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7 *Attorneys for Defendant Democratic Party of Pima County*

8 **IN THE SUPERIOR COURT OF THE STATE OF ARIZONA**  
9 **IN AND FOR THE COUNTY OF PIMA**

10 **BETH FORD**, in her official capacity as  
11 Pima County Treasurer,

12 Plaintiff,

13 vs.

14 **DEMOCRATIC PARTY OF PIMA**  
15 **COUNTY, a political organization; et al.,**

16 Defendants.

17 **PIMA COUNTY COMMITTEE OF THE**  
18 **ARIZONA LIBERTARIAN PARTY**  
**INCORPORATED, a political organization,**

19 Cross-Claimant,

20 vs.

21 **PIMA COUNTY,**

22 Cross-Defendant.  
23

**NO. C20085016**

**DEMOCRATIC PARTY OF PIMA**  
**COUNTY'S SUPPLEMENTAL**  
**MEMORANDUM, DECLARATION**  
**OF EXPERTS AND EXHIBITS**

Assigned to:  
Hon. Charles Harrington

24  
25 The plaintiff Beth Ford quoted from the deposition of the Office of the Secretary of State  
26 by Joseph Kanefield to the effect that the GEMS software used by Pima County "is not insecure."

1 (Plaintiff's/Counterdefendant's Reply In Support of Joinder In Pima County's Motion To Dismiss,  
2 page 5 and 6.) Pima County joined in their Reply.

3 The plaintiff is clearly and absolutely wrong as a factual matter and Pima County is  
4 collaterally estopped from making such an assertion. The true fact of the insecurity of the software  
5 is relevant to the court's exercise of equity jurisdiction. The Democratic Party will first examine the  
6 factual issue:

7 **I. JOSEPH KANEFIELD AGREES WITH THE DEMOCRATIC PARTY**

8 During Mr. Kanefield's deposition he was asked about a statement in the iBeta report  
9 released by the Attorney General which had been given to the Secretary of State and was a  
10 deposition exhibit.

11 Q. BY MR. RISNER: On page 3, there's an "Executive Summary"  
12 and there's a statement that says, "During testing it was discovered that the  
13 GEMS software exhibits fundamental security flaws that make definitive  
14 validation of data impossible due to the ease of data and log manipulation."

15 Would you agree that that's an accurate statement about the GEMS  
16 software?

17 ... (Kanefield 58: 19-25; 59:1, Exhibit 1, attached)

18 Mr. Kanefield responded:

19 ... Yes, we did get this report. And we've seen many other reports that  
20 have come to similar conclusions about not just the equipment manufactured  
21 by Premier – formerly known as Diebold – but other companies.

22 ... So this is no secret. These issues have been known by not only our  
23 office but election offices all over the country.

24 (Kanefield, Exhibit 1, 59: 25, 60: 1-4 and 15-17)

25 Mr. Kanefield was and is quite correct that the insecurity of election software including  
26 Diebold/Premier "is no secret" and is known all over the country.

27 **II. PIMA COUNTY IS ESTOPPED FROM CLAIMING GEMS SOFTWARE IS  
28 SECURE**

29 During the "database lawsuit," *Democratic Party of Pima County v. Board of Supervisors*,  
30 Pima County Cause No. C20072073, the county's defense was based on the lack of security in the

1 databases produced by GEMS. They argued the data should not be released because the software was  
2 not capable of being secure. Christopher Straub represented the county. His opening statement  
3 explained clearly the county's position that the GEMS software was not secure.

4 "The databases themselves are not secured. We know that and we  
5 agree that they can be altered using Microsoft Access."

6 (Opening statement, Trial Transcript, Dec. 4, 2007, Christopher Straub 36: 18-20, Exhibit 2,  
7 attached)

8 "Because it can be easily manipulated, the bottom line is in this whole  
9 thing is we're only going to catch stupid people, all right, because one could  
also alter the audit logs. One could do anything."

10 (Opening Statement, Trial Transcript 39: 21-24)

11 "Judge, this case is not about what should happen with respect to the  
12 machines that we have or anything because those same experts will tell you  
13 right now there is no commercially available machine that is certified, no  
commercially available machine and software that is certified for use in  
Arizona that does not have some of these computer security flaws."

14 (Opening Statement, Trial Transcript 43: 22-25, 44: 1-2)

15 In view of the clear admissions by Pima County through its lawyers in C20072073, the  
16 county is estopped from arguing otherwise in this case.

