

Pyro Technical Data and Information Management

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1. Introduction

Two main management areas needed to successfully carry out a complex project with long project term, many stakeholders and success targets are systems engineering (SE) and project management [1]. Pyro project is an example of complex project, which develops process and durable equipment under high radioactivity and high corrosive environment, design of equipment and facility, and also involves joint research to verify technical and economic feasibilities, and nuclear nonproliferation acceptance.

In this article, we reviewed the technical management related standards in a view of systems engineering (SE), and then suggested the necessary process, a technical data and information management.

2. Systems Engineering (SE) and Technical Management Processes

2.1 Systems Engineering (SE) and Project Management

According to ISO/IEC/IEEE-15288:2015 standard [2], “systems” are defined as man-made, created and utilized to provide products or services in defined environments for the benefit of users and other stakeholders. And, “systems engineering (SE)” is an interdisciplinary approach and means to enable the realization of successful systems, and is an integral part of project management in that it plans and guides the engineering effort [3].

2.2 SE Standards

Typically, the following typical standards: ANSI/EIA-632 [4] and ISO-15288 [2], are widely known, and only ISO-15288 is accepted as the Korean Industry Standard, KS-X-ISO/IEC-15288 [5].

ISO-15288 was first enacted in 2002 and has been upgraded in 2009 and 2015. The ISO-15288:2015 consists of 30 processes in 4 groups: agreement, organizational project-enabling, technical management, and technical processes. The technical management process group is composed of project planning process, project assessment and control process, decision management process, risk management process, configuration management process, measurement process, and quality assurance process.

Another best practice in SE effort is NASA/SP-2007-6105 Rev1, “NASA Systems Engineering Handbook” [1], which has been applied to the development and implementation of large and small NASA programs and projects. The NASA’s SE consists of 17 processes in 3 groups: system design, product realization, and technical management processes. Here, the technical management processes, which is composed of technical planning, requirement management, interface management, technical risk management, configuration management, technical data management, technical assessment, and decision analysis, play an important role to manage and control the systems between system design and product realization.

3. Pyro Technical Data and Information

Management

The review of above SEs shows that an important function in technology management is to manage the resources or technical performance (including technical information, data and configuration) of the project. In addition, decision making, risk management, assessment and measurement are also important technology management processes. In the current state of the pyro project, which focuses on the development of pyro technology and equipment, an 'integrated technical data management' with the function to manage pyro-related technical data and information, assess and measure the pyro technology, and maintain the product consistency is essential. On the other hand, quality assurance and risk management should be promoted independently at commercialization stage.

4. Conclusion

The technical management processes were reviewed by the SE standards and handbooks. The technology management processes that can be applied from the pyro technology development phase were analyzed to be assessment and control, configuration management, measurement, technical data management and QA. Because QA has been already applied, an 'integrated technical data management' with the function to manage pyro-related technical data and information, assess and measure the pyro technology, and maintain the product consistency is needed for the present pyro project.

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