UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

April 01, 1998

Dear SSFL Workgroup Member:

Re: **DRAFT Transcript of the *JANUARY 28, 1998* SSFL Workgroup.**

Please review the enclosed transcript, making corrections to factual information and spelling errors. Also, add clarifications where appropriate. Tom and I have made an attempt to identify speakers wherever the designation of "unidentified speaker" appears. We would appreciate your help in this effort.

We're asking you to provide your corrections by **APRIL 17**, directly to:

Mark Sanchez
Tetra Tech EM Inc.
135 main Street, Suite 1800
San Francisco, CA 94105

Phone: 415-222-8220 Fax: 415-543-5480

Mark will consolidate all comments and will provide revised pages only to each Workgroup member, so be sure to save your original draft transcript. Also, these revisions will be provided to each of the three repositories along with a copy of the certified original transcript.

Thank you for your consideration and input. If you have any concerns or questions, please call me at 415-744-2184 or toll free at 800-231-3075.

Sincerely,

Vicky M Semones

Vicky M. Semones
Community Involvement Coordinator

Enclosure: January 28, 1998 Transcript

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ORIGINAL

WORKGROUP MEETING

TRANCRIPT OF PROCEEDINGS

SIMI VALLEY, CALIFORNIA

WEDNESDAY, JANUARY 28, 1998

ATKINSON-BAKER, INC.
CERTIFIED SHORTHAND REPORTERS
330 North Brand Boulevard, Suite 250
Glendale, California 91203
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REPORTED BY: KAREN E. GEER, CSR No. 9781

FILE NO. 9802274

WORKGROUP MEETING

TRANSCRIPT OF PROCEEDINGS, at 3900 Avenita Simi Boulevard, Simi Valley, California, commencing at 7:00 p.m., Wednesday, January 28, 1998, before Karen E. Geer, CSR No. 9781.

A P P E A R A N C E S:

Vicky Semones
Tom Kelly
Paul Baldenweg
Conrad Sherman
Mark Sanchez
Unidentified Attendees

I N D E X

EXHIBITS:

(None.)

P R O C E E D I N G S

MS. SEMONES: Good evening. My name is Vicky Semones. I'm with the USEPA Community Involvement office. I apologize for starting a little late, but as you can see, we're rather small in number this evening, and we wanted to wait to make sure we had as many people as possible to begin this evening.

First of all, please be sure you have signed in tonight. That's for EPA's mailing list, and also there's quite a nice variety of handouts in the back that I think will be useful for you not only through the evening but to reflect back on to supplement what you hear tonight.

Also we wanted to advise you as you came in, I hope you each got a little note here about the evening, that there are some low level household sources of radiation and what are known as exempt sealed check sources that are not subject to regulation that are on display behind me here and are going to be used in the demonstrations tonight and as they are being presented tonight, they are not harmful to you, and if you have any problem with any of that, please let any of us know.

The Santa Susanna Field Lab Work Group meets quarterly. Our last regular discussion was in

October, and in December we also held a special topic ~~focus~~ presentation ~~group~~ with the Regional Water Quality Control Board. We're beginning this year with a special presentation this evening on a workshop on radiation survey techniques with presentations by DHS and EPA's contractor, Tetra Tech. We're planning our next regular discussion work group meeting for March 4, and we've contacted the work group members on that. We have not yet set an agenda, but we will be working with each of the work group members to do that over the next month.

Although we set this date aside in October and assumed that a lot of people would be keeping this in mind, despite our best efforts at EPA, we encountered a problem with our mail room in the issuance of the flier that was announcing this event; so I think that's why we have reduced attendance this evening, but I want to thank you very much for being here this evening in spite of that; so please accept our apologies.

We've also made a special effort to consolidate our mailing list. We've had a number of comments about that in the past, that some of you have been getting duplicate and even triplicate mailings; so we have consolidated that and made all

these revisions so those of you who did get a flier tonight, we hope you only got one.

Also the work group has received the transcript from the October meeting -- I believe the October 29 -- and just before coming down here, we -- I was delivered the transcript from December 9, and I'll make that available to you all prior to the March meeting so you'll have an opportunity to review that.

So this evening, if I can direct your attention to the agenda, I'll turn this over momentarily to Tom Kelly from EPA for program updates. Then we'll have a demonstration by DHS on survey techniques and sources and equipment, followed by a question-and-answer period, and then we'll move on to Conrad Sherman who is with Tetra Tech, EPA's contractor, for additional survey techniques and a demo, some additional questions you may have from his presentation, and then we'll have an opportunity for you all to come forward and actually get acquainted with all of the items up here.

So thank you again, and let me turn it over -- actually I would like, first of all, to have the work group members identify themselves if they would please. Would you mind? Shall we start up

here in front.

(The members identify themselves.)

MS. SEMONES: We have Phil Rutherford here from Rocketdyne.

(The remaining members identify themselves.)

MS. SEMONES: And I hope you don't mind we have you sitting out here tonight, but I think you can see, because of the format, this should work out fairly well. Okay. Thank you very much. Tom...

MR. KELLY: I really don't have too many things to cover. I did want to mention that we had sent out the building 12 documentation of the clean up there to the work group members. It wasn't the intent that we were going to cover that here, but we did want to provide that as some background into the survey procedures that they do; so if you have questions about instruments or surveys, we thought that might stir those types of questions which is why we sent them out. That's certainly an item we can set on the agenda for the next work group meeting is to go into those reports in more detail. We can definitely do that.

As Vicky mentioned, our contractor is here. We had a request to bring Greg Dempsey in. I

know we've always appreciated his involvement. He wasn't able to make it to the meeting tonight, and he's told us in the past, while he's willing to be involved in the facility in the future and he's willing to work with DOE on a survey of the site, large area survey down the road, with regards to looking at specific buildings, we'll be relying on the expertise of our contractors as well as I'll be reviewing documents and other people at EPA.

So in addition, you're probably all aware, but I'll just refresh people's memories. Rocketdyne is the ones who actually do the work in decontaminating a lot of their facilities. Then they complete a final survey of their facilities, and those facilities are also surveyed by the Department of Health Services and by ORISE. It's an independent third party review, and some people have questioned that because the Department of Energy pays ORISE to do that, but they actually have a good reputation in the radiation field and in the work that they do; so we do -- we are interested in bringing in Oakridge -- the Oakridge Institute of Science and Education, ORISE, into a meeting, and we hope that we can work that out with DOE in the future, but we weren't able to bring them here.

Hopefully this workshop will be informative. We would like to have Paul give a presentation and an opportunity for some questions for him on the things that he's covered. Then we'll have Conrad also with a short presentation and an opportunity for questions, and then we'd really like to see people come up and have an opportunity to make some measurements for themselves on a lot of this type of stuff.

There are a couple of instruments which people can identify as you come up that are a little too sensitive, and they don't really want people handling, but by and large, most of them can be handled, and we hope we can make this real interactive and you can get an opportunity to see how this stuff works.

With that, I'll turn it over to Paul.

MS. SEMONES: I just didn't want to overlook Ingrid ~~Hopsin~~ Hodgson also from Rocketdyne who came here tonight. We're very pleased that she's here.

MR. BALDENWEG: Hi. I'm Paul Baldenweg, DHS.

To give you a background, DHS is responsible to do confirmation surveys. That is, if we follow the process, Rocketdyne will do -- take a building. They will do a contamination survey. They

will identify spots that need to be cleaned up. They will clean them up. A lot of times they will have a party come in, which would be like ORISE on a DOE project, and DHS, us, will come in and do a confirmation survey after them, after we review all the documentation.

What we are going to show you tonight is the different instruments we use. Some we have check sources to show you how we verify that our instruments are functioning, and we also brought in some common household products and things that are manufactured that are radioactive and that we're all very familiar with.

I'm going to try to follow my agenda. If you found my four page handout, I apologize for not getting it to you. I only put it together today. It says on the front -- it's real simple. Workshop on Radiation Survey Techniques, little four page thing. That came from us, DHS. It came from me. It's real simple. I did the first part on the index on what DHS is really responsible.

I'm going to talk just a little bit about NORM and background radiation. NORM is naturally ~~accruing~~ occurring radioactive material. It's very common. Thorium is a good one. What's in this is

typical mantle. This is really a natural that's manufactured, but you're -- giving a better example is there's a company called Molicore on the way to Las Vegas. They literally take rare earths, and it's NORM product that they mine out of the ground, and they end up making -- it turns it through a whole process. It's owned by Union Oil. They make the color in TV screens, color TV screens. It's a big process that they go through, but they actually mine naturally ~~accruing~~ occurring radioactive material.

