

ENGINEERING STANDARDS UPDATE

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

Topics this month:

- **New Project Engineering Tools!!!**
- **New DOE Document Impact**
- **LANL Standards Issued in December**
- **Engineering Processes Changes**
- **O&M Criterion Changes – New!!!**
- **DOE Technical Standards Actions**
- **When Good Conduct of Engineering Isn't Followed**

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

QUOTE

"If we invite the team that wins the Super Bowl to the White House, then we need to invite some science fair winners to the White House as well." – President Obama at the 2012 White House Science Fair as quoted by the American Institute of Physics newsletter FYI

NEW PROJECT ENGINEERING TOOLS!!!

As a result of an ongoing engineering improvement initiative, Mike Clemmons, Group Leader of ES Project Engineering, recently issued two new documents on the [ES-PE](#) website (under Related Links). These will surely be very helpful with executing projects effectively. You don't need to be in ES-PE to use them and benefit. As explained by Mike, they are:

1. PE Desktop Training guide (focused on how to get new PEs up to speed quicker)
2. AE Kickoff Meeting Guidelines (some things to consider as you kick off your new projects which should include appropriate Lessons Learned from similar projects or systemic concerns)

Send suggestions on them to Mike.

BACK TO NORMAL

ARCHITEXTS



NEW DOE DOCUMENT IMPACTS

The four DOE documents below were issued in December. All but the Guide will likely be in our contract around April 1. LANL is already assessing their impact on standards and processes and developing implementation plans for each of them.

The VERY significant challenge with STD-1020-2012 is that (1) it's in direct conflict with the also-contractual IBC-2009-mandated standard editions such as ASCE 7-2005 and (2) it replaces the longstanding PC category concept that pervades our CoE processes and standards. These issues mean that institutional 1020 implementation will not be easy or fast; it will take several months. As such, projects should NOT require its use until these issues are discussed/resolved internally and with LASO, and the Standards Program provides direction.

[DOE O 420.1C, Facility Safety](#)

The Order establishes facility and programmatic safety requirements for DOE and NNSA for nuclear safety design criteria, fire protection, criticality safety, natural phenomena hazards (NPH) mitigation, and System Engineer Program. Cancels DOE O 420.1B, DOE G 420.1-2 and DOE G 420.1-3. [for engineering, revision mainly adds a host of national standards, and ESM will need updating for this major reference]

[DOE G 420.1-1A, Nonreactor Nuclear Safety Design Guide for use with DOE O 420.1C, Facility Safety](#)

This Guide provides an acceptable approach for safety design of DOE hazard category 1, 2 and 3 nuclear facilities for satisfying the requirements of DOE O 420.1C. Cancels DOE G 420.1-1. [ESM will need updating for this major reference]

[DOE-STD-1066-2012](#), Fire Protection [safe-harbor methods, begin using immediately for new project starts per ESM Chapters 1 and 2]

[DOE-STD-1020-2012](#), Natural Phenomena Hazards Analysis and Design Criteria for Department of Energy Facilities [hold off on use per above]

LANL STANDARDS ISSUED IN DECEMBER

Master Specifications [STD-342-200](#)

01 5705 R4 Temporary Controls and Compliance Requirements	Addresses recent regulatory changes as well as changes in related implementation activities
07 2400 R2 Exterior Insulation and Finish Systems	General re-write and re-formatting. Revised and updated submittal and sustainable design requirements. Specifies cementitious coating instead of synthetic coating due to woodpecker and small animals causing deterioration of synthetic coatings and insulation.
Updated Exhibit I template	

ENGINEERING PROCESSES CHANGES

Administrative Procedure news:

As announced December 3, the collaborative/online AP-341-517, R1 Design Change Form is now available in MS SharePoint [here](#) (better with IE than Firefox). You can initiate a new DCF by going to this site and submitting a short request form. Also a DCF Quick Start Guide and User's Manual was sent with that message. Please contact [Curtis Thomson](#) (7-8510) to arrange for training on the use of the MS SharePoint DCF by your group.

