
$T R A N S C R I P T$ of the stenographic notes of the proceedings in the above entitled matters, as taken by and before CHARLES R. SENDERS, Certified Shorthand Reporter (License No. 596) and Notary Public of the State of New Jersey, held at the New Jersey National Guard Armory, 151 Eggerts Crossing Road, Lawrenceville, New Jersey, on Thursday, July 26, 2007, commencing at 9:00 in the morning, pursuant to notice.

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    B E F O R E :
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    RICHARD WOODBRIDGE, ESQ.-CHAIR
    DARYL MAHONEY-MEMBER
    JOHN FLEMING-MEMBER
    (Transcript of proceedings July 26, 2007 commencing at 10:30 a.m.)

MR. WOODBRIDGE: Good morning. Do the people hear me in the back? Thank you very much. We're going to open the Title 19

Committee hearing today. I'm going to first of all thank all of you for joining us.

I'd like to start off again by thanking the attorney general's office with providing us with the support we need and also NJIT, who we will hear from later on today, who has looked at the machine.

The machine we're looking at today, I believe is an Avante Vote-Trakker VVPRS. That's the paper trail machine.

The last two days we have looked at machines from the manufacturer Sequoia. As you all are familiar, we are under a Court and Legislative mandate to make it possible for the State of New Jersey to have paper trail
machines by the ready for voting in february of 2008 .

Just a few procedural issues and ground rules. First of all, my name is Dick Woodbridge. I'm the Chair of this Committee to
until the two gentleman on either side of me decide they want to get somebody better, which they can easily do.

Title 19 has an unusual feature to it. It has a portion that requires a three person committee to review all new types of voting machines that come into New Jersey and to make recommendations to the appropriate authority, which is the state and now the Attorney General's office, as to be whether or not they believe that particular voting machine meets the criteria then applicable to voting machines in the State of New Jersey.

On my left is John Fleming who is a is a management information specialist with the Department of Law and Public Safety. On my right is Daryl Mahoney, who is the assistant director of the Bergen County voting machine division, with has extensive experience, obviously, in the practical use of voting machines.

The statute that establishes this three person Committee is unusual, to my knowledge. In that it requires a patent attorney to be one of the three individuals.

I've had the pleasure of serving on this Committee off and on since being appointed in 1982 by then Secretary of State Jane

Burgio. I've seen a lot of machines in the last twenty-five years.

Charlie, the court reporter on my right, points out that it is sometimes difficult to hear the speakers. We have experienced some audio problems during the course of the last two hearings.

What we have found is that the speaker in the back of the room, the microphone in the back the room, seems to be the best one to use. The ones on my left, your right are sometimes difficult to hear. So I would request anybody who does any speaking on the record here, to speak directly into the microphone so the court reporter can pick it up.

The procedure that we'll go through today is almost identical to the procedure that we've gone through for at least the twenty-five years, that I'm familiar with. Which is typically to request the vendor to do a general presentation of the machine. Historically it
has been followed by a walk-through point by point of the articles in the statute to see, as best the Committee can determine, whether or not the machine we're inspecting meets the various different parts of the statute.

When that part is finished, we've traditionally asked for public input, which we welcome enthusiastically. And more
enthusiastically, the shorter and briefer and more to the point it is.

It is going to be a little bit different this time around, because we're working with a new type of voting machine that has new criteria which the Committee has not had experience with before.

This set of hearings, this being the third and last day of the hearings, is the first time that this Committee has officially been asked to review a paper trail voting machine. So the criteria that we have to work with, are more lengthy than the criteria that used to be found, and still are found in Title 19, Section 48 and Title 19, Section 53. So it will take us probably longer than it historically has.

The criteria that we work with, working with today, are directed towards paper trail machines. But also have incorporated into them some of the better features of Title 19, which were written at least forty years ago, to cover the old fashioned mechanical lever machines and scanner type devices. They were not really written with electronic voting machines in mind, much less paper trail.

Well depart a bit from the historical procedure, in that we're going to ask for input after the vendor's general description of their device, along with their opening statement. With a comment by David Millstein who is here today, who speaks on behalf of the disabled of this state.

Most importantly and something that's a significant departure from our past procedures, but a highly welcome one, is that we have a contingent here from the New Jersey Institute of Technology, who has done a yeoman's job of reviewing the machines and providing to us, the Committee, a report as a guideline. Giving us some objective ways to judge these machines and give us a better
depth. I know they spent several thousand hours, several thousand hours of effort and untold hours the last three days here in this room.

I don't know if the Attorney General's office has the equivalent of a purple heart, but if they did you would be our first candidates for it. So Rich, I want to thank you your crew again. Because your assistance has been invaluable.

The Committee's job is not to certify voting machines. We do not certify voting machines. Our job is to take a look at the criteria and make recommendations to the Attorney General's office about whether or not, in our opinion, the machine meets the criteria. If it doesn't meet the criteria, what criteria does it not meet?

It is not an instant gratification exercise. We will not make a decision at the end of the day, I'm fairly confident about that. Because there is just so much to digest.

The hearings have a closing date effectively in terms of getting input from vendors of the paper variety, of five o'clock
tomorrow. So if we don't receive whatever your paper materials are, by five o'clock tomorrow, this includes members of the public and the audience, there is a good chance it might not be included in the record. With the materials that we get to review, $I$ think that would be a shame.

I admonish everybody here that if they if they do want anything to be included for our review and in the technical official record, we appreciate your getting that to the Attorney General's office by five o'clock tomorrow.

In fairness to us and the vendors and to keep the process flowing smoothly, we will not be taking questions from the audience, or any other source, while the vendor, Mr. Millstein and NJIT, makes its presentation and during the course of our walk-through of the various criteria.

The criteria takes a long time to go through. After three days my attention span is not measured in large units. So I do request that you give us the opportunity to carefully study what the vendor gives us.

After that point we will be glad to take public input, public comments and public documents, as we have the last few days and we welcome them.

During the course of the hearing, just to keep things flowing so we can get through this in an expeditious and efficient manner, $I$ would request that you address all the questions to me, the chair. Again, we will not be generating any report of any sort today. However we are not unmindful of the fact that the Attorney General, this Committee, the vendors, everybody, is under the gun to expedite the review of these machines so that the legislature's goal of having them in position in February of 2008 can be obtained. For those of you who smoke, there is no smoking in the building. There is no smoking allowed in the front of the building outside. But there are, apparently, places to smoke in the back. If you would like to speak during the public input part, would you please make a point of signing up on the sign-up list, which is way over on the left-hand side over there, so we have your name and your
affiliation. Please spell your name and affiliation so that it is human readable.

Last but not least, $I$ encourage all
of you to-- do we have donuts and coffee today? We have coffee. Is that right? So those of you who might be susceptible to nodding off during the course of this stimulating discussion, are invited to take advantage of the caffeine over there to keep you alert.

I make the same recommendation to the Committee who is sitting in front of me. So with no further ado, I'd like to welcome you. Since there aren't a lot of people in the audience, $I$ 'm going to ask the audience if they wouldn't mind identifying themselves and start with Flavio?

MR. KOMUVES; Flavio Komuves. I'm with the New Jersey Department of Public Advocate.

MS. MENITES: Penny Menites, M-e-n-i-t-e-s, Rutgers University Law School.

MR. KRUEGER: Carl Krueger, $K-r-u-e-g-e-r$.

MR. GLADNEY: Derrick Gladney, G-l-a-d-n-e-y, Department of Public Advocate.

MR. MIDGETTE: Jerry Midgette, Somerset County Board of Election.

MR. WOODBRIDGE: The young lady in the back I'll introduce myself. Her name is Sylvia Nause. She's an intern with our office. I told her this is what we do for a living. The two ladies in front on the right.

MS. SIRACUSA: Annalisa Siracusa.
MS. ADAMS: Rae Adams.
MR. WOODBRIDGE: Andrew Wynham, $W-y-n-h-a-m, \quad$ Sequoia Voting Systems.

MR. WOODBRIDGE: I think we
finished with the preliminary areas. Mr.
Gleim, are you ready to go?
Mr. Gleim has asked to make an introductory remark. Then $I$ asked him if he wouldn't mind walking us through a demonstration of the machine. After that point we'll ask Mr. Millstein to make his comments.

MR. GLEIM: Good morning all. My
name is Rick Gleim. I represent Avante International based in Princeton Junction, New Jersey.

Those of you who are familiar with the area, we're on Washington Road, right near
the train station, just to give you a reference where we are located, my team and I.

Let me introduce the other people at the front table here. At the end is Greg Beasley. At the voting machine here at the center of the room is Mike Ma. Over toward the other other voting machines on the side is Dave Alampi. Any general questions today will be answered by one of us.

My team and I are pleased to be here today to discuss the findings of the NJIT report. We are satisfied with the report and in general agree with the findings. We are happy to have the opportunity to examine the findings today.

We are pleased to be here to
discuss our model EBC 308 FF , full face voting machine paper record, the machines that we have here to the right side of the room.

The system was nationally certified in 2006 and in the same year certified by the State of New Jersey. The machine has been used in Warren County, New Jersey in 2006 and 2007 in general, primary and special elections. On June 5 of this year, the system
was used with full implementation of the paper record with great success. That will be the same paper record that we'll be discussing here today. Thank you.

Mike is going to do a demonstration of the equipment. Do we want to hand him a microphone.

MR. WOODBRIDGE: Yes, if we have one that works. I caution you that you need to talk right into it. Keep in mind we are keeping a record of the hearing.

MR. MA: Good morning. My name is Mike Ma, M-a. I'm going to be the demonstrator of the machine today. My demonstration today will not cover every detailed feature of the system, but will primarily focus on the paper record feature.

A voter will be issued a smart card at a polling place, when the voters sign-in at the check-in desk. This card will bring up the voter's ballot on the machine. The voter puts the card into the cut rigger. The machine reads the codes from the card, then puts the ballot on the screen.

If the County offers a multi
language ballot, it indicates on top of the screen a list of parties. The first column lists the office tiles. It could be either orientation, but the office has to be on top of the screen. The parties are put on the the first column. It depends on the County's choice. The voters press on any candidates, that's the one to vote. The choice will be shown on the the screen showing the choice of a certain candidate.

Just move on to the next office.
If you have to change your choice, you touch on another selection that will register your new choice and cancel your previous selection. If the voter wanted to do a
write-in, the write-in will be done by pressing one of the write-in buttons for that office. You touch it right here, anyone, it doesn't matter. That will bring the write-in screen. The voter can put in the first name, last name, for the write-in candidates and press "okay". Your write-in is shown on the screen immediately. If you want to cancel it, touch it again. Your write-in will be provided. Propositions will be shown on the
bottom of the screen. If you do not know the detail of the question, you can press on the question title, that will show you the complete detail of that question. So you can spend some time reading it and you can vote on this screen, by pressing yes or no who you want to vote for.

Any time you can chose to stop voting by pressing the "cast ballot" button on the lower right-hand corner. The system will do a check for whether the voter missed any selections at this point. All those offices that the voter has not fully voted on will be highlighted in a different color. This is just a reminder screen. It is not an obligation. The voter can chose to continue, so that all of those other votes will be reported as is.

The system asks the voter to wait for the paper record to be printed. Beside the monitor is a printer unit. During the election the front cover is sealed, so that nobody can open the cover and then hamper with the paper record. Also the paper records are stored.
(Pause in proceedings).
The paper record will be printed
for the voter, so that the voter can see from the clear glass window. If the voter is satisfied with the options printed on this paper, the message will instruct the voter just to press the "cast ballot" again to finalize the ballot.

The paper will be taken back by the printer automatically. The vote is finished. The voter puts up the card and gives it back to the polster, which will finish the voting section.

MR. FLEMING: Can we go through the third time.

MR. MA: There is an option in the ballot generation software, which will allow how many times a voter can change their mind after the first paper is printed. Right now the state allows three prints. The voter has two chances to change their mind. Once the third print is out, a message will come up on the screen. That tells the voter you have to cast a ballot, there are no more chances to make any changes.

MR. FLEMING: Can you go through that again?
(Pause in proceedings).
MR. MA: This is the first print. If I'm not satisfied with it, post message and change my selection on the screen. The first print will be taken back and the system will issue a second print. If $I$ look at it, this is number two, it might be more than one page.
(Pause in proceedings).
MR. GLEIM: Our apologies the machine.

MR. MA: Will tell you this is the final record.

MR. GLEIM: We need to bring
another machine. This is one is set on non-review. It is putting the paper record back immediately. The software can be adjusted.
(Discussion takes place off the record).

Just in general, the machine is set at the moment, it is not allowing the voter to review. That's an available alternative on the EMS system. So what we will do is grab one of the other machines and have it done on that.

MR. WOODBRIDGE: Is David Millstein
here still? Where did he go? Why don't we do this, just to keep things moving along. There is nothing sacred about the order in which we do things. If Mitch and his crew are ready, why don't we have NJIT make its presentation and then $I$ think we can continue with the vendor demonstration.
(Pause in proceedings).
I think I falsely accused you of sneaking a smoke in the back, which is the right place to smoke. We've had a little problem with the first demo machine. While they are setting up the second, David, if you wouldn't mind presenting your finding with regard to the accessibility of the machine. MR. MILLSTEIN: Good morning. For the record, David Millstein, M-i-l-l-s-t-e-i-n. I'm the state ADA Administrator for the American for Disabilities Act.

For the Avante machine, myself and Marilyn Rosenthal, who is from the Department of Human Services, who is a person with a visual impairment who is blind, I did an actual test of the Avante machine.

The voting machine itself has a moveable screen for persons of short or tall stature, or a person who has the ability for afford reach who is a wheelchair user. The machine itself does not have full forward reach access, but does have the ability to utilize a corded keyboard for those persons who cannot reach the actual touch screen machine.

The Avante also has other adaptive equipment for voters of varying disabilities. Our tests of the voting machine was done for visual impairments, listening to the actual instructions and also casting a ballot by the corded keyboards and listening through the voice synthesizer and voice recorded instructions.

A person who is going to be utilizing the keyboard tray, it is suggested that they would have to be seated in front of the machine, du to the point of utilizing a full keyboard would have to be sat on the lap, because both hands would have to be free to utilize the keyboard.

As our voter went through the instructions, she was able to utilize the
machine, cast her ballot. The paper did validate what she did request for her voting. Again this machine, would also verify everything that she wrote or asked for. The paper ballot gave us the paper trail for that. MR. WOODBRIDGE: I'd like to ask you a quick. The individual who is using the keyboard needs to sit down. I think that's pretty easy to understand why. Does that individual-- is that individual still afforded sufficient privacy when they vote?

MR. MILLSTEIN: Yes, they would.
The curtain itself would go behind the person, but they are only going to be seated in front, yes.

MR. WOODBRIDGE: Thank you very
much. We appreciate you coming in. Look forward to seeing you, but not tomorrow. MR. MILLSTEIN: Thank you very much. Mr. Gleim?

MR. GLEIM: We're good to go.
MR. WOODBRIDGE: Mitch, we're not
going to go with NJIT as planned. The machine is ready to go. So we'll go back to the vendor's demonstration. I think we were at the
point where we had requested a demonstration of the spoiled ballots during the paper ballot vote.

MR. MA: I'm going to activate the ballot again. I put a few choices on the screen. Then is asks for my first paper printout. The machine prints out the record. The voter can see the record and verify all the choices printed. It is presented behind a clear cover, so the voter can see it but can't remove the paper from the printer.

If the voter is satisfied with the result, just touch this button again to finish the ballot. If the voter sees something that he doesn't want, he can still go back on the screen and change the choice.

Once all of the choices have been made, press the "cast ballot" again. The first paper will be taken back by the printer and the printer will printout a second printed record which will reflect all the changes that the voter has made.

If the voter is still not satisfied with his second one, this will be the last chance that the voter will have any paper
record printed for this ballot.
Once the paper is out, the message that will slow on the screen that the only choice the voter has now is to cast the ballot. If $I$ close the message and tap on any of the choices on the screen, $I$ can't change it any more. This one that $I$ have so far. That will be my official ballot result.

MR. WOODBRIDGE: Before you cast that third ballot, does it warn you that will be your last ballot?

MR. MA: There will be-- before, when the first paper is out, when the message to the voter that you have chance to print three papers. That was number one. You get the section point. That was number two.

MR. WOODBRIDGE: There is an
actually display on the screen?
MR. MA: Yes.
MR. MA: Before you do your third ballot.

MR. MA: Right. I will bring up the ballot again. The dial up box shown on the screen, it says you may print up to three paper records. This is number one. If you change
your mind, another one printed out, it will say this is number two.

Once you get to the third print, you are done.

MR. WOODBRIDGE: I can read the screen from back there. Does the paper ballot tell you that you've got those choices?

MR. MA: It will tell you that that was a replacement paper record, when the second one is printed.

MR. WOODBRIDGE: Yesterday we went through the same drill with a write-in. Can you show us what happens when you try three different write-ins.

MR. MA: The three different write-ins and cancel the first two?

MR. FLEMING: Do it from the second one. We can put it right in now and do the third one write-in?

MR. MA: I would do three write-in ballots. The first one.

MR. WOODBRIDGE: We want to see.
MR. FLEMING: He's putting another write-in from another contest. We want to see the record.

MR. MA: I will print one.
MR. FLEMING: It does show.
MR. GLEIM: Go to the third one.
MR. MA: Do you want a third
write-in?
MR. FLEMING: Change.
MR. MA: "Cast ballot". That's your final record. So the only thing you can do is cast the ballot.

MR. WOODBRIDGE: While we're at it, it might be useful if you showed us how you replace the paper roll during the voting process?

MR. MA: Each machine has a roll of paper. It is 800 feet long. During the NJIT testing it could last for 600 ballot tests for their long ballot. In case you are going to need to change the paper roll, slide the paper forward and break the seal. Because the printer will be sealed during the election. The front cover can be open and release the two latches on either side of the printer. That's locked. There is a plate that prevents the paper sliding them the machine, notifies that you are going to be running out of paper.

MR. MA: You stop voting.
MR. BEASLEY: We thought we had done this thing. So you probably will not have to change paper. There are about 600 votes on 800 feet of paper. If a rare situation came up where you did have to change the paper, you can power this machine down, change the paper. But there is no possibility of electrical shock or anything like that for the co-worker. You bring it back up. It goes through the same place where you are. So you don't go to the poll. All the thing is still. There all the votes cast to that" point.

MR. FLEMING: When you are saying 600 votes, you mean 600 single paper or single paper ballots? If you went to multiple paper ballots or have a voter with three choices, that will be considerably less or possibly?

MR. BEASLEY: We're talking about 600 ballots. That represents as to the number of voters. That represents the maximum would be three, divided by that, if everybody has changed their mind three times.

MR. MA: The paper needs to be-- so the wouldn't be much paper left. Remove the
paper roll from the holder. Then put a new roll in. I'll put it back in.

MR. FLEMING: In your documentation for the pole workers, is that documented.

MR. BEASLEY: Not only do they do that, we provide extensive poll worker training on two levels. We provide the poll worker training for the County administrators. We also provide super poll worker training. What we teach the poll workers, is to deal with the many common issues that might come up. The power cords might be disconnected, whatever. These are six session, s eight hours of background of how to handle, how to change the paper, the typical things that might come up. MR. FLEMING: How do the ballots go?

