

August 14, 2000

TO: Dennis Sollenberger
Office of State and Tribal Programs

FROM: Steve Hsu
California Department of Health Services

SUBJECT: DEPOSITIONS OF JOHN VADEN (AUGUST 5, 1998) AND RAYMOND F. FISH,
JR. (OCTOBER 12, 1999, NOVEMBER 8, 1999) REGARDING THE
PROVIDENCIA PROPERTY



1 UNITED STATES DISTRICT COURT
2 CENTRAL DISTRICT OF CALIFORNIA

3
4 JOSEPH A. THOMSON and
5 VIRGINIA THOMSON,

6 Plaintiffs,

7 vs.

No. 97-5220 RAP (AJW)

8 ION PHARMACEUTICALS, INC.,
9 NUCOR CORPORATION,
10 RHONE-POULENC, INC.

11 Defendants.

12 AND RELATED COUNTER-CLAIMS.

13
14 Deposition of: John Vaden

15
16 Date: Wednesday, August 5, 1998

17
18 Time: 10:15 a.m.

19
20 Place: The Omsby House
21 Blue Room
22 800 S. Carson Street
23 Carson City, Nevada

24 Videographed by: Bill Hines

25 Reported by: Del Munro, C.S.R.
License Number 4089

CERTIFIED COPY

LAKE TAHOE REPORTING SERVICE

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5 Witness: John Vaden.

6 Examination by Ms. McKeith Page 8

7 Examination by Mr. Patterson Page 114

8 Examination by Mr. Shimada Page 142

9 Examination by Mr. Brown Page 193

10 Further Examination by Ms. McKeith Page 197

11 Further Examination by Mr. Shimada Page 224

12 Further Examination by Mr. Brown Page 225

13
14
15 Exhibits:

An 11-page document consisting of Attachment B, Attachment C, Attachment D, Attachment E and Attachment F was marked for Identification as Exhibit 1 on page 12.

An 18-page document bearing document number JT0332 and document numbers 00300 through 00316 was marked for Identification as Exhibit 2 on page 26.

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2 A P P E A R A N C E S

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4 Law Offices of LOEB & LOEB
5 1000 Wilshire Boulevard, Suite 1800
6 Los Angeles, California 90017-2475

7 Represented by MALISSA HATHAWAY McKEITH,
8 Attorney at Law
9 appeared as counsel on behalf of

10 Plaintiffs.

11 PROSKAUER ROSE LLP
12 2049 Century Park East, Suite 3200
13 Los Angeles, California 90067-3206

14 Represented by GREGORY J. PATTERSON, Esq.
15 appeared as counsel on behalf of

16 Defendant ION Pharmaceuticals, Inc.

17 Law Offices of LEWIS, D'AMATO, BRISBOIS & BISGARD
18 221 North Figueroa Street, Suite 1200
19 Los Angeles, California 90012

20 Represented by JOHN H. SHIMADA, Esq.
21 appeared as counsel on behalf of

22 Defendant Nucor Corporation.

23 Law Offices of McCUTCHEN, DOYLE, BROWN & ENGERSEN
24 355 S. Grand Avenue, Suite 4400
25 Los Angeles, California 90071

Represented by BRYAN K. BROWN, Esq.
appeared as counsel on behalf of

Defendant Rhone-Poulenc, Inc.

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5 Exhibits (continued):

Three documents bearing document numbers JT0332A, 000301A and 000302A which contain the witness' markings were appended to Exhibit 2 on page 68.

Reporter's Note: No Exhibit 3 was marked.

Reporter's Note: No Exhibit 4 was marked.

A one-page document entitled Application for Byproduct Material License was marked for Identification as Exhibit 5 on page 70.

A one-page letter dated March 1, 1961 to James Mason from Kenneth Newman was marked for Identification as Exhibit 6 on page 78.

A one-page Memo Route Slip to L. R. Rogers from Donald E. Werner to which is attached a two-page 2/16/61 memo to Werner from Blanc and a six-page 2/9/61 memo to Smith from Book was marked for Identification as Exhibit 7 on page 80.
(Reporter's Note: Document bearing number JT0443, which is page 2 of the six-page 2/9/61 memo was inadvertently left out and never given to this Reporter.)

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I N D E X

Exhibits (continued):

A seven-page document consisting of a memo dated May 4, 1961 to L. R. Rogers from Donald E. Warner and six pages of attachments was marked for Identification as Exhibit 8 on page 85.

A three-page typewritten document bearing document numbers JT0358 through JT0360 was marked for Identification as Exhibit 9 on page 88.

Reporter's Note: No Exhibit 10 was marked.

A two-page memo dated January 11, 1961 to A. R. Luedcke from H. L. Price by R. L. Kirk with attachment was marked for Identification as Exhibit 11 on page 89.

A two-page letter dated January 13, 1961 to James Mason from Allen Goldstein was marked for Identification as Exhibit 12 on page 94.

A one-page letter dated January 13, 1961 to the U.S. Atomic Energy Commission from J. D. Vaden was marked for Identification as Exhibit 13 on page 99.

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I N D E X

Exhibits (continued):

Four different rough draft letters addressed to Dr. Goldstein bearing document numbers JT0166 through JT0181 were marked for Identification as Exhibit 21 on page 110.

A group of documents bearing document numbers JT0229 through JT0250 was marked for Identification as Exhibit 22 on page 112.

A two-page letter to Mr. A. A. Michaud from H. L. Price was marked for Identification as Exhibit 23 on page 141.

Marked Question and Answer requested by Ms. McKeith Page 98, Lines 17 through 23

Reporter's Certificate: Page 230

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I N D E X

Exhibits (continued):

A two-page letter dated January 19, 1961 to James Mason from J. D. Vaden with a three-page log attachment was marked for Identification as Exhibit 14 on page 100.

Reporter's Note: No Exhibit 15 was marked.

Reporter's Note: No mention of an Exhibit 16 was made.

Reporter's Note: No Exhibit 17 was marked.

A two-page memo dated July 9, 1958 to Isotopes Branch Files from Robert Brinkman was marked for Identification as Exhibit 18 on page 101.

A one-page Memo Route Slip to L. R. Rogers from R. E. Brinkman to which is attached a nine-page document entitled Administrative Procedures dated August 20, 1958 was marked for Identification as Exhibit 20 on page 106.

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1 THE VIDEOGRAPHER: We are ready, so let's go
2 ahead and get things rolling here.

3 Stand by, please.

4 (Brief pause)

5 THE VIDEOGRAPHER: This deposition of John Vaden
6 is being held on August 5th, 1998 at 800 S. Carson Street,
7 Carson City, Nevada.

8 The caption of the case is Thomson versus
9 ION Pharmaceuticals and this deposition is being taken on
10 behalf of the Plaintiff.

11 The time on record is 1017 a.m.

12 Will all attorneys present please identify
13 themselves and state the parties they represent?

14 MS. McKEITH: Good morning. I'm Malissa McKeith,
15 M-c-K-e-i-t-h, representing Joseph and Virginia Thomson,
16 the Plaintiffs in the litigation.

17 MR. BROWN: Good morning. My name is Bryan
18 Brown. It's B-r-y-a-n, B-r-o-w-n. And I represent
19 Rhone-Roulenc, Inc.

20 MR. PATTERSON: Good morning. My name is
21 Greg Patterson. I represent ION Pharmaceuticals, Inc.

22 MR. SHIMADA: Good morning. My name is
23 John Shimada. That's S-h-i-m-a-d-a. And I represent
24 Nucor.

25 THE VIDEOGRAPHER: If there are any stipulations

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1 by either party, please state them now.
2 MS. McKEITH: None.
3 THE VIDEOGRAPHER: The videographer's name is
4 Bill Hines of Bill Stephens Productions.
5 The Reporter's name is Del Munro from
6 Lake Tahoe Reporting Service who will now administer the
7 oath to the deponent.

8 THE REPORTER: Would you raise your right hand,
9 please?

10 JOHN VADEN
11 an independent witness called by the Plaintiffs herein,
12 who, having been first duly sworn by me, was thereupon
13 examined and interrogated as hereinafter set forth:

14 THE REPORTER: Thank you.

15 THE VIDEOGRAPHER: Please proceed.

16 EXAMINATION BY MS. McKEITH:

17 Q. Good morning, Mr. Vaden.

18 A. Good morning.

19 Q. Have you had your deposition taken previously?

20 A. No.

21 Q. Then I'd like to go over some of the ground rules
22 so you understand what will happen today.

23 A. As you --

24 A. Very well.

25 Q. Thank you.

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1 penalty of perjury as if you were giving the testimony
2 today in a court of law.

3 Do you understand that?

4 A. Yes.

5 Q. And do you also understand that in the event you
6 make changes it may mean that either myself or any of the
7 other attorneys in the room can comment that you have
8 changed your testimony?

9 A. Should I initial my changes?

10 Q. Yes, you should.

11 And so, therefore, it's important that you try to
12 give your best testimony this morning.

13 Therefore, if you don't understand a question,
14 please ask us to clarify the question. If you're tired and
15 you want to take a break, let us know, we would be happy to
16 take a break. And if you can't hear the question or don't
17 understand the question, make sure that the attorneys
18 clarify and repeat the question for you.

19 A. Very well.

20 Q. Is there any reason why you can't give your best
21 testimony today?

22 A. No.

23 Q. All right.

24 During the course of the deposition I'm going to
25 be showing you some Exhibits and you'll get a copy to take

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1 As you can see, the Court Reporter is taking down
2 my statements and your responses. And in order for her to
3 get the best possible record it's important that you wait
4 until I'm done and until these gentlemen are done asking
5 questions before you give your answer.

6 Do you understand that?

7 A. I think I do.

8 Q. Good.

9 Um -- it's also important that when you respond
10 you articulate your response out loud so that you would say
11 yes or no instead of nodding your head or saying uh-huh or
12 unh-unh (negative response), because she can only take down
13 actual words.

14 Do you understand that?

15 A. Okay.

16 Q. Is there --

17 At the end of this deposition the Court Reporter
18 is going to type up a transcript and you will be sent a
19 copy of the transcript and you will have the opportunity to
20 make changes to the transcript to change your testimony if
21 necessary.

22 Do you understand that?

23 A. I understand.

24 Q. Okay.

25 And then you will be signing the transcript under

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1 with you today which will be your own copy. The Court
2 Reporter will keep a copy. And then my counsel here will
3 also have a copy.

4 So I'm going to start with Exhibit 1 to the
5 deposition, and Exhibit 1 is a number of documents starting
6 with 00289 through 00299.

7 (An 11-page document
8 consisting of Attachment B,
9 Attachment C, Attachment D,
10 Attachment E and Attachment F
11 was marked for Identification
12 as Exhibit 1.)

13 MS. McKEITH: Q. Now if you look toward the
14 bottom of the page you'll see there's a reference to you,
15 John Vaden, radiological health officer and member of
16 Isotope Committee.

17 Do you see that?

18 (Brief pause while the witness reviews document)

19 MS. McKEITH: I'm directing the witness to the
20 place that I'm referring to.

21 THE WITNESS: Yes, I'm reading this.

22 MS. McKEITH: Q. Okay. Good.

23 A. I'm reading it.

24 (Brief pause while the witness continues to
25 review document)

26 THE WITNESS: I should have charged more.

27 MS. McKEITH: Q. Okay.

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1 The other thing that's important is you should
2 try not to respond until there's actually a question that's
3 pending.
4 A. Okay.
5 Q. So do you see where your name is referenced
6 there, Mr. Vaden, on document number 00289, the first page?
7 A. Okay.
8 Am I to read through all this?
9 Q. No.
10 If you would go back to the first page where your
11 name is referenced.
12 A. All right.
13 Q. Okay.
14 Um -- beneath the name -- your name there is a
15 description of some of your experience up until the time
16 that this document was drafted.
17 A. Do you have a question?
18 Q. Yes, I do.
19 Does that accurately reflect what your academic
20 training was and experience --
21 A. It appears to be accurate. The training
22 described for me appears to be accurate of what I submitted
23 on -- for employment.
24 Q. Okay.
25 Was this -- uh -- information that was submitted

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1 A. To make sure that the operations were in
2 compliance with the Atomic Energy Commission regulations.
3 That was the basic requirement.
4 Q. Do you know the circumstances under which you
5 were hired to work for Nucor at the ISC facility?
6 A. Yes.
7 It was my understanding that the company had --
8 had some noncompliance history with the Atomic Energy
9 Commission. And I was told by AEC inspectors that they
10 were under show cause orders why their license should not
11 be suspended or revoked and that they needed somebody who
12 would be a forceful health physics officer to make sure
13 that they were operating correctly and safely.
14 Q. And prior to working at ISC where did you work?
15 Where -- where did you work just prior to coming to ISC?
16 A. Where did I work?
17 Q. Yes.
18 A. In Burbank.
19 Q. And what was the name of the business for which
20 you worked?
21 A. We're talking about Isotopes Specialties, right?
22 Q. That's correct, right -- right before you got to
23 Isotopes Specialties.
24 A. I was working for the LA County Health Division.
25 Q. What did you do for the LA County Health

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1 for employment --
2 A. Yes.
3 Q. -- to Isotopes --
4 A. That is correct.
5 Q. Remember, we need to let me finish.
6 -- the Isotopes Specialties Corporation?
7 This was information you gave to them?
8 A. It was -- I -- I think I was hired by Nucor.
9 Q. Okay.
10 Was this information that would have been
11 provided to Nucor?
12 A. Yes.
13 Q. And do you recall approximately when you were
14 hired by Nucor?
15 A. Sometime in 1959, I believe. I'm not sure of the
16 exact time.
17 Q. And were you hired to work at Isotopes
18 Specialties Company at 170 Providencia in Burbank?
19 A. That is correct.
20 Q. Okay.
21 And what was your title when you began working
22 there?
23 A. Health physics officer.
24 Q. And can you tell us what some of your duties were
25 as the health physics officer?

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1 Division?
2 A. I was an industrial hygiene engineer.
3 Q. And what type of responsibilities did you have in
4 that job?
5 A. To control the occupational exposures of people
6 working in industry.
7 Q. And in that job did you go to facilities that
8 used radioactive materials?
9 A. Yes.
10 We monitored and regulated the use of all source
11 of radiation in all hospitals, all V.A. medical
12 institutions, all dentist office, all industrial use of
13 X-ray radium. And in conjunction with the Atomic Energy
14 Commission we went around with them on inspections of all
15 those people who were using material issued by the Atomic
16 Energy Commission.
17 Q. Would you have inspected the 170 Providencia
18 facility before you became an employee there?
19 A. Uh -- no, I never did.
20 Q. Okay.
21 Now the document that you're looking at indicates
22 that there's an Isotope Committee personnel. What was an
23 Isotope Committee?
24 A. An Isotope Committee is an organization
25 recommended by Atomic Energy Commission to have a group of

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1 knowledgeable people in all areas of use in radioactive
2 nuclei so they can advise on the safe operation and rule on
3 any projects in advance to insure that they will be able to
4 comply with all the requirements of the regulations.

5 Q. And is it your understanding that the other
6 individuals who are identified in the document that you
7 have in front of you were also Isotopes Committee members
8 during the time that you worked at the company?

9 A. I haven't looked at the whole list, but I
10 recognize -- for instance, the first name was the
11 chairman -- uh -- of the Isotope Committee,

12 And, as I say, I haven't looked at the rest of
13 the list.

14 Q. Do you want to take a moment to take a look at
15 that list, please?

16 A. I can do that.

17 Q. Thank you.

18 (Brief interruption)

19 (Brief pause while the witness reviews document)

20 THE WITNESS: I recognize John Leak. I recognize
21 Art Seibel. I recognize Leonard Wetterau. Al Michaud was
22 not really a member -- an official voting member anyhow of
23 the committee; he was simply the vice-president of Nucor.
24 Uh -- these others are not members; they're all
25 users.

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1 But I don't recognize these specific items.

2 MS. McKEITH: Q. If you --

3 A. They may have been from the license application.

4 Q. Okay.

5 If you look in the first paragraph there's a date
6 here on the second line. I believe that says 6/30/59.

7 A. Yes.

8 Q. Okay.

9 A. That sounds like a request in an application --

10 Q. Okay.

11 A. -- for possession limit.

12 Q. Okay.

13 Now the types of radioactive materials that are
14 identified on this page, cobalt 60, cesium 137, --

15 What is Sr 90, the third item?

16 A. What did you say?

17 Q. What is Sr 90? What does that stand --

18 A. Strontium 90.

19 Q. Okay.

20 -- cobalt 60 --

21 Are those types of radioactive materials that
22 were stored at and utilized at the facility?

23 A. Yes; that is true.

24 Q. And what other types of radioactive materials in
25 addition to those that are identified here were stored and

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1 MS. McKEITH: Q. What do you mean by users?

2 A. People who work with the radioisotopes, do the
3 actual physical labor and/or research involving
4 radioisotopes.

5 Q. Have you had contact with any of the individuals
6 who are identified on this document in the last five years?

7 A. No.

8 Q. And do you know the whereabouts of any of the
9 individuals who are identified?

10 A. Uh -- no; no, I do not. I don't even know if
11 they're alive.

12 Q. Thank you.

13 Now I'd like to draw your attention to document
14 number 00295. It's one of the documents there. The
15 numbers are in the lower righthand corner.

16 A. I have that in front of me.

17 Q. Okay.

18 Do you recognize this document?

19 (Brief pause while the witness reviews document)

20 THE WITNESS: Not per se.

21 The -- the third (sic) item down on cobalt 60
22 appears -- or fourth item -- appears like it is an
23 amendment to the license, which I may have seen as an
24 amendment, but -- uh -- it depends on what year it was and
25 so forth and so forth.

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1 used at the facility?

2 A. Anything from atomic number 3 to 83. We had a
3 broad byproduct material license. We had a source license.
4 We had a special nuclear material license. And the
5 byproduct material is what we called industrial broad --

6 (Brief interruption)

7 THE WITNESS: We had a license for byproduct
8 material which was a broad industrial research license.

9 MS. McKEITH: Q. Okay.

10 A. We had a special nuclear material license in
11 quantities less than a critical mass. And we had a source
12 material license. That's for thorium and uranium.

13 So there were lots of licenses, and we had some
14 of all those materials granted on all those at one time or
15 another were on the premises.

16 Q. Okay.

17 Was tritium one of the types of materials that
18 was used?

19 A. Yes, that's on the byproduct material license.

20 Q. Okay.

21 A. See, that's number 3.

22 Q. Okay.

23 And magnesium-thorium -- was that a type of
24 radioactive material?

25 A. Oh, yes, they're both on there.

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1 Q. Okay.
2 And polonium -- was that --
3 A. Sure.
4 Q. Okay.
5 And can you tell us what polonium is?
6 A. What polonium is?
7 Q. Right.
8 A. Polonium 210 is a naturally occurring radioactive
9 isotope primarily and almost exclusively an alpha emitter.
10 There is no gamma radiation. And, therefore, you could not
11 detect it with a Geiger counter.
12 Q. And what are the health impacts of the polonium?
13 A. It's a very dangerous element if it gets inside
14 the body. It's a bone seeker.
15 Q. Now in the first paragraph there's a reference to
16 5,000 curies of cobalt 60.
17 A. Yes, ma'am.
18 Q. Okay.
19 In your --
20 Was that -- is it your recollection that
21 5,000 curies was the average inventory of cobalt 60 that
22 was at the facility?
23 A. I think that was about the maximum. I think it
24 really ran around 3500, because it was using it all the
25 time and bringing new in all the time. It was a pretty

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1 What did that stand for again -- I'm sorry -- the
2 SR 90?
3 A. Uh -- I'm not sure where that came from but --
4 uh -- it's basically a -- uh -- bremsstrahlung type of
5 device.
6 Q. I'm sorry. How do you say that word?
7 Bremsstrahlung?
8 A. Bremsstrahlung, b-r-e-m-s-t-r-a-l-l-u-n-g.
9 Q. And what does that mean?
10 A. Breaking electron radiation. It's a German term.
11 I don't know as you want to get into all these
12 technicalities, but that -- these kind of source -- these
13 are the kind of sources one can put in a gauge which would
14 be setting next to a bunch of beer cans coming by, and if
15 the beer can is not filled all the way this radiation that
16 goes through the top notifies this device -- detective
17 device, and that not-quite-filled can is thrown out, so you
18 don't get a short beer when you buy a six-pack.
19 Q. Is that why it had a German name?
20 (Laughter off the record)
21 THE WITNESS: Well, I don't know -- I don't think
22 it had any relation.
23 But it's the kind that we put in gauges of
24 various kinds, density gauges and all kinds of light
25 gauges.

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1 active stockpile.
2 Q. And where was the cobalt 60 stored at the
3 facility?
4 A. It was called -- it was stored in a water-filled
5 concrete cell, which was named the swimming pool.
6 Q. Okay.
7 And the cesium 137 -- approximately how much
8 cesium 137 on average was an inventory at the facility?
9 A. Oh, I would say about 1200 curies.
10 Q. And where was that stored?
11 A. Usually in -- in huge casks.
12 Uh -- for instance, this shipment from Kellogg,
13 as I recall -- uh -- we bought from them -- or the company
14 bought from them, because they made them specially for
15 their cameras, but they had gone in financial problems --
16 and this was bought, and it came in a huge steel-encased
17 lead-filled cask.
18 And these were on trays in there and you opened a
19 huge bolted lid on the top to get down in there with a
20 handling device. You never got your hands near any of this
21 stuff.
22 Q. And the Sr 90 -- how much product was an average
23 inventory during the time you were there?
24 A. What was that again?
25 Q. The Sr 90 --

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1 MS. McKEITH: Q. You didn't use that to
2 determine how much beer was in a can, did you; you used
3 that to determine how much product was in a source?
4 A. That's right.
5 Q. Okay. I understand.
6 Now how much tritium would have been stored on
7 the site on average while you were there?
8 A. Generally we didn't store an awful lot because --
9 uh -- the tritium pressurized rocker runs on radioisotopes
10 were never more than a few -- not more than a hundred
11 millicuries.
12 And we'd try to keep down the size on hand
13 because if you had a large quantity of tritium open we were
14 required by AEC to take urine samples of those people who
15 may have been exposed and run an analysis for it, and that
16 was expensive.
17 Q. I'd like to go back to the cesium 137.
18 Where were those lead casings stored at the
19 facility?
20 A. Uh -- back and near the hot lab area, near the --
21 it was actually near the swimming pool.
22 Q. Okay.
23 And the tritium -- where was it stored when you
24 did have it in stock?
25 A. In the carbon 14 cold laboratory.

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24

1 Q. Okay.

2 And the magnesium-thorium -- where was -- how

3 much was in stock?

4 A. The only magnesium we had on hand was in the form

5 of magnesium-thorium waste, and that was stored in the --

6 in a building the farthest to the rear of the facility that

7 the premises would permit.

8 Q. Now I'd like to turn your attention to

9 document number 296. It's the next page.

10 A. 21- -- What?

11 Q. 296.

12 A. Okay. 296.

13 Q. If you can just look at this document quickly.

14 A. (Witness complies)

15 Q. I just want to confirm that this is a list of the

16 type of instruments that would have been at the facility.

17 A. This generally looks like the -- uh -- the type

18 and the quantities we generally had on hand at all times.

19 And some would be off repaired. Some would be coming back.

20 Some would be being calibrated. And some would be coming

21 back.

22 But we had a very large quantity of all types of

23 instruments.

24 We actually manufactured some instruments, and

25 Nucor was in the business of manufacturing -- we made

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1 A. Yes.

2 Q. Okay.

3 And you recall that -- um -- document number

4 JT332, the document you're looking at right now, is one of

5 the documents that I showed you?

6 A. Yes, it does look like the same document.

7 Q. Okay.

8 And I asked you some questions about where

9 various -- uh -- activities took place at the site.

10 A. Right.

11 Q. Okay.

12 Now you mentioned in your testimony a few moments

13 ago a swimming pool that was used for the storage of the

14 cobalt 60.

15 A. (Witness nods head affirmatively)

16 Q. Can you mark on this map with an "S" like Sam

17 where the swimming pool was located approximately?

18 A. Yes, I can mark on there where it's located --

19 Q. Okay.

20 A. -- where it was located.

21 Q. Can you do that, please?

22 A. (Witness complies)

23 I'm marking and -- put the letters "SP", swimming

24 pool.

25 Q. Okay.

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1 specific devices for detecting the things for beryllium

2 ores. It was a very unique application.

3 So we -- we had a lot of instrumentation. We had

4 one man that did nothing else but work on instrumentation

5 all the time.

6 Q. I see.

7 Now you can go ahead and set aside that whole

8 document because I'm going to hand you another set of

9 documents.

10 (Brief pause while the witness reviews documents)

11 MS. McKEITH: We're going to go ahead and mark

12 this as Exhibit 2, which is JT0332 and then a series of

13 documents, 00300 through 00315 (sic).

14 (An 18-page document bearing

15 document numbers JT0332 and

16 document numbers 00300

17 through 00315 was marked for

18 identification as Exhibit 2.)

19 MS. McKEITH: Q. Mr. Vaden? I'm going to hand

20 you some new documents.

21 A. Okay.

22 Q. Okay?

23 (Brief pause while the witness reviews document)

24 MS. McKEITH: Q. Now, Mr. Vaden, you recall that

25 we met yesterday evening?

26 A. What did you say?

27 Q. You recall that we met yesterday evening?

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1 And just so everyone else in the room knows where

2 you marked, can you describe generally where that is

3 relative to some of the writing on this document? Um --

4 A. Northwest corner of the -- where it says "ISC

5 Shop and Office".

6 Q. Okay.

7 Is it in the upper righthand corner of that

8 square?

9 A. Yes; that is correct.

10 Q. Okay.

11 And you mentioned the -- uh -- C-14 laboratory,

12 the carbon-14 laboratory. Can you mark that with a

13 "C14" --

14 A. Yes.

15 Q. -- on the map?

16 A. (Witness complies)

17 Q. And you mentioned -- uh -- the hot labs. Can you

18 indicate where the hot lab was --

19 A. Right.

20 Q. -- with an "HL"?

21 A. (Witness complies)

22 And up here (indicating) was the office in the

23 front.

24 Q. Are you going to mark that with an "O"?

25 A. In between was the shop area (indicating).

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1 Q. You also mentioned that there were -- uh -- some
2 materials -- I believe it was the magnesium-thorium
3 materials -- that were stored in a building toward the rear
4 of the property.

5 Is that in the area where the "R" is indicated in
6 parenthesis?

7 A. That was stored out in this back building -- is
8 part of the back building back in here (indicating).

9 Q. Okay.

10 Can you generally describe where you're marking
11 based on some of the -- the --

12 A. I can say in about the right two-thirds of the
13 building.

14 The left part was an experimental area where we
15 were radiating rats for the Air Force experiment.

16 Q. Okay.

17 Can we call that the "Rat" area, r-a-t area? Is
18 that correct?

19 A. Yeah, rats.

20 Q. Okay.

21 Now in addition to storing materials in the
22 swimming pool, in the carton-14 lab, in the building to the
23 rear of the facility, can you identify for us any other
24 areas where radioactive materials were stored at the site?

25 A. Yes, there were considerable waste -- radioactive

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1 A. So it took special shielding. That's why those
2 walls are were heavier. They're thicker.

3 Q. Can you mark the word "Radium" where those radium
4 drums were located?

5 A. That's radium, right there where it says "I" --
6 or whatever it is -- radium.

7 Q. Now you mentioned that the waste was in several
8 different kinds of packaging. Can you describe for us the
9 different kinds of packaging that you observed?

10 A. There were a lot of barrels, a lot of smaller
11 cans, and a lot of canisters. There were wooden boxes.
12 And I think in a few cases there were even some face board
13 packages.

14 Q. What you do you mean by face --

15 A. Now I don't know what -- if there were secondary
16 packages inside, because I didn't have -- I didn't open
17 those.

18 When I got rid of those smaller packages, I
19 simply sat them in a barrel. I didn't open them. That's
20 dangerous practice -- to open them.

21 Q. Do you remember approximately how many containers
22 of whatever sort were there when you first came to the
23 facility?

24 A. No, I don't.

25 Q. Do you know whether it was more than a hundred or

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1 waste stored in what is shown as the "Yard" on here.

2 Q. Okay.

3 Can you draw the area where the waste was located
4 and call that "Waste" area?

5 A. It completely filled that yard (indicating).

6 Q. Okay.

7 When you arrived at the facility in approximately
8 1959, can you recall the number of barrels or storage --
9 uh -- items with waste in them in the yard area?

10 A. I never -- I never counted them.

11 There were -- there were not only barrels, but
12 there were every shape of container imaginable including
13 some that I recommended to people that they send out there
14 and now I had to get rid of them myself, --

15 Q. Can you --

16 A. -- but --

17 Q. Go ahead.

18 A. I wanted to say that in this area marked -- it
19 looks like an "I" or something -- on the right of that yard
20 there's a small area. That was filled with barrels that
21 had radium in them and were very high activity. They
22 hadn't been packaged properly. The sources of radium were
23 not in the center -- there's concrete and beams were coming
24 out in all directions.

25 Q. Can you --

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1 less than a hundred?

2 A. Oh, I would assume it was more than a hundred.

3 Q. Okay.

4 Were the containers -- the smaller containers
5 that you described -- are you talking about five-gallon
6 containers or --

7 A. There were a lot of those.

8 Q. And did they have covers on them?

9 A. Yes.

10 Q. Okay.

11 And --

12 A. The magnesium-thorium, by the way, was all
13 stored, strangely enough, in wooden boxes.

14 Q. Is magnesium-thorium liquid or solid?

15 A. Is it what?

16 Q. Liquid or solid.

17 A. It is a solid metal, solid alloy.

18 It did, however, have -- uh -- some oil --
19 cutting oil on it, which is what gave it a kind of greasy
20 look and feel.

21 Q. Was it --

22 A. The main hazard of that was a fire hazard. And
23 the fire people came out there and said: If that catches
24 on fire we could never put it out. And I said: Well,
25 chief, -- I said -- if that catches on fire you're not

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1 going to be able to get within two miles of it, it burns so
2 hot, and the fallout would come down in Chicago, so. . .
3 Q. Tell me about the wooden boxes. Were these --
4 A. They were just industrial wooden boxes about
5 one-inch thick wood. That's what it was.
6 Q. Okay.
7 Do you recall what kind of wood it was?
8 A. What?
9 Q. What kind of wood it was. Was it plywood?
10 A. No, it wasn't plywood. Regular -- just looked
11 like pine wood to me.
12 Q. Okay.
13 Now the drums and the boxes and the various size
14 canisters -- were they directly on top of the pavement?
15 A. They were what?
16 Q. Were they directly sitting on top of the pavement
17 on the ground?
18 A. No, they -- those box -- uh -- there was asphalt
19 under -- under the surface --
20 Q. Okay.
21 A. -- under that yard.
22 Of course, the building had a concrete floor to
23 it.
24 Q. Okay.
25 Were some of the boxes directly on top of the

1 Now you mentioned taking this packaging, this
2 waste, and hauling it off site or --
3 A. That is correct.
4 Q. Okay.
5 Do you recall approximately when that occurred
6 after you came to the facility?
7 A. I expect that we didn't start packaging and/or
8 carrying anything off there until I'd been there about a
9 year, I imagine.
10 Q. So during that year it sat outside in the yard
11 area?
12 A. That's right.
13 Well, it -- it sat out longer than that. They'd
14 never -- they'd never used the disposal license.
15 Q. "They" is who?
16 A. The people -- the previous licensee --
17 Q. And who --
18 A. -- had never used the disposal license. They had
19 never packaged -- they'd take the waste in, but they had
20 not packaged it or disposed of it.
21 Q. Who do you understand "they" to be? What
22 would -- was that --
23 A. The previous licensee.
24 Q. Okay.
25 And what was their name?

1 asphalt?
2 A. Yes.
3 Q. Okay.
4 Was there any type of covering over the boxes --
5 A. No.
6 Q. -- that were out --
7 A. No.
8 Q. Okay. Let me finish my question.
9 -- that were out in the yard?
10 No.
11 A. There was no -- there was no cover over this yard
12 at all.
13 Q. Okay.
14 Were there any precautions taken to prevent
15 rainwater from soaking into the boxes?
16 A. No.
17 Q. Okay.
18 Did you ever have occasion to see discoloration
19 on the ground after any type of a rainstorm?
20 A. No.
21 Q. Was there any discoloration on the ground while
22 you were working at the facility in the area of the waste
23 in the yard?
24 A. Not that I recall.
25 Q. Okay.

1 A. I assume it was Isotopes Specialties.
2 Q. Okay.
3 Now do you know where the waste that was sitting
4 in the yard came from?
5 A. Yes.
6 We had a -- uh -- a ledger that showed in a lot
7 of cases that they had taken in so much waste from a
8 customer, so-and-so name -- or whoever.
9 And I personally knew where two batches of it
10 came from because I had recommended those sources to call
11 this company who had a waste disposal license and they sent
12 it out to him or he came and got it -- or whatever.
13 Q. So you called the customer and ask them to have
14 another disposal company come and take it away?
15 A. Yes.
16 I -- I was asked by a licensee: How do I get rid
17 of this stuff? And I said: There's a licensed waste
18 disposal licensee in the area.
19 Q. Was it your understanding that the customers who
20 brought waste back to Isotopes Specialties Company thought
21 that that waste was going to be packaged and disposed of
22 properly?
23 A. Absolutely.
24 Q. Okay.
25 Did you ever have occasion to review any of the

1 contracts with the customers concerning waste disposal?
2 A. No.
3 Q. Okay.
4 A. I didn't enter a contract with anyone.
5 Q. Okay.
6 Did you ever reject any of the waste that came to
7 the facility?
8 A. Yes.
9 I rejected -- uh -- let's see -- two truckloads
10 of U.S. Air Force waste that arrived at the facility
11 because they had a contract with the company that said they
12 would package their waste properly for transit and deliver
13 it in that condition. They didn't -- they had not packaged
14 this waste on the trucks.
15 Q. Was there any procedure in place to check the
16 containers or -- uh -- wooden boxes on a periodic basis to
17 insure that they were still intact and not leaking any
18 radioactive materials?
19 A. Would you repeat the question?
20 Q. Was there any procedure in place to periodically
21 check the containers and the boxes that were out in the
22 waste area to see if they were still intact --
23 A. No, there was no procedures for that.
24 Q. So there was no process by which ISC --
25 Isotopes Specialties Company determined if there was

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1 number 00301, which is the third document you have, and in
2 the upper righthand corner of that document is indicated
3 Swimming Pool Facility.
4 A. Yes.
5 Q. Is this the swimming pool that you reference that
6 contained --
7 A. That is correct.
8 Q. -- that contained the cobalt 60?
9 A. That is correct.
10 Q. Okay.
11 Was there any procedure in place while you were
12 at -- uh -- Nucor for determining whether or not there was
13 any cracks in the pool?
14 A. No.
15 Q. Okay.
16 Was there any procedure in place for determining
17 whether or not there was any leakage in the piping?
18 A. No.
19 Q. During the time that you were at Nucor was the
20 water in the pool ever replaced?
21 A. The entire water wasn't replaced, but there was
22 make-up water added to the pool for evap- -- to take care
23 of evaporation.
24 Q. And do you have an estimate of approximately how
25 much water would evaporate in the pool?

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1 radioactive materials leaking from those containers
2 or. . .
3 A. I don't know what Isotopes Specialties did.
4 Q. Okay.
5 What did Nucor do when you were employed there?
6 A. We did not check the containers for leakage.
7 Q. Okay.
8 So you would have no way of knowing one way or
9 the other whether they were, in fact, leaking?
10 A. No.
11 But let me just for the record state that when
12 you were running a hazardous material operation you're
13 doing it in a restricted area and you expect that you're
14 going to contaminate that area.
15 Q. Okay.
16 I'd like to turn to the -- uh -- next page in
17 this document.
18 MS. McKEITH: Uh -- when I go to pick up the --
19 uh -- copies that I had made I will take the map that the
20 witness has marked on and make copies for everybody, so
21 when we take a break. . .
22 (Brief pause while Mr. Brown, Mr. Patterson and
23 Mr. Shimada review document)
24 MS. McKEITH: Q. Okay.
25 I'd like to draw your attention to document

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1 A. No, I do not.
2 Q. And was there any way to determine whether or not
3 the -- uh -- reduction in water was due to evaporation
4 versus slow leakage -- uh --
5 A. No.
6 Q. None.
7 When you left the facility --
8 Do you recall approximately when you terminated
9 your employment with Nucor?
10 A. I guess somewhere in time in January of '61 I
11 left.
12 Q. And where did you go?
13 A. I went to the Atomic Energy Commission.
14 Q. In what state?
15 A. Uh -- Germantown, Maryland.
16 Q. At the time you left the facility in 1961 was the
17 water still in the swimming pool?
18 A. That is correct.
19 Q. Did you have any involvement with the
20 decommissioning of the swimming pool?
21 A. I was not involved in any decontamination
22 processes -- uh -- before I left at all.
23 Q. Okay.
24 And stored in the swimming pool was the
25 cobalt 60?

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1 A. Where was it?
2 Q. Was the cobalt 60 stored in the swimming pool?
3 A. That is correct.
4 Q. And in what manner was it stored?
5 A. It was stored on the bottom of the swimming pool
6 in biscuit pans.
7 Q. What do you mean by "biscuit pans"?
8 A. The tin pans that one puts dough in and makes
9 biscuits in.
10 Q. Literally?
11 A. Absolutely.
12 Q. And what does the cobalt 60 look like to those of
13 us in the room that have never seen it?
14 A. It looks like a small cylinder of gray, sort of
15 metallic, not brilliant or bright -- that's it.
16 Q. And -- and how large would the cylinder be?
17 A. It depends on which reactor it came from.
18 Um -- some of it is about as big as that pen
19 (indicating). Some of it is fatter.
20 And one takes bolt cutters and cuts off a portion
21 and measures how many curies that is. And then you put
22 that into a stainless steel container and that's a seal
23 source.
24 Q. And when you were describing the pen, the pen was
25 about a quarter inch in diameter?

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1 One of the biggest reasons for containing
2 contaminated material is that your workers can't work in
3 there or they'll get exposed, so they had to cut down their
4 working time, and this gets to be an economic feature.
5 When it gets too bad, then you clean up.
6 Q. And during the time you were there, there was
7 never any cleanup?
8 A. No.
9 Q. Do you know whether there had been any cleanup
10 prior to your coming to the facility in 1959?
11 A. Do I know if they cleaned up before then?
12 Q. Yes.
13 A. No, I have no -- I don't remember any record of
14 it.
15 Q. Okay.
16 And what is the largest number of curies of
17 cobalt 60 that were in the pool at any given time, if you
18 recall?
19 A. I would say in the nature of 6,000 curies.
20 Q. Now turning your attention to document number
21 000302, the next document in line --
22 A. 302?
23 Q. Yes, sir.
24 -- uh -- the C-14 laboratory.
25 (Brief pause while the witness reviews document)

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1 A. Some are larger than that.
2 Q. Okay.
3 A. Some might be a half inch.
4 Q. Okay.
5 And some of the fatter ones -- how fat was that
6 in diameter?
7 A. Not more than about a half inch. I don't think I
8 recall any bigger than that.
9 Q. Okay.
10 Would the cobalt 60 on occasion have any reason
11 to bleed off the -- um -- packaging or the --
12 A. Yes, it would -- uh -- it would -- uh --
13 It was kind of a brittle material and -- uh --
14 the effects of water and so forth -- there was a plating
15 out effect, which meant that a very small layer would get
16 on the walls of the swimming pool.
17 Q. And during the time you were at Nucor from 1959
18 to 1961 did anyone ever clean the sides of the swimming
19 pool?
20 A. No.
21 And the reason was that the radiation level did
22 never get high enough so that the man couldn't operate from
23 the surface of the pool --
24 Q. Safely.
25 A. -- which is --

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1 THE WITNESS: Yes, it looks like the cold lab --
2 we call it.
3 MS. McKEITH: Q. Okay.
4 Is this another document that I showed you
5 yesterday evening?
6 A. What was the question?
7 Q. What this another document that I showed you
8 yesterday evening?
9 A. No, I don't believe I saw this one.
10 Q. Okay.
11 What was done on the benches that are identified
12 here?
13 A. These are regular laboratory -- like you see in a
14 high school chemistry class. It's just a raised portion
15 and in the middle there's a hood and then you do your
16 laboratory work out on the surface of the bench. It's up
17 about this far off the floor (indicating). It's higher
18 because you're standing up, but --
19 Q. What --
20 I'm sorry.
21 What --
22 Do you want to finish?
23 A. No, that's it.
24 Q. I apologize.
25 What type of work was done in the carbon-14

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1 laboratory?

2 A. They produced tagged -- uh -- chemicals with

3 carbon 14 atom as a substitute for natural carbon atoms.

4 And then they produced tritiated compound where one puts

5 the tritium in and substitutes it for the normal hydrogen

6 atom. These become tracers to be used in research.

7 Uh -- they also did some P 38 work in there,

8 again, using it as a tracer.

9 Q. And P 38 was the polonium?

10 A. No; no, phosphorus.

11 Q. Okay.

12 And when you say "tracer", was this the type of

13 tracer that was used, for example, in the oil industry

14 for -- uh -- detecting pipe locations?

15 A. Yes.

16 Industrial radiography, I think you're referring

17 to, is to check the integrity of well elements, and that

18 includes those made in foundry castings and pipelines, both

19 gas and so forth, to make sure they'll stand the pressure.

20 Now this had nothing to do with this laboratory.

21 That's a hot source and it's in the hot cell where they

22 make those.

23 Q. Okay.

24 We can talk about that when we turn to the hot

25 cell laboratory.

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1 weak beta emitter, so you could hold a cylinder of it -- a

2 glass -- a tube of it in your hand and you would not get

3 any exposure that way.

4 Q. And approximately how many vials would be stored

5 at any given time?

6 A. I have no idea about how many vials, but -- uh --

7 Q. More than --

8 A. -- I'm sure there was a considerable amount of

9 carbon 14, being as it was less hazardous to keep larger

10 quantities.

11 Q. Is this a laboratory that you would have visited

12 on a regular basis --

13 A. Absolutely.

14 Q. -- as part of your responsibilities?

15 A. Absolutely.

16 We would not -- we did not allow any smoking, any

17 eating, any chewing in there or anything like this. They

18 wore gloves. They wore laboratory coats. They wore

19 booties. They wore all types of protection.

20 Q. How frequently was this lab cleaned up -- the

21 floors cleaned up and the walls cleaned up?

22 A. I'm sorry. I don't hear you.

23 Q. Were the walls and the floors of this laboratory

24 cleaned on a periodic basis?

25 A. Absolutely.

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1 A. All right.

2 Q. In this location were there any hazardous

3 materials that were stored?

4 A. Yes, and there's plenty of hazardous chemicals as

5 well as the radioisotopes.

6 Q. Okay.

7 Can you indicate on the map where the hazardous

8 materials were stored by writing an "HM"?

9 A. Uh -- I think it's -- uh -- in this corner right

10 here where it says "Safe C-14" area.

11 (Brief interruption)

12 MS. McKEITH: "Safe", s-a-f-e.

13 Q. "Safe", right?

14 A. Yeah, I think that's --

15 Q. "C-14".

16 A. -- mainly where they put them -- right in there.

17 Q. The scale is difficult to tell.

18 Can you recall approximately what the width was

19 and length of that area?

20 A. I'd say this -- uh -- this whole laboratory

21 across here (indicating) wasn't more than 30 feet.

22 Q. And how were the materials stored?

23 A. In vials usually.

24 Q. And how --

25 A. Carbon 14 doesn't have anything but a very weak,

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1 Q. And how were they cleaned?

2 A. They were usually mopped, wet-mopped.

3 Q. And where did the water go that had been

4 wet-mopped?

5 A. The water went out to the back area by the

6 swimming pool and was solidified in a barrel as radioactive

7 waste.

8 Q. Did it drain into that area?

9 A. Drain?

10 Q. Did it -- how did it get from the carbon lab to

11 the area of the swimming pool?

12 A. In buckets.

13 Q. Okay.

14 A. It was in containers.

15 Q. Okay.

16 And it was stored in 55-gallon drums?

17 A. That is right.

18 Q. Okay. Okay.

19 Turning your attention to document 000303, the

20 next page called Laboratory #1, what is a glove box?

21 A. Uh -- a glove box is a container that has two

22 large holes about at shoulder height; that in those holes

23 are huge rubber gloves that come all the way up to the

24 holes. One sticks one's arms through these holes, and then

25 they are in the rubber gloves. And now you are working in

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1 a glove box contained area using your hands which are
2 protected by the rubber gloves.

3 Q. Is this one of the hot areas that you -- hot lab
4 areas that you were referencing earlier?

5 A. This is one of the hot lab areas.

6 Q. How many hot labs were there at the facility?

7 A. Uh -- there were about -- uh -- half a dozen what
8 we call cells in the hot lab where this work was performed.

9 Normally in a glove box one doesn't perform work
10 with gamma sources because the gloves offer no protection
11 from that, but they do offer some -- quite a bit from any
12 making of beta sources or -- uh -- in some instances with
13 additional shielding, neutron sources.

14 Q. Does document number 303 only show us a portion
15 of a room, or is this an entire room that we're looking at
16 on this diagram?

17 A. Uh - if I can go back to one of the original
18 maps, I think I can give you an illustration.

19 Q. Okay.

20 A. This --

21 Q. What number is that?

22 A. This is number 301.

23 These numbered cells, 1, 2, 3, 4, and so forth --
24 this is a typical example of one of those.

25 Q. Okay.

1 A. Where -- the line that runs directly down through
2 that whole structure is the edge of the hot line.

3 Q. Okay.

4 Approximately how large was the hot laboratory
5 area?

6 A. Um -- I think those -- those -- the righthand
7 side is a hallway, and I think those cells were about ten
8 feet deep, so I'd say we're talking, maybe, total depth
9 across there is about 15 to 18 feet.

10 Q. And its width, since that's your length, it's
11 referring --

12 A. I don't know about the length.

13 Q. Was the 15 to 18 feet the width or the length?

14 A. Yeah.

15 Well, actually --

16 Q. Width or the length? Which one, width or length?

17 A. Width.

18 Q. Okay.

19 A. The hot cells stopped about somewhere in this
20 area (indicating), and in here was actually the shop
21 area (indicating).

22 Q. When you say, "In here was actually the shop
23 area," what are you referring to?

24 A. I'm referring to the area between the hot lab and
25 the cold lab.

1 And that 1, 2, 3, 4 is up on the top part of the
2 page next to where it says --

3 A. And the number of these vary. They put more in
4 there and they take them out if they need them. They could
5 build them up, put them in and take them out, so that
6 varied.

7 But this would be one of those and this one would
8 be way down toward this end more -- probably number 1 --
9 away from the hotter ones.

10 Q. Okay.

11 And you're referring back to document number 303
12 when you say "this one"?

13 A. Okay.

14 Q. Okay.

15 Now when we look at document number 301, does
16 this document show us the entire hot lab?

17 A. Yes, it does.

18 Q. Okay.

19 A. And this area on the lefthand side is actually --
20 that's that research outfit division -- the hot cell ended
21 right there --

22 Q. Where --

23 A. -- along that middle line.

24 Q. Where it says "Outlet 2,000 CFM System", is that
25 what you're referring to?

1 Q. Okay.

2 Is it -- um -- the cold lab being the C-14 lab?

3 A. Yes.

4 Q. Okay.

5 So was the machine shop approximately to the
6 right of where we see, "Outlet" -- it looks like -- "5,000
7 System"?

8 A. That's just a remark on the ventilation system.

9 Q. Okay.

10 Could you describe for us where the machine shop
11 was with reference to some of the wording on this document?

12 A. Well, all of the --

13 The way you make a hot lab is you have to have
14 negative ventilation in the hot lab so that when you open
15 the door in the hot lab you feel the air coming in behind
16 you. It sweeps any contamination out the exhaust system so
17 it is not in your breathing zone. That's a safety feature.

18 Q. Okay.

19 A. And that -- what all this ventilation is -- is
20 each one of these is hooded and goes up to a roof filter
21 and so forth.

22 Q. That's what outlet is -- a hood?

23 A. That's right.

24 Q. Okay.

25 And where was the machine shop?

1 A. The machine shop was between the hot lab and the
2 cold lab.
3 Q. Is it where -- approximately where these little
4 black circles are? See the black circles in between the
5 outlets?
6 A. I'm not -- I don't see what you're referring to.
7 Q. Are you on document 301?
8 A. I'm on 301.
9 Q. Okay.
10 Do you see where it says "Outlet 3,000" and then
11 to the left it says "Outlet 5,000"?
12 A. Oh, that's another ventilation system. That's
13 for the cold lab.
14 Q. Okay.
15 I'm still trying to get a sense of where the
16 machine shop was.
17 Why don't you write down -- write where the
18 machine shop is and hand me the document for a moment.
19 A. (Witness starts to indicate)
20 Q. Write it down, please -- machine shop.
21 A. (Witness complies)
22 Q. Thank you.
23 (Brief interruption)
24 MS. McKEITH: Q. Ah! Okay.
25 So the machine shop is higher up on the page

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1 Q. Okay.
2 And what was done in the cell?
3 A. (Indicates to repeat)
4 Q. What was done in the cell?
5 A. Encapsulation of large gamma radiation sources.
6 Q. Now on the right side of this document there's
7 some writing that says, "Underground waste drum not used".
8 A. Well, the place there is for -- uh -- storage of
9 radioactive material to be used in sources and storage of
10 completed radioactive material in sources.
11 Q. Did you ever physically observe one of these
12 underground -- uh -- waste drum areas at the facility?
13 A. Uh -- we didn't have any underground waste drums.
14 What we had was a concrete cylinder down in the ground, and
15 it had a bottom in it. It wasn't sitting -- it wasn't a
16 drum. It was a --
17 And then we had a variety of trays in there that
18 could be moved around so that we could put sources in
19 different places and mark what they were and who they were
20 and so forth.
21 Q. Was this located in the hot lab?
22 A. Yes, it was.
23 Q. And approximately how deep was this -- uh --
24 storage area?
25 A. About four feet, I think.

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1 closer -- right under where the lab number 1 is.
2 Thank you.
3 Okay.
4 Turning to document number 306, which is
5 described as Laboratory No. 3 --
6 A. What's the number of the sheet?
7 Q. 306.
8 A. 27.
9 Q. 6.
10 A. 6. All right.
11 Got it.
12 Q. Okay.
13 What are these figures that we're seeing on the
14 left side, this rounded figure?
15 A. This (indicating)? The rounded figure?
16 Q. (Indicates)
17 A. Okay.
18 That's a hot cell.
19 Q. And how large is the hot cell?
20 A. Oh, that one is probably about four feet long by
21 two feet wide.
22 This is one of those cells that you saw on that
23 other one --
24 Q. And what was done in the cell?
25 A. -- 1, 2, 3 or 4. This is one of those.

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1 Q. Okay.
2 And approximately how wide and long was it?
3 A. It was about -- uh -- two feet in diameter,
4 something like that.
5 Q. Okay.
6 And was it concrete-lined?
7 A. Yes.
8 Q. Okay.
9 Was there more than one of these types of
10 storage --
11 A. Yes, I think there were two or three cells that
12 had these kind of storage containers in them.
13 Q. Were they all located in the hot lab?
14 A. Yes, they were.
15 Q. Okay.
16 Drawing your attention to document 307 --
17 A. 7, okay.
18 Q. -- the next page?
19 (Brief pause while the witness reviews document)
20 MS. McKEITH: Q. Uh -- do you recognize what
21 this depicts?
22 A. Yes.
23 This is another -- uh -- encapsulation hot cell.
24 And it's apparently for the higher curie sources.
25 I don't recall them ever making the source that

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1 large while I was there.

2 Q. When you say "that large", are you referring

3 to --

4 A. 2,000 curies is what it says down here at the

5 bottom.

6 Q. Okay.

7 Uh -- on the lefthand side there is a writing

8 that says, "Storage holes in storage cask"?

9 A. Yes.

10 Q. Is that what you were referring to a moment ago?

11 A. No, these are different.

12 These are -- these are steel-encased lead-filled

13 casks. You have to have a tremendous amount -- when you're

14 up to this size source you need, as shown here, eight

15 inches of lead -- not concrete -- it will not stop it.

16 Q. Um -- how many of these casks were there at the

17 facility?

18 A. What kind of casks are you referring to?

19 Q. The type of storage cask that you just described

20 with the lead.

21 (Brief interruption)

22 THE WITNESS: On 307?

23 MS. McKEITH: Q. Yes, sir.

24 A. I have no idea, but that --

25 There was only one, I believe, in the --

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1 My question went to the storage area in the hot

2 lab where you would have been storing sources.

3 A. Oh, I'm sure there were many, many sources still

4 stored in the hot lab when I left there.

5 Q. Okay.

6 Is that because you would have seen them or is

7 that just your recollection?

8 A. Um -- I -- I don't go around and physically

9 inventory sources. There's too much exposure.

10 But -- uh -- we always kept a large number of

11 sources on hand. And these are still valuable. And I

12 would assume that somebody sold them to some other industry

13 that could use them if and when they liquidated the

14 facility.

15 Q. Okay.

16 When you left the facility in 1961 was it still

17 operating and manufacturing sources?

18 A. Yes, it was still operating.

19 Q. Okay.

20 Uh -- turning your attention to document 308, the

21 next document in line, there's a reference to High Level

22 Laboratory No. 4.

23 Do you know what is meant by high level?

24 A. No, I'm not quite sure, and --

25 Um -- I don't know when this was done, but --

LAKE TAHOE REPORTING SERVICE

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1 Q. Was --

2 A. -- in here.

3 Q. Was this cask above ground or below ground?

4 A. This was above ground.

5 Q. Okay.

6 (Brief interruption)

7 MS. McKEITH: Q. When you left the facility in

8 1961 was this cask still at the facility?

9 A. I have no idea.

10 Q. Okay.

11 When you left the facility in 1961 was -- were

12 the storage pits still being used -- the storage areas that

13 you just described that were the four-foot deep storage

14 pits?

15 A. Well, we -- we had removed all of the waste

16 stored out in that back area. I had taken it all out and

17 dumped it in the ocean.

18 And I had removed all the magnesium-thorium out

19 of this back building and taken it -- sent that up to

20 Idaho Falls. And I had removed all the barrels of radium

21 and sent that up with that mag-thor.

22 So all the waste on hand was basically --

23 possibly a few barrels as a result of activities in the hot

24 lab.

25 Q. Okay.

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1 This may have been what later became the storage

2 area for the high level radium drums out in back.

3 Q. Okay.

4 But you don't know one way or the other?

5 A. No.

6 Q. Okay.

7 A. I'm not familiar with this type of area being in

8 use for a -- uh -- a laboratory.

9 Q. Okay.

10 Drawing your attention to document 309, the next

11 document -- um -- do you recognize -- uh -- what this

12 document reflects of the facility?

13 A. No, I don't from this -- uh --

14 It looks like some kind of a storage facility.

15 Probably the last -- last cell back there. They did have

16 some storage facility -- sources stored in that last cell.

17 Q. When you say "last cell", would you be referring

18 to cell number 1, 2, --

19 A. Number 5.

20 Q. Number 5. Okay.

21 And I'm going back to document 301. Okay?

22 There's a reference here to "10 storage holes".

23 Do you know what that refers to?

24 A. Ten storage holes, you say?

25 Q. Yes.

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1 A. Yes, I see that. .
2 Yes, they had storage holes and they were --
3 again, were the steel pipes driven down and -- with the
4 bottoms in them and were trays that one could lift up with
5 a pulley and then you could pick a source hole.
6 Q. And this was similar to the four-foot deep --
7 A. Yes, but smaller in diameter.
8 Q. Okay.
9 A. Much, much smaller in diameter.
10 Q. Do you know approximately what the diameter would
11 be?
12 A. I would say they're -- uh -- you're talking,
13 maybe, three inches or something like that -- three inches
14 in diameter.
15 Q. Okay.
16 Drawing your attention to document number 311,
17 which refers to a Storage Laboratory #5 --
18 A. Okay. I'm looking at that.
19 Q. I'm sorry?
20 A. I'm looking at it.
21 Q. Okay.
22 These little circles at the bottom of the page --
23 there are twelve little circles and then two big circles --
24 uh --
25 A. They appear to be storage locations.

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1 Q. No, in the middle of the square something says
2 "drain" and there's a word beneath it I can't read.
3 A. Drain pac, p-a-c.
4 Q. Do you know what that refers to?
5 A. No, I don't.
6 Q. Okay.
7 Turning your attention to document 313, which is
8 also swimming pool diagram --
9 A. I'm looking at it.
10 Q. I take it that the trolley hoist was used to
11 lower and remove sources from the pool.
12 There's an "ST - Trolley Hoist".
13 A. What is the question?
14 Q. Was that used for lowering and taking sources out
15 of the pool?
16 A. It was used for lowering the cast (sic) -- the
17 cask to take --
18 One doesn't pick up the source. What you do is
19 lower a shielded cask that has a hole in the bottom so that
20 the water can go through it. And then you get down to the
21 bottom. Then you pick up your source with a remote control
22 rod, lift it up, put it inside the shielded cask, put the
23 lid on, carefully hoist it up, and as you hoist it up the
24 water comes out of the cask. Then you have it up here
25 where it's shielded, and then you take it to the hot lab in

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1 Q. Of what you -- of the type that you were just
2 describing?
3 A. That is correct.
4 Q. The steel cylinders driven down into the ground?
5 A. (Witness nods head affirmatively)
6 Q. When you left the facility do you -- did you have
7 any involvement with removing these metal cylinders storage
8 holes?
9 A. Did I what?
10 Q. Did you have any involvement with removing the
11 metal cylinder storage holes?
12 A. No.
13 Q. Okay.
14 Turning your attention to document number 312,
15 the next page, which is referenced as a Swimming Pool
16 Facility --
17 A. I see it, yes.
18 Q. Okay.
19 Uh -- what was the pipe guardrail referring to?
20 A. That was a railing around the edge of the pool to
21 keep people from accidentally falling in.
22 Q. Okay.
23 And the "drain" -- is it p-a-t or p-a-c?
24 A. Are you referring to where it was says six-inch
25 curb?

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1 that container.
2 Q. Okay. Okay.
3 Drawing your attention to document number 314,
4 also Swimming Pool Facility -- uh -- in the upper righthand
5 corner there's a reference to "Backwash - to building
6 through anti-siphon valve".
7 Do you know what that refers to?
8 A. No, not particularly.
9 Q. Okay.
10 Then there's a reference to "1-1/2" -- it looks
11 to me like an abbreviation -- "cubic piping - grouted in
12 pool walls to be given 200-percent" (sic) "pressure test
13 with no loss in 24 hours".
14 Do you know what that refers to?
15 A. I think that was a test result when they built
16 the pool that it was supposed to be built to.
17 Q. And during the time period that you were employed
18 at Nucor from '59 to '61, did you ever do any pressure
19 testing?
20 A. No, I did not.
21 Q. And do you know whether anyone else did?
22 A. No, I don't.
23 Q. Had someone else been testing the pool, would
24 that have been information that would have come --
25 A. I have no information on that.

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1 Q. No.
2 Would it have been information that would have
3 come to your attention if someone else had been testing the
4 pool?
5 A. Not necessarily.
6 Q. Okay.
7 That would not have been discussed at the
8 Isotope Committee when the committee met?
9 A. Not unless it was a procedure that hadn't been
10 done.
11 Q. That was supposed to be being done?
12 A. Yeah, supposed to be done and wasn't done --
13 hadn't been, then it would come up.
14 Q. But to your knowledge this was not a procedure
15 that was done on a regular basis?
16 A. No, as far as I know it was not.
17 Q. Okay.
18 (Brief pause)
19 MS. McKEITH: Q. Okay.
20 The next document I'd like you to look at is 316.
21 I apologize for the quality. This is how we got
22 documents from the AEC and they're very difficult to read
23 at times, and this is one of them.
24 Do you know what this document reflects?
25 A. Do I know what?

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1 about eight feet above ground.
2 Q. I see.
3 So it was an above-ground wooden --
4 A. That is correct.
5 Q. -- pit -- box as opposed to a pit.
6 A. Naturally.
7 Q. Okay.
8 And did that sit on top of asphalt?
9 A. Yes.
10 Q. Okay.
11 I'm done with this Exhibit.
12 I'd like to go ahead and take a ten-minute break,
13 pick up the other documents and make copies of the
14 documents that you've written on.
15 Can I please get a copy of any of the documents
16 you have there that you've made some writing on --
17 A. Sure.
18 Q. -- this morning?
19 Okay.
20 A. Help yourself.
21 MS. McKEITH: And we can go off the record.
22 THE VIDEOGRAPHER: We are off the record at 1125.
23 (Brief recess)
24 ***
25 ***

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1 Q. Do you know what this reflects -- this document?
2 Can you tell what it is?
3 A. It's another drawing of the facility.
4 Q. Okay.
5 Uh -- I see it says "Storage Yard" and to the
6 righthand side there's a little box that says "Pit".
7 A. Yes.
8 Q. Do you know what that pit referred to?
9 A. Yes, it's the same one that we had over here on
10 the first drawing, number -- whatever it is --
11 Q. Uh-hum?
12 A. -- 32.
13 Q. Okay.
14 And --
15 A. It's just another picture of the same
16 organization. There that pit where the radium barrels was,
17 and that's what this pit is.
18 Q. How deep was this pit?
19 A. (Indicates to repeat)
20 Q. How deep was the pit?
21 A. I think it was about --
22 Well, it didn't go underground. Okay?
23 This was a build-up double-wooden structure
24 filled with sand on all sides about two-foot thick per
25 shielding and it was built above ground. The top of it was

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1 (Three documents bearing
2 document numbers J70332A,
3 000301A and 000302A which
4 contain the witness' markings
5 were appended to Exhibit 2.)
6 MS. McKEITH: Can we go back on the record?
7 THE VIDEOGRAPHER: All rightee.
8 Stand by, please.
9 (Brief pause)
10 THE VIDEOGRAPHER: We are on the record at 1154.
11 Please proceed.
12 MS. McKEITH: Q. Mr. Vaden, can you tell me if
13 you are familiar with what types of orders to show cause
14 the AEC issues or issued at the time of the 1950s?
15 A. I didn't view those orders. I didn't have any
16 knowledge except hearsay evidence that they existed.
17 Q. Okay.
18 Did anyone tell you what those orders were in
19 reference to?
20 A. No, it was simply -- it was simply stated that
21 they were due to noncompliance matters.
22 Q. Okay.
23 Who stated that to you?
24 A. The representatives of the Atomic Energy
25 Commission, namely Gene Blanc.
26 Q. Did Mr. Blanc tell you what type of noncompliance
27 he was referring to?

