

## **ENGINEERING STANDARDS UPDATE**

[Standards are serious business](#), but this newsletter isn't.

### **Topics this month:**

- **Accessing the I-Codes Online**
- **IHS Upgrade to Engineering Workbench**
- **UL Listings and Violations—or Not**
- **Engineering Processes Changes**
- **Training & Qual – IFC, IEBC, and Software this Month!**
- **LANL Standards Issued in August**
- **DOE Technical Standards Action**
- **National Standards Action**
- **When Good Conduct of Engineering Isn't Followed**

The Standards Homepage: <http://engstandards.lanl.gov/>

### **ACCESSING THE I-CODES ONLINE**

LANL follows several 2015 International Codes, like the IBC (see ESM Ch 16 IBC-GEN Att A). In fact, we're hosting training on the International Fire and Existing Building Codes later in September (see T&Q topic below).

The 2018 I-Codes come out in September. Since LANL tends to follow the State of NM, it's unlikely we will adopt any of the 2018s for years, if ever, given NM just mandated the 2015's in early July and skipped the 2000, 2006, and 2012. So, once the 2018's hit the Library's [IHS online codes and standards service](#), you'll need to uncheck "Most Recent Revision" to get the 2015s, which is all LANL will get. You already have to do this for IAPMO's UPC, UMC, etc. codes since we still use their 2012s, not later editions (also just like NM).

### **IHS UPGRADE TO ENGINEERING WORKBENCH**

Speaking of our IHS Markit subscription, they're upgrading our current Standards Expert product to the new Engineering Workbench solution in September. As part of the switchover, IHS will automatically transfer your Favorites and Watch Lists from Standards Expert to Engineering Workbench on our switchover day. You do not need to recreate Favorites or Watch Lists in the new solution. Additionally, any bookmarks, annotations, or Watch Lists you've created within Engineering Workbench will remain after the upgrade is complete. For questions about the switchover or assistance using Engineering Workbench, read the [Upgrade FAQ](#), contact [IHS Markit Customer Care](#), and/or visit the [Engineering Workbench Resource Center](#).

In honor of Labor Day (aka Must Go Camping in NM Weekend):



## UL LISTINGS AND VIOLATIONS—OR NOT

Here's some really useful information for those concerned with whether products are UL listed, which is a typical LANL requirement for electrical, fire, and building-related products. It's based on information from Electrical Standards POC Eric Stromberg.

The information has historically been compiled in the [UL White book](#) (over 1100 pages). That same information and more is also available in the real-time, online [UL Product Spec](#).

Either way, here's an example of the info it contains and the listing violation matter from Eric.

In a recent electrical engineering standards class, it was pointed out that the electrical spec for conduit bodies requires the conduit body to be listed to UL 514A. The cut sheet for the conduit body simply states that it is UL listed. The UL White Book shows the product listing information for every category. The White Book shows, for conduit bodies, that they have the UL code DWTT and that they are evaluated against UL 514B. Here are excerpts from the applicable section of the White Book:

### **CONDUIT FITTINGS (DWTT)**

#### USE

This category covers metallic and nonmetallic conduit fittings, such as connectors, couplings, conduit bodies, short radius conduit bodies, expan-

## REQUIREMENTS

The basic standards used to investigate products in this category are ANSI/UL 514B, "Conduit, Tubing, and Cable Fittings," and ANSI/UL 651, "Schedule 40 and 80 Rigid PVC Conduit."

The UL White Book or Product Spec is also a good resource in determining "listing violations." If it is not a violation of the listing information in the White Book, it should not be considered a "listing violation."

Of course, don't confuse the UL White Book with the IEEE White Book (aka STD 602, Recommended Practice for Electrical Systems in Health Care Facilities).

## ENGINEERING PROCESSES CHANGES

The following Administrative Procedures have been posted on the AP [SharePoint site](#):

<b>AP-341-703</b>	<b>Commercial Grade Dedication</b> Posted VAR-10171, Identification of Critical Characteristics by Third-Party Dedicator for CGD	<b>Issued:</b> 8/23/2017
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## **ALSO—[P341 \(Rev. 6\)](#) Facility Engineering Processes Manual Major Revision**

As one of Mel Burnett's last acts, P341 has been revised and issued on the Policy Center's webpage. The change take away is:

Summary of Changes: Updated Section 2.2, *Applicability*, to be consistent with [PD340](#), *Conduct of Engineering and Configuration Management for Facility Work*. Replaced "adjacent" with "collocated." Updated Footnotes. Enhanced Section 3.2, *Configuration Management Program*, to describe engineering configuration management requirements and elements in more detail. Updated Section 3.5, *Cognizant System Engineer Program*, to clarify relationship of vital safety systems and other hazard controls. Provided reference to applicable COE administrative procedures throughout the document and deleted duplicate information from the document that is provided in administrative procedures. Revised Section 4.0, *Responsibilities*, to delete reference to P313, and inserted COE responsibilities associated with this document. Updated Section 5.0, *Implementation*, to include standard Policy Office implementation statement. Updated Section 9.1, *Definitions*, to delete definitions that are described in LANL Definitions and Terms, COE Administrative Procedures, or [Engineering Standards Manual](#).