MR. BEASLEY: The go actually to this box right here. There is a lock that goes right here. They don't have accesses to that. They have to cut the seal.

MR. FLEMING: The general poll worker reaching up, they don't have actual access.

MR. BEASLEY: They can't see it.
MR. FLEMING: From the slot that it
drops into.
MR. BEASLEY: No, it is behind.
MR. FLEMING: Okay.
MR. BEASLEY: We should have timed this.

MR. BLEMING: The other scenario is, we will say you have printer failure, can you replace the whole unit?

MR. BEASLEY: You can. However, because of our interpretation-- we'll get to this as one of the exceptions. Because of our interpretation of NJIT's exception that was made with respect to not having cables exposed and that kind of thing, you certainly can change.

What we're going to address subsequently about, is put a disclaimer on the back of the data cable and power cable, so it is incredibly difficult to unscrew that in order to change the entire printer. This printer, as you can see in your printer documentation as described. In the unlikelihood if you change this printer, it is very remote, very remote. We certainly do have to change printers just because we run out of paper, but
now he's powering back up.
MR. WOODBRIDGE: The power cables
and other cables are behind the printer. Is that correct?

MR. BEASLEY: Yes, sir.
MR. BEASLEY: On the other side of the cable is internal to the machine. So even if you do take this apart, a part loose, you have to make this entire panel down, take about 1,400 screws apart to get to that.

MR. MAHONEY: Change the paper
roll?
MR. BEASLEY: Yes.
(Pause in proceedings).
MR. GLEIM: We're back, ready to
go. The system was brought to a halt. None of the information was lost and the voting proceeds. As long as the poll is not closed, everything is retained on the system. If you close, you don't.

MR. MAHONEY: I notice a paper came out after you put the new paper roll in. Can you tell us what that is?

MR. GLEIM: The paper is just a
machine status paper on there. In this case
we're just in a test voting mode. On regular days we are just general election voting. That's a test. It has nothing to do with any vote. It is normally taken out of the machine when it is started, but left in there. It has no impact impact whatsoever. It is just machine status.

MR. BEASLEY: The other reason for that, when the system is brought online it does an integrity check of several modules. If any one of them is not working properly, that will show you. The system automatically will shut down. It will prevent you if anything is going on when it is started.

Even if this piece of paper was lost, for example, everything that's done on that on machine is written. The event log cannot be accessed. It makes a recording of everything that happens in this machine, just like we just. We did power down and back up. The voting has everything you have down, pointing to that event log. There is no way to interrupt that data. That is protected. So you can't get into it and change.

MR. MAHONEY: On an event log, does
it show you that the paper was changed? Does it say paper changed or anything like that? MR. MA: It will show the record that the printer has some error message, like the paper is low. But it will not show you that the paper has been changed, because the machine is that cleaver to do that. But it will record any of your messages that come up on the screen.

MR. WOODBRIDGE: Thank you. Just one question on the first machine we saw. It looked to me like there are some problems from the paper feeding out from behind. What was that, do you know what was happening there? MR. GLEIM: What appeared on there, the front cover on the machine to the side there, just had a small defect in manufacturing of it. What happened was, the paper record was generated. It would have been retracted, but the voter would not have seen it.

On that case the voter will alert the poll worker saying $I$ didn't see any paper record. It would have been done, showing the the voter on the screen. In addition, the machine had a setting that was not allowing us
to review, pulling the page record up and pulling it away immediately. That can be done in the poll location itself when you are generating your ballot. We just brought this is one up which has it corrected. This is yours.

MR. WOODBRIDGE: At this point in time I'm going to ask the gentlemen from NJIT if they would come up and do their report.

Rick, I hate to do this to you--all right.
Let's do it from back there, if you are comfortable with that, because the acoustics are better from that podium, okay.

MR. DARRAH: I'll go anywhere you want. Good morning. Thank you again for yet another opportunity to discuss our project. I'm still Mitchell Darar, Executive Director NJIT's Center for Information Age Technology. I'll provide the overview. Professor Ari Jain, J-a-i-n, will describe test samples sizes and ballot scenarios. Professor Shi, S-h-i, will discuss specific findings for the Avante Vote-Trakker.

The requirements in the criteria address a broad range of attributes, design
procedures, feasibility, security and reliability. Together they form the performance criteria that were used in our tests. Some are qualitative and subjective. Such as allowing the voter to easily review his or her paper records. Easily is somewhat subjective. Others are quantitative, pure matters of fact to be determined. Such as the machine shall not externally communicates with any system. That's a yes or no. In each of almost 70 individual requirements in the criteria, were subjected to up to four different tests. Our most important findings are that the two core requirements were satisfied by the of Avante Vote-Trakker. Number one, the voters were able to verify their votes on the paper records, by viewing them. Two, the vote tallies derived from four different sources, paper records, barcode, closed poll reports and electronic records all matched.

Exceptions, which we defined as
situations where testing against criteria did not completely or did not clearly yield the required or excepted results were also
reported. The project team, not all of whom are here included senior faculty and staff with extensive expertise in information technology, cyber and security networks, statistics.

A secure lab was established to design and perform the testing to house all vendor supplied items, such as machines, documentation, other equipment, including bar coded readers and the audio components.

The staff was quite helpful in explaining machine operations and answering technical questions. Although they were not present or involved in the actual testing, nor was the Attorney General's office or did they influence or participate in our testing.

The team spent thousands of hours, not just here this week, but over two months on the project, scientifically and objectively evaluating and documenting the machines's performance against the criteria.

To support the testing, sample ballot scenarios were devised. Four different test procedures, as $I$ mentioned, were designed and used to evaluate different elements of the performance criteria and were designed for
different reasons.
Professor Jain will speak about
these in more detail. They are the single test
and three volume tests. The 1,200 vote test,
the 14 hour test and the 52 vote test.
Now, I would like to introduce Professor Jane to discuss the test, sample size, scenarios and tallies.

MR. WOODBRIDGE: Thank you, Mitch. Professor Jain welcome back again. Look forward to your presentation.

DR. JAIN: Thank you and good morning. I'm Ari Jain, a special lecturer in the division of mathematical sciences at NJIT. As Mitch mentioned, $I$ will describe the four types of tests, the sample sizes, the ballots we used, the scenarios for voting and the four types of tallies of counting the votes.

As Mitch, mentioned, we developed four types of procedures; the single test, the 1,200 vote test, the 14 hour test and the 52 vote test.

The single test is a one time
examination, inspection or review of equipment operations and vendor documentation. It
includes the physical inspection of various components of the DRE and the VVPR voting systems, as well as an examination and comparison of paper records, electronic records and barcode.

We used three types of volume tests. In these three tests we use two types of ballots, the long ballot the one that you saw the demonstration of in this room, which has 19 items for voting, and we use the short ballot for electronic voting, which has nine items.

To do the actual voting, we use mock voters. We use twelve voting scenarios. Eight of them were designed to be completely balanced with respect to the affiliation of the candidates and the yes, no votes. The other four scenarios were designed to capture the write-in, the petition, and the under votes. Now, let me turn to the 14 hour test, which is designed to emulate the actual voting in a real official election. We use mock voters to cast these ballots. We gave each voter a set of shuffled scenarios to randomize the order in which they voted. Each voter voted for about one to two hours, took a ten
minute rest and then continued with the voting. After the voting was done, we had four types of tallies that I'll talk about in a minute.

The 1,200 vote test is a simulated test, it is an electronic test, which used a scripted program to electronically cast the ballots. The current version of Avante doesn't have this capability, so we simulated the votes by doing the manual voting. So we cast 1,200 votes that way. The reason for that 1,200 is to go much beyond the 750 for district voters.

The 52 vote test is designed to
test special cases other than the one that you have in the 14 hour and the 1,200 vote. These special cases are the ones that were demonstrated a few minutes ago, somebody changing their mind and voting, voiding the previous votes and going on to later votes.

We also tested the fleeing voter scenario, when somebody walks away, even before a paper ballot is printed or sometime later. So those are the three volume tests.

Now, the tallies for the votes.
There are four types of tallies, the paper
ballot that falls in that tallies the votes cast. Then scan the paper ballots from the barcode. Those are the two types. Then the tally from the close of the poll. The fourth is the electronic record.

In our analysis, all four types of types of tallies match perfectly for the 14 hour vote and the 1,200 votes. Thank you.

MR. WOODBRIDGE: Thank you, Dr. Dr.
Jain. Dr. Shi, are you going to clean up the day again?

DR. SHI: My name is Yun Qing Shi, professor of electrical engineering at NJIT. Here I will report our testing results, especially those exceptions.

As the previous two people already mentioned, the Avante machine has a VVPRS system. Voters, therefore, can verify their selections in the paper records. Also electronic records matches with paper records. So overall, the Avante machine complied with most of the criteria.

The following were presented as exceptions. Some are some violations, not completely followed criteria. The other, like
fleeing, is something for additional report. So exception number one. Long
III.A.1 reads, "The printer shall be designed to have a sufficient amount of paper, ink, tone, ribbon or like supply for use in an election, taking into account election district should have at least one voting machine per 750 registered voters".

Our finding is, the paper
replacement inspected after about 600 voters or ballots, perhaps is a more accurate term.

Exception number two, criteria long
III.A.1.a., reads, "If any addition or
replacement of paper, ink, toner, ribbon or
other like supply is required, it shall be done with minimum discuption to voting and without the circumvention of the security features of the printer and storage unit, which protect the casted ballots and the secrecy of the vote".

Our finding is there is a slit that
exists between the storage unit and the printer, that may allow for unathorized or forged paper records to be slid into the storage unit.

Exception number three, criteria
long II.A.2. Reads, "The VVPRs shall have a low paper indicator that will allow for the timely addition of papers so that each voter can fully verify without disruption all of his or her ballot selections".

Our finding is as follows, if a voter selects candidates, as the paper supply is low, then voter casts the vote. At this time we expect paper can be printed. But because the paper supply is low, there is no printing. Instead, there is an error messaging window open. On the window--error message window it reads "printer error". Beneath the printer error, there is an 'okay' also on that error message window.

Now, at this point if the voter presses the "okay" button in the error message window, then machine goes back to the normal selection window-- no, screen.

Then if at this time the voter chooses to cast the vote because he or she agrees with the paper record showing his selection, then there is no paper ballot printed out, but electronically his vote or her vote, has been recorded. This is what we said
in exception number three.
Now, exception number four,
criteria long IV.A.1. reads, "the paper record shall include the identification occasion of the particular election, the election district and the voting machine".

Our find is that the particular election name is not printed on the paper record.

Exception number five, criteria long IV.C.5. reads reads, "The paper records shall distinguish between accepted and non-accepted ballots.

Our finding is there is no clear acceptance information. For example, void versus acceptable. Voided paper records have the same identifier number as the final approved paper record has by the same vote.

VVPRS depends, (1) and (2) with to that identifying number, for the second data and third updated records respectively. Some voided paper records may be incorrectly considered as accepted paper records, if some updated paper records are lost.

Exception number six, criteria
IV.C.5.a.(4) says, "If a mechanical error in recording or printing a paper record occurs, the record shall be counted as a spoiled paper record. It will not be counted as one the voter's three attempted votes".

Criteria long V.G. says, "If a
mechanical error or malfunction occurs, the DRE and VVPRS shall sudden spend voting operations, not record votes, and present a clear indication of the malfunction to the voter and election officials".

Our finding is, if a mechanical
error or malfunction occurs, there is no warning signal sent to notify the election officials at the polling place. The DRE does not suspend voting operations. The voter has the opportunity to continue voting and cast the vote, but the paper record is not printable. The vote is, however, electronically recorded. That's number-- exception number six.

Exception number seven, criteria
long V.E. reads, "The printer shall be connected to the voting machine, either by completely concealing the printer connection or via a security card, to prevent tampering".

Our finding is that the printer connection between the printer and the particular voting machine, is not completely concealed to prevent tampering. Furthermore, the exposed part of the connection between the VVPRS and the voting machine, is covered with plastic wrap, to not completely allowing access to the cable.

Exception number eight, criteria long V.F. reads, "The DRE shall detect and notify the election officials at the poling place of any errors and malfunctions".

Our finding is, although the DRE can detect the problem that may prevent the paper record from being correctly displayed, printed or stored, no warning signals are sent to notify the election officials at the polling place.

Exception number nine, Criteria
long V.H. reads, "If the connection between the voting machine and the printer has been broken, the voting machine shall detect and a provide notice of this event and record it in the DRE's internal audit log. Voting operations shall be suspended and no votes shall be recorded".

Our finding is, if the connection between the voting machine and the printer breaks during the voting process, that the DRE displays an error message on the screen to the voter, but no warning signal is sent to notify the election officials at the polling place. The DRE does not suspend the voting operations. The voter has the opportunity to continue voting and cast the vote without printing any paper records. The vote is, however, electronically recorded.

Exception number ten is
miscellaneous relating to fleeing voter. Our finding is for fleeing voters who have yet not printed any paper records, the DRE displays the correct warning, which allows the intervention by the poll worker to spoil or cast the ballot. However, once a paper record has been printed by the voter, the DRE will automatically cast the ballot as the fleeing voter left, without review and approved by the voter and without any intervention by the poll worker. We reported this one as an additional item.

MR. WOODBRIDGE: I have a couple of
questions. So if a fleeing voter comes in to the voting booth and makes some selections, then casts a ballot, then leaves, does that first ballot automatically become the voter's choice.

DR. SHI: Yes.
MR. WOODBRIDGE: Is there a period of time between when it's printed, when it automatically becomes that final votee.

MR. GLEIM: Can I answer that? The fleeing voter-- I agree with everything that he is saying, but it is set according to New Jersey law. This the way it was used in the Warren County election.

What will happen is, if the voter comes in, touches the screen, but doesn't cast his ballot. In other words, there is no paper record showing within a pre-determined time which is set by the municipality, the warning will come up on the screen saying you have to do something on this screen or you are going to get thrown out, you are not going to get your chance to voter.

If they don't touch it, it will
then send a warning to the poll worker to come
in. That is now assuming that the fleeing voter is gone. The poll worker comes in. Their choice is at that point, is to take the two poll worker cards that they started the machine with in the morning and they put it in. New Jersey law says since there was no intent shown, spoil it. That's what our system does.

In the cases that the voter came in, did all of his choices, cast his ballot, the page record is now hanging. Then he assumes that's all $I$ have to do and walks out, forgetting you have to cast it one more time. The machine will let the paper record stay there. Same thing will happen in a hundred seconds, two minutes, whatever it may be.

It will tell the voter-- since the voter is no longer there, it will tell them you have to do something or the system will be ended. It does not need poll worker intervention. At that point if nothing is done, the paper record is pulled back, the vote is cast. That's what the law is says. It follows that, it follows that intent.

MR. WOODBRIDGE: I'm not frankly
clear myself about exactly what the law is,
what extent we actually have clear instruction regarding the fleeing voters. I'm just curious about how that procedure works.

If $I$ can indulge the Committee, there are a couple of items here that relate to the physical machine itself, that I'm not entirely sure $I$ can visualize. So I'm going to ask the vendor to--and NJIT in particular, to show the Committee two things.

In exception number two, the statement was a slit exists between the storage unit and the printer, that may allow
unauthorized paper record to be slid in the storage unit. I can't be sure $I$ can visualize it. Also, if you could show us the issue with regard to the power cables. Perhaps Mr. Darar is here. Maybe there are other things that you'd like to see.

MR. MAHONEY: I also have a
question. Earlier you saw a problem with the printer being dropped behind the screen. Did you find anything like that happen during your testing?

DR. SHI: Can you repeat that
question?

MR. MAHONEY: When you were
demonstrating the first machine, there was a problem with the printer. The paper dropped behind the metal plate, so you could not see it.

During your testing did you find any problems with the printers or paper jams or anything like that.

MR. DARAR: Yes. I understand what the question was. I didn't see what happened in demo. The paper came down, it wasn't viewable. It was blocked or came too far down.

MR. WOODBRIDGE: I don't think
that's quite correct. At one time the paper didn't present itself. I believe Mike Ma had to open the unit, to get in and retrieve the paper.

MR. DARAR: That happened once during testing. We stopped testing and a technician was on-site. The technician, I guess did that. I wasn't there that day, but that was fixed and then continued.

MR. WOODBRIDGE: So you had one instance out of how many hours of testing?

MR. DARAR: The 1,200 votes, the 14
hour and the 52 vote.
MR. WOODBRIDGE: Was it something
that appeared eminently fixable?
MR. DARAR: I don't know how to
answer that.
MR. WOODBRIDGE: Is it something
that if that were to occur again, could a poll worker correct it?

MR. DARRAR: I don't know what was done to fix it.

DR. SHI: The one instance occurs from three tests. Because all the tests were reported in this report is for the full election, not the pre-election.

MR. WOODBRIDGE: Fair enough. If we could move on to the issue of showing us those two concerns with regard to this slot and also the power cable. We may need the assistance from Mike Ma on this, too.

DR. SHI: It is three machines provided to NJIT. Two of them have such a problem at this position. You will see this and this is not exactly in the same plane. There is space such that you will be able to slide the sheet.

I think this morning we double checked one of the machines. There is such an issue. That's exception number two.

MR. WOODBRIDGE: Why don't we adjourn over to the other machine, if that's a better demo?

Mr. Darar, is this the machine that you are talking about.

MR. DARAR: Yes.
MR. WOODBRIDGE: We saw a demo closer to the table that had this part here. I'm pointing to a part that is flush to the top of the plate. Is that correct?

MR. DARAR: Yes.
DR. SHI: Another question the chairman asked, to show exception number seven. You can see from here.

MR. DARAR: For exception number two, you have to open the top of the printer.

DR. SHI: Then you can see that slit, report it to the poll worker. They would be able to do that this.

MR. MAHONEY: Can $I$ disconnect the printer if I do this, Michael? I'll disconnect the printer, then I'll power down the machine
if I'm a voter behind the curtain, no one can see me. That's the connection of the power to the printer, but on that machine it is
covered. This is the type of machine we saw.
MR. WOODBRIDGE: When you say you
covered, do you mean not visible?
MR. MAHONEY: It is not visible
anyway behind, but $I$ couldn't get my little finger in to reach it.

DR. SHI: According to the criteria it should be concealed. Also, you can see hear the test rack, even for the voter positions are completely-- this could be improved, fully concealed to be more safe.

MR. WOODBRIDGE: Thank you. Does the Committee have any other questions?

Then we can go back to the podium then.

MR. FLEMING: Then I do have one question. We're seeing differences between the machines. I have to get in mind is what machine-- or what combination is printer and machine out in the field?

MR. BEASLEY: We have production devices already deployed in one of the counties
in New Jersey. Some of the machines we delivered to NJIT for testing, we actually got--we borrowed them from the county. The other machines we're using for development. That's why there are differences. The changes that we have made have not been approved by the AG's office, so they are not implemented machines that we did employ.

When we delivered the machines to NJIT, what you point the out is covered to show this is solution. Before the exception came up we had already developed this cover that goes into the back of the machine to keep from doing what Daryl just did.

It is my understanding that it was that machine was going to be used as the representative sample of the these machines, but apparently that is not the case. We're fine with it because, we have already have a solution for that exception.

