

ENGINEERING STANDARDS UPDATE

Because [Standards Know-How Isn't Just for Nerds](#)

Topics this month:

- **Concrete Mix 15/15X Problems, Actions**
- **Training**
- **Boiler and Pressure Vessel Inspection, Repair, and Alteration**
- **Engineering Processes Changes**
- **LANL Standards Issued in September...and so far in October**
- **World Standards Week is Oct 24-28**
- **National Standards Changes**
- **DOE Technical Standards Actions**
- **When Good Conduct of Engineering Isn't Followed**

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

Some, including a QA manager, may wonder why this is publishing so late. Apologies, we had an IT problem that took them a moment to cause and two weeks to fix.

CONCRETE MIX 15/15X PROBLEMS, ACTIONS

Projects in design or construction with mix 15 and/or 15X specified are advised to revise their design to require 03 3001 rev. 10 and its mix designs. The background is that LATM mix design 15, and later 15X, were authorized by variances and then LANL Master Spec Section 03 3001 revision in the 2012-2013 timeframe. However, about a year ago, we began to see low break strength results. Last fall Kevin Krank sent out a notice recommending that mix 15 not be used, however mix 15X is also breaking low.

In response, 03 3001 r10 dated June 30, 2016 was issued; among other changes, it replaced pre-approved mix designs 15 and 15X with mixes 5000-4N and -8E. This action had the effect of stopping future project starts from using mixes 15 and 15X, but projects with 03 3001 r9 and specifying mix 15 or 15X can avoid probable low break problems by revising their project specification and other documents reflecting mix 15/15X.

TRAINING

The Conduct of Engineering Training and Qualification Program, headed by Mel Burnett and Mike Brazile with assistance from Yolanda Trujillo, has a new web presence thanks to Christina Salazar-Barnes. The [main T&Q webpage](#) explains matters and now includes a "Courses and Qualification" link in the upper right corner that leads to a single, well-organized page with all

such information, even the new FDAR Oral Checkout Evaluation Package with answers included. ES Division folks can now study up and outsmart their bosses!

Electrical Standards Course Tues, Nov 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 at the White Rock Training Center (TA00-1308-116).

Ethics for Engineers

Mike and Heidi Hahn are working on the 2016 edition of this online course and I'll announce it later this year in time for the biennial P.E. scramble for PDHs.

For LANL courses, to register: Sign up via [UTrain](#) (AEs without cryocard via Yolanda Trujillo at 665-5696 or ytrujillo@lanl.gov with Z number) -- and dis-enroll if you can't make it.

- On [UTrain](#) click on the "catalog" tab and select "advanced catalog search"
- Enter course number as the "ID", then "search"
- Add-to-do-list
- Go to your to-do-list and click on 'register'

BOILER AND PRESSURE VESSEL INSPECTION, REPAIR, AND ALTERATION

A written Quality Control Systems Manual was developed and has been accepted by the National Board of Boiler and Pressure Vessels Inspectors for the Owner-User and "R" Stamp programs. It's now a section of [ESM Chapter 17](#), Pressure Safety.

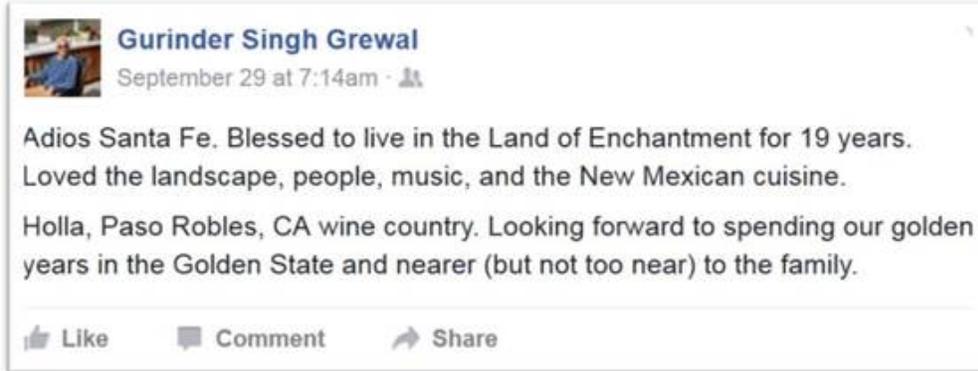
Based on this, LANL has been accredited by the National Board to (1) perform in-service inspection of the boilers owned and operated by LANL under the Owner-User Certificate of Authorization and (2) perform repairs and alterations to the boilers and pressure vessels owned and operated by LANL under the "R" Stamp Certificate of Authorization. Both activities must be performed in accordance with the National Board Inspection Code (NBIC) and State of New Mexico Boiler Rules Title 14 (NMAC 14.9.4.1).

