

April 22, 2009

Mr. James A. Turi, Manager
Thomas Jefferson Site Office
12000 Jefferson Avenue, Suite 14
Newport News, Virginia 23606

TIME SENSITIVE

Subject: Response to DOELAP Assessment from March 17-18, 2009

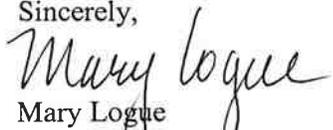
Dear Mr. Turi:

On March 17-18, 2009, auditors from the Department of Energy Laboratory Accreditation Program (DOELAP) performed an assessment of Jefferson Lab's External Dosimetry program. Auditors identified two deficiencies and three concerns as listed in the attached Onsite Assessment Report. TJNAF is required to send, within 45 days from the date of the report, a written statement to DOELAP Performance Evaluation Program Administrator (PEPA), detailing the actions taken or plans for resolving the deficiencies and concerns. This written response also requires concurrence of TJSO.

Deficiencies need to be corrected within 60 days from the day of the report, concerns need to be addressed before the next DOELAP audit, usually scheduled on a two-year cycle. As of today, both deficiencies have been corrected and all but one corrective action stemming from the three concerns have been completed.

I would appreciate if you could review the attached TJNAF Response and forward it to Mr. Laird Bean, DOELAP PEPA, by May 2, 2009. Please feel free to contact Vashek Vylet ext.7551 with any specific questions regarding our response.

Sincerely,


Mary Logue
Associate Director – ESH&Q

Enclosures:

- DOELAP External Dosimetry Onsite Assessment Report
- TJNAF Response to DOELAP Assessment from March 17-18, 2009

Cc:

M. Dallas
V. Vylet
K. Welch



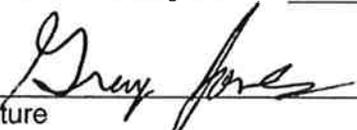
**Department of Energy
Laboratory Accreditation Program (DOELAP)
External Personnel Dosimetry**

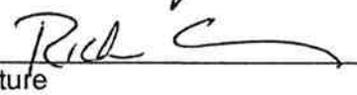
ONSITE ASSESSMENT REPORT

Organization: Thomas Jefferson National Accelerator Facility (JLAB)

Onsite Assessment Dates: March 17, 2009 – March 18, 2009

Date Report Reviewed with Management: March 18, 2009

Assessors:		
JONES, Greg		3/18/09
Printed Name/Signature	_____	Date

CUMMINGS, Rick		3/18/09
Printed Name/Signature	_____	Date

Information for the Recipient

You are asked to respond in writing within 45 days, detailing the actions you have taken or plans you have for resolving the deficiencies and concerns identified in this report and your reasons for feeling any reported deficiencies are unwarranted. Failure to respond may delay an accreditation decision. Please obtain concurrence by your DOE field office. It should then be forwarded by the field office with a cover letter indicating concurrence to:

Laird C. Bean
DOELAP Performance Evaluation Program Administrator
U.S. Department of Energy, Idaho Operations Office
1955 Fremont Avenue, MS 4149
Idaho Falls, ID 83415-4149

You are reminded that this Onsite Assessment Report conveys the opinions of the assessors as representatives of DOELAP. The final evaluation of your facilities for the purpose of recommending accreditation will be conducted by a DOELAP oversight board. They will review this report, your response to it, other written information submitted by you and the performance test results for your dosimetry system in making a decision.

Signed Statement

The assessors have discussed the contents of this Report with members of management who agree to respond in writing to the DOELAP Performance Evaluation Program Administrator within 45 days of the date of this Report (with concurrence by the local DOE Office), regarding correction of deficiencies and concerns noted herein.

