ENGINEERING STANDARDS UPDATE

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

Topics this month:

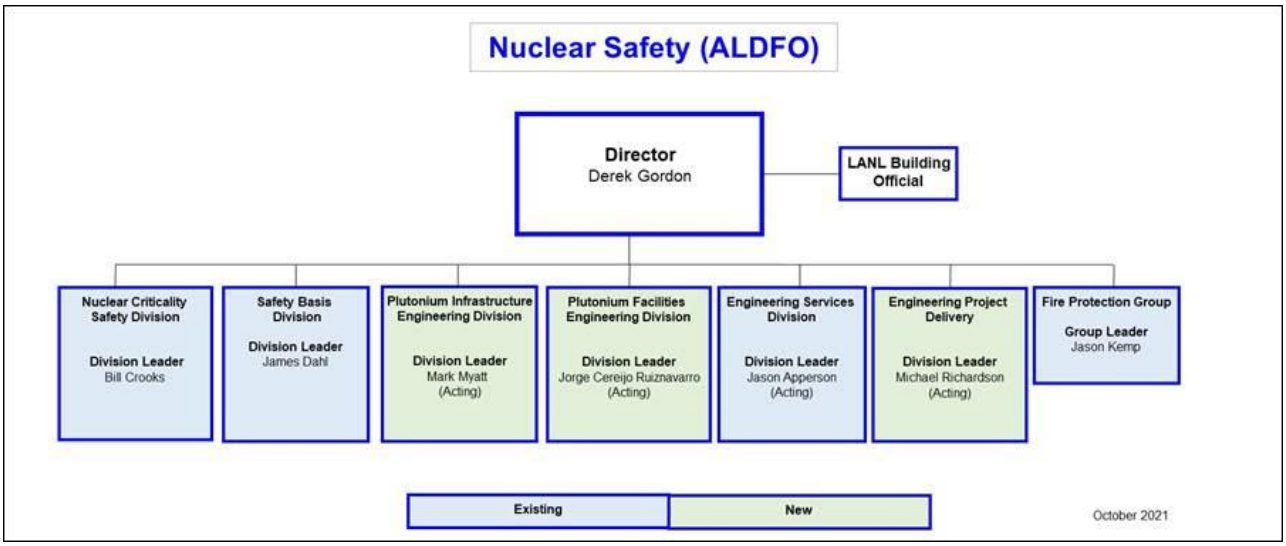
- **ES Reorg**
- **Training & Qualification-- Building Code Training Last Month**
- **Data Call for National Standards Committee Work**
- **Fire Prevention Week**
- **Engineering Processes News**
- **LANL Standards Issued in September**
- **DOE Technical Standards Action**
- **Pressure Safety Committee; Upcoming Leadership Change**
- **National Standards Action**
- **MSS Document Changes**
- **When Good Conduct of Engineering Isn't Followed**

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

Note: This newsletter has hyperlinks all over but their formatting may not show. Please hover your cursor where you might expect one.

ES REORG

Engineering Services has been steadily growing in size (now 100s of people), reaching the point where Derek Gordon has concluded that some spin-offs are in order. Below is a possible future state. The final approach may be that Conduct of Eng and Fire Protection become offices under Derek along with the building department, EPD remains under ES, or otherwise.



TRAINING & QUALIFICATION -- BUILDING CODE TRAINING LAST MONTH
The Conduct of Engineering Office hosted three building code courses focused largely on the International Building Code (IBC) and International Existing Building Code (IEBC), all by Webex. The courses presented the 2021 codes that LANL expects to adopt in 2022 including the major differences between those and the 2015s that we follow today. Attendance numbers were excellent:

Students	Course
250	Building Codes Overview (3 hours)
150	2021 International Building Code (IBC) Overview (7 contact hours over 3 part-days)
120	2021 International Existing Building Code (IEBC) Overview (7 contact hours over 3 part-days)

Students are getting UTrain credit today or soon, and then I'll email wall certificates (Yolanda, we miss you!). And, for those desiring, AIA and ICC contact hours.

On the building code topic:
This is Tin Can Alley in Albuquerque, an attractive (but boomy) shipping container based building.

