

National Institute for Occupational Safety and Health (NIOSH)
SEC Worker Outreach Meeting for the Los Alamos National Laboratory
(LANL)

Meeting Date: September 17, 2008, 9:00 a.m.

Meeting with: International Association of Firefighters (IAFF) Local 3279, White Rock, New Mexico

NIOSH Worker Outreach Team

Greg Macievic, PhD, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Health Physicist

Mark Lewis, Advanced Technologies and Laboratories International, Inc. (ATL), Senior Outreach Specialist

Wilfrid "Buck" Cameron, ATL, Senior Outreach Specialist

Mary Elliott, ATL, Technical Writer/Editor

Also present:

Loretta Valerio, New Mexico Office of Nuclear Workers' Advocacy, Director

Sylvia Rodriguez, New Mexico Office of Nuclear Workers' Advocacy, Assistant Director

Proceedings:

Mark Lewis welcomed the attendees and opened the meeting at 9:00 a.m. He stated that the National Institute for Occupational Safety and Health (NIOSH) Worker Outreach Team had met with the International Association of Firefighters (IAFF) Local 3279 in May 2007 to discuss the Special Exposure Cohort (SEC) petition for a class of workers at Los Alamos National Laboratory (LANL or the Lab) for the years 1943 to 1975. Mr. Lewis recalled that the Cerro Grande fire that destroyed part of the Lab in 2000 had been a recurrent topic of discussion during that meeting, but did not fall within the time period for that petition. He stated that the date of the fire falls within the time period from 1976 through 2005 in the current SEC petition for a class of LANL workers that includes firefighters, security officers, and other workers in the support services. He encouraged the attendees to discuss the working conditions and the monitoring practices during that event as well as others that they may have encountered during the time period covered by the petition. He introduced Greg Macievic, the NIOSH Health Physicist who is the lead for the LANL SEC petition evaluation. *(A handout entitled Work History Information was passed out to the attendees at this time. This handout was developed by the petitioner. Please see Attachment A.)*

Dr. Macievic recalled that the May 2007 meeting included a discussion on keeping track of the events that the Los Alamos Fire Department (LAFD) responds to at LANL, particularly those events in which they are not informed of potential radiological contamination until after the fact. He stated that NIOSH needs key information about those events to locate survey data in the LANL records that will be helpful in evaluating the feasibility of dose reconstructions for the firefighters and other service workers who may not have been properly monitored for radiological contamination. Information about the firefighters' routine activities in the radiation

areas to which they responded without adequate personal protective equipment (PPE) may also be useful, as well as contamination events in which their equipment may have become contaminated and set off alarms. He added that dates and other specific information may help NIOSH find the survey data that can be used to estimate radiation doses for unmonitored workers based on the doses for workers who were monitored. He asked the firefighters to share information that may help NIOSH locate the survey data.

An unidentified attendee asked if the evaluation is specific to radiation only. Dr. Macievic replied that NIOSH's role in Part B of the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) deals only with claims for cancers caused by radiation. NIOSH does dose reconstructions for these claims as well as evaluating SEC petitions for classes of workers for which dose reconstructions are not feasible. The Department of Labor (DOL) is solely responsible for evaluating Part E claims for illnesses caused by chemical exposures.

Dr. Macievic acknowledged that in any given event, firefighters at LANL may have been exposed to radiological or chemical contamination, or both. It is important for NIOSH to understand that there were events in which the firefighters were treated differently than the other workers. For example, the production workers wore PPE and the firefighters did not because they were not aware until after they arrived at the scene that there was a potential for radiological exposure. He cited a LANL quarterly report from the 1980s that described an event in which the firefighters responded unknowingly to a heavily contaminated area and were monitored after the fact to assess their radiation doses. Dr. Macievic asked the attendees to provide information on these activities, including whether or not they may have given bioassay samples.

[Name redacted] asked Dr. Macievic if he is familiar with the experiments at PHERMEX (Pulsed High Energy Radiation Machine Emitting X-rays). Dr. Macievic responded that he is not, but he could search the database for information if he has the name of the facility and the dates in question. [Name redacted] stated that he had been a battalion chief in 1995 when 10 firefighters had been sent to the Los Alamos Medical Center after reporting to PHERMEX to put out the small fires that routinely occur after the bursts. The firefighters were told after the fact that they should have been wearing a different type of equipment. Dr. Macievic stated that he has seen quarterly reports that indicate that such events were common and occurred over a period of time. He asked [Name redacted] if the radiological control technicians (RCTs or rad techs) are always present during the shots at PHERMEX. [Name redacted] responded that RCTs were not present during the early morning hours of the late shift.

