ENGINEERING STANDARDS UPDATE

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

Topics this month:

- **Code Adoption Complete!**
- **Standards Program Welcomes Neha Gidwani!!**
- **Steel Yourself**
- **Training & Qualification**
- **LANL Standards Issued in March**
- **Engineering Processes News**
- **National Standards Action**
- **DOE Standards Action**
- **MSS Document Action**
- **When Good Conduct of Engineering Isn't Followed**

Note: This newsletter has hyperlinks all over but their formatting may not show, so please hover your cursor where you might expect one.
The LANL Standards Homepage: **https://engstandards.lanl.gov/index.shtml**

CODE ADOPTION COMPLETE!

On March 22, the Standards Program issued the Engineering Standards Manual revisions needed to adopt three current International Codes and the 2020 National Electrical Code (NEC). Thirteen documents in ESM Chapters 2, 5, and 16 were affected, and numerous unrelated improvements were made to the documents concurrently including the complete revision of the Structural Chapter and the majority of the Building Code Program chapter (formerly IBC Program). See full list under "LANL Standards Issued in March" below.

This timing directly aligns with the State of New Mexico's intent to require the 2021 International Building Code at permitting late this year. That's because LANL defines what's to be used at the start of design, and we know that the design process for buildings often takes six months or more — so such LANL designs could possibly begin to show up for LANL Building Official permitting about September (more likely later).

New Mexico had already adopted the 2021 International Fire Code in November, and LANL's Electrical Safety Committee adopted the 2020 NEC in January this year.

The last time LANL implemented a similar upgrade was five years ago in April 2018.

New Mexico's adoption has been long-anticipated and many NM architects attended training on the IBC in February, just as LANL did over a year ago. In reality, all these codes are so mature that they don't differ tremendously edition-to-edition unless a major disaster lesson drives it (e.g., 1994 Northridge earthquake or 2001 World Trade Center attacks). Nevertheless, LANL's adoption ensures that we track with New Mexico's expectations and use modern code and the safety, functionality, and efficiency that comes with them.

We'll revise affected Master Spec Sections and Std Details over coming months; meantime it's the design agency's responsibility to verify/modify as needed when editing.

There will be a brownbag seminar summarizing the ESM changes from noon-1 on April 19. **Click here to join the meeting**

Because opening day was last week.

STANDARDS PROGRAM WELCOMES NEHA GIDWANI!!

We've now filled one of two job openings mentioned in previous months. We're thrilled to announce that Neha starts in the CoE Office on April 17th. She'll join Alan Yaeger and myself as your humble standards servants (and aspiring standards idiot savants).

Neha has been the Civil/Structural/Architectural Team Lead in ES-WPD for several months. According to her resume, she's a licensed structural engineer with 14+ years of experience in the analysis and design of multi-billion-dollar heavy industrial facilities for various engineering-procurement-construction projects in the nuclear, renewable energy, and oil, gas, & chemical industries. Responsibilities include performing analysis and design of steel and concrete structures; finite element analysis; developing calculation templates, design guides, standard engineering details; and providing technical guidance to engineers on the use of engineering software tools.

In other words, well-qualified for this position.

STEEL YOURSELF

LANL how has a professional membership with the AISC, the leading "technical institute and trade association" for steel, thanks to ES Lead SME and Standards POC Carlos Coronado Restrepo.

AISC gives away the main documents that LANL uses on their **website**, like **ANSI/AISC 360**, **ANSI/AISC 341**, and **ANSI/AISC N690**. (AISC is also linked from the Library's **Online National Codes & Standards** page's **other standards by developer** and "**See Standards not Hosted on IHS Workbench**" links.)