Applicable and Impacted Organizations: This document applies to all LANL employees who are responsible for managing or performing engineering, document control, safety basis, operations, maintenance, project management, or construction activities associated with facility work and with programmatic Research and Development (R&D) that affects the safety basis or technical

baseline configuration of a LANL facility. It also applies to subcontractors as communicated through contract documents.

For questions about CoE engineering processes, please contact POC [Jeff Fauble](#) (5-0595).

## TRAINING & QUAL – IFC, IEBC, AND SOFTWARE THIS MONTH!

To register for LANL courses, sign up via [UTrain](#). Enter course number in search field, assign to yourself. Disenroll a similar way if you have to bail. AEs can also register; contact Yolanda Trujillo at 665-5696 or [ytrujillo@lanl.gov](mailto:ytrujillo@lanl.gov) with Z number

### IFC and IEBC Code Courses – Sept 20, 21

We're bringing in an Int'l Code Council trainer to teach two, all-day courses. If relevant to your job, **please sign up ASAP and attend**. Both courses will be in the MSL Auditorium, TA3-1698-A103, 8:30 a.m.-4:30 p.m. Handout print files will be sent to those that enroll the week prior.

#### International Fire Code 2015 Essentials, Wed, Sept 20, UTrain 37744

This course will introduce 2015 IFC administrative requirements, occupancy classification, general precautions against fire, emergency planning and preparedness, fire service features, interior finish, decorative materials and furnishings, fire protection systems, means of egress, and provide an introduction to hazardous materials. Activities and discussions will further enhance participant learning. 6 PDHs. Upon completion of this seminar, participants will be better able to:

- Explain the fundamental provisions of the IFC
- Describe the intent and scope of the IFC
- Identify common fire hazards and understand how the IFC addresses correction, or elimination, of the hazards
- Identify how life safety and fire protection issues are addressed in building design and construction
- Identify how the IFC applies to maintenance of building design and components to maintain fire and life safety
- Identify how the IFC addresses hazardous materials

#### International Existing Building Code 2015 Overview, Thurs, Sept 21, UTrain 37738

This course will introduce critical concepts of the 2015 IEBC. It will provide a basis for the correct use and application of the code. It will build an understanding of the intent of the code through detailing basic tables, categorizations, and a case study. 6 PDHs. Upon completion of this seminar, participants will be better able to:

- Recognize the limitations and extent of the codes related to existing buildings.
- Recognize the classifications of work associated with existing buildings.
- Identify fire protection systems that need to be upgraded.
- Recognize vertical openings that need partial or complete enclosure.
- Identify unsafe interior finishes that need to be replaced.

- Determine adequate means of egress.
- Identify needed accessibility improvements.
- Identify improvements to structural systems.
- Describe the compliance alternative tabular method of evaluating existing buildings.

**ESM Chapter 21 Software – Tuesday, Sept 26 -- NEW!!!**

Owners and managers (RLMs) of facility affecting software should attend 2–2.5 hour overview course 38047 from 9:00 to about 11:15 in TA-55-0400 RLOUB Classrooms 4503 and 4504.

In addition, owners of said software should return from 1-4 p.m. for more detail in Owner’s follow-on course 34048.

An Outlook invite has been sent to those we know should attend. I’ve missed anyone in either role, please contact me. Students will need to print their own handout and bring it; we’ll email the files later to anyone I know who’s attending the week prior.

For the software users in ES not attending the above or the recent ES Brown Bag by Joy, we’ll be assigning some required reading soon after.

Instructor/SME: Joy Getha. SME: Paula Diepolder. POC: Tobin Oruch.

**LANL STANDARDS ISSUED IN AUGUST**

Our spec update campaign is starting to wind down a little, but there are many more in the pipeline that are nearing completion. Thanks to SI-DC’s Christina Salazar-Barnes for another busy month of document work. She deserves some time off.

