Special Exposure Cohort Petition
under the Energy Employees Occupational Illness Compensation Act

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

OMB Number: 0920-0639 Expires: 07/31/2010

Special Exposure Cohort Petition — Form B

Use of this form and disclosure of Social Security Number are voluntary. Failure to use this form or disclose this number will not result in the denial of any right, benefit, or privilege to which you may be entitled.

General Instructions on Completing this Form *(complete instructions are available in a separate packet)*:

Except for signatures, please **PRINT** all information clearly and neatly on the form.

Please read each of Parts A — G in this form and complete the parts appropriate to you. If there is more than one petitioner, then each petitioner should complete those sections of parts A – C of the form that apply to them. Additional copies of the first two pages of this form are provided at the end of the form for this purpose. A maximum of three petitioners is allowed.

If you need more space to provide additional information, use the continuation page provided at the end of the form and attach the completed continuation page(s) to Form B.

If you have questions about the use of this form, please call the following NIOSH toll-free phone number and request to speak to someone in the Office of Compensation Analysis and Support about an SEC petition: 1-877-222-8570.

If you are:			
	☐ A Labor Organization,	Start at D	on Page 3
	☐ An Energy Employee (current or former),	Start at C	on Page 2
	☐ A Survivor (of a former Energy Employee),	Start at B	on Page 2
	☒ A Representative (of a current or former Energy Employee),	Start at A	on Page 1

A Representative Information — Complete Section A if you are authorized by an Employee or Survivor(s) to petition on behalf of a class.

A.1 **Are you a contact person for an organization?** ☐ Yes (Go to A.2) ☒ No (Go to A.3)

A.2 **Organization Information:**

Name of Organization

Position of Contact Person

A.3 **Name of Petition Representative:**

Mr./Mrs./Ms. First Name Middle Initial Last Name

A.4 **Address:**

Street Apt # P.O. Box

City

A.5 **Telephone Number**

A.6 **Email Address:**

A.7 ☐ Check the box at left to indicate you have attached to the back of this form written authorization to petition by the survivor(s) or employee(s) indicated in Parts B or C of this form. An authorization

If you are representing a Survivor, go to Part B; if you are representing an Employee, go to Part C.

Name or Social Security Number of First Petitioner: _

Special Exposure Cohort Petition
under the Energy Employees Occupational Illness Compensation Act

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National Institute for Occupational Safety and Health

OMB Number: 0920-0639 Expires: 07/31/2010

Special Exposure Cohort Petition — Form B ***Appendix — Petitioner 2***

B Survivor Information — Complete Section B if you are a Survivor or representing a Survivor.

B.1 **Name of Survivor:**

Mr./Mrs./Ms. First Name Middle Initial Last Name

B.2 **Social Security Number of Survivor:** _____

B.3 **Address of Survivor:**

Street Apt # P.O. Box

City State Zip Code

B.4 **Telephone Number of Survivor:** (___) ___-_____

B.5 **Email Address of Survivor:** _____

B.6 **Relationship to Employee:** ☐ Spouse ☐ Son/Daughter ☐ Parent ☐ Grandparent ☐ Grandchild

Go to Part C.

C Employee Information — Complete Section C.

C.1 **Name of Employee:**

Mr./Mrs./Ms. First Name Middle Initial Last Name

C.2 **Former Name of Employee** (e.g., maiden name/legal name change/other):

Mr./Mrs./Ms. First Name Middle Initial Last Name

C.3 **Social Security Number of Employee:** _____

C.4 **Address of Employee (if living):**

Street Apt # P.O. Box

City State Zip Code

C.5 **Telephone Number of Employee**

C.6 **Email Address of Employee:**

C.7 **Employment Information Related to E**

C.7a Employee Number (if known): _____

C.7b Dates of Employment: Start 1957 End 1962

C.7c Employer Name: SANDIA

C.7d Work Site Location: SANDIA

C.7e Supervisor's Name:

Sign Part G of the original petition.

Name or Social Security Number of First Petitioner: _____

E Proposed Definition of Employee Class Covered by Petition — Complete Section E.

E.1 Name of DOE or AWE Facility: SANDIA NATIONAL LABORATORIES KIRKLAND AIRBASE COMPLEX

E.2 Locations at the Facility relevant to this petition:
AREA 15 and other locations in which unmonitored work involving radioactive samples from the Nevada Test Site or other source material was analized

E.3 List job titles and/or job duties of employees included in the class. In addition, you can list by name any individuals other than petitioners identified on this form who you believe should be included in this class:
Engineers, scientists, technical staff;

E.4 Employment Dates relevant to this petition:

Start 1957 End 1962

Start _____ End _____

Start _____ End _____

E.5 Is the petition based on one or more unmonitored, unrecorded, or inadequately monitored or recorded exposure incidents?: ☒ Yes ☐ No This depends on the definition of an "incident", there were post-criticality exposures only.

