

# THE INSPECTOR

Newsletter for the Members of the EIA of BC



November 2002

Ark Tsisserev, President  
Electrical Inspectors Association.

Over 230 people came together on Saturday Oct 5<sup>th</sup> to review the changes to the next edition of the code. The quadrennial code seminar is a mainstay of both the Electrical Inspectors Association and the programs we support.

Not only did a great number of people interested in the code changes show up for this event, but also the EIA gained fifty new members for 2003. On behalf of the EIA I'd like to welcome new members to the association and to encourage the members to take the time get involved by coming out to our regular meetings. Staying informed and up to date is the first step in making a difference.

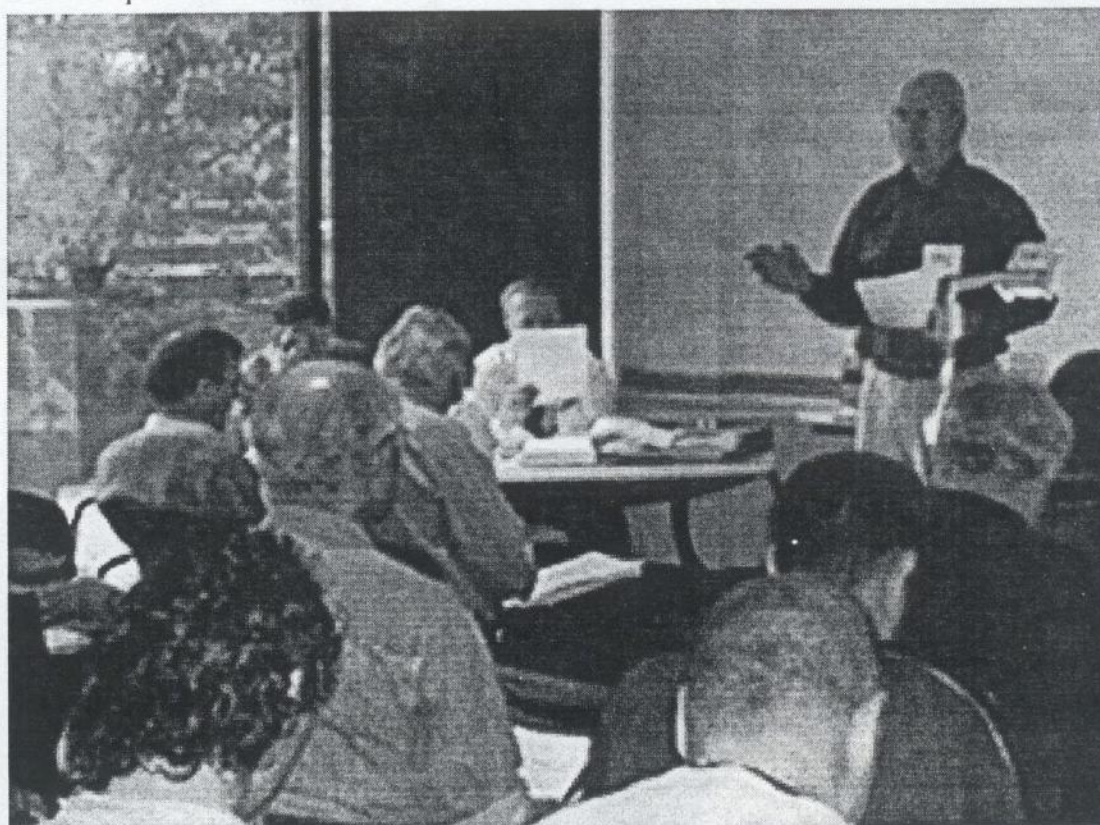
Of course, no EIA function would be complete without the odd door prize to finish off the day. Our seminar has been no exception to this approach with over \$1,000.00 dollars presented to seminar attendees.

Our instructional team volunteered their time, expertise and humour to make the day a fun learning event for all. I know that more than one instructor devoted a fair bit of personal time getting ready for the day; we would not have been as successful without their dedication and endurance.

Thanks to our instructor team of Mr. Roger Tuttle, Mr. Bob Cornwall, Mr. Farmand Ghafari, Mr Graeme O'Neill, Mr. Eric Sipila, Ms

Judy Biluk, Mr. Rick May, Mr. Robert Rieimer, Mr Dave Shavalier, Mr George Razzo and Mr. Ted Simmons, all of who took on sections of the code to review, present and answer questions from all.