Mary Logue
Printed Name

Mary Logue 3/18/09
Signature of Authorized Representative of Management

INTRODUCTION

A DOELAP onsite assessment was conducted of the Thomas Jefferson National Accelerator Facility (JLAB) dosimetry program to assure routine practices comply with criteria contained in DOE/EH-0026, "Department of Energy Laboratory Accreditation Program (DOELAP) Handbook." The DOELAP assessors were Greg Jones, LLNL and Rick Cummings, NTS. The following people were interviewed in the course of the assessment: Dr. Vashek Vylet, Radiological Control Department Head, Keith Welch, Radiological Health Group Leader and Becky Mosbrucker, Dosimetry Coordinator, Mel Washington, Head Radiation Monitoring Systems, John Jefferson, Instrument Technician and David Hamlette, Field Operations Group Leader. Other staff members contributed to the assessment process, but were not interviewed directly. All the JLAB staff involved in the assessment process were competent, conscientious and cooperative.

JLAB is seeking accreditation using the Landauer T2 dosimeter which has four OSL elements and a CR-39 foil with radiator to enhance the thermal neutron response. JLAB badges about 1400 people on a semi-annual basis. The neutron doses are small and indeed, the occupational exposure for 2008 was 1.6 person-rem (most from the first half of the year using the Global Dosimetry Services (GDS) dosimeter), with only three people getting above 100 mrem. All doses above 20 mrem are routinely investigated.

The assessment team reviewed progress towards resolving the findings identified in the previous DOELAP assessment and evaluated the current compliance of the program with DOELAP requirements. Twelve findings were identified, including two deficiencies, three concerns and seven observations. One of the deficiencies arose from an uncorrected finding at the concern level from the previous assessment.

The assessment was conducted between March 17 and 18, 2009. The following report summarizes the findings identified during this assessment.

REVIEW STATUS OF CORRECTIVE ACTIONS FOR PAST DEFICIENCIES OR CONCERNS.

2007

Concern #1 The Lab approval process needs to be strengthened. Specific examples include:

- Blind audit reports were miscalculated and miscategorized.
- No apparent approval signatures were found on the dose reports from Global Dosimetry Services (GDS)
- No review and approval signatures were found on the dose reports for TJNAF to accept the reports.

(R.2, Q.9, T.4, Q.4, and P.4)

Status : Evidence was not provided to demonstrate that JLAB has implemented the actions necessary to demonstrate a formal review and acceptance of doses provided by the processor is being performed.

2007

Concern #2

TJNAF recently modified the background subtractions based on the badge rack control dosimeters as indicated in the email from Keith Welch to GDS dated Dec 15, 2006. These changes were applied to the last dosimeter exchange cycle (July – December 2006) but they were not documented in any of the written procedure. In addition, the results from the badge rack control dosimeters and also processing dosimeters were not reported, reviewed, and analyzed to ensure the accuracy and validity of these new background subtraction algorithms. Finally, procedures do not reflect the protocol necessary to process off-cycle (monthly) dosimeters to ensure appropriate background subtraction is applied. (D.14 and TD.14)

Status: Actions were taken by JLAB to update the procedure used to review TLD background subtraction. Processing protocols were specifically added to the procedure to ensure that raw element values are provided by processing vendor. This action effectively closed the concern from the 2007 assessment. Subsequent to this change, JLAB has changed to a new processing vendor using OSL technology.

This concern is considered closed as it applies to the 2007 assessment because it addresses an issue with GDS that was resolved. It has been reopened as a Concern (see Concern #2 below) with Landauer because the resolution of the problem did not migrate to the new processing contract.

GENERAL

Comments

In the last assessment in 2007, JLAB had a mature dosimetry program that consisted of a TLD dosimeter provided by Global Dosimetry Services (GDS). The contract with GDS had been in place for 5 years. In 2008, JLAB decided to replace services provided by GDS with services from Landauer using a combination Optically Stimulated Luminescence (OSL) dosimeter, model T2 with CR-39. When the assessment team arrived, the Quality Assurance Manual (QAM), Technical Basis Document (TBD) and ten of the thirteen operating procedures remained in revision (unapproved). The deployment of the new Landauer dosimeters had proceeded without the associated revision of programmatic documents. The importance in the programmatic revisions was stressed to the JLAB staff as not being just a change of the name of the processor, but a change in technology. The reports were different, the dosimeter element readings had different meanings and the addition of CR-39 added a new wrinkle, especially because the CR-39 included a proton radiator to enhance the thermal neutron tracks.

