

## **Comments on CNSC “Human Performance” discussion paper**

*IRSN (France) – 23 February 2017*

The IRSN has been very interested to look at the CNSC discussion paper on Human Performance, which is globally a good contribution for clarifying the concept of Human Performance. Indeed, this concept is at the core of our domain, and it is also useful to clarify relations with other concepts such as human factors, management system, human performance tools, etc. as well as what is expected and how to oversight, in a graded approach, etc.

Our reading was guided considering both the human and organizational aspects as major contributors to Human Performance in nuclear safety. That’s why the points we highlighted hereafter go beyond the simple human contribution consideration.

On the whole, we can note that this Discussion Paper focuses mainly on two points which are the human behaviour and the results obtained by the individuals at work. IRSN believes that evaluating Human Performance only upon these criteria prevents from having access to the human cost required to achieve the performance expected, both at the physical and cognitive levels. Because human cost depends largely on “working environment” characteristics, a Human and Organizational Factors Approach to Safety requires considering in detail how these characteristics influence behaviors; and it is important to highlight that this influence is mainly by bringing some variability in the “working situation”. This latest notion refers not only to the individual at work but also to the context in which he operates. That’s why IRSN suggest that the document put a greater emphasis on a systemic approach to be able to evaluate human performance in a more global way (holistic).

To this end, it would be interesting to dedicate a specific chapter of the discussion paper on how different factors may have an impact on human activity and how they can interact each other to determine the human behavior. As a matter of fact, several types of factors could be taken into account notably because of their own influence on the individual behavior and also because of the potential harmful consequences of their combination. Among them, let’s quote for instance : organization and management (skill management, decision-making processes, communication, relationships, rules, operating experience feedback,...), workload, work groups, collective dimension, human beings characteristics, physical environment, safety culture, etc...

Moreover, it’s important to notice that human adjustments in daily activities contribute to ensure reliability, and thus nuclear safety. As such, they have also to be considered as a part of human performance. This part of human performance, known as “managed safety”, needs to put in place relevant tools in order to be properly evaluated. In any case, this aspect should be taken into account when evaluating human performance.

Finally, the points mentioned are concerned with the individual capability to operate as expected. Taking these points into account is thus crucial in the evaluation of human performance. That’s why defining a human performance program can’t be reduced to a list of factors being checked. For IRSN, a human performance program must be seen as a component of an overall HOF process whose goal is to contribute to ensure the best conditions to allow individuals to operate as expected, and then to contribute positively to safety. In particular, an important contribution of human to safety is recovering, for example in case of a failure of technical component, or after an error.

*Human & Organizational Factors and Operating Experience Feedback Department*

*IRSN / PSN-SRDS / SFOHREX*