NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Gaithersburg, Maryland

TECHNICAL GUIDELINES DEVELOPMENT COMMITTEE (TGDC)

MEETING

Wednesday, March 29, 2006

(START OF AUDIOTAPE 1, SIDE A)

MR. ALLAN EUSTIS: Good morning, everybody. Could we take our seats? We're ready to begin this meeting. Well good morning, everybody. I'm Allan Eustis with the NIST Information Technology Laboratory. I welcome you all to the sixth planning session of the Technical Guidelines Development Committee. I also welcome you to the George Mason nation. Actually, it's the next state over but it's close enough to us to claim credit for their success.

A couple of just preliminary things that I'll go through, and then I'll hand the meeting over to Dr. Semerjian. Our usual safety slide so you're aware -- we're up here on stage, or I am. You are all out here. There's an exit literally in all four corners. If there is an emergency you will see the blinking (indiscernible) lights. And those who have been here

before know that we have real practice emergencies here. So you'll hear a voice and then just please proceed to the nearest exit you out of the back exits can easily access, glass doors outside the building. As far as Jim Elekes is concerned and J.R., we have people down here that are willing to assist you should there be an emergency. We'll make sure you all are taken care of.

With that, please turn off cell phones, pagers, and other electronic devices, some of which don't work in here anyhow. But please be considerate of your other members attending this meeting. There's no food allowed in the auditorium. I've broken this rule in the past, so if you've broken it once you're allowed but not more than once. Please wear your name badge at all times for security reasons clearly. If there is anybody with hearing issues, our signers are over here, stage left. And please feel free to sit over on that side of the auditorium should you need there services. They'll be here all day long and we'll continue to check to make sure people understand that that's where the signers are. The webcast -- and I welcome all the people to our webcast. It's close-captioned, and it will be available

in archive format at the end of this meeting.

My last comment is to TGDC members that they please remember to identify themselves when they address the chair or the rest of the committee. You have a little button that turns your microphone on and off. I've actually kept records here of people who've remembered to say their names, because I have to go through the minutes of the meeting and it's very nice -- and we actually have only one person who gets an A for saying his name. And that's Paul Craft. There are a lot of D's and F's. There are a few B's: Whitney Quesenbery and J.R. Harding, and Jim Elekes when he's on the phone always identifies himself. But there were a lot of C-minuses and D's, so I'd like to see that improve please, if we could do that.

With that I turn the meeting over to Dr. Semerjian.

DR. SEMERJIAN: Good morning, everyone and welcome. I'm Hratch Semerjian. I'm the Deputy Director of the National Institute of Standards and Technology and Acting Chairman of the Technical Guidelines Development Committee for today.

I hereby call to order the Sixth Planning Session

of this committee today, Wednesday, March 29th, 2006. Let us now stand and pledge allegiance.

(Pledge of Allegiance recited.)

DR. SEMERJIAN: Thank you. At this time I recognize Mr. Phil Greene as the TGDC Parliamentarian and request that he determine if a quorum of the committee is present. Mr. Greene?

MR. GREENE: Taking roll call for quorum. Williams?

DR. WILLIAMS: Here.

MR. GREENE: Williams is here. Berger?

MR. BURGER: Here.

MR. GREENE: Berger is here. Karmol?

MR. KARMOL: Here.

MR. GREENE: Karmol is here. Craft?

MR. CRAFT: Here.

MR. GREENE: Craft is here. Gale?

MR. GALE: Here.

MR. GREENE: Gale is here. Elekes?

MR. ELEKES: Here.

MR. GREENE: Elekes is here. Gannon?

MR. GANNON: Here.

MR. GREENE: Gannon is here. Harding?

DR. HARDING: Here.

MR. GREENE: Harding is here. Miller?

MS. MILLER: Here.

MR. GREENE: Miller is here. Purcell?

MS. PURCELL: Here.

MR. GREENE: Purcell is here. Quesenbery?

MS. QUESENBERY: Here.

MR. GREENE: Quesenbery is here. Rivest?

DR. RIVEST: Here.

MR. GREENE: Rivest is here. Schutzer?

DR. SCHUTZER: Here.

MR. GREENE: Schutzer is here. Turner Buie?

MS. TURNER BUIE: Here.

MR. GREENE: I'm told Turner Buie will join us by telephone. Turner Buie, are you there?

MS. TURNER BUIE: Yes, I'm here.

MR. GREENE: Not at the moment. And Semerjian?

DR. SEMERJIAN: Here.

MR. GREENE: Semerjian is here.

UNIDENTIFIED SPEAKER: She is here on the phone.

MR. GREENE: Turner Buie?

MS. TURNER BUIE: Hello?

MR. GREENE: Well we do have a quorum so we can proceed. Mr. Chair?

DR. SEMERJIAN: How many votes are necessary to carry an issue, Mr. Parliamentarian?

MR. GREENE: At the present we have 14. We would want eight votes.

DR. SEMERJIAN: Thank you, Mr. Greene. I'm pleased to return briefly as Chair of this committee. Dr. Jeffrey has been invited to appear this morning at a Senate Committee Hearing and he has asked me to fill in for him at this important TGDC public meeting.

This morning I look forward to working with my former colleagues on the committee. We are especially pleased that Mr. Jim Elekes representing the U.S. Board is able to participate in person today. He has been a most valuable contributor to the voting standards development work, all the TGDC subcommittee on human factors and privacy. I also welcome Ms. Sharon Turner Buie, who is participating via teleconference due to her workload as Director of Elections in Kansas City. I also understand that congratulations are in order for

J.R. Harding who is engaged to be married in the next few months. Congratulations, J.R.

Finally, let me thank all the members of the committee for reserving time on their busy schedules to participate in these proceedings. The initial recommendations for voluntary voting system standards delivered by this committee to the election assistance commission in the nine months mandated by the Help America Vote Act are the foundation for increasing the nation's trust and confidence in our voting system. In addition, this voting team has benefited from your willingness to volunteer significant time in assisting them to complete drafts or preliminary reports for future updates to the VVSG that we will review today.

The committee is also pleased today to have three of our (indiscernible) Election Assistance Commissioners in attendance with the commission's Executive Director and senior staff. The committee will shortly receive remarks from the EAC Commissioner, Donna Davidson (phonetic sp.), Commissioner Greg Shirehillman (phonetic sp.), and Executive Director Tom Wilkey. I look forward to their comments regarding the ongoing work of this

committee.

At this time I will entertain a motion to adopt the September 29th, 2005 meeting --

DR. HARDING: Mr. Chairman, this is J.R. Harding. I believe you were saying the March 29th ’06 agenda.

DR. SEMERJIAN: Yes.

DR. HARDING: (Indiscernible.)

DR. SEMERJIAN: March 29th, 2006 meeting agenda for the Technical Guidelines Development Committee. Do I have a second?

DR. HARDING: Second. J.R. Yes.

DR. SEMERJIAN: J.R.? Okay. Any comments or discussion?

UNIDENTIFIED SPEAKER: Yes. Mr. Chairman, I’d like to request a slight modification to the agenda. I think there are several of us that would like to discuss the general structure of our work given where we are to assure that our efforts are being focused on where they’re most needed to improve the voting system. And I think that might be most helpfully done early in the meeting, and then revisited at the end of the meeting. So if that might be agreeable, I’d make a motion to

amend the motion, to add a short discussion at the beginning and at the end, looking at the system, the organization of our effort.

UNIDENTIFIED SPEAKER: I'll second that.

DR. SEMERJIAN: Any other comments?

MR. CRAFT: Actually, I have I guess a question about the intent of the agenda, Mr. Chairman. This is Paul Craft. My grade is sliding already, I'm afraid. The agenda item, introduction of resolutions and discussions by the TGDC, am I to read that to indicate that we should not be introducing other motions and discussing motions during the body of the meeting until that point in the day? That seems to hamstring the committee quite a bit.

MR SEMERJIAN: No, we've actually discussed that. I think we will take resolutions where appropriate. I think some resolutions we may want to postpone until the end because there may be other discussions that may impact the resolution (indiscernible).

MR. CRAFT: Then I would move that the 4:15 agenda item be amended to include introduction and discussion of any resolutions not discussed earlier in the day.

DR. SEMERJIAN: That will be fine. We'll make the change accordingly. But if there are indeed resolutions that need to be taken up earlier on, we will do so.

MR. CRAFT: Okay.

DR. SEMERJIAN: Regarding the other -- Mr. Berger's motion, why don't we then have the discussion and presentations by Mark Skall and John Wack so that we will hear at least from the NIST people what the thinking is? And then, given that, maybe after the break we can then have a brief discussion. Is that acceptable?

MR. BERGER: Absolutely.

DR. SEMERJIAN: Is that acceptable to everyone else?

(No audible response.)

Then we will have a brief time period after the break to have a broader discussion. If that's acceptable to everyone we will proceed as such. Thank you.

UNIDENTIFIED SPEAKER: Mr. Chairman, as a point of procedure do we need to vote on the adoption of the agenda?

DR. SEMERJIAN: Yes. So could I have another motion to accept the agenda as modified?

UNIDENTIFIED SPEAKER: So moved.

DR. SEMERJIAN: Do I have a second?

UNIDENTIFIED SPEAKER: Second.

DR. SEMERJIAN: All in favor?

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

(No audible response.)

DR. SEMERJIAN: It's passed unanimously. Thank you. At this time I will entertain a motion to accept the minutes of the September 29th, 2005 meeting of the Technical Guidelines Development Committee.

UNIDENTIFIED SPEAKER: So moved.

DR. SEMERJIAN: That's in your second tab actually in the book.

UNIDENTIFIED SPEAKER: Mr. Chair, there was a notice that Mr. Eustin sent out regarding a correction.

DR. SEMERJIAN: Yes.

UNIDENTIFIED SPEAKER: Has that been incorporated into --

UNIDENTIFIED SPEAKER: Yes, it has. It's

incorporated.

DR. SEMERJIAN: Yes, I believe in the version that was on your desk this morning that change has been made.

UNIDENTIFIED SPEAKER: Okay.

UNIDENTIFIED SPEAKER: I second.

DR. SEMERJIAN: Okay. We have a motion on the floor and a second. Any other questions or comments?

(No audible response.)

DR. SEMERJIAN: Not hearing any, all those in favor of accepting the minutes of the September 29th meeting of TGDC, all in favor?

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

(No audible response.)

DR. SEMERJIAN: Thank you. By the way, just for your information the only resolutions that have been adopted over the last few meetings of the TGDC are here for your reference under the third tab labeled as Adopted Resolutions from the very first meeting until the last meeting, just for reference.

As a brief review for the public in attendance and viewing the webcast, public law 107-252, the Help

America Vote Act, HAVA, establishes the Technical Guidelines Development Committee. HAVA charged the members of this committee to assist the Election Assistance Commission with the development of voluntary voting system guidelines. In addition, EAC Resolution 2005-1 authorizes the TGDC to continue its work beyond the development of initial Voting System Standards Guidelines. This committee's original set of recommendations for these guidelines was sent to the Executive Director of the U.S. Election Assistance Commission in accordance with HAVA's nine-month deadline on May 9th, 2005. The EAC issued draft voluntary voting system guidelines for public comment in June of 2005. The final Voluntary Voting Systems Guidelines, VVSG, was publicly announced on December 13th, 2005, and copies of the VVSG 2005 were sent to committee members in their administrating material. The guidelines are also posted on the EAC website, www.eac.gov.

Since the last meeting the TGDC in September of 2005 this staff, in coordination with the three working subcommittees of the TGDC, have continued drafting and editing preliminary reports on issues pertinent to

future voluntary standards development in areas of Human Factors and Privacy, Security and Transparency, and Core Requirements and Testing of voting systems. We will discuss these reports at today's plenary session. Specifically as a committee we will review, approve and, where appropriate, provide supplemental direction to NIST scientists. This guidance is critical to the development of recommendations for future voluntary voting system guidelines.

The time required to accomplish the agenda items means that the committee cannot take public comment at this meeting. However, there will continue to be opportunities for the public to comment on relevant issues. Additional comments and position statements regarding the work of this committee should be sent to voting@NIST.gov, where they will be posted on the NIST voting website, vote.NIST.gov. The comments we have received to date have been posted and reviewed by NIST staff and TGDC committee members.

At this time I note that the latest revised version of Robert's Rules of Order was adopted on July 9th, 2004 to govern Technical Guidelines Development Committee and

sub-committee proceedings. At this time I invite EAC Commissioner Davidson to address the committee. We look forward to hearing from the EAC members.

MR. HARDING: Mr. Chairman?

DR. SEMERJIAN: Yes?

MR. HARDING: This is J. R. Harding. Before our past colleague and now Commission speaks, you mentioned our resolutions in our binder. And in the past we've referenced the resolutions as a kind of an overview or an intent of this group to guide the development of our guidelines. Has there been any effort made by staff to, let's say, quantify or count the integration of these philosophical statements into those draft guidelines as kind of like a check and balance thing, of the spirit of our work in fact being integrated into the VVSG? And if not, I'd like to ask that we do that.

DR. SEMERJIAN: Yes, we in fact, after each review of reports, we will refer to the resolutions that that particular piece of work will be in response to, so to speak. So we will have a correlation, let's say, between the work being reported and the resolutions that that particular body of work addresses.

MR. CRAFT: Well, Dr. Semerjian, this is Paul Craft. I guess I have the same concern that J. R. has voiced. And when we were finalizing the draft on the last version, I asked Allan Eustis for any information on that. And I've been unable to find a document that, you know, has that kind of analysis. So I would make a motion that NIST take it upon itself to do an audit or review and determine and publish a paper as to the extent of those prior motions flowing through to the standards.

UNIDENTIFIED SPEAKER: I'd second that, Mr. Chairman.

DR. SEMERJIAN: I will actually, in my comments, in my summary, you know, after each review, I will refer -- it's in my notes here. I will refer to each resolution that this particular piece of work addresses. I believe the speakers will also have in their presentations, in their viewgraphs lists of resolutions that that particular work addresses. Is that sufficient?

UNIDENTIFIED SPEAKER: Dr. Semerjian, can you hear me?

DR. SEMERJIAN: No.

UNIDENTIFIED SPEAKER: Can you hear me now?

DR. SEMERJIAN: Well, maybe the volume -- keep talking. Maybe they'll have to adjust the volume.

UNIDENTIFIED SPEAKER: Hello? Hello?

DR. SEMERJIAN: Yes, that's better.

UNIDENTIFIED SPEAKER: If I may, I think part of the question is the reverse of what you're discussing, looking at the resolutions and seeing which have been covered, which have not. We will in the next few weeks posting on our web page that exact scenario for you with a breakdown of all the resolutions and where we are with respect to each resolution, if that's going to be helpful.

DR. SEMERJIAN: Is that acceptable to the members?

UNIDENTIFIED SPEAKER: It would be to me so long as it's a public document.

DR. SEMERJIAN: Well I assume that we will be posting that on our web site.

UNIDENTIFIED SPEAKER: Yes.

UNIDENTIFIED SPEAKER: And I guess if NIST intends to do something of that anyway, shall we go ahead and call the question, make an official resolution of the

TGDC and NIST can address it?

DR. SEMERJIAN: Okay. Would you like to make a resolution?

UNIDENTIFIED SPEAKER: I made a resolution that's been seconded.

DR. SEMERJIAN: Is the resolution clear? I believe the resolution is to request NIST to post on its website a list of --

UNIDENTIFIED SPEAKER: No, sir.

DR. SEMERJIAN: Okay. Would you restate the resolution?

UNIDENTIFIED SPEAKER: The resolution was for NIST to do an analysis of the extent to which the TDGC resolutions have flowed through into the most recent version of the Voluntary Voting System Standards, and to publish a report with those results in it.

DR. SEMERJIAN: Publish meaning posted on the website? Is that your --

UNIDENTIFIED SPEAKER: To me, these days it generally means both the production of a hard-copy document on official letterhead and posting on the agency's website.

DR. SEMERJIAN: Did you have a question, Ms. Quesenbery?

MS. QUESENBERY: I was just wondering whether it, want it to be broader. I mean, you're asking specifically how it has; it flowed through into the current version. But I know that on Human Factors, some of our resolutions are for ongoing work which is a slightly broader question. We're working on some things that you'll hear about this afternoon that are not in the current version, but are being planned for future versions.

UNIDENTIFIED SPEAKER: I'd be happy to accept that as a (indiscernible) to the motion.

MS. QUESENBERY: So it might be something like we ask NIST to report on the status of the resolutions in regard to work that's been done or is underway.

UNIDENTIFIED SPEAKER: That would be acceptable (indiscernible).

DR. SEMERJIAN: Any other comments?

DR. HARDING: Mr. Chairman, I would -- J. R. Harding. I would take that to mean that we would continue to track it from here on so it evolves as the

work evolves.

DR. SEMERJIAN: Okay.

MS. QUESENBERY: (Indiscernible) is that a from time to time we request that?

UNIDENTIFIED SPEAKER: Well certainly at least from the same cycle as our meetings.

DR. SEMERJIAN: That's what I was going to say, that maybe we need to make a practice of presenting such a report, either in a presentation or at least in hard copy for the information of the committee so that we produce such a list for each TDGC meeting.

UNIDENTIFIED SPEAKER: Okay. I have --

DR. SEMERJIAN: Is that acceptable?

UNIDENTIFIED SPEAKER: Well I'll make you a deal. I'll temporarily withdraw the motion so the Commissioner can go ahead with her presentation. During the break we can try to put some language around it and represent it after break.

DR. SEMERJIAN: Thank you. Commissioner Davidson, I apologize for the delay in keeping you here.

MS. DAVIDSON: Not a problem.

DR. SEMERJIAN: But you've been a member of this

committee, so you know how things work.

MS. DAVIDSON: I understand. Well it's great being here with you today, and I do want to tell you that the Vice -- our Chair could not be here today because he's at American University. And so he sends his regrets that he couldn't be with you today. But as stated, we do have our Vice Chair in the audience. We have Ray Martinez (phonetic sp.), and you'll be hearing also from Commissioner Hillman in just a little bit. So you've got a good representation of us, and we've got staff here. And as you said, Tom Wilkey is also here for presentations.

As you've just reviewed -- and Dr. Semerjian, you took part of my speech so I will try not to go into a lot of that. But we did have a busy 2005. We accomplished a great deal. Within the nine months you've got it to the EAC, and by December 13th, obviously we had standards. And we're very pleased about that. The help that we received from NIST , we publicly want everybody to know in reviewing all the 2,000 -- I mean, excuse me -- 6,000 comments that were out there, we had lots of support from the NIST group.

And I want to really say thank you.

And as we look forward, we know we have a lot of work to come. We have the work on future iterations that are already underway, that you've got a lot of resolutions you're going to be talking about today. And we have the certification program that's top priority also, and I'll go into it a little bit coming up.

We've come a long ways in a short time as I said. And as a former TDGC member as you just referred to, I understand how hard you work. I want to thank each and every one of you for your loyalty of being here constantly, as often as you can, and also for attending by phone when you can't be here. So it's really rewarding to see how hard all of you worked, and we do thank you. And thanks to Dr. Semerjian for your leadership in the past, and we look forward in working with Dr. Jeffrey in the future.

The VVSG addresses -- in increases complexity in our voting systems, and the technology and how it impacts everything, obviously security, usability -- which is a big one that I was always involved with that's near and dear to my heart -- and accessibility,

which is also very near and dear to all of our hearts. Work on the future iterations is ongoing. We must keep up obviously with technology. We must address the issues of security, and as we move forward the security, the software -- we also have to keep in mind wireless -- the changes are unreal how it's going through everything. The VVPAT that's one that we have to keep addressing. The test suites is a big one. We're really very anxious for a lot of the test suites. And then more forms of independent verification.

The timeframes, you know, we've worked on the timeframes with NIST at our monthly meetings. We try to have a meeting every month. Once in a while it doesn't quite work out, but the timeframes were shared with everybody. We thought that we would be handing out, you know, maybe what we call different versions -- mot really versions, but modules, we'll say, of the standards that we would be moving forward. And after we really looked at it we felt that we really couldn't accomplish that, because we talk about we'd have more public hearings -- I don't know, on page 6 is where I'm at -- more public hearings, and we really felt like that

sometimes we could really get into a confusion element with all of the, everybody out there. When you stop and think about it, if we got like in April the VVPAT there's issues that could take place in the future of that in this 2006 elections that maybe you want to address after that. So we really felt like the April timeframe of giving that to us, us having public hearings on it, also publicizing it, then we could have another forum come in right away that you would have. I don't remember which one it was, the nixed one, but it could cause some confusion, not only with election in people but the public outside. We could be receiving comments on more than one at a time.

So we looked at that and thought, you know, obviously we think the timeframe and moving forward and utilizing that as a draft, it really would help everybody if we could get them as, so that they are public obviously, you get it and it's very public, and you put it on your website so that the vendors know what's moving forward. But at the same time we've got this 2006 election that's coming up that I think we're all going to learn a great deal. And then it can be all

utilized and sent to us at one time.

The one thing that I think that is important to remember is that there can be technical amendments that we make to the 2005. If they are technical, we can actually go through that part of it and do the technical amendments and in the certification portion of it. So that will make it, we feel, more concise and be really open to everybody. And when you present everything that we have, at the end obviously the guidelines will be there for the whole iteration of it to be changed in 2007. So I hope I explained that clearly enough that we expect the work to go forward, but we hope that it will be kind of like in a draft format. So if you see after the election if you need to touch that again, you have that capability before it's presented to us. And so in working that way we hope that it will be a significant improvement over what we had planned originally.

You know, the TGDC has been more involved with our operations than what they had been in the past, and we really enjoy having them. The Chairs, we have started inviting them to take part and be at our Standard Boards and our Boards of Advisory Meetings. We really look

forward in working with them, and I think that from time to time if they want to come in and be part of our monthly meetings that we have with NIST, we have no problem with doing that. Also on the other hand, we're becoming more involved and learning as you go along the process, we're going to be more involved with your communication, your weekly or every-other-week meetings that you're having over the telephone. And that way we're knowing what's going on and it's not -- we're more aware and more prepared to make decisions I think as we move forward in that area.

When we start looking at how we work, we also look at our budgets as another thing. And we have to work with NIST to make sure that they get the money that they need to support the TGDC and all the efforts that go behind the scenes that the NIST people are working on. So we need to work with the Congress and make sure that they get their budget. We go in hand-in-hand, where if they need an increase it doesn't decrease our funding at the EAC. Sometimes they cut one group short so they can give to another group. And obviously we want to be hand-in-hand in that proposition as we move forward.

The other thing that I really wanted to go into is, one of the things that we need to start looking at is how do we address the issues of people out there doing voting systems that we have not the complete standards for, like phone voting. We need to really address some of those issues. They're also utilizing and looking at ATM in the future. So these things, I think that we really need to stand back and say how do we address this and what moves do we make in the future. Also there's a big one. Congress is very intent, and we've got direction in the law that actually says we have to better serve our military and overseas voters. So we have to take that seriously. We have to move forward.

Getting the certification program up and running is top priority for us, not only the certification for the independent test authorities, but also taking over the certification of the voting equipment itself. That's very important to us and we are going to be part of that process of pre-assessment so we can learn what they're actually doing, the NIST Lab. And so we can move forward and be more knowledgeable in those areas. We feel it has to be a very transparent process. We need

to be very open with everything we do.

Beyond the VVSG, you know, it's only part of it. There is also that human factor element that we need to look at. And training support has to be addressed. It is hands-on; we've got to take care of it. We have a group right now doing a study on the election management guidelines that goes side-by-side with all of the standards and guidelines, really the guidelines. So our Executive Director will go more into a lot of our research programs that we're doing and give you some information there.

We've already proven that working together, we have accomplished a great deal. 2006 will be a very important year for all of us. It will give us a focus and shifting government's first voting system to the certification program. The election reform will always be ongoing, so there's always going to be changes that we have to consider. 2006 elections, if we have issues their timeframes are very short. By the time that the states and counties are buying their equipment, the vendors are struggling to meet all of those deadlines. And the shorter the time that they have to train judges,

then we have more issues because the judges haven't been trained properly, or if they equipment hasn't been tested properly at the time that they received it. So there are issues that we think could come up in this election. If it does, obviously we're going to see more in legislation possibly within states or in Congress.

But we also have to remember that there's a balance in the work that we're doing. The balance of the cost and how usable the equipment is for the judges and how costly it is for the election community -- because obviously we want every state to adopt our volunteer guidelines. And if we have them so stringent, we'll see them backing off because they can't afford it or if there's issues. So there's a balance there that we all have to remember. I know you understand that, and I just wish you all the very best in working forward. And I will now call on my Chairman Hillman to come up and say a few words to you. Thank you very much.

(Applause.)

DR. SEMERJIAN: Thank you, Commissioner Davidson.

MS. HILLMAN: Thank you, Commissioner Davidson. Before I begin, let me say there was no coup this

morning. Paul Degregorio (phonetic sp.) is still the Chair of the Election Assistance Commission. But I am here to thank you in my capacity as last year's Chair of the Election Assistance Commission. Let me begin by saying good morning to all of you, Dr. Jeffrey in absentia, Dr. Semerjian, all the members of the committee and all the NIST staff.

The deliverance of the 2005 Voluntary Voting System Guidelines was a major, major accomplishment. And it was indeed a pleasure for me to have served as Chair during that time, to have completed one full year of working with the Technical Guidelines Development Committee. It was something that at the beginning of the Election Assistance Commission, we couldn't imagine how we were going to get it done, given the great obstacles. And you all were willing to come to the table even before we knew that we would have sufficient resources and a budget to complete this work. You were willing to take that risk with us, and I think it is because of that commitment and conviction that we were able to prevail. And so again I want to thank you.

I also want to say how important it is that the

guidelines were developed as a result of the different lenses that the committee members brought to the discussion. It was important to have the scientific and technical input, but it was also important to have the input of election officials to be able to bring that perspective to the complexity of this issue. And as is witnessed by the many, many comments that we received, even when we remove the redundant comments, you know, receiving several hundred comments to the draft guidelines was just incredible. It lets us know how important this issue is, particularly at a time when at least public reports remind us of the growing distrust that people have of some of the newer voting systems, at a time when the technology is developing, at a time when the federal government is taking on for the first time full responsibility for not only the development of the guidelines, but also the certification of equipment. Those three major activities coming together could create the perfect storm, or they could create the perfect solution. And I believe they will create the perfect solution. So again, I just want to thank each and every one of you for everything you're doing, and I

look forward to continuing our work together. Thank you.

(Applause.)

DR. SEMERJIAN: Thank you, Commissioner Hillman. Just personally I would like to say that the entire EAC, all the Commissions, Commissioner Degregorio, Commissioner Martinez, Commissioner Hillman, and Commissioner Davidson have been great supporters of this work, great supporters of NIST staff. Sometimes people get down as Commissioner Hillman said, you know, sometimes we have doubts whether this is going to get done, especially whether it's going to get done in time. So a little cheering, a little encouragement was very much on target. We appreciate your continuing encouragement and continuing support of the work of the TGDC and of this staff. So we very much appreciate all your support and your being here today. Thank you very much.

As was mentioned, this is a team effort. And I think the next set of presentations will reflect that team effort. Mark Skall of our Information Technology Laboratory will provide a review of NIST activities

since September 2005. But that will also follow up by a presentation by the EAC Executive Director. So you will see progress as seen from both side. So at this time I call on Mark Skall to give us a review of what's been accomplished over the last six months or so. Mark?

MR. SKALL: Thank you, Dr. Semerjian. As Dr. Semerjian said, I'm going to basically tell you essentially what's been done since the last TGDC meeting. There have been quite a few activities that NIST, with the TGDC, have been engaged with. In October of 2005 we had a Threat Analysis Workshop for Voting Systems. In November 2005 the VVSG 2007 timeline was approved. If you recall, there was a resolution at the last meeting asking NIST to look at the proposed timeline that we had developed to coordinate it with the EAC, to ensure that the dates made sense, and to modify the timeline if appropriate. And after some deliberations with the EAC, they basically accepted the timeline as it was. So that happened in November that the timeline was formally accepted by the EAC.

DR. SEMERJIAN: Excuse me, but I just want to point out that you have a copy of all these presentation

materials inside in the, behind the front cover of your binder. There's a thick package which has all the different presentations. So if you want to follow, you have that at your disposal. Thank you. Sorry for the disruption.

MR. SKALL: In the November to December timeframe, as the Commissioners have referred to the work we've done with them to assist the EAC in resolving the comments from the public review period on the VVSG, this was a fairly intensive effort over about six or seven weeks. There were probably six or seven NIST staff involved full time during that period that did of course take away from the work that we could do on the next iteration of the VVSG. On the other hand, it was extremely important work. Working with our partners at the EAC proved to be a tremendous experience for us, I believe for them, and I think we got the best resolution of the comments we could possibly get from that endeavor. December 2005, the VVSG was formally adopted by the EAC, and in the January, February and March period we are continuing research and development work on the next iteration of the VVSG.

I'd like to say a few words about the Threat Analysis Workshop that was held in October of 2005. The goal really was to arrive at a set of drivers for our requirements, mainly our security requirements. These are fairly stringent requirements that we're imposing on states, and we wanted to ensure that these requirements were driven by real threats. So in essence, you can look at the requirements as solutions to problems, and the problems are what we wanted to ensure that we had documented very precisely so that the requirements can in fact mitigate the problems. So we had this Threat Analysis Workshop that we believe was very successful. We got a lot of feedback from people at the conference as to the success of it, bringing different players together from various aspects on security, and looking at threats from various angles. We have a draft Workshop Report available on our website, and we are undergoing more extensive review to look at the threats in more detail. We also have a follow-up workshop planned for June.