AISC doesn't give away their Steel Construction Manual and some other **publications**, but membership offers some of them. LANL's Professional Membership is open to "engineers and architects who hold an accredited four (or more) year degree in Civil/Structural Engineering, Architecture, Architectural Engineering, or are a licensed Professional Engineer or licensed Architect." To gain access, contact **Carlos** who'll submit the names periodically. (ref. **https://www.aisc.org/aisc-membership/member-types/**)

Free docs, free Spam: By becoming a member of AISC you "agree to receive email from AISC concerning the structural steel industry, AISC activities, and events." There's no free lunch in life, but Outlook can filter them away.

TRAINING & QUALIFICATION

Admin Stuff

New E-mail for COE Training: es-do-tng@lanl.gov
Use the addy linked above for any kind of help with COE training issues like requesting course sessions, getting registered, missing credit, etc. The email goes to the whole Training team: Stan Hayes, Nick Jones, Sadonna Tapia, and Santana Quintana, our newest Specialist.

E-mail for COE Qual Program: COEQuals@lanl.gov
Click this addy for any kind of help with COE quals such as CSE, PrE, Design, Project, PSO, FDAR, and other qualified positions (and also SHR matters for CSEs). The email goes to the whole team: Deb Cushner, Jess Blea, and Barb Dela Cruz.

Instructor-Led Course Request/Registration Guide
For courses that don't yet have a session set in UTrain, there's a step-by-step guide posted to the CoE T&Q "Resources" page
https://int.lanl.gov/org/ddops/aldfo/nuclear-safety/engineering-services/conduct-of-engineering/_assets/resources/instructor-led-course-registration-FAQ.pdf

Of Course(s)

P841-1, *Quality Procurements* Briefings, 2-3 pm, Apr 18, May 23
P841-1, *Quality Procurements* will become effective on April 25, 2023. This is a significant change to the procurement quality program including the Exhibit H, supplier evaluation, and item/service acceptance. P841-1 also expands the scope of the

procurement quality program, so some items and services currently procured as ML-4 will become quality risk level (QRL-)3 and be subject to procurement quality requirements.

To prepare to implement these changes, organizations must:

- Identify and train sufficient P-TSMEs to process procurements
- Identify and request evaluation of suppliers as soon as possible using the **Form 1953** (QRL-1 and -2 suppliers) or Form **IQPA-IQ-FD-095** (QRL-3 suppliers)

To find out more, please visit the **P841-1 Info Hub** or attend one of these upcoming virtual brown bags.

Meeting dates/times: April 18, 2-3pm; May 23, 2-3pm

Meeting logon info
Microsoft Teams meeting link
Meeting ID: 299 756 609 257, Passcode: mZAa3t, Call-in (audio only): +1 575-323-9652, Phone Conference ID: 787 804 946#

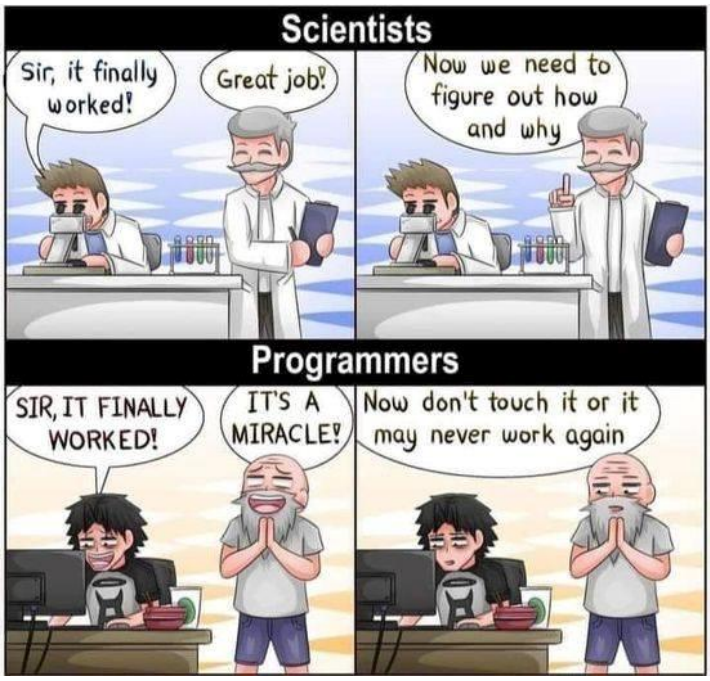
ESM Chapter 21 Software -- Overview and Owners Courses – Series Begins May 16, Teams

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). If you follow ESM Chapter 21 Software then you need to take training on the chapter. The managers (including FDARs) of Owners only need the overview.

