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NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

CLOSED MEETING

Place -

Date - Sunday, 1 April 1979 Pages 1 - 45

(THIS TRANSCRIPT WAS PREPARED FROM A TAPE RECORDING.)

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NUCLEAR REGULATORY COMMISSION

Sunday, 1 April 1979

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Tape 2-A, continuation of the same meeting.

1:15 p.m.

MR. AUSTIN: Each release cateogry in WASH-1400 has associated with it certain curies release.

COMMISSIONER GILINSKY: All right. Let's say reactor safety studies release, and I would take out the PWR part of it --

COMMISSIONER KENNEDY: I don't --

MR. AUSTIN: Mid-level.

COMMISSIONER KENNEDY: Don't forget this. You see, this is what they're talking about. Here's where all those clients come from.

COMMISSIONER GILINSKY: This will be explained in the back so --

COMMISSIONER KENENDY: Oughtn't we to refer to that

COMMISSIONER GILINSKY: I'd like to have a version of this that can be turned over to people who don't know a thing about it.

COMMISSIONER KENNEDY: Look at this.

COMMISSIONER GILINSKY: Yeah.

COMMISSIONER KENNEDY: You see? This is pretty clear.

COMMISSIONER GILINSKY: I know, but I think we can just say that all the foregoing assumes this.

COMMISSIONER KENNEDY: Oh, all right. Okay.

COMMISSIONER GILINSKY: We'll get to that.

COMMISSIONER KENNEDY: All right.

COMMISSIONER GILINSKY: We'd like it not to clutter up--

COMMISSIONER KENNEDY: All right.

COMMISSIONER GILINSKY: Safety study of -- mid-range?

MR. AUSTIN: Mid-range.

COMMISSIONER GILINSKY: Is that what it is?

MR. AUSTIN: Yes

COMMISSIONER GILINSKY: Mid-range release.

COMMISSIONER KENNEDY: Does anybody know what that means?

MR. AUSTIN: I think, can't you say the PWR-4 category.

COMMISSIONER GILINSKY: Well, nobody is going to know what that is. I think we could say-- What we're saying is not maximum, less than maximum release, or something like that.

COMMISSIONER KENNEDY: That isn't going to be meaningful, unless somebody knows what a maximum release would be.

MR. AUSTIN: Significant release according to the coefficient.

COMMISSIONER GILINSKY: Let's say that.

COMMISSIONER KENNEDY: Okay.

MR. KENNEKE: Yeah.

COMMISSIONER KENNEDY: All right.

COMMISSIONER KENNEDY: Vic, you forgot to tell her to leave the back page, the last column off. She did it perfectly, but -- tell her she doesn't need to worry, just white it out. Tell her on the next one she shouldn't.

COMMISSIONER GILINSKY: What did you say?

JOHN AUSTIN: Significant release of core fission products. Significant releases, you know. Get the core in there because it's a core melt.

COMMISSIONER GILINSKY: I wouldn't put 24 hours. I would put parenthesis in here,time for pressure relief to exceed containment failure.

MR. AUSTIN: Time for containment failure.

COMMISSIONER KENNEDY: Time for containment failure.

COMMISSIONER GILINSKY: Yeah. All right. Time for containment failure, alright. Let's put 90-degree sector over here and that will take care of it, instead of having an asterix. Okay?

COMMISSIONER KENNEDY: Yeah. Sure.

COMMISSIONER GILINSKY: Well, first of all it should have more room here.

COMMISSIONER KENNEDY: It's the same thing down here.

COMMISSIONER GILINSKY: Five miles, 90 degrees.

COMMISSIONER KENNEDY: While you're doing that

do it at the bottom at the same time.

COMMISSIONER GILINSKY: and 10 miles, 180-degree sector. Okay? And 10 miles, 180 degrees. Okay?

So you've got "precautionary" here. Stay inside, make sure you're in explosive range. Precautionary, and now a question mark. Explosion. I think you have to put in the word "explosion" on the next line, just to make it clear.

COMMISSIONER KENNEDY: Which one?

MR. THOMPSON: What a minute, yeah, under release time?

COMMISSIONER GILINSKY: Under mixture and explosiv range. In the next box I would put "explosion." No significant change in reactor. In other words, you didn't expect it, but it went thru.

COMMISSIONER KENNEDY: Yeah. Okay. Explosion.

COMMISSIONER GILINSKY: Okay. No significant change.

COMMISSIONER KENNEDY: And then next phrase you should say explosion, too.

COMMISSIONER GILINSKY: Any release?

COMMISSIONER KENNEDY: No.

COMMISSIONER GILINSKY: Here?

COMMISSIONER KENNEDY: Yeah, explosion, core crushed.

COMMISSIONER GILINSKY: Now we don't have here worse items, significant breach of containment, et cetera, but--

COMMISSIONER KENNEDY: Well, they said back here-- They said back here Rupenhouse indicates the pressure vessel would not rupture.

COMMISSIOER GILINSKY: Okay, because, this is the one which could really go boom and break open right up. But that's why mixture in the explosive range says--

COMMISSIONER KENNEDY: They're working on that bubble problem. They've got a new idea.

COMMISSIONER GILINSKY: Oh, yeah?

MR. SAUTER: Al Kenneke isn't here?

COMMISSIONER GILINSKY: Okay, lets--

COMMISSIONER KENNEDY: Using the sulfide.

MR. SAUTER: Has he talked to you about the 8-hour business yet?

MR. THOMPSON: Yes, he did mention that. 8 hours

MR. SAUTER: You know, to get out.

MR. THOMPSON: I think he's planning to take it out.

MR. SAUTER: You want to have some qualifying words in there which you can--

(Simultaneous discussion.)

COMMISSIONER KENNEDY: But they got an oxygen

absorber instead, sulfides, and you wind up getting a sulfate, chewing up the oxygen.

COMMISSIONER GILINSKY: Sulfite?

COMMISSIONER KENNEDY: Yeah, sulfite.

COMMISSIONER GILINSKY: That right?

COMMISSIONER KENNEDY: Yes. And then it chews up the oxygen.

MR. AUSTIN: The trick, that will only get the oxygen in the water.

COMMISSIONER GILINSKY: Let's work on our chart, okay? Later we'll solve the reactor problem.

COMMISSIONER KENNEDY: If its against the water, oxygen won't be releasing and increasing the amount of oxygen in the containment.

COMMISSIONER GILINSKY: Let's see. Okay. Here, core crushed, unlikely, and then say release in time-- I would just put it back here, see 2. Expected planned event, I would put core melt here.

COMMISSIONER KENNEDY: Yeah.

COMMISSIONER GILINSKY: Core melt, see 2. Now as your core --

COMMISSIONER KENNEDY: Yeah. Okay.

COMMISSIONER GILINSKY: Okay?

