

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BRIEFING ON CURRENT STATUS OF NUCLEAR MATERIALS TRANSPORTATION

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

WEDNESDAY, AUGUST 10, 1988

The Commission met in open session, pursuant to notice, at 10:00 a.m., the Honorable LANDO W. ZECH, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

LANDO W. ZECH, Chairman of the Commission

THOMAS M. ROBERTS, Member of the Commission

KENNETH M. CARR, Member of the Commission

KENNETH C. ROGERS, Member of the Commission

1 STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:
2 S. CHILK
3 W. PARLER
4 J. TAYLOR
5 R. BERNERO
6 R. BURNETT
7 C. MACDONALD
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P R O C E E D I N G S

(10:00 a.m.)

CHAIRMAN ZECH: Good morning, ladies and gentlemen.

The purpose of this mornings briefing is to discuss nuclear materials transportation issues. This is an information briefing. The Commission continuously monitors the activities in the nuclear materials transportation area. As most of you know, the Nuclear Regulatory Commission is responsible for assuring that standards, rules and regulations provide for adequate protection of public health and safety and the maintenance of national defense and security during the transportation of radioactive materials.

One item of recent interest includes the transportation of plutonium air shipments under the new U.S./Japan agreement for cooperation.

This briefing this morning will cover in more detail the aspects of the Murkowski amendment and how it impacts on the responsibilities of the Nuclear Regulatory Commission.

The Office of Nuclear Material Safety and Safeguards will brief the Commission this morning on ongoing events in the transportation area in general.

Do any of my fellow Commissioners have opening

1 comments to make before we begin?

2 (No response.)

3 If not; Mr. Taylor, you may proceed.

4 MR. TAYLOR: Mr. Chairman, this is a briefing of
5 a collection of current issues on the subject as you
6 indicated. I will ask Mr. Bernero to give a few more details
7 of what will be covered.

8 CHAIRMAN ZECH: Thank you very much. You may
9 proceed.

10 MR. BERNERO: Mr. Chairman and Commissioners, I am
11 Bob Bernero, the Deputy Director of the Office of Nuclear
12 Material Safety and Safeguards. With us here at the table,
13 we have Bob Burnett who is Director of the Division of
14 Safeguards and Transportation and Charles MacDonald who is
15 Chief of the Transportation Branch.

16 I will be giving this status briefing to report
17 on a few aspects of our program and I hope to give you some
18 insight into some policy issues that are related to these
19 areas.

20 Would you put up the purpose slide, please?

21 (Slide.)

22 I am going to talk first about package
23 certification in general and with respect to one important
24 package case that is before us now which you will hear about
25 frequently in the coming months, the TRUPACT II transuranic

1 waste package.

2 In addition, I will talk to you about plutonium
3 air transport and some of the dilemmas that we face there
4 with implementation of that law. On current issues, I want
5 to touch on one which is of significant interest to us. It
6 involves a Type B package incident that occurred this year
7 and involves other agencies and a state as well.

8 May I have the next slide, please.

9 (Slide.)

10 There has been an evolution in package
11 certification with respect to the Department of Energy over
12 the past few years where originally the Department of
13 Energy -- for example, the naval reactors program -- came
14 to the NRC for package certification out of their desire to
15 have it rather than any statutory requirement.

16 In the defense program and in the high level waste
17 program there evolved a desire to have package certification
18 and now the laws require it. So, there has been a notable
19 shift in our jurisdiction in what we have to do in package
20 certification just because of that. So, we are now required
21 to review the Nuclear Waste Policy Act casks for high level
22 waste and we are required to review the transuranic waste
23 casks for the Waste Isolation Pilot Plant, the WIPP facility
24 in New Mexico, both by statute.

25 Now, we have asked DOE for priority setting. We

1 have asked the Secretary to set priorities for DOE-related
2 work. We have yet to hear any such priority setting from
3 the Secretary. We had originally intended to go with
4 priority for the long-standing naval reactors casks but now,
5 with the statutes, we must shift to some degree toward
6 statutory requirements.

7 May I have the next slide, please.

8 (Slide.)

9 This slide I think can illustrate for you in
10 graphical terms -- it is not legible on the screen because
11 of the fine print but you can see the numbers of new
12 applications.

13 COMMISSIONER ROBERTS: It's not legible on the
14 handout.

15 MR. BERNERO: We are talking here only about new
16 applications to illustrate the workload. It does not cover
17 amendments to existing applications and especially emergency
18 reviews which we get routinely. You know, the problem we
19 have had with a cesium 137 irradiator in Georgia where they
20 need to ship leaking sources, and we are doing an emergency
21 review of what it takes to modify the container for safe
22 shipment of a leaking source. We are not counting that kind
23 of workload in this.

24 But to give you an idea, if you look on the screen,
25 the base load of commercial work is the first part of each

1 block and the commercial cask applications are routinely
2 received and acted on. We have in the dark here, the black,
3 the naval reactors load of work. Now, the naval reactors
4 work goes back many years and their variation with a given
5 year is part of the naval reactors program. They have put
6 us on notice long since of their priorities and when they
7 are getting their work in and what they need to do.

8 The defense program casks -- that would be
9 TRUPACT II and things like that -- are here in this heavy
10 stroke section and you see that is in the current years,
11 '88, '89 and '90. Then this last gray block up here that
12 comes in, that's the NWPA casks, the high level waste casks
13 starting about 1990 and going on -- well, the graph only
14 goes to 1992 but it could go even beyond that.

15 Now, what you can see then is we have a major
16 workload and these statutory requirements that have been
17 imposed are adding to it. Now, an interesting thing,
18 especially with respect to our policy, comes from what is
19 not on this sheet.

20 If I could have the next slide, please.

21 COMMISSIONER CARR: Before you leave that one, let
22 me ask you, why do we have a standard load? Once you have
23 approved and certified a package, it doesn't have to be re-
24 done, does it?

25 MR. MACDONALD: No, that is correct.

1 COMMISSIONER CARR: Do you mean there are going to
2 be 40 different kinds of packages over the next five years?

3 MR. MACDONALD: There will be a number of
4 different packages, yes, sir. We have approved now some
5 220 different package designs. Once that approval is made,
6 the industry may fabricate as many to that design as the
7 need may dictate. However, in regard to nuclear waste
8 policy packages, you will have several designs that would be
9 used for legal weight truck shipment, some for rail shipment
10 and some possibly for overweight truck shipment. There will
11 be different capacities and interfaces with the various
12 utilities.

13 MR. BERNERO: A reminder; these are Type B
14 packages. They are not only spent fuel shipping containers.

15 COMMISSIONER CARR: I understand that.

16 MR. BERNERO: You know, it's radiography cameras
17 and all Type B's.

18 COMMISSIONER CARR: But it would seem to me
19 finally you could say, hey, buy one that is already approved
20 instead of adding to your workload. There are plenty of
21 approved packages on the market. It looks like you don't
22 have to keep --

23 MR. BERNERO: We are going to get to that very
24 issue. Should the NRC deny an application given that the
25 market already holds sufficient approved packages to deal

1 with the user's need? I said the things that are not on
2 this chart for package certification and transport.

3 (Slide.)

4 Going to that next slide, on storage casks, you
5 all know that we are licensing dry storage at reactors. We
6 have done it at Surry. We have done it at H. B. Robinson.
7 We are now considering the application for it at Oconee and
8 at Calvert Cliffs. In order to do that, we are using a
9 topical report approach where a vendor or manufacturer
10 proposes a design. We review the topical report and approve
11 it for use and then some utility, some power company, uses
12 it at a reactor station in their application.

13 We have a rulemaking in progress to develop a
14 general license for use of such. That is part of the
15 followup of the Nuclear Waste Policy Act. But, you see,
16 each reactor has its own unique problems. The sites are
17 different and how much land they have available. How big
18 is their crane? What is their current spent fuel storage
19 situation and so forth? So, there is a natural tendency to
20 have a diversity of design. And, there is of course a
21 diversity of vendors who would seek the business of making
22 these things.

23 If you look at the work we have now in certifying
24 casks for storage, we have approved five topical reports
25 already, three of which are also intended for transport.

1 But we didn't certify them for transport. We only certified
2 them or approved them for use in dry storage. Their
3 transport time would be perhaps 20 years from now or 30 years
4 from now. We have four more applications we are looking at,
5 of which three are also intended for transport. We have had
6 no applications for transport certification of any of this.
7 We are concerned about that. We are concerned because of
8 the blossoming of diverse designs.

9 I will give you an example. Just recently, Hugh
10 Thompson was meeting with Duke Power as part of a routine
11 visit. He was checking on this work that they are applying
12 for Oconee. At the Oconee station, the dry cask design is
13 one of these concrete bunkers where you slide an insert, an
14 inside cask into it. Now, they will probably make about 100
15 of those things and there was an evident size incompatibility
16 with the expected Nuclear Waste Policy Act cask that would
17 be used to transport that 20 or 30 years hence.

18 So, what we are trying to do is work with Duke and
19 encourage DOE to set up some sort of interface understandings
20 so that we don't build in a situation where the utility is
21 putting out in the yard in dry storage spent fuel in welded
22 shut canisters that 20 or 30 years from now would have to be
23 cut open and re-manipulated and re-packaged in order to ship
24 them.

25 COMMISSIONER CARR: It looks to me like we have

1 got an obvious opportunity to standardize here at the start.

2 MR. BERNERO: The similarity is striking. The
3 MRS Commission, you know, the one that the Amendments Act of
4 1987 set up, is now meeting and taking evidence. I had the
5 pleasure of briefing them about two weeks ago. They really
6 bored in on this point and asked me directly, why don't you
7 standardize? Why don't you standardize?

8 CHAIRMAN ZECH: What did you tell them?

9 MR. BERNERO: I told them about our statutory
10 limitations but at the same time I told them what we are
11 trying to do to make sure that the system coordination
12 between utilities with their perspective of short-range
13 storage and the DOE with its perspective of long-range
14 transport, storage and disposal, that they are compatible.
15 Now, I am personally convinced that sound interface
16 agreements about package size, size and weight, would be
17 sufficient so that you don't have square pegs to go in round
18 holes 20 years from now.

19 Now, some of these casks though involve materials
20 that would be controversial or difficult to review; nodular
21 cast iron being one, but so that in many respects some of
22 the storage assemblies are postponing address of problems.
23 Okay. Now, they are problems today perhaps but in the
24 future 20 or 30 years from now, there may be a better data
25 base and it may be possible to certify some of these.

1 MR. TAYLOR: It may be important, Commissioner
2 Carr, for subsequent staff briefing to look at those ideas
3 and present them since it will lead to major policy and
4 potentially rulemaking.

5 MR. BERNERO: Yes, we have this general license
6 rulemaking which permits a diversity of designs.

7 COMMISSIONER ROGERS: Can you give us roughly what
8 would be the time and cost of producing a certification of a
9 new design?

10 MR. BURNETT: Yes, we program approximately one
11 man-year for a major cask. That is the larger ones, the
12 NWPA type casks.