So…if you, in fact, need training, please register in Utrain for the course(s) below. If you're not sure what you need, contact SME/instructor Joy Getha, 5-9586**,** jlgetha@lanl.gov or Oruch.

- 38047 ESM Chapter 21 Software Overview, 3 hours. (RLMs and Owners): Tuesday, May 16, from 9 am - noon.
- 34048 ESM Chapter 21 Software Owners (3 additional hours, just Owners return for this): Thursday, May 18, also from 9 am - noon.

This is no doubt the last time SME Joy Getha will teach these, so please make every effort to set aside these times to take these courses. The next offering is tentatively Nov 7 & 9, 9 am - noon.



Reminds me of Allen Hayward just a bit.

Pressure Safety Courses (April and beyond)

There are three different courses that repeat each quarter this year. If a person wants to take a class without becoming qualified that is fine, just register in UTrain (Teams meeting notice for the class dates and times is sent later). The POC is Ari (Ben) Swartz, Chief Pressure Safety Officer.

FYI, the process for a PSO qualification is:

1. RLM requests assignment of curriculum
2. Training coordinator assigns curriculum to candidate
3. Candidate registers for a class offering on UTrain

The schedule for this quarter is below (may be adjusted):

Utrain	Title	Dates (partial days)
COURSE 52955	PSO Overview	**NOW 4/10 - 4/20**
COURSE 53900	B31.3, Process Piping	5/15 - 5/24
COURSE 56239	B31.9, Building Services Piping	6/12 - 6/19

LANL STANDARDS ISSUED IN MARCH https://engstandards.lanl.gov/

Thanks to Christina Salazar-Barnes for a whole lot of document work on these!

Engineering Standards Manual ESM STD-342-100

ESM-Chapter	Section	Title	Rev.	Date	Comments
Chapter 2 - Fire Protection	D40	Attachment 1, Adopted Editions of NFPA Fire Protection Codes, Standards, and Recommended Practices	1	3/22/2023	Thanks to POC Keenan Dotson, Greg Shino.
Thanks to Structural Stds POC Carlos Coronado Restrepo:					
Chapter 5 - Structural	I	General Criteria	9	3/22/2023	Adopted 2021 IBC. Clarified return periods in Table I - 2 notes. Design Basis Document (DBD) eliminated for non-nuclear SSCs, and corresponding requirements moved to Section III. Minor and administrative changes including updated references and definitions.

	II	Commercial Design and Analysis Requirement	12	3/22/2023	Adopted 2021 IBC. Updated Snow (II.1.4), Wind (II.1.5) and Rain Loads (II.1.6). Clarified that SDC-C exception does not apply to nonbuilding structures. Provided guidance regarding the Risk Category for Explosive Facilities (II.1.2). Added IBC-required documentation of live loads (II.1.3.A). Clarified seismic detailing of structures governed by wind load (II.1.5.D). In Appendix A, added guidance for prevention of galvanic corrosion in anchor bolts and shear lug design. Other minor changes.
	III	Nuclear SSCs Design and Analysis Requirements	11	3/22/2023	Section III.1 revision adopts ASCE 7-16 and ACI 318-19 for NDC-1 and NDC-2 structures. Precipitation requirements for PDC-1 and PDC-2 structures have been updated to meet IBC 2021. PDC-3 precipitation loads (snow and rainfall) have been increased based on reinterpretation of 1020-2016 requirements and ASCE 7-16 snow and rainfall updates. Design Basis Document (DBD) requirements moved from Section I.1.6.C to Section III.6. Minor and administrative changes including updated references and definitions.
	IV	Geotechnical Investigations	7	3/22/2023	Incorporation of NQA-1 Subpart 2.20 per SD330, graded approach for nuclear and non-nuclear structures. Added section regarding ML-4 structures that do not require geotechnical investigations. Clarified that geotechnical calculations, analyses, and reports shall be reviewed and accepted by LANL. Provided additional guidance for selecting the depth of boreholes and determination of surface deformation due to Quaternary faults.
Ch 16 POC: Tobin Oruch					
Chapter 16 – Building Code Program **(NEW NAME!)**	IBC-GEN	IBC-GEN – General Building Code Requirements	12	3/22/2023	Chapter and section title changed. Graded approach table reformatted and incorporated previous exceptions and Fire Alarm Work Alteration Levels (ES-DO-Memo-22-003). LANL Qualified Inspection Agency (QIA) term introduced. PPDs for Repair eliminated. Incorporated VAR-10564, Test and Inspection Plan (TIP) Development

