



*From the desk of Jim March, Member of the Board of Directors, Black Box Voting  
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3/29/07

## California's Certification Process: An Additional Step

The California Secretary of State's office is asking for commentary on a state-level process to ensure that workable and secure voting machines are certified.

Under California law, a Federal certification process must be completed before the state process is allowed to begin. If that Federal process was flawed for a given voting system, a case can be made that any subsequent state certification cannot go forward as it would be illegal to do so. This is particularly true if vendor fraud was at issue, since by law fraud in obtaining any legal document nullifies the legality of that document. "Fraud vitiates everything it touches" per the courts.

Our organization will not be commenting on the nuts and bolts of the process defined in draft to date. While imperfect, the draft is certainly a good start and we will allow others to work on the existing content further.

We see an inadequate focus on ensuring that the quality control of the Federal process was adequate. We see no system within the draft rules for outside input on quality control issues with that Federal oversight process, and we see no concern with the known failures of the lab known as "Ciber" and their exclusion from voting system review circa mid-2006 due to shoddy practices.

Above all, we see no evidence of concern that at least one vendor (Diebold) can be documented as having defrauded the Federal certification rules and process.

Our organization filed information with your agency in August of 2006 proving that fraud against the Federal certification process was committed over a period of years by Diebold. This was in the form of a request for re-examination of a voting system component under Election Code 19202. I submitted my own investigation on this matter, and material evidence in the form of a declaration from Dr. Richard Lee. Following this commentary please find the attached:

- \* A Request Under Election Code 19202: Was Diebold's Windows CE Installation Certified?
- \* The Fraud Behind Diebold's Touchscreen Certifications.
- \* The declaration of Dr. Richard Lee, PhD.

On February 15<sup>th</sup> of this year I re-submitted the same information by electronic mail to Lowell Finley, and confirmed with him by phone that he received it. To date I have had no response to what I believe is a valid, legal request. Given the extent of my investigation, it should take only minimal time in your office to confirm my data.

We respectfully ask that the ability to review the Federal certification process be included in the state process, including public input and review. The actions of the EAC in de-certifying Ciber as a test lab and the documented failures of Wyle in the matter of the Diebold Windows CE Touchscreen certifications provide ample proof of the necessity.

Thank you for your your kind attention,

*Jim March*

*From the desk of Jim March, activist  
jmarch@prodigy.net / 916-370-0347*

**8/8/06**

## A Request Under Election Code 19202: Was Diebold's Windows CE Installation Certified?

This is a request under Election Code 19202 for a re-examination of a voting system component. This request should be simple as it requires no new research on the part of Secretary of State staff. Some phone calls to the ITAs will reveal whether or not Windows CE in the Diebold TSx touchscreen was certified by any ITA, or was declared "Commercial Off The Shelf" ("COTS").

### **Background:**

Wyle labs is on record at the California Senate Elections Committee of 3/27/06 as stating that they treated the Windows CE build inside of the Diebold touchscreen product line as "COTS" – an admission that they did not do full code review. See also the transcript starting at page 34 line 13:

<http://www.bbvforums.org/forums/messages/2197/California-ITA-hearings-27281.pdf>

This dovetails with the 2002 memo which you're familiar with by Talbot Iredale ordering underlings to withhold Windows CE source code from ITA certification (specifically Wyle).

The Wyle certification report for the TSx version 4.6.4 makes no mention of source code files examined that appear related to Windows CE, especially not the "NK.\*" filename series to be expected when the kernel is compiled – as it must be, custom, for each CE hardware build. The activist community (BlackBoxVoting in particular) has a modest collection of Wyle reports for TS/TSx series Diebold products. The community as a collective does not have the whole set.

The latest NASED certifications for Diebold list Windows CE as a component. But that does not resolve whether or not CE was treated as COTS or custom (requiring a full code review). Wyle and Systest are jointly on record before the Senate Elections Committee claiming that they don't know how to make sure "COTS is COTS" (confirm authenticity) without getting access to the COTS source...they have apparently never heard of binary compares, checksums and/or hashes?