If yes, provide the date(s) of the incident(s) and a complete description (attach additional pages as necessary):

These workers were exposed to Brass samples and other materials recovered from Ground Zero of the Pizeau blast with minimal short term external monitoring (limited to the excursion period to Ground Zero with no subsequent attention to exposures from these materials in the Sandia Laboratory environments), and no internal monitoring while handling these samples. There was incomplete exposure assessment especially to inhalation and ingestion routes for these scientists machining radioactive samples from ground zero. Samples were recovered from the Nevada Test site in order to determine the Fireball temperature of the Pizeau site.

Go to Part F.

F Basis for Proposing that Records and Information are Inadequate for Individual Dose — Complete Section F.

Complete at least one of the following entries in this section by checking the appropriate box and providing the required information related to the selection. You are not required to complete more than one entry.

F.1 ☒ I/We have attached either documents or statements provided by affidavit that indicate that radiation exposures and radiation doses potentially incurred by members of the proposed class, that relate to this petition, were not monitored, either through personal monitoring or through area monitoring.

(Attach documents and/or affidavits to the back of the petition form.)

Describe as completely as possible, to the extent it might be unclear, how the attached documentation and/or affidavit(s) indicate that potential radiation exposures were not monitored.

As per comments in Section E, 5, Radiation Exposure data for these workers is incomplete and insufficient for accurate, data based, dose-reconstruction. These scientists recovered metal specimens from the Fizeau blast, brought same to their laboratory and ground and polished these metal specimens without protection, ventilation or internal monitoring. Film badges were worn routinely by the radiation staff but completeness and accuracy of these data for the purpose of dose-reconstruction. Note that Mr. Strauss and several coworkers smoked in the lab,

F.2 ☐ I/ We have attached either documents or statements provided by affidavit that indicate that radiation monitoring records for members of the proposed class have been lost, falsified, or destroyed; or that there is no information regarding monitoring, source, source term, or process from the site where the employees worked.

(Attach documents and/or affidavits to the back of the petition form.)

Describe as completely as possible, to the extent it might be unclear, how the attached documentation and/or affidavit(s) indicate that radiation monitoring records for members of the proposed class have been lost, altered illegally, or destroyed.

Part F is continued on the following page.

F.3 ☒ I/We have attached a report from a health physicist or other individual with expertise in radiation dose reconstruction documenting the limitations of existing DOE or AWE records on radiation exposures at the facility, as relevant to the petition. The report specifies the basis for believing these documented limitations might prevent the completion of dose reconstructions for members of the class under 42 CFR Part 82 and related NIOSH technical implementation guidelines.

(Attach report to the back of the petition form.)

F.4 ☐ I/We have attached a scientific or technical report, issued by a government agency or the Executive Branch of Government or the General Accounting Office, the Nuclear Regulatory Commission, or the Defense Nuclear Facilities Safety Board, or published in a peer-reviewed journal, that identifies dosimetry and related information that are unavailable (due to either a lack of monitoring or the destruction or loss of records) for estimating the radiation doses of employees covered by the petition.

(Attach report to the back of the petition form.)

Go to Part G.

G Signature of Person(s) Submitting this Petition — Complete Section G.

All Petitioners should sign and date the petition. A maximum of three persons may sign the petition.

___ 1-13-10
Date

___ 1-13-10
Date

___ 1-13-10
Date

Notice: Any person who knowingly makes any false statement, misrepresentation, concealment of fact or any other act of fraud to obtain compensation as provided under EEOICPA or who knowingly accepts compensation to which that person is not entitled is subject to civil or administrative remedies as well as felony criminal prosecution and may, under appropriate criminal provisions, be punished by a fine or imprisonment or both. I affirm that the information provided on this form is accurate and true.

Send this form to:
SEC Petition
Office of Compensation Analysis and Support
NIOSH
4676 Columbia Parkway, MS-C-47
Cincinnati, OH 45226

If there are additional petitioners, they must complete the Appendix Forms for additional petitioners. The Appendix forms are located at the end of this document.

