REPORT ON DISCUSSIONS
DURING UL MEETINGS
WITH ELECTRICAL INSPECTORS
AT THE
2014 IAEI SECTION MEETINGS

March 6, 2015

TO: Attendees of Underwriters Laboratories Inc. Meetings with Electrical Inspectors at the 2014 IAEI Section Meetings

SUBJECT: Report of Meetings

Underwriters Laboratories held meetings with Electrical Inspectors during the 2014 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 2014

ANNUAL IAEI SECTION MEETINGS

This report contains questions and answers from the 2014 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, CERTIFICATION, AND FIELD EVALUATION INFORMATION

1.1 (NW) **Q.** Where can an inspector find that a product needs to be listed to a United States standard, the definitions in the NEC only refer to the appropriate designated standard. This causes some to argue that any standard may be used including foreign standards.

A. NEC 90.7 generally supports use of listings as a basis for approval. Further, throughout the NEC are specific requirements for listing of equipment. The NEC also includes Informative Annex A, which provides a list of product safety standards used for product listing consistent with the NEC. It is recognized that this list is current at the time of publication, but that new standards or modifications to existing standards can occur at any time while the current edition of the NEC is in effect. Within the United States, the use of American National Standards (generally including "ANSI" within the designation) are widely recognized as fundamental requirements for products under their scope. Included in the development of all UL safety standards is management of content for compatibility with applicable model codes such as the NEC; this is generally not the case for foreign standards or standards with a different focus such as performance. Note that Code Link (UL's code correlation database) at www.ul.com/codelink and UL Product Spec at www.ul.com/productspec are effective resource for identifying applicable US standards.

Definitions in the NEC are descriptive by design, and do not themselves constitute requirements. Any time there is a question regarding the applicability of a specific standard being used for listing where listing is required by the NEC, the AHJ, designer, and installer should review the scope of the specified standard to assure that the standard is applicable to the specific provisions of the NEC.

1.2 (NW) **Q.** UL has an enhanced label now, the UL Mark has the file number or the issue number but what does CA stand for?

A. The "CA" is the ISO (International Standards Organization) country code for Canada to identify the country requirements for which the product has been certified.

The Enhanced UL Certification Mark is an alternative UL Mark that can

be used in place of the UL Listing and Classification Mark. In May of 2013, UL launched an enhanced version of its certification Mark. Even with the introduction of the enhanced Mark, all current UL Listing and Classification Marks remain valid and should continue to be accepted as an indication of certification.

For over 100 years, designers, architects and code authorities have relied on UL's Marks to determine code compliance. But, products in today's environment must meet a diverse spectrum of certification and compliance requirements. In response to evolving customer needs, UL introduced an enhanced version of our Certification Mark that manufacturers have the option of using in place of our traditional Listing and Classification Marks.

One important change you will note in the enhanced Mark is the use of the term "Certified." Certified is a general term encompassing Listed and Classified and complies with the definition of "listed" in all model codes. It's also a term that is more easily understood by the marketplace.

The enhanced UL Mark also identifies the attributes that UL has certified about a product. For example, "Safety" indicates that a product has been certified in accordance with the applicable safety requirements. "Energy" means that a product has been certified in accordance with the applicable energy efficiency requirements. There are several other attributes that may appear on the enhanced UL Mark, and the enhanced Mark may include more than one attribute to describe the full set of certifications a product has earned.

The enhanced UL Mark includes an ISO (International Standards Organization) country code such as "US" for the United States or "CA" for Canada to identify the country requirements for which the product has been certified.

Another significant feature of the enhanced Mark is the use of a unique identifier (most commonly for products in the built environment, a UL file number). This enables users to easily verify certification information at UL's Online Certifications Directory. Just go to www.ul.com/database and

search by the enhanced Mark identifier using the UL File Number field or Keyword Search ("S123456" in the illustration). That search will send you directly to a product's certification record, which also includes a link to the product category guide information. This will go a long way to enabling easy verification of the scope of a product's certification to determine compliance with the Code. If required, a product name or identification will also be on the product near the enhanced Mark to assist in verifying the certification product category in UL's White Book.

An example of an enhanced UL Mark is shown in the accompanying illustration, and details of the Mark are included in the product category guide information in UL Product Spec at www.ul.com/productspec and in the 2014 UL White Book. In addition there is a detailed explanation of the mark and its attributes on page 44 of the 2014 UL Whitebook.

UL expects the transition to the enhanced Mark to happen over time, so you may not see it in the immediate future. For more information on this important development, please go to https://markshub.ul.com/ . Access to the Marks Hub is free and open to all regulators, but registration to use it is required.

1.3 (E) **Q.** Will the Enhanced UL Certification Mark be used on products that presently are authorized to bear the UL Recognized Component Mark ?

A. No, at this time the Enhanced UL Certification Mark only affects the UL Listing and Classification services.

1.4 (E) **Q.** The information on the UL Enhanced Certification Mark indicates that the product is certified. What is the difference between listed and certified?

A. There is no difference between Listed and Certified. Both the UL Listed and Classified products can alternatively bare the UL "Certified" Mark on the products in lieu of the traditional UL Listing or Classification Mark.

1.5 (E) **Q.** How is it possible for Field Evaluation Bodies to apply their marks in the factory?

A. Without prior AHJ approval, this practice should not be accepted by the AHJ. By adopting NFPA 790, Standard for Competency of Third-Party Field Evaluation Bodies, and NFPA 791, Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation, the procedures for completing the evaluation and application of the FEB's label are spelled out. NFPA 790, Section 10.2 states the following:

> **10.2 Evaluation Locations.**
> **10.2.1** The field evaluation process shall be completed at the final installation site.
> **10.2.2** A preliminary evaluation for the field evaluation, if conducted, shall be permitted to be conducted at the point of manufacturing, at interim points of distribution, in the evaluating company's facilities, or at the final installation site.

In addition, NFPA 791 Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation is the document used when unlisted products must be evaluated. This document requires that the evaluator take into consideration the site where the product is installed. This generally needs to be completed by physically being at the final site to assess the environmental and application conditions to complete the evaluation properly. Although an evaluation may start in the factory before a label may be applied all deficiencies must be addressed including issues caused by the final installation site.

If an AHJ encounters field evaluated products that were labeled in the factory without prior knowledge and consent, the AHJ should reject the field evaluation as unacceptable in accordance with industry and ANSI standards. AHJs that accept this practice will only allow it to perpetuate in the future.

1.6 (E) **Q.** If a field Evaluation body has placed a label on a piece of equipment where can an AHJ find it?

A. NFPA 791, Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation is the document used when unlisted products must be evaluated. This document requires that the Field Evaluation Body after all identified issues have been fully resolved, all electrical testing has been satisfactorily completed, and the evaluation has determined that the equipment meets the applicable requirements of the standard(s); a label should be affixed to the equipment. Section 8.3 of NFPA 791 states:

8.3 Label Location.
8.3.1 The evaluation label should be in the area of the equipment nameplate.
8.3.2 Consideration should be given if expected environmental or operating conditions could cause deterioration of the label.