					Responsibility. Early work release linked to FDAR-permitted scope. Deferred design and changes-to-design requirements changed. Prefab article revised to exclude garages, other updates. D&D article expanded. R2A2s moved to App A. New App B for prefab storage incorporates VAR-10561, Transportainer and ARMAG Installation Requirements; added carports, sheds, and vault toilets. Programmatic restraint moved to ESM Ch. 5. Minor changes for 2021 IBC adoption. Other changes throughout.
		Att. A: LANL Building Code (LBC)	14	3/22/2023	Adopted 2021 IBC (and its App. K), IEBC, IFC; NEC 2020, other minor changes.
		Att. B: LANL Existing Building/System Code (LEBC)	10	3/22/2023	2021 IEBC update. Material on 304.3.1–2 revised for same and ESM Ch. 5 Section II r12. Other changes throughout. Thanks to POC Carlos Coronado R, Keenan Dotson.
		Form 1: Preliminary Project Determinations	6	3/22/2023	New field on FP Triggers; numerous smaller improvements. Thanks to Amy Gitnick, Karen Marsh, others.
	IBC-IP	IBC-IP - Inspection Process	10	3/22/2023	Incorporated VAR-10564, Test and Inspection Plan (TIP) Development Responsibility (now Constructor task) and VAR-10168 on inspection scope. LANL Qualified Inspection Agency (QIA) term introduced. Added Att J on inspection of Lowest/Moderate Risk work. Deleted Atts A and C (SI summary, NCR example). Other changes throughout.
		Attachment B: Statement of Special Inspections	15	3/22/2023	Changes for 2021 IBC. Clarified that in-shop special inspection is not required for LBO-approved fabricators. Other changes throughout. Thanks to POC Carlos Coronado R
		Attachment I: Test and Inspection Plan Template	1	3/22/2023	Complete revision and update, simplified/streamlined. Addition of code-based inspections and instructions on separate tabs. Incorporates VAR-10564 (constructor develops, not design agency). 2021 IBC, IFC, UMC, and

					UPC and 2020 NEC compliant. Thanks to SME Tyson Cardon
		Attachment J: Inspection of Lowest/Moderate Risk Category Work; Division of Responsibility based on Qualifications and Risk (LANL internal) -- NEW	0	3/22/2023	**NEW!!!!!!!!!!**
Chapter 17 – Pressure Safety	**EXIST - Legacy System Requirements**	Issued **VAR-10163**, In Process Examination of Tie-in to Existing Contaminated Piping, and **VAR-10198**, In-process Examination of Tie-in to Existing Contaminated Wet Vac Piping	0	3/9/2023	Thanks to POC Ari Swartz, Shawn Wright, Mike Stark, Steve Foxworth, Tristan McDonald.

