

February 14, 2017

NK21-CORR-00531-13355
NK29-CORR-00531-13904
NK37-CORR-00531-02707

Mr. B. Torrie
Director General, Regulatory Policy Directorate
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Mr. Torrie:

Bruce Power comments on Discussion Paper DIS-16-05 - Human Performance

The purpose of this letter is to comment on this discussion paper, which the CNSC produced to open a dialogue with interested stakeholders and develop a shared understanding of human performance.

At the outset, let me say that Bruce Power does not believe formal regulation or guidance on human performance is required. We look at the first principle of best-practice regulations, which is to determine if a problem even exists through rigorous analysis, and see no gap to nuclear safety that a Regulatory Document would be needed to close. The topics discussed in the paper already exist within licensees' management systems and the various programs we use to comply with *CSA-N286, Management Systems for Nuclear Facilities*.

Having said that, we appreciate the CNSC's efforts to initiate discussion on the topic and encourage all interested parties to come together for a CNSC-sponsored workshop to continue the conversation.

During a collaborative review of this paper with our industry peers, a clear need emerged for consistent definitions and a common understanding about what is truly meant by human performance and human factors among licensees and the CNSC. Even the definitions cited in this paper are inconsistent with those in the CNSC's recently published glossary of nuclear terms, which only underscores the need for additional dialogue. It also highlights the importance of work that is currently underway by industry, through the CANDU Owners Group, to agree on definitions and better engage the CNSC in this work.

We understand discussions are underway with the CNSC to schedule workshops with subject matter experts in human performance. As always, Bruce Power looks forward to actively participating in those workshops. To aid those discussions, please find industry's collective responses to the questions posed by the CNSC in this paper as Appendix A.

NK21-CORR-00531-13355
NK29-CORR-00531-13904
NK37-CORR-00531-02707

Bruce Power Frank Saunders Vice President - Nuclear Oversight and Regulatory Affairs
P.O. Box 1540 B10 4th floor W Tiverton ON N0G 2T0
Telephone 519 361-5025 Facsimile 519 361-4559
frank.saunders@brucepower.com

Mr. B. Torrie

February 14, 2017



If you require further information or have any questions regarding this submission, please contact Maury Burton, Manager, Nuclear Regulatory Affairs, at (519)-361-2673 extension 15291, or maury.burton@brucepower.com.

Yours truly,

 Frank Saunders
Vice President Nuclear Oversight and Regulatory Affairs
Bruce Power

cc: CNSC Bruce Site Office (Letter only)

Attach.

Attachment A

Responses to CNSC Questions – Dis-16-05 Human Performance

RESPONSES TO CNSC QUESTIONS – DIS-16-05 Human Performance

Q 1. Do you agree with the definition of human performance as stated above? Are there changes or alternative definitions you would propose?

Industry does not agree with the definition introduced in this discussion paper, which includes the phrase “results of human activities.” Under certain circumstances, it may be viewed as promoting inappropriate (unsafe) behaviours to achieve a desired result. Licensees suggest the CNSC host a workshop with all interested parties to agree upon a clearly-written definition industry could align with based upon a common understanding and actual work in the field. A more accurate definition would recognize that human performance includes various factors that affect the behaviour of humans. It would also recognize the distinction between behaviours and their results (accomplishing a specific objective or task). Ahead of a workshop, licensees and the CNSC might consider the definitions used by WANO/INPO, IAEA and other established industry groups that use descriptors such as *series*, *variables* or *system*. For instance, the INPO definition says HU is a “series of behaviours executed to accomplish specific results.” The IAEA definition includes the phrase “variables that influence” while the American Department of Energy’s definition includes the phrase, “a series of behaviours.” FIT calls human performance “a system comprising People and the Work Environment.”

Q 2. Do you propose any changes or alternatives to the CNSC’s existing definition of human factors? Please provide rationale for any proposed changes or alternatives.

Industry believes defining human factors as “those factors that influence human performance” is overly broad and vague. All aspects of a facility -- including its management system, social and economic conditions, physical design, as well as non-work related experiences and situations -- can influence human performance. The inherent characteristics of humans, the specific characteristics of individuals or groups of workers also influence work behaviours and results. Given this, the definition in this paper does not actually provide guidance because it can be interpreted as essentially everything about the facility, the worker and the environment around them. Considering these components are already included in other programs, licensee’s management systems and Licence Condition Handbooks, it is unclear why they would be replicated in a separate program. The definition and supporting references in this section are also circular. They define human factors in terms of human performance by giving examples of human factors that are then used as examples of elements of a human performance program later on, e.g. fitness for duty, organizational culture, etc. Definitions as they relate to the application of human factors engineering are not outlined clearly. Again, licensees suggest the CNSC host a workshop with all interested parties to agree upon a definition of human factors this based upon a common understanding and actual work in the field.

