

## A Recent Revisit Study on the Human Error Events of Nuclear Facilities in Korea

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After Fukushima accident we have launched two new projects in Korea. One is for the development of the countermeasures for human errors in nuclear facilities, and the other is for the safety culture of nuclear power plant itself. There had happened several succeeding events that turned out to be the typical flags of the human and organizational factor issues for the safety of the other socio-technical systems as well as nuclear power plants in Korea. The second safety culture project was an ambitious development to establish an infra system utilising system dynamics, business process modeling and big-data techniques to provide effective and efficient information basis to various interest parties related to the nuclear power plants. However the project has been drastically cancelled last year without any further discussion on the original issues raised before in Korea. It may come not only from the conflicting perspectives among the different approaches to nuclear safety culture but also from the misunderstandings on the human factors for the nuclear safety.

Thereby the first project in Korea is a kind of revisit study on the human errors themselves at first, secondly on the practical hazards that we should cope with in prioritised, and finally on their countermeasures that we could manage in practice. The study has been focused to the human errors especially in unexpected situations of nuclear facilities such as Fukushima accident. Though it is nowadays well known that human error means a crucial consideration for nuclear safety, current works on HRA and human factors verification may not be enough. The rareness of the errors in nuclear and the non-stochastic characteristics still require more cares beyond HRA, and additional considerations over the traditional safety such as occupational safety. For example violation type of human errors in compliance should be considered carefully in case of social/routine/permitted contexts. The key consideration to these human and organizational factors could be that they are not hazardous when separated deeply in the digital technologies and the organizations in terms of culture, climate and etc. in a system, but become critical when structured by the humans and human factors in the system. So a systemic concept/approach may be indispensable to cope with them including at first an infra system such as IMS(integrated management system).

Nowadays we are trying to devise many effective schemes to capture out the structural mechanisms of those hazards based on the database of the human factors characteristics including the personal traits and organizational differences, and proactive new criteria and defensive features that might be plausible and practical against to them.