[Name redacted] recalled a similar event at PHERMEX 12 years later. A rad tech came to the facility after the testing had started and told the firefighters that they should not be in the area. Another RCT told them that they could go back into the facility, only to be directed again by another RCT to get out of the area. The firefighters ended up donning respirators and other PPE midway through the shift.

[Name redacted] stated that the firefighters relied on the RCTs to keep them safe, but had no assurance that the RCTs are always right. Dr. Macievic asked if the firefighters were required to wear PPE when they responded to the calls at PHERMEX. [Name redacted] stated that the RCTs were supposed to tell them whether or not they needed respiratory equipment. He recalled that the firefighters were called to put out fires outside the facility fence after the shots were fired. They had been digging firebreaks for two or three hours when the RCT stopped to tell them that they should not even be standing in the area. After that incident, they were required to wear SCBAs (self-contained breathing apparatus) when they were dispatched to PHERMEX for shot activities.

[Name redacted] stated that he had asked a couple of years ago why there was a fence and was told that it was there to keep the elk out. He stated that the firefighters cannot wear SCBAs when responding to wildland fires such as the Cerro Grand fire because the equipment is too restrictive for the intense working conditions.

Mr. Lewis asked for a brief pause in the proceedings to have Mary Elliott explain that the meeting was being recorded to capture the attendees' comments and concerns. The final minutes will be redacted in accordance with the Privacy Act to protect the attendees' identities and other sensitive information. Ms. Elliott also stated that the sign-in sheet will not be published. It will only be used if Dr. Macievic needs to contact an attendee for additional information.

Dr. Macievic stated that the LANL records are inconsistent. The quarterly reports he has seen indicate that there was a chronic problem occurring over time. The purpose of the meeting is to speak with the firefighters so NIOSH can validate whether flaws in the safety practices were limited to specific incidents or if the problems were a result of the standard safety practices.

[Name redacted] stated that some of the attendees had careers spanning more than 20 years. He stated that the safety issues from the past are ongoing because the Lab has not made corrections to the processes. The Lab calls on the Fire Department and they respond to the incidents, often without an RCT present.

[Name redacted] described an incident that happened in approximately 1990, shortly after he was promoted to captain at Station 2. An unidentified attendee commented that Station 2 opened on September 23, 1989. The firefighters were "going through evolutions" on the roof and around the building perimeter at DP Site in TA-21, practicing response procedures. Station 2 was not notified prior to the exercise that there had been a tritium release at the facility. Dr. Macievic responded that specific information can help NIOSH link the activities to contamination survey reports by the health physics groups. NIOSH will use the airborne contamination data in the survey reports to model the "missed dose" for dose reconstructions of unmonitored workers in those particular areas instead of using generic information. [Name redacted] added that the incident happened during an academy class in July or August of 1990.

Dr. Macievic stated that the SEC petition was filed for a class of support services workers at LANL from 1976 through 2005. NIOSH has some information for the later years, but still needs information from 1976 through 1986 that may help to fill in the gaps in the LANL records for that period.

A brief discussion ensued regarding the review of the minutes. Ms. Elliott stated that the draft minutes will be sent to the union for review after they are edited by the team.

[Name redacted] stated that the fire department keeps "run reports" that describe their responses to events in the LANL areas. The fire department often responds to wildland fires in the canyon areas that are littered with things from LANL's past. Firefighters often use "destructive force" to disturb the soil and overturn rocks to contain fires. Since most of those areas have been remediated, LANL may not send out RCTs for surveys during wildlands fires. He asked Dr. Macievic if NIOSH takes into account the contamination in the soil that may become airborne during their activities. Dr. Macievic responded that NIOSH can use the data in environmental reports to develop a model that accounts for the resuspension of the residual material in the soil. Survey reports of the area during the operational period may also contain actual data taken by a technician that can be used to develop a usable model for the resuspension of contaminated residue. The models are necessary to help dose reconstructors come up with accurate radiation

doses for firefighters and other workers who are not normally considered radiological workers but who come into contact with contaminated materials while carrying out their job duties.

[Name redacted] asked why the SEC is only about radiation and not chemicals. Buck Cameron responded that the SEC is under EEOICPA Part B, while the chemical exposures are under Part E.