COMMISSIONER KENNEDY: Yeah.

COMMISSIONER GILINSKY: I'd put on this thing

evacuate. If something happens in there for one reason or another, anybody evacuates the control room, which I would think would happen.

On the other hand I don't know what happens. When, do these guys know that there's a core melt do they stay there?

COMMISSIONER KENNEDY: They stay there for a while. They stay there until such time as activity levels are so high that the dose rates won't permit. Isn't that correct?

MR. AUSTIN: They should, because there are things they can still do, containment space --

COMMISSIONER KENNEDY: Yeah. And indeed, they may leave for a while --

MR. AUSTIN: To the secondary.

COMMISSIONER KENNEDY: -- to the secondary, waiting to find out what the activity levels are. When the activity levels drop, if they do, they go back.

COMMISSIONER GILINSKY: And what's the secondary? Control room?

COMMISSIONER KENNEDY: The secondary control room, yeah, which has less capability.

MR. AUSTIN: But clearly would have that capability for which the condition got you there.

COMMISSIONER GILINSKY: Well, what would we say here? The loss of control? I would say treat like --

like major release, something like that.

COMMISSIONER KENNEDY: Yes, that's fair.

COMMISSIONER KENNEDY: We've got to do something with it, except very temporarily. I first, maybe it was just me, when I first read it.

MR THOMPSON: It really doesn't need to be put in there, I mean because that's really-- if you're just temporarily evacuating, you're not evacuating the control room.

COMMISSIONER KENNEDY: That's right.

COMMISSIONER GILINSKY: Treat like major release, huh?

COMMISSIONER KENNEDY: Yeah. Sure.

COMMISSIONER GILINSKY: Release Okay? Evacuate First of all, we don't have to say "evacuate." Just evacuation scenario, right? Can't we just drop that?

COMMISSIONER KENNEDY: That's right. You can. Yes

COMMISSIONER GILINSKY: Let's just drop that.

COMMISSIONER KENNEDY: Oh, no. No, wait, wait, wait. Yes, you do. Becasue they're two different things. One's evacuation, the other is stay inside. Right? That's what I was suggesting.

COMMISSIONER GILINSKY: All right, good enough, don't waste time. All right. Why don't we just turn this thing over.

(Simultaneous discussion.)

COMMISSIONER GILINSKY: Would you get her to type this "Unplanned Events" on the top, please?

MISS HARDING: Yes. Isn't there --

(Simultaneous discussion.)

MISS HARDING: I want to tell some of the people there that you could lose the power.

COMMISSIONER KENNEDY: Yes, but there's a loss of Tht's in the front sheet. On the front page, it's a loss of power.

MR. THOMPSON: That was loss of offsite power which goes not--

COMMISSIONER GILINSKY: We can say loss of the control room.

(Simultaneous discussion.)

MR. THOMPSON: You evacuate a loss of the control room.

COMMISSIONER KENNEDY: Evacuate or loss --

MISS HARDING: -- the control room.

COMMISSIONER KENNEDY: -- the control room.

COMMISSIONER GILINSKY: Okay. For whatever reason, I don't know why. Get them to tack that on and add this, okay? Now, let's, let us now put down the assumptions that this is being done, because you say that right away.

COMMISSIONER KENNEDY: Well, here they --

COMMISSIONER GILINSKY: They though this was very important. What about the stuff right at the beginning?

COMMISSIONER KENNEDY: On the front page?

COMMISSIONER GILINSKY: They thought this was terribly important. Somehow, it didn't do much for me.

VOICE: It actually should be evaluated at the hour of time.

COMMISSIONER KENNEDY: I don't have any problem with putting it on there. It didn't do an awful lot for me either, but, you know, if they think it's terribly important I think we ought to put it there.

(Simultaneous discussion.)

COMMISSIONER GILINSKY: It's just two sentences.

COMMISSIONER KENNEDY: What's the last one?

COMMISSIONER GILINSKY: An actual release or potential should be evaluated in there entirety.

COMMISSIONER KENNEDY: Well, that's skipped-- I think it's the last sentence; is the important one. Am I right? I think so.

MR. THOMPSON: Certainly, for making some decision.

COMMISSIONER KENNEDY: Yeah. I think we ought to leave it there.

COMMISSIONER GILINSKY: Alright, let's leave it, okay?

COMMISSIONER KENNEDY: And also, Vic, it pertains to --

COMMISSIONER GILINSKY: You know, we could put this on the bottom of the first table.

COMMISSIONER KENNEDY: My suggestion --

COMMISSIONER GILINSKY: Why don't we say these tables include another assumption.

COMMISSIONER KENNEDY: Okay.

COMMISSIONER GILINSKY: All right?

COMMISSIONER KENNEDY: Yeah.

COMMISSIONER GILINSKY: These tables include anoth assumption.

COMMISSIONER KENNEDY: Now here are the other assumptions.

COMMISSIONER GILINSKY: Then we say "constitute conservatism." All right. Could you get this put on the bottom of these?

MISS HARDING: You want it on the bottom of both of them?

COMMISSIONER GILINSKY: Of the first one, just --

MISS HARDING: The first page?

COMMISSIONER GILINSKY: Yeah, just the first page.

COMMISSIONER KENNEDY: Here are the rest of the assumptions.

COMMISSIONER GILINSKY: All right. Now let's go to the assumptions.

COMMISSIONER KENNEDY: Page 7.

COMMISSIONER GILINSKY: Is this it, the weather.

COMMISSIONER KENNEDY: The weather, heat generation, and then, if you need to include some of this stuff--

COMMISSIONER GILINSKY: Well, we'll just attach it in the back --

COMMISSIONER KENNEDY: Because they're part of the assumptions -- you don't need this.

COMMISSIONER GILINSKY: I know, we'll --

COMMISSIONER KENNEDY: But that's a set of assumptions.

COMMISSIONER GILINSKY: I don't know that we need all this stuff having said it previously. Do we need that first paragraph, can we put in a --

COMMISSIONER KENNEDY: I guess I'd leave it there.

COMMISSIONER GILINSKY: Because we have the conservative business.

MR. AUSTIN: On that first page when you said conservativeism of members, I think Steve said that they did this realistically with the objective of not being optimistic is his definition of conservative. So it's not a-- How about just say realistic?

COMMISSIONER KENNEDY: It's not a calculated--

COMMISSIONER GILINSKY: We aren't being realistic?

MR. THOMPSON: Probably should

COMMISSIONER GILINSKY: Realistic. Okay. But then why are we saying conservative. The condition was in the next few days?

MR. AUSTIN: That's how he defined conservatism.

MR. THOMPSON: In other words, you're not taking the worst meteorology you could have, but look --

COMMISSIONER GILINSKY: Why don't we say realistic then; it's kind of realistic leaning to conservative, but let's not --

MR. THOMPSON: Yeah.