And then the other one is background. If I turn one of these meters on, it's very typical. This is what's called a Geiger-Mueller, GM, Geiger-Mueller, or Geiger counter. If I turn it on, you're going to hear chirps. Now, I could take it over here away from everything else. Can you all hear that? That's background radiation, background radiation from the ground, from terrestrial, from the sky. We have radiation from our bodies, but that's what you're hearing is background radiation.

Okay. Now, definitions -- let's go to the next page. The only ones I'm really going to go into detail are number 2, 3, 4, 5, and actually I'm not going to go into that much detail. I'm going to read them verbatim. Radioactivity: Some atoms have

nuclei that contain an excess of energy. Such atoms exist in an abnormally excited state, characterized by an unstable nucleus. To reach stability, the nucleus spontaneously emits particles and energy and transforms into another atom. This process is called radioactive disintegration. That's what all of these products do right here.

It goes on to say the process is called radioactive disintegration or radioactive decay. The atoms involved are radionuclides. That's what these are. These transformations and subsequent release of energy are most commonly accomplished by the production of either one of three phenomenons: Alpha, beta, or gamma radiation. We can represent each one of those here. We have different things that are representative of alpha, beta, and gamma.

Alpha particles: An alpha particle is a highly energetic helium nucleus that is emitted from the nucleus of the radioactive isotope when the neutron to proton ratio is too low. It is a positively charge, massive particle, consisting of an assembly of two protons and two neutrons. Alpha particles only travel within centimeters and can be stopped by a piece of paper.

Okay. What I have here is thorium 230

source. Again these are all exempt quantity. We do not regulate them. We have to purchase them, but they're unregulated; so they're very safe. I'm not concerned with them. I'm going to give you an idea.

First of all, let me talk about this real quick. This is an alpha probe. Just like this is too. Made by the same company but used in different ways. This is a beta instrument. This is a gamma instrument. This is called a micro R meter. This is a very typical ion chamber. This also is a gamma meter. We use it all the time at Rocketdyne. The difference between this gamma meter and this one, this one is much more sensitive. It will read at a lower range. It can pick up smaller quantities easier with this. I will use this. This is a higher energy unit. If you're going to transport radioactive materials on public streets and highways, it requires you meet certain DOT requirements, Department of Transportation requirements, federal requirements. I will measure those radiation external measurements with this ion chamber. That's the difference between using this and a micro R meter.

Roentgen is defined as an in-air exposure. That's where this is by definition a TI,

transported index instrument, in-air instrument. That's where this comes in, right here. If they do not meet certain -- if they see certain levels, we will not let them ship it out by the DOT regulations, and that's what we measure it with.

Now, we talked about alpha. This is an alpha -- this is an alpha source. Now, the thing with alpha now, alpha do not penetrate. They won't -- I'll demonstrate. It won't even penetrate a piece of paper; so it's an not an external hazard. If you had it right next to you and laid it on your skin, your skin is dead tissue; so it's really not a problem. This will not penetrate the dead tissue; so it's not an external problem. You've always heard this or heard this before. It's an internal problem. If you have it loose, it's free form, it's contaminating, it's in the air and you breathe it in or ingest, it becomes an internal problem because there's live tissue there. It sits there for many years sometimes, and it be lead tagged. It goes in the bone and stays in the bone. You have both of them. You have half life to here, physical half life, and then you have a biological half life. It stays in the body for a long time. It keeps exposing the patient or the person for a long time.

I'm going to show you how this works. Now, this will not pick up background. You won't hear a lot of background in here. You get maybe one chirp a minute or two minutes or something like that. It's not a big deal. Watch what happens when you get close now. You've got to get very close now. Alpha only travel about a centimeter. They do not go any farther than that; so you've got to get right up on this. Watch me do this. You've got to get right up on it. See that. Watch my distance. If I go really close to it, see how it goes away. They only travel a short distance.

Now, when we're surveying with this, what do we have to do? We have to be really close to the surface. If you see a guy with an alpha probe, he's looking for an alpha emitter, and he's standing two inches or three inches away from the surface, he hasn't got it. He is not even going to get close. He's not going to see it. So what I do in this very sensitive -- this is the only instrument I don't want you guys to touch. It's very expensive to change this out. So when I survey, I take my fingertip, and I don't want to get anything on the end of it. I stand and run it real slow over the surface. I don't want to be right on it because there could be a nail

sticking up. It could be some imperfection on the surface. It could puncture my surface here, and then I'm having problems.

We talked about the paper. You've got the radiation. I'm setting it right here. Now, take just a piece of manilla envelope, put it on top. Same source right there, and I'm laying it right on top now. It's not there. It's gone. When you hear about an alpha particle being ~~tinuated~~ attenuated by a piece of paper, it's true. It does work that way.

I appreciate when you do come up, this is the only one I really don't want you to handle too much. You're welcome to, but just be careful with it.

Now, this is really a beta meter, but it will measure -- it will measure other instruments. It's just not really efficient to do that. This is really a beta meter. Again I've got a whole packets of check sources here. Here's pure beta emitter. It's an energetic, very energetic beta meter. Commonly used in the medical field, used to be. If you had a cancerous growth on your eye, they use contact therapy.

Now, if you listen to this, can you hear that? Now, beta will travel a little farther than

that. It's more penetrating, but this is a -- distance is always going to be a criteria for safety. Radiation follows all electromagnetic spectrum. If I double my distance, I'm going to get four times less radiation. The cheapest way to safeguard yourself is distance. As I pull away, I'm going to get less radiation. Now, here's a piece of just linoleum. Is that what it is? That's enough to stop the beta. It's gone.

Now, lastly is gamma. I've got a bunch of sources for gamma, but very, very common -- very common thing is ~~sesium (phonetic)~~ cesium 137. We use it all the time. It's use in the industry. It's used in industrial radiography. It's commonly used as a check source. It's used as a calibration source a lot of times. It's got a long half life. You can take any one of these gamma meters, and you'll see it really go off. Just the -- extremely sensitive gamma. It is a really small source. Can you hear that go off? Now, gamma is very similar to x-ray. Very similar. The difference being this is emitted from the nucleus, whereas x-ray is produced outside the nucleus. It's very penetrating, goes very long distance. This is where the lead shielding comes in. It takes lead to stop it. Can you see that

difference? Do you see it's faster? It's moving faster. Watch. It's hard. See that? Now, this should go back the way it was over here. Hear? See that? Change positions. See that now? Does everybody see that dial? We had a background of 10 micro R per hour, and with the source here, we've got it right about 22 micro R per hour. At least doubled it. Let's put the lead in there. We're back down to about 15, 16; so it will be ~~tinuated~~ attenuated by the lead itself.

Common shielding for gamma are lead, concrete. Concrete is cheaper. The thicker you make your lead, the problem with lead if you try to make lead that was an inch or two inches thick and you made it on the whole wall, eight by ten or something like that, by sheer mass inside and weight, it kind of falls off. You can't put it up on the wall; so they start using concrete.

Those are the different types of instruments. Now, commonly -- what we want to do is talk about some common things. We talked about the typical mantle lantern. This has thorium in it. You can pick it up with the alpha. But they do make now a gold -- the old ones were the green, and then you have of the pink ones. Both of these have thorium.

They do make a new one. It's a gold label, and that doesn't have thorium in it. See, that has the thorium in it.

Very typical too is your smoke alarm. This has a little tiny piece of americium in it, americium 241. It's an alpha emitter. Keep in mind it's in a little tiny shield so you won't see -- it's only got a little tiny foil in it. You won't hear it here because it would be -- a piece of paper would do it -- right -- so you won't hear it, but americium, one of the good products of it that's used quite often in the industry, it's gone a photon; so that would definitely go through paper. We could pick it up with the micro R. Can you hear a little increase on that? Small tiny source. It's got a little photon in there. Some nuclei like americium will have different things coming off. They're not all unique to gamma, alpha, or beta.

Americium have both alpha -- mostly alpha but it also has a 60 ~~KEB~~ KeV photon coming off here. This is a gamma meter. This is another smoke alarm, same principle. This is -- some of these people remember Fiestaware. The paint on this -- has anybody ever seen this? This is Fiestaware. It's uranium. That took off, didn't it? It's the glaze

itself. Right. I just got -- very common, this is still around. You can go to an antique shop and find this occasionally. You can find it at swap meets, people selling old stuff. It's hard to find, but it's still out there. Is it dangerous? No. I wouldn't boil water in it and drink out of that. It's not going to easily come off, but you can process it off. I used to have a couple pieces of that. You can't manufacture it, but you can -- it's still around.

(Inaudible discussion held.)

MR. BALDENWEG: I just got one about two months ago, a really tiny tea pot one, and I gave it a to an old friend of mine, and I'm so disappointed because I don't have any left.