UL procedures have the Field Evaluation label, like the listing mark, generally applied near the equipment nameplate or at the point of the power supply entry. Where the equipment is installed outdoors or in other potentially harsh environment, the label may be applied inside the cover or door where the main electrical supply is connected.

1.7 (E) **Q.** If someone needs switchgear field evaluated, who is responsible to pay for the service?

A. The party that is contracting with UL for the evaluation would be responsible to pay for the services, this might be the purchaser of the switchgear, possibly the manufacturer, or the installer.

1.8 (E) **Q.** An installer had a multiple section motor control center that the sections bussing did not line up, what should be done?

A. Due to the fact that the motor control center could not be assembled without modifications, the motor control center should be rejected by the AHJ and we would request that you file a Product Incident Report (PIR) at www.ul.com/ahjreport. The modification to the MCC would require a Field Evaluation to determine if the modified product complies with UL's requirements.

For more information on or to initiate a Field Evaluation, contacts UL's Customer Service at 877-854-3577, prompt No. 2 or go to www.ul.com/field.

1.9 (W) **Q.** Is there a protocol for doing Field Evaluations and notifying the AHJ? Some test labs notify the AHJ and some don't.

A. NFPA through the ANSI consensus process developed and adopted NFPA 790, the Standard for Competency of Third Party Field Evaluation Bodies and NFPA 791, Recommended Practices and Procedures for Unlabeled Electrical Equipment Evaluations. By application of these ANSI national documents, uniform procedures and protocols are established. The major national bodies that complete field evaluations participated in this process directly other through their input from the American Electrical Safety Council (ACES) and therefore agreed to abide by these documents. UL's protocol is to follow NFPA 791 Recommended Practices and Procedures for Unlabeled Electrical Equipment Evaluation which requires the field evaluation body (FEB) to contact the AHJ upon receipt of the order and again when work in the AHJs area is being performed. UL contacts the AHJ prior to the Field Evaluation to let them know when UL plans on doing the field evaluation to see if the AHJ wants to be present and to find out any specific concerns the AHJ may have. It does need to be understood by all that sometimes the Field Evaluation schedule may be accelerated to meet the clients need, such as a business grand opening, so the timing of the AHJ notification may be less than ideal for the AHJ to schedule their inspection to be present.

One way to assure field evaluation providers in your jurisdiction meet your criteria and contact you ahead of time and provide field evaluation reports that meet your needs is to adopt NFPA 790, the Standard for Competency of third Party Field Evaluation Bodies and NFPA 791, Recommended Practices and Procedures for Unlabeled Electrical Equipment Evaluation. If these standards are adopted in your jurisdiction field evaluation providers will have to make application in writing to the AHJ or jurisdiction to become an accepted field evaluation body in your jurisdiction and demonstrate compliance with NFPA 790 and use NFPA 791 as a guide when performing field evaluations in your jurisdiction, which includes the FEB using the appropriate nationally recognized safety standard for the specific equipment being field evaluated. Since the AHJ is the final approver of the installation and the FEB's work, where the required procedures are not being followed, the AHJ should reject the work completed by the Field Evaluation Body. The adoption of these two standards will help assure consistency between field evaluation providers in your jurisdiction.
For more information on UL Field Evaluations go to www.ul.com/field or

contact UL's Customer Service at 877-854-3577, prompt no. 2.

1.10 (W) **Q.** Sometimes field evaluation reports get lost, who does the report get sent to?

A. When UL conducts a field evaluation (FE) all reports get sent via a single e-mail to the client requesting the field evaluation and the AHJ. When clients sign the application initiating the FE they authorize all reports to be sent to the AHJ.
UL's new field evaluation mark that went into effect May of 2014 states that the product that bears the label was evaluated in accordance with the procedures and limitations detailed in the report and gives a serialized number for the label and UL's contact information. Both the label and the report are necessary for the AHJ to make an informed decision on approval. If the report is not provided, then the AHJ should not approve the product that just bears a label.

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1.11 (S) **Q.** What do we do when we find products in the field that do not meet the NEC or the standards what is our recourse?

A. If you see UL Certified (Listed) products in the field that you feel doesn't comply with the appropriate requirements, please contact your UL Regulatory Services representative for assistance; they will be able to

provide you with the necessary information to determine if a UL Product Incident Report (PIR) should be initiated.

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The following are some reasons to complete and submit a UL Product Incident Report:

- fire, shock or other personal injury or property damage allegedly

  caused by UL certified products
- misuse or misrepresentation of a UL Mark
- noncompliance with UL requirements for that product
- unauthorized or counterfeit UL Marks
- inappropriate or unauthorized reference(s) to UL on packaging, web sites, brochures, or ads
- application of UL Certification (Listing) Marks to products in the field

1.12 (S) **Q.** We have heard that the CE mark is being reviewed, what is being looked at and are they trying to meet the US market requirements?

A. UL is aware that the European Union is reviewing the CE system to identify areas that could be improved. Currently, UL does not have any details or specifics on this activity. UL is not sure, but we do not believe there is a movement by the European Union to try and make the CE mark align or comply with the US safety requirements. The CE mark indicates conformity to the applicable European Union directives and is usually completed through self-declaration.

Back in October of 2008, Occupational Safety and Health Administration (OSHA) received a petition to permit use of a Supplier's Declaration of Conformity (SDoC) as an alternative to OSHA's current Nationally Recognized Testing Laboratories (NRTLs) product-approval process.

OSHA carefully reviewed the elements of the SDoC system. OSHA's analysis concluded that, for electrical safety, the system does not provide the high level of worker protection required by the OSHA Act. This statement would apply to any similar SDoC system. OSHA determined that SDoC's protection is reactive, and, therefore, is less likely than the NRTL Program to find nonconforming products before the products reach the market. In addition, an SDoC system does not provide assurance that manufacturers are appropriately certifying products because it lacks an assessment of the manufacturers' competence, independence, and production control.

Link to the OSHA report:
https://www.federalregister.gov/articles/2010/12/17/2010-31695/nationally-recognized-testing-laboratories-suppliers-declaration-of-conformity

1.13 (E) **Q.** A problem we have encountered is that a contractor performed 13 line-side taps in a switchboard in our jurisdiction, which involved moving some barriers. The particular contractor did an unacceptable job. Another NRTL/FEB evaluated the work and applied a field evaluation label. What should we do if we are unhappy with the field evaluation?

A. Any FEB (Field Evaluation Body) must be recognized as proficient by the jurisdiction to perform field evaluations for the specific type of equipment involved. Given the unacceptable performance of the installer and FEB as described in the question, the jurisdiction should consider taking corrective action to ensure the safety of the installations and determine if the installer and FEB are qualified to perform such work in the future.