Support from the Electrical Contractors Association of BC (Advertising and Registration) and TELUS (Facilities) helped to make the day a success. The BCEA, The Electric Line, the IBEW, CSA, and



A Seminar class

Continued on page 2



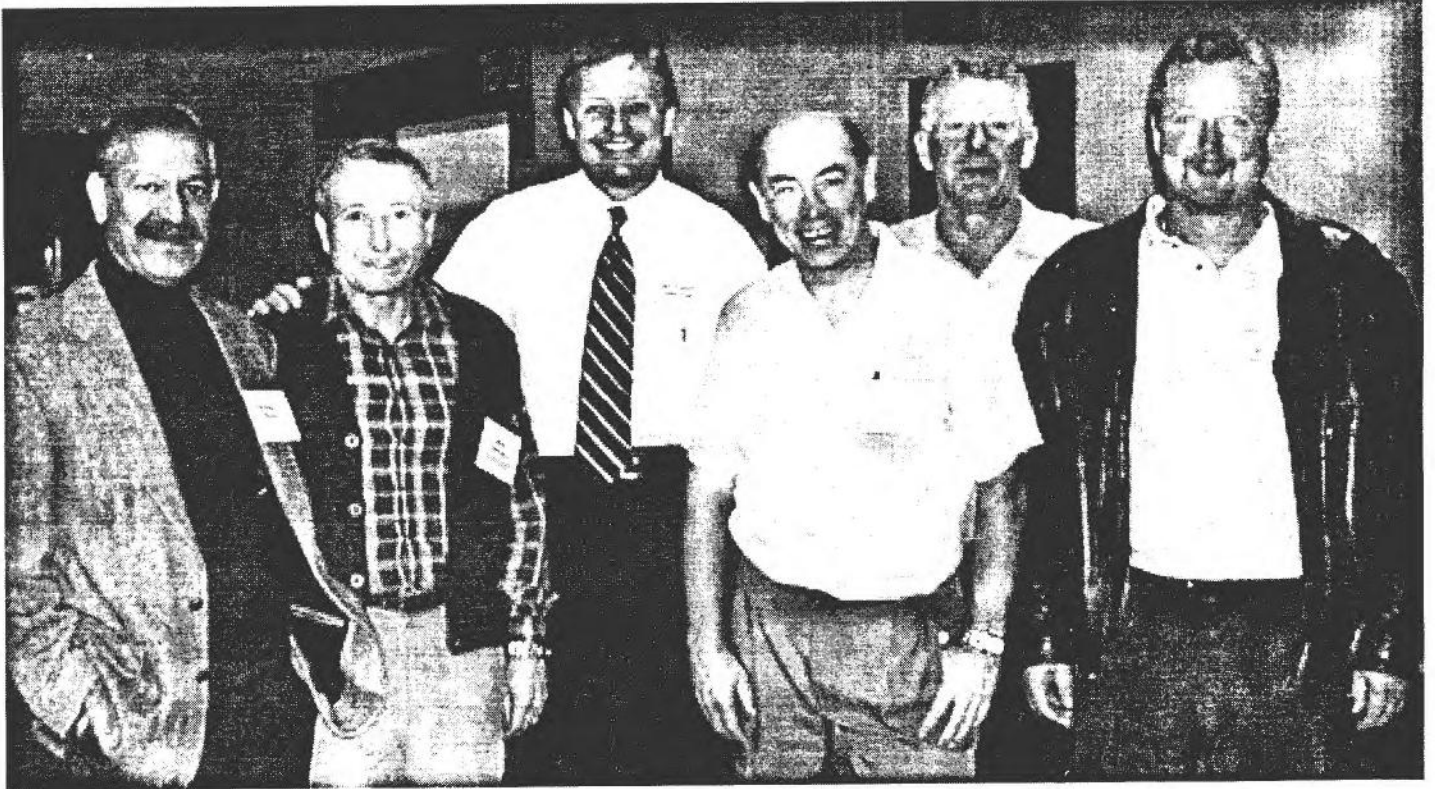
## Season's Greetings

*The President and Executive of the Electrical Inspectors Association of BC thank all the members and associates for their active support throughout 2003 and wish you all a very happy holiday season and a bright and peaceful New Year*



*(Check for details of the EIA Christmas meeting on page 5)*

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Taking a well-earned break, organizers, instructors and speakers stop for a photo



Hundreds converge for lunch

the Electrical Consultants also helped advertise our seminar informing those who otherwise would not have been aware of this event.

