SEC Petition Evaluation Report
Petition SEC-00061

Report Rev #_08-18-06_____ Report Submittal Date _8/18/06_____

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Petitioner Administrative Summary			
Petition Under Evaluation			
Petition #	Petition Type	Petition A Submittal Date	DOE/AWE Facility Name
SEC-00061	83.14	June 5, 2006	Los Alamos National Laboratory (LANL)

Feasible to Estimate Doses with Sufficient Accuracy?											
Single Class				Multiple Classes				Determination Established for All Classes			
Yes		No	X	Yes		No	X	Yes	X	No	

Proposed Class Definition

All employees of the Department of Energy predecessor agencies, and their contractors or subcontractors, who were monitored or should have been monitored for exposure to ionizing radiation associated with radioactive lanthanum (RaLa) operations at Technical Area 10 (Bayo Canyon Site), Technical Area 35 ("Ten Site"), and Buildings H, Sigma, and U (located within Technical Area 1) at the Los Alamos National Laboratory (LANL) for a number of work days aggregating at least 250 work days during the period from September 1, 1944, through July 18, 1963, or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

Related Petition Summary Information

SEC Petition Tracking #(s)	Petition Type	DOE/AWE Facility Name	Petition Status
None			

Related Evaluation Report Information

Report Title	DOE/AWE Facility Name
None	

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Evaluation Report Summary: SEC-00061, LANL

This evaluation report by the National Institute for Occupational Safety and Health (NIOSH) addresses a class of employees proposed for addition to the Special Exposure Cohort (SEC) per the *Energy Employees Occupational Illness Compensation Program Act of 2000*, as amended, 42 U.S.C. § 7384 *et seq.* (EEOICPA) and 42 C.F.R. pt. 83, *Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort Under the Energy Employees Occupational Illness Compensation Program Act of 2000*.

NIOSH Proposed Class Definition

The NIOSH-proposed class includes all employees of the Department of Energy (DOE) predecessor agencies, and their contractors or subcontractors, who were monitored or should have been monitored for exposure to ionizing radiation associated with radioactive lanthanum (RaLa) operations at Technical Area 10 (Bayo Canyon Site), Technical Area 35 ("Ten Site"), and Buildings H, Sigma, and U (located within Technical Area 1) at the Los Alamos National Laboratory (LANL) for a number of work days aggregating at least 250 work days during the period from September 1, 1944, through July 18, 1963, or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

Feasibility of Dose Reconstruction

Per both EEOICPA and 42 C.F.R. § 83.14(b), NIOSH has established that it does not have sufficient information to complete dose reconstructions for individual members of the class with sufficient accuracy.

Health Endangerment Determination

The NIOSH evaluation did not identify evidence from the petitioners or from other sources that would establish that the class was exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. However, the evidence reviewed in this evaluation indicates that some workers in the class may have accumulated substantial chronic radiation exposures through episodic intake of radionuclides and from direct exposure to radioactive materials. Therefore, the regulation 42 C.F.R. § 83.13(c)(3)(ii) requires NIOSH to specify that health was endangered for those workers who were employed for a number of work days aggregating at least 250 work days within the parameters established for the class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

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SEC Petition Evaluation Report for SEC-00061

1.0 Purpose and Scope

This report evaluates the feasibility of reconstructing doses for employees who worked at specific facilities during a specified time. It provides information and analysis germane to considering a petition for adding a class of employees to the Congressionally-created SEC.

This report does not provide any determinations concerning the feasibility of dose reconstruction that necessarily apply to any individual energy employee who might require a dose reconstruction from NIOSH. The finding in this report is not the final determination as to whether or not the proposed class will be added to the SEC. This report will be considered by the Advisory Board on Radiation and Worker Health (the Board) and by the Secretary of Health and Human Services (HHS). The Secretary of HHS will make final decisions concerning whether or not to add one or more classes to the SEC in response to the petition addressed by this report.

This evaluation, in which NIOSH provides its findings on both the feasibility of estimating radiation doses of members of this class with sufficient accuracy and on health endangerment, was conducted in accordance with the requirements of EEOICPA and 42 C.F.R. § 83.14.