Here's a good example, and that's another natural ~~accruing~~ occurring radioactive material. You've all heard of radon. It's a daughter product of radium. What happened is Phil Rutherford took his TV screen, and any time you're in a confined space, more often in some states than others, Pennsylvania is high radium, Colorado is high radium. Not so much in California, but if you get radon inside a building, especially a closed environment, your TV screen -- in the first 24 hours the daughter products

of radium are real strong. ~~I've~~ I'll be out there, and I'll open a radium container that's confined, so you're going to have a lot of daughters. Now, take a wipe inside that container and it's hot. 24 hours later a lot of the daughters have died out; so they're gone, but you still have them -- you don't have the radium, but you still have other products. You don't have the radon, but this was hot. It died off.

(Inaudible discussion held.)

MR. BALDENWEG: Again in California it's not a real big issue. About four or five years ago, we did a complete survey. Steve ~~Shu~~ HSU is from the Environmental Assessment Group.

MR. ~~SHU~~ HSU: Our assistant branch, environmental management branch, they're in the charge of the radon monitoring program. They were able to leave because the temperature range in California is not that -- so people can open the windows. Once the windows are opened, the air inside is ventilated; so the radon gas doesn't get accumulated; so we don't really have the radon problem generally speaking in California. There's some radon problems. I'd really refer to Mr. Dave Quinton. If you want to know the details, you can have him talk about it. But that's my

understanding of the radon problem, if it's a problem in California.

As Paul said, it's more of a problem in Pennsylvania, Colorado, and some states that tend to have more of those uranium series in the ground. They tend to have that -- there is an NCRP, National Council of Radiation ~~Potassium~~ Protection measurement that you can go for, I believe, there's a phone number -- 92 or 91. If you can go to a library, and you can get some background information on the radon issue. It changes with season. It changes with moisture. It changes with your ventilation in your house. It changes with altitude too. Also depending on the location, where your house is located. Depending on whether it's located where it is full of uranium series.

MR. BALDENWEG: Like Steve was saying, I don't consider -- I personally don't consider it a big issue in California, but if you have an enclosed environment and it gets really cold like Pennsylvania or something, you close in the radon product. They don't get out. It becomes a hazard for that individual intake, internal hazard. Are they going to die? There's all kinds of studies to show what kind of a real problem it is. The corrective ~~major~~ measure

for a house that's confined, they design a filtering system -- I'm sorry -- a venting system; so as long as you get the radon out of there, that's the big thing. Once you get the radon out of there, it helps minimize your exposure, but it's not a big issue in California.

Pretty much -- what I got was a lot of check sources, a lot of things here. We can talk -- I'll talk a little more about the instruments. If you go to about to the third or fourth page, it talks about instrumentation here. We commonly -- DHS commonly uses every one of these pieces of instrument. Some more often than others, but these are standard. In my trunk alone, I carry four of these instruments. This right here is an emergency kit. It carries my alpha pro. If Del and I out of our office get called out on an emergency response -- the most serious new one, recent one, was in Orange County. They closed down 5 Freeway down to the Orange Crush, where the 22, the 5, and the 57 meet, come together. There was a transporter of radioactive materials. Actually it was pretty benign, crashed and closed down the whole freeway. This is one of the things we take with us. It's got all of the instruments. Everything is ready to go

and all kinds of things, and it's got the alpha pro. We don't commonly have these in the trunk of our car. Anyway, so we're all ready to go. But a lot of these instruments, we already have in our car, and we're ready to go.

I'm just showing you a couple other bizarre little things. This is another. This is Steve ~~Shu's~~ HSU's alpha. Remember in your report you see it. It says 100 square centimeters. This is 100 square centimeters here. Whatever you see is your per hundred square centimeters. Mine is 50; so whatever I see, I have to double it mathematically. So alpha -- most commonly they come in 50 and 100. Sometimes you see a 25.

(Inaudible discussion held.)

MR. BALDENWEG: Both of these are. And so this is one. What else was I going to say? This probably we wouldn't use too often. I'm getting a little off on a tangent here.

This is what's called an MCA, multi-channel analyzer. If we get called out on an emergency and it's unknown and we don't know what that nuclei is, hopefully it's a gamma ~~meter~~ emitter because commercially most radioactive material that's manufactured of gamma ~~meters~~ emitters -- because they're used

in medicine, research other than beta ~~meters~~ emitters. So if all gamma emitters have what's called a footprint or fingerprint, they all have a specific energy; so we can identify that gamma emitter by it's energy, and how do we do that? We do that with a multi-channel analyzer. Del and I use that maybe not often. Maybe once every six months, for unknowns, we go through the whole process, and we've gotten pretty good at it. Some things like ~~sosium~~ cesium -- this is ~~sosium~~ cesium 137. It has a very distinct photon comes out at 662 KEV. We can see that on that thing real easy. Very common, very easy to see. Once we see it, we know.

Cobalt 60, very common nuclei. It's two energies coming out, 1132 and 1365 or something like that. You can just see those peaks come up. It has these peaks that come up. You see them, and you say that's cobalt. There's no question about it.

The uranium series and thorium series, those are a little rougher. Those are harder to analyze. There's a bunch of stuff that comes out; so it's hard. We'll spend hours trying figure out what they are. We're pretty good. This is hooked up to big sodium iodine crystal. This is a big gamma detector, two by two. Very expensive too. This instrument is pretty expensive. This doesn't travel

with us. We only take that -- I'll give you an example. We get a land fill that goes off their alarms. Their alarms usually will detect on most gamma emitters. It's most likely a gamma emitter. They say, hey, Paul, we've got a truck. We don't know what it is. They'll set it to the side, and either Del or I will come out and take the MTA with us and do an analysis and figure out what it is. Okay. Pretty much -- okay.

Now, Geiger meter. If you go on the sheet, good for contamination. It's go, go, go. It's very energy dependent. Whatever it's calibrated for, it's very efficient for that, but it's not efficient for other energies all the time unless you calibrate it to that energy. They're very sensitive. They can see small quantities of contamination, very sensitive. This is very sensitive whereas the ion chamber is not as sensitive. You don't go looking for contamination with this one at all. You go looking for it with a Geiger meter. The ion chamber is a true roentgen. I talked about that. If you want to measure what an outside exposure -- if you're at an x-ray facility and there's legal limitations, you cannot have two millirem ~~(phonetic)~~ in any one hour beyond any occupied area. We will take this

meter. If we see three MR per hour, then they're exceeding the legal limit. They'll have -- either they'll have to change the configuration of their x-ray machine, or they'll have to add additional lead. And we'll cite them on that. That's very typical what we do with that.

UNIDENIFIED SPEAKER: How often do you investigate x-rays?

MR. BALDENWEG: All the time. In the State of California, we have this whole process. We have this whole priority system depending what kind of specialty the person is. It's either a hospital, high priority, or chiropractor to medium priority which would be like an internal medicine doctor, general practitioner. That's medium priority. That's every 4.25 years, and then we have 5 years.

If we get any complaint in, we go out. We go -- we go on every complaint there is. There isn't that many. But a guy could be in one office and he says, hey, this doctor has an x-ray machine. I'm worried about my secretary getting exposed, and we'll go out and measure and determine.

(Inaudible discussion held.)

MR. BALDENWEG: On complaints or routine inspections? We cite a lot of things. There's a lot

of rules, and if they don't have caution, radiation area or caution, x-ray machine or something like that, little minor violations. We get these all the time. They don't have title 17 withdrawal regulations, we cite them, minor. It's not very often we find a lot of major stuff. We also have the ability to go through Ed Bailey, our chief, and what's called emergency order, cease and desist. He's the only one that can sign it, but we as inspectors can do an immediate verbal cease and desist, if it's causing public harm. If we walk in and we say there's no timer on this x-ray machine, there's just hand timing it, and they're going one thousand one, one thousand two, it's absolutely illegal. We would tell them, hey, you can't do that. We'll cease and desist immediately. They're not allowed to do that.

UNIDENIFIED SPEAKER: I'm not sure I understand. High priority one, how often do you get out?

MR. BALDENWEG: High priority is every three years on x-ray machine. It's all by law.

UNIDENIFIED SPEAKER: Lowest priority is --

MR. BALDENWEG: 5.24 years. Actually it was our -- our office. We used to do dental. We'd send

them out by survey. I'm getting way off track.

(Inaudible discussion held.)