Additionally, special thanks go to Mr. Jack Ball, Mr. Dave Shavalier, and Mr. Mark Neath who made up the organizing committee for the seminar. Well done!

## **Jim Barker appointed to EWESC**

Many thanks to Jim Barker for agreeing to serve as the EIA representative on the EWESC. Jim replaces Jack Marsh who wishes to step down from this committee.

Jack has represented this Association on the EWESC for a number of years. On behalf of the EIA membership and Executive, EIA President Ark Tsisserev expressed their appreciation to Jack for the time, energy, expertise and knowledge he dedicated to representing the EIA on this technical committee.

**Have you renewed your membership for 2003?**

**Use the convenient renewal form on page 6 and consider renewing for 2 or 3 years.**

# The International Association of Electrical Inspectors Convention

By Jack Ball

This year after many years of debate, our association decided to sponsor six of our members to join the International Association of Electrical Inspectors (IAEI). As a result of now having members in the IAEI, our association decided to send our Treasurer, which is myself Jack Ball, to their Annual Fall IAEI Convention. This year it was held in Kingston, Ontario for three days at the end of September. About 200 people attended the convention from all across Canada, most of whom were accompanied by their wife or significant other. At the end of the seminar I am happy to report that one of our members, Mr. Duncan Stevenson, the Chief Electrical Inspector of Victoria, was elected The President of the Canadian Chapter of the IAEI.

The theme of the convention was a step back in time. Throughout the weekend we were reminded of bits of electrical inspection history. For example it was mentioned that inspections started around the turn of the century, because of the fire damage to property caused by improperly installed wiring. It seems that there was not much concern about human injury due to electrical shock.

The technical workshops were geared towards looking at the power sources of the future, which were called green power. Green power is power derived from the wind and sun. Technological advances in these renewables are rapidly bringing down the cost barriers to their use. The federal government plans to have wind turbines with a total generating

capacity of 10,000 megawatts installed throughout Canada by the year 2010. Prince Edward Island, Quebec, Ontario, Alberta, and the Yukon Territories already have some wind turbines installed, but only Alberta, Quebec and Ontario have utility scale productions.

Photovoltaic (PV) installations were reviewed as well. As this method of power generation is still in its infancy here in our country, many of the code rules and their

interpretations were discussed as presentations were made. The approval of inverters was another area of concern. Utilities are trying to adapt as quickly as possible, but in some cases a permit to connect this privately owned source of power to their grid could take up to a year. The reason for this is that these sources of power will alter their grid specifications and may require physical changes for the utility as well as their customers on that grid by raising the potential fault current. A complete photovoltaic installation was on display at the mini trade show.

The trade show had exhibitors such as CSA, UL, Ideal, the movie industries and their temporary wiring equipment and the Electrical Safety Authority (ESA), just to name a few. The ESA is the name of Ontario's non-profit electrical inspection

service. They use a risk assessment system similar to the one used by our provincial inspectors and have been using laptops in the field for inspections for the passed decade. They plug in their laptops at home at the beginning of the day and upload their data. During the day they operate from their cell phones and type in reports in their vehicles as they

inspect. No reports are left on job sites. At the end of the day they plug in again and download their reports to their office, from their home. Once the downloading is done, inspection reports are automatically faxed to the contractors or homeowners.

The spouses or partners of the convention attendees were kept busy as well. There were tours of historic Fort Henry as well as downtown Kingston that was once the capital of this country. They had lunch in the city core and were let loose to wander the waterfront and do some much needed shopping. There was also a fashion and cosmetics demonstration one morning. In the evenings there was some casual entertainment and music provided the first night and a gala semi-formal dinner and dance was held on the last evening. These were all well attended and it seemed like a good time was had by all.

As Kingston is the home of nine penitentiaries, when someone says they spent some time in Kingston, the phrase takes on a whole new meaning.