Just being able to use these containers would have required the CABQ building official's approval since they're not "listed" materials in most cases (could be sourced with an ICC-ES report).
The place includes an SF Brewing taproom, which likely explains this:

For sure a keg urinal isn't listed/labelled so would also have also needed approval which can be done under IAPMO UPC-2015 if you don't overthink the flush effectiveness issue:

301.3 Alternate Materials and Methods of Construction
Equivalency. Nothing in this code is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this code. Technical documentation shall be submitted to the Authority Having Jurisdiction to demonstrate equivalency. The Authority Having Jurisdiction shall have the authority to approve or disapprove the system, method, or device for the intended purpose.

DATA CALL FOR NATIONAL STANDARDS COMMITTEE WORK

The annual effort to catalog the work being performed by LANL personnel for non-government standards has begun. The approximately 65 known people's efforts have been updated, and a labwide solicitation for others in LANLToday is forthcoming. Every year we report this volunteer work to DOE-HQ; it's then sent to the OMB per public law. DOE also documents this work in "DOE-TSL-4, Directory of DOE and Contractor Personnel Involved in Non-Government Standards Activities." LANL participation is among the highest of the DOE sites.

Those doing such work (please let me know of updates):

Kelsey M. Amundson	Milan S. Gadd	Murray E. Moore
Randall D. Austin	Dakota J. Gregory	William L. Myers
Luiz Bertelli	David P. Harvey	Benjamin E. Nelson
David A. Bingham	Robert A. Hayward	Raymond T. Newell
Kelly L. Bingham	Vlad Henzl	Donivan R. Porterfield

Amber N. Black	S. Davis Herring	Jose E. Rodriguez
David A. Bruggeman	Jon E. (Rick) Hinckley	Christopher Romero
Joanna L. Casson	Patrick W. Hochanadel	Taunia J. Sandquist
Brittain J. Catron	Daniel A. Javernick	Scott R. Salisbury
Ondřej Čertík	Benjamin Karmiol	Michael W. Salmon
John T. Ciolek Jr.	Theodore J. Keppner	Emily S. Schultz-Fellenz
Paul J. Contreras	Paul N. Kirpes	Michelle E. Silva
Candace S. Culhane	Aaron C. Koskelo	Dusan Spernjak
Theresa E. Cutler	Brett R. Krueger	Phillip H. Stauffer
Paula R. Diepolder	Joel A. Kulesza	Jacob Stinnett
Shannan D. Diffey	Robert C. Little	Jared T. Stritzinger
Scott W. Doebling	Li-Ta (Ollie) Lo	Eric R. Stromberg
Keenan T. Dotson	Jean-Francois Lucchini	Deborah A. Summa
Donald J. Dudziak	Eric R. MacFarlane	Ari Ben Swartz
David A. Fry	Michael W. Mallett	Thomas E. Tierney IV
David P. Fuehne	Kattathu J. Mathew	Brandon M. Wilson
Michael (Misha) Gallegos	Carl A. Mazzola	Ning Zhang
Lloyd B. Gordon	Robert B. Merl	

Here's hoping this list doesn't dwindle much in coming weeks.

FIRE PREVENTION WEEK

It was last week, coinciding with the Great Chicago Fire of Oct 8-10, 1871 – ref. O'Leary's cow story (and animals start hundreds of fires: https://www.iccsafe.org/building-safety-journal/bsj-perspectives/fire-safety-and-prevention-tips-for-pet-parents/)

First Alert, which sells fire safety goods, has declared all of October "Fire Prevention Month (apparent sales gimmick, but at least it's a lifesaving consumer product category).

Below message from Int'l Code Council is astounding (better: recorded-voice alarms for kids). Fire fatalities up due to all the COVID homebodies?

> **October 7, 2021** | The weekly news & insights of the ICC Building Safety Journal
> Most people don't realize how quick, hot or deadly fire is. They believe the danger comes from the fire itself; not realizing most fatalities are due to the toxic smoke. This year's Fire Prevention Week encourages recognition of the different sounds smoke and carbon monoxide alarms make, actions to take if an alarm sounds, and the life-saving benefits of smoke and carbon monoxide alarms. Research indicates high-frequency tone smoke alarms awaken only 56 percent of children and as of September 30, reported home fire fatalities are up 13 percent from last year.
>
> During October, the International Code Council is committed to getting the message out regarding fire safety and prevention in our communities. As the publisher of the International Fire Code (IFC), the Code Council has a wide-ranging collection of services

and resources to prepare building safety professionals in dealing with fire safety and prevention and wildland fire safety and recovery.