NFPA 790 is the Standard for Competency of Third-Party Field Evaluation Bodies, and addresses requirements for the qualifications and competency of a body performing field evaluations on electrical products

and assemblies with electrical components. NFPA 791 is the Standard for Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation, and covers recommended procedures for evaluating such equipment.

Consideration should be given to adopting NFPA 790 and 791 in your jurisdiction. This would go a long way to assuring the FEB and their evaluation meets your jurisdictions expectations.

For more information on if tapping a busbar is permissible, please see the Question 2.3.

2.0 Service Equipment, Switchboards, Panelboards and Power Distribution Equipment

2.1 (NW) **Q.** We have found switchgear in the field that the doors when latched open are at 88 degrees the code and the standard indicated they need to open to 90 degrees. How is this possible?

A. UL Certifies (Lists) switchgear under the product category Switchgear Assemblies, Metal Enclosed, Low-voltage Power Circuit Breaker Type (WUTZ), located on page 533 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter WUTZ at the category code search field.

The 2014 NEC 110.26(2) states; The width of the working space in front of the electrical equipment shall be the width of the equipment or 762 mm (30 in.), whichever is greater. In all cases, the work space shall permit at least a 90 degree opening of equipment doors or hinged panels.

In accordance with the UL Standard for Safety for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear, UL 1558, products Certified (Listed) for compliance with UL 1558 are to be built per cause 16A.1 The enclosure shall be constructed so that all doors are able to be opened to a minimum of 90 degrees from the closed position.
As long as the switchgear can be opened to 90 degrees it complies with both the standard and the NEC. The equipment that holds the door open does not have to comply with the 90 degree rule and can relax to less than 90 degrees.

2.2 (NW) **Q.** Is the installation of a Kirk Key considered a modification that would need a field evaluation?

A. The addition of a kirk key interlock in the field to a UL Certified (Listed) panelboard or switchboard would be considered a field modification of a UL Certified (Listed) product. When a UL Certified (Listed) product is modified in the field, UL no longer knows if the product continues to comply with UL's requirements unless UL conducts a Field Evaluation on the modified product. The only exception to this would be if the UL Certified (Listed) panelboard or switchboard was marked with the kirk key kit as field installed accessory.

For more information on UL's Field Modification policy, see page 46 in the 2014 UL White book, which states the following:

Field Modifications

What happens to the Listing if a UL-Listed product is modified in the field?

An authorized use of the UL Mark is the manufacturer's declaration that the product was originally manufactured in accordance with the applicable requirements when it was shipped from the factory. When a UL-Listed product is modified after it leaves the factory, UL has no way to determine if the product continues to comply with the safety requirements used to certify the product without investigating the modified product. UL can neither indicate that such modifications ''void'' the UL Mark, nor that the product continues to meet UL's safety requirements, unless the field modifications have been specifically investigated by UL. It is the responsibility of the Authority Having Jurisdiction (AHJ) to determine the acceptability of the modification or if the modifications are significant enough to require one of UL's Field Engineering Services staff members to evaluate the modified product. UL can assist the AHJ in making this determination.

An exception for a field modification authorized by UL is when the product has specific replacement markings. For example, a switchboard may have specific grounding kits added in the field. The switchboard is marked with a list of specific kit numbers that have been investigated for use in that particular switchboard. Only grounding kits that are included on the marking on the product have been investigated for use in that product. If a party wishes UL to determine if the modifications made to a UL Listed product comply with UL requirements, the appropriate Field Engineering Service can be initiated to investigate the modifications. This investigation will only be conducted after UL consults with the AHJ to ensure that UL's investigation addresses all areas of concern and meets all of the AHJ's needs.

If you have any questions or would like to inquire about a Field Evaluation, contact Field Services at +1-877-UL-HELPS, prompt #2 (+1-877-854-3577) or visit http://www.ul.com/field/.

2.3 (SW) **Q.** This is a multi-part question regarding tapping of busbars.

1. Can you tap a busbar in a switchboard using existing holes and slots?

A: Please see the following UL article on tapping of busbars (http://ul.com/wp-content/uploads/2014/04/ul_TappingBusbarConsiderations.pdf), more information on tapping a bus may be found in the UL Guide information for Deadfront Switchboards (WEVZ) located on page 516 in the 2104 UL White Book and also UL Product Spec at http://www.ul.com/productspec and enter WEVZ at the category code search field. The WEVZ Guide Information includes information on Taps under the heading Field Terminations. If there are existing holes in the busbars marked with the word "Tap" adjacent to the holes, then it is permitted to tap at that location in accordance with the manufacturer's instructions and markings on the equipment. Holes in the busbar that are not marked with the word "Tap" are intended for the connection of overcurrent devices or other devices as identified by the product markings and described in the installation instructions as identified by the manufacturer. If not identified as a tap location, then it would be considered a field modification to tap at that location, and a Field Evaluation would be needed to determine acceptability.

2. On a load-side tap of a service disconnect for a PV installation, will UL apply the 120 percent of the rating of the busbar rule as part of a Field Evaluation?

A: In accordance with 2014 NEC Section 690.64, which now refers to Section 705.12 (705.12(D)(2)), "the sum of the ampere ratings of overcurrent devices in circuits supplying power to a busbar shall not exceed 120 percent of the rating of the busbar or conductor." As part of a Field Evaluation, UL generally applies the requirements of the product standard, and it is assumed that the AHJ would enforce this code section. A product certification (listing) or a field evaluation to the product standards also needs to ensure the product can be installed in accordance with the NEC (this is different than being constructed to the NEC) so in the case cited by the question, yes, UL would consider the 120% requirement from the NEC in completing the field evaluation. Once the Field Evaluation is completed and report reviewed by the AHJ,

the AHJ would make the final determination on “approval” of the overall installation.

3. Typically we see a parts list and bag of parts for a tap, but not detailed installation instructions. Is this considered to be a modification of the listed equipment?

A: As indicated in no. 1 above, if the busbar is not identified by the manufacturer as a tap location, with accompanying markings and instructions, then it would be considered by UL to be a field modification, and a Field Evaluation would be in order.

4. What about kits provided by the switchboard manufacturer as part of the listing?

A: Some Listed power distribution equipment may have installation instructions with specific directions on tapping the busbars. If this is the case, this equipment can be field modified, following those manufacturer’s instructions, in accordance with the National Electrical Code® (NEC) Section 110.3(B). The UL White Book identifies the required markings for field-installed equipment that have been evaluated by UL. For additional information, please see the Guide Information for Dead-Front Switchboards (WEVZ) on page 516 of the 2014 UL White Book and also on UL Product Spec at www.ul.com/productspec and enter WEVZ at the category code search field.

5. For a large solar contractor, an old 4,000 A switchboard has little room to tap, and the installer has suggested using DLO cable. Is this ok?

