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UNITED STATES NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

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INVESTIGATIVE INTERVIEW OF
HOWARD R. IRWIN

LOCATION: WICKLIFFE, OHIO

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ATTACHMENT 7

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF INVESTIGATIONS

Ramada Inn North
28611 Euclid Avenue
Room 201
Wickliffe, Ohio

Wednesday, September 4, 1985

The investigative interview commenced at 10:35 a.m.

INTERVIEWEE:

HOWARD R. IRWIN

INTERVIEWERS:

DONALD J. SRENIAWSKI, Radiation Specialist
United States Nuclear Regulatory Commission

HAROLD G. WALKER, Senior Investigator
United States Nuclear Regulatory Commission

P R O C E E D I N G S

MR. WALKER: For the record, this is an interview of Howard R. Irwin, I-r-w-i-n, who is employed by Advanced Medical Systems, Incorporated. The location of this interview is the Ramada Inn located at 28611 Euclid Avenue, Wickliffe, Ohio. Present at this interview are Mr. Irwin; Don Sreniawski, nuclear materials chief, Region 3, Nuclear Regulatory Commission; myself, Harold G. Walker, investigator, Office of Investigations, Region 3. As agreed, this interview is being transcribed by court reporter Kathie Weller of Ace-Federal Reporters, Incorporated. The subject matter concerns Advanced Medical Systems, Incorporated.

At this time, Mr. Irwin, would you please raise your right hand?
Whereupon,

HOWARD R. IRWIN

was called as a witness and, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. WALKER:

Q With that out of the way, we can proceed with a little brief background information regarding yourself prior to your employment with AMS. Just briefly, your educational background?

1 A I have a -- I'm college educated, I have a BS
2 from Carnegie Mellon University in Pittsburgh. I've worked
3 for Dr. Stein since my graduation from college in various
4 capacities for all of his companies, and as he's added
5 companies I've assumed responsibilities for each of them.

6 Q You indicated you have a BS from which
7 university?

8 A Carneg'e Mellon.

9 Q How do you spell that?

10 A C-a-r-n-e-g-i-e, M-e-l-l-o-n. You haven't heard
11 of it?

12 MR. SRENIAWSKI: I have.

13 THE WITNESS: I'm very proud to have come from
14 there.

15 BY MR. WALKER:

16 Q Carnegie I heard of, but not Carnegie Mellon.
17 You're probably not aware of a lot of universities in the
18 South. You say you worked under Dr. Stein in various
19 capacities in his businesses?

20 A Right.

21 Q From what -- you entered at a certain level and
22 advanced to what level at this time? Your corporate title?

23 A I work directly for him. I'm not anywhere else
24 in the management chart. I handle special projects that he
25 has to have looked at, and one of my titles is project

1 manager where I try and get something moving and keep
2 people, you know, on track and get it accomplished.

3 Q So you are a manager, on a corporate scale?

4 A Right.

5 Q Do you have any other title that we could refer
6 to you as?

7 A For Advanced Medical Systems, for all the
8 medical companies I'm the manager of regulatory affairs and
9 I handle our license work, any approvals we need for, for
10 instance, transportation packages, that sort of thing.

11 Q Do you in this capacity of manager of regulatory
12 affairs interface with the regulatory agencies?

13 A Yes.

14 Q How many companies do you manage, you personally,
15 for Dr. Stein?

16 A Well, there are three medical companies, two of
17 which require really someone in my position. One is
18 Advanced Medical Systems based here, headquartered in
19 Geneva and also a facility in Cleveland and also ATC
20 Medical Technology, Incorporated, in Sunnyvale, California.

21 Q Does that spread you pretty thin sometimes?

22 A Sometimes.

23 Q When did you -- let's go to 1984 now, Advanced
24 Medical Systems. In what capacity were you performing with
25 Advanced Medical Systems in November of 1984?

1 A Well, at that point, I was manager of regulatory
2 affairs. I had just assumed the responsibility of
3 radiation safety officer. Based on discussions we had with
4 B.J. Holt in September when she visited our facility, we
5 had at -- our previous radiation safety officer had
6 resigned earlier that year and we had kind of a temporary
7 one.

8 Q Who was the radiation safety officer who
9 resigned?

10 A Norman Kelbley.

11 Q Who was the temporary one?

12 A Glenn Sibert.

13 Q Was he referred to as an RSO designate?

14 A Yes. I think at the time of the November
15 incidents I had been approved as the RSO.

16 MR. WALKER: Don, do you have any questions at
17 this point?

18 MR. SRENIAWSKI: Not on the background, no.

19 BY MR. WALKER:

20 Q What then was your responsibility regarding the
21 inquiries regarding -- by the NRC regarding the November
22 entries into the hot cell? What was your position in the
23 company, what kind of investigation did you do and who did
24 you report to?

25 A I talked to -- of course I was reviewing film

1 badge exposures.

2 Q From Pittsburgh?

3 A No, I come up here just about weekly, and I
4 realized obviously when the November report finally showed
5 up that we were over the allowable limits, and I dug into
6 the regulations and, you know, found that I had to report
7 to you within 30 days, so then I did conduct an interview
8 with the participants of those entries and formulated my
9 letter and sent it to you.

10 Q For the record, who were the participants in the
11 entries?

12 A Glenn Sibert, [REDACTED]

13 Q Okay. The film badges which you say exhibited
14 an over-exposure, are those rated by a separate company?

15 A Yes. We use Radiation Detection Company in
16 California. The badges are sent to them and they give us a
17 verbal and then a written report.

18 Q So what you looked at was the written report?

19 A Right.

20 Q And not the film badges themselves?

21 A Right. I've never seen the film badges.

22 Q And the film badges, did it indicate that there
23 was over-exposures on all three or only one or --

24 A On two, [REDACTED]

25 Q Then you looked into the regulations, 10 CFR,

1 and determined that it would be a necessity that you make
2 the NRC aware of this within 30 days?