13 MR. TAYLOR: Not all Type B take that.

14 MR. BURNETT: That is a Type B.

15 MR. TAYLOR: Yes.

16 MR. BERNERO: That is a spent fuel.

17 MR. BURNETT: But no, no, the smaller Type B's,
18 which you will be briefed on later, take very, very much
19 less resources even down to 1/100th of a man-year. But if
20 you are talking about the NWPA, it does take approximately
21 one man-year for each new design.

22 COMMISSIONER ROGERS: Are there other costs besides
23 that that are of significance?

24 MR. BURNETT: To the NRC, no, I don't think so.
25 There are preliminary meetings that we have with respective

1 builders and applicants but, no, one man-year is --

2 MR. BERNERO: The major cost I think -- I am
3 suspecting that you are going toward why don't we require
4 them to get the certification of transport now? If you went
5 in that direction, the major cost would be theirs, you know,
6 the analysis and tests supporting the application. That
7 would be a very significant burden.

8 MR. BURNETT: In fact, in discussions with the
9 industry, they are talking about possible movement of this
10 type of material somewhere around the year 2000 to 2008.
11 The cask itself would be significantly impacted cost-wise
12 to make it compatible to transportation requirements. Their
13 position is that it would just sort of sit there for 20 or
14 25 years and that maybe a preferable route would be to make
15 this insert concept they have come up with. However, there
16 is an incompatibility there also.

17 CHAIRMAN ZECH: All right. Let's proceed.

18 COMMISSIONER CARR: Can I ask one question before
19 we do that?

20 CHAIRMAN ZECH: Sure, go right ahead.

21 COMMISSIONER CARR: You have mentioned some kind
22 of statutory limitations. What is that?

23 MR. BERNERO: Well, if an applicant applies for a
24 certificate or for a license on a permitted practice under
25 our regulations, it is my understanding that we cannot deny

1 it because it is non-standard. We have gone through this
2 and --

3 COMMISSIONER CARR: Well, we can deny it because
4 we don't have the manpower to put on it though, can't we?

5 MR. BERNERO: Yes.

6 COMMISSIONER CARR: By not going on it, we --

7 MR. BERNERO: Yes, we could do what we have done
8 in reactors of prioritizing and saying we will drag our feet
9 and we will give expedited treatment to a standard plant and
10 reluctant treatment to a non-standard.

11 MR. PARLER: This agency certainly can provide
12 guidance and direction and point out problems. It doesn't
13 have to wait for any MRS Commission or any other commission
14 to give it guidance in that regard. The amendments to the
15 Waste Policy Act in December of 1987 said at least in the
16 high level waste area these casks should be certified by the
17 Commission and that was this Commission. So, this Commission
18 is the one that has the authority and the responsibility, at
19 least in the regulatory area, for these casks.

20 MR. BURNETT: We don't want to leave a taste in
21 your mouth that we are not trying to pursue that. There has
22 been one meeting with Duke and in discussions this week Duke
23 is having a second meeting with the DOE to pursue a more
24 standardized form but it has just not resulted yet.

25 MR. BERNERO: Yes, we are encouraging DOE as well

1 in order to get this rolling.

2 CHAIRMAN ZECH: All right. Let's proceed.

3 MR. BERNERO: Yes, may I have the next slide,
4 please.

5 (Slide.)

6 I would like to turn to the TRUPACT II, the
7 transurantic waste package. This is an important current
8 case. It is for the DOE defense program. This is the
9 transurantic waste that would go to the WIPP facility.
10 There is a very strong schedule pressure in DOE to start the
11 WIPP facility at the end of 1988. Now, they are still
12 hoping to do that.

13 Their application, as this slide indicates, was
14 originally going to be submitted to us in February of 1988.
15 They have slipped that date to October. At the same time,
16 they have been doing package testing at Sandia National Lab
17 which we are tracking and some of which we have witnessed.
18 It is a very optimistic schedule. I will talk about that a
19 little bit later.

20 May I have the next slide, please.

21 (Slide.)

22 I think it is useful in this context to look at
23 the hypothetical accident conditions for a Type B package.
24 This is the analogue of the design basis accident in a
25 reactor. Put rather simply, there are test conditions

1 described here in very simple terms: A free drop 30 feet
2 to an unyielding surface; a puncture drop of 40 inches to a
3 six-inch diameter pin; a thermal load from fire, 30 minutes
4 at 1,475 degrees Fahrenheit followed by water immersion,
5 three feet of water for eight hours.

6 Now, those are sequential tests. That last
7 parenthetical remark, 50 feet non-sequential, refers to the
8 sort of exposure one would get if it fell off a barge or a
9 train into a canal. But the four main tests, it drops first
10 and then gets the puncture load, then gets the fire, and then
11 gets the immersion.

12 The criteria of acceptance are put simply that
13 there shall be after that exposure adequate containment,
14 adequate shielding, and no criticality for fissile materials
15 of course. So, this is a severe environment for these
16 things to stand.

17 May I have the first photograph.

18 (Slide.)

19 Now, the TRUPACT II is a rather large cask. If
20 we look at this photograph here, basically you start with
21 the contents. It is 55-gallon drums, 14 of them in two
22 layers, hexagonal close packing. They are banded together
23 into a bundle and they are put into an inner containment
24 vessel. It is 1/4-inch thick stainless steel. You can't
25 see it here. It is inside this shell.

1 MR. BURNETT: The picture on the TV, Bob, does
2 give a better presentation than the one that follows.

3 MR. BERNERO: Yes, we have a photocopy of it in
4 your package but the actual photo is here. Now, there is
5 an outer containment shell and it is just beyond the inner
6 containment shell, still not this gray outside. That, too,
7 is stainless steel 1/4-inch thick.

8 Now, may I have the next photograph, please.

9 (Slide.)

10 If you see this next photograph where the lid is
11 coming on, you can see here the inner dome and the inner
12 closure coming so that you have an inner container seal, a
13 so-called outer container seal, and then this big shell is
14 eight to ten inches thick of foam insulation for cushion,
15 shock resistance and thermal insulation, and there is a
16 stainless steel skin of variable thickness -- 1/4 to about
17 3/8ths of an inch thick -- around the thing. So, that you
18 really have the payload of those 14 drums not counted on at
19 all. They are contained in double stainless steel
20 containers inside here. That is required for any
21 significant quantity of plutonium. And, then the shock
22 resistance wrapper is all around it and you end up with a
23 package which is about eight feet in diameter and about ten
24 feet tall. It weighs 18,500 pounds of which about 7,500
25 pounds is the payload of those drums. So, you are talking

1 about a very large device here and a fair quantity of
2 transurantic waste being shipped in it at any one time.

3 What the Department of Energy did is they brought
4 two of these packages down to Sandia in a desire to have a
5 demonstration series of tests which would put test one on
6 top of the other and test enough of them so that they could
7 have demonstrated that they satisfied the regulatory
8 requirements.

9 The first unit was to get a three-foot drop test.
10 That is for the ordinary conditions of transport. It is not
11 part of the design basis accident environment. It is for
12 if the crane let go too soon or things like that. Then their
13 intent was to have three 30-foot drop tests on it, four
14 puncture tests and a fire test. The testing of that unit
15 had to be suspended because when they did the three-foot
16 drop test it didn't hold pressure. They had some leakage.
17 So, that one, they had to look into that for some
18 modification.

19 They got their second unit and they were going to
20 have three 30-foot drop tests, three puncture tests, and
21 follow that by a fire test. After one 30-foot drop test and
22 two puncture tests, they found some tearing on that outer
23 shell here and it seemed to be related to some of the
24 structural detail nearby, so that went back.

25 Now, these are in my view more R&D tests than

1 qualification tests in the normal sense because of the
2 accelerated nature of the program. They have been working
3 on a success schedule. They have identified weaknesses in
4 the package that require modification. We are meeting with
5 them. They still hope to keep their desired schedule and
6 that desired schedule is that they would submit an
7 application, presumably backed up by successful tests, on
8 October 1st, and we would certify they hope by December 1st.
9 We have told them that that is an extraordinarily rapid
10 turnaround.

11 We are willing to cooperate but under no
12 circumstances, and this is quite clear to all the staff
13 involved, no stampeding. We are not being stampeded into
14 a certification. We are trying to cooperate with the
15 program that they have but they do have serious problems
16 here in time alone.

17 COMMISSIONER ROGERS: What is the pressure leak?
18 What is pressurized in this? You mentioned there is a
19 pressure.

20 MR. BERNERO: The off-gassing from the waste.

21 MR. MACDONALD: Tested it has a pressure of about
22 50 psi in the package.

23 CHAIRMAN ZECH: Well, I certainly encourage you
24 not to be stampeded.

25 MR. BERNERO: No.

1 CHAIRMAN ZECH: You have got to be early and be
2 satisfied.

3 MR. BERNERO: Rest assured, we won't be.

4 CHAIRMAN ZECH: All right.

5 MR. BERNERO: Now, let's turn from ground transport
6 of plutonium to air transport. May I have the next slide,
7 please.

8 (Slide.)

9 You will of course recall the Murkowski amendment
10 and the key words in it are actual worst case transportation
11 conditions. That situation, the worst case, means that it
12 might exceed -- those criteria might exceed the criteria we
13 used in NUREG-0360, published, what, ten years ago for what
14 is called PAT-1, Plutonium Air Transport Number 1, the
15 Sawyer amendment package.

16 The U.S./Japanese bilateral agreement activity
17 that is going on right now, sea transport is also being
18 analyzed as an option and we are collaborating with the
19 State Department in that consideration. We also understand
20 that the Japanese are considering funding a technical
21 development effort to really work out technical criteria that
22 would satisfy worst case. We have a Commission paper and
23 as soon as --

24 CHAIRMAN ZECH: Is this regarding air transport?

25 MR. BERNERO: Air transport, yes.

1 MR. TAYLOR: The Murkowski amendment.

2 MR. BERNERO: Yes.

3 CHAIRMAN ZECH: Yes. So, they have not ruled out
4 transportation by air, the Japanese.

5 MR. BERNERO: No, they haven't but, of course,
6 depending on what those criteria are, the tasks can be
7 formidable. I think it would be useful if I put up the next
8 slide, please.

9 (Slide.)

10 The PAT-1 accident condition test sequence, now
11 this, too, is like the one I showed you before. It is sort
12 of the design basis accident. This was developed on
13 aircraft crash data of the time. It is, first of all, an
14 impact at 422 feet per second into an unyielding surface.
15 The crushing load is a Static 70,000 pound load. It was
16 associated with an aircraft beam; you know, one of the
17 structural members of the aircraft. The puncture load is
18 500 pounds coming through a ten-foot drop. That actually
19 is propelling a structural member, a puncture member of some
20 formidable character. Then a 60-minute fire with aviation
21 fuel and then immersion similar to what you have in the other
22 criteria, three feet for eight hours, three-foot submergence.