Deficiencies

- Deficiency #1 Programmatic documentation was not current with the dosimeter that had been deployed for assessing personnel exposure. Additionally, inconsistencies in existing documentation (unapproved revisions remaining from the previous system) were observed between the Quality Assurance Manual, the Technical Basis Document and operating procedures. Because the programmatic documentation does not address the technical basis nor the use of the deployed dosimetry, this finding is categorized as a deficiency. (G.1, G.2)

Concerns

- Concern #1 A review of the 2008 dosimetry results identified an individual with doses exceeding the JLAB Administrative Alert Level requiring that the individual be reassigned to a monthly monitoring period. The individual was not reassigned to a monthly monitoring period, nor was this deviation from established procedure documented at the time (July 2008). It is unclear what approvals are required and what documentation of mitigative measures is expected. The decision was subsequently documented in an unsigned memo, dated March 16, 2009. (Q.7, P.7)

Observations

None

QUALITY ASSURANCE PROGRAMComments

JLAB has a small staff involved in the dosimetry system. Dosimeter results require, by procedure, review by a technically competent person at JLAB and at the services provider. The program is in transition between two contract services providers. The programmatic documentation is still being revised and some standard processes have not yet been fully implemented. However, the main programmatic elements are being conscientiously conducted by individual dosimetry staff members to assure that quality is maintained.

FindingsDeficiencies

- Deficiency #2 Dose reports received from the processor(s) for the past two years were reviewed during this assessment. Reports are reviewed by JLAB personnel using procedure HPP-DOS-006. The Dosimetry Coordinator reviews the report to identify both positive and anomalous dose results for further dose investigation. However, there was no documentation available to show that the technically responsible person ensures that dosimetry results are approved as required by this procedure. (P.4) (See Concern #1 from 2007 assessment report).

Concerns

None

Observations

Observation #1 The Dosimetry Coordinator currently reviews dosimetry data submitted by the contractor. It is suggested that the dosimetry staff receive training on identifying anomalous dosimeter results and particularly, the implementation of the dosimetry algorithm.

Observation #2 Several of the staff visited Landauer during Spring and Summer of 2008 (anecdotal), and an audit was planned for Spring of 2009, this audit has not yet been conducted. While an annual audit is not an actual requirement, JLAB could request (of Landauer) audit results from other entities (e.g., DOELAP, SLAC, FNAL and PPPL).

Observation #3 JLAB has a strong focus on identifying and tracking procedural performance objectives. However, documentation that all objectives were tracked was not evident.

Observation #4 JLAB has implemented a blind audit program to ensure the stability of processing, and has implemented special tests, however, there is no responsibility for design and documentation of test protocols and acceptance criteria.

PERSONNEL

Comments

The personnel in the Dosimetry Group include the Dosimetry Coordinator, the Radiological Health Group Leader and the Radiological Control Department Head. The DC has primary responsibility for conducting the day-to-day operations of dosimeter receipt, issue, collection and return, and, also, review and incorporation of data. The RHGL has primary responsibility for supervising the DC. The RHGL and DC each have 17 years operating experience in RADCON and Dosimetry and their contributions underscore the importance of experience and training to maintaining a viable dosimetry system. The dosimetry staff members have not had sufficient time to gain a thorough understanding of the theoretical response of the new dosimeter system in different radiation fields. That understanding will come with time and experience as it did under the contract with GDS, but it could be hastened by specific training conducted by Landauer professionals.

The Technical Lead is Vashek Vylet. The Quality Assurance Manager position is vacant at present.

