

International Conference on Human and Organizational Aspects of Assuring Nuclear Safety –Exploring 30 Years of Safety Culture



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Verification of Human Factors in Mexican Nuclear Facilities, Experience Gained During 20 Years

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Contain a generic description of the main problems identified during surveillance on Human and Organizational Factors in Laguna Verde Nuclear Power Plant for 20 years. It also describes the main challenges to meet by the Mexican regulatory body in order to continue and improve monitoring of these topics.

Synopsis

One important insight from studies of the Three Mile Island (TMI), Chernobyl, and other nuclear power plant (NPP) accidents is that errors resulting from human factors deficiencies, such as poor control room design, procedures, and training are a significant contributing factor to NPP incidents and accidents. Plant safety requires “defense in depth” that encompasses using multiple barriers to prevent the release of radioactive materials, and employs a variety of programs to assure the integrity of barriers and related systems (IAEA, 1999). These programs include conservative design, quality assurance, administrative controls, and human factors.

This presentation describes the main activities and the process carried out by the CNSNS in Mexico, over 20 years to follow up on topics related to Human and Organizational Factors, including the main challenges to be solved by the regulatory body to ensure adequate monitoring of these issues in the Laguna Verde Nuclear Power Plant, for example:

- Diffusion with the licensee of the benefits of development and implementation of a Human Factors program. Results of measurements of noise, lighting and temperature were the first activities on the subject.
- Verify the Detailed Control Room Design Review process and solve all the problems identified during the review, such as: Use of color code to identified Systems and Instrumentation, Darkboard configuration in Alarm Systems, Use of color codes to identify ranges of normal and abnormal operation, Relocation of controls and handles.
- Replacing analogue by digital instrumentation and determine their impact on the actions of the operators in the main control room (Híbrido Control Room).
- Review and improvement of operational procedures to reduce the occurrence of events by inadequate written communication.
- Verification from the point of view of human factors of the areas of process buildings where you want to perform alignments systems, according to the emergency procedures.
- Verification of implementation of analysis tools to determine human errors in the occurrence of operational events at the facility.
- Human Factors Verification during Power Up Rate Project, by modifications in the Main Control Rooms of the facility. Mainly the Human-Machine Interface, in systems with displays and commands in computer screens.

Also describes the main challenges to be solved within the Mexican regulatory body, regarding:

- Formalization, development and management of a regulatory program on Human and Organizational Factors.
- Development of own human resources (experts), on the topics of human and organizational factors.
- As part of the Operating Experience Review, develop a database that allows recording and analyzing the main contributing factors and causes of human error.

Country or International Agency

Mexico

Type "YES" to confirm submission of required Forms A and B via the official channels

YES

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