ENGINEERING STANDARDS UPDATE
Trying to Make Standards Exciting Since 2001

This is the monthly newsletter of the LANL Conduct of Engineering Office's Engineering Standards Program. The Standards define the minimum technical requirements for the design, fabrication, construction, commissioning, repair, and replacement of both new and existing equipment and facilities, including both maintenance and modification, for programmatic and facility work at LANL [PD340].

### Topics this month:

- **Engineering Processes Changes**
- **CoE Quote**
- **LANL Standards Issued in November**
- **DOE Technical Standards Actions**
- **When Good Conduct of Engineering Isn't Followed**
- **Standards Spotlight – Cross Connection Control**

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

## ENGINEERING PROCESSES CHANGES

Learning Guide: *A Guide to Commercial Grade Item Dedication* NEW
AP-341-506, *Engineering Change Notice* -- Alternate Method approved and posted

Please ensure you are working to the latest revision being implemented by your facility.

For a listing of all APs and learning guides, visit the Conduct of Engineering Office, Engineering Processes page on SharePoint. For questions about engineering processes (e.g., procedures), please contact POC Gurinder Grewal: ggrewal@lanl.gov or 7-3667. (FB, this includes you).

## COE QUOTE

The purpose of the LANL Engineering Standards is to shift building and system design from "not breaking the law" to higher performance that provides a greater return on investment and a smaller environmental impact.

> -- Scott Gibbs, 2010, as LANL Associate Director of Engineering & Engineering Sciences, as an effort to better inform critics of the program

## LANL STANDARDS ISSUED IN NOVEMBER

As you can see, Electrical-POC-Practically-Forever David Powell has been in hyperdrive updating his documents prior to his January retirement.

### Eng Standards Manual STD-342-100

| **Chapter 7 - Electrical** | **Summary of Changes** |
|---|---|
| D5000 Rev. 6, General Electrical Requirements | For NFPA 70E & arc flash: defined extent of calcs; aligned analysis and labeling requirements with LANL P101-13.1 and Section 26 0553; added requirement for labeling equipment with maximum available fault current; changed voltage indication on equipment nameplates to IEEE system voltage notation. |
| D5010 Rev. 4, Electrical Service & Distribution | Clarified concrete coverage requirements for underground conduits for MV and LV services and feeders; moved LV surge protection requirements to Section D5090; revised panelboard schedule for non-coincident loads and added description of calculations; added requirement to de-rate outdoor transformers exposed to summer mid-day sun. |
| D5020 Rev. 5, Lighting & Branch Circuit Wiring | Changed GFCI accessibility and location requirements. Added requirements for "residential" portions of certain LANL facilities. Revised AFC location and redundancy requirements for AFCs with graded approach. Corrections in Table 5020-4. Augmented illuminance criteria for glovebox interiors. Major changes for LEDs. Clarified characteristics of fluorescent lamps for re-lamping. |
| D5090 Rev. 4, Other Electrical Systems | Surge protection requirements per ANSI/UL, 3rd Edition and NEC Article 285; added requirements for solar photovoltaic systems. |
| **Chapter 13 – Welding & Joining** | |
| 3-01, Application of Welding Procedure Specifications -- App A., Welding Procedure Specifications | 9000CS100-8 Rev. 1;<br>5000-xxxx-HY80/HSLA100D1.1 Rev. 0;<br>5000-xxxx-HY80/HSLA100-IX Rev. 0 |