### 17 **III. DAVID JEFFERSON DECLARATION AND CALIFORNIA STUDY**

18 Exhibit 3, attached, is an affidavit from David Jefferson, a nationally-known and recognized  
19 expert on computers and election systems. This declaration is part of the court file in C20072073.  
20 Exhibit 4 is the California study he refers to.

21 15. As a preamble, it is my professional opinion that the GEMS  
22 election management system (and also similar products from competing  
23 vendors) are full of security vulnerabilities of all kinds. The security  
24 mechanisms that are there are generally incorrectly implemented, or seriously  
25 incomplete, or easily circumvented, and in general hopelessly inadequate to  
26 prevent manipulation of ballot records or vote totals by anyone with even a  
very short period of access to the system. The opinion is based on two very  
thorough reviews of those systems published this year. The first was done by  
world class computer scientists led by computer science Prof. David Wagner  
of U.C. Berkeley and Prof. Matt Bishop of U.C. Davis and published a few  
months ago by California Secretary of State Debra Bowen in her "Top to

1 Bottom Review” of California voting systems. (See  
2 [http://www.sos.ca.gov/elections/elections\\_vsr.htm](http://www.sos.ca.gov/elections/elections_vsr.htm).) The other was a similar  
3 thorough review under the name EVEREST by an equally distinguished  
4 scientific panel under the auspices of Ohio Secretary of State Jennifer  
5 Brunner and led by Penn State computer science Prof. Patrick McDaniel. (See  
6 <http://www.sos.state.oh.us/sos/info/everest.aspx>.) Several other less  
7 comprehensive and less authoritative reports reached similar conclusions  
8 earlier.

9 The Executive Summary of the Source Code Review of the Diebold Voting System prepared  
10 for the California Secretary of State as part of a “top-to-bottom” review succinctly states conclusions  
11 that confirm the opinions of the experts that are advising the Democratic Party.

12 Our analysis shows that the technological controls in the Diebold software do  
13 not provide sufficient security to guarantee a trustworthy election. The  
14 software contains serious design flaws that have led directly to specific  
15 vulnerabilities that attackers could exploit to affect election outcomes. These  
16 vulnerabilities include:

17 • **Vulnerability to malicious software**

18 The Diebold software contains vulnerabilities that  
19 could allow an attacker to install malicious software  
20 on voting machines or on the election management  
21 system. Malicious software could cause votes to be  
22 recorded incorrectly or to be miscounted, possibly  
23 altering election results. It could also prevent voting  
24 machines from accepting votes, potentially causing  
25 long lines or disenfranchising voters.

26 • **Susceptibility to viruses**

The Diebold system is susceptible to computer viruses  
that propagate from voting machine to voting machine  
and between voting machines and the election  
management system. A virus could allow an attacker  
who only had access to a few machines or memory  
cards, or possibly to only one, to spread malicious  
software to most, if not all, of a county's voting  
machines. Thus, large-scale election fraud in the  
Diebold system does not necessarily require physical  
access to a large number of voting machines.

• **Vulnerability to malicious insiders**

The Diebold system lacks adequate controls to ensure  
that county workers with access to the GEMS central  
election management system do not exceed their  
authority. Anyone with access to a county's GEMS  
server could tamper with ballot definitions or election  
results and could also introduce malicious software

1 into the GEMS server itself or into the county's voting  
2 machines.

3 **IV. ELECTION CHEATING CAN ALMOST NEVER BE DETECTED WITHIN FIVE**  
4 **DAYS**

5 The iBeta report released by the Attorney General said they found evidence of manipulation  
6 in the RTA database but they discounted it because it is so easy to cover one's tracks using GEMS.  
7 Joseph Kanefield confirmed our reading of their conclusion.

8 Q. BY MR. RISNER: I understand what he's saying is – this guy – or  
9 iBeta is saying, look, it's so easy to erase the tracks of what you've done that  
10 we think even though we find evidence that might – one might conclude there  
11 was tampering, there probably wasn't, because anybody that had sufficient  
12 skill to tamper with it would have covered his tracks.

13 Isn't that kind of what he's saying?

14 MS. SHIPMAN: Objection, form, beyond the scope.

15 MR. KANEFIELD: I – yeah, I think that's what he's saying.

16 (Exhibit 1, Kanefield depo, 62: 6-17)

17 Thomas W. Ryan, Ph.D. has examined the RTA electronic database. His declaration is  
18 attached as Exhibit 5. Dr. Ryan has spent the past five years examining election integrity issues on  
19 behalf of the Democratic Party. He concludes that:

20 13. It is well established that the GEMS databases are vulnerable to  
21 software errors and can be manipulated using simple software applications  
22 or scripts.