2.0 Introduction

Both EEOICPA and 42 C.F.R. 83 require NIOSH to evaluate qualified petitions requesting the Department of Health and Human Services (HHS) to add a class of employees to the SEC. The evaluation is intended to provide a fair, science-based determination of whether or not it is feasible to estimate, with sufficient accuracy, the radiation doses of the proposed class of employees through NIOSH dose reconstructions.[1]

NIOSH is required to document its evaluation in a report, which is provided to the petitioners and to the Board. The Board will consider the NIOSH evaluation report, together with the petition, comments of the petitioner(s) and such other information as the Board considers appropriate, to make recommendations to the Secretary of HHS on whether or not to add one or more classes of employees to the SEC. Once NIOSH has received and considered the advice of the Board, the Director of NIOSH will propose decisions on behalf of HHS. The Secretary of HHS will make final decisions, taking into account the NIOSH evaluation, the advice of the Board, and the proposed decision issued by NIOSH. As part of this final decision process, the petitioner(s) may seek a review of certain types of proposed decisions issued by NIOSH.[2]

[1] NIOSH dose reconstructions under EEOICPA are performed using the methods promulgated under 42 C.F.R. pt. 82 and the detailed implementation guidelines available at www.cdc.gov/niosh/ocas.

[2] See 42 C.F.R. pt. 83 for a full description of the procedures summarized here. Additional internal procedures are available at www.cdc.gov/niosh/ocas.

3.0 NIOSH Proposed Class Definition and Petition Basis

This NIOSH report provides a summary of the methods and findings of the NIOSH SEC evaluation for employees of DOE predecessor agencies, and their contractors or subcontractors, who were monitored or should have been monitored for ionizing radiation exposures associated with RaLa operations at Technical Area 10 (Bayo Canyon Site), Technical Area 35 ("Ten Site"), and Buildings H, Sigma, and U (located within Technical Area 1) at LANL from September 1, 1944, through July 18, 1963, and who were employed for at least 250 aggregated work days either solely under the employment or in combination with work days within the parameters established for other SEC classes. During this period, employees participating in these operations were potentially exposed to radioactive material which primarily consisted of barium-140 (Ba-140), lanthanum-140 (La-140 or RaLa), strontium-89 (Sr-89), and strontium-90 (Sr-90).

This evaluation responds to Petition SEC-00061 submitted by an EEOICPA claimant who was employed as a security inspector at the facility during the affected time period, whose dose reconstruction could not be completed by NIOSH because of a lack of sufficient dosimetry-related information. The NIOSH determination that it is unable to complete a dose reconstruction for an EEOICPA claimant is a qualified basis for submitting an SEC petition pursuant to 42 C.F.R. § 83.9(b).

4.0 Radiological Operations Relevant to the Proposed Class

The following subsections summarize the radiological operations associated with LANL RaLa activities from September 1, 1944, through July 18, 1963, and the information available to NIOSH to characterize particular processes and radioactive source materials. From available sources NIOSH has gathered process and source descriptions, information regarding the identity and quantities of each radionuclide of concern, and information describing the processes through which the radiation exposures of concern may have occurred and the physical environment in which they may have occurred. The information included within this evaluation report is meant only to be a summary of the available information.

4.1 LANL RaLa Operations Description

When the first samples of plutonium arrived at LANL from Oak Ridge in mid-April, 1944, physicists were alarmed when they discovered that the spontaneous fission rate of the plutonium-240 impurity was much higher than previously believed. This meant that the neutron emission rate from weapons grade plutonium (WGPu) would be too high for the planned gun-type weapon design because it would be physically impossible to assemble a sufficiently supercritical mass of plutonium with this design before the neutron chain reaction began (Bayo, 1996).

The solution to this problem was to use an implosion-type bomb design, whereby a sub-critical shell of WGPu is compressed inward by the blast from a symmetrical array of high explosives. The key to success for this design is that all of the high-explosive material detonates at virtually the same instant, causing uniform compression of the plutonium shell. Tests were conducted to assess the uniformity of compression of implosion assemblies by using a shell of some surrogate metal (substituting for

plutonium) surrounded by high explosives. Typical surrogate materials included cadmium, iron, copper, and uranium. A strong gamma ray emission source was placed inside the surrogate metal sphere with radiation detectors placed all around the device. Before being destroyed upon detonation, the detectors provided information on density changes in the collapsing metal sphere due to increased gamma ray absorption. Comparisons of gamma ray intensities in different directions revealed the time of collapse, the degree of compression, and the symmetry (Bayo, 1996).

