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**Subject: Discussion Paper DIS-16-05 – Human Performance**

Thank you for the opportunity to provide comment and feedback on the CNSC Discussion Paper DIS-16-05, *Human Performance*, published in October 2016. We also very much appreciate the opportunity to have participated in a recent information session between nuclear industry representatives, and CNSC staff.

Each question is addressed below in sequence, as laid out in the discussion paper.

**Q1: Do you agree with the definition of human performance as stated above? Are there changes or alternative definitions you would propose?**

The stated definition of the term ‘human performance’ is quite simple; comparatively, the definitions offered by other organizations is often much more complex. For example, in NG-T-2.7, *Managing Human Performance to Improve Nuclear Facility Operation*, the IAEA defines human performance in a much greater level of detail and complexity (over 1,200 words) under section 2.1.

Applying either the simple or the complex approach to defining the term will have benefits and detriments; the important question is to establish how the definition would specifically be used or leveraged during discussions, assessments, inspections, etc. For example, instituting a simple, one-sentence definition for human performance such as that proposed offers the possibility of a very large amount of interpretation on behalf of the licensee, the regulator, or other stakeholders.

On a more technical note, the definition is laid out in a way that could be confusing due to the presence of the word ‘and’ where it currently sits. If we break the sentence into two complete sentences as currently laid out, the definition would become:

- Human performance is the behaviour of human activities when carrying out work tasks

- Human performance is the results of human activities when carrying out work tasks

'Human activities' do not exhibit behaviour – humans do. The sentence as structured can be improved; for example:

*Human performance is a combination of both the behaviour of humans performing activities, and the results of those activities, when carrying out work tasks.*

**Q2: 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.**

The existing definition is viewed as adequate, contingent on the selection of an adequate definition of human performance.

**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.**

SRBT is a Class IB nuclear substance processing facility that employs less than 50 workers. The content of the lists for both objectives and practices seems to be sufficient and comprehensive; however, it cannot be overstated that SRBT would fully expect and request that a risk-informed and graded approach be applied to the future application of any program objectives and targets.

Our facility employs a comprehensive management system that meets or exceeds the requirements and intent of CSA standard N286-12, and which has been accepted by CNSC staff. In reading the discussion paper, our interpretation is that a formal 'program' complete with human factors specialists or a dedicated management organization would not be justified, and that our management system as currently implemented provides sufficient assurance that human performance is taken into consideration during the development and execution of all work activities associated with facility operation. This seems to be an option further down the document where the topic of a graded approach is laid out and discussed, as well as the statement of a 'road map' being acceptable for demonstrating how activities and processes interface to ensure effective human performance management.

The real problem is that the objectives and practices are very detailed and do not seem to lend themselves to anything but a large-scale, formalized and all-encompassing program, complete with a dedicated human performance manager and associated staff.

CNSC should carefully consider how any program objectives and practices are documented in order to make sure that they are not so specific and imposing that they

end up excluding the possibility of applying a graded approach to managing human performance in an acceptable way. The current lists may all but remove the option of implementing anything but a dedicated program.

**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.**

Several of the bulleted elements are already covered by other aspects of nuclear facility management and regulatory requirements. For example, many of the elements are also reflected within guidance relating to safety culture.

In addition, some elements already exist as their own Safety and Control Area – why would physical design, safety analysis, and management and supervision (management system) be repeated as an ‘element’ of a human performance program. Instead, human performance is an aspect of these areas that should be taken into consideration – consideration of human performance and human factors are ‘elements’ of a safe physical design process.

Human performance is an aspect of nuclear safety that crosses into nearly all activities relating to nuclear facility operation – especially as the term is defined earlier in the paper. The elements of the program should be very much in line with how the term is defined. For example, currently the term is defined in two elements – behaviour and results – so any program that is intended to positively influence and optimize human performance would logically include two elements: the management of the behaviour of humans, and the management of the results of their activities. Each of these two elements can be further broken down of course, but the hope would be that there would be an effort to avoid replicating other already well defined aspects of nuclear safety management.

We would prefer to think of human performance as a key consideration in the overall safe operation and management of a nuclear facility. For a manufacturing facility where the vast majority of work is highly routine and deviations from these routines rare (i.e. very few high-risk activities, no complex systems that require configuration management, very infrequent ‘new’ activities on any given scale), it makes much more sense for the organization to demonstrate the ways that human performance is taken into account within processes, rather than having processes to manage each of the listed elements of a human performance program on a day-to-day basis.

**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.**

Again, the term 'program' implies something that may not be a good fit with all nuclear facilities. SRBT would offer that for a facility of our scale and risk profile, the integration of a human performance 'policy' into our already accepted management system structure may be a more reasonable approach to maximizing the performance of our workers when undertaking work-related tasks.

**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?**

Emphatically, SRBT agrees with this proposal; however, the scope of any regulation or REGDOC in this area should also be very clearly defined. For example, the latest draft REGDOC on Safety Culture attempts to clearly restrict certain parts of the requirements solely to Nuclear Power Plants. SRBT appreciates and supports this type of segmentation of requirements.

If a graded approach to human performance management were to be applied to ALL CNSC-licensed facilities and activities, this would logically mean that at some level, even licenced device operators (such as industrial radiography workers) would need to somehow show evidence that human performance is taken into account as part of their work. The act of importing and exporting nuclear substances is also a licenced activity – would human performance need to be applied to that activity as well? The term “all CNSC-licenced activities” should be carefully considered for use in any regulatory context, as the scope of that set of activities (as set out in Section 26 of the NSCA) is broad and complex, and may impose unintended consequences onto licensed persons.

**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?**

The establishment and implementation of a policy relating to how human performance management is integrated into our management system would more than likely be sufficient to ensure a continued high level of human performance (both with respect to behaviours and results) at our facility.

The implementation of this policy would then filter down into important safety-related processes, programs and procedures – for example, within any procedure relating to maintenance, the manager of the maintenance program would be expected to account for human performance when establishing or revising procedures relating to important safety-related maintenance activities.

A formal program dedicated solely to the management of human performance at a high level would require a level of management and oversight, and administrative resource

allocation, that is likely not justified when balanced against the risks associated with our operations, and our operational performance and safety track record.

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

Again, to reiterate, so long as the scope of any associated REGDOC is segmented in a risk-informed manner, and the CNSC also allows licensees to apply a graded approach to how they integrate the management of human performance in their operations, SRBT does not have any fundamental technical issue with the expectations as listed in the discussion paper.

As well, SRBT feels that many of these requirements and expectations are also sufficiently covered by the requirements of our N286-12 compliant management system, as well as current or upcoming regulatory documents (for example, safety culture, personnel training, fitness for duty).

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In conclusion, SRBT hopes that our feedback helps in the development of regulatory strategies and guidance in the area of human performance. Should further information be required please do not hesitate to contact me directly.

Sincerely,



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cc: R. Buhr, CNSC  
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