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

Topics this month:

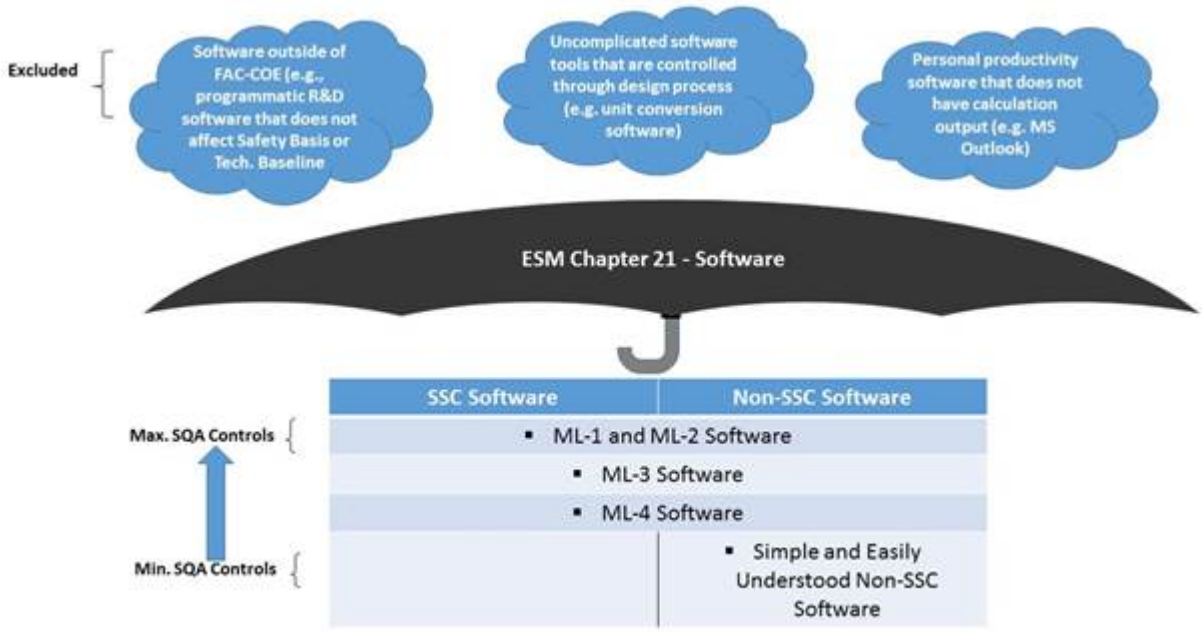
- **ESM Chapter 21 Software**
- **Training & Qual**
- **IESL Pre-Approved OEM List**
- **LANL Standards Issued in May**
- **DOE Technical Standards Inaction**
- **National Standard Actions**
- **When Good Conduct of Engineering Isn't Followed**

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

ESM CHAPTER 21 SOFTWARE

The newest chapter of the ESM was just revised and was made mandatory. In short, it sets expectations for identifying, categorizing, acquiring or developing, verifying, using, maintaining, and retiring software. It's applicable to the usual, eager Conduct of Engineering audience, plus outside designers and analysts, Safety Basis, and Crit Safety. Software that's governed by a sound QA plan and not being modified is grandfathered, but once outside of that confined space (e.g., a "Major Computer Program Change" [see Definitions]), certain SQA docs must be updated. Nuclear facility lead Eng Managers should initiate a USQ to allow using it if they determine that's necessary.

We're working on training now. Based on Systematic Approach to ~~Torture~~Training analysis, it'll probably involve everyone in ES Division reading a short slide deck. In addition, FDARs, Eng Managers, and other Software Responsible Line Managers and applicable "Software Owners" (the POC, not ordinary users) will take a short, live, and lively overview course (38047), with the Owners staying for a second helping (Course 34048), probably in July (we'll enroll you to save you the trouble). It'll be taught by Joy Getha, so it'll be LANL's own Wonder Woman summer blockbuster. Teaser graphic:



TRAINING & QUAL

Even with Chapter 21 training preparations underway, we like to multitask so we're scheduling a Standards Intro (24140) class this summer.

