

Accelerator Division EH&S Highlights November 2002

RadCon Field Support

Radiological support (planned/completed) included the installation of the HE-3 glass target fixture in the **Hall A target chamber**. Sustained high current operations create elevated radiation levels in the hall and considerable Be-7 contamination exists in Hall A force air cooled equipment. A "Standing" Radiation Work Permit regarding access to work in air-cooled equipment racks was developed for Hall A and implemented. It identifies what activities need RadCon support in the racks. **Pavel completed G0 support** with a presentation to G0 collaboration members on suggested modifications to the G0 beam line. **Plans have been developed for** establishing radiological areas around beam dump cooling water buildings and expanded Radiation Areas on the West side of the Hall A and C domes. Sustained high current operations create elevated radiation levels in the parking lot areas.

DOELAP Review

Department of Energy Laboratory Accreditation Program (DOELAP) reviewed the Jefferson Lab dosimetry program. The review resulted in no deficiencies and three concerns. Deficiencies are considered significant enough to require immediate correction. Concerns are of a minor nature and must be corrected within an approximately two-year timeframe. We also had five "observations," which represent best industry practice or the opinion of the assessors. Four of the five observations were kudos to particularly well-managed portions of the program, some of which they "had never seen before." It was a very good review.

RadCon Equipment

An accelerator site power failure resulted in damage to the Injector Rapid Access Monitor chassis. See ELOG entry [1127124](#), Injector Rapid Access Beacon flashing continuously 23-Nov-02 13:27D_Green.

Improved Lead Brick Encapsulation

In search of a better coating for lead brick, Hall C now has an inventory of primed and painted lead brick. First shipment arrived November 26th, and was swabbed to check for removable lead. None was detected. This is great news, because to date we have not had a non-detectable lead swab from a painted brick. No, it did not pass the drop test (it chipped at the corner) , but use of this lead brick will result in significantly less contamination than anything done to encapsulate lead brick to date. Thanks to Hall C staff for their proactive efforts!

Rogue Crane Incident

There are two cranes in the Test Lab. One of the crane controllers can act as a master and drive both cranes simultaneously. This happened accidentally on Monday morning, November 25th. The second crane was moving in sync with the first crane, which was being controlled by a technician on the other side of the building. There were no injuries. Eric Hanson, Industrial Safety Group Leader, is conducting the investigation.

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Test Lab Basement R&D Chem Room Drain Pipe

Jennifer Williams and Al Facenda noticed a leak that was coming from the drain pipe from the R&D Chemroom. The area of the leak was roped off and warning signs put in place. The fume hoods in the Chemroom were posted, "No acid work is permitted until drain is repaired." Fusseal piping (pvc schedule 80 dense plastic piping) was used to replace leaking drain pipes from the R&D Chem Room. The problem with potential leaking is not completely resolved, but there are no active leaks at present. A service request was submitted for upgrade of drainpipes. The remainder of the non-upgraded drain pipes were not used, because they are in the old chemical treatment section of the room. All piping will be labeled as acid drainpipe and the need for secondary containment will be assessed with Phil Mutton.



Dark blue piping is acid drain line piping runs along the ceiling along the length of former caged in area to the treatment tanks. The area under the pipes is now accessible by staff.

Treatment tanks are in the fenced off area in the back of the basement (lower left hand corner of the picture).



Work still to be done: Metal C clamps used on this (and all like it) acid drain pipe will be replaced.

Pipe will be labeled and secondary containment will be provided.

CMTF

The Safety Systems Group added the 1497MHz RF system into interlocks and logic and updated the logic to improve usability. They completed full certification and also bench-tested the RF monitors.

FEL PSS Activities

Certified FL04 RF system. Wiggler power supply certified. Found that nomenclature did not match information provided to PSS group. Wiggler and arc supplies were

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swapped. PSS screens and documentation were updated to reflect actual installation. Certified zone 4 and 1/4 Cryo RF systems, and box supplies for 1st pass, 2nd pass, and wiggler magnets.

Lead monitoring

An industrial hygiene assessment of lead soldering activities was initiated in October and continued through November. The assessment replicates the study done in 1996.

It consisted of three phases:

- Surface contamination at soldering areas
- Personal air monitoring of employees who routinely solder
- Blood lead levels of employees who routinely solder

There are no OSHA standards for lead surface contamination, so a recommended level of 40 micrograms/ft², adopted from The Residential Lead-Based Paint Hazard Reduction Act used by HUD and is a very conservative number, was used. Several work areas were identified as having lead contamination above this level, and responsible supervisors were notified. Air monitoring of soldering work was scheduled beginning after Thanksgiving, based on list of solder work turned in by supervisors (thank you!) Soldering mats were turned in to IH group for disposal and were included in the Hazardous Waste Shipment the week of November 11th.