Mr. Lewis asked [Name redacted] to explain why he filed the SEC petition on behalf of the firefighters, security guards, and other service workers at LANL. [Name redacted] described the claims process and the dose reconstruction process that NIOSH is required to perform for cancer claims under Part B of EEOICPA. He explained that the purpose of the SEC is to eliminate the need for dose reconstruction for a specific group of workers. The basis of the SEC is the lack of records or monitoring for radiological contamination or exposure. The Act named workers from four facilities to the SEC based on the lack of records and included a process for other groups to be added. [Name redacted] stated that he had originally intended to name only the security guards in the petition but had discovered that the air monitoring at LANL was inadequate. Since the air quality affects many workers at LANL, he included other support services workers who are not included in the bioassay program. [Name redacted] explained that lack of bioassay and air monitoring data takes away the internal dose component from the dose reconstructions for these workers.

([Name redacted] also noted that DOL is looking for more information for the Site Exposure Matrix, which lists the chemicals that were used at the Department of Energy (DOE) sites covered by Part E of EEOICPA. He explained that a Part E claim includes a list of the chemicals that the energy worker was exposed to during employment. The DOL uses the information to determine if the illness could have been caused by the exposure to the chemicals. [Name redacted] urged the attendees to look at the matrix and contact DOE if they know of other chemicals that were present at LANL.)

Dr. Macievic explained that the Petition Evaluation Report is due at the end of October, but the LANL records search efforts will likely continue through the end of 2008. NIOSH will continue to sample LANL records to determine if there are survey data for the petition time period. If there is a sufficient amount of data, then NIOSH will code it, analyze it by job category and building so co-worker models can be developed for the upper bound of the “missed” dose, and figure how to apply that dose to the unmonitored employees for the amount of time they spent doing their jobs in contamination areas. If there is not sufficient data to develop the co-worker models, then the question NIOSH must answer is, “Can dose reconstructions be done at all?”

Dr. Macievic asked the attendees if they had given a bioassay sample or had a lung count at the beginning of their employment at LANL, or if they did so after a particular event. [Name redacted] stated that the firefighters had given a yearly bioassay sample, but the Lab stopped that when Los Alamos County took over the fire department in the early 1990s. Dr. Macievic asked if the samples were required as part of the annual physicals or as part of the dosimetry program. [Name redacted] replied that they were given the whole kit. He added that some of the firefighters had transferred to LAFD from Pro Force when the county took over the operations of the fire department; he had worked as a security guard at LANL for three years before transferring to LAFD. Dr. Macievic explained that NIOSH has to rely on other means to calculate the internal dose when bioassay data is not available.

[Name redacted] stated that the Cerro Grande fire consumed parts of TA-8, TA-9, TA-11, TA-16, and TA-22. Firefighters were not monitored during the fire, even though those areas

contained legacy waste from nearly 60 years of operations at LANL. He said that the flames turned colors as the different materials burned.

[Name redacted] recalled that the 1977 La Mesa fire destroyed parts of K Site and S Site, the facilities where chemical explosives were developed and tested. More than 800 firefighters came from surrounding states to fight the fire. [Name redacted] added that the signs that read "Stay on Paved Roads" don't apply to the firefighters, who must leave the road to contain fires in many of the "hot" areas. Dr. Macievic responded that NIOSH looks at the environmental data to model the doses to firefighters and other response personnel from the resuspension of the legacy waste.

[Name redacted] recalled that during the Cerro Grande fire, firefighters were given a list of 10 buildings that they were to protect at all cost. Historic buildings in S Site (TA-16) burned during the fire, including Building 1. He added that all of S Site is contaminated. Mr. Lewis remarked that the topic also had been discussed in the Guards meetings the previous day. [Name redacted] added that security guards were required to go into and around the buildings. Dr. Macievic commented that NIOSH had looked at the values of the airborne contamination during the fire, but he could not recall specific numbers pertaining to the firefighters and guards during the incident. [Name redacted] commented that a report on the fire stated that the contamination levels were within acceptable levels, but he questioned the location of the air samplers. He stated that he was aware of the air samplers at Station 4 to the west of the fire, but recalled that the wind was blowing toward the east. Dr. Macievic asked if the firefighters had given bioassay samples after the fire. Several of the attendees responded that they had not. [Name redacted] commented that he had started working for LAFD in 1997 and had never had bioassay. [Name redacted] recalled that he had seen the bioassay kits when he was hired in 1991, but the program ended soon after that. [Name redacted] recalled that he had given urine samples in 1992, but the program ended about that time.

Several attendees discussed the medical problems that their co-workers have developed since the Cerro Grande fire. One co-worker is undergoing treatment for stomach cancer. At least one co-worker has received a medical card since he filed an EEOICPA claim. An attendee stated that both of his claims have been denied. [Name redacted] related that one of his co-workers recently received a Part E medical card for an illness that he felt was related to the fire. He asked if the firefighters who file Part E claims are asked to provide a list of chemicals. [Name redacted] responded that when the subject of legacy waste is brought up in the claims process, they are asked to list the areas where they have worked at LANL. Due to the nature of their work, the list is all inclusive. [Name redacted] stated that he has a report that was prepared after the fire that includes a three-page list of chemicals. He offered to send copies to an IAFF union officer to assist the members in the Part E claims process.