Bigger yet, we're also bringing in an Int'l Code Council trainer to teach two, all-day courses. If relevant to your job, please sign up for one or both ASAP to ensure a spot and so we order enough workbooks. Both courses will be in the MSL Auditorium, TA3-1698-A103, 8:30 a.m.-4:30 p.m.:

<u>International Fire Code 2015 Essentials, Wed, Sept 20, UTrain 37744</u>
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

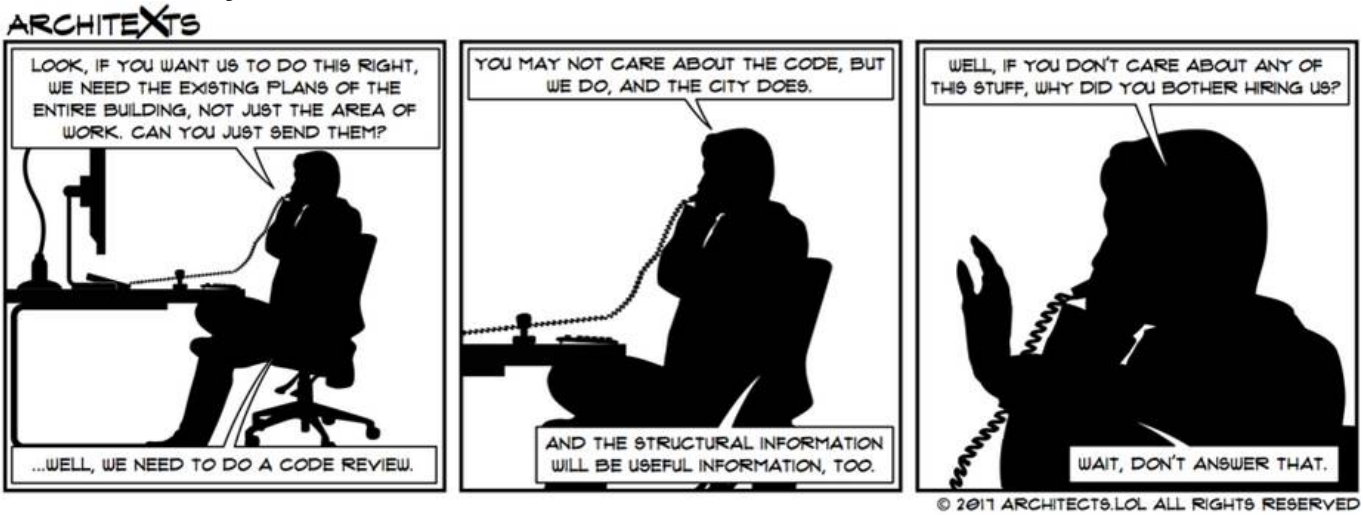
International Existing Building Code 2015 Overview, Thurs, Sept 21, UTrain 37738
This course will introduce critical concepts of the 2015 IEBC. It will provide a basis for the correct use and application of the code. It will build an understanding of the intent of the code through detailing basic tables, 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.

Then there's:
Electrical Standards Course – Tues, Aug 1
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, White Rock Training Center - 00-1308 - Room 118.

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 yjtrujillo@lanl.gov with Z number (ICC courses above subject to space available and can't buy workbooks for y'all).

Did someone say IEBC?



IESL PRE-APPROVED OEM LIST

For those doing nuclear procurements to IESL vendors with pass-through distributors (e.g., Frank's Supply), here's important news from a May 10 email by Miller Collins (QPA-SCQ, 7-3311, miller_collins@lanl.gov) to the TSMEs and QSMEs:

For certain Pass-Through Distributors currently on the LANL Institutional Evaluated Suppliers List (IESL) there is a restriction that they must either procure ML-1 and 2 items from other vendors on the IESL, or from a non-IESL vendor where QPA has approved the Pass-Through Distributors quality program evaluation documentation of the Original Equipment Manufacturer (OEM). QPA has generated a list of the "pre-approved" OEMs for these Pass-Through Distributors which can be found on the QPA-IQ organization webpage under the title "Pre-Approved OEM List" or via the link: https://caosp.lanl.gov/iq/Shared%20Documents/Approved%20OEM%20List.xlsx. The suppliers listed on the "Pre-Approved OEM List" have been previously evaluated and approved by QPA. Be advised that quotes or other documents indicating where the Pass-Through Distributor is obtaining items from (i.e. OEM and location) are still required in order to confirm IESL listing or assure alignment between the OEM/location and the "Pre-Approved OEM List".

Please note that if an OEM is not on the IESL and is not on the "Pre-Approved OEM List" for the desired IESL Pass-Through Distributor, then QPA approval must be obtained as discussed above according to the restriction listed on the IESL.

Also note that the "Pre-Approved OEM List" is subject to change so even though it's possible to save a copy to your desktop, this is not advised.

The affected IESL Pass-Through Distributors ("Institutional" IESL listing only) include: 1) Copper State Bolt & Nut 2) Dahl Wholesale Supply 3) Franks Supply Company, 4) Government Scientific Source (GSS), and 5) Summit Electric Supply.

