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Sam Pettijohn

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Pages 1-30

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ADDENDUM/ERRATA SHEET

Page	Line	Correction and Reason for Correction
6	20	Delete "...not the after..."
6	20	Delete "...and we found that..."
9	19	Delete "I see reports here..."
9	19	Change "b" "that" to upper case.
11	4	change "complaint" to "request"
16	17	Change "Like... licensees" to "like overexposures"
16	18	change line "sometimes..." to read "sometimes medical incidents are reported by medical licensees"
16	19	change line "overexposure... it." to read "as misadministrations."
17	3	change "area" to "error"
17	3	Delete "...and... times"
17	6	change "recommend" to "recommended"
17	6	change "major" to "information"
17	7	Delete "...and... are"
17	7	Add word "or an" prior to "article"
17	9	Delete "...it... when"
17	10	Delete "...was... in"
17	12	Delete radiography "radiography nurses"
17	13	Delete "sometimes"
17	14	change "find" to "found"
17	15	Delete "do something ^m , we are supposed to..."
17	14	Correct "Paperville" to read "agenello"
17	16/17	Delete "so... can do that together."
17	20	Delete "These are"
17	21/22	Delete both lines
19	25	Delete "we don't... we"
20	112/13	Delete three lines.
21	19	Delete "or... amount"

[Signature]

ADDENDUM/ERRATA SHEET

Page	Line	Correction and Reason for Correction
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21	20	Delete " of ... p-32. "
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22	243	Delete both lines
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25	2-9	Delete all lines
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Page _____ Date 11/15/11 Signature [Signature]

ADDENDUM/ERRATA SHEET

Page

Line

Correction and Reason for Correction

NO COMMENTS

Page _____

Date 11/13/95 Signature

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UNITED STATES OF AMERICA

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NUCLEAR REGULATORY COMMISSION

+ + + + +

INCIDENT INVESTIGATION TEAM

+ + + + +

JOINT INTERVIEW OF HARRIET KARAGIANNIS AND SAM PETTIJOHN

+ + + + +

MONDAY, NOVEMBER 6, 1995

+ + + + +

The interview took place in Room 4B-3 of the Nuclear
Regulatory Commission Building Number Two, Rockville,
Maryland, at 1:00 p.m., John E. Glenn, Chief Investigator,
presiding.

INTERVIEWERS:

JOHN E. GLENN, Chief Investigator

BETSY ULLRICH

SAMI SHERBINI

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P-R-O-C-E-E-D-I-N-G-S

(1:05 p.m.)

MR. GLENN: Today is November 6. The time is approximately 1:00 p.m. in the afternoon. I am John Glenn. I am leading an Incident Investigation Team that's inquiring into the circumstances surrounding an uptake of P-32 at the Massachusetts Institute of Technology in August of last year.

The interview will be transcribed. The reason we are transcribing this is so that, one, we're free to talk without taking notes and worrying about that. The other one is that the report of the Investigation Team, the findings that we make have to come out of documents either that we request and receive or the interviews that we conduct. So, we need a good, clean record of what was received and what was said so that we can support the findings and conclusions that will be in our report.

You will be permitted to review the transcript and make corrections. This is done not by striking out words and that sort of thing in the transcript, but by filling out an errata sheet and noticing by line and page if there was a word that has been misinterpreted, missaid, or you just didn't say what you meant to say, all that can be noted on the errata sheet. And the transcripts are normally available within 24 hours, so sometime tomorrow

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1 you should be able to contact Cherie Siegel and review the
2 transcript.

3 Just to remind you that an IIT is a fact-
4 finding group, it's not an investigation group that finds
5 faults, it's just mainly to understand what happened both
6 in terms of what happened in the incident itself at MIT,
7 and then authority to come back and see if there's lessons
8 to be learned here at NRC.

9 At this point, I'd like for the other members
10 of the Team who will be participating in the interview to
11 identify themselves and what their positions are.

12 MS. ULLRICH: My name is Betsy Ullrich. I'm a
13 senior health physicist from Region I.

14 MR. SHERBINI: Sami Sherbini, health
15 physicist at NMSS.

16 MR. GLENN: And Sam and Harriett, if you could
17 just identify yourselves and just a little brief
18 description of what your duties are.

19 MR. PETTIJOHN: I'm Sam Pettijohn. I work in
20 the Office of Nuclear Materials -- I'm sorry -- in the
21 Office of Analysis and Evaluation of Operational Data, as
22 primarily the data analyst of materials.