For questions about the contents of any of these documents, please contact Eng Processes Program Manager Gurinder Grewal at ggrewal@lanl.gov or 667-3667. For a listing of all APs, visit the Conduct of Engineering Office [Engineering Processes](#) page. Always ensure you are working to the latest revision being implemented by your facility.

O&M CRITERION CHANGES – NEW!!!

As a service to readers, I'm going to start noting MSS-MP actions on the Operation and Maintenance Criterion. Here's one that just occurred in early January:

O&M 728 R2– Dry Chemical Extinguishing Systems

This revision incorporates ITM requirements for self-contained QuickFire FireFoe™ automatic fire extinguishing tubes and FireTrace dry chemical automatic fire extinguishing systems. Implementation of the above document is 30 days from the Approval Date for Non-Nuclear Facilities and 60 days from Approval Date for Nuclear Facilities.

These documents may be accessed through [this](#) link, then look under SUB Function: O&M

NOTE: It is recommended to ONLY use Internet Explorer to view this procedures. If you use Mozilla (Firefox), it will prompt you for a user name and password every time. If you do get prompted for a user name and password in Internet Explorer, it is your Z# and Win Logon Password. You should only need to put that in on the initial use.

Any questions regarding any of the above Criterion, please contact the Criterion Author.

DOE TECHNICAL STANDARDS ACTIONS

New or revised DOE [Tech Stds](#) this past month:

[DOE-STD-1066-2012](#), Fire Protection

[DOE-STD-1020-2012](#), Natural Phenomena Hazards Analysis and Design Criteria for Department of Energy Facilities

DOE-STD-1194-2011 ([CH-2](#)) Nuclear Materials Control and Accountability, Change Notice 2

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Last month's driving safety message/video was very popular, so here's the story on a Thunderbird crash 10 years ago. This one has a more technical bent and it comes down to consistent use of reference standards (units) and being sure of the elevation at one's location. At LANL, the Engineering Standards Manual makes sure designers understand we're at 7200' above sea level and how to perform calculations to compensate when sizing mechanical and electrical equipment, etc.



From Wikipedia on Mountain Home AFB (Idaho): Immediately after takeoff, Captain Chris Stricklin, flying Thunderbird 6, serial #87-0327 (opposing solo), attempted a "[Split S](#)" maneuver (which he had successfully performed over 200 times) based on an incorrect mean-sea-level [elevation](#). Similar in desert appearance, MHAFB is 1100 feet (335 m) higher than the Thunderbirds' home at [Nellis AFB](#) near [Las Vegas, Nevada](#).

Climbing to only 1670 feet (509 m) [above ground level](#) instead of 2500 feet (762 m), Stricklin had insufficient altitude to complete the descending half-loop maneuver. He guided the [F-16C](#) aircraft down runway 30, away from the spectators and ejected less than one second before impact. His parachute deployed when he was just above the ground and Stricklin survived with only minor injuries. No one on the ground was injured, but the \$20 million aircraft was completely destroyed.^[3]

- [video of crash of Thunderbird 6](#) - 2003-09-14

Official procedure for demonstration "Split-S" maneuvers was changed, and the [USAF](#) now requires Thunderbird pilots and airshow ground controllers to both work in [above-MSL](#) (mean-sea-level) altitudes, as opposed to ground control working in AGL (above-ground-level) and pilots in MSL, which led to two sets of numbers that had to be reconciled by the pilot. Thunderbird pilots now also climb an extra 1000 feet (305 m) before performing the Split S maneuver.^{[3] [4]}

LAST MONTH'S UPDATE TOPICS

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

- **CoE for R&D is here**
- **Online National Standards Service Improvements**
- **LANL Standards Issued in November**
- **Engineering Processes Changes**
- **DOE Technical Standards Actions**
- **When Good Conduct of Engineering Isn't Followed**

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

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