Again, just speaking a little bit about the comments resolution, I mentioned that we were requested

by the EAC to work on this. And we of course felt this was a very good idea to tour jointly. And again, we analyzed comments. The EAC of course made final determinations as to the resolutions of the comments and the wording that would be actually incorporated into the standard, or into the guideline. Some of the comments that we –

(**END OF AUDIOTAPE 1, SIDE A**)

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(**START OF AUDIOTAPE 1, SIDE B**)

MR. SKALL: -- deemed to be appropriate for future iterations of the VVSG, and those were categorized as carry-over comments. They will impact our work on the next iteration of the VVSG.

I'd like to talk about the timeline now for a few minutes. The completion date when we are targeting our completed next iteration is July of 2007. Commissioner Davidson referred to this. Let me try to give perhaps my perspective on this, which I believe is the same as Commissioner Davidson's. We about a year ago met with the EAC Commissioners. And because we all knew that the next iteration would not be available for a while, July

2007, both the EAC and NIST were really looking for some way to get some of the requirements we're developing usable more quickly. And we thought one way to do this would be to complete modules, certain modules, and swap them, is the term we used, into the VVSG 2005 so they could take effect immediately. We figured then that way we could actually get our requirements used without waiting another year, year and a half. I think at the time that that made sense to us, and as time passed we realized there were clearly problems with this approach.

First of all, when we complete a module early, it's very possible that some of those requirements will change as we learn more when we're developing other requirements for the VVSG. As a perfect example, VV PAT (phonetic sp.), which is almost complete now -- it's due next month -- we will have a new module available. However, as we learn more about IV, as we learn more about human factors as we continue to develop our standard, clearly some of the VV PAT requirements will change. So that was one issue.

Secondly, there would be many public reviews in parallel. Some of these modules are due within a couple

of months of each other. They all will have to go through fairly extensive public reviews similar to the VVSG 2005. And having a couple of public reviews at the same time on similar material I think would be very confusing to the public. Vendors who are asking to be certified, that would complicate that issue as well because you would have to be very precise as to what version with what module being incorporated, one is certified too. In speaking with vendors we heard that vendors were confused by this approach, and the EAC tells us election officials were confused. So we met again with the EAC, and as Commissioner Davidson says we decided on a little different strategy. We would still complete the modules; make them available on our website. Vendors could bill to them, they will not be a part though, officially a part of the VVSG 2005. They will wait until July of 2007 to be incorporated. But giving the vendors a heads up clearly I think will help the situation. They can build to these requirements. There's a possibility some may change, but they will be in pretty good shape when we put them on our website.

So after making this decision, we really looked at

what's the best way to coordinate these modules with TGDC meetings and other meetings. And we still have modules we want to complete that we want endorsement from the TGDC. And there are really only two ways I think to promulgate these modules. One, we could have a TGDC meeting prior to each completion schedule date for each module. That really seems unwieldy. It would mean many, many more meetings of the TGDC that we feel are necessary. The second approach is not to have a TGDC meeting every time a module is about to be completed, but to do a lot of (indiscernible) with the subgroup, have the subgroup review it and endorse it. The subgroups can't vote, but clearly there would have to be acceptance from the subgroups. And then wait for the TGDC meetings to formally endorse, adopt, and/or change the drafts we've produced.

If you look at this plan, it seemed like the best way to schedule the upcoming TGDC meetings would be to have the first one after this in December. I think we've heard from everybody that we need to wait until after the elections for the next meeting. Clearly we need one in July when the final product is due, and

perhaps one in the middle in April. So that would be our thoughts on upcoming TGDC meetings to account for this schedule.

One other thing I want to mention that again Commissioner Davidson alluded to, FY07 we are in the President's budget to get funding for test suite development. This is something we really haven't been funded to do. Clearly we're working full time on producing the standards and the guidelines. It's clear I think to everybody that's in the community that the test suites are a very, very important part of this. They're not usually officially part of a standard. We do have a section in the VVSG on testing, and clearly that section would refer to the test suites. We actually have a field for each requirement, the documents, the test methodology used for that requirement. So we would clearly refer to the test suites. Test suites, as I think you all know, is a very, very large job. It requires a lot of resources to do these correctly. So one of the things we will be working on if the funding comes through in 2007 is three different types of test suites: one to ensure that all

the requirements are met correctly; another one to look at security, open-ended security testing; and a third to do the human factors testing.

I want to speak a few minutes about NAVLAP (phonetic sp.) accreditation. So far NAVLAP, who's conducting the internal NIST accreditation so we can make recommendations to the EAC as to what we recommend, which labs we recommend be accredited, we've received five applications. The first three applications that we've received we have scheduled on-site visits to do pre-assessments where we speak to the laboratories and get more information. And then we'll have a much better sense as to what shape they're in and how long it would be to get them up to speed for accreditation. NAVLAP has basically asked if the EAC and/or other parts of NIST Information Technology Laboratory would want to attend. And we feel it's very important to get some first-hand experience, so EAC Commissioner Davidson and I and some others will be going on the first assessment. And then there are two more labs. I mentioned there were five in total who are in the queue to be assessed next.

Outreach: the first iteration of the VVSG was very constrained by the time limits imposed by HAVA. And we really tried to do Outreach, but we didn't have as much time as we would like. During this next iteration we're really trying to reach out to many, many other parts of the community. Then there's, we're involved now with ITAA who has venue forum for voting system vendors that we try to coordinate with and get their inputs. We want to get inputs from as many election officials as possible and we're trying to do that as well. But we send out questions and receive answers from various people in the community that we think could help us. And we've made a lot of presentations at various forums. We're coordinating the NSF-funded Accurate (phonetic sp.) Group, and more workshops are planned.

We've redesigned our TGDC web pages to make them more effective. We hope that now materials and various agendas will be more easily accessible from the web. And one thing we know is we produce a lot of material and it's quite a burden to try to read these in a very short timeframe. So we're getting all material out on our web pages as soon as we possibly can. As soon as

they're done we have it on the web page. You don't have to wait until the meetings or two weeks before. We will have as much material as possible for you to review early on.

And these are just what the new web pages look like. So you can see this is the VVSG 2007 web page, and so you can see the documents are listed there with revision dates. And if you click on one of the links to one of the subgroups, for instance this is the CRT subgroup, you see the document is available there. We've added one recently, an introduction to the CRT material because we know there's a lot of material there. So we wanted to have sort of an overview document.

I'd like to close with some general comments. The VVSG 2007 clearly is a major, major undertaking. We're attempting at least at NIST, obviously with the support and coordination of the TGDC, to make the VVSG specific, unambiguous, and testable, to make it understandable to many, many audiences: testers, vendors, election officials, public. That's not always very easy to do because sometimes our vendors need, in fact more than

sometimes, always vendors need very specific requirements so that they can implement the systems correctly. But we need to do this in a way so that this is understandable to the many other audiences. It's a very interesting challenge and we've had much support from various experts and human factors assisting us on how to do that. We're reexamining all previous versions of the standards, coordinating with many groups, and working with many, many bodies.

And of course the VVSG is very complex. It can be hard to understand, and we want to make sure we communicate very effectively what we're doing. We have an introductory section to VVSG 2007, an overview section, and we intend to really focus on that area to make the material understandable to many, many audiences who are perhaps not as technical as some. Subsequent drafts will be in a new format which we distributed to you with different fields for each of the requirements. And one thing we've discussed is perhaps expanding the TGDC meetings. It seems to be a burden to get everything done in one day. We're thinking of perhaps a day and a half, with part of that time where we could

produce some overview material for better understanding of everything.

And lastly, these are just the presentations you'll be hearing today from the supplemental guidance, human factors and privacy, core requirements, and testing and security. So any questions before I allow our colleague Tom Wilkey to speak?

DR. SEMERJIAN: Mark, I would suggest that we hear from Tom also, because I think your presentations are sort of complimentary, and then maybe take questions. Because some of the questions may be addressed in Tom's presentation.

UNIDENTIFIED SPEAKER: Mark, has there been a date set for that June meeting that you referred to?

MR. SKALL: Which June meeting?

DR. SEMERJIAN: The workshop.

MR. SKALL: Yes, I believe it has. The last Thursday and Friday of the first week. I think the 5th and 6th. Does someone have a calendar? Okay. Hold on, let me check my calendar.

DR. SEMERJIAN: June -- is it -- what did you say? Thursday?

MR. SKALL: The last two days of the first week of June.

DR. SEMERJIAN: Thursday is June 8th.

UNIDENTIFIED SPEAKER: So it would be 8th to 9th of June? That would be better for me anyway.

DR. SEMERJIAN: So 8th and 9th? Is that what it is?

UNIDENTIFIED SPEAKER: And is there a location to that?

DR. SEMERJIAN: Is it here, or where is it going to be? Downtown?

MR. SKALL: Yes, June 8th and 9th. Okay, so unless there are further objections, we'll hear Tom Wilkey speak. And then Tom and I will jointly take questions.

DR. SEMERJIAN: Okay. Thank you, Mark. At this time I call on Mr. Tom Wilkey, Executive Director of the Election Assistance Commission, to report to the committee on the EAC's strategy for updating the voluntary guidelines and on the EAC's research projects. Tom?

MR. WILKEY: Thank you very much, Dr. Semerjian. It's good to be with you today. First let me say, Allan

Eustis, that having spent more time in meetings with Paul Craft over the years, we always knew when he was in the room.

First let me say that my very good friend and Commissioner Ray Martinez likes to point out every once in a while that I've been in this business so long that he was seven years old when I actually started in this business. And over those years I've made my share of boo-boo's. And I made one last night when I went to the office and picked up my notes and picked up the wrong set of notes. So this is going to be what we call the proverbial winging it. And I apologize for that, but I think between Commissioner Davidson and Mark Skall, they've done an excellent presentation of where both of us are coming from in this process

But first let me add my deep appreciate to the members of the Technical Guidelines Development Committee for their work that they have done thus far. I was privileged to take part in both the 1990 development of the standards as well the 2002 iteration of the standards. I know what an incredible undertaking doing something like that is. And to do what you did in

a nine-month period was unheard of, could never have been done back in the days when we were starting this process. So no one appreciates your efforts and the work that you have done more than I do. And you are to be congratulated for that.

We also are very, very pleased and are very cognizant of the efforts that the staff at NIST have made in working with us in the aftermath of your presenting us with that document, and that is going through the commentary process and helping us achieve our goal of getting that document out the door by the end of the year last year. It was a major effort on the part of the staff of the EAC as well as NIST. We were very grateful for their participation. We had a few laughs while we were doing it. When you get two good New Yorkers like Mark Skall and I in a room, you know, anything can happen. So we are again very pleased with the way we worked together. We have shared and have come to be a real team in this effort, and we appreciate that very much.

As Commissioner Davidson mentioned, our top priority over the next few months is to get our

certification program up and running. You've heard comments about NAVLAP and our involvement with NAVLAP in the pre-assessment program. We're looking forward to doing that, both Commissioner Davidson, myself, and Brian Hancock of our staff, and we hope that we can continue as we move along through that process. Our own certification agenda is being developed as we speak. We have an excellent consultant working with us, and we expect to get a first draft of all of the procedures that we intend to have in place by the first week in April to our Commissioners. Hopefully after some discussion and tweaking and work on that document, we will immediately have it out for public comment. And we will keep you updated as members of the TDGC because we certainly will welcome your comments in that process. After that while there will be some ongoing legal review, certainly we hope to have that process up and running as soon as possible.

Mark mentioned the issues with the timeline. This staff and EAC staff spent a considerable amount of time last fall reviewing that timeline document. And as Mark so adequately stated, we thought we had come to a really

great idea. And we left the room that day thinking, oh, my goodness, this is great, we'll be able to get chunks of modules out the door and get them (indiscernible) and get them approved. And then as we began to, as they say peel the onion, and take a better look at a lot of issues including our statutory/regulatory process that we had to go through to get something approved, comment period, up (phonetic sp.) approved, legal research, so on and so forth, we looked at the involvement and what it would mean, not only to the vendors but to the election community.

And so we backed up a little and took another look at it. I think that the ideas that Mark presented to you are both now in keeping with our thoughts on this area. And you need to know as members of the committee that our staff meets as often as we can. We try to meet on a monthly basis, and we will continue to look at this and continue to try to get things out sooner, try to get things out up on the website, so that you can have a greater opportunity to look at them and then go through our regulatory process. We think that after much thought about this and much discussion that we have now

come up with a reasonable way to make this work, given our statutory process that we must follow and given the realities of the community at large getting this in a more appropriate fashion.

Mark mentioned the funding. We were very pleased the Commissioners -- to make the request to OMB to increase the funding for NIST for 07. We feel that the test suites that are part of the agenda for the '07 workers are critically important. And we felt that it was necessary for us to try to make that effort earlier, get it up and running so that we did not have to spread it over a number of years. We thought it would look better in terms of the '08 election coming up, and so we were very pleased that OMB took our recommendation and it is part of the President's budget. And so we look forward hopefully to it being viewed favorably in Congress so that that work can begin immediately and there will be the necessary funds to do it, because we feel very strongly that those test suites are really the hallmark of everything that we're trying to do here. And so that being said, we are certainly hopeful that Congress hears that word and everything will move

forward, and we will be able to continue that.

I'd like to talk to you just a few minutes about some of the other projects that are going on at the AC which, while not directly related to what you are doing, certainly are peripherally related. And we thought that that would be of interest to you because we do have a number of research projects that were issued last fall and will be coming out over a period of time during this year. And certainly as I said, they're not directly related to the work you're doing but certainly in the context of the election process are part of what you are doing in a certain sense.

As many of you know, last year in August we issued our first guidance and statewide voter registrations list. We in September of last year came out with the first national Election Day survey. The results of that survey are up on our website. Very interesting statistics on a great number of areas that we took a look at. We are in the process right now with a research project that is nearing its completion with Rutgers University, the Eagleton Institute, on a study of provisional voter and voter ID which we are looking

at right now. We are looking based upon the research project that we did, our first survey, our first national survey that we did after the 2004 election. We needed to go back and take a look at that survey document, take a look at the results of that survey. And so we have convened a meeting of various people who have interest in this type of data, election officials who are working with that document over the next couple of weeks, and to convene them in our office to take a real hard look at that survey document, to make recommendations as to where we go with that document, and to get it out earlier this year so that the results of the 2006 election will be available. Our needs, our data that we will need will get into the hands of state and local election officials earlier than we had the opportunity to do in 2004.

One of the areas that had been a great concern of mine in the over 30 years that I have been in this business is in the area of management guidelines. As I mentioned earlier, I had the opportunity to take part in the drafting of the first set of standards in 1990. And I said at that time, you know, this is all well and good

and it is wonderful that we have this set of standards that talk about testing and evaluating the system and all the parts that need to go into development of a voting system. But it seemed to end there. And as a former local and state election official, I was concerned that we were missing what I call the other 50% of the battle. And that was what happens to a voting system once it arrives at the local election official's office. Where do we go from there? We've tested it, we've tested it against a set of very good standards, we've tested it with ITAs that have now gone through an accreditation process, a high-level accreditation process. But what happens now? What do we do with it?

There are issues of acceptance testing, pre-election testing, security requirements, warehouse requirements, training requirements, everything that goes into managing and maintaining a voting system. And so since 1990 I've been screaming, we need to have these guidelines. And so I guess one of the proudest moments that I've had since arriving at the EAC was to be able to find the necessary dollars to get this project underway, and it is a project that we are doing in

conjunction with the National Association of State Election Directors. And we are very grateful. You know, when you go to do something like that, you try to reach out to find the very best in the business that have the experience and level of experience to be able to do a really good product. And we are grateful to have Bert Williams (phonetic sp.), one of your colleagues, and Connie Schmidt (phonetic sp.), who is the former Election Director in Johnston (indiscernible) Kansas who came out with one of the first comprehensive documents ever for managing and maintaining voting systems, to work with us on this project. And we are looking forward to getting the first set of chapters out. We want to get them out as soon as possible.

As you know, and I don't think I need to tell you, as we go through this primary season and the use of new equipment throughout our nation, we see some bumps in the road. We see things happening. They will be reported in the press. Some of these things unfortunately could have been addressed had we been able to get this document out earlier. But we're going to do all we can to get information such as this, lessons

learned, best practices, as we move along throughout this primary season, get it up on our website and notify our election officials out there as best they can do so that these kinds of problems don't happen. So I'm very excited about this project as you can tell. I'm looking forward to it moving out the door and into the hands of election officials throughout the country.

One of my other interests in the many years that I've been in this business has been in the area of design of polling place materials, ballots, instructional materials. I have a long history in working with literacy groups for many years. It is a major problem in our country. It's a problem that we frankly do not like to talk about. It's the greatest nation in the world, but yet our rate of illiteracy in this country is abysmal. It is awful, and we don't like to talk about it as a powerful, well-educated, strong nation. But it is an interest that I think is absolutely necessary for us to look at in terms of the voting population. If we look across the board out in our country, we see materials being developed that are unreadable, that are hard to understand, that are hard

to comprehend by many of those who are taking part in our election process. And it is absolutely necessary that we try to do something about that. So we have contracted with an excellent organization, The Design for Democracy, to do a lot of work in this area of looking at ballot design, ballot structure, the flow of information, and the design of voter education materials so that we can try to do a better job of getting that information out.

There's another area in addition to illiteracy. It is a big concern of mine and many other people who deal with trying to educate the public, and that is where we are today in our society. We are overwhelmed with information. Stop and think about it. When you go to your mailbox every day, you look at all the stuff that is shoved in that mailbox that people want you to read. We are constantly in a barrage of the information age. I mean, as you look across this room, people have their computers out. They've become part of our daily life. Information is thrown at us on a daily basis, so we become accustomed to do really parts of things or starting out things that we get that we really want to

look at. My, this looks like something I want to read because it's been designed well, it's been presented well. And that's what we're trying to do in this whole area of taking a look at what's out there and coming up with some best practices to assist election officials in getting well-organized, well-designed information out to the public. We're also asking them to take a look at our present voter registration document so that we can make that easier to look at and easier to read.

And I see my good friend over at the end of the table there, Alice Miller. Back when we were designing our primary voter registration document in New York, we took a lot of information from the D.C. Board of Elections form which at the time was one of the most well-designed voter registration forms in the country. And many states, including my own, continue to use some of the hard work they did with the literacy group some 10, 15 years ago in helping redesign that form so it was much easier to understand and to read. And so we're going to work hard in that area.

One of the other areas that is of great interest to us because it is absolutely the hallmark of everything

we do in elections -- you know, I've often said that election officials work very hard throughout the year. And with HAVA, they're even working harder. The decisions are harder; new equipment, new training, new everything that they have been faced with over the last couple of years. And on Election Day, we simply turn all of that hard work over to a group of people that work one or two days a year, our poll workers and our judges that are out in the field. And so it's absolutely necessary that we try to provide the best resources that we can bring together to assist local election officials in the area of poll worker training and poll worker recruitment.

We've got to do a lot more in getting more people out there to work. It's getting very difficult. As new equipment comes along, a lot of the people that have been working at the polls for 20, 30 years say, we don't want to deal with this new equipment, we can't use it, we're confused, we're not going to do it anymore. And so we must look at ways to do a better job of recruiting through our local organizations, through all kinds of activities that we can do. And so we are currently

working with a couple of groups under contract to come out with best practices in the area of poll worker recruitment and training.

We are also working with Cleveland State University in the area of doing some work with college poll worker training. We know that's our future. That is the best program, and I wish we had a lot more money to spend on that program, because that is where the effort needs to be made. We need to get our young folks interested in the election process, and there's no better way to do that than to recruit them to work at our polling places on Election Day. I have physically seen in my travels around the country that where they have utilized this type of a program in the colleges and in high schools, the students really love doing it, it peaks their interest, and they do a great job.

One of the other research areas that we are currently in the process of coming out with, and we will be getting a status report on it next month at our public meeting, is in the area of vote count and recounts. I know that you all witnessed through the news the elections that were held in Washington State,

and here just in our own area in Virginia for the office of Attorney General, where we have very close races and we had to go through a very difficult recount process. And so we're hoping to gather information, best practices, research data in that area, so that we can make that available to our state and local officials to make their lives a little bit easier.

One of the things that we look at as we're moving down the road and growing and growing up as a small, new agency is in the area of our clearinghouse activities. We recognize that Congress, in creating the Help America Vote Act, made one of our primary responsibilities a clearinghouse for everything you need to know about elections: election data, election information. And it is our goal over the next several years as we move along and as we become better acclimated to what is out there, that we will be able to provide -- and I like to say this to the folks that we visited up on the Hill in Congress -- that we will be able to be the number one place in America to go for anything you want to know about elections.

The other area that we're looking at also, and it

ties in with our clearinghouse activities, is that there is a lot of data out there on legal resources and legal litigation that has happened across the country. I can't tell you when I was a state election director trying to get a handle on if you were in litigation what was going on around the country, was there similar litigation, how could we put our hands on it. What if we wanted to know about a certain law in states because our legislature was looking at making a change in law? And we have to go through this elaborate process to try to find some litigation or some piece of statutory information that we could put our hands on quickly. And so we have entered into a contract with Florida State University to provide us with the beginnings of a legal resource clearinghouse where you can do one-stop shopping on our website for any piece of litigation: state election laws, federal election laws, that type of information that you can get quickly.

Another area that has blossomed over the last few years is in the area of public access portals. And again, that's a one-stop shop where you can call on Election Day, find out where you're registered to vote,

get information on who's on the ballot, where your polling place is, so on and so forth. And so we're taking a look through a contract with Pubulus (phonetic sp.) out of Detroit who has done a lot of work with the state of Michigan over the years on effective use of public access portals. What do we need to know, what kind of recommendations and best practices do we have to recommend to our states to really make them good and usable? And so we're very excited about that.

Those are some of the things that we're doing. Our plate is full as you can see. We continue to look at other areas. We are looking now and finishing up our '06 research activities, and I think the next time that we're together hopefully I'll have the opportunity to go through them with you.

I want to again share my deep thanks and appreciate for the work that you're doing. I know from first-hand experience the hard work that you are doing. I again want to express my appreciation to the staff at NIST for the good, solid working relationship that we have, and I know that it will continue. And because of that relationship, this process will be very successful.

Thank you.

(Applause.)

DR. SEMERJIAN: Thank you, Tom. Any questions or comments, I guess either for Tom or for Mark at this time? J. R., do you have a --

DR. HARDING: Yes, Mr. Chairman, thank you. I'm not certain where to go. That was an awful lot of information and I thank the speakers for the overview. I would like to hone in on accessibility issues and specifically the talk of new research, perhaps where are we with the shoulds and the shalls, with what was the threshold or justifications in moving some of our issues from one to the other, and where might we be in the future on some of that. How might we deal with the literacy rate or the cognitive issue, if you might put it in disability language, and then specifically some of the outreach and what might we plan to extricate from the November 2006 activities, and any kind of squad programs or something we might be able to have geographically in some of the states that we know will do very well versus states that might not do as well, and then where might the middle line be. And after some

discussion, Mr. Chairman, I would like to introduce a motion regarding outreach and education, specifically with the disability community. And I'd just like to put that on kind of everyone's radar at the moment and allow the conversation to develop. Thank you, sir.

DR. SEMERJIAN: Thank you very much.

UNIDENTIFIED SPEAKER: And Mr. Chair, since Mr. Harding kind of started this, I had an issue here that I was thinking about during Dr. Skall's presentation but I'd like to perhaps get it on the table. They're looking at in the future working at test suites which will cover the three areas. My concern is that as the states throughout the country become more conscious of the importance of testing and begin efforts to do their own certification testing, testing is becoming unacceptably expensive for the vendors. And through trickledown it will become unacceptably expensive for the taxpayers. The expense really isn't a function of the thoroughness of the exams, but the simple fact that the number of jurisdictions is increasing the amount of testing that systems have to undergo almost logarithmically. And that is getting very expensive for

the nation.

I would like to see -- and it's something that there's been a fair amount of resistance in various circles to in the past -- I would like to see the federal test standards as they are developed reach more into states' specific requirements. I would like to see the functions that a system has designed into it exercised if they exist, and if there is no other standard for their performance, then the design standards for them will dictate. We need to create an environment where states can rely heavily on the federal testing that's done and start limiting state certification to just those states' specific issues that for some reason or another cannot be covered in the federal program.

UNIDENTIFIED SPEAKER: I'd like to support Paul's statement. I've done a significant amount of state-level testing and understand what he's saying. And one of the things that we really need to work on is this business of designing the subsequent tests for these requirements. We don't -- I don't think we have exact statistics on this, but back prior to this activity when

this was pretty much a massive volunteer effort, we had something like 35 or 40 states that had voluntarily signed up for this program. But we knew for a fact that a lot of those states did no state-level testing. They simply accepted the system as it came from the ITAs.

DR. SEMERJIAN: Do you have a particular resolution that you want to put forth, or this is just, you wanted to make this part of the record?

UNIDENTIFIED SPEAKER: I want to make this part of the record. And, I mean, as I understand it, you all are still trying to effectively do you needs assessment for the testing standards that Dr. Skall is going to be developing. So I wanted to put it on the record and make staff well aware that at least from my part as a member of this board, that's one of the things I'm going to look very closely at.

DR. SEMERJIAN: Okay. Mr. Berger?

MR. BERGER: Mr. Chairman, I'd like to add my support for this area of discussion. I think it was Meryl King (phonetic sp.) who made the comment once in my hearing that this is a field where we work for a week on an issue and worry for a month on what we just broke

unintentionally. And I think we're well advised to worry significantly about unintended consequences. The cost of testing is one that I have. What we're doing in the cost of implementation is another one, and equally then what we're allowing not to go undone. So as we make changes I very much am interested in knowing what the cost of the testing is that we're requiring, but also get some feedback on what the cost of implementation is so that we're being as intentional as possible about directing efforts system wide.

DR. SEMERJIAN: Dr. Schutzer?

DR. SCHUTZER: I'd like to support it also. We had a parallel in the banking industry. We all have to go through certification and audit testing of all our third-party vendors and their systems that we use. And the way we had been approaching it up until a year ago was exactly the way you're being saddled right now. I mean, we all had our unique needs and nuances in the banking community, but we got together with the big four accounting firms and we worked together to develop detailed testing criteria that could be done once. We actually tested it back with out banks, and of course,

you know, we did have some unique testing requirements yet to be done. But we have found that 60% to 70% of the testing that we were doing were now accomplished by that one single set of certification testing. So I'd like to recommend and maybe even go a step further. You might consider work item (indiscernible) to work with us to actually develop more of that philosophy to something concrete.

DR. WILLIAMS: And companion to that -- this is Britt Williams again -- is that when that system completes testing and is deployed in the field, you've got to be able to verify in the field that what you have is what was tested. And that's not a trivial task either.

DR. SEMERJIAN: Agreed.

UNIDENTIFIED SPEAKER: You know, just to pick up on something Tom had buzzed us on, very practically things like, are we discouraging poll workers and creating additional complexity, or are we confusing state officials in their roles. At least we need to look at those issues.

DR. SEMERJIAN: Would Mark or Tom like to comment

on this, or -- I mean, obviously it will be taken under advisement. But would you want to comment?

UNIDENTIFIED SPEAKER: I have one final plea. This isn't -- when you mentioned that June meeting, you said Thursday/Friday. I encourage people who are planning meetings in the Washington, D.C. area to avoid Fridays. It is really difficult to get out of Washington on Friday.

UNIDENTIFIED SPEAKER: Maybe we want to keep you in Washington. I'd just like to respond -- can you hear me now? I think these are all good points. I'd just like to remind everybody that what we're trying to do is develop test suites that test requirements in the VVSG. So the only way we can minimize problems with respect to the states is to make sure that various requirements are included generically in the VVSG that would impact the states precisely. We can't test above and beyond what's already in the standard. So I just want to make sure we're cognizant as we develop requirements that if there are things that are in there that we feel are necessary because of state interest for testing, they can be done at a state level. But what we're doing is just testing

to the VVSG. The first sort of mantra about testing is you can only test requirements in the standard you're testing. So we're limited by that (indiscernible).

UNIDENTIFIED SPEAKER: Right but, Mr. Chairman, if I may respond? Paul Craft.

DR. SEMERJIAN: Yes, go ahead.

MR. CRAFT: Mark, that is a philosophical difference that we who are trying to deal with state certification testing have been fighting with great frustration for about 15 years. And it simply has to change. We cannot say that we're going to pass a generic federal standard and pass it, turning a blind eye to the state requirements because we are not going to meet the needs of the people who are depending on the standards if we do that. The standards have got to be expanded, the scope has got to be expanded so that we come up with a standard that serves the public we're trying to serve.

DR. SEMERJIAN: Dr. Schutzer?

DR. SCHUTZER: A recommendation there is, I mean, we had the same issue.

(**END OF AUDIOTAPE 1, SIDE B**)

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(**START OF AUDIOTAPE 2, SIDE A**)

DR. SCHUTZER: I know it wouldn't be exhaustive of all the states who could, you know, work with you to ensure that some of their unique needs are reflected in the testing, actually expand it to ensure that you could accommodate some of those requirements.

DR. SEMERJIAN: Mr. Berger?

