

MILITARY QUALIFICATION TESTING & THE ROLE OF AN INDEPENDENT LABORATORY





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There has always been a role for independent testing laboratories with regards to military qualification testing and branches of the military or defense organizations have even developed programs for recognition of such laboratories. One of the oldest was the Defense Electronics Supply Center's "list of approved test facilities".

Examples today, include the United States Coast Guard laboratory approval program and instituted in 1989, NAVAIR's National Voluntary Laboratory Accreditation Program (NVLAP) EMC laboratory accreditation program. Accordingly, it is clear that the role independent laboratories play in the product approval process, has been recognized and their use widely accepted within this sector.

I submit that the "independent" in independent testing laboratory, plays a major role in that acceptance. So let me start there.

We have all heard it, the local TV news anchor reporting on a story on bad food or a defective consumer product and stating, "*And the results from an independent testing laboratory are....*"

As a society we place value on an independent review or opinion and the resulting confidence it will provide. Independent opinions and reports are always viewed as more credible because they are inherently objective and free from any conflict of interest. This is especially true in highly critical industry sectors, such as aerospace and the military defense industry sector.

In this paper I would like to focus on two specific areas related to independent testing services, that can help better position a buyer of independent testing services. The two specific areas are, the recommended building blocks of a professional independent testing organization and the selection process that should be taken in selection of an independent laboratory.

The Building Blocks

First and foremost, as this paper will show, there is considerably more to an independent testing organization than testing. Testing by itself is one part of many, but let's start with that. Because of the higher confidence placed in independent testing laboratories, they are held to a higher level of accountability. Independence, alone, is never a substitute for technical competence.

Accreditation & Technical Competence

Because of this, laboratories are accredited by either national or international laboratory accrediting bodies, providing an assurance of technical competence that goes well beyond the level to which a manufacturer's in-house laboratory typically would be held. Accreditations and their associated assessments are lengthy, detailed and costly. They review personnel training, staff technical competence, overall quality, calibration, document control, operational procedures and document generation and it is only after performing such an extensive on-site audits and assessments that an independent accrediting body will attest to the laboratory's ability to perform the complicated and technical tests and services they offer. So accreditation is one critical building block and should be a "must" in the selection of a laboratory.

Professional Liability Insurance

Something no independent laboratory ever wants to do is to submit a claim for damaging a customer's piece of equipment or performing a test incorrectly, but Professional Liability Insurance for such

instances is something good laboratories are able to obtain and maintain. In many ways being able to obtain professional liability insurance and being able to maintain it over the years, is almost another form of accreditation. Just like accreditation, in order to obtain this type of insurance the independent laboratory needs to go through an extensive review by an insurance carrier. Here too, quality and operational procedures are reviewed as well as the laboratories "loss history", should one exist. Accordingly Professional Liability Insurance is another building block and provides another layer of confidence in the laboratory.

Cyber Security and Cyber Security Insurance

Five or ten years ago, this issue would not have even been on the radar screen, but now it is and independent testing laboratories should have policies and procedures in place to address cyber security. This is especially timely today in the defense sector. Laboratories are processing and distributing customer's data and information and accordingly have an obligation to protect that information from cyber threats. There are various guidelines available, most notably, NIST 800-171, which can be used as a model for an internal program.

A laboratory can also obtain Cyber Security Insurance and here, like the Professional Liability Insurance, the ability to obtain the insurance is what is most critical, since it speaks to yet another outside entity reviewing your procedures and policies and finding them sufficient to offer you this form of insurance. Addressing cyber security is also one more of the building blocks for a competent independent laboratory.

Safety

Safety and safety defined procedures are needed in all work environments, but I would suggest it is even more important in an independent testing environment. Tests that involve high level RF signals (HIRF) or lightning or on the environment simu-

lations side, tests such as explosive atmosphere or vibration or shock, can all pose a safety threat. Also in most EMI or Environmental Simulation testing laboratories, it is typical to have the customer's personnel and others within the lab while testing is being performed, which only heightens the need for safe working environment.