### **New Data:**

Please find attached the declaration of Dr. Richard Lee, PhD, a consultant and designer of embedded systems and a published author of papers in the field of Windows CE. Dr. Lee makes clear that Windows CE cannot be considered "COTS" by the definition of same in the FEC2002 VSS (Voting System Standards).

Please consider this a request to seek the truth at all three ITAs, confirming once and for all that full code review of CE as modified by Diebold was performed (or not!) and post proof online. If such code review didn't happen, then custom code known only to Diebold has made it's way into the field and the ITA process was defrauded by Diebold. If this is the situation, the Diebold touchscreen machines do not legally qualify for the term "voting machine" in California due to our NASED (now EAC) Federal certification requirement. I trust the response will be timely due to the minimal work requirements on your agency's part to satisfy this important request.

Jim March - jmarch@prodigy.net - 916-370-0347

*From the desk of Jim March, activist  
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**8/3/06**

## The Fraud Behind Diebold's Touchscreen Certifications

With the release of a declaration by Dr. Richard Lee PhD (attached), a trail of investigation lasting three years comes to an end. **NEW 9/5/06:  
APPENDIX B page 6 - more evidence.**

### ***EXECUTIVE BRIEFING***

The net result of this investigation is that Diebold's Federal certifications for their touchscreen "voting system" product line is revealed as having been obtained by Diebold's fraud. Therefore, their certification documents at the state level, commonly known as "NASED numbers", are worthless. It is a basic principle of US and prior English law that any document, contract, deed, diploma, certification or other credential obtained by way of fraud is legally valueless.

The chain of evidence includes the following:

\* In 2003 a Diebold internal memo from 2002 was released in which the top technical officer for the elections division (Talbot Iredale) ordered underlings NOT to release customized Windows CE operating system code (found on all Diebold touchscreens) to Wyle Labs.

\* In early 2003 Diebold specifically claimed Windows CE as "COTS" (Appendix A).

\* On 3/29/06 Wyle testified before a California legislative hearing that they treated Windows CE as "COTS" (Commercial Off The Shelf) and hence did NOT do source code review as required of any customized code by the Federal Election Commission rules.

\* A few months later a Wyle certification report for the latest Diebold touchscreens surfaced in a Utah public records stack, showing that nothing even remotely CE-related was listed in the "files examined" roster, proving that the testimony in California was no mistake.

\* On 8/3/06 Dr. Richard Lee PhD released a declaration describing how Windows CE works - specifically to what degree it is customized for the hardware environment. Per Dr. Lee and all other published sources on Windows CE, this "Compact Edition" is sold by Microsoft as an unfinished "kit" that must be completed by a hardware vendor such as Diebold. Windows CE therefore cannot be treated as "COTS".

Once assembled, these three pieces of information lead to only one conclusion: Diebold defrauded the Federal certification process.

### ***AN EXPLANATION OF THE CERTIFICATION PROCESS AND LAWS***

37 US states require a "NASED number" on any voting machine prior to it being considered for state certification. The NASED number is considered significant in most of the rest.

NASED is the "National Association of State Elections Directors", a national body that until recently oversaw the actions of the three laboratories approved to test voting machines, collectively known as ITAs or "Independent Testing Authorities". NASED's functions are being taken over by the EAC (Election Assistance Commission) but we can ignore that in this instance – the documented fraud by Diebold involved one of the ITAs, Wyle Labs in Huntsville AL.

The ITAs certify systems to a "blueprint" by the Federal Election Commission known as the FEC 2002 "Voting System Standards".

### ***FACT SET ONE: FEC 2002 RULES***

These FEC rules have a definition of "COTS" as follows:

*Commercial, readily-available hardware devices (such as card readers, printers, or personal computers) or software products (such as operating systems, programming language compilers, or database management systems). These devices and software are exempted from certain portions of the qualification testing process so long as such products are not modified in any manner for use in the voting system.*

Source: [http://www.eac.gov/election\\_resources/vss.html](http://www.eac.gov/election_resources/vss.html) - Volume 1, Appendix A

The FEC rules on how "COTS" is to be treated is clear:

Some voting systems use one or more readily available commercial off-the-shelf (COTS) devices (such as card readers, printers, or personal computers) or software products (such as operating systems, programming language compilers, or database management systems). COTS devices and software are exempted from certain portions of the qualification testing process as defined herein, as long as such products are not modified for use in a voting system.

