TECHNICAL PAPER

The Layman's Guide to Qualifying a Process to J-STD-001B

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ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES®

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The Principles of Standardization

In May 1995 the IPC's Technical Activities Executive Committee adopted Principles of Standardization as a guiding principle of IPC's standardization efforts

Standards Should:

- Show relationship to DFM & DFE
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feed back system on use and problems for future improvement

Standards Should Not:

- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

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Your purchase of this document contributes to the ongoing development of new and updated industry standards. Standards allow manufacturers, customers, and suppliers to understand one another better. Standards allow manufacturers greater efficiencies when they can set up their processes to meet industry standards, allowing them to offer their customers lower costs.

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The Layman's Guide to Qualifying A Process to J-STD-001B

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Douglas Pauls
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Introduction

Electronics manufacturers are faced with the difficult task of proving that a candidate manufacturing process can produce acceptable hardware, either to the customer of the product, or for internal quality control. In the past, assembly level specifications (e.g. MIL-STD-2000A) told you exactly how to go about this demonstration. It wasn't always precisely correct, but you didn't have to figure our all of the fine points of the qualification on your own. In our modern era, "how-to" specifications are now evil things and taboo to all involved with them. The users now have to determine many of the process qualification steps on their own, and sadly, many don't have the faintest idea where to start. That is the purpose of this document. It makes no assumptions about what you know and leads you through the somewhat complex task of qualifying a candidate process to the B revision of J-STD-001.

Who Am I?

So, who died and made me Grand Wazoo? My name is Doug Pauls and I am Technical Director of Contamination Studies Laboratories. I have been involved with MIL-STD-2000, J-STD-001, and many other IPC technical activities. Much of my writing was the basis for J-STD-001A, Appendix D, and I have been actively involved with the B revision to J-STD-001. Since I have been involved with the development of these assembly documents, and because I regularly counsel assemblers who must qualify new processes, I undertook this writing to assist process professionals faced with qualifying their process. The above self-aggrandizing wording was not done to brag, but to illustrate some of my credentials.

I should probably warn you that there is some rather warped humor contained herein. I find that humor makes a document more readable and a little less "dry". Some feel it unprofessional; I don't.

I have included a short bibliography (attached) of other articles that would be helpful in qualifying a manufacturing process.

When Do I Do This Testing?

Often, the first decision that a process engineer must make is if the new process must be qualified. I'll give you my favorite engineering answer - it depends. The biggest driving factor is the customer of your product. What test data or test protocol do they desire in order to feel comfortable with the new process? If your customer wants MIL-STD-2000A, Appendix A testing, that's what you do. If they want J-STD-001A,