

**REPORT ON DISCUSSIONS
DURING UL MEETINGS
WITH ELECTRICAL INSPECTORS
AT THE
2003 IAEI 75th JUBILEE MEETING**



September 1, 2004

TO: Attendees of Underwriters Laboratories Inc. Meetings with Electrical Inspectors at the 2003 IAEI 75th Jubilee Meeting

SUBJECT: Report of Meetings

Underwriters Laboratories held meetings with Electrical Inspectors during the 2003 75th Jubilee Meeting. Historically, these meetings have provided for an open exchange between electrical inspectors 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 question 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 meeting 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.

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QUESTIONS AND ANSWERS
FROM
UL MEETINGS WITH ELECTRICAL INSPECTORS
AT THE 2003
75th IAEI JUBILEE MEETING

This report contains questions and answers from the 2003 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 input, the status of the actions is indicated. This report may provide insights into UL's intent and efforts that are associated with 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 the Section identifier.

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1.0 UL SERVICES AND INFORMATION

- 1.1 Q. I have a hospital that installed a lightning protection system from France, which utilizes no Listing on the components. Does UL List lightning protection systems?
- A. Yes, UL does List lightning protection system components under the product category Lightning Conductors, Air Terminals and Fittings, (OVTZ), evaluated under UL 96A, Installation Requirements for Lightning Protection Systems. UL also evaluates Lightning Protection installations (where the components are used) under the category Lightning Protection System Installations (OWAY). Both categories are located on page 74 and 75 in the 2004 General Information for Electrical Equipment Directory (White Book).

When a lightning protection system installation is demonstrated to comply with the Standard for Installation Requirements for Lightning Protection Systems, UL 96A, a UL Master Label Certificate is issued for the installation that is good for 5 years from the date of installation. The issuance of a Certificate is evidence that the installation of the lightning protection system (1) has been made by an installer that Subscribes to UL's Follow-Up Service, (2) employs materials subject to factory inspection service and bears the UL Mark, and (3) is subject to a field inspection program covering proper installation of the system.

For more information on obtaining a master label Lightning Protection System Installation see <http://www.ul.com/lightning/>.

- 1.2 Q Does a combination of Listed parts make the entire assembly a Listed product?
- A. No, using all Listed parts does not indicate that the overall assembly is a Listed product. For instance using a Listed swimming pool pump and a Listed switch or controller in a spa does not make the spa a Listed spa. There are many product specific hazards and applications that need to be addressed in the evaluation and listing

of an overall assembly of Listed parts,
Always look for the UL Listing Mark on the product that
will identify the product as an overall Listed assembly
and look up the Guide Information for that product
category in the White Book or online at
www.ul.com/database. The guide information for the
product category will indicate the scope of the Listing
of the product identified on the Listing Mark. That
will indicate whether the assembly as a whole is Listed
or only the parts.

In the case of the spa the Listing Mark should identify
it as a Listed Self Contained Spa as indicated under the
product category Self Contained Spas (WCZW) located on
page 122 of the 2004 General Information Directory for
Electrical Equipment (the White Book).

2.0 CIRCUIT BREAKERS AND AFCI's

- 2.1 Q. How can we test AFCI's (Arc Fault Circuit Interrupters) with out using the test button on the AFCI?
- A. There really is only one true way to field test an AFCI and that is by using the test button on the AFCI itself. There are AFCI indicators that are referred to as testers, that are intended to be used to indicate if a receptacle is on a circuit that is protected by an AFCI. These AFCI indicators are typically Listed by UL under the product category Outlet Circuit Testers (QCYU) located on page 91 of the 2004 White Book. All AFCI indicators are provided with instructions that state the proper way to "test" an AFCI because the AFCI indicator may not recognize all AFCI's as newer AFCI's are developed.
- 2.2 Q. All AFCI and GFCI circuit breakers have a test button to test the circuit breaker. Can UL require all manufacturers to have a specific color for each type, so that all GFCI test buttons are one color and all AFCI test buttons are another color?
- A. Presently, the Standard for Ground Fault Circuit Interrupters, UL 943 and the Standard for Arc Fault Circuit Interrupters, UL 1699 do not have specific color requirements for the test button on each type of device. However, we have submitted a request to discuss the possibility of such a requirement for the next Standard Technical Panel (STP) meeting for those respective standards.