COMMISSIONER GILINSKY: Let's go on conservative, a little conservatively when we do it. All right. I want to put in a sentence: rain could meet the higher load and local radioactivity level.

COMMISSIONER KENNEDY: That's fine. It's the virtual truth.

(Laughter.)

COMMISSIONER GILINSKY: Okay. Heat generation so on so on, so on. Okay.

COMMISSIONER KENNEDY: That's fine.

(Simultaneous discussion.)

COMMISSIONER GILINSKY: Now what about this thing? What about this business?

COMMISSIONER KENNEDY: I think we need th[illegible].

COMMISSIONER GILINSKY: What about that one?

(Simultaneous discussion.)

COMMISSIONER KENNEDY: This one, too.

COMMISSIONER Gilinsky: Do we need to take employees out?

COMMISSIONER GILINSKY: Not yet.

COMMISSIONER KENNEDY: This whole sheet ought to go.

MR. THOMPSON: I think you're really --

(Simultaneous discussion.)

COMMISSIONER KENNEDY: Is this the kind of assumptions that are really central to that entire set of calculations that are involved in core melt down sequences. Now I think you've got everything you need. I don't think -- I wouldn't --

COMMISSIONER BRADFORD: So, those are people -- several parts --

COMMISSIONER GILINSKY: What about the specific sequence?

COMMISSIONER BRADFORD: Might you have vectors of a LOCA?

COMMISSIONER KENNEDY: Which one?

COMMISSIONER GILINSKY: Just stick that back there.

COMMISSIONER BRADFORD: Would you?

COMMISSIONER KENNEDY: This? I don't know.

MR. THOMPSON: The weakest thing is going to go fir

COMMISSIONER BRADFORD: That's probably what we say about everything else.

MR. THOMPSON: Well, you will still get that water hammer. That water is going to have a force that will knock over a building.

COMMISSIONER BRADFORD: So, in fact then, how would you get water back over the core?

MR. THOMPSON: I'd say you'd just use the normal injection system. Unless your piping were ripped off.

COMMISSIONER KENNEDY: I couldn't understand what Kenneke was telling us. But, it is all changed.

MR. THOMPSON: You mean the whole thing; when?

COMMISSIONER KENNEDY: No.

MS. STETLER: No.

COMMISSIONER KENNEDY: More than that.

COMMISSIONER BRADFORD: You mean the injection actually sprays from underneath?

MR. AUSTIN: That's designed to relieve the pressure. It's not like the BWR.

COMMISSIONER KENNEDY: That -- Well, you could put that whole thing on there, back of the back, and nobody has to read it. You can just call it the appendix -- just the way it is.

COMMISSIONER GILINSKY: But that has considerate stuff in it so, I don't know --

COMMISSIONER KENNEDY: Well, you take all those things out, and you put this, this, this page and this; these, and you take this one out. These 4 pages. How's that? We've already got this one. We've got this one in -- conclusive summary.

COMMISSIONER GILINSKY: But that makes the assumption there too.

COMMISSIONER KENNEDY: No. I don't think so.

COMMISSIONER GILINSKY: But you see what's available, and what we need to find, and this whole thing will have gotten away.

COMMISSIONER KENNEDY: Yes. That's right.

COMMISSIONER GILINSKY: We need this business all right.

COMMISSIONER KENNEDY: We need that business and we need --

COMMISSIONER GILINSKY: This would be here. This is summary of action alternatives. That's what this is. Why don't you have him put that together, --

COMMISSIONER KENNEDY: -- with the other thing, he is. He's supposed to be putting that other table --

COMMISSIONER GILINSKY: Did he do it?

MS. STETLER: It is, just take out the in eight hour. Do you have an explanation for that now, or are you going to wait.

(Simultaneous general discussion.)

COMMISSIONER KENNEDY: What is this? We missed something, Victor.

COMMISSIONER BRADFORD: If you don't have any warning time, that's not a precautionary evacuation.

COMMISSIONER GILINSKY: This is on the basis of knowing that, it's indeterminate.

COMMISSIONER BRADFORD: No, Darrell Eisenhut told me this morning those were all (inaudible).

MR. AUSTIN: That warning time is to a dose.

COMMISSIONER GILINSKY: It's flammable.

MR. THOMPSON: I just talked to Case and Case said it wasn't. He didn't think it was an explosive -- I mean flammable. Let me talk to Eisenhut again.

COMMISSIONER GILINSKY: I think at this point we're saying that it's (inaudible).

COMMISSIONER KENNEDY: It's what?

COMMISSIONER BRADFORD: All right, if Darrell says this morning it's for all intents clear, then --

COMMISSIONER GILINSKY: Well, why don't I ask him?

COMMISSIONER KENNEDY: Well, it says something about that right back here, about what this is based on. Hydrogen explosion.

COMMISSIONER BRADFORD: Right.

COMMISSIONER GILINSKY: No, but I think that --

COMMISSIONER KENNEDY: That's the pressure vessel.

COMMISSIONER GILINSKY: Yeah.

COMMISSIONER KENNEDY: That's the pressure vessel.

COMMISSIONER BRADFORD: So is this, though.

MR. AUSTIN: This is merely your pending case.

COMMISSIONER KENNEDY: All right. It says it could rupture the vessel and/or flush the core. Rough analysis indicates the pressure vessel would not rputure.

COMMISSIONER BRADFORD: Joe thinks it would. One rough analysis against another, or at least Joe thought it might.

MR. AUSTIN: I think what this says is what this warning time is to when you get to a certain dose. At this level you have yet to have an explosion. If you don't know you've got the mixture there, what is your response to it? According to this you would say a precautionary two-mile evacuation.

COMMISSIONER GILINSKY: I would say undetermined.

COMMISSIONER BRADFORD: But how can you -- How can you -- put down on the same line, core crushed. Mixture in the explosive range is somewhere earlier in the sequence of events.

COMMISSIONER GILINSKY: Right.

MR. AUSTIN: This one's the explosion, core crushed.

COMMISSIONER GILINSKY: Yeah, but this one actually took place.

MR. AUSTIN: We added the word, explosion.

COMMISSIONER GILINSKY: Well, you could put in here potential hydrogen explosion, and here hydrogen explosion.

Shall we do that?

COMMISSIONER KENNEDY: I wouldn't. I think it's all right the way it is.

COMMISSIONER BRADFORD: Well, but then, if you carry it on into the evacuation scenario, what you're saying here is there is no evacuation, there's no precautionary evacuation.

COMMISSIONER GILINSKY: Well, you're not going -- This one is not because it's happened -- and nothing has changed.

COMMISSIONER BRADFORD: Well, this is after the explosion happened.

COMMISSIONER KENNEDY: It has happened.

COMMISSIONER BRADFORD: Nothing changes.