The gamma ray emission source used in these tests was La-140, commonly referred to as radioactive lanthanum or RaLa. RaLa is a strong gamma emitter with a 40-hour half-life. It is the decay progeny of Ba-140, a fission product with a 13-day half-life. Solutions containing a mixture of Ba-140 and RaLa were shipped via truck to Los Alamos Technical Area 10 (TA-10), also known as the Bayo Canyon site, located three miles east of the center of the Los Alamos, New Mexico town site. These solutions were prepared in Oak Ridge, Tennessee until 1956 when Idaho National Laboratory took over the preparations.

Upon arrival at Bayo Canyon, chemists prepared the sources by separating the RaLa from its radioactive parent Ba-140 and other impurities, including Sr-89 and -90. The separated RaLa was then encapsulated in a small metal sphere about one-eighth inch in diameter. A total of 254 implosion tests involving RaLa were conducted from 1944 through 1962. The quantity of RaLa varied with each test, but was nominally about 1000 Ci. A total of about 250,000 Ci of RaLa was released to the atmosphere from these experiments.

The first implosion-type nuclear explosive device was successfully tested at the Trinity Site in Alamogordo, New Mexico, on July 16, 1945. This device was the precursor to the “Fat Man” bomb that was dropped over Nagasaki on August 9, 1945.

4.2 Radiation Exposure Potential from LANL RaLa Operations

External exposures to workers associated with RaLa handling were significant. The gamma exposure rate from 1000 Ci of RaLa is 1130 R/hr at a distance of 1 meter. In addition to being strong gamma emitters, RaLa and Ba-140 both emit energetic beta particles with maximum energies of 3.76 MeV and 1.00 MeV, respectively. The highest exposures that occurred at LANL from RaLa operations were experienced by the chemists who prepared the sources. This work was not conducted in hot cells that would have used mechanical manipulation behind leaded glass. Instead, it was done behind lead brick shadow shields using tongs.

The following quote is from a *History of the Health Group* (HG History) covering the time period from March, 1943, through November, 1945:

> *As a result of failure of equipment and accidents, the chemists in this group frequently received considerably more radiation dosage than was desirable.*

A formal letter from the H-Division (Bayo, 1948) dated September 10, 1948, states:

> *The chemical procedures involved have in addition routinely resulted in extensive air contamination both inside and, more lately, outside the chemistry building, resulting in a respiratory hazard of indeterminate magnitude both to the chemists and to guard personnel.*

An H-Division progress report (H-Div, 1948) for the period of October 20, 1948, through November 20, 1948 notes:

> *A plastic hood is now being used over the GMX-5* [Bayo physicists] *people who insert and remove plugs from the source at Bayo Canyon. This decreases the amount of contamination getting on the face and neck.*
>
> *Another case is that of* [blank] *GMX-5 who during special experiments at Bayo Canyon on 11/2 and 11/8 ingested sufficient quantities of RaLa to give measurable readings with a Model 263 survey meter* [Victoreen GM probe] *on the abdomen. It is impossible to make a satisfactory quantitative estimate of the tissue dosage, but it was probably between 0.1 and 1.0 r at the region of highest intensity on each occasion.*

Another H-Division progress report (H-Div, 1949) covering the time period from April 20, 1949, through May 20, 1949, states:

> *As far as Bayo Canyon is concerned, we are faced with two serious problems. The first of these relates to the repeated high exposures of the staff in CMR-10 Laboratory. …The other problem relates to the fall-out from the cloud following operations at Bayo firing site.*

NIOSH has compiled and published a more complete summary of the available information regarding the exposures at LANL, including RaLa operations. This information is summarized in the Technical Basis Document (TBD) for LANL (ORAUT-TKBS-0010) and can be found online at: www.cdc.gov/niosh/ocas.