Accordingly a formalized program should be in place, which is OSHA compliant, and addresses such items as: Initial and ongoing employee training, facility safety inspections, safety incident investigations and the development of Safety Operating Procedures (SOP) for hazardize operations or testing procedures.

DoD Industrial Security

Many military testing programs may have a DoD security component associated with it and the independent testing laboratory needs to be able to support those requirements. The handling and se-

curing of classified material is of utmost importance and critical to national security. A strong "Security Program" will included an approved corporate security manual, a designated Facility Security Officer (FSO), proper secure storage capabilities, an appropriate amount of "cleared" personnel and an ongoing industrial security training program.

How the "Building Blocks" Benefit Manufacturers

The services of independent testing laboratories provide one major value to manufacturers and that is product acceptance and therefore market access. The simple question is, "Have you successfully developed a product if you cannot get it to the intended marketplace?"

That access is many times rooted in the services and the knowledge base that independent laboratories provide. Virtually in every industry sector, but most especially related to military testing, some defined standard or test method needs to be complied with

INDEPENDENT LABORATORY BUILDING BLOCKS

TECHNICAL COMPETENCE

Accreditation
Quality & Calibration
Training
Monitoring of Standards

CYBER SECURITY

Defined Polices and Procedures
Program Rooted in National Standard

SAFETY

Defined Manual
Ongoing Staff Training
Ongoing facility Enhancements

INDUSTRIAL SECURITY

FSO
Defined Manual
Staff Traing
Proper Storage Facilities

PROFESSIONAL LIABILITY INSURANCE

Outside Independent Review of Processes and Procedures
Historic Performance

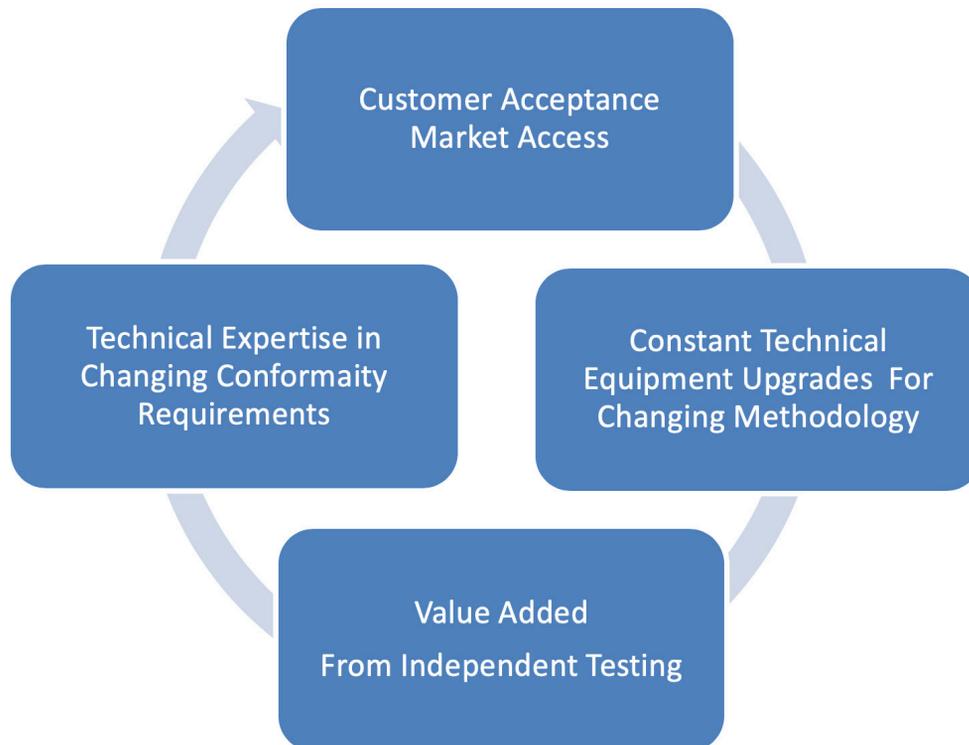
and independent testing laboratories fulfill that need. This requires consistent monitoring for standards changes and a continuing commitment by the laboratory to make the required changes; in pre and posttest documentation, the test methods that are used, the test limits that are applied and to making equipment upgrades to address changing test methodology.