Source: Volume One Section One under 1.6  
[http://www.eac.gov/election\\_resources/vss.html](http://www.eac.gov/election_resources/vss.html)

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*Should be followed by the declaration of Prof. Richard Lee, PhD, three pages*

#### 9.4.1.3 Focus of Software Evaluation

The software qualification tests encompass a number of interrelated examinations, involving assessment of application source code for its compliance with the requirements spelled out in Volume I, Section 4. Essentially, the ITA will look at programming completeness, consistency, correctness, modifiability, structuredness and traceability, along with its modularity and construction. The code inspection will be followed by a series of functional tests to verify the proper performance of all system functions controlled by the software. The ITA may inspect COTS generated software source code in the preparation of test plans and to provide some minimal scanning or sampling to check for embedded code or unauthorized changes. Otherwise, the COTS source code is not subject to the full code review and testing. For purposes of code analysis, the COTS units shall be treated as unexpanded macros.

Source: Volume One Section 9 (entire subsection cited above)  
[http://www.eac.gov/election\\_resources/vss.html](http://www.eac.gov/election_resources/vss.html)

#### ***FACT SET TWO: DIEBOLD INTERNAL EMAIL***

Here is the internal Diebold Email on Windows CE certification:

\* To: <support@gesn.com>  
\* Subject: Re: Pennsylvania Certification  
\* From: "Talbot Iredale" <tiredale@gesn.com>  
\* Date: Mon, 15 Apr 2002 09:40:26 -0700  
\* References: <001501c1e269\$1fb16f10\$0e03a8c0@hirondelle>

Don,

We do not certify operating systems with Wyle. Therefore we do not need to get WinCE 3.0 certified by Wyle. What we need to get certified is BallotStation 4.3.2. We do not want to get Wyle reviewing and certifying the operating systems. Therefore can we keep to a minimum the references to the WnCE 3.0 operating system.

Tab

Source:  
<http://www.sims.berkeley.edu/~ping/diebold/lists/support.w3archive/200204/msg00055.html>  
(This is one of many online archives of 13,000 Diebold internal Emails – at this time they were still using Global Election Systems Email addresses.)

#### ***FACT SET THREE: CALIFORNIA CERTIFICATION HEARING OF 3/29/06***

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**Senator Debra Bowen:** I ask that question in part because of the, going back to a Pennsylvania certification in which Diebold wrote:

"We do not certify operating systems with Wyle." This is a Diebold employee. "Therefore we do not need to get Win CE (the Windows CE 3.0) certified by Wyle. We do not want to get Wyle certifying and reviewing the operating systems. Therefore keep to a minimum the references to a Win CE 3.0 operating system."

**Wyle (Joe Hazeltine):** I'm not familiar with the document that you're looking at.  
[Whisper between Wyle representatives: That's back when they were...]

**Senator Debra Bowen:** Oh, it's back when they were Global, GES, Global Election Systems.

**Wyle (Joe Hazeltine):** Is this some type of a hearing or testimony that they had done?

**Senator Debra Bowen:** I'll get you a copy of the e-mail. It's not something that I uncovered. But I think it goes to the fact that Windows CE requires significant customization to work on a voting machine, such as a Diebold touch-screen. It's not "Commercial Off The Shelf Software." It won't work without being customized.

Diebold has the source code for Windows CE and can modify core features and yet here they are basically writing saying "We don't want Wyle to be looking at the Windows CE 3.0 system" even though it could only run on a Diebold touch-screen if it were customized.

**Wyle (Joe Hazeltine):** Well that's, you can read it that way, another way that you can read this is that Windows as a commercially off the shelf software does not require ITA certification.