4.3 Time Period Associated With LANL RaLa Operations

The first shipment of RaLa arrived at Bayo Canyon in September of 1944 (exact date unknown). The first RaLa shot was on September 21, 1944. The final RaLa shot was fired on March 6, 1962. In May 1963, a major clean-up effort took place, involving local workers. In a letter dated July 18, 1963, the Bayo Canyon area was officially returned to Atomic Energy Commission (AEC) jurisdiction (Bayo, 1963). That letter stated:

> *The cleanup process is now complete. All structures have been completely removed with the exception of the cement pad on which rested an uncontaminated machine shop.*

Because the precise time period of building demolition and disposal is unknown, NIOSH is assuming the end date for RaLa operations to be July 18, 1963, the signature date of the letter proclaiming clean-up complete. Thus, NIOSH has determined the time period applicable to potential radiation exposures associated with RaLa operations to be from September 1, 1944, to July 18, 1963.

4.4 Site Locations Associated With LANL RaLa Operations

RaLa experiments took place at TA-10 (Bayo Canyon facility), which included several buildings and four outdoor firing sites. La-140 separations took place in the radiochemistry building, TA-10-1. Other buildings were used for various purposes such as personnel housing, detonation control, and recording instrumentation.

In 1951, the La-140 separations operation was moved to TA-35, commonly referred to as the "Ten Site." This operation remained at TA-35 until the end of the project. Other RaLa-related activities took place on a much smaller scale in Buildings Sigma, H, and U, all located in Technical Area 1 (TA-1).

NIOSH has identified the facilities associated with RaLa operations to include locations TA-10, TA-35, and Buildings Sigma, H, and U (located in TA-1).

4.5 Job Descriptions Associated With LANL RaLa Operations

The workers with the highest potential for exposure to RaLa materials were the chemists who performed the separations. They were originally part of group CM-4 which later became CM-14, and subsequently, CMR-10. Other workers with high exposure potential to RaLa materials were the Bayo physicists, group G-6, which later became known as group GMX-5. Although the Bayo chemists and physicists certainly had the highest exposure potential to RaLa materials, any number of other groups located in the affected buildings could potentially have been exposed.

Due to uncertainties regarding worker job descriptions, and lack of knowledge concerning worker movements among Bayo Canyon facilities, NIOSH is unable to rely solely on worker job descriptions to determine potential for RaLa operations exposure.

5.0 Summary of Available Monitoring Data for the Proposed Class

The primary data used for determining internal exposures are from personal monitoring data, such as urinalyses, fecal samples, and whole body counting results. If these are unavailable, the air monitoring data from breathing zone and general area monitoring are used to estimate the potential internal exposure. If personal monitoring and breathing zone area monitoring are unavailable, internal exposures can sometimes be estimated using more general area monitoring, process information, and information characterizing and quantifying the source term.

The same hierarchy is used for determining the external exposures to the cancer site. Personal monitoring data from film badges or thermoluminescent dosimeters (TLDs) are the primary data used for determining external exposures to the cancer site. If there are no personal monitoring data, exposure rate surveys, process, and source term modeling can sometimes be used to reconstruct the potential exposure.

A more detailed discussion of the information required for dose reconstruction can be found in OCAS-IG-001, *Internal Dose Reconstruction Implementation Guide* and OCAS-IG-002, *External*

Dose Reconstruction Implementation Guide. These documents are available at: http://www.cdc.gov/niosh/ocas/ocasdose.html.

5.1 LANL RaLa Operations Internal Personnel Monitoring Data

In the fall of 2003, NIOSH determined that bioassay data being provided by LANL were insufficient. NIOSH and its contractor worked with LANL to try to obtain all available data. On April 21, 2004, a disk with americium and plutonium bioassay results was provided to NIOSH by LANL. The NIOSH staff noted that additional internal monitoring results existed that were not supplied on the disk. NIOSH then assisted LANL in developing a database for all of the available internal dosimetry data (*in vitro*, *in vivo*, and incident data). In November, 2005, the database was verified correct. On December 14, 2005, LANL informed NIOSH that the database should be considered the official LANL transmittal of monitoring data.

Despite anecdotal evidence that bioassay monitoring for fission products was conducted at times for RaLa workers, the LANL *in vitro* and *in vivo* databases have been found to contain only data specific to internal exposure to tritium, polonium, plutonium, and uranium. There are no fission product internal monitoring data available to NIOSH for LANL workers employed during the time period under evaluation in this report.

NIOSH has compiled and published a more complete summary of the available LANL bioassay program information regarding radionuclides not associated with RaLa operations. This information is summarized in the TBD for LANL (ORAUT-TKBS-0010) and is available online at: www.cdc.gov/niosh/ocas.

