

SUPERIOR COURT OF CALIFORNIA
COUNTY OF SAN DIEGO - CENTRAL DIVISION
DEPARTMENT 73 HON. JOEL R. WOHLFEIL

CITIZENS OVERSIGHT INC., a Delaware)	
non-profit corporation; RAYMOND LUTZ,)	
an individual,)	
)	
Plaintiffs,)	
)	Case No.:
vs.)	37-2016-00020273-
)	CL-MC-CTL
MICHAEL VU, San Diego Registrar of)	
Voters; HELEN N. ROBBINS-MEYER,)	
San Diego County Chief Administrative)	
Officer; COUNTY OF SAN DIEGO, a)	
public entity; DOES 1-10,)	
)	
Defendants.)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS
October 11, 2016

Appearances:

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SAN DIEGO, CALIFORNIA

TUESDAY, OCTOBER 11, 2016; 9:20 A.M.

-oOo-

THE COURT: Okay. Is it Dr. Stark?

MR. GERACI: Doctor or professor.

THE COURT: Is he outside in the hallway?

MR. GERACI: He is.

THE COURT: Madam deputy, if you can retrieve Dr. Stark.

THE BAILIFF: Yes, your Honor.

THE COURT: Good morning, sir. If you could follow the directions of my deputy and clerk, please.

THE BAILIFF: Follow me.

MR. BARRY: Your Honor, I'm sorry, Ms. Karnavas is going to be doing the cross, so she'll be the person objecting, if appropriate.

THE COURT: That's fine. Okay. Anyway, please, madam deputy.

THE CLERK: Please raise your right hand. Do you solemnly state under penalty of perjury that the evidence you shall give in this matter shall be the truth, the whole truth and nothing but the truth?

THE WITNESS: I do.

THE CLERK: Please take the stand.

THE BAILIFF: Please have a seat and make sure you speak into the mic.

THE CLERK: Sir, please state your full name

1 and spell the last name for the record.

2 THE WITNESS: I'm sorry, I couldn't hear you.

3 THE CLERK: Please state your full name and
4 spell the last name for the record.

5 THE WITNESS: Philip Bradford Stark, S-t-a-r-k.

6 THE CLERK: Thank you.

7 THE COURT: One moment, Counsel. Okay.

8 Whenever you're ready.

9

10 DIRECT EXAMINATION

11 BY MR. GERACI:

12 Q. Good morning, Professor Stark. Do you prefer
13 professor or doctor?

14 A. I actually prefer Philip, but whatever makes
15 you feel fine.

16 Q. In court we'll call you Professor Stark.

17 A. Thank you.

18 Q. What's your occupation?

19 A. I'm a professor of statistics at the University
20 of California, Berkeley. I'm also currently serving as
21 associate dean of mathematical and physical sciences.

22 Q. And how long have you been so appointed?

23 A. I've been on the faculty of UC Berkeley since
24 1988. I've been associate dean -- this is my second
25 year as associate dean.

26 Q. What is your formal education and background?

27 A. I have a bachelor's degree in philosophy from
28 Princeton University. I have a Ph.D. in earth science

1 from UC San Diego. I was a post-op in statistics at
2 UC Berkeley before getting my faculty position.

3 Q. And what subjects do you teach at Berkeley?

4 A. Statistics.

5 Q. Solely statistics?

6 A. Yes.

7 Q. Ask you to take a look at Exhibit 53.

8 If I may approach, your Honor?

9 THE COURT: You bet.

10 BY MR. GERACI:

11 Q. If you can just take a quick look at
12 Exhibit 53, is that a true and correct copy of your
13 curriculum vitae?

14 A. As of August 26, yes, there has been a few
15 things since then, but yes, sir.

16 Q. I move to admit Exhibit 53.

17 THE COURT: Any objection?

18 MR. BARRY: No objection.

19 THE COURT: All right. Just give me one
20 moment, please. Actually, Counsel, it's in your binder.

21 MR. BARRY: Yes, I'm sorry.

22 THE COURT: All right. Exhibit 53 will be
23 admitted. Continue on, Counsel.

24 (Exhibit 53 was admitted into evidence.)

25 BY MR. GERACI:

26 Q. Do you hold any licenses or certificates?

27 A. I'm licensed as a professional statistician by
28 the American Statistical Association, and as a physicist

1 by the Institute of Physics.