23 MS. KARAGIANNIS: Harriet Karagiannis, again,
24 working for Office of Analysis and Evaluation of
25 Operational Data, AEOD, for the Materials Section, and my

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1 position is Senior Project Manager.

2 MR. GLENN: The first questions I would like
3 to ask you really have to do with some of the documents
4 that have been given to us so we can understand what
5 database they came from, and whether there are other
6 databases or other searches that we should be requesting.

7 The first one is what's called a "Basic Event
8 Information Report" which, for the IIT, is our document F-
9 183. And it looks like it's an output of a database. And
10 I was wondering if you could tell us what that database is
11 and how that report is generated.

12 MR. PETTIJOHN: Okay. Yeah, there's really
13 only one database, and its official name is called the
14 "Nuclear Materials Events Database". It's maintained by
15 AEOD under contract with the Idaho National Engineering
16 Laboratory. And the database contains informational
17 events in a number of separate related tables so, when you
18 get a printout of a database, you're really getting just
19 an excerpt based on what might have been requested at the
20 time. It doesn't reflect the total information that might
21 be for that particular record.

22 For example, in this case, this printout is
23 just some basic information about -- like the licensee
24 name, type, and a brief abstract -- but there is other
25 information such as cause of extreme factors, and if there

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1 was any equipment involved, there would be a description
2 of that, and that could be printed out by the program.

3 MR. GLENN: How sensitive is the database to
4 the parameters that you request in the report? I guess
5 one of our questions would be, what do we need to request
6 in order to make sure we get all of the incidents that
7 would be of interest to us?

8 MR. PETTIJOHN: That sort of involves a little
9 bit of interpretation and maybe a discussion with the
10 requester. Generally, what we do is, along with the
11 contractor, we try several different cuts. For example,
12 if we're looking for events involving this kind of uptake
13 or internal exposure, basically we look for ingestion, we
14 look for uptake, we look for internal. We do searches by
15 the type of event to get overexposures, and in that table
16 you have a type of exposure, and then we look in the
17 abstract for strings that might be uptake, internal
18 ingestion. And that's basically, by comparing those,
19 there are several different ways, you are pretty certain
20 you've got the events that might have --

21 MS. KARAGIANNIS: Also in this case, we're
22 looking for deliberate. We focus on the word deliberate
23 when we've got an event that involves deliberate
24 contamination and ingestion and overexposure.

25 MR. GLENN: Let me just mention, I think

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1 you're referring to a document that was transmitted to Stu
2 Rubin from Pat Baranowski --

3 MS. KARAGIANNIS: Right.

4 MR. GLENN: -- and that's our document F-190.

5 MR. PETTIJOHN: Okay. But be careful about
6 that because that is not a good way to get data out of the
7 database, okay? What we had to do -- at least, I created
8 all these documents. What we tried to do was to try to
9 get the big picture and read these in order to find it. I
10 don't want you to think -- you cannot search our database
11 based on deliberate. Okay.

12 What we had to do was to try to find -- what
13 we've done is we code the events based on whether they
14 were overexposures, releases of material. We find these
15 events, and then we look in the abstracts, the subsets,
16 and then you just read the abstract. That's all you can
17 do. I mean, you can't really search and find any
18 deliberate exposures in this.

19 MS. KARAGIANNIS: The document referred to,
20 John, also includes some of the after-events, and we found
21 that from a different database.

22 MR. GLENN: That was one of my questions. Did
23 there appear to be different kinds of output from
24 different databases? Could you briefly explain what the
25 other databases are?

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1 MS. KARAGIANNIS: It's a database that is run
2 by the Reactor Group, and I'm not sure of the exact name
3 of the database, but I could certainly get back to you.

4 MR. GLENN: Okay.

5 MS. KARAGIANNIS: That database --

6 MR. PETTIJOHN: Okay. There are two databases
7 here at the NRC uses, there's Sequence Coding and Search,
8 SCCS, which is the Reactor LER database that's under
9 contract with the Oak Ridge National Laboratory, and Dale
10 Yielding is the project manager for that database. I'm
11 the project manager for the other database, which is
12 called the Nuclear Materials Events Database, or NMED, and
13 those are the two event databases.

14 What we do is look up -- for example, one of
15 the requests we got was to look up any uptakes, whether it
16 involved reactor, materials, or anybody. So, when Dale
17 looked into our database, to look up -- we keep reactor
18 overexposures -- and the Nuclear Materials Events Database
19 started in about 1992. Prior to that time, any
20 overexposure would have to be in the Sequence Coding
21 Database. Those are the two primary event databases.