COMMISSIONER GILINSKY: Here it just takes you up to the core melt scenario.

COMMISSIONER BRADFORD: Why do you need the hydrogen explosion in there. Before I'd -- it takes some time before you learn nothing has changed and you have this --

COMMISSIONER KENNEDY: No, no. But you know you're not getting -- The question is of course the only thing you're concerned about as to the specific event, the thing you're concerned about here is releases. You're going to know whether you've got releases --

COMMISSIONER BRADFORD: Right. But --

COMMISSIONER KENNEDY: -- as a result of that very shortly after the event.

MR. AUSTIN: It's being degraded.

COMMISSIONER KENNEDY: But that's a different situation.

MR. AUSTIN: If you don't know about it now.

COMMISSIONER BRADFORD: You see, but it's going to take some checking at that point before you are aware of the extent of the damage, and I would think before you -- If you had a good quantity of the core rattling around.

COMMISSIONER GILINSKY: Well, why don't we --

MR. THOMPSON: You want me to report back on where we think we stand on the hydrogen buble? Right now we believe it takes 5 percent of oxygen to become flammable; 11% to be a detonation mixture. Right now we think we've got 5 percent. And they're doing some quick recalculations because they think the 5 percent flammability number may be high, like it may be 4.8 or 4.7. But so, for all practical purposes, we've got to assume the mixture is flammable, but I don't think anybody is assuming right now that he thinks it's an explosive mixture.

COMMISSIONER BRADFORD: Darrell specifically says --

MR. THOMPSON: Those are Darrell's numbers right there.

COMMISSIONER BRADFORD: Okay.

MR. THOMPSON: Darrell wrote that. But they --

Saul Levine is on the phone, telling somebody to run additional --

COMMISSIONER GILINSKY: -- hard numbers that they know of because yesterday, they said it was 2-1/2 percent.

MS. STETLER: Did they give you some feel for the rate?

MR. THOMPSON: Generation rate? I didn't --

MR. AUSTIN: Is that at 1,000 psi?

MR. THOMPSON: At 1,000 psi.

COMMISSIONER BRADFORD: I would think that any hydrogen explosion in the reactor vessel would lead to evacuation.

COMMISSIONER GILINSKY: Oh, hey, we're not doing anything for the plant.

COMMISSIONER KENNEDY: No, we haven't done anything.

COMMISSIONER GILINSKY: Let's do the same thing. Can you get a blank. Let's see, how do we handle that?

COMMISSIONER KENNEDY: You need a blank, just like we had.

COMMISSIONER GILINSKY: See if you can get a blank so we can write --

MS. MUCCHETTI: One of those blank charts again?

COMMISSIONER GILINSKY: Yeah.

COMMISSIONER KENNEDY: Meanwhile, I'm going to check to see of the President is arriving at the site.

COMMISSIONER BRADFORD: It's a test of significance whether the President's arrival is more important than the arrival of another percent of oxygen.

COMMISSIONER KENNEDY: I think it's more likely to have an increased level of carbon dioxide with the increased numbers of people.

COMMISSIONER BRADFORD: True. Well, I don't know what to put here. If you knew that the mixture in the explosive,range would precautionary evacuation be two miles, five miles? Two,you think?

MR. AUSTIN: I would assume you'd have loss of vital functions somewhere so I would go to --

COMMISSIONER BRADFORD: This is more like an explosion isn't it? This is after you discover that --

MR. THOMPSON: This is just the first one right here.

COMMISSIONER BRADFORD: If you knew that you could have an explosion.

MR. THOMPSON: Makes it just in the explosive range.

MR. AUSTIN: Precautionary 2 mile evacuation.

COMMISSIONER BRADFORD: Yeah. Yeah, at least that, but my question was whether you stop at 2.

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COMMISSIONER KENNEDY: I would.

COMMISSIONER BRADFORD: I was going to prepare a chart with different views.

(Laughter.)

(Recording difficulties.)

1:50 p.m.

MR. BUDNITZ: More than 2 together, not in that room. Look, I'm sorry, that five minutes was getting a helicopter to get the stuff.

We now have two different groups doing calculations, one in Pittsburgh, one in National Reactor Research Lab, and a third group in Idaho working with them. And we now understand what the flammability problems are with that stuff in the upper head, and I'll give you the numbers, if I can find them.

COMMISSIONER AHEARNE: Now this is at peak. But you need something like 600 degrees Farenheit?

MR. BUDNITZ: Yes. Well, here's what I'm talking about. We've got a vessel the pipe's out here, and up here, there's gas. All right? We now think there's 3 to 4 percent oxygen, and the rest is hydrogen. Okay? There's hydrogen and oxygen bubbling up because of continuous ionization in this thing. It builds up.

There's a point at which that oxygen will get to be enough so that if a fire were to start, it would burn. Right now if you put a spark plug in there it would quench; not enough oxygen. At standard temperature and pressures, that limit is 6 percert; it's actually 5.8.

The guys did calculations of 70 atmospheres, which

is where we are, and it turns out it's 4.8 percent, we were saying 5. There's now a guy saying 4.8. I said, gee, that's two significant figures. And he said yeah, but it's 4.8. I've got another guy that says it's 5.0. So that's what it is.

Now at 5.0 if you light a spark it will burn, and it burns for about 10 milliseconds, during which time all of the oxygen that's in there is used up. H_2O, twice as much hydrogen is used up, and that's where it stays. When that burn takes place in a 10 or 20 millisecond process you get a pressure pulse which is proportional to the pressure there, not an increase in pressure but a factor. It turns out the factor is 5.5. At 1,000 psi, that's 5,500 psi.

COMMISSIONER AHEARNE: When it's burning?

MR. BUDNITZ: During the pulse. During the burn. During that millisecond of -- During that 10 milliseconds you're going to get a pressure pulse which is a factor, and I was surprised there wasn't a pressure increase, but it's not. I understand the physics of that, which is -- which was kind of surprising to me. Okay?

So if you get that burn up there and it goes to 5,500 psi, we're in trouble, and the reason why we're in trouble is with the yield stress of that vessel, which we thought was a little higher, we think is around 5800 or it might be 6100 psi.

COMMISSIONER GILINSKY: How come it pulses?

MR. BUDNITZ: Ten milliseconds long. I have the joules but --

COMMISSIONER GILINSKY: What does that mean? Is it one big --

MR. BUDNITZ: It's a ten millisecond pressure pulse.

COMMISSIONER GILINSKY: Well, what does it do? Is it a spike?

MR. BUDNITZ: It will cause -- It's a hoop stress problem and it will cause a crack which, if you were looking out, it would be like this.

COMMISSIONER AHEARNE: Bob, when you say it's a ten millisecond burn do you mean it takes ten milliseconds for the whole wave to go through?