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1 A. I can't remember that he did.
2 Q. During the time period that you were employed at
3 Nucor did -- uh -- the facility receive any other orders of
4 noncompliance?
5 A. They did not receive any show cause orders once
6 I -- when I was employed there.
7 Q. Is a show cause order different than other types
8 of correspondence concerning noncompliance?
9 A. I assume that there were on more than one
10 occasion a -- uh -- letter stating that their inspection
11 indicated there had been an item in noncompliance with the
12 regulations.
13 Q. Do you recall, or are you speculating about it?
14 When you say you assume that from time to time,
15 do you actually have any recollection here today about
16 notifications of noncompliance?
17 A. I don't recall a specific incident.
18 Q. Okay.
19 MS. McKEITH: Can we go off the record a second?
20 THE VIDEOGRAPHER: We are off the record at 1156.
21 (Discussion off the record)
22 MS. McKEITH: Okay.
23 I'm going to go ahead and do that.
24 We will not be marking an Exhibit for Exhibit 3.
25 I'd like to mark Exhibit 4 --

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1 THE VIDEOGRAPHER: Okay.
2 Stand by, please.
3 MS. McKEITH: We're going to go back on the
4 record.
5 THE VIDEOGRAPHER: Stand by, please.
6 (Brief pause)
7 THE VIDEOGRAPHER: We are on the record at 1158.
8 Please proceed.
9 MS. McKEITH: Uh -- just to clarify in the event
10 we were off the record, Exhibits 3 and 4 are blank. The
11 next Exhibit in line, Exhibit 5, is document number 287, an
12 Application for Byproduct Material License.
13 Q. Mr. Vaden, is it your understanding that you
14 completed this application? Did you complete this
15 application?
16 A. I assumed I did, yes.
17 Q. Okay.
18 Uh -- and on this application is a list of types
19 of hazard -- excuse me -- radioactive materials:
20 Carbon 14, cobalt 60, cesium 137, thallium 170, iridium,
21 sulfur, antimony, krypton 85, --
22 (Comments off the record)
23 MS. McKEITH: Q. -- sodium, hydrogen and
24 polonium 210.
25 Do those reflect the types of materials that

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1 And -- I apologize -- we will not be marking an
2 Exhibit 4.
3 The next Exhibit is Exhibit 5, which is a
4 two-page document 000287 -- actually it's just a one-page
5 document.
6 (A one-page document entitled
7 Application for Byproduct
8 Material License was marked
9 for Identification as
10 Exhibit 5.)
11 MS. McKEITH: Q. Do you recognize what this
12 document is?
13 A. Yes, it's an application for a byproduct material
14 license.
15 Q. While employed at Nucor would you have completed
16 such types of applications?
17 A. Yes, I submitted these for amendment purposes and
18 for renewal purposes on numerous occasions.
19 Q. Can you tell whether or not you were the person
20 who generated this particular document?
21 A. Can I tell what?
22 Q. If you were the person who generated the
23 document.
24 THE VIDEOGRAPHER: I'm sorry. Are we off the
25 record here?
26 MS. McKEITH: I'm sorry. No.
27 We'll start over.

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1 were, in fact, stored and used at the Isotopes --
2 A. Yes; that is true.
3 Q. -- at the Isotopes facility?
4 Okay.
5 And there's a reference here to a
6 Christine Taylor. Do you recall Miss Taylor?
7 A. Yes.
8 She was a -- uh -- radiation tech that I used for
9 help with surveys, and she analyzed and ran samples --
10 We had a contract with the Metropolitan Water
11 District for analyzing water samples for radiation. She
12 did that type of lab work.
13 Q. And do you know why she would have been
14 referenced here as assisting you 75 percent of the time?
15 A. Um -- I -- I presume they're referring to the
16 fact that I did consulting on behalf of the company --
17 uh -- as well as serving as a radiation safety officer and
18 health physics officer.
19 Q. So did you do consulting on the side outside of
20 your employment for Isotopes?
21 A. Yes.
22 I would be hired out for \$120 a day as a
23 consultant to different people that -- um -- wanted
24 assistance on writing applications for licenses or do some
25 specific work at some other plant.

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1 Q. And, Mr. Vaden, when you were hired out as a
2 consultant did they pay Isotopes Specialty or Nucor or did
3 they --
4 A. That's right.
5 Q. They did?
6 A. They did.
7 Q. Okay.
8 So --
9 It was still in the course of your employment for
10 Nucor?
11 A. That is correct; yes.
12 Q. Now there's another reference just above that
13 to "Byproduct material may also be stored at Isotopes
14 Specialties Company, 703 Main Street, Burbank".
15 A. Yes.
16 Q. Do you --
17 A. I see that.
18 Q. And on occasion did materials that we were using
19 at 170 Providencia be stored at the 703 Main Street
20 facility?
21 A. Uh -- it was simply stored there. It wasn't used
22 there.
23 Q. Okay.
24 And why would we have been storing it there as
25 opposed to on the 170 site?

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1 A. Well, my objective was to remove all the
2 contamination, radioactive contamination, from the facility
3 to the satisfaction and requirements of the Atomic Energy
4 Commission and the Los Angeles County Health Department.
5 Q. Do you recall whether there were guidelines or
6 regulations published that specified exactly what occurs in
7 a decommissioning?
8 A. Yes.
9 There were limits set by Atomic Energy Commission
10 with respect to the permissible amount of alpha and
11 beta-gamma contamination levels that could be left in the
12 building and also radiation levels at 24 inches above the
13 floor surface.
14 Q. Can you tell us in connection with the
15 703 Main Street decommissioning what are the exact steps
16 that you took at the facility to decontaminate it?
17 A. Well, the first thing you do in -- uh --
18 decontamination procedures is to locate the hot spots --
19 those are reading very high. These you eliminate, remove,
20 and put in shielded containers and take away.
21 Q. When you say "eliminate", what are you removing?
22 What --
23 A. You're removing part of the substance that the
24 radioactive material has deposited on.
25 Q. Would that be floors and --

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1 A. I -- my thinking is -- as I recall they probably
2 weren't ready to put it into use for production over at the
3 Providencia building and being in a cask and so forth they
4 needed some space. The space is limited at the -- in the
5 area back there with the -- where they could put materials
6 in the Burbank -- in the Providencia facility.
7 Q. Are you familiar with the 703 Main Street
8 facility?
9 A. Yes, indeed.
10 Q. Was it designed similarly to the 170 Providencia
11 facility?
12 A. It was used in -- before. That facility was used
13 before apparently by Isotopes Specialties as their main
14 business use before they ever got into the Providencia
15 building.
16 Q. Was it still operating at the time you worked at
17 170 Providencia?
18 A. No, it was not.
19 Q. So it was simply used for storage?
20 A. It was used for storage, but I was in charge of
21 decontaminating that building because they wanted -- it was
22 a leased building; they wanted to give it back to the
23 owner.
24 Q. And what types of activities did you engage in
25 when you decommissioned the 703 Main Street building?

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1 A. It could be a concrete floor. It could be a
2 rafter. It could be a piece of wallboard.
3 Q. Did you remove floors -- concrete floors at the
4 703 facility?
5 A. Yes, I took out the entire concrete floor of the
6 building and all the drains.
7 Q. And was that because they were contaminated with
8 radio- --
9 A. That is correct.
10 And I took out most of the backyard to a depth of
11 two feet.
12 Q. Do you know --
13 A. And I took down all the interior walls because
14 they were contaminated.
15 Q. Do you recall how long the 703 Main Street
16 facility operated?
17 A. No, I have no idea when -- when it operated at
18 all.
19 All I was -- it took me several months before I
20 could clean it up to the satisfaction of the agencies
21 involved.
22 Q. Do you recall having inspected the
23 703 Main Street facility when you were at the Department
24 of Health Services?
25 A. No, I did not.

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1 Q. Okay.

2 Can you recall approximately how many drums of

3 materials were removed from the 703 site?

4 A. Oh, I would say less than a hundred.

5 Q. And that included the concrete that you removed?

6 A. That included what?

7 Q. The concrete that you removed.

8 A. Yes.

9 You see, I didn't have to add concrete to that.

10 It was already heavy enough to sink.

11 Q. Uh -- drawing your attention back to

12 document 287, the types and quantities of radioactive

13 materials listed here under item A, B and C -- are those

14 representative of the approximate quantities that would

15 have been in inventory at the Isotopes facility?

16 A. Those are supposed to be the maximums on hand,

17 and if you're going to exceed that you'll have to get a

18 license amendment and get permission to get more.

19 Q. Okay.

20 Do you recall whether or not the guidelines for

21 decommissioning from the AEC were documents that were

22 published in the Federal Register?

23 A. Yes, all their regulations are published in the

24 Federal Register.

25 Q. All right.

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1 A. Pretty good.

2 Q. Okay.

3 A. Pretty good.

4 Q. And what does this letter reference?

5 A. It's -- it's supposedly telling the -- uh -- the

6 Atomic Energy Commission that Nucor has sold the -- their

7 company there called Isotopes Specialties back to

8 Mr. Goldstein.

9 Q. Now this letter is -- uh -- marked March 1, 1961.

10 Do you know whether you were still employed at

11 Nucor when --

12 A. No, I was not. I was in the Atomic Energy

13 Commission working there starting about February the 6th,

14 I believe.

15 Q. Okay.

16 So you --

17 Do you have any familiarity with the 85 drums of

18 radioactive waste that was transported to the National

19 Reactor Test Site?

20 A. Yes, that was a waste that I transported while I

21 was there.

22 Q. So the waste referenced in this letter to your

23 knowledge would have been transported prior to your

24 departing?

25 A. Just those drums is all I know about -- those

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1 MS. McKEITH: Um -- I would like to mark

2 Exhibit 6. It says JT436.

3 (A one-page letter dated

4 March 1, 1961 to James Mason

5 from Kenneth Newman was

6 marked for identification as

7 Exhibit 6.)

8 MS. McKEITH: Q. Do you want to take a minute to

9 look at this document, sir?

10 This appears to be a December 2, 1960 (sic)

11 letter to Isotopes Specialties Company (sic) from

12 James Mason (sic), Chair, and it looks to me --

13 MS. McKEITH: You only have one page there?

14 MR. BROWN: Uh-hum.

15 MS. McKEITH: Can I take a look at this a minute?

16 (Brief pause)

17 MS. McKEITH: I apologize. Can we strike that

18 starting with my description of what that letter was?

19 This is a March 1, 1961 letter from, it looks

20 like, Kenneth Newman, N-e-w-m-a-n, Nuclear Corporation of

21 America, to U.S. Atomic Energy Commission.

22 Q. Can you read this -- can you make out this

23 letter? Can you physically read it? Is the print readable

24 to you?

25 A. Can I what?

Q. Can you read the letter? The print is very bad.

Can you --

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1 85 drums of radioactive waste.

2 Q. Do you know what those 85 drums contained?

3 A. They contained radium.

4 MS. McKEITH: And for the record that document is

5 JT0436.

6 And I'm going to mark Exhibit 7.

7 (A one-page document entitled

8 Memo Route Slip to which is

9 attached a two-page 2/16/61

10 memo to Warner from Blanc and

11 a six-page 2/9/61 memo to

12 Smith from Book was marked

13 for identification as

14 Exhibit 7.)

15 (Reporter's Note: Document

16 bearing number JT0443, which

17 is page 2 of the six-page

18 2/9/61 memo was inadvertently

19 left out and never given to

20 this Reporter.)

21 MS. McKEITH: Q. Exhibit 7 is comprised of

22 document JT04039 (sic) through JT0447.

23 Um -- do you recognize this document?

24 A. Number 440?

25 Q. Number 439.

(Brief interruption)

THE WITNESS: Which one was it, again, please?

MS. McKEITH: Q. Number 439.

A. 439.

Q. It should be the first one there.

A. No, I don't recognize this document.

LAKE TAHOE REPORTING SERVICE

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1 This is an internal memo at AEC.
 2 Q. Okay.
 3 There is a reference to SPN which I believe is
 4 the San Francisco Compliance Division.
 5 Is that the AEC?
 6 Do you see this --
 7 A. Yes, that is -- they had their regional office --
 8 Region 5 office was located in San Francisco.
 9 Actually it was in Berkeley, I believe.
 10 Q. Okay.
 11 And it discusses the fact that on
 12 January 14, 1961 there was a shipment of approximately
 13 85 drums and a large number of wooden boxes containing
 14 magnesium-thorium to NRIS --
 15 What is NRIS?
 16 A. National Reactor Test Site, Idaho Falls.
 17 Q. Okay.
 18 -- for disposal.
 19 A. That's right.
 20 Q. Okay.
 21 There's also a residence here that "SPN observed
 22 the disposal of 942 drums and six master-drum containers at
 23 sea on January 14th," --
 24 A. That's right, we took them out and dumped them
 25 off the barge.

LAKE TAHOE REPORTING SERVICE

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1 Q. Can you tell me what the consistency of this
 2 liquid would have been? The consistency --
 3 A. It's very viscous and very oily.
 4 Q. So --
 5 A. It doesn't run, in other words. It's just -- it
 6 will run if it's up to temperature to lathe, but outside of
 7 that it's pretty sluggish.
 8 Q. Is it -- um -- have higher viscosity than the
 9 oils we put in our automobiles?
 10 A. Yes, it is.
 11 Q. Okay.
 12 Is there some common type of material that you
 13 could compare it to that we could recognize?
 14 A. Um -- it is a common material used in -- in -- to
 15 reduce heat in lathing processes for any metal.
 16 Q. But for those of us who go off to Home Depot on
 17 the weekend, is there something you can think of in our
 18 daily lives --
 19 A. No.
 20 Q. -- that's similar --
 21 A. No.
 22 Q. -- that's similar in texture and viscosity?
 23 A. What was that?
 24 Q. Something that's similar in viscosity in terms of
 25 how much it would run? Can you think of something --

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1 Q. Does this reflect -- the 942 and the 85 drums and
 2 the large number of wooden boxes -- would all of these have
 3 come from the 170 Providencia site?
 4 A. That is correct.
 5 Q. Okay.
 6 Can you explain to me why the thorium fission
 7 material would get into the coolants -- how that occurred?
 8 A. Would you repeat that, please?
 9 Q. Could you explain to us how the -- uh -- thorium
 10 fission materials would get into the coolant?
 11 A. Into what?
 12 Q. The coolant. Coolant, c-o-o-l-a-n-t.
 13 A. What page are you on?
 14 Q. I'm looking at page 444, JT0444. There's a
 15 reference to 90 to 100 packages containing liquid, and
 16 further down it says that the liquid contains small amounts
 17 of thorium and mixed fission products.
 18 A. Okay.
 19 The soluble oil is used as a coolant in lathing
 20 processes where one is shaving magnesium-thorium and the
 21 lathe tool gets the metal extremely hot so, therefore, you
 22 need something to cool down the temperature.
 23 And that's why they call it --
 24 Q. Can you --
 25 A. -- a --

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1 A. Oh, I'd say about SAE 50 -- 60 maybe.
 2 Q. And SAE 60 is what?
 3 A. Well, you only use 30 or 35 in your car. Okay?
 4 Q. Okay. Okay. Gotcha.
 5 A. There you go.
 6 Q. Thank you.
 7 I'm sure the guys understand exactly what you
 8 mean because they all change their oil.
 9 (Laughter off the record)
 10 MS. McKEITH: All right. Let me just see here.
 11 (Brief pause)
 12 MS. McKEITH: Q. All right.
 13 If you turn to page number JT0447, that's the
 14 last document.
 15 A. Okay.
 16 Q. And can --
 17 A. All right. I'm looking at 447.
 18 Q. Can you take a look and read that, please?
 19 A. (Witness complies)
 20 Q. Okay.
 21 Is the reference here to the 85 drums of waste
 22 that remained at Isotopes Specialties the 85 drums that
 23 ultimately went to Idaho?
 24 A. Yeah, that's the -- that's the 85 drums I sent up
 25 to Idaho Falls.

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1 Q. And the large amount of magnesium-thorium alloy
2 turnings and chips packed in wooden boxes -- did those go
3 off to Idaho, too?

4 A. Yeah, they went to Idaho.

5 Q. Okay.

6 MS. McKEITH: I'm going to mark Exhibit 8 which
7 is JT448 to JT454.

8 (A seven-page document
9 consisting of a memo dated
10 May 4, 1961 to L. R. Rogers
11 from Donald E. Warner and
12 six pages of attachments was
13 marked for identification as
14 Exhibit 8.)

15 MS. McKEITH: Q. Okay.

16 Can you please take a look at this document?

17 A. (Witness complies)

18 Q. Can I ask, does "mr" mean microcuries?

19 A. Where are you?

20 Q. I'm looking at page JT0450.

21 A. 450?

22 Q. Yeah.

23 There's a number of references to "mr" -- the
24 abbreviation "mr". Are those microcuries?

25 What I'm looking at here, Mr. Vaden, is -- uh --
in the third paragraph, fourth line down, "3100 mr of gamma
exposure," and I would like to know what the "mr" stands
for.

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1 may have come off of the cobalt 60 metal pieces as they
2 were being handled.

3 And he had been warned on numerous occasions to
4 be sure to hold that material out at some distance from
5 him, but on -- apparently on two or three occasions he
6 brought it in too close and his film badge was on his belt
7 down here (indicating) and he -- he got an exposure --
8 overexposure to the film badge, which didn't necessarily
9 reflect getting an overexposure to his entire body.

10 Q. Other than this one incident that was -- the two
11 incidents that were reported in this document, do you
12 recall any other incidents where the Nuclear Regulatory
13 Commission sent a notification to Nucor about overexposure?

14 A. Well, for the record it was the Atomic Energy
15 Commission.

16 Q. Thank you.

17 A. But -- uh --

18 I don't know.

19 There probably were other examples of this and
20 these exposures were all -- uh -- entirely thrashed out by
21 the Isotope Committee and all kinds of efforts made to try
22 to stop recurrence of these things, because if people were
23 overexposed too much, they had to be laid off and couldn't
24 work and it interfered with production, so there was a
25 money motive.

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1 A. Milliroentgens.

2 Q. Milliroentgens. Okay.

3 (Brief pause)

4 MS. McKEITH: Q. And was the milliroentgen limit
5 for exposure to gamma actually 300 milliroentgens in seven
6 consecutive days?

7 A. Yeah, that's the weekly limit.

8 Q. Uh-hum.

9 So would it have been that you multiply the
10 weekly limit by 13 weeks to determine if somebody was
11 overexposed --

12 Can you explain to us how they reached the
13 conclusion that this employee had been overexposed?

14 A. Why he got the overexposure?

15 Q. Yes, sir.

16 A. I don't recall how he got it. I know he did --
17 uh -- whatever.

18 Didn't I give an explanation in here? I must
19 have somewhere. They usually want one, anyhow.

20 Okay.

21 Yeah, that was the -- part of the problem.

22 He was the one who took the exchange column and
23 filters out of the system at the swimming pool.

24 These -- these devices are used to continuously
25 filter the water to take any radioactive material out that

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1 Q. All right.

2 MS. McKEITH: I'm going to go ahead and mark
3 Exhibit 9, which is JT358 through 360.

4 (A three-page typewritten
5 document bearing document
6 numbers JT0358 through JT0360
7 was marked for identification
8 as Exhibit 9.)

9 (Brief pause while the witness reviews document)

10 MS. McKEITH: Q. Do you recognize this document?

11 A. No, I don't.

12 Q. Okay.

13 Uh -- drawing your attention to JT359, the second
14 page, there's a statement here "that wastes may be
15 processed by chemical dissolution, filtration, extraction,
16 ion exchange, chemical polymerization and physical
17 absorption."

18 Do you know whether any of these processes were
19 utilized at the Isotopes facility?

20 A. I didn't see any of those processes used at
21 Isotopes Specialties, no.

22 Q. Do you recognize the handwriting on this
23 document?

24 A. Recognize what?

25 Q. The handwriting on this document.

26 A. No, I do not.

27 I may say to you that in writing licenses it --

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1 the procedure of the licensee applicant is to write the
2 license as broad as possible, include every process they
3 ever thought they heard of or could use, make sure they got
4 as much leeway as they can, and the duty of the license
5 reviewer is to try to stop all that. So it's -- it's a
6 kind of a contest.

7 So it's very common to put in: And we may do
8 this; we may do that; we may process by this; we may do
9 this; we may do all these things.

10 That gives you -- if they okay it, then you have
11 authorization.

12 Q. Thank you.

13 MR. SHIMADA: I'll move to strike all of that as
14 being non-responsive since there wasn't a question.

15 MS. McKEITH: Okay.

16 Um -- Exhibit Number 10 is going to be blank.

17 Exhibit Number 11 is document number JT396 to
18 398.

19 (A two-page memo dated
20 January 11, 1961 to
21 A. R. Lueddecke from
22 H. L. Price by R. L. Kirk
with attachment was marked
for identification as
Exhibit 11.)

23 (Brief pause while the witness reviews document)

24 MS. McKEITH: Q. Um -- Mr. Vaden, if I could
25 draw your attention to the fourth paragraph on

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1 at the Isotopes facility. Am I correct that those liquid
2 wastes were the magnesium-thorium wastes that had some of
3 the coolant in it?

4 A. It had some coolant in it.

5 Q. And that was what gave it the consistency of the
6 oil that you described?

7 A. That's right.

8 Q. Okay.

9 Is the reference here in paragraph four to
10 liquids --

11 A. Paragraph four or three?

12 Q. Uh -- number four.

13 A. "The license has also been amended to authorize
14 the disposal of liquid" waste --

15 Is that what you're saying?

16 Q. Yes.

17 Is that the same waste we've been talking about
18 or different liquids, if you know?

19 A. I think it is, but I can't be sure.

20 Q. Okay.

21 A. On second thought, I don't believe it is. I
22 don't believe it had anything to do with -- uh --

23 Q. And why do you think that? What is it that makes
24 you think that?

25 A. Because -- uh -- it refers to the concentration

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1 document 396. There is a reference to the request that the
2 license be amended for the disposal of liquids containing
3 not more than one times ten to the minus four microcuries
4 per milliliter of byproduct materials.

5 Um -- are the liquid materials referenced here
6 different than the -- uh -- slurry of magnesium-thorium --
7 slash -- coolant that we've been talking about?

8 A. Would you repeat that, please?

9 Q. Are the --

10 A. If you'll look at me when you speak I can hear
11 you better.

12 Q. Thank you.

13 Are the -- um -- liquids referred to in this
14 paragraph four different than the magnesium-thorium --
15 slash -- coolant slurry that we've been talking about that
16 was in the wooden boxes, if you know?

17 A. Is your question --

18 MR. SHIMADA: Objection. I think that
19 mischaracterizes the testimony regarding the coolant.

20 MS. McKEITH: Q. Do you know what I mean by
21 slurry?

22 A. I know what concrete slurry is, but I see -- I
23 don't understand your question.

24 Q. Okay.

25 We've talked about there being some liquid waste

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1 and it refers specifically to liquid versus the oil type
2 stuff.

3 Q. Now, Mr. Vaden, what other types of liquids were
4 there at the Isotopes facility that would have required the
5 request for amendment in the license?

6 A. Well, there's always some liquid waste being
7 generated in the cold laboratory, and there's also liquid
8 waste often -- often generated in the hot lab, and there's
9 also liquid waste generated in cleaning up of these
10 facilities.

11 Q. Okay.

12 Do you have any idea of approximately how many
13 packages of waste that was disposed of, either in the ocean
14 or at Idaho, would have been -- would have contained liquid
15 wastes as opposed to solid wastes?

16 A. No, I don't have any idea.

17 Q. Okay.

18 A. Of course, we try to keep the amount of liquid
19 wastes at a minimum because it's expensive to dispose of
20 when it solidifies.

21 Q. And what type of liquid waste was generated in
22 the carbon-14 laboratory?

23 A. Carbon 14, tritium B-32 -- whatever they were
24 using.

25 Q. And what was the consistency of the liquid waste

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1 generated in the carbon-14 laboratory?
2 A. Probably like dishwasher.
3 Q. And in the hot lab what type of liquid wastes?
4 A. Similar.
5 Q. And would it be a similar consistency to
6 dishwasher?
7 A. Yes.
8 Q. And in what type of a container was that stored?
9 A. It went into a 55-gallon drum and it was
10 solidified.
11 Q. Since it was solidified why was it still liquid
12 at the time of it being disposed?
13 A. It wasn't.
14 Q. Solidified?
15 A. It wasn't disposed as liquid. We weren't allowed
16 to dispose of it as liquid.
17 Q. Okay.
18 But am I incorrect that this document 396 is
19 requesting an amendment to the license to permit you to
20 dispose of liquid wastes?
21 A. Yes, but disposal by solidification --
22 No, it says without solidification, doesn't it?
23 Q. Yes.
24 A. I don't know what that means.
25 Q. Okay.

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1 Douglas -- and Douglas Aircraft and Robert Shaw Fulton, --
2 A. Yes.
3 Q. -- Richfield Oil Anaheim and Truesdail
4 Laboratory.
5 During the time period that you were an employee
6 of Nucor do you recall receiving wastes from these
7 customers at the 170 facility?
8 A. Only from Robert Shaw.
9 Q. And do you know what kind of waste Robert Shaw
10 transported to the facility?
11 A. I recall that they reported -- they sent some
12 gauges, nuclear gauges, and valves, but I can't recall what
13 the radioactive material involved was.
14 Q. Now when shipments came to the facility did
15 Isotopes Specialties have trucks that picked up the
16 shipments or did the customers transport the shipments?
17 A. It worked both ways.
18 Normally they -- they would pick up small
19 shipments because they had pickup trucks, but if their
20 large shipments came in semis, somebody else sent them.
21 Q. Okay.
22 This is a list of only five -- excuse me -- one,
23 two, three -- five customers.
24 Were there other customers that you're aware of
25 that were also -- uh -- utilizing Isotopes for its waste --

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1 (Brief pause)
2 MS. McKEITH: Okay.
3 I'm going to mark Exhibit 12, which is document
4 number JT400 to 401.
5 (A two-page letter
6 dated January 13, 1961 to
7 Jones Mason from
8 Allen Goldstein was marked
9 for identification as
10 Exhibit 12.)
11 MS. McKEITH: A document dated February -- excuse
12 me -- January 13, '61 from Allen Goldstein to the Atomic
13 Energy Commission.
14 (Brief pause while the witness reviews document)
15 MS. McKEITH: Q. Mr. Vaden, in January of 1961
16 was Allen Goldstein still working at the Nucor facility at
17 170 Providencia?
18 A. Uh -- as far as I know he wasn't.
19 Q. Okay.
20 At any time when you were an employee of Nucor
21 was Mr. Goldstein working at the 170 Providencia property?
22 A. No, he was not. I never worked with him or for
23 him.
24 Q. Okay.
25 In this correspondence -- uh -- under item
26 number 2 there's a reference to -- uh -- waste disposal
27 contracts being acquired as assets from Hughes Aircraft,

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1 for their waste disposal?
2 A. Not under a particular contract, but they would
3 receive and take waste back from any of their customers
4 that they had sold material to.
5 Q. Do you know approximately how many customers
6 Nucor had?
7 A. No, that's a -- quite a commercial secret.
8 Q. Well, it's no longer a commercial secret because
9 they no longer operate --
10 A. It was to me at that time --
11 Q. All right.
12 A. -- and still is because I didn't know. They kept
13 it very close. This is business competition.
14 Q. We're in a deposition and you need to give us
15 your answer to the question as best you know it, because
16 this is a business that no longer exists, so there's not
17 any --
18 A. I understand it. And I resent the fact that you
19 think I might give you a wrong answer.
20 Q. No, I don't want you to give me -- I want you to
21 give me your best answer.
22 A. I don't know. I don't have any idea.
23 Q. Okay.
24 Do you know whether it was more than fifty
25 customers?

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1 A. I don't have any idea. It could have been
2 thousands.
3 But --
4 Q. Okay.
5 A. -- these gentlemen will tell you it's a
6 competitive, dog-eat-dog world in the
7 radio-pharmaceuticals.
8 Q. And it's --
9 A. That's why he bought it back -- to get that list
10 back.
11 Q. Okay.
12 A. From what I heard.
13 Q. Without telling me the names of the customers,
14 can you tell us how many customers Isotopes had?
15 A. No way.
16 Q. Okay.
17 No way you --
18 A. I was not -- I was not in that business. I have
19 no knowledge of it.
20 Q. Okay.
21 Is it that you don't have any knowledge or you
22 don't want to say anything here this morning?
23 A. If you say that one more time, I'm going to walk
24 out of here.
25 Q. Okay.

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1 THE REPORTER: (Nods head affirmatively)
2 MS. McKEITH: Okay.
3 Q. Turning your attention to document number "13",
4 which is JTD402 --
5 (A one-page letter dated
6 January 13, 1961 to the
7 U.S. Atomic Energy Commission
8 from J. D. Vaden was marked
9 for identification as
10 Exhibit 13.)
11 (Brief pause while the witness reviews document)
12 MS. McKEITH: Q. Do you recognize your signature
13 on this document?
14 A. I do recognize my signature on document 402.
15 Q. Okay.
16 And the document is dated January 13th, 1961?
17 A. That is correct.
18 Q. And this is a resignation from the Isotopes --
19 uh -- Committee?
20 A. That's right.
21 Q. And does that reflect (sic) your recollection as
22 to the last date that you were employed at the company?
23 A. I believe it is, yes.
24 Q. Okay.
25 Uh --
26 MS. McKEITH: I'm going to mark Exhibit Number 14
27 documents 403 through 407.

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1 A. I'm tired of being insulted.
2 Q. Okay.
3 Moving on, are these customers, Hughes and
4 Douglas -- are the names on this page customers that you're
5 aware of that Isotopes was doing business with?
6 A. Well, I knew Hughes Aircraft. I went out and
7 wrote a license for them.
8 Q. Okay.
9 And how about Douglas Aircraft?
10 A. I knew the people out there from brief
11 acquaintance, but I never cared to know them on low level
12 waste or had anything to do with them on low level waste.
13 The --
14 Q. Okay.
15 And how about Truesdail Laboratories?
16 A. Uh -- I don't -- I don't recall that one at all.
17 Q. Okay.
18 And how about Richfield Oil Anaheim?
19 A. I heard of them.
20 They had some oil that they'd used in piston wear
21 tests with iron 58 and they were wanting to know how they
22 could use -- get rid of it.
23 And that's all I know.
24 MS. McKEITH: Can you mark the record from that
25 last response from the witness, please?

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1 There you go.
2 (A two-page letter
3 dated January 19, 1961 to
4 James Mason from J. D. Vaden
5 with a three-page log
6 attachment was marked for
7 identification as
8 Exhibit 14.)
9 (Brief pause while the witness reviews document)
10 MS. McKEITH: Q. Mr. Vaden, is document
11 number 403 a list of the materials in the containers that
12 were disposed of by sea on January 14, 1961?
13 A. Yes.
14 Q. Now the -- uh --
15 For example, the first item is cobalt 60, and do
16 you see "9146 mc" next to that? What does the "mc" stand
17 for?
18 A. Millicuries.
19 Q. So the millicuries do not --
20 Is there a way that we can correlate this list to
21 the 948 containers?
22 A. Correlate it with what?
23 Q. To the 948 containers, so we know how many
24 containers included cobalt 60 --
25 A. No, not unless you've got the log book which
26 actually specifies --
27 Each container had a number on it, and the log
28 book is entered what's in that container -- what the

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1 isotopes are and how much of each one.
2 Q. This log list -- was that something that the AEC
3 kept or is that something that Isotopes kept?
4 A. It was left there when I left there, and I don't
5 know who's got it now.
6 But I presume --
7 In any closure of license it becomes part of the
8 permanent record on behalf of AEC -- at least a copy of it.
9 (Brief pause)
10 MS. McKEITH: Okay.
11 Document number "15" will be blank.
12 Document number "17" will be blank.
13 (Reporter's Note: Inadvertently there was no
14 mention of an Exhibit 16)
15 MS. McKEITH: The next document I'm going to mark
16 is Exhibit Number 18.
17 (A two-page memo dated
18 July 9, 1958 to
19 Isotopes Branch Files from
20 Robert Brinkman was marked
21 for identification as
22 Exhibit 18.)
23 (Brief pause while the witness reviews document)
24 MS. McKEITH: Q. There's a reference in the
25 first paragraph to Aerojet General Corporation.
26 Do you recall whether Aerojet was a client of
27 Isotopes during the time you worked there?

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1 Q. Could you tell me what you're referring to here
2 when you made that statement? What paragraph?
3 A. I'm referring to paragraph four where it says,
4 "The necessity of following 10-CFR-20 requirements for
5 labeling and identifying contents were discussed."
6 Uh -- 10-CFR-20 does not say you can't use grease
7 pencil or chalk markings.
8 Q. Okay.
9 What does it say, if you recall?
10 A. It just says you should put the -- identify the
11 isotope and put the quantity on there -- period.
12 Q. When you first began working at the company was
13 the quantity and type of isotope in the drum identified on
14 the drum?
15 A. On the waste generated at the company it was, but
16 all that stuff sitting out in back it sure wasn't.
17 Q. Okay.
18 A. They got that from customers.
19 Q. Did you ever have occasion to have a conversation
20 with Mr. Goldstein?
21 A. Well, I've talked to him years before I ever went
22 with the company, and I think I talked to him once when I
23 was about to leave.
24 Q. Okay.
25 And do you recall your conversation with him when

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1 A. I don't know what the proposal is in reference
2 to. I don't recall any proposal.
3 Q. What I'm asking you is: Do you recall whether
4 Aerojet General was a customer of the company when you were
5 employed there?
6 A. No, I do not.
7 Q. Okay.
8 Uh -- drawing your attention to the fourth
9 paragraph that begins with "The labeling of the waste
10 storage drums -- "
11 A. Yes.
12 Q. " -- apparently consists only of grease pencils
13 or chalk markings -- "
14 When you arrived at Isotopes were the markings on
15 the drums that you observed -- uh -- still pencil and chalk
16 or were there different drawings?
17 A. That, among others. There were all types of
18 markings on them.
19 Q. Okay.
20 Once --
21 A. And he is wrong in his statement that -- uh --
22 uh -- they had to be labeled with any other different
23 material than that.
24 Mr. Brinkman was in licensing. He was not an
25 inspector.

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1 you were about to leave?
2 A. I asked him if he would be interested in me
3 decontaminating the facility. And he said -- uh -- "What
4 would be your type of fees?" I informed him what I thought
5 would be my charges, and he elected not to take my offer.
6 Q. Now had he been the individual who had hired you
7 when you were decommissioning the 703 Main Street facility?
8 A. Had he been the individual what?
9 Q. Who hired you when you were decommissioning the
10 703 Main Street facility?
11 A. No, I've never worked for Mr. Goldstein or had
12 any business relations with him whatsoever.
13 Q. Uh -- who was --
14 What was the name of the company at the
15 703 Main Street facility?
16 A. There were no company there. It was a property
17 being leased by Isotopes Specialties Company.
18 Q. So Isotopes Specialties was the business that
19 operated there?
20 A. Yes, under Nucor when I was there.
21 Q. At 703 Main Street?
22 A. Wherever.
23 I was hired by Nucor -- period.
24 Q. Right.
25 I understand for the 170 Providencia property

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1 where you were actually working as a health physics --
2 A. They --
3 Q. -- officer --
4 A. They --
5 When I came there they said: One of your duties
6 will be to help us get this building decommissioned so we
7 can get it back to the -- get it back to the landlord.
8 Q. Okay.
9 So you weren't paid a fee to do the
10 decommissioning at the 703 building --
11 A. No, it was part of my duties.
12 Q. I understand. Thank you for clarifying that.
13 Do you know whether Mr. Goldstein -- who he hired
14 to do the decommissioning at 170 Providencia?
15 A. I don't know if it was -- anything about that or
16 whether it was ever decommissioned or who did it or what.
17 Q. Okay.
18 So you were already in Washington, D.C.?
19 A. I was gone, yes.
20 Q. And so you don't have any understanding of the
21 decommissioning?
22 MS. McKEITH: I'm sorry. What does that say?
23 THE VIDEOGRAPHER: Five minutes until the tape
24 ends.
25 MS. McKEITH: Okay. I'm almost done, so. . .

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1 while I -- while you're looking at that -- any more water?
2 A. (Indicates to repeat.)
3 Q. Do you want any more water?
4 A. Yeah -- no, I've got plenty to drink.
5 Q. Okay.
6 THE VIDEOGRAPHER: We have about two minutes to
7 tape change.
8 MS. McKEITH: We probably won't make it.
9 Q. Are you familiar with the Administrative
10 Procedures that --
11 A. Yeah, that I wrote.
12 Q. Are these procedures that you wrote?
13 A. No, these are not. These were in existence while
14 I was there, as is obvious on page 8 relating to who the
15 Isotope Committee was.
16 Q. So these are procedures that predated you?
17 A. That's true.
18 Q. When you became an employee did you revise these
19 procedures?
20 A. Yes, I did.
21 Q. And why did you revise the procedures?
22 A. Well, I had different ideas on how things should
23 be done.
24 Q. Do you know when you arrived whether or not the
25 procedures that are in this document had been being

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1 Q. Can you tell us what Mr. Goldstein's reputation
2 was in the isotopes community?
3 MR. PATTERSON: Uh -- objection; relevancy; --
4 MS. McKEITH: Q. You can answer the question.
5 MR. PATTERSON: -- foundation.
6 THE WITNESS: I -- uh -- I'm not a student of the
7 isotopes community, and -- uh -- I was a public servant.
8 And I didn't -- I didn't have any relations with him
9 whatsoever.
10 MS. McKEITH: Q. So you don't know what his
11 reputation was one way or the other, good or bad?
12 A. No, I do not.
13 MS. McKEITH: Number 19 is going to be a blank
14 document.
15 Exhibit Number 20 is JT0147 through JT0156.
16 Here you are.
17 (A one-page Memo Route Slip
18 to L. R. Rogers from
19 R. E. Brinkman to which is
20 attached a nine-page
21 document entitled
22 Administrative Procedures
23 dated August 20, 1958 was
24 marked for identification
25 as Exhibit 20.)
26 (Brief pause while the witness reviews document)
27 MS. McKEITH: Q. Why don't you take a moment to
28 look at this document.
29 Do you want any -- uh -- do you want any water

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1 followed?
2 A. No, I do not.
3 Q. Do you have any recollection of how you amended
4 these procedures?
5 A. Do I have a recollection of what?
6 Q. How you changed these procedures.
7 A. No, I do not.
8 Well, one thing I did remember -- I had each
9 worker read and acknowledge that he had -- and sign that he
10 had read these procedures.
11 Q. Was that a practice that had not been in effect
12 at the time --
13 A. That is true, and I thought it was absolutely
14 necessary.
15 Q. When the Isotopes Specialties Committee met did
16 they discuss whether or not the employees were actually
17 complying with these procedures?
18 A. Absolutely. That was the main theme of the
19 entire conversation.
20 Q. And how long did the Isotope meetings typically
21 last?
22 A. Oh, sometimes an hour -- sometimes two hours,
23 depending on, you know, how much business we had and what
24 was going on.
25 Q. And was the primary discussion during those

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1 one- to two-hour meetings the failure of various
2 individuals to comply with these procedures?
3 A. Yes.
4 And we would call in employees that were having
5 any problems -- the workers, too -- and have them appear
6 and give their side of the story in front of the Isotopes
7 Committee.
8 Q. Did you ever terminate an employee because they
9 were simply not complying with the procedures?
10 A. No, we never did.
11 Q. Did an employee get a write-up in his personnel
12 file if he was caught in noncompliance?
13 A. They were given warnings on a few occasions, I
14 recall that.
15 THE VIDEOGRAPHER: I'm going to have to close off
16 this tape.
17 MS. McKEITH: Okay. Fine.
18 THE VIDEOGRAPHER: Off the record at 1246.
19 This ends tape 1 of this deposition by (sic)
20 John Vaden on August 5th, 1998. Please go to tape 2.
21 (Brief interruption)
22 (Discussion off the record)
23 THE VIDEOGRAPHER: Stand by, please.
24 MS. McKEITH: Are we back on?
25 THE VIDEOGRAPHER: No. Stand by, please.

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1 THE WITNESS: The AEC Byproduct Material
2 Licensing Branch.
3 MS. McKEITH: Q. And, Mr. Vaden, there's also a
4 Mr. H. L. Price that's identified at JT0176 -- a Mr. Price.
5 Do you recognize his name?
6 A. Yes, I do.
7 That's Harold Price. He was our -- uh -- the
8 chief attorney general for the Atomic Energy Commission --
9 or he was in that office at the time it later went into
10 NRC -- was formed. He was the head lawyer for the NRC.
11 Q. Prior to working at Isotopes -- uh -- on
12 Providencia did Mr. Mason and you ever have a conversation
13 about the company?
14 A. I can't recall that we did.
15 Um -- of course, when I got there I applied for
16 license changes directed to Mr. Mason and I went back east
17 to confer with him.
18 As a matter of fact, I wanted to put up a
19 disposal facility out in the desert. They missed it in the
20 license application. That's how good they were with any of
21 them.
22 Q. Now did you ever talk to Mr. Price before you
23 came to work at Isotopes?
24 A. No, I did not.
25 Q. Okay.

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1 (Brief pause)
2 THE VIDEOGRAPHER: On the record at 1249.
3 Please proceed.
4 MS. McKEITH: I'm going to be marking document
5 number "21" which is JT166 through JT181.
6 (Four different rough draft
7 letters addressed to
8 Dr. Goldstein bearing
9 document numbers JT0166
10 through JT0181 were marked
11 for identification as
12 Exhibit 21.)
13 (Brief pause while the witness reviews document)
14 THE VIDEOGRAPHER: I need to say one more thing.
15 MS. McKEITH: Yes, sir.
16 THE VIDEOGRAPHER: This begins tape 2 of the
17 deposition by (sic) John Vaden.
18 Thank you.
19 MS. McKEITH: Q. Can you read through these --
20 appear to be a series of draft letters -- uh -- ostensibly
21 by Mr. Mason.
22 Do you know who Mr. Mason was?
23 A. You bet.
24 Q. Okay.
25 Who was he?
A. His nickname was Rod Mason. It's James R. Mason.
And he was the head of the AEC Licensing Branch -- uh --
(Brief interruption)

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1 Did you speak --
2 A. I never even knew him or met him.
3 Q. Okay.
4 So you -- while you were employed at Nucor you
5 never met or spoke with him either?
6 A. No, I never met Mr. Price; no.
7 Q. In reviewing these letters do you know whether
8 the information in these letters is referring to those
9 orders to show cause that you were --
10 A. I do not know that, no.
11 Q. Okay.
12 That's all the questions I have on that letter.
13 (Brief pause)
14 MS. McKEITH: Okay.
15 I'm going to be marking Exhibit 22 which is
16 document number JT0229 through document number JT0250?
17 THE WITNESS: Thank you.
18 (A group of documents bearing
19 document numbers JT0229
20 through JT0250 was marked for
21 identification as
22 Exhibit 22.)
23 (Brief pause while the witness reviews document)
24 MS. McKEITH: Q. I'm going to refer to document
25 number JT0239 dated March 11th, 1959.
(Brief pause while the witness reviews document)
MS. McKEITH: Q. There's reference in the first

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1 paragraph to a complaint of February 6th, 1959 regarding
2 allegations of illegal and unfair practices in disposal of
3 radioactive liquid waste by Isotopes Specialties Company.
4 Are you at all familiar with this complaint?
5 A. No, I'm not.
6 Q. Do you recall whether Isotopes Specialties
7 Company disposed of any wastes by sewer?
8 A. Yes, I'm sure they did.
9 Q. Now why do you say you're sure?
10 A. Because it was provided for in the regulations
11 that certain low quantities of diluted radioactive material
12 could be disposed of in sanitary sewers -- not only by
13 Isotopes Specialties but by every licensee licensed by the
14 Atomic Energy Commission.
15 Q. While you were an employee of Nucor did you
16 observe any disposal of radioactive materials into the
17 sewer system through drains?
18 A. No, I did not.
19 And the reason we -- we stopped that procedure
20 because AEC was considering the fact inasmuch as we had a
21 disposal license, that was not a method we could use to get
22 rid of any customer waste and they wanted to be sure that
23 if we didn't throw any waste down the sink that way then
24 there would be no confusion about whose waste was it that
25 went down the drain.

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1 county?
2 A. Industrial hygiene engineer.
3 Q. When did you start working for the county?
4 A. 1952.
5 Q. Were you always an industrial hygienist (sic)
6 engineer?
7 A. Yes.
8 Q. Uh -- you also mentioned that part of your
9 responsibilities were to -- uh -- regulate radioactive uses
10 by companies that were operating in LA County, is that
11 correct?
12 A. That is correct.
13 Q. Can you give me an idea about how many facilities
14 were using radioactive materials in LA County during the
15 time that you worked for LA County?
16 A. When I worked for the county?
17 Q. Yes.
18 A. I'd say there were approximately 200 licenses in
19 the county and approximately 5,000 X-ray machines.
20 Q. I'm sorry. 5,000 what?
21 A. X-ray machines.
22 Q. X-ray machines?
23 A. We also regulated X-ray machines.
24 Q. Okay.
25 Uh -- did your inspections also involve -- while

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1 MS. MCKETH: I have no further questions at this
2 time.
3 So it's time for lunch.
4 THE WITNESS: Okay.
5 THE VIDEOGRAPHER: We are off record at 1257.
6 (Lunch recess)
7 THE VIDEOGRAPHER: Okay. We're ready. Just
8 stand by.
9 (Brief pause)
10 THE VIDEOGRAPHER: Going on record at 1409.
11 Please proceed.
12 EXAMINATION BY MR. PATTERSON:
13 Q. Good afternoon, Mr. Vaden. My name is
14 Greg Patterson. As I mentioned to you earlier, I represent
15 one of the Defendants in this action, ION Pharmaceuticals.
16 Again, please, if you don't understand any
17 question that I ask you or you can't hear it, please let me
18 know and I'll try to rephrase it --
19 A. Thank you.
20 Q. -- or I'll say it louder.
21 Uh -- you had mentioned this morning that you
22 worked for the Los Angeles County Health Department, is
23 that correct?
24 A. That is right.
25 Q. And you are an industrial hygienist for the

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1 you were working with the county also involve overseeing
2 the decontamination of facilities?
3 A. No, it did not.
4 Q. What --
5 A. We didn't -- it didn't come up. There was none
6 being decontaminated at the time.
7 Q. Okay.
8 So during the time that you worked for the county
9 health department there were no facilities you were aware
10 of located in LA County --
11 A. That's right.
12 Q. -- that were decommissioned?
13 A. That's right.
14 Q. Um -- I'm going to now flip to the time that you
15 went to work for the Atomic Energy Commission.
16 What was your job title for the Atomic Energy
17 Commission?
18 A. Uh -- health physics officer for a while and then
19 science officer -- uh --
20 Science officer?
21 -- something like that. They switched it around
22 because you got more money -- unquote.
23 Q. What was your responsibilities as a health
24 physics officer?
25 A. My -- the reason they hired me was because of my

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1 background in health divisions and health departments and
2 also with my other industrial radiation experience. They
3 needed someone who could relate to and help train all the
4 state people in the United States and those agencies that
5 were going to accept an agreement to assume regulatory
6 responsibility, the licensing and regulation and inspection
7 of used radionuclides that came out of Oakridge when the
8 state became an agreement state. They call it an agreement
9 state.

10 Q. I see.

11 Did California at one point become an agreement
12 state?

13 A. Yes, they did.

14 I -- I was assigned to California because of my
15 knowledge of the people here. And I helped them and --
16 uh -- the governor and so forth to get the state agreement
17 signed and get everything transferred.

18 Q. Did you -- uh -- assist in the training of --
19 uh -- of state personnel?

20 A. Yes.

21 Q. And did that training also include overseeing
22 decontaminating facilities that had utilized radioactive
23 materials?

24 A. What kind of facilities?

25 Q. The facilities like -- like Isotopes Specialties

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1 people.

2 Q. I see.

3 Now and --

4 Did that training also involve training on the
5 oversight of decontaminating a property?

6 A. Yes.

7 The principles of decontamination are fairly well
8 known, as over the years there's been an awful number of
9 facilities that had to be decontaminated so they could be
10 reclaimed and put back in use, so --

11 It's standard routine procedure how you go about
12 this.

13 And all the states have had some experience in
14 this because radium is a notorious contaminator in
15 hospitals. Whole hospitals in some countries have been
16 completely contaminated and never been able to use them
17 again. So they've learned the hard way how to do this.
18 And it's -- uh -- rather rigorous when you talk about
19 radium going into the old hardware floors in hospitals.
20 You just had to go in and gut the whole building.

21 Q. I see.

22 Did your duties change very much when you changed
23 your job title at the Atomic Energy Commission?

24 A. What's that?

25 Q. You said that you be -- you were first a -- and

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1 that had utilized radioactive materials.

2 A. We had -- uh -- a structured training program
3 depended on the background in the first place. We had
4 certain requirements of the personnel that the state could
5 use as far as their academic background and training. And
6 then we took them from there and put them through a basic
7 ten-week course in health physics and radiation protection
8 at Oakridge --

9 (Brief interruption)

10 THE WITNESS: -- in radiation protection in
11 health physics.

12 And then we had various specialized courses --
13 some of those -- the bigger health departments split up
14 into a licensing group and inspection group under one
15 administration.

16 So we had orientation course and licensing
17 procedures we put on at Bethesda at the headquarters
18 several times a year for state people. And then we had
19 inspection procedures, of course, we put on our -- uh --
20 office several times a year.

21 And then we had specialized courses in industrial
22 radiography and nuclear medicine -- you name it -- we --
23 all the disciplines and all the different uses, so that
24 they'd be able to recognize and know what the hazards were
25 and know what the language was and know how to regulate the

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1 I -- a health physics officer.

2 A. Yes.

3 Q. And then you were a science --

4 A. Physical scientist. That's what it was.

5 Q. Physical scientist.

6 Did your job duties change?

7 A. No.

8 Q. While you were at the Atomic Energy Commission
9 were you involved in overseeing the decontamination of
10 facilities?

11 A. No, I was not.

12 My job was principally working with the state
13 people to orient them, train them, and get them involved in
14 the state agreement program.

15 Q. You'd also mentioned that -- that part of the
16 reason you were hired by Nucor was to -- uh --
17 decontaminate their facility on Main Street, is that
18 correct?

19 A. That is correct.

20 Q. All right.

21 At that time were you familiar with --

22 Or let me rephrase that.

23 Were --

24 At the time that you were asked to decontaminate
25 the Main Street property, were there regulations that had

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1 been published by the Atomic Energy Commission related to
2 how to decommission a property?
3 A. Decommissioning, yes, but not decontamination.
4 Q. Can you tell me what the difference is between
5 decontamination --
6 A. Well, --
7 Q. -- and --
8 A. -- decontamination is a correction of a
9 situation.
10 Decommissioning could be -- uh -- simply saying
11 the license has expired now and -- uh -- not renewed;
12 therefore, this facility is decommissioned as far as use of
13 radioactive materials on the premises. Simply a cessation
14 of license activities.
15 Q. Okay.
16 Uh -- with respect to the --
17 Let's see.
18 You said that there are regulations regarding
19 decontamination -- or decommissioning. I'm sorry.
20 A. No, there were no regulations on decontamination.
21 Q. What about decommissioning?
22 A. No.
23 Q. Okay.
24 A. Just procedures.
25 Q. All right.

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1 Are you with me?
2 A. Okay.
3 Q. Okay.
4 What -- what would be the first step that a
5 company would do if they chose to close down --
6 A. Well, they would notify their customers if they
7 were going out of business. Do not send us any more work,
8 any more sources -- this sort of thing.
9 And then they would have their health physics
10 person make surveys and certify that -- and dispose of
11 whatever waste and -- um -- radioactive materials and
12 sources and all that that they had on hand. If they had --
13 as I say, if it's useable they might sell it to somebody
14 else or -- if it isn't, they'd dispose of it as waste.
15 Q. Okay.
16 In --
17 With respect to the survey -- uh -- what would
18 the survey consist of? What would you do to survey the
19 property?
20 A. Well, you would take your radiation instrument,
21 go around and see if there were ambient radiation levels
22 above background. And if there were, you got to do
23 something about it.
24 Now then, as far as the contamination of
25 radioactive material, you take wipe test with filter paper

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1 And were those procedures something that you were
2 made aware of?
3 A. Yes.
4 You had to -- uh --
5 For instance, if you -- you had to write into the
6 commission, as you've seen some of these letters, and
7 say: We're no longer doing this and we have made a survey
8 of the premises and we find no remaining -- uh --
9 radiation -- no source of radiation. Essentially it's at
10 background like it was the day we came in here -- this sort
11 of thing.
12 In other words, you had to assert that you're out
13 of the business; there's nothing remaining on the property
14 as far as radioisotopes, because you've turned them into
15 somebody that had a license to receive them -- maybe
16 another business with a similar license -- you sold it to
17 them or whatever. But you don't have the material anymore.
18 You're out of business.
19 Q. All right.
20 Now let's go to the procedures that a facility
21 would go through -- and I'm talking about the same time
22 frame, 1959, 1960, 1961 -- in that time frame -- the
23 procedures that a facility would go through in order --
24 uh -- to stop its operations and receive termination of its
25 licenses and have the property released.

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1 and put them into a scale and measure to see if it's above
2 background again. And if there is, it's got to be cleaned
3 off and cleaned up to see if it isn't.
4 MS. McKEITH: I'm sorry. Could you read back his
5 response to that question?
6 THE REPORTER: Uh-hum.
7 THE WITNESS: In other words, you can't have
8 radioactive material in your possession without a license.
9 MR. PATTERSON: Q. I understand.
10 (Record read)
11 MS. McKEITH: Thank you.
12 MR. PATTERSON: Q. Okay.
13 Mr. Vaden, so --
14 One of the things you would do then would be to
15 use some sort of instrument to go through the facility to
16 test to see whether the instrument was picking up
17 radioactive -- uh -- waves?
18 A. That's true.
19 Q. And one of the ways that you tested would be to
20 take wipe samples?
21 A. That is true.
22 Q. And the wipe samples would be taken of --
23 What? -- the walls or the floors, --
24 A. The walls, the floor, the ceiling, anywhere.
25 Q. How did you determine where to take those

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1 samples?

2 A. Well, if -- if you're familiar with the facility,
3 you know where radiation has been used, but as -- in a
4 final survey one would take them at random throughout
5 because when the AEC and/or county people come, they'll do
6 that; they'll take random samples. They may -- they may
7 put a ladder up as high as they can get up there and wipe
8 around up there to see if they could find something.

9 Q. Uh -- would you notify the AEC -- and in the
10 instance of the facilities in Los Angeles, the Los Angeles
11 County Health Department -- if you intended to conduct a
12 survey for purposes of closing down a facility?

13 A. Uh -- well, notify them that -- in the case of
14 the -- whatever -- Main Street building -- or whatever it
15 was -- we notified them that we had decontaminated it to
16 the limits proposed by AEC and it was ready for their
17 inspection.

18 Q. I see.
19 Did you submit a report to the AEC with respect
20 to the Main Street property?

21 A. Uh -- I believe we did, yes.

22 Q. All right.

23 A. And AEC had inspectors down to make their own
24 inspections -- two of them -- and the county sent out one
25 and they made an inspection also separately.

1 He's been deceased 20 years.

2 Q. Uh -- would LA County Health had also -- would
3 you have submitted any kind of report to LA County Health
4 also?

5 A. I don't know whether they did or not.

6 Q. Uh -- were you familiar with where LA County
7 Health Department would keep files on properties or
8 facilities that utilized radioactive materials?

9 A. I'm sure somewhere in the archives they must have
10 a -- a -- some kind of a file on it, because they did keep
11 files on all these sort of things. They also kept names
12 and information about every license in the county.

13 Q. Now -- uh -- with respect to the Main Street
14 property, did -- just so I can clarify this -- did you
15 submit a report to the Atomic Energy Commission about what
16 you had done at that facility to decontaminate it prior to
17 their inspection?

18 A. No, I don't think I went through the particular
19 procedures that I used to decontaminate it. It was rather
20 routine and -- uh -- there were no requirement for it and
21 I -- it didn't occur to me to do it for any reason.

22 Q. I thought that you had mentioned that you thought
23 that some report had been prepared and submitted to the
24 Atomic Energy Commission.

25 A. Well, termination -- at the termination I think I

1 Q. Was it the usual course of business for the AEC
2 to also conduct an inspection of a facility that --
3 where --

4 A. Yes, it was customary and part of their
5 procedure.

6 Q. And that --
7 Would that also being true of the LA County
8 Health Department?

9 A. No, they hadn't gotten that far in the game, but
10 they -- they wanted to do it anyhow and so --

11 As much as I knew all those people I afforded
12 them the opportunity, and they came out and did it.

13 Q. Okay.

14 With respect to the Main Street property, did
15 personnel from the Los Angeles County Health Department
16 come to the facility and do their own inspection at
17 Main Street?

18 A. Are you saying routinely other times or --

19 Q. No, I'm talking about the time that you were
20 involved in -- uh -- decontaminating the property.

21 A. They came out only the one time to do their
22 inspection there at the end.

23 Q. Do you recall who the person -- what the name of
24 the person was who came out?

25 A. Uh -- yeah, Bill Cardello (phonetic spelling).

1 sent them a letter and said I've decontaminated to the
2 levels mentioned in your letter of so-and-so and so-and-so
3 and it's ready for inspection.

4 Q. All right.
5 After that to your knowledge did the --

6 A. No, that was it.

7 Q. Did the Atomic Energy Commission come out and
8 inspect the property after you submitted that
9 documentation?

10 A. Absolutely. I said two of them showed up.

11 Q. All right.
12 Did they conduct their own survey?

13 A. Absolutely.

14 Q. And would that be in the normal course of events
15 that the -- they would conduct their own survey of the
16 property?

17 A. Absolutely. They're supposed to. It's called a
18 close-out inspection.

19 Q. All right.
20 Do you recall the names of the persons from the
21 Atomic Energy Commission who inspected the Main Street
22 facility?

23 A. One I recall. There were two of them. I can't
24 remember the second one, but one was Herb Book -- H-e-r-b.
25 He's been deceased about 20 years.

1 Q. Did the AEC require that you decontaminate a
2 property prior to terminating any licenses held by that
3 company?
4 A. Not in so many words except to say that the rules
5 say you can't have radioactive material in your possession
6 unless you have a license. So, obviously, if you're going
7 to cease the license or it expires -- or whatever -- you
8 can't have the radioactive material there anymore.
9 Q. All right.
10 So one of the conditions to terminating a license
11 would have been to have removed any radioactive materials
12 to the satisfaction --
13 A. That's right, and if they find anything --
14 Q. Let me --
15 A. Excuse me.
16 Q. That's all right.
17 A. I -- if they find anything on their inspection
18 they're -- they will not -- they will not terminate the
19 license.
20 Q. Okay.
21 So the cleanup of a property -- the
22 decontamination of the property must be done to the
23 satisfaction of the Atomic Energy Commission, is that
24 right?
25 A. If you want to get rid of the license.

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1 A. On the basis of what they told me.
2 Q. All right.
3 And "they" being the Atomic Energy Commission?
4 A. Yes.
5 Q. And this was during -- during what time period?
6 A. Well, when I was dealing with the San Francisco
7 office and Gene Blanc and Herb Book and Dick Smith and
8 Ray Fish -- and there were a couple more of them -- and
9 they came around all the time, and we got our information
10 first hand from them.
11 Q. All right.
12 So that the information that you've just
13 discussed was --
14 A. The information concerning whatever questions we
15 had about the regulations or any other thing, and when it
16 comes down to -- uh -- decontamination I asked them: Well,
17 I can get this down to zero, but it's going to take
18 forever. Now what is the practical level that I have to
19 decontaminate to? And they told me. They wrote it out in
20 writing and sent me a letter.
21 Q. Okay.
22 And your understanding that the AEC would not
23 terminate a license unless they were satisfied that the
24 property had been cleaned up was information provided you
25 directly by AEC personnel, is that right?

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1 Q. And unless they're satisfied with that cleanup
2 the license would not be terminated, is that correct?
3 A. Right.
4 MS. McKEITH: I'm going to object that it lacks
5 foundation. We don't --
6 This witness has testified that he did not
7 decommission as part of his responsibilities for AEC and
8 that the only decommissioning he was personally was
9 involved in was at the Main Street property. And,
10 therefore, I do not think that he can state on all
11 occasions that the AEC either would not have terminated a
12 license or that in all instances contamination would have
13 been removed before a license was terminated.
14 Move to strike.
15 MR. BRITTON: Q. Mr. Vaden, the answers that
16 you just gave me regarding what the AEC would do or not do
17 in terminating a license and in or approving or not
18 approving the decontamination of a property, can you tell
19 me on what basis you provide me those answers? Where did
20 you obtain that information or knowledge?
21 A. When did I do what?
22 Q. How did you obtain the information and knowledge
23 about the -- about the testimony that you just provided me
24 regarding the AEC procedures -- uh -- for decontaminating a
25 property and terminating the license?

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1 A. That is correct.
2 Q. Now -- uh -- to your knowledge was it permissible
3 to leave certain levels of radioactive -- or materials that
4 had radioactive -- had been contaminated with radioactive
5 materials -- to leave those on the property at certain
6 levels?
7 A. That's right.
8 Q. Do you recall what those levels were during that
9 time period?
10 A. No, I do not.
11 Q. Do you recall whether you were informed at that
12 time -- although you don't remember the levels now, were
13 you informed of certain levels that the AEC would deem
14 permissible to leave on the property?
15 A. These levels, I understood it, were established
16 by AEC. And I can't remember what they were, but they were
17 fairly low, I'd say, compared -- not much over background
18 and so forth.
19 Q. Do you know whether the Atomic Energy Commission
20 would issue a report, itself, on its survey of a property
21 that was being decontaminated?
22 A. What property?
23 Q. A property that was being decontaminated, like
24 the Main Street property. Would they have issued a report?
25 MS. McKEITH: Objection. He did not testify that

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1 the AEC conducted an actual survey of the property.
2 MR. PATTERSON: I believe he did.
3 THE WITNESS: Are we at the trial?
4 MS. McKEITH: I have to interject objections when
5 he makes statements that I believe misrepresent what you've
6 stated.
7 MR. PATTERSON: Q. Mr. Vaden, the attorneys are
8 permitted to make objections --
9 A. Are they?
10 Q. -- to questions that --
11 A. Okay.
12 Q. -- I have so that it's on the record of the--
13 uh -- of the transcript, so that they preserve that --
14 A. All right.
15 Q. -- objection for later.
16 But it was my understanding that you said that
17 personnel from the Atomic Energy Commission came out to the
18 Main Street property and surveyed that property themselves,
19 is that right?
20 A. They surveyed the property at Main Street.
21 Okay?
22 Q. Okay.
23 Do you know whether they issued -- whether the
24 Atomic Energy Commission -- the personnel from the
25 Atomic Energy Commission issued a report regarding that

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1 A. -- but not chemically.
2 If you're using a compound of cesium 137 chloride
3 it will go right into concrete floors -- right on in. You
4 got to dig the concrete out.
5 Q. Uh -- speaking of concrete, did your decon- --
6 Would the survey of -- of --
7 Strike that.
8 Did the survey of the Main Street property
9 involve taking any kind of -- uh -- soil samples or core
10 samples of the concrete?
11 A. Where was this?
12 Q. At the Main Street facility.
13 A. We surveyed around and we found extensive
14 contamination in the soil particularly in back. And we
15 went in and dug out all the soil two feet deep in the back
16 yard.
17 Q. All right.
18 And how did you --
19 What tests did you perform on the soil to
20 determine that it was contaminated?
21 A. What got it contaminated are you saying?
22 Q. What tests did you perform on the soil to
23 determine whether or not it was contaminated with
24 radioactive materials?
25 A. Measure- -- measurements by instrument mainly.