2 **Q. And what are your professional associations?**

3 A. I belong to the Bernoulli Society, an institute
4 for mathematical statistics, the American Statistical
5 Association. Those are the primary professional
6 organizations. I'm also the Institute of Physics and
7 Royal Astronomical Society.

8 **Q. Have you received any awards?**

9 A. Yes, I was --

10 **Q. Academic awards I should ask?**

11 A. Sorry. Yes, I was a National Science
12 Foundation Postdoctoral Fellow in Mathematical Sciences.
13 I was a Presidential Young Investigator. Those are now
14 called presidential early career awards. Miller
15 Research Professor. I received the John Gideon Award
16 for Election Integrity, the Election Verification
17 Network. And I received the Chancellor's Award for
18 Research in the Public Interest, that's the UC Berkeley.

19 **Q. The Gideon Award was for election integrity?**

20 A. Yes.

21 **Q. What specifically did that entail?**

22 A. For my work in election audits.

23 **Q. Anything specifically identified?**

24 A. It might have called out my work on
25 risk-limiting audits in particular, but I don't recall.

26 **Q. Have you done research in or published in the
27 area of election integrity or election implementation?**

28 A. Yes, I have, a number of refereed articles and

1 then things in the popular press as well, lectures at
2 professional societies and workshops and everything from
3 political science to things more specifically,
4 elections, including talks for the California
5 Association of Clerks and Election Officials, talks for
6 IACREOT, which I will not be able to reconstruct,
7 International Association of Clerks, Recorders, Election
8 Officials and Treasurers.

9 **Q. Have you testified before, either in court or**
10 **before the legislature?**

11 A. Yes, sir, both.

12 **Q. Okay. On how many occasions have you testified**
13 **before the legislature on elections issues?**

14 A. If I recall correctly, I've testified three
15 times to the California Legislature on election issues.

16 **Q. What were the subjects of your testimony?**

17 A. Again, if I'm recalling correctly, the first
18 two were regarding AB 2023, which authorized pilot of
19 risk-limiting audits in California funded by the
20 elections commission. So I think if I'm recalling
21 correctly, it was one appearance in the assembly and one
22 in the senate.

23 And since then, I testified also regarding
24 AB44, which relates to recounts and the purchase of
25 election equipment by California jurisdictions in the
26 future as provision that they should be auditable using
27 the risk-limiting audit methods that I developed.

28 **Q. And when did you last testify in court**

1 **concerning election integrity?**

2 A. In court I've only testified once regarding an
3 election in California, which was contested election in
4 Marin County involving the Novato Sanitary District. I
5 don't recall the year of that. It was roughly 2011 or
6 '12. I could look at my CV and tell you. I've
7 submitted papers, you know, a report relating to
8 election integrity and New York State shortly after they
9 updated their voting systems to paper-based optical scan
10 voting systems, but I don't think I had any other
11 interception with the court's system regarding
12 elections.

13 Q. So you've been qualified to testify on the
14 issues of election implementation before?

15 MS. KARNAVAS: Objection. Mischaracterizes
16 testimony.

17 THE COURT: Overruled. You can answer the
18 question.

19 THE WITNESS: I'm not -- I was qualified as an
20 expert in the statistics relating to elections, but I'm
21 not sure whether that answers your question.

22 BY MR. GERACI:

23 Q. Yes. Thank you. Did you review any materials
24 in preparation for your testimony here today?

25 A. Yes, sir.

26 Q. Specifically, did you review the plaintiff's
27 second amended complaint?

28 A. Yes, sir.

1 **Q. And are you familiar with Elections Code**
2 **Section 336.5?**

3 A. Yes, sir.

4 **Q. And Election Code Section 15360, which is the**
5 **subject of the lawsuit?**

6 A. Yes, sir.

7 **Q. Are you aware of the changes that were made by**
8 **AB 985 effective January 1, 2012?**

9 A. Yes, sir, I actually contributed to the
10 language of that.

11 **Q. And what was that bill involving?**

12 A. It was intended to make it easier for local
13 election officials to conduct the 1 percent manual tally
14 by allowing them to separately audit batches of
15 vote-by-mail ballots rather than meeting to sort them by
16 precinct and incorporate them together with the ballots
17 that were cast in person and precinct.

18 **Q. Are you familiar with the legislative history**
19 **of SB 1235 which became law in 2007?**

20 A. I've read a document that was labeled
21 "legislative history" and contained much of it. I don't
22 know whether it was complete or not, but . . .