MR. BUDNITZ: That's right. For that whole -- For that whole --

COMMISSIONER AHEARNE: For the wave it to go through. But now is the detonation wave ten milliseconds long?

MR. BUDNITZ: Yeah.

COMMISSIONER BRADFORD: When that happens --

COMMISSIONER AHEARNE: It is a fairly sharp rise?

MR. BUDNITZ: It's a sharp rise, ten milliseconds long, and then it comes back down.

COMMISSIONER BRADFORD: What happens to the surface of the water --

MR. BUDNITZ: Yeah, that pressure pulse is going to be everywhere. The most important --

COMMISSIONER GILINSKY: What's the detonation --

MR. BUDNITZ: But most importantly -- No, the explosion's a little later I'll come to that. This is not an explosion. This is a chemical burn, but it's fast.

Most importantly is where the gas is above the water, there's the head. Okay? It really goes like this, and then there's the head, and then there's bolts. And the water is like here. And it's here that you're going to get that you know.

And from the inside out it's going to be like that. That's the way it's called hoop stress. And we might lose that vessel, which we can't afford. Although, by the way, losing it at the top is going to be like a LOCA; it's not like losing it at the bottom, but it still is bad.

COMMISSIONER BRADFORD: Do you expect any kind of time sequence?

MR. BUDNITZ: There is going to be a propagated pulse everywhere in the system. We're going to lose valves; we're going to lose seals; we're going to lose the pumps. We just can't stand that.

There was a time only yesterday when people were saying that Well, if it burns, it burns.

COMMISSIONER GILINSKY: I just said that.

MR. BUDNITZ: Now there's another thing, there's another point --

COMMISSIONER AHEARNE: Another source of misinformation.

MR. BUDNITZ: -- which you have to say -- and that is if that oxygen gets to the 5 percent, 4.8, nothing happens unless you set if off with a spark. The spark you need is about 1800 degrees Kelvin, a very high spark to set it off. If you have any -- But of course any small thing gives you that for the nanoseconds that it takes. And then it just goes.

Now if you don't have anything like that, if there's no electrical things or anything like that, you could raise that oxygen and just keep raising, raising, raising and nothing happens. In fact, the guy said you can get all the way stoichiometry, which is one third, two thirds hydrogen H_2O, and it would sit there forever.

COMMISSIONER BRADFORD: What does stoichiometry mean?

MR. BUDNITZ: That means we're in -- Hydrogen and oxygen H_2O is exactly two thirds, one third. It's the perfect mixture.

COMMISSIONER BRADFORD: And that's the most explosive?

MR. BUDNITZ: That would be the most explosive.

On the other hand, the closer you get, the lower that 1800 degrees Kalvin gets, until you're awfully close to a trigger.

But the point I'm making is that you can raise the oxygen level if it's absolutely steady, absolutely steady, and nothing happens forever. But it's just not something you would ever want to do.

COMMISSIONER BRADFORD: When you say lower it until you are close to a trigger, trigger means that it would happen at the --

MR. BUDNITZ: The amount of --

COMMISSIONER BRADFORD: -- amount of oxygen that's in there now?

MR. BUDNITZ: No. Let me say. As the oxygen goes up from the 5 percent at which it would support a flame to one-third, which is H_2O, the amount of energy it takes to start it becomes less and less and less and less, until at two-thirds, one-third, the amount of energy is really quite small. It might even be induced by things like shloshing. At that.

So that's a -- But of course you'll never get there for a number another reason --

COMMISSIONER AHEARNE: Many, many, many percentages of --

MR. BUDNITZ: You'll never get there for another reason that I'm going to tell you, that is if the oxygen were to go from 5, 6,7, 8 or 9, and at just over 10 percent -- yesterday we thought it was 12, we now -- all agree it's around 10 percent. At 10 percent we reach a regime where

if it starts, it doesn't burn, it explodes.

A burn would be 10 or 20 milliseconds, and an explosion will be microseconds. And a microsecond explosion is a true, coherent, complete combustion all at once. And it turns out that you get a pressure pulse which is again a factor above the present, and it's a factor of 13-1/2, 13,000 psi. Gonna lose everything if we get that.

COMMISSIONER AHEARNE: What's the difference between yesterday in this portion?

MR. BUDNITZ: Okay. Now again --

COMMISSIONER AHEARNE: You've got a 14,000 --

MR. BUDNITZ: You've got 1400?

COMMISSIONER AHEARNE: 14,000/

MR. BUDNITZ: 14,000. We're getting 13-1/2. That's about the same number.

COMMISSIONER AHEARNE: Yes.

MR. BUDNITZ: Okay? So if you ever got to 10-plus percent, then you got the spark, you're going to blow everything. And this business about 5500 being closer above the yield stress here, it's just way above it, and we're going to lose everything.

Now there's a more important point and that is that again, if you're at 10 or 11 percent you can sit there and not much happens until you get a spark. But the key point in this whole thing is that that's all at the present temperature --

COMMISSIONER AHEARNE: Tell them about the ringing.

MR. BUDNITZ: -- which is 280F.

COMMISSIONER AHEARNE: Tell them about the ringing,

MR. BUDNITZ: I'll tell you abut the ringing, too.

COMMISSIONER AHEARNE: -- which is important.

MR. BUDNITZ: It's another point.

This is all 280 degrees F., which is where we are.

Now in either case, if you have this millisecond pulse which is the burn or the microsecond pulse which is the explosion, the pulse doesn't just happen once and it's over. It's like a wave which will bounce back and forth because there is no way to damp that energy rapidly except by the mechanism of the H_2O which you made in the chemical explosion,

congealing one on the other and finally you get condensation and it will damp out.

The millisecond thing could last for seconds, one or two or three seconds. The microsecond thing should probably only last ten's of milliseconds.

It's still very bad. We just--

COMMISSIONER AHEARNE: Instead of one sharp spike.

MR. BUDNITZ: So it's one sharp, followed by a bunch of rings. Okay? There's just no other way to get that energy out of there.

Well, now here's the key point. We're at 280 degrees F. If you gradually raise the temperature up, you finally get to 680.

COMMISSIONER AHEARNE: Isn't that the bulk?

MR. BUDNITZ: The bulk temperature. Okay? The bulk temperature of the water and the gas.

As soon as that gas gets to 680 degrees F., 360 degrees C., it will spontaneously combust without any ignition, and that's true at any mixture about the 5 percent which will sustain combustion.

If it was at 10 percent and you reach 680, it would explode, and if it's at 5 to 10, it will burn. Okay? And that's now calculated by a couple of people, and one says 680 and the other one gives me another 20 degrees above that, so we're trying to use 680 to be conservative.

Now that tells us that we've got to keep that water below that, because the water and the gas are in some sort of contact fairly rapidly. Okay?

These calculations are now close enough to being reliable, I think we have to operate on them.

COMMISSIONER BRADFORD: What is the temperature likely to be at the top of the water?

