June 21, 2007 ESH-RPS-2007-00134

SITE ALARA COMMITTEE MEETING MINUTES-06/21/07

The Site ALARA Committee met on June 21, 2007, 766-H rm. 1026, 8:30 a.m. – 10:00 a.m.

Attendees:

Bill Poulson	James Harris	Michael Gilles	Terese Henson
Darrell Howe	Jim Wilson	Michael Holod	Terry Pifer
Ellen Parrish	John Gall	Mike Croft	TV Smith
Gary Chandler	Kela Johnson	Robert Becton	
Greg Tunno	Mary Vinson	Ted Padezanin	

The Quorum was met.

1) Operational Scope: Michael Gilles

A discussion was held about the results from the 226.1 assessment on the ALARA Program. The Site ALARA Committee (SAC) membership needs to increase its participation and attendance from line management, and a Quorum should be developed which will add formality to the voting by members and proxies.
The SAC shall consist of fourteen members, with a minimum of at least two Operation representatives from each of the two Business Units (M&O and LWO). The Quorum shall consist of at least the Chair plus seven voting members and two of those eight should be Operation representatives.

Chairman Bill Poulson expressed concern over the number of occasions that RWP Suspension Guides are being exceeded. A common practice to reset the Suspension Guides on a particular job multiple times sends the message that you are ill prepared and not aware of the hazards of the job. Be the spoke person in your group to encourage the understanding of the hazards, to be thorough in the upfront planning and the setting of the controls for each hazard.
A discussion was held by the SWMF representative over the concern that RCI's do not exhibit good contamination control techniques while performing routine work, such as, leaving their instruments a distance from the survey area when radiation dose is not a concern, and when surveying an object and it is found to be contaminated. Probe surveys are not being performed before the smears are taken. Also, SWMF has a concern with the lack of shielding on the HandiCount scalers and the time it takes for RCO to travel to a low dose area to count their disc smears.

ACTION ITEM: RPS to develop a plan to focus on RWP guideline suspensions.

ACTION ITEM: Greg Tunno to discuss scaler options with James Harris and SWMF RCO.

Topics for discussion at future SAC meetings may consist of: Exposures in excess of 5 man-Rem (projected or received), Lessons Learned from abnormal and complex events, Increase in ACL, Committee involvement at design start up vs. final phase, Increase or decrease in a facilities projected ALARA Goal.

2) SAC Charter Revisions: Michael Gilles

Discrepancies exist in Manuals WSRC-1-01, Charter 6.9, Site ALARA/Committee and ALARA Radiological Awareness Subcommittee and SCD-6. The SAC Charter is being revised to revise the scope of responsibilities for the members 'and adds expectations for their knowledge of guidance documents listed in the body of the Charter, and deletes the reference to A/RAC in favor of FRAT.

ACTION ITEM: Review the attached Charter and send comments to Ellen Parrish by July 20th.

3) SWMF ACL Increase: James Harris

James Harris of SWMF Operations presented to the committee a request to increase the ACL for 17 SWMF Miners from 500 mrem to 700 mrem. Radiological Engineering has reviewed various methods of Engineering Controls for implementation to assist in dose reduction for the mining activities. The cost and implementation of these controls out weighs the benefit. Behavior changes in the work force are being stressed and implemented, such as, reviewing Status Boards for vital information prior to entering the Pad, do not approach drums with orange cones that identifies higher doses unless absolutely necessary, reduction in the drum scanning process, relaxation of current JCO drum inspection requirements, treat all doses as a concern whether it is 1 mrem or 100 mrem, and swapping of Culvert Miners with Pad Miners. Also, recommendation from the ALARA Center are being implemented and/or reviewed for implementation.

The Quorum voted and approved the increase.

4) First Quarter Performance Indicators: Ellen Parrish

- ORPS Personnel Contamination Events total zero.
- Non-ORPS Personnel Contamination Events total one.

- ORPS Area Contamination Events total two.
- Non-ORPS Area Contamination Events total seven.

- The 2007 Cumulative Exposure Goal was set at 107 rem in December, 2006. Total Cumulative Exposure through the 1st Quarter is 33 rem.

- The maximum individual dose is 545 mrem. The actual dose assigned is from the Tank 37 work on HTF. The ACL for the HTF workers assigned to Tank 37 was raised from 500 mrem to 750 mrem.

- The Maximum Extremity dose is 3627 mrem.