Q3. Do you agree with the objectives and practices of a human performance program listed above? Are there items that you would add to or remove from the lists? Please explain.

Industry does not agree because the definitions of human factors and human performance program are not correct. The objectives are NOT written in a specific, measurable, achievable, or reasonable way and the practices listed for a human performance program are not all-inclusive and should not be contained in a list or be prescriptive. The description of a human performance program as a set of coordinated activities is too limited since human performance is a system that is integrated into a program, not a program itself. Achieving excellence in human performance relies on a significant, over-riding leadership component and a significant planning phase to set workers up to succeed.

For reference ahead of a potential workshop, licensees and the CNSC might consider IAEA document **NG-T-2.7 Managing Human Performance to Improve Nuclear Facility Operation**, which supports the Re+M view saying, “*The strategic approach to improving human performance is really defined by two elements: (1) Anticipating, preventing, catching and recovering from errors on the job, (2) Identifying and eliminating organizational weaknesses, which induce and set individuals up for failure, by establishing and managing error defences.*” This IAEA document also addresses human factors concepts as well as Corrective Action Program concepts. Most nuclear utilities have separate processes for documentation management, fitness for duty, ergonomics, human performance, human factors engineering, etc.

Q4. Do you agree with the elements of a human performance program listed above? Are there items that you would add to or remove from the list above? Please explain.

Industry does not agree because the definition of human factors and human performance program are not correct. Industry believes the elements are too prescriptive. As written, they could inadvertently mandate organizational design and a stand-alone program that would not take advantage of the synergies and best practices of an integrated approach within the management system. Industry does not believe the elements as listed are all inclusive. Again, industry encourages the CNSC to conduct a workshop with all interested parties to discuss the elements of a human performance program once commonly understood and accepted definitions are derived.

Q5. Do you agree with the concept of a human performance program described above? If you would propose other ways of viewing a human performance program and its elements, please describe them.

No. This is not a program, but another consideration for an integrated management system. Programs require distinct processes that can be easily described and performed with clear, measurable goals and outcomes. Industry believes the best human performance program is not a stand-alone program document, but one where the elements are integrated within the appropriate parts of the management system as outlined in *CSA N286-12* and *IAEA Safety Fundamentals No SF-1*. The CNSC references SF-1 on page 6-7 as identifying “the need for an integrated approach to human performance (sections 3.12 and 3.14).”

Q6. Do you think that the requirement to have a human performance program should be applied using a graded approach to all CNSC-licensed facilities and activities? If so, what might this graded approach look like?

Industry sees no compelling need for regulation in this area. The mandate of the CNSC is to protect the health and safety of Canadians and the environment. Imposing regulations in this area would add a significant administrative burden upon licensees which would not necessarily make operations safer, just more complex. Every facility has a variety of factors that make up risk. The higher the risk, the more focus there has to be on improving human performance. Industry believes a graded approach works well, but feels the discussion paper does not do much to enable the application of a graded approach. Instead, the paper reads very prescriptive with lists of objectives, elements, and practices. Industry supports the CNSC alternative outlined on page 8 beneath the heading Graded Approach, which says, “a human performance program may be a defined and collectively managed set of interfaced activities and initiatives, which consider the elements of human performance and aims of the program, but without being a formal program within the management system.”

Q7. Which type of human performance program (a formal program or otherwise) is most appropriate for the types of nuclear facilities most relevant to your comments, and why?

Industry disagrees with the distinction of a “formal” program or otherwise. A graded approach means some licensees will focus on certain aspects of human performance (with justification) and other facilities will focus on a different set of human performance elements (again, with justification provided in their planning/program documentation.) The focus should be on: (a) How does a licensee’s management system address the human performance elements? (b) How is this approach relevant/important for a licensee’s particular facility?

Q8. Do you propose any additional or alternative expectations of a human performance program?

Industry believes the expectations outlined in section 9 are too formal and prescriptive. In many cases, they not provide clear expectations but simply examples of application of human performance practices. Once again, licensees encourage the CNSC to host a workshop with all interested parties to discuss this and all other questions posed in this discussion paper.