22 We could also look into NUDOCS, just generally
23 take a shot and look in NUDOCS and look for information --

24 MS. KARAGIANNIS: And that is -- a couple of
25 events we got out of NUDOC.

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1 MR. GLENN: Okay. It looks like one came out
2 of a system probably run by the Office of Enforcement. It
3 has an "EN" number associated with it.

4 MS. KARAGIANNIS: Perhaps we got that from
5 NUDOC that you found an "EN" number.

6 MR. PETTIJOHN: In Operations Center, these
7 are preliminary notification systems, you know, to keep
8 the -- what do you call those -- I guess, prompt
9 notification systems -- you're going to find an EN number,
10 which is Event Notification, and they assign an MR number,
11 which is for the Morning Report, and also the PN that's
12 put into that, that's a temporary database that we pull
13 from, that Sequence Coding pulls from that. Any events in
14 that database are included in the Sequence Coding and the
15 NMED database.

16 MR. GLENN: Okay. And just in that document,
17 the last pages appear to be coming from this NMED
18 database, but it's a different format. I just want to
19 confirm --

20 MS. KARAGIANNIS: We put in that format.

21 MR. GLENN: Okay.

22 MS. KARAGIANNIS: We put in that format, just
23 to make it easier to read.

24 MR. GLENN: I just wanted to clarify whether
25 there were additional databases. Okay. I just wanted to

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1 clarify whether there were additional databases.

2 MS. KARAGIANNIS: No.

3 MR. GLENN: Okay. I guess another question
4 is, once the database is searched and we find an event,
5 and we can identify a licensee and a place and location
6 and time, is there anyone in the NRC who maintains an
7 event file, so that -- one place we could go to to find
8 all of the information?

9 MS. KARAGIANNIS: Like hard the hard copies,
10 you're talking about?

11 MR. GLENN: Yes, the reports of -- you know,
12 inspection reports, investigation reports --

13 MS. KARAGIANNIS: The inspection reports, when
14 we do a quick review in AEOD, there may be some event of
15 interest. For example, I may see something I may want to
16 analyze in the future, I tend to keep some of the reports,
17 or it may be a misadministration of a medical event that
18 would be of interest, and maybe I do an analysis in the
19 future. I see reports here, but I don't have, for
20 example, a set up or -- you're asking me all the leak
21 medical sources for the last three years, I wouldn't have
22 that, or all the lost medical sources for the last three
23 years, I would not have that in hard copy.

24 MR. PETTIJOHN: Or if we had an event number
25 here from the database, you couldn't go to a file and get

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1 more information.

2 MR. PETTIJOHN: Yeah. Okay. What we do, in
3 the database itself is a table that we keep called a
4 "Document Table", and the contractor for each event that's
5 entered in there, any supporting documents that come in
6 related to that event -- such as an enforcement document,
7 or an inspection report -- a number from that usually is
8 the accession number from the RID system is put into that
9 table.

10 So, if you request a set of documents -- for
11 example, like the way we find which documents is, we take
12 the event number and look in that table and find all the
13 related reports, and you generally have to go to NUDOC to
14 pull those reports out.

15 Now, the contractor, for a couple of years,
16 will keep on file copies of the documents he receives
17 through the RIDS system, and we were able to get a bunch
18 of these over the last few days, and it was a quick way --
19 otherwise, you have to go back to NUDOC. But it was
20 probably the only system that exists in terms of what you
21 can basically identify an event and then go through all
22 the supporting documents.

23 MR. GLENN: But that capability does exist,
24 and it gives accession numbers and --

25 MR. PETTIJOHN: You've got accession numbers,

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1 and somebody can go to NUDOC and retrieve the hard copy of
2 the document.

3 MS. KARAGIANNIS: And that's what we did when
4 this complaint came to us about NIH. We got events from
5 NMED, and then we went back and got original copies for --

6 MR. GLENN: What about events that occur in
7 Agreement States, do we have the same access to documents
8 under those circumstances?

9 MR. PETTIJOHN: Well, what we do is, right now
10 the system that exists is Agreement States send hard
11 copies of reports into the Deputy Director's Office of
12 State Programs. They keep a copy in State Programs, and
13 send us a copy. We basically send our copy to the
14 contractor.