It is interesting to note that the association between the use of the orange anti static mats and lead buildup is significant. IH is recommending that these mats be dated with magic marker when put into service and disposed of periodically because they have greater capacity to “hold on” to the lead.

R&D Chem Room Officially Cyanide Free!

The last of the cyanide was shipped off site as waste on November 27th. No further cyanide work will be permitted in the room. See record # ACC-02-10-14-001 in the EH&S Tracking System.

EH&S Tracking System

Added the Radiation Deviation Report (RDR) section to the database. Provided training to the AD's senior executive staff. There are questions about how the data will be used now that it is centrally collected and available for analysis. This issue will be added to the Operations Committee agenda. Also provided training to the SRF Institute Facilities Group supervisors. Completed development of tailored layouts for accident/incident (AI), independent assessment (IA), line self assessment (LSA), and notable event (NE) records. Added bar graph to the home page showing at a glance how many records are open by source (A/I, NE, IA). Prepared summaries of accidents, incidents, and notable events that comply with Privacy Act requirements. Uploaded summaries into Docushare and appended tracking records with related link. Added EH&S Department Line Self Assessment improvement plans and significant targets for next year into tracking system.

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FEL Safety & Operations Envelopes

B. May and S. Prior assisted the FEL Department and Office of Assessment with the development of an Interim Change to the FEL operating and safety envelopes. Changes were needed to support the present upgrade commissioning and intended operating activities.

Task Force on Space Utilization

The EH&S Department formed a task force on space utilization. The task force is chartered to survey space presently used by the department to include offices, labs, instructional and storage areas. They will then identify uses that are: a) cramped or significantly constrained; b) better if collected together; c) underutilized/get light usage. The task force will propose reconfigurations that will improve work efficiency and capacity. Thus far, they have identified potential improvements to the manner in which the groups manage documents and technical equipment storage. They continue to explore methods for improving training delivery (both classroom and computer-based).

CEBAF Run Safe Crash Button Damaged

Personnel were trying to avoid a roped off hot spot and did not see the Run/Safe box when maneuvering the cart. Run/Safe 48 crash switch which was a pump cart detector, was struck by the cart. Only the mechanical portion of the crash switch was damaged. No wiring had to be disturbed. The Safety Systems Group replaced the crash switch. Certification involved only actuation of the switch.

CMTF ODH Alarm

PSS and IH personnel responded to ODH alarm in CMTF. The alarm was on a floor sensor. Personnel had difficulty with locating sensor. Location documentation was updated to make it easier to identify sensors.

ODH alarm in CEBAF

ODH monitor OMNL11 (North Linac) was reading high for the latter part of the first week in November. This corresponded with reports of ozone and beam loss. This is the first time there has been enough ozone in the linacs to come out of the noise on the ODH system. The elevated ozone levels were likely due to significant beam scraping associated with the G0 beam.

Dosimetry QA

QA irradiations of dosimetry continue to show that our dosimetry performs considerably better than the appropriate standards.

VTA Update

PSS, now in use, had false trips of dewar 7 Permit signal due to mounting problems with the shield door switches. Switch mounting was redesigned to avoid having the switch lever closed by a 5 ton hydraulic piston.

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Dosimetry

Dosimetry results are in for 3rd quarter 2002. As expected, there were two results that exceed our 60 mrem internal alert level due to work on the Hall C dump wall. The RadCon Group is investigating one of the two reports as it contained neutron dose. They suspect that the neutron dose is erroneous and was due to an incorrect algorithm choice for reading the TLDs. There is a second neutron-sensitive device in the badges that will aid in this determination.

Fiber Communications From Test Lab to RadCon Trailer Complex

Fiber communications have been made from the Test Lab to the RadCon complex. This allows flexible test stands to be made that will read out and archive through the Test Lab radiation monitor IOC (the one that currently runs the CMTF communications). Still remaining to be done - pull the wire from the communications boxes to the 485 communications loop.

Electrical Safety Just-In-Time Training

EH&S T3 assisted the Engineering Department with development of the first two JIT training packages on “Qualified Workers” and “Classes, Modes, & Responsibilities.”