Deficiencies

None

Concerns

None

Observations

None

CALIBRATIONComments

JLAB conducts routine and special tests as blind audits of the service provider. The routine tests measure the stability of the performance exhibited by the processor during testing. The special tests allow JLAB to identify specific areas of interest. Neutron and Gamma irradiations are conducted for this purpose. (Measurement Assurance Program). An essential part of the measurement assurance program is the irradiation field produced by JLAB at the calibration facility. The neutron source is judged traceable by comparison with a standard (Ludlum remball) that was calibrated by NIST in 1992 and verified by MCNP and measurements with a traceable ANPDR-70 remmeter. Now, a reference standard is calibrated through a vendor with an accompanying certificate containing a statement regarding neutron traceability. The gamma source has a source certificate attesting to NIST traceability (1992). Verifications are conducted annually.

MCNP modeling indicates that AmBe provides a better calibration source for the neutron fields encountered at the laboratory than does bare Cf.

Deficiencies

None

Concerns

None

Observations

None

DOSIMETERSComments

The general process outlined by procedure for dosimeter handling is as follows. The DC receives dosimeters from the processor and removes ten dosimeters for immediate submission to the processor for analysis. Ten dosimeters are randomly selected from the batch for a visual verification of element (including CF-39) and filter placement. The DC issues dosimeters, including the area (badge rack) control dosimeters and updates the dosimeter database. The DC ensures that there is one area dosimeter for every 24 dosimeters on a badge rack to evaluate background doses. Each area is placed approximately in the center of the personnel dosimeters to adequately represent the storage background dose. Then, the DC segregates dosimeters from each facility for shipment to the processing laboratory ensuring that the appropriate area controls accompany the associated personnel dosimeters. The DC includes four shipping controls in each shipping box (one on each side of the box) as transit control dosimeters.

Deficiencies

None

Concerns

Concern #2 Actions were previously taken by JLAB to correct and close this concern as it applied to GDS. Subsequent to this resolution, JLAB has changed to a new processing vendor using OSL technology. During the review of data from the first issuance of the OSL dosimeters (2nd half 2008) JLAB staff identified that Landauer did not provide raw background readings from badge rack controls. These data were needed to support investigations to resolve false positive doses received by personnel who seldom if ever receive occupational exposure. JLAB has now requested that Landauer routinely supply this information, however, the procedure that previously addressed this concern has not been updated. (D.14)

Concern #3 Dosimeters provided by the processor are required to be tested and inspected (per HPP-DOS-008) prior to issue as follows:

- Spot check of dosimeter sample population to verify proper elements and filters.
- Scan all badges into a database.
- Send ten dosimeters to processor to check for dose that may have been received in transport.

During the transition to OSL dosimeters in July 2008, none of the above checks were performed or documented. (D.6, D.10, Q.7)

Observations

Observation #5 The number of area dosimeters per personnel dosimeter is not documented and guidance is not given in procedures to direct the positioning of area dosimeters. Analysis of area controls has indicated that some badge racks with only a few dosimeters could use more area controls to increase precision of the background.

Observation #6 The shipping and receiving procedure (HPP-DOS-008) identifies that four shipping controls must be include in each shipment to the processor. Minor discrepancies were noted in related implementation checklists, QA manual and the TBD that indicated that only two shipping controls are needed.

REPORTSComments

The QAM describes practices for resolving contested dosimetry data. The dose reports from the last two years (GDS and Landauer) were reviewed and it was observed that they contained all the items required in the DOELAP Reports requirement, R.2.

Deficiencies

None

Concerns

None

Observations

None

TESTINGComments

JLAB has a complete application including LLD and Angular testing for the T2. The 2008 performance test indicated some anomalous individual dosimeter results in the neutron categories. While the dosimeter passed performance testing, no attention was given to noticing the performance of individual dosimeters. One dosimeter in the Cs/Cf category exhibited a 74% performance quotient. 3 or 4 (20%) of the dosimeter results in a category exhibited performance quotients greater than +/- 20%.

Deficiencies

None

Concerns

None

Observations

Observation #7 JLAB should consider working with other accelerator laboratories that are using Landauer services to gain better understanding and insight into the response of the CR-39 dosimeter.