3.0 LIGHTING PRODUCTS AND SIGNS

- 3.1 Q. How does UL evaluate halogen "puck" lights that get installed in cabinets? They seem to run very hot
- A. UL Lists this type of halogen "puck" lights typically under one of two product categories. If they are low voltage lights that incorporate a power supply to step down the voltage to 30 volts or less, then they may be Listed under the product category Low Voltage Incandescent Luminaires and Fittings (IFDR) located on page 48 in the 2004 General Information for Electrical Equipment Directory (White Book).

This category covers low voltage fixtures and fixture fittings that are parts and/or subassemblies intended for final assembly into low voltage fixtures in the field. These fixtures and fittings are rated 30 V or less, for connection to an isolating type power supply Listed for the purpose and installed using fixed wiring methods in accordance with Article 411 of the National Electrical Code. Sets of low voltage fixtures may include the power supply and interconnecting cabling. These Listed Luminaires would be identified with a Listing Mark that indicates Listed Low Voltage Luminaire or similar wording as indicated in the Guide Information for (IFDR) located on page 48 in the White Book.

If the products are cord and plug connected and either low voltage or rated 120 Volts and intended for use specifically in cabinets, they may be Listed under the product category Portable Cabinet Lights (QOVJ) located on page 252 in the 2004 White Book.

This category covers surface and recess mounted portable cabinet luminaires intended for installation into open or enclosed portable cabinets such as china hutches, bookcases, bars, consoles, bed headboards, and similar locations.

These products are not intended for installation in recessed walls or ceilings, or in permanently installed cabinets where the wiring is concealed or passed through openings in the structure. Portable cabinet luminaires have been evaluated for mounting in accordance with the clearances marked on the product. Portable cabinet

luminaires not marked with clearances may be mounted as close to any surface as permitted by the housing, an integral mounting flange, bracket, or spacer. A restrictive marking is provided for portable cabinet luminaires intended for use only in open top cabinets. Portable cabinet luminaires without the restrictive marking are evaluated for a 13 mm (1/2 in.) minimum clearance from the top.

These types of luminaires would be identified by a Listing Mark that states Listed Portable Cabinet Light or Cabinet Light as indicated in the Guide Information for (QOVJ) located on page 252 in the White Book.

Regardless of which of the two product categories, halogen "puck" lights Listed for undershelf use in or on cabinets are temperature tested with the luminaire installed in a six-sided 12 inch cube. During this testing, temperatures are monitored on the luminaire and test box surfaces to determine if they exceed applicable limits for the involved materials. Test box surfaces are limited to 90C. The temperature limits applied during this temperature test evaluate the risk of fire due to luminaire generated heat.

Always refer to the installation instructions and markings on the product to identify what installations and applications for which the light was Listed. The instructions will identify if the light was intended for use in an open or closed cabinet and proper spacing of the lights and installation into or under shelves. Without the installation instructions compliance with NEC Section 110.3(B) cannot be determined.

- 3.2 Q. Is there a cable Listed for low voltage lighting systems that can be fished in a wall or ceiling without installation in a Chapter 3 raceway?
- A. No, currently, UL does not List a specific stand alone cable intended for use in concealed locations in accordance with the requirements of Section 411.4 of the *NEC*® for Lighting systems operating at 30 volts or less.

Section 411.4 of the 2002 *NEC*® requires Chapter 3 wiring methods for concealed wiring. Chapter 3 covers wiring methods for all wiring installations, unless modified by

other Articles in the code. Based on this reference to other *NEC*® Articles, power limited cable used in accordance with Article 725 can be used for low voltage lighting systems, provided that the cable is supplied by a Listed Class 2 or 3 transformer or power supply.

The proper cable would be specified in the installation instructions provided with the Listed system.

3.3 Q. Are 2 x 4 Ft. fluorescent recessed fixtures with fold out clips on the corners Listed for compliance with NEC Section 410.16(C) or do I need Listed clips?