Training

- P. Hunt and J. Williams attended RF safety seminar at NASA LaRC. Mostly concentrated on antenna measurements, but basic survey techniques were reinforced.
- S. Prior attended NREP conference to meet re-certification requirements as a Registered Environmental Manager. Other talks included Pressure-Treated Wood and the arsenic hazard it poses. It was a very interesting talk. If you are interested in the research ongoing, you can read about it at www.ccaresearch.org; EPA Audit Policies; several talks on Environmental Management Systems (EMS); Environmental Management Information Systems (EMIS); ISO 14001; 12 Safety Myths; and Impacts of Terrorist Attacks. The guest speaker was the Head of the EPA Office of Inspector General.
- E. Hanson attended the AIHA – ASSE annual join meeting in Richmond.

Administration Division Notes for EH&S Committee
For meeting of 12/6/2002

Facilities Management (New title for Plant Engineering Department)

Active Construction Projects:

- *Central Chiller Utility* (Replace chillers in the Test Lab, install a chilled water loop around the Accelerator Site, and replace AC units at various service buildings.)
- The progress schedule was submitted on 11/22/02 and is under review.
- EH&S training classes continued through the week of 11/25/02.
- First progress meeting is scheduled for 12/4/02. (PM - D. Brand) First progress meeting held on 12/4/02. (PM - Brand) Subcontract Completion Date (SCD) 7/14/03

Acid Neutralization System Building

Addition to Building 31 to house an increased capacity acid neutralization system. Site visits were held 11/15 and 11/22. Proposals are due on 12/2/02. (PM - Chandra)

- Estimate Finalized Equipment Layout: 1/30/03 Est. Construction Award: 12/15/02
- Estimate Construction Completion: 5/30/03

Modification to ARC Gas Shed

Add a lockable door and provide separation for different gas bottles (i.e. oxygen & fuel gases). ECD: 3/30/03. (PM – Chandra)

Risk Management

Awaiting proposals from carriers for Policy Year 2003-4. Several underwriters have indicated they may want their field loss-control representatives to “look us over” before quoting. Another 9-11 artifact.

We have received a preliminary advisory from our broker that SURA/JLab will receive about \$35K in workers’ comp. premium dividends (“rebates”) for policy year 2001. Again, this is an outcome of better-than-expected injury experience and related medical expenses.

EH&S Training

The following actions are part of an integrated effort to address electrical safety training:

- Develop electrical/electronic safety “qualifications” composed of sets of skills and knowledge that can be tailored to a particular person or job and tracked in the training database (Aspen). The foundation qualification that will apply to all electrical/electronic workers has been developed by the Training & Performance Office (TPO). It’s based on EH&S Manual Chapter 6210 and is being reviewed by subject matter experts (SME). Others, e.g. Lockout/Tagout, use of PPE, will follow.
- Develop and field a series of short presentations delivered by Ed Martin at Accelerator Division staff meetings on specific safety-related subjects. The series, called “Electrical Shorts,” will then be placed on the Web for future reference. So far, two presentations have been completed: “Qualified Persons,” and “Classes, Modes, and Responsibilities.” The next one will be designed to cover the basic qualification for all electrical/electronic workers.
- The Administration Division EH&S Officer and TPO jointly adapted LLNL’s “High Voltage Electrical Safety” web-based course for use at JLab. It is found at:

<file:///M:/training/High Voltage/HighVoltage.html>

- JLab has invited Lloyd Gordon, instructor for a highly-touted electrical safety course at LANL, to design a similar course for JLab. Lloyd will visit JLab (at the expense of the Accelerator Division EH&S Dept) on Dec 16-17 to discuss our specific needs, review the elements in our basic electrical/electronic safety qualification, and observe our practices. He will then develop a one-day course for us and present it in January 2003. He has agreed to be videotaped so his presentation can be retained and published on the Web.

Emergency Management Notes

Visit by a representative from the DOE Inspector General's office from 11/19-2002. JLab is one of four sites to be visited. Stated scope of inspection was Lab's management of medical emergencies and written agreements between the Lab and emergency responders and medical treatment facilities.

