REPORT ON DISCUSSIONS
DURING UL MEETINGS
WITH ELECTRICAL INSPECTORS
AT THE
2011 IAEI SECTION MEETINGS

April 6, 2012

TO: Attendees of Underwriters Laboratories Inc. Meetings with Electrical Inspectors at the 2011 IAEI Section Meetings

SUBJECT: Report of Meetings

Underwriters Laboratories held meetings with Electrical Inspectors during the 2011 IAEI Section Meetings. Historically, these meetings have provided for an open exchange between the electrical inspection community and UL regarding any subject of interest to authorities.

UL acknowledges the importance of this feedback. The electrical inspector is an integral part of the UL information loop. It is the inspector, who during the examination of the final installation, can judge under field conditions, the adequacy of the constructions and markings for proper installation. It is the inspector who can pass this installation information to UL for use in modifying product safety requirements.

The questions and answers in this Report present the items discussed during the meetings. This is not a verbatim transcript; only the pertinent points have been recorded. Each question has been identified with the designation of the Section meeting at which the subject was discussed.

UL appreciates all those who took the time to participate in these meetings and provided us with information important for our endeavors and goals toward public safety. I would appreciate hearing from you on any comments or suggestions you have on this Report or the UL/Inspectors meetings.

UNDERWRITERS LABORATORIES INC.

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FROM

UL MEETINGS WITH ELECTRICAL INSPECTORS

AT THE 2011

ANNUAL IAEI SECTION MEETINGS

This report contains questions and answers from the 2011 meetings. Where necessary, the answers have been expanded to include information that may not have been available during the meetings. Where specific actions have taken place in response to the Inspector's input, the status of the actions is indicated. This report may provide insights into UL's intent and efforts that are associated with the certification of electrical equipment so that it meets the purposes of the National Electrical Code® and is installable in accordance with it. The questions have been arranged by subject matter and are identified in the margin with an identifier for the IAEI Section where the question was raised.

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IAEI Section Identifier Legend

(E) Eastern Section
(NW) Northwestern Section
(S) Southern Section
(SW) Southwestern Section
(W) Western Section

1.0 UL LISTING, CLASSIFICATION AND FIELD EVALUATION INFORMATION

1.1 (W) **Q.** What are the options when a non-service rated switchboard is used for service?

A. If a piece of distribution equipment that is not marked with a label identifying it as suitable for use as service equipment or "SUSE", then it has not been evaluated for use as service equipment.

If the equipment was shipped to the field without a "SUSE" label and the manufacturer claims that it was evaluated as service equipment then the only option would be to conduct a UL Field Evaluation by contacting UL's Customer Service at 877-ULHELPS, prompt number 2. During the Field Evaluation, UL will confirm in the field if it is indeed suitable for use as service equipment and then witness the SUSE label applied to the product in the field. After a successful Field Evaluation, the UL representative will issue a report to the manufacturer and AHJ, noting that the product complied with the requirements and that the label was applied.

1.2 (SW) **Q.** UL has made AHJs aware of the new NFPA 790 and 791 standards covering field evaluation competency and practice, and that a presentation on this subject is available for IAEI meetings. Would it be beneficial for city managers and council representatives to attend such a presentation, and how can a jurisdiction judge whether a company is competent to perform field evaluations?

A. It would definitely be beneficial for city managers and council representatives to attend this presentation. In addition, city attorneys and risk managers would also benefit from this information. UL Regulatory Services staff should be contacted to schedule a presentation.

As there are dozens of testing companies, or field evaluation bodies (FEBs) at both the local and national level, that claim competency to conduct field evaluations of electrical equipment, it can be quite difficult and cumbersome to determine the qualifications of the FEBs.

OSHA has an accreditation program for Nationally Recognized Testing Laboratories (NRTLs), but no similar program currently exists for organizations that evaluate products in the field. Some jurisdictions have their own application and accreditation procedures, while others simply require field evaluations to be conducted only by NRTLs with accreditations for the equipment being evaluated.