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1 decommission?
2 A. I do not know that, but the property was
3 released.
4 (Brief pause)
5 MR. PATTERSON: Q. What do you mean when you say
6 that "the property was released"?
7 A. It was given back or taken back by the landlord.
8 Q. Did the Atomic Energy Commission provide any kind
9 of notification that they had released the property and
10 that it could be used for other purposes safely?
11 A. Uh -- I have no idea about that.
12 Q. Was the Main Street property the only property
13 where you were personally involved in decontaminating a
14 property?
15 A. That is right.
16 Q. Mr. Vaden, when a -- uh -- portion of a facility
17 becomes contaminated with some sort of radioactive
18 materials -- let's say a portion of a wall or a desk or
19 something -- does that radiation affix itself to that -- to
20 whatever physical object it's been exposed to?
21 A. It depends on the chemical compound that it's
22 mixed with. Certain chemical compounds will combine with
23 different materials. Sometimes it's simply sitting there
24 physically attached --
25 Q. All right.

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1 Q. Okay.
2 What was -- what instrument was this? What kind
3 of instrument was it?
4 A. How do we do it?
5 Q. No, what kind of instrument? What's the type of
6 instrument?
7 A. Usual Geiger counter.
8 Q. How did you determine -- uh -- whether or not you
9 should go to the --
10 Strike that.
11 Other than removal of a material that's
12 contaminated -- uh -- what other methods are you aware of
13 to clean -- uh -- a contaminated object from radioactive
14 material?
15 A. If you have radioactive dust sitting on fixtures
16 and/or walls, one can use a simple detergent solution with
17 cloths or brushes and wipe it off just like any other dirt.
18 Q. Uh -- did you do that --
19 A. Yes, that was done --
20 Q. -- on the Main Street facility?
21 A. -- particularly on the rafters.
22 The previous attempts by people to decontaminate
23 the
24 facility were sort of amateurs. They used a pneumatic
25 drill, which in turn blew particles of the contaminated

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1 cement they were trying to get all the way up on all the
2 rafters. And I had to go around and clean the whole darn
3 thing up.

4 We use electric drills that don't make any dust.

5 Q. To your knowledge would the Atomic Energy
6 Commission have allowed the release of a property for
7 further uses -- uh -- assuming this property had licenses
8 and it used radioactive materials?

9 A. No, they wouldn't -- they wouldn't and --

10 Uh -- they were -- there was some pressure by the
11 landlord who stated that what he wanted to put in their
12 next was either a candy kitchen or a nursery.

13 MS. McKEITH: And, again, I'm just going to
14 interject an objection to Mr. Patterson's last question as
15 lacking foundation.

16 You can go ahead, though. I mean, you already
17 went ahead, so. . .

18 THE WITNESS: Which we assume meant they wanted
19 to sell us the building very -- a lot of money.

20 MR. PATTERSON: Q. Was the AEC made aware of the
21 potential uses of the Main Street property?

22 A. Yes, they were. We discussed it.

23 MS. McKEITH: Can we just clarify for the
24 record: Mr. Vaden, was the property that you were just
25 talking about with respect to the bakery the Main Street

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1 simply going to -- he bought it back to get the customer
2 list. And he said he was going to get out; he was going --
3 uh -- close the building down.

4 So I said: What about decontamination? He -- I
5 said: I'll be around just a little bit longer; I can get
6 it started -- or whatever.

7 And he said: No, we're going to have some
8 people -- or whatever -- he didn't go along.

9 Q. Okay.

10 Was it your impression that -- that he was going
11 to be responsible for making sure the property --

12 A. Right, I assumed he would be.

13 Q. Please let me --.

14 A. Excuse me.

15 Q. -- finish. It makes it very hard for her if you
16 don't wait until I finish.

17 Uh -- was it your impression that Mr. Goldstein
18 was taking on the responsibility of decontaminating or
19 decommissioning the Providencia Street property?

20 A. It was my impression that he would do that.

21 Q. Okay.

22 And how did you come by that impression?

23 A. Because it's what's required.

24 Q. Was it your impression that he had purchased the
25 property also?

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1 property?

2 THE WITNESS: Yes; that's right.

3 MS. McKEITH: Thank you.

4 MR. PATTERSON: Q. I'm pretty sure you were
5 clear about this, but just to make sure: You have no
6 personal knowledge of the -- of any of the events regarding
7 the decontamination or the decommissioning of the
8 Providencia Street property, is that right?

9 A. I missed the first -- I have no knowledge of
10 what?

11 Q. You don't have any knowledge of -- of the how or
12 the manner in which the Providencia Street property was
13 decontaminated, is that right?

14 A. No, I was not there at all.

15 Q. Okay.

16 How did you come to know that --

17 You -- I think that you testified that you had
18 asked Mr. Goldstein -- uh -- or offered your services to
19 decontaminate the Providencia --

20 A. That's true.

21 Q. -- street property to Mr. Goldstein.

22 Why did you do that?

23 A. He --

24 I asked him why he bought that building back, and
25 he said he wasn't going to operate there anymore; he was

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1 A. He said he was.

2 (Brief pause)

3 MR. PATTERSON: Q. Okay.

4 I'm going to have an Exhibit marked as
5 Exhibit 23. And, Mr. Vaden, I'd ask for you to take a look
6 at this document.

7 A. (Witness complies)

8 Q. Have you had a chance to look at the document,
9 Mr. Vaden?

10 A. I have looked at the letter.

11 Q. Do you recognize this letter?

12 A. No, but I recognize the limits that are in here.

13 Q. When you refer to "the limits", do you mean the
14 items listed as 1, 2, 3, 4?

15 A. What they're talking about -- uh -- the radiation
16 levels that must be achieved or they would not let anybody
17 else in the building.

18 Q. Okay.

19 Were these -- the items listed as 1, 2, 3 and
20 4 -- the requirements imposed upon you during your
21 contamination of the Main Street --

22 A. That is correct.

23 Q. -- property?

24 A. That is correct.

25 (Brief pause)

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1 MR. PATTERSON: Q. I'm almost finished,
2 Mr. Vaden.
3 THE REPORTER: Excuse me. Before we lose track,
4 may I mark that Exhibit?
5 MR. PATTERSON: Uh -- yes, in fact, let's. . .
6 (A two-page letter to
7 Mr. A. A. Michaud from
8 H. L. Price was marked
9 for identification as
10 Exhibit 23.)
11 MR. PATTERSON: Q. Uh -- I'm just going to ask
12 you if you -- if you know or knew some people that may have
13 been involved at this site.
14 Did you know a Richard Donelson?
15 A. Yes.
16 Q. How did you know him?
17 A. Oh, just talking to him at meetings and things
18 like that.
19 Q. Was this during the time period that you were
20 employed by Isotopes --
21 A. I think I may have seen him at the
22 San Fernando Road facility when we visited there with the
23 AEC inspector.
24 Q. Have you had any discussions with Mr. Donelson in
25 the last five years?
A. No, I --
Q. Do you --

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1 And I am going to apologize ahead of time. I'm
2 going to be jumping around a little bit because I'm just
3 trying to ask you questions that have occurred to me based
4 upon your answers to --
5 A. That's okay.
6 Q. -- the other attorneys' questions. So in the
7 course of doing that, if I confuse you about what I'm
8 asking you, if you could please tell me that you don't
9 understand or you're not --
10 A. I sure will.
11 Q. -- clear.
12 Okay. Great.
13 First, where do you reside?
14 A. What is what?
15 Q. Where do you -- where do you live?
16 A. Right here in town.
17 Q. Okay.
18 Now what's the address there?
19 A. 1110 Goldfield Avenue.
20 Q. Carson City?
21 A. Yeah.
22 Q. Uh --
23 And if --
24 Is there a phone number we can reach you at if
25 there -- it becomes --

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1 A. -- not in the last -- not in the last 30 years.
2 (Brief pause)
3 MR. PATTERSON: Q. Were you -- uh --
4 Did you know a person by the name of a
5 Sandy Sigaloff (phonetic spelling)?
6 A. Say again?
7 Q. Sandy Sigaloff -- something like that. Does
8 that mean -- strike a bell?
9 A. I don't think so.
10 (Comments off the record)
11 MR. PATTERSON: Well, Mr. Vaden, my examination
12 was blissfully short. Thank you for your time. I'm
13 finished.
14 Could we go off the record for a minute?
15 THE VIDEOGRAPHER: Off the record at 1443.
16 (Brief recess)
17 THE VIDEOGRAPHER: Okay.
18 Stand by, please.
19 (Brief pause)
20 THE VIDEOGRAPHER: On the record at 1447.
21 Please proceed.
22 EXAMINATION BY MR. SHIMADA:
23 Q. Mr. Vaden, as I indicated to you prior to the
24 start of the deposition, my name is John Shimada, and I'm
25 an attorney representing Nucor.

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1 MS. McKEITH: It's in the subpoena.
2 MR. SHIMADA: Q. Is there --
3 A. 885-9534.
4 Q. That's great.
5 A. Area code (702).
6 Q. Do you have any present plans to move from that
7 house?
8 A. Do what?
9 Q. Do you have any present plans to move?
10 A. I'm thinking about it. Since my wife died, I'm
11 getting too big a house and I'm thinking about going into a
12 condominium.
13 Q. Are you thinking --
14 Do you have any actual plans to move or is this
15 just something --
16 A. Not right now, but --
17 I live in a 5th Avenue townhouse outfit anyhow.
18 And I happen to be in a private dwelling in there. I'm a
19 member of the board, so it kind of behooves me that maybe
20 if I move out or go into my own outfit -- they've got
21 condominiums coming out of their ears.
22 Q. When were you first contacted about this lawsuit?
23 A. When I was contacted about what?
24 Q. When were you first contacted about this lawsuit?
25 A. I never have been contacted about a lawsuit.

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1 I've been contacted about a deposition.
 2 Q. When were you first contacted about a deposition?
 3 A. I think about six months ago.
 4 Q. Do you recall who contacted you?
 5 A. Um -- I believe it was somebody from her office
 6 (indicating)
 7 Q. Ms. McKeith's office?
 8 A. Uh -- the -- um -- the -- uh -- complainant or
 9 whoever that's listed on the subpoena. I don't remember
 10 who it was.
 11 Oh, Loeb & Loeb. They're coming in through
 12 Loeb & Loeb.
 13 Q. Okay.
 14 Do you recall who from that law firm contacted
 15 you?
 16 A. I want to say King or something like that -- was
 17 it?
 18 I don't know. She -- I think she thinks she was
 19 the one that first contacted me.
 20 Q. Was this a telephone call you received?
 21 A. Yeah.
 22 Q. Was it a man that contacted you?
 23 A. No, I believe it was a lady. She said that she'd
 24 been referred to me by Gene Blanc, I think it was. So I
 25 called him up and gave him the what for.

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1 fact, but he won't tell anybody including the sheriff where
 2 that is. I. . .
 3 (Laughter off the record)
 4 MR. SHIMADA: Q. When was your next discussion
 5 with anyone about the deposition?
 6 A. Oh, I think just about a month ago -- uh --
 7 someone called and said: Come on down to LA and -- uh --
 8 we'll pay your way and everything for a deposition. And I
 9 said: No, I don't want to get back to LA for any purposes
 10 whatsoever. So they said: Well, we'll have it up your
 11 way.
 12 And then the next time I heard she -- I got a
 13 subpoena, but it said where it was going to be in Reno.
 14 Q. And then the location was moved to here in
 15 Carson City?
 16 A. Yes.
 17 Q. Uh -- prior to --
 18 Strike that.
 19 So when was -- when was the first meeting
 20 face-to-face that you had with anyone about the deposition?
 21 A. Last night.
 22 Q. And who was that with?
 23 A. This lady right here (indicating Ms. McKeith).
 24 Q. Uh -- prior to that time had you met with anybody
 25 about your deposition?

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1 (Laughter off the record)
 2 MR. SHIMADA: Q. Did -- did --
 3 A. It turns out it's all his fault. I'm going to
 4 call him up again, now that I know what the situation is.
 5 Q. Did this individual tell you why they were
 6 calling you?
 7 A. Yes.
 8 They said that -- uh -- basically that -- uh --
 9 somebody bought the old Providencia property and then
 10 learned later that it was a condemned -- had been a
 11 condemned site by the EPA as a waste site or something and
 12 that they wanted to know what I knew about it when I was
 13 there and so forth.
 14 That was about it.
 15 Q. All right.
 16 Did you during this telephone conversation tell
 17 what you could recall about the property?
 18 A. No, I -- we didn't get into that much detail.
 19 Q. By the way, is Mr. Blanc still alive?
 20 A. Mr. Blanc?
 21 Yes, he is.
 22 Q. Where does he live?
 23 A. Somewhere in California. I don't know exactly
 24 where.
 25 He's got an old cabin up on Tahoe, as a matter of

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1 A. Absolutely not.
 2 Q. Have you ever given any written statements in
 3 connection with this deposition?
 4 A. Written statements on the condition what?
 5 Q. In connection with this deposition, have you --
 6 A. No.
 7 Q. -- provided any written statements?
 8 A. No, I have not.
 9 Q. Did you meet --
 10 During your meeting last night what were you
 11 asked?
 12 A. She asked if I had seen certain documents
 13 before --
 14 Q. And were some --
 15 A. -- most of which are in this pile right here
 16 (indicating).
 17 Q. Do you recall any documents that were shown last
 18 night that you weren't shown tonight (sic)?
 19 A. No, I couldn't -- couldn't make that distinction.
 20 There's too damn many today.
 21 MS. McKEITH: I can represent for the record that
 22 every document that I showed Mr. Vaden is a document that
 23 was produced today at the deposition.
 24 MS. SHIMADA: Q. Do you recall any subjects that
 25 you discussed last night that were not the subject of

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1 questions today?

2 A. I can't recall anything specific.

3 Q. Now one of the responsibilities of the
4 Isotopes Committee was to -- uh -- address issues of
5 employee compliance with company procedures, correct?

6 A. Yes, company compliance with the regulations of
7 the AEC.

8 Q. Were there any other matters or issues that the
9 Isotopes Committee dealt with apart from those issues?

10 A. No, it was strictly confined to the safety of the
11 use of the radionuclides on the property and so forth.

12 Um -- the committee was very active in the waste
13 handling. When we would ship truckloads of waste from
14 Burbank all the way down to Long Beach, a member of the
15 Isotope Committee would always convoy with a group of
16 trucks just to make sure everything got there safely. They
17 would've had safety radiation detection equipment in their
18 car. They would be in charge in case anything got -- might
19 have got lost off the truck. And they would run interface
20 with the police, the whole bit -- um --

21 That was their job and they did pretty damn good
22 on it.

23 Q. I want to focus your attention right now on --
24 uh -- instances in which the Isotopes Committee -- uh --
25 addressed issues or situations when employees may not have

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1 Q. Was it also part of your responsibility to make
2 sure that -- uh -- the physical conditions at the facility
3 were -- uh -- proper, such as there weren't any -- uh --
4 leaking containers of any kind of material and that kind of
5 thing?

6 A. When it had to do with waste containers, yes, I
7 was responsible for selecting the quality of barrels that
8 would be a satisfactory container according to DOT
9 regulations and all this sort of thing.

10 Q. Now those barrels would be utilized to contain
11 waste generated during -- uh -- the operations at the
12 facility?

13 A. That is correct.

14 And when you transport those over a highway
15 you're subject to DOT regulations, so it must meet the
16 qualifications.

17 And at that time we put the DOT-approved shipping
18 labels on them. Before that time, sitting around the place
19 one could simply write the isotope and the quantity on the
20 side.

21 Q. Is it your recollection that the requirements
22 changed -- uh -- while you were employed with the company?

23 A. They are subject to change and they do change
24 regularly. Some of them change quite often.

25 MS. McKEITH: Could we get a clarification?

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1 been complying with company procedures.

2 How did those instances come to the committee's
3 attention?

4 A. How did they what?

5 Q. How did the committee find out that those things
6 had happened -- that employees had not followed procedure?

7 A. Mainly that was my job to keep them informed.

8 Uh -- if it were just a minor overexposure, I
9 would say to the committee -- but in the event it was a
10 reportable exposure to the Atomic Energy Commission, they
11 got a copy of the letter.

12 Q. Now was one of your responsibilities at -- uh --
13 the Providencia property to oversee the employees and make
14 sure that they were following proper safety procedures?

15 A. That's right, and to make sure they got their
16 physical exams and were inspected and so forth and they
17 wore their monitoring equipment and everything that has to
18 do with pertaining to radiation safety.

19 Q. And that's something you did on a regular basis?

20 A. Absolutely. That's what I was paid for.

21 Q. What were some of your other responsible as --
22 uh --

23 A. I ran the film badge service, for one thing, and,
24 as I say, I would consult on behalf of the company when --
25 when necessary.

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1 He asked whether you remembered during the time
2 you were there whether the regulations changed on the topic
3 of --

4 THE WITNESS: I don't remember any specific
5 changes that I can mention, but I'm sure there were some.

6 MR. SHIMADA: Q. You recall there being changes,
7 but at this time you can't remember what they were?

8 A. They put out supplements which we just stuck into
9 our regulations and started following. That's the way that
10 worked.

11 Q. The "they" being who?

12 A. AEC and DOT and any number of regulatory
13 agencies.

14 Q. What other responsibilities did you have at the
15 Providencia facility?

16 A. I think I've -- uh -- I've described pretty well
17 in detail those that I had.

18 Q. I'd like to focus your attention now on the
19 receipt of waste material from -- uh -- Isotopes customers.

20 A. (Witness nods head affirmatively)

21 Q. You indicated that for small amounts the company
22 had the ability to just pick them up in pickup trucks,
23 correct?

24 A. That is true.

25 Q. And for the larger volumes of material those were

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1 delivered by the customers, themselves, correct?

2 A. Or a commercial shipper.

3 Q. Somebody hired by the --

4 A. That's right.

5 Q. -- customer?

6 A. That's right.

7 Q. One thing I need to kind of remind you

8 about: It's important that you wait until I finish.

9 That way we're not talking over each other and make it

10 harder on the Court Reporter.

11 Okay?

12 A. Okay.

13 Q. One of the responsibilities of the members of the

14 Isotopes Committee was to accompany customer shipments of

15 waste to the Providencia facility? That's one of the

16 things they did?

17 A. To the Long Beach wharf where we loaded it on

18 barges.

19 Q. All right.

20 So when you were -- previously talked about --

21 uh -- members of the Isotopes Committee participating in a

22 convoy -- uh -- you were referring to ship- -- the

23 transport of waste from Providencia to the Long Beach

24 Harbor?

25 A. That is correct.

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1 Q. Do you recall the names of any of the

2 customers -- uh -- that you -- whose places of business you

3 went to in the pickup truck?

4 A. Um -- no, I can't.

5 Q. Do you recall the nature of the waste materials

6 that you were picking up?

7 A. Well, one time I recall we picked up a couple of

8 barrels of -- uh -- of -- uh -- what they call strobe

9 lights. These were beta lights encased in heavy plastic

10 used as markers for different things including the end of a

11 jet -- uh -- coming down to a fighter plane so we can see

12 it in the dark, and -- uh -- they had been built to Navy

13 standards but somehow they had blown it and they had to get

14 rid of the whole shipment, so they asked if I could come by

15 and pick it up. So I went out and picked up a couple of

16 barrels of it and brought it down to the facility.

17 Q. What kind of barrels were these?

18 A. 55-gallon drums.

19 Q. With tops on them?

20 A. Of course.

21 Q. And where were those barrels placed?

22 A. They were placed in the facility until I found

23 another customer that needed --

24 Actually these had krypton 85 in them. He was

25 looking for some krypton 85, so I checked to see if they

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1 Q. What I'd like to focus you on is the receipt of

2 waste or the transport of waste from -- uh -- Isotopes

3 customers to the Providencia facility.

4 Okay?

5 A. Right.

6 Q. Now were those shipments accompanied by anyone

7 from the Isotopes Committee?

8 A. In the case of the pickup truck, I was on it.

9 But in the case of a commercial truck coming in,

10 it came under DOT rules and it doesn't require -- it may

11 have come from New York -- you know -- you can't send your

12 Isotope Committee man back there to come all the way --

13 thousands of tons of this come over the highway every day

14 under DOT regulations.

15 Q. But whatever -- at least during the time you were

16 employed with the company whenever the company would send

17 out the pickup truck to pick up waste you were on the

18 truck?

19 A. That is right.

20 Q. Do you recall how many times you did that?

21 A. I don't know the number.

22 It was only a local haul, so it wasn't an awful

23 lot, but -- uh --

24 I don't know. Probably average once every two

25 months or something -- something like this.

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1 weren't contaminated on the outside, and I told the general

2 manager: As far as I'm concerned you can sell them to him

3 if he's got a license.

4 So they did.

5 Q. So you checked those specific barrels for

6 contamination on the outside before releasing them to the

7 customer?

8 A. Before they went out of our facility.

9 Q. When waste was received from customers at the

10 Providencia facility, was it one of your jobs or

11 responsibilities to check the outside of those waste

12 containers --

13 A. That is correct.

14 Q. -- for contamination?

15 A. Yes.

16 Q. So as waste would come into the facility from the

17 company's customers, you would see if they were leaking?

18 A. That's true.

19 And any other kind of container. Customers that

20 wanted radiation source for their radiography camera would

21 send an empty shipping cask. Well, we would make the

22 source, put it in the cask and return it. And then they'd

23 say: But it's contaminated inside.

24 Well, we found out it was contaminated inside

25 when it was coming in empty, supposedly, so from that day

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1 or we wiped inside, outside, and everything else.

2 Q. But it was the company's standard practice to
3 check for contamination on the outside of waste containers
4 received at the facility?

5 A. That is true.

6 MS. McKEITH: I'd like to object. Vague as to
7 time.

8 MR. SHIMADA: Q. While you were employed there.
9 Let me do it again, okay?

10 While you were employed at the facility was it
11 the company's practice to check waste containers received
12 at the facility from its customers for contamination on the
13 outside of those containers?

14 A. Yes.

15 Q. Did you use a Geiger counter?

16 A. Did I what?

17 Q. How did you check for contamination?

18 A. We took wipe tests. We'd take -- we also took
19 instrument measurements. Sometimes we'd take wipe tests
20 and we'd still get an instrument measurement.

21 The stuff was radioactive. Why? Because it
22 had been neutron activated and it doesn't have any
23 contamination on it at all.

24 Q. Do you have an understanding as to whether the --
25 prior to your employment with the company whether it was

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1 supposed to be unannounced.

2 Q. How frequently did they -- how frequently did
3 they come out and inspect?

4 A. Well, I would say about four times a year.

5 Q. Was it always the same inspector or a
6 different --

7 A. No, they would have different inspectors.

8 Q. Do you recall the names of any of those
9 inspectors?

10 A. Yes, I think I indicated that Gene Blanc,
11 Herb Book -- uh -- Dick Smith, Ray Fish, --

12 And there was one other. I can't remember his
13 name though.

14 Q. Aside from Mr. Blanc, do you know where any of
15 those other individuals are presently?

16 A. No, I don't.

17 Q. When these inspectors from the AEC would come out
18 what would they inspect?

19 A. They would inspect -- uh -- all of my records.

20 The procedure was to go to the general manager
21 and say: I am here to inspect your operations and their
22 license numbers, so-and-so-and-so-and-so. And then they
23 better not forget that; otherwise, they get in big trouble
24 with the office.

25 As a matter of fact, one of them didn't do it,

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1 the company's practice to check waste containers received
2 from its customers for leakage?

3 A. I don't really have any understanding that they
4 had such a policy.

5 Q. You don't know one way or the other?

6 A. No.

7 Q. While you were with the company did you on
8 occasion go out into the storage yard that you previously
9 identified as containing waste containers to check to see
10 if you observed any leakage from those containers?

11 A. Did I go out and do what?

12 Q. Check for leaks.

13 A. No.

14 (Brief pause)

15 MR. SHIMADA: Q. Do you know whether anyone else
16 at the company inspected those waste containers in the
17 storage yard on occasion for leaks -- someone other than
18 yourself? Do you know whether that happened?

19 A. Not to my knowledge.

20 Q. You mentioned that on occasion -- uh -- AEC
21 inspectors would come by the Providencia facility.

22 A. That is true.

23 Q. Were they --

24 Did they come by on a regularly scheduled basis?

25 A. No, their -- their inspections were always

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1 and the manager came around and said: Who's taking all

2 your time up, John? And I said: This is the AEC

3 inspector. He said: Well, you didn't tell me you were

4 here for an inspection and you're in here interfering with
5 operations.

6 He gave him a bad time.

7 So they're supposed to go to top management first
8 and say: We're here to make this inspection.

9 And then they come around and they sit down and
10 they say: Well, I want to see all the records that you
11 have recorded since the last visit, all the exposure
12 records for every individual, all the air sample records,
13 all the film badge records on the perimeter of the
14 property, all the wipe tests over the whole building and
15 the hot lab and so forth -- why all of these things -- and
16 the latest results of physical exams or any biological
17 samples taken, and so forth and so forth.

18 So they spend a couple of days there going
19 through in detail, chapter and verse, reading the minutes
20 of each radioisotope committee meeting. Those minutes are
21 somewhere in the files -- and so forth.

22 So they -- they did a pretty comprehensive job.

23 Q. You mentioned that the inspectors would examine
24 the results of wipe tests?

25 A. That is true.

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1 Q. What wipe tests are you referring to?

2 A. Wipe tests that we made in the course of

3 business, all through the cold lab, all through the hot

4 lab, all outside, all around -- uh -- premises, to make

5 sure that we were meeting the requirements in a restricted

6 area and that we were obeying the requirements for the

7 non-restricted area, which are different.

8 Q. While you were with the company did the company

9 have a regular practice of conducting wipe surveys

10 throughout the facility?

11 A. I don't know if the company did or not, but it

12 was in my program and it was done regularly.

13 Q. And where specifically within the facility would

14 you have these wipe tests conducted?

15 A. Well, as I mentioned, I would do them on the work

16 surfaces and on the floors and the laboratory and the hot

17 cells and in the facility machine shop, office -- I'd even

18 do them on the secretary's chairs -- every -- well, they

19 want reassurance. And -- you see, they're not being

20 radiation workers, their levels of exposure are so much

21 lower that you have to take special precautions to protect

22 that area.

23 Q. Would you take any wipe samples outside the

24 facility?

25 A. Yes, we took --

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1 (Discussion off the record)

2 (Record read)

3 MR. SHIMADA: Q. Did the inspectors inspect the

4 cobalt swimming pool?

5 A. Yes. Only visually, however. They would look at

6 the remote monitor.

7 Q. And did the inspectors also inspect the waste

8 storage areas at the facility?

9 A. Only from a distance. They didn't want to get

10 contaminated.

11 Q. Why -- why do you say that?

12 A. Well, there's -- there's such a thing as

13 unnecessary radiation exposure. And why deliberately go

14 into an area you already know the level of contamination

15 and the height of radiation exposure is pretty high -- why

16 go in there and get exposed? What's the point?

17 Q. Now is that radiation that --

18 Which areas are you referring to as --

19 A. I'm referring to any restricted area on the

20 property -- restricted areas where only radiation workers

21 can go and their exposure and time of exposure is strictly

22 limited.

23 And it's against the policy of radiation to let

24 anybody else go in there and stay in there for any length

25 of time unnecessarily.

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1 To establish what background levels were we went

2 down to the post office about once a month and wiped the

3 floor of the post office. That was our background

4 standard.

5 Q. And the company kept records of all those

6 wipe-down samples?

7 A. Absolutely. Bound notebooks, not loose

8 notebooks -- bound notebooks.

9 Q. Do you know whether or not the company had

10 followed such procedures prior to your employment with the

11 company?

12 A. No, I do not.

13 Q. Do you recall seeing any wipe sampling records

14 that predated your employment with the company?

15 A. No, I did not.

16 Q. Apart from inspecting the records that you've

17 previously described -- uh -- did the ABC inspectors

18 inspect the physical facilities?

19 A. Yes, they did. They went over the whole place

20 with their own instrumentation.

21 MS. McKEITH: I'm sorry. Can you repeat the

22 question, please?

23 THE REPORTER: Just the question?

24 MS. McKEITH: Yes.

25 (Record read)

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1 Q. Those restricted areas would include the -- uh --

2 area where you previously described -- uh -- barrels as

3 being stored?

4 A. I'm talking about the restricted areas which are

5 known to everybody who works in the plant, --

6 Okay?

7 -- and that is where the waste is stored, the hot

8 cell and the cold laboratory.

9 The only non-restricted areas on the property are

10 the office and the machine shop.

11 Q. My next question is going to be based purely on

12 the fact that I don't know much about anything about

13 radiation.

14 Is it possible --

15 Well, was it the case at the Providencia facility

16 that some of the waste containers were emitting radiation

17 even though physically they weren't leaking any of the

18 radioactive material?

19 A. Well, I'll have to ask you to give me that again

20 a little bit.

21 Q. Sure.

22 Uh -- is it your recollection that there were

23 waste containers at the Providencia facility that were

24 emitting radiation that could be detected by way of

25 instrument even though the physical containers, themselves,

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1 were intact and without leaks?

2 A. If I understand the correction -- uh -- the
3 question correctly, any container can be emitting radiation
4 even if it's airtight and doesn't leak anything.

5 We're talking radiation in the form of pustular
6 energy or waste versus radiation in the form of particles
7 or liquid dripping out -- physically out of some container,
8 so all radiation containers with a sealed source in it --
9 it doesn't leak physically -- still has radiation coming
10 out the sides depending on how much shielding there is
11 around it. The more shielding, the less. You can't stop
12 it all. It's the law of diminishing returns, really.

13 If you put enough lead around something to keep
14 no radiation out, you could never lift it. You could never
15 use the radiation. It's impossible.

16 Does that answer your question or --

17 Q. Yes, it does.

18 A. Okay.

19 Q. Now previously in your deposition you -- you
20 described the disposal of some nine hundred plus containers
21 at sea in 1961.

22 A. (Witness nods head affirmatively)

23 Q. Do you recall that incident?

24 A. Yes.

25 Q. Now those containers were, as I understand it --

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1 A. Did I say what?

2 Q. Were these airtight drums -- that cobalt
3 material?

4 A. Um -- yes.

5 Q. And where were those drums stored prior to being
6 put in these old buoys?

7 A. I think some of them were in that pit with the
8 radium because that's where the really high level stuff
9 was, and then some of them were out there in the yard, and
10 then some of them came out of the hot lab and were packaged
11 at that time and then -- then put into the big drum because
12 we knew they had big drums.

13 Q. Did you personally inspect each of the
14 containers -- uh -- prior to them being -- uh -- shipped
15 for disposal at sea?

16 A. Uh -- I always inspected the new barrels --
17 either me or some of my crew inspected the new barrels to
18 make sure there were no holes in them.

19 Q. What I'm referring to is at the time the
20 barrels -- the containers were collected and put onto the
21 trucks for shipment.

22 A. They had to all be wipe-tested and measured for
23 radiation.

24 Q. That was part of the procedure prior to shipping?

25 A. That is right.

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1 and correct me if I'm wrong -- containers that were in the
2 waste storage area in the Providencia facility.

3 A. Not all at the same time, but they were there --
4 they were there -- some of them were loaded there, some of
5 them were already there, and some of them came in already
6 loaded there, so. . .

7 Q. The --

8 But the waste containers that were in -- kept in
9 the waste storage yard were among the containers that were
10 disposed of at sea?

11 A. Yes.

12 Q. Now the containers that were disposed at sea,
13 were any of those containers repackaged prior to disposal?

14 A. Yes, they were.

15 Q. Do you recall which ones?

16 A. The ones that had tremendously high sources of
17 cobalt in them -- uh -- were originally in 55-gallon drums
18 or smaller drums, but the activity was so powerful we got
19 some old used mooring buoys, cut the tops out of them,
20 filled them with tons of concrete, put this down the
21 middle, and then concreted that into that.

22 It weighed about 2,000 pounds each.

23 Q. Now were these sealed drums of that material that
24 you were talking about -- the cobalt material -- were these
25 airtight drums?

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1 And, furthermore, on the label it says what the
2 radiation level is, too. You got to get that on there for
3 DOT purposes.

4 Q. So if there was, for instance, a barrel
5 containing cobalt material in the storage yard that was
6 going to be transported for shipment for disposal at sea
7 during this incident in 1961, that barrel would have been
8 wipe-tested?

9 A. Every barrel that left there was wipe-tested and
10 labeled properly.

11 Q. And was one of the purposes of that wipe-testing
12 to determine whether there were any leaks from the barrels?

13 A. That was the idea why they were inspected, yes.

14 Q. And do you recall detecting any leaks from any of
15 the barrels of any of the materials that were shipped for
16 transport and disposal at sea?

17 A. Again?

18 Q. Do you recall during the course of the
19 wipe-testing that was done whether any of the containers
20 that were transported for disposal at sea -- whether any of
21 those containers showed any leakage?

22 A. Were they what?

23 Q. Each of the containers that were transported for
24 disposal at sea was wipe-tested prior to shipping.

25 A. That is correct.

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1 Q. Do you recall --
2 And the purpose of that wipe-testing was to
3 determine whether any leaks were present, correct?
4 A. Right.
5 Q. Did you find any leaks?
6 A. No.
7 Q. The loading of the waste containers for transport
8 for disposal at sea was also supervised by AEC personnel,
9 correct?
10 A. No.
11 Q. What involvement did AEC have with those -- with
12 that shipment?
13 A. On one or two occasions they sent an inspector to
14 go out with the barge.
15 Q. And there was a meeting or meetings prior to the
16 actual shipment to go over procedures with the SE- (sic) --
17 with the AEC, correct? Do you recall that?
18 A. Perhaps the first time. I can't recall.
19 Q. At any time while you were employed at the
20 Providencia facility, did you ever see anything that you
21 thought indicated that any of the waste containers stored
22 in the storage yard had leaked or spilled their contents?
23 A. Uh -- you went down the last part.
24 Q. Okay.
25 At any time while you were employed at the

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1 Q. How often --
2 A. We loaded a special boxcar full of that
3 magnesium-thorium and all those radium barrels and sent it
4 up to Idaho.
5 Q. Those were those 85 barrels?
6 A. Yeah.
7 Q. All right.
8 Any other incidents in which the company
9 transported waste for disposal during the time you were
10 employed there?
11 A. Well, the only other time I was involved in waste
12 disposal was as a consultant to Coast Rise (phonetic
13 spelling) Marina. I took about three barge loads from
14 their warehouse out to the ocean and dumped it.
15 Q. But that was directly from the customer?
16 A. Yeah, we were -- I was doing consulting.
17 Q. Do you recall, apart from the shipment of the
18 radium barrels to Idaho and the shipment of barrels for
19 disposal at sea, were there any other incidents -- or
20 instances that you can recall in which waste containers
21 were transported for disposal some place?
22 A. No, I don't recall any other instances.
23 Q. Previously you testified that you can -- you
24 recalled two batches of waste that you recommended be
25 disposed of, and then I was unclear as to what your

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1 Providencia --
2 A. I got that part.
3 Q. -- facility, did you ever see any indication that
4 any of the waste containers that were contained in the
5 storage yard had leaked or spilled their contents?
6 A. Oh, yeah, I'm sure I saw evidence of that.
7 Q. Do you recall any such incidents?
8 A. No, not in particular, but it was --
9 They had been sitting there a long time and they
10 were -- some of them were in very bad shape.
11 Q. Do you recall any leaks, though, or spills?
12 A. I don't recall a specific incident, but I recall
13 more than one occasion looking at barrels and it looked to
14 me like there'd been seepage out of them.
15 Q. If you saw that, did you do anything?
16 A. Pardon?
17 Q. Did you do anything?
18 A. No. What's to do?
19 They were in a restricted area and the whole
20 place was going to have to get cleaned up eventually.
21 Q. Other than the shipment of containers for
22 disposal at sea, were there any other times while you were
23 employed at the Providencia facility that waste containers
24 were transported for disposal some place?
25 A. Of course.

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1 testimony was.
2 Uh --
3 A. I think you may be referring to the Air Force
4 shipments, is that it?
5 Q. It was just prior to that testimony.
6 Uh -- you were asked if you could recall the
7 names of any of -- uh -- Isotopes Specialties customers.
8 A. Oh, yes.
9 Q. And during that testimony you indicated that
10 there were two batches of waste that you made a
11 recommendation to a customer --
12 A. That is true; yes.
13 Q. -- to do something.
14 A. That is true.
15 Q. Now do you recall the name of that customer?
16 A. Yes, one of them was -- uh -- Cal Tech -- I
17 believe it was.
18 Q. And what was the nature of the recommendation --
19 A. They had -- uh -- done some experiments with rats
20 with carbon 14 and they had put them -- sealed them into
21 five-gallon cans. And they didn't put enough formaldehyde
22 on and the carbon dioxide started building. And these
23 things were about to blow up.
24 So the guy says: What can I do? And I
25 said: There's a waste disposal company in town.

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1 So he -- he sent them out there.
 2 The other one was -- um -- what I like to call
 3 the Santa Monica Bay fiasco. We had some experts come up
 4 there who used radioactive tracer to try to find out if a
 5 five-mile extension of the High Purine (phonetic spelling)
 6 outfall --
 7 (Brief interruption)
 8 THE WITNESS: -- of the outfall for the
 9 High Purine (phonetic spelling) Treatment Plant would
 10 dilute the effluent enough so it wouldn't get back on the
 11 beach with high E. coli readings.
 12 And to do this they put a lot of radioisotope --
 13 well, they brought in a Ph.D. and I don't know if he'd
 14 ever been around this stuff before, but he ended up
 15 contaminating a wide area. So all that junk was
 16 contaminated. It had to be removed.
 17 And I -- I recommended it go out to this company,
 18 and that's where it went out -- to Isotopes Specialties.
 19 MR. SHIMADA: Q. And it went to Isotopes
 20 Specialties?
 21 A. It went to Isotopes Specialties.
 22 Q. The -- you say the -- the --
 23 A. That was before I got there.
 24 Q. Well, the waste that you were referring to, what
 25 was -- were those ocean sediments or --

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1 Stand by, please.
 2 (Brief pause)
 3 THE VIDEOGRAPHER: On the record at 1553.
 4 Please proceed.
 5 MS. SHIMADA: I'd like to have Exhibit Number 7
 6 placed in front of Mr. Vaden.
 7 (Reporter complies)
 8 MR. SHIMADA: Q. Mr. Vaden, if you could turn to
 9 the page that has the number JT0444 on it -- on that
 10 document. You'll find the page numbers on the bottom
 11 righthand corner.
 12 (Brief pause while the witness reviews documents)
 13 MR. SHIMADA: Q. If you could look at the bottom
 14 righthand corner of the document.
 15 The very, very bottom.
 16 A. Oh.
 17 Q. And if you could turn to page 444.
 18 A. Okay.
 19 Q. Three 4's.
 20 A. Got it.
 21 Q. And do you see the first full paragraph beginning
 22 with the words on "January 10, 1961"?
 23 A. I see that paragraph.
 24 Q. And there's a reference in that paragraph to --
 25 uh -- packages containing liquid.

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1 A. No; no. Uh -- rubidium 85.
 2 They wanted to use cesium 137. And it came
 3 before a group of city/county people including me. And we
 4 said: Are you out of your mind? This stuff lasts
 5 30 years. We don't want it around 30 --
 6 Q. So they took it -- they sent it to Isotopes
 7 Specialties?
 8 A. They sent it out there, the whole -- the whole
 9 contaminated -- they had barrels full --
 10 Q. Which facility?
 11 A. -- of contaminated --
 12 Q. Which facility?
 13 A. Providencia.
 14 Q. Let's take a break --
 15 A. And the other one went out when I was with the
 16 county, too. I wasn't with them then, but I --
 17 They were an ABC disposal licensee, and they
 18 wanted to know how to get rid of the stuff. I told them
 19 about them.
 20 Q. Let's take a break.
 21 A. Then I had to take care of it myself later when
 22 I...
 23 THE VIDEOGRAPHER: We are off the record at 1528.
 24 (Brief recess)
 25 THE VIDEOGRAPHER: Okay. Everyone ready?

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1 Do you see that?
 2 A. Yes.
 3 Q. And that's the liquid that you previously
 4 described as being coolant liquid?
 5 A. Yes.
 6 Q. What kind of container were those -- was that
 7 liquid contained in?
 8 A. Paper -- or -- or wooden boxes.
 9 Q. It was a liquid, but it was in wooden boxes?
 10 A. Yeah, it was in wooden boxes.
 11 Q. Were those boxes lined in any fashion?
 12 A. No.
 13 Q. Was it more solid than liquid?
 14 A. Yes.
 15 Q. So when it says liquid waste, it wasn't -- it was
 16 primarily solid; there wasn't a coating of liquid on it, is
 17 that correct?
 18 A. Yes.
 19 MS. McKEITH: I -- uh --
 20 THE WITNESS: And the reason was that --
 21 MS. McKEITH: -- objection; asked and answered.
 22 THE WITNESS: -- the magnesium-thorium was ground
 23 up very finely, so it was kind of a mush type stuff.
 24 MR. SHIMADA: Q. Did this -- did the contents of
 25 the boxes leak out?

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1 A. Only when they repaired one up at Phillips when
2 they were unloading the boxcar. They stuck a -- a forklift
3 tine through the side of it.
4 Q. Other than that, the content -- other than that
5 instance, the contents of those boxes remained inside the
6 boxes?
7 A. There was nothing leaking out of them, no.
8 (Brief pause)
9 MR. SHIMADA: If Exhibit 12 could be placed in
10 front of Mr. Vaden, please.
11 THE REPORTER: Mr. Vaden, I'll take "7" back and
12 I'll give you "12".
13 THE WITNESS: (Complies)
14 THE REPORTER: Thank you.
15 (Brief pause while the witness reviews document)
16 MR. SHIMADA: Q. Now, Mr. Vaden, this document
17 references a disposal contract with Hughes Aircraft.
18 Do you see that?
19 A. I see that.
20 Q. Do you recall the Providencia facility receiving
21 any type of waste from Hughes Aircraft during the time that
22 you were employed at the facility?
23 A. No, I do not.
24 Q. Same question for Douglas Aircraft. Do you
25 recall --

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1 MS. McKEITH: Asked and answered.
2 THE WITNESS: -- I do recall that.
3 MR. SHIMADA: Q. And what do you recall
4 receiving from Robert Shaw Fulton?
5 A. Uh -- they were valves that had sources of
6 radiation in them, but I do not recall what the sources of
7 radiation were.
8 Q. Do you recall why that -- those materials were
9 sent to the Providencia facility?
10 A. It was my impression that they were -- had become
11 defective or over-used or were no longer operative.
12 Q. So they were sent to the facility for disposal?
13 A. That is correct.
14 Q. Do you recall the volume of such valves that were
15 received?
16 A. No, I don't.
17 Q. Do you recall the number of containers?
18 A. I believe they came in 55-gallon drums.
19 Q. Do you recall how many drums were received?
20 A. No, I don't.
21 Q. Is it your recollection there was only one
22 shipment or more than one?
23 A. I only recall the one.
24 Q. Do you recall where those drums were placed?
25 A. Um -- they were probably placed --

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1 A. No.
2 Q. Well, let me finish --
3 A. No, I do not.
4 Q. Okay.
5 Let me ask the question, just so the record's
6 clear.
7 Do you recall the Providencia facility receiving
8 any waste from Douglas Aircraft during the time you were
9 there?
10 A. No, I do not.
11 Q. Would you have been made aware of the sources of
12 all waste received at the Providencia facility during the
13 time you were employed there?
14 A. There was a notebook recording -- uh -- that had
15 recordings in it about waste that had been received over
16 previous time when I wasn't there.
17 Q. During the time you were there, would you
18 personally see every shipment that arrived at the facility?
19 A. That is correct.
20 Q. And you would personally inspect each shipment?
21 A. That is correct.
22 Q. And do you recall during the time you were there
23 receiving any waste at the Providencia facility from the
24 Robert Shaw Fulton Company?
25 A. Yes, --

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1 No, I don't recall it specifically, but I would
2 assume they were placed out with the other drums in the
3 waste yard.
4 Q. Now previously you described recalling the
5 receipt -- receipt of waste from Richfield Oil Anaheim.
6 Do you recall that testimony?
7 A. I described what?
8 Q. Receiving waste from Richfield Anaheim (sic) that
9 had --
10 A. No.
11 Q. -- iron 8 --
12 A. No, I didn't say that.
13 I said that I heard that they had a problem with
14 contaminated oil that they would like to figure out some
15 way to dispose of. So I suggested certain chemicals for
16 solidification. But the cost they felt was a little bit
17 high.
18 And that's the last I heard of that situation.
19 Q. Do you recall any instances in which waste
20 material from Richfield Oil Anaheim was received at the
21 Providencia facility?
22 A. No, I do not.
23 Q. Do you recall any instances in which waste from
24 Truesdell Laboratory was received at the Providencia
25 facility?

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1 A. I don't ever recall seeing -- hearing of that
2 name before today.
3 Q. Do you recall the names of any of the other
4 companies from whom waste was received at the Providencia
5 facility?
6 A. Not by name.
7 There were -- as a class, a lot of them were
8 radiographers sending back spent sources that we had sold
9 to them.
10 Q. And they were sending those spent sources back to
11 you for what? For disposal?
12 A. For disposal, yes.
13 (Brief pause)
14 MR. SHIMADA: If Exhibit 18 could be placed
15 before Mr. Vaden.
16 (Reporter complies)
17 (Brief pause while the witness reviews document)
18 MR. SHIMADA: Q. Mr. Vaden, if you could look at
19 the third paragraph on the first page of that document.
20 Do you see that?
21 A. Yes.
22 Q. It begins, "The waste storage area".
23 Do you see that paragraph?
24 A. I see that.
25 Q. If you could read that paragraph to yourself.

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1 A. Yes; that is true.
2 Q. What types of waste would -- would be involved in
3 those instances?
4 A. Basically it was -- uh -- waste like the spent
5 sources coming in from radiographers. We removed those
6 from the shields and put them in our own containers until
7 we got sufficient waste in there to make a barrel load.
8 Another instance, the shipments from the
9 Air Force -- they were not packaged at all -- were
10 eventually packaged by Isotopes Specialty Company.
11 Q. There were, in fact, shipments received from the
12 Air Force at the Providencia facility?
13 A. From the Air Force, yes.
14 Q. Do you recall what type of material that was?
15 A. It was basically material that had been used in
16 the flying reactors down in the Texas area and most of it
17 consisted of neutron activated waste.
18 Q. And in what type of container were those received
19 from the Air Force?
20 A. They were not in containers. That was the
21 problem.
22 Their contract said they had to package it
23 according to shipment of radioactive waste on DOT
24 regulations, and they came up with their own trucks,
25 Air Force trucks, and it wasn't packaged at all.

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1 A. I'm doing that now.
2 (Witness complies)
3 THE WITNESS: I've read the third paragraph.
4 MR. SHIMADA: Q. Is that an accurate description
5 of how access to the waste storage area was controlled?
6 A. That is true.
7 Q. That's all I have with that document.
8 If you could look at Exhibit 21, please.
9 (Reporter hands document to witness)
10 (Brief pause while the witness reviews document)
11 MR. SHIMADA: Q. Now these are those draft
12 letters that you were previously asked some questions
13 about.
14 Do you know whether Isotopes Specialties ever
15 received final versions of these letters?
16 A. I do not.
17 Q. So you have no personal knowledge as to whether
18 they were ever sent, is that true?
19 A. No, I do not. I do not know.
20 Q. That's all I have for those.
21 (Brief pause)
22 MR. SHIMADA: Q. When waste was received at the
23 Providencia facility from customers, were there ever any
24 occasions in which the waste was treated in some fashion by
25 the company?

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1 Q. What did this material look like?
2 A. What is what?
3 Q. What did the material look like?
4 A. It was a variety of stuff like huge -- uh --
5 hoses that you would put JP-4 jet fuel through and boron
6 metal boxes. This is the toughest metal you can think of.
7 And I don't know what they had contained, but
8 they were like chests, very heavy. We had to use diamond
9 saws to cut those suckers up. And they were wearing out
10 blades like you wouldn't believe. Talk about money!
11 Q. And what did you do with all of that material
12 once --
13 A. Put them in barrels and dump them in the ocean.
14 Q. And were those among the barrels that were stored
15 in the waste storage area?
16 A. That's right. They're the ones that went down to
17 the barge and right on out.
18 Q. What is neutron activated material made of?
19 A. What is what?
20 Q. What is neutron activated material made of?
21 A. Uh -- well, the basic principles of reactor
22 operation --
23 (Brief interruption)
24 THE WITNESS: The basic principles of reactor
25 operation is to bring enough -- uh -- enriched uranium

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1 together that the flux of neutrons start a chain reaction.
2 Anything near that chain reaction, such as a reactor on
3 this bomber they were flying all over the place -- if it's
4 in proximity, the neutrons will activate it. They will
5 make the existing atoms active in the material.

6 And that's how you make radioisotopes. You take
7 a piece of common ordinary cobalt metal 59 and send it down
8 the reactor. It kicks it up to cobalt 60. It comes out
9 radioactive -- the half life of 5.3 years. And the half
10 life is the length of time it takes for half of the
11 activity to take away.

12 MR. SHIMADA: Q. Now while you were with county
13 health you recall an instance in which waste from an
14 experiment at High Purine (phonetic spelling) outfall was
15 taken to the Providencia facility?

16 A. That is correct.

17 Q. Do you know whether it was actually received at
18 that facility?

19 A. Yes, it was.

20 Q. And was that from the City or the County of
21 Los Angeles?

22 A. It was the city.

23 Q. And do you recall in what type of container that
24 material was received?

25 A. In 55-gallon drums.

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1 A. It went into the barrels in the back, cemented
2 in, and down the ocean.

3 Q. And that was part of the ocean disposal --

4 A. Yes, sir.

5 Q. -- in 1961?

6 A. Yes, sir.

7 (Brief pause)

8 MR. SHIMADA: Q. During your deposition you've
9 used the phrase special nuclear material.

10 What does that mean?

11 A. Special nuclear material is uranium 235,
12 plutonium, any isotope of plutonium, uranium 233 or any
13 other substance enriched in any of the above.

14 Q. Those are all fissionable material?

15 A. You want to know about raw material?

16 Q. No.

17 Are those fissionable materials?

18 A. Yes, they are.

19 Q. What type of --

20 Are you familiar with the type of activities that
21 were conducted by Research Chemical during the time --

22 A. Yes, sir, I am.

23 Q. -- during the time you were at Providencia?

24 A. Yes, sir, I am.

25 Q. What type of activities were conducted by

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1 Q. And what was the nature of the radioactive
2 material that contaminated that material?

3 A. Sand mainly.

4 Q. What was the radioactive material in it?

5 A. Rubidium 85 was spilled on it -- the tracer --
6 (Brief interruption)

7 THE WITNESS: Rubidium.

8 It was spilled on it by the person who had the
9 long-handled tongs and was supposedly pouring them in the
10 dosage tank, but he was getting it all over the place,
11 including the sand and these barrels which was around the
12 thing for shielding purposes to keep -- and even so the
13 people in the vicinity -- their dosimeters went off scale.

14 That's why I call the whole thing a fiasco.

15 MR. SHIMADA: Q. Do you recall how many barrels
16 were received at the Providencia facility that contained --

17 A. Approximately five, I believe.

18 I know it was there because I disposed of it
19 after I got there.

20 Q. What do you mean you disposed of it?

21 A. I -- it was on site when I arrived at Providencia
22 later on, and I was required to get rid of it myself. I'm
23 the one that recommended it go there, and then I had to get
24 rid of it.

25 Q. Where did it go?

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1 Research Chemical?

2 A. The --

3 MR. BROWN: Excuse me.

4 Can I object to his question for foundation --
5 the previous question?

6 THE WITNESS: I --

7 MR. SHIMADA: Q. Go on.

8 A. The operation at -- at that division was to
9 remove valuable rare earths from ores that are normally
10 present in trace quantities, and these things are like
11 hafnium and iridium and all these things that coat special
12 electron tubes inside.

13 And in doing so they come across and have to
14 take care of to combine thorium, which is radioactive,
15 thorium 232 and regular uranium, which is radioactive, 238.

16 So it was low level source material.

17 Q. So those ores were processed by
18 Research Chemical?

19 A. Yes, sir, on a pilot plan basis.

20 Q. And did you have some personal involvement with
21 some of the activities at Research Chemical?

22 A. We supplied them with radiation from
23 Texas Services -- Services because these things are
24 radioactive material and they can be ingested and, as such,
25 besides being a heavy metal type toxic, they're also toxic

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1 in their own right, plus the fact that their proximity to
 2 our wall on the west side of the plant potentially exposed
 3 them to operations on our side, so we monitored that area,
 4 too.

5 Q. So you personally monitored the Research Chemical
 6 side?

7 A. That is correct.

8 Q. To your knowledge did the Research Chemical
 9 operations generate any waste material?

10 A. Yes.

11 We got rid of the thorium and the uranium that
 12 was a -- to them a waste product from their rare earth
 13 extraction process.

14 Q. And what was done with that waste material?

15 A. What was the amount of it, you say?

16 Q. What was done with it?

17 A. It was treated like any other radioactive waste
 18 that we had on the property. It went with the barrels and
 19 down the ocean.

20 (Brief pause)

21 MR. SHIMADA: Q. Apart from the disassembly of
 22 used sources that the company would receive from its
 23 customers, were there any other ways in which the company
 24 treated or processed waste received from its customers?

25 A. No, we never recovered any waste that was --

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1 you were there?

2 A. That is correct.

3 Q. Do you have an estimate as to what percentage of
 4 the wastes that were disposed of at sea were disposed in
 5 their original containers?

6 A. In the original containers, did you say?

7 Q. Yes.

8 A. I would guess probably the only waste that we
 9 packaged in 55-gallon drums while I was there was disposed
 10 in those containers. A lot of the material out to sea --
 11 now I'm talking -- the ones in the pit went in their
 12 original containers up to Idaho Falls and the ones in the
 13 back building went up there in the boxes in their original
 14 containers.

15 Am I clear to you on that?

16 MR. SHIMADA: If you could read back the last
 17 answer, please.

18 (Record read)

19 (Discussion off the record)

20 THE WITNESS: So I guess what I'm trying to say
 21 is that -- uh -- we had to repackaging all the old customer
 22 waste out there, and that was 90 percent of the waste on
 23 hand when I arrived.

24 MR. SHIMADA: Q. And it was repackaged into
 25 55-gallon drums?

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1 comes in the container. It was considered to be too
 2 dangerous a practice, and the economic returns were not
 3 worth that risk.

4 Q. Concerning the containers that were disposed at
 5 sea in 1961, were most of those containers -- most of those
 6 wastes disposed of in the original containers that they
 7 came in when they were received at -- uh -- the Providencia
 8 facility?

9 A. Yes, all of those, as far as I know.

10 Q. Do you recall any instances in which -- uh -- any
 11 of those containers from customers had to be repackaged
 12 prior to disposing them in the ocean?

13 A. We did repackaging a lot of the waste that was --
 14 the old waste that was on hand when I arrived. Some of
 15 them were in very poor containers, so we put them in the
 16 barrels.

17 Q. Do you recall whether that was waste received
 18 from customers?

19 A. Yes.

20 Q. Do you recall --

21 Of the waste that was disposed of at sea in 1961,
 22 how much of that waste, if you can recall, was present at
 23 the facility at the time you arrived in 1959?

24 A. I would estimate 90 percent of it.

25 Q. And the balance was received or generated while

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1 A. Yes.

2 Q. Do you recall who would have been most
 3 knowledgeable at Isotopes Specialties while you were there
 4 with customer contracts?

5 A. No, I don't.

6 Q. Was there someone at the company that was
 7 responsible for sales?

8 A. I -- I recall that they had someone in sales
 9 for -- uh -- tagged radionuclides like for medical use,
 10 but they seemed to be salesman type and were always bugging
 11 me to allow them to carry a vial with some actual material
 12 in it, which I would not let them do. Um -- I said: Just
 13 tell them it looks like this. They can't tell anything
 14 different whether it's radioactive or not.

15 (Brief pause)

16 MR. SHIMADA: I don't think I have any other
 17 questions for you, sir. Thank you.

18 THE WITNESS: Thank you.

19 THE VIDEOGRAPHER: We are off the record at 1621.

20 (Brief recess)

21 THE VIDEOGRAPHER: I'm going to go ahead and
 22 change tapes now. We're real close to the end of this
 23 tape, unless you think your questioning will be under seven
 24 minutes -- eight minutes, sir.

25 MR. BROWN: It may be.

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1 THE VIDEOGRAPHER: It may be.
2 Let's just go to the end then, and I'll let you
3 know a couple of minutes before its over.
4 Okay.
5 Stand by, please.
6 (Brief pause)
7 THE VIDEOGRAPHER: We are on the record at 1622.
8 Please proceed.
9 EXAMINATION BY MR. BROWN:
10 Q. Mr. Vader, as I told you earlier, my name is
11 Bryan Brown, and I represent one of the Defendants,
12 Rhone-Poulenc. I'm going to keep this really brief.
13 Did you -- were you ever employed by Research
14 Chemicals?
15 A. By whom?
16 Q. Research Chemicals.
17 A. No, sir.
18 Q. Did Research Chemicals operate separately from
19 Isotopes Specialties?
20 A. Yes, sir.
21 Q. Do you have any personal knowledge of the waste
22 handling procedures used by Research Chemicals?
23 A. Yes, I was familiar with their operation.
24 Q. How were you familiar? What was the basis of
25 your familiarity?

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1 facility is Isotopes Specialties?
2 A. Yes, I understood it was Isotopes Specialties.
3 Q. And not Research Chemicals?
4 A. That's right.
5 Q. Okay.
6 You earlier testified that some of the wastes
7 from Research Chemicals was disposed of at sea by you.
8 A. Yes.
9 Q. Um -- what kind of waste was this?
10 A. Source material.
11 Q. Specifically?
12 A. Uranium and thorium.
13 Q. And that's it?
14 A. That's it.
15 Q. What percentage of waste disposed at sea came
16 from Research Chemicals?
17 A. I would guess about a barrel every six months.
18 Q. So there was --
19 A. Let me explain.
20 They had their own license from ABC. Okay? They
21 were a licensee also.
22 Q. Uh-hum.
23 So a barrel six -- six months --
24 I mean, of the nine hundred and some barrels that
25 were disposed of at sea, about approximately what

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1 A. It was a rare earth extraction process, a
2 chemical wet procedure. It was very common. Being a
3 chemical engineer I had no problem understanding that.
4 Q. Okay.
5 Throughout this deposition counsel has referred
6 to the Providencia facility.
7 Is it your understanding that this Providencia
8 facility refers to Isotopes Specialties?
9 A. Refers to Isotopes Specialties?
10 That's what it was called when I was there.
11 Q. And not to Research Chemicals?
12 A. Not what?
13 Q. Not to Research Chemicals?
14 A. I'd never heard of that company before.
15 Q. You had testified earlier that Research Chemicals
16 was -- that Research -- you have never heard of
17 Research Chemicals --
18 Strike that.
19 A. I'm sorry. I didn't understand you. I thought
20 you gave a different name.
21 Q. No.
22 Let me repeat the question.
23 Throughout this deposition the rest of the
24 attorneys here have referred to the Providencia facility.
25 Was it your understanding that the Providencia

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1 percentage of the waste in those barrels came from Research
2 Chemicals?
3 A. I don't know what they put out in the pile in the
4 past out there, but while I was there they only made a
5 barrel about every few months. It was no big operation.
6 Q. And out of a six-month period you said a barrel
7 every six months?
8 A. Something like that.
9 Q. How many barrels every six months was from
10 Isotopes Specialties -- or from customers of Isotopes
11 Specialties?
12 A. Oh, I guess, ten or twelve maybe.
13 Q. Okay.
14 And was any of the waste from Research Chemicals
15 disposed of in any other way?
16 A. Question again?
17 Q. The waste from Research Chemicals -- was it
18 disposed of in any other way?
19 A. Not that I know of, no.
20 Q. Okay.
21 MR. BROWN: And that's all I have.
22 THE WITNESS: Very good.
23 MS. McKEITH: I'm going to have about 40 minutes
24 of questions.
25 THE WITNESS: You don't get to go around again,

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1 do you?

2 MS. McKEITH: Yes, we do.

3 THE WITNESS: Oh, God!

4 MS. McKEITH: We get to go around until we're

5 done, unfortunately, but I'll try to be as fast as I can.

6 THE VIDEOGRAPHER: Should we go off the record

7 now?

8 MS. McKEITH: Yes, please, just for a moment so

9 we shift.

10 THE VIDEOGRAPHER: We are off the record at 1626.

11 (Brief recess)

12 THE VIDEOGRAPHER: Okay. Whenever you're ready.

13 MS. McKEITH: (Indicates)

14 THE VIDEOGRAPHER: Stand by, please.

15 (Brief pause)

16 THE VIDEOGRAPHER: On the record at 1629.

17 This begins tape 3 of the deposition by (sic)

18 John Vaden on August 5th, 1998.

19 Please proceed.

20 FURTHER EXAMINATION BY MS. McKEITH:

21 Q. Mr. Vaden, you gave us some testimony about

22 decommissioning of the property.

23 When decommissioning occurred at Main Street, did

24 you take any actual soil or core samples that got run in

25 the laboratory -- that were tested in a laboratory?

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1 three different distinct points on each scale. And many

2 of them have three to four scales, which are multiples of

3 each other. So it would run from somewhere like

4 .002 milliroentgens all the way up to possibly as much as

5 2,000 milliroentgens per hour dependent upon the type of

6 Geiger counter manufactured.

7 Q. Do you recall the type of Geiger counter that was

8 used at the Providencia property?

9 A. No, I do not. We had at least 25 different

10 styles of Geiger counters.

11 Q. Uh -- I showed you an Exhibit earlier today that

12 listed the type of equipment.

13 A. Yes.

14 Q. Do you recall whether that Exhibit identified

15 Geiger counters?

16 A. No, I couldn't recall whether that was the one we

17 used over there.

18 Q. No, I asked --

19 MS. McKEITH: Well, let me pull the Exhibit.

20 That will be faster.

21 Can you -- uh -- return to the witness Exhibit 1,

22 specifically page 296?

23 (Reporter complies)

24 THE REPORTER: Oh, I handed him the whole

25 Exhibit.

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1 A. No.

2 Q. Was the sampling of the concrete and the soil at

3 that facility limited to the Geiger counter?

4 A. Yes, it was.

5 Q. When you take a wipe sample, do you use the

6 Geiger camp -- uh -- Geiger counter to test whether or not

7 that wipe sample exceeds a certain number or not?

8 A. Yes, but in soil -- in a wipe test you'd put it

9 into kind of a counter that can count both beta-gamma and

10 alpha separately.