23 **Q. How have you professionally been involved in**
24 **California election processes?**

25 A. My first exposure was appointed to then
26 Secretary of State Debra Bowen's Post-Election Audit
27 Standards Working Group, which was part of her top to
28 bottom review of voting systems in California just after

1 she took office of Secretary of State. Then in -- after
2 my service there, I started to do research on how to
3 improve audits, and I partnered with several counties in
4 California to conduct risk-limiting audits. Those first
5 three counties were Marin County, Yolo County and Santa
6 Cruz County.

7 Then working -- I worked with the Secretary of
8 State around that time. Language for the PMT, post
9 election manual tally emergency regulation, worked for
10 the Secretary of State's office on the wording of
11 AB 2023 and on the grant proposal to The US Election
12 Assistance Commission that ultimately funded that.

13 Again, testified in support of the bill in both
14 houses of the California Legislature. Then worked for
15 the Secretary of State to conduct a number of pilot
16 risk-limiting audits and roughly a dozen California
17 counties ranging in size from Orange County down to, I
18 think Humboldt might have been the smallest participated
19 or maybe Madera participated in writing up the results,
20 and reports back to the legislature and to the Election
21 Assistance Commission. I think that's in addition to
22 the testimony regarding the contested election, that's
23 the main part of my intersection with California
24 elections. I've done work for other states as well.

25 **Q. What was Secretary of State Debra Bowen's top**
26 **to bottom review as you called it?**

27 A. She commissioned an extensive evaluation of the
28 voting systems that were in use in California to

1 determine whether they were reliable and secure. It was
2 subcontracted to several University of California
3 campuses, if I'm recalling correctly, it included Davis,
4 Berkeley and San Diego. There were a number of teams
5 that were either trying -- you know, examining the
6 source code for the voting systems to look for
7 vulnerabilities or trying to attack the systems blind
8 without looking at the source code, assessing what the
9 vulnerabilities were.

10 And in conjunction with that, she convened the
11 Post-Election Audit Standards Working Group in order to
12 look at how the audits were conducted in California and
13 elsewhere, and tried to figure out what best practices
14 were.

15 **Q. Did you have involvement in that top to bottom**
16 **review?**

17 A. Only through my involvement in the
18 Post-Election Audit Standards Working Group.

19 **Q. Okay. Have you interviewed Registrars of**
20 **Voters in California about the implementation of the**
21 **1 percent manual tally?**

22 A. Yes, I've probably spoken with ten or 15 -- I
23 mean, visited their offices and discussed with them how
24 they conduct the tally and how the paper flows through
25 their office and the process of the canvas. I might
26 have spoken with more informally at the CACEO or at
27 conferences, but actual visits and observing, it's been,
28 you know, on the border of a dozen.

1 **Q. Why did you discuss or interview these**
2 **Registrar of Voters, what was your purpose or intent?**

3 A. Well, to understand how their logistics work,
4 to try to figure out how they might be able to conduct
5 risk-limiting audits, whether the risk-limiting audits
6 would tend to be cost-saving for them. In many cases
7 the counties were part of the pilot, and so to
8 understand their paper flow, in order to make the
9 risk-limiting audits mate with what they were doing
10 without disrupting their ability to carry out their
11 regular functions in a timely way.

12 **Q. Is the 1 percent manual tally a particular type**
13 **of audit?**

14 A. Yes, it's like audits in general, it's a
15 quality control check on the election results and the
16 functioning of the equipment that was used to -- used in
17 the conduct of the canvas.

18 **Q. And you described your involvement with**
19 **risk-limiting audit. You're the creator of that**
20 **concept?**

21 A. Yes, sir, I invented it.

22 **Q. And it's -- as I understood your previous**
23 **testimony, it has been some pilot implementation of that**
24 **process?**

25 A. Yes, there has been risk-limiting audits in
26 roughly 13 counties in California, three or four
27 counties in Colorado, county in Ohio and in Denmark.

28 **Q. And again, what is the risk-limiting audit?**

1 A. Well, the basic idea is what an audit should
2 accomplish is to give you confidence when it is done
3 that the outcome of the contest that are under audit are
4 correct. So if going in, there is a contest with an
5 incorrect result, coming out of the audit that should
6 have been corrected. Generally by law, the only way to
7 correct an incorrect result is by a complete hand count.
8 So risk-limiting audits have some chance of leading to a
9 full hand count to set the record straight.