MR. FLEMING: When at the County level, you make the modification to make the verifiable printing available, all the modifications will be made so that will be covered, make sure the slot is not there, so
forth and so on?
MR. BEASLEY: Absolutely.
MR. WOODBRIDGE: Thank you. In the
last flew days we tired to break around 12:30 for a one hour lunch and then go back on the record. It is about 12:00 now. What I would like to do, I'd like to start the walk-through process, because we sort got a little bit behind our usual schedule. I don't want to lose the pace.

What we've done, we started with the criteria and literally gone line by line starting with the operation section, working our way to the last page, skipping only those items that relate to procedures that are not specific to the vendor.

I've annotated some of this, so
that when we get to the sections that NJIT has discussed, we'll be able to talk about the exceptions in sequence in the criteria.

Start by-- I should just mention for the record, we did earlier, receive a document dated May $20 t h$, I believe, that responded to the criteria at that time. We appreciate your having done that. There may
have been some changes to the criteria, that's not entirely clear.

We also got a response to the criteria-- I'm sorry, we also got a response to the NJIT exceptions in a table format, which will also be considered as part of the record. We appreciate your helping make our job simpler in that regard.

Regardless, what we will do is, I'm going to read in my deep, pear shaped tones, the criteria that we have. I'm going to ask the vendor to respond to the criteria and inform us to what extent and why the vendor believe that the vendor conforms or not to the section.

Starting on page two, Part B, operation."The VVPRS may be designed in various configurations. In all configurations, prior to casting the ballot, the voter shall have the ability to verify his or her selections on a paper record in a private and independent manner."

MR. GLEIM: Yeah, we comply with that. The booth is covered totally by a curtain. Only the voter can observe his own
operations and selections. He can verify his selections on the screen and also on the paper record. Prior to casting his ballot he's able to verify independently all selections.

MR. WOODBRIDGE: Just one question
for verification. The curtains are closed by--who closes the curtains.

MR. GLEIM: It is left to each municipality. I mean, the choices are--the curtains are normally closed all day. The curtains--Mike will pull them out. They are closed. The voter will walk in and crack the curtain. During low time, slow times the poll workers may slide it open a little bit, just to observe what's going, just to see if anybody is sneaking. But the voter himself will push the screen.

MR. WOODBRIDGE: Thank you. B. 2 .
"The VVPRS shall be designed to allow the voter to easily review, accept or reject his or her paper record".

MR. GLEIM: The same pretty much as the first, as we showed, the paper records could be reviewed up to three times. The final one is your last choice. Each time it comes up
behind the glass. It is easily reviewed. You check it with the screen. Then you can go ahead and accept or reject. In that certain time when you are comfortable with what you have, you cast your ballot.

MR. WOODBRIDGE: "The DRE shall not records electronic record until the paper record has been approved by the voter".

MR. GLEIM: The protected public counters do not move until the ballot had been cast by the voter. After he approves his record he casts his ballot. So, therefore, it does not record the electronic records until the voter has approved the paper record.

MR. WOODBRIDGE: Paragraph
B.3. "VVPRS records may be printed and stored by two different methods: A. The cut and drop method: The voter views and verifies the paper record, which the VVPRS cuts and drops into a storage unit". You demonstrated that to us.

MR. GLEIM: Yeah, we're cut and drop.

MR. WOODBRIDGE: 4. "No electronic or paper record shall indicate the identity of the voter or be maintained in any way that
allows a voter to be identified".
MR. GLEIM: There is absolutely no voter identification information on the paper record.

MR. WOODBRIDGE: Let me ask a
question that has come up in the last couple of days. Let's say the voter votes in spanish. The paper ballot that is put into the votes cast hopper, is that in Spanish, too?

MR. GLEIM: When the ballots are generated, your choice, it is an option in the County, is to choose the language that the paper record will be printed. One choice is to print them all in English. The other is to print them a native language. The only thing that someone will bring, the Spanish voter, you will know who voted for it. But it is their choice.

MR. WOODBRIDGE: You have the
option?
MR. GLEIM: Yes.
MR. WOODBRIDGE: B.5. "The
electronic and paper records shall be created and stored in ways that preserve the privacy of the record".

Could you describe a little bit, just out of-- for my information, when you get finished voting, what do you actually do with the printer and the contents?

MR. GLEIM: What happens, in the evening, the poll workers will close voting for the day. When that happens, the system will automatically go into its tally mode. It will do a couple of things automatically for them.

One is, inside the paper record, pull down the front cover, a tally records, just like a grocery list, will be recorded. That they take out.

On that shows a submission of all the voters for the day, by contests, with the parties. The totals, write-ins will be on there.

They take that--
MR. WOODBRIDGE: This is the
traditional end of election gross tally?
MR. GLEIM: Right. In addition, on
the bottom they will note public protected counters and how much there was. Is it different as it was during the day.

On the left side of the machine
automatically will be generated and dispensed, a CD Rom. On that $C D$ Rom, that has the information of the day's events, including things like what was on that tally, on that paper tally.

In the case that the dog eats the paper on the way home, you have it on the CD. The CD also has the electronic record. It has the event log. It has the it ballot images. All of these can be used between the time between the paper record and what's on the actual system. There is a one to one relationship with the paper records and electronic ballot images.

We, frankly, can't believe any
system would be approved or certified without that tie. It's your absolute link between the guaranteed paper record that belongs in that box. We'll address that later, I think when we talk about the suspicious stuffed box that could be done. We'll address how that is highly unlikely, how that will happen.

MR. WOODBRIDGE: I think we also asked for copies of paper ballots that were cast. Can we get copies of the paper ballots?

Those are the ones we actually saw.
MR. GLEIM: We can pull those out.
MR. WOODBRIDGE: Let me see what
you have there. Also, if you don't mind pulling out the ones in the hopper.

MR. GLEIM: What that is, is an
example of a voter who has changed his mind and come to the end of the road. So it shows his first vote, his replacement record one, his replacement record two.

MR. WOODBRIDGE: One question I had, I don't see the barcode.

MR. GLEIM: We don't have the polls
open. This is in a test mode. When Warren County was voting. When the polls were actually opened for voting, the barcode shows right above where the votes are. The tallies are below that unique identifier that's on the top. It doesn't show up on test voting, though.

MR. WOODBRIDGE: We need some examples what a real ballot looks like. I believe $I$ understand from the representative of NJIT, they did, in fact, see ballots with bar codes on it. Is that correct, Dr. Shi?

DR. SHI: The answer is yes. Because, as $I$ said, everything we reported is in the regular, full election. So if a person selected three times in total, which is a maximum number, each of those three votes, paper ballots will have a barcode.

MR. WOODBRIDGE: Let me just
backtrack a second. If a person--do the spoil ballots include barcode, too.

DR. SHI: In this Avante machine, yes.

MR. WOODBRIDGE: Do those-- are those barcode differentiated from each other? In other words, you can tell the difference between the bar codes on the ballots?

MR. SHI: Something among those three. Let's say three barcode. Some information send, namely the voter's $I$ number, the voter is the same. The selection, if among those three are different, then the content is different. So the barcode is actually different.

MR. WOODBRIDGE: I understand, thank you. The top of page three, Paragraph 6 . "The VVPRS components shall conform to federal
and state accessibility requirements. A. These requirements shall include but are not limited to, an audio component that shall accurately relay the information printed on the paper ballot to the voter".

I believe we have the testimony of Millstein here earlier this morning, I think the thrust of David's testimony was that in his opinion it did appear to comply. Even though there was some concern about the necessity of having to sit down, put a keyboard across his lap to do so. Any more comments?

MR. GLEIM: It is not unusual for a voter with a disability to vote that way. They are very used to do it. We've done many, many demonstrations where they put the keyboard in their lap and are very comfortable voting that way.

MR. WOODBRIDGE: 7. "The VVPRs device shall draw its power from the DRE or the same electrical circuit from which the DRE draws its power".

MR. GLEIM: It does that.
MR. WOODBRIDGE: 8."The voting
machine shall provide a standard, publicly
documented printer port, or the equivalent, using a standard communication protocol".

MR. GLEIM: Again, agree, yes, it
definitely does that.
MR. WOODBRIDGE: What is the
protocol, what kind of cord do you have, do you know, regular USB cord.

MR. SALGUERO: We'll check.
MR. WOODBRIDGE: Could you write us
a response? So you will provide us with that additional information?

MR. GLEIM: Yes, we will.
MR. WOODBRIDGE: 9."The VVPRS shall
mark the paper record precisely as indicated by the voter on the DRE and produce an accurate paper record and corresponding electronic record of all votes cast".

I believe it is also fair to say that NJIT has testified that as far as they are concerned it met the two core criteria and that there was a direct correspondence between the electronic ballot and the paper.

MR. GLEIM: As I said, I explained previously, we definitely have that system and a tied link between the ballot and the ballot
images.
MR. WOODBRIDGE: 10. "The DRE electronic ballot image records shall include many all votes cast by the voter, including write-ins and under-votes".

MR. GLEIM: Definitely, it is
accurate. We demonstrated with the write-ins and it does accurately reflect everybody's vote.

MR. WOODBRIDGE: 10a. "Write-in
votes are votes cast by a voter for an individual not listed on the ballot as formal candidate. Undervotes are elective office and'or public office and public questions on the ballot for which the voter has not cast a vote".

We've gone over that.
11. "An electronic ballot image record shall have a corresponding paper record".

MR. GLEIM: We've talked about that a couple of times already. So that is a core criteria criteria. We believe any system that would be certified that would have that linkage between that paper record and the electronic
record.
MR. WOODBRIDGE: 11 a. "The paper record shall be printed and the voter shall have the opportunity to verify the paper record in its totality prior to the final electronic record being recorded". We had a demonstration of that.

MR. GLEIM: We did. Our system is not showing a line by line. It shows the voter's intent in total, before they cast.

MR. WOODBRIDGE: 11b. "The DRE
electronic ballot image record shall correspond with the paper record in a manner that does not reveal the voter's identity. This is somewhat similar to the question asked.

MR. GLEIM: No voter information is on the paper record.

MR. WOODBRIDGE: C."The paper
record shall contain all voter selection information stored in the electronic voter image record".

MR. GLEIM: Yes, we discussed that.
MR. WOODBRIDGE: So there is--
there is nothing left out between--is it fair to say that electronic records and the paper
records have essentially the same information? MR. GLEIM: Yes.

MR. WOODBRIDGE: All the same
information?
MR. GLEIM: Yes. That comes through the EAC requirements also. The EAC and the State requirements are consistent.

MR. WOODBRIDGE: Going to the top
of page four, Roman Numeral III, "Design requirements for a VVPRS". Section A, regarding the printer. This relates to the first of the exceptions from NJIT.

Section $A-1$ reads, "Printer shall be designed to have a sufficient amount of paper, ink, toner, ribbon or like supply for you use in its election, taking into account an election district should have at least one voting machine for 750 registered voters". NJIT's comment was paper replacement is expected after 600 votes. MR. GLEIM: Our printer is actually designed to hold much more paper than what will be anticipated to be used that day. It is designed not to run out of paper in the elections that we have done so far, no machine
has run out of paper.
What we do at the start of each
election, is asked for a minimum of 800 feet of
the paper, which is similar to what you saw here. 800 feet to be put on a new roll, each time an election is actually done.

Then if you look at each paper record being roughly eight to twelve inches long, we'll do some of the math that you've gone through the last couple of days. Here's an example of the long record, that NJIT-- we pulled this out over here. This is roughly a foot long.

If we assume that a voter goes-it's called a voter cycle, into the booth, do it, votes, out of the booth. What he is doing, inserting his card, making his choices. He's reviewing his paper record. He casts his ballot. The next voter comes in. Let's say that takes two minutes and let's do the math. That's three voters an hour, on a day that's 420 voters. That's a reasonable amount of voters that you would expect on that machine that day.

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                                    If each one of those voters
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actually used one foot of paper--and this is a long ballot, typically the paper records are more like four, five, six inches long. If they use this, that would only use 420 feet of that 800 foot roll. There is plenty of paper there for that.

Let's say that those voters, on a much common, six inch paper records, were actually changing their minds twice. What we have found so far, that very few of the voters changed their mind at all.

So working and trying to fix this for three paper records for each voter, is not realistic. If we go down to a six inch and each guy changes it twice, you still have in the neighborhood of 800 feet of paper used that day. We still think there will be plenty of paper there.

MR. WOODBRIDGE: Maybe I missed it or wasn't listening carefully. With 800 feet of paper, how many voters do you think you can service.

MR. GLEIM: We think on there, then, I'm not exactly sure, maybe they would have to give us a little more information. I'm
not sure how they determine the 600 number. What I'm saying, if you can squeeze a voter a minute through that facility on a standard six inch, you can put 800 voters in there.

MR. WOODBRIDGE: This is assuming they are not casting spoiled ballots?

MR. GLEIM: That's assuming, if we take-- everybody look at their paper record. Say it only took one minute for a guy to vote, 60 voters an hour, 840 voters for the day. That would just barely exceed the amount of paper that was on the system. Voters are not going to get in and out in a minute.

It is going to take longer just to get started, to look, to review the paper records, to cast and get the next voter in. It's not going to happen in minute.

What we are saying is, we highly doubt there will be need to change the paper during the day.

Now, the revision-- certainly extra paper can be put there if we need it, as we did.

MR. WOODBRIDGE: Mr. Fleming asked me to ask NJIT how they arrived at the 600
number. I guess part of that question would assume whether or not spoiled ballots are cast to arrive at that number?

DR. SHI: During our 1,200 voting test, one of the three volume tests, we found that after we replaced one paper roll, it can afford for 600 voters. That is a short ballot. That's our results.

MR. WOODBRIDGE: If you do 600 voters, do those votes include any spoiled ballots?

DR. SHI: I think so, right, yeah, it included that.

MR. WOODBRIDGE: So you would
assume there are some who had to change their minds. That gives a more accurate re-election of what you would get?

DR. SHI: Yes, that program.
MR. WOODBRIDGE: Thank you. Why don't we do one more section, then we'll take a--I'm sorry, Mr. Mahoney?

MR. MAHONEY: On the printer that you have now on the machine, can it be adapted for a larger roll of paper. Is that possible.

MR. GLEIM: Anything is possible on
any of the equipment, given time and money to do it. So, yes, it could be. Right now it is about 800 feet, but there is a gap, roughly an inch maybe below. Another 100 feet could be put on that roll.

MR. MAHONEY: Thank you.
MR. WOODBRIDGE: Let's take one more section, because it is an issue that we had visited. Then we'll take our lunch break.

MR. GLEIM: Can I--just because I
had some feedback from the back of the room, I'll comment on the current protocol, the USB protocol. I was going to read what $I$ was given. The printer protocol was provided by the manufacturer of the equipment. It conforms to the industry standard and is available upon request, but could be downloaded from the manufacturer's website.

So what we would have to do, is go to their website and get that. We're not prepared to go on the website now.

MR. WOODBRIDGE: Before the record or this hearing closes tomorrow at five. So if we can get it today, that will be great. If not, you can send it to the AG's office by five
tomorrow.
MR. GLEIM: Fine.
MR. WOODBRIDGE: Thanks. 1.A "If any addition or replacement of paper, ink, toner, ribbon or other like supply is required, it shall be done with minimal disruption to voting and without circumvention of the security features of the printer and storage unit, which protect cast ballots and the secrecy of the vote".

This, of course, was the subject of one of NJIT's exceptions. Which stated that a slit exists between the storage unit and the printer, which may allow unauthorized or forged paper records to be slid into the storage unit.

The record should reflect the fact that the Committee did inspect, actually three different units. Two of which had different front configurations. It is our understanding that the configuration that was slid into by NJIT, had two plates which were not co-plated, thereby leaving a slit between the two, which an item could be passed.

I think that's a fair statement.
Obviously, our concern is that co-worker, if
that person had bad intentions, could slip a ballot in through that crack or something else.

So could you please tell us how you respond to that concern?

MR. GLEIM: Okay. You are correct, the only people that would have access would be poll workers. Only those poll workers would have access, not a voter would have access. They would only have that access in the morning when there was a zero tally, and at the night when they were doing the final tally for the voting results.

So if in fact they were actually able to-- remember, polling officials typically are different parties. They, number one, would have to be in agreement that they are going to be stuffing ballots in there. Or number two, there would have to be as a team, because they are the only ones that could have gotten in there, to have agreed to have some third party, actually, pushing a paper down inside that slot.

We think that's very unlikely to happen. Even so, any forged paper record that may have found its way inside that box, would
not match up with any electronic record in the machine. That's because every ballot in that box has a unique randomly generated identifier that is identified by the machine.

So any paper, that they are able to make it look like it, whatever, it would not get counted because it would not match to the system.

It is much different than a paper balloting system where $I$ can take and forge a ballot or $I$ can stuff the ballot box. There is not that check.

Once again, as we said before then, you could find that language, so if I've got a paper record here, $I$ go back to my electronic record on the computer. I will look for that unique identifier. I will find this, this is no good. That's how that would be done.

The other solution to this whole thing, is a great invention. We manufactured one time around our systems and the system as you see behind us right now does not have that slot. So the accessibility is denied there. Any machines in the future will be like this.

MR. WOODBRIDGE: I guess one of our
concerns is-- I appreciate your comments about being able to check on the ballots in there. A major concern is that the system that has the co-plated plates that has not really been tested yet. I'll be interested in NJIT's comments, whether or not what we saw today is something that they feel comfortable with, if you care to comment on it?

MR. DARAR: Are you asking about the new design?

MR. WOODBRIDGE: Yes, sir.
MR. GLEIM: Our technicians--oh,
sorry.
(Pause in proceedings).
MR. DARAR: Yes, the redesign looks
fine. This looks-- this redesign, the two plates are flush.

DR. SHI: It appears that is opened.

MR. DARAR: One of these actually is a little off. So on the left the top plate stands further out than the bottom-- than the bottom supply.

DR. SHI: Originally there is a difference, but now you do not have this.

MR. WOODBRIDGE: Thank you very
much. The record should reflect that representatives from NJIT made a quick inspection of the machine and believe to have given the opportunity to inspector at this time that it may very well be satisfactory. Are there any other comments from the vendor?

MR. GLEIM: No, sir.
MR. WOODBRIDGE: Mr. Mahoney?
MR. MAHONEY: The printer that we just viewed, is that the one that's provided to Warren County now? Do they have some of the older ones that have be retrofitted?

MR. GLEIM: If they bought some new ones, this is what they would get. Is there a mix of these in there, the current ones?

MR. BEASLEY: For the most part
they have this style that NJIT looked at. So in the case of the printers, because of the certification process that they have to be changed in any way. But in addition to that, there is a seal that we have available. It's a numbered seal. It's more to do with the label, that goes across that slit, in case we didn't have to replace the whole printer. There is a
numbered labeling that goes across, that prevents anybody from putting anything in the box. Unless, of course you take the seal off. That lends itself to the matter, as Rick was talking about, the collusion among all of the members.

So we're trying to get, at least the voter verified paper trail aspect of the voting, to the point where it doesn't matter. If we had every poll worker in collusion with each other, there is to way check. That's why we replace them.

MR. MAHONEY: Am $I$ to understand
this is the procedure they have been doing or they are going to be doing to correct that? MR. BEASLEY: We are going to replace that printer box. MR. MAHONEY: Thank you. MR. WOODBRIDGE: Just two more follow-up questions. How many units does Warren County presently have?