MR. BERGER: Yes, I think the most helpful thought construct is that we're all involved in a conformity assessment system. At the end of the day we very much want to make sure that the system delivers to the end user. To the nation, the accuracy, reliability, accessibility, usability that we desire. We need the boundaries you've discussed, but we don't need to be doing each other's job. But those boundaries need to be designed very carefully with a lot of collaboration and sometimes some overlap so that the system functions properly. And I think that would be my view. It's clear to me at least and I think to several others, that we need to work that state/federal testing boundary to provide better efficiency and a better end product.

DR. SEMERJIAN: Thank you. Any other questions or comments? Ms. Quesenbery?

MS. QUESENBERY: Sorry, this is probably a little less far reaching than that discussion, but I'm concerned about something that Mr. Skall said about how modules will be promulgated. And one of the suggestions was that they could be essentially published with the endorsement of one subcommittee. And I have to say I worry about this. We've already heard a lot and have heard a lot from various committee members about the burden of reading a lot of material. It's especially hard to read it when you've had no background in the material and no presentation on it. So if -- I guess I don't have a specific suggestion except to say that if we are in fact going to have specific subcommittees presenting material that in a sense is then going to be sort of blanket approved by the committee, that there has to be some form of cross-fertilization between the committees. I'd like to hear for example not just the NIST experts, but the TGDC members from one subcommittee presenting to the other. I know we've had some issues with the level of complexity of the material and whether

the material communicates clearly. And we're certainly a first round of canaries in the mineshaft to ensure that as it's presented it actually makes sense to someone who wasn't part of creating it.

DR. SEMERJIAN: My impression was that the subcommittees were not expecting a blanket approval by the TGDC. I think their idea was to put that out there to start the discussions, so to speak. Am I right?

MS. QUESENBERY: I don't understand when we're going to have these discussions. I mean, we get a four-inch pile of paper. We have a day to go through stuff. We never really have any chance to discuss it in detail. It's sort of reviewed at an overview level, but we just heard Mr. Berger talk about the unintended consequences. I know that one of the things that the NIST staff and the Human Factors and Privacy Subcommittee have been concerned about is the interplay between accessibility, usability, and security, which have obvious trade-offs that have to be made. And it would be better if we had a way during the course of the development of these modules to cross-communicate some of what we're talking about, so it's not just presented as one giant

(indiscernible). Because if what we've done is publish something, I really don't see how we're ever going to go back and seriously revisit it when it's been published as a working module. And then in June we're going to vote on 10 or 15 of these.

DR. SEMERJIAN: Mark, would you like to comment?

MR. SKALL: Yes, well the intent was not to imply rubberstamping or blanket endorsement. The intent was to try to come up with a way that, when we work closely with a subcommittee and there's some sort of meeting of the minds, that we could at least get this on the website so vendors know this is the direction we're going in. Clearly there would have to be caveats that this hasn't been endorsed or voted upon, or to some degree even vetted by the entire TGDC. Now we would hope to put it on the website and get comments from the entire TGDC, but it doesn't seem to happen without a meeting where you can actually have face-to-face things. But the idea is why not allow the public and the vendors to see the direction we're going in. This happens with standards all the time. Drafts are made publicly available and if vendors choose to implement them, they

know there is a risk that they may change before they're agreed upon. But it seems to me it's just in line with sharing information and being as transparent as we can be to put these on there when we think there's a meeting of the minds. Now clearly it would be better if the meeting was a broader meeting of the minds, and the TGDC would at least maybe electronically send in comments that we could vet this. I mean, the other side of the picture is not make it available until the very end, and then there are issues with that as well. So, I mean, I understand your concern.

MS. QUESENBERY: I'm not suggesting that it not be made available. I'm suggesting that the communication materials among the TGDC working groups need to be more transparent between the groups, and there needs to be a better communication on the technical issues from the NIST technical staff to the various members of the TGDC, not a single subcommittee.

MR. CRAFT: And I agree with that.

DR. SCHUTZER: Yes, and I'd like to --

DR. SEMERJIAN: Dr. Schutzer?

DR. SCHUTZER: I'd like to support that too, and

give it a comment and then a recommendation. I think even though we have three separate groups, they are really very interdependent. There was no doubt that sometimes if you bend over backward on accessibility you may be, you know, sacrifice the security. You may be sacrificing for security maintainability, which as we see in some of the recent press can really defeat a lot of the intent anyhow. They are not independent of one another. So I think what you're hearing here is the frustration that the results of these different modules -- I understand that they are not going to be published as modules (indiscernible) access to them. But some time, even if it's not a face-to-face meeting, ought to be made where that information could be available to the whole TGDC, and some time a conference call or (indiscernible) or whatever should be devoted to, you know, just input from the other sides of the -- just outside of our work to provide you our input and concerns or whatever. And I think the product would be better for it. It doesn't mean that it shouldn't also be out on the website and have vendor and public comment and so forth. It certainly should. So I'd recommend

something in that schedule be devoted for that kind of interaction.

DR. SEMERJIAN: Mr. Craft?

MR. CRAFT: Yes. I'd like to also go down I guess another aspect of this while we're on the subject. There is a dearth of vendor input in the process that we went through the last time around. More recently as the subcommittees have started trying to deal with in our committee setting a standard for how marginal marks are going to be handled, it was very, very difficult to get vendor input into this process. I mean, it's my understanding that with all the other industries that NIST works with in setting standards, the industry that makes the devices are a very key part of the standard-setting process and building standards. I really feel that it has been way too difficult for us to get the vendors involved. None of the subcommittee meetings to my knowledge have had a vendor participating in them. There are brilliant minds in the vendors. There are people who have been working on some of the problems that we're discussing here for years. Some of them have done very creative work. There is of course an issue as

to how much of that they're willing to show, because some of it's trade secret information. But I really feel that they need to be brought a little further into the circle as we go into our next iteration of how we're going to regulate their industry.

DR. SEMERJIAN: Mr. Berger?

MR. BERGER: Well, I'd like to just add a single thought. I very much support the comments that Mark and Whitney have made about openness and making the work very visible to all stakeholders. Maybe just consciously having a point in the process where we're not saying this is the direction we're going, but this is a direction we're discussing being more inviting of input. And I think, Paul, this is your point. We very much need to know the vendor input and other stakeholder groups' input before we start getting locked in on a direction.

DR. SEMERJIAN: We have to break at 10:45 for technical reasons, so this is the last question. Mr. Williams?

DR. WILLIAMS: All right, well I'll be brief. The makeup of this committee has concerned me from the get-

go. I've been involved with all four standards developments in this arena, the 1990 FEC, the 2002 FEC, the IEEE, and now this. And this is the first one that didn't have a balanced mix of members of the election community and vendors. We've had vendors actively participate in all of the other three as members of the committee, not just incidental people that we occasionally ask a question. And the balance of election experience on this committee I feel is way out of kilter. Alison -- Sharon Turner Buie, I believe I'm correct, are the only actual election officials -- oh, yes, well okay. Well then we've got three actual election officials out of 14. And so I don't know. The makeup of this committee is specified by law, so there's not much we can do about that. But there's nothing wrong with us forming working subgroups and actively soliciting their input, not on a what-do-you-think-of-this-basis, but on a more generic, look at this and help us refine it. And there's nothing that says that we can't do that within the charter we've got.

DR. SEMERJIAN: Okay. We have to take a break. But I think this is a topic that perhaps can be

discussed during the break. And if anybody wants to make a specific recommendation or resolution, we'll take that up. So we will take a break now. That means that John Wack's presentation will be after the break. And we'll come back at 11 o'clock to start the next session. Thank you.

(15 minute break.)

DR. SEMERJIAN: Can we all take our seats, please? That includes the TGDC members.

(Pause.)

DR. SEMERJIAN: TGDC members, if you could take your seat we'd like to start, please.

UNIDENTIFIED SPEAKER: This might be a good time to get some things passed, don't you think?

DR. SEMERJIAN: Yes, this might be an opportunity for resolutions.

(Pause.)

DR. SEMERJIAN: Okay, I think we'll get going. There is a little change of plan, you know, to respond to the comments made before. But before we get into a discussion of possible resolutions or the need for a fresh look for where we are versus, you know, where

we're going, or where the needs are versus what the plans are and appropriate resource allocation, etc., I think some of these questions may be addressed. So at least the discussion should be held in light of what John Wack will present. So I think we'll go ahead and ask John Wack of our Information Technology Laboratory to report on the developmental status and supplemental guidance for the VVSG 2007, and then open up the discussion, open up the floor for the discussion after that. So unless there are any objections, I propose we proceed as such. Is that -- hearing no objections, John, will you go ahead, please/

MR. WACK: Thank you very much. It is a pleasure and an honor to be here up addressing you again. And, Whitney, you mentioned something about feeling like a canary in a mineshaft. And after the discussion about resolutions, I have to say I feel the same way a little bit.

What I'm going to do is change my presentation slightly. And I think for the purposes of the discussion you want to have, maybe it would be best if I focused more on essentially where are we in the

development of the standards, and review some of the structure of the document, and the reason it looks the way it does, and things of that sort. And then I think that might help you out. So what I'll do is give you an overview of the volumes, a little bit of the history. I'll review some material that we went over last September, and go on to some next steps.

Okay, last September I have you a presentation and we talked about essentially VVSG 2007, and I'll just go through some of that material again. We looked at basically ISO and decided it was best if we broke apart the standard. And we actually separated distinct parts of the standards into separate volumes. So if you look up there -- and the introduction basically is a stand-alone introduction to the overall standards, and it will contain overviews of a variety of different things that essentially will be very usable to the general public as well as, you know, all members of the election official community. Terminology standard, you've seen already parts of that, and that is the glossary. The product standard really has requirements for voting systems in there. Standard on data to be provided has requirements

for test labs and vendors in terms of documentation. And then a separate testing standard that, with the inclusion of some additional funding, will be filled out with actual test suites. And those tests will actually be referenced by requirements in the product standard.

Now what I'm going to do here very quickly is just show you some of the topics that we are covering. This is not an actual outline with sections of the document, but what I've done is I've taken the outline that we presented to you last September and I've done a little bit of color coding of it to show you topics that we have addressed to some measure. And those items in red actually, which I'll read out, for example auditing assumptions, that's basically material that we will present at some point today. So you can see looking at the introduction, some of the material we're going to include in that. And the introduction actually will be pretty much our next focus.

Some of the discussion prior to my appearance here on stage has been basically about making the material usable for the TGDC as well as other communities. And that's become apparent to us as well, that a bigger part

of our job as we've developed more material actually is to put it all together. And I think the next job we have to do is essentially show you on some newer pages how the document all hangs together, what it's starting to look like, so that -- well essentially what I'd like is for a member of, let's just say the HFP subcommittee, to be able to at a glance take a look at the document as a whole and look at other sections, look at the core requirements areas or look at the security areas, and be able to see how it ties in and how HFP is being promulgated in those areas as well. And the same would hold true for the other subcommittees as well.

Okay. Product standard, today we'll also have material on the Conformance Clause, general requirements on crypto access control, Dr. Laskowski is going to present some material on usability, hardware/software performance, workmanship requirements. One thing I want to point out is that the product standard is divided into two general areas, and those are general requirements and then, on the next page, requirements by voting activity. And part of the reason for doing that is to minimize duplication of requirements. Basically

requirements by voting activity will likely reference requirements in the more general section. So we basically make the document a little easier to follow through, and we don't have to keep repeating requirements. We can just reference them. I'll just point out we've got casting and counting and some VVPAT material that we'll present today as well.

Standard on data to be provided, we've touched on that as well and I don't really need to go into too much detail with that today because we really aren't presenting material there. Certification test plan, data to be provided to software reference libraries, still areas that we have to address.

And then the testing standard, and the testing standard at this point, we've got some material developed for it. It's high-level material and I want to point out that one perspective you might take with the VVSG 2007 is that there really isn't a whole lot of new stuff in there. Basically it's taking the VSS, taking what we did for VVSG 2005 and other material and digging down deeper, being much more accurate and specific in the presentation. But I think one of the

most important things we're doing with this standard is basically making things clear. We will do our best to address the most important topics in voting and get it done by July of 2007. But it's very important that we provide a document that's maintainable, that can be updated, and that will be very usable to our primary audiences, and we consider those to be vendors and testers. And at the same time it has to be very usable to -- well, I'll start with the TGDC and the election community and the general public researchers, and so on and so forth.

The testing standard is important. Basically it's going to hopefully contain tests, and each requirement will point to a test if things work out. And we think that that's an extremely important aspect of the standard, that one of the things I've heard from vendors is they would love to know how requirements are actually going to be tested. And I think that's essential as well for the voting system test labs, so the test labs have common guidance and common requirements and common language on developing tests. Right now we have overview material and we can point to that with our

requirements. Given the funding and the further development work, we would like to actually have the specific tests in there.

Okay, very briefly, who's going to use the VVSG? Well I've already talked about vendors and I've already talked about test labs, but we know that states are going to be using it, election officials, people doing RFPs buying voting systems, researchers will be using it, the general public. And we've already talked about basically making this standard usable, very usable not only to the vendors and testers, but to other audiences as well. It has become apparent to us that along the way we have been in situations where we think it's important to develop some additional supplemental guidance on some of the requirements. And I'm not really talking about best practices so much as information that provides a context for some of the requirements.

And so we plan on adding this material. In fact, we've already started. But it is not material that's testable. It's not material that anybody would have to follow. They aren't actual election official

procedures. We will include this material as part of subsections containing requirements. I'll give you a couple examples of some of that material. For example, VVPAT and paper spools, and you know that if you use a paper spool there is a problem in that votes are recorded sequentially on there, and therefore it becomes easier to basically determine the order in which voters used a particular machine. Some context, some supplemental guidance where there might be a recommendation to maintain a certain level of security, there may be additional procedures along the way. It's basically a notification that a state in using a particular VVPAT system may need to examine its own procedures as well. Some of this material by the way, I should mention may find its way into best practices, some may be just too specific to certain requirements and may stay in the VVSG.

A couple of other examples, essentially things such as notation, using small fonts on a paper spool may, there may be some supplemental guidance there for brighter lights than the standard actually says to use, or separate of certain types of voting systems with

audio input that could be more easily overheard. Distribution of passwords or security information, if passwords, cryptographic keys, certificates, whatever are used on voting systems and they have to be distributed manually, there may be some supplemental guidance there.

I talked a little bit about the format. Essentially we could do it a couple of different ways. We may list it somewhat in the requirements format so that we can actually reference where we're actually getting this information, the supplemental guidance. We also may just have informative text in each section.

Okay, well what I've tried to do in a relatively short amount of time, and I guess I apologize that I actually don't have hours to do this, because really to digest all the material that we have it would take about that length of time to present it to you. I just want to wrap it up and say that we will be working more on introductory material down the road, and we recognize a real need to not only develop the requirements and do the research, but also to make it usable to the TGDC as a whole. I think it will get more difficult for the

TGDC though. I think that, you know, as a result of delving deeper into the standards, we have more material and it's going to be more difficult for you. So the more we can talk about working together more closely and getting this reviewed better, you know, we welcome that.

Do you have any quick questions before we go on?

MR. SCHUTZER: Yes, just a quick comment just to illustrate (indiscernible).

DR. SEMERJIAN: Could I remind all the members to identify themselves, please?

MR. SCHUTZER: Dan Schutzer. If you jump back to page 13 for example, I think that we do need greater interaction because some of the things we've been learning or some of the discussions of the core requirements of other areas, or even in a case like this where people have talked about this capability primarily from a privacy and security point of view, there are other things about that that really ought to be put in, like for example guidelines for how to set up and test it to ensure that the accuracy is up to par, guidelines in terms of procedures and handling of this in terms of contingencies, how to prevent things from, paper from

being jammed and how to handle it and so forth. So I really think we do need in some case some thorough review of these things, because we are sometimes identifying a particular feature or function of product from one point of view, from one of the aspects that we really could make it better if we were to include that. And of course I will go along with the fact that vendor input in areas like this would be extremely useful.

DR. SEMERJIAN: Mr. Craft?

MR. CRAFT: Yes, John, one thing that I would like to see, and I don't know how we get there -- I will take one of the requirements that we've been kicking around for the last two years on security is the ability of a system to be, have its firmware validated after the firmware has been loaded. Now that's an issue we've been kicking around for two years, or we've been telling the vendors that they need to figure out do to it, it's going to be in the standard one day. That's an issue that really I think should be pared off from a draft standard into a research project. And that's an area that I think NIST has probably some of the best resources in the world to work at. What are the various

types of firmwares that these vendors are working with, what are the real technical issues in being able to validate installed firmware, and being able to do it in such a manner that you don't compromise security. And then if NIST could bring this board back, that analysis showing us, you know, what specifically has to be done in each of the systems there are currently fielded and the impact, then I think this board could start making informed decisions on those kinds of issues. But we can't go down the road of throwing out a requirement like that, even though it's something those of us who have dealt with the issue would love to see. And how do we get there?

MR. WACK: Well if I could respond quickly, that's a good question, how do we get there. We recently started a series of telecons with vendors basically through ITAA. We had one approximately three weeks ago, and we're going to try to do them every month. And we had the major vendors there, and we initially started off by identifying major issues for the vendors that they wanted to talk about. That was one of them. So one suggestion was essentially to start dedicating, you

know, basically half a day on specific subjects, that being one of them. We've talked a little bit about opportunities where we can have face-to-face meetings with the vendor community at large. And maybe we can do that, for example, during major voting, meetings such as the standards board or (indiscernible) or something like that.

That's one way we can start building more research into that area. It is difficult to actually, you know, get the other work done at the same time, but I think that's part of our charter here. But at least a start though is focusing on those issues with the vendors and with our research folks at the same time.

MR. CRAFT: Okay, I'm glad to hear that that kind of research is going on and I guess I'll follow that up with, is there a way that the NIST staff can start involving those other, some TGDC in some of those efforts? Because I would certainly love to sit in on a phone call in some of those sessions and perhaps advance while we're doing it.

MR. WACK: I actually think that would be great. We can do that.

DR. SEMERJIAN: Mr. Berger?

MR. BERGER: John, thank you for your presentation. And I think you were right in predicting you would address a number of concerns. I have a couple of questions. One maybe is a bit more of a comment. But on page 5 of your slides you talk about interoperability (indiscernible) in standards. There is a concern and I'm wondering if you all are working on it under this item or somewhere else. We qualify COTS on a number of points and systems. I'm not sure we've carefully specified what the limits of replacing cots without additional qualification are. As an example, many of the systems use PCs. The ITAs test them with a specific PC. I'm not sure where we give the range of other models or other vendors' PCs that we would be comfortable or replaceable without independent evaluation. Is that under work anywhere?

MR.WACK: Dave Flater, could I point to you? Dave might to be able to address that a little bit better since he's really dealing more with the COTS issue.

DR. FLATER: There's a pragmatic approach to this, and then there's the hard line tester's approach to

this. I don't know what the pragmatic approach of the EAC with respect to how flexible the certifications are is. I can tell you from the hard-line tester's perspective you certify a particular system. It is a complete system, and any modification you make to that system could potentially break it. For example, substituting one COTS PC for another PC should not break it but it can, because if there are race conditions in the system putting in a faster or slower PC could trigger those problems. That's just one example. So I acknowledge that there needs to be some pragmatism and some flexibility, otherwise we can't possibly send every system back for a complete re-certification regression testing every single time something is changed. But speaking as one with a lot of testing experience, I can tell you that's a very tricky issue to address.

MR. BERGER: David, I share your concern and I think it would be accurate to say that's an area where there's a great deal of confusion more generally. Let me bring up a different item. John, you talked about looking at the VVSG in terms of usability to vendors and testers as the primary audience. And maybe this is more

of a comment, but I'll make it a question. Have we looked through the VVSG to its work product, the ITA report as to its usability by its intended audience, that is state and local officials, as to how well this supports their efforts to then state certify equipment to get to the information they need to perform their functions in running elections?

MR. WACK: Well the answer is yes, we have discussed that. And in the data to be provided section in the certification test plan, first of all looking at the slide it's not complete, it doesn't have everything. But certainly yes, that is basically an area that we've discussed. I think again I'm going to -- well, I don't know, Dave, if you want to address that at all, but we recognize that yes, that report has to be essentially made available and usable and understandable.

DR. SEMERJIAN: Mr. Craft? No? Mr. Gannon?

MR. GANNON: This is Patrick Gannon. John, as a follow-up to Steven's question that related to the interoperability under general requirements, I would draw attention to page 10 where you're talking about the test suite overviews. I don't see any indication there

of interoperability testing, and I would think if the need for interoperability across different components that could be made by different vendors is one of the major requirements, then there should be testing that would specifically address the way to provide interoperability and to verify that, and specifically focusing on the kinds of data interchange formats that might be required from exchanging data between different dissimilar or different vendor-type systems that is not sufficient to just test all the components by a single vendor, but where appropriate to provide interoperability testing across different vendor pieces as part of a larger system. So this is something that could be added to page 9 and 10 to indicate the need for test scripts around interoperability testing.

UNIDENTIFIED SPEAKER: Okay, thank you. I've noted it.

DR. SEMERJIAN: Mr. Harding?

DR. HARDING: Thank you, Mr. Chairman. I'd like to feed off of Mr. Gannon's interoperability observations as it then relates to the system or whatever system we're testing or certifying, and then the role that that

equipment plays in that and how that might change some of these pieces of the equation. And that's somewhere that I don't know that we have any information on. But it will become more important as we get closer to the '08 elections, that the expectation of the community with adaptive needs will continue to grow. So I'd like to add that.

DR. SEMERJIAN: Thank you. Not seeing any other comments, John, thank you. And now we'll go back to a couple of the items that were brought up early in the morning. One was a resolution perhaps regarding the correspondence shall I say between the resolutions passed by this committee and the progress made or work planned that are related to those, however you would like to phrase it.

MR. CRAFT: Okay. We did a bit of writing by committee, so the -- okay.

DR. HARDING: Before -- Paul, before we begin with the Chairman's okay, I'd just like to kind of give the group and the audience a little context or why we're doing this and why we believe it's important, at least from my perspective. In Portland I was asked to

represent this group in front of the advisory committee and kind of give them an overview of well, who were we, how were our different lenses contributing to this process, did we fight amongst ourselves, and those kinds of things. But specifically they wanted to know, well where were we coming from. And I used our resolutions as a bill of rights analogy, and that this was the heart, this was the expectation. And while many of them were philosophical, they in fact created specific work products, and that if they wanted to follow the work of this group and see if in fact that the standards board and the advisory boards and then ultimately the EAC were getting what we thought they should get, they should use the resolutions as kind of your checks and your balances. And that's why I raised it in September and again why I raised it today. And so, Paul, I'd like to ask you if you could, Mr. Chairman, to let the motion be read.

DR. SEMERJIAN: Thank you.

MR. CRAFT: This is difficult from this angle. NIST shall prepare an analysis and regularly report on -- okay, that didn't work -- and regularly prepare a

report. Okay, prepare a report -- take out on -- that tracks resolutions passed by the TTDC and the progress of standards development to the specific -- okay, that didn't work at all -- and the progress of standards development and to the specific work products of NIST. After the initial publication, reports will be provided to the TGDC with the meeting materials prior to each meeting, and will be included as an appendix to all NIST and TGDC work products sent to the Election Assistance Commission.

UNIDENTIFIED SPEAKER: I think if you could just say reports will be provided to the TGDC prior to each meeting just to make it a little more readable.

UNIDENTIFIED SPEAKER: Okay. What kind of timeframe, Britt?

(**END OF AUDIOTAPE 2, SIDE A**)

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(**START OF AUDIOTAPE 2, SIDE B**)

UNIDENTIFIED SPEAKER: -- well what you think will be reasonable, particularly with the fast pace that NIST is going to be working on and getting these materials together. Are we -- okay.

UNIDENTIFIED SPEAKER: No, we already -- it's when the rest of it's --

UNIDENTIFIED SPEAKER: Yes, it's when the rest of the material is due, which is a week. Okay.

DR. SEMERJIAN: Okay, first of all is that clear to everybody? Do we need to read it again, or are we -- okay.

UNIDENTIFIED SPEAKER: Could you read it into the record?

DR. SEMERJIAN: Okay, could you read it again, Mr. Craft?

MR. CRAFT: Yes. NIST shall prepare an analysis and regularly prepare a report that tracks resolutions passed by the TGDC and the progress of standards development and to -- okay -- and the specific work products. So we need to take that to out -- to the specific work products of NIST. After the initial publication, reports will be provided to the TGDC prior to each meeting, and will be included as an appendix to all NIST and TGDC work products sent to the Elections Assistance Commission.

DR. SEMERJIAN: Do we have a second?

DR. HARDING: Second.

DR. SEMERJIAN: Any discussion, comments? Yes, Mr. Harding?

DR. HARDING: Thank you, Mr. Chairman. I'm J. R. Harding. I believe this would also compliment the supplementary kind of guidelines, or that extra work thing that John was alluding to. And I don't know, maybe it is really the upper half of this equation, but I think it speaks to where are we going, what are we trying to do, and where did that work originate from.

DR. SEMERJIAN: Any other comments? Mr. Karmol?

MR. KARMOL: Yes, Mr. Chairman, Dave Karmol. A question I guess to the NIST staff. Does NIST staff understand what is meant by this resolution? Because obviously they're going to have to prepare it. And the second part of the question is, is this something that can be done in sort of a matrix-type fashion of a couple of pages? Because I think the last thing we need is another document that's 20 or 30 pages long. So I guess that's my only concern here. Well no, I understand, that's the problem. I don't think we need another document that's 40, 50 pages long. Is this something --

does the sponsor of the resolution intend that this be a brief, like one-, two-page matrix?

MR. CRAFT: I would like to see it be as brief and understandable as possible, but very frankly there are a number of us on this board, or at least I speak for myself and J. R. said his part. There are those of us on this board who really do not have a clear concept of how our work product from prior meetings has flowed into the standards. And I just, I think that document needs to be created. If there are resolutions that are not flowing into the standards for some reason, we need to know about that and the report needs to show that. I'm sure there were things that possibly after receiving public comment the EAC, you know, took out at the final moment for the document that was published. But how do we get it? There is no traceability right now that I know of from our resolutions to the published standards. And it's very difficult from my perspective to conceptualize where NIST is in executing some of the prior resolutions we passed.

DR. SEMERJIAN: Well we certainly understand the traceability concept, so I'm with you on that. But in

that spirit, may I suggest that the word analysis to me means voluminous things. So may I suggest an amendment perhaps that says NIST shall prepare a brief report and -- brief -- yes, I would take out the word analysis, because analysis to me says a lot of studies and, you know, this and that. And --

UNIDENTIFIED SPEAKER: And you can cut from there to that --

DR. SEMERJIAN: And regularly --

UNIDENTIFIED SPEAKER: -- brief report that tracks resolutions.

DR. SEMERJIAN: Yes.

UNIDENTIFIED SPEAKER: Mr. Chairman, if I may --

DR. SEMERJIAN: Sure.

UNIDENTIFIED SPEAKER: -- I'd just like to speak up. Sharon Laskowski and her staff did just this for the Human Factors and Privacy Committee, went through where -- the final version that we voted on, what the changes were that had been made between there and January 12th, and have been continuing to update us on work that they're doing and in continuing to review comments with the EAC. So perhaps there's some examples

there even within NIST (indiscernible).

DR. SEMERJIAN: Yes, I thought that we actually had presented some things along those lines. It may not have been comprehensive, but how about the --

UNIDENTIFIED SPEAKER: On the other hand, back to my comment about cross-fertilization between the subcommittees, we of course were intensely interested in what happened in the sections that we've been deeply involved in. But perhaps others were equally interested in that.

DR. SEMERJIAN: Okay, with the modification, is this acceptable to the original authors of the resolution?

UNIDENTIFIED SPEAKER: Mr. Chair, if I may, first of all I guess I didn't hear -- were you responding on behalf of the staff in terms of what was understood? I guess you were.

DR. SEMERJIAN: Well when I saw the word analysis, that made me worry because, you know, it sounded like for each resolution we were going to write three pages on what I did, etc. I think the idea of a matrix that says these are the resolutions and this is the work

product, you know, maybe by page or by heading in the standard that says, this is what that material addresses with regard to (indiscernible) resolution.

UNIDENTIFIED SPEAKER: Just maybe as a friendly amendment here, because I notice there's some 40 resolutions and many of these are structural resolutions, in other words, how we're going to structure the work. I don't think we need a report that says, you know, we have three subcommittees and each -- we don't need a report on all of these. I guess I would suggest maybe adding the word the relevant resolutions.

UNIDENTIFIED SPEAKER: Well I think that some of these are --

UNIDENTIFIED SPEAKER: But --

UNIDENTIFIED SPEAKER: I think since it just hasn't been done up until now it would be good to start with a document that shows which of the prior resolutions have now been clear, implemented. And then we can go forward with regular reports.

DR. SEMERJIAN: Yes, some of them may not have any follow up because it may have been in the nature of the resolution that it was more of a discussion. So are we

comfortable with this? Any more discussions or any changes?

(No audible response.)

DR. SEMERJIAN: Hearing none, those all in favor of this resolution?

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

(No audible response.)

DR. SEMERJIAN: Let me see here. Ms. Turner Buie, are you on the phone?

MS. TURNER BUIE: Yes, I am.

DR. SEMERJIAN: Oh, thank you. I understand you've been following the discussion but we could not hear you.

MS. TURNER BUIE: Yes, I was --

DR. SEMERJIAN: Did you capture this resolution?

MS. TURNER BUIE: I did, and --

DR. SEMERJIAN: Are you in favor?

MS. TURNER BUIE: Yes, I am.