A: No, DLO refers to diesel locomotive cable and it is sometimes used due to its flexibility, such as in the application described, however, it is not a cable that is recognized by the NEC.. It is UL Listed under the product category Wire, Special Purpose (ZMHX). Guide Information can be found on page 598 of the 2014 UL White Book and also on UL Product Spec at www.ul.com/productspec and enter ZMHX at the category code search field.

It is assumed that the busbars on this particular equipment are not marked “Tap,” as a switchboard marked with a “Tap” location would

likely have adequate space and not need the DLO cable for flexibility. Drilling or enlarging hole in busbars can increase the current density and reduce current carrying capacity. Some equipment is constructed with fully rated busbars, which have a current density of 1000 A per square inch of cross sectional area for copper and 750 A per square inch for aluminum. However, some equipment use busbars at a higher current density and have temperature testing conducted to determine compliance with UL's requirements.

Removing busbar material can result in higher operating temperatures, and additional holes can potentially weaken the busbar, which adversely affects the short circuit rating of the equipment required by NEC Section 110.10. Both sufficient wiring space and wire bending space need to be provided for the conductors and the wire connector at the tap connection. In measuring the wiring space, AHJs need to consider the possibility of the connectors rotating, which may result in reduction of the spacing between uninsulated live parts of opposite polarity and uninsulated live parts and ground.

Wire connectors (lugs) need to be UL Listed for the correct ampacity and type of cable used and have the proper ratings for specific application, and the mounting hardware for wire connectors needs to be properly selected and attached with the correct torque. The potential reduction of required spacings from the wire connectors or fasteners to the enclosure or other busbars also needs to be evaluated. In completing the modification, all foreign material such as cutting oil, burrs and metal shavings needs to be removed from the equipment enclosure. Temporarily removed materials such as insulating barriers need to be returned to their original positions and secured.

The above are just a few of the concerns and items that must be inspected, checked and reviewed where such modifications are made to this type equipment.

3.0 Industrial Controls and Prefabricated Buildings

3.1 (W) **Q.** How will industrial control panels for use in hazardous locations be marked? How do I know it is intended for use in hazardous locations?

A. UL Certifies (Lists) Industrial control panels for use in unclassified (ordinary) locations unclassified locations under the product category Industrial Control Panels (NITW). For industrial control panels that are located in an ordinary unclassified locations and have intrinsically safe circuits that extend into a hazardous (classified) locations, UL Lists these panels under the product category Industrial Control Panels Relating to Hazardous Locations (NRBX). Also, UL also Certifies (Lists) industrial control panels that are intended for use in a hazardous classified locations under the product category Control Panels and Assemblies for Use in Hazardous Locations (NNNY). This category includes explosionproof, purged/pressurized and nonincendive industrial control panels. It is important to note that NITW panels are not permitted to incorporate the following hazardous locations equipment and associated apparatus:

a) An explosion-proof enclosure marked for Class I hazardous locations (or Type 7),

b) A dust-ignition-proof enclosure marked for Class II hazardous locations (or Type 9),

c) A barrier that provides intrinsically safe or nonincendive input/output connections for use in Class I, II, and III hazardous locations,

d) A dusttight enclosure marked for Class II, Division 2 hazardous locations, or

e) Purging and pressurizing controls and accessories marked for Class I or II hazardous locations.

The Guide information for NITW, NRBX and NNNY categories can be located in the 2014 UL White Book on pages 304 for NITW, page 322 for NRBX and page 316 for NNNY. You can also access the guide information on UL Product Spec at www.ul.com/productspec and enter NITW, NRBX or NNNY at the category code search field.

The UL Guide Information for all product categories will always specify in the last section of the guide information how to identify products Certified (Listed) under that product category in the UL Mark Section. So that for industrial control panels certified under NNNY the UL Mark will identify it as a “Control Panel for Hazardous Locations” and for NRBX the UL Mark will identify it as "Industrial Control Panel Relating to Hazardous Locations" or "Enclosed Industrial Control Panel Relating to Hazardous Locations" and the statement "with Intrinsically Safe Circuit Extensions.

3.2 (W) **Q.** Can you rebuild industrial control panels on site as a UL 508A panel shop?

A. No. When a manufacturer is authorized by UL to produce UL Certified (Listed) industrial control panels under the product category Industrial Control Panels (NITW), they are authorized to apply the UL mark to their industrial control panels in the factory where they are subject to inspection under UL's Follow Up Service, where UL performs inspection on their production a minimum of four times a year to make sure they are still producing products in accordance with UL's requirements.

The UL mark is not permitted to be applied in the field by the manufacturer. The only exception would be under a UL Field Inspection, where the UL representative would conduct their UL inspection on the product in the field with the UL report and if it complied would witness the application of the UL mark. The UL representative would contact the AHJ before the inspection to notify them and afterwards to let them know whether or not the product was labeled.

UL Certifies (Lists) these panels under the product category Industrial Control Panels (NITW). The UL Guide information for NITW can be located on page 304 in the 2104 UL White Book and also UL Product Spec at http://www.ul.com/productspec and enter NITW at the category code search field.

3.3 (W) **Q.** Can you build custom industrial control panels (ICP's) in a UL 508A panel shop?

A. Yes, UL Certified (Listed) industrial control panels can be all the same or they can be all custom. When UL sets up an industrial control panel shop, the manufacturer tells UL what scope of products that they intend on building and UL sets up their program to give them the most latitude to build custom control panels within the guidelines of the Standard for Safety for Industrial Control Panels, UL 508A without having to re-submit each different type of control panel.

UL Certifies (Lists) these panels under the product category Industrial Control Panels (NITW). The UL Guide information for NITW can be located on page 304 in the 2104 UL White Book and also on UL Product Spec at http://www.ul.com/productspec and enter NITW at the category

code search field.

For more information on becoming a UL 508A panel shop go to http://industries.ul.com/blog/become-a-ul-listed-panel-shop

3.4 (W) **Q.** Some big box stores have the electrical service installed as a prefabricated UL Certified building that contains the service. Does UL evaluate the working spaces around the equipment in that service room/building?

A. Yes. UL evaluates prefabricated buildings that include only the service for installation into another building under the product category Commercial and Industrial Prefabricated Buildings and Units (QRXA). The UL Guide Information for QRXA is located on page 431 in the 2014 UL White Book and also online at http://www.ul.com/productspec and enter QRXA at the category code search field.

This category covers the installation of electrical systems in commercial or industrial prefabricated buildings and units, including, but not limited to, power-distribution buildings and units, refrigeration building and units, guard sheds, toll and phone booths, drive-up ATM booths, canopy shelters, traffic-control booths, indoor data/cash offices, power-wall modules, sound-isolation buildings, water-pump-station buildings, stationary ITE server or data-center buildings, storage buildings (for other than hazardous materials), and other similar buildings and units.