Master Spec Sections STD-342-200

Section Number	Rev.	Section Title	Effective	Summary
03 3001	17	**Reinforced Concrete**	3/20/2023	Preapproved mix designs now Tephra pozzolan. Thanks to POC Carlos Coronado Restrepo, Neha Gidwani, and now-retired Mike Denlinger.
03 3053	10	Miscellaneous Cast-In-Place Concrete	3/23/2023	Tephra pozzolan-based pre-approved mix designs except for NMDOT (Class A, AA, and F). Thanks to POC Jon Stein

ENGINEERING PROCESSES NEWS
From CoE Eng Process Manager (and acting Office Director) Sarah Murdock, smurdock@lanl.gov, 667-7788:

AP-341-705, Make or Buy Determination for Design Engineering https://coe.lanl.gov/APs/AllAPs/Forms/APbyNumber.aspx	
Issued 3/27/2023 Effective 3/27/2023	Issued Variance-10602, Make or Buy Determination Allowance for Delegation of Approval

Please enter issues with APs in the SharePoint issues database (Standards has this tool also). Use the button below, same one that's found in the upper right of the Processes SharePoint homepage.

NATIONAL STANDARDS ACTION
Online National Codes & Standards ←link

Document number: **ASME B31.3**, **Process Piping**
Publication Date: 2022
Type of Change: Errata/Erratum

Document number: **NEMA C82.11**x, **Lamp Ballasts—High Frequency Fluorescent Lamp Ballasts**
Publication Date: 2023
Type of Change: Complete Revision

2021 I-Codes, 2020 NEC Access: The 2021 ICC codes (I-Codes) are now available to all users in IHS Engineering Workbench. Also, for the first time, we have subscribed to the commentary version of them instead of the code-only versions so everyone can benefit from the additional guidance those offer. **We may revert back to the non-commentary versions next year so get 'em now while they're there.**

Link: **Online National Codes & Standards** Fastest search is with acro and year in the search field, like "IBC 2021," or search for the bare acronym and set the Issue Date to 2021 in the filters. Note: The IBC is in two volumes and you'll probably want both.

Please log out by clicking your name to see the drop-down shown below when you've downloaded what you want.

Note: We use the 2018 version of the Int'l Energy Conservation Code (IECC) for very small modifications per ESM Ch. 14, so we get that, too. We also get the 2021 IAPMO UMC and UPC for mechanical and plumbing.

NFPA 70-2020 NEC access: Like all NFPA, read-only. On IHS, search for NFPA 70 and set issued date to 2020. The top hit is what you want, says this (and direct link is): **National Electrical Code - Effective Date: 8/25/2019; Incorporated Amendments 1-17 Dated 4/12/2022; Errata 1-5 Dated 4/5/2022; TIA Changes**. We get past editions of NFPA standards, also those of some other developers.

DOE TECHNICAL STANDARDS ACTION

Tech Stds Program **postings** in the past month on the **Technical Standards Portal**:

DOE-HDBK-1169-2022 Chg Notice 1, Handbook for Use with DOE-STD-1269-2022, "Air Cleaning Systems in DOE Nuclear Facilities"

This handbook is a companion document to DOE-STD-1269-2022, Ai Cleaning Systems in DOE Nuclear Facilities. It identifies good practices drawn from operational experience at DOE components and commercial nuclear facilities, industry input, and the advice of technical experts that can be used to meet the Standard's requirements and guidance.

A note on this. LANL's Radiological Engineering Team had found a significant error in the 2022 edition. We reported it to DOE-HQ owners and they issued this correction in a matter of days. That's GOOD CoE, so thanks to Garry Schramm, Britt Edquist, Jordan Douglas, and Scott Engeman at LANL and DOE!

MSS DOCUMENT ACTION

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

Operation and Maintenance Criterion and related Preventative Maintenance Instructions (PMI) are standards with which system and plant 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 shown on its approval page.

Access here:
https://logistics.lanl.gov/MSS/_layouts/15/start.aspx#/Policy%20%20Procedures/Forms/Public.aspx If you have issues with SharePoint sites use a Microsoft browser (e.g., Edge) to access them.

