

## **FIRE ALARM SYSTEM CONTROL UNIT REPLACEMENTS**

**FP 31**

Revised: Feb. 19, 2013

### **1.0 PURPOSE**

To provide a structured guideline for inspectors when fielding inquiries or involving situations with existing buildings that require the replacement of a fire alarm system control unit.

### **2.0 SCOPE**

All members in the Fire Prevention Division.

### **3.0 POLICY**

Like most equipment in buildings, fire alarm systems have wearing components. That is, over time, these systems will require repair in order to be maintained in operating condition in accordance with the Division B Articles 2.1.3.7, 6.3.1.1 and 6.3.1.2 of the BC Fire Code. The most important component of a fire alarm system is the control unit and it typically contains the microprocessors that perform the logical actions of the system. Infrequently, the control unit of these systems may catastrophically fail, or when repair is required, replacement parts may no longer be available. In these situations it is often necessary to replace the entire control unit and related annunciator components in the system.

We may be alerted to a potential issue of a fire alarm system control unit requiring attention by a building owner or a service company. We may also discover control units that have been replaced in buildings without our knowledge during our regular inspection cycle.

The recommendation for replacement of a control system shall be in documented form from an ASTTBC certified fire protection technician or professional engineer with qualifications in electrical systems. Control units shall be replaced in conformance with the procedures listed in this policy.

The following regulations (with explanatory information) apply to the replacement of a fire alarm system control unit:

1. BCFC, Division B, Sentence 6.3.1.2.(1) requires that fire alarm systems shall be inspected and tested in conformance with CAN/ULC-S536-M, "Inspection and Testing of Fire Alarm Systems" (the "Standard").

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2. If a fire alarm system is found to not meet the requirements of ULC-S536 due to malfunctioning control unit and it is required to be replaced, Part 3 of the Standard applies. More specifically:
  - a) Where a control unit is replaced, the fire alarm system shall be verified in accordance with the requirements of Section 6 of CAN/ULC-S537-M, "Verification of Fire Alarm Systems"; and
  - b) While the control unit is being replaced, Appendix B, "Alternate Measures for Occupant Fire Safety" of the Standard apply.
3. BCBC, Division A, Clause 1.1.1.1.(1)(k) states that the Building Code applies to the installation or replacement of equipment regulated by the Code.
4. BCBC Division A, Clause 1.1.1.1.(1)(h) and Article 1.1.1.2 apply when it is determined that the existing fire alarm system as installed did not meet the building code of the day.
5. Division B, Subsection 3.2.4 applies to situations where a fire alarm system upgrade is required because the existing system did not meet the requirements of the building code of the day.
6. The BC Electrical Safety Regulations.

### **4.0 PROCEDURE**

When it has been determined that the control unit of a building fire alarm system is required to be replaced, the building owner shall be instructed to perform and/or conduct the protocols noted in any combination of the following scenarios:

**(A) Control unit being replaced with exact replacement part(s) supplied from original equipment manufacturer (OEM):**

1. Upon completion of the work a copy of the fire alarm verification in accordance with CAN/ULC-S537-M shall be submitted to our office.

**(B) Control unit being replaced with other than the exact replacement part(s) supplied from OEM (includes upgrade of control unit):**

1. Submit for building permit a design from a registered professional engineer for control system replacement meeting the requirements of the current building code.

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2. The design shall be accompanied by a report or other verification from the design professional that the new control unit is compatible with the existing system field devices and wiring installation. This would pertain to, but not be limited to, new addressable, non-addressable or hybrid (addressable/non-addressable mix) type control units or systems.
3. Upon completion of the work a copy of the following documentation shall be submitted to our office :
  - a) Fire alarm verification in accordance with CAN/ULC-S537-M; and
  - b) The Schedule C from the design engineer.

**(C) The existing fire alarm system as installed did not meet the building code of the day (as determined through inspection or written correspondence from qualified personnel):**

1. Submit to our office a report prepared by a professional engineer containing an analysis of the existing fire alarm system versus the requirements of the code of the day noting non-complying aspects.
2. Submit for building permit a design from a registered professional engineer for control system replacement and fire alarm system upgrade demonstrating conformance with the requirements of the most current building code. (Permission to correct the existing installation to meet the requirements of the building code of the day will be considered on a case by case basis in consultation with the City Building Department and the Assistant Chief Fire Prevention.)
3. Upon completion of the work a copy of the following documentation shall be submitted to our office:
  - a) Fire alarm verification in accordance with CAN/ULC-S537-M; and
  - b) The Schedule C from the design engineer.

**(D) The control unit replacement requires physical changes to the control panel and/or alterations to building components such as wiring, conduits and wall and floor systems:**

1. Submit for building permit a design from a registered professional engineer for control panel replacement or modification.

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2. The design shall address all aspects of the work that may affect building systems including fire stopping and fire separation continuity.
3. Upon completion of the work a copy of the Schedule C shall be submitted to our office.

**(E) Control unit being replaced where fire alarm system is monitored:**

1. Upon completion of the work a copy of form C5.1 from CAN/ULC-S537-M shall be submitted to our office.

**(F) Fire watch:**

During any control unit replacement a system of fire watch is required and shall be in accordance with OG FP 11 and form CFD-FP-14, "Notice of a Required Fire Watch Program." Prior to commencement of the shut-down of the fire alarm system to replace the control unit the building owner or owner's representative shall provide to our department a documented proposal on the system of fire watch being employed and shall include at least the following:

- The method by which occupants of the building will be warned of the impending fire alarm system shut down and shall include the duration of the corrective action.
- The method by which the building occupants will be alerted should an emergency occur;
- How the requirements noted in our departmental Fire Watch Program will be met; and
- The names and shifts of the personnel conducting the fire watch.

The system of fire watch shall be verified by inspection of the premises during the shut-down of the fire alarm system to replace the control unit.

In all cases above, where compliance with the building code is mentioned, it shall also mean to include that of the relevant referenced standards.

Electrical permits may be required from the BC Safety Authority – Electrical Branch. Please inform clients that electric permits may be required when performing fire alarm system modifications.

Upon completion of the work the building owner shall submit verification that all requirements of the permit have met.