MR. BEASLEY: 200 .
MR. WOODBRIDGE: Are there any
other states or municipalities currently using Avante equipment.

MR. GLEIM: Yes, New York State uses our smaller system, not the full face system. But they use it in the majority of the state in their primary and general election last year. They'll use it next year. They are primarily used as ballot marking devices. It would be the system that you guys sought here in New Jersey. It is the paging system, the one contest at a time. Most of the state, including New York City and Long Island, use it for accessibility. They use for blind voters and they use it for multiple languages.

MR. WOODBRIDGE: They use it to supplement the old mechanical machines. MR. GLEIM: They were forced to do that by the Department of Justice. MR. WOODBRIDGE: How many units does New York presently have?

MR. GLEIM: It is approximately
150, but 85 percent of the voting communities around the state use it. So we have a good base of the business there.

MR. WOODBRIDGE: Any other states? MR. GLEIM: No, not that we have
sold.

MR. WOODBRIDGE: This is probably as good time as any to take a break. It is about 12:30. We're slightly behind our normal pace, but $I^{\prime} m$ confident that we'll pick it up after we are refortified. We'll see you back here at 1:30. We will try to get the ball rolling promptly at that time. Thank you very much.
(Whereupon, a luncheon recess takes place).

MR. WOODBRIDGE: We're going to go back on the record and resume the hearing from where we left off.

The next section coming up is section Roman Numeral III A.2, which stated, "The. VVPRS shall have a low paper indicator that will allow for the timely addition of paper so that each voter can fully verify, without disruption, all of his or her ballot selections.

We do have comments from NJIT on this point. That is exception number three, that states-- $I$ will read it again. It was read before. It was somewhat involved. That states, if during the vote, the DRE detects the
low paper supply, an error message window appears on the DRE screen. Pressing the okay button in the error message window closes this window and returns back to the DRE screen as to the normal status.

The voter has the opportunity to continue the voting operation and to cast the vote. However, a paper record is not printed. This situation of no paper records being printed, continues with subsequent votes. No audio or visual signal to the poll worker until the voter presses "cast ballot" twice. At which time the vote is electronically recorded without a paper records. The machine has to be reset for the next voter. Mr. Gleim, would you like to responds to that?

MR. GLEIM: Yes. Minor revisions are being made to our oral paper indicator. What it will do is limit the disruption to the voter. It will actually place an alert on the screen that the voter will see. That will also produce an audible alarm that the poll worker will see.

We will then have identification on the screen up against--by a code that the poll
worker will understand there is a paper jam, there was a low paper, whatever that might be. The system will shut down for the mechanical. The poll worker can change the paper as it was shown this morning, in case that was paper out or paper jam. These are mostly finished. These change have mostly been finished. We should be able to show them next week.

MR. WOODBRIDGE: So these changes, you mean whatever changes are necessary so that you don't have the situation of getting a low paper supply error message, pressing okay and continuing. Is that correct.

MR. GLEIM: That's correct. It is a software change. It's being worked on. It is mostly complete right now.

MR. WOODBRIDGE: I'm going to go out on a limb. That strikes me as being a fairly important correction to the voting machine?

MR. GLEIM: It's an enhancement to the system.

MR. WOODBRIDGE: You believe this
enhancement will be a corrected within a week?
MR. GLEIM: Yeah. We've almost got
it done already.
MR. WOODBRIDGE: Does NJIT have any
further comments?
DR. SHI: According to what the Avante people said, it should resolve the problem. Because during our tests when the original printer error is okay, that button comes out-- error message window comes out.

At that time if the voter reminds the poll worker, instead of doing something by himself, everything is okay. So I think that according to what they said, if they can change that error message alarm, that poll worker-that the poll worker getting into that, should be resolving the problem.

MR. WOODBRIDGE: Thank you very
much. Does the Committee have any particular comments on that particular section?

Paragraph Roman Numeral III A. 3
"The printer shall be secured by security seals or locking mechanisms to prevent tampering. The printer shall be accessed only by those election officials authorized by the county commissioner of registration".

MR. GLEIM: Our system is exactly
that, with the seals and locks that it has on it.

MR. WOODBRIDGE: The seals and
locks were demonstrated earlier this morning to the Committee.

Paragraph III A4, "The VVPRS shall be capable of showing the information on the paper records in a font size of at least 3.0 millimeters and should be capable of showing the information in at least two font ranges, 3.0 to 4.0 millimeters and 6.3 to 9.0 millimeters under the control of the voter or poll worker. This criteria can be met by providing a magnification device with the VVPRS".

MR. GLEIM: The original font size is set by the ballot generator. You make your choices. You make it as small as you want. After that the magnification device is right underneath the printer.

MR. WOODBRIDGE: I'm a little confused. You say the magnification device, did you say?

MR. GLEIM: Button and device.
MR. WOODBRIDGE: Optical
magnifier?
MR. GLEIM: Yes.
MR. WOODBRIDGE: Do you know the range of sizes of fonts that you can generate? Do you have have an internal font that you can just choose the size for?

MR. GLEIM: I do. I'll just ask
Mike, who does a good and bit of our E\&S generation, Mike Ma.

MR. MA: Font sizes? The acceptable range of font size went from eight to-- I'm not quite sure about the maximum. It could be about twenty or thirty something.

MR. WOODBRIDGE: It goes from eight millimeter to something or other.

MR. MA: Eight to, I'd say
twenty-four. The normal font size on the paper record would be around eleven or twelve, which is the optimal size of the printer.

MR. WOODBRIDGE: Now, should we be cautious when it says the font size should be capable of showing the information in at least two font range, 3.0 to 4.0 and 6.3 to 9.0 millimeters? It says in at least two font ranges. So I understand, though, that you,
interestingly enough, don't generate a font in 3.0 to the 4.0 millimeter range. Is that correct.

MR. MA: 3.6 would be around sixteen. I think for a font size of about 3.6 millimeters, it equals a font size of around 16.

MR. WOODBRIDGE: Let's go back a step, maybe $I$ misspoke here. When we talk about two font ranges, 3.0 to 4.0 millimeters, I assume they are talking about the size of the printed letter. Is that correct?

THE WITNESS: Yes.
MR. WOODBRIDGE: Let's redirect ourselves to the question of the size of the printed letter and the ranges. What's the smallest size letter that you can produce?

MR. GLEIM: What's shown here, where it says font says 10 , that's equivalent to the 3.0 millimeters.

MR. WOODBRIDGE: You are pointing to what.

MR. GLEIM: Looking right where it says here, in this observation. The font size is ten. The length of the printer character is
3.0. What we're saying is that font says ten is equal to 3.0 millimeters. That's the NJIT finding.

MR. WOODBRIDGE: So 3.0 millimeters
is equal to ten font size.
MR. GLEIM: Yes.
MR. WOODBRIDGE: What's the upper
end of that range, what's the largest font?
MR. MA: Twenty-four. That could give you five millimeters or bigger than that, pretty large.

MR. WOODBRIDGE: It does talk in
terms of up to 9.0 millimeters.
MR. FLEMING: That was the
magnification, the magnification device. It certainly can do that.

MR. WOODBRIDGE: Roman Numeral III B, the section heading "Paper record display unit. 1. The paper record shall be displayed in a way that allows the voter to privately and independently inspect it".

MR. GLEIM: Yes. It will, as long as the curtain is closed there is privacy.

MR. WOODBRIDGE: I think the Committee saw that with the curtain open. They
can probably take judicial notice that it doesn't change when the curtain is closed.

Paragraph 2."If the paper record cannot be viewed entirely in the display units at one time, the voter shall have the opportunity to verify the entire paper record prior to the electronic or the paper ballot being stored and recorded".

MR. GLEIM: The system will allow the voter extra time. If there is more than one paper record, more information that would have gotten on the one page, it goes to two pages, it will not move until they tell it to move to the second page.

MR. WOODBRIDGE: Let me dwell on that for a second. If one of your paper ballots is longer than the viewing field on that device, let's say it is two feet long, how do you handle that, how does the viewer see that.

MR. GLEIM: That will actually bring out two individual paper records. Let's say one is this long. What that will say on it one, two. On the screen it will alert the voter that this is the first of the two paper
records that are coming. Once I approve this one, I touch on the screen, then it moves to the second one.

I look at second one. I touch on it. It brings up the ballot screen.

MR. WOODBRIDGE: Mr. Gleim,
approximately how long is that ballot?
MR. GLEIM: This one, I would guess, is about twelve inches long.

MR. WOODBRIDGE: That is just for the benefit of the court reporter. Thank you.
3. "The display unit shall have a protective covering which shall be transparent and shall not obscure the voter's view of the paper record. This covering shall be in such condition that it can be made transparent by ordinary cleaning of its exposed surface".

I think it's fair to say that the Committee saw a clear transparent cover on the printer unit. It is probably safe to say that it can be cleaned?

MR. GLEIM: Yes.
MR. WOODBRIDGE: Section C,
"Paper. Any paper record produced by a VVPRS, shall be readable by voters and elected
officials". The Committee has seen a test version. Did you say you had provided us with a copy of the actual type of ballot?

MR. GLEIM: We can. When we open a
poll, we have one that has a barcode on it.
MR. WOODBRIDGE: That we do need to
see. I think we can take judicial notice that, even without my glasses, I can probably read what's on this ballot.

MR. GLEIM: I think we can get you one.

MR. WOODBRIDGE: While he does,
let's continue along.
C.2, "All paper records shall be stored in accordance with vendor
specifications". Backing in the question, are there vendor specification for storage of these records?

MR. GLEIM: I'm sorry, which one?
MR. WOODBRIDGE: C. 2 , "All paper
records shall be stored in accordance with vendor specifications".

MR. GLEIM: They are also in the ballot boxes securable in the printer.

MR. WOODBRIDGE: Are there vendor
specifications regarding how these records should be stored, such as heat, extreme humidity.

MR. GLEIM: During the day of the election, of course, they will be subjected to whatever temperature the room in which the voting machine is. After that, if there is not a recount where the paper records are kept, it is not required to be pulled out of the box. They will be pulled out of the ballot box in whatever period of time. It will be put it into a standard office environment. The records are very durable. They will last for an indefinite period of time. We've got paper records, ITAs, that still have been referred to.

So the recommendation is basically don't put them in the water, don't put them in terribly high humidity. Don't subject them to too much sun.

MR. WOODBRIDGE: Is this thermal print paper that we're talking about?

MR. GLEIM: Yes, it is, heavy paper ballots, archived type of paper. It is not that flimsy stuff you get at the ATM.

MR. WOODBRIDGE: Just a question of procedure, a little bit of a departure from the script here. At the end of the election day, is it your recommendation that the votes, the paper ballots, be removed from their storage unit and transferred to something else? Should they stay in that storage unit for some period of time?

MR. GLEIM: The chain of custody. Our recommendation is to take the ballots out of the box that evening.

MR. WOODBRIDGE: Does the Committee have any other questions on this issue?
C.3, "If stored in accordance with vendor specifications, the paper used to produce a paper record shall be readable for a period of at least two years after the election in which it is used".

MR. GLEIM: They have been proven to be durable for a period longer than that.

MR. WOODBRIDGE: Do you know what that period of time is?

MR. GLEIM: I know on my desk-- we did some elections in Connecticut. That was in 2003. They are definitely readable. That
looks like they just came. We still have the ITAs that we did, the ones that we tested on our equipment over the years. The ones which we have say over 3.5 years, they are still fine. MR. WOODBRIDGE: To your knowledge, has anybody else used the same printer paper? MR. GLEIM: I don't know that. MR. WOODBRIDGE: Paragraph D, "Paper record storage unit. 1. Security protections including, but not limited to, security seals or locking mechanisms, shall be built into the storage unit to prevent tampering at all times, including pre-election, election day and post-election. The Attorney General, through the Department of Law and Public Safety, will issue chain of custody guidelines regarding the storage unit".

MR. GLEIM: The whole system is protected and secured by a system of seals and locks. We've seen those today. In addition to that, $u p o n$ removing the printer cover, we don't have all of the seals on there today, but also that inner door from where you take the paper records, also has an internal seal. So that cannot be tampered with without the seal being
broken during the day. It will be evident or obvious to anybody.

MR. WOODBRIDGE: Is the printer
itself ever separated normally from the rest of the cartridge? In other words, the canister stays with the paper?

MR. GLEIM: Pull the cover down and store it. It stays right with the machine.

MR. WOODBRIDGE: Thank, you. Roman
Numeral IV, Procedural and usability
requirements. A. Paper records. Paper records shall include the identification of the particular election, the election district and the voting machine".

This was subject to a comment and exception noted by NJIT. Which stated as follows: "The particular election name (e.g. Primary election and general election), is not printed on the paper record".

MR. GLEIM: We can easily meet that
requirement. It has already been done. We'll show you one of the paper records that already shows the election, showing on the top one there.

MR. WOODBRIDGE: We're looking at a
test ballot, not a real ballot. We have to take at face value the comments from NJIT. So it is-- do $I$ understand correctly that this is in fact-- was, in fact, an issue that was identified, that is something that you are planning on correcting. Is that correct? MR. GLEIM: It is correct. It is something that-- just one of those odd things. It wasn't on the paper record. It is now. MR. WOODBRIDGE: Thanks. Roman Numeral IV A. 2 , "The paper record shall include a barcode that contains the human-readable contents (shorthand is acceptable), of the paper record. A. The barcode shall use an industry standard format and shall be able to be read using readily available commercial technology".

I should say this is the first time that the Committee has seen a pad that isn't demonstrated with the barcode on it.

MR. GLEIM: We should have that shortly. The barcode does meet industry standards. In fact, the paper record, if there are multiple writings, will have a multiple barcode showing each of those individuals
names.
Mike is at the moments trying to attempt to open the polls. He's got the decoder back there, so that you can printout some records. So that you can have the barcodes. MR. WOODBRIDGE: If he can print them out. Maybe $I$ can ask the question, in a form that is more typical of the real voting scenario?

MR. GLEIM: That's how we would do it. You would have to open the polls, as if you are going to vote today in a real election.

MR. WOODBRIDGE: You can show us one of the barcode on it. Is that correct. MR. GLEIM: Yes.

MR. WOODBRIDGE: Did I understand Professor Shi correctly? What I think he stated, that even the spoiled ballots include the barcode on them. Is that correct?

MR. GLEIM: Yes.
MR. WOODBRIDGE: Thank you. 2B.
"If the corresponding electronic record contains a digital signature, the digital signature shall be included in the barcode on the paper record".

MR. GLEIM: Yes. The digital
record, the digital signature appears on the records.

MR. WOODBRIDGE: Each paper
record?
MR. GLEIM: Yes.
MR. WOODBRIDGE: Each electronic record, too?

MR. BEASLEY: The barcode doesn't appear electronically.

MR. WOODBRIDGE: The next section under that says-- it's part definition and part question. It says, "A digital signature is extra data appended to an electronic document which identifies and authenticates the sender and message data using public key encryption or other means approved by LPS".

The question is, what kind of encryption, if any, do you use with your digital signature?

MR. BEASLEY: The digital signature is a combination of documents. We use a unique randomly generated twenty-four character value setup. That is the software that we're trying to use. From there, we conform that with using
another, CRC 32, to make sure that what is printed on the actual paper record is exactly the same as what's on the electronic signature.

MR. WOODBRIDGE: DO $I$ understand
correctly that you generate a random number? You use CRC 22 to encrypt it. Is that correct?

MR. BEASLEY: CRC 32.
MR. WOODBRIDGE: To encrypt it. Do you use that to generate a barcode.

MR. BEASLEY: That's used to
generate the digital signature. The CRC aspect, the CRC 32, has more to do with making sure that information that was from point $A$ to point B is accurate. The encryption aspect of it has to do with making sure that that data is protected.

MR. WOODBRIDGE: So is that more like your correcting codes, for example? MR. BEASLEY: Yes. MR. WOODBRIDGE: C. "The barcode shall not contain any information other than an accurate reflection of the paper record's human-readable content, error two error correcting codes and digital signature information. Codes and three digital signature
information.
MR. GLEIM: That signifies exactly with that that is. It is an industrial standard 2D PDF.

MR. WOODBRIDGE: Slower.
MR. GLEIM: 2D PDF-4017, barcode
standard form.
MR. WOODBRIDGE: Which I believe is
that same standards that the other two vendors used yesterday, too. It does ask the question, though, whether the error correcting codes are, if fact, contained in the barcode.

MR. BEASLEY: It is contained in the digital signature, that's it.

MR. WOODBRIDGE: Let me just read the section. It is a little subtle. It says, "The barcode shall not contain information other than an accurate reflection of the paper record's human-readable content, error correcting codes and digital signature information".

MR. GLEIM: Yes, that's absolutely true.

MR. WOODBRIDGE: Now, some question there is, does the barcode include error
correcting codes in it? MR. BEASLEY: Yes, it does. MR. WOODBRIDGE: Thank you. 3."For for the cut and drop method", which we've already looked at today,"if the paper record cannot be displayed in its entirety on a single page, each page of the record shall be numbered and shall include the total count of pages for that ballot".

Mr. Gleim, I think you talked a
little bit about that before. If you can
address that question directly. It also
mentions the issue of whether or not the pages are numbered.

MR. GLEIM: The pages are
numbered. If it is three pages, one of three, two of three, three of three, two pages, one of two, two of two. Each individual record will have that on it. So if it cannot be displayed in its entirety, it will print the first page. The voter will review it. It gives them enough time to approve that individual page. It shows one of two. Once that one is subtracted, page two of two comes out. You are given an amount of time, it is lot limited look at it. It also
says to retract or accept. You touch it, it goes back. It goes to the ballot box and it comes back to the voter.

MR. WOODBRIDGE: Thank you.
MR. GLEIM: You are welcome.
MR. WOODBRIDGE: "The image created
on the paper record shall include every contest that is displayed to the voter on the DRE, including write-ins and under-votes".

For the record, we saw earlier this
morning a demonstration of write-ins. We do have a test ballot which appears to include a variety of different contests on it.

Our only concern is, we're looking at a test ballot, not a real vote cast. Would you care to respond to that paragraph 4?

MR. GLEIM: I'm sorry?
MR. WOODBRIDGE: Paragraph 4
says, "The image created on the paper record shall include every contest that is displayed to the voter on the DRE, including write-ins and under-votes".

MR. GLEIM: Everything does show on that paper record, write-ins and selections. MR. WOODBRIDGE: 5."The paper
record shall created such that its contents are machine readable".

MR. GLEIM: They are encoded in a barcode, which itself is machine readable.

MR. WOODBRIDGE: "The paper records shall container correcting codes for the purposes of detecting read errors and for preventing other markings on the paper record for being misinterpreted when the paper record is machine read". Then it goes on to explain that, "a read error is a separate code or piece of data that can be used to indicate whether the data printed on the paper record is different from the data created on the electronic record".

MR. SIGUELAR: The record does error correcting codes.

MR. WOODBRIDGE: The question
specifically says that, "the paper record shall contain error correcting codes for the purpose of detecting read error".

MR. SIGUELAR: Yes, it does include those error correcting codes.

MR. WOODBRIDGE: By error
correcting codes you mean the paper record
includes an error correct code that could read errors in the sense that there is some way to double check that the information on the paper ballot is consistent with the information on the electronic ballot.

