16 years as a contracting specialist before changing to quality assurance 12 years ago. She said her contracting background has helped her in quality assurance, which she calls "the eyes, ears and feet for the customer in evaluating the supplier's ability to meet contract requirements.

Michael Corrente, Pilch's QA group leader, said being a physical presence on behalf of the customer is the true value the agency brings. "On a day-to-day basis we are on the shop floor verifying and validating the quality of the contractor's products and processes."

This is no small task for the team, which is primarily split between two large manufacturing facilities in Massachusetts and Ohio, but with other personnel stationed at facilities in Vermont, New Hampshire, and Kentucky.

"Before we do any process reviews or product evaluations, we look at the contract for quality requirements, then conduct a supplier risk assessment. This helps build our surveillance plan," said Pilch. "We review data monthly, analyzing important manufacturing processes to mitigate risk of a process not

meeting the customer's contract technical requirements.”

Steven Nogas, lead QA specialist in Windsor Locks, Conn., said reading the contract is the first step his team uses when developing its plan. “We’re looking to find the ‘shalls,’ or specific requirements the customer expects of the supplier.” Nogas added that planning is crucial to limiting problems and unanticipated outcomes at the end of the production line. “We get more return on process reviews than final inspection.”

PROCESS REVIEWS

Process reviews are used to determine the suitability, adequacy, effectiveness and consistency of the supplier’s processes to meet contractual requirements. For APO, they also provide a cumulative basis of confidence for final engine acceptance.

A process may be reviewed as a single event, or incrementally if the process has multiple elements.

Derick Yu is a QA specialist who specializes in these reviews. Yu said during process reviews his team “looks at five elements of a process, or what the (QA) Instruction calls the four m’s and an e or 4M+E.” These are methods, manpower, material, machinery and environment.

For some complex items, such as those that affect safety of flight or life support, analytical tools such as flowcharts may be used to track supplier performance and observe how the contractor plans controls for each of the 4M+E throughout the manufacturing process.

“The supplier gives us full access so that we can do our job,” said Rick Moskal, a QA specialist. “This includes walk up computers where we can review contractor processes, then walk out on the floor to validate that they are being followed.”

SYSTEM AUDITS

All of a supplier’s processes and controls add up to something larger – the Quality Management System. DCMA personnel review all supplier QMS processes identified in their surveillance plan within a three year period for longer duration



Mark Spencer and Ron Chevalier, Defense Contract Management Agency quality assurance specialists, review data associated with the production of a military jet engine. (Courtesy photo)

contracts, more frequently if data trends identify additional process variation or risk. Additional process reviews can also be directed by the customer.

A full system audit is done on behalf of the customer, and due to DCMA’s greater familiarity with supplier processes, these tend to be more thorough than third party audits that may be conducted. A formal audit team of functional specialists is established by the contract management office, and the supplier is notified of the audit and its scope. In many cases, customers will be notified as well.

Regular process reviews can meet some audit requirements, but Mike Klem, QA group leader in East Hartford, said QMS audits are a global look at the larger production capability. “We’re making sure that the supplier is validating to requirements agreed to between the customer and contractor in the contract.”

Chet Jambora, a QA specialist on Klem’s team, said a variety of information is examined for each part of a system audit. “We look at things outside of the current process, like past non-conforming material, customer complaints, escape data, and input from our own quality assurance representatives.”

At the close of an audit, nonconformities

supporting evidence are presented in a formal meeting with the supplier. The meeting may also generate a timeframe for the supplier to address nonconformities. The final step for DCMA personnel is an audit report, a complete record of the audit including an appropriate corrective action request if necessary.

DATA DRIVEN

Finished aircraft engines, parts and other components receive final testing and acceptance daily at DCMA APO offices. Before they are signed for by DCMA on behalf of the customer, a detailed package of information has been compiled and carefully reviewed.

Ron Jackson is one member of a small group which performs final testing and acceptance of engines for a major program. The last line of review before shipping to the customer, Jackson spends about four hours on each engine making sure it passed all inspections specified by contract. Less than half of that is on inspecting the engine itself – the bulk is in reviewing data, logbooks and documentation to ensure everything from manuals to the shipping container meet


contract requirements.

“The contractor inspects to determine if the engine is good or bad,” said Jackson, an Air Force veteran with more than 25 years at DCMA. “We observe their inspections, and do inspections of our own to validate their quality system.”

At the end of the day, it’s not a scanner or machine that assesses a supplier’s adherence to contract requirements. It is a person, a quality assurance specialist, who is witnessing, reviewing, validating and interpreting processes and systems.

“Ultimately we are the last line of defense before the product is delivered to the end user,” said Corrente.

“These are passionate, data driven, requirements driven, proactive people,” said Klem of the agency’s quality team, adding they take pride in a good product being provided to the customer.

“We’re focused on the end user, so we want the supplier to be efficient and effective with their resources. Our first responsibility is to take care of the customer.” 



Above: Steven Nogas, a Defense Contract Management Agency quality assurance lead in Windsor Locks, Conn., points to a heated blade on a NP2000 propeller. (Photo by Patrick Tremblay, DCMA Public Affairs)

Left: Mark Spencer and Chet Jambora, Defense Contract Management Agency quality assurance specialists, discuss a spreadsheet at the Aircraft Propulsion Operations office. (Photo by Patrick Tremblay, DCMA Public Affairs)