15 So, the only copy that exists -- actually,
16 right now, we file a copy here and then we send a copy to
17 the contractor. So, the only copy that exists -- we
18 usually don't have any back-up material from Agreement
19 States. Like they'll send the basic report, but we don't
20 have access to inspection reports or findings. We'd have
21 to request those from individual Agreement States. The
22 only thing we have would be whatever report that the
23 Agreement States sent in at the time they sent they sent
24 the initial event in. But we could get copies of those
25 reports. The contractor keeps copies of all of those, and

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1 it works the same way. You look at the event ID number
2 and then you can get a hard copy of the report.

3 Now, one thing that's underway here, I think,
4 and it's probably like somewhere in the spring of next
5 year, the Agreement States are going to send all of their
6 event reports directly into the Document Control, so
7 they'll go into the RIDS system.

8 MR. GLENN: Okay. So those will have
9 essentially the same availability as an NRC event.

10 MR. PETTIJOHN: Right, yeah. And that's
11 probably about six months down the road, going to
12 Agreement States -- I mean, Office of Programs.

13 MR. GLENN: Maybe you could give us a little
14 bit of information on the development of this database,
15 how new it is and how far back the data goes.

16 MR. PETTIJOHN: Okay. AEOD basically started
17 maintaining an Events Database in 1981 when AEOD was
18 formed. Initially, it was an inhouse system that was just
19 dBase III, and we had basically a file for
20 misadministrations and one for all the other events.

21 Starting about in 1993, we started basically
22 with a contractor support to review and code the events.
23 And we took all the data from '81 up to '93, and just sort
24 of pulled it into a newly developed structure.

25 What that really meant -- then we -- after

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1 that, we had INEL go back to the contractor and sort of
2 back-fit this database back to 1990. So, what happened is
3 that if you look for anything from the present back to
4 1990, you can find it pretty easy because we improved the
5 structure so you can do a lot more different -- a lot of
6 different kind of searches.

7 If you go back from '90 back to '81, all the
8 information is there, but it may be difficult to find
9 because all of the fields aren't completed. And so if
10 you're looking for internal exposures, for example, we're
11 looking from '89 back, you probably would have to depend
12 heavily on looking at abstracts to find them whereas, if
13 we're looking from '90 forward, those events are coded as
14 overexposure, and then they're coded as to type of
15 overexposure which would show whether it was a skin or
16 internal or whole-body, and also would show the material
17 that caused the exposure, whether it was a radiography
18 source, or what.

19 So, that's probably the big differences, that
20 the database is the INEL -- the contractor started coding
21 in 1993. This database is supposed to be made available
22 throughout the NRC. In fact, some time -- it's supposed
23 to be in October, but now it's probably the end of
24 November our end is going to be installed locally within
25 NMSS, Office of Research and Events in the Region.

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1 MR. GLENN: How does information come into
2 you? I guess state programs send information when they
3 get it. NRC events, how do you get those?

4 MR. PETTIJOHN: Okay. It's the same thing.
5 State Programs -- not State Programs -- the Agreement
6 States send their event reports into the Office of State
7 Programs. We basically would forward those to the
8 contractor. The contractor, which is Idaho National
9 Engineering Laboratory, has access to the Prompt
10 Notification system here. They get a file every day of
11 all the enforcement notices, the morning reports, and the
12 PNs. They review those to get information, they enter
13 those into the database.

14 In addition to that, they're on the RIDS
15 Distribution System based on codes for all material
16 reports that might be associated with event information,
17 such as inspection reports, licensee reports, enforcement
18 notices, and so forth.

19 They review all of these events. Basically,
20 they have 72 hours once they get the information in their
21 Contracts Office, and they have these events entered into
22 the database. Basically, what they are, for the most
23 part, they are updates in a lot of cases because we get
24 initial notifications in mostly through PNs and the event
25 notifications are called in. So, if there is additional

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1 information, they'll update it.

2 Now, the one case where that's an exception is
3 on inspection reports. About 20 percent of the events in
4 the database, or somewhere between, I'd say, 15 and 20
5 percent, come from inspection findings. They don't get
6 reported to the NRC, but they may be discovered in
7 inspections. And so they review the inspection reports
8 and pull these events into the database.