These factory-built buildings and units incorporate pre-installed materials and equipment which, after installation, may be concealed and may not be accessible for inspection at the final installation site. The final site installation of these prefabricated buildings and units is subject to approval by the Authority Having Jurisdiction.

These prefabricated buildings and units are intended to be installed in accordance with ANSI/NFPA 70, "National Electrical Code" (NEC).
Buildings that are evaluated under this product category do not bear a UL Mark on the product, however, are issued a UL Certificate of Inspection. The UL Certificate of Inspection is the only method provided by UL to identify prefabricated buildings and units inspected by UL under UL's Building Inspection Certificate Services Program.

The prefabricated buildings and units for which UL issues Certificates are considered by UL to comply with the applicable requirements of the NEC at the time of inspection. The Certificate is only valid when accompanied by a completed UL Inspection Report. The UL Inspection Report identifies applicable plan drawings that indicate all the equipment included in the

building at the time of manufacturing. UL does not know what the effect of a modification to the electrical system or equipment, or to the construction of a prefabricated building or unit, subsequent to the inspection, may have on the safety of the product or the continued validity of the Certificate unless the modifications have been specifically investigated by UL. Unless UL investigates a modified product, UL cannot indicate that the product continues to comply with the applicable requirements.

If the prefabricated building or unit is shipped in multiple sections or "knocked down," the number and description of the sections required to complete the building or unit are included on a building's nameplate. Instructions for completion of the building, including any wiring connections to be completed at the installation site, are also provided.

The Certificate is not transferable. UL reserves the right to void a Certificate at any time. The Certificate does not indicate compliance with any UL product certification program, nor does it entitle the Subscriber to use the UL Mark. UL assumes no liability for any loss that may result from failure of the equipment, incorrect certification, or nonconformity with requirements.

3.5 (W) **Q.** Does UL certify prefabricated buildings for use in hazardous classified locations that go into other buildings?

A. No, not at this time. UL evaluates prefabricated buildings for use in unclassified (ordinary) locations under the product category Commercial and Industrial Prefabricated Buildings and Units (QRXA), however, not for use in hazardous (classified) locations. The UL Guide Information for QRXA is located on page 431 in the 2014 UL White Book and also online at http://www.ul.com/productspec and enter QRXA at the category code search field.

This category covers the installation of electrical systems in commercial or industrial prefabricated buildings and units, including, but not limited to, power-distribution buildings and units, refrigeration building and units, guard sheds, toll and phone booths, drive-up ATM booths, canopy shelters, traffic-control booths, indoor data/cash offices, power-wall modules, sound-isolation buildings, water-pump-station buildings, stationary ITE server or data-center buildings, storage buildings (for other than hazardous materials), and other similar buildings and units.

These factory-built buildings and units incorporate pre-installed materials and equipment which, after installation, may be concealed and may not be accessible for inspection at the final installation site. The final site installation of these prefabricated buildings and units is subject to approval

by the Authority Having Jurisdiction.

These prefabricated buildings and units are intended to be installed in accordance with ANSI/NFPA 70, "National Electrical Code" (NEC).

Unlike most other UL product categories, UL does not authorize the use of a UL Mark on products under this category, the UL Certificate of Inspection is the only method provided by UL to identify prefabricated buildings and units inspected by UL under UL's Building Inspection Certificate Services Program.
The prefabricated buildings and units for which UL issues Certificates are considered by UL to comply with the applicable requirements of the NEC at the time of inspection. The Certificate is only valid when accompanied by a completed UL Inspection Report. The UL Inspection Report identifies applicable plan drawings that indicate all the equipment included in the building at the time of manufacturing. UL does not know what the effect of a modification to the electrical system or equipment, or to the construction of a prefabricated building or unit, subsequent to the inspection, may have on the safety of the product or the continued validity of the Certificate unless the modifications have been specifically investigated by UL. Unless UL investigates a modified product, UL cannot indicate that the product continues to comply with the applicable requirements.

If the prefabricated building or unit is shipped in multiple sections or "knocked down," the number and description of the sections required to complete the building or unit are included on a building's nameplate. Instructions for completion of the building, including any wiring connections to be completed at the installation site, are also provided.

The Certificate is not transferable. UL reserves the right to void a Certificate at any time. The Certificate does not indicate compliance with any UL product certification program, nor does it entitle the Subscriber to use the UL Mark. UL assumes no liability for any loss that may result from failure of the equipment, incorrect certification, or nonconformity with requirements.

4.0 Luminaires and Signs

4.1 (NW)

Q. With the change in the NEC to allow the labels on signs to now be concealed after installation, it is very difficult for an AHJ to verify the label.

A. UL Certifies (Lists) signs under the product category for Signs (UXYT) located on page 489 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter UXYT at the category code search field. Signs Certified (Listed) under UXYT have been evaluated for compliance with the Standard For Safety For Electric Signs, UL 48. The marking location change in both the NEC 600.4(C) and UL 48 was made to enable sign owners and sign manufacturers to have an alternative to placing the label on a visible part of the sign exterior such that the sign exterior could be consistent with the surrounding environment and esthetics. It also was intended to reduce the likelihood that sign owners would remove the labels after inspections.

4.2 (S)

Q. We have seen luminaries that have a label that states do not exceed 60W type A or 13W CFL lamps what is the concern here?

A. UL Certifies (Lists) Compact Fluorescent Lamps (CFL's) under the product category Lamps, Self-ballasted and Lamp Adapters (OOLR) located on page 342 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter OOLR at the category code search field.

Luminaires are required to be provided with lamp replacement markings for the lamps that are evaluated as part of the certification so that they do not generate temperatures that exceed the limits specified in the certification requirements for the luminaire.

4.3 (S)

Q. We have seen where plastic keyless lamp holders have been used with CFL lamps in a base up position being damaged by the heat from the ballast what should we do when we come across something like this?

A. When UL evaluates a CFL (compact fluorescent) for certification (Listing), the CFL is installed within test luminaires that simulate either a 6 inch or 8 inch recessed can, so using such a lamp in an open luminaire or lampholder should produce less severe thermal results. If the CFL appears to be damaging a lampholder, that may be an issue with the CFL producing too much heat or the lampholder material may be defective

and/or unsuitable. If either or both the CFL and the plastic keyless lampholder are UL Certified (Listed) then a UL Product Incident Report (PIR) may be warranted. A UL Product Incident Report may be initiated at www.ul.com/ahjreport and completing the online form.

UL Certifies (Lists) Compact Fluorescent Lamps (CFL's) under the product category Lamps, Self-ballasted and Lamp Adapters (OOLR) located on page 342 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter OOLR at the category code search field.

UL Certifies (Lists) plastic keyless lampholders under the product category Lampholders, Medium Base (ONHR) located on page 341 of the 2014 UL White Book, and also on the UL Product Spec at www.ul.com/productspec and enter ONHR at the category code search field.