Name or Social Security Number of First Petitioner

(*) ON THE BASIS OF WORK DESCRIPTION NOTE FROM I WOULD NK THAT

From:
Sent:
To:
Subject:

I started to compose a note to you yesterday morning about my work with radiation and contamination. The basic thrust of my note would have been to focus on the contaminated sites we cleaned up after the research reactor was shutdown here at the end of 1978. At that time many of the contaminated sites around the campus and the City of Ames were stil not surveyed or monitored for radioactivity. As I was the engineer in charge of the reactor decommissioning and our helath physics crew and I had gained hands-on experience with site cleanup and disposal of contaminated spoils we were selected to continue the cleanup of sites left over from as far back as the Manhattan Project work done here in Ames. We spent the early part of the 1980's doing the surveys of all of the known sites and surveyed other "suspect" sites here with instructions that we were to continue with decontamination and disposal of all refuse materials from any contaminated sites. In that sense we were the experts for doing this work, and I was placed in charge of all of this work. This included the work with thorium contamination in Wilhelm Hall, the contamination in the work areas of the ISU Chemistry building, the burial site for waste from the "Little Ankeny" structure, the City sewage treatment plant site which had been contaminated by a thorium release from Ames Lab, and surveys of other sites that were reported to be contaminated. We worked as a team to monitor, remove waste, place materials in trucks lined with plastic sheeting, and final shipping for disposal of the radioactive waste to DOE disposal sites in Utah and Idaho. As stated in an earlier note to you I was a hands-on-manager that worked directly with the other members of our crew, getting in the dirt when necessary to sample, loading the trucks and covering the loads for shipment and so on. I would receive exposures right along with the other workers to complete this job which was done over several years. On the administrative side I was in charge of all public meetings to disseminate information and answer questions from the public, worked with the Iowa DNR to meet their requirementw and provide all of the data required for their agency to release these sites as "clean" and ready for any use. In that role I was the supervisor of the work, even though it does not fall in the time limits specified in the legislation that John Vance refers to in his note to you on 1/08/2010.

But then I got a phone call yesterday from a person in NIOSH who identified herself as Denise, as I remember. She said she had been working on my claim and was sure that she knew a way to get the claim settled and a payment sent to me. She briefly described how she would phrase my work at the NTS and the sample analysis we did subsequently in our labs at Sandia. She told me I did not have to do anything right now, but wait until after she has a chance to talk with you on the phone and describe her plans for settlement of this claim. She said she knew you very well and knew of all of the work you have done for me on this claim. So with that information I have done nothing more to settle my claim as you had been suggesting to me. Denise was very convincing with what she described to me, and suggested that I wait until I hear from you again before I do anything. So now I am in that mode and will wait for some contact from you or her before I proceed to contact anyone else.

Thanks again,

From:
Sent:
To:
Cc:

Subject:

Follow Up Flag: Follow up
Flag Status: Flagged

I am the

In that time I interacted with : the Laboratory's reactor and worked with him as part of his post-reactor responsibilities. is a hands-on manager, and as such would have been exposed to many of the same hazards as his employees during operation and decommissioning of the reactor, remediation of inactive waste sites, and remodeling and remediation of thorium and uranium processing facilities at the Ames Laboratory and Iowa State University's Manhattan Project facilities. For claim to be excluded from an SEC due to his classification as an engineer is inappropriate and certainly not in tune with the spirit and objective of the government's compensation program. The idea that as an engineer, would not be subjected to the same hazards associated with activities at the NTS is totally off base. duties as a young junior engineer would be working side-by-side with the technicians at the "ground zero" hazards zone. Therefore, his functional job assignments and duties, and the subsequent exposures are the same as those of the technicians, and for the purpose of the SEC inclusion criteria his functional job title should be considered to be that of a technician.

wrote:

FYI an email regarding exposures at NTS from the from that era

Good Morning Dr.

I had never been privy to what job involved up at NTS. My thoughts on workers being sent up and "burned out" during 2 calendar quarters does not apply to this case.

I had never discussed his work responsibilities at Sandia and the NTS. The 250 day requirement being applied to the NTS is very much an error. NO ONE would have been required to work at or near ground zero that close to a shot for 250 days!. REGULATIONS WOULD HAVE PREVENTED THEM FROM RECEIVING THIS MUCH RADIATION EXPOSURE. They might have job responsibilities that would have placed them at other less active and contaminated places at the site. But in cases such as just think how many blast tests you would have to

have participated in to meet the 250 day requirement. I seriously doubt that many nuclear blast tests were conducted in the time frame addressed in the SEC recently created for these workers. (Jan 51-Dec 1962)

I agree with your acute analysis that he was essentially removing samples and objects FROM the NTS and essentially TAKING the NTS back to his Sandia Lab.