MSS has issued the new document(s) below:

AP-MNT-014 Rev 2: Variance Request Process
Made editorial, grammar, and punctuation updates.
Responded to recommendations from the Conduct of Maintenance Assessment annotations, dated 2022, including the following:

- Changed 1.0 Purpose to clarify that this AP applies to exceptions or variances to AP-WORK, AP-MSS, and AP-MNT series of procedures
- Added specific procedure action steps in 4.2 Procedure
- Added responsibilities and action steps for applicable job titles in 5.0 Responsibilities.
- Changed contact from Richard Dickinson to Samuel

Garcia.

- Revised Attachment 1, Exception or Variance Request Form, to clarify that the procedure applies to "variances" to APs covered under P950, *Conduct of Maintenance*, but not changes to P950 itself.

O&M 431: Automatic External Defibrillators (AED)

- Moving weekly inspections from section 6.1 Operations Requirements to 7.1 Operations Recommendations

PMI 431-A: Automatic External Defibrillator (AED) Maintenance

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Two news items this month. The second was a bit dry, so added the first, all wet.

Train Carrying Coors Light and Blue Moon beer derails in Montana April 3
https://www.usatoday.com/story/news/nation/2023/04/03/montana-train-derailment-coors-light-blue-moon-beer/11591531002/?utm_source=usatoday-dailybriefing-strada&utm_medium=email&utm_campaign=narrative&utm_term=narrative&utm_content=usat-8872UT-nletter02-weekday

Some like to blame engineering, or just engineers, for a lot of problems, and that's a shame. Engineers, even the locomotive-driving ones, usually try do the right thing. It's profit-based cost- and corner-cutting that's often to blame. The above event wasn't nearly so concerning as recent derailments in Ohio and Minnesota, or others. As far as spilled beer, at least with Coors Light it's barely alcohol abuse.

This second story is about a New Mexico nuclear facility safety basis violation; the issue was apparently missed by ops, maintenance, maybe engineering (really should be reviewing such work packages). LANL doesn't process UF6 but does have credited barriers at nuclear facilities, so such an incident could possibly happen here; lesson learned…?

NRC Proposes $70,000 Fine to Urenco USA Uranium Enrichment Facility
Nuclear Regulatory Commission - News Release
No: II-23-004 April 3, 2023; Contact: Dave Gasperson, 404-997-4417

The Nuclear Regulatory Commission has **proposed** a $70,000 civil penalty for Urenco USA for two violations of agency requirements related to improperly implementing safety controls at its Eunice, New Mexico, plant.

The first violation occurred during a March 2022 **event** when plant staff found three construction vehicles parked near a building that handles uranium hexafluoride without physical barriers in place. The company notified the NRC as required and the agency launched a special inspection in response and documented its findings in a May 10, 2022, **report**.

The second violation occurred during a June 2022 **event** when plant management observed an employee not following established safety procedures for trucks entering an area near a building containing uranium hexafluoride cylinders. The company notified the NRC and the agency conducted a follow-up inspection Aug. 24, 2022.

During that inspection, NRC inspectors found that Urenco USA failed to implement adequate safety measures during both incidents. Specifically, the company did not take enough precautions to prevent a potential accident sequence involving construction vehicles damaging the facility or the uranium hexafluoride inside – increasing the risk to plant workers and the public.
snip

LAST MONTH'S UPDATE TOPICS

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

- **Come Work in the CoE Office!**
- **Training & Qualification**
- **Code Adoption Update**
- **LANL Standards Issued in February**
- **David Harvey Becomes Primary NDE "SME Level III" AND "Responsible Level III"**
- **National Standards Action**
- **MSS Document Action**
- **When Good Conduct of Engineering Isn't Followed**

The views expressed in this email are not necessarily those of my employer.
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Tobin Oruch, Engineering Standards Mgr
Los Alamos Nat'l Lab, Conduct of Eng Program Office
(505) 665-8475 oruch@lanl.gov http://engstandards.lanl.gov/
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