

Human Factors in nuclear safety engineering – Developing a company specific process to apply a system view of human, technology and organization

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Abstract

A system safety view and early inclusion of addressing the interaction of Human, Technology and Organisation (MTO) is important in the design and refurbishment of technical systems in nuclear facilities. The MTO framework is used to represent the use of human factors expertise and a system safety framework in order to ensure high safety in different areas of industry. Well known problems in applying MTO in engineering projects are: MTO is considered at a late stage of the project where solutions are set and cannot be altered, MTO is not addressed in a systematic manner, little or no coordination of the MTO issues and overall project process, lack of understanding the need and the benefits of applying MTO throughout the entire project process, lack of competence in human factors issues; shortage of human factors expertise as well as basic knowledge in the project team. The existing guidelines are perceived as being too complex or too extensive in order to be applied in smaller projects, nor are they adapted to meet the specific company needs. The purpose of this study was to develop a company specific approach in order to meet regulatory demands, existing guidelines and the specific technical and company safety management needs. The result shows that important process characteristics were *transparency*, *a scaled approach*, and definition of *level of expertise*. Future work includes creating supporting instructions in the company safety management system, as well as evaluating the routine by applying it in different engineering projects.

Introduction

Background

A system safety view and addressing the interaction of Human, Technology and Organisation (Swedish abbreviation MTO) at an early stage is important in the design and refurbishment of technical systems in nuclear facilities. In the nuclear field it is a regulatory requirement to apply such a framework in design and evaluation of nuclear facilities with the purpose of eliminating or minimizing the

In D. de Waard, A. Axelsson, M. Berglund, B. Peters, and C. Weikert (Eds.) (2010). *Human Factors: A system view of human, technology and organisation* (pp. 387 - 394). Maastricht, the Netherlands: Shaker Publishing.