Thank you for your help.

--

From:
Sent:
To:
Subject:

Good Morning

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Thank you for your help.

From:
Sent:
To:
Cc:
Subject:
Attachments:

our Radiation Safety Officer looked at this and provided comments. I agree that has had significant exposure potential, especially with his work prior to his ----------, appointment. I suggest that you and try to reconstruct his work assignment and establish a more quantitative picture of his activities, not just "frequent" but more like "approximately 200 times", etc. Also does remember the names of his coworkers and can he re-establish contact with them? Maybe you have thought of all of these approaches, and I'll keep thinking of ways to help and your efforts.

take care.

------- Forwarded message follows -------
Date sent:
From:
Organization:
To:
Subject:

After reviewing the data provided by it is my opinion that there is not enough information to accurately assess the applicant's risk. Granted it is apparent, if the data is correct, that was exposed to levels of radiation that would concern me. There are gaps in the data. According to the claimant no monitoring was conduct in the laboratory. Also how often did he visit ground zero and to what proximity, time wise to the detonation did he visit ground zero. These are just a few of the gaps I can see initially looking at the email
below and the data. I also spoke with the Iowa State University
Radiation Safety Section and they too conferred that the data is significant but may take some assuming to reach any credible calculated risk.

fyi - please take a look at this. > > > ------- Forwarded message follows --
----- > From: To:

Thu, 14 May 2009 15:12:44 -0500 > Subject: FW: NTS exposures and the SEC requirement > >
could you please look over my email below regarding > I would like to know how to interpret the enclosed rad monitoring data and whether it looks to be sufficient to calculate exposures and risks as I have described below from his work

From:
Sent:
To:
Subject:

You requested more information on my work exposures at the NTS in your note of May 20th, 2009. My recounting of those workdays is all from memory as I think you already realize, but I will be as complete as I can in giving this account.

I went to work at Sandia in 1957 in the Radiation Division where was the Division Chief. was the Section Chief of the reactor section and was in that position as long as I was employed there. My employment ended in 1962 when I went to Ames Lab as an engineer in the Reactor Division.

The first year or two at Sandia was spent in the design and construction oversight of the Sandia Engineering Reactor Facility, SERF. Probably in the year 1958 or maybe even 1959 several of us were assigned to the group effort determining fireball temperatures of a nuclear detonation. was the metallurgist who led this effort with another metalurgist, as his assistant. knew about the temperature transition between the beta and alpha phase of brass and decided this would be a good way to record the transition and with thermal heat transfer calculations make an estimate of the exposure temperature on the face of a sample.

The phase change from the alpha to the beta phase is very distinct and occurs in a very narrow temperature band. If a sample like a 1/4 inch rod was quenched by a surrounding metal block, the location or position of the phase change would be caused by the temperature/time exposure the sample received on the exposed face. This leads to thermodynamic calculations using the specific heat of the brass sample to correlate the distance from the exposed face to the phase change. Another way of looking at this is to relate the heat input to the sample face (in BTU/hour for example) to the temperature within the sample at the location of the phase change (measured on a metallurgical microscope). Since the high speed photos of the fireball temperature gave us the time factor for the equations, all we needed to calculate the heat input was the temperature of the source (fireball). By calculating the heat input with the time and temperature factors we could estimate the fireball temperature by measuring the location of the phase change transition. This transition location in the sample was easy to distinguish on the microscope.

The calibration of the samples was done at Sandia where we used a solar furnace to simulate the fireball temperatures. With the factors of phase transition and time/temperature of exposure we could estimate the apparent temperature of the nuclear detonation fireball. The work led to a publication in a Solar Journal but I do not recall the name of this Journal.

This then led to the field work. Brass samples were prepared and tempered to get the metallurgical phase of the sample uniform in the brass rod. Sample rods 1/4 inch in diameter and about 1 inch long were set into steel discs which were mounted in large steel billets (as quench and blast protection for the samples), and these were made for mounting on the legs of the steel tower supporting the weapon. The detonation totally destroyed the steel tower and allowed the large steel billets of about 8 inch diameter to be blasted onto the ground surface and partially embed them in the sand desert floor. This is what we needed for sample retrieval after the Fizeau shot. We had to locate the steel billets and then remove the steel sample holder discs for return to Sandia. The brass samples were removed from the discs, mounted in bakelite holders and ground and polished on a metallurgical lap for examination on the microscope at Sandia.