23 Now, the fly in the ointment here is aircraft
24 crash data for years have been pretty much the same until
25 December 7th, 1987. A PSA airlines flight from Los Angeles

1 to San Francisco was hijacked so-to-speak by an unhappy
2 employee or former employee of the airline. He went crazy
3 with a .44 magnum revolver and shot up the airplane and
4 then entered the cockpit and shot the pilot and co-pilot.
5 The plane was on auto-pilot and they apparently slumped over
6 the controls and their bodies drove the plane into a power
7 dive.

8 COMMISSIONER ROBERTS: Drove it into what?

9 MR. BERNERO: A power dive, right into the ground.
10 This thing was a turbo prop, a four-engine turbo prop, but
11 from the recordings, the flight recordings, the impact and
12 a variety of things, it is believed that that airplane broke
13 the sound barrier before it hit the ground. That is of
14 course technically possible with a propeller aircraft.

15 That puts you instead of -- may I have that slide
16 back.

17 (Slide.)

18 Instead of 422 feet per second, you probably have
19 1,100 feet per second as that impact. That is where the
20 formidable problem comes in. You know, the kinetic energy
21 goes up by the square of the velocity. You know, it's a
22 really formidable task. So, when you look at criteria that
23 is analyzing -- you know, especially analyzing that air
24 crash, and then the ramifications of other types of
25 airplanes and so forth and these incidents.

1 CHAIRMAN ZECH: So, that is the criteria by which
2 you are measuring or you are required to measure --

3 MR. BERNERO: Yes, we haven't set a new criteria.
4 We haven't set new criteria at all. We are just saying that
5 the one on the books doesn't -- it's a factor two and a half
6 lower than the arguable impact velocity of this one airplane
7 crash.

8 CHAIRMAN ZECH: But are you saying that you must
9 meet that 1,100 feet per second requirement?

10 MR. BERNERO: No, no, we are not saying that. We
11 had legal analysis supporting it saying that, yes, that is
12 the worst case and you had better count it, you know. You
13 see, one could think of a commercial aircraft with a hijacker,
14 some uncontrolled or poorly controlled population in it,
15 rather than a cargo plane. You could make arguments like
16 that. No, it doesn't appear that those arguments could
17 prevail as ruling this out as the worst case for a cargo
18 airplane. No, more to the point, we might be getting into
19 a discussion of what is the package because we commonly in
20 transport use a package and an over-pack. It is possible,
21 it is conceivable to have the airplane as the over-pack, the
22 cargo fuselage. So, that needs addressed to consider that.

23 MR. BURNETT: I think what it does say is that we
24 will have to run an analysis or study of the FAA safety data
25 and this accident will be in that data base. Then the staff

1 would have to present to the Commission the findings of
2 that study to satisfy the Murkowski amendment. That was
3 where Bob indicated a little earlier that the Japanese
4 government has shown an interest. The Japanese government
5 and NMSS are now having preliminary meetings for them to
6 fund, which is required by the law, that first analysis of
7 the FAA safety data.

8 But we wanted to make sure you knew that there
9 were accidents that were far and above present criteria that
10 would be included in that data base and could drive it.

11 CHAIRMAN ZECH: All right. Thank you. You may
12 proceed.

13 MR. BERNERO: Let me have the next slide, please.

14 (Slide.)

15 I would like to go to current issues and single
16 one out. It is a very interesting case that occurred this
17 year. The incident occurred on January 27th, 1988. The
18 trade name is SPEC 2-T radiography device or camera, you
19 know. It's the Type B package, a shield, and the
20 radiography source is inside for remote deployment. It fell
21 out of a truck into a roadway and was struck and dragged by
22 a following vehicle. By following, one should clarify that
23 the vehicle that struck the camera came an hour and a half
24 later. So, the thing was lying in the roadside.

25 COMMISSIONER ROBERTS: Laying in the roadway for --

1 MR. BERNERO: It was in the roadway for an hour
2 and a half before that other guy struck it but it was dark
3 and it was in the evening. The source was released from
4 the shield and we will talk about that more, you know. Why
5 and when are both debatable. The state is Texas, an
6 agreement state. The state investigated this incident. The
7 Department of Transportation, which is the competent authority
8 for transportation, investigated. Then we, the NRC, who
9 certified the package, have investigated it. So, all three
10 of us are involved.

11 If I may have the SPEC technical data sheet,
12 please.

13 (Slide.)

14 You have in your packages a copy of this data
15 sheet. It has a cutaway drawing of the device. Now, if
16 you will look, this is a depleted uranium shield and the
17 source is the little pellet at the head of the arrow there
18 on the screen. The source is on a pigtail that curves over
19 to a locking assembly over here at one end. At that locking
20 assembly there is a connector, a pigtail connector, that can
21 connect to the radiographer's remote crank. You know, it
22 is like a plumber's friend that you just turn the crank and
23 it pushes out the cable. By pushing out the cable, it then
24 makes the source come down through the shield passage out
25 to a tube which would be attached out here and that is how

1 he takes his picture, his X-ray picture.

2 When he is in the center shielded position with
3 that source, this wire that this cable piece going out to
4 the cap is really a flexible plug. It's a quick disconnect
5 plug that is put on the other end of the cap to keep the
6 source from falling out. The lock over here locks it at the
7 other end. The design principle is similar to the single
8 failure criteria. It is a double contingency principle.
9 You have to have two failures before that source will come
10 out. You know, you would have to break this cable and have
11 the safety plug out or break the lock out, you know, have
12 that fail, and have the cap on this end fail. You would
13 need two failures.

14 Now, turn to the first photo of this device, the
15 first small photo, please.

16 (Slide.)

17 This is a cutaway of one of these devices that is
18 cutaway to show you both the size and the interior. The
19 shielding is in here, rather dark, difficult to pick up.
20 Here you can see the flexible tube and you see the handle
21 up here and that shipping plug. That flexible wire shipping
22 plug is actually stored in the handle when the device is in
23 use. Then you quick disconnect it and put it back in for
24 shipment. Now, this whole thing is not very large. It is
25 about a foot long, about four inches by four inches across

1 the sides, and it weighs about 40 pounds. It can hold 200
2 curies of iridium-192. That is it's designed package. Now,
3 this is what fell off the truck, this whole assembly here.

4 May I have the next small photo, please.

5 (Slide.)

6 This in the post-mortem is a photograph of the
7 one that fell off the truck. Now, this cut mark here was
8 made in cutting it open to examine it. The lock goes here.
9 This is the device itself, the original device. You can
10 see how it is bent down somewhat here. Could you back up
11 the picture a little bit so we can see the nozzle here.

12 Now, if you look there, you don't see any evidence
13 of mechanical damage of significant mangling or abrasion.
14 It's fairly evident from looking at the device that the car
15 suffered a lot worse than the device did. It tore the
16 transmission oil pan out of the car and, you know, pretty
17 much disabled it. The whole device wedged up into the
18 engine compartment of the car. It had to be pried out.

19 May I have the next slide, please.

20 (Slide.)

21 To illustrate what happened, I think a little
22 cartoon here or a little scenario. First of all, at 7:15
23 a.m., down on this street is the location of the licensee,
24 Houston Inspection Lab. This is Zavalla Road. One of their
25 technicians brought this truck back in and parked it at the

1 facility and left the camera in the darkroom for picture
2 developing. It was on a shelf in there. It should not
3 have been there. It should have been stored. In fact,
4 when he came back to the facility, he should have removed
5 it and put it into the facility itself. They have a vault
6 for storing these things. So, there was a first error right
7 there in just leaving this thing on the shelf of the truck.

8 About 12 hours later, 7:30 p.m., another employee
9 of that company, unaware that the thing was sitting in the
10 back, needed a vehicle and went out and took this truck on
11 an errand. He came up the road here and then turned the
12 corner. As the truck turned the corner, this thing, which
13 is rather small but rather heavy, apparently slid along the
14 shelf, broke the little guardrail off the end of the shelf,
15 went right through the door and went off the truck. Based
16 on abrasions in the pavement and other signs, it's believed
17 that it struck the pavement right there. That's consistent
18 with the truck making the corner.

19 Then the thing was apparently lying in the
20 pavement there for an hour and a half until that car hit
21 it. The car hit it and dragged it all the way up to here.
22 It's a block and a half. It amazes me that a car with the
23 transmission oil pan torn out and all that other -- it must
24 have made an awful racket. It was a rental car and the
25 people had said that's a good sign of how you treat a

1 rental car.

2 So, then what happened -- this is at night. That
3 was 9:00 at night when the car hit it. Then 9:30, 10:00,
4 they are going on and they discovered this box under the
5 car. They pried it out and here is the logo on it. Hey,
6 this is radioactive. So, by the time the authorities are
7 called, the licensee got word of it, came out, and went
8 looking for the source because the source wasn't in it.
9 Then the licensee found the source here.

10 Now, the locking device, that plug locking device,
11 was not found until the 1st of February by people walking
12 along the road over here, right on this side of the road.
13 It's not clear whether the source fell out here and was
14 dragged along by passing vehicles -- you know, it's not
15 very big and it would be something like a little piece of
16 debris in the pavement that could be knocked along -- or
17 whether it actually fell out of the camera after the car
18 overran the camera and kind of shook out. But no shipping
19 plug was ever found. You know, that flexible plug cable.
20 So, with the locking device out and the shipping plug out,
21 then the cable could come out just if you kept shaking it.
22 You know, only friction would hold it in.

23 So, it's not clear what caused it. The interesting
24 thing is the device was in pretty good shape and the only
25 questions we have about it are were the protective devices

1 in place, as against, you know, why did it break up? Is
2 this thing contrary to our design? Is this accident beyond
3 the design basis and too severe a challenge? It doesn't
4 appear that that is the case at all.

5 COMMISSIONER CARR: But the plug locking device
6 doesn't come out with the key. It just stays there. It's
7 spring-loaded or something, isn't it?

8 MR. BERNERO: Yes. Could you go back to the
9 slide that is the cutaway drawing of the radiography camera.

10 (Slide.)

11 COMMISSIONER CARR: The plug could be missing but
12 the locking device ought to be present.

13 MR. BERNERO: There is a glitch with this. The
14 locking device is spring-loaded and it fails open. This
15 locking device holds the cable there and if you turn the
16 key it pops up to let you move the cable. But the whole
17 locking device is held in by a set screw there, and guess
18 what was missing.

19 COMMISSIONER ROBERTS: The set screw.

20 MR. BERNERO: Yes. Now, sometimes locking devices
21 can be removed without a key by undoing the set screw and
22 you pop the locking device out. It's a poor man's way of
23 operating a camera without a key. We don't know whether
24 that took place here or not but there was no set screw and
25 the locking device was definitely loose. You saw the can.

1 It wasn't abraided in a way that would have pried the
2 locking device out. So, more mystery.

3 May I go to the SPEC 2-T followup slide, please.

4 (Slide.)

5 Well, basically the investigation revealed a lot
6 of doubts and questions that we have just talked about but
7 it also revealed to us, as we looked at this device, that
8 it did not match the drawing. We had a drawing in the
9 files. We looked at it and it had a difference. It didn't
10 appear to be crucial to the incident but it was a difference.
11 So, we inspected the SPEC facility in Louisiana. Louisiana,
12 I remind you, is an agreement state. But, their agreement
13 state jurisdiction for a company-like SPEC is that they
14 review license and inspect the handling of radio isotopes,
15 not the fabrication of Type B packages. Agreement states
16 don't certify packages.