5.2 LANL RaLa Operations External Personnel Monitoring Data

The external radiation hazards associated with the RaLa experiments were recognized from the beginning of operations. Dosimetry badges were provided to workers who had significant exposure potential and the monitoring records from this program are available to NIOSH.

NIOSH has compiled and published a more complete summary of the available LANL external monitoring information, including detailed descriptions of the dosimeters used and the radiation fields associated with RaLa operations. This information is summarized in the LANL TBD (ORAUT-TKBS-0010) and is available online at: www.cdc.gov/niosh/ocas.

5.3 LANL RaLa Operations Workplace Monitoring Data

A report from the RaLa Physics Group (RaLa, 1946)) makes clear that outdoor airborne contamination monitoring was conducted following most of the shots at Bayo Canyon. Although the actual data used to generate this report are unavailable, the report indicates:

> *…the highest count ever recorded was 22 c/m per liter for ten minutes after the shot. All other determinations were of the order of 5-10 c/m per liter. Although these counts are all well below the tolerance limit (160 c/m per liter), all members of G-6 are provided with gas masks to be used during and immediately after the shot.*

Indoor monitoring data for airborne and surface contamination in areas where RaLa materials were handled in preparation for implosion tests are unavailable to NIOSH.

NIOSH has compiled and published a more complete summary of the available information regarding RaLa shots, including the quantity of RaLa used in each shot and the estimated annual doses to personnel from the RaLa experiments. This information is summarized in the LANL TBD (ORAUT-TKBS-0010) and is available online at: www.cdc.gov/niosh/ocas

6.0 Feasibility of Dose Reconstruction for the Proposed Class

42 CFR § 83.14(b) states that HHS will consider the determination by NIOSH that there was insufficient information to complete a dose reconstruction, as indicated in this present case, sufficient, without further consideration, to determine that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy.

In the case of a petition submitted to NIOSH under 42 C.F.R. § 83.9(b), NIOSH has already completed research to determine that a dose reconstruction cannot be completed for an employee at the DOE or AWE facility. This determination by NIOSH provides the basis for the petition by the affected claimant. NIOSH has further considered defining the extent of the class of employees who are similarly affected, as indicated by the completed research, and hence, as a class of employees, dose reconstruction is similarly not feasible.

In accordance with 42 C.F.R. § 83.14(a), NIOSH also considers whether or not the completed research provides a basis for evaluating an additional class at the facility for whom NIOSH may believe that dose reconstruction is unlikely to be feasible. If NIOSH were to identify such a basis, it would undertake a separate SEC evaluation regarding the additional class. This would allow NIOSH, the Board, and HHS to complete, without delay, their consideration of the class including a claimant for whom NIOSH has already determined a dose reconstruction cannot be completed, and whose only possible remedy under EEOICPA would be adding a class of employees to the SEC.

This section of the report provides a summary of research findings by which NIOSH determined that it lacked sufficient information to complete the relevant dose reconstruction and on which basis it has defined the class of employees for which dose reconstruction is not feasible. The determination relies on the same statutory and regulatory criteria that govern consideration of all SEC petitions.

6.1 Feasibility of Estimating Internal Exposures

As indicated in Section 5.1, NIOSH does not have access to any internal monitoring data for the fission products to which the class of employees were exposed, which include radioactive isotopes of lanthanum, barium, and strontium. Records indicate that airborne and surface contamination was a concern for RaLa workers. Beginning in late 1947, there are indications that some internal dose monitoring for fission products was conducted, but no data generated from these bioassays have been found. Following shots, environmental air monitoring was often conducted and documented; however, the highest potential for internal exposure occurred during source handling and shot preparation, for which data are unavailable to NIOSH.

Personnel internal monitoring records for fission products are unavailable to NIOSH for the time period covered by this evaluation. In addition, data relating to airborne and surface contamination activity levels in buildings where RaLa operations took place are unavailable. Consequently, NIOSH finds that it is not feasible to estimate with sufficient accuracy internal exposures and resulting doses for the class of employees covered by this evaluation.

The class for which feasibility was considered by NIOSH in response to Petition SEC-00061 includes employees who participated in RaLa operations at LANL from September 1, 1944, through July 18, 1963. These workers were potentially exposed to a variety of radioactive fission products, including radioactive isotopes of lanthanum, barium, and strontium.