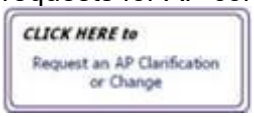
This week let's recognize the fire prevention and fire protection professionals who dedicate their expertise and experience to ensure our communities are safe, sustainable and resilient.

…and also:

An overview of fire safety within the IBC
People have expectations that when they enter a building, they will be safe from inherent dangers caused by natural or man-made disasters. The International Building Code (IBC) addresses that through five significant sections: code administration and enforcement, building planning, life safety, structural safety, and fire safety. Read more

ENGINEERING PROCESSES NEWS
Per CoE Eng Process Manager is Sarah Murdock, 667-7788, sterrill@lanl.gov:

New and newsworthy:
The FY 2022 AP Revision Priority List was approved and is now posted on the AP SharePoint site under "Announcements" (upper right, directly here). This would be a good time to submit requests for AP content changes on the listed APs through the SharePoint site's button:



The following Administrative Procedures have been revised and posted to the COE Administrative Procedures SharePoint site. Always ensure you are working to the latest version of all Engineering Administrative Procedures adopted at your location.

Always ensure you are working to the latest effective version of all Engineering Administrative Procedures.

For questions or concerns regarding this email or the content of any AP, please contact Sarah Murdock at 667-7788.

New and newsworthy:

AP-341-519 Rev. 6.1, Design Revision Control	
Issued 10/1/2021, effective 10/1/2021	
Administrative change: Clarifying role of Responsible Engineer in determining scope change, corrected references, and allowed for a "No" response to Interim Work Release.	

Now effective:

AP-341-405 R6, Identification and Control of Technical Baseline in Operating Facilities	
Issued 9/02/2021, effective 10/02/2021	Course 54133

- Updated to reflect SD330 Revision 12 changes.
- Added definitions for Priority, Support, and General Documents.

Briefing slides are on SharePoint with the AP. Word forms will be posted on 10/2.

Now effective:

AP-341-502 R7, Management Level Determination	
Issued 8/31/2021, effective 9/30/2021	Course 55428

- Updated attachments, forms, and instructions to match Revision 12 of SD330, *LANL Quality Assurance Program*, change in ML-3 screening criteria.
- Updated Attachment A by adding new procedures and deleting cancelled procedures.
- Clarified management level determination of software.
- Added Section 4.0 to AP-341-502-FM01, *SSC Management Level Boundaries*
- Incorporated CIR-2020-001.0 in Implementation section.

If you have been identified as requiring additional training on an AP you will see an assignment on your UTrain "to do" list.

Users: Please enter issues with APs in the SharePoint issues database. Use the live button below, same one that's found in the upper right of the Processes SharePoint homepage.

LANL STANDARDS ISSUED IN SEPTEMBER
Engineering Standards Manual ESM STD-342-100

Chapter	Section	Title	Date	Comments
ESM Ch. 7 Electrical	D5010 Electrical Service & Distribution	Reference: Transformer Design Guidance, R0 (NEW!!!)	9/14/21	Low voltage (up to 480v) selection and wiring. Thanks to Alex Olsen and POC Eric Stromberg.

Also–when the Standards Team wraps another FY it's time to run the numbers. This past fiscal year, we:

Revised or created:

- An all-new Tailored Standards Manual (streamlined standards set for certain lower-risk projects)
- 27 ESM Chapter, Section, or subtier documents (total now 375 documents)
- 41 LANL Master Specs; total now 200
- 2 CAD Stds Manual changes
- 4 Std Details (2 new, total now 260 sheets)

Offered the following courses:

- Intro to LANL Eng Standards (two times)
- ESM Ch 21 Software Intro, Owners (once)
- Electrical Standards (quarterly)

In related news, memos were issued by ES/ALDFO in September for the Tailored Standards Manual (TSM) rollout (ES-DO-Memo-21-038) and a comparison the TSM to the ProtoSTAR pilot (ES-DO-Memo-21-049).