MR. BALDENWEG: We send them on a piece of cardboard, TLD chip, same thing we use the film as, and we tell him to expose it like you do a typical bite, when you're biting, what you do twice a year, send it back. We evaluate it, and if it doesn't fall within the range, we send an inspector out. I never liked the system. It's kind of fallen through the cracks. We weren't getting the contract to get the TLD's; so our office says why don't he we do this routinely, and we went up to Ed Bailey and asked him do you mind if you go out and do routine inspections, and he said I don't care. Go do it. So our office is actually almost caught up on all its dentals. I cover Santa Barbara, Ventura, Los Angeles for state facilities, Kern, and San Bernardino and King. We have thousands of tubes in our inspections. Normal deal is 30 or 40 x-ray tubes per month is a good average. The guy did 70 last month. These guys are knocking them off. Really inside is really important. We're going to bring all those 5.24 years, we're going to bring all them up in the next six months, something like that. We'll have them all in our areas completely inspected.

UNIDENIFIED SPEAKER: Which ones are you considering high priority?

MR. BALDENWEG: Hospitals, chiropractors, medical clinics, orthopedic surgeons. Orthopedics because of the volume. They do 20 or 30 patients a day. Have you ever been in an orthopedic office? When they're doing x-rays that day, it's boom, boom, boom, boom, boom. Cut the cast, treat the patient, put the cast back on, and sometimes they shoot again. Chiropractors, it used to be because it was a 14 by 36, full length film. That's changed. They very rarely use that. Hospitals obviously they do a high volume of x-rays. That's the reason why. If anybody has therapy, high priority. Mammography and Inc. U.S.A. -- that's every year, period, flat out, done. It's a whole federal and state policy. It's very intricate.

UNIDENIFIED SPEAKER: It's more than every few years.

MR. BALDENWEG: Oh, yes. Inc. U.S.A. follows a one year, one year. I'm sorry if I mislead you.

Radioactive materials is a little different now. We have high priority.

Tom Kelly

~~UNIDENIFIED SPEAKER:~~ Maybe show like some of the survey speeds that you survey the area.

MR. BALDENWEG: Sorry about that. I got way off track. You were enjoying that more than the -- one more real quick, even though he's the facilitator. Radio material, we also follow a very specific guideline, a priority. We have one, two, and three priority. Actually we have four and five.

UNIDENIFIED SPEAKER: The licensees?

MR. BALDENWEG: The licensees themselves, very distinct. Radiographers, industrial radiographers, are out there with those high source -- reading 192 sources. Those guys are once every year. We'll go unannounced to the field and actually watch the guys hopefully without them seeing us. I carry binoculars in my car just to watch these guys.

Now, inspection procedures, if I'm looking for an alpha source, I'm talking about how close I have to be. I use my thumb. I don't want to puncture my membrane. I don't want to pay $2-, $300; so I keep fairly close to the surface, running at surface speed. I may not hear that. So I maintain about every couple inches. You watch. Watch them pick it up. Go by it. I'll come back to any spot I hear to verify it, and without them I'm looking for contamination. I'll mark it right there, and I'll go back and do -- put it on a slope, a mode here, and do

a complete count on it and get a real accurate reading. Again one other thing I want to do --

(Inaudible discussion held.)

MR. BALDENWEG: I'm very careful. If this was removable versus fixed contamination, I want to be very careful. I don't want to set my probe right on top of it. If I contaminate my probe, I'm going to have totally clean this. So I try not to contaminate my probe. Obviously I can't cover this up, but if I put tape on this -- you've just got to be very careful. In the real world, I just stay close to it and do the best I can.

Now, another thing I do too, you notice I wasn't looking at my analog meter? Analog is dependent on response time. I may not see this. I may have the audible off. I may not see my meter go off. Audible on all survey instruments is instantaneous. If I get one interaction with the meter, I'm going to hear it. If I get 20 of them, I'm going to hear all 20 of them. But I always have my instrument on, have the audible on. I will listen. Then I will start panning. Okay.

Now, there could be two guys surveying this building. If we've got the same instrument and we're doing audible and nobody's got earphones on, I

will have him get on the other side of the room. I don't want to hear his chirps. I only want to only hear my chirps. I survey with one of Steve's people quite often. It turns out he's got a different brand name instrument. It has a different sound to it; so it doesn't bother me. Mine's much higher pitch; so he doesn't bother me if he's right next to me. I'm very aware of mine. Okay. What else did we want to cover?

UNIDENIFIED SPEAKER: Talk about special frequencies.

MR. BALDENWEG: There's only a few facilities that are in-house. In fact, only like, for instance, has in-house -- two of them, in fact -- isn't it two -- in-house every day.

(Inaudible discussion held.)

MR. BALDENWEG: We have no luxury whatsoever to do that whatsoever (full time DHS staff person located at Rocke dyne) We let them. They do their report to us first. I get a copy. Steve ~~Shu~~ HSU gets a copy. Licensing gets a copy. It's reviewed. That's just the plan. We say yea or nay to the plan. They say yea. They start doing -- their people are on the license or a part of their broad scope license only because when we reviewed the credentials, we believe they have a professional credential to meet. They do

that on their own. They come back with their final plans -- final results and say, hey, we don't have any contamination. We found this and this and this. They come out and do confirmation survey, third party. Then we come out after we've read the total report, new confirmation. Okay. Does that make sense? There's no way we could ever afford to have someone on site. Rocketdyne is on a download; so there's a lot of D&D going on, but it's still not as often. We could never have a person on site all the time. There would be no need. They'd be sitting around twiddling their thumbs. I know you were laughing because of ~~Molicore~~ Molycorp. That's the big issue right now.

UNIDENIFIED SPEAKER: Whether or not it's actually a waste or --

MR. BALDENWEG: Well, I'm not going to get into that part. There's a lot of controversy. What happened is they have an evaporation problem. They were what's called pigging. Steve is more familiar with. What happened is their pipe burst in seven locations. The controversial part is this NORM or source material -- we're going to -- what I'm getting at, we are one of the agencies that's overseeing in the clean up of that, but there's no way we could

afford to have somebody there all the time while we're doing it. We approve their plan and the procedures and the credentials of their people. Now, we'll come back to this. There's just no way.

Removable: Now, there's two basically types of contamination. We have fixed and removable, and it has different standards depending on if it's alpha, beta, or gamma emitter. Removable -- fixed is fixed. It could be like concrete. If you take a liquid radioactive material and you put it on concrete, concrete is very absorbent. Once you get in concrete, it's all kinds of trouble to get it out. It's hard to get out. It's not easy. You can't remove it very easy, but you can have other things that are removable.

Removable is a little more dangerous obviously. If you remove it and put it in your pocket and you walk away, you can contaminate your family or yourself. So the restrictions on removable are a little higher than on fixed. It makes sense. We will do the fixed by measuring the fixed. We do a count, and then we'll do a wipe of that spot, and what the standard is it's 100 CM (square centimeters), moderate pressure. They're wipes, and I keep them in my car for emergencies too. They're little disks. There's two

different kinds. One's for gamma emitters. If we know we have a gamma emitter, we look at our gamma emitter. It's a little courser, a little rougher. We estimate for 100 CM. Four inches by four inches is standard. We send it off to our lab, and they analyze it for removable contamination. We already know what the nuclei is. We tell the lab what it is, what we think it is, and they analyze it, and they use special kinds of anodine.

If it's something like a beta emitter, you only can detect -- to truly detect a beta emitter, I wouldn't use a heavy source piece of material and try to pick it up. Maybe use a dissolvable membrane. I'm real careful. I keep it in my car, do that wipe. I send it off, and they measure it and tell me what the DPM is for the removable wipe.

Now, with Rocketdyn, I'm going to blow their horn. If they notify -- if there's something they find that's contaminated and it may not exceed the releasable limit. I've never had any problem with Rocketdyn going -- they have no problem with that. They've always brought everything almost -- if I have 20 DPM's of removable and I'm seeing -- and I do all my calculations and I'm seeing 10 DPM's,

disintegrations per minute, they take out. Jim Barnes, just get rid of that, and he'll have it checked out or whatever. So it's been a good setup.

Does anybody have any questions? There's a lot of common things here. When we do come up and do this, Conrad does his presentation, I would appreciate it if you have one of the ~~telephysicists~~ health physicists work with you on that, tell you what the difference between the different emitters are. We can work with you on it. You're welcome to use it, but be real careful with the alpha.

(Inaudible discussion held.)

MR. BALDENWEG: Different for different emitters. Alpha versus beta, gamma.

UNIDENIFIED SPEAKER: My question was how do you know for those, alpha emitters?

MR. BALDENWEG: How do I know which ones are which? Because you have a history of that building's use, and it's in their report. They'll have -- commonly they'll have like a paragraph that says building whatever -- building one had ~~potomium~~ plutonium 239; so we know what to use in that case. That's part of where -- or they'll have a -- eventually they'll have their calibration removed. They only have ~~sesium~~ cesium 137. We know that's a gamma meter.