The IESL Restriction being discussed (*example* from Franks Supply IESL listing) reads as: Prior to placement of a ML1 or ML2 procurements via Franks, LANL requestor / DPR must ensure that the items are procured from a vendor listed on the LANL-IESL, excluding other Pass-Through Distributors. For OEMs not listed on the IESL, quality program records must be obtained, reviewed and approved by the QPA-IQ group. Franks quotation must stipulate the OEM name(s) and location(s). Send Quotations with supporting quality data such as Quality Manual and evidence of third party evaluation (e. g., ISO registration) to QPA-IQ Group Leader to initiate review of OEM quality data.

LANL STANDARDS ISSUED IN MAY

It should be obvious by now that the spec improvement campaign is in full swing. Thanks to SI-DC's Christina Salazar-Barnes for all the document support this month and every month!

ESM STD-342-100	
Ch. 1 Section 230 Equipment/ Component IDs	Revised to include exceptions grudgingly granted in recent months.
Ch.13 Welding, Joining, and NDE, Vol. 3, WPS 3-01 App A WPS index	Added WPS 2010-XXTT-HSLA100 r0.
Ch.16 IBC Program (chapter references on webpage)	Org chart updated. A great big thanks to Randy "Clouseau" Teel for his past service as Testing Agency Chief Inspector for the LANL Building Official.
Ch.17 EXIST R2 Legacy System Requirements	Clarified when piping flexibility analysis is required. Updated initial service leak test for low pressure systems and acceptance criterial of initial service leak test. Added requirement for variance/alternative methods to place non-compliance issues into PFITS for tracking. Thanks to POC Ari Ben Swartz.

Master Specifications STD-342-200	
CSI MasterFormat spec numbers and titles index (link above LANL's masters)	New revision April 2016
01 3000 Att. A Construction Submittal Log	Updated May 22, 2017
01 4216 R0 Definitions **NEW-ISH!!!**	Initial issue. Includes general definitions previously located in sections 01 1116 Work By Owner and 01 4200 References (both being archived concurrently with 01 4216 issuance). Tx to Arch POC Scott C. Richardson.
01 6000 R2 Product Requirements	Minor revisions made to this section include general formatting. Tx to SCR.
01 8734 R0 Seismic Qualification of Nonstructural Components (IBC) **NEW!!!**	Initial issue. A great big thanks to POC Glen J. Pappas.
03 6000 R3 Grouting	Relocated mix-design submittal to PART 1, added field-QC compressive-strength testing (typical UFGS/vendor practice), and typos fixes. Tx to GJP.
07 9200 R4 Joint Sealants	Updated references, validated manufacturers. Tx to POC Scott R.
08 3323 R3 Overhead Coiling Doors	Complete re-write to align with industry practice and added references. SCR

08 7100 R3 Door Hardware	Revisions made include updating/verifying/correcting references, materials, finishes and products, and general editing/formatting. Tx to SCR.
21 1313 R7 Wet-Pipe Sprinkler Systems	Revised for sprinkler head design/placement with deep concrete TEE construction. FM DS 2-0 provides more definitive criteria and is consistent with DOE O 420.1C/DOE-STD-1066 objectives to meet HPR expectations. Also, these 4 plus 21 1326 revised for obsolete (and not lead-free) BFPs. Thanks to Fire Marshal Jim Streit, Michael Ladach.
21 1316 R6 Dry-Pipe Sprinkler Systems	
21 1319 R6 Preaction Sprinkler Systems	
21 1326 R6 Deluge Fire-Suppression Sprinkler Systems	
21 1339 R6 Foam-Water Systems	
	For these next 3, thanks to POC Eric Stromberg.
26 0536 R4 Cable Trays for Electrical Systems	Removed fire stopping from spec; Removed seismic requirements; Removed general listing requirements; Added class descriptions; Removed resistance requirements (of splice plates); Removed requirement for label to not use as a walkway; Modified requirements for existing work; Added specifics for installing expansion plates and where to place splice plates
26 2500 R3 Enclosed Bus Assemblies	Added new seismic requirements; modified listing requirement language removed requirement for grounding bar to be 50% capacity; removed requirements to address existing equipment; modified expansion requirement to include thermal; modified torque language
26 2816 R4 Enclosed Switches and Circuit Breakers	Included new seismic requirements; Reworded listing requirements; Took out most references to “NEC requirements,” reworded others; Removed requirement to use 200k amp fuses for all applications; Removed requirement for receipt inspection; Removed requirement for viewing window; Removed requirement for compression lugs; Removed requirements for removing abandoned equipment; Gave option to either verify torque after the fact or to witness it while being performed;
Deleted Specs:	
01 1116 R1 Work by Owner	Canceled and archived, normally handled by 01 4216 R0 Definitions
01 4200 R3 References	Canceled and archived, new 01 4216 R0 Definitions normally sufficient.
21 2223 R0 Fixed Aerosol Fire Extinguishing System	Canceled and archived, use not anticipated near-term