All inspections must be performed by the LANL Commissioned Inspectors. For boilers inspection and repairs and alterations to boilers and pressure vessels please contact QCSM SME [Siavosh "Mark" Motamedi](#). A. Ben Swartz remains POC for Ch. 17.

ENGINEERING PROCESSES CHANGES

Posted against AP-341-703 on Commercial Grade Dedication: VAR-10059, Variance to CGD process to allow installation of parts and PMT prior to release to Operations.

All the APs are [here](#). But Gurinder isn't—he's fully retired and left the state:



[North Korean construction workers fed crystal meth to accelerate skyscraper project](#)

Contributor Chris Arnold quipped: “This begs the question: What do the project managers give to the engineers?”

LANL STANDARDS ISSUED IN SEPTEMBER...

ESM STD-342-100	
Chapter 6 Mechanical, Section D10-30GEN General Mechanical Requirements: Posted VAR-10053, Exception to Equipment Housekeeping Pad Requirement, 9/14/2016	Thanks to Zoe Ledbetter and Chapter POC Michael Ladach.
Chapter 17 , Pressure Safety, Section QCSM Quality Control Systems Manual	Thanks to SME Siavosh “Mark” Motamedi, Chapter POC A. Ben Swartz, and others.

Drawings & Details STD-342-400	
Civil	
ST-G3010-1-R3, Valve Box Detail -Gas/Water	Admin. changes to new format CAD STD Rev. 5. Minor design changes. Thanks to Ed Seawalt, Marisol Alvarez-Torres, Scott Richardson, and POC Crystal Rodarte-Romero. And the retired Mell Smithour.
ST-G3010-2-1-R4, Water Piping Tie-In, 3/4" - 2" Copper Service Line	
ST-G3010-2-2-R4, Water Piping Tie-In, 4" - 12" Service Line	
ST-G3010-3-R3, Water Piping Shut-Off Valve, 4" - 12" Line Size	
ST-G3010-3-2-R3, Water Piping Shut-Off Valve, for Fire Line (PIV)	
ST-G3010-4-R4, Fire Hydrant, Gate Shut-Off Valve	
ST-G3010-5-R4, Sloping Pipe Anchor	
ST-G3010-6-R3, Water Valve Support	
ST-G3020-1-R3, Sanitary Sewer Manhole	
ST-G3020-2-R6, Exterior Sewer Lift Station	

ST-G3020-2-2-R6, Exterior Sewer Lift Station Plan
ST-G3020-2-3-R6, Lift Station Concrete Wet/Dry Well
ST-G3020-2-4-R6, Lift Station Electrical Detail
ST-G3030-1-R2, Concrete Catch Basin
ST-G3030-2-R2, Precast Concrete Catch Basin
ST-G3030-3-R3, Man Hole
ST-G3040-1-R4, Tie-In
ST-G3040-2-R3, Site Steam Drip Leg
ST-G3060-1-R2, Gas Piping Tie-In, Steel Service Line to Steel Main
ST-G3060-1-R2, Gas Piping Tie-In, PE Service Line to Steel Main
ST-G3060-1-R2, Gas Piping Tie-In, PE Service Line to PE Main
ST-G3060-2-R3, Gas Regulator, Two Stage, Low Flow
ST-G3060-2-R3, Gas Regulator, Two Stage, High Flow
ST-G3060-2-R3, Gas Regulator, Single Stage, Low Flow
ST-G3060-2-R3, Gas Regulator, Single Stage, High Flow

...AND SO FAR IN OCTOBER:

ESM STD-342-100	
Ch. 16, IBC-GEN, IBC General Requirements Rev. 10	Incorporated streamlined graded admin approach of VAR-16-009 r1 altered for fire protection and circuit addition from VAR-2015-058. Programmatic anchorage requirements revised. Required that design document the final design inputs (including Alt Level) and fire ratings of walls. Added CAD and CM-CE design reviews. Reduced seismically exempt anchor requirements, incorporating CIR-16-002. Minor revisions for temporary and D&D.
Ch. 16, IBC-GEN, Att. B, LANL Existing Building Code	Added anchorage to code of record exception at 301.1.
Ch. 16, IBC-IP, Inspection Process Rev. 9	Moved some delegated tasks to LBO at 3.0.E. Modified inspection role at 4.0.I.