UNIDENIFIED SPEAKER: Is there a problem -- is there a problem -- what happens if you're not sure what was used? For example --

(Inaudible discussion held.)

MR. BALDENWEG: If we had a problem, we'd take the most restrictive one, most conservative. In fact, the -- kind of along those lines. They say if you have two nuclei, you shall use the most conservative. That's what our guy does.

UNIDENIFIED SPEAKER: DHS regulations, I assume, you're not going by the DOE order? Do you have your own regulations?

MR. BALDENWEG: Our release are equivalent to -- they're almost identical.

UNIDENIFIED SPEAKER: If I may --

MR. BALDENWEG: Sure.

(Inaudible discussion held.)

MR. BALDENWEG: Keeping in mind now, though, when they do analysis alpha or gamma spec, now, this is all done in a lab, very sophisticated lab. They are not field instruments, and geometry is very sensitive. Other things, high purity, geranium crystals, a lot of expensive things that you cannot use out there in the field for obvious reasons. In fact, this is probably the most expensive instrument

you take out into the field. This is pretty sensitive. Again it's two by two inch. This is a very expensive instrument. Just like that --

UNIDENIFIED SPEAKER: Sounds like you're really on top of the situation up there at the present time. How long have you been doing it?

MR. BALDENWEG: Well, I guess ever since 1962. I mean keep in mind, when they established a license with us, they weren't doing D&D for the first -- what? Phil will have to give you the history. You don't start doing D&D until you're done with projects. You could start a project in the certain building and do a D&D five years down the line, but the major D&D is only currently now in the last five years.

UNIDENIFIED SPEAKER: You're telling me that when they had the radioactive melt downs, you allowed them to go on knowing full well the contamination taking place at Rocketdyne?

MR. BALDENWEG: I'm not familiar with it. I'm personally not familiar.

UNIDENIFIED SPEAKER: You're not familiar? I think you ought to read the records.

(Inaudible discussion held.)

UNIDENIFIED SPEAKER: I'm not familiar with

it. I'm sure this was in the AC time.

MR. BALDENWEG: Prior to 1962?

UNIDENIFIED SPEAKER: 1959.

(Inaudible discussion held.)

MR. BALDENWEG: I'm sure there's facilities that have had ~~access~~ accidents in the past that I'm not familiar that I regulated -- well, that the office that I work in regulated all the time. I'm sure there is. Absolutely. I don't want to presume I know everything in the past history. Why do we let them continue on? I have a facility right now that has americium contamination on something they weren't allowed to do. Once we get this all remediated, it's not a big issue -- I mean it's a big issue, but it's not something that's going to cause people on the outside any harm. Once we remediate the immediate health problems, we're going to go after the big guy, but we want to make sure we get rid of the health hazard right now, first. We're not worried about the compliance issue. I'm current since 1980, but I don't know what happened prior to that. There's a lot of people who aren't going to know exactly --

MR. KELLY: Some of what you're covering here is specific buildings, and they were licensed by the Department of Health Services, and they're verifying

that they're cleaning up the release. They're talking about other work and trying to survey other areas because they found contamination where they didn't think they were going to find it. There have been some of these studies. We had some problems with those studies, and we're still working that stuff out, and DHS also requires a final survey of the area before they will eventually release the entire site from their license. So there are activities where they're looking in broad areas for contamination. I guess, Paul -- I've read the one study on building 59, famous building that had the reactive problem. Somewhat familiar with it. Here we're covering a little bit more about the buildings that are being done and also some of these are based on soil, but there's other methods as well. Laboratory analysis as Paul mentioned.

MS. SEMONES: We're trying to get your question, and then this gentleman right here.

UNIDENIFIED SPEAKER: I notice you have some fertilizer. Whether radioactive materials was used as fertilizer -- radioactive waste was used?

MR. BALDENWEG: Purposely they were using radioactive waste?

UNIDENIFIED SPEAKER: Yes.

UNIDENIFIED SPEAKER: Explain this.

MR. BALDENWEG: It is naturally accruing. It's not waste. It's naturally accruing like mithorium and mantle. This is potassium, and you've got phosphorus. That's just natural phosphorus which is radioactive.

MR. SHU: Uranium also exists in the phosphate mines. Uranium comes with it. So what you see here, I believe, mostly it's uranium.

MR. BALDENWEG: Isn't it like they --

UNIDENIFIED SPEAKER: Radioactivity wastes, one of the purposes of -- not that it came -- not that it came as part of the product, but it was --

UNIDENIFIED SPEAKER: There was an article in the L.A. Times about how fertilizer is not regulated, and they found --

MR. KELLY: That's actually lead.

UNIDENIFIED SPEAKER: They said it's low level waste, and they were dumping it in fertilizer, and it was regulated going in, but not coming out because fertilizer doesn't have any recognitions.

MR. KELLY: And that's true, and people still are being -- applying fertilizer, and unfortunately EPA doesn't have any regulations. I believe the major problem is lead, but they don't have any

regulations.

UNIDENIFIED SPEAKER: Low level waste.

MR. KELLY: I've heard the problem before of lead.

MR. BALDENWEG: I'm not familiar with that.

UNIDENIFIED SPEAKER: Confirmation survey, what does that entail? Rocketdyne, major plan, approved it. They've done their survey, and you say you have confirmation survey. What does that entail?

MR. BALDENWEG: Well, we actually go in usually with a team of people, literally -- pardon me?

UNIDENIFIED SPEAKER: Do you physically go through?

MR. BALDENWEG: Yes, with instrumentation and do wipes, and we map it. We map it. We indicate on the map where those wipes were taken, and we can do DPM. The measurements could be released on DPM, disintegration per minute. That's all done by us. We do soil samples and water samples. We send them off to a lab. Those are all quantified and analyzed, and they have to meet the release limits prior to.

Keeping in mind, emissions and other previous actual meetings are not in workshops. We have certain standards of what we're supposed to

measure and what we're supposed to do and grid this and grid that. If I walk in and we used to have some kind of normal form radioactive material, nonsealed source, normal form, if I see an exhaust vent and it's 15 feet up there, if I suspect there might be contamination, it's my professional judgment, I will ask Bill or whoever is with me to give me a ladder, and I'll go up and do a sample. I'll do a physical measurement, and a lot of times I'll do a wipe. I always do -- we almost always do a wipe with a physical, but if you're only reading background, very rarely will you get a positive wipe, but we still do it. We certainly get a positive reading, and we always do a wipe.

We look for the strangest thing. I don't remember where -- we had a furnace or something, and it had ash, some residual from the furnace. I took a big old sample of that. So I'm just thinking I'll lift up where there's possibly a water drain, and there's a grid. I'll lift up the grid and I'll go down and take any kind of junk down in there and take and send it where I think there possibly could be contamination. That's part of our professional judgment. We don't always fix ourselves to exact parameters. We go beyond those parameters a

lot of times because we're just not comfortable with the situation. That's just our job. That's how our minds work sometimes. We're actually out there trying to find something. It's boring getting all background. It's absolutely boring. It's amazing. We'll be out there, and Steve knows if you're measuring hour after hour of the same stuff, it drives you nuts. When you get a positive, you know, it's like we're all spread out, four guys out there doing this whole room. We find a positive thing, and these four guys go (indicating coming together). We're all trying to figure out what it is or what we're doing. It's fun to find a positive. We want to find a positive.

UNIDENIFIED SPEAKER: I'm glad to hear you go beyond. When you're looking for a history of the building and you go in and do a confirmation survey to confirm that the positive you may have found --

MR. BALDENWEG: Oh, yeah.

UNIDENIFIED SPEAKER: Do you ever go and look at things that maybe weren't in the history of that building such as -- wasn't necessarily noted that it was -- do you ever go and do x-rays?

MR. BALDENWEG: Sometimes we do, but you've got to keep in mind now, I guess sometimes we just don't have -- go ahead, Steve. You finish it.

MR. SHU: When we take wipes, we can comment for alpha, alpha phosphate, and run this through gamma. So we have an idea how much there is. That will cover the whole spectrum of radiation types.

If it shows up, then we have reason to go in to do an alpha spec. If there is a gamma meter, there is a significant amount that may be quantified, then we would be -- identify and quantify during the gamma spec analysis because there will be a peak. If the peak is strong enough, you know, that can be quantified with good assurance that the peak is real, then somewhere in analyzing the result would be able to calculate it out and provide a quantitative number; so if you're saying if we have alpha, alpha phosphate plus gamma spec, that particular wipe will give us a great deal of information about all different types of radiation, contamination might have been at that spot.