10 If the results were inaccurate in the sense
11 that the wrong people, the wrong individuals or
12 positions were deemed to have won, you can think of a
13 risk-limiting audit as an intelligent incremental
14 recount that stops the recount as soon as it comes very
15 clear that it's pointless, because the recount will just
16 confirm the winners that were already named.

17 **Q. So it's based on a statistical model that you**
18 **create?**

19 A. A number of them, but basic statistical
20 framework is we want to test the hypothesis that the
21 outcome is wrong. We keep collecting data until either
22 we can conclude that the outcome is correct or until
23 we've done a full hand count. The underlying theory
24 behind that has evolved in various ways, develop methods
25 that are suitable for different kinds of elections where
26 all the elections vote for, you know, several people,
27 like city council elections, elections that require a
28 super majority, proportional representation, a variety

1 of things like that.

2 And then also develop methods that are suitable
3 for working at the level of precincts, very, very
4 similarly to how the 1 percent manual tally is conducted
5 or methods that are more efficient statistically because
6 they look at smaller batches of ballots, for instance,
7 on the ability to check whether an individual ballot was
8 interpreted correctly by the voting system.

9 **Q. So how does the risk-limiting audits compare or**
10 **relate to the 1 percent manual tally process?**

11 A. Well, they both in broad-brush are after the
12 same thing, which is evidence that everything is okay,
13 that the outcome is correct and they both can pick up
14 various kinds of mistakes or errors in the process or
15 malfeasance in the process. The primary difference is
16 that the risk-limiting audit is really geared to
17 ensuring that the outcome is correct, and so it puts
18 more scrutiny on contests with narrow margins, because
19 the smaller amount of error could cause the answer to be
20 wrong and looks more strategically at the paper records
21 in order to be more efficient.

22 **Q. So in the contest where there is a wider margin**
23 **between candidates, for example, you might need a sample**
24 **of less than 1 percent to basically verify the election?**

25 A. Yes, the details will depend on what the risk
26 limit is, are you trying to certify things to 99 percent
27 confidence or 90 percent confidence or something lower.
28 It will depend on the margin and the contest. It will

1 depend on the nature of the batches that are available
2 for audit that's precinct-based. It generally requires
3 looking at more paper. But in general, what we found in
4 the California pilots was that the risk-limiting audits
5 would have been less expensive than the 1 percent manual
6 tally was. On the other hand, the workload is
7 unpredictable, because if errors are encountered in the
8 course of conducting the risk-limiting audit, then the
9 sample expands potentially leading to a full manual
10 count if enough errors is encountered.

11 So that could be substantially more expensive
12 than the 1 percent audit -- 1 percent manual tally but
13 has the benefit of actually breaking the outcome whereas
14 the 1 percent manual tally results in a report to the
15 Secretary of State's office but doesn't necessarily
16 report the outcome as well.

17 **Q. Does both the risk-limiting audits and the**
18 **1 percent manual tally both require a robust chain of**
19 **custody?**

20 A. If you don't have a robust chain of custody and
21 can't -- you don't have affirmative evidence that you
22 have all the ballots, that you have, you know, only the
23 ballots that were actually cast, nothing's been altered
24 or whatever, then the audit is more theater than it is
25 substantive. Auditing an unreliable record doesn't
26 produce a reliable result.

27 **Q. And conversely or additionally, does a risk**
28 **limiting audit and 1 percent manual tally require that**

1 **the individual ballots be available for inspection?**

2 A. Just as the 1 percent manual tally, you're
3 comparing a hand count or hand inspection of the paper
4 trail, generally paper ballots against an electronic
5 record. It does require physical access to individual
6 ballots.

7 **Q. Just so my notes are complete, where did you**
8 **say the pilot program for risk-limiting audit has been**
9 **tested, what counties?**

10 A. I won't be able to name them all off the top of
11 my head, but trying to start from the south, Orange, I
12 believe Santa Barbara, if I'm recalling correctly,
13 San Luis Obispo, Monterey, Santa Cruz, Alameda,
14 Stanislaus, Merced, Marin, Madera, Yolo, Humboldt, and I
15 probably left out one or two.