Source:

Written transcript; this is part of a long discussion on COTS that starts at page 34 line 13:

<http://www.bbvforums.org/forums/messages/2197/California-ITA-hearings-27281.pdf>

Alternatively, you may refer to the audio recording of the session from a California legislative site starting some time after 1 hour and 10 minutes:

[http://senweb03.senate.ca.gov/Audio/Committee/Elections/SenElectionsComm\\_060329.MP3](http://senweb03.senate.ca.gov/Audio/Committee/Elections/SenElectionsComm_060329.MP3)

**FACT SET 4: WYLE CERTIFICATION DOCUMENTS FOR THE LATEST TSx**

The state of Utah responded to a Black Box Voting public records inquiry with a complete copy of a Wyle certification report for the latest Diebold touchscreen version. Windows CE analysis is NOT included, nor are files known to be connected to Windows CE listed among the "files examined" section. Note that the Richard Lee declaration makes mention of the standard name of the Windows CE "Kernel": "NK.EXE". None of the Wyle files match NK.anything, powerful evidence confirming both the Diebold memo (fact set two) and Wyle admissions to Sen. Bowen (fact set three): Windows CE wasn't studied in anything like the detail needed for custom code.

[http://www.bbvforums.org/forums/messages/2197/Wyle\\_Lab\\_4\\_6\\_4\\_00001-32747.pdf](http://www.bbvforums.org/forums/messages/2197/Wyle_Lab_4_6_4_00001-32747.pdf)

### ***FACT SET FIVE: THE DECLARATION OF DR. LEE, PhD***

That document follows this in it's unedited entirety, or find it at:

<http://www.equalccw.com/rrlee-wincedeclaration.pdf>

### **CONCLUSION**

"Fraud vitiates everything" is an ancient legal maxim inherited from English law. Googled references to the phrase turn up in courts across the world. "Vitiates" is an old term for "corrupts" but it has a vicious connotation of "sexually corrupts", as in "to render someone impure due to sexual assault", a concept our culture has thankfully abandoned.

It shows the degree to which the courts react to any paper document obtained by fraud.

Diebold's Federal certification is unsupportable in any court, therefore in the 37 "NASED certification requirement states" the Diebold touchscreen product line doesn't meet the legal definition of "voting machine". The legal consequences of using them are serious.

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### **APPENDIX A: Yet More Evidence Of Deliberate Fraud**

A question can be raised as to whether or not Diebold deliberately defrauded the labs, specifically Wyle. The Iredale memo of 2002 orders underlings to withhold CE-related material, but that doesn't necessarily mean that was done. Global/Diebold may have later turned over the CE material to Wyle, who for some reason ignored it. This is unlikely but not ruled out above.

So far the case for Diebold committing "fraud" in purely legal terms is weak but not eliminated. Diebold paid for the testing, it was their responsibility to make sure the testing occurred and they would have known from the final certification documents that Windows CE was skipped.

A document has turned up that sheds some additional light on culpability.

It is dated Jan. 20<sup>th</sup> 2003, titled "AccuVote-TSx System Overview", in PDF form with Diebold letterheads and logos. It has a "version number" of 1.0 and can be seen here:

**<http://www.equalccw.com/tsxoverview.pdf>**

Two copies from two sources exist. Mine (linked above) was part of the stash of files copied from a Diebold Internet site by Bev Harris in late Jan. 2003. My copy has blocks of text in red.

Another copy with the same text in the blocks I will quote below came from a California Public Records Act query to the California Secretary of State's office by Mr. Jody Holder. Mr. Holder and I have communicated by phone and Email and thus far confirmed that the key text related to Windows CE on page 20 is identical.

That text is a listing of the "COTS" components of the TSx as stated by Diebold:

*COTS hardware and software products used in the AccuVote-TSx include the following:*

- *Windows CE operating system*
- *Sharp TFT LCD LQ150X1DG11*
- *ELO LCD Panelmount touchmonitor 1567L*
- *TDK DC AC connector (inverter for display backlight)*
- *Socket Communication ethernet PCMCIA card 8510-00093C with CF to PCMCIA adapter 8520-00025*
- *Wireless LAN card Orinoco/Proxim PCMCIA Card*
- *Sankyo smart card reader Model ICM0A0-0130*
- *AT Flash Card (election media) Sandisk Industrial grade (Part# SDP3B-128-101-80 for the 128MB card)*
- *Headphones*
- *Printer engine Citizen MLT-289*

This is the first evidence to date that Diebold specifically labeled CE as "COTS" in a report read by the California Secretary of State's office and (presumably) both NASED and Wyle Labs.