After the detonation an NTS lead crew went into ground zero and found the large steel billets. A team of us from Sandia then went to the site probably within a month after the detonation to retrieve the samples. The Health Physics team told us the general radiation field at the ground zero area was about 25 R/hr.

The weather was hot so this might give a better date for these tasks. We went to a temporary base station located about 1/4 mile from ground zero, to suit up for sample retrieval. We removed our street clothes and suited up with double coveralls, booties, surgical caps, and wore carbon canister respirators. Our wrists and ankles were taped to keep dust and debris out. We wore film badges and pocket dosimeters. We moved as rapidly as we could from the base camp, on foot, to the ground zero area. We removed the steel discs with some removal tools we had devised to create impact while we pulled on the disc removal rods. Our crew was , me and another technician, whose name I do not remember. would read his pocket dosimeter to tell us when we had received about 1 R of exposure and we exited the area as rapidly as we could on foot, carrying the discs we recovered with us. The elapsed time for our work in the ground zero area was probably about 30 minutes from leaving the base to the return. The HP's read our pocket dosimeters and we removed our clothes and dressed in our street clothes again. We did not shower and no nasal swabs or urine samples were taken that I remember. The NTS health physicists kept our dosimeters and film badges and we returned to Las Vegas. The 1R of exposure was the daily limit set for us at the site. We would return the next morning and retrieve as many samples as we could while getting the 1R exposure again in the short time, return to Vegas and then return for a third day to repeat the sample recovery. This gave us a total of about 3R which was the quarterly dose limit set for us at that time. We then returned to Albuquerque. The samples, in the discs, were shipped to Sandia where we did the examinations of samples in the lab.

At the start of the next calendar quarter we returned to recover as many samples as we could within a 2R limit on exposures which gave us a 5R accumulated dose limit, the maximum allowed for a yearly exposure. The sample handling and examination in the lab was monitored by HP's at Sandia. When this assignment was completed I returned to my engineering duties in the reactor division. The crew at NTS was only , me and the unnamed technician. The reactor section at Sandia was supervised by who now lives in retirement in Texas. I talked to him on the phone last fall, before Christmas, and his phone number then was . He remembered the work we did at NTS very well. The rest of the staff I worked with at Sandia, and another technician, are all deceased.

This is the best reconstruction I can offer from memory. If it is useful you can certainly share it with others for evaluation or verification.

Brief summary for employment of Sandia Corporation, Albuquerque, NM

Hired by Sandia into the Reactor Division 1957.
Left Sandia to take employment at Ames Laboratory on 1962

Sandia Corporation operated a testing organization to determine the effects of various environments on nuclear weapons systems at Area 5 on Sandia base, near their Area 1 which was their headquarters. To test the effects of nuclear radiation on systems a light water cooled reactor was built in Area 5 by the Reactor Division while was the head of the Reactor Group for the entire time that I worked there. currently lives in Texas and can be reached by phone at if verification of employment is required.

While building the steady state reactor our group was also designing and constructing a pulsed reactor facility to test the effects of very high intensity pulses of radiation of short duration on weapons systems. I was in charge of the with as the group leader of this project. All of the was done by me and the fabricated at Los Alamos, was done solely by me. The handling of the was very sensitive and only one employee could work on the for nuclear safety reasons. The subsequent operation of the reactor was very successful and any required required my direct involvement. The reactor was radioactive after the initial operation.

Sandia was also trying to get an accurate estimate of fireball temperatures from weapon detonations done in actual testing now deceased, was assigned to the Reactor Division as the metallurgist studying the fireball temperatures. I worked directly with him in that would subsequently be exposed to a fireball in the Fizeau test at the Nevada test site. The were mounted into steel discs that would protect them from the shock of an explosion and these were mounted in large billets of steel that would survive a detonation and could be recovered. The billets were fastened to the steel tower that supported the weapon at a height of several hundred feet.

After the detonation the were recovered and analyzed. Several of us, including (now deceased) as our crew chief, went to the test site and recovered the at ground zero. We were required to wear coveralls, respirators, gloves and booties. Wrists and ankles were taped to keep dirt and debris from contaminating us during recovery. We wore film badges and pocket dosimeters to measure the exposure to radiation. The pocket dosimeters were read after each excursion into the ground zero area to determine when we got a dose of 1 R, the exposure limit for a day. We could get this limit for a 3 day period to get the limit of 3 R for a calendar quarter. This required us to quit and return for more samples in a subsequent quarter. At that time 5 R was the limit for a year. As I recall we got an exposure of 1 R in about 2 or 3 trips into the ground zero area in about 30 to 45 minutes of elapsed time. After each day's exposure was reached we would go to the base camp to undress and shower before leaving in street clothes. We were never "washed down" to wash off contaminants including fission products before changing clothes. I don't remember if nose swabs were required or used. As I recall the dosimetry was all handled by the Health Physics group at the test site. As I recall I had an accumulated dose of 5 R or more from this test site work.