17 Well, we looked into this thing and what we found
18 is that the company had an approved QA program. We had
19 reviewed and approved their QA program but they had not
20 implemented it and they made about 800 of these devices and
21 they are scattered all over the place. They are in use in
22 many, many different companies all over the country.

23 So, we did recognize there was no apparent nexus
24 between the performance of the device in the accident and
25 the discrepancies we were identifying in our inspection and

1 what we could find out.

2 But we no longer had confidence that the thing
3 met the certification because of the failure to implement
4 the QA program. So, we immediately amended the certificate
5 of compliance to have additional requirements for handling
6 or shipment of this package. The compliance package is
7 amended and the appropriate notifications have gone out to
8 licensees that this package is certified for transport only
9 if it has an additional overpack -- there are devices you
10 can buy and it's like a big barrel and you put this thing
11 inside -- or the additional secure storage of the shielded
12 wells of the trucks, because ordinarily a radiographer's
13 truck will have a shielded well for storage of this device
14 so you won't fog new film. That is a rather secure thing
15 usually built right into the truck.

16 So, we made that amendment and got the information
17 out. I would add, this is a relative first for us. This is
18 the first time we have had inspections of small
19 manufacturers of Type B packages. So, we took up followup
20 inspection at other facilities and right now we are working
21 with the SPEC company. They believe that all the changes
22 that they made were changes in the positive direction for
23 positive improvements of safety. They just didn't keep the
24 drawings on the floor and operate under their QA program.
25 They didn't have configuration control, in other words.

1 What we are trying to do with them is to see
2 whether they can indeed make the case that -- I'll call it
3 recertify their package in an unhindered way without these
4 extra shipping requirements. But it's a major burden for
5 them to do that. Meanwhile, we have inspected other vendors
6 and we found some followup action to do but nothing so far
7 on the scale of this.

8 COMMISSIONER CARR: Were they making it like they
9 thought they were making it?

10 MR. BERNERO: They were making it like a good
11 backyard mechanic would make it. You know, that, gee, I
12 see an improvement in this thing and why don't I start with
13 the next one of doing it in the improved way, and not sitting
14 down and, you know, not going through a configuration
15 management thing and writing to somebody to get permission
16 to do that improvement.

17 May I have the next slide, please.

18 (Slide.)

19 So, to summarize where we stand, we have got a
20 lot of events and a lot of activities going on. There is
21 continued congressional, state and public interest in this.
22 The whole area of transportation of nuclear materials, in
23 particular the transportation of large quantities -- the
24 waste, things like that, the high level waste and spent
25 fuel -- are going to have sustained interest for years to

1 come.

2 We are conducting a survey of international data
3 on severe accidents somewhat similar to the Modul (phonetic)
4 study you were briefed on. That is the accident
5 environments. We went to seven major countries. We have
6 gotten answers from three of them so far. The data they
7 are reporting is quite consistent with our U.S. experience,
8 which is not particularly surprising. And, as you probably
9 know, we are undertaking substantial review and revision
10 of the agency's environmental impact statement on
11 transportation.

12 In 1977, we issued UN-0170, transportation by air
13 and other modes. It is obsolete. It was for the fuel
14 reprocessing expectation. It used older data. We are going
15 to review that thing and do it over again in the coming
16 years, so that we have a current valid assessment of
17 transportation risk and its significance.

18 That completes the status report that we wanted
19 to give. I will be happy to answer any further questions
20 you have.

21 CHAIRMAN ZECH: All right. Thank you very much.
22 Any questions or comments by my fellow Commissioners. Mr.
23 Roberts.

24 COMMISSIONER ROBERTS: In the incident that you
25 went through, how long -- well, you don't know precisely --

1 but what was the effect on public health and safety of that
2 source being out in the middle of the roadway?

3 MR. BERNERO: That was looked at. It turns out
4 this is -- could you go back to the cartoon of the street,
5 please.

6 (Slide.)

7 COMMISSIONER CARR: The source was still
8 encapsulated, wasn't it?

9 MR. BERNERO: Well, the source is still
10 encapsulated. You know, iridium is a piece of metal, but
11 it's light and they are unshielded. The location here on
12 this median strip, it's a wide street, South Main Street
13 in Houston, Texas. It's a wide street and the nearby
14 business is a mobile home sales lot. The people who did
15 the investigation -- this is the state people -- drew the
16 tentative conclusion that something could lie out there not
17 only unseen but not significantly exposing people because
18 of the distance involved.

19 MR. BURNETT: What was the source strength, Bob,
20 do you recall?

21 MR. BERNERO: It was about 92 curies.

22 MR. BURNETT: 92.

23 MR. BERNERO: It wasn't the full -- no, 42.

24 MR. BURNETT: 42.

25 MR. BERNERO: Yes, it was quite decayed from the

1 design capacity of the thing. So, they considered the
2 emergency workers who went to work on the car. Most of them
3 were down here at the end. You see, most of the emergency
4 workers were down at this end over here where the car came
5 to rest. Then some went back here. The source was found
6 over here. Apparently this thing here is a mobile home lot.
7 And, this is a median strip of grass. It is wide open, so
8 that passing traffic wouldn't get much of an exposure just
9 out of time.

10 COMMISSIONER CARR: Did they have to use a
11 detector to find it?

12 MR. BERNERO: Well, the owner, the licensee, when
13 he heard about it, he went back to his shop and got a survey
14 instrument and went out and found it.

15 COMMISSIONER CARR: So he knows pretty much what
16 the readings were around it.

17 MR. BERNERO: Yes. I would be disappointed in him
18 even more if he hadn't gotten a survey instrument and just
19 went looking for it bare-handed.

20 CHAIRMAN ZECH: Do you have any indication of the
21 radiation in milliurems that they might have either
22 calculated or measured?

23 MR. BERNERO: I don't recall anyone postulating
24 doses.

25 MR. MACDONALD: It was very small.

1 CHAIRMAN ZECH: Very small.

2 MR. MACDONALD: Yes.

3 CHAIRMAN ZECH: Like what?

4 MR. MACDONALD: I don't know if they came up with
5 a number. It was just the adjective small or insignificant
6 exposure.

7 MR. TAYLOR: It's essentially a point source,
8 right, if it's 42 curies.

9 MR. MACDONALD: Yes.

10 MR. TAYLOR: So, you can postulate it.

11 MR. MACDONALD: Yes, you can postulate it.

12 MR. BERNERO: They didn't measure. The licensee
13 just went out and found it and at the time he found it, you
14 know, no one did a free field sort of measurement that would
15 give you a basis. As Jim says, point sources are pretty
16 easy to calculate.

17 CHAIRMAN ZECH: But as far as public health and
18 safety are concerned, are you saying that as far as you know
19 there was no --

20 MR. BERNERO: As far as we know.

21 CHAIRMAN ZECH: -- damage to public health and
22 safety?

23 MR. BERNERO: But I feel real distressed. I think
24 we all feel real distressed that a high curie source -- even
25 42 curies is a high curie source -- was lying in the roadway

1 for hours.

2 CHAIRMAN ZECH: Well, of course we all are
3 distressed about that.

4 COMMISSIONER ROBERTS: Sure.

5 CHAIRMAN ZECH: But what I am trying to figure out
6 is was there any calculations made of what the dosage might
7 have been?

8 MR. BERNERO: No. The state investigation report
9 does include some -- I don't recall the exact words but they
10 do include some discussion of the dose and I don't remember.
11 The four initial responders had little zero to 200-MR pocket
12 dosimeters, none of which indicated any excessive exposure
13 to motorists. They have some negative findings in it but
14 they don't have any specific calculations.

15 MR. TAYLOR: You can use the old rule-of-thumb
16 that if it is 42 curies source, it would be one arc by
17 approximately a meter per hour, right?

18 MR. BURNETT: On the energy, yes.

19 MR. TAYLOR: And, then somebody would have to
20 stand there for some period of time to get any appreciable
21 dose in the proximity where it was lying. These numbers
22 could be run.

23 MR. BERNERO: Yes, they could be.

24 MR. TAYLOR: By the inverse square rule, I would
25 say it would be much less over at the trailer shop where

1 they are selling trailers.

2 MR. BERNERO: Yes, a lane and a half, two lanes
3 across, about the same.

4 MR. TAYLOR: But maybe you can do that.

5 CHAIRMAN ZECH: It seems to me it would be useful
6 to do that just to assure ourselves that the dose was --

7 MR. TAYLOR: If somebody went by in a car and they
8 were moving fairly rapidly would have only a short period of
9 exposure.

10 CHAIRMAN ZECH: But do we know that nobody went
11 out there in the vicinity for any length of time?

12 MR. BERNERO: Yes, no knowledge of any people
13 doing that other than those who responded to the automobile
14 event.

15 CHAIRMAN ZECH: It was nighttime --

16 MR. BERNERO: It was night, yes.

17 CHAIRMAN ZECH: -- when that was laying out there.

18 MR. BERNERO: It fell a few minutes after 7:30.
19 It fell to the street. The car hit it at 9:00 p.m. As I
20 say, it is not clear whether it was outside the camera before
21 the car hit it or after the car hit it.

22 CHAIRMAN ZECH: It seems to me it might be useful
23 to run some calculations and give ourselves the confidence
24 that --

25 MR. TAYLOR: The staff can do that, sir.

1 MR. BERNERO: Yes.

2 CHAIRMAN ZECH: -- the dose rate was not --

3 MR. MACDONALD: And, we shouldn't forget this
4 wasn't a manufacturing problem. It was a user problem.

5 COMMISSIONER ROBERTS: Right, it was a user problem.
6 That's my question. Especially dealing with the SPEC 2
7 people or the manufacturer, and there are 800 of these
8 devices out.

9 MR. MACDONALD: Approximately about 800 of them
10 roughly.

11 COMMISSIONER CARR: And, you said that the mods
12 he had made didn't apparently have anything to do with this
13 particular accident.

14 MR. BERNERO: No, huh-uh. They were mods like
15 shielding configurations, slightly different, that kind of
16 thing.

17 COMMISSIONER CARR: The indications are if the
18 user had complied with all his requirements this probably
19 wouldn't have happened.

20 MR. BERNERO: If you ask my personal opinion from
21 the facts I have seen, I am inclined to judge that the user,
22 the licensee in Texas, did not have the proper safeguards on.
23 He didn't handle it properly. It wasn't fixed for shipment.
24 That is the reason it fell out.

25 MR. BURNETT: That locking device might not have

1 been locked properly but even if --

2 COMMISSIONER ROBERTS: Again, that is not the fault
3 of the manufacturer of the design.

4 MR. BURNETT: That's right.

5 COMMISSIONER ROBERTS: That's the fault of the
6 operator.

7 MR. BERNERO: Yes.

8 MR. BURNETT: But even in the absence of that,
9 had he stored it in the well which is in the trailer and
10 provided for that purpose, then it wouldn't have fallen
11 through the well and onto the ground.

