ENGINEERING STANDARDS UPDATE

Standards are serious business, but this newsletter isn't.

Topics this month:

- **When Good Conduct of Engineering Isn't Followed—Snow Loads**
- **Training & Qualification**
- **Engineers Week and Feb 20**
- **LANL Standards Issued in December**
- **Engineering Processes News**
- **DOE Technical Standards Action**
- **National Standards Action**

The LANL Engineering Standards: http://engstandards.lanl.gov/

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED—SNOW LOADS

The recent big snowfall in Los Alamos reminded me of the December 2006 blizzard. That time, Santa Fe received two feet in one event and more around the same period—and my kitchen ceiling sagged noticeably and began to drip. Tearing the soggy sheetrock off revealed why: a previous homeowner's remodel apparently removed a load bearing wall and left the flat-roof joist lumber joined with a very inadequate lap splice overlap. I'm lucky it didn't cave in completely. Ceiling jacking, joist sistering, reroofing, and refinishing ensued.

My experience illustrates the importance of building permitting, which ensures contractors are licensed, codes are followed, and work is inspected—the trifecta ensuring a good job. At LANL, ESM Chapter 16 "IBC Program" mandates this just as municipal jurisdictions do.

Back to snow loads: ESM Chapter 5 Structural Section II provides the LANL-specific calc input for roof structural design for snow per IBC Section 1608, and it obviously works well. But the same design margins may not exist with your old home's roof, so you could have a weight problem if we get yet more snow, and even if you don't have shoddy construction. The internet says a square foot of Midwest snow typically weighs a pound per inch of depth and can be up to 1.5 lb/in; NM snow is likely similar. So a 24-inch snowfall could weigh up 36 pounds per square foot, or nearly two tons per 100 square feet. That's a car's weight. So you might have to get up there and shovel some of it off along with clearing your north-facing driveway. Just do it safely…

Wear. A. Safety. HARNESS

Unless of course you meant to shovel your friend right off the roof. In which case you should probably find a new line of work.

TRAINING & QUALIFICATION

Standards Intro Course 24140 – Tues, Jan 29 – THIS MONTH!
Provides familiarity with national and LANL engineering standards for anyone performing, reviewing, or managing design activities. **Required** course for many LANL engineers, recommended for those at local AE firms. Presented in TA-55-0400 (RLUOB) Room 4503/4, 8 a.m.– 4 p.m., by yours' truly. Next offering will be several months from now. CoE Training Pro Ruby Molinar will email the handout to print a few days prior so don't wait until the last day to register.

ESM Chapter 21 Software Courses – Express Interest!
Perhaps a few of you are new "Owners" of nuclear safety or other ML-1, -2, or -3 software (installed in a system, or maybe for design/analysis). Most people in that situation are or soon will be subject to ESM Chapter 21 Software and need to take required training on the chapter. (Non-"Owner" tech staff in ES-Div may take the a live course such as the 38047 overview, but if they don't they must take UTrain Required Reading 38040, which should show up in their to-do list if so).
If you need live training, please get on the waitlists for the course(s) below as applicable so we can determine when to schedule the training; either do so in UTrain (Request Schedule

function) or contact Yolanda Trujillo (see below). If you're not sure what you need, contact me (5-8475) or SME/Instructor Joy Getha, 665-9586, jlgetha@lanl.gov

- 38047 ESM Chapter 21 Software Overview Course 9-11:30 a.m. (RLMs and Owners)
- 34048 ESM Chapter 21 Software Owner's Course 1-3 p.m. (just Owners return for this)

Electrical Standards – Weds, Feb 6
Four-hour course 17998 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. AEs are also encouraged to attend. Taught by Electrical Standards POC Eric Stromberg from 7:30–11:30 am, at White Rock Training Center TA-00-1308 Rm 112. Also planned for 5/29, 8/7, 11/14.

REGISTERING for UTrain Courses: Go to UTrain, search on course (or click link below), select and enroll. Disenroll if you have to bail. AEs can also register; use token (CryptoCard) or contact T&Q coordinator Yolanda Trujillo at 665-5696 or yjtrujillo@lanl.gov with Z number.

