

**EFCOG
Radiation Protection Subgroup
DOE Radiological Protection Workshop
December 2007 Meeting Minutes**

A DOE Radiological Protection Workshop was conducted in Washington, DC during the period of November 27 to 29, 2007. The workshop combined a topical meeting for June 8, 2007 amendment to Title 10, Code of Federal Regulations, Part 835, *Occupational Radiation Protection* with the Energy Facilities Contractors Operating Group (EFCOG) Radiation Protection working group semi-annual meeting. The meetings were conducted in the DOE Forrestal Auditorium and supported by audio and video conference capability with various locations throughout the DOE complex. Approximately 100 individuals attended throughout the 3 day workshop.

Copies of the presentations are available on the [HSS Radiation Protection Workshop WEB Site](http://www.hss.energy.gov/HealthSafety/WSHP/radiation/workshop2007/presentations.htm) at the following URL:

<http://www.hss.energy.gov/HealthSafety/WSHP/radiation/workshop2007/presentations.htm>

Tuesday, November 27, 2007 Notes:

- Dr. Bill McArthur, Director of the Office of Worker Protection Policy & Programs (HS-11) provided opening remarks and introduced Glenn Podonsky, Chief, Health, Safety and Security Officer (HS-1). Mr. Podonsky spoke on the recent reorganization of SO and EH to form an integrated Health Safety and Security (HSS) organization. His presentation reviewed the successes achieved by both the old and new DOE organizations with a focus on the need to communicate and celebrate the success of the DOE complex rather than focusing on the survival of DOE.
- Peter O'Connell (HS-11) presented a [summary of the 10 CFR 835 amendment](#). After the presentation a question was asked regarding the change made that would exempt radioactivity approved for release in accordance with the requirements for an authorized limit and approved by a Secretarial Officer [§835.(1)(b)(6)]. The question was, "could the authorized limit provision be used to obtain relief from other provisions of the rule such as posting and labeling?" Joel Rabovsky responded that the DOE 5400.5 process applied to only release and not to other worker health and safety requirements. If other relief was desired then the exemption process should be followed.
- Dr. Judith Faulke presented a [status of occupational radiation standard and guide revisions](#). The DOE process for review and revision of technical documents was reviewed. The DOE Standard 1098-99 and DOE G 441.1-1 are completing review through the REVCOM process and should be complete in 1st quarter CY2008. Other radiation protection guides have been reviewed and will be processed through the revision process during 2008. In addition, her organization (HS-11) will be reviewing technical position papers and exemption requests and cancelling those incorporated by the rule amendment or that are no longer valid.

A question was asked regarding the content of the revised documents. The questioner wanted to know if the revision would establish a consistent approach for implementation of neutron radiation weighting factors for instrumentation and dosimetry. Uncoordinated implementation of the technical approach may result in implementation issues with NRC and DOT.

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No immediate response was available (NOTE: radiation weighting factors were discussed in additional presentations and a specific action was later established during the 11/29 EFCOG meeting.)

A second question was asked regarding incorporation of technical position papers into revised DOE documents. DOE responded that technical position papers were being evaluated and where appropriate, incorporated into the revised documents.

A 3rd question was asked wanting to know if DOE had considered implementing preemptive discussions with DOT and NRC to coordinate the implementation of neutron and dosimetry changes caused by amendment to the rule. DOE responded that nothing is preventing such an action but there had been no substantive discussions to date. As neutrons are not a big impact for the NRC, the NRC does not see a cost benefit in initiating any immediate action.

- Robert Loesch (HS-82) presented an update to DOELAP. Mr. Loesch provided a review of DOELAP key documents and planned revision schedules. Key to DOELAP efforts is coordination of dosimetry efforts with NRC to maintain alignment with NAVLAP where possible. Both NRC and DOE are working with PNNL to setup and recalibrate the Californium source to support dosimetry needs. Implementation plans to support the amended rule will probably continue to use existing DOELAP inspection cycles. There will be a transition period where the contractor and DOELAP will have to communicate which calibration factors are being used in the dosimetry program. The most likely path forward to address difference between neutron instrumentation and dosimetry will be through development or revision to a technical position paper. [NOTE: A task group was formed by EFCOG to assist in development of a technical position paper at the 11/29/07 EFCOG meeting.]
- Andy Wallo (HS-20) provided a status of release of materials and the status of the metals moratorium. The presentation reviewed DOE's objectives and requirements for clearing property including available guidance documents. The metals moratorium remains in effect with a reminder that the moratorium is not based on safety and health but rather as a public policy and any change would probably be driven by the public and stakeholders.

