

Establishment of standard operating procedures for environmental qualification test failure handling procedures – A case study of A project

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ABSTRACT

The weapon system is fundamental in national defense and the weapon system requires a series of environmental tests before deployment. The purpose of environmental test is to ensure that the weapon system can operate normally in different environments throughout the life cycle. In other words, the design margin of the hardware can be realized by environmental qualification test. In the past, when the product failed after the environmental test, there are two ways to correct the failure; re-design and select different parts to replace the original one. It wastes not only a lot of manpower, but also time waste. However, the failure might be random one that is irrelevant to design or part selection. If repair is carried out immediately and re-design is skipped after product failure, many manhours and a investment will be saved. This study used tree diagrams from QC 7-method tools to analyze the development process of the project A. The discussion is divided into four parts. First of all, this study finds the weak point of the original process and modify it. Secondly, this study explores the number of subjects, the test sequence, and the re-verified process of the environmental qualification test. Thirdly, according to the U.S military standard, this study establishes a new process that should be followed when the product fails in the environmental test. The process is implemented for the project A and its benefit evaluated. Finally, the new process is included in the environmental specification, so that it can be followed by other similar project.

Key words: Environmental qualification test 、 Reliability 、 Systematic diagram