3 A Right.

4 Q Explain how you went about that, making the NRC
5 aware of it.

6 A I knew that I had to submit a written report, I
7 guess I would call it a report, notification, so prior to
8 doing that I talked to the individuals involved because I
9 didn't know how much I had to put in my letter other than
10 these were over-exposures.

11 Q Did you interview these individuals at London
12 Road or the Geneva location?

13 A I interviewed Glenn at London Road -- basically
14 where they are stationed, and [REDACTED] and [REDACTED] I
15 talked to each one individually.

16 Q What was, briefly, what was the question that
17 you were interested in asking?

18 A I wanted to know what had occurred. I was not
19 present on either of the days where the cell entries were
20 made, so I had no first-hand knowledge of what went on, so
21 my inquiry was to try and determine what had happened, who
22 did what on those days.

23 Q And did you forward this information in written
24 form to the NRC at that time?

25 A Yes.

1 MR. WALKER: Do we have a copy of that?

2 MR. SRENIAWSKI: Yes.

3 BY MR. WALKER:

4 Q I don't know whether you have a copy of this,
5 Mr. Irwin, but here's some of the names blocked out, I
6 assume for confidentiality purposes, but is that the letter
7 you forwarded?

8 A Yes, this is the letter.

9 Q Once you had forwarded that letter, then what
10 was the next series of meetings or incidents? Did NRC then
11 come out or did you hear from the NRC immediately?

12 A I'm not certain when in my mind, when NRC got
13 back to us on that. I don't believe I was contacted
14 directly. I think maybe the company was contacted.

15 Q Then an inspection was conducted or at least
16 inspectors arrived on the scene in February of 1985?

17 A Right.

18 Q Were you here during that time frame?

19 A Yes, I was here in the second day or later in
20 the first day. I wasn't on site when they arrived.

21 Q Do you remember speaking directly with an
22 inspector?

23 A Yes.

24 Q Do you remember who it was?

25 A Toye Simmons.

1 Q Was there anybody else with Toye or was she
2 alone?

3 A I believe she was alone when she spoke with me.

4 Q Her questions, do you recall what her frame of
5 questions were?

6 A I really don't.

7 Q I have here also a letter dated 31 July, 1985,
8 from Dr. Stein, directed to the director of the Office of
9 Inspection and Enforcement, Washington, D.C. It addresses
10 items A, B, C and D, which correspond to items found in the
11 notice of violation. In that, in this text, did Dr. Stein
12 obtain the information in this letter from your
13 investigation or your inquiry?

14 A In part, yes. We worked on this letter together,
15 as a matter of fact.

16 Q Let's take this letter item by item. Take the
17 first one, item A. This indicates that regarding an NRC
18 form 4 -- would you take a moment to read what Dr. Stein
19 has to say here on item A to refresh your memory on it and
20 let's discuss that for a moment. When you're finished,
21 just nod your head to me.

22 In this he indicates that the form 4 was
23 information that was available before cell entries for an
24 individual, referenced as having the over-exposure. Which
25 individual would this be concerned with?

1 A This would be [REDACTED]

2 Q What's the significance for the record of the
3 form 4, NRC form 4 in your opinion?

4 A The significance of it?

5 Q The significance of having a form 4?

6 A It is to insure that an individual does not
7 receive more than the maximum allowable dose.

8 Q Do you recollect what the maximum allowable dose
9 is?

10 A It is based on a formula. It is 5R per year of
11 age over the age of 18 basically.

12 MR. SRENIAWSKI: It limits the quarterly
13 exposure to a person without a completed form to less than
14 1-1/4 Roengen per quarter, so in order to get the
15 opportunity to expose an individual to anything in excess
16 of the 1-1/4 rem per quarter, you require the form 4 and
17 there's the upper limit you mentioned according to the age
18 of the individual.

19 MR. WALKER: It basically determines the past
20 exposure of the individual.

21 THE WITNESS: Right, the life exposure.

22 BY MR. WALKER:

23 Q Mr. Irwin, this is an occupational and personal
24 radiation exposure history of [REDACTED] Do you
25 recognize the form?

1 A Yes.

2 Q Do you recognize the signature?

3 A Yes.

4 Q Was this form on file or in the possession of
5 Advanced Medical Systems at the time of the entries of
6 November of '84?

7 A Was the form on file?

8 Q Was this form in your files and filled out as it
9 is there when the entries of 1984 were accomplished?

10 A The form itself was not, no. The information
11 was known to us.

12 Q When did the form come into existence? Not the
13 form, but the information and the signatures?

14 A The information we knew from previous work that
15 [REDACTED] had done for us. We had only first utilized him in
16 1984. He was being utilized on a part-time basis on an
17 as-needed basis. He performed some work for us I think in
18 April, May and June, and also in September when we had to
19 replace our cell window. At that time, I knew and had
20 determined, of course we knew his name and birth date and
21 social security number because we issued film badges to him.

22 Q What was [REDACTED] job? Was it not in the
23 engineering department?

24 A Right.

25 Q How did [REDACTED] get to working in the hot

1 cell from the engineering department?

2 A Basically we asked for volunteers and he
3 volunteered.

4 Q The form itself indicates that it was -- there's
5 a typed date of 9/12/84. How did that date come about?
6 The date by [REDACTED] name, September 12, 1984?

7 A That's a date that would have been prior to the
8 work we performed in September on our hot cell window,
9 which is the point at which this information was known to
10 us.