9 So, that's the primary way that event
10 information gets into the database. In addition, we send
11 the contractor the NMSS monthly briefings. Each Region
12 sends to AEOD presently, a log of all events that have
13 come into the Regions, and we send those logs to the
14 contractor. And those are two methods for verifying that
15 we have the events, in most cases. In all cases, we
16 should have the events that are listed -- in almost all
17 cases. Occasionally, we do find events that have come
18 into the Region but didn't get into the RIDS system.
19 That's a job.

20 MR. GLENN: It sounds like the database, the
21 threshold is actually below what's reportable according to
22 the regulations, so that there would be some, I guess,
23 possibility of seeing some precursor kinds of information.

24 MR. PETTIJOHN: Yeah, that's a good point.
25 What we did, we have a flag in the database to indicate

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1 whether an event was required to be reported by a
2 regulation or not, and we include the regulation under
3 which it was reported.

4 So, if you want to go in -- like, in this
5 case, what we're looking for -- we'd just look for
6 everything that might have been reported. But if you
7 said, well, I only want to find reportable overexposures,
8 then you can set a flag for reportable, and that way you'd
9 only get events that are required to be reported.

10 So, we get, I don't know, probably 30 percent
11 or so of events are voluntary, of different sorts. One of
12 the biggest areas are exposures in general because what
13 happens is, a lot of times licensees are not sure about
14 whether this is an overexposure, especially a badge, is an
15 overexposure, and they will report it, and it goes into
16 the database.

17 MS. KARAGIANNIS: Like a medical licensee
18 sometimes people are not sure whether it is an
19 overexposure or not, they report it.

20 MR. GLENN: You keep track of it, you didn't
21 even know whether it was required to be reported.

22 MR. PETTIJOHN: Right.

23 MR. GLENN: Are there any -- is there any
24 analysis you do of the information that's coming in, any
25 lessons learned?

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1 MS. KARAGIANNIS: Um-hmm, we do. For example,
2 we performed a study on medical event misadministrations
3 that resulted from computer area, and maybe about 23 times
4 -- and we had Lawrence Livermore help us with analysis,
5 and we did additional review of events. And our results
6 were -- and we recommend that a major notice be sent out
7 in this case, and we said that if you sent out an article
8 in the NMSS Newsletter, with basically the same
9 information that was in it back when the initial
10 information was sent in.

11 Also, another topic that we looked at was
12 nurses, radiography by nurses, and we prepared a memo to
13 go NMSS based on our analysis, which sometimes reminds me
14 at the same time we find out that Paperillo is planning to
15 do something, we are supposed to get together on what he
16 will do and what we will be doing, so we can do that
17 together. This is the latest analysis that we have done.
18 In the past, we have done -- we have analyzed other types
19 of events, and the types of analysis that we have done,
20 the topics, are listed in the annual report. These are
21 also a couple of studies, if you want, I can tell you
22 about.

23 MR. PETTIJOHN: Well, I think also we need to
24 talk a little bit about process because we have a specific
25 process, and it's not a random type of thing. We have a

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1 procedures in AEOD, in our Nuclear Assessment Center,
2 which I think is 3.1, which is a Procedure for Evaluating
3 and Reviewing Event Information. And we have a tracking
4 system -- we call it a tracking system, even though there
5 is another tracking system that NRR uses, and we call it
6 Event Tracking System.

7 Each day, Harriet and I and a few other
8 persons in there are assigned events based on what type of
9 event they are. For example, like if it's medical,
10 Harriet would look at it; if it's industrial, I'll look at
11 it. These are PNs and ENs and MRs that get called into
12 the NRC.

13 We review these events and we enter that into
14 the tracking system, and we also make a determination
15 whether that event is significant or not. From an area
16 that we want to follow up on, we make notes as to whether
17 or not we want to follow up on it, and follow up could be
18 calling NMSS or Regions. We may put it in a list to
19 follow, or whatever.

20 The procedures calls for us then to basically
21 review these events, and if we, for example, want to have
22 a group of events that are significant enough to be -- in
23 which we need to do some follow-up study, then we would
24 submit this and write into the branch chief for approval,
25 an outline, a process, or a plan and why we want thought

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1 it was important to do a study and so forth.

2 Now, those regional studies -- Harriet
3 mentioned a couple of them -- had to do with the medical
4 area. We also did one involving the loss of controlled
5 material. This is a recent study here we just did, which
6 looked at reports that were coming into the NRC involving
7 loss of controlled material. And about 20 percent of the
8 events that are reported that we get in are involving some
9 loss of controlled material, so it's a big number of
10 events.