The were shipped back to Sandia base where we machined and polished them as necessary to examine them on a metallurgical microscope. We also exposed in the 5 foot diameter solar furnace at Sandia to make comparisons against the The results of this study were published in a solar journal and used to predict the temperatures of short duration fireball environments.

All of this work during the employment period at Sandia involved radiation exposure from different inputs. The Sandia Health Physics group did the monitoring for the home base sites. Annual physicals were required for all radiation workers at Sandia, but they were limited in scope. Urine analysis was usually done but stool samples were never required. Chest X-rays and eye exams were the principal items examined with these physicals. Film badges were required for all workers in the Reactor Division.

After this period at Sandia I worked at Ames Laboratory until in 1996. A heavy water cooled reactor was assembled and systems were functionally tested during the early part of this work period. I was sent to the fuel fabrication facility to
The reactor began operations in 1965 with the initial criticality, and operated for 12 years after that. Following initial operation the design, fabrication, testing and installation of experimental equipment at the reactor beam ports was done.

always required my assistance. Control rods were removed from the reactor by remote tools and transferred to the hot cell in shielding casks. Repairs were done remotely and the control rods were returned to service in the reactor. D2O systems were opened and repaired as required. During one of these operations I was opening a pipe flange which the reactor operators had not properly isolated from the cooling loop and I got a face full of D2O loaded with tritium as a result. That required a complete decontamination including a shower and nasal swipes followed by urinalysis to document exposure. All work done during the period of reactor operations were accomplished by the engineers, technicians and Health Physics personnel working side by side.
from the Health Physics group can verify that work experience.

Work at Ames continued after the reactor was shut down. I was the in charge of all activities that were required for decommissioning. This involved the disassembly of experiments used around the reactor, the removal of all of the biological shielding, the dismantling of the reactor containment and cooling systems, underwater cutting of fuel elements and shipping. When the reactor was completely decommissioned I was responsible for the cleanup and disposal of all the previously contaminated sites used by Ames Laboratory during the Manhattan project and subsequent programs like the thorium project done after WW II. This required excavations of radioactive material in waste sites used in the early operations at the Laboratory. These waste sites included the debris left from burning all of the building and equipment from Little Ankeny where the uranium was produced. Another chemical waste site from these activities was also excavated and removed. A thorium release to the City sewer system in the 1950's resulted in contamination of the City sewage treatment sludge beds which was also cleaned up and shipped to a DOE burial site. The contamination in Wilhelm Hall from fume hood work and the ventilation system was identified by working with the Health Physics group to find the contaminated areas which were subsequently removed by the Facilities Service technicians. The monitoring by Health Physics personnel was rigorous and recorded for reference, and should be available to verify my exposures at Ames Laboratory. Some GAPS IN DOSIMETRY

file

From:
Sent:
To:

Cc:
Subject:

Dear Folks,
Enclosed is some follow up exposure information from a former Ames lab worker who also worked at ground zero at the NTS Fizeau site and brought samples from ground zero to his lab at Sandia. He is not being considered as eligible under the NTS SEC as he did not spend 250 days at ground zero however I have tried to make the argument that his exposures were likely very high, that his monitoring was insufficient for developing credible POC's and that as he brought samples from ground zero to his lab and ground them without monitoring or protection his situation should be reconsidered under the SEC process.
I would ask each of you to please give this case your consideration and please give me and any feedback you can.
Thank you all,

-----Original Message-----
From:
Sent: Tuesday, May 26, 2009 6:48 PM
To:
Subject: NTS exposures

You requested more information on my work exposures at the NTS in your note of May 20th, 2009. My recounting of those workdays is all from memory as I think you already realize, but I will be as complete as I can in giving this account.

I went to work at Sandia in July 1957 in the Radiation Division where was the Division Chief. of the reactor section and was in that position as long as I was employed there. My employment ended in 1962 when I went to Ames Lab as in the Reactor Division.

