

Fluor Hanford ALARA Center and D&D Knowledge Management Website

Activity Report for Week of July 7, 2008

ALARA Center Activities and Information

1. While searching for other information we found an article written in 2007 on “Applying Simple Technology Accomplishes Visual Inspection Challenges”. The article contains info on cameras used in canyons, glove boxes and fuel pools. See <http://sti.srs.gov/fulltext/E-TRT-A-00001.pdf>

2. Forwarded copy of HNF-35658, Containment Guidelines - Best Work Practices to PNNL Rad Engineer who has an assignment to upgrade the PNNL Containment Guide. Found additional documents:

DOE M 441.1-1 (Manual, 03/07/2008) “Nuclear Material Packaging Manual”

<http://www.directives.doe.gov/pdfs/doe/doetext/neword/441/m4411-1.pdf>

DOE G 441.1-1C (Guide, 05/19/2008) “Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection”

<http://www.directives.doe.gov/pdfs/doe/doetext/neword/441/g4411-1c.pdf>

DOE O 450.1A (Order, 06/04/2008) “Environmental Protection Program”

<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/o4501a.pdf>

DOE M 460.2-1A (Manual, 06/04/2008) “Radioactive Material Transportation Practices Manual”

<http://www.directives.doe.gov/pdfs/doe/doetext/neword/460/m4602-1a.pdf>

DOE HDBK-1110-2008 (February 2008) “ALARA Training for Technical Support Personnel”

<http://hss.energy.gov/NuclearSafety/techstds/standard/hdbk1110/hdbk1110.htm>

DOE HDBK-1113-2008 (April 2008) “Radiological Safety Training for Uranium Facilities”

<http://hss.energy.gov/NuclearSafety/techstds/standard/hdbk1113/DOE-HDBK-1113-2008.pdf>

3. Jeff toured the Fast Flux Test Facility and the Maintenance and Storage Facility with the 400 area Radiological Control Manager. They discussed the remaining work at the facilities, current schedules and looked at the layout and postings of radiological areas. The FFTF Radiological Control staff appeared well organized and ready for the remaining challenges. Contact the ALARA Center if you would like a second opinion at your facility.

4. Forwarded info on Ultrasonic Testing Equipment to Health Physicist at Energy Northwest. Information included a link to a 41 page document on UT. See <http://www.ndt.net/article/v05n09/berke/berke1.htm>.

5. Discussed ALARA Protective Measures with Julio Castro from the Los Alamos ALARA Center. He forwarded info on a remote arm used for taking measurements. The

arm employs “Blue Tooth” technology. Although the arm may not have application at Hanford, this info is provided for your information. The technology used to operate the arm may have application at Hanford in the future. See

<http://www.faro.com/content.aspx?ct=ENG&content=pro&item=2&subitem=0&tab=0>

6. ALARA Center personnel worked with the D&D Facility RadCon Manager and the Fluor Hanford Plastic Shop to design a glovebag to sample several containers of uncharacterized fluid. The Center loaned the D&D group a glovebag frame to support the sample operation’s tight schedule.
7. Conducted Basic Containment training for three CH2M Field Work Supervisors and one Chem Tech from WSCF. This hands-on training includes a tour of the plastic shop.
8. Three personnel from Perma-Fix Northwest visited the ALARA Center and the Plastic Shop. Their primary interest was improving work practices when changing glove bag sleeves. Rick Wilson from the Plastic shop recommended a change to their method of changing sleeves and provided a sample for their testing.
9. Conducted PHMC ALARA Council meeting for July.
10. The Health Physics Society has published a new website to help answer questions about radiation. See <http://www.radiationanswers.org/#looper>
11. Received call from D&D Engineer looking for a protective sleeve for their GE Inspection Technologies videoprobe. They need to look 3’ inside a component and don’t want to contaminate their unit. The unit we have on display at the ALARA Center doesn’t have a protective sleeve. Recommended they install shrink tubing or contact the Plastic Shop. The shrink tubing can be heated to form a tight sleeve around the probe and then decontaminated or stripped off after removal.

D&D Hotline Activities and Information (The D&D Knowledge Management Website is (<http://dndkm.arc.fiu.edu/dndkm/>))

1. Received request via the D&D Knowledge Management Website from engineer at Oak Ridge. They are preparing to apply three types of fixatives to the outside of corrugated metal buildings and compare the results. The paint on the outside of the building is in poor condition, contaminated and peeling. Recommended Polymeric Barrier System (PBS), Polyurea Spray Coatings, and Rhino Lining or Line-X Polyurethane coatings. Also recommended they check local hardware stores to see what products are used to coat the roofs of mobile homes or waterproof concrete walls. Forwarded the ALARA Center’s List of Fixatives to Oak Ridge.
2. Found a report written in 2003 on constructing a subsurface barrier around waste sites to prevent the migration of underground contaminants. The report recommends a backhoe be used to dig a trench up to 35’ deep and then filled with a geo-membrane barrier. Read this report at <http://www.osti.gov/bridge/product.biblio.jsp?>

[query_id=1&page=5&osti_id=885428](http://pages.prodigy.net/cartertech/)

A simpler emerging technology that might be used instead is to inject molten wax around each waste site to contain contaminants. The ground could be heated and the molten wax injected around the waste site. The wax will flow like water until it cools to <125 degrees F. This should form an impermeable barrier around and under the waste site. Contact Carter Technologies at <http://pages.prodigy.net/cartertech/> for more info on using Molten Wax.