- Internal Exposures: >100 mrem = 0 & >500 mrem = 0

A Population vs. Exposure TEDE (mrem) chart was introduced to the committee. This chart indicates the number of employees that have received dose in a particular range. For example, in 2006, 5031 employees received dose between 0 - 1 mrem and 11 had received dose between 401 - 500 mrem. Through the first quarter of 2007, 4790 employees received dose between 0 - 1 mrem and 3 have received dose between 401 – 500 mrem.

Defense Projects, NMM, and FCA were asked to explain why the YTD exposure was less than the YTD goal. Defense Projects had only processed nineteen of the TP Bars and the rest were in storage, NMM has had a delay in their project, and FCA had a reduced number of TRU drums received and processed due to procedural problems in E-Area.

ACTION ITEM: Facilities will be required to discuss ± 25 % discrepancies between their projected goals and actual exposure in future SAC meetings.

5) F/H Lab HAD Problems: Bob Becton

A presentation of the High Activity Drain replacement in F/H Lab was given by the facility ALARA Coordinator. Some of the repair challenges that had to be overcome were; the size of the trench (36”x 18”) made pipe removal and replacement difficult, high levels of alpha and beta-gamma contamination and elevated dose rates of 220 mrem/hr @ 30 cms and 1200 mrem/hr @ 5 cms, highly acidic and contaminated liquid in trench, type of pipe material, and the stainless steel liner was damaged. A mock up of the trench was used and a trench liner repair plan was established by Site material experts, lead shielding was utilized, stick cameras were used to inspect and view the work, and Teletrak EPD’s was used to track dose. Total exposure for the job was 1368 mrem. See the attached info.

Another topic for discussion was the issue where an F/H Lab employee travels around the Site performing assays of radioactive material. This employee’s tld indicates that he has received 261 mrem. While working in SWMF he is performing work very similar to the drum miners on the TRU Pads. While the SWMF drum miners are signing in under a JSRWP and wearing EPD’s this employee is signing in under an SRWP and not wearing

any additional dosimetry to track his dose. Some of the corrective actions that have been put in place are: Sign in on same RWP as drum miners which requires an EPD, the drum miners will locate the drums to be assayed, and a monthly tld badge will be worn.

Please be aware of employees working within your facility that are not typically assigned to ensure that they are utilizing the appropriate work documents, abiding by the rules and procedures of your facility, and wearing the appropriate dosimetry for the job evolution.

6) Tank 37 Lessons Learned: John Gall

A presentation of the Tank 37 Transfer Line Replacement was given by John Gall. There were multiple hazards that had to be mitigated while performing the work. High dose rates of 78.5 rem/hr extremity, 9 rem/hr skin, and 1.2 rem/hr working dose rates, high contamination levels of 1 rad/hr bg and 800 d/m alpha, heat and cold issues, and industrial safety issues, such as, excavations requiring shoring and portable ladders, grinding and welding activities, carbon monoxide from backhoe exhaust, and multiple work locations. Some of the controls put in place were design considerations, cameras, misting, Polymeric Barrier System (PBS) to stabilize contamination, containments (i.e. huts, glovebags, windbreaks), shielding, Teletrak for exposure monitoring, soil & ventilation management, and PPE. Lessons Learned was that you must consider that outdoor structures must address weather impacts and sumps/pumping systems must be robust and automatic, housekeeping must be a daily priority, impacts from high background dose, and the importance of a PIC. A total of 24.19 man-rem was received on the job. See attached for further info.

7) ALARA Center News: Ellen Parrish

The ALARA Center presented several items for viewing.

A new lead blanket cover to protect lead blankets from becoming contaminated while in use. Once the lead blanket has served its purpose it can be removed from the cover and cleared from the CA. The cover can be stored in the CA or placed in a plastic bag for RMA storage and reused as needed. Also, the lead, which is encased in a protective material, can be removed from the existing contaminated herculite cover and then placed into the new cover.

A lead pig that was specifically ordered for use at MCU Cell Covers to provide shielding at the cracks around the cell covers.

Radiation Attenuating Surgical Gloves and Sleeves: The gloves are lead-free, but the sleeves are not. The manufacturer is close to developing a lead-free sleeve. The gloves are $50.00 ea. and the sleeves are $71.43 ea. See attached info.