## EIA CODE ISSUE

# REMOVAL OF BONDING SCREWS

By Ted Simmons

One of the most important, but often overlooked Code requirements, involves the removal of bonding screws (or jumpers) from disconnect switches and subpanels located on the load side of the main service disconnecting means. This requirement is identified in Rule 10-204(1)d.

To fully understand this requirement it is essential that we first recognize the reason that the Code requires the bonding screw or jumper be installed on the supply side of the service disconnecting means. This requirement is outlined in Rule 10-204(1) a & b. The purpose of the bonding screw or jumper is to tie the grounded circuit conductor (usually the neutral) to the metal enclosure of the main service disconnecting means. This connection ties the grounded circuit conductor to the interconnected system of metallic enclosures, such as boxes, cabinets and raceways that provide the bonding for the electrical installation.

The purpose of this connection is to provide a low impedance path for the flow of fault current and facilitate the operation of the overcurrent device should one of the ungrounded conductors of the system develop a fault to ground. Once this connection is made (ie: on the supply side of the main service disconnecting means) the Code requires that the grounded circuit conductor be insulated from all metallic enclosures on the load side of the main service disconnect.

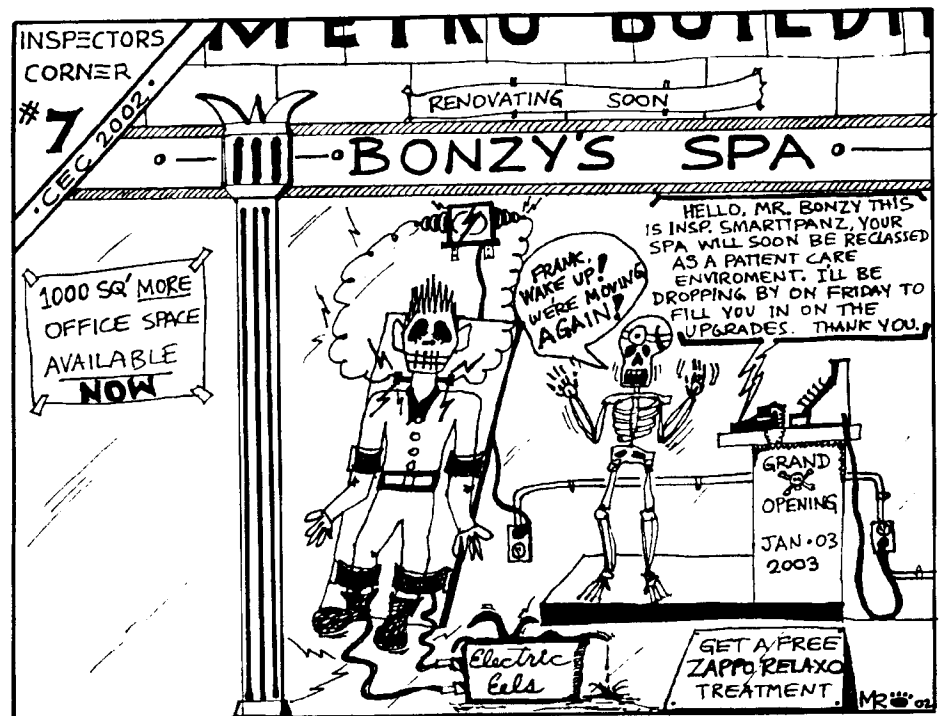
The reason for this requirement is to ensure that there is no objectionable flow of current over the bonding path. For example, when a bonding

screw is left in a subpanel the current will have two parallel current paths to follow. ie: through the grounded circuit conductor or through the bonding path of interconnected bonding conductors, raceways, etc. If the grounded circuit conductor developed an open, then the entire return current will flow through the interconnected metallic enclosures and conductors that form the bonding path. This may not seem as though it presents a hazard, however, if the bonding path contains a high impedance connection such as a loose locknut or bonding screw, a dangerous potential difference could occur between the metallic subpanel enclosure and any grounded surface.

The potential difference can create a severe shock hazard and could result in arcing across any high impedance bonding connections.

With the bonding screw removed from the subpanel enclosure as required by Code, any interruption (ie: open) in the grounded circuit conductor would cause a noticeable malfunction in the operation of the system, resulting in the need for immediate corrective action by a certified electrician.