Systems Engineering Professional (SEP) Certification Exam Preparation Self-Paced Webinar (non-LANL)
From Heidi Hahn, here's a professional development opportunity. It might be great for those interested in advancing in realms such as requirements management.

The regional INCOSE Enchantment Chapter is excited to offer a webinar-based SEP certification exam preparation training through a special deal made with Paul Martin's **SE Scholar**. The timing of this offering is conveniently planned for students to take a **free SEP exam offered at NM Tech on April 4, 2019** in conjunction with the 2019 Socorro Systems Summit (another offering by the Chapter).
Here are the **webinar details**:

- The class is **self-paced** consisting of 7 modules and over 16 hours of instructional videos covering the entire INCOSE SE Handbook v4.0.
- The price includes study guides, a comprehensive process flow diagram, practice quizzes, and exams.
- The material will be provided as PDF with the students making hard copies as desired.
- There will be a discussion board so that students can collaborate and ask the instructor questions.

The Chapter got a special deal on the course cost ($150 off), making the cost of the webinar $500 (discount good until March 31, 2019). **Time line**:

- **January 10, 2019, 5pm MST**: Before-class live webinar explaining the INCOSE SEP certification process, allowing members to ask the instructor questions in real-time. The

Chapter will send out an invite to the event with a link to the webinar portal. Paul will also give attendees free access to his Canvas web portal that supports the webinar, so they can get a feel for what it's like to take the course.

- **January 10 – April 3, 2019**: Buy access to SE Scholar's online Canvas class portal. [Note: You'll have access to the class as long as it takes for you to pass the SEP exam. No time limit – take as long as you need.]
- **April 4, 2019**: Take free SEP exam offered at NM Tech.

Here's how to **register**:

- Navigate here and use the discount code ***ENCHANTED19*** at checkout. This discount code will expire March 31, 2019.

Questions to Heidi Hahn or Ann Hodges.

ENGINEERS WEEK AND FEB 20

Also from Heidi Hahn:
"As part of National Engineers Week 2019, February 17-23, James Owen, Associate Laboratory Director for Weapons Engineering (ALDW), invites employees and students/Postdocs to share

information about recent LANL R&D engineering projects at the 9th annual poster session to be held in conjunction with a keynote address and presentation of the Postdoctoral Publication Prize on February 20, 2019 at the J. Robert Oppenheimer Study Center - Santa Clara Gallery and Jemez/Cochiti Conference Room. This year's national theme "Invent Amazing" celebrates you—engineers, engineering students, and technicians—and all of the amazing things you do every day to make a difference in our world."

You may want to block your calendar for the above, which is typically 1–4 p.m. And they're still considering poster abstracts until the 18th. I'll publish more event details next month. Also, in New Mexico, E-Week is Feb. 19-25, with the NMSPE big event on Friday, Feb 22, which last year included 2 PDHs of ethics training (e.g., don't lie, don't cheat). Such training is required of NM professional engineers but not those in government, unfortunately.

LANL STANDARDS ISSUED IN DECEMBER

Engineering Standards Manual ESM STD-342-100	
Ch. 16 IBC Program Section IBC-IP References	Added WI-400-282-FM01, *IBC/Owner's Inspection Report* and WI-400-282-FM02, *Final Report of Special Inspections by LANL (tx to Ed Lucero; POC Tobin Oruch)*
Ch. 17 Pressure Safety – POC Ari (Ben) Swartz	
Section ASME R1, *New ASME System Requirements*	Updated to note adding Att ASME-2 for NB-23 and Att ASME-5 for ASME B&PV Code in November, and that VAR-2015-011, Copper Tubing Alternative, was incorporated by the Allowed Unlisted Component Listing
NASME References	Updated Reputable Manufacturers list.
Ch. 21 Software Section SOFT-ACQUIRE References	Added ANSYS Fluent CGD/V&V Package Example (request from Chapter POC Tobin Oruch)