NFPA 790, the Standard for Competency of Third-Party Field Evaluation Bodies was recently adopted, and can be used to establish minimum competency requirements for organizations that perform field evaluations. A companion document, NFPA 791, covers Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation. Together, these two standards can be used by jurisdictions to establish processes for determining competency and sound field evaluation practices.

Please follow this link for a recent UL newsletter article on the subject: http://www.ul.com/global/documents/corporate/aboutul/publications/newsletters/electricalconnections/tcaec_october_2011.pdf

1.3 (E) **Q.** How can a manufacturer that claims to have UL Listing on their motor control centers (MCC's) build MCC's and have some ship with UL labels and some without UL labels?

A. Products manufactured can be UL Listed or not listed. It is a choice by the manufacturer. If a manufacturer is authorized to apply the UL Mark, the UL Mark can be applied to a product if the manufacturer chooses, however, only those products bearing the appropriate UL Mark and the company's name, trade name, trademark or other authorized identification should be considered as being covered by UL's Listing or Classification and Follow-Up Service. The UL Mark on the product provides evidence of listing or labeling, which may be required by installation codes or standards.

1.4 (E) **Q.** How often are UL Follow-Up Services (FUS) inspections performed at a facility?

A. UL Follow Up Services inspections are performed at a minimum of four times per year and that is based on production output of the facility and type of product. If there is a high production facility it could be as often as once a week to assure conformity to the standards and no deviation in any tolerance.

2.0 SERVICE EQUIPMENT, SWITCHBOARDS, PANELBOARDS, AND POWER DISTRIBUTION EQUIPMENT

2.1 (SW) **Q.** For a motor control center (MCC) or a switchboard, my experience is that most are installed on a pad. Is a pad required by the Listing? Since the Code permits the highest switch to be 6 ft, 7 in. high, could a switch installed on the equipment end up higher because of the pad?

A. In accordance with UL 891, the Standard for Safety for Switchboards and UL 845, the Standard for Safety for Motor Control Centers, pad mounting is allowed, but not required. In general, both standards have a requirement that switches or circuit breakers not be installed more than 6 ft, 7 in. (2 m) above the bottom of the switchboard or motor control center.

In addition, for switchboards, if it is specifically intended for installation where it is known that a raised working platform will be provided, the handle may be more than 6 ft, 7 in. above the bottom of the equipment, but not more than 6 ft, 7 in. above the platform.

A motor control center that does not preclude the installation with the operating handle higher than 2 m (6 ft., 7 in.) is required to be marked to indicate that the operating handle shall not be located more than 6 ft. 7 in. from the floor or a working platform.

NEC Section 110.26(A)(3) acknowledges “platforms” as one of the possible measuring points for required working space. While it would be an AHJ call, it could be argued that the size of the pad or platform should be based on the depth and width requirements in Section 110.26(A).

2.2 (SW) **Q.** I am reviewing a project for a 35 kV substation. Does UL have standards and list such installations or similar medium voltage equipment? When a utility buys such equipment, would it be evaluated to the same requirements? Can UL conduct a field evaluation on this substation?

A. UL Lists substations under the product category for Substations (YEFV), located on page 445 of the 2011 UL White Book, and also on UL’s Online Certification Directory at www.ul.com/database. Enter YEFV at the category code search field.

However, some very large substations are not engineered and Listed as a single assembly, but instead are made up of several different pieces of equipment. UL Lists a variety of medium voltage equipment that make up substations, including the transformers and switchgear. A list of the product categories for UL Listed equipment rated over 600 V is located on page 32 of the 2011 UL White Book.

The standards used for Listing of medium voltage equipment are typically the IEEE C37 series of standards, which are the American National Standards (ANSI) for this type of equipment. These standards are applicable to the equipment, whether the equipment is utility owned or customer owned, and there are no differences in the level of investigation.