Mr. Wallo reviewed the basic approach for development of an authorized limit and reminded attendees that any proposed value must be concentration based and not dose based as well as supported by an ALARA discussion. Mr. Wallo shared some lessons learned from development and review of submitted authorized limit packages. Additional improvement in the authorized limit process is being pursued through improved awareness of process knowledge, improved documentation of authorized limits, and improved independent verification of release protocols and processes.

The revision process has been initiated to update DOE O 5400.5 and a revision working group has been formed. If necessary a technical position paper may be developed to describe the alignment between the amended rule and the authorized limit process.

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- Melanie May (HS-81) provided an update to the Sealed Radioactive Source Transaction Reporting Notice. DOE N 234.x is in final development and is intended to support implementation of the US commitment to the IAEA for implementation of a National Source Tracking System (NSTS). Congress has assigned primary responsibility to the NRC and DOE will provide information to the NRC through Sandia and the NSTS database. Implementation is expected to occur in late 2008. A final implementation data-call will probably occur in 2008. The scope of NSTS management is for only those sources that meet established dangerous source values or other established criteria provided in the notice. DOE will update NRC annually or when a source transaction occurs (leaves DOE site or is shipped to another organization/overseas.)
- Joel Rabovsky (HS-11) provided an overview of Radiological Protection in the DOE. Joel provided information regarding key programmatic events and radiation dose trends since 1990. Total dose for the complex has been reduced and appears to be either stable or decreasing at a slow rate.
- Don Cossart (FERMI Labs) provided a report on anticipated impacts of the amended rule to FERMI through a video link to the conference. Terminology changes will be a continuing challenge; perception of no difference. The largest potential impact will be the impact of radiation weighting factors for neutrons. Impacts from the neutron radiation weighting factor changes are anticipated in dosimetry, instrumentation, shielding and personnel occupancy considerations. FERMI is still evaluating potential impacts to software used for Monte Carlo shielding calculations and occupancy factors for area dosimetry.

Two questions were asked on why 10 CFR 835 had not addressed the desired fluence to neutron dose conversion factors and the desired ICRP guidance in the rule. Joel Rabovsky (HS-11) responded that HSS would prefer to put such information in publications other than the rule to permit selection of the optimum set of dose conversion factors on the impact of the change in neutron weighting factors had been determined.

- Robert Loesch (HS-82) presented a follow-up presentation on implementation issues associated with neutron radiation weighting factors. Mr. Loesch reminded the participants that Quality Factors are based on deposition of energy while the radiation weighting factors are based on incident neutron energy (the related presentation slide is incorrect). The presentation reviewed the key factors affecting dosimeter calibrations and discussed the differences and potential impacts between ICRP 26, ICRP 60, ICRP 74, ISO-8529-3 and the draft N 13.11. It is anticipated that DOELAP will implement the revised N 13.11 when complete.
- As a part of the EFCOG sharing of information Marcia Maria Campos Torres (ANL) provided a presentation on the Dose Rate Characterization In Cladding, How to Minimize Extremity Exposures – An ALARA Challenge. The presentation reviewed the challenges in supporting destructive testing of fuel pellets that have had limited decay time after exposure while maintaining extremity dose ALARA. Ms. Torres shared the importance of accurate characterization, time-motion evaluation of the desired work, real-time

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evaluation of dosimetry information resulting from work, and selection of the most effective shielded glove to support the work.

- Sandra Hyman (INEEL) provided a report on Confirmatory Bioassay Program – A Discussion of the August 2007 IG Report. Sandra provided an overview of the IG Report, IG-0773. The focus of the report was administration of contractor bioassay programs at selected sites. The IG report acknowledged that the components of a confirmatory bioassay were discretionary (not required by 10 CRG 835) and determined by the contractor. Issues with implementation of individual approved contractor bioassay procedures and policies were identified by the report. The IG concluded that the review represented ineffective implementation of contractor worker safety programs. In general EM disagreed that mandatory Federal requirements were not being implemented and did not concur with the IG recommendations. DOE did agree that the contractor was responsible to implement their approved contractor procedures and that additional Federal emphasis on implementation of bioassay program requirements would be forthcoming.
- Mark Ledoux (Energy Solutions) provided an update to the EFCOG membership on Radiation Protection Safety Metrics. Mark shared Energy Solution's approach to establishing metrics for activities that encompass both NRC and DOE activities. The focus of the program is to proactively identify potential issues and monitor the effectiveness of each organization radiological activities. Energy Solution has established four corporate level metrics and allowed individual organizations to establish more restrictive and additional metrics based on their needs. The four corporate level metrics are total TEDE, individual TEDE, average TEDE and personnel contaminations. Statistical process controls and dashboard approach are used to evaluate data and report data to management.