16 **Q. That's fine, thank you. By the way, have you**
17 **been retained to testify here today?**

18 A. No, I have not.

19 **Q. You are not receiving any compensation from any**
20 **party for your testimony today?**

21 A. I'm expecting to be reimbursed for my travel
22 expenses but no compensation.

23 **Q. Okay. The court's probably curious then, why**
24 **are you down here from Berkeley to testify?**

25 **MS. KARNAVAS: Objection. Relevance.**

26 **THE COURT: Overruled.**

27 **THE WITNESS: If the allegations in the second**
28 **amended complaint are correct, then I think the**

1 integrity of the 1 percent manual tally has been really
2 compromised, and I'm interested in promoting election
3 integrity however I can. This is an area that is very
4 much of interest to me personally and professionally.
5 So if there is an opportunity to help, I'm happy to.

6 BY MR. GERACI:

7 Q. Since we are here today to talk about the
8 1 percent manual tally, let me focus you on that. What
9 errors can be detected during the 1 percent manual tally
10 process?

11 THE COURT: One moment, Counsel.

12 MR. GERACI: Yes, your Honor.

13 THE COURT: Excuse me, Professor Stark, let me
14 catch up here. All right. Please continue.

15 You might, Counsel, have to restate the
16 question.

17 BY MR. GERACI:

18 Q. What errors can be detected during the
19 1 percent manual tally process?

20 A. A variety of kinds of errors can be detected
21 ranging from problems with the chain of custody, for
22 instance, if the electronic record doesn't include some
23 batch of ballots that should have been included, or
24 conversely, you know, if the paper can't be found, the
25 correspondence to some electronic results, mechanical
26 issues, mispicks, misfeeds, double picks, things like
27 that, in the scanners, if it's a scanner-based system.

28 Some kinds of ballot programming errors or

1 ballot definition errors, for instance, if accidentally
2 when the equipment was configured two candidate names or
3 contests were swapped, calibration errors in the
4 scanners, problems with the scanners picking up paper
5 that's not the length that's expected, various kinds of
6 voter errors, voters mismarking ballots or in a way that
7 the equipment can't pick up reliably, that can be as odd
8 as voters marking ballots using gel pens which have a
9 kind of ink that scanners don't pick up or didn't pick
10 up historically. It can pick up some kinds of hacking.

11 It can pick up -- basically, if the audit trail
12 itself is reliable, if there is good -- if there has
13 been good physical chain of custody, it can pick up
14 anything that would have affected the outcome. The
15 chance that it picks it up depends on how widespread the
16 problem is, whether it's concentrated to some subset of
17 ballots and not limited, spread out throughout all the
18 ballots of the election.

19 **Q. How about misfeasance or malfeasance of**
20 **employees?**

21 A. Some kinds, yes, for instance, hacking, whether
22 that's inside or outside or hacking of the tabulation
23 system or the voting machines themselves.

24 **Q. Or a general compromise to the central**
25 **tabulating system?**

26 A. Yes.

27 **MS. KARNAVAS: Objection. Lacks foundation.**

28 **THE COURT: Overruled.**

1 THE WITNESS: I'm sorry, yes.

2 THE COURT: He answered the question.

3 BY MR. GERACI:

4 Q. He said yes? I'm sorry, I didn't hear you.

5 Are you familiar with the 1 percent manual
6 tally once errors are detected, are they corrected in
7 the system?

8 A. In general, there is not a requirement to
9 correct them in the system. There is a requirement to
10 report to the Secretary of State what discrepancies were
11 found and how they were resolved, but for example, if
12 the 1 percent manual tally turned up the fact that two
13 contests had been swapped in the programming, it doesn't
14 specifically require the local election official to
15 correct that and retabulate. On the other hand, I
16 imagine there would be public outcry if he or she
17 didn't.

18 Q. From a statistical standpoint, is the batch
19 method for conducting the 1 percent manual tally on mail
20 ballots as good as or better than or equal to the pure
21 precinct method?

22 MS. KARNAVAS: Objection. Lacks foundation.

23 BY MR. GERACI:

24 Q. If you have an opinion?

25 A. So I --

26 THE COURT: One moment, Professor Stark. Let
27 me see counsel at sidebar for just a moment.

28 (Off the record discussion at sidebar.)

1 **THE COURT:** All right. Thank you very much,
2 Counsel. The objection will be sustained at this point.
3 Let's back up and lay a little extra foundation,
4 Counsel.

5 **BY MR. GERACI:**

6 **Q.** Professor Stark, could you explain to the Court
7 the difference between the precinct method and the
8 batching method for conducting the 1 percent manual
9 tally on vote by mail?

10 **A.** I understand you to be referring to the change
11 to the Election Code that came forthwith, 985, is that
12 what you're referring to?

13 **Q.** Yes.

