

# **Application of the model CREAM for the influence of Human and Organizational Factors on the performances of an RT inspection**

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This communication reports on a study carried out in the context of the collaborative FOEHN project (Human and Organizational Factors in Non-Destructive Evaluation) supported by the French National Agency. The motivation of this project comes from the observation that human and Organizational factors (HOF) are not sufficiently taken into account by the NDT community. Its goal is to analyse and model the influence of the HOF on selected cases of study in the perspective of a better evaluation of the performance of inspections. The communication is focused on a Radiographic Testing (RT) case of study in which it appeared that several successive inspections had failed to detect an existing in service defect. The analysis and modelling of HOF related to interpretation of radiograms has been achieved in the framework of the CREAM (Cognitive and Reliability and Error Analysis Method). A survey has been conducted during the training and the maintaining of the proficiency of NDE operators. This was followed by a non-participant observation of operators on site and several individual interviews including a sample of people covering the main organizational and hierarchical roles (eg. project management, management, operations, invigilation). The exchange with the HOF experts resulted in a hierarchical analysis of "radiogram interpretation" tasks (31 sub-tasks) and a list of contextual and organizational factors that may affect the performance of interpretation of radiograms by the operator. From such a description the CREAM method allows to determine critical tasks and probability of "errors" linked to a limited set of "Common Performance Conditions" (CPC). The first conclusions of this study are that the model CREAM seems well-adapted to the estimation of the impact of HOF on NDT performances. The next phases should be to apply it to other tasks (here only radiograph interpretation) and techniques. The expected benefit of this study is to provide tools for the evaluation and optimisation of NDT implementation.