11 Q But when did [REDACTED] actually sign this
12 report?

13 A Sometime after that date.

14 Q After November of 1984?

15 A I believe, yes.

16 Q I guess you can see my point here. I want to
17 understand if this form was not available in '84 in
18 accordance with 10 CFR --

19 MR. SRENIAWSKI: Can I expand on that?

20 BY MR. WALKER:

21 Q I want to ask this question. This indicates it
22 was completed on September 12, 1984, when in fact the
23 gentleman signed the form later than November of '84..
24 Realistically, it would appear that this form wasn't in
25 existence before the '84 entry date and therefore there was

1 no form 4 on file in accordance with 10 CFR. Do you agree
2 with that or am I off-base?

3 A Well, that's what it indicates.

4 MR. WALKER: Well, Don?

5 BY MR. SRENIAWSKI:

6 Q You made a statement, and it is documented in
7 the letter: "The information required on form NRC 4 was
8 determined and was available before the cell entries." Who
9 made that determination?

10 A I knew that information.

11 Q When you say the information was available, was
12 it collected in one form in one location, or I mean
13 obviously some of the information -- you knew his name,
14 You knew his social security number --

15 A I had all the information except his signature.

16 Q You had all that information?

17 A Yes.

18 Q Where did you obtain it?

19 A I obtained it from him, from prior work that he
20 has done for us.

21 Q At what time did you obtain that? How did you
22 become aware of his previous occupational exposure, where
23 he worked and what he had received?

24 A In speaking with him earlier in the year.

25 Q Do you recollect whether anybody else was

1 present when you made that inquiry into his previous
2 occupational exposure record?

3 A I don't recall.

4 Q So you had the information memorized essentially?

5 A Basically.

6 Q You didn't have it written in one location that
7 was available for review by an inspector or third party?

8 A I don't believe.

9 Q Specifically, would Mr. Sibert have known that
10 information?

11 A I think he would have, yes.

12 Q Where would he have obtained it? From you?

13 A I believe.

14 Q Do you remember mentioning to Mr. Sibert at any
15 time what the exposure record was or showing him any
16 collection or individual documents that all together would
17 have given this information?

18 A No.

19 Q When the individual volunteered for the job --
20 this would be [REDACTED] -- at that time did you intend to
21 complete the form sometime in the future? What triggered
22 you eventually to make that form up?

23 A At the time -- I believe I brought up this point
24 at the conference -- there was confusion in terms of how
25 this applied to a part-time employee in our case, a one-time

1 employee, a volunteer, as opposed to our full-time people
2 and prior, you know, to 1984, we had a staff of experienced
3 people who did all this work for us all the time. We
4 didn't have to use volunteers or non-isotope people.

5 Q Non-regular workers. I understand.

6 A And our files were maintained for these people.
7 It was unclear to me whether or not, you know, how this
8 applied to a part-time person basically. That's really the
9 truth.

10 Q Okay, then --

11 A Regulations really don't say, don't spell out
12 terms of employment, okay?

13 Q No. What the regulation --

14 A I don't know how this applies exactly to
15 somebody that we would hire on a consulting basis either.
16 At this point in time --

17 Q The regulation specifically says it is required
18 to determine his previous occupational exposure if intended
19 to use that individual in an area where you would give him
20 an exposure in excess of 1-1/4 rem per quarter. If you
21 chose to keep his exposure under that limit, the form is
22 not required or the information equivalent, and that
23 information is supposed to be recorded on a form.

24 The intention of providing the additional leeway
25 is so that you specifically don't have to have that form or

1 that piece of paper but you do have to have a piece of
2 paper that is the equivalent of it. My interpretation is
3 that you cannot just be aware of the information without
4 having that information documented because obviously it is
5 uninspectable if it is just memorized. That's my
6 interpretation.

7 BY MR. WALKER:

8 Q Let me sum this up and maybe give you my
9 understanding, Mr. Irwin, and you can tell me whether I'm
10 right or wrong, is that the information there was not on a
11 retrievable system prior to it being placed on that form
12 that we have; is that correct?

13 A The --

14 Q I'm talking about files, computer-type or
15 something. What I understood you to say, it was something
16 you knew you had talked with him earlier in his employment,
17 but it wasn't in a retrievable system.

18 A The name, social security number and birth date
19 was retrievable but the exposure history, that was based on
20 a discussion I had with [REDACTED]

21 Q One other note on item A is that the individual
22 referenced as having the over-exposure had been scheduled
23 for the radiation safety course earlier in the year. How
24 are they scheduled for their safety courses at AMS?

25 A When we decided to hold a course, we took a

1 survey, so to speak, of individuals within the company that
2 we thought we would like to train, and [REDACTED] name was one
3 of the individuals.

4 Q When you say you take a survey, do you
5 voluntarily ask people if they would consider it and they
6 say yes and you put their name down to be trained, or how
7 is this done?

8 A Basically, management, okay, knowing the needs
9 of service people and our production people, and of course
10 Dr. Stein and myself realized the need for additional
11 trained personnel, and we basically scan the list of
12 employees that we have and in discussion amongst ourselves
13 decide which are prospects.

14 Q So this process would not necessarily include
15 the subject giving his approval to be scheduled?

16 A It would before he actually took the course, yes.
17 Obviously if a person doesn't want to take the course it is
18 futile for us to push him through it.

19 Q The scheduling, you schedule an individual to
20 take a course. When you schedule, I assume you're planning
21 on a course and that you're scheduling it for a certain
22 time frame. Would he be knowledgeable or know that he had
23 been scheduled for a course?

24 A He would know that he was a candidate for the
25 course. The actual course schedule was changed a

1 considerable number of times, got pushed later into the
2 year.

3 Q Basically [REDACTED] would have been aware that
4 he was being considered and was going to take a course in
5 this class?

6 A I think he was aware that he was being
7 considered, yes.

8 Q Had he been talked to directly about it?

9 A That I don't know. I don't know that I talked
10 to him.

11 Q Whose responsibility would it have been to talk
12 to him?

13 A He would have been asked by his supervisor --

14 Q Who would have been --

15 A Ed Sviegel -- whether or not he was willing, and
16 Ed Vose has input as to whether he's willing to let [REDACTED]
17 go out of his department.