MR. SIGUELAR: I believe that our
error correcting code do see if the barcode that is being handled is able to be read by the scanner.

MR. WOODBRIDGE: I'm still not
entirely sure that that's what they are looking for here. "The read error is a separate code or piece of data can be used to indicate whether the data printed on the paper record is different than the data created on the electronic record.

MR. BEASLEY: That's part of the CRC 32 error correcting. It actually checks and verifies that basically at one point or the other it is the same. The error code is the function of the CRC 32 .

MR. WOODBRIDGE: That deals with the read error issue, this paragraph?

MR. BEASLEY: Yes, it does.
MR. WOODBRIDGE: Thank you.

Paragraph B, heading "DRE Electronic Records. 1. The electronic ballot image record and paper records shall be linked by including unique identifiers so that an individual paper record can be identified with its corresponding electronic record. Unique identifiers are tools that will allow LPS to measure the reliability and accuracy of the voting system, as necessary. The electronic ballot image and the paper record shall not reveal the identity of the voter."

It also goes on to say, a."Unique identifiers shall not be displayed in a way that can be easily memorized."

MR. GLEIM: We conform to all of that. No unique identifiers. Information on the ballot is not revealed to voters. The identity, we definitely have a tie within the paper record and the unique electronic record.

MR. WOODBRIDGE: Thank you for your response. The next question says, "The DRE should generate and store a digital signature for each electronic record".

MR. GLEIM: It does that.
MR. WOODBRIDGE: 3."The electronic
ballot image records shall be able to be exported for auditing or analysis on standards-based and/or COTS (commercial off-the-shelf) information technology computing."

MR. GLEIM: The system, the ballot
images and the records are easily taken from the $C D$ and exported onto a PC for analysis for identification of handwriting.

MR. WOODBRIDGE: Section a., "The exported electronic ballot image records shall be in a publicly available non-proprietary proprietary format". Do you know what format it is exported in?

MR. GLEIM: I'm just going to say it is definitely publically available.

MR. WOODBRIDGE: We need some specificity sophisticated. We had vendors testify it is PDF, $T X D$ or whatever is is.

MR. GLEIM: We'll check it.
MR. WOODBRIDGE: You'll let us know what the format is?

MR. GLEIM: Yes.
MR. WOODBRIDGE: B, top of page
7," The records should be exported with a
digital signature which shall be calculated on the entire set of electronic records and their associated digital signatures.

MR. BEASLEY: It does.
MR. WOODBRIDGE: C. "The voting
system vendor shall provide documentation about the structure of the exported ballot image records and how they will be read and processed by software".

I should indicate before we get
into, that we've be provided he boceau documentation which the Attorney General's information office, which I'm sure has duplicate copies.

To get back to the specific question, the issue is, "The voting system vendor shall provide documentation about the structure of the exported ballot image records and how they shall be read and processed by software".

MR. BEASLEY: We have provided that. MR. WOODBRIDGE: Do we have copies of that?

MR. BEASLEY: I don't think you do. MR. WOODBRIDGE: Will we get copies
of that?
MR. GLEIM: I was pre-occupied,
copies of--
MR. BEASLEY: It will be available.
MR. WOODBRIDGE: The question is
providing documentation about the voting system, structure of the exported ballot image records, how they'll be red and processed by software.

MR. BEASLEY: We'll provide that.
MR. WOODBRIDGE: Will we get that
by Friday, tomorrow at five o'clock?
MR. GLEIM: Sure.
MR. WOODBRIDGE: D. "The voting
system vendor shall provide the software
program that will display the exported ballot image records and that my include other capabilities such as providing vote tallies and indications of under-votes".

MR. BEASLEY: We will provide that. We provided that capability in the Manchester elections in the EMS software, election management software.

MR. GLEIM: That is the proprietary software. It is generally home bred.

MR. WOODBRIDGE: Just a question
about the EMS and vote tallies. Are these like collective vote tallies from different machines or is this just a vote tally from a single machine.

MR. GLEIM: Individual machines can have individual tallies. You then can take it back to a central office, clerk's office or maybe use a central processing unit and include some or all of those issues.

MR. WOODBRIDGE: You also indicated during the demonstration, $I$ believe, that the results of the election were written to a CD Rom. Is that correct?

MR. GLEIM: Yes.
MR. WOODBRIDGE: Now, is that a write-only?

MR. GLEIM: It is write only. It is a write once, once read only.

MR. WOODBRIDGE: Is that CD Rom taken to central location where it is included with the other tallies?

MR. GLEIM: Yes. What would happen, the paper tally that comes out at the end of the night, they take the CD. They put both of
those together and send them back. So they have both of those for the tallying purposes. MR. WOODBRIDGE: Your EMS software takes that information and tallies it and combines it?

MR. GLEIM: Yes, it does, yes. MR. WOODBRIDGE: Thank you.
E. "The voting system shall provide full documentation of procedures for exporting electronic ballot image records and reconciling those records within the paper records".

MR. GLEIM: We have full
documentation that appears in our tallying record and our field training manuals cover that.

MR. WOODBRIDGE: Next section, C."Voting with a VVPRS. 1. LPS shall promulgate for voters instructions on how to use the VVPRS. A. The VVPRS vendors shall provide, in plain language, any reference material requested by LPS to aid in the preparation of the VVPRS instructions. These instructions shall be issued to each county board training. B. Instructions for use of $a \operatorname{VVPRS}$ shall be made available prior to an election on the

Division of Election's website and shall be available to the voter at the polling place on election day. C. Prior to an election, the county commissioners of registration will provide demonstration machines at convenient locations throughout the county for voter education purposes".

Tell us how you deal with the demonstration machine?

MR. GLEIM: One way that voters are able to learn how to use the system, is in a system--in the situation in Warren County, where they actually put one of these systems right in the clerk's office. Any voter in the community had the opportunity to come by and try it. Everyone in the office is capable of showing an individual how to use the machine.

Machines are relatively intuitive anyway. Many times they just go at it and see how they would do. We had many community outreach programs where we actually took equipment into the field, to shopping centers, to nursing homes and whatever, to allow people to play with the machine before the date of the election.

Printed instructions are on every one of the machines. Printed instructions are also sent to the homes of registered voters, when sample ballots lots are sent out.

MR. WOODBRIDGE: Per the
instructions. The next section inquires or states, "The instructions for performing the verification process shall be made available to the voter on a location inside the voting machine. Where feasible, the instructions shall also be on the machine ballot face". So I guess the question is, where are the instructions for performing verification process located? MR. BEASLEY: They are on the side. MR. WOODBRIDGE: When you say the sides, on the inside or the outside?

MR. BEASLEY: On the inside.
MR. WOODBRIDGE: Where on the
inside are they located, can we see it on here?
MR. BEASLEY: On the opposite side of the printer.

MR. WOODBRIDGE: Unfortunately it
is the side we can't see.
MR. BEASLEY: As you are looking at
the machine, the front of the machine, the printer is on the right and the instructions on how to use the machine is always posted on the left side. Frankly, that's done by the county. MR. WOODBRIDGE: That may be it says here they are going to be posted on the machine.

MR. GLEIM: It is posted on the machines.

MR. WOODBRIDGE: Are they posted on these machines here?

MR. BEASLEY: I'm not sure they are on these machines.

MR. GLEIM: They are during the election. These machines, when they are in storage, they will change things from time to time. There are writing instructions on the side of the machine. The paper record, which was used by them up to this time, had instructions inside, on the side of the machine, on how to use the paper record. These, $I$ don't know.

MR. BEASLEY: In some cases, Mr. Chairman, the instructions vary on the type of election. If it is a primary, for example, the
instructions are a little different than the general election. But it is always on the side of the machine, always.

MR. WOODBRIDGE: Do you as a vendor have any standard instructions that can be put on the side of the machine.

MR. GLEIM: Yes, we do, but we modify depending on the county, what they would like to be used. All of those are included in in the manuals, ways to use the machine. Poll worker training, they are taught how to use the machine.

So there are standard instructions, but commonly those standard instructions are ones that everybody wants to use for whatever the means are.

MR. WOODBRIDGE: My concern is that the literal language of the criteria says, "Shall be available at a location inside the voting machine". Which strikes me that it shall be there at all times.

MR. GLEIM: Once they--if they take them out and if they are not there now-- some of these are Warren County machines, so they have taken them off. It's out of our control
at that point.
MR. WOODBRIDGE: It is fresh
criteria, but it would seem to me that if they are voting instruction and they are supposed to be located inside of the machine, I'm not sure I see the value of them being removed.

The machine operates the same way every time. It says there shall be instructions inside the voting machines. It doesn't say placing the instruction, its says shall be instructions.

MR. GLEIM: This last time was the first time we used a paper record. So they had to change them on June 5 th when they went to their election. Here is an example that was on the side of the machine.

But the difference for the voters moving into the use of the paper world, where previous instructions were not associated with look over to the the right at the adjacent printer and approve your vote. That was mentioned in the June election when we used paper records.

MR. WOODBRIDGE: I don't know,
again. These criteria are directed at something
that we're dealing with, paper record machines. So anything that is related to non-paper record machines wouldn't necessarily have the same set of instructions.

MR. GLEIM: Correct.
MR. WOODBRIDGE: 2. "Voter privacy
shall be preserved during the process of recording, verifying and auditing ballot selections. This includes a voter who uses an audio voting device. Voter using an audio voting device shall also be able to verify votes privately and independently".

Actually while we're at it, we did have a request from one of our Committee here to have a demonstration, if you wouldn't mind, of your audio device. Can you do that for us? MR. GLEIM: Yes.

MR. WOODBRIDGE: Would you like to set that $u p$ and come back to that question?

MR. GLEIM: I pulled the machine back, we'll get it back up.

MR. WOODBRIDGE: Why don't you set that up. We'll come back and revisit that. MR. GLEIM: Do you want to do it back there?

MR. WOODBRIDGE: How hard is it to bring it up?

MR. GLEIM: Just unplug it.
MR. WOODBRIDGE: Why don't you get
it ready. Let me know when you are ready.
MR. GLEIM: It is actually ready
now. We don't have to do anything special to make it audible.

MR. WOODBRIDGE: Will everybody be able to hear it?

MR. ALAMPI: The only thing we have are earphones. We don't have an amp.

MR. WOODBRIDGE: Are those your speakers over there?

A VOICE: They belong to someone here.

MR. WOODBRIDGE: We did the demo with those speakers yesterday. Do you think you can try those speakers with your device? We're going to take a two minute break while we're setting up here.
(Pause in proceedings).
We're going to take a slight
detour. I'm delighted to have before this committee Brian Hughes, the Executive of Mercer

County and co-resident of Princeton, a graduate of Princeton High School.

Brian, we're very pleased to have you here. We appreciate your comments. I should indicate for the record that I've spoken to the other individuals who do want to talk on the record in the public comment section. They do not have an objection.

Brian, we're delighted to have here and we want to hear what you have to say.

MR. HUGHES: Thank you very much. I appreciate you taking me a little bit out of order and allowing me to testify today.
(Pause in proceedings).
I want to thank the Committee for hearing me today and for taking me out of order. I appreciate the opportunity to speak. I heard of the opportunity to testify very late. I guess $I$ heard about it starting late on Monday. I heard that there was going to be an opportunity for folks to testify.

It came into focus when $I$ saw a newspaper article with sequoia about the Sequoia machines and the opportunity to retrofit them.

That is not something new that we have worked on in Mercer County. We have been trying to get Sequoia to show us an example of a retrofit since 2004 .

In 2004, after Congressman Rush Holt, who I've spoken to in the last day, he he's talked to me about some of the efforts going on in Washington, even as we speak.

Obviously, he was the sponsor of a voter verified paper ballot. We supported that action in my very first budget $I$ presented to our freeholders.

In 2004 we set aside in our capital budget half a million dollars, as an incitement to the private sector, most specifically Sequoia, to present to us a usable, accurate, verifiable add-on to the voting machines that were purchased late in the last administration before $I$ took office. They were purchased, I guess in 2003 and we took possession of them early in 2004 .

## We wanted to support our

Congressman, but we also wanted to ensure that there was security in the ballot box. We knew that that was an issue for voters in Mercer

County, but it was going to become a national issue, certainly it has.

We feel we didn't get much response from our vendor. We certainly didn't get much response until it became a state law. Even though we had meetings, we had public meetings that were on the record with Sequoia. We had private meetings. I had meetings with the president of the company over the phone and in person. The answer was always we're working on it. This is the problem, we're going to be able to solve this problem, but nothing much came of it.

I appreciate the state legislation, because it was able to to start the ball rolling as far as these voting machines are concerned.
My concern here today is to talk
about what happens if the federal legislation goes a step further than the state requirements. My understanding is they are taking a very, very hard look at reimbursement, the possibility of reimbursement for the optiscan readers.

If that were to take place, are
add-on attachments going to be out of place with federal law or is there going to be an exception for what the state is now perhaps going to be paying for?

This is an issue $I$ think that the Committee needs to look at very, very carefully. I would like to see some synchronization between the state and federal movers, as far as this is concerned.

I would hate to see us walk further down this plank in paying for an add-on, then the law of the land change once again.

I am going leave it up to you to decide whether these things work or not. I know that we put in a half million dollar set-aside waiting for the day that we had a usable add-on.

My understanding is, the state will pay once it has decided there is a usable model, that the state will be reimbursing counties for installing them.

But $I$ would have to say, $I$ want to thank Dick for your comments of us, not going to high school together, but certainly our roots together in Princeton. We are both
people, I think, that care about making sure that votes count.

There can be no more important thing in a democracy than to make sure that each vote counts. That's the way to enhance the voting experience. I think that we are both here for the same reason.

So with that, $I$ would like to just say $I$ think we in Mercer County have taken the step. Our voting machines from Sequoia cost about, $I$ believe $\$ 3.7$ million. We were reimbursed by the federal government to the tune of about $\$ 3.1$ million.

So now we were reimbursed, I think, because we were one of the first to apply for HAVA funding. I think counties that are applying now are not being reimbursed at that rate.

But that being said, there was a fundamental flaw, $I$ believe in the machines. That is, to guarantee the security of the machines.

Sequoia will-- the machines have worked well, I think. I think, I can't verify that they worked well, but $I$ think they worked
well, in the election cycles that we've had since then.

That's what $I$ had to say. That's my testimony. I hope it is brief.

MR. WOODBRIDGE: It is mercifully brief and we appreciate it. I don't want to make any public comment now. I do want to make a few comments just for clarification purposes.

Sequoia presented their Advantage machine, which $I$ think is what Mercer County uses, which is the machine in the corner. Yesterday we saw the Edge, which is the smaller machine on the left.

We walked through the fairly new state procedure criteria of both of those two machines, again, we the assistance of NJIT, from whom we have a substantial report they gave us a number of criticisms about sequoia. Euphemistically referred to them as exceptions.

We are presently going through the same process with Avante today. This will Committee will produce a report based upon what we've seen, what we assume is the state-of-the-art, vis-a-vis Sequoia, probably next week, if we can get the time to do it.

Which should give all of us an idea of what the state-of-the-art is and how acceptable those kinds of attachments are.

I would say, I share your concern and maybe even dismay at the onset, of after going through the paper trail approach having to go through optiscan, in addition to, or supplementary to it. Needless to say, the feds can say the states have got to get their acts together, but it leaves the municipalities and counties up in the air. The potential is spending money that they can put to better uses.

The last thing $I$ should comment on is, this Committee's responsibility under Title 19 is really quite narrow. All we can really do officially is make a recommendation to the Attorney General as to whether or not in our opinion, with the assistance of $N$ JIT and also with the assistance of the Office of Disabilities, whether or not it meets the new criteria for VPAT. That's not to say we can't unofficially add our two cents, that anybody up here feels restrained to do that.

I just want to make sure the record
is clear what we do. We understand the concerns. I think it might be useful to have the ability to see the reports when we get finished we them and then revisit the question. We are deeply honored and we appreciate taking the time to come.

MR. HUGHES: Thank you very much, Dick. Let me just say one thing, specifically that $I$ think should be a recommendation of this Committee. The Sequoia machines in Mercer County were apparently purchased without a contract. They were purchased, $\$ 3.6$ million worth of voting machines were purchased on the strength-- we can't find a contract, sequoia can't find a contract. All we can find is a purchase order.

They were purchased on the strength of a purchase order. So I can't tell you is Sequoia meeting the acceptable terms of their contract or not.

Obviously, a purchase order, some of it was municipal government purchase orders, is much less specific than a contract. I would say that whatever add-ons are approved, must be purchased with a contract and not with the
strength of a purchase order.
That's been one of the real
problems that we've had in this whole paper chase, to figure out what machines, our machines, are supposed to be doing and what they are doing.

MR. WOODBRIDGE: That actually is part and parcel, $I$ think, of another issue that we are dealing with. That is the Legislative deadline of this february to have paper trail devices installed. Which I think have compressed the hearing time frame and the time frame for testing everything else. I totally agree with that. If you are going to purchase a machine you need to have good specifications and they should be in the contract.

MR. HUGHES: Thank you.
MR. WOODBRIDGE: Where we left the hearing was, we were going to have a demonstration of the audio section. Is that ready?

MR. GLEIM: Yes.
MR. HUGHES: I did mention and Penny reminded me, I'll apologize. I'm not here to beat up on Sequoia. As I said, the
machines, to my knowledge, have worked well. But in 2004 and 2005 , like $I$ say, in public meetings and through private conversations, there certainly was a representation that the add-ons would be made available to Mercer County.

In fact, we approached that figure of $\$ 500,000$, not by throwing a dart on the wall, but with the recommendation of Sequoia. So, not a dollar figure, but they said we'll probably be able to deliver something for less than $\$ 500,000$. That's how that figure got in our capital budget. Thank you very much.

MR. WOODBRIDGE: Thanks, Mr.
Hughes, glad to have you here.
Let's take a look at the audio portion.

MR. WYNHAM: With your permission, Mr. Chairman, $I$ know we had our two days of questions--Andrew Wynham Sequoia Voting Systems. These are comments that have come up at the last minute.

MR. WOODBRIDGE: I do apologize for
taking the county executive out of order. It is sort of a matter of executive privilege. Are
these comments that could wait for the public input section?

MR. WYNHAM: I think they are just germain to the complaints that were made and it losses its value if we did so. I can be less than thirty seconds.

MR. WOODBRIDGE: You are on then.
MR. WYNHAM: Andrew Wynham,
Sequoia Voting Systems. I wasn't the New Jersey rep that the gentleman referred to during his negotiations with Sequoia. While I do agree that a contract is always preferable to a purchase order, in terms of the value added by the comments today, it seems to me that the comments weren't about what would make a good VPAT system. But gee, we had some problems with Sequoia. We just wanted to come in let you know what those problems were.

The only thing $I$ can say is that in my own view $I$ think it would be to develop a VPAT voting system by one county's design, when we knew there was a design coming that had to meet the needs of the entire state.

I don't know that that's the reason
for delay, but it would not have been wise to
develop one county, spend the taxpayer dollars from that county, then come back and have a new design mandated by the state. Then have to retrofit that county again. That's it. I just wanted to put that on the record.

MR. WOODBRIDGE: Again, just to
reiterate, the purpose of this Committee is to generate a report, basically making a determination as to what extent the new V-PATs do, in fact, met the state criteria. I think there may be some progress along the way.