12 MR. BERNERO: I think what we are seeing here is
13 two independent problems. The QA problem --

14 COMMISSIONER CARR: Well, there are not as many
15 vendors. There are 799 --

16 MR. BURNETT: Exactly.

17 COMMISSIONER CARR: -- if it wasn't a manufacturing
18 problem.

19 MR. BERNERO: Even with a good QA program in the
20 manufacturer, there is still the QA in the handling and the
21 shipping and so forth and that is a continuing problem with
22 radiography devices.

23 MR. BURNETT: Bob, that's the reason we did go
24 out with the bulletin also.

25 MR. BERNERO: Sure.

1 MR. BURNETT: And, reminding the users of the
2 device that this failure had occurred and to make sure that
3 their maintenance and their QA of locking it up is done
4 properly.

5 CHAIRMAN ZECH: Are you pursuing this for possible
6 enforcement action?

7 MR. BERNERO: Well, that wouldn't be the NRC. Our
8 enforcement would be on the vendor for the QA issues if we
9 have any.

10 CHAIRMAN ZECH: I see.

11 MR. BERNERO: But for the other, it is the DOT and
12 the State of Texas.

13 CHAIRMAN ZECH: Are they doing something in that
14 regard; do you know?

15 MR. BERNERO: They are considering it but I don't
16 think they are prepared to say one way or the other right
17 now.

18 CHAIRMAN ZECH: All right.

19 MR. BERNERO: They are represented here in the
20 room. Mr. Michael Wangler from DOT is here. I talked to
21 him this morning and their policy, until the enforcement
22 action is decided, they don't take a position one way or
23 the other.

24 COMMISSIONER CARR: Hertz is probably suing.

25 MR. BERNERO: Pardon.

1 COMMISSIONER CARR: Hertz is probably suing.

2 MR. BERNERO: Yes.

3 MR. BURNETT: Well, maybe he would like to step
4 forward to the microphone and at least acknowledge that that
5 is the case. Would you mind doing that, Mr. Wangler?

6 MR. WANGLER: No.

7 MR. BURNETT: Step to the microphone if you would,
8 sir, and identify yourself for the reporter.

9 MR. WANGLER: Thank you. Mr. Chairman, my name is
10 Michael Wangler. I am Chief of the Radioactive Materials
11 Branch in the Office of Hazardous Materials Transportation
12 at the Department of Transportation. I am in the technical
13 division. I am not in the enforcement division. So, my
14 group is not the group that is handling the action, that has
15 been reviewing this particular activity.

16 The DOT is pursuing an enforcement action against
17 Houston Testing. Because of the nature of the enforcement
18 action, I can't give you any specifics on what it is that
19 the Department is planning to pursue. I can tell you that
20 among some of the items that are being looked at are failure
21 to properly block and brace the device during transportation.
22 We have a specific requirement on that. They are also
23 looking at whether Houston Testing was properly registered
24 as a user of the device as we require by our regulations,
25 and there are a couple of other one that I don't recall right

1 now. But those are the types of things that we are looking
2 at.

3 MR. BURNETT: Thank you very much.

4 CHAIRMAN ZECH: Is there anything else, any other
5 statement that you would like to make on the entire incident
6 while you are there at the microphone?

7 MR. WANGLER: No, sir. I think Mr. Bernero has
8 pretty much covered all of the information as we have it.

9 CHAIRMAN ZECH: Thank you very much. We appreciate
10 it. Any other questions. Commissioner Roberts.

11 COMMISSIONER ROBERTS: No.

12 CHAIRMAN ZECH: Commissioner Carr.

13 COMMISSIONER CARR: Yes, I have got one. I notice
14 when I go around visiting state programs and officials that
15 transportation is always one of the things that they want
16 to talk about. I think we are probably missing a little
17 chance at a public relations area and telling them what is
18 going on in our transportation. So, you might put some of
19 that in your newsletter or whatever that you are mailing
20 out of things we are doing and keep them informed a little
21 better.

22 The other one, on the storage of spent fuel, when
23 we had a paper go by the other day a question came up about
24 storage of spent fuel other than that generated on the site.
25 Are we going to address that issue one of these days, if you

1 can store spent fuel from some other site on another site?

2 MR. BERNERO: Well, we have already authorized
3 that in the past and evaluated that. For instance, the
4 Carolina Power and Light Company, which has three sites, has
5 been authorized to ship spent fuel from -- I forget now if
6 it is Robinson to Brunswick or --

7 COMMISSIONER CARR: How about Oconee?

8 MR. BERNERO: Oconee, Maguire, Catawba, Duke Power
9 has a similar --

10 COMMISSIONER CARR: How about between sites that
11 are not owned by the same company?

12 MR. BERNERO: I don't know of an instance where
13 we have been asked to consider that but I also don't know
14 of a reason why that couldn't be authorized.

15 COMMISSIONER CARR: You might give that some thought
16 because it is possible that somebody with room in his pool
17 might end up being asked to store somebodies fuel one of
18 these days.

19 MR. TAYLOR: They might ask to do it in the dry
20 storage. I doubt anybody would want to give up pool space.

21 COMMISSIONER CARR: Well, there is a big pool down
22 there in Carolina for something else that never got built.

23 MR. TAYLOR: We might get a request.

24 MR. BERNERO: Have you gone to look at that
25 building?

1 COMMISSIONER CARR: I haven't. I didn't look at
2 it. I looked from the outside but I didn't look at it. It
3 looks like a great waste storage facility.

4 MR. BERNERO: Hugh Thompson looked at the inside
5 and it is hot in there.

6 COMMISSIONER CARR: The last time you briefed us,
7 I think we asked you to take a look at lessons learned from
8 transportation incidents. How is that coming?

9 MR. BURNETT: I think that was one of the things
10 that Bob tried to cover. We have gone to seven countries
11 and made requests for their data. Three have responded in
12 the past 45 days. Would that be about right?

13 MR. MACDONALD: Yes.

14 MR. BURNETT: And, we are analyzing that data.
15 We haven't seen anything really revolutionary there. They
16 are having similar experiences to us. They have not had
17 any significant release. So, that was part of that effort.

18 MR. BERNERO: I might add that some of the facts
19 in the SPEC 2-T thing are part of the lessons learned. We
20 immediately look at that thing to see if we are still
21 satisfied that the design requirements are adequate. In
22 this case, as the evidence indicates, the problem seems to
23 be they didn't have the plugs in. The design was fine. It
24 wrecked the car, not vice versa.

25 MR. BURNETT: Each incident is reviewed and we

1 take it to the Office Director.

2 COMMISSIONER CARR: The other one; in addition to
3 negotiating with state on sea transport, don't ignore the
4 Defense Department. Having been involved in the last sea
5 transport, that is a tremendous amount of trouble and
6 funding that is going to be required.

7 MR. BURNETT: At the meetings that we have
8 attended, the Defense Department, our representative, in
9 addition to the Coast Guard, state; all the right players
10 are communicating on that issue.

11 COMMISSIONER CARR: Okay.

12 CHAIRMAN ZECH: Thank you very much. Commissioner
13 Rogers.

14 COMMISSIONER ROGERS: Now, how do you feel about
15 the status of what we might call coming to closure on this
16 whole question of domestic power plant waste packages? I
17 somewhat have the impression from the briefing that this is
18 a kind of an open-ended situation, that it seems to be
19 growing rather than under control. Maybe it is under
20 control but it is certainly growing. How do you really
21 feel about that? Do you feel that everything is in place
22 to bring that back together to what you might call closure?
23 Are there any Commission actions that you think might be
24 required? Are there any inter-agency problems that are out
25 there that have to be solved?

1 I just don't have a feeling about, you know, how
2 you folks see that problem.

3 MR. BERNERO: The perspective I would offer on it
4 is that given that the existence of an MRS in the near term
5 might dilute the priority given to the high level waste
6 repository -- Congress has been very concerned about that --
7 they wrote the statute to put the MRS back in time, no
8 earlier than the repository. As a result, we are going to
9 have a trend for substantial dry storage at one, two, three,
10 many reactors.

11 The dry storage from a technological point of view
12 is evidently feasible and there are proper ways we can do
13 that. The interface for ultimate transport I think can be
14 handled if there is some systematic agreement on package
15 size or inner-module size that people will design to --
16 envelopes -- many, many programs. I know my own personal
17 experience in a radio isotope device for space, we had two
18 parallel programs and they had nothing but an envelope
19 interface requirement between us that worked with a great
20 degree of success.

21 That can be done. I think it can be done. I think
22 it can be done with what I would call jawbone integration,
23 making sure that the utilities -- and now Duke Power is a
24 very large and influential utility and they are working with
25 DOE now. I think it can be done in that fashion, that there

1 can be agreement on acceptable designs to put in the yard
2 of reactors for storage so that 25 or 30 years from now we
3 don't find ourselves with a massive re-packaging problem.
4 We don't want to see re-packaging from the standpoint of
5 unnecessary exposure, unnecessary chance of dropping things
6 and so forth. Certainly the utilities and DOE don't want to
7 see it either.

8 MR. TAYLOR: They also will have a cost advantage
9 in not having to re-handle that.

10 MR. BERNERO: Yes.

11 MR. TAYLOR: And, that is an obvious attraction,
12 having them ready whenever the shipment can be made to a
13 dry storage position.

14 COMMISSIONER CARR: Is NUMARC working this problem?

15 MR. BERNERO: I can't say that NUMARC is.

16 COMMISSIONER CARR: Well, make sure they are or
17 at least are aware of it.

18 COMMISSIONER ROBERTS: Well, you are right in the
19 long-term that it has an economic advantage but maybe not
20 for the short-term.

21 MR. TAYLOR: Not for the short, maybe not; but in
22 the long-term the company is better off to do that.

23 MR. BERNERO: I talked to one of the principal
24 engineers at Duke Power Company myself and I think that in
25 the case of Duke and the Department of Energy, a relatively

1 simple dialogue can set the agreement on their interface.
2 I think that they basically have a general interface that
3 is acceptable but they differ by three feet in length. It
4 is something of that order. And, I think that the competing
5 desires for these things can be handled in such a way that
6 practical interface requirements can be agreed to and used
7 in that. I think it is a good point to get NUMARC as a
8 whole looking at it.

9 MR. TAYLOR: We can update at the next regular
10 briefing on this.

11 COMMISSIONER CARR: Well, we can probably specify,
12 as you say, a volume and say it has to fit these dimensions,
13 whatever you build.

14 MR. PARLER: Mr. Chairman, if I may repeat --

15 CHAIRMAN ZECH: Go ahead.

16 MR. PARLER: I think it is pretty obvious but just
17 in the event that it isn't, this agency is the licensing and
18 regulatory agency, the certifying agency, under the 1987
19 amendment to the High Level Waste Act. I am not a technical
20 person but I would assume that it would not be difficult to
21 find public health and safety questions involving opening
22 up something that has already been packed and re-packaging
23 it for transport.