11 Q. You indicated that while at Isotopes Specialties

12 there was a log that recorded the results of wipe samples.

13 Did I understand you correctly?

14 A. That is correct.

15 Q. And who was in charge of putting entries into

16 that log?

17 A. It was my responsibility.

18 Q. Okay.

19 Do you know who the health physics officer was

20 after you departed the facility in 1961?

21 A. No, I do not.

22 Q. Do you know at what level the Geiger counter is

23 calibrated -- was calibrated at the time you worked at the

24 facility?

25 A. The Geiger counters are always calibrated at

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1 MS. McKEITH: Okay.

2 Q. Mr. Vaden, can you look at document 296?

3 A. I'm looking at document 296.

4 Q. And are any of the items specified on this page

5 Geiger counters?

6 A. Yes, the first item is, GM survey meters, as you

7 see --

8 I don't know why they only got one available.

9 That's -- they just put down the minimum here.

10 Q. Under Sensitivity Range, where it has 0.2 to 2 --

11 A. 20 -- that's 20.

12 Q. Okay.

13 And that's --

14 What does the mr stand for again? I'm sorry.

15 A. It's .2 milliroentgens to 20 milliroentgens per

16 hour -- is what it says here.

17 Q. Okay.

18 So it wouldn't detect anything under .2 or

19 anything above 20 milliroentgens, is that correct?

20 A. That's correct.

21 Q. Now are there any other Geiger counters that are

22 identified on this document?

23 A. Uh -- not particularly Geiger counters, but there

24 are ion internal survey meters. There are different other

25 meters that will also measure gamma and beta radiation.

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1 Q. Can you tell us which ones those are?

2 A. Well, you start with the second one, ion chamber

3 survey meter. You see it says it detects gamma.

4 Q. Okay.

5 Go on.

6 A. And it says -- the one made by NRC CS-40 detects

7 the alpha-beta gamma and beta-gamma.

8 Then down -- we have alpha meters. It says

9 alpha, beta-gamma sensitive also.

10 Then we have area monitors. Those are not Geiger

11 counters.

12 Let's see.

13 That's -- that's about the size of the

14 detection-chambered type which includes Geiger counters.

15 Q. What did area monitors do?

16 A. The area monitors are those in the facility that

17 are mounted on the walls and at various locations to

18 monitor the ambient radiation in that area.

19 Q. And dosimeters?

20 A. Those are the things that -- little chamber that

21 the workers wear while they're working. And they can look

22 through them and see a scale in there that tells them the

23 amount of radiation that they're getting at any particular

24 point in time -- how much they've received that day.

25 And they're supposed to do that, too, because if

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1 A. Microcuries per milliliter.

2 Q. Okay.

3 Is that smaller than a microcurie?

4 A. It is a concentration; not a physical amount.

5 Q. Can you explain for us non-physicists what that

6 means?

7 A. So much radioactive particles per volume of air.

8 It's like saying there are twenty dust particles

9 in this cup full of air dispersed in there versus saying

10 there's five -- uh -- five ounces or five grams -- or

11 whatever.

12 Q. Would this reflect the mass of -- uh -- of

13 radioactive material?

14 A. Well, this is an old standard used, I think, by

15 EPA for -- uh -- minimum detectable tritium in air or

16 something like that.

17 Q. Of the equipment that's identified on these two

18 pages, which piece of equipment did you use to test the

19 integrity of the containers that were received at the

20 facility by customers?

21 A. These types of manually held ion chambers are not

22 used to test containers for physical leakage of radioactive

23 material or any other material or liquid. They are used to

24 test -- quote -- leakage -- unquote -- of waves of

25 radiation coming through the side.

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1 they start getting radiation they're supposed to tell their

2 supervisor: We're getting exposed here. And the

3 supervisor looks into it to see what their problem is.

4 Q. Can you turn to the next page and tell us whether

5 any of the items specified on that page are Geiger

6 counters?

7 A. No, they're -- there's no -- uh --

8 Well, no, there's no Geiger counter there, but

9 the ion chambers such as the Landsverk -- uh -- and the

10 Vibron radiation detector are charged up chambers that can

11 be placed at any location and they will detect -- uh --

12 gamma radiation and so forth as it occurs at that site.

13 Q. And the -- uh -- designation above the word

14 "tritium" in the third column over, can you tell us what

15 that abbreviation stands for?

16 A. You're on what page?

17 Q. The same page, right above the word "tritium",

18 where it says, like, 10-5- --

19 A. Tell me the number of the page, please.

20 Q. The next page. It is 297.

21 (Brief pause while the witness reviews document)

22 MS. McKEITH: Q. At the top.

23 A. Oh, okay. Okay.

24 Q. Great.

25 What does the "uc/ml" stand for?

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1 Q. I understand that.

2 A. Okay.

3 Well, that --

4 Q. Do you use these types of equipment to figure out

5 whether or not any of the containers were emitting waves of

6 radiation?

7 A. That is correct.

8 Q. Okay.

9 And which of these pieces of equipment did you

10 use to check the containers when they arrived from

11 customers?

12 A. Any con- -- any instrument that will read more

13 than 200 milliroentgens per hour because that is the

14 surface limit by DOT. If it's higher than that, you can't

15 ship it.

16 So we're talking ion chamber basically rather

17 than Geiger counter.

18 Q. And the ion chamber would have been, for example,

19 the Landsverk?

20 A. No.

21 Q. Okay.

22 Which was it?

23 A. It would be -- uh --

24 Let's see.

25 (Brief pause while the witness reviews document)

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1 THE WITNESS: For instance, that Jordan AGE-50C.
2 which is, I guess, about the third one down.
3 MS. McKEITH: Q. Is that what you recall using
4 to test the containers for --
5 A. No, I don't recall which one I'd used.
6 Q. For the waste containers that were on the
7 property when you first arrived at Providencia, did you
8 personally ever take one of these Geiger counters and
9 sample to see whether there were waves emitting from the
10 container?
11 A. No, I did not.
12 Q. Okay.
13 Now do you have a degree in chemistry?
14 A. Chemical engineering.
15 Q. Okay.
16 A. I also have an A.B. degree and major in both
17 chemistry and biology before that.
18 Q. Okay.
19 If a wave of radiation is emitted from a
20 container and that container is sitting on concrete, does
21 the emitted radiation have the potential to bond to the
22 concrete?
23 A. No.
24 Q. Okay.
25 What happens to that emitted radiation?

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1 Q. Were their drums of that type of waste in --
2 A. There were some, but it had such a short half
3 life that the energy was gone before we ever disposed of
4 it.
5 That's another one of those replaceable sources.
6 Q. If there had been energy emitting from those
7 barrels, would it have --
8 You say it goes until it stops. When it stops
9 does it disappear?
10 A. Basically.
11 Theoretically it -- it really never stops
12 theoretically, but actually there's a practical limit to
13 the penetration.
14 Q. How does one know when it has stopped
15 penetrating?
16 A. Well, there's a little bloom that appears on the
17 outside of the shield if it doesn't get -- get any further
18 out. It's called a bloom. It dissi- -- side-way
19 dissipates into the structure of the material.
20 Q. Well, when you had a wooden box on top of
21 asphalt, would you have had any shield near that?
22 A. Not -- not really.
23 It's a very light shield, but anything will
24 shield radiation. It's just --
25 Again, it depends on the energy, as I say. You

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1 A. It eventually hits enough atoms and the matter is
2 trying to pass through, that it stops moving almost.
3 Q. Okay.
4 Where does it go when you have concrete or
5 asphalt that's porous?
6 A. It goes as long as it still has energy, and when
7 that's dissipated it stops.
8 Q. Okay.
9 How long does it take that energy to stop?
10 A. Depending on the size of energy to start with.
11 Q. Okay.
12 A. Very hard energy will go through many inches of
13 lead before it stops. Light energy will stop within one
14 millimeter of the lead.
15 Q. Okay.
16 For the types of alpha rays that were emitted
17 from polonium, for example, --
18 A. Alpha rays are not what we call penetrating
19 radiation. They will not even go through the layer of your
20 skin.
21 Q. For the type of gamma rays that were emitted from
22 the types of radiation in containers --
23 A. Some of them were -- like antimony 127 is so
24 powerful -- it's the one that can hit really -- more knock
25 a neutron out, just -- almost like a reactor.

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1 can put this out in front of an alpha source and you're
2 safe from being hit by an alpha particle, because it's a
3 big, heavy, slow-moving particle. But a gamma ray with a
4 lot of energy behind it can go through a mile of that
5 paper (indicating).
6 Q. So would you --
7 MR. SHIMADA: The record should indicate that the
8 witness is holding up a sheet of paper.
9 MS. McKEITH: Thank you.
10 Q. When you had gamma rays emitting from barrels,
11 for example, is it conceivable they would have penetrated
12 the concrete or asphalt?
13 A. It depends on how thick that asphalt or concrete
14 is.
15 Q. I understand.
16 (Brief interruption)
17 MS. McKEITH: Q. Do you have any knowledge about
18 how con- -- how thick the concrete or asphalt was in the
19 waste storage areas --
20 A. No, --
21 Q. -- at Providencia?
22 A. No, I don't.
23 Q. Now is it correct that the only decommissioning
24 that you ever supervised personally was at the Main Street
25 facility?

LAKE TAHOE REPORTING SERVICE

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1 A. That is correct.
2 Q. So during the time you worked for the AEC,
3 you did not personally supervise any additional
4 decommissioning?
5 A. No, I did not.
6 Q. Okay.
7 If the AEC failed to properly terminate a
8 license, you wouldn't have any idea one way or the other if
9 that, in fact, happened, would you?
10 A. No, I would not.
11 Q. Okay.
12 And if the AEC failed to actually conduct a
13 survey before a license was terminated, you would not have
14 one -- any idea one way or the other if that happened?
15 A. No, not unless -- not unless I was involved
16 somehow.
17 Q. Right.
18 But you were only involved in one?
19 A. Yes, the Isotopes Specialties.
20 Q. When you and Mr. Goldstein discussed your
21 decommissioning the property, did he approach you or did
22 you approach him?
23 A. It came up in the general conversation between
24 the two. I -- it was not a -- as far as I know, a
25 planned -- other than just to say -- uh -- I will be

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1 A. No.
2 Q. -- on behalf of --
3 A. No.
4 Q. Okay.
5 Was the waste that was generated at Isotopes
6 while you were there handled differently than the waste
7 that was received from customers in terms of its packaging
8 and storage?
9 A. Not while I was there.
10 Q. Okay.
11 Do you have any knowledge as to whether prior to
12 the time you came there the waste that was generated in the
13 operations was handled differently than the waste that was
14 received from customers?
15 A. No.
16 Q. You have no knowledge?
17 A. I have no knowledge.
18 Q. How many times did you personally transport waste
19 by means of a pickup truck from customers?
20 A. Oh, it wasn't too often. I think it was maybe
21 every two or three months I'd be called upon to go out and
22 get a couple of barrels or something.
23 Q. While you were at the facility did the facility
24 ever accept any wooden boxes from customers?
25 A. I can't recall any.

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1 available for a little longer in the event that you're
2 planning on decommissioning and you need some help -- just
3 something like that.
4 Q. Okay.
5 Did it surprise you that Mr. Goldstein returned
6 to the facility when he had not been there for some period
7 of time?
8 A. Uh -- well, I didn't expect it, but I didn't --
9 not being involved in the business end of anything I -- I
10 wasn't -- you know -- I didn't think too much of it.
11 Q. And what was your understanding as to why
12 Mr. Goldstein was involved in the decommissioning of the
13 Providencia property?
14 A. I didn't understand whether or not he was
15 involved in the -- in the decommissioning. I was under
16 the impression he was buying it back for some type of
17 commercial purposes and -- uh --
18 And when we talked he said that -- I said: Oh,
19 you're going to operate it -- or something like that. He
20 said: I just got it back to get the customers -- or
21 whatever -- something like this.
22 Q. Did he --
23 A. And that's when the decommissioning came up.
24 Q. Did he ever state to you that he was responsible
25 for taking care of the decommissioning --

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1 Q. Do you know whether the AEC when it was
2 conducting its inspections, its periodic quarterly
3 inspections that you described, take Geiger counter samples
4 of the restricted waste storage areas?
5 A. No, I don't believe they ever --
6 Well, they didn't ever take any samples, but I
7 don't believe they ever took any radiation readings either.
8 Q. Is --
9 So when you say samples versus radiation
10 readings, are you -- uh -- distinguishing between wipe
11 samples and Geiger counter --
12 A. Yes; that is true.
13 Q. Is it accurate to say that the AEC's primary
14 focus was on the safety of employees and the levels of
15 exposure for those employees as opposed to whether or not
16 any radiation had contaminated the concrete or soil beneath
17 the concrete?
18 A. I think that's generally a true statement.
19 Of course, they were also primarily interested
20 that material at the facility in the restricted area did
21 not get away from the facility and get into the
22 unrestricted area, for instance, in the -- in the houses
23 nearby the site, too. They were protecting the general
24 public.
25 Q. But so long as the waste stayed in the restricted

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1 areas, the AEC did not focus on those areas?
 2 A. No.
 3 And that -- that's the principle of containment.
 4 You put it in a place that you know you're going to have to
 5 clean it essentially (sic) some time, and that's it.
 6 Q. Now you mentioned as part of the health safety --
 7 it -- officer's responsibility you would take wipe samples
 8 periodically.
 9 A. That's right.
 10 Q. And were there occasions when you took wipe
 11 samples where, in fact, the levels of radiation exceeded
 12 the recommended --
 13 A. That's right.
 14 Q. Okay.
 15 On a monthly basis can you recall how frequently
 16 that occurred and where?
 17 A. Probably once a month in the hot lab.
 18 Q. Okay.
 19 And did it occur in any other areas?
 20 A. Uh -- sometimes in the cold lab but very rarely.
 21 Q. When you took a wipe sample and you found
 22 elevated levels of radiation, what steps did you take to
 23 correct the problem?
 24 A. I required that the area be cleaned.
 25 Q. And when the area was cleaned, what did that

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1 that you did not take wipe samples in the back building
 2 where the waste storage and the pit was located?
 3 A. That's right, I did not. That was another
 4 restricted area.
 5 Q. Now turning to the swimming pool, you mentioned
 6 that the AEC inspectors would, in fact, inspect the pool.
 7 When you were saying that, were you referencing
 8 Geiger counter readings of the area around the pool to see
 9 if it was emitting high levels of radiation?
 10 A. They would mainly come back, I believe, to see
 11 if -- uh -- any water was being splashed around because you
 12 were taking containers out, and also they looked at the
 13 remote area monitor.
 14 THE VIDEOGRAPHER: I'm seeing your hand a lot.
 15 MS. McKEITH: I'm sorry.
 16 Q. During the time you were at the Isotopes facility
 17 did you ever witness any water splashing out of the pool?
 18 A. Oh, sure, it happened quite often.
 19 Q. "Quite often" meaning several times a week?
 20 A. Yeah, --
 21 Well, every time you took one of those big
 22 shields out it usually happened.
 23 Q. What --
 24 A. But you mopped that up, of course.
 25 Q. When you referred to the AEC conducting an

LAKE TAHOE REPORTING SERVICE

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1 involve?
 2 A. It involved taking up the paper off the -- like
 3 the floor of the hot lab, and then washing the whole thing
 4 down with mops -- detergent.
 5 Q. And when there was any excess water that was
 6 generated during the washing down, where did that water go?
 7 A. There was no excess water. It was done in
 8 pails -- all contained -- squeezed out in pails and wiped
 9 up and squeezed out again.
 10 Q. And where did the water in the pails go to?
 11 A. It went into barrels and was solidified.
 12 Q. When you talked about taking up a paper that was
 13 on the ground, can you describe what kind of paper that
 14 was?
 15 A. Oh, it was industrial -- uh -- industrial type --
 16 uh -- paper that you could walk on without -- uh --
 17 knocking holes in it and so forth. It's a partly plastic
 18 in the middle and then tough paper on the outside like
 19 heavy craft paper and so forth.
 20 Q. Was this paper that was made especially for
 21 radioactive use, or was it used generally --
 22 A. I don't believe they claimed it was for that,
 23 but -- uh -- it was common practice to use that kind of
 24 paper in hot laboratories around the country.
 25 Q. And just so that I am accurate, is it correct

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1 inspection of the pool, they did -- the inspectors did not
 2 physically go into the pool and check for cracks?
 3 A. Oh, heck, no.
 4 Q. In fact, while you were there no one checked for
 5 cracks in the pool.
 6 A. No.
 7 Q. You stated that the AEC did not inspect in
 8 restricted areas. Did that mean they did not inspect in
 9 the hot cell area?
 10 A. No, they didn't go in there.
 11 Q. Okay.
 12 But they did go near the swimming pool.
 13 Isn't the swimming pool in the hot cell area?
 14 A. It is in the hot cell area, but it is not in the
 15 hot cell.
 16 Q. I see.
 17 So they would have conducted no radiation
 18 readings or wipe samples of the hot cell areas?
 19 A. That's right.
 20 But I want to explain to you there's windows all
 21 along that building where one can look in and see what's
 22 going on -- happening in the hot cell, so they could
 23 observe operation without going in.
 24 Q. But observing operations does not give you
 25 radiation levels, correct?

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1 A. No.

2 Q. When you ultimately began repackaging the waste

3 drums and containers and wooden boxes for disposal at the

4 ocean, before you repackaged did you take Geiger counter

5 readings of the packages?

6 A. No.

7 Q. Okay.

8 You mentioned that 90 percent of the waste

9 material in the restricted areas were, in fact -- was, in

10 fact, repackaged before it went to the ocean.

11 A. That is correct.

12 Q. Was that --

13 Okay.

14 Why was it repackaged?

15 A. Because the condition of the other packages were

16 not suitable for transportation.

17 Q. And how did you determine that they were not

18 suitable for transportation?

19 A. They didn't meet the specifications of DOT for

20 materials of construction and so forth.

21 Q. You mentioned earlier about the 200 micro- --

22 A. -- milliroentgens per hour --

23 Q. -- milliroentgens limits for DOT transportation.

24 Do you know whether or not the levels of the

25 milliroentgens in connection with the containers that were

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1 reason one of the barrels fell off the dam truck and

2 fortunately our member of the Isotope Committee was right

3 behind and he saw it and stopped the foreman's truck who

4 was running the fleet. They took a big plant and rolled it

5 up in his truck.

6 By then the police had come. Somebody was acting

7 suspiciously under the viaduct.

8 But it was recovered; no loss; no leakage; no

9 nothing.

10 Q. Mr. Shimada asked some questions about you had

11 observed leaks while you were at the facility.

12 Do you consider the emission of radiation at

13 levels that are unacceptable to be a leak, or do you

14 consider a leak a physical release of the product?

15 A. We always considered leakage to be physical

16 release and usually of a liquid.

17 Q. You mentioned that before you came to Isotopes

18 waste received by companies -- customers was recorded in a

19 log.

20 Do you recall that?

21 A. Yes.

22 Q. And while you were at Isotopes was there a

23 similar log that you used when waste was received from

24 customers?

25 A. That is true.

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1 repackaged exceeded the 200 milliroentgens?

2 A. Not the ones that I repackaged.

3 But you may recall the radium barrels in the pit

4 were reading a lot over that, and so the boxcar, itself,

5 exceeded DOT regulations. So I went to the Bureau of

6 Explosives and got an exception for that shipment.

7 Q. Were the drums and wooden packages that were

8 shipped to Idaho shipped to Idaho because they were too

9 radioactive to dump in the ocean?

10 A. No, they -- we were -- we weren't dumping that at

11 that time, but I didn't want to repackage all those wooden

12 boxes full of magnesium-thorium cuttings.

13 Q. Had you repackaged them could they have gone into

14 the ocean?

15 A. Yes.

16 Q. So they were sent to Idaho because you did not

17 want to have to go through the repackaging exercise?

18 A. That's right. There were 75 tons of those

19 things.

20 Q. During the time period that the repackaging of

21 the nine hundred and some odd drums occurred, did -- were

22 there any accidents that occurred?

23 A. I don't recall any physical accidents.

24 Oh, there was one incident. On one shipment of

25 barrels going down the freeway, Harbor Freeway, for some

LAKE TAHOE REPORTING SERVICE

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1 Q. Would UCLA have been one of your customers?

2 A. They could have been, but I'm not -- I'm not

3 aware that they were.

4 Q. What about USC?

5 A. Same thing.

6 Q. You're not aware?

7 A. I'm not aware.

8 Q. Okay.

9 There was a document that we looked at -- uh --

10 while Mr. Shimada was asking you questions that described

11 the restricted area in which waste was -- uh -- hand --

12 uh -- stored. And it discussed the fact that there was a

13 lock on the gate --

14 MS. McKEITH: Well, why don't we show the witness

15 Exhibit 18. It's JTO134.

16 (Reporter complies)

17 (Brief pause while the witness reviews document)

18 MS. McKEITH: Q. Calling your attention to that

19 paragraph three, --

20 A. Yes, I see it.

21 Q. -- it states that "the gate is interlocked to

22 actuate both a local audible signal, which can be shut off

23 if desired."

24 Do you recall whether the audible signal was in

25 effect during the time you were at the facility?

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1 A. Yes, it was in effect.
 2 Q. Okay.
 3 Was there any similar restriction that prevented
 4 people from going into the back building or near the pit
 5 area in the back building?
 6 A. That door in the back building was kept locked.
 7 Q. Okay.
 8 Did it have a similar audible alarm if that lock
 9 were unlocked --
 10 A. No, it did not.
 11 But it had a roof on it and nobody could get in
 12 that way, see.
 13 Q. Okay.
 14 A. That's why we had the audible -- uh -- and so
 15 forth -- out there.
 16 If the outside gate -- we're afraid maybe
 17 somebody would get over our fence -- some kid would get
 18 around there or something and get in there and this maybe
 19 would give us a chance to catch them before they got into
 20 problems.
 21 Q. Who had access to the key to the back building?
 22 A. I think I did.
 23 Q. Did any of the other employees have access to it?
 24 A. Well, my assistant. I think he had a key.
 25 Q. And what was his name?

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1 Research Chemical?
 2 A. Yes.
 3 Q. And on what basis do you -- uh -- on what
 4 information do you base that understanding?
 5 A. On information from Al Michaud.
 6 Q. And who was Al Michaud?
 7 A. He was vice-president in charge of the facility.
 8 Q. When you subsequently began working for the
 9 AEC --
 10 Well, strike that.
 11 During the time period that you worked for either
 12 the health department or the AEC, did you conduct
 13 inspections of facilities that were similar to the Isotopes
 14 facility?
 15 A. No.
 16 MS. McKEITH: I have no further questions at this
 17 time.
 18 THE VIDEOGRAPHER: This concludes the deposition?
 19 MR. PATTERSON: I have no further questions.
 20 MS. McKEITH: Mr. Shimada?
 21 MR. SHIMADA: Hopefully brief.
 22 (Brief interruption)
 23 THE VIDEOGRAPHER: Should we go off the record
 24 for a minute?
 25 MS. McKEITH: I don't know that we need to.

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1 A. Larry (sic) Wetterau.
 2 (Brief interruption)
 3 THE WITNESS: Wetterau, W-e-t-t-e-r-e-a-u (sic),
 4 I believe.
 5 MS. McKEITH: That's Leonard; not Larry.
 6 THE REPORTER: Thank you.
 7 MS. McKEITH: Q. You mentioned that you
 8 conducted surveys at Research Chemical?
 9 A. Yes.
 10 Q. How frequently did you conduct surveys?
 11 A. Probably once a month.
 12 Q. And when you say "conduct surveys", were those
 13 Geiger counter and wipe samples?
 14 A. Wipe samples and Geiger counter.
 15 Q. And was it that the amount of radiation on the
 16 wipe samples ever in excess of the required limits?
 17 A. No.
 18 Q. You mentioned that to your understanding
 19 Research Chemical generated about one barrel of waste every
 20 six months, is that correct?
 21 A. That is correct.
 22 Q. And was that barrel stored in the outside
 23 restricted waste area or inside the back building?
 24 A. That was outside.
 25 Q. Was it your understanding that Nucor also owned

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1 THE VIDEOGRAPHER: Okay.
 2 (Brief interruption)
 3 FURTHER EXAMINATION BY MR. SHIMADA:
 4 Q. Mr. Vaden, when you testified that approximately
 5 ninety-some-odd percent of the -- uh -- waste containers
 6 had to be repackaged prior to disposal at sea because they
 7 did not meet DOT specifications for transport, that doesn't
 8 mean, does it, that 90 percent of the containers were
 9 physically leaking or were somehow not tight, does it?
 10 A. It means that they were not in the approved
 11 packages that DOT requires for transportation by truck.
 12 Q. Because DOT specified certain types of barrels of
 13 a certain strength?
 14 A. That is correct. They --
 15 All barrels have a specification number that --
 16 you look it up and you tell the weight of the steel and
 17 the -- the number of ribs on the side and the burst
 18 pressure and -- and other types of material.
 19 Q. So a waste barrel could be physically tight --
 20 that is, no physical seepage or leakage of material -- yet
 21 still have to be repackaged because the barrel wasn't
 22 strong enough?
 23 A. Yes.
 24 MR. SHIMADA: Thank you.
 25 MR. BROWN: I have one more question.

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1 MS. McKEITH: Sure.
2 (Brief interruption)
3 THE VIDEOGRAPHER: You can just stay where you
4 are, if you like.
5 FURTHER EXAMINATION BY MR. BROWN:
6 Q. Mr. Vaden, --
7 MR. BROWN: Can I have him shown Exhibit 1 and
8 it's document number 00301?
9 (Reporter complies)
10 MR. BROWN: Q. I'm looking at 301. I think it's
11 a couple of pages down.
12 (Brief pause while the witness reviews documents)
13 MR. BROWN: Q. Yes, that's it.
14 Can you mark on that map exactly where
15 Research Chemicals was located?
16 THE REPORTER: Off the record.
17 THE VIDEOGRAPHER: Going off the record at 1705.
18 (Discussion off the record)
19 THE VIDEOGRAPHER: Okay. Stand by.
20 (Brief pause)
21 THE VIDEOGRAPHER: On the record at 1706.
22 Please proceed.
23 MR. BROWN: Q. Mr. Vaden, for the record, can
24 you mark on document number 00301A where Research Chemicals
25 was located?

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1 (Discussion off the record)
2 THE VIDEOGRAPHER: We are terminating the
3 deposition, is that correct?
4 MS. McKEITH: Yes.
5 THE VIDEOGRAPHER: Off the record at 1707.
6 This ends tape 3 of the deposition by (sic)
7 John Vaden on August 5th, 1996 and ends this deposition.
8 Got to do my thing.
9 (Discussion off the record)
10 MS. McKEITH: Okay. Okay.
11 Um -- the parties have stipulated that the
12 Court Reporter will send the original transcript directly
13 to Mr. Vaden with an envelope that is self-addressed to
14 Melissa McKeith at Loeb & Loeb.
15 Mr. Vaden will have 30 days to review the
16 transcript, make changes, if necessary, and sign the
17 transcript under penalty of perjury. In the event that
18 Mr. Vaden does not sign the deposition transcript under
19 penalty of perjury for any reasons -- uh -- it's stipulated
20 amongst the parties that a copy of the deposition may be
21 used in connection with these proceedings.
22 Changes that Mr. Vaden makes to the deposition
23 will be communicated to counsel for the other parties upon
24 receipt by Loeb & Loeb, and the original will be made
25 available to counsel upon reasonable notice.

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1 A. I'm looking at Exhibit 00301A.
2 Q. Yes, on that map right there, where was
3 Research Chemicals located?
4 A. Where was what?
5 Q. Research Chemicals located.
6 A. Uh -- Research Chemicals is in the area where it
7 says Research Chemical Company.
8 Q. So it's --
9 A. It occupied all that space to the left of the
10 line down the middle of the space.
11 Q. Okay.
12 Would you mind marking that with an "RC"?
13 A. Okay.
14 (Witness complies)
15 Q. And is that area you just marked with an "RC" the
16 extent of Research Chemicals operations?
17 A. Research Chemicals is right over there
18 (indicating).
19 Q. Does the area you just marked represent the
20 extent of Research Chemicals operations?
21 A. That is correct.
22 Q. Okay.
23 MR. BROWN: That's all I have.
24 MS. McKEITH: I have no further questions.
25 Can we go off the record?

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1 So stipulated?
2 MR. PATTERSON: So stipulated.
3 MR. BROWN: So stipulated.
4 MR. SHIMADA: Yes.
5 (Discussion off the record)
6 (Reporter's note: The deposition concluded at
7 5:14 p.m.)
8 ---
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I, the within witness, certify that the within deposition has previously been submitted to me for examination; that I have examined the same and the same has been read by me; and I have made such changes in form or substance thereon as I desire.

Date of signing: The _____ day of _____, 1998.

JOHN VADEN, Witness

Subscribed and sworn to before me this _____ day of _____, 1998.

1 STATE OF CALIFORNIA }
2 COUNTY OF EL DORADO } ss.

3 I, DEL MUNRO, Certified Shorthand Reporter of the
4 State of California, hereby certify that the witness in the
5 foregoing deposition was by me duly sworn to testify the
6 truth, the whole truth and nothing but the truth in the
7 within entitled cause; that said deposition was taken at
8 the time and place therein stated; that the testimony of
9 the said witness was reported by me and was thereafter
10 transcribed under my direction into typewriting; that the
11 foregoing is a full, complete and true record of said
12 testimony; and that the witness was given an opportunity to
13 read and correct said deposition and to subscribe the same.

14 Should the signature of the witness not be affixed to the
15 deposition, the witness shall not have availed himself of
16 the opportunity to sign or the signature has been waived.

17 I further certify that I am not of counsel or
18 attorney for either or any of the parties in the foregoing
19 deposition and caption named, or in any way interested in
20 the outcome of the cause named in said caption.

21 IN WITNESS WHEREOF, I have hereunto set my hand
22 this 3rd day of September, 1998.

DEL MUNRO, CSR
DEL MUNRO, CSR, License No. 4089

1
2 IN THE UNITED STATES DISTRICT COURT
3 CENTRAL DISTRICT OF CALIFORNIA
4 --oOo--
5
6 JOSEPH A. THOMSON and VIRGINIA THOMSON, as individuals,
7 Plaintiffs,
8 vs.) No. CV-97-5220 RAP
9 ICN PHARMACEUTICALS, INC., a
10 Delaware corporation; NUCOR CORPORATION, a Delaware
11 corporation; RHONE-POULENC, INC., a New York Corporation,
12 Defendant.
13
14
15
16
17 DEPOSITION OF
18 RAYMOND F. FISH, JR.
19
20 October 12, 1999
21 Volume I (Pages 1 - 181)
22
23 REPORTED BY: JULIE ANNE ZEIGLER, CSR 9570 JOB 84467
24
25

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10 1 Letter to A.A. Michaud from H.L. Price . 53
11 on the letterhead of the United States Atomic Energy Commission.
12 2 Letter to Nuclear Corporation of 58
13 America, Inc. Isotopes Specialties Company Division from James R. Mason with a docket stamp date of February 1, 1961.
14 3 Document entitled "Contamination 64
15 Guides."
16 4 Document which contains some pictures .66
17 of various survey instruments.
18 5 Document entitled "Atomic Energy 75
19 Commission, Title 10 - Atomic Energy (AEC Reprint Containing Amendments Issued Through July 30, 1958)."
20 6 A diagram entitled "Figure 1-2 91
21 Thompson Property Facility Map."
22 7 Document entitled "Former Isotopes 113
23 Specialties Company Site: 170 West Providencia Street Burbank, California."
24
25

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1 EXHIBITS MARKED FOR IDENTIFICATION CONTINUED
2 No. Description Page
3 8 Document entitled "Figure 3-1 Results . 118
4 of ground and floor surface gamma radiation surveys."
5 9 Document entitled "Figure 3-8 122
6 Locations and results of in-situ gamma ray spectrometry."
7 10 Document entitled "Table 3-3 123
8 Measurements of surface contamination, beta and alpha."
9 11 Document entitled "Table 3-1 Locations 126
10 with localized elevated areas of contamination."
11 12 Four-page document numbered 4-6 to 127
12 4-9.
13 13 Letter to Edgar Bailey from Ross A. ... 134
14 Scarano dated April 8th, 1996. Bates-stamped ICN 001937 to 001960.
15 14 Letter to Raymond Fish from Martha 135
16 Sharp dated December 17, 1997 re: Interview statement.
17 15 Document entitled "Guidelines for 146
18 Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" dated April 22, 1970.
19 16 Subpoena for Raymond Fish. 146
20 Plaintiff's Exhibits marked:
21 17 Document entitled "California 167
22 Radiation Control Regulations" 1966.
23
24
25

Page 3

1
2 IN THE UNITED STATES DISTRICT COURT
3 CENTRAL DISTRICT OF CALIFORNIA
4 --oOo--
5
6 JOSEPH A. THOMSON and VIRGINIA THOMSON, as individuals,
7 Plaintiffs,
8 vs.) No. CV-97-5220 RAP
9 ICN PHARMACEUTICALS, INC., a
10 Delaware corporation; NUCOR CORPORATION, a Delaware
11 corporation; RHONE-POULENC, INC., a New York corporation,
12 Defendant.
13
14 --oOo--
15 BE IT REMEMBERED that, pursuant to Notice,
16 and on Tuesday, October 12, 1999, commencing at 10:08
17 a.m. thereof, at Lewis, D'Amato, Brisbois & Bisgaard
18 LLP One Sansome Street, 14th Floor, San Francisco,
19 California, before me, JULIE ANNE ZEIGLER, a Certified
20 Shorthand Reporter, personally appeared
21 RAYMOND F. FISH, JR.
22
23 called as a witness by the Defendant ICN
24 Pharmaceuticals, Inc., who, having been first duly
25 sworn, was examined and testified as follows:

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1 --oOo-- 2 LOEB & LOEB LLP, 1000 Wilshire Boulevard, 3 Suite 1800, Los Angeles, California 90017-2475, 4 represented by MALISSA HATHAWAY McKEITH, Attorney at 5 Law, appeared as counsel on behalf of the Plaintiffs. 6 PROSKAUER ROSE LLP, 2049 Century Park East, 7 Suite 3200, Los Angeles, California 90067-3206 8 represented by GREGORY J. PATTERSON, Attorney at Law, 9 appeared as counsel on behalf of Defendant ICN 10 Pharmaceuticals, Inc.. 11 LEWIS, D'AMATO, BRISBOIS & BISGAARD LLP, 12 221 North Figueroa Street, Suite 1200, Los Angeles, 13 California 90012 represented by JOHN H. SHIMADA, 14 Attorney at Law, appeared as counsel on behalf of 15 Defendant Nucor Corporation. 16 McCUTCHEN, DOYLE, BROWN & ENERSEN, LLP, 355 17 S. Grand Avenue, Suite 4400, Los Angeles, California 18 90071 represented by BRYAN K. BROWN, Attorney at Law, 19 appeared as counsel of behalf of Defendant 20 Rhone-Poulenc, Inc. 21 --oOo-- 22 VIDEO OPERATOR: Here begins Videotape No. 23 1 in the deposition of Raymond Fish in the matter of 24 Thomson versus ICN Pharmaceuticals in the United 25 States District Court, Central District of California. Page 5	1 the witness. 2 (Witness sworn.) 3 VIDEO OPERATOR: Go ahead. 4 EXAMINATION BY MR. PATTERSON 5 MR. PATTERSON: Q. Good morning, 6 Mr. Fish. 7 A. Good morning. 8 Q. Before we get into the substance of the 9 deposition, we would all -- counsel here would all 10 like to make it clear that we're simply here to try to 11 get your best testimony today regarding events that 12 occurred a long time ago, and that there is no 13 interest on the part of any of our clients -- I 14 represent that there's no interest on the part of ICN 15 Pharmaceuticals, Inc. to sue you in this matter 16 because of facts arising out of this matter in any 17 way. There's no liability attached to your testimony 18 today. We tell you that so you feel comfortable about 19 giving your best testimony today. 20 A. Thank you. 21 MS. McKEITH: And I represent the 22 plaintiffs in this lawsuit, and we do not have any 23 interest in filing litigation against you. We simply 24 want your best recollection of what occurred in the 25 early 1960s. Page 7
1 Case number is CV 97-5220 RAP. Today's date is 2 October 12th, 1999. The time on the video monitor is 3 10:08 a.m. The video operator today is Rhonda 4 Collins, a notary public, contracted by Video 5 Solutions, a LegaLink company in San Francisco, 6 California. 7 This video deposition is taking place at 8 One Sansome Street in San Francisco and was noticed by 9 Proskauer Rose for Defendant ICN Pharmaceuticals. 10 Counsel, would you please voice identify 11 yourselves and state whom you represent. 12 MR. PATTERSON: Greg Patterson from 13 Proskauer Rose on behalf of ICN Pharmaceuticals. 14 MS. McKEITH: Good morning. I'm Malissa 15 McKeith from Loeb & Loeb. I represent Virginia and 16 Joseph Thomson, the current property owners. 17 MR. SHIMADA: Good morning. My name is 18 John Shimada of Lewis, D'Amato, Brisbois & Bisgaard 19 for Nucor Corporation, a defendant. 20 MR. BROWN: Good morning. My name is Bryan 21 Brown. I'm from McCutchen, Doyle, Brown & Enersen. I 22 represent Rhone-Poulenc. 23 VIDEO OPERATOR: The court reporter today 24 is Julie Zeigler of LegaLink of Northern California. 25 Would the court reporter please swear in Page 6	1 MR. SHIMADA: I'll join in those statements 2 on behalf of my client. 3 MR. BROWN: I will also join in those 4 statements on behalf of my client. 5 MR. PATTERSON: Q. Mr. Fish, have you 6 ever had your deposition taken before? 7 A. No. 8 Q. Have you ever testified at a trial? 9 A. I have testified at administrative 10 proceedings conducted by the Atomic Energy Commission 11 and the Nuclear Regulatory Commission. 12 Q. How many times have you testified in those 13 proceedings? 14 A. At least twice. 15 Q. What was the substance involved in those 16 first? 17 A. In the first one, it was the action on the 18 part of the commission to terminate licensed activity. 19 And in the second one, it was concerning activities 20 related to a nuclear power plant. 21 Q. How long ago was this? 22 A. The first one I testified was in 1960, and 23 the second one would have been in the mid-'70s -- '75 24 to '77. Somewhere around there. 25 Q. Was this testimony given under oath? Page 8

1 A. Yes, it was.
2 Q. Mr. Fish, you've also been given the oath
3 in these proceedings today. And that oath has the
4 same solemnity of the oath that you gave during your
5 administrative hearings. Do you understand that?
6 A. Yes, I do.
7 Q. I'm going to go over a few ground rules
8 regarding the deposition today so that we have an
9 understanding of how this should work. The court
10 reporter will be taking your testimony down and
11 transcribing it into a booklet form. You will have
12 the opportunity to review that testimony and make any
13 changes that you feel are necessary. However, I would
14 caution you that if you make substantive changes to
15 your testimony, that that -- those changes might be
16 used in any trial to impeach you or to attempt to
17 discredit you. So it's really important today that
18 you try to give us your very best testimony.
19 A. I will do that.
20 Q. It's also important that you wait until I
21 finish my question, and then you can provide your
22 answer, and I will try very hard to wait until you
23 finish your answer before I ask my next question.
24 That allows the court reporter to take accurate
25 testimony. It's very difficult if she has to try to

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1 take our testimony when we're talking over each other.
2 Okay?
3 A. I understand that.
4 Q. Responses like "uh-huh" or "huh-uh," I
5 would try to avoid because in booklet form you can't
6 tell whether it's a no or a yes. So in those
7 instances, it would be important to provide us with a
8 no or a yes. Okay?
9 If you don't understand the question that
10 we ask today, then it's perfectly fine to let us know
11 that and we'll try to rephrase it in a way that you do
12 understand. Okay?
13 A. Yes.
14 Q. Again, we're entitled to your best
15 recollection of what occurred. If you have a memory,
16 however faint it might be, we would like to hear about
17 that, but we would also caution you not to guess. Do
18 you understand the difference between having a sort of
19 vague memory and guessing?
20 A. Yes.
21 Q. We'll all try not to assume or guess today
22 because we are talking about events that occurred
23 nearly 40 years ago, and we all understand that it may
24 be difficult to remember everything. So when -- as we
25 go through today, if you simply don't remember

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1 something, it's a perfectly fine answer to say "I
2 don't remember."
3 Are you aware of any reason why you can't
4 give your best testimony today?
5 A. None.
6 Q. Are you on any kind of medication which
7 might impair your memory or your ability to testify?
8 A. No.
9 Q. What I would like to do now, Mr. Fish, is
10 get an understanding of your background. I would
11 first like to have you describe your education since
12 high school.
13 A. I have a bachelor of arts degree with a
14 major in chemistry and a minor in physics from San
15 Jose State, and I have a master's of business
16 administration from John F. Kennedy University.
17 Q. When did you receive your bachelor's
18 degree?
19 A. Bachelor's degree I received in June of
20 1951. And master's, I received in June of 1971.
21 Q. Okay. You kind of cut me short there.
22 Again, it's easy for us to start talking over each
23 other. So please try not --
24 A. Sorry.
25 Q. Could you just describe briefly the sort of

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1 range of courses that you had at San Jose State?
2 A. They had a number of courses that were
3 established for the degree which covered general
4 chemistry, organic chemistry, and analytical
5 chemistry, and physical chemistry. Those were the
6 primary courses in chemistry.
7 I took some courses in physics which
8 started with general physics and a couple of other
9 courses, and I don't remember those offhand right now.
10 And then there were other required courses to get a
11 bachelor's degree, which included foreign language and
12 some other courses like political science courses and
13 these types of courses and, of course, English.
14 Q. Did you take any courses involving
15 radioactive materials at San Jose State?
16 A. No, I did not.
17 Q. Did you go to work after graduating from
18 San Jose State in 1951?
19 A. Yes, I did.
20 Q. Where were you first employed?
21 A. I was employed in late fall of 1951 by
22 California Research and Development Company, which was
23 a subsidiary of Standard Oil of California.
24 Q. What was your position at California
25 Research and Development Company?

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1 A. I was an analytical chemist.
 2 Q. And what were your responsibilities as an
 3 analytical chemist?
 4 A. To perform all of the activities assigned
 5 to the laboratory, which was primarily the collection
 6 of samples and the analysis of those samples.
 7 Q. What would these samples be analyzed for?
 8 A. For the most part, the samples were
 9 analyzed for nonradioactive materials, calcium and
 10 water, total solids in water. These kinds of things
 11 with respect to -- however some of the work involved
 12 the analysis of urine samples for radioactive
 13 materials, including uranium and plutonium.
 14 Q. What was the purpose of conducting the
 15 urine sample?
 16 A. To make an assessment of internal
 17 disposition.
 18 Q. Where were these samples coming from? What
 19 facility?
 20 A. From the employees at the site employed by
 21 CR and D.
 22 Q. Was -- when you say "CR and D," that's
 23 California Research --
 24 A. California Research and Development.
 25 Q. And did California Research and Development

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1 Company conduct radioactive materials research?
 2 A. Yes.
 3 Q. Do you have an understanding of what that
 4 research involved?
 5 A. It was a wide-ranging research. One of the
 6 assignments was to deal with the potential machine
 7 production of enriched uranium, which was a major
 8 effort there. And then there was also other types of
 9 research work going on involving radioactive
 10 materials, and there was nonradioactive work going on,
 11 including diffusion pumps and these kind of things,
 12 which would be related to the major project.
 13 Q. Did you, yourself -- were you involved in
 14 any of this research?
 15 A. No.
 16 Q. Did you receive any training regarding
 17 testing or sampling for radioactive materials?
 18 A. I received guidance by supervision and
 19 other experienced chemists in the areas that I was
 20 working in, but in terms of a formal course, I did not
 21 have a formal course.
 22 Q. Did this work involve the use of any
 23 instruments to detect radioactive materials?
 24 A. Yes, they did.
 25 Q. What materials were those?

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1 A. They would be what we call "scalars" with
 2 various types of detectors depending upon the type of
 3 activity being evaluated.
 4 Q. Did you ever use any kind of Geiger
 5 counters during this time period?
 6 A. Not during this time period, no.
 7 Q. How long did you work at California
 8 Research and Development Company?
 9 A. I worked until mid-September of 1953.
 10 Q. Did your position change during that time
 11 period from?
 12 A. No, it did not.
 13 Q. So you were an analytical chemist from 1951
 14 to 1953 at California Research and Development?
 15 A. Yes.
 16 Q. What job did you have next?
 17 A. From there I went to work for the Nuclear
 18 Division of North American Aviation, and I don't
 19 remember the job title, but my work assignment was to
 20 evaluate the effects of radiation on organic
 21 materials.
 22 Q. And I'm sorry, when did you start working
 23 there? Do you have a sense of --
 24 A. In the late fall of 1953. November, give
 25 or take a month.

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1 Q. Where was the Nuclear Division of --
 2 A. They were located in Downey, California.
 3 Q. And where was California Research and
 4 Development Company located?
 5 A. They were located in Livermore.
 6 Q. You testified that you evaluated the
 7 effects of radiation on organic materials. Could you
 8 explain what that involved?
 9 A. Yes. That was taking various materials
 10 that the organization considered potential coolants in
 11 a reactor, in an organic reactor, and in order to
 12 determine the potential problems from these materials
 13 being subjected to radiation, we did laboratory
 14 studies of these organic materials by subjecting them
 15 in a laboratory atmosphere to radiation, and then
 16 evaluating the material.
 17 Q. What kind of organic materials were subject
 18 to the radiation?
 19 A. These were primary biphenol and tertiary
 20 phenol materials.
 21 Q. Was this work done under a license issued
 22 by the Atomic Energy Commission?
 23 A. I think it was, but I'm not sure. I know
 24 they also had activities going -- being performed
 25 under contracts with the Atomic Energy Commission.

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1 Q. Were you involved in any of that work? 2 A. No. No. 3 Q. While employed at Nuclear Division of North 4 American Aviation, did you receive any training on the 5 radiation safety or precautions, etc.? 6 A. Everybody got training on radiation safety. 7 That was -- everybody was subjected to that in order 8 to be able to work safely in that kind of an 9 environment. 10 Q. Could you describe to me what kind of 11 training you received while at Nuclear Division of 12 North America? 13 A. We would have received training on the 14 types of radiation, the effects of radiation, the 15 instruments used to measure the radiation, and 16 appropriate safety practices. 17 Q. Can you identify the instruments that you 18 were trained to use while at Nuclear Division of North 19 America? 20 A. I can't identify them. I can tell you that 21 they would have been the typical Geiger-Muller type 22 instruments and ionization-type instruments, and those 23 would have been the primary instruments in use at the 24 time. 25 Q. And what did the Geiger-Muller -- what was Page 17	1 THE WITNESS: No. That's a type of 2 instrument. 3 MS. McKEITH: Do you know how to spell 4 that? 5 THE WITNESS: G-e-i-g-e-r. 6 MS. McKEITH: Got that part. 7 THE WITNESS: And Muller, M-u-e-l-l-e-r, I 8 think. That's a guess. 9 MS. McKEITH: Thank you. 10 MR. PATTERSON: Q. How long were you 11 employed at Nuclear Division of North America? 12 A. I left them in the middle part of 1956. 13 Q. So you were there for almost three years? 14 A. Yes. 15 Q. Did you have the same position during those 16 three years? 17 A. Yes. 18 Q. Was the work that you did at Nuclear 19 Division of North America, was that in a laboratory? 20 A. Yes. 21 Q. And during that time period, did you handle 22 or use radioactive materials? 23 A. No. 24 Q. Did you maintain certain radioactive 25 materials in the laboratory? Page 19
1 it used for? 2 A. Measuring beta gamma radiation. 3 Q. Do you recall what kind of measurements 4 were used at that time to measure the beta gamma ray 5 radiation? In other words, what -- 6 A. Typically, the units were in milligram 7 or -- actually, milliroentgen or fractions of a 8 milliroentgen using the metric system. It would be in 9 tenths or hundredths. 10 Q. And what were the ionization instrument -- 11 A. Would be the same type of measurements. 12 Q. It would also test for beta and gamma 13 radiation? 14 A. Yes. Some of those instruments had the 15 capability of measuring alpha, but, primarily, the 16 problem was the beta gamma problem. A minimum amount 17 of alpha around or alpha contamination or radiation. 18 Q. Were the Geiger-Muller instruments capable 19 of detecting alpha radiation? 20 A. No. 21 MS. McKEITH: Could you spell Muller for 22 us? 23 THE WITNESS: Pardon? 24 MS. McKEITH: Geiger-Muller, the Muller. 25 Is that the brand name? Page 18	1 A. I did not, no. 2 Q. Were there radioactive materials maintained 3 in the laboratory? 4 A. Yeah, there were radioactive materials 5 everywhere. 6 Q. It was someone else's responsibility to 7 handle those? 8 A. Yes. 9 Q. Could you describe to me in a little bit 10 more detail exactly what your responsibility was in 11 that laboratory? 12 A. Yeah. I had a piece of equipment in which 13 I put my samples and it had the capability of 14 elevating the temperature on the sample, and then I 15 would subject it to radiation from a machine -- from 16 an accelerator. And then when the -- and we would 17 establish how much radiation was to be imposed upon 18 the sample, and then we would take the sample out and 19 analyze it and see what changes had occurred. 20 Q. When you left Nuclear Division of North 21 America Aviation, where did you go to work? 22 A. I went to Aerojet General Nucleonics 23 Company. They were located in San Ramon, California. 24 Q. What was your position at Aerojet General? 25 A. I don't remember the position. My Page 20

1 responsibility was to oversee the fabrication of the 2 cores for the research reactors, which the company was 3 building for universities. It was a combination of 4 research and training. 5 Q. When you say "oversee" -- could you read 6 back his answer for me, please? 7 (Record read.) 8 MR. PATTERSON: Q. Did you have a staff 9 that you oversaw? 10 A. I had two technicians working for me. 11 Q. And you were involved in fabricating 12 research reactors? 13 A. No. The core. 14 Q. The core. 15 A. The core. 16 Q. What is the core? 17 A. The core is the material that contains the 18 enriched uranium, which is the center piece of a 19 reactor. The core is where the fission takes place. 20 Q. Did you receive any training while at 21 Aerojet General? 22 A. Yes, I did. 23 Q. Could you please describe that training? 24 A. One of the courses I took was a nuclear 25 engineering course put on by the staff, and that's the Page 21	1 any instruments to measure radioactive materials or 2 contamination while at Aerojet General? 3 A. Yes, I did. 4 Q. And what instruments were those? 5 A. They would have been the Geiger-Muller and 6 ionization-type instruments. I don't remember whether 7 there was any specifically for alpha, but it would be 8 just the typical instruments that you would use for 9 the type of materials being used, which was primarily 10 enriched uranium. 11 Q. Were you ever involved while at Aerojet 12 General with cleaning up any radioactive 13 contamination? 14 A. Only to the extent that we had to keep the 15 lab clean and prevent contamination within the lab 16 from moving outside the lab. 17 Q. Was there a continual monitoring within the 18 lab of radioactivity? 19 A. Yes. 20 Q. Were you involved in doing that monitoring? 21 A. Yes. 22 Q. And where were you employed after working 23 at Aerojet General? 24 A. In September of 1959, I was employed by the 25 Atomic Energy Commission, specifically the San Page 23
1 only formal course that I remember. 2 Q. Was there any kind of informal training? 3 Do you recall? 4 A. There certainly was training in radiation 5 safety. Every plant or facility that uses radioactive 6 material has a radiation safety training program. All 7 employees are required to attend and take it. 8 Q. How long did you work at Aerojet General? 9 A. I worked there until the middle of 1959. 10 Q. Did your position change while you were at 11 Aerojet General? 12 A. Yes, it did. During the last nine months, 13 I was assigned to a group of people that were working 14 under a contract with the University of California 15 laboratory in Livermore. 16 Q. And what were your responsibilities at that 17 time? 18 A. My responsibilities at that time were 19 liaison with people at the lab in the area of high 20 explosives. 21 Q. Would these be explosives using radioactive 22 materials? 23 A. No. No, these are real high explosives 24 that are used in connection with nuclear devices. 25 Q. Did you utilize any survey instruments or Page 22	1 Francisco operations office. 2 Q. Where was that office located? 3 A. When I joined them, they were located in 4 Oakland, California. 5 Q. What was your position when you started? 6 A. It was a radiation safety specialist. 7 Q. What were your job duties as a radiation 8 safety specialist? 9 A. My duties were to inspect licensed 10 activities -- those activities licensed by the 11 Commission within the area of jurisdiction, which was 12 California, Arizona, Hawaii, and the Pacific Islands. 13 The inspections included inspections for compliance 14 with the regulations as well as for safe practices, 15 and all of the other things that went with it, 16 including the handling of radioactive wastes. 17 Q. Was there a -- were you in a particular 18 department or division of the Atomic Energy 19 Commission? 20 A. This was a group that was called the 21 inspection group, and it was just one part of the 22 operations office, but it administratively reported to 23 people in Bethesda, Maryland. 24 Q. Can you describe to me what other groups or 25 divisions were in your San Francisco office at that Page 24

1 time? 2 A. There was a radiation safety group. There 3 was a contract administration group. There was an 4 engineering group. I'm sure there were two or three 5 other groups, but I don't remember those. Those 6 people were primarily dealing with the contract 7 activities such as the Lawrence Livermore Lab, the 8 Berkeley Livermore Lab -- or the Lawrence Berkeley 9 Lab, and other contract activities as opposed to 10 licensed activity. 11 Q. Was there any group located in San 12 Francisco that was involved in issuing licenses or 13 amendments to licenses? 14 A. No. 15 Q. Did all of that come out of Maryland? 16 A. Yes. 17 Q. Did you receive training when you were 18 employed by the Atomic Energy Commission? 19 A. Yes, I did. 20 Q. Can you describe that training for me? 21 A. There were two or three courses at Argonne 22 National Laboratory put on specifically for the 23 inspection groups. One concerned various 24 instrumentations and measuring all types of radiation. 25 Another one dealt with, specifically, with Page 25	1 limitations of the instrumentation. It would have 2 involved evaluating geometries with respect to the 3 measurements. I think that's the best I can do for 4 you. 5 Q. Also, just to -- if you ever feel like you 6 need to take a break, just let us know and we'll go 7 off the record. 8 A. All right. 9 Q. Don't feel like you have to keep going if 10 you need to stop. Okay? 11 A. All right. Thank you. 12 Q. What kind of instruments were involved in 13 this training while you were at Argonne Lab? 14 A. I don't remember, except that it would 15 cover all of the types of instruments in use at the 16 time. 17 Q. These were instruments to measure 18 radioactive activity? 19 A. These were instruments that were typically 20 used by the radiation safety people to measure various 21 types of radiation, direct levels of radiation, as 22 well as contamination levels of activity and removable 23 activity. 24 Q. Could you describe to me the types of 25 instruments that were available although I understand Page 27
1 reactor-related activities. I have taken -- there was 2 a two-week course put on for environmental activities 3 related to licensed activities. There was one or two 4 course involved in what I would describe as nuclear 5 engineering, understanding reactors and the 6 components. I'm sure there were some other education, 7 but that sort of summarizes it. 8 Q. The two or three courses that you took 9 at -- was it Argonne Laboratories? 10 A. Yes. 11 Q. Was that done at the time that you became 12 employed by the Atomic Energy Commission? 13 A. It was done over a period of time. 14 Q. Let me ask you: Did you receive any 15 training prior to actually being in the field, so to 16 speak? 17 A. No. These were courses that were given 18 after I had actually done inspections. 19 Q. You described at least one of the courses 20 as a course on instrumentation? 21 A. Yes. 22 Q. Could you tell me what that course 23 involved? 24 A. It would involve the use of 25 instrumentations. It would have involved the Page 26	1 you don't remember exactly what you were trained on. 2 A. They would have involved the Geiger-Muller 3 types, which, of course, included the pancake type of 4 Geiger-Muller instrument. It would have included 5 ionization types, which -- both the Cutie Pie and the 6 Juno were examples. It would have included 7 instruments for measuring alpha contamination with a 8 large or a rectangular screen, thin Mylar window. 9 Those are the primary types of instruments it would 10 have involved. 11 Q. What is a pancake type Geiger-Muller? What 12 is that? 13 A. A pancake-type Geiger-Muller is a circular 14 detector, normally with a shielded top and a thin film 15 that is used to collect the radiation from 180 degrees 16 so that it's basically shielded from from the top, but 17 measures only that that comes from -- through the 18 bottom, through the thin film, and it's a -- it works 19 the same way that a Geiger-Muller did. 20 Q. Did it measure the radioactivity in 21 milliroentgen or millirems? 22 A. It typically was in milliroentgens. 23 Q. Can you tell me what the difference is 24 between a milliroentgen and a millirem? 25 A. Yeah. The difference between a Page 28

1 milliroentgen and a millirem is related to the
2 different effects that different radiations have on
3 individuals. Beta and gamma radiation have a
4 conversion factor of one, which means it reads
5 directly. Neutrons have a factor of 10, which means
6 that 1 milliroentgen, which is not the terminology
7 used for neutron, but 1 would be 10 in terms of
8 millirem. In the case of alpha, I think it was a
9 factor of 20. But the difference between
10 milliroentgen and millirem is to account for the
11 different effects the radiation have.

12 **Q. You testified that you had some training in**
13 **evaluating geometry measurements or geometric**
14 **measurements?**

15 A. They would discuss the issue of geometry.
16 If you have a situation where part of the source is
17 shielded, you need to recognize that, because the
18 radiation goes in all directions. So that if you have
19 something in the way, it would shield it. So you
20 would not get total measurement of the radiation
21 because some of it would be shielded out, and you need
22 to be aware of those effects.

23 **Q. So the placement of your measuring**
24 **instrument might affect what reading you got?**

25 A. It can have an effect, yes.

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1 **Q. And was the -- so you were getting training**
2 **in evaluating the placement of the measuring**
3 **instruments as compared to the source; is that what**
4 **this course involved?**

5 A. In essence, that's right. What it was --
6 the attempt was to make you understand what happens if
7 certain situations occur, and you need to be aware of
8 them so that when you make your valuation, you
9 understand what outside effects have occurred that
10 could make a difference on the end-reading that you
11 get.

12 **Q. I see. With respect to the alpha, beta,**
13 **gamma rays, are any of those waves more easily**
14 **blocked, for lack of a better word, than the others?**

15 A. Yeah. Alpha is the easiest to block, and
16 typically you can block it with one or two sheets of
17 paper. Betas are more energetic, but are also
18 easily -- you can easily shield them. And gammas are
19 the most difficult to shield.

20 **Q. What would you use to shield a gamma**
21 **radiation, generally? What types of materials?**

22 A. The best one, of course, would be lead, but
23 concrete was used to shield for gammas. I'm sure
24 heavy metals, steel plates and things like that would
25 also be used in concert with something else. A lot of

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1 it depends upon how much activity is there.

2 **Q. Did you have any training in**
3 **decontamination procedures while at the Atomic Energy**
4 **Commission?**

5 A. No formal training.

6 **Q. Did you have some kind of on-the-job**
7 **training, so to speak?**

8 A. Yeah. The issue of decontamination was
9 discussed and exchanges among inspectors and
10 supervision and things, and those from headquarters
11 would take place. And, of course, there was always
12 documents to read where this had been written up.

13 **Q. In 1961, what were the procedures used at**
14 **that time, generally, to decontaminate a facility that**
15 **was contaminated with radioactive materials?**

16 MR. SHIMADA: Objection; the question is
17 overbroad and vague.

18 MS. McKEITH: Also it's vague as to whether
19 you're talking about decontaminating an area that will
20 be used again for radioactive source work versus an
21 area that would be decommissioned. I think if you
22 clarified it, it would help everybody.

23 MR. PATTERSON: Q. The attorneys are
24 going to be putting objections on the record so that
25 they can preserve them if we use this testimony in

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1 later proceedings.

2 Did you understand the question or do I
3 need to clarify it?

4 MS. McKEITH: Sometimes the attorneys
5 object because the question is actually vague and we
6 want to make sure the record is very clear.

7 THE WITNESS: Would you restate it, please?

8 MR. PATTERSON: Q. All right. With
9 respect to a facility, that -- let's say, a licensed
10 facility licensed by the Atomic Energy Commission --
11 what I'm asking is just a general case question of
12 what kinds of methods were used at that time to clean
13 radioactive materials contaminated in the facility.

14 A. One technique would have been the use of
15 chemicals or soaps or detergents or things like this
16 in a liquid medium and then using some kind of a rag
17 or some other thing to wash it and take it up, which
18 would be used typically for surface type of things.
19 In the case of where it has gotten down in between
20 parts of linoleum or other similar materials, it would
21 involve taking those materials up. If it got into a
22 concrete crack -- surface crack or something like
23 that, it would then have to be chipped out. Those
24 are, basically, the techniques and, of course, you
25 know, the various ways of using -- you could use

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1 mechanical equipment like they use to clean floors,
2 you know; that would be the same as using a rag or
3 something, except it would just be using a mechanical
4 mechanism to do the physical removal.

5 **Q. Was the Atomic Energy Commission involved**
6 **in developing procedure for cleaning up radioactive**
7 **contamination to be used by licensees?**

8 A. Not our group.

9 **Q. Was there another group that you're aware**
10 **of that did that?**

11 A. If that did occur, it would have occurred
12 under the developmental part of the Atomic Energy
13 Commission, which is the other nonregulatory group,
14 and I don't know whether they were doing that or not.

15 **Q. You had mentioned that you took a course in**
16 **environmental activities and licensed activities?**

17 A. Yes.

18 **Q. What did that course involve?**

19 A. At that point in time, the licensing
20 process was getting involved or had become involved in
21 the environmental aspects of building primarily
22 nuclear power plants, but also some of the larger
23 licensed activities had an environmental component.
24 It involved the gamut of doing the preliminary
25 environmental assessments prior to the reactor

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1 becoming operational. It included, for instance,
2 where activities occurred out in the ocean, it would
3 involve making sure that no oil was dropped out there
4 or, if any oil was, they had a program to collect it
5 and grease control and all of these types of things.
6 And it also involved the environmental samples
7 associated with evaluating the total environment
8 situation prior to the facility becoming operational.
9 **Q. When you say "environmental situation," do**
10 **you mean the effect of a nuclear power plant operating**
11 **around the surrounding environment?**

12 A. No. It was, for instance, at Rancho Seco
13 it involved looking at the animals that were there and
14 they discovered a three-legged toad. It involved
15 making assessments of radioactive material that may be
16 there before any was brought on the site, so that you
17 know the background levels. And there were some
18 problems at Rancho in this area.

19 It involved an evaluation of the fish
20 population out in the ocean areas where the cooling
21 waters would be discharged and collected so that, at
22 some point down the line, you could make a comparison
23 to see whether the activities of the facility had an
24 effect on it. It was basically what we call
25 background -- establishing background information.

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1 **Q. Did you receive any training on how to**
2 **survey a facility for radioactive contamination?**

3 A. Well, I guess you would say I received it
4 every time I received training on radiation safety,
5 because that's basically telling you how to -- or
6 showing you how to make radiation measurements, and
7 you make the measurements in order to find the
8 contamination.