11 We also did a study at INEL looking at
12 overexposures. So, those are the ones we pretty much
13 looked at last year, the two Harriet talked about. Our
14 process now is more formalized than it was before, and we
15 are now -- I guess I don't have a copy of the procedures.
16 The procedures sort of lays out specifically how you go
17 about determining whether or not you want to do a follow-
18 up study. And I guess one of the differences -- it
19 doesn't make any difference if NMSS is doing a study, or
20 if the region has done a study because AEOD still might
21 want to look at the events from a different angle.

22 MS. KARAGIANNIS: I guess the feedback process
23 is where we don't want duplication, you know, if NMSS is
24 sending something out, we don't want to send the same
25 thing. We don't want to prepare one on the same topic, we

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1 may want to combine interests. If you send out an NMSS
2 article, we don't need to send another article to the
3 group.

4 MR. GLENN: I guess one thing, Sam, does that
5 report have a NUREG number?

6 MR. PETTIJOHN: Actually, it has an INEL
7 number. Now, we're right now writing a memo to distribute
8 to the Program Offices in the Region Agreement States --
9 this was completed at the end of September -- so, again,
10 it was a look at whatever has coming into the agency, and
11 we kind of try to put it in bins.

12 MR. GLENN: It sounds like that's something we
13 should take a look at.

14 MR. PETTIJOHN: I brought a copy for that
15 reason. I figured you might want to take a look and see
16 what we're doing.

17 MR. GLENN: Let me ask this before we read it,
18 did anything pop up about malicious acts with material, as
19 part of this? Most of it is lost material that ends up in
20 a smelter.

21 MR. PETTIJOHN: No, there's not anything in
22 there specifically that involved ingestion. I think,
23 thought, that it sort of shows that when you look at the
24 big picture, kind of where things go. In terms of things
25 that were reported as loss of material, the kind of event

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1 that happens, you know, with P-32, really doesn't get
2 reported as a loss, you know, so it gets reported, if
3 anything, as a personnel overexposure or contamination
4 problem versus losses are ones in which -- even though --
5 they may have -- if someone is looking, doing inventory,
6 and they couldn't find -- and they didn't find all the
7 materials, and they couldn't account for the material. If
8 that was the primary reason they were reporting it, it
9 would get counted in there.

10 And so this is -- the interesting thing about
11 this, I guess, is it does give some indication of the kind
12 of event, or the number of events that get reported --
13 well, I can't find it. There is a certain number of those
14 that come from inventory losses in that they weren't aware
15 that it's missing until they go look for it, and it's not
16 there.

17 MS. KARAGIANNIS: Medical, though, most of the
18 loss of sources that we had was like Iodine-135, Iodine-
19 131, people throwing Iodine in the trash, or small amount
20 of Iodine involved, and P-32.

21 MR. GLENN: I don't have too many more
22 questions. Just one to get on the record and get it
23 clarified. From what you said, I guess, you recommend
24 information notices and that sort of thing, that's really
25 the Program Office that would determine whether it should

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1 be issued.

2 MS. KARAGIANNIS: Right, because permission is
3 out of the Program Office, or NRR.

4 MR. GLENN: Betsy, do you have any questions?

5 MS. ULLRICH: Yes, I have a couple questions.
6 Let me see if I can remember them. The first one is that
7 a couple of times you've said that you searched the
8 database for overexposures. Would you have a separate
9 category for ingestions or contamination that didn't
10 result in an overexposure?

11 MR. PETTIJOHN: Okay. Actually, you know, I
12 kind of use the word loosely. I guess, to use it
13 correctly, what we really count are exposures, and we just
14 call an overexposure as anything that exceeds the
15 regulatory limit. So, any events that are reported to the
16 NRC that involve any either uptakes of material, anything
17 on the skin, or any external radiation, if it's reported,
18 regardless of whether it meets or exceeds any regulatory
19 limit, would go into the database in what we have, an
20 Exposure Table. And whether or not it would count as an
21 overexposure would depend on whether after the review it
22 exceeded Part 20 limits.

23 MS. ULLRICH: Okay. With the materials
24 licensee event reports, particularly the ones involving
25 exposures, I know that approximately once a year the

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1 region would get a list of exposures that you have listed
2 for the region, and to ask us to clarify or add to it
3 information that we might have for the categories about
4 that event.

5 Is that --- I guess I want to know what
6 happens to that information. When you talk about
7 analyzing the information, what kind of analysis is it
8 that's being done?