5.0 Wiring Systems and Wiring Devices

5.1 (E) **Q.** Is there a difference between hubs on services and hubs on air conditioner disconnects?

A. No, UL Certifies (Lists) conduit hubs under the product category Conduit Fittings (DWTT), located on page 139 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter DWTT at the category code search field. Hubs Certified (Listed) under DWTT are fittings with internal female threads (e.g., hubs, conduit bodies, couplings) and have only been investigated for use with threaded rigid conduit. Hubs intended for use with conduit that serves as a service mast in accordance with the NEC are marked on the fitting or carton to indicate suitability for use with service-entrance equipment.

5.2 (E) **Q.** What are the requirements for the cords on power walls?

A. UL Lists power walls under the product category for [Prefabricated Buildings] Composite Panels (QRSY) located on page 431 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter QRSY at the category code search field. This category covers composite panels, which are factory-built panel assemblies intended for use within or as part of the structure of buildings for commercial, industrial and residential use. These assemblies incorporate pre-installed branch-circuit electrical power distribution systems that are usually concealed and may not be accessible for inspection at the installation site. Some panels incorporate audio, lighting, ventilation fans, and other certified utilization equipment.

In accordance with the UL Outline of Investigation for Composite Panels (UL 1294), products Certified (Listed) for compliance with UL Subject 1294, may be connected by cords.

Clause 8.5 of UL's Outline of Investigation for Composite Panels (UL Subject 1294) states that some panel systems may be connected to the building wiring system by cord and/or plug connection. Cords shall be of the extra hard usage "S" cord type. The connection of the cord to the panel shall be to a factory installed junction box utilizing a standard conduit fitting, knockout or opening size. The arrangement shall be such that it is possible to field disconnect the cord and field install a permanent wiring system by disconnecting and removing the cord and installing a suitable raceway. The cord shall be provided with a suitable cord grip for

strain relief that complies with the Standard for Conduit, Tubing, and Cable Fittings.

Authorities Having Jurisdiction should be consulted before installation.

5.3 (E) **Q.** With the 2014 NEC allowing system voltages to increase from 600v to 1000v will the lugs used for grounding meet these requirements?

A. Yes, UL Certifies (Lists) lugs for grounding under the product category for Grounding and Bonding Equipment (KDER) located on page 262 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter KDER at the category code search field. Lugs for grounding Listed under KDER are not limited to voltages under 600V; the change in the 2014 NEC will have no effect on lugs for grounding.

5.4 (E) **Q.** An educational provider has stated that power supply cords from pieces of equipment do not need to meet the requirements of NEC 400.8(2). Is this true?

A. No, power supply cords are constructed with flexible cord and are not exempt from the requirements for compliance with NEC 400.8(2), uses not permitted for flexible cords and cables.

UL Certifies (Lists) power supply cords under the product category for Cord Sets and Power-Supply Cords (ELBZ) located on page 150 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter ELBZ at the category code search field. Power supply cords Listed under ELBZ are required to meet the requirements of NEC 400.8 because power supply cords are required to comply with the Standard for Safety for Cord Sets and Power Supply Cords UL 817.

UL 817 requires flexible cord used in power supply cords to comply with the UL 62, the Standard for Safety for Cords and cables**.**

5.5 (E) **Q.** Can a condensate pump for a HVAC unit above a ceiling be plugged in to a receptacle?

A. No, power supply cords must be installed in accordance the requirements in NEC 400.8, which prohibits the use flexible cords where run through holes in ceilings or where, concealed by or located above ceilings.

5.6 (W) **Q.** Does UL list prefabricated wiring whips?

A. Yes, UL Certifies (Lists) prefabricated whips under the product category Wiring Assemblies (QQYZ). The UL Guide Information for QQYZ can be found on page 430 in the 2014 UL White Book or on UL Product Spec at www.ul.com/productspec and enter QQYZ at the category code search field. This category covers prefabricated wiring systems comprised of certified electrical components that could be field assembled and inspected by an Authority Having Jurisdiction (AHJ), but are assembled in the factory prior to field installation.

Prefabricated wiring assemblies incorporate certified (Listed) conduit, tubing or cable, conductors and fittings intended for field installation in accordance with ANSI/NFPA 70, "National Electrical Code" (NEC). They may be factory assembled to outlet or junction boxes, box-mounting brackets, and wiring devices.

Prefabricated wiring assemblies are marked with the conduit, tubing or cable type, and the conductor size and type to permit determination of their suitability for a specific application and ampacity in accordance with the NEC. A parts list is provided with each assembly to identify the extent of the product.

The UL Certification or Listing Mark on the factory-assembled wiring assembly or the packaging of a wiring assembly kit is the only method provided by UL to identify products manufactured under its Certification or Listing and Follow-Up Service. The UL Certification or Listing Mark for these products includes one of the following product names: "Wiring Assembly," "Wiring Assembly Kit," "Conduit Kit" or "Surface Raceway Kit."

5.7 (S) **Q.** We see purple wire nuts being used in the field to splice copper and aluminum conductors are they listed for this use?

A. Yes, if the box or the installation instructions with the Certified (Listed) wire connectors identify those wire combinations.

UL Certifies (Lists) copper and aluminum wire splicing connectors under

the product category Wire Connectors and Soldering Lugs (ZMVV), located on page 601 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter ZMVV at the category code search field.

ZMVV covers single-polarity wire connectors for use with all alloys of copper, aluminum, or copper-clad aluminum conductors, or all three, for the purpose of providing contact between current-carrying parts. Splicing wire connectors establish a connection between two or more conductors by means of mechanical pressure and are not intended to be permanently mounted. They are floating, such as a twist-on connector in an outlet box.

A wire connector that has been evaluated for securing an aluminum wire in combination with a copper or copper-clad aluminum conductor, where physical contact occurs between the wires of different metals, is limited to dry locations only and is marked ‘‘AL-CU (intermixed – dry locations).’’ This marking is located either on the wire connectors or the unit container. Neither UL nor NEC requirements stipulate that wire connectors be Purple in color.

Remember, NEC 110.3(B) requires that Listed (Certified) products shall be installed and used in accordance with the manufacturers installation instructions. These instructions are needed to verify a proper conductor combination.

5.8 (S) **Q.** We are experiencing conductors with printing that is illegible. What should we be able to see printed on these conductors once they are installed?

A. UL Certifies (Lists) general wiring conductors under two product categories, Thermoset-insulated Wire (ZKST) and Thermoplastic-insulated Wire (ZLGR), located on page 596 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec, and enter ZKST or ZLGR at the category code search field.

In accordance with the Standard for Safety for Thermoset-Insulated Wires and Cables, UL 44 and the Standard For Safety For Thermoplastic-Insulated Wires and Cables, UL 83; all markings on the finished product shall be visible and legible and shall be repeated at intervals not exceeding 1.0 m (40 inches), except for conductor size, which shall be repeated on the conductor at intervals not exceeding 610 mm (24 inches).