A. Fluorescent recessed fixtures are Listed under the product category Fluorescent Recessed Luminaires (IEVV) located on page 43 of the 2004 General Information Directory for Electrical Equipment (White Book). The guide information for (IEVV) states that recessed luminaires intended for use in suspended ceilings and provided with integral clips are marked for use with particular grid systems. When installed in accordance with this marking they comply with Section 410.16(C) of the NEC. Instructions for using clips to secure the luminaire to the grid are provided with the luminaire.

Luminaires with integral fold over clips must be provided with installation instructions that specify the type of grid it was tested and Listed for use with. The installation instructions also detail the proper use of the clips to secure to the luminaire to the grid for compliance with Section 410.16(Clips that are not integral to the luminaire and Listed for compliance with Section 410.16(C) are Listed under the product category Luminaire Fittings (IFFX) located on page 50 in the White Book.

3.4 Q. NEC Section 410.35(A) states that luminaires requiring supply wire rated higher than 60°C (140°F) shall be marked. It seems that most of the luminaires commonly available today are marked for 90°C wire. Are there any Listed fixtures available for use with 60°C wires in old buildings?

A. Luminaires are Listed by UL under several different categories that are all sub categories of the main guide designation Luminaires and Fittings (HYXT) located on page 40 in the 2004 White Book.

The Guide information for (HYXT) details information that is common to all the luminaire product categories, including minimum supply wire markings. The Guide Information states:
"Luminaires are marked with a supply wire temperature rating **'MIN __C SUPPLY CONDUCTORS,'** if intended for greater than 60C supply wiring. Luminaires rated for over 90C supply wiring are additionally marked **'NOT FOR USE IN DWELLING.'**"

While the majority of the luminaires that are available today are marked for 90°C wire, it is possible that there are luminaires rated for 60 °C wire still available and as one of the other attendees indicated that there are 60°C luminaires available today.

NEC Section 410.67 provides guidance for installing luminaires that require supply wire with an insulation rated above what is provided in the existing branch circuit to which the luminaire is to be connected.

4.0 WIRING SYSTEMS

- 4.1 Q. What standard is used to evaluate and List Limited Combustible Cable (OWKZ)?
- A. Limited Combustible Cable is a higher performance type of plenum cable which is evaluated to be no more combustible than the building materials that make up the plenum space, with a maximum flame spread index of 25 and a smoke developed index of 50. This cable is presently Listed under the product Category Limited Combustible Cable (OWKZ) located on page 75 in the 2004 General Information for Electrical Equipment Directory, the White Book.

This category covers electrical and optical fiber cable that meets the Limited Combustible and smoke developed requirements for ceiling cavity and raised floor plenums in accordance with NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems. This cable also meets the requirements for cable in ducts, plenums and other spaces used for environmental air in accordance with Article 725, 760, 770, 800, 820 and 830 of the National Electrical Code (NEC), NFPA 70. The requirements for these cables are in the "Outline of Investigation for Cable Marked " Limited Combustible"" dated July 24, 2003.

There will be no reference to these cables in the 2005 National Electrical Code. The Code Making Panel for the Standard for the Installation of Air-Conditioning and Ventilating Systems - NFPA 90A has been charged with making all decisions with regard to use of cable in ducts and plenums. They are now in their revision cycle.

It is anticipated that they will define the use of these cables in their 2005 edition of the standard. The product may also be renamed by the panel since the use of the term "Limited Combustible" with reference to cable has been restricted by the Standards Council. Changes to the NEC are anticipated in the 2008 edition unless a TIA is proposed and accepted.

If this cable does end up changing names and the name of the product category changes, UL will disseminate this

information to the IAEI online through the UL Regulators page at www.ul.com/regulators as well as the UL Question Corner in the IAEI News and the Code Authority Newsletter published by UL.

- 4.2 Q. Are grounding bushings Listed for use with rigid metal conduit or Intermediate Metal conduit or both?
- A. Yes, Grounding Bushings are Listed under the product category Grounding and Bonding Equipment (KDER) located on page 64 in the White Book. Recently the Guide Information for (KDER) was updated to reflect the following:

Grounding and Bonding Bushings – Bonding bushings for use with conduit fittings, tubing (EMT) fittings, threaded rigid metal and intermediate metal conduit, or unthreaded rigid metal and intermediate metal conduit are provided with means (usually one or more set screws) for reliably bonding the bushing (and the conduit on which it is attached) to the metal equipment enclosure or box. They provide the electrical continuity required by the NEC at service equipment and for circuits rated over 250 V. Means for connecting a grounding or bonding wire are not provided and if there is need for such a conductor a grounding bushing should be used.