This suggests more stringent liability on Diebold's part than simply "withholding" code.

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## **APPENDIX B: WinCE, COTS Issues And The "Stephen Heller Memos"**

Internal memos released from Diebold's attorneys in 2004 reveal that Diebold was paying attention to activist complaints regarding Windows CE being customized, and the potential legal repercussions. We now know in 2006 that no corrective action was taken. Diebold and their attorneys apparently gambled that we'd never assemble the whole story. Not a good bet.

Activist complaints on this subject include a formal submission I made in Oct. of 2003: <http://www.equalccw.com/sscomments2.pdf>

The "case" we could make then was shaky - it was based in large part on Diebold internal memos released anonymously including the Talbot Iredale memo cited. But as I pointed out, there were questions here that could be answered with just a few pointed queries by authorities.

Between that point and January 2004, Diebold discussed these matters with their attorneys at Jones Day. JD legal staff then wrote memos showing that they at least partially understood this issue and specifically named myself ("Jim March") as a complainant on this point. The memos went on to "ponder" whether the degree of customization required full source code disclosure and review or not. Their memos focused on what legal effects were triggered by the customization, and the degree of customization. The term "custom drivers" was mentioned.

The existence of these memos at all show that Diebold was paying attention to activist complaints - mine by name. See the above "sscomments2.pdf" file to see what my complaints consisted of - you'll see that I cite Microsoft online sources (now largely offline as new CE reference material has replaced it) saying that CE is heavily customized to the hardware environment - in this case the voting machine environment - and that therefore it would need full code review. My letter is now fully validated by Windows CE specialist Dr. Richard Lee:

<http://www.equalccw.com/rrlee-wincedeclaration.pdf>

In January of 2004 a 44 year old actor temping as a typist for Jones Day noticed that he was handling Diebold files that seemed to be discussing ongoing illegality on Diebold's part. Concerned about the integrity of the US electoral system in advance of the spring primaries and November presidential election, Stephen Heller copied 107 pages of material and sent it to Black Box Voting, who promptly made it available to California Secretary of State Kevin Shelley and staff. The Oakland Tribune published key excerpts. The documents show a pattern of ongoing illegality across many issues with Diebold, legal failures that Jones Day seemed to recognize.

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In my opinion, the most serious of these was the mention of Windows CE being customized and in legal need of full source code review as custom software per certification rules.

Consider: in 2004, Diebold fully understood certification law and the computer science related to Windows CE that Dr. Lee has now as of Aug. 2006 clarified under oath. They knew that Wyle and the other labs hadn't reviewed it, something else the activist community couldn't prove in 2003 but **can** in 2006. Diebold did nothing, and according to Wyle's testimony in California has done nothing in the intervening three years. The Heller documents provide an insider's snapshot into the level of legal scrutiny paid to this issue, and at the same time prove that no corrective action was taken by either Diebold or Jones Day by Jan. 2004 all the way to the present.

DECLARATION OF Richard R. Lee

1 I, Richard R. Lee, declare as follows:

2 1 . I make this declaration of my own personal knowledge and if called as a witness,  
3 I would competently testify to the facts set forth herein.

4 2 . I received my Doctorate in Physics from Brandeis University in 1986, and have  
5 been employed since in the development of embedded computer systems. I was first employed  
6 in the development of computer systems based on Microsoft Corporation's Windows CE  
7 product in 1997, and have continued through the present time in this activity. I have been  
8 recognized by Microsoft, as an Embedded Windows MVP for my work with the Windows CE  
9 product. I am deeply familiar with the internal workings of this operating system, have spoken  
10 at conferences and written articles, and taught classes related Windows CE internals and  
11 deployment.