If the equipment is utility owned and controlled, Listing by a Nationally Recognized Testing Laboratory may not be a requirement, so not all medium voltage equipment on the market is UL Listed.

For an assembly already installed and lacking evidence of certification, UL can provide Field Evaluation Services on the individual pieces of equipment that make up the substation. Dedicated support from UL's Field Engineering Services Department can be received by contacting UL via email at fieldevaluations@ul.com or by phone at 1-877-UL-HELPS (1-877-854-3577), prompt number 2.

2.3 (E) **Q.** Is the XO bonding jumper strap provided in listed dry type core and coil transformers used in typical commercial installations adequately sized.?

A. Dry type transformers can have two bonding jumpers installed. One bonding jumper is for grounding the transformer steel core to the enclosure where the core is electrically isolated by the sound dampening pads that are typically made of rubber. This bonding jumper is covered by the requirements in UL 1561, the Standard for Safety for Dry Type General Purpose and Power Transformers 600 Volts or less, and must remain in place.

The other bonding jumper, that may or may not be supplied by the manufacturer, is installed between the Xo terminal and the enclosure. This second bonding jumper is identified from the National Electrical Code as the "System Bonding Jumper". UL 1561, The Standard for Safety for Dry Type General Purpose and Power Transformers does not have requirements to install or size the system bond jumper between the Xo terminal and the enclosure or equipment grounding bus. The evaluation of the transformer for Listing therefore does not include an evaluation of the size or adequacy for the system bonding jumper, it is really an item optionally provided by some manufacturers. For the same reason, if this bonding jumper were removed because the system grounding and bonding was done elsewhere as allowed by section 250.30 of the NEC, the UL Listing of the transformer is not affected. Since the size of the system bonding jumper is based on field installed feeder conductors for the derived system, it would be difficult to determine the correct size of the system bonding jumper that is to be installed at the factory. If the inspector determines the supplied system bonding jumper does not meet the Code minimum based on the actual installed feeder conductors, then they can require it to be replaced with a suitable system bonding jumper meeting all the requirements from the NEC.

3.0 CIRCUIT BREAKERS AND AFCIs

3.1 (S) **Q.** Is it permissible to supply Information Technology (IT) equipment from two circuits?

A. Yes. IT equipment Listed under product category Information Technology Equipment Including Electrical Business Equipment (NWGQ) located on page 259 of the 2011 UL White Book, is evaluated for compliance with UL 60950-1 the Standard for Safety For Information Technology Equipment - Safety - Part 1: General Requirements. UL 60950-1, identifies that when equipment is provided with more than one supply connection (for example, with different voltages or frequencies or as backup power), the design shall be such that all of the following conditions are met:

- separate means of connection are provided for different circuits; and

- supply plug connections, if any, are not interchangeable if a hazard could be created by incorrect plugging; and

- bare parts of an ELV CIRCUIT (voltage limited to 42,4 V peak, or 60 V d.c.) or parts at HAZARDOUS VOLTAGES, such as plug contacts, are not accessible to an OPERATOR when one or more connectors are disconnected.

A warning is required if a unit receives power from more than one source (for example, different voltages or frequencies or as backup power), there shall be a prominent marking at each disconnect device giving adequate instructions for the removal of all power from the unit.

3.2 (S) **Q.** Are combination arc fault circuit interrupter (AFCI) circuit breakers required to be legibly marked “Combination Type AFCI”?

A. Yes, combination-type AFCI circuit breakers are marked "Combination Type Arc-Fault Circuit-Interrupter" or "Combination Type AFCI" where visible, with a dead-front or faceplate removed, while the device is installed. This information is can be found in the Guide Information for the product category Arc-Fault Circuit Interrupters Combination Type (AWAH) located on page 65 of the 2011 UL White Book, and also on UL’s Online Certification Directory at www.ul.com/database and enter AWAH at the category code search field.