24 Therefore, it seems to me that this agency
25 certainly does have the authority and eventually some

1 responsibility to give regulatory guidance as to what either
2 they require or the preferred approaches will be and would
3 not necessarily be dependent, at least ultimately, on what
4 others may wish to do.

5 CHAIRMAN ZECH: That is certainly my understanding.
6 Mr. Bernero, would you like to comment?

7 MR. BERNERO: I would be a little cautious about
8 making such an argument though. Keep in mind that we are
9 routinely asked to review and approve, and have done so,
10 people in reactors manipulating the fuel back and forth in
11 order to get ever denser racking geometry -- you know, more
12 and more units of fuel in a given square foot of pool --
13 and in some cases we have reviewed and authorized reactors
14 to take the fuel apart, to put it into bundles, you know,
15 with all the fuel pins touching one another, to get more fuel
16 into a space.

17 The Department of Energy is going to do a similar
18 thing probably in preparing and packaging the fuel for high
19 level waste disposal in order to get optimum packing density
20 and thermal distribution and so forth.

21 So, there is an awful lot of necessary and expected
22 and authorized manipulation and I would be cautious about
23 going one step further and saying, well, but this one I don't
24 like, you know.

25 CHAIRMAN ZECH: I know but the point I think the

1 General Counsel is making is that we have the ultimate
2 responsibility for public health and safety. Therefore,
3 that's a fundamental premise that we keep in mind in all
4 these kind of transactions.

5 MR. BERNERO: Certainly.

6 CHAIRMAN ZECH: And, I would presume that you
7 wouldn't, you know, find anything that would deter you from,
8 you know, carrying out our responsibilities in that area.
9 Therefore, I think what the General Counsel is saying is
10 that we should, indeed, be mindful of those responsibilities
11 and be able to assert ourselves and not rely on others if
12 we have any concerns about our public health and safety
13 responsibilities.

14 MR. PARLER: Well, beyond that, Mr. Chairman, if
15 I may say, if there are potential problems which can now be
16 foreseen, recognizing as Mr. Bernero does the necessity for
17 flexibility to deal with particular circumstances, the
18 regulatory navigator is this Commission, this agency, and
19 no one else that I am aware of.

20 COMMISSIONER CARR: Well, it seems to me, if we
21 wanted to, that we could say you have got to fit it in an
22 eight by four by four box and if it doesn't fit, cut it,
23 but we have some responsibility to at least standardize to
24 some particular package size; otherwise we are going to be
25 all over the world with it.

1 MR. BERNERO: Yes, we will get into your regular
2 shipments. Now is the time to do it.

3 COMMISSIONER CARR: I agree.

4 COMMISSIONER ROGERS: Absolutely.

5 MR. BURNETT: But just to let you know about one
6 other thing; one of the casks that has been selected is only
7 over-sized by about two inches.

8 MR. TAYLOR: Well, we will take that charge and
9 the staff will report further. Okay.

10 CHAIRMAN ZECH: All right, that's fine. I think
11 that is appropriate. Commissioner Rogers.

12 COMMISSIONER ROGERS: No, that's fine.

13 CHAIRMAN ZECH: Just one question. The
14 transportation of nuclear materials is, as we know, a
15 concern of the states as well as the Indian tribes.
16 Recently I understand that there has been initiative on the
17 part of the National Conference for American Indians to bow
18 a petition for rulemaking which would require advance
19 notification of spent fuel shipments over Indian lands. I
20 wonder if you could enlighten me on that. Has a petition
21 been filed? Do you know about it? Would this proposal
22 involve anything different from what we are already doing
23 for the state and local governments?

24 MR. BERNERO: Excuse me, Mr. Chairman. We don't
25 know of that petition. As you probably know already, the

1 states are informed. We have a system of route approvals
2 and prior notification of states for the shipment of spent
3 fuel. And, from what you describe, the petition is seeking
4 analogous treatment for Indian lands but this is the first
5 time I have heard of that petition.

6 CHAIRMAN ZECH: All right. Maybe we can ask the
7 Department of Transportation if they have heard anything
8 about it. Have you heard anything about it?

9 MR. WANGLER: No.

10 CHAIRMAN ZECH: You have not. All right. Will
11 you look into it?

12 MR. BERNERO: Yes, certainly.

13 COMMISSIONER CARR: My memory seems to say that
14 was in some proposed legislation that is on the hill
15 somewhere.

16 CHAIRMAN ZECH: Yes, I have heard about it
17 recently. I am not exactly sure where it was.

18 MR. BERNERO: And, I will check with some PA on
19 it too.

20 CHAIRMAN ZECH: All right. I appreciate that.
21 The other thing I would be concerned about is the U.S./
22 Japanese agreement and the transportation of plutonium under
23 that agreement. The Commission would be very interested in
24 receiving your analysis and any recommendations on that. I
25 presume that that is something you are working on right now.

1 Now, is that correct, and you are coming to the Commission
2 with something in that regard?

3 MR. BERNERO: Well, we are working on the U.S./
4 Japanese bilateral agreement on the sea transport option
5 and we are talking to the Japanese about the air transport;
6 you know, where would they go? Are they going to pursue it?
7 Are they going to pursue the sea option. Where they have us
8 right now or where they stand is they are considering this
9 major effort of funding a criteria to develop a technical
10 program, to develop criteria that can relate worst case
11 accidents to how many feet per second and --

12 MR. BURNETT: You have the Commission paper too.

13 MR. BERNERO: Yes, yes. We are trying to get that
14 picture jelled. We, ourselves, are not right now developing
15 criteria or engaged in any substantial work independent of
16 that.

17 CHAIRMAN ZECH: Well, my point is I know you are
18 working on both the potential for sea transportation as well
19 as continuing discussions on potential air transportation.

20 MR. BERNERO: Yes.

21 CHAIRMAN ZECH: But all I am saying here is the
22 Commission is vitally interested in this and we want to be
23 kept informed --

24 MR. BERNERO: Certainly.

25 CHAIRMAN ZECH: -- as those kind of negotiations

1 and discussions proceed.

2 Well, if there are no other questions from my
3 fellow Commissioners, let me thank you for a very
4 informative briefing and to thank the Department of
5 Transportation representative, Mr. Wangler, for being with
6 us here today also.

7 I do think it is important that we keep the states
8 and Indian tribes informed in this. I agree with
9 Commissioner Carr, perhaps we ought to improve some of the
10 things we are doing in our newsletters or maybe more than
11 we are doing so that they know what is taking place. I
12 think that is an important part of our responsibilities.

13 So, again, this transportation of materials is
14 one that the Commission is very interested in and we want
15 to make sure that the staff recognizes that we have this
16 keen interest. Again, we focused mostly on reactor plants
17 here today. We have talked about nuclear materials and
18 transportation. Again, a very important part of our
19 responsibilities, I would just ask that you continue to
20 keep the Commission informed and not wait necessarily for
21 a meeting but to continue to keep us informed as you think
22 appropriate from time to time.

23 Thank you very much for an excellent briefing. I
24 appreciate it. We stand adjourned.

25 (Whereupon, at 11:15 a.m., the meeting closed.)

CERTIFICATE OF TRANSCRIBER


This is to certify that the attached events
of a meeting of the U.S. Nuclear Regulatory Commission
entitled:

TITLE OF MEETING: Current Status of Nuclear Materials
Transportation

PLACE OF MEETING: Washington, D.C.

DATE OF MEETING: Wednesday, August 8, 1988

were transcribed by me. I further certify that said
transcription is accurate and complete, to the best
of my ability, and that the transcript is a true and
accurate record of the foregoing events.

A handwritten signature in cursive script, appearing to read "John Roubidge", is written over a horizontal line.

Ann Riley & Associates, Ltd.

COMMISSION BRIEFING
ON
CURRENT STATUS OF
NUCLEAR MATERIALS TRANSPORTATION

AUGUST 10, 1988

PURPOSE

DESCRIBE STATUS OF PRINCIPAL TRANSPORTATION
TOPICS:

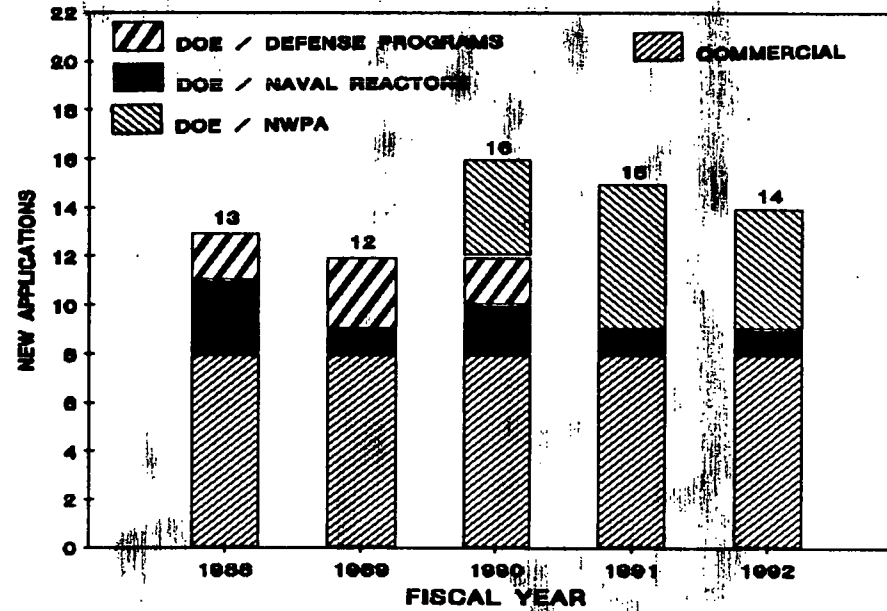
- O PACKAGE CERTIFICATION
- O AIR TRANSPORT OF PLUTONIUM
- O CURRENT ISSUES

PACKAGE CERTIFICATIONS

O WORK LOAD INCREASE DUE TO DOE REVIEWS
FOR NWPA, WIPP, OTHER DOE SHIPMENTS

- NRC REVIEW OF NWPA CASKS NOW
REQUIRED PER NWPAA OF 1987
- DOE REQUESTED TO SET PACKAGE REVIEW
PRIORITIES AND PERFORM PRIOR DOE
CERTIFICATION

NUMBER OF NEW APPLICATIONS FOR PACKAGE CERTIFICATION (FY88 - FY92)



STORAGE CASKS

- 5 TOPICAL REPORTS APPROVED OF WHICH 3
ARE ALSO INTENDED FOR TRANSPORT
- 4 OF WHICH 3 ARE ALSO INTENDED FOR
TRANSPORT
- 0 APPLICATIONS SUBMITTED FOR TRANSPORT/
STORAGE