9 **Q. Aside from the survey instruments that you**
10 **described, the Geiger-Muller and the ionization-type**
11 **instruments, were there other mechanisms used to test**
12 **for radioactive materials?**

13 A. Later on, sodium iodide crystal and --
14 detectors were developed and used, and I'm not just
15 sure what others because we used -- at some point in
16 time we had a sodium iodide detector.

17 **Q. Did you have any training on how to take a**
18 **wipe sample to test for radioactive material?**

19 A. No formal training, no.

20 **Q. Did you have some on-the-job experience on**
21 **how to take wipe samples?**

22 A. Yeah, there was on-the-job experience.
23 There were discussions of how do you take a sample to
24 make a representative, and then you get into
25 discussions of how big an area are you talking about,

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1 and how do you -- what techniques to use to randomly
2 sample that area and what would be the best way to do
3 it. It was talk among all of us.

4 **Q. When you say discussions, would you have**
5 **meetings where these issues were discussed?**

6 A. No formal meetings, no.

7 **Q. While in the office, you discussed how to**
8 **take representative wipe samples, for instance?**

9 A. Yes.

10 **Q. How long did you work at the Atomic Energy**
11 **Commission?**

12 A. I worked until the Atomic Energy Commission
13 was eliminated and divided into the two groups, which
14 was in 1975. And at the time of dissolution, I went
15 with the group that became the Nuclear Regulatory
16 Commission.

17 **Q. You testified when you first went to work**
18 **at the Atomic Energy Commission, you were a radiation**
19 **specialist. Did your position change at any time**
20 **while with the Atomic Energy Commission?**

21 A. Yes. Around 1980, I got involved in
22 emergency preparedness at nuclear power plants, and
23 then I eventually made section chief in charge of
24 emergency preparedness.

25 **Q. I'm sorry, in charge of --**

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1 A. Emergency preparedness.
 2 Q. Now, you say in 1980, at that point you
 3 were with the Nuclear Regulatory Commission?
 4 A. Yes.
 5 Q. So was it -- from 1959 to 1975, were you a
 6 radiation safety specialist?
 7 A. I was a radiation specialist.
 8 Q. Did your duties or responsibilities change
 9 during that time period from '59 to '75?
 10 A. Yes, it did. In around 1968 or 1969, my
 11 responsibilities changed to the extent that my
 12 assignments were with large licensed facilities like
 13 Vallecitos and for nuclear power plants, and the
 14 general types of licenses I was not inspecting
 15 anymore.
 16 Q. And did you continue with those
 17 responsibilities from approximately '68, '69 through
 18 1975?
 19 A. Yes.
 20 Q. Now in 1975 when AEC broke up into two
 21 parts, you went with the Nuclear Regulatory
 22 Commission?
 23 A. That's correct.
 24 Q. What was your position at that time?
 25 A. It was the same.

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1 Q. Radiation safety specialist?
 2 A. Yes.
 3 Q. And then in 1980, you moved to emergency
 4 preparedness of nuclear reactor incidents, I suppose;
 5 is that correct?
 6 A. Basically, emergency preparedness was the
 7 inspection and review of emergency plans at nuclear
 8 power plants, but it also included the response of the
 9 agency to a nuclear accident, and the program that the
 10 agency had for those areas. It also involved
 11 interfaces with the states on emergency preparedness.
 12 Q. Did you assist in developing emergency
 13 preparedness plans?
 14 A. For the agency, yes.
 15 Q. And did you evaluate emergency preparedness
 16 plans of various facilities?
 17 A. Yes, those within the region.
 18 Q. Would you provide comments to the facility,
 19 perhaps, on how to improve their emergency
 20 preparedness or deficiencies, that kind of thing?
 21 A. The agency's inspectors were not allowed to
 22 do that. We were told to make an evaluation and
 23 either say yes, it met the requirements, or no, it
 24 didn't meet the requirements.
 25 Q. So there were specific emergency

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1 preparedness requirements in place at that time?
 2 A. There was an extensive modification to the
 3 requirements in the regulations as the result of the
 4 Three Mile Island accident, and there was an extensive
 5 evaluation of the reactor sites to see how they were
 6 coming along with respect to implementing those new
 7 requirements. And then having gone through that
 8 initial evaluation at all sites, then, from thereon,
 9 it was routine inspections of those activities.
 10 Q. Do you remember in 1960, '61, the
 11 personnel -- the names of the personnel in your
 12 inspection group?
 13 A. Yes.
 14 Q. Could you give me those names?
 15 A. The director was Richard W. Smith. The
 16 assistant director was Gene Blanc, B-I-a-n-c. The
 17 inspectors included Sam Cassalina, William Cooley,
 18 Herb Young. There was a reactor inspector, Robert
 19 Engleken. There were two secretaries, Ida
 20 Alexander --
 21 Q. That's very good.
 22 A. -- and Barbara Govia. And there was an
 23 investigator and I don't remember his name.
 24 Q. Do you keep in contact with any of these
 25 people?

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1 A. Bill Cooley has passed away. I see Gene
 2 Blanc periodically. Gene lives in Moraga.
 3 Q. Here in Moraga, California?
 4 A. Moraga, California. And I do not have any
 5 contact with Dick Smith. I see Ida Alexander
 6 periodically.
 7 Q. Do you know where she lives?
 8 A. She lives in Orinda, California.
 9 Q. What about Sam Cassalina?
 10 A. Sam Cassalina was -- left the office in the
 11 early '60s, and I heard of some of his activities for
 12 a few years and have not had any further contact.
 13 Q. And what about Herb Young?
 14 A. Herb Young, in the early '60s, moved back
 15 to the office established in Atlanta, Georgia, and I
 16 have not heard anything since.
 17 Q. You may have mentioned this already, but
 18 Bill Cooley?
 19 A. Bill Cooley is passed away.
 20 Q. What about Richard Smith?
 21 A. Dick lives in I think it's Woodbe Island in
 22 Puget Sound up near Seattle, Washington.
 23 Q. Could you describe, in general, what the
 24 responsibilities were of the inspection group?
 25 A. The inspection group's responsibilities

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1 were to evaluate the licensed activities with 2 compliance of the radiation safety and other 3 requirements in the regulation. It was to evaluate 4 the safety practices. It was to evaluate the handling 5 of radioactive wastes. In the case of nuclear 6 reactors, the radiation specialist's function would 7 also include the environmental programs. I think 8 those were the primary areas of responsibility. 9 MR. PATTERSON: Can we go off the record 10 for a couple minutes. 11 VIDEO OPERATOR: Going off the record at 12 11:04. 13 (Break in proceedings.) 14 VIDEO OPERATOR: We're back on the record 15 at 11:12. 16 MR. PATTERSON: Q. Mr. Fish, how long did 17 you work at the NRC? 18 A. Until I retired in December of 1989. 19 Q. Did you have the same position from 1980 20 through December of 1989 while at the NRC? 21 A. Yes. 22 Q. We were talking, before we went off the 23 record, about the general responsibilities of your 24 group, and we talked about evaluating licensing 25 activity, evaluating safety practice, handling of Page 41	1 terminated. 2 Q. When you say "request from the licensing 3 group" -- 4 A. Yes. 5 Q. -- was this the licensing group that was 6 located in Bethesda? 7 A. Yes. Organizationally, the inspection 8 function and the licensing function were separate. 9 Q. As an inspector, how would you be informed 10 of the AEC requirements, new regulations or guidance? 11 A. We each had copies of the regulations, and 12 as amendments were issued, we would get those 13 amendments to put in our document, in our book. They 14 were working documents. 15 Q. Did you periodically receive any kind of 16 guidance documents from the Atomic Energy Commission 17 that weren't in the form of regulations that -- 18 A. The office received copies of the guidance 19 documents, and typically those would be circulated to 20 the inspectors, and then ultimately wind up in a 21 central location, which one might call a library. 22 Q. What kind of guidance documents did you 23 receive? 24 A. They covered all kinds of guidance 25 documents that would be -- they were primarily Page 43
1 radioactive wastes. Would you be involved in actually 2 going to a licensed facility and reviewing their 3 procedures? 4 A. Yes. 5 Q. Would your group also be responsible for 6 overseeing the decommissioning of a facility? 7 A. We would be involved in -- to the extent 8 that the commission was involved, yes, we were part of 9 that process. 10 Q. And what would be your responsibilities as 11 part of that process? 12 A. The process involved, from our perspective, 13 receiving a request from the licensing group that the 14 licensee had requested the authority to abandon the 15 facility, and would have been required to provide a 16 survey of the facility, which would have been provided 17 to us, and licensing would request that we make a 18 confirmatory survey. We would likely make the 19 confirmatory survey. And once we had confirmed that 20 the release requirements established by the licensing 21 group had been met, we would have submitted a written 22 report to our headquarters confirming that the release 23 criteria had been met. That report would have been 24 then transmitted to the licensing people with a 25 statement saying that we recommend that the license be Page 42	1 intended to provide guidance to the licensees as 2 oppose to internally. At some point in time, they 3 started issuing regulatory guides, and, of course, in 4 addition to those, there were the group guides, for 5 instance, the NCRP, the National Council on Radiation 6 Protection and measurement had documents. We would 7 have access to those, too, as well as the internal 8 documents that were available to licensees. 9 Q. You stated that your group would receive a 10 request from the licensing group -- let's back up a 11 little bit. Was it your understanding that if a 12 licensee wished to terminate the license and 13 decommission the property and have it released for 14 unrestricted use, that that request would be made to 15 the licensing group in Bethesda, Maryland by the 16 licensee? 17 A. That's correct. 18 Q. And then the licensed group, would they 19 contact your office? 20 A. They would either send a memo requesting a 21 confirmatory survey to our headquarters people, which 22 would then be transmitted to the field, or in some 23 cases, they might send the request directly to the 24 field. 25 Q. Would the request generally be in writing? Page 44

1 A. Always in writing.
 2 Q. And would you be provided with whatever
 3 survey the licensees had conducted on the property at
 4 that time?
 5 A. Yes, we would.
 6 Q. Would you review those surveys prior to
 7 conducting your own survey?
 8 A. We would.
 9 Q. How would you be informed of the
 10 requirements related to the level of radiological
 11 contamination which would be allowed on the property
 12 in the event it was going to be released for
 13 unrestricted use?
 14 A. A copy of the letter of the licensee would
 15 also be sent to our office.
 16 Q. And would the letter to the licensee
 17 contain the requirements the licensee was to meet in
 18 order to obtain its termination of its license and
 19 release of the property?
 20 A. It would.
 21 Q. During the 1961 time period, were there any
 22 regulations which provided the levels of radiological
 23 contamination allowed on a property intended to be
 24 released for unrestricted use?
 25 A. No.

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1 Q. Were the requirements imposed on a licensee
 2 seeking to terminate the license essentially on a
 3 case-by-case basis?
 4 A. They were.
 5 MS. MCKEITH: Could you reread that last
 6 question?
 7 (Record read.)
 8 MR. PATTERSON: Q. When I'm referring to
 9 "requirements," I mean the clean-up criteria for that
 10 facility to meet in order to terminate their license
 11 and release the property and have the property
 12 released for unrestricted use. Those criteria were on
 13 a case-by-case basis?
 14 A. They were.
 15 Q. Now you indicated that your group would
 16 conduct a confirmation survey?
 17 A. Confirmatory survey.
 18 Q. What did that involve?
 19 A. Well, it involved making a survey similar
 20 to what the licensee had performed, but just to
 21 confirm his results, and we would make the same types
 22 of surveys. We would make direct radiation
 23 measurements. We would also take wipes to assess the
 24 removable contamination. It wouldn't necessarily be
 25 in the same areas, but it could be, that the licensee

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1 did. Ours was a random survey.
 2 Q. So you conducted direct radiation
 3 measurements. Do you recall what instruments you were
 4 using in 1961?
 5 A. Yeah. We were using a Geiger-Muller survey
 6 instrument.
 7 Q. Any other instrument?
 8 A. Not that I can remember.
 9 Q. And you also recall conducting or taking
 10 wipe samples?
 11 A. Yes.
 12 Q. Would these wipe samples be taken randomly
 13 through the facility?
 14 A. Yes.
 15 Q. Would you take wipe samples of both
 16 restricted and unrestricted areas?
 17 A. Yes.
 18 Q. And would you take direct radiation
 19 measurements of both restricted and unrestricted
 20 areas?
 21 A. Yes.
 22 Q. Once you had conducted your survey, what
 23 would you do next?
 24 A. If there were levels of radiation or
 25 removable contamination in excess of the limits stated

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1 to the licensee, we would identify those areas and the
 2 licensee would have to do additional decontamination,
 3 and then we would come back and make additional
 4 surveys.
 5 Once all of the results of our confirmatory
 6 survey show that the release criteria had been met, we
 7 would then summarize or document the results of our
 8 survey in a report and send it to our headquarters
 9 with a transmittal memo stating the fact that the
 10 release criteria had been met, and then our inspection
 11 headquarters would then transmit it to the licensing
 12 people with the same request.
 13 Q. Would the transmittal memo contain a
 14 recommendation that the license be terminated?
 15 A. It's likely that the one going from our
 16 headquarters to the licensing people would say that
 17 the release criteria had been met and that we
 18 recommend that the license be terminated, but since I
 19 didn't generate those memos, I couldn't state any more
 20 than I have.
 21 Q. Who would generate those memos within your
 22 group?
 23 A. Within our group, the report would have
 24 been prepared by myself or the inspector performing
 25 the confirmatory survey. That same person would have

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1 drafted a transmittal memo for signature of the 2 supervisor or director for transmittal to our 3 headquarters. The supervisor would then make 4 appropriate changes that he wanted, essentially, in 5 the transmittal memo, but if he had questions about 6 the inspection or the confirmatory survey report, that 7 would be resolved before it was put in final form, 8 then the package would be sent to headquarters. 9 Q. Were the confirmatory surveys always 10 documented, in your experience? 11 A. Always. 12 Q. And would there -- in your experience, 13 would there also have been some sort of transmittal 14 from your group to licensing in Maryland? 15 A. The transmittal from our group in the field 16 would be to the inspection function and headquarters, 17 and then the inspection function and headquarters 18 would then transmit it over. 19 Q. You mean the inspection function and 20 headquarters in Bethesda, Maryland? 21 A. Right. 22 Q. And they would transmit it to the licensing 23 portion of the AEC? 24 A. Right. 25 Q. Prior to conducting a confirmatory survey, Page 49	1 would address the change and why the change and 2 programs that would be related to it. 3 Q. Would you interview any representative of 4 the licensee prior to conducting -- prior or during 5 the time you were conducting your survey? 6 A. Confirmatory survey? 7 Q. Confirmatory survey. 8 A. There was contact made with the licensee to 9 establish a visit to make the confirmatory survey, and 10 there was always initially a licensee present. For 11 the most part, there was always a licensee 12 representative present, but it's conceivable on large 13 releases that we would be on our own, but in this 14 case, that would not be so. There would have been a 15 licensee person there at all times. 16 Q. What part of the Atomic Energy 17 Commission, what division, would actually terminate 18 the license? 19 A. The licensing people. 20 Q. And that would be the licensing group out 21 of Bethesda, Maryland? 22 A. In Bethesda, Maryland. 23 Q. And would you generally -- would your 24 office receive copies of any notice to the licensee 25 that the license had been terminated at that facility Page 51
1 would you generally attempt to find out information 2 about the property first? 3 A. The inspection file would be completely 4 reviewed before it went and that would include the 5 license, the backup documentation to the license, and 6 then the inspection reports, previous inspection 7 reports. 8 Q. So you would review the actual license 9 issued to that licensee prior to conducting your 10 confirmatory survey? 11 A. Yes. 12 Q. And you talked -- 13 A. That includes any amendments that had been 14 issued to it. 15 Q. What backup docs would these files 16 typically contain? 17 A. The backup documentation is documentation 18 submitted by the licensee to the licensing people, 19 initially, for the initial issuance of the license. 20 It would contain the complete program of what they 21 were going to do and the radiation safety program and 22 all of the other things that the licensing people 23 required to be submitted before they would issue a 24 license. It also included any documents that the 25 licensee submitted to have amendments issued, which Page 50	1 if you had conducted a confirmatory survey? 2 A. Yes, we would have gotten a copy of the 3 termination letter. 4 Q. And what division would authorize -- would 5 that same division authorize the release of the 6 property for unrestricted use? 7 A. The letter typically stated that the 8 licenses were terminated and the property could be 9 used for unrestricted use. 10 Q. Mr. Fish, as you know, this case involves a 11 property located at 170 West Providencia Street in 12 Burbank, California. Are you familiar with that 13 property? 14 A. I am. 15 Q. And were you involved in conducting the 16 confirmatory survey of that property? 17 A. I made the confirmatory survey. 18 Q. Do you recall what regulations or 19 guidelines were in place at that time with respect to 20 the cleanup criteria for the Providencia property? 21 A. No, I do not. 22 Q. You don't remember? 23 A. I don't remember. 24 MR. PATTERSON: I'm going to show Mr. Fish 25 a document that we'll mark as Exhibit 1 to Mr. Fish's Page 52

1 deposition. Have this marked, please.
2 (Whereupon, Defendant's
3 Exhibit 1 was marked
4 for identification.)
5 MR. PATTERSON: Q. Mr. Fish, I'll ask
6 that you review this document for a moment.
7 A. Yes.
8 Q. Mr. Fish, this documents appears to be a
9 letter from the Atomic Energy Commission to Isotopes
10 Specialties Company regarding the criteria that was to
11 be used at a property located at 703 Main Street
12 Burbank for purposes of terminating the license. Is
13 that a fair summary of the document?
14 A. Yes, it is.
15 Q. And would this typically be the kind of
16 letter that the licensee would receive during this
17 time period regarding the criteria for that
18 property -- the cleanup criteria for that property?
19 A. Yes.
20 Q. Now, there's a listing of four criteria on
21 the first page. Do you see that?
22 A. Yeah, I do.
23 Q. The first criteria is that: "The
24 radioactive contamination must not be readily
25 removable from the property." Can you explain to me,

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1 if you know, what might be meant by what is "readily
2 removable"?
3 A. The purpose of the wipes was to detect or
4 to assess the compliance with this requirement. We
5 had some numbers that we used to define "readily
6 removable" because it doesn't say, so we had to define
7 it. And that would have been acceptable -- the
8 numbers we were using would have been acceptable to
9 the licensing people, but I don't remember what the
10 numbers are.
11 Q. What were the -- when you say "numbers," do
12 you mean levels of detectable contamination?
13 A. Yeah. When you take a wipe, you put it in
14 a scaler and measure it, and you get -- the end result
15 is counts per minute from that wipe. The wipe would
16 have been taken over an approximate area so that we
17 can now get the results in counts per minute per area,
18 typically a hundred square centimeters. We then
19 convert it to dpm, which is an efficiency conversion
20 on the instrument. And then that number, the end
21 result, which would be in disintegrations per minute
22 per hundred square centimeters, would then be used to
23 assess the amount of removable activity for that area
24 sample.
25 Q. You don't recall today what those numbers

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1 were in 1961?
2 A. No, I don't. I don't remember what they
3 were.
4 Q. Does reading the four requirements on this
5 letter refresh your recollection as to what might have
6 been the requirement at Providencia Street?
7 A. The second requirement of 2 millirem in any
8 one hour at a distance of 3 inches is something that
9 seems reasonable to me at this point in time, that
10 that's the number that would have been used because
11 typically 2 millirem was an accepted number for a
12 maximum radiation level.
13 MR. SHIMADA: Move to strike as
14 nonresponsive as to what his recollection was.
15 THE WITNESS: The third one does not. I
16 don't recognize that number. There was a second
17 number at a higher distance, but that number is -- I
18 don't recall.
19 MR. PATTERSON: Q. Okay. And would --
20 A. The fourth one is what we typically used.
21 Q. The fourth one, it says: "No radiation
22 attributable to byproduct material contained in drain
23 lines or pipes located within the boundaries of the
24 property shall be detectable by surface measurements
25 made with a scintillation-type survey meter." So you

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1 would typically at that time conduct surveys of the
2 drain lines and pipes?
3 A. We would have.
4 Q. This indicates that the radiation level at
5 3 inches from the surface was -- what's the
6 implication of the distance 3 inches? Why do you
7 think that would have been used?
8 MR. SHIMADA: As phrased, the question
9 calls for speculation.
10 MR. PATTERSON: Q. Do you understand the
11 question or would you like me to try again?
12 A. I think I understand the question. It's an
13 attempt to or it is establishing a maximum amount of
14 radiation that is allowable at the facility to meet
15 the de minimus requirements. It's related to
16 potential exposure to individuals occupying that space
17 in an unrestricted use. Sets the upper limit.
18 Q. Let me ask it a different way. Is the --
19 would the distance between the measuring instrument
20 and the radioactive source have an effect on what you
21 were reading on your instrument?
22 A. Yes. There is the -- you set it at an
23 established distance because if you didn't set an
24 established distance your -- you wouldn't be able to
25 relate one reading -- a reading in one location to a

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1 reading in another location. So it had to be an
2 established distance. And the distance that you
3 measured -- you make the measurements in has an effect
4 on the reading. The farther away you are, the less
5 reading you get.

6 Q. Do you remember what the detection limits
7 of the instrument that you would use in 1961 to
8 conduct a confirmatory survey, what those detection
9 limits were of the instrument?

10 A. The minimum detectable would have been a
11 tenth of an mr per hour. There were some instruments
12 that went down to a hundredths of an mr per hour, but,
13 at this point in time, I can't differentiate between
14 those two with respect to the instrument I used.

15 Q. When you say "mr per hour," what does "mr"
16 stand for?

17 A. That means milliroentgens per hour.

18 Q. Would the instrument have a meter on it
19 which would show you in some fashion what you were
20 detecting?

21 A. Yes.

22 Q. And would the meter be in divisions of
23 what? Milliroentgens --

24 A. Milliroentgen per hour. And it had several
25 scales on it. I mean, one was -- times one, 1 time

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1 10, 1 times 100.

2 Q. What were the scales used for?

3 A. To allow the instrument to record higher
4 levels of activity. It would change the scale from
5 saying -- from one-tenth of milliroentgen per hour to
6 one milliroentgen per hour. You could then switch it,
7 and then it would go from 1 to 10, and times a hundred
8 would go from 10 to 100 just to allow you to get
9 higher readings and record on the meter.

10 Q. And what would -- what would cause you to
11 switch from different scales? Would that be dependent
12 upon the amount of radioactivity that's occurring in
13 the area you're testing?

14 A. If the meter shows that I'm off scale high,
15 I then have to switch it to a higher level to get it
16 back to on scale so that I could make a determination
17 of what it was.

18 Q. And is this scale sort of a like a -- I'm
19 trying to imagine -- like an arrow -- like with a
20 speedometer would have where you see an arrow move
21 across the scale? Is that what these counters have?

22 A. Yes.

23 Q. Mr. Fish, I'm going to show you a second
24 document which I would like the court reporter to mark
25 as Exhibit 2.

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1 (Whereupon, Defendant's
2 Exhibit 2 was marked
3 for identification.)

4 MR. PATTERSON: Q. Take a moment to just
5 take a look at that document. There's a docket number
6 on the top right-hand corner. Do you see that? It
7 says 27-7?

8 A. Yes.

9 Q. Do you know what that refers to?

10 A. Yeah. Each licensee for each license was
11 given -- there was a docket number assigned to it. So
12 it relates to a licensee and a license of that
13 licensee.

14 Q. Would that docket number be assigned by the
15 Atomic -- by the AEC?

16 A. In this case, it would have been assigned
17 by the AEC, yes.

18 Q. And there's a sort of a stamp. You see
19 that, where it says "Docketed February 1st, 1961"?

20 A. Yes.

21 Q. "Division of," I think, it says "Licensing
22 and Regulation"?

23 A. Um-hum.

24 Q. What was that purpose of that stamp, if you
25 know?

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1 A. Just to acknowledge receipt of it and its
2 docketing.

3 Q. What is meant by "docketing"?

4 A. It's an assignment. That's their way of
5 assigning all items related to a specific licensee and
6 specific license. Docketing means that it has been
7 received and acknowledged and from there it tends to
8 become a -- it might be published in the federal
9 register to indicate it had been received.

10 Q. When you say "received and acknowledged,"
11 received and acknowledged by whom?

12 A. In this case, it was received by the
13 Division of Licensing and Regulation.

14 Q. In the upper left-hand corner.

15 A. Yes.

16 Q. There's a some reference to -- there's some
17 numbers there, it says, "(4-580-6, 7, 8, and C-53
18 perhaps 52)," do you see that?

19 A. Yes.

20 Q. Do you know what that refers to?

21 A. Yes.

22 Q. What does that refer to?

23 A. The first one refers to license No. 4-,
24 looks like, 580-6. That's a license. The 7 refers to
25 license No. 4-580-7. The third one is 4-580-8. So

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1 those are three byproduct material licenses. The
2 other number, the C-5352 refers to a source material
3 license.
4 Q. This letter is a little bit difficult to
5 read, so I'm going to read a portion of it. It states
6 that this is a letter to Nuclear Corporation of
7 America, Inc., Isotopes Specialties Company Division,
8 170 West Providencia, Burbank, California.
9 "Gentlemen, we were advised by telegram dated January
10 3rd, 1961 from Mr. John Vaden, that Isotopes
11 Specialties Company, Division of Nuclear Corporation
12 of America, Inc., had been sold to U.S. Nuclear
13 Corporation. Further, by letter dated January 4th,
14 1961, U.S. Nuclear Corporation requested an amendment
15 of its license No. 4-5241-1 to authorize the
16 decontamination of the Nuclear Corporation of America,
17 Inc., Isotopes Specialties Company Division
18 Laboratory premises located at 170 West Providencia,
19 Burbank, California."
20 Mr. Fish, did you know Mr. John Vaden?
21 A. Yes.
22 Q. How do you know him?
23 A. Through my responsibilities as an
24 inspector.
25 Q. Do you know who he worked for at that time?

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1 A. At that time, I don't remember who he
2 worked for.
3 Q. Do you know who he worked for at any time
4 that you recall?
5 A. Well, at some point in time, I know he
6 worked for the licensing people in the NRC.
7 Q. Let me ask it a different way. Do you have
8 a recollection that Mr. Vaden worked for Isotopes
9 Specialties Company at one point?
10 A. At this point in time, I do not remember
11 that fact.
12 Q. The letter indicates that U.S. Nuclear
13 Corporation was requesting an amendment of its license
14 to authorize the decontamination of the 170 West
15 Providencia property. Would an amendment to its
16 license be necessary for it to conduct -- for U.S.
17 Nuclear Corporation to conduct this work if it wasn't
18 part of their original license?
19 A. Yes, it would.
20 Q. I'm going to continue reading for a second
21 here. "From informal communications we understand
22 that another division of your corporation will
23 continue to occupy these facilities for purposes not
24 covered by AEC licensing. The Nuclear Corporation of
25 America, Inc., Isotopes Specialties Company Division,

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1 has a legal licensee listed in license numbers
2 4-580-6, , 4-580-7, , 4-580-8 and C-5352, and is
3 responsible for any license material in the form of
4 radioactive contaminants fixed to real property at the
5 170 West Providencia facilities. References made to
6 our letter of December 23rd, 1959, regarding the
7 levels of contamination which would be considered de
8 minimis at your previous 703 Main Street, Burbank,
9 California facility (copy enclosed). These de minimis
10 criteria will also apply to the current situation.
11 Upon completion of any necessary decontamination
12 procedures you're requested to notify this office of
13 the contamination levels which remain in the
14 buildings."

15 Is it your understanding, Mr. Fish, that
16 this letter appears to be stating that the four
17 criteria that I showed you in the Exhibit 1 letter
18 were the criteria that were to be used at Providencia
19 Street?

20 MR. SHIMADA: Objection; calls for
21 speculation, lacks foundation as phrased.

22 THE WITNESS: Yes.

23 MS. McKEITH: Join in the objection.

24 A. This letter does require those same
25 requirements for the decontamination of the 170 West

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1 Providencia.
2 MR. PATTERSON: Q. So if you were
3 conducting the confirmatory survey at this property,
4 would these have been the criteria that you would have
5 used even though you don't remember today?

6 A. Yes, they would.

7 MR. SHIMADA: Same objections.

8 MS. McKEITH: Same objections.

9 MR. PATTERSON: I'm going to show you
10 another document that we'll mark as Exhibit 3 to
11 Mr. Fish's deposition.

12 (Whereupon, Defendant's
13 Exhibit 3 was marked
14 for identification.)

15 MR. PATTERSON: Q. Have you had a chance
16 to look at this document, Mr. Fish?

17 A. Yes.

18 Q. At the top of the document its heading --
19 although it's difficult to read, I believe it reads
20 "Contamination Guides" at the top. And then there's a
21 heading called "Vacating Facilities." Do you see
22 that?

23 A. Yes.

24 Q. And then underneath that are four -- appear
25 to be four criteria, clean-up criteria. Those

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1 clean-up criteria appear to be the same criteria that 2 are listed in the Exhibit 1 letter; is that right? 3 A. Yes. 4 Q. If this document were -- did you maintain a 5 file that you used in making sure that you understood 6 what -- did you maintain any kind of personal file of 7 documents? 8 A. No. 9 Q. During this time period? 10 A. No. 11 Q. Did you keep any kind of folder where you 12 maintained regulations or guidance documents at that 13 time? 14 A. I did not. 15 Q. Was one maintained at the office, to your 16 knowledge, for general use? 17 A. There were folders for each license which 18 contained all of the materials that were germane to 19 that license. A copy of the license, the applications 20 associated with it and inspection results, and other 21 correspondence. 22 Q. Mr. Fish, do you recall the kind of 23 instrument you used in conducting the confirmatory 24 survey at 170 Providencia? 25 A. Yeah. I used a Geiger-Muller tube survey Page 65	1 MR. PATTERSON: Q. Any of the other 2 pictures -- 3 A. None of the others were used at that 4 facility. I recognize the meters, but none of them 5 were used in that confirmatory survey. 6 Q. Could you look at the page that has 527 at 7 the top? You see there's two pictures there in the 8 bottom picture. Do either of those two instruments 9 that are on that table look like one you might have 10 used? 11 A. The one instrument that is in the center 12 top is also similar to the one I used. 13 MS. McKEITH: Could we just clarify. It is 14 not the one you used, however? 15 THE WITNESS: It does not look like the one 16 I used, but it's very similar. 17 MR. PATTERSON: Q. And the same goes for 18 figure 8A -- it looks like the one you used, but it 19 may not have been the exact piece of equipment? 20 A. I know this one is not. 21 Q. How do you know that? 22 A. It doesn't look like the instrument I used. 23 Q. Now, these instruments have what I'll 24 describe as a box and then what appears to be some 25 sort of tube connected to the box. What portion of Page 67
1 instrument. 2 Q. Do you remember what the detection limit of 3 that Geiger-Muller tube was? 4 A. No, I do not remember specifically. 5 MR. PATTERSON: Can we go off the record 6 for a minute? 7 VIDEO OPERATOR: Going off the record at 8 11:56. 9 (Discussion off the record.) 10 VIDEO OPERATOR: We're back on the record 11 at 12:04. 12 MR. PATTERSON: Q. Mr. Fish, I'm going to 13 show you a document which contains some pictures of 14 various survey instruments, and I would like you to 15 look through them and see if you recognize any 16 instruments that you may have used at the Providencia 17 facility. 18 And I'll have the reporter mark this as the 19 next number, please. 20 (Whereupon, Defendant's 21 Exhibit 4 was marked 22 for identification.) 23 THE WITNESS: Figure 8a is similar, but not 24 exactly like the one I used. It has the same type of 25 a detector with the same connection to the meter box. Page 66	1 the instrument did you use to actually measure the 2 radioactivity? 3 A. The detector is the tube. 4 Q. What type of detector was used in the 5 instrument that you used at Providencia Street? 6 A. It was a Geiger-Muller tube. 7 Q. A Geiger-Muller tube? 8 A. Yes. 9 Q. Can you explain to me how that detector 10 works? 11 A. It's a tube that has a center wire to it, 12 and it -- as the radiation goes in, it records 13 electrically the event, and then transmits it down the 14 electrical wire to the box which has the meter. 15 Q. Do you remember the -- was there an opening 16 or a window in the tube that would allow the materials 17 to come in to the tube? 18 A. The tube is shielded, and it has both -- it 19 has a window in it that can be used both open and 20 closed. 21 Q. Do you remember the window thickness of the 22 instrument that you used at Providencia? 23 A. I do not. 24 Q. Do you remember the detector size for the 25 tube? Page 68

1 A. I do not. When you say the window size,
2 are you talking about the detector or are you talking
3 about the shield around it on the previous question?
4 Q. In the window thickness?
5 A. Yes.
6 Q. I'm talking about the detector portion.
7 A. The detector portion, yeah. I do not
8 remember the --
9 Q. Do you recall the thickness of the shield
10 around the tube?
11 A. Not specifically except that it was a metal
12 shield that you used to open and close.
13 Q. Where was the window located on the tube of
14 the instrument that you used at Providencia?
15 A. Well, it would be similar to the picture
16 shown. It would be a tube like this with a shielding
17 around it, and the shielding would have a movable
18 piece that became the window, and you could move it
19 aside so that you had direct exposure of the
20 Geiger-Muller tube to the radiation, or you could
21 close it in which case you put the additional density
22 of the window to shield out the lower energy
23 radiation.
24 Q. Was the tube that you used I'm going to
25 refer to this as a side or end window?

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1 A. It would be a side window.
2 Q. Side window. So the window wasn't at the
3 bottom portion of the tube?
4 A. No.
5 Q. It was on the side of the tube?
6 A. Yes.
7 Q. Would you use the tube differently, in
8 terms of how you held it, to take a measurement
9 depending on whether it was an end window or a side
10 window?
11 A. Yeah. Those instruments would be used
12 differently because what you do would be to -- in the
13 case of an end window, you would expose the end of the
14 tube in order to get the measurement. In the side
15 window, you expose the side of the tube.
16 Q. So you would hold the tube horizontally to
17 the area that you were testing?
18 A. In the case of side -- the whole length of
19 the side of the tube, yes.
20 Q. Did the Atomic Energy Commission own the
21 instrument that you used to conduct your confirmatory
22 survey at Providencia Street?
23 A. Yes.
24 Q. Were these instruments -- was this
25 instrument calibrated?

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1 A. Periodically, the instruments were
2 calibrated.
3 Q. Who did the calibration?
4 A. I don't remember.
5 Q. Would you do the calibration?
6 A. No, I would not do the calibration.
7 Q. Did you wear any kind of headset when you
8 conducted your survey at Providencia?
9 A. No, I did not.
10 Q. Referencing the criteria that are listed in
11 Exhibits 1, 2, and 3.
12 A. Yes.
13 Q. Assuming those are the criteria that you
14 would have used in conducting your confirmatory
15 survey, can you tell me first how you conducted your
16 direct readings at the Providencia property?
17 MR. SHIMADA: Objection; question calls for
18 speculation, lacks foundation.
19 THE WITNESS: When I made the surveys, I
20 would make the measurements -- assuming these are the
21 criteria, I would make the measurement at three inches
22 and use the criteria shown in No. 3, which is a value
23 at 18 inches. And the reason for doing that is if
24 it -- it would allow me to differentiate between
25 possible problems, so that if I found numbers above

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1 the 0.25 millirem, then I would make an additional
2 evaluation to see that it met the 2 millirem at 3
3 inches criteria. But if it met the 0.25 millirem
4 criteria at 3 inches, it automatically met it at 18
5 inches. So it was just a simpler way of restricting
6 the additional work I had to do with respect to
7 evaluating radiation levels that are above the 0.25.
8 Q. Just so I understand: So you would have
9 measured and looked for .25 millirems at any one hour
10 at 3 inches?
11 A. I would.
12 Q. Do you also recall taking wipe samples
13 during your confirmatory survey at Providencia?
14 A. I do.
15 Q. And how were those wipe samples analyzed?
16 A. They were taken back to the office and
17 counted in a scaler.
18 Q. At the office?
19 A. At the office.
20 Q. How large were the wipes that you used when
21 you took a sample?
22 A. The filter papers were approximately
23 one-and-a-half to two inches in diameter. And they
24 would be filter papers typically used in a chemistry
25 lab, and I would just use finger pressure to wipe the

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1 filter paper on the surface. 2 Q. How large of a surface area would you wipe 3 with the one particular wipe sample? 4 A. One wipe would typically be used over a 5 one-square meter, and we would make about 10 short 6 swipes over that one square meter area. 7 Q. Using the same wipe? 8 A. Using the same wipe. 9 Q. And then what would you do with the wipe 10 after you had done that? 11 A. Put it in a container -- in a holder, 12 either a -- well, for the most part, it was put in a 13 small manila envelope so it wouldn't get contaminated 14 or would be preserved. 15 Q. And then -- 16 A. And then taken back to the office for 17 counting. 18 Q. Would you take them back yourself -- 19 A. Yes. 20 Q. -- if you were doing the wipe samples? 21 A. Yes. 22 Q. Would you do the analysis of the wipe 23 samples yourself? 24 A. Yes. 25 Q. Do you remember doing that for Providencia Page 73	1 We're going off the record at 12:17. 2 (Luncheon recess taken at 12:17.) 3 --oOo-- 4 AFTERNOON SESSION 1:12 p.m. 5 VIDEO OPERATOR: Here begins Videotape No. 6 2 in the deposition of Raymond Fish. We're back on 7 the record at 12 minutes past 1:00. 8 MR. PATTERSON: Q. Good afternoon, 9 Mr. Fish. I'm going to show you a document we'll have 10 marked next in order. 11 (Whereupon, Defendant's 12 Exhibit 5 was marked 13 for identification.) 14 MR. PATTERSON: Q. For the record, this 15 is "Part 20, Title 10 - Atomic Energy Commission 16 Regulations." At the top it says: "AEC reprint 17 containing amendments issued through July 30, 1958." 18 Mr. Fish, would these regulations have been 19 regulations that you would have reviewed as part of 20 your responsibilities at AEC in 1959, 1960? 21 A. Yes. 22 Q. And do these regulations look familiar to 23 you today? 24 A. They do. 25 Q. I'd like to refer you to Section 20.102, Page 75
1 Street? 2 A. Yes. 3 Q. Do you remember talking to anybody employed 4 by Isotopes Specialties Corporation prior to 5 conducting your survey where the topic was the survey, 6 the decontamination procedures? 7 A. No, I don't remember that. 8 Q. Do you have a specific memory of reviewing 9 the Isotopes Specialties file before conducting the 10 confirmatory survey? 11 A. I do not have a specific memory of going 12 through the file. 13 Q. But that would have been your practice at 14 the time? 15 A. I would have had to do that in order to be 16 prepared for the confirmatory survey. 17 Q. Do you remember in reviewing that -- do you 18 have any recollection of any reports of any releases 19 or spills onto the property? 20 A. I have no recollection of that. 21 Q. It's a tough one. 22 She's out of tape. I suggest we maybe 23 break for a quick lunch since I'm very hungry. 24 VIDEO OPERATOR: This marks the end of 25 Videotape No. 1 in the deposition of Raymond Fish. Page 74	1 which is on page 3, essentially, of the document. It 2 refers to permissible levels of radiation in 3 unrestricted areas. Do you see that? 4 A. Yes. 5 Q. And Subsection B provides that: "Except as 6 authorized by the Commission pursuant to paragraph 7 (small a) of this section. No licensee shall possess, 8 use, or transfer licensed material in such a manner as 9 to create in any unrestricted area from radioactive 10 material and other sources of radiation in his 11 possession: (1) Radiation levels which, if an 12 individual were continually present in the area, could 13 result in his receiving a dose in excess of 2 14 millirems in any one hour." You see that? 15 A. Yes. 16 Q. Does that refresh your recollection on what 17 level was considered safe at that time? 18 A. It -- the maximum of 2 millirems in any one 19 hour is the maximum radiation level that was deemed 20 acceptable to -- in unrestricted areas, which means 21 areas that were accessible by nonradiation workers, 22 including the general public. 23 Q. So that level was considered safe or 24 considered the level that would be considered -- would 25 not be harmful to any person coming in contact with Page 76

1 that level for that period of time?
 2 MR. SHIMADA: Objection; mischaracterizes
 3 the testimony.
 4 THE WITNESS: That's the maximum level.
 5 There's a second requirement in there that goes along
 6 with it which alters the potential exposure somewhat.
 7 MR. PATTERSON: Q. And what's that?
 8 A. Well, in (2) it says that "radiation levels
 9 which, if any individual were continuously present in
 10 the area could result in his receiving a dose in
 11 excess of 100 millirems in any seven consecutive
 12 days," and that's less.
 13 Q. And the 2 millirems per hour corresponds, I
 14 guess, to the reference in the clean-up criteria in
 15 Exhibit 1 where it notes that the radiation level at 3
 16 inches from the surface of the floor and wall shall
 17 not exceed 2 millirems in any one hour; is that right?
 18 A. The numbers are the same.
 19 Q. The numbers are the same. Was there a
 20 number -- a level that was used for a period of a
 21 year? In other words, you couldn't be exposed to a
 22 certain amount over a period of a year at this time
 23 period?
 24 A. The number was not in the regulations per
 25 se, but there was a number that was used in

1 establishing numbers in the regulations, and the
 2 number was a maximum of exposure to any individual in
 3 the general public of 500 millirem per year, maximum,
 4 to any one individual, but the average of individuals
 5 was to be down to 170 millirem per year.
 6 Q. Could you explain what you mean by the
 7 average of any --
 8 A. Any single individual, the maximum would be
 9 500 millirem, but if you take a group of people, the
 10 average exposure to that group -- and, in this case,
 11 of course, the group would be a large number -- the
 12 average would have to be 170 millirem not 500. So
 13 everybody couldn't get 500 millirem.
 14 Q. I see?
 15 A. The average of everybody would have to be
 16 down to 170 millirem.
 17 Q. Okay. So if you had an unrestricted area
 18 where you had a lot of people going through, you would
 19 have to make sure that you were not exposing them to
 20 the average number; is that what that means?
 21 A. Well --
 22 Q. No, it doesn't.
 23 A. It really doesn't because the group that
 24 you're dealing with in establishing 170 millirem is a
 25 very large group.

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1 Q. What do you mean by "very large group"?
 2 A. Millions. It's, you know -- it's a bigger
 3 look at the picture of effects of radiation on people,
 4 and so the group would be very large. And it's done
 5 by the National Council on Radiation Protection in
 6 measurements who put all the basis for these kinds of
 7 things together. And so they do studies and out of
 8 this comes their recommended number. It's a group of
 9 professionals, the top people in the United States
 10 form this group, and they do the studies and make the
 11 recommendations.
 12 Q. And would the Atomic Energy Commission
 13 utilize those recommendations --
 14 A. They would.
 15 Q. -- in its application to various licensees?
 16 A. Yes, they would use those bases for
 17 creating the regulation.
 18 Q. Just so I understand. So the average
 19 number -- and, I'm sorry was a hundred and --
 20 A. 70.
 21 Q. -- 70. If you were trying to determine
 22 whether a facility like the 170 West Providencia
 23 facility was complying with that, what number would
 24 you use, then? I mean, you don't expect a million
 25 people to go through West Providencia?

1 A. No, but the numbers -- the intent to
 2 control the exposure to people -- nonradiation workers
 3 at, say, the Providencia location would be 20.102.
 4 These are the numbers that you would use, and these
 5 are numbers that apply to the licensed activities to
 6 assure that the quote, general public, or office
 7 workers would not receive excessive exposure. And so
 8 this requirement is imposed upon an operating licensed
 9 activity as opposed to a facility where you're
 10 decontaminating it for the purpose of releasing it.
 11 Q. I understand. Previously, you testified
 12 about the relationship between roentgens and rem, and
 13 I think you indicated that for gamma or beta radiation
 14 there was essentially an equivalency of 1?
 15 A. Yes.
 16 Q. If you look at Section 20.4, "Units of
 17 Radiation Dose" -- it's on the back page of the first
 18 page. In the middle column about halfway there --
 19 MS. McKEITH: Could you refer to the page
 20 number?
 21 MR. PATTERSON: It's the second --
 22 MS. McKEITH: What's the Bates stamp?
 23 MR. PATTERSON: -- page. I don't have a
 24 Bates-stamped copy.
 25 MR. SHIMADA: No Bates. What was the

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1 number? 2 THE WITNESS: It's paragraph 20.4. 3 MR. PATTERSON: It's paragraph 20.4. It's 4 on the back of the first page of the document, and the 5 middle column about halfway there. 6 Q. It discusses what looks like what we're 7 talking about. It says: "For the purpose of the 8 regulations in this part, any of the following is 9 considered to be equivalent to a dose of one rem." Is 10 that what you were referring to in terms of one dose 11 of -- it says "one dose of 1 r." Is that "1 r" a 12 roentgen? 13 A. Yes. 14 Q. "Due to X or gamma radiation," and then it 15 says, "dose of one" -- what's a rad? 16 A. That's an energy term. In 20.4 b, it talks 17 about rads, and it says that 1 rad is the dose 18 corresponding to the absorption of 100 ergs per gram 19 of tissue. So it's 100 ergs of energy received in a 20 gram of tissue. 21 Q. Can you explain to me the difference 22 between a roentgen and a rad? 23 A. They are basically different measurements. 24 One is talking about energy deposited in tissue. 25 Q. Which one is that? Page 81	1 conducted the confirmatory survey of the Providencia 2 property, was California an agreement state at that 3 time? 4 A. Since I don't remember when I made the 5 confirmatory survey, I don't know. I know that 6 California became an agreement state in September of 7 1962. 8 Q. Would you have conducted a confirmatory 9 survey after California became an agreement state? 10 A. Not by myself. If California had been an 11 agreement state, California might have asked us to 12 provide a joint confirmatory survey, but I don't 13 remember that such a request was made. 14 Q. Do you recall if, at the 170 Providencia 15 property, did you conduct that by yourself or were 16 there people from the State also involved in 17 conducting that survey? 18 A. No, I conducted the survey myself. There 19 were no state people. 20 Q. Can you explain to me what counts per 21 minute measures? 22 A. Counts per minute is the values that the 23 detector sees. Each gamma ray that comes from the 24 contaminated particle or the radioactive particle 25 gives off a gamma ray. The gamma ray goes into the Page 83
1 A. That's the rad. And the roentgen or rem is 2 a measurement in air. So it's really counting events 3 or the amount of radiation in air as opposed to in 4 tissue. 5 Medical people, when they treat people for, 6 say, cancer with radiation, they do it in terms of 7 rads because it's the energy deposited in the tissue. 8 Q. When you conducted a -- strike that. 9 Was there a requirement in 1961 that the 10 licensee who is conducting a survey for purposes of 11 terminating a license also drill soil borings to 12 obtain subsurface radioactive material readings? 13 A. There was no regulation requirement for 14 that. If such a requirement were to be made, it would 15 have been in the letter from the licensing people to 16 the licensee instructing him to do those kind of 17 tests. 18 Q. Absent a determination that there had been, 19 let's say, a release into the subsurface area of the 20 facility, would that have generally been a requirement 21 of the licensee to conduct subsurface soil sampling? 22 MR. SHIMADA: Objection; calls for 23 speculation, lacks foundation. 24 THE WITNESS: Not normally. 25 MR. PATTERSON: Q. At the time that you Page 82	1 detector. That event is counted in the detector. 2 Creates a certain amount of energy, electrical energy, 3 which is then picked up by the central wire, in the 4 case of a GM tube, in an ionization chamber, and then 5 it's sent to the meter for counting. And those are -- 6 those events are in counts per minute, typically. And 7 then there's an efficiency conversion which transfers 8 it from counts per minute into milliroentgen. 9 Q. I'm sorry an efficiency -- 10 A. There's a correction factor that you use. 11 Q. When you had the Geiger-Muller instrument 12 in 1961, would the instrument tell you how many counts 13 per minute it was picking up? 14 A. No. It recorded directly in milliroentgens 15 or roentgens per hour. 16 Q. How would you -- was there a way to measure 17 counts per minute at that time? 18 A. No, I don't recall that there was a way of 19 measuring counts per minute. If you put a headset on, 20 you would be hearing the counts per minute, but the 21 dial would not read in counts per minute, but you 22 would hear the individual events as it was recording. 23 Q. I see. So there's nothing on the dial 24 itself which would tell you how many counts per minute 25 it might be reading? Page 84

1 A. No.

2 Q. Now, can you then explain to me what

3 disintegrations per minute means?

4 A. Disintegrations per minute is counts per

5 minute times the efficiency factor of the instrument

6 that's counting it. So you have a source that you

7 know the disintegrations per minute and you put it in

8 the instrument, and so it records so many counts, and

9 you know that it has so many disintegrations and you

10 compare those two numbers. You get a correction

11 factor to transfer it from counts per minute into

12 disintegrations per minute. The counts per minute is

13 less than the disintegrations per minute.

14 Q. And for purposes of your confirmatory

15 survey in 1961, you would be measuring the

16 milliroentgens?

17 A. Yes.

18 Q. But you would not be measuring counts per

19 minute or disintegrations per minute; is that right?

20 A. No, except in the case of the wipe sample.

21 Q. The wipe samples would be analyzed in terms

22 of which -- counts per minute or disintegrations --

23 A. The analysis would come out in counts per

24 minute and then you would convert it into

25 disintegrations per minute.

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1 Q. Would you convert that -- or is there a way

2 to convert that into milliroentgens, into the

3 equivalent milliroentgen factor?

4 A. Not really.

5 Q. Not really. Prior to California becoming

6 an agreement state, would the Atomic Energy Commission

7 still notify California of its intent to terminate a

8 license and release a facility? Do you know?

9 A. At some point in time, they did those kind

10 of things to keep California informed, but I don't

11 remember when that occurred.

12 Q. You don't remember whether it was before or

13 after California became an agreement state?

14 A. It would have been before, but, you know,

15 there was a period of time when California started the

16 process of -- an interest in becoming an agreement

17 state, and then it took some time before they actually

18 became an agreement state and, of course, during that

19 period of time there was a greater effort to keep them

20 more informed of everything that was going on within

21 California, even though it was still under the

22 jurisdiction of the AEC.

23 Q. Do you know whether California was in the

24 process of becoming an agreement state at the time

25 that you conducted the confirmatory survey at

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1 Providencia?

2 A. Since I don't remember when I made that

3 survey, the answer has to be no, I don't.

4 Q. If you had conducted the survey, would you

5 have been the one to notify the state of California or

6 would someone else in your office have that

7 responsibility?

8 A. It would not have been me.

9 Q. Do you know who it would have been?

10 A. In some cases, the notification would have

11 come from Bethesda, Maryland. And in some cases, it

12 would have come from our office -- somebody in our

13 office.

14 Q. After a license expired or was terminated,

15 and the property released for unrestricted use, would

16 your group have any further involvement with that

17 property assuming there was no licensing activity

18 occurring on the property?

19 MR. SHIMADA: At what point in time are we

20 talking about?

21 MR. PATTERSON: '61.

22 THE WITNESS: Once the license is

23 terminated, we no longer have any -- would have had

24 any responsibility for it. We would have no interest,

25 unless somebody from the general public asked us for

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1 information and we would try to respond to public

2 requests.

3 MR. PATTERSON: Q. With respect to

4 Providencia, do you have any memory of being informed

5 of the fact that there was going to be a

6 decommissioning at the 170 Providencia property? Do

7 you remember how you were informed of that?

8 A. The process in notifying us would have been

9 the licensing people would provide us with a copy of

10 the letter to the licensee providing the release

11 criteria, and then the licensing people would, by

12 memo, request that we make a confirmatory survey after

13 they had received the survey report from the licensee.

14 MR. SHIMADA: I move to strike --

15 MS. McKEITH: Move to strike as

16 nonresponsive.

17 MR. SHIMADA: Join.

18 MR. PATTERSON: Q. Would the survey

19 report that you received from the licensee have a plot

20 plan or a map of the facility?

21 A. Yes, it would.

22 Q. And would that survey --

23 MS. McKEITH: I would like to object to the

24 extent that he asked you whether you remembered as it

25 related to this property, not generally. Can we just

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1 make it --

2 MR. PATTERSON: That last question was

3 generally.

4 MS. McKEITH: I'm not trying to trick

5 anybody. I just want to know what the witness

6 remembers as it relates to this property, if that's

7 what you're asking, as opposed to what he testified to

8 earlier this morning at length, which was his general

9 recollection about he had done at that time. You

10 understand the difference we're --

11 THE WITNESS: Yeah. What you're concerned

12 about is do I remember seeing the specific memo

13 requesting, and the answer to that is no.

14 MR. PATTERSON: Q. Generally, would the

15 survey received from the licensee also provide you

16 with the description of the manner in which they

17 conducted the survey?

18 A. I guess the answer to that is generally no.

19 They would describe the instrumentation that was used

20 and they would show the results.

21 Q. Would there be anything in the survey you

22 received from the licensee that would show you where

23 they took wipe samples? In other words, would they

24 plot out on a map where the samples were taken?

25 A. There would be either a -- there would

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1 either be an identification on the plot plan or there

2 would be a verbal description of the location.

3 Q. So you would have some understanding of how

4 they took the survey and where they took samples from

5 before you went out to do your survey?

6 A. Yes.

7 Q. In reviewing the survey from a licensee who

8 was providing the survey for purposes of terminating

9 the licensing -- license and releasing the property,

10 what would be your -- how would you basically evaluate

11 that survey? What would you be looking for?

12 A. There would be two things we would be

13 looking for. We would be looking for the numbers, the

14 actual numbers, to see how they relate to the release

15 criteria, and we would be looking at locations to see

16 the thoroughness of the survey.

17 Q. In 1961, would the measurements that were

18 provided to you by the licensee be in the form of the

19 milliroentgens?

20 A. That's the form it would be in, yeah.

21 Q. And then if they -- did they also inform

22 you of the results of wipe samples in this survey

23 report by the licensee?

24 A. I don't remember.

25 Q. Mr. Fish, I'm going to provide you with

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1 another document which we'll mark next in number.

2 (Whereupon, Defendant's

3 Exhibit 6 was marked

4 for identification.)

5 MR. PATTERSON: Q. I'll ask you to take a

6 look at that document. Do you recognize this as the

7 map of the Providencia Street property at that time?

8 A. For the most part, yes.

9 Q. Are there parts that don't look familiar to

10 you?

11 A. The upper left-hand corner where it says, I

12 guess, that's "Bay" and "Class" something or other,

13 which is in front of Bay-A, that I don't have any

14 recollection of that. The rest of it is just pretty

15 much as I remember it.

16 Q. Just so I understand, underneath Bay-A

17 there's a rectangle, and inside of that is the word

18 "Bay." You don't recognize that as part of the

19 facility at that time?

20 A. No.

21 Q. And that's also true of the rectangle that

22 has "Class" written in it?

23 A. Yeah.

24 Q. Do you see where there's a couple of

25 other -- there's a notation here that says "fences

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1 installed 4/99 for control of site." Do you see that?

2 A. Yes.

3 Q. I'm assuming those fences were not in place

4 or there weren't any fences there at the time you

5 conducted your survey?

6 A. There were no fences there.

7 Q. What I would like to do, Mr. Fish, is kind

8 of go through this plot plan and have you describe to

9 me what you did when you conducted your confirmatory

10 survey. And let's start first with the area that's

11 marked the "office area." Do you see that?

12 A. Yes.

13 Q. Did you conduct any direct measurements in

14 the office area at the time you conducted your

15 confirmatory survey?

16 A. Yes, I did.

17 Q. And can you just generally describe how you

18 would have conducted your direct readings?

19 A. Yeah. I would have used the -- held the

20 detector in my hand with an open window and at

21 approximately 3 inches or whatever distance was the

22 higher number distance, and then, just being bent over

23 would have slowly gone over areas of the floor and

24 dividing the floor in sort of square areas or

25 rectangular areas of a given dimension like, maybe,

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1 every three or four feet square, I would go randomly
2 over that, and then gradually work down through the
3 whole room.
4 Q. Would you also -- then you would be
5 watching the meter as you did that?
6 A. Yes.
7 Q. To determine whether it would pick up any
8 radioactive material readings?
9 A. Yes.
10 Q. Do you remember whether, when you conducted
11 your direct survey of the office area, whether you
12 picked up radioactive material readings?
13 A. No, I don't remember.
14 Q. Would you also conduct direct reading
15 measurements of the walls in the office area?
16 A. I wouldn't have checked in the office area
17 walls, no.
18 Q. Did you take any wipe samples in the office
19 area?
20 A. I don't remember.
21 Q. Would it have been your general practice to
22 take wipe samples in this type of area?
23 A. It would have been -- my normal activity
24 would have included a few wipe samples there.
25 Q. Moving up to the area marked "Tritium and
Page 93

1 C-14 labs." Do you see that?
2 A. Yes.
3 Q. Did you conduct a direct reading survey of
4 that area?
5 A. I don't remember that area.
6 Q. What do you recall the interior building
7 looked like at that time?
8 A. What I remember is that the -- there was a
9 front office area, and then there was a large open
10 space in the back part of the building. And
11 previously, walls or, in this case, where it says "hot
12 cells" and things like that, had all been removed. So
13 the main part of this -- back part of the building was
14 all open and there was nothing else in there except
15 for the pool.
16 Q. So where it says "former hot cells" --
17 A. Yes.
18 Q. -- all of the walls in that area had
19 already been removed when you did your survey?
20 A. All that was there was the flat concrete
21 floor.
22 Q. Do you remember whether there were -- next
23 to the tritium and C-14 lab, there's a notation called
24 "QA lab," do you see that?
25 A. Yes.
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1 Q. Do you remember whether that lab was there
2 at the time you conducted your survey?
3 A. I do not remember that.
4 Q. And then just to right of that, there's a
5 section marked "lab," do you see that?
6 A. Yes.
7 Q. Do you recall that being there at the time
8 you conducted your survey?
9 A. I don't remember that.
10 Q. Above that it says "cooler." Do you
11 remember seeing that --
12 A. I don't remember that.
13 Q. -- facility? What about the lockers and
14 the rest rooms, were they there?
15 A. I don't have any recollection of that.
16 Q. Do you see where it says "Sump with CS
17 137"?
18 A. Yes.
19 Q. Do you remember a sump being in that
20 approximate location in the building?
21 A. I do not remember that -- a sump in that
22 location.
23 Q. Once again, with respect to the building
24 area you've described as sort of a concrete floor open
25 area, can you describe to me what you did in
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1 conducting your direct reading survey of that portion
2 of the property?
3 A. Well, I would have started in one location
4 and then worked my way either from back to front or
5 from one side to the other and taken a specific area
6 and just randomly, in a slow fashion, moved the meter
7 over to see if I detected any radiation that exceeded
8 the lower number at the shorter or distance.
9 MR. SHIMADA: Move to strike as
10 nonresponsive.
11 THE WITNESS: And then work my way across
12 or down the building and then moved over for another
13 section, and did that until I covered, basically, the
14 whole area.
15 MR. PATTERSON: Q. Do you have a specific
16 memory of doing that at this facility?
17 A. Yes.
18 Q. So what you're describing to me is based
19 upon your memory?
20 A. Yes.
21 Q. Do you remember -- leaving the pool aside
22 for a moment. Do you remember any areas within that
23 portion of the building that exceeded the criteria?
24 A. I don't remember any.
25 MS. McKEITH: Is it that you don't remember
Page 96

1 any areas or you don't remember one way or the other?
 2 THE WITNESS: I don't remember the numbers.
 3 So what I do remember is that the first survey that I
 4 made, there were areas that did not meet the criteria
 5 and the licensee had to do additional decontamination
 6 to meet the criteria. So I had to come back either a
 7 second or a third time. I don't know how many times,
 8 but it was at least a second time in order to make
 9 additional measurements to confirm that the
 10 decontamination that had been done now satisfied the
 11 release criteria.
 12 MR. PATTERSON: Q. Do you remember what
 13 areas within the building had levels that exceeded the
 14 criteria at that time?
 15 A. The only one that I remember --
 16 specifically that I remember, that did not meet the
 17 release criteria at the time I made my first survey
 18 was the cobalt pool.
 19 Q. How did you survey -- first of all, was the
 20 pool filled with water at the time that you conducted
 21 your survey?
 22 A. No, the pool was empty.
 23 Q. Do you remember what the walls of the pool
 24 were constructed of?
 25 A. No, I don't remember specifically what they

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1 were. I remember that there was a concrete pool, but
 2 whether they had some additional coating on that
 3 concrete, I don't remember specifically.
 4 Q. Do you remember the pool being dry?
 5 A. Yes, because that's the only way I could
 6 make my survey measurements.
 7 Q. Why is that? Would the water --
 8 A. The water would interfere.
 9 Q. -- interfere with the measurements? Did
 10 you go down into the pool to do your survey?
 11 A. No. I lowered the detector into the
 12 edge -- around the edge of the pool.
 13 Q. When you say "lowered the detector," is
 14 that the tube portion of --
 15 A. That's the tube because it has the lead on
 16 it that would allow me to lower it.
 17 Q. And how did you lower it down? Did you
 18 just lower it down slowly and watch the counter?
 19 A. Yes.
 20 Q. The gauge?
 21 A. Down and then across to get the whole
 22 surface.
 23 Q. Did you attempt to survey the whole bottom
 24 portion of the pool?
 25 A. I don't remember that.