4.0 DISTRIBUTED ENERGY SYSTEMS

4.1 (W) **Q.** Is UL working with the smart grid industry?

A. Yes, the published requirements specific to smart grid are found in Subject 2744, Outline for Safety of Products in Smart Environments. Requirements for communications equipment related to the smart grid can be found in the Outline of Investigation for Meter Socket Adapters for Communications Equipment, Subject 2745 and in the product category Meter Socket Adapters for Communications Equipment (POBN). Meters themselves are covered by the requirements in Subject 2735, Outline for Electric Utility Meters and certified under Electric utility Meters (POCZ) located on page 284 in the 2011 UL White book. These product categories can be found in UL's Online Certification Directory at www.ul.com/database and enter POBN or POCZ at the category code search field. More Smart Grid Information may be found at; http://www.ul.com/global/eng/pages/offerings/industries/powerandcontrols/smartgrid/

4.2 (E) **Q.** What are the installation requirements for the grounding lug on a Solar PV panel? Are the installation instructions reviewed by UL when submitted by the manufacturer?

A. Yes, for UL certified (Listed) PV modules, UL 1703, the Standard for Safety for Flat-Plate Photovoltaic Modules and Panels requires that UL engineers review installation manuals as part of the product evaluation and certification, including how to assemble the ground connection / lug prior to testing. PV modules are tested with all provided and specified PV grounding methods defined in the instruction manual of the PV module supplied by the manufacturer. PV modules are Listed under the product category (QIGU) located on page 314 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter QIGU at the category code search field.

UL now also lists ground lugs for PV panels under a new UL Product Category for Mounting Systems, Mounting Devices, Clamping Devices and Ground Lugs for Use with Photovoltaic Modules and Panels (QIMS). This information can be found on page 329 in the 2012 UL White Book and on UL's Online Certification Directory at www.ul.com/database and enter QIMS at the category code search field. The evaluation of ground lugs under QIMS includes only ground lugs intended for use with specific PV modules and panels and specified module frames and mounting structures as identified in the individual Listings.

5.0 LUMINAIRES AND SIGNS

5.1 (W) **Q.** Are there LED retrofits for emergency lighting? Do you need two light sources?

A. Product category Emergency LED Drivers (FTBV) covers battery packs that can be factory or field-installed into specific LED luminaires. These products are functionally parallel to fluorescent luminaire products commonly referred to as "inverter-charger packs". However, because certified emergency luminaires are evaluated for performance (providing a prescribed minimum light output for at least 90 minutes) in addition to safety (risk of fire, risk of electric shock), emergency LED drivers certified under FTBV are Classified for use with specific luminaires, identified by manufacturer and model number on the product or on the instructions provided with the product. Unlike fluorescent lamps, there is not yet sufficient standardization amongst LED arrays (the light source) to allow for mixing-and-matching drivers and arrays with confidence that the emergency lighting performance will be maintained.

We would expect most LED luminaires with battery (or other emergency source) backup would use the same LED array (it's "lamp") for normal and for emergency operation, although the light output during emergency operation may be less (in order to preserve battery power for the necessary duration). But it would certainly be possible for an LED luminaire to have an auxiliary array that operates only during emergency (power outage) situations, with the emergency source feeding only that auxiliary array.

The Guide Information for Emergency Light Emitting Diode Drivers (FTBV) can be viewed on UL's Online Certification Directory at www.ul.com/database and enter FTBV in the category code search field.

5.2 (W) **Q.** Do LED luminaire retrofit kits permit the installation of a UL Mark without UL present?