Now, we really are back into the audio section again. Now, are we going to have that demonstration done over in the corner or can you bring it over here to have it--

MR. GLEIM: The microphone-- the speaker plugs in, so it has to be over there.

MR. WOODBRIDGE: Can the court reporter get it where you are? If you can't-maybe you can do the best you can.
(Approximately ten minute audio demonstration takes place, off the record).

MR. WOODBRIDGE: The record will
reflect that we completed a review of the audio
system under Section C.2. It should also be
reflected that a candidate by the name of Skip Choice got a lot of votes.

Does the Committee have any questions with regards to this particular section?

Top of Page 8, Paragraph 3. "In any
election where the ballot contains a language in addition to English, the paper record shall be produced in all such languages".

We talked earlier today about the English-Spanish choices, I understand that you have. If you vote in Spanish you have a printed English record. Is that correct?

MR. GLEIM: That's correct.
MR. WOODBRIDGE: Anybody have any comments on that section? Part $A$ of that section says, "To assist with manual auditing, candidate names on the paper record shall be presented in the same language as used in the DRE summary screen".

MR. GLEIM: It is.
MR. WOODBRIDGE: B. "Information on
the paper record not needed by the voter to perform verification, shall be in English".

MR. GLEIM: That is correct.

MR. WOODBRIDGE: Paragraph 4. "The privacy of voters whose paper records contain an alternative language, shall be maintained".

MR. GLEIM: That's correct, I guess if you say there is more than one voter in an alternative language.

MR. WOODBRIDGE: Understood.
Paragraph 5 and 5A, I'm going to read together, note this related to exception number five from the NJIT report.

Paragraph number five says, "The paper records shall distinguish between accepted and non-accepted ballots. A. The voter shall have the opportunity to accept or reject the contents of his or her paper record".

Exception number five is as
follows, quote: "There is no clear acceptance of information where (e.g., voided or accepted) voided paper records have the same identifier number as the final approved paper record cast by the same voter. VVPRS 1 and 2 give that identifier number, of the second updated and the third updated paper records respectively. Some voided paper records may be incorrectly considered as accepted paper records if the
same undated paper records are lost".
Do you understand their comments.
MR. GLEIM: Yes, I do. Can I
comment?
MR. WOODBRIDGE: Please.
MR. GLEIM: The paper record does actually distinguish between the accepted and non-accepted votes. The statute basically says in that term, distinguished between accepted and non-accepted.

What we do, as has been
demonstrated today, is that when the voter first changes his mind, a second paper record will come out. That record will be marked replacement record one. He then either approves or disproves of that. The second one will be marked as replacement record two.

At the same time, each concealed ballot identifier which you see up at the top of that ballot, will add a suffix to the end of that randomly generated number. You will see a bracket one for the first replacement record and a bracket two for the second replacement record.

MR. WOODBRIDGE: We actually seeing
those items?
MR. GLEIM: Yeah.
MR. WOODBRIDGE: This is the pretend voter?

MR. GLEIM: We'll submit this to you.

Now, if you just spread those out. We are going to talk about the ones that Daryl now has. The first paper record has or a readibly generated number. The second one has a bracket one after it and then it has bracket two. At the bottom of the page, the second paper replacement has replacement record one. The last paper records says replacement record two.

Then I'll just say that the statute asks us to distinguish between accepted and non-accepted ballots. Ours is probably one of the many way that it is done.

MR. FLEMING: I think what NJIT was trying to saying, if you have replacement one and replacement two and for some reason ballot replacement one and/or replacement two are missing, you can look at the first one and say that's a raw vote.

Taking it that the paper is going to be--the recount scenario is there. So I guess what the legislation is trying to tell you or what the criteria is trying to tell you, is that they will have something so that you know it is to be voided or not voided, how is it stated.

MR. GLEIM: That's not what the statute says whether it is accepted. What it says is to show accepted or non-accepted. What happens, though, if you lose paper record one or lose paper record two, go back to the the event law. You will know that there will be a one or two that should be counted during the recount.

MR. FLEMING: I think the whole process of paper verifiable, is that if you go into a recount, go into questions, you are not looking at the electronic ballots. You are going to take the paper as God as to what the vote is going to be.

If you do lose paper, you don't have anything to really track back to what it is going to be. It depends on this paper.

MR. GLEIM: You can track back to
the event log. That is the fail-safe in the system.

MR. FLEMING: That's correct, I
agree with you to that. But if you are going to take the paper record, separate that from the electronic record and you are going to say that the paper is what the election is, not verifying to the electronic, having the vote or having votes-- you know, we understand that right now, but when you are going to do the recount.

MR. WOODBRIDGE: Another point,
John, if $I$ can jump in a second? When $I$ read this language, $I$ read it in it the term clearly, even though clearly is not in there. The concept is to distinguish between accepted and non-accepted ballots.

I know that you've been here the last couple of days. The previous vendor had very clearly in large letters on the spoiled ballots the word voided other cast ballot the word accepted. I believe it was-- I think our concern is that we understand that this information is to be constructed. We understand that if you are moderately
sophisticated you can distinguish between these ballots.

But my major concern is that
clearly it doesn't jump out at you. It is my sense that the intent of this was not to merely indicate it could be distinguished, but it would be clearly distinguishable without a lot of effort. Decoded, I guess it is another way of saying it. Is there any way that it would be possible to provide such an indication on these ballots?

MR. GLEIM: The answer to most any question on the systems is yes. One of the things our system does now, when you see that paper record hanging, when it is presented for you to review, it is already cut. It is already been through the printer. It can't be put back into the printer. That's the way our system is made.

It does not allow for additional stuff-- call it stuff, to be printed on that paper record. We felt that was a very secure way of doing it. Take your paper record that may have already been done and then go ahead approve or disapprove, put void on it or
accepted on it, or said something else on the printer. Ours is already out of the printer. It gets marked replacement or replacement two.

I understand where you are going there, but what we are saying, we feel it's an extremely secure way of doing it.

The county has been using this paper record system, has had no problems with it whatsoever.

MR. WOODBRIDGE: All right.
Professor Shi, do you have any comments with regard to their response to the exception?

DR. SHI: I think what we said in this exception is the following: Yes, on the one hand the way they do can distinguish from one to the other. But this way you do it, has more risk than the others. Because in the cases if you purely, solely rely on the paper records you may be missing the last page, say replacement two, then replacement number one will be recognized as the last one. This may cause risk.

MR. WOODBRIDGE: Thank you. Any further comments?

MR. GLEIM: Well, I guess in any
system, whether it is ours or anyone else's, with a paper record, if the last paper record is missing, it is missing. I don't know necessarily how it is typical with ours than it is with another system where, if you lose a paper record, it is gone. That's why you have that tie, so you can understand that there is paper record gone.

MR. WOODBRIDGE: I guess the issue is, in the previous systems we've seen, let's say you voted three times, if your second ballot said voided, then you knew there was a missing third ballot. If it said "accepted", then it doesn't go any further. So the problem is, it begs what's in that missing piece of paper?

MR. GLEIM: If the third one--the third one is the accepted one that's missing, that's a final vote, so it is gone. The only way you would be able to check it, even with anybody else's system, is to find out what that guy's intent was, to go back to the electronic record and.

MR. WOODBRIDGE: You may not know it's missing.

MR. GLEIM: That is why we have the record.

MR. FLEMING: If these are all dropped in the box, I assume you randomed it out. As you are looking at these, okay, if I don't have it in order, it says I have a no number, a number and number two. So I know it's right vote, number one with nothing on, it is in front. I'm pulling these out one at a time. How am I telling that's a real vote?

MR. GLEIM: What you are doing
first, you are looking at the top of that page. You are looking for numbers that have brackets. You take the piles of twos up on the right--

MR. FLEMING: The numbers are all
the same.
MR. GLEIM: The previous numbers, other than that last number, are all the same. What I'll do is find all of my twos. I know there are ones to be replaced. If $I$ have ones I know that they replace the original. That's the fashion in which that would be done.

MR. FLEMING: You couldn't just pull out independent votes, put it on the
truck, you have to take everything out and patch everything up.

MR. GLEIM: Yeah, that's correct.
MR. MAHONEY: Looking at these
printouts, who were these linked to the individual voting machines? How do we know that this came out of that single voting machine? I see it says Precinct 2 and 3 after it. How do we know which machine this came out of?

MR. MA: If you look at the
tracking number on top of the paper record much, count from the end of that number, number 7 and number 8, which is the $I$ think 02 . Now 02 is the machine code in the database. So that we may know what machine printed this particular record. MR. WOODBRIDGE: I think this 02 in sequence. MR. FLEMING: The ones we have are 02 . MR. GLEIM: We'll just come up a second.

MR. FLEMING: From the right? MR. GLEIM: Right, it came from the
right.
MR. WOODBRIDGE: It is the first machine, I guess.
(Pause in proceedings).
As you can see, we are sorts of struggling with this, flashbacks, people swinging about trying to figure out what they are doing.

Does NJIT have any further comments, Dr. Shi?

DR. SHI: Again, I agree with your message that replacement one, replacement two are distinguishable, $I$ agree with that. I have no question for that. But the let me tell you one thing, including there are two different codes. One code is an instantaneous code. Another code is non-instantaneous codes. Why are instantaneous codes used? I can immediately decode it without knowing-- without the necessity to know what's happening following that.

Your way belongs to this way.
Namely-- you can decode. If you see replacement two, you can definitely decode without any hestitation or mistake. If you see replacement
number one-- yeah, replacement one, you have to see if there is something else following. If yes, then you say this is not the last one. Otherwise you rely on them.

That belongs to non-instantaneous codes. There other some other coding ways which are instantaneous. Once I saw, I don't need to look behind, $I$ know immediately, in my view in terms of risk. Non-instantaneous one calls more risk, what involved is more risk. That's my point.

MR. WOODBRIDGE: Shall we move on?
MR. GLEIM: Please.
MR. WOODBRIDGE: 5.a.(1),"If the voter rejects the contents of a paper record, he or she may recast the ballot up to two additional times. This procedure is consistent with current state law, with limits the amount of time a voter has to cast a ballot".

I believe we saw this feature
demonstrated?
MR. GLEIM: That's correct.
MR. WOODBRIDGE: 5.a.(2), "Before the voter causes a third and final paper to be printed, the voter will be presented with a
warning notice on the machine that the selections on the DRE will be final. The voter will see and verify a printout of the votes, but will not be given additional opportunities to change any vote. The third ballot cast
shall constitute the final and official ballot of such a voter."

MR. GLEIM: That was also
demonstrated.
MR. WOODBRIDGE: 5.a.(3), "Upon
rejecting a paper record, the voter will be able to modify and verify the selections on the DRE without having to reselect all choices in all contests on the ballot".

MR. GLEIM: Yes, that's correct we had contents or items that can be corrected easily.

MR. WOODBRIDGE: Next, item
5.a.(4), is also the subject of a comment or exception by NJIT. We can read it to you.
5.a.(4), "If a mechanical error in recording or printing a paper record occurs, the record shall be counted as a spoiled paper record. It will not be counted as one of the voter's three attempted votes".

The comment was, if a mechanical error or malfunction occurs, such as a paper jam, running out of paper, paper torn in half or paper sent improperly, the DRE displays the error message on the screen to the voter. No warning signals are sent to notify the election officials at the polling place. DRE does not suspend voting operations. Voter has the opportunity to continue voting, cast a vote. The paper record is not printed. Vote is, however, electronically recorded.

MR. BEASLEY: Let me respond to that, Mr. Chairman. This as a software change that we are making in the source code. In the event of a paper jam, which is unlikely-- in the event of a paper jam, running out of paper, some event that causes a voter to not be able to their vote to be able to verify the machine, what they are going to do, we are going to suspend operations, display a message so that the voter knows to contact the poll worker. The poll worker will hear this.

MR. WOODBRIDGE: Just to
summarize. If I'm correct, you do agree that NJIT's statement is correct, that you believe
that can be resolved fairly easily with the appropriate software change?

MR. BEASLEY: Absolutely, not only that, we can resolve it by next week. By next week. Thank you very much.

Does NJIT have any follow-up
comments on that?
DR. SHI: None.
MR. WOODBRIDGE: Moving right
along. Top of page nine. We're not breaking any land speed records, but we are getting close to the ultimate goal.
(5), "The VVPRS shall be designed to indicate the paper record which the voter has identified and cast as his or her official ballot".

MR. GLEIM: We will provide that. MR. WOODBRIDGE: Section
V., "Security and Reliability. A. The VVPRS shall not be permitted to externally communicate with any system or machine other than the voting system to which it is connected".

MR. BEASLEY: That is absolutely.
Right now there is no external system
necessary.
MR. WOODBRIDGE: "The VVPRS shall
only be able to function as a printer; it shall not contain contain any other services (e.g., copier or fax functions) or network capability. The printer shall not contain any component were an external communication feature."

MR. BEASLEY: We comply.
MR. WOODBRIDGE: V.C., "The paper path between the printing, viewing and storage of paper shall be protected and sealed from access, except by election officials authorized by each county commissioner of registration.

MR. BEASLEY: That's correct, by virtue of the seals and the lock and the key, as you saw.

MR. WOODBRIDGE: Thank you. D., this gets a little bit sophisticated, "All cryptographic software in the voting system shall be approved by the U.S. Government's Cryptographic Module Validation Program, if applicable, prior to being certified in New Jersey".

Paragraph 1 states further: "As stated in the discussion portion of Section
7.9.3 of the United States Election Assistance Commission draft criteria for 'Voter Verifiable Paper Audit Trail Requirement,' there may be cryptographic voting schemes where the cryptographic algorithms used are necessarily different from any algorithms that have approved CMVP (Cryptographic Module Validation Program) implementations. Thus CMVP approved software should be used when feasible but is not required.

I guess it really asks what kind of cryptographic methods do you use in your system?

MR. BEASLEY: First let me say that this implementation is primarily oriented toward-- what is the question, Mr. Chairman?

MR. WOODBRIDGE: The question we're talking about is the cryptographic methods that you used in response to section V.D. and V.D.1 and whether or not it is cryptographic module-part of a cryptographic module program implementation. But as we read the language here, it is our understanding that is not a strict requirement.

So I guesses a better approach is
to ask what kind kind of cryptographic system do you use in the voting machine?

MR. BEASLEY: We use an advanced encryption standard that is approved by the Federal Government, by the $S A$ and by the Department of Defense.

MR. WOODBRIDGE: Do you know exactly which standard that is?

MR. BEASLEY: The advanced encryption standard.

MR. WOODBRIDGE: Is that, like, a 256? I'm not familiar exactly with the the advanced standard?

MR. BEASLEY: It is little greater than the old advanced encryption. That was a 256 .

MR. WOODBRIDGE: So this is an NAS 256 .

MR. BEASLEY: We only used approved standards for any of our encryption functions.

MR. WOODBRIDGE: Do you have any idea whether it is approved by the U.S. Government's Module Validation Program or not?

MR. BEASLEY: Yes.
MR. WOODBRIDGE: You have an idea
or it is?
MR. BEASLEY: Yes, but it doesn't quite comply. That's what $I$ was saying before, because that implementation has to deal with the transferring data from one-- low data or a writer network environment. That doesn't comply. I think that is the same discussion that Sequoia was bringing up the other day. In terms of the spirit of what the state has required, yes, it does apply.

MR. WOODBRIDGE: The bottom line is, it is basically a 256 bit encryption system?

MR. BEASLEY: Yes.
MR. WOODBRIDGE: Do Committee have any other questions in that regard?
2. "The vendor shall provide a certification of CMVP approval, if applicable. If not applicable, the vendor shall provide a certification setting forth the reasons why CMVP approval does not apply."

Can you provide us with the certification?

MR. BEASLEY: I don't know if we have we have provided you with approved
documents. I would have to check with our programmer on this.

MR. WOODBRIDGE: I don't think I'm
telling you anything out of school. The vendor
that was here the last two days has previously
provided us with certification. It appears that's something that we will need from you.

MR. BEASLEY: I'm not sure that we haven't already provided it. That's what I'm saying. We will check on it.

MR. WOODBRIDGE: If you wouldn't
mind. If you can get that here by the time-- I don't know who actually provides the certification, by the way.

Okay. The next item V.E., I note that this is also the subject of an exception by NJIT. That section reads as follows:"The printer shall be connected to the voting machine either by completely concealing the printer connection or via a security tag to prevent tampering".

I believe we had a demonstration
earlier today including Mr. Darar, who
illustrated how he believed there were some possibilities of tampering according to the
machines by unplugging them. Is that correct? MR. BEASLEY: Right. That physical
correction we are implementing by putting a restraining relief being applied to the back of the printer, where the power cable connects into the back of the printer. Where the USB cable connects in the back of the printer we have a strained relief. You can't unplug it, you don't have access to it.

MR. WOODBRIDGE: Maybe you want to
elaborate a bit for us as to what you mean by strained relief? Is this like a cable or something?

MR. BEASLEY: It is a box that covers the connection.

MR. WOODBRIDGE: So if the box covers the connection, you can't pull it out over the plug. Is that correct?

MR. BEASLEY: That's correct.
MR. WOODBRIDGE: What about the
issue of protecting the wire covering?
MR. BEASLEY: I beg your pardon?
MR. WOODBRIDGE: What about the
issue of protecting the wiring, the covering? Will it be completely concealed?

MR. BEASLEY: It is our
understanding--
MR. WOODBRIDGE: "The printer shall be connected to the voting machine either by completely concealing the printer connection or via a security tag to prevent tampering".

MR. BEASLEY: We believe the
solution that $I$ am discussing, which is already on one of the machines here, does comply to that exception. I'm certainly willing to hear any comment from NJIT as to whether or not that is not acceptable. So it is pretty easy to address this.

MR. WOODBRIDGE: I guess one of the things that concerns us and has concerned us in these hearings, is the ability of a voter, in the privacy of the curtains, to actually put their hands on cables. Is that an issue that's addressable.

MR. BEASLEY: Yes, it is.
Certainly the major aspect has to to do with whether or not they can disconnect the cable. There is no electrical danger or anything of that nature. But it's the factor that there was a cable that connects to a printer.

I was of the impression that the objection was that you could unplug it at will. That is what we have addressed. In terms of the cable going from inside that monitor over to the printer, if that is done that is a different system".

MR. WOODBRIDGE: The language says,
"The print shall be connected to the voting machine either by completely concealing the printer connection or via a security tag to prevent tampering".

MR. BEASLEY: That's not a
problem. We will just simply reroute the cable.

MR. WOODBRIDGE: I'm not quite sure how a security tag prevents tampering. It shows that tampering is taking place.

MR. BEASLEY: It won't.
MR. WOODBRIDGE: Okay. So you will
deal with the issue, at least by providing some kind of what you call strain relief. Is that correct?

MR. BEASLEY: That's correct.
MR. WOODBRIDGE: You may take some steps to attempt to fully conceal the
connection?
MR. BEASLEY: To conceal the cable itself.

MR. WOODBRIDGE: To conceal the cable itself. It says the printer connection. I'm assuming you means a wire. Is that right?