Notes from Wednesday, November 28, 2007 continuing meeting:

- Nimi Rao provided a presentation on the Radiation Exposure Reporting System (REMS). The REMS shares data with the equivalent NRC database and contains over 3.5 million records. The system provides a central repository for all DOE and DOE contractor radiation exposure records.
- Derek Hagemeyer (ORAU) provided a follow-on presentation to the Nimi Rao presentation that discussed the impacts of the amended 10 CFR 835 on REMS and demonstrated the REMS analysis tool. In general the largest impact will occur with the implementation of revised dosimetry terms and values. Derek discussed the ability of the tool to provide exposure information in general categories and by locations. Derek demonstrated several sample queries using the report tool through the internet. The tool does not provide access to personal information or individual data that is provided as input to the database. A recent addition to the database is a site roll-up of performed bioassay data.
- Chuck Schaefer (BNL) presented the topic Radiation Protection Associated with Implementing ICRP-60. Chuck communicated the observation that the lack of clear

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DOE direction would result in ICRP-60 implementation issues for the revised neutron radiation weighting factors. It was his opinion that there should be one set of fluence to dose conversion factors to prevent issues associated with neutron measurement instruments. Initial BNL review indicates a 14-17% difference between ICRP-38 and the ICRP 60 H*(10) factor. Each contractor is currently expected to reach their own conclusion and the review is impacted by the long delivery and cost impacts of obtaining copies of ICRP-60.

- Gary Zeman (ANL) provided a discussion on the Need for Unique Identifiers Other than Social Security Numbers. Gary reviewed the challenges associated with use of social security numbers for the identification of individual dosimetry records. The changes associated with personal identification information and theft/loss of personal identity information is impacting issuance of visitor dosimetry. The problem is generally not a problem for employees but more of one with members of the public, who are visitors or sub-contractors and are reluctant to provide social security number information for the sole purpose of obtaining a dosimeter. Gary provided examples of conflicting Federal guidance on the appropriate uses of social security number information. Gary recommended that improved guidance be considered. [See Thursday, November 29, 2007 meeting notes for follow-up actions.]
- As a continuing EFCOG action Greg Perkins (FH) provided an update on Radiation Protection Staffing – Are We Ready for ‘Boomer’ Retirements? Greg reviewed information regarding man-power challenges facing the nuclear industry. Greg had the opportunity to attend the Nuclear Energy Institute (NEI) Radiation Protection group meeting in July 2007 and obtain information on specific commercial nuclear and NRC actions occurring to maintain or attract new individuals. Several community colleges are working with local NEI member companies to establish technician 2 year programs. Some DOE contractors have also initiated programs with local colleges for 2 year technician programs. DOE efforts are not coordinated and little is being done to improve the pipeline for DOE professional development. This issue will remain a continuing topic for EFCOG.
- A short discussion of Occurrence Reporting System (ORPS) was conducted with attendees. The needs and potential improvement areas were discussed by both DOE and contractor representatives. Recent changes to increase reporting thresholds and the reduced Category 4 reporting requirements have been successful. Additionally the use of legacy contamination roll-up reports has reduced unnecessary administrative efforts. As a future improvement EFCOG attendees recommended that the value of performing roll-up reports for contamination events in areas where contamination is being managed be considered. The general suggestion is that reporting not be required or be reduced in situations such as the identification of contamination inside a controlled area but outside a glovebox when identified during work coverage and that is properly controlled upon discovery.
- Hitesh Nigam (NA-26) provided information regarding DOE administrative controls and experiences in management of personnel visiting nuclear facilities outside the US.

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Hitesh reviewed the planning, dosimetry, bioassay, training and follow-up process used for DOE individuals who visit nuclear facilities outside the US.

- Hung-Cheng Chiou (WIPP) provided a presentation titled Challenges and Viable Options in Addressing Pu-241 Issues Associated with 10 CFR 835 Appendix D Values. Dr. Chiou introduced the issue that Appendix D states that transuranics belong in Group II or Row 2 of Appendix D and does not recognize that Pu-241 while having an atomic number above 92 does not decay by alpha emission. He further pointed out that the in-growth of Am-241 activity (having alpha emission) from Pu-241 is minimal which only accounts for up to 3 % of original parent Pu-241 activity. Field measurement ability to monitor Pu-241 to a level of 20 DPM/100 cm² does not currently exist. Two proposed methods were introduced for calculating the activity of Pu-241 on smears for assessing the removable activity without the need of costly instrument and operational delay. The presentation went on to demonstrate that management of Pu-241 as a Beta emitter is protective of worker health and safety and is consistent with new 10 CFR 835 approach and ANSI N13.12. The recent amendment to the rule preamble acknowledges that DOE needs to move Appendix D values towards a risk based – consensus based approach. Dr. Chiou provided 3 recommendations for resolution of the issue. [Note: See EFCOG follow-up from November 29, 2007 meeting.]
- Dan Strom (PNNL) reviewed the operational versus protection differences between ICRU and ICRP. Dan updated attendees on current efforts to align the two organizations and reviewed the key differences between the use of absorbed dose and equivalent dose as used by the two organizations.