A. No, LED luminaire retrofit kits do not include applying a UL Mark in the field. The UL Classification Mark that identifies it as a retrofit kit is applied at the factory to one of the major subassemblies of the kit. UL Classifies LED retrofit kits for luminaires under the product categories Luminaire Conversions, Retrofits (IEUQ) which is being transitioned into LED Luminaire Conversion, Retrofits (IFAR) and Commercial Refrigerated LED Luminaire Retrofit Kits (IFAS). The Guide Information for (IEUQ) can be located on page 165 in the 2011 UL White Book. The Guide Information for IFAR and IFAS can be located on UL's Online Certification Directory at www.ul.com/database and enter IFAR or IFAS at the category code search field. IFAR and IFAS will appear in the 2012 UL White Book.

5.3 (W) **Q.** When retrofitting a sign with an LED conversion kit, what should we look for to know it has been retrofitted with a Classified kit? What about the existing markings?

A. LED sign conversion kits are Classified under the product category Sign conversions, Retrofit, (UYWU) located on page 389 of the 2011 UL White Book.

In order to identify a retrofitted sign, you would first look for the original sign Listing Mark (in order to use a UL Classified retrofit kit, it has to be installed into an already Listed sign). Then look at the major subassemblies of the kit for the UL Classification Mark. One of the major subassemblies, such as the power supply or perhaps an LED tube would have the UL Classification Mark identifying it as a sign retrofit kit. The Guide Information for UYWU as well as the companies who have certification under the category can be viewed online at www.ul.com/database and enter UYWU at the category code search field.

5.4 (SW) **Q.** When retrofitting incandescent recessed cans with LEDs, is it acceptable to install a different manufacturer's retrofit kit? Is it acceptable to retrofit a new installation?

A. Yes. LED retrofits are UL Classified for use in new or existing luminaires in accordance with the UL product category for Light-emitting-diode Retrofit Luminaire Conversion Kits (IFAR) or Luminaire Conversions, Retrofit (IEUQ), located on page 165 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database. Enter IEUQ or IFAR at the category code search field. Note that the IFAR product category is currently only available online, as it is a new category and therefore does not appear in the 2011 UL White Book.

LED retrofits may be installed in the same or different manufacturer's Listed luminaires in accordance with the UL Classification and installation instructions. These product categories cover retrofit installations that may require modifications to the luminaire in accordance with the installation instructions provided with the retrofit kits.

The retrofit kits consist of LED light sources, installation instructions, subassemblies, luminaire marking labels, and assembly aids (where appropriate) to facilitate the replacement of the existing light source in a complete luminaire.

They have been investigated to determine that, when installed in accordance with the manufacturer's instructions, they do not adversely affect the operation of the luminaire. A luminaire that is modified so it can no longer accept the original lamp has a label provided by the retrofit kit manufacturer, to be affixed to the luminaire where visible during relamping that indicates the luminaire has been modified and can no longer operate the originally-intended lamp(s).

5.5 (SW) **Q.** LED luminaire retrofits often times don't come through plan review, and instead are completed by maintenance staff. On final inspection, what sort of label information should I expect to see on the retrofit installation?

A. First, you should see a UL Classification Mark on a major component of the LED retrofit kit, which will identify the proper application of the kit. This Mark should be as described in the UL product category for Light-emitting-diode Retrofit Luminaire Conversion Kits (IFAR) or Luminaire Conversions, Retrofit (IEUQ), located on page 165 of the 2011 UL White Book and also on UL's Online Certification Directory at www.ul.com/database and enter IFAR or IEUQ at the category code search field. Note that the IFAR product category is currently only available online, as it is a new category and therefore does not appear in the 2011 UL White Book.

Next, installation instructions should be available for review, in order to confirm that the retrofit kit has been installed correctly and as investigated by UL.

For an LED retrofit luminaire conversion kit that no longer permits the insertion of the original lamp type, these are also provided with a marking for installation by the kit installer on the retrofitted luminaire. This marking is required to be visible during relamping and states "This luminaire has been modified and can no longer operate the originally intended lamp," and additionally identifies the replacement LED lamp type/model to be used, together with the manufacturer's name and ordering information.