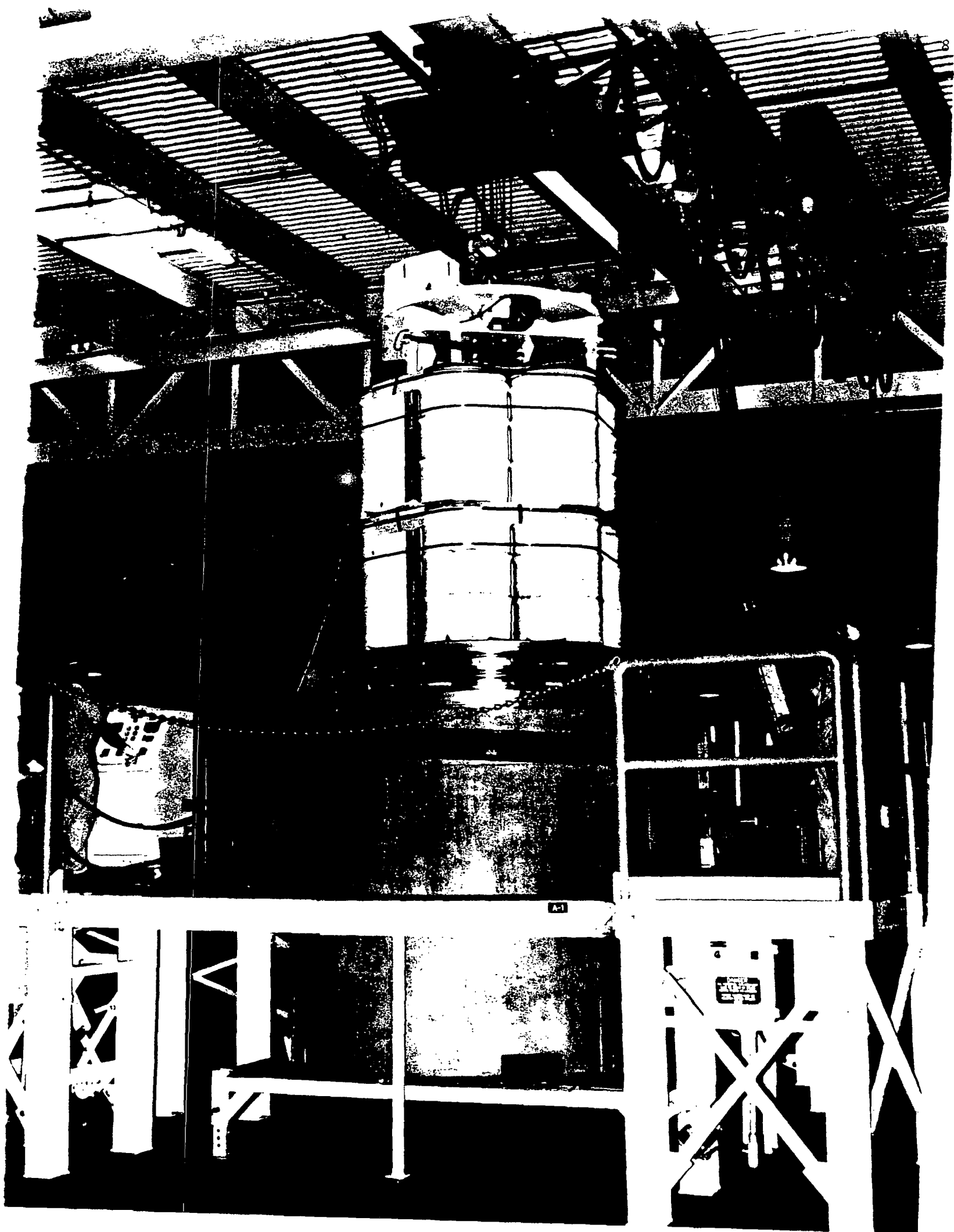
AFFECTED PARTIES UNDERSTAND THAT TOPICAL
REPORT APPROVAL FOR STORAGE IS COMPLETELY
INDEPENDENT FROM REVIEW FOR TRANSPORT

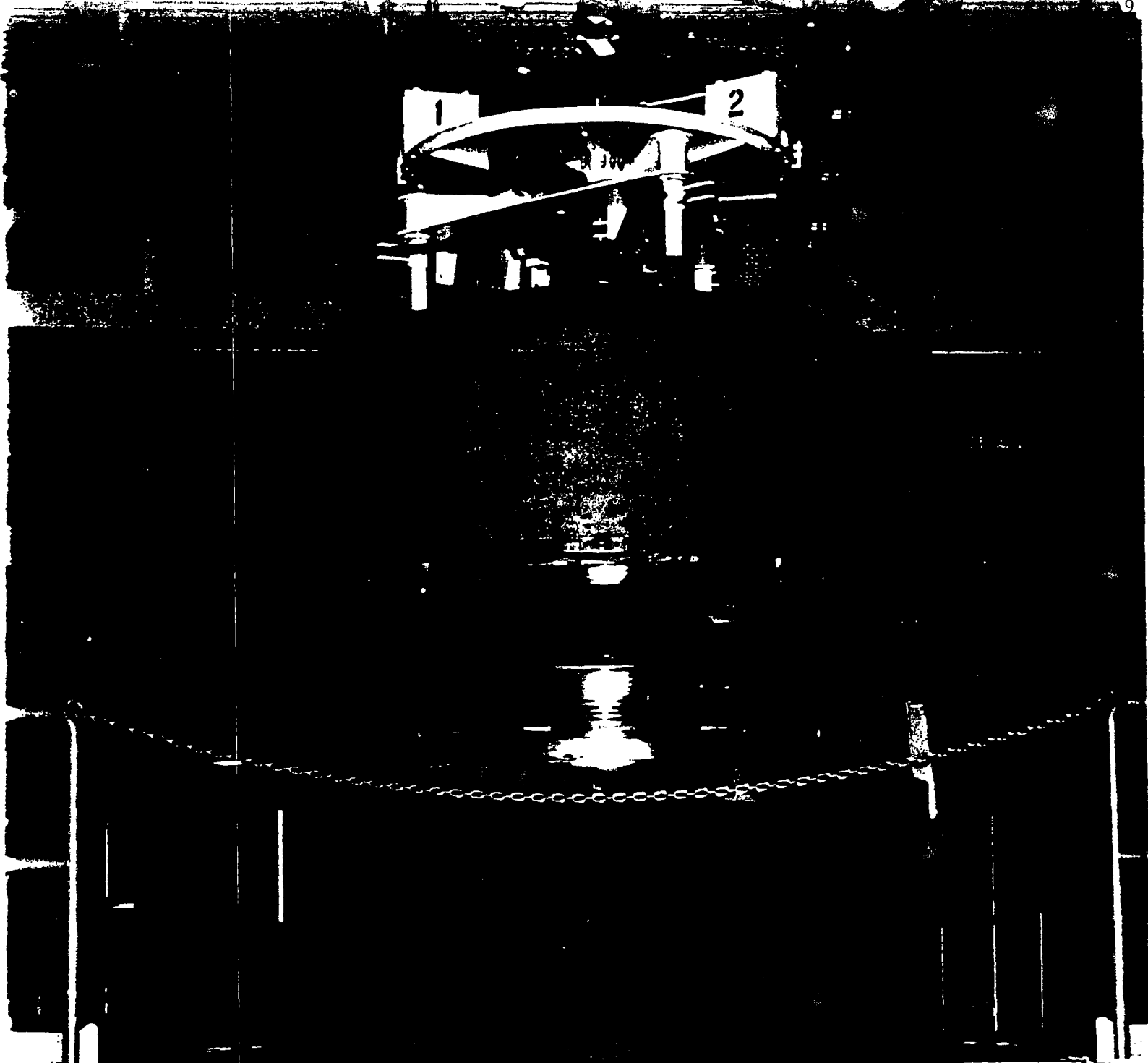
PACKAGE CERTIFICATION (CONT'D)

- o DOE'S TRUPACT II PACKAGE FOR WIPP SHIPMENTS
 - NRC HAS NOT RECEIVED PACKAGE APPLICATION, WHICH HAS BEEN DELAYED FROM FEBRUARY, 1988 TO OCTOBER, 1988.
 - PACKAGE TESTING AT SANDIA IN PROGRESS

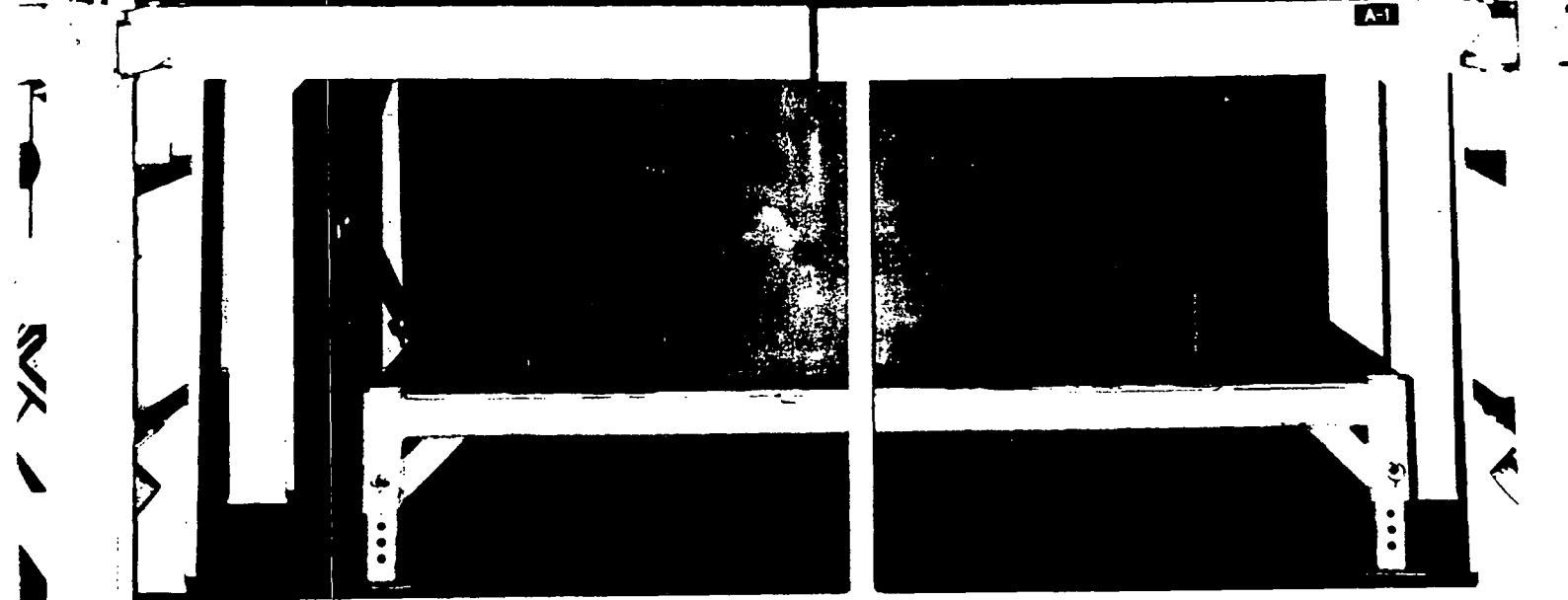
HYPOTHETICAL ACCIDENT CONDITIONS
FOR TYPE B PACKAGES

- O FREE DROP - 30 FT./UNYIELDING
- O PUNCTURE - 40 IN./6-IN. DIA. PIN
- O THERMAL - 30 MIN./1475°F
- O WATER IMMERSION - 3 FT./8 HRS.
(50 FT. NONSEQUENTIAL)





A-1



AIR TRANSPORT OF PLUTONIUM

- O MURKOWSKI AMENDMENT REQUIRES TESTING
PU AIR PACKAGES TO ACTUAL WORST
CASE TRANSPORTATION CONDITIONS
- O WORST CASE CRITERIA WOULD EXCEED
NRC'S EXISTING CRITERIA IN
NUREG-0360
- O COMMISSION PAPER IN PREPARATION
- O SEA TRANSPORT ALSO UNDER
CONSIDERATION

PAT-1 ACCIDENT CONDITION
TEST SEQUENCE

IMPACT - 422 FT./SEC.