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1 Q. Do you remember how big the pool was
 2 approximately?
 3 A. Specifically, I do not. I can make an
 4 estimate of what the pool -- what I sort of remember
 5 the pool size, but I --
 6 Q. What's your best estimate?
 7 A. My best estimate, it was about, maybe, four
 8 or five feet by, maybe, seven to ten feet long. It
 9 wasn't a large pool.
 10 Q. Did you see any indication of cracks or
 11 repairs in the pool walls?
 12 A. I did not see any repairs. All concrete
 13 has cracks to some extent. There's at least surface
 14 cracks on it. I can't say that I saw and was aware of
 15 the cracks, but concrete just has surface cracks, so.
 16 Q. Do you remember, as you sit here today,
 17 seeing cracks in the pool?
 18 A. No.
 19 Q. Did you ask the licensee if they had ever
 20 experienced any leakage from the pool?
 21 A. I don't know whether I asked them that or
 22 not.
 23 Q. Do you remember if the pool had any pipes
 24 or drains coming into the pool?
 25 A. I don't know. At this point in time, I

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1 don't remember whether -- my recollection is that it
 2 was -- it was a stationery pool, which means that it
 3 would not have pipes that would circulate the water.
 4 It was just a concrete pit that had water in it for
 5 shielding and the sources were stored in there.
 6 Q. Do you know what sources were -- at that
 7 time, were you familiar with the sources that were
 8 stored in that pool?
 9 A. The ones that I can remember is cobalt
 10 sources. I can't honestly say that I remember there
 11 was cesium in there, c-e-s-i-u-m, sources, but I know
 12 that they were working with cesium sources. And so
 13 the larger sources would have had to be stored in the
 14 pool.
 15 Q. Why would they have had to be stored in the
 16 pool?
 17 A. Too much radiation. It's the only way to
 18 keep the radiation down and prevent exposure to the
 19 radiation workers.
 20 Q. The instrument, which I think you described
 21 as a Geiger-Muller instrument, would that instrument
 22 be able to differentiate between different isotopes?
 23 A. No.
 24 Q. What would the -- so the instrument would
 25 be measuring, essentially, gamma and beta

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1 radioactivity?
2 A. Yes.
3 Q. Could it detect alpha activity?
4 A. No.
5 Q. Now, you said that you recall or you
6 remember in the cobalt pool you determined that there
7 was additional cleanup required in the pool; is that
8 right?
9 A. That's correct.
10 Q. Was that in the interior of the pool?
11 A. Inside surfaces.
12 Q. Was it at the bottom of the pool, do you
13 remember?
14 A. I know it was on the sides. With respect
15 to the bottom, I don't know.
16 Q. Do you remember the levels that you were
17 reading?
18 A. No, just that they exceeded the limits.
19 Q. Do you have a memory of how much they
20 exceeded the limits in terms of a lot or a little?
21 A. No.
22 Q. What did you do when you determined that
23 there were elevated levels above the clean-up criteria
24 in the pool?
25 A. I told the licensee that the levels

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1 exceeded the limits and that they needed to do
2 additional decontamination work because we couldn't
3 release it in its present situation.
4 Q. Do you remember who you talked to?
5 A. No.
6 Q. Do you remember talking to a Richard
7 Donaldson?
8 A. I have talked to Richard Donaldson, but I
9 don't know whether it was he at that time.
10 Q. You just don't have a memory today of who
11 you talked to at that time?
12 A. No. There was somebody there and I don't
13 know who, or at least I can't remember who it was at
14 this point in time.
15 Q. At some point did you -- were you informed
16 that additional clean-up activities had been conducted
17 in the pool?
18 A. Yes.
19 Q. Do you know what those activities consisted
20 of?
21 A. I know that they chipped out parts of the
22 concrete that had the high levels of activity and then
23 they would have disposed of them.
24 Q. And did you come back and do an additional
25 survey of that area -- of the pool area?

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1 A. Yes.
2 Q. Do you remember coming back more than once
3 or at least once?
4 A. I remember making at least a second visit,
5 and there may have been a third visit, but I remember
6 the second visit. I don't remember -- but there could
7 have been a third visit before we got all of the
8 elevated areas eliminated.
9 Q. Do you remember a company called Research
10 Chemicals operating at this facility?
11 A. I don't specifically remember.
12 Q. Were they operating at that facility when
13 you conducted your survey?
14 MR. BROWN: Asked and answered. Objection.
15 MS. McKEITH: Objection.
16 THE WITNESS: All activities at that
17 location had ceased at least with respect to the main
18 part of building. I don't remember about the
19 activities in the bays at the back of the building,
20 but all activities in the front building had ceased.
21 MR. PATTERSON: Q. Do you remember seeing
22 any drums stored on any portion of the facility?
23 A. No, I do not remember that.
24 Q. You don't remember whether they were there
25 or not, or are you sure -- were they there?

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1 A. They could have been, I just don't -- if
2 they were there, I don't remember them being there.
3 Q. Did you also take wipe samples of the
4 interior portion of the building in that large open
5 area that you described?
6 A. Yes.
7 Q. And could you tell me how you took those
8 wipe samples?
9 A. Yeah. I would take the small filter paper
10 and with a certain amount of finger pressure would
11 estimate an area of approximately one square meter,
12 and over that one square meter randomly take 10 wipes
13 with the filter paper, and that would constitute that
14 sample. And then I would do that on another area of
15 approximately the same size with the same number of
16 wipes, and then randomly do the whole surface.
17 Q. Would you do any kind of grid of that
18 interior portion and then kind of randomly decide
19 where to take samples?
20 A. I didn't set up a grid. I just -- there
21 was a -- it wasn't totally random when I did it. It
22 would be kind of like, I would do a -- take out a one
23 meter square area and then move in a regular fashion
24 down, and then go over a ways and work my way back up,
25 similar to the way the survey -- the direct radiation

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1 levels were made and cover it that way so that it
 2 wasn't totally random and it wasn't regimented by
 3 having it set off by squares and specific squares.
 4 Q. Would you take a wipe sample and then use
 5 it to take a portion of the, you say, square meters
 6 you're describing?
 7 A. Yeah, one wipe would be used for an area of
 8 about one square meter.
 9 Q. Just so I understand, would you move up to
 10 the adjacent square meter and then take another wipe
 11 sample or would you just move down a little bit?
 12 A. It might be the next square meter and it
 13 might be the next meter and a half. It wasn't
 14 regimented to every square meter, but it was routine
 15 to the extent that it would allow me to say that I had
 16 more than just totally randomly surveyed the surfaces.
 17 Q. Were those wipe samples, then, taken back
 18 to your office and tested?
 19 A. I took them back to the office and I
 20 counted them.
 21 Q. Did any of the wipe samples that you took
 22 in this large portion of the building exceed the
 23 clean-up criteria?
 24 A. From the first set of samples, I do not
 25 remember whether any of them exceeded what we would

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1 determine to be acceptable.
 2 Q. Now, you say the first set of samples, was
 3 there a subsequent set of samples?
 4 A. There may have been. If there were any
 5 samples that exceeded what we would find to be
 6 acceptable levels, we would have notified the licensee
 7 of the area that it came from and we would have made
 8 another set after he had done additional work.
 9 MS. McKEITH: I'm going to object. He's
 10 asking you about the specific facility. You're
 11 speaking generally. We want your recollection --
 12 THE WITNESS: I'm talking about that
 13 facility.
 14 MS. McKEITH: Okay. Then I'm unclear as to
 15 whether or not he found elevated levels the first time
 16 out or not.
 17 THE WITNESS: And I said I didn't know.
 18 MS. McKEITH: So you don't recall?
 19 THE WITNESS: I don't recall.
 20 MR. PATTERSON: Q. Do you remember coming
 21 out a second time to take additional wipe samples in
 22 this portion of the building?
 23 A. No, I do not.
 24 Q. Did you also test any drain lines or pipes
 25 in the facility?

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1 A. All of the drain lines and pipes that were
 2 there and accessible were tested or measured.
 3 Q. Were these measured with direct readings
 4 from the Geiger-Muller?
 5 A. Yes.
 6 Q. And how would you test the drains?
 7 A. You would lower the instrument, the
 8 detector, into the drain.
 9 Q. Would you attempt to lower it as far as it
 10 could go or was there a set measurement that you went
 11 into the drain?
 12 A. I don't remember whether it was as long as
 13 the cord would allow me to go, but I remember all of
 14 the drains were checked.
 15 Q. And did you find any levels of
 16 radioactivity above the clean-up criteria in those
 17 drains?
 18 A. I don't remember specifically that any of
 19 them exceeded the limits which would have required
 20 some additional activity. I don't remember. All I
 21 know is --
 22 Q. You're certain you tested them?
 23 A. I tested every one of them.
 24 Q. And if one of the drains had shown elevated
 25 radioactivity, it would have been your practice to

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1 inform the licensee and make them do some additional
 2 clean-up; is that correct?
 3 A. If it exceeded the limits, it would not
 4 have been allowed, and they would have had to do
 5 additional work to clean it up.
 6 Q. Did you -- referencing this Exhibit 6
 7 again, looking to the south of the building, there is
 8 what looks like a driveway or a -- do you see that?
 9 A. Yes.
 10 Q. Did you conduct a survey, direct readings
 11 from the Geiger-Muller of that area?
 12 A. There were surveys made in that area, yes.
 13 Q. And were those surveys done with the
 14 Geiger-Muller?
 15 A. Yes.
 16 Q. Would you have conducted those surveys in a
 17 similar fashion to that that you described with
 18 respect to the interior of the building?
 19 A. No, not as thorough.
 20 Q. Not as thorough. Why is that?
 21 A. Because it was in an unrestricted area and
 22 you wouldn't expect to find anything there, but you
 23 would make surveys to check and confirm that that was
 24 true. There's a side entrance there, and so you would
 25 be more thorough in your survey in that area because

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1 that would be the potential source of activity coming
2 out from the restricted area. So you would be more
3 thorough there than you would be in other areas of
4 the --
5 Q. Do you remember whether this area that
6 we're referring to was paved in any way?
7 A. There was asphalt on it.
8 Q. Do you remember any cracks in the asphalt
9 that caused you to review them more carefully?
10 A. No, I don't remember that. I don't
11 remember that.
12 Q. Do you remember the asphalt being in good
13 shape or poor shape? Do you have any recollection?
14 A. No.
15 Q. Did you take wipe samples of that area?
16 A. There were some wipe samples taken in that
17 area.
18 Q. Did you remember how many?
19 A. Nope, I do not.
20 Q. How did you determine how many wipe samples
21 to take in that area?
22 A. I don't know how I did determined it. I
23 mean, I took some to make an assessment of the
24 potential removable contamination in that area, and I
25 can't even tell you how many I took.

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1 Q. Moving to what I'm going to call the back
2 area, the east of the building.
3 A. Yes.
4 Q. This map is a little bit different in that
5 the north is to the left instead to the top of the
6 paper, but the east of the building. Do you remember
7 what was in the back of the building there?
8 A. What I remember in the back there was a
9 concrete pad in sort of the area around where the
10 cobalt pool is.
11 Q. Is this an elevated pad?
12 A. It was an elevated pad. That is elevated
13 above the asphalt, and that's the only thing that I
14 remember back there other than the asphalt that was
15 laid.
16 Q. And was this just -- the rest of it was
17 flat asphalt of this portion in the area?
18 A. As near as I can recall. The only thing I
19 specifically remember is that concrete pad being back
20 there in that corner.
21 Q. What I would like you to do is, if you
22 could, draw where you believe -- you remember seeing
23 the pad on that document. And, if you could, put the
24 word "pad" in there. How high was the pad? Do you
25 remember?

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1 A. No.
2 Q. You remember it was elevated above the
3 asphalt portion?
4 A. Yes.
5 Q. Was there a roof covering?
6 A. No.
7 Q. Did you conduct a survey of this area with
8 the Geiger-Muller instrument?
9 A. Yes, that area was surveyed.
10 Q. Can you describe to me how you conducted
11 that survey in that portion of the property?
12 A. Only that the same mechanism would be used
13 there as the rest of it. The survey performed was
14 consistent throughout. You didn't change the way you
15 made the surveys.
16 Q. So in this portion of the facility, you
17 would have held the tube at the same level above the
18 ground that you did inside the building?
19 A. Yes.
20 Q. And would you have walked sort of back and
21 forth across this area in a way -- similar way that
22 you described what you did inside the building?
23 A. Similar, yes, I would have.
24 Q. Did you take any wipe samples of this area?
25 A. Yes, wipe samples were taken in that area.

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1 Q. Do you remember any locations where you
2 took wipe samples?
3 A. No.
4 Q. There's some areas that are marked "storage
5 bays" at the top of the paper.
6 A. Yep.
7 Q. And it says "Bay E," "Bay B," and "Bay C."
8 Do you remember conducting a survey of those areas?
9 A. I do not remember making a survey of those
10 areas.
11 Q. Were these bays in place when you were at
12 the facility?
13 A. I remember that those bays and that
14 building was back there.
15 Q. Do you recall any reason why you wouldn't
16 or didn't conduct a survey in those areas?
17 A. I don't recall.
18 Q. In Bay B, there's a small square that says,
19 "floor sump with thorium material was cleaned out."
20 Do you see that?
21 A. Yes.
22 Q. Do you remember seeing a sump in Bay B?
23 A. No.
24 Q. Do you remember going inside these bays,
25 leaving aside whether you surveyed them or not, going

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1 inside these bays to look around?
 2 A. I do not remember going into these bays
 3 during my confirmatory survey.
 4 Q. When you conducted the survey, we talked
 5 about the window on the tube.
 6 A. Yes.
 7 Q. Was that survey done with the window open?
 8 A. All surveys were done with the window open.
 9 Q. Going back to the pool, do you have a
 10 memory -- at some point did you determine that the
 11 clean-up criteria in place at that time had been met
 12 inside the pool?
 13 A. Yes.
 14 Q. Mr. Fish, I'm going to show you another
 15 document which we'll mark as Exhibit 7.
 16 (Whereupon, Defendant's
 17 Exhibit 7 was marked
 18 for identification.)
 19 MR. PATTERSON: Q. Mr. Fish, if you look
 20 at Item No. -- there's a No. 5 in the area called
 21 "Work Area." Do you see that?
 22 A. Um-hum.
 23 Q. And then under 5, it says: "Cesium-137
 24 facility. Storage: Ten 2-inch holes to 6 feet bgs,"
 25 which I assume is below grade surface, "manufacturing

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1 of up to 1,000 curies of source material." Do you see
 2 that?
 3 A. Yes.
 4 Q. Do you remember any holes in that portion
 5 of the property?
 6 A. I do not remember any holes.
 7 Q. Do you remember seeing any coverings that
 8 would suggest to you that these holes may have been
 9 capped? Do you remember anything, seeing like fresh
 10 concrete or anything?
 11 A. I do not remember anything.
 12 Q. So you have no memory today of those holes?
 13 A. No, I do not.
 14 Q. If you look at -- there's also a No. 6. It
 15 says: "Storage laboratory. 15 storage holes four
 16 feet, bgs," which again I assume is below grade
 17 surface, "for hard gamma emitters and soft gamma
 18 emitters." Do you remember seeing any holes in that
 19 area?
 20 A. No, I do not.
 21 Q. Seven refers to the cobalt pool. You do
 22 recall that?
 23 A. Yes.
 24 Q. You see where it says No. 9 in the paved
 25 area?

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1 A. Um-hum.
 2 Q. It shows a "15-foot by 24-foot double wall
 3 concrete-lined pit-waste storage." Do you see that?
 4 A. Yes.
 5 Q. Do you remember seeing that in the paved
 6 area at the time you conducted your survey?
 7 A. I do not remember. I don't have any memory
 8 of that.
 9 Q. At some point, Mr. Fish, were you satisfied
 10 that the clean-up criteria at the Providencia facility
 11 had been met by the licensee?
 12 A. Yes.
 13 Q. What did you do at that point?
 14 A. At that point, I would have returned to the
 15 office and written a report of the visit or visits, in
 16 this case it was at least a visit because I know there
 17 was a second one. And it would have reflected all of
 18 the work that we did there and results of our
 19 confirmatory survey and would have been transmitted by
 20 memo or memorandum to our headquarters, inspection
 21 function headquarters. And then inspection function
 22 headquarters would transmit it to the licensing people
 23 informing them of the results of our survey.
 24 MR. SHIMADA: Move to strike as
 25 nonresponsive.

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1 MR. PATTERSON: Q. You used a lot of "I
 2 would have" and "I would have done this." Do you
 3 have a specific memory of writing the report for
 4 Providencia property?
 5 A. Yes, I do.
 6 Q. And do you have a specific memory of
 7 writing the --
 8 A. I have a specific memory of generating a
 9 draft of the memo transmitting that report.
 10 Q. And who would that report have gone to?
 11 Did you give that report to someone to review?
 12 A. Yeah. My supervisor reviewed the report
 13 and reviewed the draft of the transmittal memo and
 14 made changes in the memo that he felt appropriate.
 15 Q. Who was your supervisor at that time?
 16 A. At that time, I believe it was Herb Brook.
 17 Q. Would Mr. Brook have been responsible for
 18 then transmitting the final document to the licensing
 19 division in Bethesda, Maryland?
 20 A. No.
 21 Q. Who would have that responsibility?
 22 A. The inspection people in Bethesda, Maryland
 23 would have the responsibility.
 24 Q. Okay so the -- I'm sorry. Would Herb
 25 Brook -- would your office have transmitted the final

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1 document to the inspection portion in Bethesda, 2 Maryland division? 3 A. Yes. 4 Q. And would they have independently reviewed 5 the report or was that part of the process? 6 A. I'm sure that before they transmitted it to 7 licensing, they would have reviewed it, but I don't 8 have any knowledge that that's what they did. 9 Q. Did anybody from the inspection division in 10 Bethesda call you regarding your report of the 11 Providencia confirmatory survey? 12 A. I don't remember hearing any or having any 13 conversations with the people in Bethesda, the 14 inspection function in Bethesda, on that report. 15 Q. Would you receive notification that the 16 report had been accepted and the license terminated? 17 A. We would have received a copy of the letter 18 that the licensing people sent to the licensee saying 19 that the license had been terminated. 20 Q. Do you remember seeing that letter? 21 A. Right now, I can't say that I remember 22 seeing that letter in person. 23 Q. Do you remember having an understanding 24 that the Providencia property license had been 25 terminated? Page 117	1 Associates. And previously our office had provided 2 you with a copy of that report; is that right? 3 A. That's true. 4 Q. Have you had an opportunity to review the 5 Rogers & Associates report -- read it? 6 A. Yes, I have. 7 Q. Now, this particular figure appears to show 8 average surface gamma radiation measured 3/30/99 9 through 4/17/99 in, I guess, one-meter-by-one-meter 10 grids. Is that your understanding? 11 A. Yes. 12 Q. And these measurements are in -- it appears 13 to be micro rs per hour? 14 A. Microroentgens per hour. 15 Q. Microroentgens per hour. 16 A. Yes. 17 Q. Now, the highest level that I could find is 18 a measurement taken in the yellow portion of this 19 document that shows 106 microroentgens per hour. It 20 is at the coordinates 80 east and looks like and -- 21 I'm sorry, 80 north and 22 -- I'm sorry, I'm not doing 22 this right. It's 80 east and about 22 north. Are you 23 able to convert that microroentgen per hour to a 24 milliroentgen per hour? 25 A. Yes. Page 119
1 A. Yes. 2 Q. How do you have that memory? 3 A. Because we no longer conducted any 4 inspections there, and so that just terminated our 5 responsibility in that area. 6 Q. Did you use any other instruments other 7 than the Geiger-Muller to conduct your survey at the 8 Providencia property? 9 A. No, I didn't, not that I remember. I don't 10 remember using any other. 11 Q. Do you know whether the -- the person 12 conducting the survey on behalf of the licensee used 13 other instruments in his -- in the licensee's survey? 14 A. No, I don't remember what instruments he 15 used. 16 MR. PATTERSON: I would like this document 17 marked as Exhibit 8. 18 (Whereupon, Defendant's 19 Exhibit 8 was marked 20 for identification.) 21 MR. PATTERSON: Q. Mr. Fish, this 22 document, Figure 3.1, was taken from the site 23 characterization of residual activity from former 24 radioactive materials, license operations, Thomson 25 Property, Burbank, California, prepared by Rogers & Page 118	1 Q. What would be the milliroentgen per hour 2 measurement be? 3 A. 0.1 -- a tenth of a milliroentgen. 4 Q. And if we were to, you know -- assuming a 5 half life of 30 years, if we were to double that 6 measurement, it would be .2 milliroentgens 7 approximately? 8 A. Yes. 9 Q. And that would be -- that number would be 10 below the .25 millirems per hour that this document 11 shows was the clean-up criteria, at least for 703 Main 12 Street; is that right? 13 A. That's correct. 14 Q. Would your instrument have detected that 15 level? 16 A. It would have detected that level if I had 17 been close enough to it, assuming, of course, that 18 it's twice this value. 19 Q. I understand. If it was this value -- 20 strike that. 21 This appears to be measured on the ground 22 or floor surface. Do you see that? 23 A. Yes. 24 Q. And again, I guess, you had indicated that 25 the distance from the source would affect the reading Page 120

1 that you would obtain? 2 A. That's correct. 3 Q. And the farther away that you were from 4 that source, the lower the reading would be? 5 A. That's correct. 6 Q. Is there any measurement that you see on 7 this Figure 3.1 which was -- which is above the .25, 8 which is above .25 -- I'm sorry, .25 millirems? 9 A. As I review this thing, the 106 was the 10 highest number there. 11 Q. So the answer is no? 12 A. They are all less. 13 Q. Even if you would have detected twice the 14 level shown in this document, that would have been 15 acceptable criteria assuming that the .25 millirems 16 was the level you were using as clean-up criteria? 17 A. Yes. 18 MR. SHIMADA: Objection; calls for 19 speculation. 20 MR. PATTERSON: I need to take a bathroom 21 break. Can we go off the record for a minute. 22 VIDEO OPERATOR: Going off the record at 23 2:24. 24 (Break in proceedings.) 25 VIDEO OPERATOR: We're back on the record Page 121	1 you conducted the confirmatory survey? 2 A. No, I don't believe so. 3 MR. PATTERSON: Marking next in number, 10. 4 (Whereupon, Defendant's 5 Exhibit 10 was marked 6 for identification.) 7 MR. PATTERSON: Q. Have you had a chance 8 to look at this table? 9 A. Yes, I read this table when I read the 10 report. 11 Q. This is Table -- for the record -- 3.3 of 12 page 3-24 of the Rogers' report, and it shows various 13 measurements of what appears to be beta and alpha 14 surface contamination at the Providencia property. 15 You'll see toward the bottom, Mr. Fish, there's a 16 heading called "Area Outside on Asphalt"? 17 A. Yes. 18 Q. And there's a beta concentration there done 19 in counts per minute, and it shows a 1,331,200 counts 20 per minute. Do you see that? 21 A. Yes. 22 Q. Would your instrument that you were using 23 at the time have been able to detect that kind of 24 activity? 25 A. I don't know. Page 123
1 at 2:39. 2 MR. PATTERSON: I'm going to mark as next 3 exhibit, No. 9, this document. 4 (Whereupon, Defendant's 5 Exhibit 9 was marked 6 for identification.) 7 MR. PATTERSON: Q. Mr. Fish, have you had 8 a chance previous to today to review this particular 9 figure, Figure 3.8, which I'll represent is from the 10 Rogers report? 11 A. Yes, I have. 12 Q. What is your understanding of what this 13 document is depicting? 14 A. This document depicts measurements made to 15 identify the source of the radiation in these areas. 16 Q. You say identify the source. Do you mean 17 identify the type of isotope? 18 A. Yes. 19 Q. If you look at this, they are showing a 20 series of different circles, and the circles indicate, 21 apparently, measurements taken in multiples of the 22 background measurement. Do you see that? 23 A. Yes. 24 Q. Do you have any way of looking at that and 25 correlating it to the measurements that you took when Page 122	1 Q. Why don't you know? 2 A. Because I don't know how -- I don't know 3 how they would convert that number into millirem or 4 micro -- milliroentgens or microroentgens per minute 5 at the time. 6 Q. The report indicated that the surveys for 7 beta and alpha surface contamination were performed 8 with beta and alpha detectors, and that most of the 9 surveys were performed by placing the detector on the 10 surface and making one-minute measurements. Would 11 conducting the survey that way by placing the detector 12 on the surface and making a minute measurement greatly 13 increase the counts that they were measuring when 14 compared to the manner in which you conducted your 15 survey? 16 A. Well, if they are laying the instrument on 17 the surface, directly on the surface, those counts 18 would not be the same as my measurements at three 19 inches. 20 Q. Would your measurements be lower -- 21 A. Yes. 22 Q. -- than what they were reading on the 23 surface? 24 A. My readings would have been lower. 25 Q. And it says that it was placing the Page 124

1 detector on the surface and making one-minute
2 measurements. Do you know what they mean by making
3 one-minute measurements?
4 A. Yeah. They put the meter there and left it
5 there and accumulated the counts over a one-minute
6 period of time, and then they would stop the
7 collection of the counts.
8 Q. So these numbers indicate an
9 accumulation -- your understanding is these numbers
10 indicate an accumulation of counts over a period of
11 one minute?
12 A. From what you read, that's what happened.
13 Q. And that's not the manner in which you
14 conducted your survey; is that correct? You didn't
15 leave your instrument over a particular area for a
16 minute?
17 A. No. I did not collect data that way.
18 Q. And it wasn't at that time in 1961 -- it
19 wasn't common practice to collect data in that way; is
20 that correct?
21 A. Our confirmatory surveys did not make the
22 surveys in that manner.
23 MR. SHIMADA: Move to strike as
24 nonresponsive.
25 MR. PATTERSON: I would like to mark next

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1 in number, 11.
2 (Whereupon, Defendant's
3 Exhibit 11 was marked
4 for identification.)
5 MR. PATTERSON: Q. Have you previous to
6 the deposition had a chance to review this table,
7 Mr. Fish?
8 A. Yes, I have.
9 Q. This is Table 3.1, "Locations with
10 localized elevated areas of contamination," pages 34
11 and 35 of the Rogers report. This appears to show
12 various areas of concentrations of contamination in
13 counts per minute. Is that your understanding of what
14 this document shows?
15 A. Yes.
16 Q. Do you have any ability to convert these
17 readings into the measurements that you utilized, the
18 milliroentgens per hour?
19 A. No.
20 MR. PATTERSON: And we'll mark -- go off
21 the record for a moment, please.
22 VIDEO OPERATOR: Going off the record at
23 2:47.
24 (Discussion off the record.)
25 VIDEO OPERATOR: Back on the record at

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1 2:48.
2 MR. PATTERSON: Okay. I would like the
3 reporter to mark this document as next in number as
4 exhibit --
5 (Whereupon, Defendant's
6 Exhibit 12 was marked
7 for identification.)
8 MR. PATTERSON: Q. Mr. Fish, if you could
9 turn to page 4.7.
10 A. Yes.
11 Q. Under paragraph 3, the second full
12 paragraph, it notes that there is a gamma logging hole
13 14, which indicated high localized radioactivity at 25
14 centimeters beneath the surface of the concrete
15 extending to about 30 centimeters and remaining very
16 elevated to a depth of about 50 centimeters. The
17 radioactivity is primarily cesium-137 based on field
18 gamma spectra --
19 MS. McKEITH: What page are you reading
20 from?
21 MR. PATTERSON: 4-7.
22 Q. And the maximum levels appear to be very
23 localized. The maximum saturated a Ludlum 2221 with a
24 one-inch diameter -- is that sodium ion?
25 A. Sodium iodide.

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1 Q. -- iodide Ludlum probe at 1 million counts
2 per minute. And it says the HPS Cypher with a
3 one-inch sodium iodide probe also saturated at 19
4 million counts per minute.
5 Do you have an understanding of where gamma
6 logging hole 14 was located on the property?
7 A. I can't tie down the -- in that diagram in
8 that report. There it is. Yeah, I see where hole 14
9 is located on the diagram in the report.
10 Q. Mr. Fish, you're looking at the Rogers
11 report?
12 A. Yes, I am. It's Figure 4.1. It says,
13 "locations of bore holes and sample collection
14 points."
15 Q. Where does it show gamma logging hole 14 to
16 be located?
17 A. Gamma 14 is back in the southeast corner.
18 Q. Is that near where the --
19 A. It would be near the cobalt pool, but I
20 can't tell from its location whether that's a point
21 that's inside or outside of the walls of the pool.
22 Q. Did this level of activity at this location
23 surprise you, given the work that you had done at that
24 site?
25 A. If that activity is from inside the walls

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1 of the pool, it would have occurred after my survey.
 2 And so, I guess, it might or might not have surprised
 3 me. It would not have -- if it's inside the pool
 4 walls, I would have discarded it because it was
 5 something that would have occurred after my survey.
 6 When I left the survey, the pool was empty.
 7 So after the survey and those things, then
 8 they obviously filled the pool in -- the pool area in.
 9 And I have no knowledge or control whatsoever of what
 10 it was filled with. So to that extent, I
 11 wouldn't, you know -- it's conceivable they put
 12 contaminated dirt or something else back in there. So
 13 to that extent, it wouldn't surprise me. I would just
 14 kind of discard it. If it was outside of the pool,
 15 outside of the pool walls, I guess I would have been
 16 surprised that there were those kind of levels.
 17 Q. If it was outside the pool walls but
 18 underneath the concrete, would that have potentially
 19 masked the levels that you would be able to read with
 20 the instrument you used at the time?
 21 A. The pool walls would have --
 22 MR. SHIMADA: Objection; lacks foundation.
 23 THE WITNESS: The pool walls would have
 24 shielded that source so that measurements inside the
 25 pool would have not likely seen that kind of a source.

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1 MR. PATTERSON: Q. So the concrete would
 2 have acted as a shield?
 3 A. It would.
 4 Q. And do you remember -- does this refresh
 5 your recollection at all of what kind of readings you
 6 were getting in the pool area?
 7 MS. McKEITH: I'm going to object. Asked
 8 and answered. He indicated the readings he got in the
 9 pool area when he signed off was below the 2 millirem
 10 per hour. Is that correct, sir?
 11 THE WITNESS: That's right. It met the
 12 release criteria.
 13 MS. McKEITH: And these are higher than 2
 14 millirem per hour?
 15 THE WITNESS: I would guess so, but I don't
 16 know. Because, you see, they are talking in terms of
 17 counts per minute, and I have -- there's nothing in
 18 the report that allows me -- provides me with
 19 information to convert that into the numbers that --
 20 the readings I was that making.
 21 MR. PATTERSON: Q. Are you familiar with
 22 this instrument called the Ludlum 221 with a one-inch
 23 diameter sodium iodide, is it?
 24 A. Sodium iodide.
 25 Q. Ludlum probe.

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1 A. I'm not familiar with that instrument per
 2 se. I'm familiar with instruments that use a sodium
 3 iodide detector.
 4 Q. Is a sodium iodide detector more sensitive
 5 to radioactive contamination than the detector -- the
 6 Geiger-Muller tube that you used? Would it pick up
 7 more counts per minute?
 8 A. Yeah, it would be more sensitive. It would
 9 pick up lower counts, lower amounts of activity.
 10 MS. McKEITH: Object. Move to strike. You
 11 asked him whether it would pick up more counts.
 12 MR. PATTERSON: Q. I asked whether the
 13 Ludlum instrument would -- over the same period of
 14 time -- pick up more counts per minute than the
 15 instrument that you used?
 16 MR. SHIMADA: Objection; lacks foundation.
 17 MR. PATTERSON: Q. If you know. If you
 18 don't know, you don't know. Or maybe I'm not phrasing
 19 the question very well.
 20 A. I think that's true. The Ludlum sodium
 21 iodide instrument is more sensitive, which means it
 22 can pick up smaller amounts of activity than a
 23 Geiger-Muller tube. So that if you're using the two
 24 instruments, the sodium iodide detector will pick up
 25 smaller amounts and record the presence of radiation

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1 before the Geiger-Muller will.
 2 Q. Mr. Fish, as you sit here today, did you
 3 believe that you had sufficient data at the time you
 4 conducted your final confirmatory survey based on your
 5 surveys and the licensee's surveys to support the
 6 decision to allow the property to be released for
 7 unrestricted use based on the criteria in place in
 8 1961?
 9 A. I believed that the surveys -- the
 10 confirmatory surveys we made confirmed the results of
 11 the licensee's surveys, and that the facility, when we
 12 finished our confirmatory survey, had met the release
 13 criteria in the letter from the licensing people for
 14 releasing the facility to unrestricted use.
 15 Q. And your survey was -- of the Providencia
 16 property was as -- strike that.
 17 Did your survey meet the standards for
 18 conducting these types of surveys that were in place
 19 in 1961, in your opinion?
 20 A. There were no standards per se.
 21 Q. I understand that, but did they meet the
 22 industry practice at the time?
 23 MR. SHIMADA: Objection; lacks foundation.
 24 THE WITNESS: The survey was performed in
 25 accordance with the acceptable methods used by the

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1 inspection function for performing those surveys.
 2 MR. PATTERSON: Q. Do you remember if you
 3 had conducted any surveys prior to the Providencia
 4 survey for purposes of terminating the license and
 5 releasing the property for unrestricted use?
 6 A. I do not remember whether I had made such
 7 surveys prior to this survey.
 8 Q. I believe you testified that you went to
 9 work in 19 -- middle of 1959?
 10 A. September of 1959.
 11 Q. September of 1959. Was this one of the --
 12 if you know, was this one of the first confirmatory
 13 surveys conducted by your office for purposes of
 14 terminating a license and releasing the facility?
 15 Would it have been one of the first?
 16 A. It would have been one of the first. I
 17 don't know that it was the first, but it would have
 18 been one of the early ones that we did.
 19 Q. Were you familiar with the facility at 703
 20 Main Street in Burbank?
 21 A. No, I was not.
 22 Q. Did you have any involvement in the
 23 confirmatory survey conducted, if any was conducted,
 24 at 703 Main Street?
 25 A. No, I was not involved in any way.

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1 Q. Did you conduct any kind of radioactive
 2 contamination survey at 703 Main Street at any time?
 3 A. No, I did not.
 4 MR. PATTERSON: I'm going to have marked
 5 next in order an April 8th, 1996 letter from the
 6 Nuclear Regulatory Commission to the State Department
 7 of Health Services.
 8 (Whereupon, Defendant's
 9 Exhibit 13 was marked
 10 for identification.)
 11 MR. PATTERSON: Q. Mr. Fish, have you had
 12 a chance to read this document prior to your
 13 deposition today?
 14 A. First time I saw it.
 15 Q. What I would like you to do is turn to page
 16 7 of the document, Bates-stamped ICN 001947. You see
 17 at the top there, it notes the heading: "170 West
 18 Providencia Street"?
 19 A. Yes.
 20 Q. In the second paragraph it says, "General
 21 area exposure rate surveys of areas within and outside
 22 of the two site buildings range from 11 to 80" -- is
 23 that microroentgens?
 24 A. Yes.
 25 Q. -- "per hour on the outside (east side) of

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1 the primary building and 10 to 22 microroentgens per
 2 hour inside of the primary building." Can you convert
 3 those levels to milliroentgens? What would 11 be?
 4 A. Well, 11 would be .011. The 80 would be
 5 .08 milliroentgen. The 10 would be .01, and the 22
 6 would be .022 milliroentgens per hour.
 7 Q. All of those levels were below the .25
 8 millirems per hour referenced in Exhibit 1; is that
 9 right?
 10 A. That's correct.
 11 Q. So there were -- strike that.
 12 MR. PATTERSON: Off the record for just a
 13 moment, please.
 14 VIDEO OPERATOR: Going off the record at
 15 3:07.
 16 (Discussion off the record.)
 17 VIDEO OPERATOR: We're back on the record
 18 at 3:09.
 19 MR. PATTERSON: Q. Mr. Fish, I would like
 20 you to look through the documents that you brought
 21 today and locate a December 17th, 1997 letter and
 22 attached statement from Loeb & Loeb.
 23 What I would like to do is have the
 24 reporter mark that as the next exhibit in number, both
 25 the letter and the statement together.

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1 (Whereupon, Defendant's
 2 Exhibit 14 was marked
 3 for identification.)
 4 MR. PATTERSON: Q. Mr. Fish, did you have
 5 occasion to meet with a Martha Sharp at some point
 6 prior to this statement being provided to you?
 7 A. Yes, I believe I did.
 8 Q. What did you discuss?
 9 A. We were discussing the statement that is
 10 attached to the letter. They came to my house -- two
 11 people came to my house. There had been previous
 12 discussions by telephone, and they came to my house
 13 and we looked over the statement that's here, and I
 14 made corrections as indicated, which were initialed,
 15 and then I signed it.
 16 Q. If you could, do you remember who the --
 17 was Martha Sharp one of the persons that met with you?
 18 A. Martha was one.
 19 Q. Do you remember who the other person was?
 20 A. The other person was a Larry R. Druxel.
 21 Q. If you could refer to your statement,
 22 Mr. Fish. The last paragraph states that "ISC" --
 23 that refers to Isotopes Specialties Company; this is
 24 the first page of your statement, sir, at the
 25 bottom -- maintained an -- "ISC maintained a plaster

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1 lined isotope storage pool which was used to store
2 cobalt, possibly cesium, and other radioactive
3 materials." Is this referring to the cobalt pool that
4 you referenced previously?

5 A. Yes, it is.

6 Q. And it says here that it was a
7 plaster-lined pool. Does that refresh your
8 recollection that this pool was lined somehow?

9 A. The source of the statement is -- that I
10 specifically remember -- is that when I was working at
11 the U.S. Nuclear Facility over there, the
12 discussion -- we had a discussion about the pool at
13 Isotopes Specialties, and the people at U.S. Nuclear
14 said that one thing that they were not going to do
15 with their pool was to line it with plaster as it had
16 been done over at Isotopes Specialties because that
17 created great problems from a contamination standpoint
18 and the decontamination of that contaminated plaster.
19 That's the source of that statement, were those
20 discussions, which --

21 Q. So you had a discussion with someone at
22 U.S. Nuclear that whatever they were using to line --
23 that was used to line the pool at ISC wasn't what they
24 wanted to use the next time?

25 A. It created problems from a decontamination

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1 that same page, "Upon inspection for site release at
2 the 170 West Providencia Street property, I detected
3 levels of cobalt-60 in excess of the AEC release
4 limits in ISC isotopes storage pool, and levels of
5 radiation exceeding regulatory standards was detected
6 on the concrete pad outside the building marked as
7 Exhibit 2 on the attached site map."

8 Does that refresh your recollection that
9 you detected radiation exceeding regulatory standards
10 on the concrete pad? Do you remember that, as we sit
11 here today?

12 A. I guess the answer to that is yes.

13 Q. You do recall -- I think your previous
14 testimony was you didn't remember other areas. This
15 refreshes your recollection that there was another
16 area and that was the concrete pad?

17 A. That was an area that needed additional
18 work, yeah.

19 Q. Do you know what additional work was
20 conducted on the concrete pad?

21 A. No, I don't.

22 Q. Did you come back and conduct another
23 survey of the concrete pad to determine whether they
24 had cleaned it to the standards?

25 A. I don't specifically remember surveying

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1 standpoint.

2 Q. And that's what -- how you came to this
3 understanding that it was lined?

4 A. That's specifically -- I can remember --
5 the discussions at U.S. Nuclear concerning the
6 Isotopes's pool, and that's the source of that
7 statement. I can't say that I remember the plaster on
8 the pool at Isotopes Specialties, but I can remember
9 this discussion, and that's the source of the
10 statement.

11 Q. In the next paragraph on the next page, the
12 last sentence indicates that: "Two types of sources
13 stored in the pool were Cobalt-60 in the form of metal
14 pellets and cesium-137 in the form of a chloride
15 power"?

16 A. That's wrong. It's powder.

17 Q. Powder?

18 A. It's powder, not power.

19 Q. Do you have a specific recollection --
20 again, I'm just trying to make sure I understand your
21 testimony before and this statement, that cesium-137
22 was actually stored in the pool?

23 A. I can't say right now that I remember
24 specifically that cesium was stored in the pool.

25 Q. And then, again, in the last paragraph on

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1 that pad, except that I do remember that on the
2 follow-up survey trip that all areas that were higher
3 were resurveyed to make sure they met the release
4 criteria. So if that -- if -- and it's not if,
5 really. I remember there were elevated levels there,
6 and I did survey on the next trip to make sure that
7 the decontamination work had been adequate to meet the
8 requirements.

9 Q. On the next page it says that: "Steel
10 beams to store equipment on, and process source
11 material were located on the concrete pad." That's on
12 page 3 of your statement.

13 A. Um-hum.

14 Q. Do you remember seeing steel beams on the
15 concrete pad at the time you conducted any of the
16 confirmatory surveys that you did at Providencia?

17 A. I remember seeing steel beams. I don't
18 remember that they were there at the time of the
19 confirmatory survey.

20 Q. Did you conduct inspections of the
21 Providencia property as an inspector prior to
22 conducting the confirmatory survey?

23 A. I don't remember that I did.

24 Q. It also says that "process source material
25 were located on the concrete pad" on your statement.

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1 Do you see that? Page 3 at the top.
 2 A. Yeah.
 3 Q. Do you remember -- what is process source
 4 material?
 5 A. The activities that were going on there
 6 were activities with respect to rare earth, and source
 7 material was the feed material that was used because
 8 it contained the rare earth and the rare earth
 9 material would be eluted out of the feed material.
 10 Q. And it's your memory that those materials
 11 were located on the pad?
 12 A. The statement here relates to what the
 13 steel beams were used for, not that there was material
 14 there.
 15 Q. Okay. You lost me. What did you mean by
 16 that statement?
 17 A. What I said was that the steel beams which
 18 were used to store equipment on and process source
 19 material -- so the steel beams were located on the
 20 concrete pad.
 21 Q. And on the steel beams were equipment and
 22 source material?
 23 A. No. On the beams -- the steel beams were
 24 used as a framework for holding equipment that was
 25 used in the processing of the source material.

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1 Q. Okay. Now, I get it. Do you have an idea
 2 of how many confirmatory surveys you conducted while
 3 employed with the Atomic Energy Commission both before
 4 and after the Providencia property?
 5 A. I can only make an estimate of what that
 6 might be, and it was eight or ten confirmatory surveys
 7 that I made over the period of time.
 8 Q. Mr. Fish, do you have a document that's
 9 entitled "Guidelines for Decontamination of Facilities
 10 and Equipment"; it's dated April 22nd, 1970?
 11 A. Yes.
 12 Q. Did you have an opportunity to review this
 13 document prior to the deposition?
 14 A. Yes, I have.
 15 Q. Was this a guideline that you used around
 16 1970 in decontamination efforts?
 17 A. Yes, it was a document that we used.
 18 Q. Were the standards or criteria used in 1970
 19 to obtain a release for unrestricted use or
 20 termination of a license more strict in 1970 than they
 21 were in 1961?
 22 MR. SHIMADA: Objection; the question is
 23 vague, lacks foundation.
 24 MR. PATTERSON: Q. Do you understand the
 25 question?

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1 A. Yeah, I understand the question.
 2 MS. McKEITH: Are you marking the document?
 3 THE WITNESS: I just --
 4 MR. PATTERSON: Q. You seem to have some
 5 difficulty.
 6 A. The numbers are a little different. For
 7 instance, in Table 2, they are talking about a maximum
 8 reading of 1 millirad and 0.2 millirads per hour at
 9 one centimeter. Those numbers are more restrictive
 10 than the 2 milliroentgen and the 0.25.
 11 Q. The tables you're referring to are -- they
 12 are -- let's see, there's a Bates-stamp number on the
 13 side JT 17717
 14 A. Yes.
 15 Q. And it says "surface contamination levels"?
 16 A. Well --
 17 Q. At the top.
 18 A. -- there's, basically, a Table 1 and a
 19 Table 2. And Table 1, the total would be relating to
 20 a radiation level-type measurement. The removable
 21 would be just that. Removable levels of contamination
 22 that you would detect by wiping. Table 2 is basically
 23 set up the same way, that is, the total would be the
 24 instrument reading and the removable would be what
 25 would be on the wipe.

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1 Q. If a radioactive source were, let's say,
 2 left in the ground, does it have the potential to
 3 migrate and contaminate further and further out as
 4 time goes by?
 5 MR. SHIMADA: Objection. The question
 6 is --
 7 MR. PATTERSON: Q. If you know.
 8 MR. SHIMADA: -- vague, lacks foundation,
 9 calls for speculation.
 10 THE WITNESS: If the source is a sealed
 11 source, the activity will not move unless the sealing
 12 material is violated. If it's an unsealed source and
 13 there's some kind of a driving medium such as rain
 14 water or some other water movement, the answer is it
 15 would tend to move, or some of it would tend to move.
 16 MR. PATTERSON: Q. If there was an
 17 unsealed source, say, in subsurface soils and those
 18 subsurface soils were impacted with solvents, do you
 19 have an understanding of whether that would have a
 20 bearing on the ability of that radioactive material to
 21 migrate?
 22 MR. SHIMADA: Same objections.
 23 THE WITNESS: There are mechanisms where
 24 the solvent could move it.
 25 MR. PATTERSON: Q. What is your

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1 understanding of what those mechanisms would be? 2 MR. SHIMADA: Same objections. 3 THE WITNESS: Well, if the solvent -- if 4 there's a -- if there's a physical opening so that the 5 solid could move it by just physically moving it, it 6 would do it. The only other mechanism would be if it 7 was soluble to any extent in the solvent, it would 8 then move. 9 MR. PATTERSON: Q. In your experience, is 10 it true that it's essentially impossible in every 11 situation to measure residual radioactivity at every 12 point and space and time at a facility? 13 MS. McKEITH: Objection. 14 MR. PATTERSON: It's a statement right out 15 of Marson. 16 MR. SHIMADA: I object also. Vague and 17 ambiguous, overbroad, calls for speculation, lacks 18 foundation. 19 THE WITNESS: There's no way you can 20 measure all radioactivity. It's just an 21 impossibility. 22 MR. PATTERSON: We're running out of tape. 23 Why don't we take a short break, and I think I'm 24 almost finished. 25 VIDEO OPERATOR: This marks the end of Page 145	1 deposition. And you -- did you attempt to determine 2 whether you had documents responsive to the exhibit 3 prior to coming to the deposition? 4 A. The only documents that I ever had since I 5 retired are the documents that have been provided by 6 the lawyers in connection with this experience. 7 Q. And you produced all those documents today? 8 A. They've all been brought here today. 9 Q. I have a couple quick questions going back 10 to your confirmatory survey at Providencia. Would you 11 have surveyed any vents that were in the facility? 12 A. Any vents that were there at the time that 13 I made my confirmatory survey were surveyed. 14 Q. And how did you survey those? 15 A. With the same mechanism that I used in the 16 others; I surveyed them with a Geiger-Muller survey 17 instrument and would have -- and made wipes in the 18 accessible areas to see if there was removable 19 contamination. 20 Q. Do you remember whether there were any 21 tiles in any portions of the building, floor tiles? 22 A. I do not remember that. 23 Q. Do you remember requiring that any floor 24 tiling be removed because of concerns that radioactive 25 materials seeped into the cracks? Page 147
1 Videotape No. 2 in the deposition of Raymond Fish. 2 We're going off the record at 3:27. 3 (Break in proceedings.) 4 VIDEO OPERATOR: We're back on the record. 5 This marks the beginning of Videotape No. 3 in the 6 deposition of Raymond Fish. The time on the video 7 monitor is 3:32. 8 MR. PATTERSON: Q. Mr. Fish, what I would 9 like to do is take that last document that we were 10 looking at, the decontamination standards, and have 11 the reporter mark that as the next exhibit in number. 12 (Whereupon, Defendant's 13 Exhibit 15 was marked 14 for identification.) 15 MR. PATTERSON: And then I would like to 16 have the subpoena attached to the exhibit marked as 17 the next exhibit. 18 (Whereupon, Defendant's 19 Exhibit 16 was marked 20 for identification.) 21 MR. PATTERSON: Q. Mr. Fish, if you could 22 look at Exhibit 15 that was sent to you, and 23 specifically Exhibit A. If you could look at Exhibit 24 A to the subpoena, that exhibit requested that you 25 identify and produce documents here today at your Page 146	1 A. I do not have any recollection of that. 2 Q. When you analyzed the wipe samples that you 3 took from Providencia, would you have kept some sort 4 of record of what the analysis showed, written record? 5 A. The counting of the wipes would have been 6 written, and then those numbers would have been 7 transferred to the report and that's the extent of the 8 record. 9 MR. PATTERSON: I don't have any further 10 questions at the time. 11 VIDEO OPERATOR: Going off the record at 12 3:36. 13 (Break in proceedings.) 14 VIDEO OPERATOR: Back on the record at 15 3:41. 16 EXAMINATION BY MS. McKEITH 17 MS. McKEITH: Q. Good afternoon, 18 Mr. Fish. I'm Malissa McKeith, and I represent Joseph 19 and Virginia Thomson, who are the current owners of 20 the Providencia property. Do you recall whether you 21 ever had occasion to speak with Mr. Thomson in 22 approximately 1961 or '62 when you were conducting the 23 decommissioning of the property? 24 A. No, I did not have any discussion with him. 25 Q. Do you recall whether you spoke to anyone Page 148

1 who owned the property at the time that you
2 decommissioned the property?
3 A. No, I didn't.
4 Q. When you conducted the surveys that you
5 have been discussing earlier today, can you tell me
6 approximately how long it took you to conduct each of
7 the surveys that you've been describing? When I'm
8 saying that, was it a day or two days? Five days?
9 A. The individual visits were either a day or
10 a day-and-a-half type time frame, but I don't remember
11 specifically. It would not have been like five days
12 because the facility was not big enough to warrant
13 that much of an effort.
14 Q. Now, my understanding is that after
15 Isotopes Specialties Company -- or excuse me, after
16 U.S. Nuclear conducted their survey of the property,
17 they provided written documentation to you and
18 requested that you come to verify their survey
19 results; is that correct?
20 A. They provided a copy of the survey, and the
21 request was made to the licensing people in Bethesda,
22 Maryland, not to our office in the Bay Area.
23 Q. Now, as you sit here today, do you recall
24 the actual survey documents that were forwarded from
25 U.S. Nuclear to Bethesda and then, apparently,

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1 forwarded to you?
2 A. No, I do not.
3 Q. You mentioned that you would go to the
4 facility and you conducted both wipe samples and
5 direct readings with the Geiger-Muller; is that
6 correct?
7 A. That's correct.
8 Q. And you described a situation where you
9 would conduct this work and then you would report back
10 to U.S. Nuclear as to whether any additional
11 remediation was required; is that correct?
12 A. I had the discussion with the licensing
13 representative that was there.
14 Q. Do you know whether that licensing
15 representative was Mr. Donaldson from U.S. Nuclear?
16 A. I do not remember who the person was
17 specifically.
18 Q. Do you recall whether there was more than
19 one individual at the property when you were
20 conducting your surveys?
21 A. No, I do not.
22 Q. So you don't recall one way or the other?
23 A. I know there was at least one person.
24 Q. Would it be accurate to say that, when you
25 conducted your initial survey to determine whether or

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1 not the licensee had met the release criteria for
2 unrestricted use, that took approximately a day and a
3 half?
4 A. It might have been done in a day. It might
5 have been done in a day and a half. I just don't
6 remember the length of time specifically -- how long
7 it took me to do it.
8 Q. So the work that you described today where
9 you -- based upon what you're saying, my understanding
10 is that you surveyed, virtually, all of the interior
11 of the building at 170 Providencia; is that correct?
12 MR. SHIMADA: Objection; mischaracterizes
13 his testimony.
14 THE WITNESS: I did survey -- the survey
15 covered the entire building, the front building.
16 MS. McKEITH: Q. The entire interior of
17 the front building?
18 A. Yeah.
19 Q. And then it included areas of the driveway;
20 is that correct?
21 A. That's correct.
22 Q. And it included the area of the concrete
23 pad that you've described in the open backyard area?
24 A. It did.
25 Q. And did it include any of the back bays

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1 that were depicted on the exhibit that Mr. Patterson
2 showed you earlier today?
3 A. I do not remember whether the survey
4 included those areas or not.
5 Q. Well, Isotopes Specialties Company was an
6 operating business. Did you ever have occasion to
7 visit the facility while it was still functioning?
8 A. I do not remember whether I made
9 inspections at Isotopes Specialties at that location
10 or not.
11 Q. You testified earlier that when you came to
12 the property to conduct your first initial survey
13 that, with the exception of the pool that remained
14 open, there were no other open subsurface structures
15 such as holes or sumps that you recall; is that
16 accurate?
17 A. No. What I said was that there were drains
18 in the floors and that those were surveyed.
19 Q. Other than the drains, were there any other
20 below grade openings that existed at the facility when
21 you conducted your initial survey?
22 A. I don't remember whether there was or not.
23 Q. When you testified earlier today, you
24 indicated that you did not recall, for example,
25 subgrade holes in the hot lab area?

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1 A. That's true.
 2 Q. Was that because they weren't there or you
 3 just don't remember one way or the other?
 4 A. I don't remember one way or the other.
 5 Q. For a licensing facility that was seeking
 6 release for unrestricted use, was there a regulation
 7 in place at the time that would have prohibited their
 8 closing such below grade storage facilities prior to
 9 your conducting an inspection?
 10 A. There was no regulation in place that would
 11 have done that.
 12 Q. So a licensee such as Isotopes Specialties
 13 Company could have filled in any of their below grade
 14 storage areas and paved over them prior to your
 15 conducting your final survey and that would have been
 16 consistent with the regulations?
 17 MR. SHIMADA: Objection; calls for
 18 speculation, assumes facts.
 19 THE WITNESS: The answer to that is that if
 20 there were storage locations below ground, they would
 21 have had to survey them, decontaminate them if
 22 possible, but could not hide them or cover them up
 23 before we made our confirmatory survey; but that was
 24 not by regulation.
 25 MS. McKEITH: Q. You have a very clear

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1 recollection of surveying the vents; is that correct?
 2 A. I have a recollection of surveying the
 3 vents, some vents that were there.
 4 Q. And you have a recollection of surveying
 5 the drains, as you sit here today?
 6 A. Some drains that were there I have a
 7 recollection of surveying.
 8 Q. And you have a recollection of surveying
 9 the interior of the pool -- the cobalt pool; is that
 10 correct?
 11 A. I do.
 12 Q. But you have no recollection of surveying
 13 any other below grade storage areas at the site as you
 14 sit here today?
 15 A. I do not have any recollection of making
 16 those surveys.
 17 Q. So is it possible that you did not conduct
 18 any surveys in those additional below grade storage
 19 areas?
 20 MR. SHIMADA: Objection; calls for
 21 speculation.
 22 MR. PATTERSON: Join.
 23 THE WITNESS: I don't know. I just don't
 24 recollect.
 25 MS. McKEITH: Q. Are you aware of the

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1 fact that thorium was one of the source materials used
 2 at the 170 U.S. Providencia site?
 3 A. Yes.
 4 Q. And are you aware of the fact that Isotopes
 5 Specialties Company was permitted to accept waste from
 6 its customers, some of which included thorium?
 7 A. Right now I do not recollect that.
 8 Q. You indicated previously that you would
 9 have reviewed the file concerning the 170 Providencia
 10 property prior to conducting your survey; is that
 11 correct?
 12 A. That's correct.
 13 Q. And if Isotopes Specialties Corporation's
 14 license permitted it to receive thorium from its
 15 customers, would that have been reflected in its file?
 16 A. Yes, it would have been listed on the
 17 license. It would have been reflected in the file.
 18 Q. Would you have fashioned your survey to
 19 detect the kind of contaminants or the type of
 20 radioactive materials that Isotopes Specialties
 21 Company had used on the property?
 22 A. Yes, we would have. I would have.
 23 Q. What type of radioactive materials does
 24 thorium emit -- or radioactive rays?
 25 A. It's a beta gamma, but there are some

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1 thorium isotopes that emit alpha.
 2 Q. Can you recall specifically whether thorium
 3 230 emits alpha, beta or gamma?
 4 A. No, I don't remember.
 5 Q. My understanding, based on your testimony,
 6 is that the Geiger-Muller that you utilized did not
 7 detect alpha rays; is that correct?
 8 A. That's correct.
 9 Q. And my understanding is that you didn't
 10 utilize any other instrument for direct readings other
 11 than the Geiger-Muller in the field; is that correct?
 12 A. That's
 13 MR. PATTERSON: Misstates his testimony.
 14 MS. McKEITH: Well, he can clarify it now
 15 if it does.
 16 THE WITNESS: That's my -- that's my
 17 recollection, that that was the instrument that I used
 18 to make the direct radiation measurement.
 19 MS. McKEITH: Q. So if there was alpha
 20 contamination on the property, it would not have been
 21 detected with your Geiger-Muller?
 22 A. That's true.
 23 Q. And with respect to the wipe samples that
 24 you've described having taken, if there was thorium
 25 contamination on the property that was emitting alpha

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1 radiation, would that have been detected on the wipe
2 samples?
3 A. Yes, it would have.
4 Q. And can you tell me how one, based upon the
5 wipe samples, differentiates between alpha
6 contamination, and beta or gamma contamination?
7 A. In the case of the wipe samples, the
8 instrument was such that, by changing the dials, you
9 would be able to measure either alpha or beta gamma.
10 Q. Do you have any recollection, as you sit
11 here today, whether or not, in fact, you changed the
12 instrument in order to check for alpha rays at the 170
13 Providencia property?
14 A. The wipes were counted for both alpha and
15 beta gamma.
16 Q. And you have a distinct recollection of
17 that?
18 A. Yes.
19 Q. And the 2 millirems per hour that we've
20 been discussing as what you believe the clean-up
21 criteria was for the time, did that number apply to
22 alpha readings as well as beta or gamma readings? Was
23 that a collective number, so to speak?
24 A. No, that number would not relate to alpha
25 contamination.

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1 Q. Are there any documents that we've seen
2 here today, sir, that would indicate to you what the
3 clean-up criteria was for alpha contamination in
4 approximately 1961 when you decommissioned the
5 property?
6 A. No.
7 Q. Do you have any recollection of what the
8 clean-up criteria would have been for alpha
9 contamination?
10 A. Depends upon the type of alpha
11 contamination you're dealing with. If you're dealing
12 with alpha contamination that comes from a natural
13 thorium, one of the components being an alpha emitter,
14 you would be looking at numbers that were comparable
15 to the release values that were given in the letter.
16 And that's different, for instance, than if you were
17 dealing with, say, polonium-210. Because natural
18 thorium -- the release criteria for radiation levels
19 for natural thorium would coincide. If you were
20 dealing with other isotopes that had alpha emitters,
21 then the criteria would had to have been different.
22 Q. Would the criteria have been more stringent
23 or less stringent for radioactive material such as
24 polonium-210?
25 A. Would have been more restrictive.