As for what information you should be able to verify after the conductors

are installed; manufacturer's identification, insulation type designation, conductor size and voltage rating are all required markings. Optional markings would include; cable-tray use, sunlight resistant as well as gasoline and oil resistance.

If after installation, the markings required by UL 44 and UL 83 are not legible, the conductors would be in violation of the applicable UL product standard in addition to Section 310.120 of the National Electric Code. A UL Product Incident Report (PIR) should be submitted for noncompliance with UL requirements for that product. A UL Product Incident Report may be initiated at www.ul.com/ahjreport by completing the online form.

6.0 Appliances and Utilization Equipment

6.1 (NW) **Q.** In the field inspectors are seeing drapery motors that are recognized components, where would an inspector find the listing mark?

A. UL Certifies (Lists) drapery operators and systems under the product category for Door, Drapery, Gate, Louver, and Window Operators and Systems (FDDR), located on page 166 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter FDDR at the category code search field.
The Listing (Certification) mark can usually be found on the main operator housing, and the installation instructions will spell out how the operator or system is to be installed.
Note that a drapery motor with a UL Recognized Component Mark alone has not been evaluated by UL as a complete product for field installation and does not comply with the definition of Listed in the NEC.

6.2 (SW) **Q.** For a split-system HVAC, power is connected to the outdoor section and interconnecting cable is run between the outdoor and indoor section. This interconnecting cable may or may not come with the equipment. What type of wire or cable is supposed to be used, and how is this identified on the equipment?

A. For split system central type units, power to the outdoor and indoor sections of these central units are provided from two separate power supplies (both marked with the minimum circuit ampacity and maximum overcurrent protection on the nameplates). Interconnecting cable would typically be Class 2 control circuit wiring as marked on the product and specified in the installation instructions. It is not required for the interconnecting cable to be provided with the unit.

For mini-split systems, where one outdoor section also provides power to several wall-mounted indoor sections, these systems do have interconnecting power wiring. The manufacturer may or may not provide the cabling for the interconnecting power wiring, but the manufacturer's instructions should indicate that this wiring is to be completed in accordance with the NEC or local codes.

UL Lists split-system and mini-split HVAC equipment under the product categories for Air Conditioners, Room (ACOT) and Heating and Cooling Equipment (LZFE), located on pages 65 and 289, respectively, of the 2014

UL White Book, and also on UL Product Spec at www.ul.com/productspec. Enter ACOT or LZFE at the category code search field.

6.3 (E) **Q.** Some pool pumps listed by UL are marked portable only, what does this mean to the installers and inspectors?

A. Pumps Certified (Listed) for storable pools are so identified. These are sometimes referred to as “portable pool pumps”. Storable pool pumps are intended to be connected to a water circulation system constructed so that the pump may be readily disassembled from the system for storage and future reassembly to its original integrity. Storable pool pumps are provided with a minimum 25-ft non-detachable power-supply cord.

UL Certifies (Lists) pool pumps under the product category for Pumps (WCSX) located on page 514 of the 2014 UL White Book and also on UL Product Spec at www.ul.com/productspec and enter WCSX at the category code search field. Pool pumps Listed under (WCSX) and investigated for permanently installed pools are so identified and are additionally marked "Do Not Use With Storable Pools." Permanently installed pool pumps are intended to be permanently connected to the water circulation system and they may be permanently wired or provided with a 3-ft non-detachable power supply cord terminating in a grounding-type attachment plug. The attachment plug may be of the locking or non-locking type. Units provided with locking type attachment plugs are intended to be installed at least 5 ft. from the inside walls of the pool and are marked accordingly. Units provided with a non-locking type attachment plug are intended to be installed at least 10 ft. from the inside walls of the pool and are marked accordingly.

6.4 (E) **Q.** In the field we have seen TC-ER cable used between the units of mini-split HVAC equipment, how is this possible?

A. The 2014 NEC 336.10(7) regarding uses permitted for Type TC, tray cable states that In industrial establishments where the conditions of maintenance and supervision ensure that only qualified persons service the installation, and where the cable is continuously supported and protected against physical damage using mechanical protection, such as struts, angles, or channels, Type TC tray cable that complies with the crush and impact requirements of Type MC cable and is identified for such

use with the marking Type TC–ER shall be permitted between a cable tray and the utilization equipment or device. The cable shall be secured at intervals not exceeding 1.8 m (6 ft.). TC-ER used for any other application is decided by the individual AHJ. See 90.4 of the NEC.

UL Certifies (Lists) TC-ER cable under the product category for Power and Control Tray Cable (QPOR), located on page 421 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter QPOR at the category code search field. TC-ER cable Listed under (QPOR) that can be used between cable trays and utilization equipment in accordance with NEC 336.10(7) is surface marked with the suffix "-ER."

See Question 6.2 for more information on the wiring of mini-split systems.

6.5 (W) **Q.** What differentiates modular data centers (MDC'S) from a prefabricated building and getting state approval?

A. Modular data centers (MDCs), are Certified (Listed) under the product category Modular Data Centers (PQVA). The UL Guide Information for PQVA can be located on page 364 in the 2014 UL White Book and also on UL Product Spec at http://www.ul.com/productspec and enter PQVA at the category code search field. Modular data centers are self-contained assemblies of information technology equipment (ITE) installed within prefabricated enclosures. MDCs may be provided with integral support equipment such as power distribution units, HVAC equipment, standby power, illumination and the like, that are required for the operation of the ITE. In some cases, the support equipment may be housed in its own separate enclosure, and certified as part of the MDC system. Modular data centers, as covered under this category, are sometimes referred to as "containerized data centers."

MDCs are comprised of the enclosure, all equipment and components located within the enclosure, and all components mounted to the walls of the enclosure. They are evaluated as large pieces of equipment rather than any sort of building. Although MDCs may permit the temporary entry of authorized personnel within the enclosure for service, maintenance and upgrading of the ITE and associated support equipment, they are not intended to provide an occupied space (as in an office) for personnel.

A prefabricated building that may be intended for occupation such as a mobile office trailer may require state approval and compliance with all the

applicable installation codes.

6.7 (W) **Q.** Does UL List air compressors that are typically sold in big box home improvement stores?

A. Yes, UL certifies (Lists) air compressors under the product category Compressors, Vacuum Pumps and Pneumatic Paint Sprayers (QDGS). The UL Guide Information for QDGS can be located on page 393 in the 2014 UL White Book or on UL Product Spec at http://www.ul.com/productspec and enter QDGS at the category code search field, you can also access the nearly 60 manufacturers that have certification under this category.