The first year or two at Sandia was spent in the design and construction oversight of the Sandia Engineering Reactor Facility, SERF. Probably in the year 1958 or maybe even 1959 several of us were assigned to the group effort determining fireball temperatures of a nuclear detonation. was the metallurgist who led this effort with , another metalurgist, as his assistant. knew about the temperature transition between the beta and alpha phase of brass and decided this

would be a good way to record the transition and with thermal heat transfer calculations make an estimate of the exposure temperature on the face of a sample.

The phase change from the alpha to the beta phase is very distinct and occurs in a very narrow temperature band. If a sample like a 1/4 inch rod was quenched by a surrounding metal block, the location or position of the phase change would be caused by the temperature/time exposure the sample received on the exposed face. This leads to thermodynamic calculations using the specific heat of the brass sample to correlate the distance from the exposed face to the phase change. Another way of looking at this is to relate the heat input to the sample face (in BTU/hour for example) to the temperature within the sample at the location of the phase change (measured on a metallurgical microscope). Since the high speed photos of the fireball temperature gave us the time factor for the equations, all we needed to calculate the heat input was the temperature of the source (fireball). By calculating the heat input with the time and temperature factors we could estimate the fireball temperature by measuring the location of the phase change transition. This transition location in the sample was easy to distinguish on the microscope.

The calibration of the samples was done at Sandia where we used a solar furnace to simulate the fireball temperatures. With the factors of phase transition and time/temperature of exposure we could estimate the apparent temperature of the nuclear detonation fireball. The work led to a publication in a Solar Journal but I do not recall the name of this Journal.

This then led to the field work. Brass samples were prepared and tempered to get the metallurgical phase of the sample uniform in the brass rod. Sample rods 1/4 inch in diameter and about 1 inch long were set into steel discs which were mounted in large steel billets (as quench and blast protection for the samples), and these were made for mounting on the legs of the steel tower supporting the weapon. The detonation totally destroyed the steel tower and allowed the large steel billets of about 8 inch diameter to be blasted onto the ground surface and partially embed them in the sand desert floor. This is what we needed for sample retrieval after the Fizeau shot. We had to locate the steel billets and then remove the steel sample holder discs for return to Sandia. The brass samples were removed from the discs, mounted in bakelite holders and ground and polished on a metallurgical lap for examination on the microscope at Sandia.

After the detonation an NTS lead crew went into ground zero and found the large steel billets. A team of us from Sandia then went to the site probably within a month after the detonation to retrieve the samples. The Health Physics team told us the general radiation field at the ground zero area was about 25 R/hr.

The weather was hot so this might give a better date for these tasks. We went to a temporary base station located about 1/4 mile from ground zero, to suit up for sample retrieval. We removed our street clothes and suited up with double coveralls, booties, surgical caps, and wore carbon canister respirators. Our wrists and ankles were taped to keep dust and debris out. We wore film badges and pocket dosimeters. We moved as rapidly as we could from the base camp, on foot, to the ground zero area. We removed the steel discs with some removal tools we had devised to create impact while we pulled on the disc removal rods. Our crew was , me and another technician, whose name I do not remember. would read his pocket dosimeter to tell us when we had received about 1 R of exposure and we exited the area as rapidly as we could on foot, carrying the discs we recovered with us. The elapsed time for our work in the ground zero area was probably about 30 minutes from leaving the base to the return. The HP's read our pocket dosimeters and we removed our clothes and dressed in our street clothes again. We did not shower and no nasal swabs or urine samples were taken that I remember. The NTS health physicists kept our

dosimeters and film badges and we returned to Las Vegas. The 1R of exposure was the daily limit set for us at the site. We would return the next morning and retrieve as many samples as we could while getting the 1R exposure again in the short time, return to Vegas and then return for a third day to repeat the sample recovery. This gave us a total of about 3R which was the quarterly dose limit set for us at that time. We then returned to Albuquerque. The samples, in the discs, were shipped to Sandia where we did the examinations of samples in the lab.

At the start of the next calendar quarter we returned to recover as many samples as we could within a 2R limit on exposures which gave us a 5R accumulated dose limit, the maximum allowed for a yearly exposure. The sample handling and examination in the lab was monitored by HP's at Sandia. When this assignment was completed I returned to my duties in the reactor division. The crew at NTS was only , me and the unnamed technician. The reactor section at Sandia was supervised by who now lives in retirement in Texas. I talked to him on the phone last fall, before Christmas, and his phone number then was . He remembered the work we did at NTS very well. The rest of the staff I worked with at Sandia, and another technician, are all deceased.

