


 Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire



Canadian Nuclear Safety Commission Supply Chain Oversight

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Outline




- The Canadian Nuclear Safety Commission (CNSC)
- CNSC regulatory framework
- Regulatory Requirements addressing CFSI
- CNSC Oversight of the Canadian Supply Chain
- CNSC oversight of CFSI
- CFSI events at Canadian nuclear facilities



2

The Canadian Nuclear Safety Commission (CNSC)



MANDATE

- Regulates the use of nuclear energy and materials to protect **health, safety, security** and the **environment**
- Implements Canada's **international commitments** on the peaceful use of nuclear energy
- Disseminates **objective scientific, technical and regulatory information** to the public



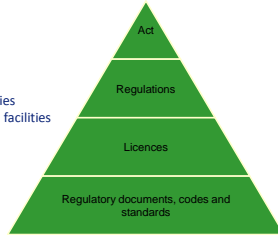
3

CNSC Regulatory Framework



Canadian nuclear facilities regulations

- **Class IA**
 - NPPs
 - other reactor facilities
- **Class IB**
 - particle accelerators
 - nuclear fuel processing facilities
 - nuclear substance processing facilities
 - nuclear waste facilities
- **Class II**
 - cancer therapy facilities
 - particle accelerators
 - industrial irradiators
- **Uranium mines and mills**



4

CNSC Regulatory Framework



An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain... the proposed quality assurance program for the activity to be licensed.

“licensed activity”: an activity described in any of paragraphs 26(a) to (f) of the Act that a licence authorizes the licensee to carry on.

Typical licence condition

The licensee shall implement and maintain a management system. This management system shall comply with the requirements set out in **CSA N286 Management System Requirements for Nuclear Facilities**

5

CNSC Regulatory Framework CSA N286-12 (Requirements)



Clauses pertaining to supply chain:

Section 7.6.2: Purchasing requirements

- technical performance requirements
- applicable codes, standards and specifications
- management system standard and applicable requirements
- inspection, test and acceptance requirements (including any special instructions)
- requirements for reporting and approving the disposition of problems
- the need for right of access to work facilities and records
- provisions for extending applicable requirements to sub-suppliers

6

CNSC Regulatory Framework CSA N286-12 (Requirements)



Clauses pertaining to supply chain ... con't:

Section 7.6.3: Supplier acceptability

- potential suppliers shall be assessed on their ability to meet the purchasing requirements, supply history and oversight of supplier's supply chain
- when supplier audits are delegated to another party, the licensee shall ensure that the results of the supplier's audit are acceptable
- acceptable suppliers shall be included on an approved supplier list

Section 7.6.6: Supplier-customer relationship

- the performance of the supplier-customer relationship shall be monitored to ensure purchasing requirements will be met
- results shall be used as an input in determining the extent and frequency of inspection, verification and audit activities

7

Regulatory Requirements addressing CFSI



• REGDOC-3.1.1:

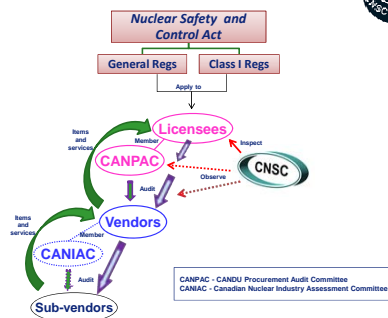
- Reporting Requirements for Nuclear Power Plants for the
 - Discovery of counterfeit, fraudulent or suspect items during the conduct of licensed activities
- Came into effect in January 2015
- The first reportable CFSI event was presented in April 2015

• Regulatory Requirement for a QA program:

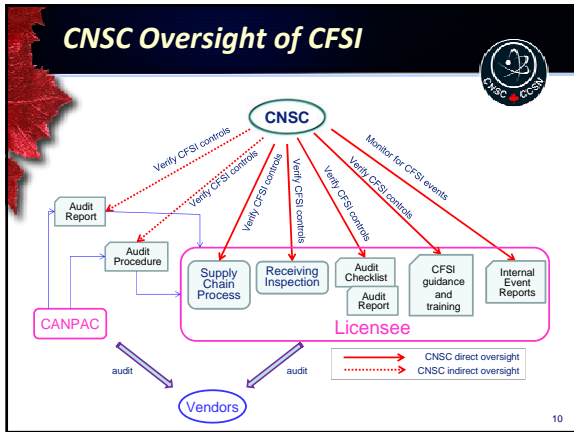
- implementing audit programs that ensure the use of only audited, qualified and reputable suppliers
- introducing CFSI awareness training programs for their personnel
- checking for CFSI at the receipt of an item, before and after installation, and via periodic inspection and surveillance testing during operation
- including contractual requirements for suppliers and sub-suppliers to prevent, detect and dispose of CFSI
- disposing of non-conforming items so that CFSI are not reintroduced in the supply chain

8

CNSC Oversight of the Canadian Supply Chain



9



CFSI Events at Canadian Nuclear Facilities

Burr Brown operational amplifiers

- January 2007: A Canadian NPP unknowingly purchased 50 CFSI Burr Brown operational amplifiers (op-amps)
 - Unauthorized distributor → vendor 2 → vendor 1 → licensee
- 2008: 5 CFSI op-amps installed in two reactors
 - shutdown system 1 (SDS1) neutron overpower (NOP) amplifiers
 - reactor regulating system level zone control amplifiers
 - an amplifier failed a routine safety system test (September 2008)

CFSI Events at Canadian Nuclear Facilities

Baumer pressure gauges

- Receipt inspection identified a suspect Baumer gauge
 - part number on gauge did not match purchase order and packing slip
 - gauge markings inconsistent with Baumer gauges
 - poor quality printing on the face plate

CFSI Events at Canadian Nuclear Facilities

Baumer pressure gauges

- March 2014 – Six gauges shipped to Baumer for examination; Baumer reported that:
 - one gauge confirmed fraudulent
 - a face plate was reversed with 0-60 psi silk screen face plate facing inward
 - adhesive paper was printed with -100 to +300 kPa facing outward
 - they appeared to have been previously used
- Extent of condition:
 - 19 fraudulent Baumer gauges were discovered in stock
 - gauges were modified (original scales in psi replaced by kPa scales)
 - 33 gauges from source distributor installed in field
 - two were found fraudulent

13

CFSI Events at Canadian Nuclear Facilities

Baumer pressure gauges

14

CFSI Events at Canadian Nuclear Facilities

Newman Hattersley valves

- Some Newman Hattersley Ltd. (NHL) nuclear class valves, of a diameter equal to or less than two inches, manufactured between 2001 and 2011, have fraudulent material test reports

Cert. A: Certification of Material from Mills to British Standard
 Cert. B: Certification of Material to ASME Requirement
 Cert. C: Certification to ASME requirement for valves > 2"

15

CFSI Events at Canadian Nuclear Facilities



600 Volt Welding Receptacles

- Sept. 2016: misrepresented as having valid CSA Certification by attaching a fraudulent CSA sticker
- CSA sticker is printed and attached at the Mexico manufacturing facility
- Product itself is not counterfeit, as it is manufactured by the valid manufacturer to the approved and proven design and using the applicable manufacturing processes and materials



16

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Canadian Nuclear Safety Commission



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