The changes to GEN and its Att B are significant and deserve a look.

WORLD STANDARDS WEEK IS OCT 24-28

World Standards Day 2016 theme “Standards Build Trust”:

Reliability and trust are fundamental components of any process, business, or service. Behind the scenes, standards and conformity assessment ensure this reliability and trust. In short, standards make everyday life work.

Everything from tech gadgets and the products we rely on in our offices and homes, to services

that fuel the global economy and ensure health and safety, relies upon standards and conformance to ensure safety, dependability, and interoperability.

A product or service conforming to an international standard represents a trusted symbol of quality, safety, and compatibility. Most of all, standards—developed through a process that is balanced, open, and transparent—help engender trust among the people, businesses, and governments that have placed their confidence in the standardization process.

Maybe I'm biased, but the [best seminar](#) is clearly on the 25th:



NATIONAL STANDARDS CHANGES

A selection of updates:

NFPA 75, Standard for the Fire Protection of Information Technology Equipment - Effective Date: 08/24/2016 Access on IHS [here](#).

NESC-2017 (IEEE C2) and Handbook access now available. The Research Library is now providing online access to the [2017 NESC](#) and its corresponding [handbook](#). Access is available through the IEEE Xplore Digital Library.

Remember, the license for most standards is for single simultaneous user access. Users are reminded to close the document and log out of IHS once they have completed a download, print, save or other use of the item. This will release the license for the next user.

Please contact library@lanl.gov with any questions on IHS or IEEE Xplore.

DOE TECHNICAL STANDARDS ACTIONS

DOE Tech [Stds](#) activity in the past month. Seems we're not the only people with FY-end goals.

[DOE-HDBK-7251-2016](#) Fleet Management. This Handbook addresses the life cycle management of motor vehicles (including passenger, special purpose, experimental, law enforcement), motor equipment and watercraft.

[DOE-HDBK-1223-2016](#) Classified Matter Protection and Control Handbook. This handbook is not intended to replace DOE Order 471.6, Information Security, other departmental rules, plans or processes or national directives. This handbook describes one way to fulfill requirements for Classified Matter Protection and Control (CMPC) within DOE.

[DOE-NA-STD-3016-2016](#) Hazard Analysis Reports for Nuclear Explosive Operations, superseding DOE-NA-STD-3016-2006. The purpose of this Technical Standard is to define requirements and guidance for preparing HARs for NEOs in accordance with 10 C.F.R. Part 830.

[DOE-STD-1149-2016](#) Safety and Health Program for DOE Construction Projects, superseding DOE-STD-1149-2002. This Standard provides a framework for a construction safety program for use on DOE construction projects that will comply with the requirements of title 10, Code of Federal Regulations, part 851 (10 CFR 851); DOE Order (O)440.1B, Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees, and would be consistent with its accompanying Guide (G), DOE G 440.1-1B, Worker Safety and Health Program for DOE (Including the National Nuclear Security Administration) Federal and Contractor Employees, and DOE Policy (P) 450.4A, Integrated Safety Management Policy.

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Since October has Halloween, Fire Prevention Week/Fire Safety Month, and the Electrical Standards Course coming up, here are some electrical horrors with grounding.

It used to be that earthing and grounding only referred to electrical systems, but when Googled now, one learns it's the notion that walking barefoot solves inflammation, pain, stress, poor sleep, and illness. I'm skeptical so will claim that carrying crystals helps equally well.



This second one is scariest, since that's a point-of-use shower heater. I'd joke about Russia but don't like polonium-210 in my tea. Or tea.



LAST MONTH'S UPDATE TOPICS

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

- **Report National Standards Work**
- **Training**
- **Engineering Processes Changes**
- **LANL Standards Issued in August**
- **Project Management Procedures Moved to EDMS**
- **National Standards Changes**
- **I-Code Errata**
- **DOE Technical Standards Actions**
- **When Good Conduct of Engineering Isn't Followed**

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