18 Q Managerial concerns, but I guess if I was to ask
19 [REDACTED] if he had been scheduled for any courses there,
20 he would at least know that, wouldn't he?

21 A He would know if he was scheduled at the time
22 that the course actually took place.

23 Q Would he have known prior to the course taking
24 place?

25 A He would have known that he was at least being

1 considered, yes.

2 BY MR. SRENIAWSKI:

3 Q Did he ever attend the course? Was it ever held?

4 A Yes, the course was held.

5 Q What did it consist of?

6 A Basically, it is a course that we have to
7 prepare our people for service work. It involves classroom
8 work on radiation theory, safety, and then laboratory work
9 and use of meters.

10 Q About how many hours?

11 A The classroom course is probably 30 hours. The
12 laboratory course is probably another 40 hours.

13 Q In [REDACTED] case, do you remember who gave
14 the course?

15 A Various people. I gave a portion of it.

16 Q You gave a portion of it?

17 A Right.

18 Q Do you remember anybody else?

19 A Who --

20 Q Did Glenn Sibert?

21 A Glenn Sibert handled most of the laboratory
22 portions of the core for us.

23 Q As far as in-cell entries, did they receive
24 additional training for that?

25 A Additional training at the time that they

1 reported to London Road, we reviewed the work to be done.
2 They had -- [REDACTED] had some previous experience with us down
3 at London Road.

4 Q Was that formal or was that instructional and on
5 the job?

6 A I would say instructional and on the job.

7 Q And that was that portion of it given by you
8 or by some of the London Road people?

9 A It would have been Mr. Sibert.

10 BY MR. WALKER:

11 Q Did I understand you in that you stated that
12 [REDACTED] had attended the radiation safety course prior
13 to November or simply that according to the letter he was
14 scheduled for the safety course earlier in the year, but
15 did he in actuality attend?

16 A He definitely didn't complete it, no. He may
17 have attended an initial session.

18 Q So I'm reading this correctly that the
19 scheduling had taken place but not total completion?

20 A Right.

21 Q What was your findings regarding the surveys --
22 MR. SRENIAWSKI: Can I ask a couple questions on
23 the form?

24 BY MR. SRENIAWSKI:

25 Q We've discussed [REDACTED] case specifically.

1 Routinely, how do you obtain the previous occupational
2 exposure records for your people, because I know everybody
3 else has them that we've ever looked at. Are you aware of
4 the procedural methods in order to get that information?

5 A Routinely I ask the individual whether or not
6 he's ever worked in a facility that has exposed him to
7 radiation, and in all cases that I've had they all said no.

8 Q You do that for all your employees or -- I
9 notice you have two plants and like in [REDACTED] case
10 he's a draftsman, [REDACTED] is not what I would call a
11 regular radiation worker --

12 A Yes.

13 Q I can understand the people that are hired for
14 the London Road facility, but do you routinely ask all the
15 people for the NRC 4 form information?

16 A No.

17 Q If someone said -- again, I'm using you as an
18 individual. Are you a primary person or does someone else
19 have the responsibility?

20 A For the NRC 4?

21 Q Yes.

22 A I would be the primary person at this time.

23 Q It wouldn't be Ms. Powell or Mr. Sibert?

24 A No.

25 MR. SRENIAWSKI: The last question on that issue,

1 when Ms. Toye Simmons, the NRC inspector came out, did she
2 have an opportunity to review any forms that were the
3 equivalent of an NRC 4 form? I know she has seen the one
4 copy we showed you of [REDACTED] but there was no other
5 supporting documents for that?

6 THE WITNESS: I think it is all in one file.

7 BY MR. WALKER:

8 Q Let's move on to another area. In your --
9 should I call it inquiry or investigation which you
10 conducted? Which is appropriate? An inquiry?

11 A I would say inquiry.

12 Q In your inquiry you reviewed the survey
13 procedures being conducted. What was your findings as to
14 entries in the hot cells and how they were conducting the
15 surveys?

16 A Basically my findings were that we followed our
17 procedure, which in [REDACTED], you know, taking a pre-entry
18 survey and taking a survey at the door and doing our air
19 sampling.

20 Q In other words, procedures in place for AMS were
21 being followed according to what you were able to find out?

22 A Right.

23 Q Regarding the procedures of AMS, is it a
24 procedure that on each exit from the hot cell that the
25 dosimeter is read by the individual and recorded in some

1 manner?

2 A Is it a written procedure?

3 Q Well, procedure, either way. Is it a procedure
4 that you use at AMS, written or unwritten?

5 A Yes. We inform our people to read their
6 dosimeters frequently. The way the cell is set up, the
7 individuals are working back here in this area, and I, if I
8 were supervising, would be out here. I'm a good distance,
9 remote, I would say, from them. We can communicate by
10 intercom.

11 Q You can't or you can?

12 A We may. We're able to.

13 Q Are the individuals, according to your
14 procedures, instructed to read their dosimeter on each exit
15 from the hot cell to determine their doseages, or is that a
16 procedure?

17 A Yes.

18 Q Is that in fact -- how is that enforced for the
19 individuals? Do you remind them? Is there someone working
20 outside the window which is there in order to assure that
21 people don't forget during their work to do these readings
22 once they are in the decontamination room or wherever?

23 A The times I've monitored cell entries, which has
24 been -- I participated in one because I feel it is pretty
25 hard to supervise people when you don't know what the job

1 is, and also when I monitored on the outside I periodically
2 communicate with them and remind them to do that.

3 Q So have you found it necessary in some instances
4 people are maybe less experienced workers and have to be
5 reminded to read their dosimeters?

6 A No, I found that people are quite interested and
7 quite concerned about what amount of dose they are
8 receiving. [REDACTED] especially,
9 were quite conscientious, I feel, in knowing what they were
10 getting.