- Paul Koudry, IG, gave a close-out briefing to Kelly Caccetta, representing the Laboratory, and Barbara Morgan (representing DOE Site Office) regarding his review of the Laboratory's Emergency Medical Response. The points of the briefing follow:
 - No smoking guns!
 - Overall thought is that the Laboratory's responsibility as a good community member can present problems in that it can overshadow weaknesses in programs.
 - A concern he has is that one employee mentioned that when calling 911, don't mention any radiation concerns, even if there is one.
 - Areas where he thought there might be areas of concern:
 - Perception and training of off-site people: His review found no problem.
 - MOAs: His review found them not useful for our laboratory situation.
 - Hospital and Emergency Responders: His review found no concerns.
 - He found that the type of radiation on site does not present emergency medical serious problems.
 - Thoughts that may or may not turn up in the report:
 - Underutilization of Medical personal in emergency planning
 - Updating of listing in Emergency Plan, EH&S Manual, telephone tree not routinely reviewed (this is off the scope of the review)
 - Off-site responders are not capable of detecting radiation on site because they do not have appropriate equipment. They depend on the Laboratory for that information.

After all the Laboratories have been reviewed, there may be other concerns that turn up from an overall perspective.

- *Bottom Line:* Excellent Program overall
Excellent working relationship with responders



EH&S Reporting Activities for November 2002

- As of November 30th, there have been **114** days without a lost-time injury. The Lab record is **455** consecutive days without a lost-time injury. There were no recordable injuries to JLab or contractor staff in November or in October.
- Carter Ficklen attended the DOE Contractor EH&S Management Forum at the Princeton Plasma Physics Laboratory, Princeton, NJ on November 5-6.
- Recordable accident/injury narratives (10) were provided to the Accelerator Division EH&S Department at their request. Also provided to the Accelerator Division was an injury/ occurrence Reporting Summary for the JLab Research Operations Committee of the Director's Council.
- The FY 2002 Annual Waste Generation and Pollution Prevention Progress Report was submitted to the DOE Site Office on November 15. Jefferson Lab included a Pollution Prevention accomplishment about the establishment of several local recycling centers around the site in FY 2002.
- A well-attended Waste Minimization/Pollution Prevention Task Group meeting was held on November 21. Discussions on improving recycling and affirmative procurement performance, and on standardizing waste/recycling containers at JLab, among many other topics (such as a new pallet recycling opportunity) took place.
- The FY 2002 Shipment Mobility Accountability Collection System (SMAC) information for Jefferson Lab was provided to the DOE. The SMAC information summarizes FY hazardous waste shipments for inclusion in the DOE-wide database. This information is a reporting requirement of the DOE/SURA contract.
- EH&S Reporting reviewed preliminary Office of Science (SC) guidance for the annual DOE ES&H Management Plan budget document. SC has deleted some non-ES&H information requested in the past.
- **Occurrence Reporting**
- A DOE occurrence reporting (ORPS) screening of an October 21, 2002 JLab lead handling event was conducted. This event involved fabrication of mobile shielding units containing lead for the FEL commissioning process. This event did not qualify for ORPS reporting as no personnel

exposure guidelines were exceeded, and the DOE “near miss” criteria were also not present during the event.

➤ **Work Smart Standards (WSS) Set**

- Proposed changes to the WSS Set are in various stages of review, including the proposed addition of a local terrorist response plan. EH&S Reporting is working with the Policy and Manuals Group to ensure new or modified hazards or standards become addressed appropriately in the EH&S Manual.

➤ **National Environmental Policy Act (NEPA)**

- CEBAF and FEL Upgrade Environmental Assessment (EA)
 - The DOE Site Office is finalizing the team charter.
 - Proposed Action/Project Information Checklists are being prepared. The initial draft checklists for the CHL Facility Expansion and the new Shipping and Receiving/Warehouse Building are available for line management input.
- EH&S Reporting is working with other laboratory staff to address other NEPA items.

**Physics Division
EH&S Activities
November, 2002**

For the month – Commissioning new experimental apparatus and experimental equipment readiness for beam to three experimental halls were major division priorities.

Experimental Readiness and Work Control Documents

Reference Jefferson Lab EH&S Manual Chapter 3120 – Experimental Review, and Chapter 3320 - Temporary Work Permits.

One Experiment Readiness Certificate, an Operational Safety Procedure and a Temporary Operational Safety Procedure were given final approval. The certificate went to the Hall B run group for the latest e1 experiment, the OSP for the G0 Superconducting Magnet System in Hall C, and the TOSP for testing the Hall A Lead Glass Calorimeter Ultraviolet System in the Experimental Equipment Laboratory.

Inspections

Reference Jefferson Lab EH&S Manual Chapter 5100 - Internal Inspections.

Three scheduled formal inspections identified five new recordable action items. Since first observed three items have been closed. The DOE Site Office Contracting Officer, Don Baxter and EH&S/Security Manager, Barbara Morgan, along with Area Safety Warden, Brian Kross, accompanied the division EH&S staff on the inspection of the Experimental Equipment Laboratory.