[Name redacted] recalled that firefighters burned 55-gallon drums of chemicals at TA-16 during training for chemical fires. He stated that the Lab did not tell them what the chemicals were except to say that it was safe to burn them. Other training involved burning several buildings at S site.

[Name redacted] recalled that in the 1970s and 1980s, firefighters were called to S Site frequently for shot activities. They reported to the site, waited at a safe distance for the shot to be fired, were given a signal when the shot was over, and then went out into the area to extinguish the fires that resulted from the bursts. They were not monitored, even though there were many "hot spots" from the shots. [Name redacted] commented that firefighters are still doing the same activity; he had worked at S Site the previous day (9/16/08).

[Name redacted] asked if firefighters stand by at PHERMEX during shots. An unidentified

attendee responded that the firefighters have had the same shot activities at PHERMEX and DARHT (Dual Axis Radiographic Hydrodynamics Test). [Name redacted] pointed out that the distance comes into play at those facilities because they may be exposed to X rays if they are too close. [Name redacted] commented that a barrier was raised during the shot so they couldn't get too close. He referred again to the 1995 incident at PHERMEX (see page 2). The fire had grown too large for the three initial responders to contain, so additional firefighters were sent to the scene. [Name redacted] stated that he still does not know what contaminant caused the breathing problem that sent the firefighters to the hospital. He added that firefighters also had shot duty at I and J points (firing sites) in TA-15 near PHERMEX and DARHT up through the 1980s. I and J points were established in the 1940s.

[Name redacted] commented that it is difficult for response personnel to identify the radiation sources in the technical areas because they rarely know what materials are present. Dr. Macievic responded that it is NIOSH's responsibility to find survey data that can establish the materials that were associated with the buildings and technical areas over time. As part of the petition evaluation, NIOSH reaches out to workers for information that may help in locating the survey data.

[Name redacted] stated that LAFD kept a logbook describing the daily activities, including, for example, the date, the time, the facility, the time a shot was fired, and the time the all clear was given so they could put out the fire. [Name redacted] noted that Los Alamos County took over the fire department in 1989, so any records prior to that would belong to DOE. [Name redacted] asked [Name redacted] and [Name redacted] how incidents were documented prior to the late 1990s when LAFD began using the Firehouse Reporting System (FRS) computer program that is maintained by the State of New Mexico. [Name redacted] responded that the incidents were noted in the logbook and written up in narrative reports in a computer file kept by the captain. [Name redacted] stated that the FRS can be queried for reports going back to the time the system was implemented, but hard copies of reports prior to that may be kept in records archives at Station 4. [Name redacted] commented that the reports were handwritten when he began working in the 1970s. [Name redacted] added that most of the reports will not include information about the materials involved because the industrial hygienist does not usually tell them.

Mr. Lewis introduced Loretta Valerio and Sylvia Rodriguez of the New Mexico Office of Nuclear Workers' Advocacy, who joined the meeting at this point. He explained that Ms. Valerio is the director of the program. She and Ms. Rodriguez assist EEOICPA claimants in resubmitting claims after they have been denied for compensation.

[Name redacted] explained that Station 5 has daily shot activity from 2:00 to 3:00 p.m. [Name redacted] stated that the shots are classified experiments, so the computer log does not contain much information other than dates, times, locations, and activity. Dr. Macievic noted that a number of Quarterly Reports are missing, presumably because they contain classified information. NIOSH has security-cleared personnel who can review the classified documents, but written descriptions of activities must be generic to exclude the classified information. Mr. Lewis added that a secure interview can be arranged if a worker has classified information for NIOSH. [Name redacted] asked if NIOSH has access to LANL Industrial Hygiene reports. Dr. Macievic responded that NIOSH is searching LANL records and DOE Federal Records Centers for monitoring records and radiation survey reports as part of the petition evaluation process. He explained that such searches can often turn up large amounts of data that can help NIOSH associate real dose values with specific activities at a site. Dr. Macievic assured the attendees

that NIOSH accounts for human error by looking for trends in the survey methods and creating a bounding dose that can be assigned for unmonitored workers who received an indirect ambient dose.

Attendees described a fire at Ancho Canyon (TA-39) in June 2008. The fire resulted when a fire from an experimental shot could not be contained and spread into a larger wildlands fire. The firefighters and other response personnel were monitored for contamination, but were not informed of any possible contaminants. Dr. Macievic commented that it seemed to be common practice for the Lab not to disclose that information to response personnel.