6.2 Feasibility of Estimating External Exposures

This evaluation responds to a petition based on NIOSH determining that internal radiation exposures could not be reconstructed for a dose reconstruction referred to NIOSH by the Department of Labor. As noted above, HHS will consider this determination to be sufficient without further consideration to determine that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy. Consequently, it is not necessary for NIOSH to evaluate the feasibility of reconstructing external radiation exposures in this case.

However, for the record, NIOSH considers the adequate reconstruction of occupational external doses for RaLa workers feasible. Records indicate that RaLa workers were monitored for external whole body exposures. Adequate reconstruction of external dose is considered possible by using claimant-favorable assumptions found in the LANL TBD as well as applicable protocols specified in various complex-wide Technical Information Bulletins (TIBs).

In addition, NIOSH considers the adequate reconstruction of medical dose for RaLa workers feasible by using claimant-favorable assumptions found in the LANL TBD as well as applicable protocols specified in the complex-wide TIB for dose reconstruction from occupationally-related diagnostic X-ray procedures (ORAUT-OTIB-0006).

7.0 Summary of Feasibility Findings for Petition SEC-00061

This report evaluated the feasibility for estimating the dose, with sufficient accuracy, for employees of DOE predecessor agencies, and their contractors or subcontractors who participated in LANL RaLa operations from September 1, 1944, through July 18, 1963. NIOSH determined that it lacks internal dosimetry data necessary to reconstruct internal exposures to radioactive fission products during this time period. Consequently, NIOSH finds that it is not feasible to estimate with sufficient accuracy the radiation doses resulting from internal exposures received by members of this class of employees.

NIOSH has documented in its evaluation that it cannot complete the dose reconstruction(s) related to this petition. The basis of this finding is specified in this report, which demonstrates that NIOSH does not have access to sufficient information to estimate either the maximum radiation dose incurred by any member of the class or to estimate such radiation doses more precisely than a maximum dose estimate. Members of this class at LANL may have received radiation exposures from fission products used in the RaLa operations. NIOSH lacks sufficient information, which includes internal personnel

dosimetry, workplace monitoring data, or sufficient process and radiological source information, that would allow it to estimate the potential internal exposure to which members of the proposed class may have been exposed. The adequate reconstruction of external exposures and occupational medical doses for this class of workers is considered feasible.

8.0 Evaluation of Health Endangerment for Petition SEC-00061

The health endangerment determination for the class of employees covered by this evaluation report is governed by EEOICPA and 42 C.F.R. § 83.14(c) and § 83.13(c)(3). Pursuant to these requirements, if it is not feasible to estimate with sufficient accuracy radiation doses for members of the class, NIOSH must determine that there is a reasonable likelihood that such radiation doses may have endangered the health of members of the class. The regulations require NIOSH to assume that any duration of unprotected exposure may have endangered the health of members of a class when it has been established that the class may have been exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. If the occurrence of such an exceptionally high-level exposure has not been established, then NIOSH is required to specify that health was endangered for those workers who were employed for a number of work days aggregating at least 250 work days within the parameters established for the class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

NIOSH has determined that members of the class were not exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. However, the evidence reviewed in this evaluation indicates that some workers in the class may have accumulated chronic radiation exposures through intakes of radionuclides and from direct exposure to radioactive materials. Consequently, NIOSH is specifying that health was endangered for those workers covered by this evaluation who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

9.0 NIOSH Proposed Class for Petition SEC-00061

The evaluation defines a single class of employees for which NIOSH cannot estimate radiation doses with sufficient accuracy. This class includes all employees of the Department of Energy predecessor agencies, and their contractors or subcontractors, who were monitored or should have been monitored for exposure to ionizing radiation associated with radioactive lanthanum operations at Technical Area 10 (Bayo Canyon Site), Technical Area 35 (“Ten Site”), and Buildings H, Sigma, and U (located within Technical Area 1) at the Los Alamos National Laboratory (LANL) for a number of work days aggregating at least 250 work days during the period from September 1, 1944, through July 18, 1963, or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

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10.0 References

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42 C.F.R. 83, *Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule; U.S. Dept. of Health and Human Services; May 28, 2004

42 U.S.C. §§ 7384 *et seq.* [EEOICPA], *Energy Employees Occupational Illness Compensation Program Act of 2000*; as amended

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