23 ...

24 15. Detection of fraudulent manipulation or software errors in a  
25 GEMS database would most likely be difficult, if not impossible, depending  
26 on the nature of the manipulation or error.

16 16. Detection of errors, if possible, would require a thorough analysis  
17 of the sequence of database “snapshots”, looking for anomalous data either  
18 within a single database or, more likely, among the various snapshots.

19 17. Software tools are under development to detect logical  
20 inconsistencies but these tools are not yet fully automated and will probably  
21 never address all possible forms of manipulation or bugs.

22 18. Unless the manipulation or software errors are blatantly obvious,

1 it will take several weeks to fully analyze the database set for an election.

2 19. Discovery of manipulation or other errors in election databases  
3 would almost certainly take longer than the five-day contest period allowed  
4 under A.R.S. 16-673.

5 Michael a Duniho is a “master computer scientist” retired to Tucson from a career with the  
6 National Security Agency. His declaration is attached as Exhibit 6. He has worked with the  
7 Democratic Party's Election Integrity Committee since 2006 and was appointed by Supervisor Ray  
8 Carroll to the Pima County Election Integrity Commission where he serves along with Dr. Thomas  
9 Ryan, another appointed member.

10 Mr. Duniho confirms that manipulation of GEMS is generally undetectable:

11 It is important to understand that manipulation of the GEMS database  
12 is generally undetectable without comparing the database data with actual  
13 ballots and poll records. Such a comparison takes not a few days but rather  
14 a year or more of intense forensic analysis to compare every computer  
15 information record with every paper information record.

16 ...

17 The only way to confirm the integrity of a computer-counted election  
18 is to compare actual ballots with the data in the databases. In 2006, the  
19 Arizona legislature enacted changes to election law requiring a statistical  
20 hand count audit of elections in Arizona, and we have applied that new law  
21 to better confirm election integrity in Pima County.

22 ...

23 Because the GEMS system has no capability for publishing vote totals  
24 by early ballot scanning batch after the election is complete, the current  
25 process for hand counting randomly arriving early ballots is a jury-rigged  
26 effort that compares a batch of early ballots with a couple of vote total  
summary reports printed before and after the batch of ballots is scanned (4%  
of the early ballots are selected for possible audit and then 1% are actually  
hand counted). A computer operator bent on fraud always knows which early  
ballots will be hand counted before they are scanned and could easily  
manipulate the vote totals for the 96% of the early ballots that are guaranteed  
not to be hand counted.

24 **V. COMPUTER COUNTED BALLOTS CAN NEVER BE CHALLENGED UNDER**  
25 **ARIZONA LAW**

26 Pima County, the Republican Party and Beth Ford, Pima County Treasurer, claim that the

1 exclusive means of challenging any election is set out in A.R.S. § 16-671 et seq. A.R.S. § 16-673  
2 requires that an elector file a challenge “within five days after the completion of the canvass....”  
3 Furthermore, the election contest requires a court filing setting forth “the particular grounds of the  
4 contest.” The permissible grounds set out in A.R.S. § 16-672A as a practical matter can never be  
5 known within a five-day period, if at all.

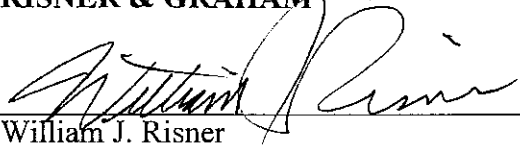
6 **VI. CONCLUSION**

7 The defendant Democratic Party has prepared this memorandum with attached declarations  
8 and exhibits to demonstrate relevant factual issues that must be considered by the court. It is our  
9 assertion that these simple facts are not in dispute.

10 The GEMS software contains well-known security holes that permit easy manipulation of  
11 election results by anyone with access to the election computer. The software further permits the easy  
12 deletion of evidence of manipulation. Finally, no one could detect such manipulation so as to file an  
13 election challenge within five days or at all.

14 DATED this 13<sup>th</sup> day of January 2009.

15 **RISNER & GRAHAM**

16 

17 William J. Risner  
18 Attorney for Defendant  
19 Democratic Party of Pima County

20 COPY of the foregoing delivered  
21 this 13<sup>th</sup> day of January 2009 to:

22 Hon. Charles Harrington  
23 PIMA COUNTY  
24 SUPERIOR COURT  
25 DIVISION 02  
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Tucson, Arizona 85701

1 **COPY** of the foregoing faxed (without exhibits) and  
2 delivered (with exhibits) this 13<sup>th</sup> day of January 2009 to:

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