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1 Q. Are you aware of the fact that Isotopes
2 Specialties Company's license permitted it to have
3 polonium-210 on the property?
4 A. Yes, I was. I am.
5 Q. Excuse me?
6 A. Yes, I was and I am aware that that license
7 allowed it.
8 Q. Do you recall what clean-up criteria you
9 utilized with respect to alpha contamination?
10 A. There was no criteria for alpha in the
11 release criteria that we were using.
12 Q. How did one make a determination at what
13 point a property should be released that had utilized
14 polonium-210, as an example?
15 A. The licensing people made that
16 determination. They decided what the release criteria
17 were, and we were only using the numbers established
18 by them.
19 Q. Have you seen any of the documents that
20 you've seen here today, sir, that indicated what the
21 clean-up criteria was for alpha rays that would have
22 been emitted from polonium-210 at the facility?
23 A. No.
24 Q. Do you have any recollection of what
25 criteria -- you've indicated that the clean-up

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1 criteria for an alpha emitter that would have been
2 generated from the polonium-210 would be have been
3 less than the 2 millirem per hour; that's correct, is
4 it not?
5 A. Alpha -- the limits established for alpha
6 contamination are lower than those for beta gamma.
7 Q. Do you know whether it's, at that time
8 period, was 100 percent lower or 50 percent lower?
9 A. I don't know. You know, there was a
10 definite lower number.
11 Q. Could you explain to us why that is. What
12 is are more problematic about alpha contamination than
13 beta contamination that would have justified a lower
14 clean-up criteria based upon your experience over the
15 last, approximately, 30 years with radioactive
16 materials?
17 A. The difference is that the real problem
18 with alpha contamination is an internal disposition
19 problem. It gets inside.
20 Q. Gets inside what?
21 A. Gets inside the body. And the other
22 problem is that the damage caused by alpha radiation
23 is more severe than beta gamma, and that's why you
24 have the conversion fact -- a larger conversion factor
25 when you change from milliroentgens to rem. The

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1 factor associated with alpha, if I remember right, is
2 a factor of 20. So it would be, basically, 20 times
3 more damaging -- an exposure from alpha would be
4 approximately 20 times more damaging than exposure to
5 beta gamma. But also you have to recognize that the
6 range of the alpha particle is very short, and that's
7 why it becomes a problem when it's an internal
8 disposition as opposed to an external exposure.
9 Q. Were there field instruments available at
10 the time that would have detected alpha radiation from
11 a direct reading instrument?
12 A. Yes.
13 Q. Can you tell me what those were?
14 A. Well, the Juno had a capability of
15 detecting alpha because it had a thin window and you
16 could open it up and expose it. I don't specifically
17 now remember other instruments, but I know there were
18 instruments capable of measuring alpha contamination.
19 Q. Is there a reason that you did not utilize
20 those instruments in the field at a site where
21 alpha-emitting radioactive materials had been
22 utilized?
23 A. Yes, because the release criteria didn't
24 involve that.
25 Q. But you've indicated that there was some

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1 release criteria for alpha emitters, did you not, that
2 was set by the Atomic Energy Commission?
3 A. The licensing people, if they knew or had
4 reason to suspect that there was a problem with alpha
5 contamination, would have included alpha requirements
6 in the letter that they sent for the release criteria.
7 The letter that was sent in this case did not contain
8 any such requirements. And our, you know -- we were
9 there to make a confirmatory survey that the facility
10 met the release criteria in the letter.
11 Q. So, essentially, what you're saying is the
12 silence in the letter of any release criteria for
13 alpha contamination meant that you did not apply any
14 release criteria for alpha contamination; is that
15 correct?
16 A. In our survey, that's true.
17 Q. So regardless of what level of alpha
18 contamination you would have detected, there was no
19 release criteria to compare it to based upon the
20 absence of that criteria in the letter?
21 A. That is true.
22 Q. And because the letter that you used as
23 your instructions for how to conduct the survey did
24 not require any alpha readings, you did not utilize
25 the equipment that was available at the time to

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1 conduct those readings in the field?
2 A. That's true.
3 Q. Do you know, sir, whether thorium-230 is a
4 naturally-occurring thorium?
5 A. When you talk about thorium, natural
6 thorium, it has a number of isotopes in there, and I
7 don't remember which isotopes and what percentage.
8 Q. Is that also the case for thorium-232?
9 A. When you talk about natural thorium, it has
10 a variety of isotopes, and I don't recall which
11 isotopes are there, but I am sure that if you see the
12 composition of natural thorium, you will find some
13 part of it is also thorium-230.
14 Q. I guess what I'm confused about is based
15 upon your testimony a few moments ago, my impression,
16 and correct me if I'm wrong, was that natural thorium
17 would not emit alpha rays. Did I misunderstand
18 something?
19 A. If thorium-230 is an alpha emitter and
20 thorium-230 is one of the components of natural
21 thorium, then natural thorium would have an alpha
22 component.
23 Q. If we find any contamination on the
24 Providencia property that is in excess to -- of the 2
25 millirems per hour that you believe was the release

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1 criteria --
2 A. Yes.
3 Q. -- would that indicate to you that there
4 was a portion of the property that had not met the
5 release criteria?
6 A. Not necessarily. I mean it could have
7 occurred after my survey.
8 Q. You have indicated that after your survey
9 the cobalt pool remained open?
10 A. It was open when I made my final survey,
11 yes.
12 Q. And therefore you have no readings that
13 would indicate that once the cobalt pool was closed,
14 however it was closed, it continued to meet the
15 release criteria?
16 A. I have no knowledge about the status of
17 that pool if it was filled. Whatever they put in
18 there, they put in there, but I have no knowledge of
19 that.
20 Q. So it was not the ABC's practice at the
21 time to ensure that previously open areas that had
22 been used for storage were actually physically closed
23 or covered up prior to releasing a site?
24 A. No.
25 Q. So at that point in time -- at the point in

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1 time where you released the site -- no, strike that. 2 Can you describe for me what some of the 3 limitations are, if any, with regard to the 4 Geiger-Muller insofar as it samples beta and gamma 5 rays in the field? 6 A. It has a limitation with respect to the 7 minimum amount of activity it can detect because of 8 the thickness of the walls of the tube. 9 Q. Does it have any limitations in terms of 10 the upper limits that it detects? 11 A. Yeah, it does. If you put it in a 12 radiation field that is extremely high, it will -- the 13 tube will saturate and when it saturates, the reading 14 then goes to zero. Normally, it goes to zero. 15 Instead of off scale, it goes to zero. That's a 16 saturated tube. 17 Q. When there's no radiation being detected, 18 does the instrument sit at zero? 19 A. Yeah, except that there's an occasional 20 blip which represents background radiation that will 21 reflect on the instrument, but it's kind of an 22 occasional thing that you would be aware that it was 23 at least receiving background radiation independent of 24 what's there. 25 Q. Now you indicated that you were not the Page 165	1 aware of, yes. 2 MS. McKEITH: Can we go off the record for 3 a moment? 4 VIDEO OPERATOR: Going off the record at 5 4:10. 6 (Discussion off the record.) 7 VIDEO OPERATOR: Back on the record at 8 4:12. 9 MS. McKEITH: Q. I'm going to mark as 10 Exhibit, I believe, 17 a document. The first page 11 which is entitled "California Radiation Control 12 Regulations" dated 1966, attached to which is a 13 document described as "Control and Removal of 14 Radioactive Contamination in Libraries from the 15 National Bureau of Standards Handbook 48" dated 1951, 16 which is a multipage document. Also attached to that 17 is a "Safe Handling of Radioactive Isotopes, National 18 Bureau of Standards Handbook 42" issued September 19 1949, and also attached is a chart previously attached 20 to this deposition entitled "Comparison of Various 21 Release Criteria." 22 (Whereupon, Plaintiff's 23 Exhibit 17 was marked 24 for identification.) 25 MS. McKEITH: Q. Sir, you're familiar Page 167
1 individual who calibrated the Geiger-Muller? 2 A. That's true. 3 Q. If the Geiger-Muller had not been 4 accurately calibrated, how would you have known in the 5 field? 6 A. The only way we would know that is if the 7 instrument didn't function properly in a way we would 8 have expected it. But the instruments are calibrated, 9 and the calibration records were kept in the office. 10 Q. But you don't have those calibration 11 records; is that correct? 12 A. No, I do not. 13 Q. I am reading from a document entitled "Safe 14 Handling of Radioactive Materials" that was published 15 by the U.S. Department of Commerce, National Bureau of 16 Standards Recommendation of the National Committee on 17 Radiation Protection, Report No. 30, National Bureau 18 of Standards Handbook issued March 1964 and, beneath 19 that, it states "supersedes Handbook 42." 20 Are you familiar with the name I just read? 21 A. Yes. 22 Q. Are these standards that employees of the 23 Nuclear -- Atomic Energy Commission would have 24 utilized in the early 1960s? 25 A. They are documents that we would have been Page 166	1 with the National Bureau of Standards? 2 A. I am. 3 Q. And is it correct that employees of the 4 Atomic Energy Commission refer to the National Bureau 5 of Standards handbook in connection with their work at 6 the Atomic Energy Commission? 7 A. Some people did, yes. 8 Q. Did you? 9 A. We did not directly use these documents, 10 except to be aware of the information that's there. 11 Q. What is the National Bureau of Standards, 12 if you know? 13 A. National Bureau of Standards is an 14 organization that sets up certain standards. It's not 15 only radioactive material. Actually, most of its work 16 is in other areas -- nonradioactive material areas. 17 Q. I'm going to read from one of the documents 18 that I've provided to you that is contained in the 19 National Bureau of Standards, and it's a reference to 20 typical radiation survey meters. I'm showing the 21 witness the page that I'm referring to. It might be 22 simpler if you thumb through that quickly, and it's 23 the only chart of its sort. 24 MR. SHIMADA: Which document did it come 25 from? Page 168

1 MR. BROWN: Page 16 and 17. 2 MS. McKEITH: It's page 16 and 17 of the 3 National Bureau of Standards Handbook issued September 4 1949. 5 MR. SHIMADA: Thank you. 6 MS. McKEITH: Q. Did you find that 7 document, sir? 8 A. Yes. 9 Q. And you see there's a reference to portable 10 Geiger-Muller counters? 11 A. Yes. 12 Q. Drawing your attention to the fourth column 13 over under "Ranges"? 14 A. Yes. 15 Q. It says "multiple range," nominal, maximum, 16 80,000 c/m"? 17 A. Yes. 18 Q. What does "c/m" stand for? 19 A. Counts per minute. 20 Q. The Geiger-Muller that you utilized, did it 21 have counts per minute on it? 22 A. No, it was in milliroentgens per hour. 23 Q. Does that lead you to believe that the 24 instrument that's being described in the document is 25 different than the Geiger-Muller that you utilized? Page 169	1 1961 allow you to do quantitative analysis? 2 A. It allowed us to do quantitative analysis 3 to the extent it was required by the release criteria. 4 Q. What steps did you take, if any, to 5 determine whether or not there had been any releases 6 of radioactive materials at the Isotopes Specialties 7 Company during its operations that would have resulted 8 in contamination beneath the concrete of the facility? 9 A. The only thing that I did was review what 10 was in the -- in our license file in our office. 11 Q. So you took no independent steps to confirm 12 whether a licensee had, for example, buried any 13 radioactive materials on the property? 14 A. Not in connection with the confirmatory 15 survey. 16 Q. In connection with day-to-day operations at 17 a company such as Isotopes Specialties -- strike that. 18 The fact that there was some 19 decontamination that was required at the facility, did 20 that lead you to conclude that there had been some 21 releases of radioactive materials during the 22 operations? 23 A. To the extent that it had been released 24 from the area for which it was being used, the answer 25 is yes. Page 171
1 A. Not different per se, but it reflects -- or 2 it doesn't reflect the advances made in the 3 instrumentation between the date of this document and 4 the time that I'm involved with it. 5 Q. What this document says is "per rapid 6 radiation detection. Normally improper for 7 quantitative work." Was that no longer true in 1961 8 that it was not proper for quantitative work? 9 A. Depends upon what you mean when you say 10 quantitative work. You know, this report, which uses 11 a sodium iodide detector -- 12 Q. When you say "this report" -- 13 A. The report of the site characterization 14 done by Rogers & Associates engineering unit. That is 15 what I would consider quantitative work, qualitative 16 work. 17 Q. I'm sorry, you just said quantitative and 18 qualitative? 19 A. It's quantitative here. I'm trying to 20 relate -- the instruments that were used here for 21 making some of the assessments, which certainly -- 22 Q. Sir, I would rather focus on the document 23 that you're looking at relative to what you used in 24 1961 as opposed what the consultants used in 1999. 25 Did the Geiger-Muller that you utilized in Page 170	1 Q. So in the areas that were restricted areas, 2 there were actually releases of contamination in those 3 areas? 4 A. Yes. 5 Q. That you indicated were subsequently 6 cleaned up through the use of -- you mentioned some 7 chemical agents? 8 A. I was not there when they did the 9 decontamination, so I don't know the techniques, 10 except that I saw chips out of the pool. So I know 11 that was the technique that was used for that. 12 Q. When there were releases in restricted 13 areas back in 1961, is it possible that those releases 14 would have penetrated the concrete and gone into the 15 soil below the concrete, based on your experience at 16 the Atomic Energy Commission? 17 MR. SHIMADA: Objection; lacks foundation, 18 calls for speculation. 19 THE WITNESS: To some extent, it would have 20 probably gotten into the concrete because concrete 21 always has minor cracks. Cracks that go all the way 22 through would be different than surface cracks. 23 MS. McKEITH: Q. When you were conducting 24 your release survey, was the purpose of the release 25 survey to determine whether or not there were safe Page 172

1 levels at a certain distance from a radioactive source 2 as opposed to determining whether or not, in fact, you 3 had contamination remaining in the concrete or in the 4 soil? 5 A. The purpose of the confirmatory survey was 6 to provide information that said that we could rely on 7 the results of the licensee survey. 8 Q. In this instance, the licensee did not -- 9 well, strike that. 10 In 1961, was it possible to actually sample 11 concrete for radioactive materials? 12 A. Sure, it was possible. 13 Q. Do you know whether Isotopes Specialties 14 Company ever sampled any of the concrete at its 15 facility to determine whether there was radioactive 16 material in that concrete? 17 A. No, I do not know. 18 Q. Now, you testified earlier that the 19 concrete, in fact, serves as a shield to radioactive 20 materials. 21 A. Concrete can be used as a shield. 22 Q. So if there was contamination beneath 23 concrete in an area where you surveyed, would that 24 concrete have served as a shield for your detecting 25 those radioactive materials? Page 173	1 Q. In fact, would it have been unusual for 2 someone in 1961 to conduct samples beneath concrete at 3 a facility as part of a decommissioning, based on your 4 experience at that time? 5 MR. SHIMADA: Objection; lacks foundation. 6 THE WITNESS: Depends upon the activities 7 and what occurred at the facility, whether it would 8 have -- in most cases, the activities were -- and the 9 types of releases that did occur in facilities like 10 that -- were such that it would not be normal to take 11 those kind of samples. 12 MS. McKEITH: Q. How would you know one 13 way or the other what types of releases occurred at 14 that facility other than what your licensee reported 15 to you? 16 A. Inspection results would identify -- if 17 they had occurred, there's a reasonable expectation 18 that it would have been detected and written up in the 19 inspection report. 20 Q. How frequently -- you were the head of an 21 inspection unit during that time period? 22 A. No, I was not. I was just a radiation 23 specialist. Just one of the inspectors. 24 Q. But you were familiar with the day-to-day 25 procedures of an inspector during that time period? Page 175
1 A. Yes, it would have. 2 Q. So if there was radioactive under the 3 concrete at any location on the Providencia property, 4 you would not necessarily have detected that with your 5 survey; is that correct? 6 A. I would not necessarily have detected it. 7 Q. And you took no independent steps to 8 determine one way or the other whether there was 9 contamination beneath the concrete at any area of that 10 facility? 11 A. No, I did not. 12 Q. Do you know -- did you review anything in 13 the survey conducted by Isotopes Specialties Company 14 from which you could conclude that they took 15 independent steps to determine whether or not there 16 was any contamination beneath the concrete? 17 MR. SHIMADA: Counsel, were you meaning to 18 say Isotopes Specialties Company? 19 MS. McKEITH: Yes. 20 THE WITNESS: I do not remember any of the 21 details of their survey. 22 MR. SHIMADA: Object that it assumes facts. 23 MS. McKEITH: Q. So you don't know one 24 way or the other whether they took any samples? 25 A. At this point in time I do not. Page 174	1 A. Yes, I was. 2 Q. And during the approximately 1957 to '61 3 time period, can you tell me approximately how many 4 times a year you were required to investigate a 5 site -- or inspect a site? 6 A. I can't tell you exactly. I can tell you 7 that the system that was used, we -- the frequency of 8 the inspections was related to the type of activities 9 that were involved, and those that had a greater 10 potential for problems were inspected more frequently 11 than others, and the inspection frequency ranged 12 anywhere from twice a year to once every five years. 13 Q. So twice a year would have been the maximum 14 number of inspections that would have occurred at a 15 facility like this? 16 A. Yeah. At this kind of a facility, it would 17 be more apt to be once a year. 18 Q. So other than the inspections that would 19 have occurred once a year, you -- you meaning the 20 Atomic Energy Commission -- relied upon what the 21 licensee told you with respect to whether there were, 22 in fact, releases at the facility? 23 A. Yes, but there was -- there were reporting 24 requirements in the regulations with respect to 25 accidents and occurrences. Page 176

1 Q. Certainly. And assuming that somebody
2 actually followed those regulations, you may or may
3 not have gotten information; is that correct?
4 A. That's true.
5 Q. You described a slab in the backyard area.
6 Was this a concrete slab that was to grade?
7 A. To grade?
8 Q. In other words, Mr. Patterson asked you
9 whether the slab was elevated above grade.
10 A. Yes, it was elevated above grade.
11 Q. Was there any pit in the middle of that
12 slab -- a pit meaning a subsurface structure outside
13 as part of that slab area?
14 A. I don't remember whether there was any kind
15 of a pit in there at all per se.
16 Q. So your recollection is there was no pit;
17 is that correct?
18 A. There was no pit if you describe a pit as
19 similar to that cobalt pool.
20 Q. What about a structure that would be three
21 to five feet deep, deep meaning below grade?
22 A. At this point in time, I don't remember
23 anything like that being in the slab.
24 Q. But based upon what you were saying
25 earlier, if the license reflected that such a pit

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1 existed, then the licensee should not have closed that
2 pit, meaning covered it up, before you conducted your
3 survey; is that your understanding of what the
4 regulations would have required at the time?
5 A. That's true.
6 Q. Are there any limitations to taking wipe
7 samples on asphalt as opposed to concrete?
8 A. It's more difficult to take a sample off of
9 asphalt than it is on concrete because the surface is
10 not as smooth.
11 Q. So did you account for that in connection
12 with the wipe samples that you described having taken
13 on asphalt?
14 A. I took a sample of the asphalt in a method
15 so that I would be able to detect whether there was
16 any removable contamination on that asphalt.
17 Q. But you took no steps to determine whether
18 or not there was any contamination beneath the asphalt
19 area itself?
20 A. That's true.
21 Q. Now, you mentioned a conversation you had
22 at U.S. Nuclear concerning the plaster and the pool,
23 and you indicated that U.S. Nuclear stated words to
24 the effect that they did not intend to operate their
25 pool in the similar way that they had done at 170

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1 Providencia because of the contamination caused by the
2 plaster; is that correct?
3 A. The problem was that the plaster tended to
4 absorb the contamination. The water would get into
5 the plaster. It was more pervious to the water, and
6 hence the contamination would get into the plaster,
7 and that created a decontamination problem.
8 Q. How do you mean "a decontamination
9 problem"? What was the problem?
10 A. There would be more activity there because
11 it would tend to collect in there, and the more
12 activity, the greater the problem of -- it's a matter
13 of physically going in and removing the plaster. And
14 that's just more work and more potential exposure to
15 the people that are doing the work, than if you just
16 had a bare concrete surface.
17 Q. Was all of the plaster removed in
18 connection with the decommissioning at 170
19 Providencia?
20 A. Yes, it was.
21 Q. And then beyond that, you recollect that
22 there was concrete that was chipped?
23 A. There was concrete -- the surface of the
24 concrete showed elevated radiation levels, and when I
25 came back after it had been further decontaminated, it

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1 was clear that some of that contamination had been
2 removed by chipping.
3 Q. Did you physically ever go into the pool
4 and inspect it for cracks?
5 A. No, I did not.
6 MS. McKEITH: It's approximately 4:30 now,
7 and I would like to conclude the deposition for today.
8 Mr. Fish has agreed to advise us whether
9 November the 8th, Monday, November the 8th, is a
10 convenient time for him to reconvene the deposition.
11 Thank you for your time today.
12 VIDEO OPERATOR: This marks the end of
13 Videotape No. 3 in the deposition of Raymond Fish.
14 Going off the record at 4:32.
15
16 (Whereupon, the deposition was
17 adjourned at 4:32 p.m.)
18 --oOo--
19 I declare under penalty of perjury that
20 the foregoing is true and correct. Subscribed at
21 _____, California, this ____ day
22 of _____, 1999.
23
24 _____
25 Signature of the witness

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1 CERTIFICATE OF REPORTER

2

3

4 I, JULIE ANNE ZEIGLER, a Certified

5 Shorthand Reporter, hereby certify that the witness in

6 the foregoing deposition was by me duly sworn to tell

7 the truth, the whole truth and nothing but the truth

8 in the within-entitled cause;

9 That said deposition was taken down in

10 shorthand by me, a disinterested person, at the time

11 and place therein stated, and that the testimony of

12 the said witness was thereafter reduced to

13 typewriting, by computer, under my direction and

14 supervision;

15 I further certify that I am not of

16 counsel or attorney for either or any of the parties

17 to the said deposition, nor in any way interested in

18 the event of this cause, and that I am not related to

19 any of the parties thereto.

20

21 DATED: _____, 1999.

22

23

24 _____

25 JULIE ANNE ZEIGLER, CSR 9570

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1 SIGNATURE AND ERRATA SHEET

2 (To be signed by deponent)

3 I, RAYMOND F. FISH, JR., do hereby declare under

4 the penalties of perjury that the foregoing testimony

5 is true and correct (with the exception of the

6 following changes listed below):

7 Page Line Change/Correction Reason

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21 Executed this _____ day of _____, 1999,

22 at _____

23

24 _____

25 RAYMOND F. FISH, JR.

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1

2 SIGNATURE AND ERRATA SHEET

3 (To be signed by deponent)

4 I, RAYMOND F. FISH, JR., do hereby declare under

5 the penalties of perjury that the foregoing testimony

6 is true and correct (with the exception of the

7 following changes listed below):

8 Page Line Change/Correction Reason

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21 Executed this _____ day of _____, 1999,

22 at _____

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24 _____

25 RAYMOND F. FISH, JR.

Page 182

1 October 25, 1999

2 Raymond Fish

3 12 Doral Drive

4 Moraga, CA 94556

5 Re: Joseph A. Thomson, et al. vs. ICN

6 Pharmaceuticals, et al.

7 Dear Mr. Fish:

8 Please be advised that the original transcript of your

9 deposition taken October 12, 1999 in the

10 above-entitled matter is available for reading and

11 signing. The original will be held at the offices of:

12 Combs & Greenley

13 49 Stevenson Street

14 Suite 400

15 San Francisco, CA 94105

16 for thirty (30) days in accordance with Federal Rules

17 of Civil Procedure Section 30(e). If you do not sign

18 your deposition within 30 days, it may be used as

19 fully as though signed.

20 If you are represented by counsel in this matter, you

21 may wish to ask your attorney how to proceed. If you

22 are not represented by counsel and wish to review your

23 transcript, please contact our office for a mutually

24 convenient appointment to review your deposition.

25 Thank you for your cooperation in this matter.

Sincerely your,

Julie Anne Zeigler, CSR 9570

cc: Original transcript

GREGORY J. PATTERSON, Attorney at Law

MALISSA HATHAWAY McKEITH, Attorney at Law

JOHN H. SHIMADA, Attorney at Law

BRYAN K. BROWN, Attorney at Law

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1 2 IN THE UNITED STATES DISTRICT COURT 3 CENTRAL DISTRICT OF CALIFORNIA 4 --oOo-- 5 6 JOSEPH A. THOMSON and VIRGINIA) 7 THOMSON, as individuals,) 8) 9 Plaintiffs,) 10) 11 vs.)No. CV-97-5220 RAP 12) 13 ICN PHARMACEUTICALS, INC., a) 14 Delaware corporation; NUCOR) 15 CORPORATION, a Delaware) 16 corporation; RHONE-POULENC, INC.,) 17 a New York corporation,) 18) 19 Defendant.) 20) 21 22 DEPOSITION OF 23 RAYMOND F. FISH, JR. 24 November 8, 1999 25 Volume II (Pages 182 - 290) REPORTED BY: JULIE ANNE ZEIGLER, CSR 9570 JOB 85447 182	1 EXHIBITS MARKED FOR IDENTIFICATION CONTINUED 2 No. Description Page 3 Exhibits marked by Rhone-Poulenc: 4 23 Letter to Eugene V. Kleber at Research 257 5 Chemicals, Inc. from Kber Price 6 dated May 18, 1961. Bates-stamped 7 RP 00015 to 00016. 8 9 24 Letter to Fred E. Nathanson from Kber . 259 10 Price dated August 29, 1961. 11 Bates-stamped RP 00018. 12 13 14 15 16 17 18 19 20 21 22 23 24 25 184
1 INDEX 2 3 INDEX OF EXAMINATION 4 Page 5 FURTHER EXAMINATION BY MS. McKEITH 187 6 EXAMINATION BY MR. SHIMADA 226 7 EXAMINATION BY MR. BROWN 249, 283 8 FURTHER EXAMINATION BY MR. PATTERSON .. 262, 283 9 FURTHER EXAMINATION BY MS. McKEITH 285 10 11 EXHIBITS MARKED FOR IDENTIFICATION 12 No. Description Page 13 Plaintiff's Exhibits marked: 14 18 Document entitled "Attachment G 202 15 continued Facilities and Equipment 16 continued." Bates-stamped 000305 17 and 309 to 316. 18 19 19 Document entitled "Compliance Report" . 210 20 stamped "Copy." 21 Letter to Mr. James Mason from J.D. ... 215 22 Vaden dated January 19, 1961 on the 23 letterhead of Nuclear Corporation 24 of America. 25 21 A draft document to Mr. Goldstein from 219 Mason dated 9/2 something/58. 26 Exhibits marked by Nucor Corporation: 27 22 Letter to Raymond Fish, Jr. from 245 Daniel Fresquez dated September 27, 1999. 28 29 30 31 32 33 34 35 183	1 2 IN THE UNITED STATES DISTRICT COURT 3 CENTRAL DISTRICT OF CALIFORNIA 4 --oOo-- 5 6 JOSEPH A. THOMSON and VIRGINIA) 7 THOMSON, as individuals,) 8) 9 Plaintiffs,) 10) 11 vs.)No. CV-97-5220 RAP 12) 13 ICN PHARMACEUTICALS, INC., a) 14 Delaware corporation; NUCOR) 15 CORPORATION, a Delaware) 16 corporation; RHONE-POULENC, INC.,) 17 a New York corporation,) 18) 19 Defendants.) 20) 21 22 --oOo-- 23 BE IT REMEMBERED that, pursuant to Notice, 24 and on Monday, November 8, 1999, commencing at 12:53 25 p.m. thereof, at Lewis, D'Amato, Brisbois & Bisgaard LLP, One Sansome Street, 14th Floor, San Francisco, California, before me, JULIE ANNE ZEIGLER, a Certified Shorthand Reporter, personally appeared RAYMOND F. FISH, JR. called as a witness by the Defendant ICN Pharmaceuticals, Inc., who, having been first duly sworn, was examined and testified as follows: 185



1 --oOo-- 2 LOEB & LOEB LLP, 1000 Wilshire Boulevard, 3 Suite 1800, Los Angeles, California 90017-2475, 4 represented by MALISSA HATHAWAY McKEITH, Attorney at 5 Law, appeared as counsel on behalf of the Plaintiffs. 6 PROSKAUER ROSE LLP, 2049 Century Park East, 7 Suite 3200, Los Angeles, California 90067-3206 8 represented by GREGORY J. PATTERSON, Attorney at Law, 9 appeared as counsel on behalf of Defendant ICN 10 Pharmaceuticals, Inc. 11 LEWIS, D'AMATO, BRISBOIS & BISGAARD LLP, 12 221 North Figueroa Street, Suite 1200, Los Angeles, 13 California 90012 represented by JOHN H. SHIMADA, 14 Attorney at Law, appeared as counsel on behalf of 15 Defendant Nucor Corporation. 16 McCUTCHEN, DOYLE, BROWN & ENERSEN, LLP, 355 17 S. Grand Avenue, Suite 4400, Los Angeles, California 18 90071 represented by BRYAN K. BROWN, Attorney at Law, 19 appeared as counsel of behalf of Defendant 20 Rhone-Poulenc, Inc. 21 --oOo-- 22 VIDEO OPERATOR: Here begins Videotape No. 23 4 in the deposition of Raymond Fish. Today's date is 24 November 8th, 1999. The time on the video monitor is 25 12:53. The video operator today is Stephen Statler 186	1 release criteria were. 2 Q. Do you know whether Isotopes Specialties 3 Corporation was permitted to bury any radioactive 4 materials on the property? 5 A. There were in the regulations requirements 6 allowing under certain circumstances provisions for 7 burying radioactive wastes. 8 Q. My question was: Do you know whether 9 Isotopes Specialties Company was permitted to bury any 10 radioactive wastes or materials on the property? 11 A. The answer is no. 12 Q. Is that no, you don't recall, or no, they 13 weren't permitted? 14 A. Will you repeat that? 15 Q. Do you recall one way or the other whether 16 they were permitted to bury any radioactive materials 17 on the property as part of this release and/or 18 decommissioning? 19 A. No, I don't remember. 20 Q. Did you take any steps as part of your 21 survey in connection with the decommissioning to 22 determine if they had, in fact, buried any radioactive 23 materials on the property? 24 A. To the extent that I reviewed what was in 25 our file, which would have included any reports that 188
1 employed by Video Solutions, a LegaLink company, of 2 San Francisco, California. 3 All those who were present at the October 4 12th session are present today. Please begin. 5 FURTHER EXAMINATION BY MS. McKEITH 6 MS. McKEITH: Q. Good morning, Mr. Fish. 7 You may recall that I represent Joseph and Virginia 8 Thomson, the individuals who purchased the Providencia 9 property in the mid-1960s after it was decommissioned. 10 I'm going to continue the questioning from our last 11 sessions. 12 The first question I have is: Would it 13 have been unlawful for Isotopes Specialties 14 Corporation to bury radioactive source materials on 15 its property prior to the decommissioning? 16 A. I don't really know the answer to that. 17 You would have to get into the Office of General 18 Counsel to get an answer to that one. 19 Q. You testified earlier that you were 20 involved in the decommissioning of the property and 21 had received instructions from Maryland as to what the 22 limits of the decommissioning would be; is that 23 correct? 24 A. I was involved in the confirmatory survey, 25 and the people in Bethesda had informed us of what the 187	1 they made of releases or similar actions that were in 2 violation of the regulations or that were identified 3 in previous inspection reports, to that extent, the 4 answer is yes, but no other extent. That is, the 5 survey itself did not. 6 Q. So if as part of the decommissioning of the 7 its site or the closedown of its site, Isotopes 8 Specialties Company had buried radioactive materials 9 and had not told the Atomic Energy Commission, you did 10 not take any independent action to determine -- one 11 way or the other to determine if there was any buried 12 waste on that site? 13 A. No. My confirmatory survey did not get 14 into that type of an action. 15 Q. Prior to the time that you conducted the 16 decommissioning at Providencia site, did you work on 17 any site where, in fact, the Atomic Energy Commission 18 permitted the burial of radioactive materials? 19 A. I don't recall that I personally was 20 involved in such inspection activities. 21 Q. Do you know what the criteria was for the 22 Atomic Energy Commission deciding whether to permit 23 the burial of radioactive waste on a site? 24 A. Only in general terms do I remember the 25 provisions in the regulations for burial on a 189

1 licensee's site, but I wouldn't want -- I'm not sure 2 enough to be able to get into the specifics of it. 3 Q. Could you just tell us what your general 4 recollection is today? 5 A. My general recollection today is that it 6 had -- there were limitations on what could be buried 7 and there were limitations on the burial that could 8 occur being a depth restriction and a separation 9 restriction from one burial to another. 10 Q. And under what circumstances other than the 11 limitations that were placed on someone for, in fact, 12 burying wastes, under what circumstances would the 13 Atomic Energy Commission permit burial as opposed to 14 cleanup? And by cleanup, I mean removal and taking 15 off site. 16 A. I'm not sure I remember. 17 Q. I previously asked whether or not you 18 personally had been involved in the decommissioning of 19 a site that involved the burial of waste; am I correct 20 your answer to that was no? 21 A. That's true. 22 Q. Subsequent to the Providencia site, were 23 you involved in any of the decommissioning that 24 involved the burial of the radioactive waste at any 25 time in your career at the Atomic Energy Commission? 190	1 Q. My question was posed in the context of a 2 decommissioning, whether there were differentiations 3 between the decommissioning of a licensee site that 4 was located in a residential area such as Providencia 5 versus an installation such as Hanford, for example. 6 A. No, the criteria would be the same for 7 release. 8 Q. In 1961, approximately, was there a 9 methodology available for sampling soil to determine 10 if there was radioactive contamination in soil? 11 A. Yes, there was a means of sampling soil. 12 Q. Can you tell me what that sampling 13 methodology was? 14 A. Well, sampling that I got involved in would 15 be taking soils -- we were primarily -- the ones I was 16 involved in were primarily surface soils so it wasn't 17 like taking a core. So we would take samples from the 18 top of the earth. We would use a shovel and collect 19 the sample and then have it analyzed. 20 Q. And what type of analytical methodology in 21 the laboratory, if you know, was used on those types 22 of samples? 23 A. Well, first thing they would do would be to 24 try to eliminate the water problem, any interference 25 from water. They would then, probably, do a gross 192
1 A. Not that I can remember. 2 Q. Now you have an amazingly good memory for 3 things that happened 30 years ago. If you had been 4 involved, do you think you would remember if you had, 5 in fact, been at a site where there was burial of 6 waste? 7 A. I'm not sure I would or not. The only 8 thing I do remember is that there were licensees that 9 had done such activities within the area of the 10 region, and that's all I remember. 11 Q. Do you recall whether the Atomic Energy 12 Commission differentiated between sites that were 13 located in a residential neighborhood such as the 14 Providencia site versus a nonresidential area such as, 15 let's say, Hanford in Washington, which was a large 16 installation? 17 A. There would be different restrictions on 18 what could take place in a site like Providencia 19 versus a site like Hanford. 20 Q. Can you describe for us generally what 21 those different restrictions would be? 22 A. Yeah, there would be more restrictive use 23 of the quantities and the types of isotopes that could 24 be used, primarily quantities more than anything else, 25 but it would be -- that would be the differentiation. 191	1 count on the sample. And depending upon what they 2 were looking for, they might do an isotopic analysis. 3 Q. Did you conduct any such tests on the 4 Providencia property? 5 A. No. 6 Q. Why did you not conduct any such tests on 7 the Providencia property? 8 A. Because the surfaces were all -- were in 9 place, and I was not aware of any violation of those 10 surfaces. So if you don't have a violation of the 11 surface, you can't get down below. 12 Q. What do you mean by a violation of the 13 surface? 14 A. A crack or deterioration to the extent that 15 the underneath is exposed. 16 Q. You actually recall, as you sit here today, 17 whether the asphalt paving in the rear yard of the 18 Providencia property had no cracks in it? 19 A. No, I do not remember. 20 Q. Was there a methodology available in the 21 1960s, early 1960s, to sample whether or not concrete 22 material was contaminated? 23 A. You mean taking a part of the concrete 24 and -- 25 Q. That's correct. A chip or a section of the 193

1 concrete and analyzing it. 2 A. I'm sure there were ways of doing it, sure. 3 Q. Well, I don't want you to guess. Do you 4 recall if there was a methodology for doing that? 5 A. Since I didn't get involved in the analysis 6 of those types of samples, I guess the answer is I 7 don't know. 8 Q. Before I move on, prior to the Providencia 9 decommissioning, had you conducted soil samples at any 10 of the other sites that you had been involved in 11 decommissioning, either directly or as part of your 12 office? 13 A. I don't really remember. 14 Q. Subsequent to Providencia, do you recall 15 whether you conducted any decommissionings that 16 involved the sampling of soil? 17 A. I guess I don't even remember that with 18 respect to decommissioning. 19 Q. What about with respect to -- well, under 20 what other circumstances would the Atomic Energy 21 Commission have been involved with conducting soil 22 samples at a facility? 23 A. Well, if there was an accident or a release 24 of activity from a facility, we would then take soil 25 samples to see the extent of the release of the 194	1 equipment was available or not? 2 A. Yes. 3 Q. Can you tell me what, if anything, you did 4 to detect alpha contamination at the Providencia site 5 as part of your decommissioning? 6 A. Yes, I counted the wipe samples for alpha 7 contamination. 8 Q. Did you count every wipe sample you took 9 for alpha contamination or only in the areas where you 10 suspected there could be some alpha contamination? 11 A. All of them were counted for alpha. 12 Q. Was there a particular cleanup standard for 13 alpha contamination in approximately 1961? 14 A. I don't remember the specific numbers. 15 Q. Would they have differed from the cleanup 16 criteria that was in the letter that had been sent to 17 Isotopes Specialties Corporation in connection with 18 the Main Street facility? I would be happy to show 19 you a copy of that letter again if you need it. 20 A. The only answer I can give you is that 21 alpha contamination limits were lower than the limits 22 for beta gamma. 23 Q. I believe that this letter has already been 24 marked as -- I'm referring to the -- this is a letter 25 from Mr. Michaud to -- excuse me, from Mr. Price. 196
1 activity. 2 Q. You testified at length at our last 3 deposition about the use of the Geiger-Muller to 4 detect surface contamination at the site. Do you 5 recall that? 6 A. Yes, I do. 7 Q. Was the Geiger-Muller the state of the art 8 equipment at that time for detecting beta and gamma 9 rays or was there better equipment available in the 10 early 1960s? 11 A. Well, I guess you would describe it as the 12 instrument that was used for most of the work as 13 opposed to a research-type instrument or an instrument 14 that would be used for a very sophisticated 15 requirement. 16 Q. My question was: Was there better 17 equipment available to conduct a survey at a site for 18 the detection of beta and gamma radiation in the early 19 1960s? 20 MR. PATTERSON: Objection; vague. 21 MR. SHIMADA: Lacks foundation. 22 THE WITNESS: I don't remember -- because 23 of a time problem, I don't remember. 24 MS. McKEITH: Q. So what you don't have 25 is a way is to place in time whether or not that 195	1 MR. PATTERSON: Exhibit 1. 2 MS. McKEITH: Q. Exhibit 1. Okay. I'm 3 going to go ahead and show you this letter again so we 4 can go through it together. Do counsel need another 5 copy of this letter? 6 Calling your attention to Item 2, "the 7 radiation level at three inches from the surface of 8 the floor and walls shall not exceed two millirems in 9 any one hour." Do you recall whether the cleanup 10 criteria for alpha contamination would have differed 11 from that? 12 A. The alpha requirement would not have been 13 in the form of a radiation level, which is what this 14 is, two millirem in any one hour is a radiation level. 15 The alpha would have been in the form of a removable 16 contamination, which would typically be in 17 disintegrations per minute. 18 Q. Do you know or see anything in this 19 correspondence that refers to disintegrations per 20 minute and providing any alpha criteria? 21 A. Item No. 1 covers that. 22 Q. What do you interpret -- could you read No. 23 1 for us, first of all? 24 A. Sure. No. 1 says, "The radioactive 25 contamination must not be readily removable from the 197

1 property." 2 Q. If there was alpha contamination in the 3 soil, would you have considered that readily removable 4 from the property? 5 MR. PATTERSON: Objection; vague. 6 MS. McKEITH: Q. Do you understand what 7 I'm asking? 8 A. Yeah, I understand what you're asking. I 9 guess my answer is that that criteria No. 1 would not 10 be applied to soil conditions. There would be a 11 different requirement in there as it relates to soil. 12 Q. Is there anything in this letter that 13 relates to soil conditions at all? 14 A. Not specifically the soil. 15 Q. Could you please explain to me your 16 interpretation of Item 1 relative to the alpha 17 criteria for a release of nonrestricted use? 18 A. At this point in time, I don't remember the 19 numbers that were used to define readily removable, 20 but if that dealt with alpha, we would have had some 21 kind of a number that we would be using to define 22 readily removable, but I don't remember what the 23 number is. 24 Q. Do you really remember one way or the 25 other, as you sit here today, whether there was a 198	1 contamination? 2 A. That's dependent upon the amount of 3 activity that would be there and how much shielding 4 was between the radioactive material and my detector. 5 Q. You had testified in your last deposition 6 that concrete served as a shield for beta and gamma 7 rays. 8 A. That's true. 9 Q. So could you tell us any guidelines for how 10 much concrete it was required to shield? 11 MR. SHIMADA: Objection; the question is 12 vague. 13 MS. McKEITH: Q. Do you understand my 14 question? 15 A. I think I understand your question, and 16 right now I can't tell you the relationship between 17 the thickness of concrete and the shielding it 18 provided. 19 Q. I believe you testified in connection with 20 the swimming pool that if there had been contamination 21 on the other side of the wall of the swimming pool, 22 you did not believe that your Geiger-Muller would pick 23 up on that contamination. Do you recall that? 24 A. Yeah, I remember saying that it would be 25 possible for that sidewalk to shield the activity 200
1 number that you applied? 2 A. No, I do not. 3 Q. So as you sit here today, you don't recall 4 one way or the other if there was even a number that 5 the Atomic Energy Commission had designated for this 6 site for alpha removal? 7 A. I do not remember specifically any such 8 number. 9 Q. Now, the impression I get from reading this 10 letter -- and correct me if I'm wrong -- is that the 11 Atomic Energy Commission was concerned about levels of 12 radiation that remained at the surface at certain 13 distances from the surface of a floor of a building or 14 from a wall. And if your Geiger-Muller recorded a 15 level that was beneath what's designated in this 16 letter, then there was no longer a concern on the part 17 of the Atomic Energy Commission; is that a fair 18 interpretation of this letter? 19 A. The numbers were set. Numbers such as are 20 described in the letter are set with the intent of 21 limiting the exposure of the general public who would 22 occupy those areas after the decontamination. 23 Q. And if there was contamination, for 24 example, beneath the concrete, would your equipment 25 have necessarily picked up the levels of that 199	1 depending upon how much was there. 2 Q. You've had a lot of years with radioactive 3 materials. If you have a foot of concrete, can you 4 tell us in percentages approximately how much that 5 would reduce the levels that would be likely to emit 6 through that concrete? 7 MR. SHIMADA: Objection -- 8 THE WITNESS: At this point I just do not 9 remember. 10 MR. SHIMADA: -- lack of foundation, calls 11 for speculation. 12 MS. McKEITH: Q. Just because I can't 13 recall from the last deposition, did you personally 14 count the wipe samples or were the wipe samples 15 reviewed by someone other than you? 16 A. I counted the samples. 17 Q. You've testified earlier today that alpha 18 contamination would have had a lower cleanup level 19 than beta or gamma. Can you tell us why that is? 20 A. Alpha is a -- creates more damage -- 21 exposure to alpha creates more damage to the 22 individual; however, that only occurs if it's 23 internally deposited. And because of the -- it 24 being -- creating more damage if internally deposited, 25 the limits are held to be lower. 201

1 Q. What do you mean by "internally deposited"? 2 A. Taken inside the body. 3 Q. How is alpha contamination taken inside of 4 the body? What are the -- 5 A. It can either be taken in orally through 6 the mouth or breathed through the nose or, 7 theoretically, it could go in through a cut in the 8 skin. 9 MS. McKEITH: I'm going to mark next in 10 line -- is it 24? 11 MR. PATTERSON: Eighteen. 12 (Whereupon, Plaintiff's 13 Exhibit 18 was marked 14 for identification.) 15 MS. McKEITH: Q. I'm going to give you my 16 copy. When you're done, could you give this to the 17 court reporter, please. 18 I'm going to represent to you that these 19 documents were attached to the license application 20 that Isotopes Specialties Corporation had provided to 21 the Atomic Energy Commission. I believe you've 22 testified previously that you reviewed the file prior 23 to doing the survey for the decommissioning; is that 24 correct? 25 A. Yes, I did. 202	1 preventing the removal of more than the amount of 2 cobalt 60 from the storage unit at any one time." 3 Q. You testified earlier that when you went to 4 the facility you do not remember any open holes in the 5 floor of the facility other than the swimming pool. 6 Between your last deposition and today, have you 7 recalled whether or not there were any subgrade holes 8 that were open at the facility? 9 A. No, I don't remember. 10 Q. In looking at document No. 000309, does 11 this document at all refresh your recollection as to 12 whether there were any holes at the facility? And my 13 recollection is that you had been to the facility when 14 Isotopes Specialties Corporation was operational; is 15 that correct? 16 A. I said I didn't remember whether I had made 17 inspections at the facility or not. 18 Q. So you don't recall having made inspections 19 there? 20 A. No. I guess I should point out that what I 21 read here on page 305 does not necessarily mean this 22 is a below-floor storage facility. 23 Q. Let me ask you this: If they had had any 24 below grade storage facilities at all -- assume for a 25 moment that were correct and they did have some below 204
1 Q. And as part of the file at that time, would 2 it have contained the license applications for 3 Isotopes Specialties Corporation? 4 A. Yes, it would. 5 Q. Drawing your attention to document Bates 6 Stamp 000309. There's a reference to ten storage 7 holes, and I believe if you turn back to the prior 8 page, 000305, there's a reference to those storage 9 holes. 10 A. What was the first reference page? 11 Q. 305? 12 A. 305 I have. What was the other one? 13 Q. The next one in line, which is 000309? 14 A. Yes. 15 Q. Do you want to go ahead and read that. 16 A. The highlighted portion? 17 Q. Yes, please. You can go ahead and read it 18 out loud, please. 19 A. "The primary storage unit for the facility 20 is a cylindrical cast with a 4-inch cavity and 10-inch 21 lead shielding. The plug for the cavity contains nine 22 storage holes. Each of which is stopped by remotely 23 removable lead plug with storage shelves below the 24 plug. The unit is designed for storage of 25 approximately 200 curies in each hole. This design 203	1 floor storage facilities in their hot labs, were they 2 permitted to close those below-grade storage 3 facilities before you conducted your decommissioning 4 survey? 5 A. No. 6 Q. So if they had closed those before you got 7 there, that would have not been permitted by the 8 Atomic Energy Commission? 9 A. If you're asking a legal question -- 10 Q. No. I'm asking you whether or not at the 11 time, if you had known they had closed something, 12 whether that would have been right or wrong? 13 A. It would have been wrong. 14 Q. Okay. Thank you. 15 MR. SHIMADA: Objection; lacks foundation, 16 calls for a legal conclusion. 17 MS. McKEITH: Q. I'm going to draw your 18 attention to document No. 00315. It's the second 19 document to the end under "Storage Area." Can you go 20 ahead and read that. 21 A. The two highlighted areas? 22 Q. Yes, please. 23 A. "The building contains an experimental 24 animal irradiation facility. Low-level packaged 25 radioactive waste is stored here." 205

1 Q. And under "Storage Area." Yes. 2 A. And then under "Storage Area" it says, "A 3 fenced, locked storage area is provided at the rear of 4 the main building. In addition to open storage, a 15 5 foot by 24 foot double wall concrete lined pit with 2 6 feet of sand between the walls is used." 7 Q. Do you recall seeing a 15 foot by 24 double 8 walled concrete lined pit when you went to do your 9 decommissioning? 10 A. No, I do not remember any such facility. 11 Q. Do you want to turn to the next page, 12 000316. Do you see -- this is actually a document 13 that was also attached to their license. It is a bad 14 copy like so many of the copies we received from the 15 Nuclear Regulatory Commission, made worse by the fact 16 that I copied it in my fax machine. Do you see where 17 it says "pit area"? 18 A. Yes, I do. 19 Q. Do you recall any subgrade pit in that 20 area? 21 A. No, I do not remember any such pit. 22 Q. Do you recall any fenced-in area in the 23 area that's marked "storage yard"? See the reference 24 to the fence? 25 A. Yeah, I see the reference. No, I don't 206	1 the site to do the survey, would that have been 2 permitted? 3 MR. SHIMADA: Objection; lacks foundation, 4 calls for speculation. 5 THE WITNESS: Well, I guess the answer is 6 the same. I mean, legally, I don't know. We would -- 7 if we found out about it, we would be very upset and 8 would force them to open it up so that we could survey 9 it. 10 MS. McKEITH: Q. Do you recall whether 11 you asked anyone at Isotopes Specialties Company 12 whether they closed any subsurface features prior to 13 your arrival? 14 A. At this time I do not remember. 15 Q. Drawing your attention to the swimming pool 16 for a moment, while Isotopes Specialties Corporation 17 was operating, you're aware of the fact that that pool 18 had water in it, correct? 19 A. Yes. 20 Q. And you're aware of the fact that that pool 21 would have been contaminated with radioactive 22 materials -- the water in the pool? 23 A. Yes. 24 Q. Did you personally witness Isotopes 25 Specialties Company disposing of that swimming pool 208
1 remember that. 2 Q. Now, are you aware of the fact that 3 Isotopes Specialties Company received and repackaged 4 waste from its customers at its facility? 5 A. As of today, I don't remember that. 6 Q. Had you known at the time that they 7 collected waste from their customers, would that have 8 made any difference in terms of a level of 9 investigation you would have conducted in the outside 10 yard area of the facility? 11 MR. SHIMADA: Calls for speculation. 12 MS. McKEITH: Q. You can answer it. 13 A. It wouldn't have made any difference 14 because I would have made a thorough survey there. To 15 the extent that I was aware of that area the 16 evaluation would have been more thorough than just the 17 evaluation that was done on the driveway. 18 Q. Now you testified at the last deposition as 19 to what you actually did in the backyard area. 20 A. Yes. 21 Q. Do you recall whether you conducted a more 22 thorough survey in that area? 23 A. No, I don't recall it. 24 Q. Had Isotopes Specialties Company covered 25 over the pit with concrete prior to your arrival at 207	1 water? 2 A. No, I do not. 3 Q. Do you recall whether you reviewed any 4 documents to demonstrate that they properly disposed 5 of that water at a site licensed to receive such 6 materials? 7 A. At this time I do not remember. 8 Q. Would it have been part of your practice in 9 the early 1960s to require that they show you some 10 documentation of that type? 11 A. I guess I just don't remember whether we 12 would have or not. 13 Q. In connection with any other radioactive 14 contamination materials that would have been generated 15 during the decommissioning such as the chipping of the 16 pool -- you testified earlier that they had to chip 17 the sides of the pool because of the high levels of 18 contamination. That's correct, is it not? 19 A. Yes. High level being in excess of the 20 release amount. 21 Q. Correct. Did you witness their packaging 22 of that material for purposes of disposal? 23 A. No, I did not. 24 Q. Do you have any knowledge one way or the 25 other whether that chipping, in fact, was disposed of 209

1 properly? 2 A. At this point in time, I do not. 3 MS. McKEITH: Exhibit 19. 4 (Whereupon, Plaintiff's 5 Exhibit 19 was marked 6 for identification.) 7 MS. McKEITH: Q. Do you recognize this 8 type of report? 9 A. Yes, I do. 10 Q. Can you tell me what it is? 11 A. Yeah, it's the results of an inspection 12 that was conducted on October 16th, 1959. 13 Q. My birth date, real birth date. 14 A. And it's an initial inspection. 15 Q. And what facility was that at? 16 A. This is the -- licensee is Research 17 Chemicals. The address is 170 West Providencia Street 18 in Burbank, California, and the license is a source 19 material license. 20 Q. And what on this document would indicate 21 that this is a source material license? 22 A. The license number and the type of material 23 that was allowed to be possessed. It's a thorium 24 source material. 25 Q. Can you tell us how much thorium source 210	1 seems like a lot for this particular type of license? 2 A. Well, two and a half tons is a lot of 3 material. 4 Q. You testified earlier that if someone has a 5 license to handle source materials, that they were 6 required to go through a decommissioning for release 7 for nonrestricted use when that license terminated; is 8 that correct? 9 A. In this particular case, yes. 10 Q. And so decommissioning of the Research 11 Chemical, Inc. facility would have taken place at some 12 point in time? 13 A. Yes. 14 Q. Mr. Donaldson, the individual who conducted 15 the presurvey work prior to your decommissioning has 16 been deposed in this case. Mr. Donaldson insists that 17 he never did any surveying at the Research Chemical 18 facility. Do you recall doing a recommissioning for 19 the Research Chemical facility? 20 A. Not specifically. 21 Q. I want to turn your attention to the next 22 page. Under paragraph 12 under "Facilities and 23 Equipment," it reads, "Most of the source materials, 24 approximately 4,300, pounds remains in the shipping 25 containers" parentheses -- I can't read how many 212
1 material was permitted at the Research Chemical 2 company? 3 A. The license allowed them up to 5,000 pounds 4 of thorium source material. 5 Q. Are you able to tell us approximately how 6 large a quantity of 5,000 pounds is by pointing to 7 something in this room? 8 A. No, I'm not able to. 9 Q. Is 5,000 pounds -- you know, I think about 10 a ton. 11 A. It's two and a half tons. 12 Q. So this allows them to have two and a half 13 tons of thorium source material on site? 14 A. That's right. 15 Q. Relative to other facilities, is that a 16 lot? 17 MR. BROWN: Objection; vague. 18 MR. SHIMADA: Lacks foundation. 19 MS. McKEITH: It's okay. 20 THE WITNESS: This is a significant amount 21 of quantity for this type of a license. There are 22 other source licenses where this would be a very small 23 amount, but not for this one. It's a significant 24 amount. 25 MS. McKEITH: Q. What makes you say this 211	1 barrels on my copy. Can you read that? 2 A. It looks like 20. 3 Q. -- "approximately 20 barrels, which are 4 located in the fenced area in back of the building." 5 And just to reiterate, you previously testified you do 6 not recall a fenced area in the back of the building 7 when you did your decommissioning? 8 A. That's true. I don't remember. 9 Q. Given the quantity of thorium materials 10 that you see here today, was the wipe sampling you 11 conducted, in your own opinion, adequate to 12 decommission the back portion of that site? 13 A. I can only state that the site -- the wipe 14 samples were adequate to release the site for 15 unrestricted use. 16 Q. Can you recall the number of wipe samples 17 you would have taken on pavement in the backyard area 18 of the site? You know what I'm referring to? 19 A. No, I don't. 20 Q. You had discussed previously that you 21 conducted a grid in the building where the operations 22 were. 23 A. Sort of a grid. I mean, you know, it's a 24 matter of looking at one area and then moving to 25 another area and moving to another until you basically 213

1 cover the whole area that was involved, and to that 2 extent, it was a grid. 3 Q. If you weren't aware of there being a 4 fenced area that had contained thorium materials in 5 the backyard -- well, let me strike that. 6 Can you recall whether you conducted the 7 same grid methodology in the paved area of the 8 backyard or whether you took fewer samples outside? 9 A. I can't remember the details of that. 10 Q. You testified at the last deposition that 11 you did sample the pipes inside of the building at the 12 Providencia facility. 13 A. The drains? 14 Q. The drains, right. 15 A. Yes. 16 Q. Do you recall whether you had a schematic 17 of the plumbing system at your disposal? 18 A. No, I did not have a schematic. I was 19 looking at only what was there and measuring what was 20 there. 21 Q. Approximately how many feet into any given 22 pipe was your Geiger-Muller capable of detecting 23 contamination? 24 A. Well, assuming that the detector could get 25 in there, it was capable of going in 18 inches to two 214	1 to James Mason, Chief, Isotopes Branch, Division of 2 Licensing and Regulation. This document reflects the 3 fact that 948 containers of radioactive waste were 4 dumped in the ocean that had been previously been at 5 the Providencia site. Can you tell me whether the 6 Geiger-Muller that you used in the field and the wipe 7 samples that you utilized would have identified the 8 type of contamination that would be generated by the 9 types of radioactive materials that are identified on 10 this list? 11 MR. SHIMADA: Objection; vague, lacks 12 foundation. 13 THE WITNESS: The Geiger-Muller tube would 14 have detected some of them. 15 MS. McKEITH: Q. Can you tell us which of 16 the chemicals identified on the Exhibit 20 were not 17 susceptible to detection from the Geiger-Muller? 18 A. Polonium 210 is one. I'm not sure about 19 the Thorium 232. It would not have detected the 20 Carbon 14. It would not have detected the Hydrogen 3. 21 Those are the only ones I can identify. 22 Q. Were the wipe samples that you conducted 23 capable of detecting the four types of contaminations 24 that you've just identified -- the Polonium 210 and 25 Thorium 232 and Carbon 14 and Hydrogen 3? 216
1 feet. 2 Q. So if a pipe ran under a building for 25 or 3 30 feet, and there was only one opening to that pipe, 4 the maximum amount that that Geiger-Muller could 5 detect would be approximately a foot and a half? 6 A. It's my guess. 7 Q. If a pipe had leaked at any given point in 8 time, would your Geiger-Muller have been capable of 9 detecting any contamination in soil underneath the 10 pipe that had leaked? 11 A. No, it wouldn't have detected the 12 contamination in the soil. 13 Q. Are you aware -- were you aware of the fact 14 when you conducted the survey at Providencia that 15 Isotopes Specialties Corporation was permitted to 16 dispose into their sanitary sewer system radioactive 17 contaminated materials? 18 A. To the extent it was permitted by the 19 regulations, yes. 20 MS. McKEITH: Exhibit 20. 21 (Whereupon, Plaintiff's 22 Exhibit 20 was marked 23 for identification.) 24 MS. McKEITH: Q. I'm going to mark as 25 Exhibit 20 a January 19, 1961 letter from J.D. Vaden 215	1 A. It would have detected the polonium. The 2 Thorium 232, I don't know what the radiation is on 3 that, but my guess is that it would have, because if 4 it were an alpha emitter, it would have detected that. 5 If it had beta gammas, it would have been detected. 6 Carbon 14 and Hydrogen 3 are both soft betas, and at 7 this point in time, I don't remember whether it would 8 have been able to detect those soft betas. 9 Q. Can you tell me when you were doing the 10 wipe samples, did you have to be looking for a certain 11 type of contamination in order to identify it? I'm 12 simply not aware of how the wipe sampling test works 13 to know, for example, that the person doing the count 14 has to be looking for polonium 210, that if they are 15 not looking for it, they are not going to find it. 16 A. The samples are counted in such a manner 17 that gross counts are detected, and so the particular 18 isotope involved was not germane. In other words, it 19 was total counting. So we had total counts of alpha, 20 and then we had total counts of beta gamma and the 21 source of that activity was not important. 22 Q. Did you put the wipe sample under a 23 microscope and, like, physically count? 24 A. No, it's a scaler unit that had a gas flow 25 detector which is a -- the wipe was put on a tray and 217

1 slid into the detector. The activity would then give 2 off its radiation which would be sensed by the 3 instrument and then recorded on a scaler. 4 Q. Do you recall what the level of accuracy of 5 that piece of equipment was? Everything is always 6 plus and minus some margin. 7 A. No, I don't remember any of that. It was 8 typical to put a standard in there in which you would 9 know the amount of activity. The disintegration per 10 minute coming off that sample, you would count that 11 sample which then allows you to convert from the total 12 number of counts that the instrument sees to the 13 number of the disintegrations that was in the sample. 14 Q. If you weren't expecting to find alpha 15 contamination because you weren't expecting to find 16 alpha emitters, would you necessarily have run a 17 standard for alpha? 18 A. On this particular case, the samples were 19 all counted for alpha, and it was a two-step 20 operation. You counseled the samples for alpha, and 21 you went back and counted them for beta and gamma. So 22 it was automatic. 23 Q. And you recall actually conducting the 24 alpha tests on the wipe samples? 25 A. Yes. 218	1 9/20 something -- 1958. 2 A. 9/29 on the second page is what it says. 3 It looks like there's been seven violations. 4 Q. Would you have considered this, if you had 5 generated this letter, a facility that was in 6 compliance? 7 MR. SHIMADA: Objection; lacks foundation, 8 calls for speculation. 9 THE WITNESS: This letter clearly indicates 10 they are not in total compliance with the regulations. 11 MS. McKEITH: Q. Are these minor 12 violations or are some of these significant violations 13 in your -- 14 MR. SHIMADA: Same objection. 15 MS. McKEITH: Q. -- based upon what your 16 view of the situation was back in the 1960s? 17 A. It's hard to understand from this wording 18 what -- in some cases what the violations are. In 19 other cases, it's very clear, and I -- and we would 20 have, the Commission included, would have considered 21 some of them significant violations. 22 Q. Can you tell me what you consider 23 significant? 24 A. Well, No. 2. 25 Q. Could you read that, please? 220
1 Q. You recall that today? 2 A. Yes. 3 Q. But you just don't recall the cleanup 4 level? 5 A. No, I don't. 6 MS. McKEITH: Exhibit 21. 7 (Whereupon, Plaintiff's 8 Exhibit 21 was marked 9 for identification.) 10 MS. McKEITH: Q. This is a draft letter 11 from Mason to Isotopes Specialties Company. We do not 12 have the final version of this. Could you look at 13 this letter, please, and I would like you to read to 14 yourself the entire letter. 15 A. Yes. 16 Q. In connection with your activities at the 17 Atomic Energy Commission, are you familiar with what 18 type of letter this is? 19 A. Yes. 20 Q. Would this letter have been generated after 21 the inspection at the Isotopes Specialties' facility? 22 A. It would have. 23 Q. Can you tell us how many violations this 24 letter reflects occurred at that facility at this 25 point in time? Looks to me like the date of this is 219	1 A. "Film badge reports indicated that an 2 employee exceeded the maximum permissible exposure 3 limits specified in Section 20.101(a) (1) exposure of 4 individuals in restricted areas, during the weeks of 5 September 13, 1957; September 27, 1957; and October 6 11, 1957, when he received doses of 325 millirem, 930 7 millirem, 400 millirem, respectfully. The 13-week 8 period cumulative dose in each instance exceeded 3 9 rem." 10 Q. And you can consider that a significant 11 violation? 12 A. Yes. 13 Q. Just prior to that under paragraph 1, 14 there's a sentence which reads: "Concentrations in 15 effluents" -- e-f-f-l-u-e-n-t-s -- "to unrestricted 16 areas were not made as required by Section 20.201(b), 17 surveys." Do you know what that refers to? 18 A. Yes. That refers to the Section 20.103. 19 Q. But I don't know what 20.103 is? 20 A. 20.103 discusses -- sets limits for 21 concentrations in effluents to unrestricted areas. 22 Q. What is meant by the word "effluent"? 23 A. That's liquids. 24 Q. What do you interpret that to mean, 25 "effluents"? 221

1 A. It means that effluents were released from 2 the restricted area to the unrestricted area. 3 Q. In some liquid form? 4 A. Yes. Typically, it's water. 5 Q. Can you draw our attention to any other 6 violations in this notice of violation that you 7 consider significant? 8 MR. SHIMADA: Same objections; lacks 9 foundation, calls for speculation. 10 MS. McKEITH: Q. In your first deposition 11 you testified that you were in the compliance branch 12 of the Atomic Energy Commission during this time 13 period. 14 A. Yeah, it was actually called the Inspection 15 Group. 16 Q. Thank you. So in the course of your 17 responsibilities, you would have been engaged in the 18 type of inspections that are being referenced in this 19 letter? 20 A. Yes. 21 Q. And Mr. Mason, do you recall who he is? 22 A. Yes. 23 Q. Did you work for Mr. Mason? 24 A. No. Mr. Mason was in the licensing group. 25 Q. Go ahead. Anything else? 222	1 the storage yard was not posted. 2 A. That's true. That could or could not be 3 significant. From this information, it's hard to tell 4 whether it was a -- was posted, but not posted exactly 5 according to the requirements. 6 Q. When a site was released for unrestricted 7 use back in the 1960s, did you understand that to mean 8 that the property could be used for any purposes 9 whatsoever? 10 A. Yes. 11 Q. Did you understand that to mean that 12 someone could tear down the building and reconstruct 13 anything without risk of radioactive exposure above 14 the limits that were set in the decommissioning? 15 A. It meant the release criteria -- anything 16 could be done, including the dismantling of the 17 facility. 18 Q. And you could have built a school on that 19 property without any special handling or procedures; 20 is that correct? 21 A. That's correct. 22 Q. In 1961, had someone contacted you to ask 23 about the decommissioning, would you have told them 24 that he had no need to be concerned about any special 25 handling in light of the fact that you had 224
1 A. Well, No. 3 is almost as significant, which 2 says that, having received these exposures described 3 in Item 2, the regulations would have restricted his 4 further exposure, and they didn't do it. 5 Q. And is there anything else? 6 A. Without having any -- the backup material 7 and the inspection report, it's hard to understand 8 whether No. 5 would have been significant, but those 9 are the main ones that would have been considered 10 significant. 11 Q. In No. 5 it states that the effluent from 12 glove boxes was not monitored as required by Condition 13 No. 25 of license No. 40-580-7. The word "effluent," 14 do you interpret that as liquid? 15 A. No. 16 Q. What do you consider that to be? 17 A. I would guess that it would be gaseous, but 18 I don't know. It could be liquid, but I don't know. 19 MR. SHIMADA: Based on the answer, lacks 20 foundation, calls for speculation. 21 MS. McKEITH: Q. So you don't know one 22 way or the other -- 23 A. I don't know. 24 Q. -- okay, as it relates to this? 25 Now, there's also a reference to the way 223	1 decommissioned the site? 2 MR. SHIMADA: Objection; calls for 3 speculation. 4 THE WITNESS: If we had in our hands a copy 5 that the licensing people had sent to the licensee 6 saying that the licensee had met the release 7 requirements and that the site could be used for 8 unrestricted use, the answer was yes. 9 Q. So if Mr. Thomson had called you personally 10 in the mid-1960s and asked you whether to be concerned 11 about purchasing that site, would you have indicated 12 to him that he had to take any special precautions 13 because of the previous use of the property? 14 MR. SHIMADA: Same objections; lacks 15 foundation. 16 THE WITNESS: The office would not have -- 17 would have told him he could use it any way he wanted; 18 that there would not have been any restrictions 19 associated with the use of that site. 20 MS. McKEITH: Q. In other words, there 21 wouldn't have been anything to worry about? 22 A. That's true. 23 MS. McKEITH: I have no further questions 24 at this time. 25 MR. SHIMADA: Let's go off the record. 225

1 VIDEO OPERATOR: Going off the record. The 2 time on the monitor is 1:54. 3 (Break in proceedings.) 4 VIDEO OPERATOR: Coming back on the record. 5 The time on the monitor is 1:56. Please begin. 6 EXAMINATION BY MR. SHIMADA 7 MR. SHIMADA: Q. Mr. Fish, as I've 8 indicated to you before, my name is John Shimada, and 9 I represent Nucor Corporation as a defendant in this 10 lawsuit. I'm going to apologize ahead of time. I'm 11 going to be jumping because, frankly, most of my 12 questions are based on the questioning of the other 13 counsel, and they're mostly things I didn't understand 14 or some things I wanted to follow up on. So it will 15 be sort of jumping around. And if in doing so, I 16 confuse you as to exactly what I'm asking you about, 17 please tell me that you're not clear as to what I'm 18 asking you about, and I'll be happy to try to make it 19 clear and give you a little bit more context for what 20 I'm inquiring about. Fair enough? 21 A. All right. 22 Q. If I understood you correctly, is it true 23 that the Geiger-Muller detector that you recall using 24 as part of your confirmatory survey at the Providencia 25 facility would not have detected carbon 14? 226	1 As I understand it, primary licensing 2 authority was handled by the Atomic Energy 3 Commission's facility or offices in the Bethesda, 4 Maryland; is that correct? 5 A. That's true. 6 Q. So they would have been the primary 7 repository of all documents relating to the licensing; 8 is that true? 9 A. Those files would have been the official 10 files. 11 Q. And do you recall, was it the agency's 12 normal practice to keep duplicate sets of files at the 13 various regional offices pertaining to the licensees 14 in those regions? 15 A. The regions kept files on each license. 16 Q. Is it your understanding that every piece 17 of documentation relating to a particular license that 18 would be found in Bethesda files would also be found 19 in the local region's files, in this case, the San 20 Francisco office? 21 A. No, there was no guarantee that we had a 22 copy of all the documents that were in the file. 23 Q. Did you have any steps you normally took to 24 see whether there were documents of note that were 25 contained in Bethesda's files that were not contained 228
1 A. It's not likely that it would have detected 2 the carbon 14. 3 Q. And similarly, is it not likely that the 4 wipe sampling would have detected carbon 14? 5 A. I don't know that. At this point in time, 6 I don't remember. 7 Q. Do you recall being aware that there was a 8 portion of the Providencia facility that was sometimes 9 referred to in the licensing documents as being the 10 C-14 or the carbon 14 lab? 11 A. As part of this experience, I have seen a 12 diagram that identifies a carbon 14 lab. 13 Q. Do you have a specific recollection of 14 seeing that document during the course of your review 15 of materials in preparation for conducting your 16 confirmatory survey? 17 A. No, I do not. 18 Q. As you sit here today, you don't recall 19 what documents you may have reviewed prior to actually 20 conducting the survey; is that true? 21 A. I do not recall what specific documents I 22 reviewed. 23 Q. Now, you've been shown various documents 24 from what was referred to -- well, let me try that 25 again. 227	1 in your local offices files at the time you went out 2 to any given facility? 3 A. The answer to that is no. If the region 4 became aware of a document that they did not have, 5 they would call the people in Bethesda and probably 6 ask. Normally they would ask for a copy to be sent to 7 them, but only if we became aware of its existence, if 8 we didn't have it as a normal course of business. 9 Q. So it's entirely possible that the AEC's 10 files in Bethesda, Maryland might contain documents 11 that weren't contained in the files that you had 12 access to prior to your confirmatory survey at 13 Providencia Street? 14 MR. PATTERSON: Objection; speculation, 15 lacks foundation. 16 THE WITNESS: It's possible. 17 MR. SHIMADA: Q. Mr. Fish, quite a number 18 of the questions that have been asked of you in the 19 past day and a half regarding practices and procedures 20 of both yourself and the Atomic Energy Commission in 21 relationship to the release of facilities for 22 unrestricted use have been couched in terms of what 23 you recall the procedures being in 1961. Do you 24 recall whether the survey that you conducted at 25 Providencia, in fact, was conducted in 1961? 229

