

ENGINEERING STANDARDS UPDATE
Trying to Make Standards Exciting Since 2001

This is the monthly newsletter of the LANL Conduct of Engineering Office's Engineering Standards Program. The Standards define the minimum technical requirements for the design, fabrication, construction, commissioning, repair, and replacement of both new and existing equipment and facilities, including both maintenance and modification, for programmatic and facility work at LANL [[PD340](#)].

Topics this month:

- **Electrical Standards Course Next Wed, Dec 8**
- **2011 National Electrical Code**
- **Projects Underway -- Download IBC-2006/IEBC-2006 This Month -- Update**
- **Prime Contract Appendix G Changes**
- **CoE Quote of the Month**
- **LANL Standards Issued in Nov**
- **Why Engineers Don't Write Recipe Books**
- **What Happens When Conduct of Engineering Isn't Followed**
- **DOE Technical Standards Actions**

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

ELECTRICAL STANDARDS COURSE NEXT WED, DEC 8

David Powell, The Oracle of Electrical and LANL's most-tenured Standards Point-of-Contact, hopes to retire in a year or so; this may be the last session taught solely by him (Alternate POC Joseph Sanchez will be transitioning in).

This is 17998, "[LANL Electrical Engineering Standards](#)" from 8-5 at the White Rock Training Center. Covers the electrical engineering standards in Chapter 7 of the LANL Engineering Standards Manual and discusses mandatory requirements and good practices for those involved in electrical design. Strongly suggested for electrical designers, electrical engineers, electrical safety officers, and facility managers. Enroll (or disenroll) using link above or call 667-0059 or e-mail Central Training at esh-registration@lanl.gov.

2011 NATIONAL ELECTRICAL CODE

Starting January 1, projects (design tasks) must use the 2011 NEC (NFPA 70). Per ESM Chapter 7, Section D5000, Para 2.12-A: "...for electrical design, the current edition of the NEC shall be used starting January 1 of the edition year..."

PROJECTS UNDERWAY -- DOWNLOAD IBC-2006/IEBC-2006 THIS MONTH -- UPDATE

The State of New Mexico is adopting mostly 2009-based model building code set in early 2011 (fire and electrical codes on a different schedule). LANL is doing the same and is revising wording in ESM Structural Chapter 5 and IBC Program Chapter 16 in the next few weeks to so indicate. Concurrently, the Research Library will switch our IHS online national standards subscription for ICC codes from the 2006 set to 2009.

So...for most “underway” facility projects per ESM Chapter 1 Section Z10, your code of record is probably the 2006 International Building Code, and you’ll want to have that saved and available. For LANL folks to get it, go to the Research Library from any webpage and click [IHS Standards Database](#) next to the word STANDARDS. Enter IBC as the document number and UNCHECK “Most Recent Revision” parameter (to get 2006), then hit Enter. The first viewable pdf is the document with errata. Use a similar procedure for the Int’l Existing Building Code (IEBC) if you’re underway on a mod.

PLEASE, when using IHS, click LOGOUT as soon as you have downloaded the document to your drive (to free the society license for others).

PRIME CONTRACT APPENDIX G CHANGES

The institutional (Safety Management Program Owners) will make the necessary institutional and functional series document changes, but an early heads-up to standards users who may be affected.

[Mod 150](#), 10/5/10, adds these engineering-related [400-series](#) orders (and some others):

DOE O 420.1B Chg 1 Facility Safety [incorps DOE-STD-1189; already in contract]
DOE G 424.1-1B Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements
DOE O 425.1D Verification of Readiness to Start Up or Restart Nuclear Facilities
DOE O 426.2 Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities [replaces DOE O 5480.20A]
NFPA 70E Standard for Electrical Safety in the Work Place [already largely implemented]

COE QUOTE OF THE MONTH

“Engineers like to solve problems. If there are no problems handily available, they will create their own problems.”

Scott Adams, cartoonist (e.g., Dilbert)

LANL STANDARDS ISSUED IN NOV

LANL [Master Specifications](#) (STD-342-200)

03 3001 R4 Reinforced Concrete	New submittal matrix attachment, various minor changes throughout.
23 3400 R0 HVAC Fans	Initial issue
23 8123 R0 Computer-Room Air-Conditioners	Initial issue

Many thanks to Francisco Banea in ES-DE for the new ones, plus many other new and revised mechanical specs over the past year or so. He did a great job, but now he's leaving LANL (about the 9th). It's a rare person who can and will develop a good master spec, and we wish him well.

WHY ENGINEERS DON'T WRITE RECIPE BOOKS

Chocolate Chip Cookies

Ingredients:

1. 532.35 cm³ gluten
2. 4.9 cm³ NaHCO₃
3. 4.9 cm³ refined halite
4. 236.6 cm³ partially hydrogenated tallow triglyceride
5. 177.45 cm³ crystalline C₁₂H₂₂O₁₁
6. 177.45 cm³ unrefined C₁₂H₂₂O₁₁
7. 4.9 cm³ methyl ether of protocatechuic aldehyde
8. Two calcium carbonate-encapsulated avian albumen-coated protein
9. 473.2 cm³ theobroma cacao
10. 236.6 cm³ de-encapsulated legume meats (sieve size #10)

To a 2 liter jacketed round reactor vessel (reactor #1) with an overall heat transfer coefficient of about 100 Btu/°F-ft²-hr, add ingredients one, two and three with constant agitation. In a second 2 liter reactor vessel with a radial flow impeller operating at 100 rpm, add ingredients four, five, six, and seven until the mixture is homogenous.

To reactor #2, add ingredient eight, followed by three equal volumes of the homogenous mixture in reactor #1. Additionally, add ingredient nine and ten slowly, with constant agitation. Care must be taken at this point in the reaction to control any temperature rise that may be the result of an exothermic reaction.

Using a screw extrude attached to a #4 nodulizer, place the mixture piece-meal on a 316SS sheet (300 x 600 mm). Heat in a 460°K oven for a period of time that is in agreement with Frank & Johnston's first order rate expression (see JACOS, 21, 55), or until golden brown.

Once the reaction is complete, place the sheet on a 25°C heat-transfer table, allowing the product to come to equilibrium.

- Anon from <http://www.bris.ac.uk/civilengineering/aboutus/engineeringquotes.html>

DOE TECHNICAL STANDARDS ACTIONS

New or Revised DOE [Tech Stds](#) this past month: None.

WHAT HAPPENS WHEN CONDUCT OF ENGINEERING ISN'T FOLLOWED

In demo, things can go badly wrong. Here's a recent example of why the IBC (and ESM Ch 16) address demolition and associated personnel protection (and I'm glad, working in the shadow of SM-43 coming down). CoE maybe wasn't the problem, but was surely part of the restoration:

In November, thousands of people lost power when a 275' stack on the property of the former Ohio Edison Power plant fell the wrong way during demolition. Due to existing cracks, when the smoke stack came down, it fell on numerous power lines (with spectators directly below the lines) and some generating buildings, causing about 4,000 people to lose power.

Exciting video: <http://www.whiotv.com/news/25745761/detail.html>

LAST MONTH'S UPDATE TOPICS

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

- **CoE Office Move**
- **Engineering Processes Changes**
- **P343 Engineering Training and Qualification Manual**
- **Electrical Standards Course Wed, Dec 8**
- **CoE Quote of the Month**
- **LANL Standards Issued in Oct**
- **What Happens When Conduct of Engineering Isn't Followed**
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To request a change to this newsletter's distribution, please contact me.

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