9 MR. PETTIJOHN: Okay. The studies, the
10 specific studies that we have done -- and I'm really kind
11 of counting now over the years of, say, 1981 up -- these
12 have been inhouse studies where the staff, the AEOD staff
13 searching materials, selected a set of events and reviewed
14 the events in terms of cause, the contributing factors,
15 and sort of tried to come to some determination whether or
16 not there were any generic issues associated, and then
17 wrote up some findings and conclusions.

18 The same thing has been true -- we only
19 recently, as -- Harriett mentioned the ones -- have we done
20 contractor supported studies for materials. Now, we're in
21 a group and they do that for reactors all the time. They
22 always have contractors. Our studies until this time had
23 all been done essentially inhouse. But we did have in the
24 last fiscal year '94 into '95, contractor supported
25 studies.

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1 Essentially, we selected an area like
2 radiographer overexposures, and the contractor then
3 selected a set of overexposure events that were reported,
4 same with lost materials, and basically it's kind of going
5 back and trying to dig up information to find out if we
6 can determine what happened, what the primary cause is.

7 They did a human factors evaluation for
8 radiography overexposures, to try to determine the types,
9 the different types of errors based on what the activity
10 was that the radiographer was involved in, and whether or
11 not the areas had any relation to, to some extent, the
12 training and/or education of the radiographers, and so
13 forth.

14 But now we send out to the regions and ask for
15 information, and what's that for is because AEOD publishes
16 each year in the annual report a listing of all events
17 that have been reported, including radiation
18 overexposures. And so that effort is to try to ensure
19 that the information here is as accurate as it can be.
20 So, therefore, we have one other back-up on this, and that
21 is SAIC, which is a contractor for the Office of Research,
22 and does the readers of this is annual exposure data that
23 a group of licensees are required to report. They
24 maintain this database.

25 They also try to verify all of the radiation

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1 overexposures, the ones which they are responsible for.

2 MS. KARAGIANNIS: Because we ask for
3 information doesn't mean that we can analyze necessarily
4 all those events. Maybe we won't clear information for
5 the annual report, it may be a normal report of progress.
6 We ask a lot of things about it. Or we may just do a very
7 brief, one-page analysis here inhouse, and we find out it
8 was another event, and we have to look at that event again
9 and analyze it farther.

10 MS. ULLRICH: So, if I understand correctly,
11 you're not analyzing the individual event to see if the
12 doses were assessed correctly --

13 MS. KARAGIANNIS: No.

14 MS. ULLRICH: -- they are looking at the
15 overall program to see if there are trends from a number
16 of incidents.

17 MR. PETTIJOHN: Right. And occasionally, you
18 know, if an event has happened only occasionally, if an
19 event that's reported appears to be significant enough in
20 and of itself that there is concern or interest that AEOD
21 says, well, we know NMSS has looked at this, one of the
22 primary differences is that because AEOD is not involved
23 in the licensing or inspection of the licensee, the look
24 AEOD is taking really isn't geared toward regulatory
25 compliance, and that's why the difference. That's why we

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1 would look at it because NMSS and the regions will make
2 sure that, you know, they can corrective actions on all of
3 them.

4 And AEOD is really more so looking at it from
5 the point of view of, is this really a generic issue here,
6 or some other -- so, sometimes we'll look at the same
7 thing, but for a different reason.

8 MS. KARAGIANNIS: Unless it's a matter of
9 feedback that is used to prevent future incidents.

10 MS. ULLRICH: Okay. I have one other
11 question, and it has to do with this document on the loss
12 of control. You made the statement that loss of
13 controlled material makes up about 20 percent of the
14 events that are reported from materials users.

15 MP. PETTIJOHN: Right.

16 MS. ULLRICH: If the answer to my question is
17 in this book, then you'll have to tell me. Is that 20
18 percent based on all those events that were analyzed from
19 '87 to '94, or is that per year? And the reason I ask
20 this is since misadministrations, for the most part,
21 aren't required to be reported anymore, the number of
22 materials events that are reported has changed a lot.

23 MR. PETTIJOHN: Right. Okay. What we're
24 seeing -- we're getting about 350 or 400 events reported
25 by NRC licensees, that are required to be -- that meet

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1 requirements to be reported. Okay? So, that number is --
2 approximately 20 percent of that number involves some
3 losses of control of material.

