VARIANCE
CANADIAN ELECTRICAL CODE

SUBJECT: Rules 18-072, J18-072 – RE: Secondary Seals

Preamble

The requirements for secondary seals as described in the 20th edition, Canadian Electrical Code resulted in an Alberta Provincial Variance dated February 14, 2007 with the first revision issued October 1, 2007 and a second revision released on April 1, 2008. The following Variance to the installation of secondary seals will replace the existing Variance **(VAR-CEC-18-092, 18-108, 18-158, J18-108, J18-158 [rev-2])** and will remain in force as described below.

As the previous Variance (**VAR-CEC-18-092, 18-108, 18-158, J18-108, J18-158 [rev-2])** had allowed for the acceptance of a Manufacturers Declaration for those end devices meeting the requirements of ANSI/ISA 12.27.01 and where the certification process had begun prior to April 1, 2008, the following Variance will no longer accept this practice as of January 1, 2009.

In summary the existing Variances **VAR-CEC-18-092, 18-108, 18-158, J18-108, J18-158 [rev-2]** and **VAR-CEC-18-092(2), 18-108(2), 18-158(2), J18-108(2), J18-158(2) [rev-0]** will remain in force until January 1, 2009, when the following Variance will come into force.

As an alternative solution to the secondary seal rules 18-092(1)(2), 18-108(1)(2), 18-158(1)(2), J18-108(1)(2) and J18-158(1)(2) of the 20th edition Canadian Electrical Code, C22.1-06 the following Variance will provide for an equal or greater degree of safety with respect to electrical installations

This Variance will come into force on January 1, 2009 and will expire when:

1. the practice described herein is recognized in a newly adopted edition of the corresponding code, standard or regulation; or
2. this variance is revoked by the administrator.

Variance

Terms and Conditions

These terms and conditions of this Variance may be applied as an alternative solution to the Canadian Electrical Code Rules 18-092(1)(2), 18-108(1)(2), 18-158(1)(2), J18-108(1)(2) and J18-158(1)(2).
Apply Rules 18-072 and J18-072 as follows.

* **18-072 (J18-072) Flammable fluid seals**

1) Electrical equipment with a primary seal in contact with flammable fluids shall:
   a) be constructed or installed so as to prevent migration of flammable fluid through the wiring system; and
   b) be used at pressures lower than the marked maximum working pressure (MWP).
2) Where subrule (1) is met through the installation of secondary seals, the possibility of primary seal failure shall be indicated by:
   a) design features that will make the occurrence of a primary seal failure obvious; or
   b) acceptable marking means indicating that the enclosure may contain flammable fluid under pressure.

Notes to Variance

* ANSI/ISA Standard 12.27.01. “Requirements for Process Sealing between Electrical Systems and Flammable or Combustible Process Fluids”, provides construction, performance and marking requirements for the process seals incorporated into process-connected electrical equipment. Equipment containing a primary seal that complies with this Standard is eligible to include either the “Single Seal” or “Dual Seal” designation in the nameplate markings. These markings indicate that the electrical equipment is designed to prevent the migration of flammable fluid through the equipment into the wiring system when operated at or lower than the equipment rated pressure. Devices certified as conforming to ANSI/ISA 12.27.01 and marked either “Single Seal” or “Dual Seal” meet the intent of Rule 18-072(1)(a) (J18-0972(1)(a)).

* Where devices containing primary seals are not marked to indicate conformance with ANSI/ISA 12.27.01, other means may be used to prevent fluid migration through the wiring system. This may include the use of suitable barriers located between the primary seal and the wiring system, such as secondary seal or short lengths of mineral insulated (MI) cable. Where secondary seals are installed, examples of design features that make the occurrence of primary seal failure obvious are: vents, drains, visible rupture or leakage, audible whistles, or electronic monitoring. The intent of making the primary seal failure obvious is to prevent continuous pressure on the secondary seal and the possibility of an eventual secondary seal failure, as well as to protect personnel working on the device. Alternatively, where means to relieve pressure on a secondary seal is not provided, a cautionary label should be provided to warn personnel that the enclosure may contain flammable fluid under pressure.

* Engineering considerations may lead to the conclusion that the probability of leakage from a specific installation will be negligible. Acceptable factors such as an extensive history of safe operation with similar installations, or the use of a primary seal with a pressure rating well in excess of the maximum process operating pressure may be considered.

Devices exposed to Flammable Process fluids under pressure may be installed in Non-Hazardous areas, therefore owners/users should be aware that in these situations, the safety concerns are the same and the requirements listed above should also apply.