SITE ALARA COMMITTEE

ATTENDANCE ROSTER

Meeting Date: _____ **Quarter/Year: _____**

Initial	SAC Voting Member	Initial	Alternate
_____	Bill Poulson (Chair)	_____	_____
_____	Michael Gilles (Vice Chair)	_____	_____
_____	Ellen Parrish (Secretary)	_____	_____
_____	Robert Oliver (BSRI)	_____	_____
_____	James Harris (M&O)	_____	_____
_____	David Coleman (LWO)	_____	_____
_____	Joel Cantrell (LWO)	_____	_____
_____	Stuart MacVean (M&O)	_____	_____
_____	Bill Tadlock (SRNL)	_____	_____
_____	David Potocik (M&O RCO)	_____	_____
_____	Terry Pifer (M&O RCO)	_____	_____
_____	Scott Booth (M&O)	_____	_____
_____	Gary Chandler (M&O RCO)	_____	_____
_____	Jerry Marshall (M&O)	_____	_____

Quorum Requirements: SAC = Chair* + 7 other members* = 8 total

***Member may be represented by designated alternate. At least 2 members shall not be from the Radiological Organization.**

Quorum Met: Yes No

Other Meeting Attendees (print name)

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

Manual Number: WSRC-1-01

Manual Title: *Management Policies*

Charter: Charter 6.9, Rev. 7
Site ALARA Committee

Charter

The Site ALARA Committee (SAC) ensures that exposures to radiation and radioactive material are optimized, taking into account both the benefits arising out of the activity and the detriments arising from the resultant radiation exposures and the controls to be implemented, to levels as low as reasonably achievable (ALARA) as defined in WSRC Manual 5Q, *Radiological Control*. The committee provides a forum for reviewing the overall conduct of the radiological control program to ensure continuous improvement and makes recommendations to improve ALARA initiatives.

Scope

Within its area of cognizance, this committee:

- develops ALARA policies
- establishes annual ALARA goals and revises when justified
- reviews performance against those goals
- reviews requests to increase the Annual Control Level (ACL)
- issues the Radiological Improvement Strategic Plan (RISP) and reviews progress in achieving its objectives
- reviews ALARA plans for selected facilities from the SRS Nuclear Facility Startup Notification Report (SNR)
- monitors FRAT activities

Membership

The SAC is chaired by a member of senior WSRC management with assistance from the Vice-Chair and the Recording Secretary. The Chair appoints the Vice-Chair to preside over the committee in the absence of the Chair and a Recording Secretary to facilitate committee meetings and regularly communicate with the members on current issues, meeting schedules, and meeting minutes. The Recording Secretary is also responsible for collecting and tallying proxy votes. Membership shall consist of 14 members with a minimum of at least two operation representatives from each of the two Business Units (M&O & LWO). The Quorum is at least the Chair plus seven voting members and two of those eight should be Operation representatives.

All representatives should be individuals who have personal responsibility for managing the organization represented and have demonstrated strong ownership for radiological protection. These members are authorized to vote on issues that come before the committee.

SAC members are expected to be familiar with the guidance contained in the following documents and procedures to effectively perform their committee functions:

- WSRC 5Q, Articles 111, 117, 131, 132, 133, 138, and 313
- WSRC-SCD-6, *SRS ALARA Procedures Manual*
- WSRC 1-01, MP 4.4 and 6.9
- WSRC Manual 5Q1.1, Procedures 504, *Radiological Work Permit*, and 505, *ALARA Review Procedure*.
- DOE Guide 441.1-1B, *Radiation Protection Programs Guide for use with 10 CFR 835*, chapter 4.0, *ALARA*.

Practices

Meetings of the Site ALARA Committee (SAC) are held at the discretion of the Chair. The agenda is developed and provided to the members in advance of the meeting. New agenda items can be added during the conduct of the meeting. For those decisions to resolve policy issues that the Chair determines will require a formal vote, the SAC has the authority to vote while maintaining a quorum of members (half of appointed members plus one). The SAC does allow vote by proxy if the opinion of the appointed member is sent in writing to the Recording Secretary. The Chair has the authority to cast a tie-breaking vote. The Recording Secretary issues the draft minutes of the meeting following the conclusion of the meeting. The minutes will be reviewed and approved at the next meeting of the SAC.

The SAC provides a focus for review of the overall conduct of the site's ALARA program. The committee provides direction to the ALARA program by:

- developing/revising ALARA policies to reflect changing site missions and activities or to address deficiencies and lessons learned,
- developing the annual Radiological Improvement Strategic Plan (RISP) and reviewing progress in achieving its objectives,
- approving the annual Site ALARA Goals for collective employee dose, inadvertent reportable internal dose, personnel contamination cases, and an Annual Control Level (ACL) for individual employee exposure control. Performance measures are reviewed and action taken to address unacceptable performance. Goals may be revised to address emergent situations,
- reviewing and approving the ALARA plans for selected nuclear facility startups and restarts as identified in the Savannah River Site Nuclear Facility Startup Notification Report (per DOE Order 425.1C),
- monitoring the activities of Facility Radiological Assessment Teams (FRATs), which are responsible for selected ALARA reviews within their facilities, to assure maintenance of site expectations for these reviews, and
- reviewing requests to increase a facility's ACL prior to submittal to site management for approval.