DR. SEMERJIAN: Thank you. Resolution has passed unanimously. Thank you. Okay, the next item we're going to take was the discussion we sort of started in the earlier session. And I believe Mr. Berger will lead

this discussion.

MR. BERGER: Thank you, Dr. Semerjian. As I said earlier, and I think much of the discussion that has taken place so far this morning is in this direction, I think it probably serves us well to take a look at our work. And I might frame it as, are we being as focused and responsive to the concerns we've heard expressed by Commissioner Davidson and Tom Wilkey as well as from the NIST staff as to where we best apply resources today. I'm not sure that I have any answers, in fact I'm sure I don't have final answers in this area. But I to have a number of areas where I'm concerned, and I would just launch with this observation. In my career, the things that have caused the greatest problems are those areas that I wasn't working on. And so my question is, as we work very diligently we all recognize that there's much work left to be done in all the areas we're engaged in. Are we looking at the things that we maybe collectively are overlooking that may really come back to hurt the election system. As examples, some of these have been mentioned this morning. Is it very clear in the ITA Report so that those who get these systems -- exactly

what system the ITA tested, software and hardware, with enough specificity and detail so that subsequently others can say, I am working with exactly the same system that the ITA qualified in a state-certification process, in a local acceptance testing, other places. That would be an example.

As we look to improving the national qualification testing it's been mentioned, have we really given guidance on what acceptance testing should be performed, what pre-election testing should be performed to assure that the end product of the election is as solid, accurate, and reliable as possible. I'm really asking for a resource and focus discussion. And I'm not going to try and give answers, but maybe just stop and see what others might care to contribute.

DR. SEMERJIAN: Any other comments? Dr. Rivest?

DR. RIVEST: Yes. Steve has raised a good point in the questions of what we're not looking at. Whether they may cause us problems is a great one. Certainly things like vote by mail are increasing in their use, and essentially we've done as much as we need to there to address vote by mail systems. Another issue that was

raised by two of my colleagues, Ted Siliker (phonetic sp.) and Mike Alvarez (phonetic sp.) has to do with state-wide voter registration systems which are now mandated, and whether we're doing enough on that front to set standards there. And I got a letter from them which I'll pass to the committee separate by e-mail, but I think that's an area where again we're not looking at that area with much intensity at all. And it's easy to predict that we may see lots of problems in that area that some effort here might help alleviate.

UNIDENTIFIED SPEAKER: It's outside our scope, isn't it?

UNIDENTIFIED SPEAKER: Actually there was a resolution that as time permitted there were various other aspects that we should be looking at besides just what was encompassed in the scope of the specs. And I believe registration was one of them. So it would be totally within keeping. If you track those resolutions you'll find we do have an analysis paper that's due us in that area, among some other things.

DR. WILLIAMS: This is Britt Williams. Voter registration per se is outside of our scope, but clearly

within our scope is how the voter registration system interfaces into the voting system.

DR. SEMERJIAN: Any other comments? Mr. Harding, did you --

DR. HARDING: I'll wait for the gentlemen to stop their technical issues and I'll get back to the heartbeat of the voter.

DR. SEMERJIAN: Ms. Quesenbery?

MS. QUESENBERY: Just a quick follow up on something Mr. Berger said, which was talking about the question of what is in the ITA Reports. I of course have never seen one, but as I understand them now they basically say yes or no. And without regard to whether these are publicly available or available only to appropriately-designated people, I can see that as we move into usability and accessibility standards there's a number of them where having enough information about how those tests were conducted would help any expert. For instance, hired by the state to review a certification would be very useful. And I know we've sort of put off a lot of things about testing until later, and maybe later is coming.

MR. SCHUTZER: Dan Schutzer. I'd like to say that it was expressed earlier this morning the concern about trying to include more of the states' requirements. And I would say when we attempted that same thing in banking, we absolutely could not live with yes/no results because it wasn't clear that each bank would interpret the results the same way. And I believe it's the same for the states. You do need the details of the testing information. You're actually going to try to minimize the work of each state by allowing them to rely a bulk upon the national testing.

DR. SEMERJIAN: Mr. Berger?

MR. BERGER: Yes, Steve Burger. I think you raise actually a different point than what I was talking to, but an extremely important one. I really think we need the expertise of the usability experts on the ITA Reports and ask the fundamental question, what are these reports trying to do. Clearly one is so that other experts can look at the tests and develop an independent judgment on whether that test adequately performed the service it was intended for. Other purposes of the report are for state officials to look at the test and

understand with enough detail, so that if they have additional concerns they can then add to the, do their own testing so they clearly understand what was and, just as importantly, what was not done. And I think the issue of availability of the reports is a separate one but important, very important.

DR. WILLIAMS: This is Britt Williams. On this question of ITA Reports, the sticky wicket there is that the reports are proprietary to the vendors. The vendor contracts with the ITA to do the testing, and as it stands right now the reports are proprietary. And I think what we need to do is to define a public report. We certainly have no problem with the ITA's working and proprietary (indiscernible) with the vendors, but there should also be a report that is a public report. And we need for this committee to specify the content of that public report.

UNIDENTIFIED SPEAKER: We had the same issue. In other words, if I contracted with a testing authority to investigate a system that was considered private, the way we got around that, and we had to look at legal liability aspects and so forth, is we get the vendor to

agree to release the report to another bank to look at for the purposes of their auditing. It actually saves them a lot of time and money. They don't have to go through the same onerous test again. I believe you could probably work out something similar to that too.

DR. WILLIAMS: This is Britt Williams again. That happens now. I mean, any jurisdiction that is considering buying that system has no problem whatsoever getting the vendor to release the reports to them. But what I'm talking about is a report that would be released publicly without the vendors having to approve every single release of the report.

DR. SEMERJIAN: Well that's something certainly we can think about and maybe make some recommendations. I mean, it seems to me that keeping such a report entirely proprietary doesn't really serve any purpose, because in most cases the test is being done not only for the vendor's benefit but also for the election community. So having a two-step process where first they have a proprietary report and then you have to negotiate to get a release, whereas if as you say there was an agreed upon format or content that basically is expected to be

released for public consumption, certainly would cut a lot of the red tape.

UNIDENTIFIED SPEAKER: Yes. I guess as an example right now, the proprietary reports will contain a list of anomalies and specifically how those anomalies were resolved. The anomalies are not present in the end system, and how they were resolved frequently gets into the actual structure and internal design of the system. So obviously a vendor would not want that in the newspaper. But the fact that there was an indetermination and appropriate testing to verify that the system now met the standards would be in the public report.

DR. SEMERJIAN: Yes, certainly you don't want making public the interim reports or negotiations or whatever, but the final result of whatever, however the vendor may have responded to some other shortcomings that may have been identified and whatever. Are we comfortable, Mark, getting involved in such area of discussion?

MR. SKALL: Yes. I think we certainly agree with the intent of everything that's being said. I'd just

like to remind everyone that we certainly put in the standards that these things shall be publicly available, but I think where the rubber meets the road is the certification where in fact I think if the EAC and that certification imposes this, then the contractual agreements can be essentially swayed if they say that a certification shall only be granted if these aspects of the test report are made publicly available. I think that's how we put teeth into what we're proposing.

DR. SEMERJIAN: So am I hearing that, I mean, this is really perhaps more a recommendation to be made to the EAC rather than to NIST?

UNIDENTIFIED SPEAKER: No, I think it's going to have to be a reporting standard. I mean, all your evaluation standards have standards for reporting, and I think we're going to have to address that in the reporting standards.

DR. SEMERJIAN: Mr. Williams?

DR. WILLIAMS: Let me see if I can summarize this. We've got this laundry list of things that everybody's nodding their head, that if we address these things we could have an immediate impact on improving elections.

And so what are we doing? Instead we're using our resources to drive forward to write another version of voting system standards, when really the voting system standards we have in place right now are pretty adequate. So what we may be saying here is that we need to change our focus a little bit and do more of an analysis of what can we focus on that will have an immediate, beneficial impact on elections, and maybe back off a little bit on using all of our resources just to continue to refine technical standards.

DR. SEMERJIAN: Mr. Berger?

MR. BERGER: I completely agree. I think the only fair and effective approach is to prioritize as you're suggesting, Dr. Williams. If we want renewed focus on some areas that can bring quick and effective improvement, we need to equally say that we're reducing priority on other items. And I think we also need to ask the question how we might more effectively bring in wider stakeholder input to the process. A lot of these --

UNIDENTIFIED SPEAKER: (Indiscernible.)

MR. BERGER: Yes.

MR. GALE: Mr. Chairman?

DR. SEMERJIAN: Yes, go ahead.

MR. GALE: John Gale, Secretary of State for Nebraska. I guess I'm the highest election official on the committee and have been listening very closely to the discussion. And I'm fairly new to the committee, so what I may say may be pretty redundant to other discussions. But it seems to me that science, which is what you're involved in, is driven toward perfection and politics is simply the art of the possible, art of the practical. And if we drive this toward perfection, a scientific perfection that maybe accomplishes absolute certainty, it may result in equipment that can't be produced or states that can't afford it.

So I guess to me there's a balance between a standard that we try to set that vendors can live with and can price, and states can determine whether or not that equipment is going to be feasible for their various counties to purchase and to use. So for smaller states, and I think there's probably about two-thirds of the states that rely pretty heavily upon the standards whether they were the 2002 standards or the new 2005

standards, but these are Voluntary Voting System Guidelines. These are not federally-mandated guidelines. And so what we're not trying to do here, this is not a national mandate that everybody has to comply with whatever we come up with. And if we make this so difficult, so impossible, and so unwieldy in terms of cost, every state will have to have its own certification process which will be different but is going to be more practical for them to live with in terms of the costing of equipment and for vendors to be able to supply the equipment. So a drive to absolute certainty on every issue I think fails the vendors by making it impossible to produce a product that will allow them a profit and a market. And it may be that, particularly for the smaller two-thirds states, they can't afford the equipment because the standards are way too high for what is affordable for their practical use in their state.

So I'm trying to balance the discussion here in terms of the art of certainty versus the art of the possible in what we're trying to accomplish. I think the vendors have to know -- I remember the discussion in

our state about whether we were going to go with DREs or are we going to stick with paper ballots in some form. And when the whole discussion came up about the Voter-Verifiable Paper Audit Trail, we were able to determine from vendors that was going to add about $500 to each piece of equipment that we might purchase for compliance with the need for handicapped and visually-impaired equipment in each precinct. And that really made a difference in terms of our approach on that issue. So I don't know, I think we have to remain conscious all the time of the fiscal impact of what we do. And I don't know that we can add a fiscal note to each of the additional requirements that we want to impose, but if we impose so many requirements that the fiscal element is ignored, we haven't accomplished anything because states won't follow those voluntary standards because they're impossible to follow.

MS. QUESENBERY: May I ask for clarification?

DR. SEMERJIAN: Ms. Quesenbery?

MS. QUESENBERY: This is Whitney Quesenbery. I'm -- this is truly a question and not a statement. Are you talking about the, if the content of the VVSG

requirements makes the equipment too expensive to purchase, or are you talking about a situation in which the test requirements for the states wouldn't be too great a burden, or something else entirely?

MR. GALE: Well I guess what I'm saying is it seems like our standards, since they're voluntary standards, have to permit some flexibility, some choices of vendors in terms of the quality of product. Are they trying to produce a Chevrolet for Nebraska, or a Cadillac for New York? What, is it a minimum standard or a maximum standard? If it's a minimum standard, then vendors know they can produce a lower quality, maybe an economy-level piece of equipment that will work well in the Great Plain State. Maybe in California and Florida they need a much more complicated and sophisticated equipment that can be afforded by those states. But if our standard is a standard to try to meet the needs of New York City or Los Angeles, Arthur County, Nebraska is in a different world in terms of their affordability of that equipment that meets that standard.

DR. SEMEJIAN: It's past 12 o'clock. We have one other long presentation. I think with Mr. Berger's

concurrence, I would like to propose that, you know, we think about -- I think there were a lot of important points made here. Think about those, and then at the end of the day when we talk about motions to be put on the table, if there is the general feeling that there is a resolution to be proposed then we can do that at that time. I would like to proceed with the presentations. Mr. Harding, last word.

DR. HARDING: I would like then the professional courtesy just to sneak one more in, because it is the appropriate time regarding our Commissioner's comments, the EAC's Director, and the general heartbeat that was around this table, which was essentially we have a pretty good document right now that has evolved significantly in the history of our voting. And the question really is, well how is this document going to play out in our communities, and can we take the content of that, identify what states are in fact going to live up to these expectations here in this '06 round. Might we be able to identify and study some of those things for really implementation, correction, and action items for the '07 rendition of this? And I would like to

specifically speak to that of the disabled community. And if I could, Mr. Chairman, I would like to introduce a small resolution regarding the TGDC and the EAC with Outreach for the disabled community.

DR. SEMERJIAN: Can we do this at the end of the day?

DR. HARDING: We could.

DR. SEMERJIAN: If you don't mind I would like to proceed, because we were going to have two presentations and we're now going to have only one presentation -- is that right -- before lunch so that we don't fall too far behind our schedule. And I promise that we will have the opportunity for you to present you resolution.

DR. HARDING: Thank you.

DR. SEMERJIAN: At this point we will have the first of two presentations. And I call on Dr. Alan Goldfine of our Information Technology Laboratory to present part of the Core Requirements and Testing Subcommittee preliminary report. And after -- see we have to really break at 12:30, otherwise there won't be any lunch left out there, and I don't think that would be very hospitable for us. So we'll simply have the

presentation and then break for lunch. And then when we come back we'll have Dr. Flater's presentation, and then we can have the discussion. Go ahead, Alan.

DR. GOLDFINE: Thank you, Dr. Semerjian. It says part 2 but, you know, it's turned into part 1. Fortunately what I was planning to do would be a brief overview with the attempt not to get bogged down into technical details. So I'm going to proceed along those lines. Okay, I'm going to talk very briefly about what we are doing with respect to a number of areas of requirements, you know, with the CRT Group, Electrical Radio Frequency Requirements, performance requirements, and workmanship requirements in general, Quality Assurance and Configuration Management, a brief discussion of future work in this area with the little, you know, roadmap as to what to expect first. And then if in fact there's two minutes left at the end, you know, some discussion time.

Okay, in terms of Electrical and Radio Frequency Requirements, we are in fact looking at them with an attempt to update them. These requirements were in fact updated for the VVSG as the result of the public, or

comments received during the public review. Most of the changes were rather minor in terms of values and terminology and so on. We're looking at it from a slightly broader perspective to try to reflect the latest available information in these areas to reference applicable standards, rather than repeating or excerpting text from those standards which seemed to be done in a number of places in the existing standard; to also clearly separate requirements from testing specifications, which again, two things that got a little bit blurred. What we're working on are the requirements. Testing specs come later as part of a separate document. And finally, to distinguish in this area between requirements that are in fact unique to voting devices as opposed to requirements on any electrical device. So if we're talking about an FCC requirement on, you know, electromagnetic emissions or something like that, that's applicable to any device. Now the question is, is there or are there requirements, necessary requirements that are specific to voting devices. That's the area that, you know, we really need to specify, and more important to test to.

For Performance and Workmanship Requirements in general, after the completion of the December VVSG, we then, you know, made a rather major effort to go through the entire collection of public review comments. I heard a figure of 6,000. I'm not sure if the number ever totally stabilized, but we stepped through each and every requirement, not just the ones that were considered to be carry over, to try to extract, to discover, extract, and analyze any of them which would be relevant to our rethinking of the VVSG. So based on that analysis, we did make quite a few, or a number of revisions to the VVSG. For example, we removed the availability requirements. The model that had been used for this, which most importantly factored in repair time of voting devices, was unrealistic and we felt not really helpful in achieving the goal of reliability. So the goal of reliability of equipment is now an even more central requirement, defined solely through the concept of mean time between failure. A little bit more on that in a minute, but the point is that revisions were made based upon what we extracted from the public review comments. Many of the requirements that we had were in

fact moved to the other part of the CRT report, you know, cast, count, and report.

Okay, Quality Assurance and Configuration Management, this of course is not a new issue. It was identified as an issue by a previous TGDC resolution. The current text -- it's not that the current text is poor or totally inadequate, but it provides general goals and good practices. Unfortunately it's mostly not specific to voting systems. It's also not very explicit, not very amenable to verification, to testing, to certification, and that sort of thing. So we are actively involved in establishing dialogues with relevant parties. I know I've had dialogues with a number of people on the TGDC and, you know, several of the vendors regarding what is being done in this area, what is the appropriate approach to take.

Future work, the first major step is to finalize the performance requirements and workmanship requirements. There are still open questions in the document that's up on the web. Most of those though have default solutions attached to them. They've simmered for a while. We've talked to people, we've had

dialogues, we've asked questions, published issue papers, and so on. We have reached the point on all of them, I think, where it's time to, you know, fish or cut bait. We're going to resolve them.

We will complete the revision as I said of the Electrical and RF Requirements and create -- I'm grouping the first three together -- create a single CRT document via a merge with David Flater's document. So it will be a single CRT document to look at. These are the most immediate work tasks. I think that these should be pretty much complete in at least some sort of a coherent, complete draft form within the next couple of months. They will be well before the next TGDC meeting, the next couple of months. The products will be out there on the web and we will certainly be publicizing them as much as possible. After that we need a lot of informative text regarding these areas. You know, that remains to be written. There are a number of places as I was reviewing the documents where there are still notations to the effect that the coordination or integration needs to occur with the other two subgroups, with STS and HFP, where yes, we can

proceed to a certain extent, but questions that need their input still remain. And this is again something that's going to be done in the immediate months ahead.

I mentioned the reliability requirement issue and I don't want to get to deeply into it, but basically it can be boiled down to the one sentence that the mean time between failure of voting systems shall be at least 163 hours in duration. We're not totally sure the history of this, where the number 163 came from. The feeling, the consensus that we've got is that it's probably too small a number, but should the number be increased, to what? I mean you begin to run into all sorts of affordability issues here as well. You know, you could test forever, but is that practical from a cost point of view. Again, this will be the focus of a significant evaluation and analysis in the months ahead.

And finally the Quality Assurance and Configuration Management, all sorts of different aspects of looking to this should a published standard or multiple published standards be adopted. For example, the ISO 9000 series, or really should the ideas within published standards be adopted, because then you're inventing your own

standard. These are questions that we've been asking and trying to come up with a consensus for. One thing that may become necessary for this particular issue is this may begin to sort of veer onto the policies and procedures question. And we may say well, how would the EAC weigh in on this, what do they want to do.

Beyond all of this, as we've indicated before, we need to develop the draft standards on data to be provided, and of course develop the draft testing standard as well. Those are of course, as has been indicated, longer-range issues, although the long range is becoming shorter and shorter as each month goes by.

That's a quick overview of what I had to say. Is there any discussion on this?

DR. SEMERJIAN: Any quick questions?

MR. CRAFT: No questions. Comments.

DR. SEMERJIAN: Mr. Craft?

MR. CRAFT: The one item that stands out in future work is the configuration management and system validation. And I know I've harped on this for a couple of years but that is the most critical item on this list, and I feel it needs much more attention than it

has been given. If every Elections Administrator in this country is not capable of either validating or getting to consulting services that will help them validate their voting system and prove that it is in fact a certified system, all of this work is for nothing. Now there are five people I believe in this room who can go in with a high rate of reliability and validate a voting system. Three of them are in my company. And as a business perspective I'm not disappointed in that, but as public policy that's a very bad thing. There are very few people outside of this room who have that expertise. I know we have done quite a bit of work with the National Software Reference Library. And when I was running the program in Florida, we did quite a bit of work with some of the vendors on system validation models. That's something that needs to evolve. Almost beyond evolving is a standard. It needs to be developed as a process, jointly push forward by the EAC with the assistance of NIST. We've got to get to the point where states and local jurisdictions can have confidence that in fact the system there running is what they think they're running, what they're

legally supposed to be running.

DR. SEMERJIAN: Any other quick questions or comments? Mr. Berger:

MR. BERGER: Alan, on your last point, just one question since a couple of times you brought up the economic issue. Do you currently have an idea of what it costs to test to 2005 as you're looking to developing the draft test standards for future testing?

MR. GOLDFINE: Right now no, but obviously, you know, that's a crucial consideration which can't be overlooked.

DR. RIVEST: I have a question.

DR. SEMERJIAN: Yes, Dr. Rivest.

DR. RIVEST: Ron Rivest. Yes, are all of the reliability requirements stated in terms of hours, or is some of it amount of use, the number of voters processed or number of pages printed, or whatever?

MR. GOLDFINE: For the most part it centers around that mean time between failure.

DR. RIVEST: So it's going to be some sort of norm for usage rate?

MR. GOLDFINE: (Indiscernible.)

DR. RIVEST: Thanks.

DR. SEMERJIAN: Mr. Harding?

DR. HARDING: Thank you, Mr. Chairman. What Mr. Craft raised just a minute ago in a sense can be very troubling. If we've got less than a half dozen people who are capable of certifying a system, then we need to certainly figure out how our guidelines and specifications are expressed or articulated and a methodology that literally gives the layperson confidence that whatever is in his or her county meets this basic guideline. And I think ultimately -- we talk about our election manufacturer is our customer and stuff. Our customer is the people. They just happen to be the ones in the middle. But if whatever we promulgate and then goes up the food chain cannot be understood by the average voter, then we haven't done a whole lot of service. And I'm troubled if we only have a half dozen people in the country who can go around to some municipality and bless this machine. And if the characteristics of a certified machine aren't clear enough and aren't easily recognizable enough, well then, ladies and gentlemen, we haven't done a very good job.

And maybe we need to dumb it down. But the average person needs to know what a certified machine looks like, what are those characteristics, and how he or she might be able to validate that in their own observations.

MR. CRAFT: If I may comment, Mr. Chairman.

DR. SEMERJIAN: Yes, Mr. Craft.

MR. CRAFT: Actually, J. R., there's about a dozen of us which is still not enough. And the elections community has been beat to death since 2000 by the activist community with the one question, how do you know. How do you know, how do you know, how do you know, what if, how do you know. The answer –

(**END OF AUDIOTAPE 2, SIDE B**)

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(**START OF AUDIOTAPE 3, SIDE A**)

MR. HARDING: -- the release test, and what's the other phrase?

MR. CRAFT: Well the system validation, the ability to go in and look at the code running on a system --

MR. HARDING: Well stop, Paul. Stop. You gave two words a moment ago.

MR. CRAFT: Okay. System validation.

MR. HARDING: There was another piece to it, but fine. Let's define system validation so that the layperson can be able to see that, quantify it, and then a local, you know, whether it's Ian or it's Alice, you know, simply put it out there, this is how it's done.

MR. CRAFT: Yes.

DR. HARDING: That process.

UNIDENTIFIED SPEAKER: (Indiscernible.)

DR. SEMERJIAN: Dr. Williams?

DR. WILLIAMS: It's Britt Williams. This situation, J. R., is not quite as grim as Paul describes it because what he's excluding is all of the people that work for vendors and all of the election officials. What Paul's talking about is people who are available to go and do this work. There's not many of those. There are a lot more people that are capable of doing it, but they're either election officials or they're vendors or, you know, they're people that would have a conflict of interest.

DR. SEMERJIAN: Mr. Berger? Last comment before lunch.

MR. BERGER: I always love to have the last comment. Thank you. I would just point out if we look at this again as a system, a certification conformance system, in the International Standards there's an ISO 17025 that says you need to think about the qualification of the people in the system to do whatever function you're expecting of them. I think that's a piece of what Paul's talking about, and I think it serves us all well to think about have we done the work to make sure that people know what they need to do at each function in the system.

DR. SEMERJIAN: Okay. With that, I'd like to close this morning session. We will get together again at 1:30. You are welcome to join me in dining room A or B. This is for the TGDC members only and NIST staff. So if you would like to do that, you can get your lunch in the cafeteria. As you go from here, the cafeteria is on the right side. The dining rooms are on your left side. So you can get your food in the cafeteria and then come and join in a little more private setting to have our lunch. And then we'll start again at 1:30. Thank you.

(Lunch break.)

UNIDENTIFIED SPEAKER: Phil Greene, are you here, ready for the beginning of this meeting? Phil Greene?

UNIDENTIFIED SPEAKER: He's on his way back. He'll be here.

(Pause.)

DR. SEMERJIAN: Good afternoon. I call this afternoon session of the sixth meeting of the TGDC back to order. And I would like to request that Mr. Phil Greene call the role and determine if a quorum is present. Mr. Greene?

MR. GREENE: Thank you, Dr. Semerjian. The afternoon role call. Williams?

DR. WILLIAMS: Here.

MR. GREENE: Williams is here. Berger?

MR. BERGER: Here.

MR. GREENE: Berger is here. Karmol?

MR. KARMOL: Here.

MR. GREENE: Karmol is here. Craft?

MR. CRAFT: Here.

MR. GREENE: Craft is here. Gale?

MR. GALE: Here.

MR. GREENE: Gale is here. Elekes?

MR. ELEKES: Here.

MR. GREENE: Elekes is here. Gannon?

MR. GANNON: Here.

MR. GREENE: Gannon is here. Harding?

UNIDENTIFIED SPEAKER: (Indiscernible.)

MR. GREENE: Harding is on his way. Miller?

MS. MILLER: Here.

MR. GREENE: Miller is here. Purcell?

MS. PURCELL: Here.

MR. GREENE: Purcell is here. Quesenbery?

MS. QUESENBERY: Here.

MR. GREENE: Quesenbery is here. Rivest?

DR. RIVEST: Here.

MR. GREENE: Rivest is here. Schutzer?

MR. SCHUTZER: Here.

MR. GREENE: Schutzer is here. Turner Buie?

MS. TURNER BUIE: Here.

MR. GREENE: Present by telephone. And Semerjian?

DR. SEMERJIAN: Here.

MR. GREENE: Semerjian is here. We have 14 in attendance. That’s more than enough for a quorum.

DR. SEMERJIAN: Thank you, Mr. Greene. At this

time I'll call on Dr. David Flater of the NIST Information Technology Laboratory to continue with the second half of the presentation on Core Requirements and Testing Subcommittee preliminary report. David?

DR. FLATER: Thank you very much. Well normally one would have lots of style points deducted for having a presentation that's too short. I understand that today a general amnesty has been announced. So I shall omit needless words, and if the committee sees that I'm breezing past an issue that they'd like to discuss please slow me down.

My presentation covers what appears in the binders as two documents. One contains requirements on Casting, Counting, and Reporting, plus a section on closing polls, and another is the Conformance Clause. I'm going to focus on the Requirements for Casting, Counting, and Reporting. With respect to closing polls, I'm just going to talk about early voting and how that relates. And with respect to the Conformance Clause, I'm just going to talk about a classification mechanism that's been introduced into the standard.

First, the Casting Section. The Casting Section is

broken down into six subsections. First, ballot activation which previously has been only appearing on DRE systems. This is the behavior in which the system has all of the ballot formats available to it, and it delivers to the voter the ballot format that's appropriate to that voter. General voting functionality is just the interactions with the voter, which has a great deal of overlap with the Human Factors and Privacy area. Voting variations is one of the sections, or one of the areas where the requirements have been substantially expanded versus the previous standards Earlier there were some comments about how we should look at requirements and testing for behaviors that are of interest to individual states that do not appear in the old standards. Well I'm happy to inform you that NIST has anticipated this need, and in the documents in front of you the included variation requirements cover such things as cumulative voting, NFM (phonetic sp.) voting, and straight-party voting, which previously did not get a lot of language in the old standard. It just said the vendor shall describe how the system might or might not support these. In the new standard there are

actually requirements saying if you claim to provide this functionality, this is what the system must do.

Recording votes deals with when the voter hits the cast ballot button and other events surrounding that. Redundant records has to do with the historical requirement that DRE shall retain more than one copy of the cast vote record. And respecting limits has to do with the fact that a tabulator should stop before there is the threat of overflowing a counter. Now these names for these different subsections are of course tentative, and they'll be replaced with whatever words are most effective at communicating the intent.

One of the major adjustments that was made in the Casting Requirements is to expand them to include a class of voting devices that we have called EBMs, or electronically-assisted ballot markers. These are devices that provide some sort of electronic interface to the voter, and at the end of the interaction with the voter produces a ballot on paper. Earlier there was some discussion about expanding the standards to cover vote by phone. And I'm again proud to announce that NIST has anticipated this need. The vote by phone

system I believe satisfies the requirements to be an electronically-assisted ballot marker. It's providing electronic interface to the voter, which is very similar to the audio interface on a DRE. And at the end of the process you get a paper ballot.

Now we are aware of two different variations of electronically-assisted ballot markers. In one of these variants, the poll worker gives to the voter a ballot that is preprinted with the appropriate ballot format already. And what the EBM does is assist the voter in filling in the ovals, as it were. The EBM does not have the capability to serve the voter with other ballot formats. But there is a subclass of systems, which we've called electronic ballot printers, which in fact do have all the ballot formats available to them, and they print an entire ballot. You do not have to supply this equipment with a preprinted ballot that has a ballot format chosen. The interaction is very much like with the DRE. The poll worker assigns a ballot format, but the actual production of a ballot of that particular format is done by the equipment. EBMs therefore can support ballot activation. And the requirements that

previously applied -- or EBPs, rather can support ballot activation. And the requirements that previously applied only to DREs with respect to ballot activation have been adjusted to include EBPs and their scope. All EBMS on the other hand support the sort of interaction with the voter that DREs support. So those DRE requirements have been adjusted to include all the EBMs and their scope.

