
THE GAMGRAM

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HOW MUCH AVIATION FUEL QUALITY CONTROL EXPERIENCE IS ENOUGH?

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The first thing we need to do here is to agree on what "Aviation Fuel Quality Control" includes. Yes, it involves keeping fuel free from water and dirt, uncontaminated with other fuels and up to specification. But it includes every aspect of getting the fuel from receipt at the airport all the way to the aircraft wing without contamination, damaging the aircraft, or causing a spill or a fire. Quality control also includes fueling at safe pressure insuring that bonding/grounding equipment is serviceable, having the correct filter elements and making sure that gauges as well as emergency and deadman controls function correctly.

For reference, a bit of the history of our industry is in order. The world entered the "jet age" in the 1950's. All of the experience in our industry up until then was on the aviation gasoline used in piston engines. Both jet fuel and jet engines are quite different from aviation gasoline and the engines that use it.

Early on, militaries, oil companies and airlines put engineers into positions of importance on the handling of Jet Fuel. There were no real standards. For example, we had to learn not to use galvanized pipe, as the zinc coating reduced engine life! We learned about "thermal stability" in this way.

The industry matured in the 1960's and 1970's. ASTM test standards were developed. Oil companies came up with equipment approval lists. Filters, hoses, nozzles and procedures improved; slowly industry-wide standards came into practice.

It was a learning experience. For example, it was common at major airports to have 2 to 3 sets of hydrant pits at every gate, one for each oil company, complete with separate tanks, pumps, hydrant system and hydrant carts.

At smaller airports, the oil companies actually designed, supervised and paid for the installation of fuel systems to make sure they were right. Both the oil companies and the airlines had large departments dedicated to fuel quality and safety.

But time passed and things changed. By the time we entered the 1990's, many of these experts were reaching retirement age and today we have a shortage of experienced people in the industry. There are no college courses on Jet Fuel handling and little in the way of industry education (except ASTM and other seminar type programs). In addition, oil companies and airlines tend to shift people from job to job more than before.

Both the number of experienced people and the amount of experience that they have has declined. Errors take place and because all too often the experience level in the people present is less than it might be.

This is where we are today. We have had issues in the past few years that have resulted in a great deal of concern. These problems are very often due to someone simply not being observant and/or not knowing what to look for.

Quality Control is not founded on paperwork or equipment; it must be based upon observant and dedicated human beings. The human mind must be involved, and to do so, it must be educated.

This is the reason we have been writing the GamGrams for the past 37 years, to publish some knowledge and pass on experience we felt was not available from any other source. But the best form of education is experience. GamGrams only help to fill in the gaps, to help the new QC person to understand what is supposed to happen and what can go wrong.

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We've been in this industry for 53 years now, and have always participated in training seminars and standards writing. We've learned from the best in the industry and also from long experience -- and make no mistake, experience is the best teacher. Learning from an expert is harder now, we have fewer experts!

Books and manuals don't tell you what fuel is supposed to look like or smell like. They don't tell you what a membrane test pad ("Millipore") usually looks like or how quickly the differential pressure should increase on a filter vessel. They don't tell you what to do if there is a question, other than to report to "the person in authority". What if you are the person in authority?

So, if you are a new QC person, or if you supervise fueling people and you don't have a lot experience. What is our advice to you?

First, seek all the information you can find through your fuel provider, they have fuel experts on staff.

Second, look for anything out of the ordinary. If in doubt, ask someone. There are no stupid questions except "will jet fuel make my motorcycle go faster?" (The answer is no, by the way, it would be like putting diesel into your tank.)

If you are new to Aviation Fuel QC and have no one at your facility to learn from, you need to find out as much as you can about what your information resources are. Get names and phone numbers, emails and web sites. Read everything you can get your hands on and seek advice. Start with your fuel supplier but also utilize airline experts and equipment suppliers.

What do you do if, for example, you suddenly find a gallon of dark water in a sump draining sample, where you never had it before? First, look for anything else out of the ordinary and then you call an expert. Always first ask an expert in your own company, if that fails, you **MUST** reach out. **NEVER** be afraid to ask.

We in the aviation fuel QC field don't care if you are a different brand than we are, even a competitor. Information passes freely between airlines, oil companies, refueler truck manufacturers and oil companies. Safety and knowledge is always more important than corporate identity. We all sit on the same committees that write the standards and we all help each other - -as it should be. Did you know there are no US federal laws on jet fuel quality? Internationally, we are a self-regulating industry, with an excellent record.

Be observant. For example, a significant element of safe fuel handling is simply looking for changes in the operation of equipment and in your test results. [See GamGram 42](#). The secret is to catch a small problem before it gets serious.

Also, It doesn't matter how good a system you have, how good your supplier is, or how good your filters or QC procedures are, complacency is enemy #1. Problems and errors WILL happen, eventually. Never stop looking for the tip of the iceberg. They may be spills, misfueling, mixing fuels together, or over-filling a tank, a failed deadman switch, overpressurizing an underwing aircraft or simply hitting a wingtip with a refueler, but you will have problems.

INFORMATION IS KING

The best source of information is the oil company; fuel quality and safe operation is part of their responsibility, in most cases. Often oil company QC experts can provide much more information than the oil company sales representative. Fuel distributors such as Epic, World and AvFuel have experts on staff. Landmark and Signature have experts. Also you can attend our free Open House/seminars, every June.

Your filter supplier (Velcon, Facet or Faudi), your control valve, nozzle and truck manufacturers all have experts on staff. Make use of them!

If you can't find what you need, don't be afraid to call GTP or another equipment manufacturer, we'll get you to the right people if we can't answer your question ourselves.

We are all partners in this industry and we all help one another. I speak for every fuel expert in the field, from every oil company, fueling company and manufacturer when I say we will help you get the knowledge and experience that you need. ***The answer is -- you will never have enough experience!***