11 Q In your question and answer with [REDACTED] and
12 [REDACTED] did they tell you that they had read their
13 dosimeters on each exit?

14 A They told me they couldn't remember.

15 BY MR. SRENIAWSKI:

16 Q I would like to step back a little bit into some
17 of the procedures on prior to entry. We understand from
18 interviews and from a review of your procedures that the
19 first thing you do is an evaluation of the airborne
20 concentration. We understand that that usually is not much
21 of a limiting factor. The second determination is to try
22 and measure radiation level within the cell itself.

23 A Right.

24 Q We understand that the primary source is to do a
25 radiation survey at the cell door using a pic 6 and I think

1 it is a common instrument, and that in turn is extrapolated
2 into a stay time in the form of minutes?

3 A Right.

4 Q Is there any other survey that is performed for
5 the radiation level, not contamination, which would affect
6 that stay time?

7 A We do survey the cell with our remote probe.

8 Q Okay. Would that be in any way calculated into
9 stay time? My understanding is, according to your
10 procedures, is that the monitor is essentially used in the
11 decontamination process, and as far as I understand has not
12 been used to determine stay time. Am I correct in that
13 assumption?

14 A We certainly use it in the decontamination
15 process, but in the course of doing that we're aware of the
16 levels of radiation that are in the various levels of the
17 cell.

18 Q Okay. Again, would that information be used to
19 reduce or increase stay time, or let's be specific, was it
20 used on November 6 and November 21?

21 A I'm not certain. I don't know.

22 Q Let me ask you to look at response B in
23 Dr. Stein's July 31, 1985 letter. The second sentence says
24 that "complete cell survey was made with our remote probe
25 prior to these dates and prior to entry." Did you provide

1 that information to Dr. Stein?

2 A Well, as part of the decontamination process
3 this is where we obtain this information.

4 Q Okay. That instrument, is it at that date was
5 it a calibrated instrument?

6 A At that date, no.

7 Q It is my understanding of your license condition
8 that it was not required?

9 A That's correct.

10 Q I think that I would have to conclude that we
11 were well aware that the cell survey is made but we are not
12 aware of any instance where readings were taken that
13 affected stay time in the cell. Our understanding is, and
14 the inspector's understanding was, that the form ISP -- is
15 that your form number?

16 A Yes.

17 Q ISP 18, which is the stay time calculation, was
18 based on that cell door survey. Is that an accurate
19 statement?

20 A I think if you'll read, the ones for these
21 entries were probably marked.

22 Q I happen to have copies of them.

23 A I think they are marked at cell door.

24 Q Yes. The reason I'm raising those contentions
25 is trying to clear up whether any other survey other than

1 that cell door survey determined stay time in the cell.

2 A We have on occasion placed a dosimeter in the
3 cell. Unfortunately, we don't -- that gives us a general
4 feeling, but the position of the dosimeter --

5 Q I'll get back to this point a little later in
6 the question when we're discussing the survey that was made
7 later on to determine -- at the request of the NRC and its
8 significance. There's some contention that we felt that
9 the survey was identical to the conditions on November 6,
10 so I'll get back to that.

11 A Okay.

12 Q When Dr. Stein in his item B, the last statement,
13 makes the statement, "prior to any survey at the door, a
14 complete survey by remote probe is always performed." What
15 survey do you believe he's referring to?

16 A I believe he's referring to our decontamination
17 survey.

18 Q That's my interpretation also.

19 MR. SRENIAWSKI: If you want to continue.

20 BY MR. WALKER:

21 Q Earlier you indicated to me, Mr. Irwin, that
22 when you asked the individuals if they had read their
23 dosimeter between visits in and out of the hot cell that
24 they related to you that they told you they didn't remember
25 whether they did it on each trip. However, on item C, page

1 3, it's stated that between visits, it says four entries
2 were made -- and this is the first paragraph of item C,
3 page 3, about the center of the paragraph -- four entries
4 were made by each individual on the 21st of November, and
5 further that between visits, dosimeters were checked to
6 ascertain actual exposure. Now if they couldn't remember
7 when they were talking to you, how did this statement of
8 Dr. Stein get in here?

9 A You will have to ask him. He did talk to these
10 individuals prior to writing this letter.

11 Q But you wrote the letter together, you stated.

12 A Yes.

13 Q Did you not see this when you were assisting him
14 in writing the letter?

15 A Yes.

16 Q Did you not ask him where he got his information
17 if they couldn't remember to you?

18 A He talked to the individuals, yes.

19 Q Did you ask him? Do you recall this? This is
20 quite a variance from what you just told me in that they
21 couldn't remember when talking to you, then how could they
22 remember when talking to Dr. Stein?

23 A I don't know what to tell you. I prefer he
24 answer the question, not me.

25 Q I'm not trying to put you on the spot. I'm

1 trying to find out if there was some other sources of
2 information that you were not privy to.

3 A Let me say this: Dr. Stein is a qualified
4 expert witness in terms of court appearances, and he can
5 ask a question indirectly and get an answer that, you know,
6 I wouldn't have thought to ask. Let's put it that way. He
7 has a different way of questioning. I couldn't ask maybe
8 the same type of questions you would ask.

9 Q So when you assisted him in writing this letter,
10 you really didn't question Dr. Stein as to this comment
11 here?

12 A No.

13 Q Did you notice it as being different from what
14 you had found out?

15 A Yes.

16 Q You did, but you didn't pursue it?

17 A I took it based on the method he told me he
18 obtained the information.

19 Q He told you that he, in addition to you, had
20 interviewed the individuals?

21 A Right. You're talking a period of several
22 months passing. I interviewed the individuals in January.

23 Q Which was only two months -- well, a matter of
24 approximately two months, less than two months maybe, less
25 than 60 days from the time of the event?