12 3 . Computer based systems are generally described in terms of the hardware –  
13 processor, memory, and other physical devices making up the "platform", application software  
14 which control specific behavior of the system including user interaction, and operating system  
15 software which controls the operation of the hardware and the loading and execution of the  
16 application software. The lowest level of the operating system software is it's "kernel", a  
17 program which provides common services to all other software on the system. These services  
18 include, but are not limited to: memory and other resource allocation, task scheduling,  
19 communication between programs, and access to system hardware.

20 4 . Unlike other Microsoft operating system products such as MS-DOS,  
21 Windows NT, or Windows XP, the Windows CE kernel must be tailored for each "target  
22 system design". In this context, a target system design is the unique combination of hardware or  
23 "platform" and a set of operating system support features specifically selected to meet the  
24 system requirements. The principal executable module for the kernel, NK.EXE, is custom built  
25 for the target design from precompiled binary library files provided by Microsoft, and from  
26 platform specific source code compiled and linked to the Microsoft binaries. It is not possible to  
27 build a functioning release of Windows CE for any platform strictly from the executable

DECLARATION OF Richard R. Lee

1 components provided by Microsoft. There are always program elements which must be  
2 developed for that specific platform, which must be compiled and statically linked to NK.EXE.  
3 Development of these target specific program elements and the linking to Microsoft libraries to  
4 build NK.EXE is typically done by the Original Equipment Manufacturer (OEM) or by their  
5 agent; not by Microsoft. These elements, along with platform specific device driver software,  
6 are referred to as the "OEM Adaptation Layer" or "OAL" in the Windows CE product  
7 documentation, reflecting this acknowledged division of responsibility between the common  
8 elements of the operating system provided by Microsoft, and the target specific elements  
9 provided by the manufacturer. An essential quality of the static linking process is that it  
10 incorporates program elements from the linked object files and libraries into a single file. The  
11 Windows CE kernel module, NK.EXE, contains program elements from the off-the-shelf  
12 Microsoft libraries, and from customized code developed by the device manufacturer. NK.EXE  
13 may therefore be unique to the particular target system design for which it was built.

14           5. In addition to the precompiled binary library files, Microsoft also distributes  
15 source code for many of the program elements comprising the Windows CE product. This  
16 source code is provided for both fault analysis use ("debugging"), and with certain limitations,  
17 the creation of derivative works by the system developer. Such derivatives may be created to  
18 correct flaws in the original code provided by Microsoft, or to substantially change the behavior  
19 of the system. The modified source code might then be compiled and linked with other object  
20 libraries to create the collection of executable program modules, including NK.EXE, which  
21 make up the Windows CE operating system for distribution on a particular target system design.

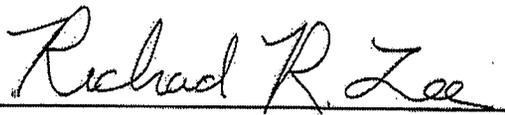
22           6. The behavior of an application may be altered by changes in the underlying  
23 operating system. Any change to the underlying hardware of the target system design may  
24 require rebuilding of key Windows CE system software elements, including the kernel file  
25 NK.EXE. In particular, analysis of the source code of an application designed to run on a  
26 particular target system would not be sufficient to determine that any changes to the operating  
27 system components do not affect system behavior.

DECLARATION OF Richard R. Lee

1           7. It would be possible to distinguish one build of NK.EXE from another, or any  
2 other compiled and linked operating system program elements by means of a binary comparison  
3 of the files. Such methods could be used to determine if any system components had changed  
4 between two analyses for certification or other purposes.

5           8. It would not be possible to determine whether or not any change was a  
6 consequence of the adaptation to the different target system hardware, or due to modifications  
7 and/or recompilation of the common Microsoft Windows CE source code by simple inspection  
8 of the kernel executable program modules. Such analysis would most likely require inspection  
9 of the source code and any precompiled library files used to build the operating system  
10 components.

11  
12 I declare under penalty of perjury that the foregoing is true and correct and that this declaration  
13 was executed on August 3<sup>rd</sup>, 2006 at Framingham Massachusetts.

14  
15   
16 Richard R. Lee