Other changes with respect to the --

DR. SEMERJIAN: Excuse me, David. There is a clarification.

MR. GALE: I had a question. John Gale. Was this at the direction of the TGDC, this merger of the EBMs with the DRE standards?

DR. FLATER: I wouldn’t call it a merger. There was discussion at some point about we have to extend the scope of the existing standards to cover these new kinds of technologies and systems that are appearing that we don’t know how to apply the standards to. I believe that the discussion was at that general level. EBMs, EBPs, including vote by phone fall into that category. This really, although it’s significant in terms of its

impact, in terms of meddling with the standard it wasn't that significant. It was simply a matter of observing that these requirements that previously said DRE shall are really referring to a broader class of systems, meaning all systems that either provide an electronic interface to the voter, which can support a certain kind of interaction, or all systems that can support ballot activation.

MR. GALE: One of my concerns was anticipation of the issue that the voter verifiable paper audit trail produces a piece of paper that's not a ballot. The electronically-assisted ballot marker produces a paper ballot. It's the genuine document that registers the vote that is cast by the voter, where the verifiable paper audit trail document is not the official ballot. So there's a fundamental legal difference between the product of both of those two pieces of equipment. Maybe the essence of the construction and the function is similar enough to combine them, and I can understand why you need to cover new forms of equipment. But if the outcome of this is that the paper ballot of an EBM is identical with a voter verifiable paper audit trail

record, then it's fundamentally in error.

DR. FLATER: These two systems, EBMS as opposed to DRE plus VVPAT, are presently in the draft classified separately. The requirements on VVPAT are completely separable from the requirements on DRE per se, or EBM per se.

MR. GALE: Okay. Thank you.

DR. FLATER: Other changes that were made in the Casting Section. There was a requirement in the IEEE draft having to do with what happens to half-finished ballots when both the primary and secondary power go out, meaning we're in a terrible failure situation and our line power is out, our backup power is exhausted. Apparently there's a concern if the half-finished ballot is preserved as part of the state that is preserved on a system that, when this system is brought back possibly hours later with different people present, that there could be a violation of privacy and/or an opportunity to cast someone else's ballot that we don't want. This requirement needs a little bit of polishing and we need to harmonize it with respect to the general requirement that says, if a system fails it shall preserve its

state, and basically saying little more than that. A little more adjustment is needed, but the general sentiment that the half-finished ballot should not be part of the checkpoint that is saved by a system makes sense.

MR. CRAFT: Well unfortunately -- this is Paul Craft -- that is an issue that is going to be covered by state elections codes and will vary from state to state. The systems are going to have to be able to accommodate the requirements of the state in which they're fielded. And the important thing I would think for the system is, number one, the way it handles that condition is entirely predictable and entirely determinable. So there is no question as to whether that ballot is going to be saved or whether it will be canceled in the event of that catastrophic failure. It needs to be a known quantity, it needs to be tested. And then the states will have to look at the way that's handled or specify the way that it's handled when they buy their systems.

DR. FLATER: Are you aware of a state that has a specific statute describing the disposition of a ballot that is half finished at the point when the equipment

becomes unusable?

MR. CRAFT: I don't know of any states that have a specific statute as to when the equipment becomes unusable, but most have a statute as to abandoned ballots. And I think in the condition where this ballot was left and not recovered until several hours later, it would fit the description of an abandoned ballot. And it would be handled consistent with however the state handles abandoned ballots.

DR. FLATER: I think there's a lot of questions there.

UNIDENTIFIED SPEAKER: So couldn't you say that the design or the disposition should be policy driven and testable that way, in which case the equipment could be used either way, depending upon how the state chooses to use it? You define in a policy the disposition of an unfinished ballot and you can test it that way, too.

UNIDENTIFIED SPEAKER: I have a question for you or for -- I mean, this is something we'll have to deal with in the future. I'd suggest this is a question for some future time. But the question I would have, I'm aware that there are jurisdictions in which if a ballot is

abandoned that they bring in two witnesses and they page through the ballot and they cast half-finished ballot. My question would be how do you, I mean, if the measure of voter intent is that they cast the ballot, then I don't understand the integrity of a half ballot in that situation that the voter did not cast.

MR. CRAFT: Well first off, you cannot determine the voter's intent. Period. It can't be done. You can come to objective conclusions as to whether the voter made a clear indication of his choices, and we've beat that language to death in here before and the state of Florida beat it to death in federal court several times. Still, even in those kinds of determinations the state election code will probably address how to handle that. If not, then their court cases hopefully will. And if not, then they have opportunities for doing new stuff in the future. You know, how you handle, I mean, obviously we know the voter left the dead machine with a half-completed ballot on it. Did he leave with the belief that the vote was counter or not? Did he leave with an understanding that he needed yet to vote or not? What are the rights and responsibilities of all the parties

involved in that. That's an issue of the state election code and it's not something that we should be dictating in our federal standard, unless Congress wants to pass a law that controls it.

UNIDENTIFIED SPEAKER: Well another case to be handled here is the case where one machine dies instead of all of them, in which case it would be reasonable to offer that voter the opportunity to cast a ballot on another machine. And you don't want to retain that half-finished ballot, but --

MR. CRAFT: Yes, that's why you need to know how the machine's going to handle the situation, how the election administrator should handle the aftermath of it. Probably you would take that machine out of service and resolve it later, but it's got to be very clear how that incident is going to be handled.

MR. GALE: Mr. Chairman?

DR. SEMERJIAN: Go ahead please.

MR. GALE: John Gale, the Secretary of State, Nebraska. Alice Moore (phonetic sp.) might be able to answer this better, but I think every state provides for resolution boards in every precinct. And the resolution

boards handle spoiled or abandoned ballots and they're able to transfer the information on the spoiled ballot to a new document which doesn't change the nature of it as a ballot. Could you explain that for us?

MS. MILLER: That's -- excuse me. Alice Miller. That is absolutely correct. We have a process in the District of Columbia that would account for how you would handle a spoiled ballot so to speak. And the ballot would be remade and then cast at another point. But it certainly is a process in place with respect to all of these sorts of things that would be addressed by our law and our procedures where the law was lacking.

MR. GALE: And the one that's being replaced is marked --

MS. MOORE: It's marked.

MR. GALE: -- with an identical mark with the one that's being cast so you can --

MS. MOORE: That's correct. It's identically marked --

MR. GALE: -- you can trace that?

MS. MOORE: -- it's traced and it's put with the ballot that has been spoiled so that there is a clear

record that the ballot was remade according to the voter's direction.

DR. SEMERJIAN: But doesn't that assume a paper ballot?

MS. MOORE: Yes, that's a paper ballot.

DR. SEMERJIAN: I mean, this is a broader issue, isn't it? I mean, the question is, what will the machine do if somebody voted halfway through and then it went clunkity-clunk. Was that ballot recorded or not recorded? If you don't have a paper system, doesn't that remain a question?

MS. MOORE: It is a question for the DRE but --

DR. SEMERJIAN: Right.

MS. MOORE: -- the way it might be handled, and I'm not sure about this, is to use the absentee process where we would have a paper in place.

DR. SEMERJIAN: I'm not the expert here, but my impression is you want to be able to, you want to know what the machine will do in such a case.

UNIDENTIFIED SPEAKER: Dr. Semerjian?

DR. SEMERJIAN: Yes.

UNIDENTIFIED SPEAKER: In the interest of time,

because I think this is a much more detailed discussion than we ought to be having here, this might be a topic for a CRT Subcommittee meeting. And a perfectly good example of where, if the agenda was published, everybody, people with particular expertise might choose to join that meeting to be able to talk about it.

UNIDENTIFIED SPEAKER: Agreed.

DR. SEMERJIAN: Thank you. I guess the suggestion is we move ahead.

DR. FLATER: The next minor change that won't be controversial is an adjustment to the requirement regarding the redundant records that are kept by DREs. In the existing spec, there were words in there saying that a DRE shall keep at least two copies of the cast vote record. That seems fairly unambiguous. But then this requirement is elaborated with some words about recording it via a separate path that raises a lot of questions. These additional words seem to be aimed at improving the auditability of the system, but they don't go very far in terms of explaining what is meant by a separate path. How separate does it have to be to be separate, etc. Now the Security and Transparency

Subcommittee has spent a lot of time looking at the issue of auditability and independent verifiability, and what it means for separately recorded records to be separate. And so the adjustment I have made to these requirements is to focus them strictly on the recoverability issue. This requirement says you shall keep two copies of the cast vote record for recoverability purposes. And the issue of whether they are separate or independent processes, this is entirely handled under the sections being developed by the Security and Transparency Subcommittee. At the same time however, I've adjusted these requirements to make them compatible with the recommendations coming out of STS. Specifically, there was a requirement saying that one of these two records shall be designated as the primary record. The requirements for auditability said they should both be equally good. So I removed the requirement saying that one of them shall be designated as primary. What's left there are words saying that you shall keep redundant records. From a recoverability point of view, there's nothing wrong with that.

Finally, in the old standard there was a

prohibition about overflowing counters and tabulators. Unfortunately it was buried in the Testing Standard part of the document. I've moved that into the main part of the requirements, clarified it, and generalized it to say, for example, if a DRE is at capacity or is in danger of exceeding its capacity through some way of voting in the next ballot, it shall not enable a next ballot.

Now with respect to the state-specific variations that I elected not to get into, but we can make adjustments here if needed, one is the merged ballot approach to open primaries. Open primaries in general is a primary election in which the voter gets to choose which party's ballot to vote on, which party's ballot format to vote on. In a DRE-type system, you can simply ask the voter, which party do you feel like today and serve them with a ballot format which is applicable to that party. In a paper-based system, you have several choices of how to approach this. You can have the poll worker ask which party do you feel like today and give them that ballot format. There might be a privacy concern there. To alleviate that concern, you can

simply make all of the formats available to the voter somehow. Or you can use the merged-ballot approach. In the merged-ballot approach, all of the partisan contests for all the parties are included in a single ballot format, and the voter is instructed to only vote in one set of applicable contests. The draft standard does not prohibit this, but it also does not require the extra logic that a system would have to include to correctly process this kind of a ballot. So this would remain an extension to the standard, just as it was in previous versions of the spec. If the vendor does this, they shall describe how they do this, but you can support open primaries without doing this.

MR. CRAFT: Do we have an example of a state that uses a merged-ballot process, or is this something that you foresee emerging?

DR. FLATER: This actually was -- I cannot site the example. I know that there is at least one brand of equipment that supports this. And I would guess that if the equipment supports it, there’s a reason.

MR. CRAFT: Okay.

UNIDENTIFIED SPEAKER: That’s not necessarily a

good assumption.

DR. FLATER: Well then it's just as well that I didn't write this into the draft. The other one is having the recall candidacy linked to the recall question. There are at least three different ways of doing recalls. The first simple way is you have a question, do you want to recall this person, yes or no, following by another question, assuming this person is recalled, who should the replacement be. The simple approach is simply to have these be two independent questions. On the other hand, there are some jurisdictions in which the voter is not entitled to vote on the replacement unless the voter has first voted one way or the other on the recall question. In other jurisdictions, the voter is not entitled to vote on who the replacement is unless the voter voted in the affirmative for the recall question.

As with the merged-ballot approach, we have some additional complexity being forced into the process here. It's ostensibly a single-ballot format, and yet the voter is sometimes entitled to vote in any given contest and sometimes not. And my guess is that the

additional complexity of specifying this in the draft is probably not worth the cost. And if there's no comment on that, I will move it right along.

Closing polls. I'm just going to mention here some issues having to do with early voting that were discussed. One of the things that was brought up with the previous standards was how do we support early voting. The standard says nothing about early voting. Well discussions about early voting have clarified that there is a clear distinction between suspension of voting and resuming voting, and opening and closing polls. And therefore the Closing Poll Section does not deal with early voting. Along the way of discovering this, it came out that some of the old requirements were perhaps a little bit too loose. They said the system shall permit unauthorized -- or shall prohibit unauthorized reopening of the polls and prohibit unauthorized early reporting. All the feedback we received said this should never be authorized, so those requirements have been adjusted simply to say, the system shall prohibit reopening the polls or early reporting.

A lot of the rest of what came out with respect to early voting was procedural and having to do with ballot accounting. At the end of the day you should make note of the ballot counter and make sure that the next it hasn't changed. And to whatever extent that, whatever is agreed with respect to the disposition of procedural requirements, those recommendations will be disposed in that manner.

Counting Section. Counting Section has five subdivisions. One is again about voting variations as timed from the tabulation perspective. Section about ballot separation and rejection, separation has to do with the requirements in some systems to, for example, separate ballots that contain write-ins on the assumption that they're going to require a manual counting later to find out who the write-ins were. Rejection has to do with what some people refer to as a second-chance voting. Rejection is not forever. Rejection is this action that the system performs when it's presented with a ballot that has some problem, such as over voting. It kicks the ballot back out to the voter in their precinct count environment, explains what

they did wrong, and gives them a chance to fix it or to submit the ballot as is.

Paper jams, pretty self explanatory. The major clarification here is that the system shall make it blatantly clear when a ballot jams in the reader, whether or not that ballot was counted. So that the election judge who's clearing that jam knows what to do with that ballot.

Accuracy builds on the general counting accuracy requirement by going into detail about some optical scan issues with manually marked paper ballots that I'm going to talk about some more. And finally there's some requirements on consolidation, chiefly about the time requirement for DREs.

With respect to ballot separation and rejection, the requirement to separate write-ins may be showing its age a little bit, because if you're using an electronically-assisted ballot marker it's entirely feasible that these devices could encode in machine-readable form the name of the write-in candidate that the voter has provided. So in such systems, it's completely unnecessary to separate write-in ballots that

can be tabulated along with the rest. So there's been initial adjustment made to the requirements, and that will probably be fine tuned later.

MR. CRAFT: Okay. I don't think an electronic ballot marker would ever be separating out write-ins, because after the ballot is marked it's taken to a tabulator which then deals with that issue, however it deals with it.

DR. FLATER: Agreed. This is about tabulators. The requirements in the Counting Section are requirements on tabulators.

MR. CRAFT: It says EBM may encode write-ins in machine-readable form.

DR. FLATER: The intent was that the requirement on the tabulator to separate ballots containing write-ins may need to be adjusted in the context of a system that includes EBMS, because it may no longer be necessary to separate those ballots.

DR. SEMERJIAN: Let's go ahead with the presentation and then let's come back.

UNIDENTIFIED SPEAKER: Yes.

DR. FLATER: Okay, rejection behaviors. In the

2002 spec there was one set of language about rejecting blank ballots, and a slightly different set of language about rejecting ballots containing over votes and under votes, with the language saying that they election official shall be able to turn on or off these rejection behaviors. In the 2005 VVSG a set of requirements was duplicated in several places, saying that the system shall reject ballots containing over votes and under votes, and the language about election officials being able to turn it off disappeared. However there is one place remaining in the VVSG where it still has the old formula that the election officials can turn it on or off. In the draft I brought these requirements back together in one place. The requirement to be able to turn on or off these behaviors is retained and also clarified to address what sounds to be the most common practice, which is to reject ballots containing over votes and blank ballots, but not to reject ballots containing under votes. And the reason there is that 80% of voters do not vote in the dog-catcher race and we do not want to reject all those ballots because it will cause a long line in the precinct.

Additionally there's been a couple of should requirements added for suggestions for future improvement. One is to reject ballots that are only blank on one side because apparently this is a common voter mistake on a two-sided ballot to fill out one side and not realize there's another one. And also to reject ballots containing marginal marks. Marginal marks are bad news in a mark-sense environment. We're going to talk some more about that. And if the system will reject ballots that contain really ambiguous marginal marks, it could go a long way towards preventing a lot of nasty problems that we'd rather not get into.

I have five minutes. I'm in big trouble. Okay, moving right along, what was the most important thing? I swore I would talk about the classes, so I'm going to have to spend at least three of my five minutes on that. We dealt with the marginal marks issue on optical scanners. The old standard said, you shall accurately read the vendor-specified mark and you shall ignore extraneous perforations, smudges, and folds. There was a lot of issues there. What we've got now is you shall accurately detect the vendor's mark. You shall also

accurately detect a standard mark which should not challenge any of the equipment that's out there now. It's just a benchmark to show that we have a large range of marks that can be reliably read. There's still issues with marginal marks.

UNIDENTIFIED SPEAKER: Mr. Chairman, J. R. is on the line.

DR. SEMERJIAN: Okay, J. R. Thank you.

DR. FLATER: I'm going to skip right forward to the classes.

UNIDENTIFIED SPEAKER: Before you leave --

DR. WILLIAMS: I have a comment on that. This is Britt Williams, and I'd like to call the committee's attention to page 102 in the Requirements Section that he's talking about. This morning Commissioner Davidson and Tom Wilkey, a boy who had idoled great American, they both talked about adding complexity and expense to the voting system unnecessarily. And Tom talked about complexity in terms of literacy. But I'd like to call your attention to 4.8-8 as an example of what they're talking about. The requirement C that a ballot scanner be able to provide feedback to the voter that identifies

specific contest or ballots when an over-voted ballot is rejected -- now that says over voted or under voted, but we're not going to return under voted. What's going to get returned is an over-voted ballot. There's not a ballot scanner currently in operation that has the ability to communicate like that with a voter. These things do not have screens on them, they do not have nice printers on them, and they cannot issue those kinds of instructions to the voters. So this requirement obsoletes every single optical scan voting scanner currently in operation.

DR. FLATER: This requirement is in HAVA.

UNIDENTIFIED SPEAKER: Say it again?

DR. FLATER: It's in HAVA.

DR. WILLIAMS: Well let me finish, and then we'll see, okay? So this adds considerable complexity and cost. Now --

DR. FLATER: It's also in the 2002.

DR. WILLIAMS: I understand that, but -- do you want me to just shut up? Is that what you're saying?

DR. SEMERJIAN: Please go ahead, Dr. Williams.

DR. WILLIAMS: The only people that this affects is

people who over vote a ballot and it gets returned to them. I'm the B.W. that commented at the bottom of the page. When a voter submits a ballot to a ballot scanner, they fully expect it to go through. But they do not deliberately submit bad ballots. And so when it comes back, it's a little bit startling and a surprise. And so who, what do you do here? What happens now is that the poll worker goes over and explains this to them. Now who benefits from this? Well, if your ballot is to be corrected, the only way you can correct it is to spoil that ballot and issue a new ballot. So the poll worker has got to get involved. So the only person that you could benefit from this by avoiding the poll worker is somebody who over votes a ballot, and when they're told they've over voted the ballot says what the heck, I'm going to cancel it anyway, going to go on and vote it anyway. So here's a requirement that adds considerable cost and complexity, and yet benefits only that miniscule number of voters that care so little about the process that they deliberately vote an over-voted ballot.

UNIDENTIFIED SPEAKER: I'm a little confused. I'm

thinking of a DRE voting machine.

UNIDENTIFIED SPEAKER: No, this is a scanner.

UNIDENTIFIED SPEAKER: Oh, it's just a scanner we're talking about? Well let's think of -- do we scan that immediately upon the -- we don't? We scan this ballot immediately upon --

UNIDENTIFIED SPEAKER: The voter scans it (indiscernible).

UNIDENTIFIED SPEAKER: The voter scans it. Okay. So I have a ballot now that's scanned and I can have a system to check whether there's a combination of dots in there that constitutes an over vote, or there's a combination of dots there that constitutes an under vote, namely some things that are not voted upon, at which case one can design that system to have it go back to the voter to determine if the want to continue on or not. I don't understand why you can't handle both.

UNIDENTIFIED SPEAKER: And that is what happens. I think what Britt is saying is that it can't tell you what the problem is.

DR. HARDING: The question is (indiscernible).

UNIDENTIFIED SPEAKER: It just sends it back and

says there's a problem. It doesn't say on race 5 you voted for two instead of three candidates.

MS. PURCELL: Mr. Chairman, Helen Purcell. It does, on the system that we use it does come back and tell you -- at least it tells the poll worker you have over voted in a specific race so you know where you have over voted.

DR. WILLIAMS. But this is a cryptic message. It's not one that the voter would understand.

MS. PURCELL: It's printed on a tape --

DR. WILLIAMS: Yes.

MS. PURCELL: -- very easily. And the inspector is instructed to show it to the voter as to what it says on that tape.

UNIDENTIFIED SPEAKER: It doesn't have to be cryptic.

DR. SEMERJIAN: Secretary Gale?

MR. GALE: Well in Nebraska we have quite a few counties that are smaller counties in terms of number of voters. And we've put in 100s, ES&SM (phonetic sp.) 100s in those counties and they do have a message when the ballot is cast if there's –

(**END OF AUDIOTAPE 3, SIDE A**)

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(**START OF AUDIOTAPE 3, SIDE B**)

MR. GALE: -- State's race it will say too many votes in the Secretary of State's race. So you can accept or reject, so you do know why it's being rejected. Now you don't maybe know necessarily how to get help to get a new ballot, and that's where the poll worker would have to help. But you know why it came back at you.

MS. MILLER: It is -- I'm sorry, Alice Miller. It's obviously system specific. Ours just says over vote. It doesn't say where, doesn't say what race, it just says over-voted ballot.

MR. CRAFT: Mr. Chair, if I may?

DR. SEMERJIAN: Mr. Craft?

MR. CRAFT: This is a perfect example of what I was discussing earlier where it would be very helpful if instead of proposing a change to the standard, NIST brought to the committee an analysis of this issue and an analysis of how the existing voting system vendors are handling this for each currently certified system,

what the vendors have in the works for future versions on this, and then we could make an informed decision. It is these kinds of lapses that every time we try to run through this from a 30,000 foot ladder poll brings us down to two feet off the deck.

DR. SEMERJIAN: (Indiscernible) these are being brought to this committee. These are not finalized and I presume that the subcommittee members are participating in these discussions. Is that --

UNIDENTIFIED SPEAKER: I mean, to me this gets to a point that says the following. Up to now it seems like the vendors have been making decisions as upon how to treat these situations on their own. You buy it and you get with it whatever the vendor's decision is, as opposed to thoughtfully thinking out what you think the right answer ought to be and calling it in the specification. And it's true that there may be some equipment that doesn't handle it that way now, but if you don't address it appropriately now you're going to forever be in the situation where you're leaving it up to the vendor.

UNIDENTIFIED SPEAKER: Can I raise a clarification

at this point? This particular requirement that's causing so much consternation, this is not one that NIST introduced without consultation. Up on the screen there is the requirements that appear in the 2002 VSS. You will note that the language is very similar to the language that's causing problems now. The adjustments that were made were simply to make some of the words sound more like they do in HAVA.

DR. SEMERJIAN: This sounds like something that we're not going to resolve at this moment.

UNIDENTIFIED SPEAKER: No.

DR. SEMERJIAN: So I would recommend that we take that under advisement.

DR. WILLIAMS: I think we're missing the point here. I don't mean to nit-pick this specific issue. What I'm saying is that in all of our work we should be cognizant of what we're doing as it impacts cost and complexity of the voting system. Cost -- every election-related person on this panel and in the audience that's spoke to this issue has brought this up and pointed out that these things are bought by jurisdictions with very limited resources and operated

by people with very minimum training and so forth. So complexity and cost are big issues. And when we're talking about adding features to the voting system, we should do that complexity and cost analysis. And that's the point I'm trying to make, and I'm not sure we're doing that.

DR. SEMERJIAN: Mr. Karmol?

MR. KARMOL: Yes, Dave Karmol. Just as a point of clarification, when I look at the statute, 30113I, it says if the voter selects votes for more than one candidate for a single office, notify the voter that the voter has selected more than one candidate for a single office on the ballot. So it does require notification of an over vote. I don't see any place it requires notification of an under vote. So maybe you can --

DR. WILLIAMS: But it also doesn't require that the machine notify them either. It just says that it must be notified.

MR. CRAFT: Well it does say the voting system shall, so I don't know how --

DR. WILLIAMS: Okay, that's generic.

MR. CRAFT: It's however we define voting system.

DR. SEMERJIAN: Ms. Quesenbery?

MS. QUESENBERY: So just to add, I don't know what to this, we also started talking about a usability issue, which is what constitutes effective and adequate notification. Is it a strip of paper that the poll worker can read and show to them, is it a code which the poll worker has a translation sheet, is it a screen that pops up, is it a voice that booms out over the loudspeaker? I mean, obviously not, but I think one of the things that we might want to be really clear about, and this is good example of an intersection, is what do we mean by an adequate notification. And I think one of the questions that came up in one of the lunch discussions was, are we setting a minimum standard, an optimal standard, or a major standard. And it might be that we would say, it must do at least something. There must be something that notifies them, but that doesn't mean that a system might not get more elaborate and do something more fancy if they thought there was a market for that. So this is a good example where it's not just a requirements issue, but what is an acceptable way to implement the requirement that doesn't violate privacy,

that is usable for the poll worker, that is usable for the voter, and so on.

DR. SEMERJIAN: Okay, well clearly there is a topic here that needs further discussion and analysis. So I suggest NIST staff take that under advisement, and let's proceed with the presentation.

DR. FLATER: I'm going to take one minute to address a topic that I promised I would address, which was classes in the Conformance Clause. In the old standard there were categories of systems broadly speaking, paper-based, DRE, precinct count and central count. And these were described in the Conformance Clause of VVSG '05, and we talked about a similar concept profile at the September meeting.

There's a problem, which is that we now have systems out there in which they may contain DRE devices and paper-based devices side by side. The old standard just talks about paper-based systems and DREs. It doesn't really tell you what to do when you have a mixture of the two. So to resolve this we are getting additional precision in the Conformance Clause to define different types of voting devices, different types of

voting systems, and how you get from one to the other. And requirements are going to be scoped very precisely depending on what sort of devices, what sort of systems, and therefore this problem will go away.

End of presentation. Was that 70 seconds? Any questions? Am I done?

UNIDENTIFIED SPEAKER: Good afternoon, everyone.

DR. SEMERJIAN: Just a minute. Just a minute. Now we believe that the preceding preliminary reports of technical support titled Core Requirements and Testing Subcommittee preliminary reports for next VVSG iteration responds to TGDC resolutions 2405, 2505, 2705, 2905, 3105, and 3205. My script reads, unless there are supplemental directions or corrections, the technical support and related work product will continue to be developed consistent with this preliminary report. But clearly there are some directions and perhaps corrections. Do we need any further discussion, or will we consider these taken under advisement, and that the subcommittee members will take the comments and the suggestions made under consideration for their future work? Mr. Craft, did you have a comment?

MR. CRAFT: Yes, Mr. Chair. I've got a bit of a concern about this perhaps on the peacemaker side. I mean, you've got some very talented payroll here on the front row who has brought us a pile of 400 pages representing the last several months of their lives, and who are sitting here today chasing at the bit to go forward to the next stage of their work. And I'm wondering I guess a question for staff is, do you feel you have sufficient direction from the committee and the discussion today to start moving forward, or does the fact that we've departed a little bit from the plan you brought in cause a problem we need to talk about before we get out of here today?

UNIDENTIFIED SPEAKER: There is enough discussion about just some of the points picked at random that it probably would be worthwhile having a more in-depth discussion, and not just necessarily of the Core Requirements and Testing Subcommittee, but, you know, to really satisfy people that they've had time to read this, digest it, and (indiscernible) for the points.

DR. SEMERJIAN: Mark, could we suggest that perhaps you have one of your committee meetings dedicated to

this particular topic, notify all members of TGDC and make sure that they have an opportunity to participate if they so choose, to clarify any issues and make sure that there is a consensus in the direction that we want to proceed? Is that a --

MR. GOLDFINE: By committee meetings I presume you mean CRT Subcommittee meeting?

DR. SEMERJIAN: Yes, well nominally but --

MR. GOLDFINE: But leave it open.

DR. SEMERJIAN: -- make sure that it's open to all members. Not open, but I mean they are specifically notified.

MR. GOLDFINE: To clarify, you didn't mean an upcoming TGDC planning meeting?

DR. SEMERJIAN: No, no, no. Obviously this is something that we need to address fairly quickly to make sure that everybody is notified and perhaps provide some flexibility in terms of the time and date of the meeting so that a significant number of TGDC members will have an opportunity to participate. And if not, they can perhaps provide some written comments or whatever.

MR. GOLDFINE: Or that might be even better. I

mean, if you gave everybody a chance to read it, provide some comments, and then give your team sufficient time to address those comments in terms of their response to it and we have a (indiscernible) we might be able to resolve this. And that way everybody will feel more comfortable that they at least have seen the rationale, been heard, what their concerns are, and it's either going to result in the same document or a modified document based upon how the outcome is. I mean, that would be my suggestion.

DR. SEMERJIAN: Is that --

UNIDENTIFIED SPEAKER: I think that's an excellent way to proceed.

UNIDENTIFIED SPEAKER: Yes, I mean I hear the frustration because the committee meetings go on week after week. But I think part of it is that this is such a big chunk to bite off that not only do you have a lot to read, but it's a lot to understand why each of it exists. Whereas you've been able to work on it over time in a very focused way, we're trying to absorb it, you know, through a giant water hose. And so if we could take any of the issues that are sort of big issues

and make sure that the committee knows we're looking at this now, and so if you want to read and comment on it, now's the time, as opposed to waiting until December or waiting until -- then maybe we'd get a little more response. Because I've heard some feedback that maybe we're not as responsive as we could be also.