5.6 (S) **Q.** Is it OK to replace incandescent recessed light bulbs with compact fluorescent lamps (CFL's)?

A. Yes, however that would depend on the type and location of the recessed luminaire. One would need to look at the markings on the CFL. CFL's are generally for use in indoor, dry locations unless additionally investigated and marked for applications such as damp locations (not directly exposed to water). Products investigated and marked for wet locations may have additional restrictions regarding use or orientation.

CFL's have also been investigated for use in the smaller of a 6- or 8-in. diameter, totally enclosed, recessed luminaire, if they will physically fit, unless marked not for use in a totally-enclosed luminaire.

This information is detailed under the product category Lamps, Self-Ballasted and Lamp Adapters (OOLR) located on page 269 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter OOLR at the category code search field.

6.0 WIRING SYSTEMS AND WIRING DEVICES

6.1 (S) **Q.** Are there any Listed fittings to connect Type AC cable to a nonmetallic outlet box?

A. Armored cable connectors are Listed by UL under the product category Armored Cable Connectors, Type AC (AWSX) located on page 67 in the 2011 White Book and also on UL's Online Certification Directory at www.ul.com/database and enter AWSX at the category code search field. Presently, we are not aware of any Listed AC cable connectors evaluated for connection to a nonmetallic outlet box.

6.2 (NW) **Q.** How many manufacturers are there for copper to aluminum connections such as wire nuts?

A. There are several manufacturers that have their copper to aluminum wire connectors Listed under the product category Wire Connectors and Soldering Lugs (ZMVV) located on page 465 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter ZMVV at the category code search field. UL's Online Certification Database will provide a list of manufacturers that have listings under ZMVV.

6.3 (E) **Q.** How does spray foam affect Type NM Cable?

A. UL has not specifically investigated the effects of spray-on foam insulation on the jacket or insulation materials of Type NM cable. We are not aware of evidence that would suggest any chemical corrosion. Once cured, these spray-on foam materials are inert solids and unlikely to effect the PVC jacket or insulation. The curing process begins immediately upon application. Complete curing of the foam occurs between 1 and 12 hours. We are unaware of these products containing any Volatile Organic Compounds (VOCs) or formaldehyde. Accordingly, in the non-cured state, are currently considered compatible with cable insulation.

6.4 (E) **Q.** Why are wiring lugs not marked for the particular stranding code that they will accept?

A. Wiring lugs are often too small for that kind of information to be stamped or imprinted on the barrel of the lug. In accordance with the UL Standard for Wire Connectors UL486A, 486-B and Splicing Wire Connectors UL 486C, this information can be found on the smallest package or container that the

product is shipped in from the factory. Wiring lugs are Listed under the product category Wire Connectors and Soldering Lugs (ZMVV) located on page 464 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter ZMVV at the category code search field.
The Guide Information for ZMVV states:
Stranded conductor Class — Connectors rated for use with stranded conductors are for the following strand configurations:

Aluminum – Class B concentric, compressed or compact, and SIW (single input wire)

Copper-clad aluminum – Class B concentric or compressed, and Class C concentric

Copper – Class B concentric or compressed, and Class C concentric

Wire connectors additionally rated for use with compact copper conductors are additionally marked "For compact-stranded copper conductors" or equivalent on the connector, or on or within the unit container.
Wire connectors additionally rated for use with other Class conductors, such as Class M, are marked with the additional class designation and number of strands.

For more information on Wiring Lugs see the UL Regulatory Services June 2011 edition of the Electrical Connections for more information.

Please follow this link for a recent UL newsletter article on the subject:
http://intranet.ul.com/en/Tools/DeptsServs/RegServs/THE%20CODE%20AUTHORITY%20%20ELECTRICAL%20CONNECTIONS%20TCA%20EC/TCAEC_2011-06.pdf

6.5 (E) **Q.** Is there a listed termination fitting that will connect two Type NM Cables to EMT for sleeving protection down a wall in a dwelling?