1 A. I do not know the date when I made the 2 survey. I don't remember. 3 Q. Do you recall, was it in the '60s? 4 A. It would have been in the '60s. 5 Q. Is there something that leads you to 6 believe it would have been in the '60s? 7 A. Well, one thing is that around 1968 my 8 responsibilities changed from looking at all kinds of 9 licenses to being primarily, almost essentially, 10 involved with reactors and large facilities such as 11 Valacitas. So I know it was before that. 12 Q. So it would have been before 1968? 13 A. It would have been before 1968, but I 14 cannot pinpoint it. 15 Q. And during the time period between 1961 and 16 1968, do you recall there being changes in the 17 requirements and criteria that were applied for 18 decommissioning facilities? 19 A. I recall that there was a change in the 20 description, but I don't recall whether there was a 21 change in the numbers. 22 Q. What do you mean by a change in 23 description? 24 A. Well, one of the exhibits here shows a 25 letter from 1959 and 1960, in which it's just a letter 230	1 Q. By format, you're referring to how the 2 cleanup -- regardless of what the actual numeric 3 cleanup criteria were, there was a change in how those 4 numerical criteria were presented as just a matter of 5 format? 6 A. Format, right. 7 Q. Do you recall -- as you sit here today, you 8 don't recall if there were changes in the numerical 9 cleanup criteria? 10 A. No, I do not. 11 Q. Is it that you don't believe that there 12 were changes or you don't recall one way or the other? 13 A. I don't recall one way or the other. The 14 release criteria were on an individual facility basis, 15 but I don't recall the numbers. 16 Q. You've testified that the detection limits 17 of the Geiger-Muller that you had available in about 18 1961 to conduct your confirmatory survey would have 19 been a tenth of a milliroetgen per hour; is that 20 correct? 21 A. That's my recollection, but it might be a 22 hundredth. I just don't remember that lower range. 23 Q. Assuming for the moment it was a tenth of a 24 milliroetgen. Is my math correct, does that equal to 25 hundred microroetgens? 232
1 with a section that describes four items. Later on I 2 was shown a table that was -- I think had a 1970 date, 3 and that format was in a table format as opposed to 4 just being part of the letter -- of the transmitting 5 letter, but I don't know that there was a difference 6 in the numbers. 7 Q. Let me, in an attempt to understand your 8 answer, ask you to look at Exhibit No. 1. Do you have 9 that handy? 10 A. Is that the letter of -- 11 Q. There's a copy of the deposition transcript 12 in front of Mr. Patterson. Perhaps he could hand that 13 to you. 14 A. There's a 1959 letter, December 1959 15 letter. 16 Q. Yes. From Mr. Price to Mr. Michaud? 17 MS. McKEITH: I'll give you another. I 18 have plenty. 19 THE WITNESS: Yes, I have that one here. 20 MR. SHIMADA: Q. Is this the letter 21 you're referring to in your last set of answers? 22 A. This is the format, and there was a 23 follow-up letter that dealt with Providencia. This is 24 one format, and then the other one I was shown I think 25 had a 1970 date which was in a table format. 231	1 A. That's true. 2 Q. When using a Geiger-Muller -- let me back 3 up. A Geiger-Muller that detects radiation in 4 increments of milliroetgens per hour, is the amount of 5 milliroetgens per hour that you measure dependent in 6 part on how long you leave the detector over a given 7 spot? 8 A. No. 9 Q. So whether you leave such a detector over a 10 spot that had radioactive contamination for a minute 11 versus 10 minutes, the level of radiation shown on the 12 meter would be the same? 13 A. Yes, it would. Now the only exception to 14 that is if you move it very quickly so that the meter 15 is not able to respond to the maximum amount of 16 reading. 17 Q. Is there a -- well, let me ask it in this 18 way. In the 1960s, say in and around 1961 or '62, in 19 that -- in the early '60s, did you have a standard 20 procedure that you followed in using a Geiger-Muller 21 detector in terms of how long or how slow you would 22 sweep the detector across the surface? Would you, for 23 instance, leave it over a given spot for 30 seconds or 24 a minute before moving on? Did you have a normal 25 practice or procedure? 233

1 A. Are you talking about a formal procedure or 2 are you talking about the normal way of conducting – 3 using the equipment? 4 Q. Let's talk about the way you would normally 5 do it, if you recall. 6 A. The inspectors were aware of the 7 limitations of the instrumentation so that you would 8 make the survey in such a manner that you would not be 9 getting inaccurate information from the meter 10 readings. 11 Q. And as part of the using the meter, did you 12 personally have a practice of – as to how long you 13 would leave the Geiger-Muller over a given spot and 14 take a reading before moving on to the next spot? 15 A. When you make a survey, you don't normally 16 hold it over one spot for a period of time. That 17 gives me the connotation that you're making 18 measurements similar to doing some analyses that were 19 done here in which they accumulated counts. With a 20 survey meter, you go over it and you would move only 21 as fast as you are assured that you get the maximum 22 reading. Once you get the maximum reading, you can 23 then move on. 24 Q. Prior to conducting your initial survey at 25 Providencia, do you recall speaking with anyone 234	1 length of the lead on the detector just wasn't long 2 enough? 3 A. That's correct. 4 Q. So you don't even know if you went all the 5 way down the entire length of the wall; is that 6 correct? 7 A. I don't remember. I really don't remember 8 how deep the pool was. 9 Q. Do you recall there being some – do you 10 recall that the detector wasn't long enough, but you 11 don't recall how short it fell? Would that be 12 accurate? 13 A. Well, I remember the length of the cord 14 that was attached – approximately, to the cord that 15 was attached to the detector, but I don't recall how 16 deep the pool was. 17 Q. Approximately, how long was the cord? 18 A. The cord was approximately 18 inches to two 19 feet, if I remember right. 20 Q. Was there any way that you had to add some 21 sort of extension cord to the detector? 22 A. Make it longer? 23 Q. Right. 24 A. No. 25 Q. I don't know if – my next question simply 236
1 employed by U.S. Nuclear? 2 A. About the Providencia facility? 3 Q. Yes. 4 A. No, I do not. 5 Q. Do you recall speaking with anyone employed 6 by U.S. Nuclear during the time you were conducting 7 your confirmatory surveys? 8 A. Not specifically. I remember that I was 9 involved with somebody when I made the visits to the 10 Providencia facility, but today I can't tell you 11 whether that person was an employee of U.S. Nuclear or 12 not. 13 Q. Was it only one individual that you recall 14 being involved with during your confirmatory survey at 15 Providencia, or were there more than one such 16 individuals that you were involved with? 17 A. I don't remember the exact number. My 18 recollection is there was only one person that I was 19 working with when I actually visited the site. 20 Q. Now am I correct that you did not survey 21 the bottom of the pool that was at Providencia? 22 A. I don't remember, but my recollection is 23 the detector would not go all the way to the bottom. 24 MS. McKEITH: Didn't want to climb in. 25 MR. SHIMADA: Q. And that's because the 235	1 is whether or not you recall doing this or not. Is it 2 your recollection that you leaned over into the pool 3 and draped your arm down over the lip of the pool and 4 tried to go as deep as you could with the detector? 5 A. I don't recollect exactly, but my guess is 6 I would have done something like that to get as far as 7 down as I could. 8 Q. So it's your best recollection that you 9 would have only been able to lower the detector no 10 deeper than the length of your arm plus about two 11 feet? 12 A. That's my recollection. 13 Q. And in doing so, that survey, you, in fact, 14 found some elevated levels of radioactive 15 contamination in the pool walls, correct? 16 A. I did. 17 Q. And you directed that those areas be 18 removed or dealt with in some manner; is that true? 19 A. I informed them that the pool did not meet 20 the criteria and that they had to do additional 21 contamination work to meet the criteria. 22 Q. Do you recall did you specify the areas 23 within the pool that needed further work? 24 A. I don't recall whether I specified the 25 areas. 237

1 Q. Do you recall -- now, you have a 2 recollection of observing areas of chipped concrete 3 out of the pool walls, correct? 4 A. Yes. 5 Q. Do you recall how far down the pool walls 6 that chipped concrete extended? 7 A. No, I don't. 8 Q. Now, when you last saw the pool, the pool 9 was empty, correct? 10 A. That's correct. 11 Q. And by that, there was no water, there was 12 no soil, there was nothing in the pool itself? 13 A. That's right. 14 Q. Would you have expected U.S. Nuclear to 15 notify the AEC had it buried radioactive material in 16 the pool? 17 A. Yes, I would have. 18 Q. And why was that? 19 A. Well, because we were making a confirmatory 20 survey to confirm that there was only minimum -- di 21 minus amounts of activity there and that the 22 facility would be released for unrestricted use, and 23 anything that would change that condition, we would 24 expect them to notify the commission. 25 Q. As you sit here today, you don't recall 238	1 Q. Do you have a recollection that the pool 2 was deep? 3 A. Well, there was sufficient depth to provide 4 adequate water for shielding of a significant amount 5 of cobalt 60, and, you know, as I would guess that it 6 would have been at least 10 feet, and so 14 is 7 perfectly reasonable. 8 Q. Is that based on your recollection of 9 seeing other cobalt storage pools and observing how 10 much water was used to shield the cobalt sources? 11 A. Yes, it is. 12 Q. So if the pool, for instance, was 10 feet 13 deep, you would have only been able to survey with 14 your Geiger-Muller approximately half the height of 15 that wall, no more than five feet or so, correct? 16 A. No, I don't specifically recollect that 17 kind of detail, but the answer is that's as far down 18 as the detector would have reached; however, since 19 it's cobalt 60 contamination and that has a high 20 energy gamma, in the air it would travel a significant 21 amount of distance so that you would be able to see 22 radiation levels down on the bottom of the pool. 23 Q. Would that depend on how much radiation was 24 actually present? 25 A. Sure. 240
1 receiving any such notification from U.S. Nuclear with 2 respect to the pool at Providencia, correct? 3 A. No, I do not. 4 Q. Do you recall seeing any steel plates 5 attached to the floor at Providencia? 6 A. No, I do not. 7 Q. I'm going to ask you to take a look at 8 Exhibit 18. Do you have a copy of that in front of 9 you, sir? It begins with page 311. 10 A. Yes. 11 Q. If you could turn to page 313. 12 A. Yes. 13 Q. First, do you recall seeing this particular 14 page during your review of the file concerning the 15 Providencia property prior to your confirmatory 16 survey? 17 A. No, I do not have any recollection of 18 seeing this. 19 Q. Now this diagram indicates that the 20 interior depth of the pool is 14 feet. Do you see 21 that? 22 A. Yes, I do. 23 Q. Does that refresh your recollection as to 24 how deep the pool was? 25 A. No, it doesn't. 239	1 Q. How much radioactive material -- 2 A. Yes, it would. 3 Q. So you really have no way of knowing 4 whether your detector could have detected cobalt 5 contamination on the bottom of the pool because you 6 don't know how much contamination there was; is that 7 true? 8 A. I don't even remember the specifics of 9 making the survey to be able to answer that question 10 any more than I have. 11 Q. Do you recall if cesium 137 was stored in 12 the pool? 13 A. I don't recall that cesium was stored in 14 the pool. I recall that cesium was there in the 15 facility, and since it was used as sources, I could 16 imagine that it would in there, but I can't 17 specifically recollect that cesium was there. 18 Q. If you could go back to Exhibit 2, which is 19 the January 30, 1961 letter from Mr. Mason. 20 A. What I have here is the front page. I 21 think that's the one you're talking about. 22 Q. You really need to have the full document 23 in front of you. 24 A. I don't have that second page. 25 MR. SHIMADA: Can we show Mr. Fish that 241

1 copy? 2 MR. PATTERSON: I'm going to provide you, 3 Mr. Fish, with a copy of the transcript of your first 4 day of deposition. It has the exhibits attached to 5 it, including Exhibit 2. 6 MR. SHIMADA: Q. Now you have Exhibit 2 7 in front of you, correct? 8 A. I do. 9 Q. Do you see anything in this letter that 10 specifies what portions of the Providencia facility 11 should be surveyed for the presence or absence of 12 radioactive contamination? 13 MR. PATTERSON: Objection; vague and 14 ambiguous. 15 THE WITNESS: There's nothing in here that 16 is specific except to the extent that it says: "You 17 are requested to notify this office of contamination 18 levels which remain in the building." That's the only 19 thing that's specific at all. 20 MR. SHIMADA: Q. Do you have any 21 recollection of reviewing any documents from AEC 22 headquarters that defined the locations that should be 23 surveyed as part of the confirmatory survey at 24 Providencia? 25 A. I would not. I don't recall anything, but 242	1 document that's a September 27, 1999 letter to you 2 from the Proskauer Rose firm. And I apologize, this 3 is my only copy; this is the copy I got from 4 Mr. Patterson during the first day of your deposition. 5 But I place it before you and ask you to look at it 6 particularly with respect to the second paragraph 7 of -- excuse me, the second page of the letter, which 8 contains the following paragraph. "One of my 9 questions is: Did the Isotopes branch have the 10 authority to do what they did and was this the cleanup 11 criteria in total? You seem to remember more specific 12 guidelines." So if you could take a look at this 13 letter, and in particular that paragraph, and then I 14 have a question or two for you about that. 15 A. Well, I see the statement. 16 Q. Now, in that letter, immediately prior to 17 the language that I quoted for the record, there's a 18 reference to the January 30, 1961 letter which is 19 Exhibit 2 that we looked at a moment ago, correct? 20 A. That's true. 21 Q. Do you recall, as you sit here today, there 22 being some other guidelines that were applicable to 23 the confirmatory survey at Providencia apart from the 24 language that's quoted in that letter, which is 25 contained in Exhibit 2 to this deposition? 244
1 it was not normal for headquarters to notify us of the 2 areas to be surveyed. 3 Q. Normally, the inspectors would make those 4 determinations on their own? 5 A. I guess the answer is yes, but it would be 6 based upon review of the file and review of the 7 licensee's survey that was submitted in connection 8 with the release. 9 Q. And as you sit here today, you recall 10 surveying the inside of the building at Providencia, 11 correct? 12 A. I do. 13 Q. And as you sit here today, you recall 14 surveying the driveway along the side of the building 15 as well as the back asphalt area, correct? 16 A. I do. 17 Q. As you sit here today, you have no 18 recollection of surveying the back bays on the 19 property; is that correct? 20 A. That's true. 21 Q. In fact, as you sit here today, you don't 22 have any recollection of going inside those bays? 23 A. At this time, I have no recollection of 24 going in there. 25 Q. Mr. Fish I'm going to show you a copy of a 243	1 A. I guess the answer is I didn't recollect 2 the criteria that were in that letter, the January 3 letter. And if somebody had asked me, I would have 4 guessed it would have been in a different form, but I 5 don't -- that's just my recollection. 6 Q. Was it your -- is it your expectation that 7 the cleanup criteria would have been more specific? 8 A. No. 9 Q. What do you mean by a "different form"? 10 A. Well, it means that the radiation levels 11 would have been at two distances: one at a close 12 distance and one at a larger distance. I would have 13 expected some statement to be in terms of removal 14 contamination in a different form. This one just 15 says -- the letter -- the December '59 letter just 16 says there should be no removal contamination, and I 17 would have recollected something with some specific 18 numbers. 19 MR. SHIMADA: We'll mark that letter as the 20 next exhibit, which is Exhibit 22. 21 (Whereupon, Defendant's 22 Exhibit 22 was marked 23 for identification.) 24 MR. SHIMADA: Q. Mr. Fish, if you could 25 look at Exhibit 9 to the deposition, which has a 245

1 Figure 3-8 from the September 1999 Rogers & Associates 2 report. It's a figure that has a lot of colored dots 3 on it. Do you have that in front of you? 4 A. I do. 5 Q. Now, is it your understanding that this 6 figure reports the various detected gamma radiation in 7 multiples of background. Do you see that? 8 A. Yes. 9 Q. And regardless of what the actual 10 background, numeric background, reading was, would you 11 have expected the Geiger-Muller detector used by you 12 in your confirmatory surveys to detect gamma radiation 13 that was in excess of a thousand times background? 14 A. Well, I guess that depends. This figure is 15 showing counts that are accumulated over a period of 16 time, not in an instantaneous reading. So it's 17 different kind of measurements. 18 Q. Understanding that the methodology used is 19 different, nevertheless, you understand that this 20 figure reports gamma ray readings that are 21 representative of a given level of radioactive 22 activity, correct? 23 A. This is an accumulation of counts over a 24 period of time. 25 Q. That are attributable to gamma ray sources. 246	1 rest of the building was open and vacant? 2 A. That's my recollection. 3 Q. You don't recall any other interior walls? 4 A. No, I don't. 5 Q. Do you recall seeing any signs that it 6 looked as if there had once been walls that had been 7 removed? 8 A. No, I don't recollect that, no. 9 Q. Apart from the swimming pool or the pool 10 that we've already talked about, would you have 11 expected U.S. Nuclear to advise the AEC had it filled 12 in or otherwise covered up any other holes that might 13 have been present at Providencia? 14 A. I would have expected that to come out 15 during the discussions of visiting the site, yes. 16 Q. And as you sit here today, you don't recall 17 that topic being discussed? 18 A. No, I do not. 19 Q. Apart from seeing the chipping away of some 20 of the concrete in the walls of the pool, do you 21 recall seeing any other evidence that any portion of 22 the asphalt or concrete work at the Providencia 23 property had been removed in any manner? 24 A. I don't recall that, no. 25 Q. Do you recall seeing any signs of that 248
1 A. That's right. 2 Q. And in some cases, this report or figure 3 indicates that the amount of gamma radiation that was 4 detected using this methodology was in some cases over 5 a thousand times background, correct? 6 A. Yeah, that's what it says. 7 Q. Given that order or orders of magnitude 8 difference over background, would you have expected 9 the Geiger-Muller detector used by you to have 10 detected gamma radiation sources of the levels that 11 are apparently present, given this figure? 12 MR. PATTERSON: Asked and answered. Calls 13 for speculation. Lack of foundation. 14 THE WITNESS: Well, as I said before, one 15 of the problems I have with this report is I don't 16 have a conversion from the counts per minute that they 17 have here into radiation levels. And so, you know, I 18 can't say that a thousand times background here would 19 be or would not be detectable by the GM tube, the 20 Geiger-Muller tube. You know, in some cases these 21 counts were accumulated over one hour. 22 MR. SHIMADA: Q. And am I correct, it's 23 your recollection that when you first saw the interior 24 of the building at Providencia in connection with your 25 survey, that once you got past the front offices, the 247	1 concrete or asphalt had been freshly poured? 2 A. I do not recall that at this time. 3 MR. SHIMADA: Mr. Fish, thank you. I 4 don't have any other questions for you. 5 MR. PATTERSON: Can we go off the record 6 for a minute. 7 VIDEO OPERATOR: This concludes Videotape 8 No. 4 in the deposition of Raymond Fish. Going off 9 the record, the time on the monitor is 2:40. 10 (Break in proceedings.) 11 VIDEO OPERATOR: Here begins Videotape No. 12 5 in the deposition of Raymond Fish. Coming back on 13 the record, the time on the monitor is 2:51. Please 14 begin. 15 EXAMINATION BY MR. BROWN 16 MR. BROWN: Q. Mr. Fish, my name is Byran 17 Brown, and I represent Rhone-Poulenc, who is another 18 defendant to this lawsuit. And I guess I probably 19 should have done this while we were on our break 20 waiting, but could you take a look at Exhibit 19 once 21 again and just kind of read it over to yourself 22 including the second page? I don't know if you have 23 the whole document. Is it cut off at the bottom? 24 MS. McKEITH: Yeah. The part that said 25 this really doesn't count? 249

1 MR. BROWN: Do you have another copy. 2 MS. McKEITH: No, but we could get a 3 complete copy. 4 MR. BROWN: I have a complete copy. It's 5 the only one I have. 6 Q. Here you go, Mr. Fish. Here is a complete 7 copy of that document. 8 Mr. Fish, did you create the original of 9 this document? 10 A. I guess I did. My signature -- my name is 11 there, so the answer is yes. 12 Q. So, it was if your name is there, that 13 means normally you would have created this document? 14 A. I do. 15 Q. And there's no reason why you believe you 16 didn't create the document? 17 A. No. The stamp says the original was signed 18 by me. 19 Q. Can you explain the what the term "thorium 20 source material" means? 21 A. Yeah. Source material was certain 22 materials that were not -- had lesser effects on 23 people. They were low concentrations of radioactive 24 material. Naturally uranium was a source material as 25 well as thorium. 250	1 A. I can't read that whole line. 2 Q. You can't read any of that in paragraph 16? 3 A. No, I really can't. I can see the line 4 below it. 5 Q. Maybe if you could look at this copy, I 6 think it's maybe clearer than that one. Why don't you 7 go ahead and read the whole paragraph. 8 A. This one says: "Two bottles contain 100 9 to" it looks like it was 500 grams of thorium total, 10 but this copy looks like it may have had some ink 11 changes to it or maybe it's an attempt to -- it's 12 something 500. It might be 580, but it's of the order 13 of 5- to 600 grams of thorium total in those bottles. 14 Q. Five to 600? 15 A. No, the two bottles contain 100 to whatever 16 that second number is, and because I can't read it 17 exactly, my guess it's somewhere between 500 and 600 18 grams. 19 Q. Can you read the second sentence? 20 A. The second sentence says: "This is about 21 100 microcuries maximum, which according to 10 CFR 22 20.203 F2 does not require a label." 23 Q. Does that second sentence give you any kind 24 of indication of what the number is that's scratched 25 out? 252
1 Q. When this says that the license -- the 2 scope of the license for 5,000 pounds of -- strike 3 that. 4 Let's look at paragraph 11 on the next 5 page. 6 A. Um-hum. 7 Q. It says that the licensee purchased 4,860 8 pounds of source material from GSA. Does this mean 9 that the licensee purchased 4,860 pounds of thorium? 10 A. No. The total weight of the material was 11 4,860 pounds. It wouldn't be total thorium. If it 12 were total thorium, it would be in the form of a 13 metal. So it's not in the form of a metal. So that's 14 not 4,860 pounds of thorium. That's the total weight 15 of the material that's there of which a portion of it 16 is thorium. 17 Q. If you reference paragraph 16 below -- 18 first of all. In paragraph 11, the second sentence 19 says that some of this material, referring to the 20 4,860 pounds of source material, has been processed 21 and the thorium collected as a residue and stored in 22 two bottles. In paragraph 16, if you look at that, it 23 discusses those two bottles and it says "these bottles 24 contain 100" and then something scratched out. Can 25 you read what that says? 251	1 A. No. 2 Q. So the maximum there, you're thinking -- we 3 can't tell. Basically, it's something over 100? 4 A. Yeah, the first one looks like a 5 to me. 5 And looks originally -- like originally it was 500, 6 but I don't know because there are marks here. But it 7 looks like it's 100 to 500 grams of thorium is what 8 looks like was typed there originally. 9 Q. And if you look back at paragraph I think 10 it was 11, it said that 400 to 500 pounds of this 11 thorium source material that was purchased was 12 processed and the thorium residue was this 100 to 500 13 or whatever that number is. 14 A. Grams. 15 Q. Grams. Could you tell what percentage of 16 thorium was in that source material, mathematically, 17 from those two references? 18 A. Well, I guess you could. 19 MS. McKEITH: Objection; calls for 20 speculation. 21 THE WITNESS: You know, there's 454 grams 22 to the pound. So if you multiply, say, the 400 pounds 23 times the 454 grams per pound, that gives you the 24 total grams that's in there. And if you put the 100 25 or even put the 500 grams of thorium over that, you 253

1 come up with a percentage. It's very, very small. 2 MR. BROWN: Q. And this -- I'm sorry, 3 could you repeat that question equation? 4 A. Yeah. If you take the 100 or the 500, say 5 the second number is 500 grams of thorium that's 6 total, and divide it by the number 400, if you use the 7 lower number up above, and you take the 400 and 8 multiply it by 454 grams per pound, that 9 multiplication will give you the total grams in the 10 400 pounds. And you just use that as a dividend -- a 11 divisor and put the 500 over it, and whatever that 12 numbers comes out, will give you the percentage of 13 thorium that's present. 14 Q. Is this equation that you just discussed 15 based on speculation or does that come from your 16 experience? 17 A. No. No, that's just a way of doing it. 18 Q. Could you, mathematically, figure that out 19 for us? 20 A. Sure. 21 MS. McKEITH: Excuse me, what is he 22 figuring out? 23 THE WITNESS: He wants to know what the 24 percentage of the thorium is in the 400 pounds. 25 MS. McKEITH: Are we looking at the 5,000 254	1 those 400 to 500 or that -- assuming 500 pounds of 2 thorium processed, .27 percent is a conservative 3 approximation of how much thorium was contained in the 4 source material? 5 A. In that 400 pounds. 6 Q. Okay. I'm going to show you another 7 document here, Mr. Fish, this is a letter from -- to 8 Research Chemicals from Kber Price dated May 18th, 9 1961. In the last paragraph of the letter it 10 references "unimportant quantities of source 11 material." Do you see that? 12 A. Yes. 13 Q. What does that mean? 14 A. Without looking up the old part 40, my 15 guess is that what it refers to is a general license, 16 which a person would have access to without getting an 17 actual license and applying for it. It's for small 18 unimportant quantities. In other words, small 19 quantities. 20 Q. But again, not being able to reference the 21 regulations at the time, you couldn't tell exactly 22 what that amount was? 23 A. No, it's to the order of pounds, you know, 24 40 pounds, 50 pounds, something like this, as opposed 25 to the larger quantities that were in the license. 256
1 pounds of source material? 2 MR. BROWN: No, we're looking at the second 3 page, Malissa. 4 MS. McKEITH: Or the approximately 4,300 5 pounds that remained in the shipping. 6 MR. BROWN: We're looking at paragraph 16. 7 MS. McKEITH: Well, good, we'll have him do 8 the same thing for No. 12 then, won't we. 9 MR. BROWN: That's fine. I think that 10 would be the same if we extrapolate that same 400 11 pounds comes from the 4,860. 12 MS. McKEITH: Well, I'll just have a 13 running objection because he doesn't have any idea at 14 all what actually was on the site. 15 MR. BROWN: But we can do it for the 400 to 16 500 pounds that was processed. 17 THE WITNESS: So its about 0.27 percent. 18 MR. BROWN: Q. 0.27. And that's an 19 approximation? 20 A. Approximation. And that's using 400 pounds 21 and 500 grams. 22 Q. And that's the most conservative estimate 23 given those numbers, right? 24 A. Yes. 25 Q. So based on your calculation, at least for 255	1 Q. I'm going to show you one more document -- 2 can we mark that as the next exhibit. 3 (Whereupon, Defendant's 4 Exhibit 23 was marked 5 for identification? 6 MR. BROWN: Q. This is a letter to 7 Research Chemicals, again, from Kber Price dated 8 August 29th, 1961. In the second paragraph -- can you 9 go ahead and take a look and read that to yourself. 10 A. Yeah, I've read it. 11 Q. Does that refresh your recollection as to 12 what level an unimportant quantity of source material 13 is? 14 A. This appears to indicate that there is a 15 second part of the regulations which deals with this 16 kind of a situation and refers to thorium content that 17 didn't exceed 0.25 percent by weight. And I think 18 that was not the section I was referring to in my 19 previous discussions where I said that I thought there 20 was a general license for certain small quantities. 21 Q. It says that for -- this letter says that 22 for products containing not more than .25 percent by 23 weight of source material are exempt from the 24 licensing requirement -- 25 A. That's what it says. 257

1 Q. -- Part 10 CFR -- excuse me, Title 10 CFR 2 Part 40; is that right? 3 A. What it says is that without a specific 4 license. 5 Q. I'm sorry. 6 A. Well, there's a difference between a 7 general license, which a person would have had by 8 virtue of it being in the regulation as opposed to a 9 specific license where you need to make an application 10 and a specific license was issued by the Commission. 11 And because I don't remember the details of this, I 12 don't know whether this is talking about this as being 13 done under a general license, which would be there by 14 virtue of it being in the regulation or whether this 15 regulation says you just don't need it, period. 16 There's a difference between general license and no 17 license. 18 Q. But, unfortunately, we don't have the 19 regulations in front of us, but by reference to those, 20 we would be able to tell that distinction, right? 21 A. That's right, we would. 22 Q. So the estimate that you had calculated 23 earlier of .27 percent for that assuming 500 pounds of 24 thorium source material processed -- 25 A. I assumed 400 pounds, and I assumed 500 258	1 23 once again, the prior letter dated May 18th, 1961? 2 Under the paragraph numbered 1 there, is it your 3 understanding that this means that Research Chemicals 4 did not have any AEC license? 5 A. What this is saying is that the residues 6 exceeded the -- 7 Q. I'm speaking about the paragraph numbered 8 1, the very first paragraph there. 9 A. That's what I'm reading. Where it says 10 "although the rare earth"? 11 Q. No. The paragraph preceding that. 12 A. Okay. It says, "You possess source 13 material without valid AEC license in violation of 14 Section 40.10 restrictions on transfers." 15 Q. Stopping there, does that make you believe 16 that Research Chemicals did not have an AEC license? 17 A. That's what that says. That -- for the 18 material they possessed, they did not have a valid AEC 19 license. 20 Q. And under the definition -- it also said 21 under the definition of source material that that was 22 a violation in the rest of that No. 1. 23 A. You know, that's what it's saying. It says 24 that material that's in those bottles met the 25 definition of source material. 260
1 grams. 2 Q. Right. 3 A. That's worst case. 4 Q. If that had been below .25 percent, it 5 would not have required a specific license? 6 A. That's true. 7 MS. McKEITH: Can we just clarify whether 8 it would have required a general license. 9 MR. BROWN: I don't think we can clarify 10 that because we haven't referenced the regulations. 11 He was not sure just in referencing -- 12 A. If I saw Part 40, specifically 40.13 paren, 13 looks like, e or c and paren 1, if I saw that, I could 14 tell you whether that, in fact, was a general license 15 that allowed this activity or whether it said that 16 this didn't require any kind of a license. 17 MR. BROWN: Q. Can you reference 18 Exhibit -- 19 A. You want to make this an exhibit? 20 MR. BROWN: Let's mark that the next 21 exhibit, Exhibit 24. 22 (Whereupon, Defendant's 23 Exhibit 24 was marked 24 for identification.) 25 MR. BROWN: Q. Can we reference Exhibit 259	1 Q. Okay. Referencing the other letter -- or 2 reading this letter and that other letter that we just 3 read combined, does that make you believe that the 4 sentence in the second letter, referring to exceptions 5 from licensing requirements, means that no license at 6 all is required? 7 MR. SHIMADA: Objection; calls for 8 speculation, lacks foundation. 9 MS. McKEITH: Speculation. 10 THE WITNESS: The one thing that I can't 11 tell is whether what's in the August 29, 1961 letter 12 is the result of an amendment that occurred subsequent 13 to the May 18th letter. So it could have been -- 14 there could have been a change in the regulations 15 which resulted in the August 29 letter that clarified 16 all this and eliminated all the problems identified in 17 the May 18th letter. 18 MR. BROWN: Q. But without knowing the 19 contents of those changes, you wouldn't be able to -- 20 A. That's true. 21 MR. BROWN: I guess that's all the 22 questions I have, Mr. Fish. Thank you. 23 MR. PATTERSON: Go off the record for a 24 minute. 25 VIDEO OPERATOR: Going off the record, the 261

1 time on the monitor is 3:18. 2 (Break in proceedings.) 3 VIDEO OPERATOR: Coming back on the record. 4 The time on the monitor is 3:20. Please begin. 5 FURTHER EXAMINATION BY MR. PATTERSON 6 MR. PATTERSON: Q. Good afternoon, 7 Mr. Fish. My name is Greg Patterson. I've already 8 asked you a series of questions. I just have a few 9 more. 10 Can you tell me what the term "whole body 11 dose" means? 12 A. The whole body dose is differentiated from 13 extremity dose, extremities being hands and feet, and 14 the whole body is the rest of the body, which contains 15 the organs and things like that that would be 16 susceptible to radiation exposure. Your hands and 17 feet can take more radiation without having a visible 18 effect than the whole body. So therefore, the 19 numbers -- the exposure limits are different for those 20 two items. 21 Q. So the exposure limits would be higher for 22 feet and hands? 23 A. Yes. 24 Q. Can you explain to me what the relationship 25 is between the cleanup criteria that would be 262	1 A. The confirmatory survey is done to, in 2 essence, confirm the results of the licensee's survey 3 so that the Commission can take reliance on the 4 results of the licensee's survey. 5 Q. Is the fact that you did not use a 6 scintillator in your confirmatory survey, that that 7 fact alone does not mean that the survey failed to 8 meet the cleanup criteria; is that correct? 9 A. No. I guess I'm having trouble with that 10 question. 11 MR. SHIMADA: And I'll object. It's vague. 12 MR. PATTERSON: Q. You testified that you 13 use a Geiger-Muller instrument to do your survey, 14 correct? 15 A. Yes, I did. 16 Q. And you do not recall using a scintillator? 17 A. I did not use a scintillator. 18 Q. Did not use a scintillator. The fact that 19 you did not use a scintillator, that doesn't mean one 20 thing or the other with respect to whether the 21 ultimate cleanup criteria were met; is that right? 22 A. No, it has no bearing on it. 23 Q. And your recollection today is that you 24 confirmed by review of the survey results, as well as 25 your own results, that the properties have been 264
1 established similar to those that we have in Exhibit 1 2 and whole body dose? Is there a relationship? 3 A. Well, yeah. The requirements would be 4 oriented towards restricting exposure in the area of 5 whole body as opposed to extremities because it's a 6 lower number. 7 Q. Now, you testified that you would have 8 reviewed the survey reports done by U.S. Nuclear of 9 the Providencia property, the initial survey report, 10 prior to conducting your own confirmatory report; is 11 that right? In other words, you would have seen 12 whatever report they had put together based -- 13 A. Their survey report that they made to 14 confirm that the facility had been cleaned to the 15 criteria and then submitted to the Commission, I would 16 have reviewed that. 17 Q. Do you recall whether the survey report for 18 Providencia indicated that the survey included the use 19 of a scintillator? 20 A. I do not recall that survey report at this 21 point. 22 Q. And as I understand it, the purpose of your 23 confirmatory survey is not to duplicate what was done 24 by the person who was conducting the decontamination, 25 but merely to confirm the sampling results? 263	1 cleaned up to the terminating criteria expressed in 2 Exhibit 2 of your deposition? 3 A. The release criteria. 4 MS. McKEITH: I'm going to object to the 5 extent that "property" is vague and ambiguous, and the 6 fact that the witness has already testified he did not 7 survey the entire property. 8 MR. SHIMADA: Also mischaracterizes the 9 testimony. The witness has already testified he was 10 not sure what documents he specifically saw prior to 11 the confirmatory survey. 12 MR. PATTERSON: Q. Do you recall the 13 question after that? 14 A. No, I guess I don't. 15 MR. PATTERSON: Could you read it back, 16 please, my question. 17 (Record read.) 18 THE WITNESS: I guess my answer is: My 19 recollection is that my survey and the survey -- the 20 final survey results of a licensee confirmed the 21 facility had been cleaned to the release criteria, and 22 I can't confirm the statement with respect to that 23 letter. 24 MR. PATTERSON: Q. I understand. I'm 25 going to jump around here a little bit and I 265

1 apologize. Was the GM tube, the Geiger-Muller tube, 2 that you used made of steel glass or aluminum? 3 A. I can't specifically say I know which one 4 it was at this time. 5 Q. There was some testimony earlier regarding 6 your efforts to survey the pool. Do you recall that? 7 A. Yes. 8 Q. And you made a statement that because of -- 9 you made the statement that you thought the instrument 10 would be able to detect gamma radiation coming from 11 the bottom of the pool based on the method that you 12 used? 13 A. Yes. 14 MS. McKEITH: Objection; misstates the 15 testimony. He said depending on the levels. 16 MR. PATTERSON: Q. Based on the method 17 that you used, do you believe that the instrument 18 would have been able to detect gamma radiation coming 19 from the bottom of the pool if the radiation was above 20 the release criteria? 21 MR. SHIMADA: Objection; calls for 22 speculation. 23 THE WITNESS: That, I don't know at this 24 point in time. 25 MR. PATTERSON: Q. Mr. Fish, the 266	1 chip away or remove some materials, right? 2 A. That's correct. 3 MR. PATTERSON: I have no further 4 questions. 5 FURTHER EXAMINATION BY MS. McKEITH 6 MS. McKEITH: Mr. Fish, I have some 7 follow-up questions for you this afternoon, but I will 8 be brief. I believe you testified in your first day 9 of deposition that you would have been doing the 10 decommissioning prior to the time that the Atomic 11 Energy Commission designated California as a licensee 12 state; is that correct? 13 A. I can't specifically state that because I 14 don't remember when it was. 15 Q. But if California had been a licensing 16 state, would you have done the decommissioning of this 17 site? 18 A. No. 19 Q. So therefore we can assume that it occurred 20 prior to the time that California became a licensing 21 state? 22 A. That's true. 23 Q. So if we can determine what that date was, 24 then we know it was prior to that date; is that 25 correct? 268
1 decontamination of a facility at that time in 1960, 2 '61, it was not intended to remove all the residual 3 radioactive contamination on the property; is that 4 right? 5 A. That's correct. 6 Q. Radioactive materials could remain on the 7 property as long as it's determined that whatever 8 levels were remaining were not posing a risk to 9 occupants of the properties; is that correct? 10 MS. McKEITH: Objection; misstates the 11 testimony to the extent that materials were buried on 12 site. 13 THE WITNESS: The answer is yes. 14 MR. PATTERSON: Q. And Ms. McKeith just 15 referred to materials that might have been underneath 16 the ground, subsurface materials that were buried. At 17 the time there was no requirement on your part to 18 conduct subsurface testing; is that right? 19 MR. SHIMADA: Objection; the question is 20 vague. 21 MR. PATTERSON: Q. Let me rephrase that. 22 There was no requirement for you to conduct subsurface 23 testing unless your instruments showed there was 24 radioactivity coming from that area above the release 25 criteria. In that instance, there may be some need to 267	1 A. Yes. Well, they became an agreement state 2 in September of 1962. 3 Q. Okay. So, for purposes of your answer to 4 Mr. Shimada's question about when you recall doing the 5 decommissioning, it would have been before September 6 of 1962; is that correct? 7 A. You reach that conclusion that way, yes. 8 Q. That's a fine way to reach a conclusion. 9 The Geiger-Muller, is it possible for the 10 Geiger-Muller to be saturated if it comes into contact 11 with very high levels of gamma ray emissions? 12 A. Very high levels, yes. 13 Q. In the event that it comes in contact with 14 very high levels, what happens to the Geiger-Muller? 15 A. It can go to zero. 16 Q. Now I recognize that you're a very 17 competent individual, and you were probably quite 18 experienced when you did the survey. Is there any 19 possibility that because of the levels of 20 contamination that were detected that the 21 Geiger-Muller went to zero and you interpreted that is 22 a nondetect? 23 A. No. 24 Q. I want to draw your attention again to 25 000305, and you're correct that the highlighted blue 269

1 area that you read from previously, in fact, did not 2 reference the ten holes. But if you go down to the 3 last paragraph of that page and read -- do you see the 4 reference to the ten holes down there? Begins with 5 the sentence, "in the floor of the enclosure." 6 A. Yes. 7 Q. Could you read that sentence, please. 8 A. "In the floor of the enclosure are ten 9 two-inch holes extending six feet below grade designed 10 for the storage of up to," looks like, "500 curies 11 each. Each hole is topped by a remotely removable 12 lead plug with storage shelves," something, "beneath. 13 The two-foot thickness shielded enclosure is designed 14 for the handling and transfer of up to 100 curies of 15 cesium 137 in a bottle at a time." 16 Q. You don't remember these ten holes when you 17 went out to the facility; is that correct? 18 A. I do not remember them. 19 Q. If somebody had disposed of cesium 137 in 20 the first foot at the bottom of this hole, and then 21 covered it up with the 5 feet of concrete, do you 22 believe your Geiger-Muller would have detected that 23 contamination? 24 A. It would have to be an awful lot of cesium 25 down there for me to detect it through that much 270	1 Q. Mr. Donaldson testified that it came in 2 liquid form also? 3 A. Can be in liquid form also. 4 Q. So how do you know whether this is liquid 5 or solid form that's being referred to? 6 A. Because if we're talking about sealed 7 sources, we're talking about powder form because of 8 physical size. In other words, the source needs to be 9 as small as possible and liquid is -- takes up much 10 more room than the powdered form. 11 Q. Do you know one way or the other whether or 12 not Isotopes Specialties Company had liquid cesium 137 13 on their premises? 14 A. I do not, no. 15 Q. I believe you testified previously that the 16 Atomic Energy Commission would inspect a licensee site 17 such as Isotopes Specialties Corporation approximately 18 once per year; is that correct? 19 A. Well, we had a system that was -- the 20 inspection frequency was related to the activities 21 that were permitted under the license. And my best 22 guesstimate at this time is that that kind of a 23 situation would be on the order of once a year. 24 Q. And that's based upon your review of the 25 Isotopes Specialties Corporation license that's at 272
1 concrete. 2 Q. What do you consider to be an awful lot? 3 Over what limit? 4 A. Well, probably, talking hundreds of curies. 5 Q. Well, how much physical space does -- this 6 document here refers to -- here meaning 000305, refers 7 to 500 curies. How much physical space does 500 8 curies of liquid cesium 137 take up? 9 A. First of all, cesium would be in a powder 10 form. Typically, cesium chloride, and that's not very 11 big volume. 12 Q. The 500 curies, how much mass are we 13 referring to? 14 A. Probably, that part of my thumb. 15 Q. You're referring to your nail and maybe to 16 the first knuckle? 17 A. Yeah. It's not very big. 18 Q. So if one were to leave in the holes 19 something the size of what you just described -- your 20 thumb to your knuckle -- it would fit well within that 21 first foot of space? 22 A. Yeah, that's a two-inch diameter space. 23 Q. You indicated that cesium 137 is in powder 24 form? 25 A. Typically, it's in powder form, yes. 271	1 issue in this litigation? 2 A. Certainly, what was permitted by the 3 license would be a major factor in the determining the 4 frequency. 5 Q. Would it be correct to say that there was 6 an element of trust, then, that your licensees were, 7 in fact, reporting honestly when they had a release at 8 the facility? 9 A. Yes, there is an element of trust in it. 10 Q. Can you tell us what Mr. Goldstein's, the 11 president of Isotopes Specialties Corporation and 12 ultimately the president of U.S. Nuclear, reputation 13 was at the Atomic Energy Commission? 14 MR. SHIMADA: Objection; lacks foundation, 15 calls for speculation. 16 THE WITNESS: Well, I only knew 17 Mr. Goldstein in association with U.S. Nuclear. 18 MS. McKEITH: Q. What was your opinion of 19 his handling of radioactive materials at U.S. Nuclear? 20 A. My opinion of Mr. Goldstein was that some 21 of the activities could lead to philosophies involved 22 in the activities. They could lead to violation of 23 the regulations. 24 Q. And what were those philosophies? 25 A. Well, one I remember is Alan said that he 273

1 thought that the regulation permitted him to expose 2 people up to the limits. whereas the proper radiation 3 safety opinion is you keep the exposures as low as 4 possible in addition to being below the limit. 5 Q. Did you think he was a -- strike that. 6 What other philosophies did you differ with 7 Mr. Goldstein, if any? 8 A. Well, that was the main philosophy. and it 9 wasn't only exposure. That philosophy was with 10 respect to all of the regulations. I mean, the 11 regulations said that he could do up to this. And 12 from a radiation safety standpoint, you do as low as 13 you can below the limits. and you aren't in violation 14 if you go up to those limits. 15 Q. Did you personally consider Mr. Goldstein 16 trustworthy? 17 A. There were times when I had some questions. 18 Q. Could you give us some examples of those 19 times? 20 A. I guess I really can't give you specific 21 examples now. I can tell you that we made an 22 unannounced inspection in the early part of the year. 23 came in unannounced on a Monday, and we were informed 24 by Mr. Goldstein that we couldn't have picked a poorer 25 time to come because they had moved radioactive waste 274	1 what their view of the Isotopes Specialties' 2 operations were? 3 A. No, I did not. 4 Q. I showed you previously one inspection 5 report from Mr. Mason? 6 A. A letter from Mr. Mason. 7 Q. Correct. Are those the kind of violations 8 that would have given you pause in terms of deciding 9 whether or not the operator of a facility had or had 10 not properly reported to the AEC when there were 11 releases of contamination? 12 MR. SHIMADA: Objection. The question is 13 vague, calls for speculation. 14 THE WITNESS: You mean the draft on Exhibit 15 21? 16 MS. McKEITH: Q. Yes, exactly. 17 A. Well, of course Exhibit 21 applies to 18 Isotopes Specialties Company. 19 Q. That's correct. I'm referring to them. 20 A. Some of the things here are in that 21 category. 22 Q. And notwithstanding that fact, you never 23 did any special investigation at that facility beyond 24 just doing surface readings during your 25 decommissioning? 276
1 that previous weekend. And when we did our inspection 2 and surveys, we found contamination in areas that 3 shouldn't have been, including out on the front 4 sidewalk. 5 Q. The front sidewalk, meaning where 6 pedestrians walk? 7 A. Yes. 8 Q. Did you have your attitude -- was your 9 attitude about Mr. Goldstein formed prior to the time 10 he was -- had moved to the Lake Street location? 11 MR. PATTERSON: I'm sorry to -- 12 MS. McKEITH: Q. When you were 13 decommissioning the Isotopes Specialties facility, did 14 you already have your opinion of Mr. Goldstein formed? 15 A. My opinions about Mr. Goldstein were 16 generated as a result of his relationship with U.S. 17 Nuclear. 18 Q. So prior to that time, you did not really 19 know that Mr. Goldstein pushed the envelope, so to 20 speak? 21 A. I had never met Mr. Goldstein prior to his 22 forming U.S. Nuclear. 23 Q. When you began to conduct your 24 decommissioning survey at the Isotopes Specialties 25 Corporation, did you inquire of other people at AEC 275	1 A. Isotopes Specialties facility? 2 MR. PATTERSON: Objection -- 3 MS. McKeith: That's correct. 4 MR. PATTERSON: Misstates his testimony 5 considerably. 6 THE WITNESS: No, I didn't do anything 7 special as a result of my feelings about 8 Mr. Goldstein. 9 MS. McKEITH: Q. No. I mean in terms of 10 the violations 11 A. Oh, the violations? 12 Q. Yes. 13 A. No, I didn't. 14 Q. Would the Atomic Energy Commission have 15 permitted occupancy by a nonlicensee at that facility 16 prior to terminating the license? 17 A. No. 18 Q. Now we had a series of documents that were 19 shown to you with respect to Research Chemical, the 20 first of which was a license that you, in fact, 21 signed; it was the two-page document? 22 A. The inspection report? 23 Q. No. Yeah, it was a compliance inspection 24 report. 25 A. That was an inspection report. 277

1 Q. Have you seen any documents here today that 2 lead you to conclude that license No. C-4013 had been 3 terminated? 4 A. No, I haven't seen anything that lead -- 5 except from my conclusions that the site was -- I made 6 a confirmatory survey and the process would be to send 7 the report to headquarters, and then there were no 8 subsequent inspections prior to turning it over to the 9 State of California that I can recall. 10 Q. I understand that. What I'm referring to 11 is Exhibit 23, Exhibit 24, and I believe Exhibit 22. 12 These documents that Mr. Brown had shown you that were 13 dealing with the percentage of -- 14 MR. BROWN: Mr. Fish, I believe it's 15 Exhibit 19. It was the long pages that she's 16 referring to. 17 THE WITNESS: Oh, yeah. Well, that's the 18 inspection report. 19 MS. McKEITH: Q. And then we had a letter 20 dated May 1961 to Research Chemical Corporation. 21 A. It's these two. 22 Q. I thought it was 23 and 24. 23 MR. BROWN: You previously marked the -- 24 THE WITNESS: Yeah, it's Exhibit 23 and 24. 25 MS. McKEITH: Q. Is there anything in 278	1 in the regulation. 2 Q. And we don't have those regulations? 3 A. No, but that would, you know -- anything 4 under that would be permitted. It would put an upper 5 limit on the amount of the percentage -- amount of 6 thorium present. 7 Q. So if it had 50 percent thorium in a source 8 material, it would have been under a different 9 license; is that kind of an example of how the 10 regulations would -- 11 A. It wouldn't meet the definition of source 12 material. 13 Q. Any longer. It would be something else. 14 Can you tell from C-4013 whether this was a general 15 license or specific license? 16 A. C-4013 is a specific license. 17 Q. And how does a specific license differ from 18 a general license? 19 A. A general license is a license that a 20 person has by virtue of the fact that it was being 21 written in the regulations. It would, for instance, 22 there might be a general license, and there would be a 23 number assigned to it, and it would say that a person 24 could possess maybe up to three pounds of source 25 material. That would be a general license. A person 280
1 these letters that lead you to conclude that Research 2 Chemical Company's license had been terminated? 3 A. No, not in these documents. 4 Q. Now, in Exhibit 19, the long document, it 5 indicates 5,000 pounds of thorium source material in 6 the form of residues for processing. And we went 7 through an exercise whereby you calculated where you 8 thought a portion of the residue material -- what 9 percentage of thorium was in that portion. Is there 10 anything in the documents that you've seen that would 11 have prevented -- that designated the percentage of 12 thorium that was permitted in a pound of source 13 material that would have been on the property under 14 C-4013? 15 A. Would you repeat that. I'm not sure I 16 understand what your question is. 17 Q. Sure. That's okay. I think Mr. Brown was 18 trying to demonstrate what a small percentage of 19 thorium was in a pound of thorium that was on the 20 property. What I'm asking is: Is there anything in 21 the license that would have limited the percentage of 22 thorium that could be in a pound of thorium source 23 material under these licensing -- 24 A. In these licenses, it would have been 25 limited by the definition of source material which was 279	1 wouldn't have to make an application to the commission 2 for up to that amount. They would just have it by 3 virtue of the fact that it being written in the 4 regulation. That's a general license. 5 Q. Mr. Patterson had asked you whether your 6 decommissioning was based upon a survey that, in fact, 7 was intended to confirm the survey results of Isotopes 8 Specialties Corporation and you indicated that was 9 correct? 10 A. That's the intent of our survey. 11 Q. If Mr. Donaldson did not conduct a survey 12 for the Research Chemical Company's area of the site, 13 on what would you have been relying? 14 A. If that facility was part of what was being 15 released, we would have surveyed it ourselves even if 16 he had not. 17 Q. Okay. But you would not have had anything 18 to rely on to confirm the results? 19 A. That's true, but my recollection is that 20 all of the areas that I surveyed were covered by the 21 survey report that was submitted. 22 Q. Is there any possibility, you know -- 23 Research Chemical Corporation and Isotopes Specialties 24 Company were divided by a wall. Is there any 25 possibility -- do you remember there being a wall that 281

1 divided the building that you were in? 2 MR. BROWN: Objection; asked and answered. 3 THE WITNESS: No. As I stated earlier, 4 what I remember is the back part of the building was 5 all open. There were no walls there. 6 MS. McKEITH: Q. And you're certain that 7 was the entire building as opposed to there being any 8 other portion that was contiguous to the portion that 9 was all open? 10 A. Yes. 11 Q. It's a mystery. 12 MR. PATTERSON: The mystery wall. 13 MS. McKEITH: Q. Can you tell me how many 14 conversations you had with Greg Patterson at Proskauer 15 Rose or anyone who works for Mr. Patterson? 16 A. Oh, boy. I've had quite a few. 17 Q. More than ten? 18 A. Probably in that ballpark. 19 Q. Can you remember how many conversations you 20 had with Loeb & Loeb? 21 A. At least two or three. 22 Q. Are you still intending to sign the 23 declaration that was being drafted for your signature 24 by Mr. Patterson? 25 A. I don't know. He hasn't asked me to. 282	1 Q. Could you reference Exhibit 19 one more 2 time? It's the long document I guess it's being 3 called. I believe it's underneath that pile you're 4 holding right there on top. I believe it's this one 5 here. 6 A. Okay. 7 Q. It has an expiration date on that document 8 under the license. Does that mean that the license 9 did not have to be terminated? 10 A. It had an expiration date of May 31, 1959, 11 and what that means is that he either has to renew 12 that license to maintain it, or if there were no 13 application for renewal, the Commission would have 14 made inquiry with respect to the status of the 15 facility and would have, you know, asked questions 16 about whether they had any materials and things like 17 that. So there would have been a follow-up action on 18 the part of the licensing people if there was not a 19 renewal application. 20 Q. Were there any follow-up activities if 21 there was not a renewal application on the part of the 22 licensee? 23 A. I don't know. 24 Q. You don't know or you don't recall? 25 A. I don't recall. 284
1 MS. McKEITH: I have no further questions 2 at this time. 3 FURTHER EXAMINATION BY MR. PATTERSON 4 MR. PATTERSON: Q. If I could jump in 5 since I've got the mike on. Just to try to narrow 6 this time period when you may have conducted your 7 confirmatory sampling. Is it fair to say you would 8 not conduct a confirmatory sampling after Isotopes 9 Specialties' licenses had been terminated? 10 A. No. The survey would have to have been 11 before the licensing people would terminate the 12 license. 13 Q. And since this was brought up, could you 14 tell me what Mr. Richard Donaldson's reputation was at 15 the AEC? 16 A. Within our office, Mr. Donaldson had a good 17 reputation. 18 Q. Was he considered trustworthy? 19 A. Yes. 20 MS. McKEITH: Unlike Mr. Goldstein. 21 THE WITNESS: Yes, he was. 22 MR. PATTERSON: No further questions. 23 FURTHER EXAMINATION BY MR. BROWN 24 MR. BROWN: I have one quick question, 25 Mr. Fish. 283	1 Q. Would that -- whether or not there was, 2 would that depend on the questions presented to them 3 by the AEC? 4 A. It could. You know, I just don't know -- 5 there are different points in time, and so I don't 6 have any information of what happened when the 7 licensee was faced with this date. I would suspect 8 there would be correspondence on the matter between 9 licensing and the licensee. 10 Q. Generally, though, when that license 11 expired, the licensee would not have to do anything -- 12 assuming they did not apply for a renewal, they did 13 not have to do anything to have the license 14 terminated? 15 A. No, except that the issue of the cleanup of 16 the facility and the disposal of any material would 17 have been raised and there would have been a final 18 survey made. 19 MR. BROWN: All right. Thank you. 20 FURTHER EXAMINATION BY MS. McKEITH 21 MS. McKEITH: Q. I have a couple more 22 questions. Isn't it a condition of the license that 23 when the license is being terminated, there be a 24 decommissioning of the facility that's been a licensed 25 facility? 285

1 A. No. 2 Q. Were the regulations that were in place at 3 the time, did they require that there be a 4 decommissioning when there was a termination of a 5 license? 6 A. No, the regulations didn't require that. 7 Q. You testified earlier that a site that had 8 a license to utilize isotopes would, in fact, be 9 decommissioned; is that correct? 10 A. When the licensee no longer intends to do 11 any activities there, then he would ask permission to 12 terminate the license and that would trigger the 13 process. 14 Q. And if a licensee failed to ask permission 15 to terminate, would the AEC have followed up to find 16 out why subsequent to a termination or an expiration 17 they hadn't heard from anybody? 18 A. Yes. If the expiration date occurred and 19 there had been no correspondence or contact from the 20 licensee, the Commission would have taken action to 21 follow up on that. 22 Q. Are you aware of the fact that 23 Mr. Donaldson was not on the site throughout the time 24 period that the survey was conducted -- that he 25 conducted the survey? 286	1 MR. PATTERSON: I don't have any further 2 questions. 3 MR. SHIMADA: I don't have any further 4 questions. 5 VIDEO OPERATOR: Here marks the end of 6 Videotape No. 5 in the deposition of Raymond Fish. 7 The original videotapes will be retained by Video 8 Solutions at 50 First Street, San Francisco, 9 California. Going off the record the time on the 10 monitor is 3:56. 11 MR. PATTERSON: Back on the record. Pose a 12 stipulation that both days of Mr. Fish's testimony, 13 both original transcripts be sent directly to Mr. Fish 14 for his review. Mr. Fish will have 30 days to read 15 the deposition transcripts and provide my office with 16 any changes to that testimony. That I will thereafter 17 inform all of other counsel of any changes that 18 Mr. Fish makes to his testimony. And that the court 19 reporter be relieved of her duty to retain the 20 original and that the original be maintained at my 21 office, and that we will lodge it with the court or do 22 whatever else we need to do with the original based on 23 the parties requests. 24 MS. McKEITH: So stipulated. 25 MR. BROWN: So stipulated. 288
1 A. No, I'm not aware of that. 2 Q. You said that Mr. Donaldson had a good 3 reputation, and I think you indicated that 4 Mr. Goldstein did not share such a good reputation. 5 I'm not misquoting -- 6 A. The reputations of those two individuals 7 were not the same. 8 Q. Are there other individuals who worked for 9 Isotopes Specialties Company who did not share 10 Mr. Donaldson's good reputation? 11 MR. SHIMADA: Objection; lacks foundation, 12 calls for speculation. 13 THE WITNESS: Since I didn't -- my 14 association with Mr. Goldstein and Mr. Donaldson were 15 primarily from U.S. Nuclear. 16 MS. McKEITH: Q. I understand. So at 17 U.S. Nuclear, were there people who didn't share 18 Mr. Donaldson's good reputation? 19 A. Not that I can remember. I just -- those 20 two I can remember, and I know there were other people 21 there, but I can't comment about that because I don't 22 remember them specifically -- specifically enough to 23 answer the question. 24 MS. McKEITH: Thank you very much for your 25 time, Mr. Fish. I don't have any more questions. 287	1 MR. SHIMADA: So stipulated. 2 (Whereupon, the deposition was 3 adjourned at 3:56 p.m.) 4 --oOo-- 5 6 I declare under penalty of perjury that 7 the foregoing is true and correct. Subscribed at 8 _____, California, this ____ day 9 of _____, 1999. 10 11 12 13 14 15 16 _____ 17 Signature of the witness 18 19 20 21 22 23 24 25 289

1 CERTIFICATE OF REPORTER 2 3 4 I, JULIE ANNE ZEIGLER, a Certified 5 Shorthand Reporter, hereby certify that the witness in 6 the foregoing deposition was by me duly sworn to tell 7 the truth, the whole truth and nothing but the truth 8 in the within-entitled cause; 9 That said deposition was taken down in 10 shorthand by me, a disinterested person, at the time 11 and place therein stated, and that the testimony of 12 the said witness was thereafter reduced to 13 typewriting, by computer, under my direction and 14 supervision; 15 I further certify that I am not of 16 counsel or attorney for either or any of the parties 17 to the said deposition, nor in any way interested in 18 the event of this cause, and that I am not related to 19 any of the parties thereto. 20 21 DATED: _____, 1999. 22 23 24 _____ 25 JULIE ANNE ZEIGLER, CSR 9570 290	1 SIGNATURE AND ERRATA SHEET 2 3 (To be signed by deponent) 4 I, RAYMOND FISH, do hereby declare under the 5 penalties of perjury that the foregoing testimony is 6 true and correct (with the exception of the following 7 changes listed below): 8 9 10 11 12 13 14 15 16 17 18 19 20 21 Executed this _____ day of _____, 1999, 22 at _____ 23 24 _____ 25 RAYMOND FISH 292
1 2 SIGNATURE AND ERRATA SHEET 3 (To be signed by deponent) 4 I, RAYMOND FISH, do hereby declare under the 5 penalties of perjury that the foregoing testimony is 6 true and correct (with the exception of the following 7 changes listed below): 8 9 10 11 12 13 14 15 16 17 18 19 20 21 Executed this _____ day of _____, 1999, 22 at _____ 23 24 _____ 25 RAYMOND FISH 291	1 November 15, 1999 2 Raymond Fish 3 12 Doral Drive 4 Moraga, CA 94556 5 Re: Joseph and Virginia Thomson vs. ICN 6 Pharmaceuticals, Inc., et al. 7 8 Dear Mr. Fish: 9 10 Please be advised that the original transcript of your 11 deposition taken November 8, 1999 in the 12 above-entitled matter is available for reading and 13 signing. After reading and signing the original, 14 please send the original and your corrections to the 15 offices of: 16 17 Proskauer Rose LLP 18 Attn: Gregory J. Patterson 19 2049 Century Park East, Suite 3200 20 Los Angeles, CA 90067-3206 21 22 for thirty (30) days in accordance with Federal Rules 23 of Civil Procedure Section 30(e). If you do not sign 24 your deposition within 30 days, it may be used as 25 fully as though signed. If you are represented by counsel in this matter, you may wish to ask your attorney how to proceed. If you are not represented by counsel and wish to review your transcript, please contact our office for a mutually convenient appointment to review your deposition. Thank you for your cooperation in this matter. Sincerely your, Julie Anne Zeigler, CSR 9570 cc: Original transcript GREGORY J. PATTERSON, Attorney at Law JOHN H. SHIMADA, Attorney at Law MALISSA HATHAWAY McKEITH, Attorney at Law BRYAN K. BROWN, Attorney at Law 293

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