DR. SEMERJIAN: All right, so what I'm hearing is clearly we've identified some issues of concern. You have an opportunity now that these have been brought up to the surface, TGDC members have an opportunity to study the detail in a little more detail, preferably provide some written comments that NIST staff can take under advisement, and then with some action items in mind on the part of NIST staff and some responses, let's say, to those suggestions, then a subcommittee meeting can be organized which would be made broadly open to all members of TGDC, and in fact make sure that you are all notified of the time and date and encourage your participation in that to make sure that your concerns are heard and addressed in this work product. Is that --

UNIDENTIFIED SPEAKER: Yes, and one other thing

just for consideration is it was discussed earlier that we have, you know, we're lacking as much interaction as a group such as vendors. And many of the comments I'm hearing here are, you know, making assumptions as to what a vendor might or might not say about some of these things. And so I don't know how best to address that, but it might not be a bad idea to also get some early vetting of that here, and we can discuss that as well. I know it adds time, but it produces a document that has been more thoroughly tested.

DR. SEMERJIAN: Well the reason these meetings are open is to give an opportunity for vendors to provide comments in writing. And that could be at any time but not -- perhaps the vendor can be notified of the date of the meeting so that, not to participate necessarily but to make sure that their input is submitted in time for consideration at that meeting. Is that a reasonable approach?

MR. CRAFT: I think that misses the mark. I mean, the mark that I'm after is, number one, getting the vendors involved earlier so that when NIST staff brings us the idea or the problem, we have the vendors' input

in that already. As far as the vendors having access to the public meeting, no, the vendors really don't have an opportunity in this current format to weigh in and give this group information if we're discussing something like we were a few minutes ago as to how the various systems notify a voter of over votes. There are people in this room who can tell us exactly how all the systems do that and we could make a decision and move on. But it's not a public meeting and they can't speak. So if we're going to do that format, then NIST needs to have proper conversations with them, involve them in the subcommittee meetings, and get some information before the committee. If you don't want to go that route, then you're going to have to change the structure of this committee so that during our meetings we can take appropriate testimony from knowledgeable individuals to support our decisions.

DR. SEMERJIAN: Mark, would you like to comment on that?

MR. GOLDFINE: Yes, please. There are a couple of issues here. As far as getting the vendors involved, that's something as I said when I stood up there that

we're really trying to do the best way we possibly can. I think the idea of having the vendors participate in subcommittee meetings, I think that probably is not allowed under the TGDC structure. The meetings and the subcommittee meetings are for TGDC members. The public can view but they cannot speak and participate. And I don't think we could give one group that opportunity without making the whole public, give them the same opportunity. And that would be chaos, and I believe it would violate the TGDC rules. I think we try to get vendor input as much as we can. We put things on the website, we call them up with questions. I think Dr. Semerjian's idea of basically asking a question of a vendor that concentrates on a single point I think would be very useful, because it would have them focus on specific issues that they would be concerned with and we could get in put. Just having a document out there and say, please give us input, maybe it works to some degree but obviously everyone has limited time. So I certainly second Dr. Semerjian's idea of vetting this as much as possible, getting all the issues out on the table, publishing what we know, and asking the vendors to

provide information so we could then discuss that at a subsequent subcommittee meeting. I think that's the only legal and useful way to proceed.

DR. SEMERJIAN: I think in the development of VVSG 2005 we were under a lot of time pressure and, you know, we couldn't afford to take long periods of time, etc. I mean, everybody knows how it worked. I think this year perhaps we can be a little more flexible and solicit more proactively, not simply putting something on the web pages and say, anybody who's interested, send us your comments. That maybe in fact specific topics that may be discussed at some subcommittee meetings could be advertised so that the vendor community can be aware of that specific interest, get their input in time, not the day after the meeting, so that we could be more proactive in soliciting input and participation by the vendor community. I think I see no reason why we can't do that. Is that -- yes, Mr. Berger?

MR. BERGER: I've been reflecting what I've seen take place in other processes. And I observe that in the IEEE operating under ANSI rules -- and Dave Karmol may wish to make some comment -- on documents of this

complexity, actually any final document, almost always it's put out for written ballot with specific comments supporting whatever the ballot is. What that allows for is compilation of the comments from the different balloters, and then in the in-person meetings really focus on the items where clearly there's concern, and especially if there's conflicting comments. What that also allows, and this happens quite frequently, is those who may not be qualified to vote can submit comments. And those can be compiled either together or separately. It's not easy, but it tends to work through the process pretty well. It also allows, and I would observe in the makeup of this committee, there's certain organizations named, it allows distribution of documents throughout the organization. So you really get the collective input of the organizational membership as opposed to the individual who's here on a specific (indiscernible). So I'd throw out we may want to consider written ballots on documents of this complexity prior to our meeting, and then focus our meeting on the issues where comments are grouped.

DR. SEMERJIAN: I don't quite understand the

concept of a written ballot. And these are guidelines that we're developing for recommendation to the EAC. And we don't have a broad membership like ANSI or ASTM or IEEE. I mean, this is basically it. This is the group that makes the final decisions. So could you clarify or, you know (indiscernible)?

MR. BERGER: Let me give just an example then. I participated in the National Academy of Engineering and National Academy of Science, reports that have been provided, we were then asked to develop. And we do provide the first draft, but after we provide the first draft before it's ever release it does go out for outsider view and comments. We get back to comments and I'm stuck reading it (indiscernible) their office and responding back. We don't necessarily have to accept every comment, but we have to consider it, give some weight to it, provide some rationale, respond back. And it does provide a stronger document, one of which you were pretty much prepared for what kinds of comments you're going to get back because you could see them and address them.

DR. SEMERJIAN: Yes, but I mean aren't we having

that process? I mean, that's why it took us, you know, seven months to get from the final draft form to the actual release of the standards, the guidelines.

UNIDENTIFIED SPEAKER: Yes, that's just what I was going to say. Exactly what we're describing now is the public review process that the EAC put forward after we give them our recommended draft guidelines or standard. And to impose a similar process on this body, yes, you'd get more input but the delay would be dramatic. And we are talking about draft standards and sometimes very informal stages. I think if they introduced that type of process on this body would just kill any schedule we possibly have right now. And I think the public review that the EAC conducts works very well to actually take care of the issues that I think you're just describing.

DR. HARDING: Mr. Chairman?

DR. SEMERJIAN: Yes, Mr. Harding?

DR. HARDING: Yes, sir, I think we need to move on. But in the (indiscernible) of moving on, that was a very good job of having what we would call advisory group (indiscernible) and the subsequent (indiscernible) we alternate national volunteer standards. So

(indiscernible) participate in a standard, they very much need to feel like they've participated in the development of that standard and not have it turned out wrong. And maybe we could have advisory groups to each of our three working committees in which a member of that advisory group that is (indiscernible) working committee make sort of a work product and a draft (indiscernible) and we have the value of that input. And I agree with (indiscernible) there's advisory groups for subcommittees.

DR. SEMERJIAN: Thank you. Mr. Berger?

MR. BERGER: Yes, I would like to report to the committee in the interest of its information, but also because I think it's a good process. Specifically on the EMC requirements, two weeks ago there was a meeting of the IEEE EMC Society Standards Development Committee. And the staff of NIST afforded me the opportunity to take those requirements there, and that committee is in process of preparing response comments, and Alan Goldfine is setting up a meeting to receive those. I think that's healthy. Those are specialists in that area and they're making sure that the requirements are

in the best current thinking of that field. And I think I both agree and disagree with Dr. Skall's comments. We have to watch what we do to the timing of the process. However I think especially as we get towards the end of final decisions, being a little more deliberate and inviting of detailed comments is probably well advised in the long run. And I guess I'm not as convinced that the public comment process is as efficient at that as necessary.

DR. SEMERJIAN: Well let me just remind you that there are big, thick copies of all the documentation that's being discussed here outside for public consumption. So, I mean, we are to my knowledge sharing all the information, interim information that's been developed with whoever is interested in showing up here as well as obviously on our website. Dr. Williams?

DR. WILLIAMS: Yes, when we were developing the first set of standards, we were working under incredible time constraints. And so I was willing to accept this glow-in-the-dark-kind of approach to things, where we came up here and we got four inches of paper that we'd only seen for two or three days. We're still operating

in that mode, yet we don't have those time constraints anymore. Why can't we take more time and spend more time, give us more time to review these things, more time to formulate intelligent responses to them, instead of this, run up here and grab a four-inch thick document and then shoot from the hip?

DR. SEMERJIAN: Well let me ask you then, how long would it take, how far in advance do you think we should send that material, and that you would promise me to read those before the meeting?

DR. WILLIAMS: Well, I'm not going to promise you that I'll respond to the entire document, but I'll at least read the entire document and select those areas that I feel like I can make a contribution to.

DR. SEMERJIAN: No, that's what I mean.

DR. WILLIAMS: I don't even have time to read this document.

UNIDENTIFIED SPEAKER: Dr. Semerjian, could I respond quickly? I mean, one of the things that we've tried to do is make the material on a web page and make it available all the time. And we want to do more there as well. We want to go beyond that and basically

publicize the telecons to all the subcommittees and better identify issues contained in a bigger overview. But what I'm hearing, we keep coming back in circles to this one issue, which is how does the TGDC digest all the material, and how do we all move forward in an orderly fashion. And I don't think we're going to solve that today, but I do think NIST and the TGDC need to discuss this and agree upon methods we can take to move things more forward. Now we put things out on websites and we've done a better job of identifying issues and getting agendas out. And it has worked in some cases, it hasn't worked in other cases, but that was something we tried. But I think we need to talk, we need to do a separate informal telecon, or do some e-mail or whatever after the meeting and really get past this issue, because I don't think we'll really settle it right here.

MR. CRAFT: If I may, Mr. Chairman?

DR. SEMERJIAN: Yes, Mr. Craft.

MR. CRAFT: I think, John, the answer to how we get past this is, number one, within this 400 pages there are not that many issues. We shouldn't be hit with 400 pages and have to sort through the 400 pages, or the

part of those 400 pages that rise to the level requiring a decision of this board. We should have confidence that our past directives to NIST are being followed. We should have a good feeling about how those are going. We should have new issues where NIST needs direction brought to us, and we should be briefed with appropriate research to make informed decisions about those issues. Those are the things. I think we have beat this horse just about to death today. This committee doesn't feel that it's getting, and no, there's nobody up here who can afford to read a 400 page document slowly enough to comprehend it, to look at all the issues, to define terms, look beyond it to the research behind it. We have other jobs. I think in working with the committee, the research staff at NIST is going to have to do a little better job of giving the committee the feeling that our previous motions have been carried forward, an understanding of how those are going, and then an understanding of the actual issues coming before us. And to have an issue before us where nobody in the room who knows about the facts behind the issue is allowed to speak about it, that kind of format simply isn't going

to work.

DR. SEMERJIAN: Well we have to take a break. We still have two more presentations. Perhaps the presenters will take into consideration the comment just made, and rather than covering all the material in your presentation perhaps you can try to focus on more controversial, or issues that have not been addressed before.

UNIDENTIFIED SPEAKER: I can say that for the HFP presentation that’s coming up, we have no new standard sections to propose at all. We’re simply reporting on ongoing research and the progress of that work.

DR. SEMERJIAN: Okay. I guess that will be a short presentation then. Okay, we do need to make a decision whether we are accepting the report as made with the suggestions or the modifications made. But we have to get a feel from this committee whether the reported work is on track or -- I hope we’re not off track, but clearly there are some issues that are not being --

UNIDENTIFIED SPEAKER: (Indiscernible.)

DR. SEMERJIAN: Right.

UNIDENTIFIED SPEAKER: I move we accept the report

on Core Requirements as written.

DR. SEMERJIAN: Do we have a second?

UNIDENTIFIED SPEAKER: Second. Second.

DR. SEMERJIAN: Any further discussions? I think we discussed it. All those in favor?

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

(No audible response.)

DR. SEMERJIAN: Thank you. The report is accepted as written. We'll take a 15-minute break, and then please don't go too far so that we can get started immediately if we expect to finish up our work today. Thank you.

(Break.)

(END OF AUDIOTAPE 3, SIDE B)

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(START OF AUDIOTAPE 4, SIDE A)

DR. SEMERJIAN: Can everyone take their seats please, so that we can start? I think we're missing a couple of TGDC members, but we're running very late. So I think we'll get started.

DR. LASKOWSKI: Well good afternoon. I think I

have about seven minutes to talk, but no worries. It's a top-down presentation so I think the key here as you listen to the talk is to note that these are progress reports. There are no draft standards guidelines here. It's a report on the progress on the research, and if you recall that for the VVSG '05 we did a lot of new requirements. So now we're switching into the research gear for the next set of requirements.

At our last meeting, this is aside from the last meeting in fact, you heard about the research underway that these all address directly the resolutions. And I unfortunately stripped off the references to the resolutions for this talk to make the slide less busy. But last time they were all in there. And in particular today I'm reporting on progress on the usability performance requirements, the testing with actual voters as a conformance test, and how to define a benchmark, also some preliminary research we did on plain language guidance for ballots, instructions, and error messages. I'm not going to talk today about the guidance for ballot design and interaction design. This is some very preliminary work we're doing with Design for Democracy

and it's not yet ready for prime time.

The usability standard is kind of pervasive in what we do. We've been looking over the outlines and different restructuring of the VVSG, and that's something we just do on an ongoing basis. And we will continue to look at refining the accessibility guidelines, and then of course work on test methods. I will talk about on my last slide some specific issues that have arisen that we will be looking at. So in the documents that are in your packet there is an overview of the research methodology for the performance benchmarks. It's rather dense, so if you look at the headings you can get a notion of the issues. And there's also a short paper on what makes for a good metric, because we're going to be measuring as we collect data. And how do we measure usability. That's a pretty short document. And the plain language guidance is 20 guidelines in a 40-page, not very dense report written by Ginny Reddish (phonetic sp.), who's one of the world's experts on plain language. So it's written in plain language as well.

So in order to kind of give you an overview or some

intuition into what a usability conformance test would look like, I kind of scripted out what it might look like. So the voting system test laboratory brings in, recruits some voters according to demographics that have been specified very carefully. And they've set up voting equipment according to the test specs with a test ballot or ballots, again predetermined for that test. The voters are brought into the lab, they're given precise instructions on how to vote their ballot choices according to a test script, and the people administering the test follow a script in how to introduce this. The voters cast their ballot, being observed by the testers and their errors and time recorded. They possibly might fill out a satisfaction questionnaire. We're not sure that's going to be one of our final metrics, but we are collecting some data in our experiments because that could be rather subjective. And then we figure out some error rates based on the metrics and the time, and we compare them against some benchmark. Now we're going to have to figure out what that benchmark is, so we're doing this summer some pilot testing of the concept, and also to give us some idea of where these benchmarks

might lie. The voting clinic fails or passes the test.

And this slide really actually is for the usability professionals community, usability engineers, because I want to just make a point here that we're doing a usability conformance test to a benchmark, and this is different than what usability engineers are used to seeing. They see formative or summative testing where they're improving the design. We're doing something somewhat different.

And there's a number of steps that we're going to be doing in order to design experiments to test our test protocol, etc. I'm not going to go over the details here, but there's a lot of iteration that we're going to have to be doing.

You should note that we're testing the protocol. We're going to bring in and probably iterate, but initially at least around 30 to 50 participants, and we're going to test all our protocols, our scripts. And we're going to use a similar population because we want to see if we can get reliability, because we're validating our test protocol, and actually in this initial test just validating that we've got the right

concept, that this is going to work.

So that's all I'm going to say about the usability conformance testing. This would be a good time to ask any question or clarification that you might need. And I'd certainly be happy to, you know, the HFP Subcommittee, etc., we take any questions you have later on and be happy to talk to you about it.

DR. HARDING: Sharon?

DR. LASKOWSKI: Yes?

DR. HARDING: Yes, Sharon, thank you. First -- this is J. R. First I would like to say thank you. This is really good. Second is specifically my question on page number 3, you mention bringing the voter into the lab. Labs generally are sterile environments. Is there any reason why we can't make mock voting (indiscernible) things or, you know, doing the experiment in the church or the not-for-profit (indiscernible)?

DR. LASKOWSKI: There's two points here. One, this is a conformance test of the equipment. So we have to control all the variables. So yes, it must be tested in the lab for that reason. But I suspect you're alluding

to the fact that there are other issues in deployment and accessibility issues when you do testing. For this initial test, we're just looking at usability of the system that is not designated as accessible. Follow-on work, which I will allude to on my last slide, is really looking at special requirements for developing the conformance test for accessibility. And then you're absolutely right, we have to look at some other environmental factors as well.

MS. QUESENBERY: J. R., this is Whitney. I would add lab is a term of art, and it just means the place you're doing the testing. It does not mean a place with people in white coats and sterile environment. It could easily be the lab could be a church rec room or some other appropriate facility that's easy for the community population (indiscernible).

DR. LASKOWSKI: But we have to -- conformance says we have to control the environment, so in some sense it is a sterile lab.

MS. QUESENBERY: Correct.

DR. LASKOWSKI: And if it's the church basement, it has to be the church basement mock up every time across

different equipment.

DR. SEMERJIAN: Would the term controlled environment be more acceptable?

DR. HARDING: Yes.

DR. SEMERJIAN: I mean, I think perhaps people have a perception of a laboratory, like a chemistry lab.

DR. LASKOWSKI: Yes. This is a testing lab, whatever it looks like.

DR. SEMERJIAN: Yes.

DR. LASKOWSKI: We will specify what the environmental conditions are very precisely in terms of lighting, etc.

MS. QUESENBERY: The other point that Dr. Laskowski made that we shouldn’t sort of slide over is that the point of this in the -- this is the development of a test method, so we’re really looking forward to volume 2. But the point of this is that it be a repeatable test, that anybody following the test protocol properly with any piece of equipment should get repeatable results. So there are, as she said, a lot of issues about how do you constrain that test.

DR. LASKOWSKI: Yes, we have to constrain because

we have to validate it that we get reliable results, so that the test is fair across voting equipment.

DR. SEMERJIAN: Let me --

MR. CRAFT: Well, I guess I've got a question then.

DR. SEMERJIAN: Let me just follow my script. Let me point out that this report responds and the work carried out responds to TGDC resolutions 205, 305, 405, 505, 605, 805 -- I guess I don't have to do this next time if we have the matrix.

MR. CRAFT: Right.

DR. SEMERJIAN: 905, 1005, and 1105. So unless there are supplemental directions or corrections, the technical support and related work product will continue to be developed consistent with this preliminary report. So are there any questions? I guess there are. Mr. Craft?

MR. CRAFT: Yes. Dr. Laskowski, a big element in the usability of the system is the instructions given to the voter by the polling place worker. And I think a key element of the usability is how well the voter can use the system in spite of fairly poor inconsistent instructions. So is that going to be another dimension?

DR. LASKOWSKI: Well we do have another resolution that talks about polling place, etc. We are going to script out, you know, typical instructions but not poor instructions because we're doing very sparse instructions --

MR. CRAFT: Yes.

DR. LASKOWSKI: -- and unassisted voting, because we're trying to capture the usability of that equipment. Now you're right. In terms of deployment it could really muck up the usability. You can't test that in the test lab on the equipment, which is why we want to make sure that we refer to other supplemental guidance for poll worker training, etc., and point that out clearly and document that elsewhere.

MR. CRAFT: But kind of another metric of the usability is --

DR. LASKOWSKI: But otherwise we're introducing so many different variables that we won't get a really get a good, reliable, valid measure of the usability of the system (indiscernible).

MR. CRAFT: Okay. Well that's why I was wondering if there was going to be perhaps another dimension to

this.

DR. LASKOWSKI: Not for the conformance test itself.

MR. CRAFT: Okay.

DR. LASKOWSKI: But I can certainly see for follow-on work. And we do have another resolution that talks about these other issues of deployment.

MR. CRAFT: Okay.

DR. SEMERJIAN: Ms. Quesenbery?

MS. QUESENBERY: (Indiscernible) I know that you probably haven't read the 30-page report that this is the two-minute summary of. There's a lot of good detail in there. We'll let you know when the next HFP meeting is and invite more detailed discussion then.

DR. LASKOWSKI: And we are hypothesizing that this will work. I suspect we're going to make some modifications. As the research proceeds it will be iterated a little bit.

DR. HARDING: Mr. Chairman, I would move acceptance of the Human Factors and Privacy progress report.

DR. LASKOWSKI: Not quite --

DR. SEMERJIAN: Thank you.

DR. LASKOWSKI: Not quite done. Two more points. But thanks for the vote of confidence.

DR. SEMERJIAN: I guess J. R. was trying to accelerate things.

DR. LASKOWSKI: I got the message. Okay, the other report we had was a report, a study that Ginny Reddish did for us. And basically we know that a clear, easy-to-understand ballot and interaction instructions are important parts of the voting process. If the voters can't understand how to use their voting materials, chances are they may not be successful in voting. Let me also make the following point, that everyone benefits from clear instruction. We know that the cognitive skills of voters vary widely. We've got an aging voter population. We've got tired voters who come in after a day of work. We've got a whole array of different cognitive disabilities. When you explain things as clearly and simply and directly as possible, you minimize mistakes, you make things clearer. And let me also note that a lot of these populations are not going over to the accessible voting machine. My parents certainly won't. They're aging, but they don't need

help. And sometimes I come in tired and I get confused easily from instructions all the time. But I don't need an accessible voting station. I need clear language. And so I think this is also responding to the fact that there are people with a whole range of cognitive disabilities that we need to design for, and I believe that this will capture a large number of those people. Clear instructions. Let me also note that poll workers also benefit from clear instruction material. We're not focusing on that right now.

DR. HARDING: Well now, Sharon and Mr. Chairman, one more question on that.

DR. SEMERJIAN: Go ahead, Mr. Harding.

DR. HARDING: Sharon, would we have any picture kind of directions to compliment the written word to deal with the literacy and some of the cognitive issues you alluded to?

DR. LASKOWSKI: That's another research issue. Once you start introducing icons and pictures, there's a lot of, some research that needs to be done because of introducing bias. If you introduce pictures, do you introduce pictures for all the instructions and

navigation as well as, say, the candidates? There's a lot of issues there. This focuses only on the language. That's another research topic. That's sort of on our list, further down our list of priorities.

DR. HARDING: Thank you.

DR. LASKOWSKI: We're trying to get the biggest coverage possible first, and then go down to, you know, further and further down into the population. So basically what we did was to look at lots of paper ballots and four DREs, and look at the ballots and the instructions and the messages to see if indeed there was room for improvement. And we found serious gaps. Based on that gap analysis -- there's some material in the viewgraphs that talk about that, and as I say I'm not going to talk about it here because I don't have time. But 20 guidelines were written just based on that gap analysis, no usability studies or testing. So for example, and it's based on best practices from other domains, one guideline is to put warnings about the consequences before, not after, the voter is likely to act. Now notice on a DRE, this is a testable guideline that could go into the VVSG. Some guidelines have to do

with paper-ballot instructions that are out of the scope per se. And I've got some examples here. Again I don't have time to go over them, but the examples go with each of the 20 guidelines so you can look at -- they're kind of fun to look at. Small improvements make big differences in clarity.

So what's missing from this preliminary report are a couple of things. First is which things are testable and could be developed further to go into the VVSG. And the second thing is that guidelines really need to be tested in the context of voters working with the ballots and equipment. What we've done so far is just on best practice and other domains. So in the next step we want to try to look at research and to, do voters actually read instructions on ballots and on the DREs. How does the organization of wording affect the reading behavior? What words do voters understand and which words confuse them. Do they understand cast a ballot? A contest, a race. Do they understand partisan, and how does that affect their voting success. So the next step is to do some research here to make sure that we've developed guidelines that indeed specifically work in the voting

arena.

So if there are any quick questions about this, I'll address them right now and then I'll wrap up with the future directions.

(No audible response.)

DR. LASKOWSKI: Okay. It doesn't look like any red lights are on. I'm going to continue. So we're going to continue our work in validating our usability test protocols and developing benchmarks. We're going to continue some research to extend the work we've done on guidelines for clear instructions. We're going to continue our work on looking at trying to develop guidelines for ballot design and interaction design that would go into the equipment standard. Always doing usability of the standard itself, and other specific issues as they arise. For example, these have arisen.

Of course we've got carry-over items from the public comments. We've got to go through those. There's also some issues about usability of some of the security approaches. And throughout some of the talks today you heard some elusions to, we've got to look at maybe this is a usability issue, we've got to look at

the usability perspective. And so as those are identified we'll look at them. I bring up vote by phone because I believe there's some guidance that could be put in the equipment standards that's specific for a vote by phone. For example, what's the best way, most usable way to time the audio interface, are there dexterity issues that could be addressed and improved with the vote by phone. And what about the control of the interaction? Is it done the simplest way possible? And there's a lot of research in the interactive voice recognition field that we might be able to pull up to use. There's still further dexterity issues about ballot submission (indiscernible) etc., so we'll continue to monitor that and address those points as they arise.

J. R. had a question about going into the polling location and other sorts of issues for usability testing, a lot of which have to do with accessibility testing. The usability tests we're talking about developing for the conformance doesn't look at, address usability testing for improved accessibility. That's because we need a slightly different version of the

tests because some of the equipment is different, the benchmarks are going to be different. If you've got, say, the audio interface, we know that's going to be slower. So what's an acceptable rate for that. So there's some specific issues. And also, how do you define the demographics for testing for classes of disabilities. So that's the next step.

And then just always looking for what can be moved from the accessible system requirements to general requirements. I know in the current version of the VVSG there were some font and color things that wound up in the accessibility section. And these I think could easily be moved into the general equipment section with really no cost to the vendors, or very little cost. Some of that is already addressed in fact on most of the DREs.

And that's the wrap-up of my talk. Any other questions or clarifications?

DR. SEMERJIAN: Any other questions or comments?

DR. HARDING: Again I would move acceptance of the report.

UNIDENTIFIED SPEAKER: Second.

DR. SEMERJIAN: We have a second? Any further discussion?

(No audible response.)

DR. SEMERJIAN: If not, all those in favor in adopting this preliminary report, say aye.

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

(No audible response.)

DR. SEMERJIAN: Unanimous. Thank you.

DR. LASKOWSKI: Thank you.

DR. SEMERJIAN: Thank you, Sharon. Okay, at this time I call on Dr. Hastings, Mr. John Kelsey, and Mr. John Wack of our Information Technology Laboratory to present the Security and Transparency Subcommittee reports for the next VVSG iterations. They promise it will be short, but no pressure.

UNIDENTIFIED SPEAKER: Okay. Good afternoon. I just want to first take a moment to acknowledge Quin Dang (phonetic sp.) and his support in helping to create the cryptography requirements as well as Angela Aura (phonetic sp.), who helped create the draft requirements for the access control. So basically I’m going to go

through very quickly some of the draft requirements that we've created in cryptography as well as access control, and then talk a little bit about some of the draft requirements that we're -- as we schedule the next areas in security.

Cryptography can support basic security services such as integrity, confidentiality, and authentication. And what we wanted to do was we wanted to consolidate general cryptography requirements in to one location. So if you go back and look at VVSG 2005, you see that there are cryptography requirements inside of set-up validation as well as in software distribution. So we wanted to consolidate those common requirements. This section doesn't talk to or set forth requirements related to voting protocols. Those will be developed under independent verification requirements. Some of the topics covered were that types of algorithms that can be used, both the symmetric key and the asymmetric key, the hash-out (phonetic sp.) rhythms that can be used, (indiscernible) authentication codes and how they can be used, validate a cryptographic module requirements. And I'll talk a little bit more about

that on the next slide. Security strengths of the cryptographic algorithms is discussed here. This is one area where it changes the security strengths of a given crypto algorithm and key length changes over time So what we've tried to do there is in the discussions sections provide links to NIST websites that are kept up to date with that information.

Key management requirements as well as some general application requirements. The first sample requirement basically says cryptographic operations will be performed in a (indiscernible) 140 validated cryptographic module. Many of the cryptography requirements can be used by using a validated cryptographic module. It leverages a well-established program here at NIST called the Cryptographic Module Validation Program, which has over 200 plus modules that could be used to be integrated into voting systems.

The next one is a requirement related to the Key Management Policy. It's a documentation requirement on the vendors. The vendors may make some assumptions about how key management is done, given their voting system. And so we wanted to capture that in some documentation.

This requirement also goes on to say that if you deviate from those suggested requirements, what hazards might occur, what risks arise. And so that's actually helpful I believe to the users of that equipment by providing them knowledge on, okay if this risk is going to occur I need to put in place certain policies and procedures to mitigate that risk.

The next one is a general requirement, usage requirement of cryptography basically saying that communications within the voting system should use cryptography to ensure confidentiality and integrity. There are two exceptions to that. One is when the communications channel is physically protected by the enclosure of the voting system, or if the integrity and confidentiality of that communication is shown not to affect the reliability and security of the voting system.

We'll continue to refine and develop these requirements based on comments we receive from you, from the TGDC, as well as the public. Right now there's an issue in terms of the way the requirements are written. It allows for general voting systems to export

cryptographic keys, which may be too liberal in losing control of cryptographic keys that need to be kept secret. So we're looking at that based on some feedback we've received.

The next section is access control requirements. What we wanted to do is we wanted to provide more specificity and broaden some of the aspects of access control. I believe it's in VVSG 2005, basically it talks about identifying people and applications to the voting system. We've gone ahead and actually expanded that a little bit to identify components. And later on you'll see systems and processes as well with respect to their role. So that's a little bit more specificity there.