4 MS. ULLRICH: In a year, 350 a year?

5 MR. PETTIJOHN: In a year, yeah.

6 MS. ULLRICH: But that number has changed
7 since the misadministration reporting requirement changed?

8 MR. PETTIJOHN: No, that number reflects the
9 change. The number was about 800 before that.

10 MS. ULLRICH: Okay.

11 MR. PETTIJOHN: About half of those were
12 diagnostic misadministrations, they just dropped out, but
13 because we -- at the same time we were making the change,
14 we started a formal program of getting Agreement State
15 information, so the number is really back up there because
16 we get about 400-or-so from Agreement States. So, it's
17 still around 800 to 1,000 reports of various kinds.

18 Now, one of the things this report does -- and
19 we may get a little criticism because we maybe somewhat
20 more liberally use the word "loss of control" than maybe
21 would be more formally used in the regions and NMSS.

22 The loss of control in this case involved
23 material being where it shouldn't be, which means we do
24 count events at steel scrap yards that set off radiation
25 monitors. We count events -- reports that get called into

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1 the agency for sanitary landfills that set off radiation
2 monitors because somehow there's material there, and in
3 some of those cases it was not clearly ever determined
4 that it was, in fact, licensed material. It could have
5 been naturally occurring or some other -- in some cases,
6 it was not even completely clear it was actually anything.

7 MS. ULLRICH: Okay. That's all I have.

8 MR. GLENN: Sami?

9 MR. SHERBINI: No questions.

10 MR. GLENN: Can you think of anything we
11 haven't asked that we should have asked?

12 MR. PETTIJOHN: Well, I think a question you
13 should have is whether or not you feel that you have
14 gotten the information you need regarding loss of
15 contamination or releases of material. You know, if not -
16 - I mean, part of this -- especially if you go back past
17 1990, it gets to be kind of a "wave your hands" kind of
18 thing. It's not completely like that.

19 You can read all of the abstracts, okay, but
20 we think we can narrow it down into a broad enough area
21 that we get a few enough that you can read through and get
22 the numbers. But if you know specifically that you have
23 some information that you wanted, then we could try to --

24 MR. GLENN: I guess one thing that personally
25 concerned me was that list had quite a bit more than this

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1 list, including Duke University and the University of
2 California at San Francisco, which were some of the more
3 significant events that, once we got into it, we just
4 started looking at. And I'd just like, before we're
5 finished today, say we're pretty confident we've seen all
6 those kinds of cases.

7 MR. PETTIJOHN: Right.

8 MS. KARAGIANNIS: Right. That was more like
9 the issues that we bring --

10 MR. GLENN: Right. But thinking back, is
11 isn't -- you know, I think your database explains it.
12 There's probably nothing in the database that says the
13 ones at the University of California and at Duke were
14 malicious, but I think we'll look into them. There's
15 certainly that possibility.

16 MR. PETTIJOHN: That's right, yeah.

17 MS. KARAGIANNIS: It has that potential.

18 MR. PETTIJOHN: You know, part of this is -- I
19 guess after we have things like this is, really, even from
20 some of the questions we got, we'd probably say, well, we
21 really need to go back and think about this a little bit,
22 whether or not we really captured some slightly different
23 aspects of events. So, this is kind of a growing process,
24 you know, because it would help to some extent if you did
25 have --

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1 MR. GLENN: I don't know whether you're aware
2 or not, but we've certainly been made aware there's been
3 NMSS and research and other groups that are actually
4 actively pursuing rulemaking that would have deliberate
5 acts reported, which would automatically create a category
6 for you to do that.

7 MS. KARAGIANNIS: There are some --

8 MR. GLENN: Okay. If there aren't any other
9 questions, I would like to give each of you a sheet about
10 the review and availability of transcripts. I mentioned
11 before, they should be available sometime tomorrow. I've
12 written Cherie Siegel's number up at the top there, you
13 can give her a call and make arrangements to review it.

14 And as I've mentioned before, you can't change
15 the transcript itself, but you can write down anything you
16 want to in terms of the errata sheet.

17 It's now about 1:43, and the interview is
18 concluded.

19 (Whereupon, at 1:43 p.m., the interview was
20 concluded.)

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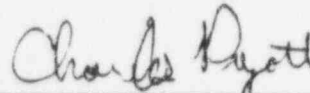
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Name of Proceeding: Interview of HARRIET KARAGINNIS
AND SAM PETTIJOHN

Docket Number: (not assigned)

Place of Proceeding: ROCKVILLE, MARYLAND

were held as herein appears, and that this is the original
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