This category covers air compressors and vacuum pumps, including pneumatic-type paint sprayers rated 600 volts or less. For industrial compressors that are customized type one of a kind compressors, UL can conduct a Field Evaluation on those types of compressors.
Products can be cord-connected or provided with means for permanent connection in the field. Permanently connected products are intended to be installed in accordance with ANSI/NFPA 70, "National Electrical Code" (NEC).
The basic standard used to investigate products in this category is ANSI/UL 1450, the Standard for Safety for Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment.

If there is an uncertified compressor that is already installed in the field, UL can conduct a field evaluation on the compressor. For more information on field evaluations, or to schedule a field evaluation, call 877-ULHELPS (877-854-3577) or request this online at www.ul.com/field.

6.8 (W) **Q.** Does UL list pumping system skid packs for use in the gas and oil fields?

A. No, UL does not presently certify (List) pumping system skid packs for use in hazardous classified locations.

UL does Certify (List) pumping system skid packs for use in ordinary non classified locations under the product category Packaged Pumping Systems (QCZJ). The UL Guide Information for QCZJ can be located on page 393 in the 2014 UL White Book and also UL Product Spec at www.ul.com/productspec and enter QCZJ at the category code search field. The guide information states under the heading SPECIAL CONSIDERATIONS that these pumping systems have not been investigated for the handling of hazardous materials or for use in

hazardous (classified) locations as defined in the NEC.

6.9 (E)

Q. What are the square foot limitations on Modular Data Centers Listed by UL?

A. UL Certifies (Lists) Modular Data Centers under the product category for Modular Data Centers (PQVA) located on page 364 of the 2014 UL White Book and also on UL Product Spec at www.ul.com/productspec and enter PQVA at the category code search field. Modular Data Centers Certified (Listed) under PQVA are evaluated as large self-contained pieces of equipment having an enclosure (as opposed to a building) but Outline of Investigation for Modular Data Centers UL Subject 2755 does not impose a square foot limit on their size.

7.0 Generators and Fire Rated Cables

7.1 (E) **Q.** What are the requirements for doors to be held open on generator enclosures?

A. The UL Standard for Safety For Stationary Engine Generator Assemblies (UL 2200), does not require that the doors be held open, but if they are the following is required; Hinged doors, covers, and panels that provide user or service access, including the function shall be constructed such that they open to no less than 90 degrees from the closed position.

Exception: A wind strap, chain, or similar attachment that may be detached without the use of tools to open the hinged door, cover, or panel to 90 degrees meets the intent of this requirement.

UL Certifies (Lists) generator enclosures under the product category for Engine Generators (FTSR) located on page 192 of the 2014 UL White Book, and also on UL Product Spec at www.ul.com/productspec and enter FTSR at the category code search field.

7.2 (W) **Q.** Does UL evaluate the working space for generators installed in enclosures?

A. No, presently UL 2200, The Standard for Safety For Stationary Engine Generator Assemblies does not address working space, however, a working group will be addressing possible revisions to the enclosure requirements including working space requirements. UL certifies (Lists) generators under the product category Engine Generators (FTSR). The UL Guide Information for FTSR can be located on page 192 in the 2014 UL White Book. UL Certifies (Classifies) engine generator enclosures under the product category Engine Generator Enclosures, Construction Only (FTPP). The UL Guide Information for FTPP can be located on page 194 in the 2014 UL White Book. The UL Guide Information and certifications for FTSR and FTPP can be can be viewed online on UL Product Spec at www.ul.com/productspec and enter FTSR or FTPP at the category code search field.

The Guide Information for FTPP states This category covers engine generator enclosures (also known as weather housings) investigated for electrical and mechanical construction only. These enclosures are intended to be installed on certified stationary engine generators in the field or in a factory. The enclosure assemblies may include components

such as mufflers, lights, heaters, fans, battery chargers, alarms, and other accessories certified to component standards. As these component investigations vary in the type and level of testing to which they are subjected by the component standard, additional testing may be needed as part of the overall engine generator investigation to address their performance in the entire system.

In most cases the combination of a certified engine generator enclosure and an engine generator will require additional investigation and testing to establish the compliance of the overall combined product. Complete overall product assemblies that have been so investigated are identified by the Certification Mark for Engine Generators (FTSR) on the outside of the engine generator enclosure or weather housing.

This category also covers enclosures that have been investigated with particular generators. In this case, the combination of the specific generator and specific enclosure is identified as part of the enclosure certification.

The final assembled combination of a generator enclosure with an engine generator and other system components is intended to be installed and investigated for compliance with local requirements to applicable product standards and installation codes, including ANSI/NFPA 70, "National Electrical Code."

FACTORS NOT INVESTIGATED
If an enclosure has not been identified for use with specific generators as part of the certification, then the effect of the enclosure on the generator operation has not been investigated nor has the effect of the generator on the enclosure. These effects include resistance to the elements and effects of the enclosure on operating temperatures of the generator.

7.3 (S) **Q.** Where can we find the information on permissible fire rated cables and CI cables?

A. The use of CI (Circuit Integrity) cables is seen in numerous articles within the NEC (i.e. Articles 725, 760 and 800). CI cables typically refer to low voltage communication cables for critical circuits installed in buildings like those that form part of a fire alarm system. UL Certified (Listed) cable that may additionally be considered “Circuit Integrity” cable (that is, installed in free air) is to be marked with a “CI” suffix. This suffix is permitted on cables types such as power limited cables, fire alarm cable and communication cables covered under UL Product Categories;

Power limited Fire Alarm Circuits (HNIR), The UL Guide Information for HNIR is located on page 207 in the 2014 UL White Book and also online at www.ul.com/productspec and enter HNIR at the category code search field.

Non-Power Limited Fire Alarm Circuits (HNHT), The UL Guide Information for HNHT is located on page 206 in the 2014 UL White Book and also online at www.ul.com/productspec and enter HNHT at the category code search field.

Power Limited Circuit Cables (QPTZ) The UL Guide Information for QPTZ is located on page 425 in the 2014 UL White Book and also online at www.ul.com/productspec and enter QPTZ at the category code search field.

And Communication Cables (DUZX). The UL Guide Information for DUZX is located on page 136 in the 2014 UL White Book and also online at www.ul.com/productspec and enter DUZX at the category code search field.

It should be noted that currently, there are presently no cables UL Certified (Listed) to use the "CI" suffix. However, UL has evaluated smaller gauge, twisted pair cables under the product category Fire Resistive Cable (FHJR) when installed in electrical metallic tubing (EMT) that are part of 2 hour fire rated Electrical Circuit Integrity System (FHIT). Cable manufacturers and Electrical Circuit Integrity Systems can be confirmed online using UL Product Spec at www.ul.com/productspec and entering FHJR or FHIT at the category code search field. Additional information on Electrical Circuit Integrity Systems can be viewed at www.ul.com/fireratedcables. When any cables become UL Certified with the CI suffix, they will also be summarized on this Website.