Steering or ad hoc working groups may be established to support sitewide activities that require interdepartmental coordination, such as the Radiological Improvement Strategic Plan (RISP).

Functional Manager Sponsorship

The SAC is sponsored by the manager of Environmental, Safety, Health, and Quality Assurance.

E Area Administrative Control Level (ACL) Increase

Introduction

Waste Management Area Projects (WMAP) is receiving increased exposure from “Drum Mining” activities. Drum Mining is the process whereby drums are moved to designated locations in E Area for processing. It consists of both locating and transporting specific drums stored on pallets, located on pads inside of RUBBs (fabric weather covers). In some cases, containers must be shifted around and later replaced back in rows. This is done in order to locate a specific drum. The drum is transported to its destination with a Fork Lift equipped with a "drum gripper“, or transported on a pallet.

ALARA Initiatives

A number of ALARA initiatives have been put into effect to aid in reducing worker exposure. They are as follows:

- Revise the WMAP pre-job procedure to include ALARA provisions for drum mining. (STAR Item 2007-CTS-001686 - Complete)
- Use of rad tape to denote drums > 5 mrem/hr at 30 cm, so higher exposure drums can be seen at a distance. (Current work practice)
- Use of orange cone to identify the highest exposure drum or drum row on a Pad. (Current work practice)
- Use of status boards to communicate dose rates on pads. (Current work practice)
- “Radcon Corner” presentation given in monthly safety meetings to review ALARA topics. (Current work practice)
- Review of shielding options for exposure reduction, for drum mining activities. (STAR Item 2007-CTS-001686 - Complete)
- Review the drum scanning process to determine a quicker method for locating drums, on a drum row. (STAR Item 2007-CTS-001686 - Complete)
- Track drum miner exposure on a weekly basis through ProRad. (Current work practice)
- Rotate select Drum Miners to lower dose jobs. (Current work practice)
- Perform assessment of WMAP Pre-Job Briefings. (STAR Item 2007-CTS-002543 - Complete)

- Evaluate the use of a tool for drum row spacing, reducing the need to enter pads to re-space rows. (STAR Item 2007-CTS-001686 - Complete)

- Evaluate current JCO to determine if drum inspection requirements can be relaxed. (STAR Item 2007-CTS-001686 - Complete)

SRS ALARA Center Assessment

At the request of WMAP, the staff of the SRS ALARA Center performed an independent assessment of ALARA controls in E Area. Recommendations from the SRS ALARA Center are currently being implemented and/or being reviewed for implementation. Recommendations were as follows:

- Use a standard location to affix drum labels. In some cases banding may cover rad label information. (STAR Item 2007-CTS-006195 – Under review)

- Obtain binoculars to read label information from a distance on higher dose rate drums. (STAR Item 2007-CTS-006195 - Complete)

- Procure and/or evaluate lightweight front and back protection non-lead aprons for use when working in between rows of drums in storage. (STAR Item 2007-CTS-006195- Complete)

- Place a stop on the back side of the Head Space Gas Chamber that will make it faster to position a drum in the chamber. (STAR Item 2007-CTS-006195 - Under review)

- Re-emphasize to workers to stay at arms length when handling drums. (STAR Item 2007-CTS-006195 - Complete)

- Determine if the number of fork lifts and grippers available is sufficient to avoid the use of hand carts for drum movement. (STAR Item 2007-CTS-006195 - In progress)

Drum Miner Exposure Summary (Thru 6/19/07)

- Highest Individual Exposure 355 mrem

- Average Exposure 242 mrem

- Average Monthly Exposure 40 mrem

Name	Cumulative Year-to –date (Thru 6-19-07, taken from PRORAD)
Drum Miner # 1	355
Drum Miner # 2	336
Drum Miner # 3	158
Drum Miner # 4	311
Drum Miner # 5	251
Drum Miner # 6	118
Drum Miner # 7	232
Drum Miner # 8	248
Drum Miner # 9	260
Drum Miner # 10	311
Drum Miner # 11	240
Drum Miner # 12	209
Drum Miner # 13	188
Drum Miner # 14	152
Drum Miner # 15	222
Drum Miner # 16	166
Drum Miner # 17	126

Request For ACL Increase

With ALARA controls, WMAP has seen a steady decline in overall exposure. However, even with these controls in place it is projected that WMAP drum miners will exceed the site ACL of 500 mrem.