A discussion ensued regarding the work schedules of firefighters. [Name redacted] stated that firefighters worked 18-20 hours per day during the Cerro Grande fire in 2000. The current work schedule at the LAFD is 48 hours on duty followed by 96 hours off, or 240 hours per month. [Name redacted] stated that firefighters worked 144 hours per two-week pay period (24 hours on, 24 hours off) when they worked for DOE in the 1970s and 1980s. When Los Alamos County took over in September 1989, the schedule changed to 112 hours per pay period. Dr. Macievic commented that work hours are a factor for response personnel whose schedules change according to demand instead of 8-hour shifts. [Name redacted] stated that the firefighters' schedule changed to 48 hours on, then 24 hours off because more manpower was needed. He recalled that people were sleeping in their vehicles in the parking lot because the stations were crowded because so many firefighters had been called in to help fight the fire.

Dr. Macievic confirmed that the firefighters wore dosimetry badges during the fire. [Name redacted] added that they regularly wear a TLD and exchange badges once a month. Dr. Macievic asked if the badges are decontaminated or replaced after a contamination event. [Name redacted] stated that he was given two badges when he began working at LANL in the 1970s – a small, square one and a longer rectangular one that had 4 spots. After a time, the Lab decided not to use the larger badge. Dr. Macievic commented that the longer badge had likely been a pick dosimeter to measure “real time” contamination levels, while the other was likely used to take a cumulative reading over a longer period of time. [Name redacted] stated that they keep single incident dosimeters on the truck, but they rely on the RCTs to tell them if it is necessary to wear a special device based on the situation. [Name redacted] indicated that the RCTs sometimes provide breathing zone samplers during incidents such as the Cerro Grande fire to check contamination levels to determine the length of time the firefighters can stay in an involved area. He stated that the RCTs do not advise them of the contamination levels. [Name redacted] added that the firefighters do not receive any information regarding their dosimeter readings.

Dr. Macievic explained how NIOSH calculates the radiation dose differently than the DOE radiation dose. The DOE sites limit a worker's radiation exposures to keep dose levels under the regulated annual limits so the DOE dose records may give the impression that the worker did not receive any dose. However, during dose reconstruction, NIOSH takes into account all of the worker's radiation doses, including doses from occupational X rays and the ambient radiation that falls below the limits of detection. The SEC class of LANL workers from 1943 through 1975 was added because NIOSH could not find enough data to determine a bounding dose for all the members of that class.

[Name redacted] asked whether workers who responded to the Cerro Grande fire from other agencies are eligible for compensation. Dr. Macievic explained that only employees who worked in the DOE nuclear weapons complex are eligible under EEOICPA; workers employed by other entities are not eligible, such as the Department of Defense (DOD) or other agencies

that dispatched workers to help fight the fire.

[Name redacted] asked Dr. Macievic to clarify the purpose of the SEC petition. Dr. Macievic briefly explained that the SEC petition filed by [Name redacted] is being evaluated to determine if NIOSH can do dose reconstructions. [Name redacted] explained that he originally considered filing the petition only on behalf of the guards because he felt that there was a lack of air monitoring data for the contaminants from the exhaust stacks and explosive testing at LANL. Historically, the Lab has excluded security personnel from bioassay programs that screen workers for those contaminants. [Name redacted] stated that he had discussed the lack of bioassay monitoring for the guards with firefighters and construction trades workers who were also exposed to the airborne contaminants with benefit of bioassay testing. Since the air monitoring data is not sufficient to model the internal dose for these workers, [Name redacted] does not believe that accurate dose reconstructions are possible. He briefly described the petitioning process:

- He filed the petition with NIOSH in April 2008 after researching the basis for the petition.
- NIOSH qualified the petition for evaluation and is currently conducting the petition evaluation.
- When NIOSH completes the evaluation, they will submit a report to the Advisory Board on Radiation and Worker Health (ABRWH or the Board) detailing why dose reconstruction is or is not feasible for the class of workers named in the petition. The report is submitted in a public session of the Board. A public comment period will allow the petitioner and other affected by the petition to give their responses to the evaluation report.
- The Board reviews the evaluation report and submits its recommendation to the Secretary of Health and Human Services (HHS). The Board may recommend either to add or to deny the petition, or may decide to have their audit contractor look for additional information.
- The Secretary considers the Board's decision and then sends his own recommendation to Congress, which has 30 days to act on it.
- If Congress does not act within that time, the Secretary of HHS adds the class to the SEC and publishes a notice in the Federal Register.