MR. BUDNITZ: The temperature at the tope of the water and in the gas are, we think identical. It's all 270 or 280 F. Very close.

If the water-- Now we've done the transfer, by the way. We've done the transfer calculation. If you raise the water by 10 degrees instantaneouslyk it takes only a fraction of a minute before the gas is at that temperature. Just put the temperatures up there.

COMMISSIONER BRADFORD: There wouldn't be likely to be hot spots in the top of the water as a result of hotter--

MR. BUDNITZ: We've thought about that. We've thought about that. Nobody seems to think so because there's a film of water, and that provides homogeniety.

Now there's one-- There's only one thing that's killing us-- There are actually two, and I'll tell you what they are.

Imagine that here's the top of the water, and

here's the gas. And this is -- what did we say? -- 4 percent and 96 percent. Okay? But what's coming out of here i two-thirds hydrogen and one-third oxygen because it's H_2O.

Now suppose that there's a thing sticking down int the thing, a piece of metal sticking down through the level everybody see what I'm drawing? -- and suppose that that has a thing that's like this. Do you know what's in here? Two-thirds, one-third.

Now if that were true it would probably sit there at this temperature.

COMMISSIONER GILINSKY: Oh, I see.

MR. BUDNITZ: Okay? We don't know that that's tru We have no idea what the geometry is right near this.

There may be little hoods with two-thirds, one-third in them because it's going this way and this other stu is settling. If that's true and the water level were to dro below, we could have a mixture --

COMMISSIONER GILINSKY: Spontaneous--

MR. BUDNITZ: -- that might be closer.

It still won't ignite until it's at the right tem-perature but several things could give trouble there.

COMMISSIONER GILINSKY: What if they're hot.

MR. BUDNITZ: Whether or not that's hot. But we don't have any idea what the geometry is there, and it's been studied carefully; people have looked at drawings. An

everything looks like it's flat. But anybody who has ever seen something with bolts on it knows that not everything is flat that's got bolts on it. So that's a pretty tough, pretty hard constraint.

COMMISSIONER BRADFORD: Are you pretty confident now about the volume that makes up the denominator of that calculation?

MR. BUDNITZ: No.

COMMISSIONER BRADFORD: So that 4 percent might be 5 percent.?

MR. BUDNITZ: The 4 percent could be 5, but not 6.

I think you have to operate under the assumption that it's close.

COMMISSIONER AHEARNE: Are you pretty confident about the 580?

MR. BUDNITZ: The 680? The 680 degrees at which it goes spontaneous? Yeah. I had one guy that said 360 degrees

COMMISSIONER AHEARNE: That's centigrade.

MR. BUDNITZ: That's 360 degrees Centigrade, and another guy that says that's just baloney Joe, it's 380. And they're arguing about a small term in some equation, so it can't be far.

MISS STETLER: When you'r in doubt --

(Simultaneous general discussion.)

MR. MINOGUE: (Inaudible) -- how many pounds you want to inject.

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MR. BUDNITZ: That's right. That's being worked. These guys here, and for systems over there. Okay. We want somebody here-- Nobody here can do it.

MR MINOGUE: We need somebody here to draw together problems

MR. BUDNITZ: That's me. I've been in contact with them about once an hour. One thing I've found out, this agency needs chemists.

His name is Bob Tucker and he's at this number and this extension, and you get anybody else who can stay on the phone with him continuously, but I've been on the phone about once an hour with him. This is the fulfite-chemical scheme.

We started yesterday with about 10 different chemicals--

MR. MINOGUE: What chemists have been involved with how it relates to the other part and ratios? Has anyone from B&W been involved in this discussion?

MR. BUDNITZ: Yes, through Bell.

MR. MINOGUE: These people are coordinating everything?

MR. BUDNITZ: Yes. You can call them if you want, but I and Bernie Weiss as recently as just before I came in here-- I'd like to have some other NRC guy work on this.

(Simultaneous general discussion.)

MR. BUDNITZ: I understand that. They've been working this for a day. Yesterday morning we had the idea, but we started off--

(Simultaneous general discussion.)

MR. BUDNITZ: Put it in suspension in little tiny particles. If there was any soloshing of the water around the gas because even though it would be hot it was lighter. We had to give that up.

Then we went to iron oxide. Iron oxide doesn't work fast enough with hydrogen, FeO.

So then we went to -- I don't know, about 10 different chemicals. They're now working on chromous chloride. I don't know any chemistry so I can't help you on this.

COMMISSIONER AHEARNE: Is there a hydrogen gas called platinum or palladium?

MR. BUDNITZ: Platinum chloride or palladium chloride are almost identical.

COMMISSIONER AHEARNE: So they would then have similar troubles.

COMMISSIONER BRADFORD: Bob, have you had any chance to bring Joe up to date?

MR. BUDNITZ: Yes, I spoke to Je as recently as 10 minutes ago, just before you grabbed me, and I had to go make a call before this, so they're all up to date on this.

COMMISSIONER AHEARNE: Thanks Bob.

MR. BUDNITZ: Now I have to make one other point, which is that we have a problem --

MR. GOSSICK: Can you reach over here?

MR. BUDNITZ: -- in understanding this geometry. This problem could be very bad for us, and we have no way to understand what these things are like as built.

(Simultaneous general discussion.)

MR. BUDNITZ: We just really don't know how these things are as built. We need pictures. Drawings don't do it.

COMMISSIONER GILINSKY: It sounds like the explosion is going to be worse than we're letting on here. Hey Bob.

COMMISSIONER KENNEDY: No, the core crushing.

COMMISSIONER GILINSKY: Well, no, no. This is an assumption, it there is an explosion something happens -- if there's an explosion not much happens, an explosion it happens.

MR THOMPSON: Well, I think that-- No,--

MR. BUDNITZ: Once you have the core crusing its the primary vessel that takes the worst.

COMMISSIONER BRADFORD: It sounds as though there is not much chance of an explosion.

MR. BUDNITZ: Not unless the temperature goes up, or unless this--

COMMISSIONER BRADFORD: Let me say it this way, there's not much chance of a harmful explosion, that we're not prepared for.

COMMISSIONER GILINSKY: So in a way you've just brought this thing out.

MR BUDNITZ: There is no such thing as a harmless explosion. At least, you had better not count on that.

COMMISSIONER KENNEDY: You mean to say now that, if core disruption of --

MR. BUDNITZ: The primary vessel --

COMMISSIONER KENNEDY: The primary vessel --

MR. BUDNITZ: -- is in danger anyway. The yield stress if 500 -- That 200 hoop stress is calculated at 10 milliseconds times.

(Simultaneous general discussion.)

MR. BUDNITZ: But the one thing that Joe didn't hear was this problem. I thoughthe got that through. That's the point of course.