1 A Right.

2 Q Had he interviewed them prior to you
3 interviewing them?

4 A No, I don't believe so.

5 MR. WALKER: Don?

6 BY MR. SRENIAWSKI:

7 Q On the November 6 and November 21 entries, you
8 already stated you were not there.

9 A Right.

10 Q Were you informed of the consequences of those
11 entries, specifically the dosimeter results?

12 A Yes.

13 Q Okay, now dosimeter results at that time, did
14 you consider them alarming?

15 A No, I didn't.

16 Q On the earlier -- to get back to the other issue
17 on cell entries, I have found the copies of the ISP 18
18 radiation exposure level evaluation for both the 6th and
19 the 21st. My interpretation in reviewing this is that the
20 stay time was based on a calculation with an estimate or
21 reading of 17.5 rem at the door, and I see no corrections
22 for any other survey. Would you be aware of any other
23 survey corrections that might have been made?

24 A No.

25 Q Now, at that time, looking at that data, after

1 the fact, it became aware that the actual exposure received,
2 as recorded by dosimeters, was significantly higher than
3 the exposure that was anticipated, the rate of exposure.
4 In short, it looked like the people were picking up the
5 radiation dose at about twice the estimated dose. Were you
6 aware of any attempt to correct for this variance by the
7 November 21 entry, where there again the stay time is based
8 on the same method, which is your procedure?

9 A Right. Was I aware of any attempt to include
10 the data from the first entry into the evaluation of the
11 second.

12 Q Was it an important evaluation factor to know
13 that there was at least circumstantial evidence that on the
14 21st they were going to pick up radiation faster than the
15 estimated dose if they used the data that they had from
16 November 6?

17 A No, I'm not aware.

18 Q What we're trying to do is if we ask several
19 individuals, we want to conclude that none of the people
20 that had an opportunity did that.

21 The form, if you'll take a look at it, has a
22 section that permits a record to be maintained of the
23 interim doses that the people have received while they are
24 in the cell. There's the check time on the dosimeters?

25 A Right.

1 Q Item number 5.8 and item number 5.9, they are
2 blank. Do you know of any reason why the interim doses
3 were not recorded? The form appears to have your signature
4 as having audited after the fact.

5 A Yes. You're looking at November 6.

6 Q I believe it is identical for November 21 also
7 that items 5.8 and 5.9 were not completed, both days.

8 A I don't know why, no. I wasn't there to
9 complete them at that date.

10 Q Based on your experience with an operation, what
11 would be the mechanism to have that information transferred
12 to the form? Let me speculate. Right now we have two
13 individuals in the cells. They have their dosimeter
14 readings. Ms. Powell is outside the cell monitoring and
15 Mr. Sibert is providing assistance to the two in-cell
16 people but is not in the area, is in the decontamination or
17 in the isotope area. How do the people transfer their
18 interim dosimeter readings to some form of a record as this
19 demonstrates?

20 A How would it be done?

21 Q Yes. Would they -- we know that the normal
22 procedure is to have the dosimeters taped into a plastic
23 bag to their chest to give them some opportunity. The
24 procedure called for the dosimeters to be checked at some
25 interval. How would they pass that information on to get

1 it recorded?

2 A They could pass it on over the intercom.

3 Q Would that be the normal way of doing it?

4 A I would think so.

5 Q And then that would mean that your timer,
6 whoever that may be, in this case I guess it was Ms. Powell,
7 would have the responsibility of recording it or checking
8 it for the individuals in the cell?

9 A Yes. I think in these cases if Mr. Sibert was
10 in the cell area with the individuals, he would have
11 checked or been aware of what it was.

12 Q Would he have warned the individuals that a
13 check time is coming up close or would Ms. Powell do that?
14 Again, you are not there, but what would you anticipate
15 based on normal procedure?

16 A Normal procedure, I would say that he probably
17 would.

18 Q And then who would physically transform the
19 information to this record? Let's be specific. Do you
20 recognize the handwriting? Who do you think did that?

21 A I did that.

22 Q Where would you obtain the information for the
23 final and interim readings?

24 A I would obtain it from the little notes we took
25 during the procedure.

1 Q In this specific case, where did you get the
2 information for the November 6 and November 21 entries?

3 A The exposures were recorded, from the final
4 dosimeters. That's obtained once the people emerge from
5 the operation.

6 Q Where is that obtained from?

7 A That's read. They read their dosimeters, and it
8 is recorded for that particular operation, and that was
9 reported to me over the phone.

10 Q So let me prompt you. My understanding is it's
11 put into a dosimeter log?

12 A Right.

13 Q You're making the assumption that that
14 information was what was transcribed to you. When you
15 completed that form physically, where were you, back in
16 Philadelphia?

17 A No, I was in Cleveland. I had access to all the
18 data.

19 Q What was the time lapse between the completion
20 of that form in each instance and the entries, starting
21 with the November 6 entry?

22 A Less than a week.

23 MR. SRENIAWSKI: I think that's all I want to
24 get on that.

25 MR. WALKER: Let's take a five-minute break, at

1 which time we won't discuss anything between the
2 interviewers and the interviewee.

3 (Recess.)

4 MR. WALKER: Let's go back on the record at this
5 time. Don, you go ahead and complete your line of
6 questioning.

7 BY MR. SRENIAWSKI:

8 Q This refers to item a response of
9 Dr. Stein's, dated July 31, 19

10 In this, it deals with the dosimeter calibration.
11 The statement is made, "the procedure for calibration
12 submitted in 1979 was found to be unworkable in that it did
13 not produce repeatable results. An alternate technique was
14 adopted."

15 Were you aware of what the dosimeter calibration
16 requirements were according to your license condition? Are
17 you aware of them now?

18 A I'm aware of them now.

19 Q Could you state briefly what they are now?

20 A I believe we included a chart in our application.
21 The application was submitted prior to my assuming
22 responsibility, but the chart of all our survey meters and
23 instruments and a calibration period was indicated for each
24 of those. I believe the dosimeters, in looking back at it,
25 I think they say 180 days or up to 200 days maximum or

1 something like that.

