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1. Comments to DG 1130

In page 5 of DG1130 it states that:

(d) Annex D, "Identification and Resolution of Hazards," The staff agrees that FTA and FMEA are well-known techniques for analyzing potential hazards; however,, this annex is not endorsed because it provides inadequate guidance concerning the use of FTA and FMEA. Guidance is provided in Branch Technical Position HICB-14," Guidance on Software Reviews for Digital Computer-Based Instrumentation and Control Systems."

These statements imply that BTP 14 contains "guidance concerning the use of FTA and FMEA", but BTP 14 does not contain such guidance.

INER (Institute of Nuclear Energy Research) staff have applied BTP 14 for reviewing Lungmen digital I&C project in last 6~7 years. We are familiar with BTP 14 and wrote several reports discussing the strengths and weaknesses of BTP 14 and related guides.. BTP 14 only prescribes hazards need to be identified and resolved, such as in Section 3.1, i: Software Safety Plan:

"Hazards, including abnormal events and conditions and malicious modifications, should be analyzed and documented. Hazard reduction efforts should be documented.

A method should exist to identify hazards caused by software, and to identify hazards whose resolution will be under the control of software.

2. Suggestions: NRC should consider issuing a Regulatory Guide for reviewing Software Safety Analysis process and results.

If one looks the software life cycle activities as described in Figure 7-A-1 of SRP Chapter 7 (NUREG 0800). There are three supporting activities: V&V, CM and Software Safety Analysis (SSA). There are RGs for V&V (RG1.168) and CM (RG1.169), but there is no RG for software safety analysis. However, considering the influence and importance of these three supporting activities, SSA is more important and influential than the other two activities. During Lungmen digital I&C licensing review process, SSA process and reports are considered as the most critical topic. If NRC decides to write RG for SSA, INER is willing to provide our SSA review experience gained from Lungmen Project.

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SSA Review Complete

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