MR. BEASLEY: Right.
MR. WOODBRIDGE: The next item is also the subject of a comment by NJIT. Paragraph V.F. reads as follows: "The DRE shall detect and notify the election officials at the polling places of any errors and malfunctions, such as paper jams or low supplies of consumables (e.g. Paper) that may prevent paper records from being correctly many displayed, printed or stored".

Comment number eight from NJIT
stated, "Although the DRE can correct problems that will prevent records from being correctly displayed, printed or stored (paper jams), no warning signals are sent to notify the election officials at the polling precinct."

MR. BEASLEY: We are complying to that exception. In terms of resolving making a minor change to that software that actually
does display different error messages.
Right now we pretty much only have two that covers a multiplicity of problems. So what we're doing is allowing the change to display the specific error message. If it is low on paper, versus the printer cable, for some kind of reason it was disconnected, it will display that message. An audible alarm will go off. According to the voter, is given a message indicator there to have them contact the poll worker. We will deal with the exception.

MR. WOODBRIDGE: The alarm will be loud enough for the election officials to hear. Is that correct?

MR. BEASLEY: Yes.
MR. WOODBRIDGE: How long do you think it will take to provide the fix-- to correct the issue that NJIT indicate?

MR. BEASLEY: To make this change for the exception, next week. It is a software change.

MR. WOODBRIDGE: You do have some sort of a device? We see a device that you put ear phones into, but is there a bell?

MR. BEASLEY: There already is an alarm indicator. For example, if a voter is standing there for greater than 100 seconds, there is a beep that goes off. We already have a speaker, if you will, in the system, just like you have with your computer at home. It's not a physical thing that we have to change.

MR. WOODBRIDGE: DO $I$ understand you correctly, that you will be providing more than depressing two error messages? You will have something better to differentiate between paper jams, paper low and things like that?

MR. BEASLEY: Yes, sir.
MR. WOODBRIDGE: Any idea how many error messages you have?

MR. BEASLEY: I'm not sure how many different types of errors. Our programmer is worker is working on that. I think yesterday he was up to fourteen. I'm not sure how many different times of error messages.

Perhaps $I$ do know; power low error
fix, current fix--I can give you a number. It is one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen.

MR. WOODBRIDGE: Thank you very
much. The next section, top of page ten, item V.G., also noted as exception number six by NJIT. The criteria reads: "If a error or malfunction occurs (such as, but not limited to, a paper jam or running out of paper), the DRE and VVPRS shall suspend voting operations, not record votes, and present a clear indication of the malfunction to the voter and election officials".

Just to re-read what exception number six previously stated. "If a mechanical error or malfunction occurs, such as a paper jam or running out of paper or paper or served improperly, the DRE displays an error message on the screen to the voter, but no warning signals are sent to notify the election officials at the polling place. The DRE does not suspend operations. The voter has the opportunity to continue voting and to cast the vote. The paper record is not printed. The vote is, however, electronically recorded".

MR. BEASLEY: Basically that
relates to the previous line.
MR. WOODBRIDGE: So if a mechanical
malfunction occurs, there is a signal and the voting operation is suspended, votes have not recorded. Is that correct?

MR. BEASLEY: If an error occurs that impacts the ability of the voter to see that paper, the system will display a message. It will shutdown. It will not allow them to continue the vote. I think that's one of the NJIT exceptions that they made earlier.

MR. WOODBRIDGE: I will just ask a follow-up question out of curiosity. If somebody is voting, let's say they get to paper ballot number one and they don't like the ballot, they deliberately spoil that ballot. As they are in the process of voting the second time, something happens and the alarm goes off and the voting is suspended. What happens to that first ballot.

MR. MA: The event log software that we were talking, every machine records the acts that happened during the voting session. If the voter prints the record and the paper is out, the alarm goes off. So the election official will come in and pull the card. That ballot will be spoiled. The memo will record
that piece of paper is the taken out and then removed from the ballot. It is not stored electronically in the computer. But since the paper was printed and put in the printer paper ballot box. So the only way we can do it is put it directly in the the mailbox in the computer. When we do a recount it will go into the mailbox first, telling us that it was voter spoiled.

MR. WOODBRIDGE: I guess the next question is, let's say that occurs, the alarms go off, the voting is suspended, when the machine come back on line does the voter start at the very beginning with a first ballot, second ballot, third ballot? Does the voter start with the second ballot?

MR. MA: The voter will be given a new card, start from the beginning.

MR. WOODBRIDGE: It is almost as if that first paper ballot didn't exist, isn't it a fact. Is that right.

MR. BEASLEY: From practice, what happens is the voter will more than likely be given another pass, another card. They are going to vote on a different machine.

MR. WOODBRIDGE: All right. I just wanted it as a point of information.

H-- any other questions from the committee? Does NJIT have any follow-up questions on this exception?

DR. SHI: See no.
MR. WOODBRIDGE: H. This is also a subject of exception number nine by NJIT. "If the connection between the voting machine and printer has been broken, the voting machine shall detect and provide notice of this event and record it in the DRE's internal audit log. Voting operations shall be suspended and no votes be recorded".

The comments for exception number nine states as follows: "The connection between the voting machine and the printer breaks during the voting process. DRE displays an error message on the screen to the voter, but no warning signals are sent to notify the election officials at the polling place. DRE does not suspend voting operations. Voter has the opportunity to continue voting and cast a vote without printing any record. The vote, however, is electronically recorded".

I guess the first question is, is that an accurate statement of the NJIT test revealed?

DR. SHI: It is.
MR. WOODBRIDGE: Your response to that?

MR. BEASLEY: We're doing another software change that we will submit next week. If those conditions exist, the voting process will be suspended and a buzzer will go off notifying the poll workers that attention is required.

MR. WOODBRIDGE: Thank you. We should start to pickup a little speed.
I. "If the voter's selections on the DRE do not match the paper record, then the DRE shall immediately be withdrawn from service. 1. The affected voter shall be able to vote on another voting machine if available, or by emergency ballot.

I don't know if that requires comment.
J."The vendor shall provide to LPS documentation of the DDRE and the VVPRS that includes procedures for the recovery of votes
in case of a malfunction. LPS shall be responsible for disseminating this information to the county commissioners of registration."

The question addresses the issue of
inviting providing under documentation the procedures that you propose. Has that been provided?

MR. BEASLEY: No problem. We have actually provided that to Warren County. I don't believe that we sent a copy of that to the AG's office. We can.

MR. WOODBRIDGE: I recommend that you do that by tomorrow, if you can.
K. "The vendor shall provide to LPS
documentation for the DRE and the VVPRS that includes recommended procedures to enable the election officials return a voting machine to workable status after the machine has malfunctioned, the printer needs to be replaced, or a voter has used it incompletely or incorrectly."

Continuing, "These proceedings shall not cause discrepancies between the between the tallies of the electronic and paper records".

The second comment, "LPS shall be responsible for disseminating this information to the county commissioners of registration".

When we hit this spot yesterday, what wasn't clear to the chair was whether this documentation to enable election officials to return the voting machines to workable status, was intended to mean making corrections during the actual election or subsequent thereto.

So I maybe have to ask you that question in two parts. Number one is, have you provided to LPS documentation that includes recommended procedures to enable the election officials to return a voting machine to workable status after the machine has malfunctioned, the printer needs to be replaced or a voter has used it incompletely or incorrectly during an election?

MR. BEASLEY: I suspect it does address itself to during an election. In that regard, we provide documentation that there is an advanced training for poll workers, the regular poll worker training. Then there is poll worker training for a select group of county workers. That would tell me them how to
resolve problems that they could resolve.
Comments come up on how we deal with various issues on that machine. It is a modified technical manual for poll workers and it is going to be advanced forward for super poll workers. We do provide that type.

To the extent that a county person can not resolve a typical problem, then again, in our case we have technicians at various polling locations to provide support for the election.

So on a typical election night, eve or day, election day, we will have fourteen people in various polling locations that are roaming around, just to help the augment the super poll workers just in case of that issue. MR. GLEIM: In fact, NJIT was given both electronic and hard copies of these documents.

MR. WOODBRIDGE: These are the documents that poll workers get in cases there is a malfunction?

MR. BEASLEY: Poll workers, yes.
MR. WOODBRIDGE: What about the
issue of post election and there are problems,
is there documentation that more sophisticated that county election officials might have to do more dramatic repairs, perhaps?

MR. BEASLEY: It is a procedure, actually, that addresses different kinds of problems. If you lose a ballot, this is the procedure that they would follow to have them reconcile that. So we have specific procedures that were given to the-- not the poll workers, but to the county officials charged with tapping into those.

MR. WOODBRIDGE: Has this
documentation been presented to the LPS?
MR. GLEIM: As far as $I$ know, yes.
In fact, in their notes to us they sent back that we had submitted both the electronic and hard copies of those.

MR. WOODBRIDGE: L. "Vendor
documentation shall include procedures for investigating and resolving printer
malfunctions, including but not limited to printer operations, misreporting of votes, unreadable paper records and process failures". MR. BEASLEY: Yes.

MR. WOODBRIDGE: Thank you. M. "If
a machine malfunctions or becomes inoperable, voters will be entitled to vote by emergency ballots."

MR. GLEIM: Yes. The emergency ballot is provided on the side of the machine. MR. WOODBRIDGE: This is my dream. I can't believe anybody has actually come in here prepared with emergency ballot boxes. We'll take notice of that. What is the capacity of the ballot boxes?

MR. GLEIM: I'm sorry?
MR. WOODBRIDGE: What is the
capacity of the ballot boxes, the emergency ballot boxes? How many emergency ballots can fit in the ballot boxes?

MR. GLEIM: I don't know, but they are the standards size that was directed by the state. They are a toggled so that they could be used with the machine.

MR. WOODBRIDGE: Thank you. On the top of page I'm going to skip sections VI., A, B and C because they are not directly relevant to this particular vendor.

I am going to move down to C.1., though. It says, "The vendor shall provide to
the state, electronically and in hard copy, all use and technical specifications and
documentation relating to the function of the VVPRS. I as if that's been done?

MR. BEASLEY: Yes.
MR. WOODBRIDGE: 2."The vendor
shall submit a certification that the VVPRS satisfies the state's criteria.

MR. BEASLEY: Yes.
MR. WOODBRIDGE: Has that been
done?
MR. BEASLEY: We already did that.
MR. WOODBRIDGE: Already done.
Section Roman Numeral VI D., "a VVPRS shall not, at any time, contain or use undisclosed hardware or software. The only comments that may be used in the system have components that have been tested and certified for use in the state".

MR. BEASLEY: We comply.
MR. WOODBRIDGE: You comply.
E."The vendor shall be required to provide the source code for the DRE and the VVPRS to the state, and/or to place such source code in escrow, to allow for independent
testing by the state, at its discretion. Upon request, the state will enter into a non-disclosure agreement with the vendor." Can you give me the status of that?

MR. GLEIM: That was done when the equipment was certified a year ago.

MR. WOODBRIDGE: Let me follow-up on that. Vis-a-vis the VVPRS, though, there must be additional software that relates to that.

MR. GLEIM: Will we check. I believe it will be intact, because the system as presented did have the DVPAT, even though it wasn't passed. But the system that was sold to Warren County that was certified here in this, did have that particular records capability on that.

MR. WOODBRIDGE: There are two real
issues here. There is one that you have to provide the source code. I'll accept your representation it's been provided.

We have also had some discussion today there are modifications that we need to be made to the source code. I'm looking for a
representation from you all that you will provide the state with a supplemental set of sources codes that includes all the facts that--

MR. GLEIM: We will comply.
MR. WOODBRIDGE: You have complied with that?

MR. GLEIM: That's correct, we will do that.

MR. WOODBRIDGE: You will do that in that manner?

MR. GLEIM: We will have fixes done by next week.

MR. WOODBRIDGE: Excellent, thank you. Item numeral VI. F., "The vendor will be responsible for the cost of any testing," that's understood.
G. "Vendor documentation shall
include printer reliability specifications, including Mean Time Between Failure estimates, and shall include recommendations for appropriate quantities of backup printers and supplies".

MR. BEASLEY: We the except of a backup printer, we have complied.

MR. WOODBRIDGE: So you have provided specifications as to failure estimates.

MR. BEASLEY: Yes.
MR. WOODBRIDGE: Thank you. Going
to page twelve, section Roman Numeral VII.,
"Pre-election Procedures. A. A VVPRS' components shall be integrated into the existing local logic testing procedures performed by county election officials, which are performed in preparation for an election".

MR. BEASLEY: We do that, yes.
MR. WOODBRIDGE: I'm going to skip
section Roman Numeral VIII, A through C, since they are directly applicable to the vendor, go right to Section VIII D. It states as follows:
"in case the machine cartridge becomes unreadable or is damaged for an audit or recount, the county commissioner of registration shall shall produce the ballot image audit log from the machine. The vendor shall provide to LPS documentation regarding the production of such audit log". Has such a documentation been provided?

MR. BEASLEY: I believe there is
not a document, it is not a CD. With the exception of that aspect of it, we comply. MR. WOODBRIDGE: It goes on to
further say to provide documentation for production of such audit log. Have you provided such documentation?

MR. BEASLEY: Yes, we did.
MR. WOODBRIDGE: Section Roman
Numeral VIII E."The paper record shall be created such that its contents are machine readable for purposes of any recount, audit, or initial tallying of an election in the event that the machine cartridge containing the electronic record is not usable. 1. The paper record shall contain error correcting codes for the purpose of detecting read errors. This may be done by barcodes".

MR. BEASLEY: Yes. We provide that.

MR. WOODBRIDGE: I'm going to skip
section $F$ and go to to the last page,
thirteen. Item $G$ there states, "The vendor shall provide LPS written procedures to identify and resolve any discrepancy between an electronic record and its corresponding paper
record. LPS shall be responsible for disseminating this information to the county commissioners of registration".

Have you provided LPS with written
procedures to identify and resolve any discrepancy between an electronic record and its corresponding paper record?

MR. BEASLEY: We have such a
document. I don't remember sending it to the Attorney General's office. The county executive certainly has it. We have no problems.

MR. WOODBRIDGE: You will send us a copy? Send a copy to LPS, hopefully by five o'clock tomorrow.

H, the last criteria: "The vendor shall provide written procedures for determining what constitutes clear evidence that a paper record is inaccurate, incomplete or unreadable. LPS shall be responsible for disseminating this information to the county commissioners of registration".

Have you provided written
procedures for determining what constitutes clear evidence that a paper record is
inaccurate, incomplete or unreadable? MR. BEASLEY: Not exactly. The documentation that tells you how to reconcile problems with paper records are electronic images into itself, unless you know whether or not there is in an inaccuracy. This is accomplished primarily because they uses a unique randomly generated twenty-four character value, to make sure that record matches the image, its corresponding image from the machine.

So I guess the answers to that is yes, we do that with the other documents.

MR. WOODBRIDGE: So if the paper record seems inaccurate or unreadable, the electronic record is there to provide backup. Is that essentially what you are saying?

MR. BEASLEY: Yes, it is very easy to detect that.

MR. WOODBRIDGE: It seems to me that except for the barcode, one can easily look at it most of the time and tell whether it is unreadable or incomplete.

I take it that the Department of
Law \& Public Safety has copies of whatever
certification that you have. Do we have copies of all the ITA reports?

MR. GLEIM: Appropriate to this machine, yes.

MR. WOODBRIDGE: Which reports?
MR. BEASLEY: We have not provided the Attorney General's office with all of those reports. Ann attempt was made yesterday and this morning, but because of mailbox limitation sizes-- let me just say this, no, we have not provide all the documentation. We shall do that as soon as we go back to the office.

MR. GLEIM: Excuse me, while not
not provided in electronic form, we did submit those in hard copy to the Attorney General's Office at the time we took the equipment through certification.

We have produced documents before even bringing the machine in front of you.

MR. WOODBRIDGE: I'm sorry, I'm not sure $I$ understand. So I understand that, are you talking about those documents have already been produced?

MR. GLEIM: Hard copy, yes.
MR. WOODBRIDGE: Hard copy. You are
just talking about sending an electronic copy. MR. BEASLEY: So that the Attorney General's office can post it to their website. MR. WOODBRIDGE: Mr. Alampi, do you have a question?

MR. ALAMPI: As far as the documentation, $I$ did deliver a hard copy of the NSCD, I believe on May 5th.

MR. WOODBRIDGE: Which
documentation are you talking about there?
MR. ALAMPI: It consisted of the Wiley and Cyber Report, all of our user manuals which there are seven of them. There are also some extra reports out of Wiley that $I$ pulled out the pages that were very pertinent to the requests. Those are the ones, I believe the AG's offices sent to NJIT.

MR. WOODBRIDGE: Thank you. There are a few items that $I$ can't recall off the top of my head, of information that you were to provide to the AG's office, perhaps, like, the protocol issue, new things like that.

If you'd be kind enough to try to
get that to us in an expeditious manner. I have to apologize, again, for giving you the
bad microphone. It wasn't done intentionally. I just want to you know. The person who sat there yesterday had the same issues.

We're going to take a very short break. Then we're going to go into the public input part of the hearing, probably the last section.

The last time $I$ looked $I$ only saw two people sign-up for it. If anybody is here who wants to be part of the public hearing, we'd like to have them, too.

We're going to take a five minute break. We will reconvene at 4:15. Thank you.
(Five minute recess takes place).
We are going to go back on the record. It is now roughly 4:20. We've historically tried to hit five o'clock as our finish time. So this is the public input part.

I should make a comment with regard to Executive Hughes. I appreciate the forbearance of the next two speakers who patiently let Mr. Hughes go ahead. He's a very busy person.

I should indicate to the
representative of Sequoia, I did not know that the comments might relate to Sequoia. To that extent that $I$ know that you had an opportunity to respond.

With that having been said, I'm
going to Professor Venetis to introduce herself. It is good to see you again.

MS. VENETIS: Good to see you, too. For the record again, day number three, my name is Penny Venetis, V-e-n-e-t-i-s. I'm a clinical law professor at Rutgers Law School, also a co-director of the Constitutional Litigation Clinic.

In that capacity, I'm also lead counsel in a lawsuit called Guciora versus Corzine. Guciora being Assemblyman Lee Guciora. There are other plaintiffs in the coalition for this action and other voters rights groups. Who sued the state in 2004 , arguing that the voting machines used in New Jersey, that continue to be used today, are unconstitutional on their face. Because we cannot be sure that the voting machines actually count votes as cast.

I believe that $I$ continue to hold
that belief even after today's presentation. I would like to put on the record several objections. I object to the fact that the hearings that were held on these voting machines, were held so quickly after the NJIT reports were made public. The public has not had a chance to prepare. It's been very, very difficult for me to prepare. Indeed, the transcripts from the proceedings are not yet completed. I was told that today's transcript would not be completed until after the Committee closes the time period for submission of written comments.

It would certainly be very easy to cite to the transcript and to provide the Committee with portions of the transcript that would support points that $I$ hope to make in my written submissions.

MR. WOODBRIDGE: Your objection is noted.

MS. VENETIS: Additionally, I would also like to put an objection on the record that no system in New Jersey exists for testing or certifying the underlying DRE software. It is upon that objection that $I$ continue to
believe that the DREs are unconstitutional.
So there is nothing in the record
to show that any of the DREs that were
demonstrated today were ever tested for
accuracy or to determine whether or not the software program has been corrupted.

