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**From:** Safety Probe [personal information redacted] June 11, 2020 5:44 PM  
**Sent:** Consultation (CNSC/CCSN)  
**To:** REGDOC 2.10.2 Fire Protection: Comments by Safety Probe International  
**Subject:** Comments to the CNSC on REGDOC on Fire.pdf  
**Attachments:**

(Please ignore my previous email titled 2.11.2 in error)

Please find in the attachment the response of Safety Probe International, to your invitation for comments on Draft REGDOC 2.10.2.

Kind Regards,  
Helmy Ragheb, PhD, P.Eng.  
Safety Probe International



[personal information redacted]  
[personal information redacted]

June 11, 2020

## **Comments on Draft REGDOC-2.10.2, Fire Protection**

**by**

**Dr. Helmy Ragheb, P.Eng.**

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Tel: [personal information redacted]

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Please find in the attachment the response of Safety Probe International, to your invitation for comments on Draft REGDOC 2.10.2.

You will note that the comments provide highlights of a number of issues that have arisen from lessons learned from a long history of operating experience in the nuclear industry in Canada and around the world. Among these issues are the following:

1. Definition of the interfaces of fire protection systems with the facility process and safety systems.
2. Consequential failures of fire protection systems.
3. Coordination of the fire assessment with the deterministic and probabilistic safety analysis of the nuclear facility.
4. Inconstancies in reporting fire events in three REGDOCs: 2.10.2, 3.1.1 and 3.1.2
5. Sharing of human resources between fire/emergency crew and the minimum staff compliment of the facility

Safety Probe International will be pleased to advise the CNSC on possible ways to address these and other issues, in detail, in the REGDOC 2.10.2.

Kind Regards,

Helmy Ragheb, PhD, P.Eng.



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[personal information redacted]

## Attachment

### **1. Section 6, page 9:**

Text in the following two bullets needs to be modified to include the underlined text:

- "design of systems and components (e.g., fire detection and notification, fire suppression, fire resistance rating of building structures, building materials, egress and water supply); and their interfaces with process and safety systems of the facility."

**Rationale:** In some nuclear plants, portions or inventory of water supply system dedicated for fire protection may be diverted for use in augmenting heat removal from nuclear fuel, in case of an accident such as LOCA. A clear definition of the interface should ensure adequate inventory of water for fire protection, in case a nuclear accident in the facility involves fire simultaneously.

- "impairments of fire protection structures, systems and components (SSCs) and any consequential hazard or failure of systems important to safety"

**Rationale:** Impairment of fire protection system, not only could disable the system itself, but could also cause consequential failure in other systems important to safety. For example, incidents involving spurious initiation of fire suppression system in a control room of a nuclear facility, could make the control room uninhabitable, thus disabling the operating staff from controlling the plant and bringing it to safe shutdown.

### **2. Section 6.2 Page 10**

Add the following underlined bullet in the paragraph beginning with "The results of the FPA are used to provide input into:" :

- Deterministic and probabilistic safety analyses

**Rationale:** The FPA may show that water inventory needed for fire protection may have already been allocated to or shared by other safety systems using the same inventory to cater to essential cooling requirements of the facility. Therefore results of FPA should be passed on to the Safety Analysis to ensure consistency with FPA.



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### **3. Section 6.8, page 14**

Last sentence, in the first paragraph should be revised to read " The objectives of the impairment procedures are as follows:"

### **4. Section 6.14 Fire investigation and reporting fires**

It is recommended that the entire section be removed or revised with the objective of ensuring consistency with two other REGDOCs, namely REGDOC 3.1.1 and 3.1.2 for reporting for nuclear and non-nuclear power plants, respectively.

**Rationale:** Section 6.14 requires the identification of procedures for reporting fires to the CNSC. But Section 6.15 calls on the licensee's to also comply with "reporting requirements and guidance" in two other REGDOCs: REGDOC 3.1.1 and 3.1.2 for reporting for nuclear and non-nuclear power plants, respectively. Examination of the latter documents show that, on one hand, the required contents of reports on fires are not consistent with each other, and on the other hand, both of them are not consistent with the reporting requirements of the current draft REGDOC 2.10.2. The inclusion, therefore, of REGDOC 2.10.2 in any facility license ,with Section 6.14 in its current format, is likely to cause confusion to the licensees who should be required to comply, as well, with either REGDOC 3.1.1 or REGDOC 3.1.2 .

### **5. Section 6: 16 Fire response capability and Appendix I Fire Response**

This section and the associated Appendix I, describe resourcing for fire response. It is recommended that this Section address situations where human resources assigned to fire protection are shared with the operating and maintenance staff in a given nuclear facility.

**Rationale:** Nuclear facilities usually assign some of the operating staff to participate or assist in fire response team. The issue that may arise here is that there are scenarios where hazards affecting the facility, such as earthquakes, may cause multiple failures in the facility coincident with fire. In such a case, the staff compliment assigned to mitigate the effects of the multiple failures in the facility may not be effective as some resources will have to be drawn to cater to fire response.