UNIDENIFIED SPEAKER: If you suspect --

MR. BALDENWEG: Not every time. If we suspect, we'll follow the suspection. We'll always look for something else. If we don't suspect anything, there's no reason why they would have had anything, we do not have the luxury of time, to be honest with you, to look for everything on every

building and every spot. If we suspect it all, in our lab form -- I don't have one with me. In our lab form, we can do all kinds of things in the lab form. The lady who runs it up there, Carolyn Long, she runs it up there. In fact, if I have a question myself, I call her before I sent the sample. Hey, Carolyn, what can you do for me? How do you want me to do this sample? I'm suspecting they might have this and this and this. She says, Paul, why don't you mark on this. Write me a note. We keep in touch with them; so we're kind of on it. We're definitely on it. Pretty scientific. Steve brought up a good point. She can run a lot more on analysis than we can. She'll come back and tell us.

UNIDENIFIED SPEAKER: You talk a lot of about surveying.

(Inaudible discussion held.)

MR. KELLY: There's a variety of monitoring going on. Rocketdyne has done studies looking for off-site contamination, and they found some low level stuff immediately north of the area where ~~radiation~~ nuclear facilities were. ~~was~~ That was by and large within a couple hundred yards. Through DHS they also have some ongoing monitoring that they do, but they're also talking about a facility that hasn't handled their operation

since the late 80's; so they're not -- at this point their work is ~~cleaned up~~ cleanup. So we make it possible to see the results of something that happened. It should be pretty striking to see the current relations.

(Inaudible discussion held.)

MR. KELLY: He was just mentioning that a lot of trucks are leaving the site or might be scheduled in the future to leave the site.

(Inaudible discussion held.)

UNIDENIFIED SPEAKER: We're talking about major contamination sites in the United States. This is one of them, and then talking about hauling off this stuff on the roads. God, help me if I'm driving by.

(Inaudible discussion held.)

MR. BALDENWEG: It's very highly regulated, and there's a lot more medical and industrial stuff going around on public streets and highways than you're ever going to get -- his volume may be larger in one single truck, but you've got with -- these are highly regulated. You've got medical people that are delivering -- good example, a radio pharmacy delivering radioactive nuclei to medical labs all over. There's one in Van Nuys. One in Colton. One

in Bakersfield. These -- they have ten vehicles, Ford Escorts. These guys are delivering radioactive material stuff, going on all the time.

UNIDENIFIED SPEAKER: That doesn't make it right.

MR. BALDENWEG: Do you want to stop nuclear medicine? I don't know what you're saying.

(Inaudible discussion held.)

MR. BALDENWEG: You're going to always have situations where you will have an accident. With the numbers going up, there's thousands across the nation. You're going to get a small percentage of accidents, and very rarely -- I've been in the last six or seven years -- Southern California has most of the industry. We have most of the medical. Most of the money is made in Southern California for everything. We have most of the accidents down here. I've never been involved with -- and I've been in major what they thought was contamination. We've had accidents where the actual thing hit head on and all of the stuff that was -- almost everything in the back of the pickup truck was out on the freeway. We didn't have contaminations.

MS. SEMONES: Aren't there regulations for trucking?

MR. BALDENWEG: Absolutely. DOT regulations are very sophisticated and very difficult. They have to be shipped in a certain way, depending on their form. It has to be fixed or unsealed or very highly --

(Inaudible discussion held.)

MR. BALDENWEG: Actually scrap metal guys -- they're putting all kinds of sophisticated monitors. Pipe with NORM in it is not getting through at all.

UNIDENIFIED SPEAKER: But does EPA --

MR. BALDENWEG: It's not EPA. NORM is NORM. It's not regulated in California right now at all; so we really don't have any oversight on the NORM, but NORM pipe will not be allowed to go through -- let me finish. A lot of the stuff that's setting off alarms at the metal recycles down at the port is NORM contaminated pipe. Probably 40 percent of it. We still recommend they dispose at a normal waste. We can't have no oversight on it.

(Inaudible discussion held.)

MR. BALDENWEG: I tell you what, we need to defer this over to the next group. This is a workshop. ~~This is an workshop.~~ We're getting too tunnel vision on this.

(Inaudible discussion held.)

MR. BALDENWEG: Why don't we move on.

MS. SEMONES: I think the specific question about this, I think we can get that after this discussion.

(Inaudible discussion held.)

UNIDENIFIED SPEAKER: When the trucks come down, do they have a sticker on them? I've seen them on the highway. You can see the nuclear thing. Do they have them?

MR. BALDENWEG: Not necessarily.

UNIDENIFIED SPEAKER: When they're taking --

MR. BALDENWEG: That's part of DOT laws.

UNIDENIFIED SPEAKER: They don't always have them?

MR. BALDENWEG: Not always. It depends on the law, what the rule is, the levels, the type of radioactive material being shipped.

UNIDENIFIED SPEAKER: The regulations are extremely complicated.

MR. BALDENWEG: They're very complicated.

(Inaudible discussion held.)

MR. BALDENWEG: Also exposure rate. Exposure rate, if you exceed a certain limit, there's all kinds of additional rules it has to go through. Most medical is not. The only thing in medical is what's

called a tech 99 generator. Radium 192 sources, come in. They're usually shipped in by FedEx to radiography companies. A lot of times those exceed the bar two. It goes to bar three. Those are very few, less than five percent. It doesn't have to be -- there's still all kinds of rules.

UNIDENIFIED SPEAKER: I just wonder because I see. I'm just curious.

MR. BALDENWEG: One of the most important rules, we have to have a manifest, a bill of lading. There's specific rules where that bill of lading has to be. We cite them if they don't have it. It has to be in the left hand door pocket. If the driver leaves, he puts it on the seat where he sits and goes and gets a cup of coffee. So if there's an accident -- the first thing Del and I ask for -- they had that big deal down in Orange County, we want to see the bill of lading. We want to know what's in that load; so then we can apply the proper inspection.

(Inaudible discussion held.)

MR. BALDENWEG: As an example, along those lines, TI is transport index. It's part of a labeling. If the TI says it shall be less than 1, 1.0, MR per hour at 1 meter, which is the standard,

all of a sudden it's 7 -- Phil's group, professional group, should know there might be something wrong. That's when he starts taking precautions. It becomes a normal source. And he looks to see on the package if there's any moisture on it. Then they take special precautions, and there's always rules you have to follow before you even open that. All kinds of rules. Very complicated.

(Inaudible discussion held.)

UNIDENIFIED SPEAKER: Given a building, let's say building, approximately what fraction of the inside of that building would we have wiped down on your testing?

MR. SHU: First, as we said earlier, we can yield other reports prepared either by Rocketdyn. Okay. In order to answer your question directly, I have to say that in the beginning, we take 10 percent. We have to do 10 percent of what they do.

UNIDENIFIED SPEAKER: 10 percent of what they do, or 10 percent of the inside area of the building?

MR. SHU: Depending on affected -- non-affected. We usually scan 100 percent of affected area, but non-impacted area, we really do spot checks. Then if it's floor, it's easier. You just try to cover it 100 percent, as I said. If it's

wall, it is very high. I don't recall exact height. We try to cover -- as long as it's easily assessable, we try to cover as much as we can. If it's really above, we start spot checking. There is no way -- our role is to bird's eye that they do a good job in meeting the requirements. If we're going to do the same whole complete survey, then they may as well not do it. Our role is to -- it's not to actually perform a complete survey. That would be really difficult, and it would be really expensive.

UNIDENIFIED SPEAKER: I'm just wondering about what fraction of the inside you actually survey.

UNIDENIFIED SPEAKER: When you said 10 percent, is it 10 percent as many wipes --

MR. ~~SHU~~ Hsu Say Rocketdyne does 200 for this area.

UNIDENIFIED SPEAKER: We're talking about wipes?

MR. SHU: Wipes. We'll go in and do 20. Sometimes we do extra if we have suspicion because the used location, because the drainage, because of vents, we have suspicion of where contamination usually occurred. Then we would take another wipe.

UNIDENIFIED SPEAKER: When you say a wipe, is wipe a definition of a fixed -- one square foot or --

MR. ~~SHU~~ HSU: A wipe, 100 centimeters square.

UNIDENIFIED SPEAKER: And you select your wipe locations?

UNIDENIFIED SPEAKER: We will survey every square meter.

(Inaudible discussion held.)

MR. BALDENWEG: That goes back to what I said earlier. If we go measuring, theoretically why do a wipe? We do a lot of times strictly to do it for verification. Sometimes if we're curious of some nuclei that we're not aware of or familiar with or something, then we might run it for some special type of test.