[Name redacted] explained that a class was added to the SEC for all LANL workers from 1943 to 1975. NIOSH could not find adequate monitoring data for the exotic radionuclides during that time to perform accurate dose reconstructions for that class of workers. NIOSH indicated in the evaluation report for that petition that there was a need to evaluate further years. [Name redacted] stated that he filed his petition based in part on that finding.

[Name redacted] stated that the bioassay program at LANL primarily involved the workers who handled the radioactive materials. The security guards give a baseline sample for bioassay when they are hired, but he understood that the firefighters have not done so since 1992. Neither group is included in the Lab's annual program for bioassay, which may include urine or fecal samples, nasal swipes, and *in vivo* monitoring (whole body or lung counts).

[Name redacted] and [name redacted] discussed the necessity of both a baseline bioassay and regular monitoring to determine the extent of a worker's internal dose in an incident.

Firefighters respond to situations such as the shot activities during which they may have an uptake but are not given the bioassay testing that the production workers have for similar events.

Dr. Macievic commented that each program at LANL had its own methodology. It is NIOSH's job to determine if that methodology can provide sufficient information to model the "missed" dose and to perform accurate dose reconstructions for the SEC class.

[Name redacted] asked Dr. Macievic if other DOE sites have a baseline bioassay for their workers. Dr. Macievic responded that most sites include that in the initial physical so there is a point of reference in case there is an incident. The site may decide at a later date that it is not necessary for that worker to be screened for any number of reasons, including a low exposure job assignment or as a cost-cutting measure. The lack of bioassay data in the LANL records is why NIOSH is going back to the source data to generate information. Dr. Macievic explained that the ABRWH review of the evaluation report will likely include an involved review of the data that NIOSH finds during the evaluation. Dr. Macievic commented that the ideal situation is to have a worker's bioassay data from 30 years of employment. That is not the case for the LANL support services workers, which is why NIOSH is looking for the source term data to develop the "missed" dose for those workers.

[Name redacted] stated that he cannot recall if the firefighters who were involved in the 1995 incident at PHERMEX gave urine samples. He speculated that even if the hospital took the samples, they probably were not set up to check for radioactive materials. Dr. Macievic concurred. NIOSH can look for the source data from the survey and incident reports for the 1995 incident and use that raw data to determine the firefighters' internal dose.

[Name redacted] asked [name redacted] if the Lab is still doing a baseline bioassay for the guards when they hire in. [Name redacted] replied that the Lab has changed its policy now to only include material handlers in the bioassay program. [Name redacted] asked if the NIOSH team could make a recommendation to LANL to include all workers in the baseline bioassay monitoring. Dr. Macievic responded that NIOSH does not have the power to make that recommendation since it is not involved in oversight of DOE activities. He commented that the NIOSH evaluation involves looking at historical information to determine if there is enough data to create a valid dose reconstruction for individuals working at LANL. [Name redacted] stated that the purpose of the program is to compensate workers at DOE sites for diseases related to their occupations. He explained the compensation available for Parts B and E.

[Name redacted] commented that it is difficult for workers to prove their exposure to the legacy waste materials from 60 years of operations at LANL. [Name redacted] explained that addressing the legacy waste issue is the purpose of petition. Dr. Macievic agreed that it is difficult to compensate a claim in which the worker doesn't know what materials he was exposed to in the workplace. But the SEC petition gives NIOSH reasons to evaluate whether sufficient data can be found to do dose reconstructions accurately for the class named in the petition. If NIOSH cannot find sufficient data to show what materials were present and in what quantities over time, then the class may be added to the SEC. However, if NIOSH does find sufficient amounts of new information for accurate dose constructions, then previously denied cases will be reviewed and recalculated using the new data.

[Name redacted] stated that in the past, LANL had hired retirees as consultants to identify legacy waste areas from the early years of operations. He commented that those consultants may not have done a thorough job of identifying all of the areas. Dr. Macievic responded that NIOSH is going back to see what information can be found in the original records because a consultant after the fact may not have all the information necessary to identify all of the legacy sites. The

SEC class for all workers from 1943 to 1975 was added because there were too many gaps in the data for many of the exotic radioactive materials that were used in the wide variety of experiments at LANL over a long period of time.

