

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

<b>DEMOCRATIC PARTY OF</b>	)	<b>CASE NO. 2007-2073</b>
<b>PIMA COUNTY</b>	)	
	)	
<b>Plaintiff</b>	)	
	)	<b>JUDGE MICHAEL MILLER</b>
<b>-VS-</b>	)	
	)	
<b>PIMA COUNTY BOARD OF</b>	)	<b><u>DECLARATION OF</u></b>
<b>SUPERVISORS</b>	)	<b><u>THOMAS RYAN, ESQ.</u></b>
	)	
<b>Defendants</b>	)	

I declare under penalty of perjury under the laws of the State of **Arizona** that the following be true and accurate:

1. I have ten years experience in the computer industry, focusing on the full life cycle of customized software design, development, testing, and deployment.
2. I have specialized training and certifications in the Java Programming Language and also hold certifications for Microsoft SQL Server.
3. I am currently working as a contractor to IBM where I analyze specialized software that is utilized by over a million users per day.
4. I am a published author in a peer-reviewed journal including an article entitled *GEMS Tabulation Database Design Issues in Relation to Voting Systems Certification Standards*, co-authored with Professor Candice Hoke, in which we examined the GEMS database architecture.
5. I have been a Technical Staff member of the Center for Election Integrity at Cleveland State University, with substantial work for the Public Monitor of Cuyahoga Election Reform project. In this capacity, I observed the GEMS database in operation on Election Day tabulations in November 2006. Also, as part of the Monitor's work for the Cuyahoga County Board of Election, I was requested to conduct a preliminary GEMS database review of the unofficial tabulations. The results of that initial database review were immediately provided to the Board Members and then published several

months later in the officially authorized Collaborative Public Audit report of the November 2006 election. I thus have a working knowledge of the architecture for the GEMS database.

6. For the California Secretary of State's "Top to Bottom Review" of Voting Systems, I was one of the technical staff members of the Diebold voting system Documentation review team.
7. I am a licensed attorney in the State of Ohio, registration number 0082755.
8. I have reviewed some of the testimony and rulings in this matter and have been asked to provide some additional information based upon my past education and experience. My understanding is that concerns have been raised that releasing copies of multiple database files will create an increased risk for potential hackers to compromise the Pima County Election process.
9. For the reasons stated below, I have concluded that a release of all the databases associated with a given election would not create an increased risk for a future election in Pima County to be compromised.
10. Further, for the reasons stated below, I have concluded the release of databases from previous elections in Pima County would not create an increased risk for a future election in Pima County to be compromised.

**ALL DATABASES WITHIN A GIVEN ELECTION:**

11. From the testimony, evidence, and rulings in this matter, it appears that there is a concern that releasing the series of election databases for a given election would compromise security of future elections. It has been suggested by the defense witnesses that allowing a series of election databases would give an individual a greater amount of data to be used to compromise the memory card authenticity check encryption scheme.
12. As stated by defense witness Merle King, the memory cards have an encryption scheme uniquely created for each election used to verify the authenticity of memory cards. This scheme places an encrypted code within the database to later identify the authenticity of the cards upon loading election results.
13. The key that is created and placed within the database does not fluctuate for a given election.
14. As correctly stated in the plaintiff's Motion to Amend Findings of Fact of Law, the only values that should change within the series of databases for a given

election, are vote totals and audit logs.

15. Because the encryption scheme for a given election is unique to the given election, placed into the database only once, and remains unchanged throughout the lifecycle of an election, allowing access to the series of database backups for a given election would not create an increased risk for a future election in Pima County to be compromised.

DATABASES FROM PREVIOUS ELECTIONS:

16. Defense witnesses have testified that the release of previous election databases would allow an increased amount of data that could be used to more effectively hack an election database.
17. According to the testimony of plaintiff witnesses, the database architecture for the current version of GEMS used in Pima County is already known due to releases of the GEMS database in other jurisdictions throughout the country.
18. If the previous elections were performed on version 1.18.24 of GEMS, releasing databases for previous elections would offer no more currently relevant information concerning the database architecture.
19. If the prior elections were performed on a previous version of GEMS, the database architecture information that would be gained would be outdated and of no use for future elections being performed on a version of GEMS 1.18.24 or later.
20. Because the current database architecture of GEMS 1.18.24 is known, and future elections in Pima County will be performed on GEMS 1.18.24 or a later version, releasing election databases based upon GEMS 1.18.24, or an earlier version, would not create an increased risk for a future election in Pima County to be compromised.

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