UNIDENIFIED SPEAKER: What happens, for example, the alpha emitter, if there's a new coat of paint in our room?

MR. BALDENWEG: That definitely would be a problem. Absolutely. Absolutely.

UNIDENIFIED SPEAKER: You scrape the paint?

MR. BALDENWEG: Yes. If we suspect it, we would do that. At least a tile or new tile would be the same thing too. If you suspect contamination and you have a tile, it's a typical one foot by one foot tile, linoleum tile, and you just put those on. Those are easy. We'll have them -- we'll just ask

them to be removed.

UNIDENIFIED SPEAKER: That's a standard procedure.

(Inaudible discussion held.)

MS. SEMONES: I was wondering if, in the interest of time, because we still have one more presentation, maybe not quite so long as Paul's, if we could go on with that, and if there are some lingering questions for Paul, we could go back to that.

MR. BALDENWEG: We'll go to Conrad, and he'll give his, and you all can come up here and ask specific questions.

MS. SEMONES: Let's have Conrad come up.

Thank you very much, Paul.

MR. BALDENWEG: Thank you.

MR. SHERMAN: I'll try to be brief. My name is Conrad Sherman. I'm a certified health physicist. I work for Tetra Tech. We used to be known as PRC. EPA asked us to provide technical support to them directly on health physics and radiation protection matters for this project. What our preliminary role is going to be is to review for selected facilities that Tom asked us to review the original survey plans, the implementation of those surveys, to see

that the surveys met the original plans. Also going to look at ORISE's reports and ORISE comments on the Rocketdyne work and see that Rocketdyne responded appropriately to the ORISE comments. Also going to look at survey results, both Rocketdyne ORISE, and DHS results. We're not here to review the quality of ORISE's work or DHS's work. Only look at the data they produced. We are looking at the way Rocketdyne does their survey. We also will get the derived soil concentration limits that have been developed at the site to see what the basis is and if it's an appropriate basis, and I'll share that information from EPA which they will evaluate.

It's a completely independent review. We're not connected with the state. We're not connected with DOE. We're not connected with the site. So we're giving selected aspects of the project a completely fresh look, and we just started on that; so it's relatively early stage of that process.

Along with that, we will develop an independent survey work plan and do some additional selected measurements. Same way DHS will do. We'll look at areas that might be more likely to have problems and focus our attention on problem areas or

areas that may not have been given enough attention, but we're not going to do as extensive a degree of survey as either ORISE or DHS.

What I wanted to do here, it's really brief, is just show you we have some different approach to surveying than what you've seen. Two instruments: One which we didn't bring. It's called field instrument for detection of low energy radiation. It's designed to look for transuranium in surface soil. It's a field instrument. It's a ~~syntolation~~ scintillation detector designed to look for low energy ~~gamma~~ alpha. We can scan surface soils or surface areas directly without relying on laboratory testing.

Scanning in some cases is lot more effective than laboratory testing because you can only sample so much soil. You can't essentially sample 100 percent of the exterior soils, but you can survey a lot more than you can sample; so it may be -- for some of the sites, it may have some value. The other thing --

UNIDENIFIED SPEAKER: Could you say the name?

MR. SHERMAN: It's called a fidler, f-i-d-l-e-r. Whether we use it or not depends on review.

UNIDENIFIED SPEAKER: We also go inside the

buildings and use a lot of the same instruments. Slightly different, and some of the procedures may be slightly different, but essentially after the same goal within the buildings, but rather than being repetitive and have them demonstrate the same instruments, we thought they'd show a couple other things they're considering at the site.

MR. SHERMAN: We'll go where Tom asks us to go. We may be inside or outside or both. This is going back over a little bit, but there are basically five things that we're looking at. Direct output activity on surface without the simulator. We're looking at beta surface activity with a beta type probe. We're looking at soil activity, water, ground water, looking at direct gamma exposure rate or dose rate from whatever contaminants might be in the soil. Okay. So we can measure alpha and beta surface activity directly with field instruments, alpha, beta. And we can measure direct gamma exposure rate or dose rate with a unit like this or like this, or you may have heard the instrument that ORISE uses.

Basically every organization that does direct survey follows the same scientific principles and the same general approach, but there are subtle differences in the application. ORISE may do things

a little differently than DHS, and we'll do things a little differently, and Rocketdyne does things differently. The point being that we can evaluate a situation and come to the same conclusion even though we've approached it a little differently. You'll see differences in the way things are done, but the idea is that they're all based on the same scientific basis and come to the same conclusion. And all these -- everything is standardized to government traceable calibration standards so that we're all getting to the same point. Okay.

Somebody asked a question about how far off the surface this is. It's a good point.

(Inaudible discussion held.)

MR. SHERMAN: The other thing we're going to do is we have a unit here which Leslie is going to demonstrate. Does anybody not know what GPS is? It's called geographic positioning system. Maybe you've seen it. It's the satellite technology for finding out where you are. Is anybody still not familiar with what I'm talking about? Okay. It's a satellite system with land based receivers to tell you where you are. This system can tell you where you are to within about two to three feet of the true location measured by the satellite system. Maybe

three feet. What it does is continuously records where the person is standing. Okay. They can stand there and put it into the computer information about the site.

The other thing we do, we have a -- this is -- it's a little larger. Two by two ~~syntolation~~ scintillation detector. As the surveyor is walking, recording the radiation reading, and walking it with a position. Okay. So we get ~~beta~~ data out that can be used to map, to document where the surveyor was, what the path was, what the speed was, and provide an audible, verifiable trail of the survey.

If you send a technician out, they'll survey an area. Reality is, you don't know what he did unless you were watching. You really -- I mean he could have -- I don't want to guess as far as Rocketdyne or anybody else, but he could have went off and had a beer and wrote down a number. But this gives you a record where the person was. It really cannot be altered by the technician. Okay. We can use this to go out and resurvey an area and produce maps. We attended an actual demonstration of computer output, but we had a little glitch. We weren't able to do that, but I brought along some maps.

MS. ~~HOPSIN~~ Nueder+: Also we would show you how this works, but it can't work inside.

MR. SHERMAN: It's all satellite based; so we don't use it inside buildings. Basically get maps. You can come look at these. You get the actual detector reading plotted next to the location, and we can plot it on -- graph of the site or actually overlay it on an areal photograph or geographic survey quad. You can see exactly what the response of the detector was at the location.

(Inaudible discussion held.)

MR. SHERMAN: We haven't done any work at Rocketdyne. We haven't done any work at Rocketdyne. We've done one round of sampling of water. We have not done any radiation surveying.

UNIDENIFIED SPEAKER: When do you intend to do this?

MR. KELLY: Maybe I can answer that one better. They have reviewed some documents, and I need to ask for some further documentation still, and then I'll be able to turn these guys loose to develop a work plan on surveying the specific facilities. And we also want to get that work plan out to people to comment on it to the extent that they want to. You guys can have an opportunity to look at it,

Rocketdyne. We'll review that and make sure we're at least comfortable with what we're proposing to do. I'm expecting two to three months before they -- we'll certainly keep you informed that we're not trying to do this -- we want people to watch this and even interact with the things we do.

(Inaudible discussion held.)

MR. KELLY: We are still discussing the buildings that we're going to be doing, and I didn't bring my list (of buildings to survey). I can share that with you, what we're going to be starting with and as to which ones we look at.

UNIDENIFIED SPEAKER: Are you going to be doing samples ~~on~~ of the water?

MR. KELLY: I want to make sure we can do that fast enough because they're going to be starting again. I hope we will be able to sample.

UNIDENIFIED SPEAKER: You've been doing it for forty years or something.

MR. KELLY: The next round for the radioactive -- they do the monitoring every six months. Although they have chemical monitoring in addition that goes on every quarter.

(Inaudible discussion held.)

MR. KELLY: Primarily radioactive

contaminants. As long as we're there, we'll look for organic compounds which is the primary known problem with the ground water at the site. We did that on some of the wells.

(Inaudible discussion held.)

Sheldon Plotkin
~~UNIDENIFIED SPEAKER~~: I'd like to know the relationship between your company and Greg Dempsey's group in Las Vegas.

MR. KELLY: I don't know if they have much of a relationship. It's my intent, since they're going to work for ~~EPA~~ EPA, they'll run their plans through Greg. I offered Greg an opportunity to look at what they proposed for ground water sampling, but he said he wasn't that familiar with the issues there, and I ran it through our internal folks in our office for quality control.

(Inaudible discussion held.)

MR. SHERMAN: Let me add something you've heard about. We're a private company. We used to be called PRC. It has been in existence for at least 15 years, and originally we worked for EPA. We've worked for them all this time. To this day most of our work is still for government agencies. We're pretty much working for EPA and have been for quite a long time. That's why we're on this job.