Std Drawings & Details STD-342-400	
Ch. 6 Mechanical	
ST6700-1-Rev. 1 Single Stage HEPA Filter	Admin changes to CAD Standard Rev.#5 Format. Tx to Scott R, Michael Ladach, E Seawalt, and those who did the CAD.
ST6700-2-Rev. 1 Two Stage HEPA Filters	
ST6700-3-Rev. 1 Two Stage HEPA Filters with Chemical Absorbers	
ST6700-4-Rev. 1 Design Notes	
D20GEN-2 Rev. 5 Water Piping	

Deleted Drawings	
ST-D30GEN-2-R1, Sheet 9 of 11, Hot Water, Pneumatic Control Diagram	Cancel and archive: These are pneumatic control diagrams, no longer used.
ST-D30GEN-3-R1, Sheet 3 of 4, Pneumatic Control Diagram for Preheat Coil	
Ch. 7 Electrical	
ST-G4010-38 Rev. 2 Three Phase Transformer Concrete Pads	Removed blocked out area for conduits, structural updates for IBC-2015, added note for subcontractor to coordinate with utilities for raceway locations. Thanks to Sammy Martinez, Andrew Molina, Glen Pappas, and POC Eric Stromberg.

DOE TECHNICAL STANDARDS INACTION

DOE Tech Stds activity (beta here) in the past month: None. Since mid-Jan. Inauguration Day to be exact. Some think Washington gridlock is a good situation, but…

NATIONAL STANDARDS ACTIONS

Though the Federal government is in a bit of a holding pattern (tailspin?), the standards developing orgs keep working. This month, the IHS online standards service reports (and POC Glen Pappas confirms) that their pdf of ACI 318-14 now has the January 6, 2017 errata incorporated. So if you use ACI 318-14 (Building Code Requirements for Structural Concrete) and Commentary (ACI 318R-14), you should download the latest pdf.

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Here's another great contribution by Kevin Krank (NOTE -- I could use more from other readers).

CONCRETE RETESTED AT HK MEGA BRIDGE FOLLOWING ARRESTS OVER CORRUPTION

Urgent checks are being carried out on Hong Kong's portion of a major new bridge to allay public concern following the arrests of 21 people for allegedly faking the original tests.

All inspections and tests on the Hong Kong works for the Hong Kong-Zhuhai-Macao Bridge show the structures are in sound condition, said the government, but it has ordered site staff to conduct new non-destructive concrete strength tests on the bridge's Hong Kong projects.

The Independent Commission Against Corruption (ICAC) has arrested two senior executives and 19 staff members of a contractor working for the Civil Engineering & Development Department (CEDD). The arrests are for alleged corruption in relation to their submission of false concrete compression test reports.

Since January 2013, the CEDD had engaged the contractor to conduct compression tests on samples of concrete to be used for the Hong Kong-Zhuhai-Macao Bridge Project. The test for each sample was required to be conducted within a set time and all concrete samples (in cube form) were required to pass the test.

It was revealed that when some of the tests were not conducted within the set time frame in compliance with the contract requirements, the site laboratory technicians and laboratory assistants might have adjusted the times on the testing machines to cover up the irregularities.

[AND THE MOST EGREGIOUS THING:]

> During the ICAC operation, it was further revealed that some of the laboratory staff might have replaced the concrete samples by using a metal calibration cylinder and/or high strength concrete cubes to falsify the tests, so that the tests would appear to have been conducted properly…snip

So -- the lesson here?
Seems like corruption is everywhere in developing regions like Hong Kong, Nigeria, New Mexico, and Washington, DC. So how does CoE save the day at LANL? Our IBC Program, through periodic assessments of LBO-approved testing agencies, ensures labs are AMRL certified and there's a P.E. supervising lab testing operations as required by ASTM E 329, *Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction*.

By the way, Kevin Krank's now the LBO's Chief Inspector for Testing Agencies as well as Chief of Inspections and Approved Fabricator assessments, and manages the field engineers. He wears more hats than an albino hydra at the beach.

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

- **LANL Standards Issued in April**
- **Engineering Processes Changes**
- **O&M Criterion Changes**
- **DOE Technical Standards Inaction**
- **NFPA Standards Changes**
- **When Good Conduct of Engineering Isn't Followed**

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