We wanted to expand authentication techniques. Really if you go back and look at the IEEE standard as well as VVSG 2005, it's very password centric. It has requirements on password links and requirements for the use of dictionaries to protect weak passwords and those types of things. So we wanted to expand the techniques to allow for biometrics to be integrated into the system, our cryptographic techniques to be integrated

into the systems.

We also specified modes of operation in order to help limit access and functionality to the voting system in a given mode of operation. Physical and hardware access controls are not covered here but will be covered in the physical security section of the document.

Some of the topics covered of documentation -- not only documentation for the end user on how do I use these access control capabilities of the system, but also documentation requirements on how those were implemented so that that documentation can be provided to the testing labs. The security policy template, very similar to the model key management document discussed earlier. Identification, authentication, authorization, logging events that should be logged, access control requirements, and communications, which probably should be more of a remote access. So you may only want certain types of capabilities to be accessed remotely.

Some sample requirements here is the first one talks about modes of operations that have been defined in the document. There’s a table I believe that defines what each one of these modes means. So you have pre-

voting, open, suspended, and post-voting. We've coordinated with the CRT folks in the state model that they've developed. And the second requirement basically says that you could apply different access controls for each of the modes. So in pre-voting you may want to be to -- the administrator should be able to upload about a definition file. However when the poll is open you probably don't want that capability or functionability to occur during the open, when people are casting ballots.

The next requirement, this is what I was talking about, expanding user systems and applications and processes, and identifying those. The second requirement talks about possible groups and roles within the voting system itself. So is the user a voter or is the user really a poll worker, or is the user the administrator. So we've defined several different roles here. We'd like your feedback on both the roles as well as the modes of operations. If we define too many, we haven't defined enough, we'd like your input back on that.

Again we'll continue to develop these and refine

these requirements based on your comments provided. We're doing some additional research to check how far we deviate from VVSG 2005 as well as the IEEE standard, as well as there is an ANSI standard, real base access control, and we need to research that and see how we can best leverage that standard for VVSG 2007.

The next graph, requirements that we're looking at, and this is subject to change, is event logging, system and event logging, communications, and software distributions. And we're looking to have some draft requirements in the June timeframe.

Other items that are still left on the table are software installation, setup validation, physical security, and those types of things. And at this point I'll open it for discussion.

DR. SEMERJIAN: For the sake of, since we're under such time pressure, why don't we go ahead with the three presentations and then open up for discussion?

MR. KELSEY: I'll try to run through this quickly. This is a talk on open-ended evaluation of voting systems. And I'm John Kelsey. So put this in perspective. About a year ago I gave a much less

specific talk on the same topic for you guys, and then I talked about what we were going to try to accomplish in this work. We made a little progress on this. There's still a lot to be done.

The history here is there's a TGDC resolution, 1705 I believe, that told us to look at open-ended, you know, kind of add a significant amount of an open-ended search for vulnerabilities in the voting system evaluation. And so then what we've done since then is we've had this Preliminary Threats presentation and paper from last year and the Open-Ended Vulnerability Testing presentation last year that just outlined a very high-level idea of this. And we've been doing a lot of informal identification of threats, and then more recently we've done the NIST Threats to Voting Systems workshop, which I think was a great success, I hope. I thought so. I hope other people did. And we've been doing some work with the Brennan (phonetic sp.) Center on a more formal threat analysis. And all of this is kind of pushing toward the same goal of figuring out how to make voting systems stronger by knowing how to attack them.

So kind of in that context, what I'm going to do is I'm going to talk about what open-ended testing is and why we need it, kind of as a review, and I'm going to talk a little bit about how we plan to do it. I'll warn you that a lot of this is still up in the air. We're doing some things that haven't done on this scale before, and so we need to kind of go slowly and learn what we're doing as we write the standards, and then as we get operational experience with it. And I'm going to try to sprinkle this talk with technical questions and policy questions that we need to resolve. And these are questions I'm hoping that you guys can shine some light on.

So kind of at a high level, I'll define open-ended testing, kind of by contrast with what you normally do. The easy way, and kind of the stairway of trying to verify that something complies with the standard is sort of a checklist approach, okay, a smart checklist approach. But the question you're asking is, does the system conform to the standard, right? So what you want to do is you want to make sure that the voting system has the right kind of security controls, it has, you

know, you can't get in there and mess with the memory cards without breaking the lock or breaking the seal, stuff like that. And you want to make sure that those controls are configured correctly or installed correctly, you know, the lock really works, you can't pry open the door without opening a lock, something like that.

Open-ended testing is kind of different. With checklist testing you're really just going down a list and saying does this comply with the requirements, does this comply with the requirements. Open-ended testing is somebody actually trying to find a way to break the system, to find a way around the security controls. And so you're both looking for a basic design flaw that lets you break the thing, and also you're looking for ways to defeat a specific control. So this thing has this control it's supposed to have and it has this lock, but you can get around it somehow.

And so the analogy that I used in the report that I wrote and also that I've been using around everywhere is, you can have a policeman come out and check your home to see if it's secure. And he'll tell you this

door has a bad lock, you need a better lock. He does a checklist. Probably that policeman has never broken into any houses. You hope not, at least not for a living. But he has sort of a list of things that he knows that are potentially problems and he'll tell you what to fix. That's checklist testing. It's really valuable. Open-ended testing is like having a professional burglar come see if he can steal your TV. It's a pretty different approach. And the good thing about this is even if you do everything right on the checklist approach, sometimes there's still vulnerabilities that weren't addressed. There's still something that somebody can get around all of your defenses. The bad thing is the quality of open-ended evaluation is really heavily driven by the quality of your evaluator. Somebody really skilled will find flaws that just a normal person wouldn't find. And that's sort of the interesting intention here.

So there've been some examples of open-ended analysis of voting systems. The stuff at the top is conceptual analysis. The Harris Book from 1934 talks about some very broad threats to voting systems, the

NIST Voting Threats Workshop, some of that. And these are not exactly what we're talking about. This is just an idea where you look at voting systems in a very broad sense and say how would you attack them. More specific stuff, and we have only a few examples that are going to -- public and why be discussed, the Hopkins Report, SAIC report, some public attacks that are done partly for publicity and partly to show a real vulnerability, and then what I thought was probably the best example I could find, which was the Rabba (phonetic sp.) report.

I won't try to read this whole thing, but this is a quote from the Rabba report. I thought was probably the most professionally done of the open-ended analyses that I could find on a voting system. And they basically talk about a red team exercise. And kind of at a high level, the goal of a red team exercise is to set up a system in an environment where it looks very much like the one that it will be used in, and then see if you can find flaws in it, see if you can attack it. And the idea is you can attack the system, the evaluation team can try a lot of different attacks. They're not constrained. And if one of the attacks fails, they don't lose any points.

They just go and try the next one. And the hope is that you'll discover kind of a lot of potential vulnerabilities. So the interesting thing about the Rabba report if you look at it is they found a bunch of practical flaws on a particular voting system. And once you knew about the flaws, I think they were all pretty easy to fix. So you can see an example of something where you have this analysis, and you could mitigate some of these with procedures but you also could just fix the problem in the voting system. And so it seemed like a really valuable thing to be that you could look at this system and do this analysis, you'd come up with a list of potential attacks and then you could actually fix the problems. The next person to look at those who maybe is more hostile doesn't find those easy attacks.

So the kind of high-level idea here is something that in the big attack world or the computer security world people call low-hanging fruit. If we want to make the voting system stronger, what we want to do is we want to pick the low-hanging fruit. So we want to find the weaknesses in the voting system that are particularly easy to find, that can be found on a

reasonably low budget and with existing tools, and fix those. Now in a real-world computer system, something as complicated as a voting system, you'll never get rid of all the bugs, you'll never get rid of all the potential attacks. What you can do is you can make those attacks a lot harder. You can close the easy vulnerabilities, make somebody be a genius to break in instead of just a 14-year old hacker with time or something. And that's the goal you're trying to accomplish here.

So one of the places where we can make voting systems stronger is by fixing those weaknesses, those low-hanging fruit. The other place though is that preparing for a test can improve your design. We're going to have documentation requirements, and I'll talk about this, in the submission package that will, if you do the exercise necessary to write this documentation I think you'll understand your voting system a little better. And more to the point, you've described it to the evaluators so they can check your logic. The other thing though is that if you know your work is going to be checked out in this way, you're more careful, you

know. The goal is to have the voting system vendors try to attack their own systems, because they're going to know it better than the testing lab ever will. And there's an incentive for them to spend some significant resources internally to try to fix the vulnerabilities so that the testing lab won't find them, say well instead of having the testing lab reject our system and have to spend a bunch of money to fix it, let's just find those problems at first. That's the hope.

So that's kind of the broad justification for what we're hoping to accomplish. This is the sort of broad process. And unlike one of the other talks here, I actually don't have huge amounts of details. If we go down more than a couple of layers here, we get to places where we're going to have do a lot more research to know exactly what this is going to look like. But the broad process -- I can go down a couple of layers at least -- there's going to be some sort of agreement between the lab and the vendor on what I'll call rules of engagement, which basically means what qualifies as an attack.

UNIDENTIFIED SPEAKER: Push this a little toward

you so --

MR. KELSEY: Oh, not able to hear me? Okay. If you haven't heard anything I've said so far, that's probably going to be a really confusing talk.

So the rules of engagement, I'll talk about this in a second. Basically what qualifies as an attack, was the attacker allowed to try to break into the system. There's going to be documentation that's going to be submitted, and that will give the evaluator a chance to quickly look at the system and see if there are obvious flaws before they start doing the more expensive parts of the evaluation. And then there's a full sample system that's submitted, and the attacker -- the evaluation team tries to break it, tries to break either the whole system or specific parts. And at the end, if the system is broken then they tell the vendor what's broken and at least give them some clue about how to fix it. If it's not broken then they produce two reports. One is an internal report for the vendor and maybe the EAC, and then another thing is the external report for the public which doesn't detail exactly what tools were used but says, here's what we looked at, here's why we

think this is okay.

So I'll go into a little more detail with this. Kind of at a high level, the rules of engagement amount to what access and what resources an attacker's allowed to assume. You know, the evaluation team is allowed to assume in doing an attack. An example here would be, say, for physical security. If you look at the way that, say, safes are rated, they're rated in terms of the amount of time an attacker is given and what tools he's allowed to have. And something like that probably makes sense for physical security. You're concerned about a widespread attack on a voting system. You probably don't care about attacks where the attacker has to spend six hours breaking into each voting machine without leaving any traces, and he does it over the course of months. That's probably not as big of a concern. You might have rules of engagement that say something like the attacker is given 15 minutes with hand tools. And if he can open the back of the thing, get access to the internals of the voting machine and not leave obvious scars on the back of the machine, that qualifies as an attack. I don't know exactly what the

right parameters for that are. I'm just trying to use that as an example. That's the sort of thing that would go into the rules of engagement.

The policy issue to consider here is how much of this should be predefined by the standard, and how much of this should be open for negotiation between the vendor and the testing lab, or alternatively should be kind of evolved, maybe by the EAC, as we get operational experience with these tests. That's something to consider.

The second part of this is the submission package, the documentation. There are two parts to this. First is we want to request security documentation from the voting system vendor. We want them to explain basically what are the security controls you're using to accomplish the required security goals, and why should we believe that they're secure. That will make the evaluation team's job easier when they're looking at the system. So if you say no software can be installed on this voting machine because of this, this, and this, then first of all that gives the evaluation team a chance to read that documentation and see if they just

fundamentally disagree with it or if it's incomplete. And then it also gives them a guide to where to look to attack the system.

So the other part of this is procedures. Now you can't mandate exactly what procedures will be done in the states or the counties, but the voting system vendor needs to provide the set of procedures that are assumed in the evaluation, because procedures really affect potential attacks. Also there are specific things that are done, for example recounts, where it seems like it's not always clear exactly what the procedures are supposed to be. And we'd like to have that explicitly spelled out so that the evaluation team can look at the procedures for, say, doing a recount, doing normal voting, lay provisional ballots, anything like that that might be a problem, and specify what they're assuming is being done so that you can check that that actually does what it's supposed to do. That's just a (indiscernible) but kind of interesting policy issues here. First of all what procedures should we be including, should we even be worrying about these. I think we probably have to at least specify some minimal ones. But there's some

interesting questions about how much detail we should include. And a broader question that applies to all testing systems or all testing regimes is how we ensure the accuracy of the submission. So in other words, if the security documentation says that they're doing things and they're not really doing it, that would be pretty bad. We'd like to catch that. And the same applies for the systems that are tested, and are they the ones that get in the field.

So then we get into the more interesting attacks. So there are two different kind of categories here. There are full attacks which basically, probably are mostly going to be done looking at the documentation where you say, here's how you would just violate the whole security of the election system, maybe fix the election, given some (indiscernible) of insider access, maybe violate voter privacy. Any of those things, if you can demonstrate a way to do that, that should probably fail the system, although if it's being done with the documentation it may very well be that the problem is that the vendor didn't write the documentation correctly, not that there's actually a

flaw. And so what you'd assume there is that the lab would send them back a note and say hey, it looks like there's an attack here, can you explain this better, and then they might fill in the details or say oh, let us fix that. Kind of the interesting question here comes out to be, what should the definition of full attacks be, and how much of that should be negotiable, how much of that should be the rules of engagement, how much should be negotiable between the vendor and testing lab, versus how much should be just fixed in the standard.

The kind of interesting bit of this, of our work here is going to be the intermediate attack goals. The idea is that instead of making you come up with a full attack on the voting system, if you can violate the security in some fundamental way, for example if you could show that you could install software on a DRE without the proper access, that should be enough to fail the system since that violates the standard. So these are the kinds of examples of intermediate attack goals, you know, cause software to run without authorization, cause a loggable event to happen and not have an entry in the event log to correspond with –

(**END OF AUDIOTAPE 4, SIDE A**)

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(**START OF AUDIOTAPE 4, SIDE B**)

MR. KELSEY: -- any of those things, and I know exactly where we'll get the precise list of these. This is going to be something we'll have to develop. But the idea here is if you can get to any one of these kind of intermediate steps in a bigger attack, that should be enough that the system fails.

The justification here, there are really three reasons for wanting to fail the system when you have an intermediate attack rather than making you actually spell out a full attack, so not just get the software on the DRE but then show how you'd fix the whole election. The reasons for wanting to do this, first of all compromising an intermediate attack goal means that you've violated one of the security requirements, like you've installed software on a DRE that you shouldn't be able to. Automatically that means you've failed. The second thing is we'd like to encourage defense in depth. A lot of real-world attacks -- if you look at the difference between the attacks kind of in the lab and in

the real world, often it's hard to get from step 1 to step 2 to step 3 to get the full attack to work. And one way of making that harder is to make sure that you don't just say, well it's okay to have step 1 and step 2 be easy, but then step 3 has to be hard. You say all three steps have to be hard. That's the kind of idea of defense in depth. You know, you have to get past the lock and the alarm and the dog, not just one.

The last thing there is to save the evaluation team some time and resources, if you look at the Rabba report it's clear that they ran out of time before they ran out of vulnerabilities. At least it seemed that way to me, and also that they spent a lot of their time working out how to get from the vulnerability that should have been enough to fail a system to the actual attack. And I'd like to see that time spent on finding other vulnerabilities to patch rather than on proving their case.

So an interesting question that is going to come up and that is actually pretty tricky here is how you decide whether the system passes or fails. Now the assumption is you're going to have unambiguous pass and

unambiguous fail. If the evaluation team has found 20 attacks, it's going to fail. If the evaluation team didn't find a scratch on the thing, it's going to pass. There probably are going to be gray areas, and I think the goal of the standard here needs to be to try to minimize the ambiguity in those gray areas. The policy issue is whether the lab should decide to pass/fail itself, or whether it should write a report and then provide that to, say, the EAC or somebody, you know, produced by the EAC and have them do the decision to pass or fail. And I talked a little bit about that in the document.

The last bit of this is the final reports, and this kind of addresses something I think J. R. talked about earlier, that we have this internal report to the vendor which, hopefully the goal here is to help the vendor make the system better and make the next version of the system better. So this will include -- obviously if it fails then it includes everything that failed. But even if it passes you might still have things that as an evaluation team you want to tell the vendor, you know, this seemed like it might be an attack but we couldn't

get it to go anywhere, or this looked like a potential vulnerability but we didn't have time to address it. You wouldn't want that in a public report, but you want that to go back to the vendor so the vendor could fix it if they thought it was a problem.

So the external report to the public is a little different because the goal here is to let kind of members of the public, election officials, opposing political parties, whatever, convince themselves that that this evaluation was done in a meaningful way. So that's going to need to specify the rules of engagement and procedures that were assumed. So if you know that the assumption here was you hand recounted every hundredth DRE or something, or every 20th DRE, if that was the assumption of the procedures you need to know that what you assume to do the evaluation. If that's not the case in the real world, then maybe the evaluation doesn't apply.

We want to list what was looked at and how at kind of a high level. I gave a summary of that in my paper. It was like what the example, maybe a paragraph or two per intermediate attack goal looked at. We tried to

defeat the physical security, we tried a crowbar, we tried a lock pick, we tried a hacksaw, nothing worked. That would be the sort of thing, maybe in a more formal language. And that's kind of the highlight of the whole idea, is that the external report is supposed to tell you enough that you can convince yourself that this evaluation was done correctly.

So the interesting last bit of policy issues involved resource and money issues. So the question is how much money is available for the open-ended testing, and then of course there's a whole bunch of money that's going to go into the testing budget as a whole. And open-ended testing can be expensive. When I tried to budget this out myself just from my experience as a consultant, I couldn't see doing this sort of evaluation for under about $100,000. And I think you'd probably run higher than that. I figure about $100,000 to do a proper evaluation like this. I mean, the voting systems are fairly complicated and you're going to spend some time just ramping up to understand the system. It might be a little less, might be a little more, but that's at least the order of magnitude.

So I think that also speaks to the issue that Paul and Britt were talking about earlier about the large number of tests for different states. Ideally you'd want one really well-funded test that went into a lot of depth rather than maybe 30 or 40 different tests that each tested apart, and nobody doing a full evaluation. I don't know if that's helpful or not. And there are some concepts of interest issues here. And this is true in all kinds of testing systems. So the lab is probably paid by the vendor, so we need to use kind of lab accreditation and a reasonably well-written standard to try to minimize the effect of any conflict of interest there between the business arrangement and the requirement to check the quality of the work.

The big question -- I know I'm out of time, so I'll get out. The big question is whether this is a feasible approach. There aren't a lot of examples of this operationally. And I'll just say our current plan is to go very slowly in this, to do a lot more research before we write any binding standards, and also to -- or whatever it is, guidelines -- and also to try to start out with the idea of open-ended testing being done on

the parts that are easy to do. Automated scans of vulnerabilities, they're off-the-shelf products for a lot of these things. Some of the parts of the standard can't be evaluated any way but the open-ended evaluation. And then hopefully as we gain operational experience, we can increase the resources on open-ended testing. And that's it.

DR. SEMERJIAN: Thank you, John. We'll proceed with the last presentation by John Wack.

MR. WACK: Okay. Thank you. I'll try to be brief. I just want to let you know that I couldn't sleep last night because I was so nervous about, you know, I didn't know how to characterize VVPAT to you. So I was watching a TV show and it described how you can take these deep-sea submersibles to basically the bottom of the ocean where the tectonic plates join together and you've got an extremely high-pressure environment with vents of air coming from the core of the earth, and new life forms that don't obey the laws of nature. And I thought, that in a way is like VVPAT. I mean, it's really where the rubber hits the road. You have new technology that has really been invented, try to follow

the existing standards but there really weren't standards at that time for VVPAT, and new election procedures have to be invented. It introduces all sorts of new legal issues with ballots and so on and so forth. It's an extremely interesting area, but it's a work in progress. So what I'm going to give to you today is essentially a quick update. I'll just explain as I go along.

Let's just start right off with just a little bit of an overview of what's going on with VVPAT. I tried to find out basically how many voters would be using VVPAT systems during the year 2006. And I basically ran out of luck. I did a lot of research. I finally ended up talking with vendors and came down to five plus states will be using VVPAT systems. But I actually don't know how many voters. But I think we will find I'd say over the months of June, July, August that we'll get a lot of feedback from elections where VVPAT systems have been used. The previous time I think was in Nevada and we'll basically be able to see the results of using them on a more widespread basis. It will be very interesting to monitor how well the systems perform for

audit purposes as well as usability. Usability not only for the voters, but for the election officials themselves. So it will be a quite interesting time I think.

And this gets into basically what I want to talk about, which is broadening the VVPAT requirements that are in the VVSG 2005. Originally when we came up with this timeline we came up with these chunkable modules that could be swapped in and swapped out, and VVPAT was the first one. And it brought to head some issues in that we didn't think that the research was really complete, that we could provide a complete finish to VVPAT module that we could swap in. And we wanted to be like doctors and above all do no harm, but we also wanted to at the same time accommodate what we thought were some legitimate comments received during the VVSG comment resolution period. And in particular we received some comments from a vendor of an electronic ballot-marking device who mentioned basically that such devices do produce a very nice piece of paper that's actually a ballot that can be used as the official ballot of record. And it is voter verified because the

voter handles it and looks at it, and in many cases can take it and deposit it into an upscan device where it can be scanned in. And therefore you do have two records there.

So what I'll get into is that in doing a bit of an update we did some research, talked with some vendors, and came to the understanding that it would be better to not constrain the existing requirements to DREs being the only types of voting systems that can in effect be part of a VVPAT system. If we opened it up to other types of voting systems that essentially do end up producing a voter-verified paper audit trail, that we would be doing states a favor, we would be doing vendors a favor, we would be doing everybody else a favor. And at the same time we wouldn't be changing the requirements in any big way. So I will just note, you know, maybe beat it into the ground a little bit that it's important to focus on what VVPAT can be. It's an audit trail but it's a paper audit trail, and it's a Voter-Verifiable Paper Audit Trail. So we believe that using an electronic ballot marker device combined with an upscan system in effect produces a voter-verified

paper audit trail.

Now to broaden the requirements so that they would allow these different types of approaches, not specifically I should note, not specifically to broaden the requirements for only electronic ballot marker devices, but to broaden the requirements in general, to allow different approaches. It essentially requires that in some of the requirements we have to proceed them with four DRE systems. And just a quick example up there on the screen, DRE systems produce an electronic record. Optical scan systems currently do not.

But for the purposes of providing a voter-verified paper audit trail that can be used in an audit of the election counts, it’s not specifically necessary that electronic records for each ballot be present. Now along with this we noted some difficulties in the press with auditing some VVPAT systems. And we need to at some point in the introductory material basically describe the results of our threat analyses. And we aren’t there just yet, but we can safely say that we believe that there has to be a basis of auditing for voting systems, that no matter how secure our

requirements are they have to depend on the fact that some sort of audit will occur.

And in this particular slide here, I just want to point out that with VVPAT you have two records obviously, a paper and electronic or a paper and the machine totals. And obviously the paper needs to be used in an audit of the machine totals and/or of the electronic records. A lot of the VVPAT systems produce not only a paper record but a barcode, and the barcode is basically supposed to encode what is in the paper record. And essentially one can take a barcode scanner and scan that in, and you've got it in memory and you can more easily manipulate it. But the fact is that is a third record and it's not a Voter-Verifiable Paper Audit Trail record. The voter does not verify that barcode, the voter doesn't know what's in the barcode. So if you are going to use those in an audit, it's imperative that basically the barcodes themselves be audited to ensure that they actually do match up with a paper record. So it really has to be a two-step audit. States that decide to take this approach essentially have to take this into mind, and it does call into

question what software you're going to be using to perform this audit, and whether that software has been inspected along with the voting system code, and so on and so forth. There are some issues there.

Where will we be going with VVPAT in the final version? Earlier in the morning I basically said in many ways there isn't a whole lot new in the VVSG. The biggest contribution I think we're making is that we're specifying the requirements well, we're linking them to tests, we're making the document easy to use, we're trying to simplify. The existing VVPAT requirements are sort of monolithic. They basically need to be distributed more. There are accuracy-related requirements, reliability-related requirements, workmanship-related usability, accessibility mixed in with VVPAT. And those logically belong in other parts of the document. So that will change. We need to do more research in the area of electronic and paper record formats. And we definitely need to explore more the issue of usability for election officials as well as voters with VVPAT.

So I'll leave you with these open areas that we

need to look at as these requirements evolve. We'll talk about these issues in some of the STS telecons, whether barcodes themselves are generally a good idea. Barcodes right now exist because basically if you have a relatively small paper spool you can scan in the barcode quickly, and it's easier to do that than it is to actually read the paper spool. But again it introduces complexity. It's a third record. You don't know what's in the barcode. It needs to be audited. So is it in general idea, is this something the standards ought to depend upon. I've talked about more study needing to be done in the area of usability and ease of auditing. I just want to highlight that a voter-verified paper audit trail system is really two things. It's basically the voter in a sense being able to compare two records and prove that the voting system is working correctly. But it depends highly -- the other part of it is it depends highly on the ability of the records to be audited. And if the records can't be audited easily, then it's essentially not worth doing. So we need to make sure in the requirements that we specify good usability for election officials when it comes to the VVPAT records.

Another area that really goes in many areas of the VVSG but specifically right now for VVPAT is some sort of common format for electronic records. We've talked about going in the direction of EML, Election Markup Language, but we recognize that if there were a common format and if these records eventually had things in them such as digital signatures, identifications of machines, and things like that, it would make auditing more simple in the long run.

Discussion. So I've tried to make up a little bit of time and I've gone over material quickly. But I think we're at the discussion area now, and I think it's discussion area for all three of our presentations.

DR. SEMERJIAN: Okay, well let me just point out that we believe these preliminary reports of the Security and Transparency Subcommittee respond to TGDC resolutions 1205, 1405, 1505 -- it's a long list -- 1605, 17, 18, 21, 22, 23, 35, and 3905. So a lot of resolutions are being addressed through this work. And unless there are supplemental directions or corrections, the technical support and related work product will continue to be developed consistent with this

preliminary report. So are there any questions, further directions, or corrections? Mr. Berger?

MR. BERGER: John, thank you for your report. I just have one question. The VVPAT is intended to be a solution to a problem. I just would like you to reflect on, are the standards written such that if a better solution comes along it can be qualified?

MR. WACK: Well, when you say better solution, would you be thinking of some solution that didn't necessarily use paper?

MR. BERGER: I wouldn't (indiscernible) the thought, but basically it's going back to almost the security. What's the threat that we're worried about --

MR. WACK: Ah, I see.

MR. BERGER: -- and how is this the solution if someone comes up with a better mousetrap?

MR. WACK: Well that's a toughy to answer in many ways. We have been pushing the concept of, we called it IDV, Independent Dual Verification or Independent Verification. And that work is evolving right now. We've had a lot of very active discussions trying to boil that down into what do we really need for a record

of a voting system to exist, that is independently verifiable and can be used in recounts and audits, and basically prove that the machine is functioning correctly. We don't have specific answers for that at this point. We're still going down that path. I want the VVPAT requirements though to basically be a subset of -- I didn't turn off my cell phone and I apologize. It's very nasty of me. The VVPAT requirements essentially should be a subset of the IV requirements. So we do not want them written in any way that precludes any other approaches that perhaps are more flexible. When I made the comment about paper I didn't mean to be funny or facetious, but paper has been noted as being difficult to handle. And if there are other ways of doing it that don't necessarily involve paper, we would want to definitely explore those ways, yes.

DR. SEMERJIAN: Mr. Karmol?

MR. KARMOL: Mr. Chairman, Dave Karmol. John, I'm sorry. Maybe I missed something in one of our meetings, but didn't we change the term here to Voter-Verifiable Paper Audit Trails?

MR. WACK: Yes, we did. And I noticed that about

one minute before I came up on stage and was hoping nobody else would.

MR. KARMOL: Okay, I just thought maybe I was --

MR. WACK: And it is true. It's not voter verified, it is potentially voter verifiable. The numbers of voters who actually verify VVPAT records, we don't know. But I would guess it might be one in five.

DR. SEMERJIAN: That will be corrected when all this material is posted on the web. Do I hear a -- yes.

MR. GALE: John Gale from Nebraska. In listening to your comments and looking at your notes, I don't see that you've tied the EBM into this particular presentation. In other words, like an Automark ballot as a Voter-Verifiable Paper Audit Trail. And I guess that's good from my point of view. I think they're two distinctly different products, but is that contained within? Did I miss something?

MR. WACK: Well, it's my contention that an Automark or another similar sort of system does essentially produce a ballot. And if the voter picks up the ballot and can inspect the ballot and put it into an upscan or some sort of tabulator system, that in essence

is a Voter-Verified Paper Audit Trail. You end up with electronic machine totals and you end up with a piece of paper. The piece of paper can be the ballot of record or it can be a paper spool. But in essence you do end up with two records, and the voter has verified one of them and that record can be used in recounts, or it can be used in high-quality audits. So we contend that in essence you are creating a Voter-Verifiable Paper Audit Trail when you're using an EBM and an upscan system.

MR. GALE: I guess I see them as so distinctly different. I don't think the courts of law have resolved that issue of what is a ballot. But I think it's very clear with the Automark, that is a paper ballot, that is the official cast ballot. And with the Verifiable Paper Audit Trail, the official ballot is the electronic and this is just a piece of paper that maybe is used and maybe not be used. We don't know. So I hate to have a system that has a very clear product, a paper ballot that is tabulated suddenly put into this morass of confusion and fog that revolves around the VVPAT. So to combine them sounds like you're mixing apples and oranges, you're prejudging some things that

the courts of law are going to address eventually. And if we build some assumptions here, assuming a clarity that's not going to be there when the courts handle it, I think is really jumping ahead of the game. I think they should be maintained as separate systems until a court determines that they're the same as a matter of policy, which hasn't been decided. So you're jumping out ahead of the courts and making a determination that I don't necessarily think is going to be there?