Sheldon Plotkin
UNIDENIFIED SPEAKER: Have you worked with Dempsey's group before?

MR. SHERMAN: I haven't personally. We were required to change our name.

Sheldon Plotkin
UNIDENIFIED SPEAKER: Did PRC do some work with -- any work at all with Dempsey's group in Vegas?

MR. SHERMAN: Possible. I'm not sure.

Joe Lyou
UNIDENIFIED SPEAKER: Do you have a company resume of some sort?

MR. SHERMAN: I'm sure, yes.

UNIDENIFIED SPEAKER: Would you be able to provide that?

(Tom Kelly)
MR. SHERMAN: He's already got one.

UNIDENIFIED SPEAKER: We appreciate that.

MR. SHERMAN: This is the other diagram, and each box represents a meeting that was collected at a certain position, and there are several ways we can analyze the data on our computer system once you have it. These are examples. I wanted Leslie to demonstrate how you might do the survey with the large detector. Can you hold it?

NEUDERT
MS. HOPSIN: I'll try.

MR. SHERMAN: I'll tell you what we're doing. We'll either take readings at one meter height or

ground surface. Usually one meter height. Contamination, trying see if there's anything around. We'll have the meter close to the surface.

MS. ~~HOPSIN~~ Neudert: I would have the detector so that it's constantly reading, and walk...

MR. SHERMAN: You can go ahead and turn the sound on. It clicks sometimes. It's bothersome.

MS. ~~HOPSIN~~ Neudert: It's so subtle.

MR. SHERMAN: Let them hear it for a minute. Listen to it click carefully.

MS. ~~HOPSIN~~ Neudert: Can you hear that? Obviously if I walk over this and hear it, I would go back, just like Paul was saying, and you go over. You hear it go up, and you go back and take either a one minute or five minute count, and then you could go back.

MR. SHERMAN: There you go. You start to hear gamma. Sometimes certain differences are so subtle in the area, that the surveyor won't know.

MS. ~~HOPSIN~~ Neudert: So this is logging. This would be logging.

MR. SHERMAN: Every two seconds --

MS. ~~HOPSIN~~ Neudert: It takes a count.

MR. SHERMAN: Every two seconds. As soon as the meter updates the digital display of the logging, the computer will take the average of the position

for the satellite before the reading and after the reading which it associates with the reading and puts it on the maps.

UNIDENIFIED SPEAKER: This doesn't work indoors?

MR. SHERMAN: No, it doesn't work indoors.

UNIDENIFIED SPEAKER: What do you have to do?

MR. SHERMAN: Use the chalk lines or use the grids, old Rockwell grids.

MS. ~~HOPSIN~~ Neubert: Letter and number grids.

MR. SHERMAN: The one thing I wanted to point out, we came out here to demonstrate this. We did a survey outside this building this afternoon, and we measure raw detector response and counts per minute. That's how we reported. You may have seen that counts per minute term. Just around here, depending on whether I was standing over asphalt or close to the building or out over dirt, we measured between 9,500 and 11,200 counts per minute; so that's a 2,000 count per minute range for presumably a clean, unaffected by nuclear activity site.

Anywhere we went, you find the similar thing. Your detectors are a little smaller; so they have a slightly lower count rate, but you get the same kind of range, and measuring radioactivity at

the low safety standards that have been set for releasing these facilities is very problematic because the range of background is 15 to 20 percent of the reading, and sometimes it's hard to distinguish affected areas -- areas that have been affected by contamination from nuclear activities in a varied background. Okay. So there are limits to what can be done from a scientific standpoint. Okay. There are actually mathematical, statistical limits. And with more money, obviously you can do more, but you can't beat the physics of the situation and get perfection or measure absolutely. In some cases you can't say absolutely if there was some contamination or some impact. There's a limit to what you can do.

Let me just say one more thing. The other problem is I think, if not all, most of the radio nuclei that we used here are present in the environment, either naturally or as a result of fall out weapons testing from the 50's and 60's; so you can't necessarily tell in every case whether it's an actual or from the operations, and the amount of uranium -- uranium in the soil six inches deep over this building is if you measured it and compared to some of these sources, it's a huge amount of material just naturally existing. Okay.

(Inaudible discussion held.)

MR. SHERMAN: Oh, yes. There's a practical limit. There's only four of those guys, and they've got other projects. There's a practical limit on this. The detection that are established under either DOE orders, NRC 180... same number, everybody uses the same numbers, and without two to three minute readings per area, you can't measure it at that level. One of the key things we look for -- and I know the state looks for when they review anybody's work plan -- is demonstration of how the instrument you're going to meet better than the detection limit. If the detection limit is 100, you guys want to see -- what -- 50 is the detection limit?

MR. ~~SHU~~ HSU: Usually 10 percent to 50 percent below the limit.

MR. SHERMAN: If you set the detection limit right at the limit, you'll miss it. That's a fact.

Another thing I'll point out -- I didn't say it when Paul was talking -- none of the decommissionings that I'm aware of have inspectors from the government on site during the decommissioning. It's always done after the fact, come back. That's the way it is in all the nuclear facilities; so to expect full time on-site inspector

is just not going to be, and this is not -- this is not what we call a high risk facility. I would say more on the --

(Inaudible discussion held.)

MR. SHERMAN: You mean there's a contamination? Oh, no.

UNIDENIFIED SPEAKER: I heard it's the worst part of any spot in this area.

MR. SHERMAN: Maybe in Southern California.

(Inaudible discussion held.)

MR. SHERMAN: I don't think this site falls into that category. You've got to be careful. They were not power reactors. They were not large scale reactors.

(Inaudible discussion held.)

MR. SHERMAN: I don't know what the controls were or how safely they were operated. I'm not making any judgment on that. I'm just saying small reactive materials, small power levels, not major sites in terms of materials, in terms of contamination.

UNIDENIFIED SPEAKER: There are some DOE reports -- maybe we can bring them to the next meeting --where they spell out the budget over the next five or ten years at different sites and they

predict billions of dollars at some of their sites.

(Inaudible discussion held.)

MR. SHERMAN: Does anybody have any questions for me at this time, or are there any more questions on the measurement process?

(Inaudible discussion held.)

MR. KELLY: That's what these folks do. Remember that EPA isn't actually the regulatory agency in charge at the site. There's a variety of environmental regulations. For radiation it's the California Department of Health Services. They are in charge of the clean up of the site. The community group has asked us to get involved and look at some of the work that's being done, and we're willing to do that. We want to try to do that hopefully and, you know, develop the --

UNIDENIFIED SPEAKER: Who asked you to be the oversight on this?

MR. KELLY: I guess maybe you're going to back to 1989. I was just thinking more recently of when you guys were up to -- wrote to our regional administrator and said we want you to get more involved in the radioactive clean up of the site. We talked to ~~Rocketdyn~~ Rocketdyne and talked to DOE and said what do you think? Do you guys have a problem with that?

We actually don't have the authority to come in and demand them to do what we want, but they essentially invited us in. As the Department of Health Services, they've been cooperative in working with us.

(Inaudible discussion held.)

MR. KELLY: It would be nice if there's one agency that would give people a higher level of comfort. Essentially it ends up being other agencies. There's Department of Health Services. There's another agency that's overseeing clean up of chemical contamination. There's a different agency that regulates air releases. There's a different agency that regulates surface water releases. There's a lot of different agencies, and, you know, that's essentially --

(Inaudible discussion held.)

MR. KELLY: Essentially a lot of the environmental laws started at the federal level -- Clean Air Act, Clean Water Act. EPA has delegated these programs to the state who, in turn, will delegate them to other agencies. Department of Health Services is a state agency; so they operate throughout the state; so with all the laws, they're delegated down, and we have an oversight responsibility of essentially all -- fairly nearly

all the agencies involved at the site. Possible exception being the Department of Health Services. Some of what their authority ties back to is actually the nuclear regulatory commission.

MR. SHERMAN: EPA sets the overall radiation standards of all the federal agencies. EPA sets all the standards.

(Inaudible discussion held.)

MS. SEMONES: Other questions for Conrad? What we might do, we have the room available to us until 10:00 o'clock, and we would welcome any and all of you to come on up and get more acquainted with the material up here if you'd like, and the gentlemen will continue to answer your questions. Okay.

(Ending time 9:15 p.m.)

REPORTER'S CERTIFICATE

STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

I, KAREN E. GEER, CSR No. 9781, certify:

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath by me;

That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me and were thereafter transcribed;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not a relative or employee of any attorney or of any of the parties, nor financially interested in the action.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this 9th day of February, 1998.

KAREN E. GEER, CSR No. 9781