April 21, 2009

Laird C. Bean
 DOELAP Performance Evaluation Program Administrator
 U.S. Department of Energy, Idaho Operations Office
 1955 Fremont Avenue, MS 4149
 Idaho Falls, ID 83415-4149

SUBJECT: DOELAP Assessment, March 17-18, 2009

Dear Mr. Bean,

The purpose of this letter is to address issues raised by the Onsite Assessment conducted on March 17-18, 2009 by presenting corrective actions taken and planned. Ther two deficiencies and three concerns identified in the Onsite Assessment Report are listed below with a detailed discussion of remedial actions by Jefferson Lab.

Deficiency #1 Programmatic documentation was not current with the dosimeter that had been deployed for assessing personnel exposure. Additionally, inconsistencies in existing documentation (unapproved revisions remaining from the previous system) were observed between the Quality Assurance Manual, the Technical Basis Document and operating procedures. Because the programmatic documentation does not address the technical basis nor the use of the deployed dosimetry, this finding is categorized as a deficiency. (G.1, G.2)

Response: The Quality Assurance Manual, the Technical Basis Document and all dosimetry operating procedures have been revised to reflect the change of dosimetry provider (GDS to Landauer) and dosimetry technology (TLD to OSL). These documents were further checked for internal consistency and consistency with current practices. The table below contains a list of the revised procedures.

Procedure	Title	Revision Date
HPP-DOS-001	SRPD Issuance and Logging	4/13/2009
HPP-DOS-002	Posting & Retrieval of Work Area/Environmental Dosimetry Devices	4/15/2009
HPP-DOS-003	Administrative Alert Level	3/16/2009
HPP-DOS-004	Dose Reporting	4/16/2009
HPP-DOS-006	Recording and Analyzing Dose	3/16/2009
HPP-DOS-007	Changeout of Personnel Dosimetry	4/14/2009
HPP-DOS-008	Auditing and Shipping TLD Badges	4/20/2009
HPP-DOS-009	Issuing Employee TLDs	4/15/2009
HPP-DOS-010	Prior Dose Assessment	4/20/2009
HPP-DOS-012	Personnel Dosimetry Investigations	4/20/2009
HPP-DOS-013	Processing Damaged Dosimeters	4/15/2009
HPP-DOS-014	Declared Pregnant Worker and Declared Radiopharmaceutical Patients	4/20/2009

HPP-DOS-015	Annual Radiation Exposure Monitoring System (REMS)	4/20/2009
HPP-DOS-016	Completion of DOELAP Proficiency Testing	4/20/2009
HPP-QAP-021	Quality assurance exposures of Dosimeters	3/13/2009

Deficiency #2 Dose reports received from the processor(s) for the past two years were reviewed during this assessment. Reports are reviewed by JLAB personnel using procedure HPP-DOS-006. The Dosimetry Coordinator reviews the report to identify both positive and anomalous dose results for further dose investigation. However, there was no documentation available to show that the technically responsible person ensures that dosimetry results are approved as required by this procedure. (P.4) (See Concern #1 from 2007 assessment report).

Response: The review and acceptance of past dosimetry results has been signed off by means of a memo to file. The procedure HPP-DOS-006 has been amended to explicitly require review and signoff of the dose report by the Radcon Department Head and to clarify steps to review and approve the doses. The procedural step directing this activity reads: *"When the RCD Head has completed review and approval of the data, prepare a memo to file for his signature, certifying the doses. File the completed certification with the vendor dose reports for the period."*

Concern #1 A review of the 2008 dosimetry results identified an individual with doses exceeding the JLAB Administrative Alert Level requiring that the individual be reassigned to a monthly monitoring period. The individual was not reassigned to a monthly monitoring period, nor was this deviation from established procedure documented at the time (July 2008). It is unclear what approvals are required and what documentation of mitigative measures is expected. The decision was subsequently documented in an unsigned memo, dated March 16, 2009. (Q.7, P.7)

Response: The individual for whom the dose trigger was met is a Radiological Control Technician (RCT) and member of the Radiation Control Department (RCD). The intent of the requirement for switching to monthly monitoring at the Alert Level is that it allows the RCD to more closely track doses received by individuals at that level. Since this particular case occurred for an RCT, the matter was discussed internally by the RCD deputy, the dosimetry coordinator, the RCT and his supervisor (the RCD Field Operations Coordinator), who has intimate knowledge of work assignments for RCTs, and detailed cognizance of all radiological work conducted at the lab.