CRUSH - STATIC 70,000 LBS.

PUNCTURE - 500 LBS.-10 FT. DROP

FIRE - 60 MIN.

IMMERSION - 3 FT.-8 HRS.

CURRENT ISSUES:
SPEC 2-T RADIOGRAPHIC DEVICES

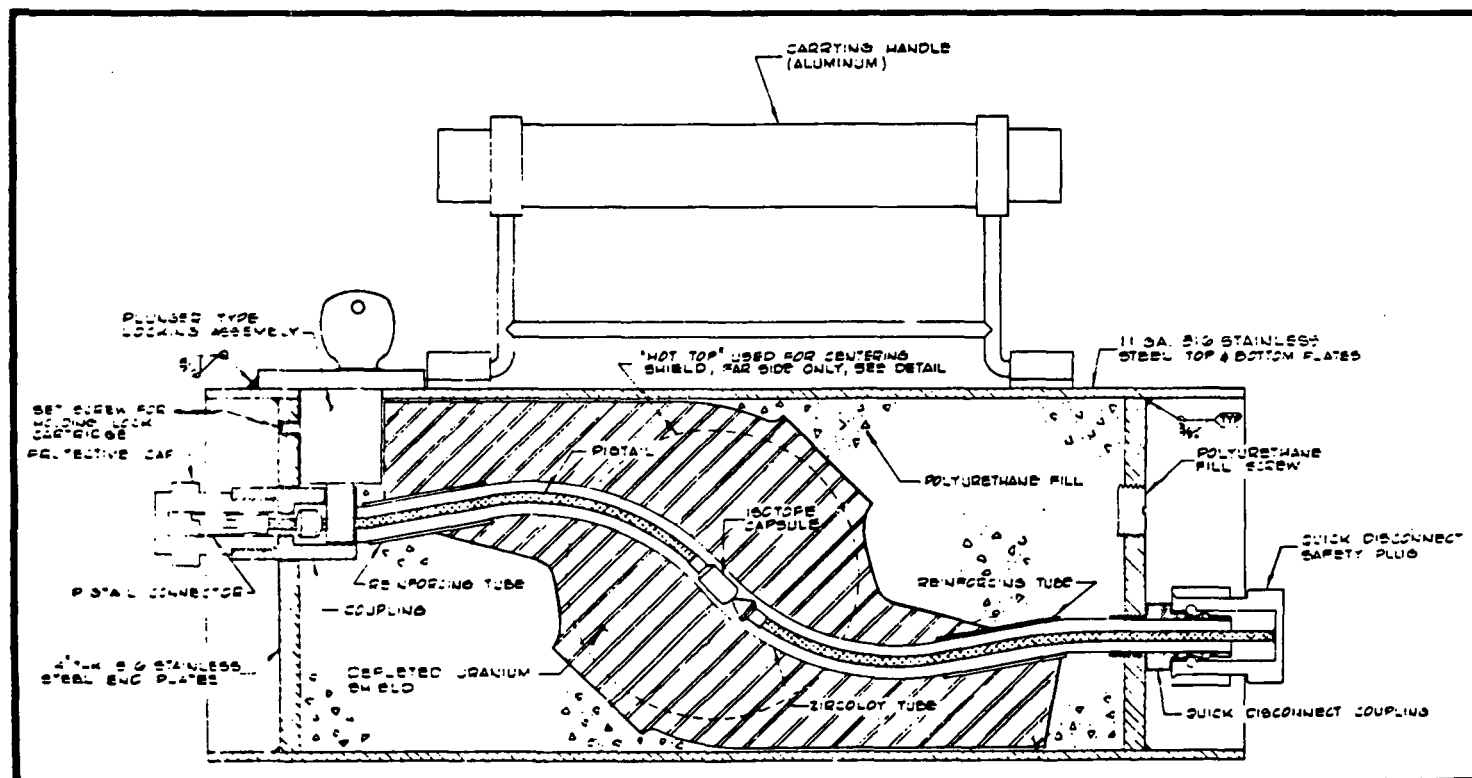
- O DEVICE FELL INTO ROADWAY, WAS STRUCK
AND DRAGGED BY FOLLOWING VEHICLE
- O SOURCE RELEASED FROM SHIELD
- O STATE, DOT AND NRC REVIEWED INCIDENT

spec

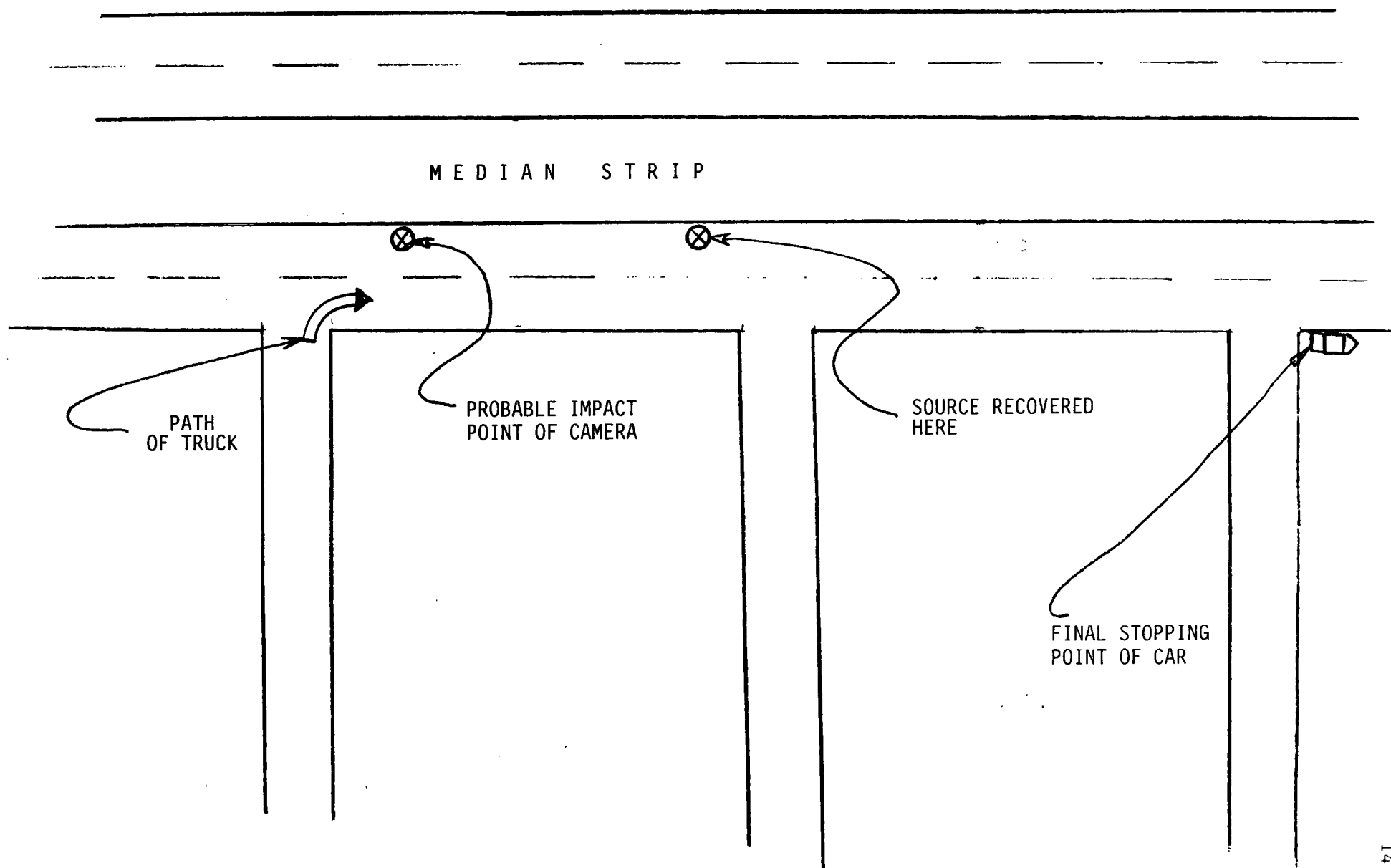
TECHNICAL DATA on the SPEC 2-T

- CAPACITY:** Any strength up to 200 Curies Iridium-192
- WEIGHT:** 40 lbs.
- DIMENSIONS:** Length 12½" Width 4½" Height (exc. Handle) 4"
- RADIATION LEVELS:** Meets applicable requirements of State and Federal Regulatory Agencies.
- CONSTRUCTION:** Welded stainless steel jacket. Depleted uranium shield secured with welded steel straps. Both outlet nipple and control connections protected by steel flanges. Source cannot be removed from rear of unit, even when unlocked.
- HANDLE:** Metal construction. Provides storage for both lock cap and safety plug.
- CONTROLS:** The SPEC control assembly is one of the most advanced and break resistant systems available. It consists of a two piece cast aluminum pistol grip featuring a roller bearing mounted gear shaft. 25 ft. flexible nylon conduit is standard. Source tubes are of flexible construction and utilize quick disconnect couplings. Source tubes are supplied 14 ft. in length standard or can be made to order.
- SOURCE CAPSULE:** Model G-1 stainless steel encapsulation. Meets all applicable regulatory requirements.
- SHIELD:** Approximately 32 lbs. of depleted uranium with a zircoloy tube.

All Specifications Are Subject To Change Without Notice.



Source Production & Equipment Co., Inc.
625 Oxley Street Kenner, La. 70062 Phone 504/464-9471



CURRENT ISSUES: (CONT'D)
SPEC 2-T FOLLOWUP

- O CERTIFICATE OF COMPLIANCE AMENDED
TO REQUIRE SECURE STORAGE OR
OVERPACK IN TRANSPORT
- O NRC BULLETIN ISSUED TO INFORM
LICENSEES OF CHANGES
- O INSPECTION OF OTHER VENDORS
 - REACTIVE INSPECTIONS TO DATE
 - INSPECTION PROGRAM BEING
REEVALUATED

CURRENT ISSUES: (CONT'D)

- O CONTINUED CONGRESSIONAL AND STATE
INTEREST IN TRANSPORTATION
- O SURVEY OF INTERNATIONAL DATA ON
TRANSPORTATION ACCIDENTS