2 Q Is this the form that you're talking about?

3 A Yes. That's part of our original application.

4 Q Let me just read into the record what it says.

5 "Calibrate with 15 millicuries of 60 cobalt at intervals of
6 180 days or less if available, or before first use if
7 longer than 180 days since the last calibration."

8 Currently, how are you calibrating your
9 dosimeters?

10 A Currently?

11 Q Yes.

12 A I have purchased a dosimeter calibrator,
13 calibration specifically for dosimeters.

14 Q Is this a manufacturing source?

15 A Yes.

16 Q Is this the Victoreen?

17 A Made by Dosimeter Corporation.

18 Q Contains 10 millicuries cesium 137?

19 A Yes.

20 Q Do you intend to get a change in your license
21 conditions to incorporate this technique?

22 A It has been submitted already with my renewal
23 package.

24 Q Who does the calibrations?

25 A I have been doing them.

1 Q Dr. Stein discusses a comparison with film badge
2 reading. Are you the one that does that calibration or did
3 that calibration?

4 A That was a standard practice from prior to my
5 assuming responsibility of RSO and it is being carried
6 through.

7 Q Do you consider that a calibration in the true
8 sense of the word?

9 A I consider it as accurate as a calibration, yes.

10 Q Do you realize that that's a deviation from your
11 license condition, that technique?

12 A I realize that now, yes.

13 Q I think what we would be discussing is opinion,
14 so I won't comment anything further on that.

15 MR. WALKER: I have no further questions if you
16 don't.

17 MR. SRENIAWSKI: No.

18 MR. WALKER: I'll give you a moment here to
19 respond, Mr. Irwin. I have questions to ask you as closing
20 comments.

21 THE WITNESS: I have a couple off-the-record
22 questions I want to clear up.

23 BY MR. WALKER:

24 Q Mr. Irwin, have I or any other NRC
25 representative ever threatened you in any manner or offered

1 you any rewards in return for this statement?

2 A No.

3 Q Have you given the statement freely and
4 voluntarily?

5 A Yes.

6 Q Is there anything further you care to add for
7 the record? Here's your opportunity.

8 A For the record?

9 Q For the record.

10 A I would like to make a speech but I haven't
11 really prepared it.

12 Q If you want to think for a moment, go ahead.

13 A In coming up against the NRC, okay, in this
14 particular instance and just trying to interpret
15 regulations, I find that it is unclear to me who I can go
16 to for interpretation on -- I understand basically that
17 what we submit for licenses is what you refer to, in
18 inspecting us, about there are some gray areas which I want
19 to ask you about later that I don't know how to approach
20 you, when to approach you, if I should approach you. Do I
21 get in trouble if I say we're doing it this way, is this
22 right? I feel that maybe the NRC should be a little more --
23 what do I want to say -- could act more in a consulting
24 manner and help me to improve my program rather than doing
25 it by holding a hammer over my head when I make a mistake.

1 I find that it is hard for me to work under that
2 type of conditions. Obviously I'm forced to and maybe the
3 NRC is set up that way where they don't have any leeway. I
4 had a little bit of a problem, I need to feel a little more
5 comfortable, okay?

6 MR. SRENIAWSKI: I think I can comment on that.
7 I wouldn't mind commenting on the record because it is more
8 of an inspection than an investigation problem. I can tell
9 you what the regulations are that only the Attorney General
10 can interpret the regulation, but that is as an ultimate
11 court of last resort when everybody disagrees. Legally
12 he's the only one. Realistically, there's obviously two
13 levels of dealing with the Commission. One would be on an
14 informal basis and the other one is formally. Obviously
15 we're in the formal mode so it is quite structured, so let
16 me confine my statements to what other licensees do in the
17 informal mode.

18 First, we'll accept any anonymous call, so if
19 you chose not to identify yourself but just said, I have
20 dosimeters that I'm calibrating, can I change them, would
21 you accept it, you can call any of the license reviewers or
22 the inspectors and that information would be returned to
23 you.

24 You could say you anticipate getting a license
25 change and identify yourself, again calling a license

1 reviewer calling me personally as a materials inspector
2 supervisor, and we can tell you or at least advise you
3 whether we would accept that as an alternate system, and in
4 some cases a simple phone call will do it.

5 My own past experience is that it is always
6 better to deal with the NRC informally over a telephone
7 call before you get into a formal exchange of letters, and
8 that's in enforcement or in licensing. But it is true that
9 a couple of concerns that we had were essentially that
10 license conditions that govern certain types of operations
11 you were performing were what you were inspected against.
12 You have an opportunity to make changes formally but to
13 abandon a procedure and adopt another procedure, the
14 inspector will inspect against what you have told us and
15 has been mutually accepted by the Commission and your
16 company, but there are alternate methods of doing it.

17 MR. WALKER: Is there anything further? If not,
18 then this interview is concluded at this time.

19 (Discussion off the record.)

20 MR. WALKER: We'll go back on the record, and
21 this was an oversight on my part. I should have addressed
22 this earlier. Mr. Irwin has agreed to go back on the
23 record still in an oath capacity.

24 BY MR. WALKER:

25 Q This is a dosimeter report from Radiation

1 Detection Company. Is this the kind of report that you
2 received back, which I'm addressing here, which is in
3 response to a film badge that's being sent in?

4 A Yes.

5 Q This is the kind of report similar to this that
6 you first noticed any over-exposure readings in November,
7 from the November entry?

8 A Yes.

9 Q Okay. This is another report which covers the
10 same time frame with corrections, and would you explain to
11 me how corrections are made to the company regarding
12 findings?