COMMISSIONER GILINSKY: Is he talking to Joe right now?

(Simultaneous general discussion.)

COMMISSIONER GILINSKY: They say -- the vessel would - may rupture.

COMMISSIONER KENNEDY: May rupture.

MR. THOMPSON: On the explosion I think you -- I got the feeling it wasn't very much of a question.

COMMISSIONER KENNEDY: Okay.

COMMISSIONER AHEARNE: The question is whether it

ruptures or not.

MR. THOMPSON: Right, right.

COMMISSIONER GILINSKY: Now let's see. Suppose it did. We have a chance of all kinds of things.

MR. AUSTIN: With an explosion it does make a difference if it's core crushed which is -- just major damage.

COMMISSIONER BRADFORD: Then the other--

COMMISSIONER GILINSKY: Well, let's just cross all this out and say--

COMMISSIONER AHEARNE: Yeah.

COMMISSIONER KENNEDY: -- major damage.

COMMISSIONER BRADFORD: It sounds as though pipes and valves destruct.

(Simultaneous general discussion.)

MR. MAZUZAN: Wait til you hear this tape.

MR. BICKWIT: Do you understand what the schedule is here on television?

MR. MAZUZAN: No.

(Simultaneous general discussion.)

2:15 p.m. (End of Tape 2A)

2:15 p.m.

(Begin Tape 2B)

MR. COLLINS: -- acknowledge that massive evacuations maybe would be required, but we simply wanted to assure ourselves that he felt on top of the situation and that he could do some important things and that he was ready to do these things. He said he understood this he was willing to answer may questions.

The first thing I asked him was if an evacuation should be ordered, do you feel that you have enough transportation and other resources to successfully carry out such evacuation?

And he said it depends upon the scenario, how large is the evacuation. He said that if it is a five-mile circle all the way all the way around the plant, 360 degrees, he feels he has 99 percent of his resource needs met and he can carry that out. That's 99 percent of the things that he needs: trucks, transportation, other things.

He is working on the worst kind of a situation. And I said what in your view is the worst kind of situation? What are you planning for?

He described this as a 360-degree evacuation ranging anywhere from 10 to 20 miles from the site of the plant. Now that certainly covers anything which we have ever considered.

COMMISSIONER BRADFORD: How much time does he give you, John?

MR. COLLINS: He is not giving any times on any of this evacuation. They have never tried an evacuation like this. For the small towns it will go very easily, but of course his biggest problem would be, you know, metropolitan areas such as Harrisburg and Harrisburg -- the 10-mile circle goes through the city.

All right.

Now with respect to extra needs, which include transportation, for a large evacuation ranging in the order of 10 to 20 miles, 360-degree, which is far bigger than some of the things that we're talking -- we've though about, but nevertheless represents the upper end of the spectrum, he said that he has in his office a man by the name of Robert Adamcheck, who is the Federal Disaster Assistance Administration-HUD coordinator of all federal assistance to PERMA.

This man, Adamcheck, is in the Pennsylvania Emergency Operating Center now, which is manned continuously.

Now Adamcheck is making arrangements to augment Henderson's needs with respect to a large-scale evacuation on the order of outside the 5-mile range. He told me at one o'clock that he hoped to have all of those arrangements -- his needs past Adamcheck by 2:00, and it's already 2:25. He feels he's getting good cooperation from Adamcheck, the federal coordinator.

Now another question which was asked was what do

you think about the state of readiness in PEMA to evacuate?

All right, he said he is hoping for at least a four-hour advance notice. He feels that's important. He said he can do a much better job if he has a four-hour advance notice than if he only had a one-minute notice.

COMMISSIONER BRADFORD: Four hours advance notice before he has to --

MR. COLLINS: Before he has to -- for -- In other words, someone tell him now that he has to evacuate --

COMMISSIONER AHEARNE: In four hours he has to make the --

MR. COLLINS: -- at 6:30.

COMMISSIONER BRADFORD: But he's not going to evacuate everybody at 6:30, so how much time is it then going to take him to evacuate?

MR. COLLINS: It depends on the size of the area, --

COMMISSIONER KENNEDY: You mean --

COMMISSIONER BRADFORD: But you know the answer for any area because -- what you need to know about it in order to know how much time in advance, you actually have to have four hours plus some number that I guess we don't know.

MR. COLLINS: What he's saying is-- He says I would like to have someone tell me four hours in advance that I have to start an evacuation. That's what he's saying.

COMMISSIONER KENNEDY: You mean he wouldn't start

until 6:30?

MR. COLLINS: People are now on a four-hour alert before they get to work. The State Police and the National Guard are on a four hour.

Let me finish what I'll tell you and then we can maybe go back and even ask him more questions.

He would like to have at least a four-hour advance notice to implement an evacuation -- all right? -- because the way things are set up now, the National Guard and the State Policy are his primary resources for implementing evacuation. All right. They are on what he calls a white alert, a white notice, which is, according to Henderson, essentially a four-hour alert status.

Henderson said he would like the National Guard and the State Policy to be on a shorter notice or a higher level of readiness than four hours, but the Governor of the State does not want to increase the readiness level because he does not want to panic the people. This is what he told me. All right.

Henderson also said that he is meeting for the first time some of the outlying county civil defense directors out in this 10- to 20-mile radius, and other people associated with civil defense who previously showed no interest in this kind of emergency preparedness simply because they were so far away from the facility.

But he's contacted all of those people and they're getting geared up.

I asked him who was in charge of this whole evacuation operation, is there any question about who's running the thing? And he said No, he is in charge and he said at this moment, though, Pennsylvania Rad Health and the Nuclear Regulatory Commission are on top of things with respect to radiological surveillance and assessment of potentials.

Once the assessment is made and once the decision has been made to carry out protective measures, hw said as far as he's concerned, Pennsylvania Rad Health and NRC are out of it and I am now in charge and I carry out the Governor's orders with respect to evacuation. There's no question in his mind that he's in charge.

Once the word comes from the Governor there is no question in my mind that PEMA has the prime responsibility to implement evacuation and protective measures on the Governor's orders.

COMMISSIONER AHEARNE: John, did you get the sense from talking to him that he is really considering all evacuations are 360 degrees?

MR. COLLINS: No, he is planning for-- The worst situation he's planning for is 360, 10 to 20 miles, and he said of course anything less than that causes me less problems That's what-- He said I have to plan for a worse scenario.

COMMISSIONER AHEARNE: Sure

MR. COLLINS: And he said the kind of things I'm hearing-- You know, he's picking up bits and pieces here and there, and he knows that the biggy is 360, 10 to 20.

Okay. Now another question which was asked was how about prisons, hospitals, nursing homes, places where people are confined, people who are sick at home and could not shift for themselves, and so forth and so on.