Radiation Protection EFCOG Meeting conducted November 29, 2007

Greg Perkins (Chair) brought the meeting to order approximately 9:00 AM and reviewed the last two days of meetings. Greg also provided feedback from the October 2007 EFCOG ESH Working Group meeting conducted in Las Vegas. EFCOG leadership is reviewing location selection and policy for future meetings. The most likely path forward is conduct of an annual meeting in the vicinity of the respective DOE EFCOG sponsor and a mid-year meeting conducted at a sponsoring contractor site. More information will be provided as decisions are made.

Greg briefed the attendees on the planned transition of Radiation Protection Subgroup Leadership. Greg anticipates his retirement in the summer of 2008. Jim Stafford (SRS) will assume the chair position for the next meeting and Greg will support him as the vice-chair. EFCOG Membership discussion during round table:

- After additional discussion it was agreed that the EFCOG would establish a task group to assist HQ with resolution of the Pu-241 topic. The general approach is to try and align with N13.12 and the currently approved SRA exemption request up to and including either a clarification of the definition of Transuranic or development of exemption and authorized limit requests. A scope statement will be prepared for approval and move towards development of a solution with HSS. Ted Giltz (FH) will chair the task group and initial membership was identified as Kathy Shingleton (LLNL), Ken Crase (SRS),

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Ken McLain (CH2MHill) and Robert Ford (PNNL). It was recommended that Dr. Chiou be contacted to determine if he was available to support the task group.

- A 2nd task group was formed to assist HQ in development of a technical position paper on neutron radiation weighting factors. A scope statement will be prepared for approval by the Chair. Ken Crase will chair the task group and initial membership is Dan Strom (PNNL), Henry Kahnhauser (BNL) and Jim Rolph (CH2MHill).
- A discussion was conducted regarding implementation of portions of the amended rule and what contractors were doing. Some contractors are implementing the amended DAC values and transportation changes in 2008. Implementation is being described in the respective RPP. Most contractors are taking advantage of the discussion provided in the preamble of the rule for equivalent terms and not making commitments to implement prior to July 2010.
- A follow-on discussion for the new NSTS reporting system was conducted. Reporting criteria differences will continue to exist between SNM and NSTS and it was recommended that contractors not try and combine the two reporting processes.
- An update to last meeting's discussion regarding Thorium welding rods was provided by LLNL. As a result of similar findings from a recent HS-60 review, LLNL has prepared hazard analysis information that they are willing to share. Kathy Shingleton will provide the information to Greg Perkins for distribution.
- Use of social security numbers and the DOE policy was discussed in more detail. The topic has a broader impact and involves groups outside radiation protection. A suggestion was made to elevate the topic. Greg Perkins agreed that the issues appear to be cross-cutting and took the action to discuss it during a future EFCOG ESH Working Group conference call.
- SRS shared lessons learned regarding a recent local RAP deployment following the identification of 15,000 DPM/100 cm² fixed contamination on a shoe and resultant management response. RAP deployments automatically escalate to HQ, congressional interest, senior management and DNFSB notifications. A minor issue consumed a significant amount of time responding to follow-up requests and inquiries and reinforced the high level of concern placed on contamination events.
- Status of pilot project at PANTEX – The pilot at PANTEX regarding release of metals covered by the metals moratorium has been stopped. No information was available but Y12 has expressed interest in reinitiating the pilot.
- WCH shared a recent situation where 4 instruments used for training had been stolen and later found for sale on EBay[®]. DOE and law enforcement are following up but the lesson learned is that the reduced controls for training materials might offer increased risk to theft.
- LANL is involved in a work control issue that was identified through processing of extremity dosimetry. The sponsoring organization had changed work scope from primarily working with Pu to Am without involving the Rad Con organization.
- NTS shared a problem with MSA - PAPRs and was interested in how each contractor managed respiratory equipment issues. Members provided a general discussion of how their organizations handled similar situations.

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Greg reviewed current activity sheets sponsored by the Rad Protection EFCOG.

Description	Status
Assist DOE-HQ to planning and execution of the December 2007 workshop	Complete
Coordinate with NEI and obtain current status of commercial industry efforts to improve staffing	Complete
Complete transition of RPSG Chair to Jim Stafford	Complete
Assist DOE w/ development of path forward for management of Pu241.	New in December 2007 – Lead Ted Giltz (FH)
Assist DOE with development of a technical position paper on neutron fluence and conversion factors.	New in December 2007 – Lead Ken Crase (SRS)