At the WMAP Facility Radiological Assessment Team (FRAT) meeting held in May, it was determined that a new ACL of 1000 mrem would be requested. However, WMAP established a management challenge and determined that an increase to 700 mrem would be requested.

- Request for increase to 700 mrem for WMAP Drum Miners
- 17 workers impacted

November 28, 2006

To: **John D. Gall, 704-56H**
RCO Facility Manager
H-Tank/299H

From: **Sean A. Barr, 241-153H**
RCO Project Liaison

TUNGSTEN GLOVE USE FOR REDUCTION OF HAND EXPOSURES

Introduction

For jobs that have the potential to expose workers to elevated extremity exposure, the use of tungsten gloves can help reduce the dose to the hands. Rubber gloves containing tungsten were recently tested by Health Physics Services (735-2B) and were shown to reduce beta radiation by almost 40% [1]. The gloves were designed for use in the Medical Radiology field to reduce the hand exposure to Doctors/Technicians from scattered radiation during examinations/procedures involving patients who have undergone radioisotope treatment [2].

Summary

The test results are very encouraging, and as a result, I recommend their use in situations where extremity exposures from beta and low-energy gamma fields are encountered. At a reduction of up to 40% for 0.546 MeV (Sr90) and 2.2 MeV betas from Y-90, the use of these gloves along with extended tools and good work practices represent an opportunity to further reduce the amount of extremity exposure to the workers hands during jobs that require close contact with low-energy radioactive materials. Whenever possible, the gloves should be reused due to the cost, about $45 per pair.

Discussion

Tungsten gloves manufactured by International Biomedical, Inc. were tested by Health Physics Services in 735-2B using a Sr/Y-90 beta source and resulted in an almost 40% reduction [1]. The tungsten adheres to the neoprene by dipping the gloves into a dip tank that contains the material. The tungsten is dispersed and held in a suspension during the dipping evolution in the mold. The dip tank was designed to ensure the tungsten does not "fall out" after mixing and is continuously being stirred to prevent fall out. The tungsten is encapsulated by the neoprene in the mix [4].

Use of the gloves will require approval from the Facility RCO Manager and will be documented on the RWP along with associated work documentation. Concern associated with exposure to the forearm region was raised by the External Dosimetrist and as a result we are in the process of testing shielded sleeve material to be worn in conjunction with the gloves if the field evaluations described below substantiates the concern [3].

Until further notice, in addition to finger rings worn underneath the tungsten gloves an additional pair of finger rings controlled as "test dosimetry" will be worn over the gloves along with forearm dosimeters to evaluate/measure exposure to the hands and forearms respectively. The inner pair of finger rings will be used to measure the actual exposure to the hands, while the test dosimetry will validate the reduction in exposure.

The use of the tungsten gloves shall be annotated on OSR 4-631, Special Dosimetry Request. Document under the comment section that tungsten gloves were worn during the work evolution and the arrangement of the supplemental and test badge dosimeters.

Conclusion

The gloves shall be worn as the inner pair, not taped, with another pair of anti-contamination gloves taped over the inner pair of coveralls. Upon completion of the work evolution, the gloves will be disc-smeared to less than 20 dpm-alpha and less than 200 dpm-beta-gamma, and have no detectable fixed contamination. Due to hygienic concerns, the gloves will be issued to individuals primarily responsible for dip sampling, gasket replacement and other identified activities that warrant extremity exposure controls. Upon completion of the assigned activity, the gloves will be cleaned by the user with a sanitary wipe and/or mild soapy water and air dried. The gloves will be stored in a plastic bag labeled with the users name in the RCO office. Along with RCO FLM, the user shall inspect the glove prior to each use to ensure there is no degradation that may compromise the effectiveness. If degradation is suspected, cracks, holes or signs of stress related fatigue, contact the H-Tank Farm GCO for disposal instructions. The tungsten gloves are not to be credited for anything other than exposure reduction, and as such the selection of PPE will be through the Assisted Hazard Analysis process.

References

1. Email, "Finger Ring Test Results for Tungsten Lined Glove", Fred Ogden to Mike Matheny, Health Physics Services, 10/12/06.

2. "Radiation-attenuating Surgical Gloves: Effects of Scatter and Secondary Electron Production", Louis K. Wagner, PhD, Oscar R. Mulhern, BS, University of Texas Houston Medical School, 2/27/96.

3. Email, "Finger Ring Test Results for Tungsten Lined Glove", Dante Wells to Fred Ogden, External Dosimetrist, 10/12/06.

4. Email, Tungsten Gloves, Alan Segars, International Biomedical Inc., 12/5/06