Master Specifications STD-342-200	
01 4631 R0 *Welding of B31 Piping* – **NEW!!!**	Initial issue. The intent is these B31 requirements be stated once in a specification by these sections rather than in multiple sections. Thanks to POC Ari Ben Swartz.
01 4731 R0 *Flan ge Assembly for B31 Systems* – **NEW!!!**	
05 1305 R2 *Stainless Steel*	Expanded author notes (pg 1 and 2.2.D) and corrected typos in ASTMs listed in References. Thanks to POC Glen Pappas.
09 2116 R7, *Gypsum Board Systems*	Deleted 2.2.A.3-Studs and tracks conforming to ASTM C 645 and GA-600; [minimum 20] [insert specific thickness as necessary] gage. Thanks to POC Scott Richardson.
23 0800R0, *Commissioning of HVAC* – **NEW!!!**	Initial issue. Thanks to POC Michael Ladach, LANL CxA Matt Foster and team, Ryan Keyser, others.

23 4133.13 R0, *HEPA Filters – ASME AG-1, Section FC*	Initial issues superseding 23 4133. Thanks to SME Scott Salisbury, POC Michael Ladach. They're awesome.
23 4133.16 R0, *HEPA Filters – ASME AG-1, Section FK, Special*	
23 4133.19 R0, *HEPA Filters – Auxiliary Nuclear Grade*	
*23 4133 *High Efficiency Particulate Filtration*	*Canceled. Superseded by 23 4133.13, 23 4133.16, and 23 4133.19.
26 0533 R8, *Raceway and boxes for Electrical Systems*	Deleted 3.4.A.6.a. "Within drywall partitions and above false ceilings: Use RMC, IMC, or EMT." (undefined terms and no code requirement). Rewrote flexible connection section (3.4.A.7; ASCE-7 regards raceways 2.5 inches and smaller to be flexible). Changed 28 3100 to 38 4600. Thanks to POC Eric Stromberg.

ENGINEERING PROCESSES NEWS

The following Administrative Procedure has been revised and posted on the SharePoint site:

AP-341-901-R5	**Performing Vital Safety System Assessments** Course 44255	**Issued:** 12/13/18

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Always ensure you are working to the latest revision being implemented by your facility.
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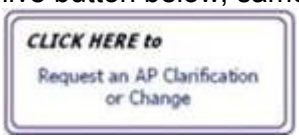
For a listing of all APs, visit the Conduct of Engineering Office, Engineering Processes page in SharePoint.

For questions about this or the content of the AP, please contact Jeff Fauble at 665-5832. Jeff is here every other week or so serving as the Eng Processes Manager. Most anytime time he's reachable by email at jfauble@lanl.gov; if emails to him bounce, the sender needs to click the Outlook "To" button and select his name from the LANL directory. After that first time, the autocomplete option will work fine.

When ideas for AP change come, please enter them in the SharePoint database. Use the fancy live button below, same one that's found in the upper right of the Processes homepage.



For AP training questions, contact Yolanda Trujillo at 665-5696.

DOE TECHNICAL STANDARDS ACTION

Tech Stds Program postings in the past month:
DOE-STD-1231-2018, Preparation and Conduct of Protective Force Performance Testing (OUO) [i.e., guns and guards; tweak to Nov rev0 version]

NATIONAL STANDARDS ACTION

LANL's IHS online codes & standards subscription reports these changes:

Document number: ASTM A450/A450M REV A
Publication Date: 11/1/2018
Title: **Standard Specification for General Requirements for Carbon and Low Alloy Steel Tubes**
Type of Change: Complete Revision

Document number: NFPA 72 ERTA 1
Publication Date: 11/21/2018
Title: **National Fire Alarm and Signaling Code**
Type of Change: Errata/Erratum
Note: ESM Ch 1 Section Z10 says "Errata (correct errors) to any document and Tentative Interim Amendments (for NFPA) are mandatory regardless of contract award date or code of record," so the above applies—assuming the standard edition is part of the project's code of record.

LAST MONTH'S UPDATE TOPICS

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

- Training & Qualification
- New Prime Contract with Triad
- Just for Fun – Twelve Days of Code Lyrics!
- LANL Standards Issued in November
- Engineering Processes News
- Form 1952 – New Version, Grace Period Ending
- DOE Technical Standards Action
- National Standards Action
- When Good 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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