3. D&D requires heavy equipment, and heavy equipment notoriously leaks oil. Therefore having a oil spill kit handy is a must at D&D sites. The Porta-Gator spill control system sold by MRI Enterprises may be the answer to equipment oil leaks. Gator is a premium oil absorbent made from 100% recycled materials and will encapsulate oil and suppress vapors. Los Alamos personnel are evaluating some of the products sold by this company and the initial results reveal the absorbent material is superior to similar products they have been using. For more information about Gator products contact MRI Enterprises at (915) 779-6540.

4. Reviewed the Pressurized Water Reactor (PWR) ALARA Committee website and found several "Golden Nuggets" that might have application at Hanford. The Golden Nuggets are ALARA Protective Measures that reduce dose, limit contamination spread and/or protect the environment. See the attached list. The PWR Website is <http://www.pwralara.org/>

Lessons Learned

1. Read a report on "Concrete Characterization: Hammer Drilling with Particulate Capture and Profiling in Depth". It describes a method used to obtain samples deep into concrete using tools developed by New Millennium Technologies. See several of these reports at <http://nmnuclear.com/> Click on TRUPRO, Projects, and Technical Reports.

2. The Fluor weekly publication described the work in progress at KE Basin to demolish the facility. Part of the building is being "rubblized" using an excavator and shear. The crew will spray the work area with a mist using Fog Cannons and fire hoses to prevent the spread of contamination and other hazardous materials. Transite asbestos siding and roofing will then be removed using an excavator equipped with shears. Work will continue until the fuel pool and 5' of soil beneath the fuel pool are removed. It will then be turned over to a Soil Remediation Contractor.

3. An Accident Prevention Report on the Hanford S-102 Spill has just been issued and can be found at http://www.hss.energy.gov/CSA/safety_advisory.html The report consists of two volumes with a total of 140 pages. FYI: On July 27, 2007, the Hanford Tank Farms experienced a spill of about 85 gallons of highly radioactive mixed waste from the S-102 Tank, located in the 200 West Area of the Hanford Site. The cause of the accident was an over pressure of a hose in a dilution line. Although required, the pump system did not have a mechanism (e.g., a backflow devise) to prevent a backflow and subsequent overpressure of the hose and the dilution line was not designed to handle the pressure that could be generated by the installed pump. The Accident Report states the incident resulted in an eight month schedule delay and cost eight million dollars.

4. **From the United Kingdom - At Capenhurst**

Rock Climbers used to Access Awkward Heights

Contractor APC has begun using a team of rock climbers to install a new smoke detection system at Capenhurst as dose rates and other restrictions required ropes—rather than scaffolding or scissor lifts—be used to access the elevated work area. The equipment is being installed 25 meters above tens of thousands of drums of depleted uranium and uranium hexafluoride in the former diffusion plant now used as a uranic storage area.

“Both restrictions on physical access for mechanical means, as well as dose rates implications for scaffolders, made it impossible for these methods to be used to access the roof of the building, which meant we had to be innovative in terms of finding a fast and cost-effective method of installing this new system,” explained Ian Mason, head of uranic storage at Capenhurst. “Through the tender process, we challenged our main contractor, Techserve, to find the most suitable rope access team to do the work.

Consequently, we have five expert rock climbers and mountaineers, who have an excellent pedigree in commercial work, to provide a unique solution to a complex problem—in fact they’re so fast and nimble that its proving to be quicker than hods.”

The detection system will be fitted to the entire building and annexes over a period of four weeks. This forms part of preparations for the potential reuse of substantial areas of storage space following the launch of the site’s new vision to maximise its assets and grow its business. Phil Malem, Sellafield Ltd’s head of site at Capenhurst, said: “Finding new ways of working, such as using rope access instead of scaffolding, is essential for the successful future of this site. Not only is rope access incredibly safe, as we approach the end of decommissioning, this project is helping prepare the ground—or the roof—for us to find new ways of using the land assets and operational experience that we have gained from being the first site to complete our clean-up programme.” Looking to future, he said, “Much of our site is a blank canvas of flexible space, coupled with hugely knowledgable employees and we’re currently exploring options of how to change our Lifetime Plan away from remaining a safe storage site to contributing more positively to



the NDA’s hazard reduction strategy. Golden Nuggets from the PWR ALARA Committee.doc