A discussion ensued regarding the lack of information from LANL on dosimetry readings for the firefighters from special TLDs issued for incidents. [Name redacted] commented that it is hard to understand why special dosimeters do not reflect any dose, given the potential internal exposure scenarios in their jobs. Dr. Macievic explained that bioassay is the key for internal exposure scenarios for firefighters and other support services. The special dosimeters are used to show that workers in a contamination area are not being exposed to neutron radiation or X rays above the levels of detection, for example, and do not address the potential internal exposures to firefighters and other support services personnel. [Name redacted] expressed doubt that NIOSH is getting any better information from LANL or DOE than he gets in his annual dose report, which usually shows no dose. Dr. Macievic stated that NIOSH sees different levels of information than the summary data that is given to the workers. NIOSH looks for the survey reports containing the actual raw data taken by the RCTs in the field before it is filtered by the health physics organization several times before the report is generated for the workers' annual dose reports. NIOSH also counts on information from workers to determine the number of incidents, the amount of time involved in contamination incidents, and other details that help NIOSH to understand the "real picture." The LANL health physics groups look more at keeping the worker under the regulated dose limits, whereas NIOSH looks at all of the potential doses a worker may have received.

[Name redacted] recalled several day-to-day activities during his career:

- While the fire department was still under the jurisdiction of DOE, the firefighters regularly assessed the fire safety conditions in the buildings. For example, the firefighters went inside the beam area in the meson facility (LAMPF) daily to inspect and to familiarize themselves with the buildings.
- When he was with Pro Force, four to six guards were assigned to Building 1 in TA-21 (DP Site). The lead shielding was a half-inch thick. The building has been decommissioned and removed from the LANL property. Security officers were stationed outside the building while it was being demolished.
- As a security guard, he regularly patrolled around the SM-102 machine shop. The only barrier to keep people from entering the area was a ribbon stating "Do Not Cross."

Dr. Macievic indicated that it is also important to know about the firefighters' daily activities in particular facilities. The routine activities in radiation facilities over a period of time give the workers a chronic low dose, which also figures into dose reconstructions. Changes in the daily practices are also important, such as the safe boundaries being moved after a period of several years because the RCTs determined that the "safe" area was farther away from the building.

[Name redacted] stated that firefighters still go into buildings for pre-fire plans and to inspect the buildings monthly to check for updates. He recalled that he had to leave his pants when an alarm went off after a tour of the CMR (Chemistry and Metallurgical Research) facility. He was dressed out in a smock and booties for the tour. He was advised of the chemical hazards in the building but not the radiological hazards. [Name redacted] commented that when he was with Pro Force, he had the same assignment. The smocks and booties had to be worn in some areas and removed in others. [Name redacted] stated that these daily activities are not recorded in their logbooks because they are daily activities. The firefighters at the stations serving the Laboratory

routinely visit every building on site to update pre-fire plans. The assignments vary by station: Station 5 by S Site serves TA-8, TA-9, TA-11, and TA-16; Station 1 responds to CMR, TA-3, TA-55, and Pajarito Canyon; and Station 6 serves TA-21 and part of TA-3. [Name redacted] recalled building inspections during his career as well.

[Name redacted] recalled that when he worked as a security guard with Pro Force, two security guards patrolled TA-18. During the Mason-Hanger era, 10 armed guards patrolled the area with heavy armored vehicles. There had been an incident in Building 2 when two sources had been stored too close together. The security guards also patrolled inside the building, which was highly contaminated. The building was eventually taken down and removed from the LANL site.

Dr. Macievic asked if the areas were posted to indicate the contamination levels. [Name redacted] stated that some of the signs warned of “Grave Bodily Danger,” for example. [Name redacted] commented that some of the signs stated that smocks and booties should be worn in the area, but they were never required to wear respiratory protection, even when he worked with Pro Force. It was routine to see other workers in the area fully dressed in protective gear, including respiratory protection. Dr. Macievic commented that he had heard similar information at the meetings with the LANL guards union the previous day. [Name redacted] commented that the Lab will not let firefighters into an area where “hot” work is being done. [Name redacted] stated that the only monitoring they had most of the time was a self-check at a hand-foot meter. [Name redacted] said that they still use that system at TA-54.