UNIDENTIFIED SPEAKER: Can I follow up, John? Do you consider an upscan system that is a human-marked paper ballot that's been scanned to also be in a similar category?

MR. WACK: Well I was hoping not to get into that because that's --

UNIDENTIFIED SPEAKER: Sorry (indiscernible).

MR. WACK: I don't have a good answer for you there. I mean, actually we've been working on the accuracy requirements, or David Flater has, in that particular area, doing active research. But just briefly, the problem is see is that if you have hand-marked or manually-marked paper ballots, you have

something that's potentially ambiguous. And essentially when they are scanned, and they're most likely scanned accurately but not always, depending on marginal marks, and all these things. So can it be used to create an unambiguous audit trail, that if you gave it to three sets of election judges they would all come up with the same conclusions I don't know the answer to that yet, and I'll get back to that above all do no harm. I felt we were safe broadening it to Electronic Ballot Marking devices that produce a machine ballot, but not the hand-marked ballot.

DR. SEMERJIAN: Dr. Rivest?

DR. RIVEST: Yes, I wanted to respond to Secretary of State Gale's comment, too. I think one interesting question for this committee is sort of our rules of engagement in dealing with all these of these variety of systems. We have voting systems which, as pieces of equipment, produce multiple records. Some of them may be paper, some of them may be electronic, some of them may be paper marked by people, and so on. And then the question that you raised, the distinction you raised, with is a very interesting one, is which is the ballot

of record which is the one that does the primary record. It's a matter of state law typically. And we're writing standards like this up to date, at least in the Security Committee. We have not paid attention to that distinction as a matter of policy because states do vary on this. So we care about things like the correspondence between the paper and the electronic and so on, too. But if a vendor was to submit a voting system for certification, then under your interpretation he would have to specify which is the ballot of record produced by this machine. It would only be certified in that usage mode, and to my understanding we have not had vendors submitting voting systems where they specified this particular record, the electronic records, say, or the paper record, is to be the ballot record. And it's only to be certified in that usage mode. And if we want to get into that, that would be an interesting direction. It maybe be very helpful for the (indiscernible) kinds of reasons you suggest, but my understanding of our task here is to not take those kinds of considerations into account.

DR. SCHUTZER: Well I'd like to just give a thought

that we really don't -- until we started the Human Factors and the actual usage of these things, independently of what we'll call the thing of record. Until we see people's behavior, we really don't fully understand things. It would be interesting to do some of these tests. Like I would reckon that if I was on a machine and selecting based upon the screen and then I got a printout which was the vote of record, that if that printout didn't match what was on the screen, I reckon that a good percentage of people would not even be looking at what they were casting in the ballot. And really the only thing they look at was on the screen. It would be an interesting test to see if you actually printed something different, which is the vote of record, whether anybody who looked at it even cared.

UNIDENTIFIED SPEAKER: Ted Selker (phonetic sp.) has done some studies along those lines.

UNIDENTIFIED SPEAKER: And what were the results?

UNIDENTIFIED SPEAKER: Yes, what he reported in the IEEE Committee was 5% of the people will look at the paper record.

UNIDENTIFIED SPEAKER: I'm sorry. Ted Selker did

not do a controlled study on whether people actually verified their record. What he did was observe during an election to see whether he thought people were checking that paper record.

MR. SCHUTZER: Oh, I mean, a good test would be actually to have (indiscernible) where they print out something different and see if anybody catches it.

DR SEMERJIAN: Certainly the policy aspects of this, you know, I'm not quite sure whether it comes into the jurisdiction of this committee. But I think the committee is focused on correspondence as Dr. Rivest said, you know, so that you can assess whether the same information comes out of the two different information channels. And, you know, perhaps that's something for further discussion in the future.

MR. GALE: Well, Mr. Chairman, John Gale. I think it's critically important. I think it's a fundamental thing that we have to decide, because a manually-marked ballot in the minds of every voter is an official ballot. Maybe they're not so sure about electronic ballot, and maybe that's why they need this paper trail. But in Nebraska with Automark, we're going to end up

with two kinds of ballots. We're going to have the manually-marked ballot, we're going to have a ballot marked through the equipment that becomes an official ballot as well. But we're going to call them two different things, the manually-marked ballot, everybody's saying that's fine. That doesn't have to be called a verified paper trail. But the one that comes through the Automark is going to have to be called a verified paper trail, which may or may not be recognized as a ballot by the courts of law. So it seems to me they're exactly the same thing. You have a manually-marked ballot, you have a piece of equipment that marks your ballot by your direction, and they both are the official ballot for recount purposes in Nebraska and every other state that uses them. But yet the official ballot under the DRE standards as I understand, the official ballot is the electronic ballot, and the other is only for use in the event of a court contest in the election.

UNIDENTIFIED SPEAKER: State law.

MR. GALE: And, by according to state law.

UNIDENTIFIED SPEAKER: One complicating thing, I

don’t know which states specifically, but some states, their statutes basically say that in the event of a recount, the VVPAT paper spool will be the official record. And since I don’t think that’s happened yet, it will be interesting to observe what happens at that point. But I think in the research we’re doing in IV and independent verification systems, we haven’t made the distinction of the, well if there is a paper trail or some other record produced of that being specifically a ballot of record or some ancillary audit record. We haven’t gone that far into the policy areas. I hear what you’re saying, but thus far we have not addressed that issue.

MR. GALE: I guess it becomes a point -- John Gale again -- when our candidacy board sits, we’re certifying the election based upon the certification of our county officials for certified paper ballots. And those paper ballots are either manual or they’re Automark, but they are paper ballots. That’s what we certify.

UNIDENTIFIED SPEAKER: You do not certify, as far as I know, the paper audit trail from DREs. They certify the electronic vote unless there is a contest.

At least, that's the direction I understand many states are going. But it is a matter of state law but I think that confusion or that oversight has to be resolved so that we're not trying to answer a political policy issue through some equipment guidelines.

DR. SEMERJIAN: May I call on Commissioner Davidson to see whether EAC is -- is this something you want to comment on? Is this something that this committee should be concerned about, or would you like to think about that and maybe respond at a later time?

UNIDENTIFIED SPEAKER: Yes, we would prefer to think about it and then get back to you. (Indiscernible) do that very shortly but we prefer to think about it.

DR. SEMERJIAN: Okay. Is that --

UNIDENTIFIED SPEAKER: (Indiscernible) and didn't really see the issues that the Secretary has brought up. So we (indiscernible) to discuss it.

DR. SEMERJIAN: Okay. Any -- Mr. Berger, did you have another question?

MR. BERGER: I just wanted to -- probably comment to follow, but Whitney, let me ask you. That number

that I quoted, do you think that's wildly off the mark? That 5% of people actually look at a printed record and verify that that's how they voted on it?

MS. QUESENBERY: Whitney Quesenbery. I haven't the slightest idea. I haven't done the research. I think it would depend a great deal on the instructions they were given. I think it would just depend a great deal on the presentation of the material, how and when it was presented, and it would depend a great deal on the state election laws in which it was happening. So I don't, I think that's, you know, do people check their bank records? I don't know. I bet Mr. Schutzer does, but I don't think there's any (indiscernible) about that.

UNIDENTIFIED SPEAKER: I might just offer that --

MS. QUESENBERY: And I guess the other question is, does it matter if only a few people check it?

UNIDENTIFIED SPEAKER: I guess I'd offer this observation. In the popular mind at least, this is viewed as a remedy to a potential threat. If our research shows that it's not as effective a remedy or protection as might be afforded, perhaps to go back to

an earlier presentation, we need an alarm and a dog so that might indicate some direction.

DR. SEMERJIAN: Dr. Rivest?

DR. RIVEST: If I could comment on that, I think there's a misperception too that everybody needs to check the voter-verified paper audit trail in order for it to be an effective deterrent against somebody trying to put in malicious software. And even if only a small fraction of people do check them and they do raise an alarm when they see it, you've got good proof there that the paper doesn't agree to what they voted, you've detected fraud. So that even if the number were smaller than commonly thought was necessary, it could still be very effective as a deterrent.

DR. SEMERJIAN: Okay. Do I hear a motion to adopt this preliminary report?

UNIDENTIFIED SPEAKER: I move to adopt it.

UNIDENTIFIED SPEAKER: I second.

UNIDENTIFIED SPEAKER: Second.

DR. SEMERJIAN: Okay, we have a motion and a second. Any other comments?

(No audible response.)

DR. SEMERJIAN: If not, all those in favor of adopting this report, say I.

UNIDENTIFIED SPEAKERS: Aye.

DR. SEMERJIAN: Any opposed?

UNIDENTIFIED INDIVIDUAL: Naye.

DR. SEMERJIAN: We have one vote opposed. The report is adopted by a majority vote. Okay, I think Mr. Harding is waiting there. And at this time I'd like to open the floor to the introduction of any new resolutions. And we promised J. R. the first shot at this.

DR. HARING: Thank you, Mr. Chairman. Before I make a motion, I'd like to make a statement and an observation. First, the statement in terms of what the EAC, the TGDC, the two advisory groups, and the public are doing is simply a national (indiscernible) in which they (indiscernible) and we need a standard that applies to this thing we call coding. And in that (indiscernible) it always makes me think of the Atlas Board and the 16 years we've had with the (indiscernible). And as (indiscernible) America, even though we have verifiable standards that are very

precise, no matter where I go in the country they are implemented differently. Case in point, this hotel right here just spend $5.7 million upgrading stuff, 20% of it on facility things, but there's a half dozen things in my room that do not comply with these standards. Now those that interfere with me using the room, well not me in general, but another member of my community would very much have a problem when there isn't even a toilet paper dispenser. So it makes me want to then move a motion to increase the interaction -- I don't want to call it the Outreach, but the interaction by the EAC, and specifically the TGDC, with the disabled community and the development of the VVSG 2007. I would like that motion to read that we move the Subcommittee Chairs to consult with the Commissioners to develop an action or strategy plan to more involve the disabled community, with the relevant issues for the VVSG 2007 requirements that are being considered. And that's this interaction that they (indiscernible) perhaps in lieu of public hearings or special kinds of involvement regarding the voting requirement as we work on issues that specifically address (indiscernible)

voting issues. Does that help?

DR. SEMERJIAN: J. R., I think you have to read -- do you have this written down?

DR. HARDING: I have it written down, but I modified it on a slide. Alan, do you have it still?

MR. GOLDFINE: No.

DR. SEMERJIAN: No, did you read that (indiscernible)?

MR. GOLDINE: If you could go a little more slowly we can probably write it down, type it.

DR. HARDING: Okay. I would like to move that the TGDC Subcommittee Chairs work in consultation with the EAC Commissioners, and the --

UNIDENTIFIED INDIVIDUAL: Stop.

DR. SEMERJIAN: Hold on a minute, Jack.

DR. HARDING: Okay.

MR. GOLDFINE: Okay, what I have is that you move that the TGDC Subcommittee Chairs work in consultation with the EAC -- go from there.

DR. HARDING: And the Chair of the TGDC. So we’re got our five -- our four Chairs with the EAC.

MR. GOLDFINE: Okay, go from TGDC.

DR. HARDING: -- to develop an interactive strategy to involve the disabled community in the review of the relevant VVSG 2007 requirements.

DR. GOLDFINE: Okay, let’s go to involve the disabled community, and take it from there.

DR. HARDING: -- in the review of relevant VVSG 2007 requirements being considered at this point.

MR. GOLDFINE: Okay, take it from 2007 requirements.

DR. HARDING: Okay, relevant 2007 --

DR. SEMERJIAN: Being considered was the last --

DR. HARDING: -- that are being considered by the TGDC.

DR. SEMERJIAN: Well, that’s a given.

DR. HARDING: Okay, that’s a given. Okay, The last part then is the interaction/Outreach (indiscernible) could include public hearings or other special inclusion activity or voting requirements that include the cognitive disabled voter.

MR. GOLDFINE: Okay, Outreach activities could include -- and go from there.

DR. HARDING: -- public hearings --

MR. GOLDFINE: -- public hearings --

DR. HARDING: -- and other unique events --

MR. GOLDFINE: -- and other unique events --

DR. HARDING: -- that specifically address voting requirements for the disabled --

MR. GOLDFINE: -- that specifically address voting requirements for the disabled --

DR. HARDING: -- and specifically the cognitive disabled voters, or the voter with cognitive disability issues, I guess is politically the way to say it.

MR. GOLDFINE: Okay, voting requirements for the disabled, especially -- after disabled, take it from there. How did you reword that?

DR. HARDING: -- and especially those with cognitive disabilities.

MR. GOLDFINE: All right. What we have here, and we can modify it, you move that the Subcommittee Chairs work in consultation with --

DR. SEMERJIAN: Let’s modify that because it’s sort of -- say that move that the TGDC Chair and the Subcommittee Chairs. I think that’s what he meant.

DR. HARDING: Yes.

DR. SEMERJIAN: So start there -- and Subcommittee Chairs, to work in consultation with the EAC. And then take out the one after that, up to develop. Right. So move that the TGDC Chair and the Subcommittee Chairs to work in consultation with the EAC to develop a interactive strategy -- I think to develop a strategy --

DR. HARDING: Oh, yes, an interactive strategy. I didn't want to say Outreach, because Outreach is such a loose word. But basically --

MS. QUESENBERY: J. R.?

DR. HARDING: -- (indiscernible) of our community.

MS. QUESENBERY: It's not an interactive strategy. It's a strategy to involve the disabled community.

DR. SEMERJIAN: Yes.

DR. HARDING: There you go. Thank you, Whitney.

DR. SEMERJIAN: Okay, so take out the interactive -- to develop a strategy to involve the disabled community in the review of relevant VVSG 2007 requirements that are being considered by the TGDC. Outreach activities could include public hearings and other unique events that specifically address voting requirements for the disabled, and especially those with

cognitive disabilities.

DR. HARDING: That's affirmative.

DR. SEMERJIAN: Does that capture --

DR. HARDING: It does, Mr. Chairman. Thank you.

DR. SEMERJIAN: Okay.

MR. CRAFT: I'll second.

DR. SEMERJIAN: We've got a motion and we have a second. Any comments, questions? Secretary Gale?

MR. GALE: J. R., I have a question. It seems like the same thing could be said of vendors for example in terms of promoting their earlier involvement. It seems like there is kind of a procedure and an order to these things where the staff develops recommendations. As we've been hearing today we develop resolutions and policy, and eventually there are public hearings at which all relevant and interested partners and groups get to testify and submit written commentary and testimony. If we keep moving that earlier and earlier, it seems like it makes us over burdened with participation before we develop something that people can look at. And I'm not objecting to your thoughts, but it seems like the public hearing part of it is the

logical part of it. But earlier involvement, how do you decide -- let's say we're talking about vendors, how do you decide what vendors are going to be consulted earlier? Or in terms of those with cognitive disabilities, are we able to identify organizations and groups that would be representative enough to be consulted without other people objecting if we consult early? Does that makes sense?

DR. HARDING: Yes. Mr. Chairman, may I answer that?

DR. SEMERJIAN: Of course. Go ahead.

DR. HARDING: Well, Mr. Secretary, now you hit it on the hammer. The latter part of your question is do we have (indiscernible) a group who for the –

(**END OF AUDIOTAPE 4, SIDE B**)

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(**START OF AUDIOTAPE 5, SIDE A**)

DR. HARDING: -- with community special Outreach has more of the (indiscernible) as opposed to saying well, if this is what you want to do, you've got to take it or like it, and that to me I think is a strategy do (indiscernible) a population that's disenfranchised

(indiscernible) is currently still disenfranchised from this process. And so I'm just tempted to (indiscernible) meaning the EAC could continue to (indiscernible) to tease this out faster or faster, and yes (indiscernible) but as when and where (indiscernible) Mr. Secretary.

DR. SEMERJIAN: Mr. Craft?

MR. CRAFT: Yes, J. R., this is Paul Craft. Is the heart of the motion which you made and I seconded more to perhaps moving up the attention that we're giving or not giving to cognitive disabilities? And I guess dealing with the first part of it, are there more specific things you feel we should be doing to accomplish involving the disabled community?

DR. HARDING: Well what I was thinking on that line, for example, we had a big debate on the shoulds and the shalls. And now that it's been (indiscernible) for the '05, the '07, I as a member of the Committee, I don't know which ones were in and which were not left in in the final document. And what might be threshold for changing them, because we said we won't make (indiscernible) shall, but when we were going to do that

and what was the criteria going to be, and have like a community help us (indiscernible) and maybe there is an interaction with the vendor community on their (indiscernible).

MS. QUESENBERY: If I could?

DR. SEMERJIAN: Ms. Quesenbery?

MS. QUESENBERY: I'd like to come at this at a slightly different direction. When we started this committee, one of the things that we did in September of 2000-something, four probably, was held public hearings that were designed to bring out issues in advance of beginning the serious work on developing the standard. And I'm afraid (indiscernible) wasn't able to attend the other Subcommittee's days, but those hearings were really useful for us because we were able to look ahead and say, what are the issues that we see coming up and find experts in that community to bring research, to bring their work, to sort of put on the plate for us. I'm --

DR. HARDING: (Indiscernible.)

MS. QUESENBERY: J. R., if I could just finish.

DR. HARDING: (Indiscernible.)

MS. QUESENBERY: J. R., if I could just finish. I look forward at what's on the Human Factors and Subcommittee plate, and it's a pretty full plate. On the other hand, the last slide that Dr. Laskowski shared also had some stuff that's coming up. Maybe that list is not complete, but there's certainly work where perhaps what we need to be doing is doing a public hearing where we do some ingathering of things, not just from a specific disabilities community but from around a number of communities who are concerned about types of equipment. Phone voting is one that came up in our area. It was mentioned by Commissioner Davidson. We've been thinking about tactile voting, tactile ballot markers, not electronic ballot-assisted markers, because with some states rolling back to paper and a pretty large number of people using paper, one of the questions is can we help people vote whose disabilities may be of a type where that would be an effective solution. And maybe that's something that we could in fact do as the TGDC to begin to bring some of that material into our thinking. We had, a Human Factors thing is we had a big mix of academic researchers, advocates, vendors, and

voting officials all presenting.

DR. SEMERJIAN: I believe Commissioner Davidson would like to make a comment.

MS. DAVIDSON: I just have a question. J. R., are you aware that we did -- in the Human Factors area because of the disabilities -- make a lot of the shoulds shalls in the 2005 standards?

DR. HARDING: Well I knew we did a great number of them, Commissioner. I just didn't know how many. And then what was the criteria for excluding the others, and that is part of where I was going.

MS. DAVIDSON: I think maybe if you knew how many of them had been changed, because in working with John and Mark and different ones we did change those before we adopted them in December. So I wonder before, you know, with some of the discussion going on, maybe it would be important for you to see how many of them had been changed.

DR. HARDING: Well I would be willing to withdraw the motion, Ms. Chairman, if we could perhaps (Indiscernible). I kindly was saying in terms of just using the Human Factors and generally doing Outreach to

the (indiscernible) community as we are (indiscernible) with these various issues that they should, you know (indiscernible) so we're not getting hijacked on the back end.

MS. QUESENBERY: This is Whitney Quesenbery. Dr. Laskowski, I know that we did an analysis for the Subcommittee and I can't remember whether we did this verbally or actually did a matrix of what the changes were. Is that something that we could distribute to the whole TGDC? I can't remember whether it was in a finished form or notes form.

DR. LASKOWSKI: We have a write up and John and I were trying to remember who we distributed it to. I don't know if it went outside the (indiscernible).

MS. QUESENBERY: I think it just went to HFP, so maybe that's something we should distribute more broadly, I mean, to the whole TGDC.

DR. LASWOWSKI: So we could circulate that. Yes.

MS. QUESENBERY: Because we did, John did do the work.

DR. LASKOWSKI: Yes, and we (indiscernible).

DR. SEMERJIAN: So did you hear that, J. R.?

DR. HARDING: Yes, I did, Mr. Chairman. And if we could get that distributed as well as the shoulds and the shalls --

DR. LASKOWSKI: That includes the shoulds and shalls.

DR. HARDING: Okay, well then that would be fantastic. And perhaps we could at least get that to the communities. And I would withdraw the motion then.

DR. SEMERJIAN: Thank you. The motion on the table is withdrawn. Any other resolutions, motions? Dr. Rivest?

DR. RIVEST: Yes, I wanted to return to the issue of state-wide voter registration systems briefly and to say a few prefatory remarks and propose a motion. So the question I have is whether that's really within the scope of this committee or not, and if we look at the language of HAVA, it says --

UNIDENTIFIED INDIVIDUAL: Point of order, Mr. Chair. If that's an open question, could we perhaps get the opinion of counsel on it?

DR. RIVEST: If you wish. Basically my resolution was to clarify that by appeal to the EAC itself.

Whether that's within the scope and if so, what priority we should be giving it. We have a lot on our plate, too, and however you want to resolve this I'm happy with that. So the resolution is to seek clarification on this point by whatever means the committee feels best. I was proposed we seek it from the EAC directly, but if counsel prefer to do that too -- the language, just let me read the HAVA language. It says to support the (indiscernible) Voluntary Voting System Guidelines, and this part including, and then part A says including the computer networks, computer data storages, and voting systems, including the computerized list required under Section 303A.

DR. SEMERJIAN: Can we -- I'd rather get a ruling from EAC. Do we need a resolution, or can we (indiscernible)?

MS. DAVIDSON: We're willing to, you know, with you just asking us we're willing to have our counsel look at it and be able to give you an opinion.

DR. RIVEST: That would be great.

UNIDENTIFIED INDIVIDUAL: Okay.

MS. DAVIDSON: So we'll follow up with that.

DR. SEMERJIAN: All right. Any other motions?

(No audible response.)

DR. SEMERJIAN: Not hearing any --

UNIDENTIFIED INDIVIDUAL: (Indiscernible) adjourn.

DR. SEMERJIAN: Well before we adjourn, we need to decide on a date for the next full committee meeting. I think the proposed date is for early December, at least the December timeframe, to review the progress of the work tasks assigned to the NIST staff at this meeting. I believe you have all been provided a sheet which provides you with two choices within the same -- I think they are within the same weeks. Is that right? Yes. And will you please make sure that you have submitted that sheet with your preferences, either here to Alan Eustis or by email?

UNIDENTIFIED INDIVIDUAL: Why couldn’t we do a show of hands right now?

UNIDENTIFIED INDIVIDUAL: We don’t have everybody here.

DR. SEMERJIAN: Well, we’re only missing two people, and they’re on the phone.

MS. QUESENBERY: I’m still waiting to find out if

I'm going to be in China that entire week.

UNIDENTIFIED INDIVIDUAL: Before we do that, I think there was a suggestion that I and a few others made to expand these to at least one and a half days, two days. So before (indiscernible).

DR. SEMERJIAN: Oh, this does (indiscernible) two days.

UNIDENTIFIED SPEAKER: -- just wanted to make sure everyone had agreed to the two-day thing, because I don't think it was discussed.

DR. SEMERJIAN: Well why don't we have a show of hands now just to get a feel, but this would not be a final decision and, you know, any of you that need to check your schedule and check on some major event, then we can --

UNIDENTIFIED SPEAKER: The dates are 4, 5 or 7, 8.

DR. WILLIAMS: 7, 8 is Thursday, Friday.

MS. QUESENBERY: And Pearl Harbor Day.

DR. SEMERJIAN: And we know how Britt feels about Fridays.

MS. QUESENBERY: I have no problems.

DR. HARDING: Well, Mr. Chairman, are we going to

deal with a day and a half, two days versus the one day first? Is that going to affect out decision?

DR. SEMERJIAN: Well my feeling is that a lot will be accomplished between now and December, and that we will have a lot of material. And even though we may send them to you, you know, three or four weeks in advance, it will still take a lot of discussion. I mean, I think today's proceedings is a perfect example, you know. These are important issues, people want to discuss them, and we certainly don't want to short trip the discussion. I think we ought to listen to all the concerns and the issues. So my suggestion is since we're not doing these every quarter, if we're going to have a meeting in December I would suggest that we count on two full days. If we finish a little early that's fine, but I think we should make the decision for the dates with that level of commitment in mind.

MR. CRAFT: Mr. Chairman, I hate to be difficult, but may I suggest perhaps the 5th and 6th --

UNIDENTIFIED SPEAKER: Can't do it on the 6th. There is no room available here on the 6th.

MR. CRAFT: How about another location then?

UNIDENTIFIED SPEAKER: We can't do it. Nobody can -- Jeffrey can't be here and you can't be here.

MR. CRAFT: How about in Atlanta or somewhere?

UNIDENTIFIED SPEAKER: It's a matter of availability of the Chair.

MR. CRAFT: Well I guess the reason I suggested that is we would be traveling on Monday rather than on the weekend, and we would not be trying to get out of the D.C. area on a Friday.

DR. SEMERJIAN: Well let me suggest something else. It's going to require preparation, yes -- did you check the week before?

UNIDENTIFIED SPEAKER: Yes, I did check the week before and Tom said the week before is out for the EAC.

DR. SEMERJIAN: Oh. Because the week before I guess is not good for EAC and the week after we have our own visiting committee. So both the Director and myself will be tied up. So --

MR. GALE: Mr. Chairman?

DR. SEMERJIAN: Yes.

MR. GALE: I don't know about the other election officials, but our canvassing board meets 30 days after

the election as do most canvassing boards. And the election officials are very tied up in the canvassing process. You may not have any election officials here in those two days, because I'm pretty sure from my staff's comment that I'll be at my election board meeting for two days.

DR. SEMERJIAN: Which two days?

MR. GALE: That was that Monday and Tuesday. Is that true, Alice?

UNIDENTIFIED SPEAKER: Yes, actually we would certify ours ten days after our election, so I'd be okay.

MR. GALE: You'd be all right. Okay.

DR. SEMERJIAN: Well, I mean, the other possibility is to go later because the week before the (indiscernible) we're into Thanksgiving, and then the week before, that's even closer to the elections. So, I mean, there is the possibility of the 19th and 20th. We haven't checked, I don't think, but --

UNIDENTIFIED SPEAKER: Well you'll get into the religious holidays.

DR. SEMERJIAN: I know. That's what I was going to

say, that that's getting very close to the holidays.

MR. GALE: It sounds like I'm the only one with the problem. I thought maybe all election officials might, so I'll withdraw my comment about that date.

DR. SEMERJIAN: Okay, let's see. The choices are 4th and 5th, and then 7th and -- who are in favor of 4th and 5th, that is Monday and Tuesday? Only one vote?

DR. HARDING: J. R.

DR. SEMERJIAN: How about you, J. R., and Ms. Turner Buie? Are you on the phone?

MS. TURNER BUIE: I'm here, but I didn't hear the month. I keep hearing the date.

DR. SEMERJIAN: Oh, December 4th and 5th.

MS. TURNER BUIE: Oh.

DR. HARDING: I'm flexible. I'll go with whatever the group wants.

DR. SEMERJIAN: Okay. I didn't hear your vote, Ms. --

MS. TURNER BUIE: The 4th and 5th are fine with me.

DR. SEMERJIAN: Okay.

MS. TURNER BUIE: All right?

DR. SEMERJIAN: And those who are in favor of 7th

and Friday?

(No audible response.)

DR. SEMERJIAN: I guess we have two votes for that. So it looks like we'll be working towards the 4th and 5th, and unless there's some other major issue we'll probably go with that date. And those who cannot be here perhaps can be, you know, connected by phone. Okay. Yes, Mr. Gannon?

MR. GANNON: Dr. Semerjian, it's Patrick Gannon. If we are planning for the 4th and 5th, would it be possible to consider starting, say, at 1 o'clock on the Monday to allow at least those on the east coast a chance to fly in that morning and (indiscernible)?

DR. SEMERJIAN: Yes, I was actually thinking whether we can extend it into, start Tuesday and extend into Wednesday morning. But the problem is, this is our awards ceremony so this hall will be decorated and everything. So I'm sure we will not be able to get in Wednesday morning, but I think we can start Monday at noon so you can fly in, and then maybe plan staying late Tuesday.

UNIDENTIFIED SPEAKER: No (indiscernible) Monday.

DR. SEMERJIAN: Oh, well, that's a possibility. If you want to have a working session -- all right, well we'll look at those. I think we have an idea of how most people feel about this and about Fridays.

So let me close this session by expressing my appreciation for your participation today. And we look forward to continuing our work with you. I also want to thank all the NIST staff for their efforts to make this meeting a success. And we will stay in touch with you concerning the final scheduling of the date. And obviously there are several suggestions that we'll take into account regarding increased interaction among the TGDC members and the subcommittee activities.

So with that I thank all of you, and I adjourn this meeting of the Technical Guidelines Development Committee. Thank you very much.

(**END OF AUDIOTAPE 5, SIDE A**)

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CERTIFICATE OF AGENCY

I, Carol J. Schwartz, President of Carol J. Thomas Stenotype Reporting Services, Inc., do hereby certify we were authorized to transcribe the submitted cassette tapes, and that thereafter these proceedings were transcribed under our supervision, and I further certify that the forgoing transcription contains a full, true and correct transcription of the cassettes furnished, to the best of our ability.

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CAROL J. SCHWARTZ

PRESIDENT