DOE TECHNICAL STANDARDS ACTION
Tech Stds Program postings in the past month: None

PRESSURE SAFETY COMMITTEE; UPCOMING LEADERSHIP CHANGE
The Pressure Safety Committee has been resurrected as a resource and steering body to guide the Lab's activities for this important management program. The PSC charter and efforts are modeled after the very successful Electrical Safety Committee, where the Pressure Safety Officers (PSOs) are the tip of the spear making things happen in the field.

Recently, Robert Payment was elected to be the new chairman of the committee starting in 2022, replacing Jason Apperson (congratulations). He'll be assisted by Erin Mavis (Secretary) and Ari Ben Swartz, who remains the Chief Pressure Safety Officer.

More info on the Pressure Safety program can be found at the website below (has tabs for PSC and other subjects at the bottom).
https://int.lanl.gov/org/ddops/aldfo/engineering-services/pressure-protection-program/index.shtml

NATIONAL STANDARDS ACTION
LANL's IHS Eng Workbench online codes & standards subscription news.

Shelf Life note: Some non-government standards developers protect their intellectual property by distributing pdf files that expire after a few weeks. The NBBI is one such org; their pdf downloads have a shelf life of two months, after which users have to go into IHS and re-download them.

New this period:

Document: AWS D1.1/D1.1M ERTA, **Structural Welding Code—Steel**
Publication Date: **5/19/2021**
Type of Change: **Errata/Erratum**
Note: ESM Ch. 1 Z10 says errata (error fixes) must be followed.

Last month I listed the 2021 ASHRAE FUNDAMENTALS chapters that IHS had updated in August. Since they updated most/all the rest (see below). IP = Imperial/English units.
ASHRAE FUNDAMENTALS IP CH 1, Psychrometrics
ASHRAE FUNDAMENTALS IP CH 2, Thermodynamics and Refrigeration Cycles
ASHRAE FUNDAMENTALS IP CH 13, Indoor Environmental Modeling
ASHRAE FUNDAMENTALS IP CH 14, Climatic Design Information
ASHRAE FUNDAMENTALS IP CH 16, Ventilation and Infiltration
ASHRAE FUNDAMENTALS IP CH 18, Nonresidential Cooling and Heating Load Calculations
ASHRAE FUNDAMENTALS IP CH 19, Energy Estimating and Modeling Methods
ASHRAE FUNDAMENTALS IP CH 20, Space Air Diffusion
ASHRAE FUNDAMENTALS IP CH 23, Insulation for Mechanical Systems
ASHRAE FUNDAMENTALS IP CH 24, Airflow Around Buildings
ASHRAE FUNDAMENTALS IP CH 31, Physical Properties of Secondary Coolants (Brines)
ASHRAE FUNDAMENTALS IP CH 34, Energy Resources
ASHRAE FUNDAMENTALS IP CH 35, Sustainability
ASHRAE FUNDAMENTALS IP CH 38, Measurement and Instruments

MSS DOCUMENT CHANGES
Below are recent changes issued by Maintenance and Site Services Division per Jeremy vonHarders.

MSS-GUIDE-050, r0: Diesel Fuel Quality & Analysis Guide -- NEW
Under Desk Guides – MSS Technical
Processes: https://logistics.lanl.gov/MSS/_layouts/15/start.aspx#/Policy%20%20Procedures/Forms/Public.aspx
Directly: https://logistics.lanl.gov/MSS/Policy%20%20Procedures/MSS-GUIDE-050.pdf

O&M Criterion/PMI Changes
Operation and Maintenance Criterion and related Preventative Maintenance Instruction (PMI) are standards about which system engineers should be familiar. Implementation is required 30 days from issue date for non-nuclear facilities, 60 days for nuclear facilities. Questions? Contact the document author.