As an example, “What changed in MIL-STD-461F?” This is the type of a compliance issue that need to be known and that independent laboratories are committed to stay focused on. Changes in standards can have significant impacts on products, in that compliance limits can change and additional testing can be added, which all can impact the design of a product.

Can a manufacture stay on top of all of this? Yes they can, but is it cost effective and more importantly is a manufacturer’s interpretation and application of a standard as “defendable” as an independent laboratory. The simple fact here is a manufacturer is clearly the expert on his or her product and an independent laboratory should be viewed as the expert of the compliance program that the product must meet.

And most importantly, the laboratory’s data is going to be looked at as the most creditable or defendable, as it is generated from an independent source. Independent laboratory testing services provide a higher level of confidence and therefore provides a “value added” to a product.

MANUFACTURER’S SUPPORT FROM AN INDEPENDENT LABORATORY



Selection of an Independent Laboratory for Military Compliance Testing

Buying testing services is not buying nuts and screws; it is a professional service, much like seeking medical services. The cheapest doctor may not always be the best, so too with testing laboratories. That is why I would suggest when searching for independent testing services the initial quoted price may in no way reflect the buyer's final price. Accordingly "Buyer Beware". A few questions to reflect on when thinking price:

1. What is the price associated with your customer being unhappy with the services or report provided?
2. What is the price if your customer requires re-testing because of in-lab mistakes?
3. What is the price if your equipment gets damaged or your personnel get injured at the laboratory?

The point being, it is not purchasing nuts and bolts and as such requires a more deliberate selection process. So what should that process include? It should include a review of many of the building blocks that we talked about. A good basic checklist would be as follows:

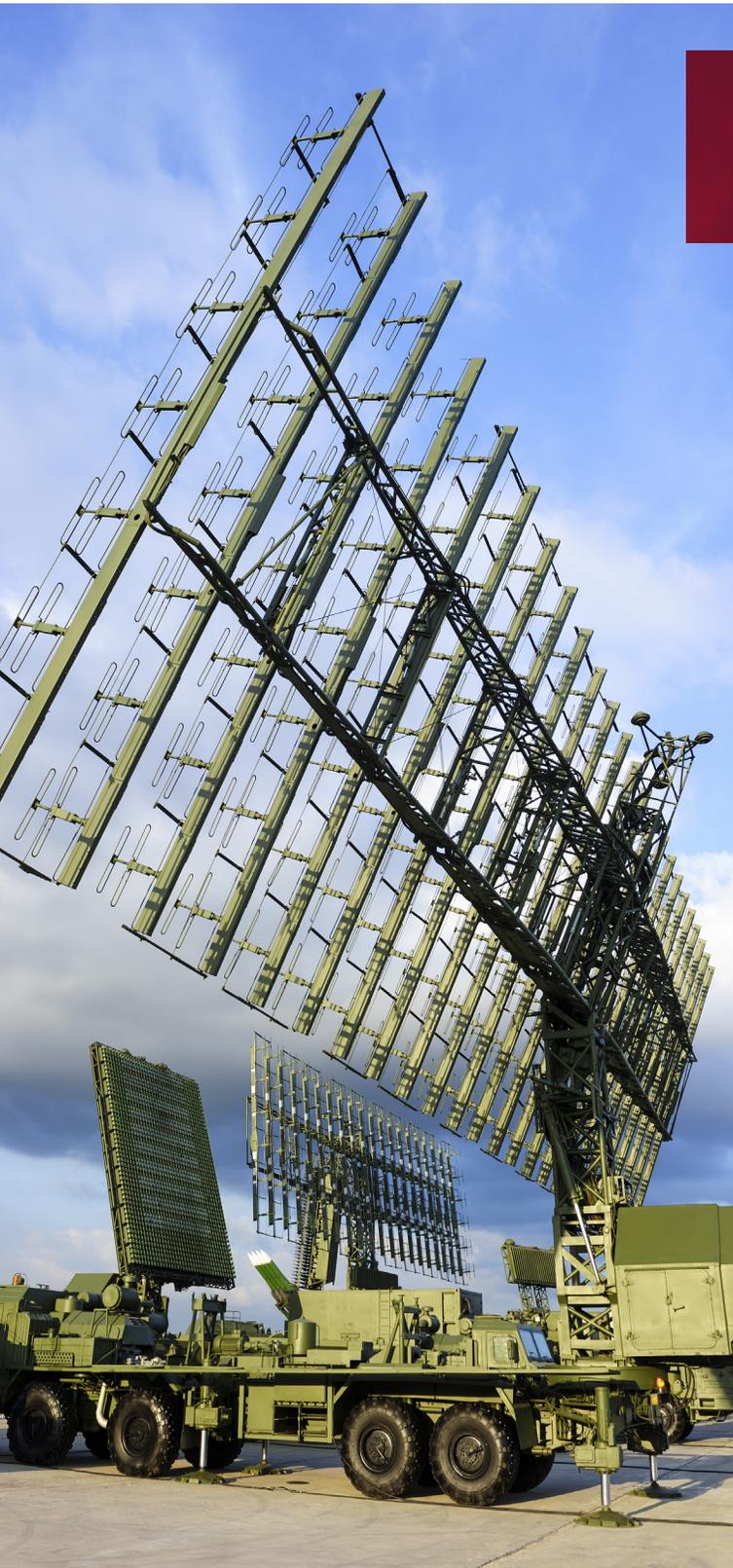
1. Make certain that the laboratory is fully accredited for the entire listing of test methods that you will need to have performed. If they are, you will then have assurance of their staff's technical capabilities, and both their quality and calibration systems.
2. Ask about deliverables. How long will it take to get a quotation? How long will it take to get a report? The only product that a laboratory produces is a report and most likely you will need that report for your customer's acceptance and market access. Very few reports should take longer than 7 to 10 business days, assuming the laboratory has proper operational procedures in place. If that timeline cannot be committed, it should be a red flag.
3. The most important, whenever possible, espe-

cially at the start of a new business relationship, VISIT THE LAB. And look for and ask about:

- What does the facility look like? Does it appear to be a safe working environment? Is it organized? What is the condition of the test equipment? How is the test equipment stored? Is there accommodations for you and potentially your customer, i.e. customer lounge, work stations, etc.?
- Discuss process. Is there a review that will take place prior to testing to make certain your expectation and technical needs are being correctly fulfilled? Things like, is the testing be done to the latest procedure revisions, what procedures take place should a failure occur, who can approve additional testing.
- Discuss security, cyber and other. How is your information and data protected, how is your equipment protected both physically and IP wise. Should your project involve DoD security, does the lab maintain the right level and storage capabilities?
- Ask about "relevant customers" who the lab has provided services to that would be similar to yours. Could they be viewed as references and could you reach out to someone at those companies?

One very important point you need to consider is that the laboratory will be a reflection of you. The lab is who you selected, so the reports, the facility, their performance will all be a reflection of your selection process. This issue evens heightens to a higher level should your customer elect to witness the test. What type of environment will you be bringing him or her into?

Independent testing services are professional services that require more due diligence in their selection. It should never be about price. It should be all about, where do I get the best professional technical services, in a safe and organized facility at the most reasonable price.



**WANT MORE INFORMATION?
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LABORATORIES**

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