13 A I see, these are both the same week?

14 Q Yes. Has a note there as per Howard Irwin.
15 That's what I wanted to ask you about.

16 A I spoke with -- when we received this film badge
17 report --

18 Q This was the week of May 13, 1985 through May
19 1985. Is there a group number 2 -- okay. Says the names
20 on it of Powell, Santoro and Sibert.

21 A When we received this report, in comparing with
22 our dosimeter reports, [REDACTED] exposure as recorded on
23 the dosimeter was considerably less. As a matter of fact
24 it was 23 OMR as opposed to what was reported by Radiation
25 Detection Company. He and I discussed it. I believe I was

1 at London Road maybe the day after this report arrived.

2 Q So the exposure readings from Radiation
3 Detection were in excess of what the exposure readings in
4 reality were?

5 A What we expected, certainly, yes.

6 Q Okay, the initial exposure readings for the
7 record for [REDACTED] indicated under the current dose
8 millirem columns, gamma 950, shallow 950. In the
9 subsequent report, issued by Radiation Detection Company
10 following correspondence as indicated on the form by Howard
11 Irwin in a letter dated June, looks like 17 -- it is
12 faded -- the current dose was indicated as 230 for gamma
13 and 230 for shallow, and there was subsequent changes
14 through the calendar quarter, and I just wanted to get an
15 understanding of what caused the discrepancy, and you said
16 it to me once but go through it one more time for me.

17 A We received a report that indicated [REDACTED]
18 received 950 MR exposure for this period of time. It did
19 not agree, as a matter of fact it was way out of line from
20 the 230 MR exposure that we had recorded based on pocket
21 personal dosimeter readings. I discussed it with
22 [REDACTED] He felt it was out of line. He has been for a
23 period of months claiming that Radiation Detection Company
24 has been reading, you know, excessive numbers. He
25 basically doesn't trust them, okay?

1 Q Following this example here, obviously how do
2 you feel about Radiation Detection Company?

3 A Let me finish the explanation of the change
4 first.

5 Q Go ahead.

6 A I discussed it with him, we discussed the work
7 he had done. He was quite confident that he had received
8 only the amount he recorded on the dosimeter. I spoke with
9 Radiation Detection Company, asked them to pull the badge
10 out, reread it, they did. They felt that they were correct,
11 read 950. We came to the understanding that they would
12 change reports if I would submit a written request and
13 explanation of why. I wrote them a letter explaining that
14 we felt that their film badge reading was inappropriate for
15 this particular week and that we had, based on previous
16 film badges in the 200, say the 150 to 250 range, they had
17 read some less, some more, so I suggested that we use the
18 actual reading as the correct reading, and they revised the
19 report and sent it back in this form.

20 Q Have you ever had to correct any other reports
21 from Radiation Detection Company?

22 A Have I? No.

23 Q In your company, have you had difficulties with
24 them in the past reading these properly?

25 A The only other report we had corrected was the

1 ones based on the November readings for [REDACTED] and [REDACTED]

2 Q That was corrected though based on a different --

3 A Different type of reading, correlation that they
4 use when they interpret the data?

5 BY MR. SRENIAWSKI:

6 Q You still have a copy of the letter you sent to
7 Radiation Detection Company in your file?

8 A Yes.

9 Q So it is available for an inspector should they
10 so choose?

11 A Yes.

12 Q The numbers that you chose as corrected value,
13 current value, they represent dosimeter readings?

14 A That's correct.

15 Q Your previous correction factor for the November
16 6 and 21 entry were based on a reduction due to different
17 calibration techniques, specifically cesium 137 versus
18 cobalt?

19 A That's correct.

20 Q Do you intend to incorporate that as a permanent
21 change? A specific example, if you get another exposure
22 that is slightly in excess of the limits, do you intend to
23 incorporate that change only for over-exposures or
24 unilaterally across the board?

25 A That change has been incorporated across the

1 board since that particular change was made in that report.
2 I explained to Radiation Detection that we only receive
3 exposures primarily from cobalt 60 and that there was no
4 reason -- they had no note in their file that said that, so
5 they have basically told us they will read all our badges
6 against cobalt 60 from that time on and I assume that is
7 correct so I don't have that option again.

8 Q From now on, they apply the correction factor
9 for the differences in the two isotopes for calibration?

10 A Yes.

11 Q I think I would have to say that to accept a
12 dosimeter reading in lieu of a film badge reading may be a
13 questionable practice as a standard practice. Specifically
14 because an individual could just recharge his film badge
15 arbitrarily. He has access to -- I mean his dosimeter,
16 correction. An individual may recharge his pocket
17 dosimeter easily, where it is more difficult for him to
18 manipulate a film badge reading. It is a more permanent
19 record, and it may be something that you will have to
20 submit for a -- or at least reconsider. Submit for
21 approval or reconsider.

22 BY MR. WALKER:

23 Q For my own benefit, this is the only one that
24 since the -- that you found -- is this the only example of
25 any misreadings by --

1 A Any gross difference in readings?

2 Q Yes.

3 A Yes.

4 Q And you do have the letter on file?

5 BY MR. SRENIAWSKI:

6 Q I would also like to note that the calendar
7 quarter totals for [REDACTED] would list an original
8 reading of 3.03 Roentgen as opposed to the corrected value
9 of 2.31. The significance of that is that it would be
10 originally an exposure of 3 Roentgen per quarter or in a
11 quarter.

12 MR. WALKER: For the second time, if there are
13 no further questions or any clarifying comments, then this
14 interview will be closed.

15 (Whereupon, at 12:15 p.m., the interview was
16 concluded.)

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CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: INVESTIGATIVE INTERVIEW OF
HOWARD R. IRWIN

DOCKET NO.:

PLACE: WICKLIFFE, OHIO

DATE: WEDNESDAY, SEPTEMBER 4, 1985

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sig) Kathie S. Weller / K.M.
(TYPED)

KATHIE S. WELLER
Official Reporter
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