



THE VIEW FROM WASHINGTON

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Quality vs. Airworthiness: They are Not the Same

As many of you know, I ride motorcycles...well, “a” motorcycle these days, an older BMW 1150 RT. Since I was 15 years old, I have rebuilt and maintained my motorcycles. With the exception of one trail bike, all of my motorcycles have been from one of two manufacturers: BSA and BMW.

Like most life-long motorcycle riders, my current motorcycle is my “baby.” Each year near the beginning of July, I perform my semi-annual servicing. Last year, I was a bit busy and decided to have my local BMW shop perform my servicing while the bike was in the shop for a repair. When I picked up the bike, right on top of the tank there was a screw sticking up with the head drilled off. When I challenged the service manager about this “shoddy maintenance,” he defended the mechanic by explaining the nut plate (which is embedded in the gas tank) had stripped and this was the only way to remove the cowling.

During the 15 years or so in which I have been a loyal customer of this BMW shop (including purchasing my current bike), I have seen this shop grow from a small, local “enthusiasts” motorcycle shop with exceptional personal experience to a large, impersonal “sales” shop with all of the older experienced employees now long gone to greener pastures replaced by a

younger, less experienced, less passionate (and I assume, less expensive) workforce.

The reason the mechanic needed to drill out the screw made sense; I’ve done it myself dozens of times. However, leaving my baby scarred is unacceptable. They lost my business.

This year, when I was performing my routine servicing myself, I began seeing little nuances where the mechanic from a year ago had changed my bike: removing aftermarket filters and replacing them with stock filters. This got me thinking: Is the aviation industry subject to the same social, cultural and generational changes in our workforce that ultimately have an impact on quality (not necessarily safety, but quality)?

Have you ever noticed Part 145 does not require an independent repair station quality control manual? Now, before you call the doctor for me, let’s look at what Part 145 requires exactly:

- §145.211, “Quality Control System” — (a) A certificated repair station must establish and maintain a quality control system acceptable to the FAA that ensures the airworthiness of the articles on which the repair station or any of its contractors performs maintenance, preventive maintenance or alterations.

It is not until Subparagraph C that the

FAA states a manual is needed to describe “your” quality control system:

- §145.211(c) — A certificated repair station must prepare and keep current a quality control manual in a format acceptable to the FAA...

Yes, Section 145.211(c) does contain a minimum list of items that must be included in your program, but it isn’t limited to just those items. Your particular needs might exceed those listed in the rules. Areas that could need addressed in your QA system might include fatigue, unique controls to minimize the effect of the environment, or controls for working in remote locations.

So, what does Part 145 actually require? The words are simple: “establish and maintain a quality control system acceptable to the FAA that ensures the airworthiness of the articles.” There are three items here: “establish and maintain a quality control system;” “acceptable to the FAA;” and “ensures the airworthiness of the articles.”

Establish & Maintain a Quality Control System

Your business is unique — it is a by-product of your philosophy, your strategy, your passion. In your particular business, how do you manage your organization to ensure a safe and conforming product?

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Who does the work and who checks the work?

In the case of my motorcycle, the mechanic takes the bike to his work station, performs the “scheduled” tasks and returns the bike back to the service manager who test-rides the bike, then calls me, the customer, to tell me it is ready to pick up. Sound familiar? In the case of my bike, the last time I took it to the mechanic, it was left scarred and the internal work was not done correctly: my serviceable oil bath, high-flow air filter was replaced with a factory, disposable paper cartridge.

In aviation, the vast majority of work is performed in a similar manner. The work is scheduled and assigned to a technician who performs the work, then it is returned to the manager who checks the operation and cosmetics of the final project before it is returned to the customer. For air carrier customers, we occasionally have a required inspection item that, by regulation, requires a second set of eyes. In component maintenance levels, we have “in-progress” requirements: the maintenance manual requires an in-progress inspection to take place before an assembly or subassembly is closed.

Is the minimum standard good enough for you, your business and your reputation? I routinely hear, “No one would do that...,” yet they do. I also hear, “That’s not how we do it in aviation,” yet it happens.

With each new generation in the workforce, the social and professional norms

change. Are you prepared for the “new” workforce? Do you have gates in place to capture and correct safety, conformity and cosmetic escapes?

How do you track the pieces and parts you use in maintenance? We use hundreds (if not thousands) of various piece parts in avionics. What processes do you have in place to ensure you are ordering the correct part, and the correct part was received and used? There are many reasons for this, and from a business perspective, knowing the pedigree for each part installed in a particular aircraft (or sold to a customer) will save you and your customers hundreds of hours of checking and inspecting similar parts in the event of a recall or airworthiness directive.

How do you maintain the proficiency of your personnel? There are many reasons you should care about this: You want your customers to know you are a ready and knowledgeable resource for any new avionics technology; you want the FAA to know you understand what you are talking about; and you don’t want to waste time learning while you’re on the customer’s time clock. You want your inspection personnel to know what they are looking at and how it operates, as well as know how to inspect and test it for conformity and operation.

How do you audit your business and take corrective action regarding deficiencies? Any successful business relies on continuous improvement to be successful;

your audits will tell you where you need to improve. It is a waste of money and resources to make the same mistake twice.

Acceptable to the FAA

“Acceptable to” is defined as “conforming to the regulations.” At a minimum, your program must meet the requirements of the regulations.

Keep in mind, your manual should describe your process for meeting the regulations: How are you going to ensure calibrated equipment is calibrated when being used? How are you going to manage suspected unapproved parts? How are you going to ensure your technical manuals are current when they are being used?

Ensures the Airworthiness of the Articles

For those of us in maintenance, ensuring the airworthiness of articles involves safety and conformity. Does the article conform to its original (or properly altered) design and is it in a condition for safe operation?

Conformity is pretty straightforward, but it is also easily masked in the final quality checks. Do you require in-progress inspections before an article is closed? Do you record the configuration of the article when you receive it and return it to the customer in the same configuration?

In the case of my air filter system, I had “properly altered” my induction system

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only to have the bike returned to its factory condition. We currently have a plague within aviation where this is becoming the norm: a properly altered item is sent to a repair station, which is owned by the original equipment manufacturer, only to have the equipment returned to factory configuration before it is returned to the customer. This is like having every alteration removed from your aircraft simply because it is being maintained by the factory service center.

In defense of factory repair stations, very few of the component articles are returned to the factory with the alteration data to show it had been "properly altered." Like my bike, a simple sticker can notify the mechanic of the modification and the location of the data.

In avionics, the "safe operation" is becoming increasingly more difficult. There is more and more equipment that interfaces with existing systems and is critical to aircraft systems, or can be negatively impacted by marginally efficient legacy electrical systems. This is neither an easy task nor one to be ignored. The old days are gone of turning on a radio and signing off on it as "Operational checks OK."

It is important to know the proper performance and interface of the equipment, and when the installation is complete to ensure the performance of the equipment installed still meets its design specifications, unless there is some other performance specification for the equipment.

When all of these minimum regulatory "airworthiness" requirements have been complied with, what about the quality of your product? Does it represent you and your business in the manner you intended? If it did yesterday, have there been personnel, facility or equipment changes that would cause you to take a second look today?

What does your quality say about you? □



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Monitor maintenance/troubleshoot

Track aircraft via internet

Check supply inventories

Do e-mail

Talk to grandma

Watch a movie

Close a business deal

In-flight data management.

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