### Master Specifications STD-342-200

| | |
|---|---|
| 23 3225 Rev. 2 Bag-In Bag-Out Housings | Added requirements from DOE-HDBK-1169-2003, Ch. 8. Updated requirements from ASME N509 and N510 to ASME AG-1. Expanded Submittal Section and information for filters used in housings. Added QA and Packaging and Shipping Sections. |

| | |
|---|---|
| 26 0519 Rev. 4 - Low Voltage Electrical Power Conductors and Cables | Administrative change: paragraph 2.2-A.3: Corrected insulation type from XHHW to XHHW-2 |
| 26 2726 Rev. 4 - Wiring Devices | • Added COORDINATION article to address interfaces, locations, and colors for wiring devices.<br>• Added FINISHES article to address device color selection.<br>• Clarified uses for “isolated ground” receptacles.<br>• Updated catalog numbers for receptacles and occupancy-sensing lighting control devices.<br>• Added specification for receptacles with integral surge protection.<br>• Added requirement to provide properly configured receptacles for equipment furnished to the Project under other specification sections or by LANL.<br>• Deleted requirement for receptacle serving an electric water cooler (EWC) to be located within the EWC cabinet. (EWC must now be GFCI protected and all GFCIs must be accessible.)<br>• Added a digital occupancy sensing lighting/receptacle control system to address requirements of ASHRAE/IES Standard 90.1. I<br>• Added requirement to verify that GFCI receptacles are installed in locations that will be accessible.<br>• Aligned receptacle configurations and ratings with NEC requirements for an “individual circuit.” |
| 26 5100 Rev. 4 - Interior Lighting | Addition of requirements for LED luminaires. With ESM, supports environmentally preferable product procurement goals. |
| 26 5200 Rev. 5 Emergency Lighting | Addition of manufacturers for each product. |
| 26 5600 Rev. 4 - Exterior Lighting | Updated requirement for LED driver input surge protection in para 2.4.H.5; clarified notes on use of luminaire-mounted photo controls. |
| 28 0528 Rev. 3 - Pathways for Electronic Security | Changes to avoid penetrating thru, or mounting conduit to, fire door frames; lessons learned from RLOUB |
| 28 1321 Rev. 3 - Administrative Access Control System Rough-In | Changes to avoid penetrating thru, or mounting conduit to, fire door frames; lessons learned from RLOUB |
| 33 5100 Rev 5 - Natural Gas Distribution | Clarified marking for coated pipe |
| Updated Exhibit I input template (link is atop the specs page) | |

## DOE TECHNICAL STANDARDS ACTIONS

New or revised DOE Tech Stds this past month: None (lacking Powell's enthusiasm?)

## WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

**Utah Professor Watched Child Porn on Flight: Police**
Fellow passenger took photo of laptop to alert cops

By Mary Papenfuss, Newser Staff - Posted Nov 28, 2011 3:50 AM CST

(Newser) – An engineering professor from the University of Utah was busted on a Delta flight from Salt Lake City on Saturday after a fellow passenger sent a message to alert police that he was viewing child pornography on his laptop, according to investigators…

## STANDARDS SPOTLIGHT – CROSS CONNECTION CONTROL

Cross connection control (C3) is the practice of preventing the flow of unhealthy substances into the potable water supply. It's best implemented through engineered controls like backflow preventers, vacuum breakers, and air gaps (e.g., lab sink faucet nozzle above rim).

In the Engineering Standards Manual, C3 is addressed primarily in Chapter 6 Mechanical in Section D20 Plumbing/Piping/Vessels, Article 2.0. It includes reference to a number of related ESM chapters, master specs, and standard details that further implement the program. In the maintenance arena, backflow preventers have periodic testing requirements per O&M Criterion 406 (now on SharePoint; login with Z No. and WIN password).

In the photos below, I'm not saying the configurations represent a C3 problem, but when things get this cobbled one does have to wonder about the safety of the system. At LANL, we keep spaghetti an entree, not a work result.


Therelfixedit.com


Therelfixedit.com

## LAST MONTH'S UPDATE TOPICS

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

- **Ethics Training Imminent**
- **SDDR Form 2178 Revised**
- **Prime Contract Changes**
- **Coming Up for Air**
- **LANL Standards Issued in October**
- **CoE-ish Quotes**
- **Testing AP Revised**
- **DOE Technical Standards Actions**
- **When Conduct of Engineering Isn't Followed**

To request a change to this newsletter's distribution, please contact me.

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