This is the best reconstruction I can offer from memory. If it is useful you can certainly share it with others for evaluation or verification.

Dosimetry Record

(Sandia Dosimetry Information)

For:

SANDIA CORPORATION
SANDIA BASE, ALBUQUERQUE, N. M.

July 22, 1964

I owa State University
Ames, Iowa

Attention:

Dear Sir:

The occupational radiation exposure received by
during his employment at Sandia Corporation is as follows:

Date of employment: -57 to -62

Sandia employment E-number:

External whole body exposure: 5.26 Rem

REW rh

Here's what I could find on your dosimetry records:

I. Landia Labs
'57 - '61

Deep	4.55 Rem
Shallow	4.54 Rem
Neutron	0.31 Rem
Extremity	0.11 Rem

II. Ames Lab
'75 - '80

Beta	0.353 Rem	Right Hand	2.994 Rem
Gamma	5.497 Rem	Left Hand	3.729 Rem
Neutron	1.418 Rem		
H-3	0.237 Rem		

III. Ames Lab
'62 - '74

Data very sketchy. Only found one report with exposure to you.

Only 1965: Gamma 28 millirem
Neutron 10 mRem.

(⇒ over)

Will dig more if you want, but doubt if any more than this. Could est. 50 mR/year ??

Totals

In Rem

γ	β	N	Ext
4.55	0.353 Rem	0.31	6.833 Rem
5.697		1.418	
.028		.010	
10.275 Rem		1.738 Rem	

This is without complete data for '62 - '74.

// 9/24/94

13 ⟹ if use ave of 50 mR/year for 13 years = 0.65 R

50

650 mR

∴ 10.275

.650

10.925 Rem est. total γ dose

γ Total

1975-1980 - β 0.353 Rem
γ 5.697 Rem

Neutron 1.418 Rem
Tritium 0.237 R

RH 2.944 R
LH 3.729 R

	Whole Bod (Rem)		Extremity		Fm trend (mRem)
	γ β	Neutron	RH	LH	H3
1981	0		1.705	2.18	
1980	0.977		0.046	0.065	
1979	0.310				3.03
1978	0.0		1143	120	5.06
1977	.167 x 0	.084			
1976	.1910	.168	0.1	0.050	20.31
1975	.143	.210			55.16
1974					
1973					
1972					
1971					
1970					
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1968					
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1965					
1964					
1963					
1962					
1961					

Sandia National Laboratories

Albuquerque, New Mexico 87185

PRIVATE

August 12, 1994

Ames Laboratory/USDOE
Environment, Safety & Health
115 Spedding Hall
Ames, Iowa 50011

Subj: Report of Radiation Dose Information

Dear

We have received your radiation dose history request for . We have data for the time periods /57 to /61. The following information is provided in response to your inquiry.

RECORD OF OCCUPATIONAL RADIATION DOSE RECORD
RECEIVED AT SANDIA NATIONAL LABORATORIES

++++ EXTERNAL DOSIMETRY (rem) ++++

	CURRENT YEAR - 1994			CUMULATIVE (TOTAL)		
	Deep	Shallow	Neutron	Deep	Shallow	Neutron
BODY	--*	--*	--*	4.550	4.590	0.310
EXTREMITY	--*	--*	--*	0.110		

++++ INTERNAL DOSIMETRY (rem) ++++

Isotope	Sample Date	Bioassay Analysis Date	Assigned Radiation Dose
	--*	--*	

* A double dash (--) indicates no dosimetry was performed.

If you have any questions regarding this information, please contact our office on 844-6990.

Sincerely,

Dann C. Ward, 7715
Radiation Protection Measurements

BJS:7715

Copy to:
7715 FG5

PRIVATE

DOSIMETER RECORD

Month: JUL 1971

No.	Name	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
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DOSIMETER RECORD

Month: MAY 1971

No.	Name	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
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DOSIMETER RECORD

Month: AUG 1971

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DOSIMETER RECORD

Month: SEP 1972

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DOSIMETER RECORD

Month: OCT 1972

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DOSIMETER RECORD

Month: NOV 72

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DOSIMETER RECORD

Month: DEC

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DOSIMETER RECORD

Month: DEC 1971

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DOSIMETER RECORD

Month: JAN 1972

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DOSIMETER RECORD

Month: FEB

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DOSIMETER RECORD

Month: _____

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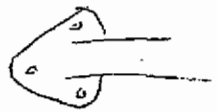
DOSIMETER RECORD



Month: _____

No.	Name	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
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