A. After review of our database UL does not evaluate a connector for two NM cables in a single connector that will connect Type NM Cable to EMT. This really would overfill the ½ inch EMT. UL Lists NM cable connectors under the product category Nonmetallic-Sheathed Cable Connectors (PXJV) located on page 294 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter PXJV at the category code search field. The Guide Information for (PXJV) states "Except for duplex connectors or when otherwise marked on the carton to indicate connecting of more than one cable or cord, the connectors covered under this category have been investigated for connecting one cable or cord only".

6.6 (E) **Q.** When using Type NM cables in a wireway installation is an equipment grounding termination bar required to be provided by the manufacturer or added in the field?

A. NEC Sections 366.60 for auxiliary gutters and 378.60 for wireways both relate to equipment grounding. Metallic wireways installed in accordance with the product markings and manufacturer's instructions are suitable for use as equipment grounding conductors, and Listed for grounding. There are no requirements in UL 870 the Standard for Safety for Wireways, Auxiliary Gutters, and Associated Fittings that mandate the manufacturer supply an equipment grounding bar. The Guide Information for Auxiliary Gutters, and Associated Fittings (ZOYX) can be located on page 468 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter ZOYX at the category code search field.

7.0 APPLIANCES AND UTILIZATION EQUIPMENT

7.1 (S) **Q.** Is a Short Circuit Current Rating required on an HVAC unit?

A. Maybe, keep in mind that per Article 440.4 (B) of the NEC, short-circuit current rating of the motor controllers or industrial control panels are to be marked on hermetic refrigerant motor-compressor equipment that have multimotor and combination loads. This requirement does not include ventilating or heating equipment as Article 440 is only for air-conditioning and refrigerating equipment.

UL 1995, the Standard For Safety For Heating and Cooling Equipment requires equipment shall be plainly marked, in a permanent manner, with the short-circuit current rating of the motor controllers, equipment control panel, overall equipment panel, or industrial control panel when employed with multimotor and combination-load equipment. The exception to this requirement is equipment intended for use in one- and two-family dwellings, cord-and-attachment-plug connected equipment, or equipment supplied from a branch circuit protected at 60 A or less is not required to be marked with a short-circuit current rating.

It should also be noted that UL1995 has an effective date of July 30, 2012, for this requirement, however the NEC has required short-circuit current ratings be marked on this type of equipment since the 2005 edition of the code. . The Guide Information for Heating and Cooling Equipment (LZFE) located on page 230 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter LZFE at the category code search field.

7.2 (S) **Q.** Wiring instructions for a "Mini Split" AC unit specify 18 AWG cord for interconnection with the other section. This application does not appear to comply with the NEC requirements. Does UL List any of these units and is this construction compliant with UL standard?

A. UL Lists split-system room air conditioners under the product category Air Conditioners, Room (ACOT) located on page 57 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter ACOT at the category code search field. Split-system room air conditioners are designed for field interconnection with a matching section. Such units and sections are marked to relate the two for proper installation; these sections may be shipped separately. However an 18 AWG flexible cord as an interconnecting wiring method would not comply with the NEC or UL 484 the Standard For Safety For Room Air Conditioners.

7.3 (NW) **Q.** Does UL List nuclear medicine equipment?

A. Yes, nuclear medical equipment is Listed under the product category Medical Equipment (PIDF) located on page 278 of the 2011 UL White Book, and also on UL's Online Certification Directory at www.ul.com/database and enter PIDF at the category code search field.

8.0 COUNTERFEITING AND OTHER TOPICS

8.1 (S) **Q.** When and where is the next UL University PV training?

A. UL University has changed names and is now known as UL Knowledge Services. UL offers several PV training programs and to obtain the most current information on when and where PV training will be available, one should visit the UL Knowledge Services web site for PV Scheduled Public Workshops.

For more information on UL training courses, go to www.ulknowledgeservices.com.