It should be noted there is one exception to this rule as outlined in Rule 10-208, where two or more buildings, or structures are supplied from a single service.



Cartoon by Mauro Rubino

## ***AFCI's will deliver major safety improvements to consumers***

*By John Coles P.Eng  
CEC Part1 Member.*

It was only in 1995 that the U.S. Consumer Products Safety commission ( CPSC) first issued a report that identified arc faults as the villain of electrical fires. This gave rise to frantic design efforts to develop first the technology, and then the products to detect and respond to arcing faults. The unique situation that exists in residential occupancies was the sheer amount of plastic sheathed wire, combined with low fault current available. Add to this the wooden structural members and the susceptibility to damage in the residential buildings, and the arc-fault villain was presented with opportunities to do its dirty deeds of ignition. It was a very difficult task to detect arcing faults without sensing normal arcs that occur in everyday apparatus and appliances, (such as a light bulb burning out). Finally a standard was developed that required an AFCI to detect an arcing fault that responded to 8 half cycles in half of a second. This is the basic requirement for AFCI's, for parallel arc fault detection. The other detection required was for arcs to ground, which is provided by a type of ground fault detection set at 30mA. In a NMD cable with a ground wire, the ground fault element is also used to detect a series arc in a line or neutral break.

The AFCI has been scrutinized by many regulatory, standards and technical institutions, and has been found to be a reliable device for detecting arc faults. It carries both U.L. and CSA certifications. AFCI's promises to deliver major safety improvements over standard

breakers and fuses. With the continual increase in the amount of wiring and number of appliances used in residences, the need for AFCI safety will increase dramatically over time.

Both the 2002 NEC and CEC require AFCI's for some circuits in residential occupancies, and the vast majority of electrical safety regula-

tory authorities in North America have adopted it. The use of AFCI's is expected to expand into other areas of the NEC and CEC in future editions.

*The EIA would like to thank Cutler Hammer and S.J. John Coles for taking time to present the Arc Fault Circuit Interrupter at our last general meeting.*



**EIA GENERAL MEETING  
AND  
BACK BY POPULAR DEMAND**



**ANNUAL EIA CHRISTMAS PRIZE DRAW**

**MONDAY, DECEMBER 2, 2002**

**"Cheers Restaurant"**

**125 East 2nd Street, North  
Vancouver, BC**  
*(Just off Lonsdale Avenue)*

**Social Hour 5:15 - 6:00 p.m.**

**Dinner: 6:00 - 7:00 p.m.**

**Meeting & Christmas  
Draw 7:00 - 9:00 p.m.**

**Reservations:  
Bob Reimer 604 532-3648**







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**EIA General Meeting**

**Monday, December 2, 2002**

**"Cheers Restaurant"**

**125 East 2nd Street, North Vancouver**

**Social Hour: 5:15 - 6:00 p.m.**

**Dinner 6:00 - 7:00 p.m.**

**Meeting & Christmas Draw: 7:00 - 9:00 p.m.**

Contact Bob Reimer

Phone: 532-3648

Fax: 533-3142

*Have you renewed your membership?  
use the membership renewal form below . . . and  
to avoid the inconvenience of annual renewals  
consider renewing for 2 or 3 years*

**MEMBERSHIP APPLICATION & RENEWAL FORM**

The EIA welcomes applications for membership from individuals and organizations involved in the electrical industry.

- If you are an Electrical Inspector you are eligible to be an **Inspector Member**.
- If you are employed in electrical manufacturing, supplies, contracting, installations or a regulatory agency, or if you represent an organization associated with the Electrical Industry, you are eligible to be an **Associate Member**.

**Please accept my application for membership in the EIA of BC**

Name (Please print) \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Postal Code \_\_\_\_\_  
 Employer \_\_\_\_\_ Title \_\_\_\_\_  
 email \_\_\_\_\_

New Membership  Renewal   
 Inspector  Associate

Enclosed is: \$30.00 for 1 year (Jan 1, 2003 - Dec. 31, 2003)   
 \$60.00 for 2 years (Jan 1, 2003 - Dec. 31, 2004)   
 \$90.00 for 3 years (Jan 1, 2003- Dec. 31, 2005)

Mail to: The EIA of BC, 201 - 3989 Henning Drive, Burnaby, B.C., V5C 6N5