The NJIT tests that have been performed, additionally do not examine the software in any way whatsoever. So, again, we have no sense of whether or not the underlying mechanism actually works or whether it will count votes as cast.

As stated twice before, the
legislature's January 1 st, 2008 deadline for equipping DREs in New Jersey, or other voting equipment with the voter's verified paper ballot, is dangerously close.

The NJIT team identified ten
exceptions which were really details of the ways that the Avante Vote-Trakker does not comply with the guidelines promulgated by the Attorney Generalc's office, that all printers must meet.

Thus, like the Sequoia DREs, based on the exceptions on their face, the Avante
printers should not be certified by this Committee.

There has been evidence today that has been presented, that several of the security risks identified by the NJIT team have already been remedied by the Avante team and that others will be remedied shortly.

I do not know what the Committee's timetable is or whether or not the Committee will be able to review any sort of further NJIT testing of these changes. But until the NJIT team can review those changes and actually specify that their concerns concerning the security risks have been met, then this Committee should assume that the NJIT concerns are still valid. Based on those, again, on their face, the printer should be rejected. MR. WOODBRIDGE: Professor Venetis, is that a round-about way of saying that the machines should be tested again, vis-a-vis the sections?

MS. VENETIS: It's saying-- and this applies to the Sequoia machines as well. It is saying-- I made the same comments the other day, that until the NJIT team that the
stated has entrusted with at least the testing somewhat, some aspects of the printers, until the NJIT team can actually state with certainty that none of the guidelines promulgatsed by the state are--that all the guidelines that have been promulgated by the state have been met.

Until that actually happens, then it is my position and our position that the machines do not satisfy the state's criteria. On those grounds alone, cannot be accepted.

Now, Avante has specified that there are certain things that can be corrected by next week. Obviously, if that is truly the case, then $I$ request that the Committee make a determination about whether or not it is going to certify these machines based on those representations.

But $I$ do believe that before this Committee can certify the machines, it really needs a bill of of approval from the NJIT team. So there would have to be additional testing. The Sequoia representatives said it would take them several moths.

Again, it is up to the committee to determine what it is going to do. But based on
the status of all of the printers today, it's our recommendation that none of them be certified until the NJIT team can certify to this group that all of the state's guidelines have been met by all the printers.

From discussing the reasons why I believe the Sequoia printers should not be adopted by the Committee, I spoke extensively about their unreliability, poor history of performance, as well as Sequoia's misrepresentations to elected officials about the quality of their product and also the availability of their product.

Brian Hughes testified earlier today that, indeed misrepresentations have been made to Mercer County about when the printers would be ready. Again, this is relevant because Sequoia made representations about the availability of their product to the Committee. The Committee should take that into account whether or not--

MR. WOODBRIDGE: I hate to
interrupt you again. It would be useful-- this hearing is supposed to be related to the Avante machine.

MS. VENETIS: That was by way of introduction to my next point. I am not aware and $I$ have spent a lot of time researching various issues, I'm not aware of any situations where there have been failures of the Avante products or where Avante has made public misrepresentations about the quality of their products or when the products would be ready. So I do not have anything to present to this Committee in that regard.

I do, though, want to make the point that Avante is located in New Jersey and Avante is not-- is not owned by a foreign corporation and Avante also is not in the process of being sold.

So in making its determination, I do ask the Committee to look at the totality of the circumstances and realize that if there are problems that exist with the Avante machines, even problems on a very wide scale basis, we would only have to look to our backyards to try to get assistance to try to fix them and try to remedy the problems.

Again, $I$ just want to put that out to the Committee. I think it's an important
thing to consider in making a determination about what products should be certified.

My last comment, again, goes to the comment that Brian Hughes made earlier about there being now federal legislation that's being contemplated concerning national adoption of electronic scanners that scan paper ballots.

I have testified in the past two days that several states have taken the lead in rejecting DREs and adopting optical scanners. Because there are multiple studies that show that they are the most effective and efficient ways to--and accurate ways to count votes.

Again, $I$ will supply the Committee with those studies. But, again, I do ask the Committee to take this into account in making recommendations to the state. Because this Committee certainly will be able to request that vendors of optical scanners be permitted to have their products tested by NJIT and have the ability to make presentations to this Committee as the vendors of the DREs did. Thank you very.

MR. WOODBRIDGE: Thank you very
much, Professor Venetis. We had a small
sidebar before this public part. I asked Professor Venetis to provide whatever information she could with regard to the federal interest in the optical scanners, as much for our education as to anything else. We appreciate you're doing that for us. Mr. Komuves, welcome back.

MR. KOMUVES: Flavio Komuves, K-o-m-u-v-e-s. I am a Deputy Public Advocate, , here an behalf of the New Jersey Department of the Public Advocate.

I want to first, again, state that
I reiterate the testimony that I've given in the past couple of days and the documents that I previously submitted to the Committee, Exhibits 1 through 67, with those exception that $I$ previously reiterated. I don't want to gain speak in detail to those issues, just highlight them briefly.

MR. WOODBRIDGE: The record should reflect that each committee member has has receive a fairly thick set of documents, I think 68, 67 different documents, that was going to be referred to. We in corporate by reference any previous statements he's made in
the last two days. The same goes with Professor Venetis, too.

MR. KOMUVES: Thank you. I just had a couple of questions about the testimony that was set forth today. I'll ask these questions through you. One of the questions-one of the statements that was made is there was testimony that the paper roll that is used to operator the Avante $308 F F$ printer that's under evaluation today, could probably receive about 600 votes. Perhaps that roll could be made a while bit greater in diameter die to accommodate a slightly greater number of votes.

But one of the things that struck my is in looking at the case on the Avante 308 FF machine, it is not entirely clear to me whether the size of that case can hold all 600 or 800 votes, as the case may be. I just wanted to know what either the Avante folks or NJIT folks had to say about the capacity of that case?

MR. WOODBRIDGE: By the capacity of the case, do you mean the case in which the ballot is dropped.

MR. KOMUVES: That's right. On the right side of the screen there is a metallic case into which the ballots are drawn after they've been reviewed by the voter.

MR. WOODBRIDGE: The question is, what is the capacity of that box that contains the ballots.?

MR. KOMUVES: That's right.
MR. WOODBRIDGE: First of all, is there any representative from Avante who would like to respond to that question.

MR. GLEIM: I'm not sure still
whether the 600 was meant by NJIT that's how many pieces of paper they had in there. I will reiterate what $I$ said earlier, that the box can hold, out of a roll of 800 , if each one is about six inches, there can be 700 to 800 pieces of paper in there.

MR. WOODBRIDGE: I'm going to also ask Professor Shi if he wouldn't mind. I do recall the previous testimony was that we had at least one if not two, 1,200 vote tests. I guess one of the questions is, were they all dropped into the same hopper?

Dr. Shi, I was wondering, can you
respond to his question?
DR. SHI: The box can contain 1, 200
votes.
MR. WOODBRIDGE: Can it contain
more than that?
DR. SHI: When we did the test, all
of the paper ballots were contained in that storage.

MR. WOODBRIDGE: So all 1,200
votes, in fact, landed in that hopper?
DR. SHI: Yeah.
MR. WOODBRIDGE: Did you run that test twice or once?

DR. SHI: Exactly 1,200 , that's short ballots. That is manually doing, because we cannot approve them to run it.

MR. WOODBRIDGE: Okay, thanks.
MR. KOMUVES: Thank you very much,
I appreciate that. The next $I$ had, there was testimony earlier, that one or more independent testing labs, one or more ITAs, had certified the Avante 308 FF .

Now, in my review of the relevant literature, $I$ found documentation and I've seen documentation that relates to an Avante voting
machine, I think the 308SPR. So I just wanted to clarify for the record that there is an ITA report that addresses the 308 FF machine. Second, what its date is and third, to which standard was that tested.

MR. WOODBRIDGE: Can you respond to that.

MR. GLEIM: Yeah, I can. Hopefully by tomorrow, the documents which will be from the Cyber Laboratories and Wiley Laboratories, will be on the New Jersey Election website.

The testing that was completed in 2006 , the standards was to 2002 . That's basically what you asked; right?

MR. KOMUVES: Yes, that is. Just by way of a follow-up, there was mention that both Cyber and Wiley were involved in this?

MR. GLEIM: That's correct. They kind of break it, they co-mingled opportunities. Wiley might be more focused on the hardware side of it. Cyber might be more focused on the software side of it.

MR. WOODBRIDGE: Let me just
interrupt for a second. Mr. Fleming points out to me, for the record, we as a Committee have
seen the Avante Vote-Trakker, once in 2004 and once in 2006. In both cases the Attorney General approved the certification of the 308 FF . We approved the 308 SPR on July 15 th , 2004 and the $308 F F$ was approved on May $4 t h$, 2006, just for the record.

KOMUVES: Was that approval of the $308 F F$ on May 4th, 2006 , with DRE hardware version 1.4.0 and DRE Firm version 1.21A, which is, according to page ten of the NJIT Report, hardware and firm ware that NJIT looked at recently?

MR. WOODBRIDGE: We're going to see if the report-- if our report to the Attorney General's office addresses that issue. You might want to go on. We'll see if we can find that information, if it is in our information here.

MR. KOMUVES: We appreciate you looking into that. Obviously, what is true not just of the Avante machines, of really all of the machines, is that the ITA report in question should be looking at the particular hardware and particular software, particular versions of each of these that are, in fact--
that have been, in fact, tested by NJIT and going to be put into use in New Jersey.

MR. WOODBRIDGE: Is that question then-- let me make sure I understand. The software we saw presented today, is that the software that the ITAs examined?

MR. GLEIM: The machines that are here today were the machines that were at NJIT, yes. These are the machines that they did the actual testing on it.

MR. WOODBRIDGE: So these machines, Wiley and Cyber-- have software that Wiley and Cyber saw?

MR. MR. FLEMING: Four of the machines were from Warren County, I'm just asking the question?

MR. GLEIM: Four of the machines we have here today were brought down from Warren County. So that has the software certified by the state. The other machine that we have has some updates that we have as far as software that wasn't put in those machines.

MR. KOMUVES: What machines are going to be used in February 2008? In other words, is there a software-- is there a machine
with a particular software version that's going to be used and has that software version received ITA certification?

MR. WOODBRIDGE: I think the answer is probably no, because according to the testimony here, the intent of the vendor to provide updates and fixes to some of the items that NJIT pointed out, it will probably be also a function of whatever collective wisdom this committee here can put together, do a report in terms of recommendations to the AG's office.

So certainly we have not seen, I
don't think what ultimately will be produced in the near future.

MR. KOMUVES: I would just hope that whatever is ultimately used in New Jersey, that we can have a verification that NJIT has looked at that particular software version with any fixes. That an ITA, a certified ITA, has looked at that with any particular fixes.

The reason $I$ say that, again, it goes back to sort of the point that $I$ underscored throughout this hearing. Which is that one of the burdens that the machine manufacturers has, is to prove the machines are
thoroughly tested. You know, to meet that burden, I think that at a minimum you have to submit documentation where the version numbers match what is, in fact, in use in the state.

MR. WOODBRIDGE: Point taken.
MR. KOMUVES: Another question I
had was this, there was some testimony that the printer VVPRS itself, does not have any wireless components. My question is whether there are any wireless components anywhere in the Avante 308 FF ?

MR. WOODBRIDGE: I'm not sure the testimony related to wireless components. I think the issue related to communication external to the printer. I think that's what--I don't want to put words in your mouth, but $I$ thought that was the direction.

MR. GLEIM: I think that's the way
it was. But we can also say there is no wireless communication capability for the system.

MR. KOMUVES: If there is no wireless capability communication in the system, maybe I didn't understand how the card works. This card is inserted into the
machine. I didn't see a magnetic stripe or an pins on it. I'm trying to understand how then there is no wireless functionality anywhere in the system then.

MR. WOODBRIDGE: Can you respond? MR. GLEIM: The card is a smart card, with an extremely, extremely narrow range of ability.

MR. KOMUVES: But it does speak to the machine through a wireless method. Is that right?

MR. GLEIM: Yes.
MR. KOMUVES: Thank you.
MR. WOODBRIDGE: Can I backup to
make sure we understand this. Let's talk about a smart card. Are we talking about an RFID smart card.

MR. GLEIM: Yes. Well, in a sense it is like your hotel card. You go to a hotel, swipe it. What this is doing, in case of a void card, they would put in. As soon as the card is put in, any information data on that card, which only ties it to the machine, is erased. The card comes back out. Am I saying that right?

MR. BEASLEY: Let me just say that in terms of federal requirements, that that voting machine over here, cannot have any external communication, external
communications, by way of wireless, by way real network, any external communications.

There are no internet ports or anything like that, anything in that box external to itself.

Now, internally, internally that is a functionality of how the card, the voter card, is read by the machine, that the voter verifies that it is a valid card, that's the only part that $I$ think you bring up.

MR. WOODBRIDGE: I missed the last part of that?

MR. BEASLEY: I think that's the aspect that he is bringing up.

MR. WOODBRIDGE: Let me make sure I understand is. Is this, in fact, an RFID smart card or is it some other kind of smart card? How is the reading of the card done.

MR. BEASLEY: There is, inside that card, when we encode it with specific, the card was read by-- Dr. Chung can explain it a little
better than I can.
MR. WOODBRIDGE: Please identify yourself for the record.

MR. CHUNG: My name is Kevin Chung.
I'm the company CEO. In answer to your question, is that card acts like an access control. That has no function other than providing the randomly generated number to match one randomly generated number to access the ballot for you.

On that basis, as per ISO 14443 , ISO Code, there is federal compliance. So the only thing it does is just that part it. It acts as an access control.

MR. FLEMING: It doesn't have the wireless component, it is just wired to the machine?

MR. CHUNG: It is one or two for a a short distance, for communicating background.

MR. FLEMING: It's a regular IO
input?
MR. CHUNG: It is indicated in the manual. It has to be inside.

MR. KOMUVES: Just if I understand this, just to sum this up, it does function
wirelessly, but the testimony is that it is at a very low power. It would function, if it works properly, only when it is inside the machine. Is that fair?

MR. CHUNG: Not beyond that. It doesn't have communication of data, of voting. It acts only as an access control, getting into the machine, not as a communication of data.

MR. KOMUVES: Okay. I'll certainly be interested in reading the ITA reports in further detail about that.

Mr. Chairman, just a procedural question, you are going to close this today, you are not going to be here tomorrow?

MR. WOODBRIDGE: I hope not, no. Nothing personal, mind you. I think we are going to close it today. We will be taking written comments and anything else like that, up until five o'clock tomorrow.

MR. KOMUVES: I previously
reiterated my exception to that. I'm not going to do that again.

MR. WOODBRIDGE: That doesn't
prevent you, if you want, to put some more
written comments or send e-mails to the

Attorney General's office, anything of that sort.

MR. KOMUVES: I suspect I'm going to be reaching out to them to look at some of the documents that are referenced in these past three days, to the extent they are not posted on the web. I'll take that up with them.

MR. WOODBRIDGE: Even watching
MPEG, if you want to send it.
MR. KOMUVES: I don't know that $I$ that capability of doing that, but we'll see. Mr. Chairman, just in closing, I mentioned this over the past couple of days. I'll reiterate this theme. The manufacturer has to show compliance with 19:48-1.

It has to show that the machines are thoroughly tested, they are reliable, that they provide secrecy an accurately count all votes cast and that they will generate a paper trail that can be voter verified.

For reasons that I've applied to the different machines as the criteria will focus, for the reasons I've cited over the past couple of days, there are certain shortcoming with each of the machines that were presented,
certainly on the record as it now exists.
I, again, reiterate that it was
very striking from the testimony yesterday that NJIT said that they didn't take a position one way or the other, about whether New Jersey's, what some people referred to as regulations, what seem some people referred to as criteria, but I'm talking about the standards that the Attorney General's offices put out on May 11th, 2007, which I'll hereafter refer to as criteria.

NJIT took no scientific opinion one way or the other as to the scientific validity of these standards. I think that's very interesting. That should really go very heavily into your deliberations, about whether the machines have been thoroughly and whether the machines are reliable.

Because what we have seen all throughout NJIT's reports is they test the machines for 14 hours and they tested the machines for 1,200 voters, $I$ think over the course, I think the testimony is, seven hours and change and slightly longer than that for the Edge machine.

But that the federal standards are that to pass a test, one of the things that a printer has to do, is over the course of 163 100 hours, not jam. I know it's in the 2002 , 2005 federal standards. According to the 2007 Miss. Standards, that the printer can't jam one in 10,000 times.

What the State of California requires, is after a test of 100 DREs with 110 votes each over six hours, that hoses machines can't jam more than three percent of the time ad cannot misrecord votes more than one percent of the time.

In other words, there are a lot of different scientific standards that are out there. New Jersey's criteria did not contain any of them. There is nothing in the record that supports the scientific validity of those standards.

I just urge you to keep that in mind when you are thinking about, are the machines thoroughly tested. That's one of the criteria that's got to be considered, along with the other ones that are articulated.

I set forth my testimony in detail
on the other days. I'm not going to repeat it, other than to just give you that highlight.

I want to thank you for your time, all the members of the Committee, the vendor representatives that came out here, NJIT representatives, representatives from the Attorney General's office. We're all here to try and make sure that the systems in New Jersey meet the statutory standards, meet standards that are scientifically valid, are credible. So that when this core, fundamental right of democracy, the right to vote, we're exercising it. We know that all votes are going to be counted are going to be counted fairly.

Please keep that in mind when you are deliberating whether any of these three machines, on the record that now exists, with the tests that now exist, are fit for use in this state. Thank you.

MR. WOODBRIDGE: Thank you very
much. I'm going to wrap up, I think you almost wrapped it up for me. I would say, parenthetically, that $I$ have had the pleasure of attending many of these meetings. I can say
that $I$ am delighted to see this level of passion, commitment to fair and safe election. I will repeat the comments. I'd like to thank the audience for their patience. I'd like to thank the Attorney General's office, in particular, for the support that we couldn't do without. I'd like to thank the vendor for taking difficult question, which is your job. I'd specifically like to thank NJIT, again, begin their invaluable input. It is something that we have never had before. I'd like to thank Charlie for bearing with us. You can put it in the record, if you like.

This will conclude the three
hearings. I like to reiterate that if you do have any other information, to submit it by five o'clock tomorrow.

We will not be issuing a report immediately. We're going to try to digest this new information that comes in. Maybe at the end of next week, possibly after that, it really depends on the circumstances beyond our control. But we will do our level best to get our recommendations to the Attorney General's office as expeditiously as humanly possible.

Thank you very much, have a safe drive home.
(Whereupon, the matter concludes at

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4:50 p.m.).
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C E R T I F I C A T E

I, CHARLES R. SENDERS, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, do hereby certify that prior to the commencement of the examination, the witness was duly sworn by me to testify to the truth, the whole truth and nothing but the truth.

I DO FURTHER CERTIFY that the foregoing is a true and accurate transcript of the testimony as taken stenographically by and before me at the time, place and on the date hereinbefore set forth, to the best of my ability.

I DO FURTHER CERTIFY that $I$ am neither a relative nor employee nor attorney nor counsel of any of the parties to this action, and that $I$ am neither a relative nor employee of such attorney or counsel, and that $I$ am not financially interested in the action.

CHARLES R. SENDERS, CSR NO. 596.

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