Dr. Macievic asked if the firefighters recalled whether the health physics practices were better in some areas than in others before LANL consolidated all of the health physics groups into one group. [Name redacted] responded that he did not remember the particular time that LANL made that change because the Lab does not notify the LAFD of changes. [Name redacted] commented that even at present, some areas are more stringent than others about monitoring practices. The monitoring system at PF-4 is different than at TA-54. He sometimes wonders if events are reported correctly. He added that all of the fire stations have areas that they inspect; for example Station 3 inspects TA-18, TA-33, TA-39, and TA-53. However, all stations are responsible to respond during incidents. [Name redacted] thanked [Name redacted] for filing the petition, stating that he does not feel that the Lab disseminates information correctly to the firefighters. Dr. Macievic explained that NIOSH is considering whether radiation doses can be determined sufficiently and accurately for the period between 1976 and 2005 – not only for the firefighters and guards, but also for all workers at LANL. He explained how the radiation doses for monitored workers in heavily contaminated areas can be used to assign a dose to unmonitored workers for the time they spent in those areas. [Name redacted] commented that there are many factors that complicate the doses that firefighters receive on their jobs. Dr. Macievic responded that the topic will be discussed at the Advisory Board meeting when he presents the LANL Petition Evaluation Report. For example, if the report says that the dose is based on 15% of the dose for monitored workers, the Board will want to know how he arrived at that figure. He explained that the more data NIOSH can find, the better the picture will be for the whole group. The unmonitored worker would not get more dose than a worker who was exposed to the source every day. The difficult part of the calculation will be in determining how much dose to assign for the resuspension of the legacy waste. The final recommendation for exactly who will be included in the class, and for what period, is a complicated process requiring careful consideration by all who are involved.

[Name redacted] asked Dr. Macievic if NIOSH intends to look at the period from 2005 to the present during the evaluation process. Dr. Macievic explained that NIOSH evaluates the period

in the petition. If the current petition is approved and the class is added to the SEC, there is always the possibility that another petition may be filed for a later period. [Name redacted] commented that safety practices are better in 2008 than during the early years, but the firefighters still have many of the same issues that their predecessors had in 1987.

[Name redacted] stated that LANL guards sometimes escorted the transportation division in the shipment of nuclear generators from Mound to Cape Canaveral, so they had exposure away from the Lab as well. Dr. Macievic responded that any dose a LANL employee received as part of his job while working at another covered DOE weapons site is added in with the dose the worker received at LANL.

Dr. Macievic informed the attendees that additional information can be submitted to NIOSH in writing after the meeting, either by mail or e-mail.

Dr. Macievic adjourned the meeting at 11:15 a.m.

ATTACHMENT A:

Work History Information

Use the following as a *guide* to prepare your statement for NIOSH. Try to provide as much information as possible to include dates, locations, who, what when, where, why, and how. The key information to be obtained is radiation exposure and inadequate or no monitoring for those exposures. NIOSH will use this information to evaluate a petition to add a class to the Special Exposure Cohort of the Energy Employees Occupational Illness Compensation Program Act. If this class is added, eligible claims will be compensated without the completion of a radiation dose reconstruction of the probability of causation.

Employment History

Job title, start date, end date

- Number of hours worked per week
- Number of hours per week the job involved potential exposure to radiation and/or radioactive materials
- Buildings/locations in which you worked (include the type of duty performed at each location)
- Types of radioactive material(s) present or processed, and what form(s) (solid, liquid, gas)
- Amount of radioactive materials present or processed (ounces, pounds, kilograms, drums, etc.) over what time period
- Types of radiation-generating equipment (X-Rays, criticality reactors, or accelerators) that were present or used
- Exposure/contamination control measures used
 - Hoods, gloves, respirators, booties, smocks, etc.
 - What type of shielding was present
 - Were only some workers provided with this equipment
 - What was the distance from the material, process, or equipment

Radiation Monitoring Information

- State whether you or co-workers (same job category) routinely wore radiation dosimetry badges
- Badge information: how often worn, how often exchanged, and where was it worn
- If worn on front of the body, did you face toward or away from the radiation source
- Did other workers (different job category) in the same area wear radiation dosimetry badges
- Did other workers (different job category) wear different radiation dosimetry badges than you
- Did you participate in a biological radiation monitoring program (**nasal smears, urine samples, fecal samples, whole body counts**)
- State the time period(s) you participated
- Was the urinalysis kit provided for a particular radioisotope (i.e.: plutonium, uranium)
- Do you have copies of your dosimeter badge or biological monitoring records?

- Are you aware of any discrepancies in your records between special, monthly, and annual monitoring?
- State whether you routinely surveyed yourself (frisked) for external contamination.
- Was there general air monitoring for radiation performed in the work environment (if yes, indicate when this occurred)

Radiation Incidents

- Were you ever involved in an incident potentially involving radiation exposure or contamination (LANL examples: Cerro Grande Fire, Sigma Americium Contamination; individual contamination, spill, exposure)
- If yes, tell:
 - what happened
 - when it happened
 - what form was the radioactive material in, what quantity of radioactive material was present
 - which radiation-generating equipment was involved
 - where it took place
 - who was involved
 - what actions were taken to remedy the exposure contamination
 - your location and activities during the incident, precautions taken to protect you
 - types of personal protective equipment used
 - length of time exposed during the incident
 - chelation therapy or other medical treatments, type of biological monitoring after the incident
 - indicate whether you have records of the monitoring