The decision was made at that time not to reassign a monthly monitoring protocol to the RCT, due to the nature of the RCT's work and exceptional degree of cognizance of radiological assignments, as this added no ALARA benefit.

During preparation and review of data for the DOELAP onsite assessment, the RCD recognized that this decision had not been documented in the monitoring record of the RCT, and there was no approved justification for the procedural variation. At that time, a memo to the file was generated in order to explain the omission.

The Alert Level procedure was reviewed and its instructions are adequately clear. The condition leading to the concern is the result of an isolated non-compliance with the requirements of the procedure. The need for procedural compliance and documentation of any deviations was reinforced with the individuals involved. The specific requirements in the procedure were reviewed and acknowledged by signature by the RCD deputy and the dosimetry coordinator on 4-16-09. We consider this issue to be closed.

Concern #2 Actions were previously taken by JLAB to correct and close this concern as it applied to GDS. Subsequent to this resolution, JLAB has changed to a new processing vendor using OSL technology. During the review of data from the first issuance of the OSL dosimeters (2nd half 2008), JLAB staff identified that Landauer did not provide raw background readings from badge rack controls. These data were needed to support investigations to resolve false positive doses received by personnel who seldom, if ever, receive occupational exposure. JLAB has now requested that Landauer routinely supply this information, however, the procedure that previously addressed this concern has not been updated. (D.14)

Response: The procedure that addresses this (HPP-DOS-006) has been updated. The procedure was approved and signed off by the RCD Head on 3/16/2009. The procedure specifically states that the Landauer background control dose in "raw" format be reviewed and compared with historical badge rack background data. We consider this issue to be closed.

Concern #3 Dosimeters provided by the processor are required to be tested and inspected (per HPP-DOS-008) prior to issue as follows:

- Spot check of dosimeter sample population to verify proper elements and filters.
- Scan all badges into a database.
- Send ten dosimeters to processor to check for dose that may have been received in transport.

During the transition to OSL dosimeters in July 2008, none of the above checks were performed or documented. (D.6, D.10, Q.7)

Response: This discrepancy was primarily the result of the changes to the program associated with the Landauer dosimeter configuration and inventory management system. The procedure had not been modified to address the differences in the systems. The following actions specifically address the concern.

1. At the time of switching to the new dosimeters, the Landauer system did not yet allow for barcode scanning to verify inventory. The Landauer system has now been updated to allow this function, and the procedure has been revised to correctly address the scanning step. This issue is considered closed.
2. The procedure step that directs the return of badges to the processor has been modified to allow checking for anomalous doses at JLab, using the onsite MicroStar™ reader. We consider this issue closed.
3. The spot-check of elements in the dosimeters was an oversight by the dosimetry coordinator, and was not identified by management review. This requirement is being addressed by a modification to the

procedure, such that the checklist used for these steps will be signed when completed, and transmitted to the Quality Assurance Coordinator (QAC) for review. The QAC will verify that all steps have been completed, and will also sign the checklist. In addition, information specific to the Landauer dosimeter regarding the internal configuration and placement of elements, filters, etc., will be added to the procedure. The procedure revision to address this step and close this issue is expected to be completed by 5/31/2009.

I believe the above remedial actions adequately address the deficiencies and concerns found during the assessment. I would gladly provide any additional information you may deem necessary or useful for the upcoming review by the DOELAP oversight board.

Best regards,

A handwritten signature in black ink, appearing to read 'V. Vylet', with a long horizontal line extending to the right.

Vashek Vylet
Radiation Control Manager