**Integration Group for the Safety Case (IGSC) Symposium 2024***MOVING TOWARDS THE CONSTRUCTION OF A SAFE DGR – GETTING REAL*

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| **Abstract Title:**  **Human reliability in the German site selection for a nuclear waste repository** | |
| **Abstract (300-500 words):**  Following the conventional use of nuclear energy, Germany is currently in a search process for a repository that provides the best possible protection for people and the environment from ionizing radiation. Conventional methods for analyzing human errors are designed and applicable for existing systems (e.g., THERP (Technique for human error-rate prediction)), enabling the assessment of human reliability in the performance of tasks in nuclear power plants. The 2nd generation HRA-methods (Human Reliability Analysis) have considered human reliability in a more complex system context and recognized human reliability enhancing aspects (e.g., SLIM (Success Likelihood Index Method)).  The German search process and site selection is expected to continue for several decades due to the gradual exclusion of unsuitable regions. Beside all scientific and engineering knowledge and tools also methods are needed to analyze human error in this conceptual phase. The quest for a repository involves extensive and complex research and exploration projects, such as those focusing on the long-term predictability of geology. In addition to classic work steps such as decision-making, result evaluation and result interpretation, further human factors must be taken into account, which are based on human perception and interaction, as well as cognitive models. This research project aims to identify and measure such human factors. For this purpose, a questionnaire has been designed with self-statements to be answered on a 6-point rating scale. Individual and collective biases form one focus of the questionnaire. Specific biases can be associated with various stages of work. Activities in the early phases of research projects are particularly susceptible to anchoring bias. If hypotheses are then created and tested, these activities are susceptible to confirmation bias. However, many other biases (e.g., authority bias or overconfidence bias) can be categorized less clearly in a process sequence and must therefore be considered in principle. In addition to biases, aspects are also measured that influence the path between the existing task according to the project outline or work instruction and the cognitively existing task. These include, for instance, explicit or latent management objectives, societal and personal goals (social recognition) as well as personal concepts. For these factors, multiple situations are described and formulated as items. The degree of agreement or disagreement then provides an indication of whether human reliability concerning the factor can be interpreted as increased or reduced.  The questionnaire is currently being used to collect data enabling the procedure to be developed further and, on the other hand, to improve the interpretation of measurement data through comparison with normative data. This allows individuals to compare their own results with these. The next step is to implement recommendations in the method. This aims to provide users with clear action steps with which their own reliability can be increased. | |