Grounding bushings for use with conduit fittings, tubing (EMT) fittings, threaded rigid metal and intermediate metal conduit, or unthreaded rigid metal and intermediate metal conduit have provision for the connection of a bonding or grounding wire or have means for mounting a wire connector available from the manufacturer. Such a bushing may also have means (usually one or more set screws) for reliably bonding the bushing to the metal equipment enclosure or box in the same manner that this is accomplished by a bonding bushing. Grounding bushings provide the electrical continuity required by the NEC at service equipment and for circuits rated over 250 V. They may be used with or without a bonding or grounding conductor as determined by the bonding or grounding function that is intended to be accomplished.

5.0 WIRING DEVICES

- 5.1 Q. What was the problems with the GFCIs that were the subject of the UL public notice dated August 26, 2003? And what do expect the AHJ to do in response to this notice?
- A. The GFCIs that were the subject of the UL Public Notice dated August 26, 2003 were manufactured after January 1, 2003 and did not comply with current UL requirements that were in effect for Listing after January 1, 2003. The GFCIs may pose a fire or electric shock hazard and UL encourages the user to stop using the GFCIs. The Public Notice can be accessed online at http://www.ul.com/regulators/index_service.html and click on the link for Public Notices for Potentially Hazardous Products or directly at <http://www.ul.com/media/public.html> for further instructions.
- 5.2 Q. I am an inspector on the New Jersey shore and have noticed that many GFCI receptacles installed at docks have failed and in many instances have caught fire. Will the new requirements that went into effect in 2003 address these problems?
- A. The new requirements that went into effect for UL Listed GFCI's in 2003 address many conditions that may be contributing factors to the problems you describe, such as new corrosion tests as well as transient voltage surge suppression tests that address the use of these devices outdoors where exposed to weather and where subject to lightning strikes in the area.

However, it is hard to say if the new requirements will address the specific problems that you have encountered with out being able to evaluate the samples of the failed GFCI receptacles.

When you encounter these types of situations, please submit a Field Report directly to our Field Report Department. If at all possible, please provide the samples of the failed GFCI so that UL can determine the cause of the condition, address the concerns with the manufacturer and if warranted develop new Listing requirements to address these concerns. Information on

filing a Field Report can be found at
<https://www.ul.com/regulators/ahjprod.cfm>.

6.0 OTHER TOPICS

- 6.1 Q. Does UL have a process to notify product distributors and retailers regarding UL public notices so that those products get removed from the store shelves?
- A. UL notifies retailers about all Public Notices through our Retail Marketing Team. An advance notice of 48 hours prior to the public issuance (to the media) of any Public Notice is given to all known retailers and distributors--as identified by the manufacturer of the product(s), as well as through records in the public domain--unless the product is deemed an imminent public safety hazard. In which case a Public Notice is issued immediately. Whether or not product is removed from the shelves is left to the retailers and distributors of that product.

- 6.2 Q. Does UL have a program in place with Lowe's stores to assure all products sold there are UL Listed?
- A. There is a cooperative agreement in place with Lowe's where UL is the preferred provider for safety certification in many of their products categories. UL has also recently begun working with Lowe's on performance verification of gas grills that are sold in Lowe's stores. This program is likely to expand to other product categories through 2004 and beyond.

UL's Retail Marketing Team also provides support services for major retailers verifying the UL Listing of products to retailer's buyers, thus assuring them the product is UL Listed before the retailer purchases the products for resale to consumers.

Periodically UL enters into programs with retailers such as Lowe's, Wal-Mart, and other retailers where in-store Public Services Announcements regarding safety are made, and UL is cited as a safety expert.

- 6.3 Q. Can UL provide installation instructions for Listed products on UL's website?
- A. UL does not intend to provide manufacturers installation instructions on our website. UL Listed products are required to be provided with installation instructions when they leave the factory and these are critical in determining compliance with NEC Section 110.3(B) in the

field.