<b>ESM <a href="#">STD-342-100</a></b>	
Ch. 16, IBC-GEN and IBC-IP	Posted VAR-10168, ESM Chapter 16-IBC Program Inspection Scope
Ch. 21 Software, SOFT-GEN-FM01(I) -SWDS Instructions with Example, R1.1	Minor improvements to instructions and updated example to use Rev. 1 of FM01. Issued 9/1/2017.
Ch. 17 Pressure Safety, thanks to POC A. Ben Swartz:	
GEN Att. GEN-2 Exclusions from Program, R0.1	Admin change to restore “not” to paragraph 1.A.3.a.
EXIST – Legacy System Requirements	Posted VAR-10163, In-process Examination of Tie-in to Existing Contaminated Piping
QCSM Quality Control Systems Manual (R Stamp Program)	Posted VAR-10170, Continued Operation of NBIC Owner User Inspection Program

<b>Master Specifications</b> <a href="#">STD-342-200</a>	
40 0504 R0, Process Piping	Initial issue revising and superseding 40 0513 Process Piping. Thanks to A. Ben Swartz, Glen Pappas, POC Michael Ladach, others that contributed.
Thanks to Electrical POC Eric Stromberg:	
26 2726 R5, Wiring Devices	Removed requirement for manufacture in a 9001/2 facility. Fixed wording of compliance with NEC. (listed products are not required to conform to the NEC). Clarify that back-stab devices are not acceptable (back and side wire only). Fixed voltages. Circuits are 120, receptacles are 125. Add LED sections for dimmers. Disallowed occupancy sensing in electrical and mechanical rooms. Changed testing requirements for GFCIs to the use of the integral testing function only.
26 2913 R3, Enclosed Controllers	Added seismic requirements. Reworded compliance with NEC to only include installation requirements. Removed requirement for ISO 9001 facility. Added service conditions of ambient temperature and solar heat gain for outdoor applications. Added requirement that contacts for 480 volts systems must be 600 volt rated. Removed blanket requirement to remove abandoned equipment. Added Connection section to align with format of other specs. Changed check torque to witness torque.
26 3353 R2, Static Uninterruptible Power Supply	Added seismic wording. Allow for LANL startup and commissioning group to be an option for startup and testing. Removed some sections that are unenforceable. Clarified that NFPA 111 only has to be followed when the installation is within the scope of NFPA 111. Deleted ISO 9001/9002 requirement. Removed requirement to meet FCC unintended radiator rules (our UPS installations are not within the scope of the FCC rules cited). Added requirements for external maintenance bypass switch such that the UPS can be removed and replaced safely. Added requirement that a transformer must be used in the bypass line. This is so the system can be bonded properly. Added option for battery systems to be individual stab-in type. Added requirements for location of bonding jumper and for labelling to indicate such.
<b>Deleted Specs:</b>	
40 0513 Process Piping	Superseded by 40 0504 Process Piping

<b>CAD Standards Manual</b> <a href="#">STD-342-300</a>	
Title Sheet, Title Block, and Sketch Title Block templates	Revisions address a reported issue with the North arrows not being legible enough when plotted on 11x17" paper. Tx to Ed Seawalt and CSM POC Scott Richardson.

## **DOE TECHNICAL STANDARDS ACTION**

[Activity](#) in the past month:

DOE-HDBK-1220-2017 [Natural Phenomena Hazards Analysis and Design Handbook for DOE Facilities](#) NEW!!!

This handbook is a companion document to DOE-STD-1020-2016, Natural Phenomena Hazard Analysis and Design Criteria (referred to hereafter as "the Standard"). It identifies good practices that can be used to meet the Standard's requirements and guidance; it also offers general technical advice on topics related to natural phenomena hazard (NPH) mitigation. The handbook provides clarification of the rationale for some provisions in the Standard and cites references to assist all DOE components and their contractors in applying the Standard. With respect to the Standard's requirement statements, the handbook should be viewed as an implementation aid, not as an interpretation of the requirements.

[NOTE: LANL is still using 1020's 2012 edition for now, but this HDBK should still be helpful].

## **NATIONAL STANDARDS ACTION**

Of possible interest, LANL's [IHS online standards service](#) reports:

Document Number: NFPA 70 AMD 5

Publication Date: July 18, 2017

Title: National Electrical Code - Effective Date: 08/07/2017

Type of Change: Amendment

Document Number: NFPA 90A

Publication Date: January 01, 2018

Title: Standard for the Installation of Air-Conditioning and Ventilating Systems - Effective Date: 08/21/2017

Type of Change: Complete Revision

Document Number: NFPA 221

Publication Date: January 01, 2015

Title: Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls - Effective Date: 5/19/2014

Status: Revised

Type of Change: Status Change (2018 is out but not yet loaded by IHS)

## WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

These are architects, but engineers are equally capable of bad conduct like this.

### FEAST OR FAMINE

#### ARCHITEXTS



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## LAST MONTH'S UPDATE TOPICS

Miss an issue? The archive is at "Monthly Update" on the Standards homepage. Last month's topics:

- **Engineering Processes Changes**
- **Training & Qual**
- **LANL Standards Issued in July**
- **O&M Criterion Changes**
- **DOE Technical Standards Action**
- **National Standard Action**
- **When Good Conduct of Engineering Isn't Followed**

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Tobin Oruch, Engineering Standards Mgr  
Los Alamos Nat'l Lab, Conduct of Eng Program Office  
ph (505) 665-8475 [oruch@lanl.gov](mailto:oruch@lanl.gov) <http://engstandards.lanl.gov/>  
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