Henderson said that he had plans for taking care of prisons and jails and hospitals and nursing homes, but particularly with respect to prisons he did not want to go into the details of these at this time, for obvious reasons.

With respect to people confined in homes, he said that these homes have already been predetermined by the county civil defense directors. They have already done that piece of business as to who will need help in leaving, and it's a county responsibilility.

How will the counties get the word to evacuate or do whatever the Governor orders?

Okay, he said, the way this will work is that when the Governor makes his decision, he will go on radio and television to issue the orders. Once the orders are issued, the counties will act on this, as will the state at this time. The county will not wait for the state to transmit a message to the counties to evacuate.

PEMA will, though, also transmit the evacuation or protective measure order to the county civil defense emergency operating centers as a backup. So there's a two-way link. The Governor announces and everybody does it simultaneously, whatever is decided, and then PEMA in Harrisburg also transmits the orders to the county CDs. And there's basically four counties involved.

That's about the extent of what I was able to find out. He was very busy and he had to leave. I would have asked him more had he had the time. He said I'm sorry, I have other things and he took off.

The impression I get is that this guy's on top of it. He seems confident and, you know, you can often tell by a person's voice whether they are or not. And he seems confident that he can carry an evacuation out, even a large one, providing he gets these federal resources through this guy, Adamcheck, who I'm sure is, you know, spending no effort to acquire these things.

COMMISSIONER AHEARNE: Another thing you mentioned, John, I gather that the four-hour time is really because that's the stage of alert that his people are no on, --

MR. COLLINS: That's primarily his --

COMMISSIONER AHEARNE: -- the State Police and the National Guard.

MR. COLLINS: He could improve that if the Governor

would put his primary evacuation resources up on a higher alert status.

COMMISSIONER AHEARNE: Right.

MR. COLLINS: These folks of course are the State Police. When you look in the Pennsylvania Plan --

COMMISSIONER AHEARNE: And the National Guard.

MR. COLLINS: The State Police are the folks in charge of evacuation. And of course he would need the National Guard as well.

As he said, the Governor is reluctant to do this because he doesn't want to panic the folks.

So if we want to change that situation then I suppose we have to say something to somebody. I don't know.

It would have to be said to the Governor. Now another thing about putting the National Guard and State Policy on shorter notice, if it was done too early, unless there was a real good reason why this agency thought it ought to be done, if it's done too early it can become counter-productive because the longer you have these guys on this kind of alert, why, you know, the less interest they have in it --

COMMISSIONER AHEARNE: Yeah.

MR. COLLINS: -- and the thing kind of drags off and pretty soon everybody --

COMMISSIONER AHEARNE: You can maintain them on

four-hour alert for days. It's difficult to put them on one-hour alert and maintain it.

MR. COLLINS: Yeah, yeah. It's difficult.

See, they can hang in here now. The way he explained it to me was if they go to a higher readiness level, this means they've got to call people like State Police who are off duty out of their bunks and they've got to come down to the police station --

COMMISSIONER AHEARNE: Yeah. Oh, yeah.

MR. COLLINS: -- and suit up.

COMMISSIONER AHEARNE: We understand.

MR. COLLINS: And the Guard has to do the same thing

So that's a balance, you know, that you have to always weigh. And if you put the people on too early, of course you'll burn out more people because they'll get tired and then you won't have any relief.

COMMISSIONER AHEARNE: And also, as the Governor pointed out, that when you trip, bump up the state of alert of all of those people, you also then give a very strong signal to the residents.

MR. COLLINS: But Henderson did say-- Henderson did say if you told me, you know, right now --

COMMISSIONER AHEARNE: Oh, of course. Sure.

MR. COLLINS: -- go, he said we'd go with what we could muster.

COMMISSIONER AHEARNE: Yes.

MR. COLLINS: But, I get the impression from this man that he's-- There's confidence in his voice, and he's on top of things, that he is in charge.

COMMISSIONER AHEARNE: Obviously also another factor is, as you point out, he says he's meeting with those county officials, that the longer we go before putting into that alert, the better prepared he is, the more he's taken. He's getting more of these pieces to begin shaping up.

COMMISSIONER KENNEDY: And the more, the better the people are, the better evacuation.

COMMISSIONER AHEARNE: Yeah.

COMMISSIONER GILINSKY: Right.

MR. COLLINS: It looks like he's thought about a lot of things.

COMMISSIONER BRADFORD: When they say evacuation is done not under a crisis situation but is done, as they are trying to do, with some dispatch, are they talking about 10[illegible] percent, or are they talking about 90?

MR. COLLINS: When they're talking about evacuation they're talking about everybody except I guess what one could deem emergency personnel who would be there to the very last. And, you know, I don't know whether all the emergency personnel would ultimately leave. Some police might have to stay in certain areas for a certain period of time.

COMMISSIONER BRADFORD: But if the guy who's in charge of emergency planning tells you that he can evacuate a five-mile area --a five-mile radius, --

MR.COLLINS: Does he mean 100 percent?

COMMISSIONER BRADFORD: -- is he saying with 100 percent assurance he's going to get 100 percent of the people?

MR. COLLINS: I don't think he'll ever give you that guarantee.

COMMISSIONER BRADFORD: How far down would you have to go to get something close to a guarantee?

MR. COLLINS: I don't think you can ever assure yourself you're going to get 100 percent.

COMMISSIONER BRADFORD: I mean how far down-- What percent would you have to get down to before he'd say Yes, I'm sure I can get that much?

MR. COLLINS: Oh, I would say way up in the high 90s --

COMMISSIONER BRADFORD: Yeah.

MR. COLLINS: -- way up in the high 90s.

You know, when evacuations have been conducted down in Florida for hurricanes and things like that, there's always about one percent of the population that doesn't want to go, and they hang on. And the way some states at least have handled this is they usually ask those people for their names and their next of kin, and usually that breaks them out becaus

then they get the message, you know.

But there have been people who have absolutely refused to leave and have been killed, and this has happened in Florida and in the Gulf states. They have refused to leave and they have been blown into the sea. And what do you do, you know? Do you drag them kicking and screaming out?

COMMISSIONER BRADFORD: But he is saying then that except for those who refuse to leave; he's pretty sure he can get just about everybody.

MR. COLLINS: Just about everybody.

COMMISSIONER KENNEDY: Surely there is the point where there wouldn't be people there, there will be police or National Guard simply to prevent looting after people evacuate.

COMMISSIONER BRADFORD: Which is one of the down sides of evacuation. I suppose if somebody comes back in an area where the policy have to shoot to kill orders.

COMMISSIONER KENNEDY: Well, they had that problem in Middletown. Put the curfew on and increased the policy patrols when the people left.

MR. COLLINS: I would say it's up in the high 90s.

COMMISSIONER BRADFORD: Just in the last few days?

MR. COLLINS: Yeah, right.

(end of Tape 2B)

2:30 p.m.