If you have issues on the SharePoint site use Internet Explorer to access them. Access to all such documents when no direct link is shown below: https://logistics.lanl.gov/MSS/_layouts/15/start.aspx#/Policy%20%20Procedures/Forms/Public.aspx

O&M 412 Rev2: Centrifugal Horizontal, Centrifugal Vertical, and Vertical Turbine Pumping Systems

This revision includes the incorporation of all formatting changes addressed in Revision 7 of the O&M Criterion 101 Writer's Guide, in addition to updated acronyms and template guidelines. Other changes include:
· An updated definition of management level grading
· Additions to the operations requirements (valves, vibrations, flowrate, pressure, and temperature)
· An addition to the maintenance requirements (pump startup)
· Guidance for maintenance during repair actions and spare pump cycling
· Updated references and attachments.

Directly: https://logistics.lanl.gov/MSS/_layouts/15/WopiFrame.aspx?sourcedoc=/MSS/Policy%20%20Procedures/412.pdf&action=default

O&M 504 Rev 7: Low Voltage Electrical Equipment

- Replaced Responsible Engineer with Electrical System Engineer and updated definition to be consistent with P950. Updated references to reflect current references.
- Replaced non-serviceable designation with limited use and updated definition.
- Updated what attributes determine when equipment is limited use.
- Added new designation for defective equipment with definition.
- Defined what attributes determine when equipment is defective.
- Clarified who applies the maintenance labels.
- Clarified who has final determination on condition of equipment following inspection and testing when there is disagreement between the Lead ETT or Qualified Electrical Engineer and the Electrical System Engineer.
- Defined Electrical System Engineer as the engineer responsible for the electrical system being maintained
- Defined Lead ETT as the LVEEM SME/Level III ETT responsible for PMI 504-B
- Replaced SMPOR with Standard Discipline Point of Contact (Stds Discipline POC)

Directly: https://logistics.lanl.gov/MSS/_layouts/15/WopiFrame.aspx?sourcedoc=/MSS/Policy%20%20Procedures/504.pdf&action=default

PMI 504-B Rev 7: Low Voltage Electrical Equipment

- Replaced "Responsible Engineer" with "Electrical System Engineer" and updated definition to be consistent with P950.
- Added requirement to perform continuity tests prior to performing insulation resistance tests.
- Replaced non-serviceable designation with limited use and updated definition.
- Updated what attributes determine when equipment is limited use.
- Added new designation for defective equipment with definition.

- Defined what attributes determine when equipment is defective.
- Created a Defective electrical maintenance label.
- Clarified who applies the maintenance labels.
- Clarified who has final determination on condition of equipment following inspection and testing when there is disagreement between the Lead ETT or Qualified Electrical Engineer and the Electrical System Engineer.
- Defined the Qualified Electrical Engineer as the electrical engineer responsible for O&M 504.
- Defined Lead ETT as the LVEEM SME/Level III ETT responsible for PMI 504-B
- Added Daily MCC As Found/As left Form 504-B.011 and renumbered previous 504-B.011-016.
- Replaced “Qualified Electrical Engineer” with “Lead Electrical Engineer”

Directly: https://logistics.lanl.gov/MSS/_layouts/15/start.aspx#/Policy%20%20Procedures/Forms/Public.aspx

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Not engineering but basic math. Engineers and other STEM types wouldn't have this issue one hopes.

One of the most vivid arithmetic failings displayed by Americans occurred in the early 1980s, when the A&W restaurant chain released a new hamburger to rival the McDonald's Quarter Pounder. With a third-pound of beef, the A&W burger had more meat than the Quarter Pounder; in taste tests, customers preferred A&W's burger. And it was less expensive. A lavish A&W television and radio marketing campaign cited these benefits. Yet instead of leaping at the great value, customers snubbed it.

Only when the company held customer focus groups did it become clear why. The Third Pounder presented the American public with a test in fractions. And we failed. Misunderstanding the value of one-third, customers believed they were being overcharged. Why, they asked the researchers, should they pay the same amount for a third of a pound of meat as they did for a quarter-pound of meat at McDonald's. The "4" in "1/4," larger than the "3" in "1/3," led them astray.

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

- **Engineering Services DL, Building Official, Fire AHJ Changes**
- **Training & Qualification (Building Codes!)**
- **Engineering Processes News**
- **LANL Standards Issued in August**
- **DOE Technical Standards Action**
- **National Standards Action**
- **MSS Document Changes**
- **When Good Conduct of Engineering Isn't Followed**

The views expressed in this email are not necessarily those of my employer.
To request a change to this newsletter's distribution, please contact me.

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