14 **A.** So what that -- the two options that are
15 available are to draw 1 percent of precincts or
16 precincts corresponding to 1 percent of the vote at
17 random and compare the manual tally of those votes to
18 the electronic results or to draw two samples, one of
19 those ballots that were cast physically in the precinct
20 and another of ballots that were cast by mail, not
21 necessarily organized by precinct.

22 That has a number of logistical and statistical
23 advantages. The statistical advantage is because you
24 end up looking at twice as many samples, the audit has
25 more power -- power is a term of art here, has more
26 statistical power to find errors, if errors exist.

27 The logistical advantage for some jurisdictions
28 is that if they don't sort their vote-by-mail ballots by

1 precinct in the ordinary course of conducting the
2 canvas, they don't have to do that sorting for the
3 purpose of the 1 percent manual tally. Instead if they
4 are able to generate batch reports for individual
5 batches as scanned, they can check the electronic
6 results for those batches against the manual tally of
7 the votes that were in that scan batch.

8 **Q. When is it important to actually begin the**
9 **1 percent manual tally relative to the official canvas**
10 **process?**

11 A. I'm sorry, when is it important?

12 **Q. When is it important to conduct the random**
13 **selection?**

14 A. Oh, you shouldn't draw the random sample from
15 any collection of results that are not final but for the
16 audit. So there should basically be an all but
17 certified statement of votes counted for. I should be
18 careful with that, it's a term of art. But sort of
19 tally for the batches from which the sample is to be
20 drawn.

21 So if the results are going to be drawn in a
22 precinct-based way, then the results need to be final
23 for every precinct before you draw the sample. If you
24 are drawing separate samples from vote by mail and
25 ballots cast in person, you could, for example, start to
26 draw the sample of the vote-by-mail ballots before the
27 ballots cast in person have been completely tabulated
28 provided the vote-by-mail ballots have been completely

1 tabulated.

2 Q. You've heard testimony that here in San Diego
3 they used a GEMS report to determine which batches
4 contain ballots from precincts to be reviewed in the
5 1 percent manual tally?

6 A. Yes.

7 Q. And to perform a precinct-based 1 percent
8 manual tally, they had to pull ballots from the decks or
9 batches by hand. Does that method comply with the
10 1 percent manual tally?

11 MS. KARNAVAS: Objection. Lacks foundation.

12 THE COURT: One moment.

13 MS. KARNAVAS: Relevance. Also calls for a
14 legal conclusion potentially.

15 MR. GERACI: I could rephrase the question.

16 THE COURT: One moment, Counselor. Just give
17 me one moment, Counselor.

18 MR. GERACI: Yes, your Honor.

19 THE COURT: The objection is overruled. Madam
20 Reporter, may I ask you to reread the question.

21 (The question was read by the reporter.)

22 THE WITNESS: So forgive me, your Honor, but I
23 actually do think it's asking me to interpret the law,
24 and I'm reluctant to do that, but I don't believe that
25 the Election Code specifically says not to do that, I
26 don't think the election --

27 THE COURT: Let me stop you. Now, as the
28 answer is unfolding, not the prefatory comment but his

1 reference to the Election Code, the objection on calls
2 for a legal conclusion will be sustained.

3 MR. GERACI: That's fine, your Honor. Thank
4 you.

5 BY MR. GERACI:

6 Q. What I wanted to know is from a statistical
7 point of view, does this method comply with statistical
8 reference?

9 A. So from a statistical point of view, conducting
10 the 1 percent manual tally that way actually undermines
11 the point of doing the tally, which is to have an
12 independent check of whether the voting system and
13 tabulation system function correctly. If you pull the
14 ballots that way, you're relying on the election systems
15 electronic results to tell you how many ballots you have
16 of a given style and a given batch.

17 The ways of conducting the manual tally -- so
18 you basically have to trust the system to have an
19 accurate record in the first place, which you're then
20 double-checking, whereas -- there are two ways of
21 conducting the tally that would still provide an
22 independent check on the integrity of the voting system.
23 One would be to sort all of the vote-by-mail ballots
24 into precincts so that you have an independent physical
25 tally of how many ballots there are of each ballot
26 style, and then combine them with those that were cast
27 in person, or alternatively, to use the batches as they
28 were scanned, the scanned batches as they came in.

1 So it does -- it requires reliance on the
2 voting system accuracy of the voting system results in
3 exactly the way the audit is supposed to be checking the
4 accuracy of the results.

5 **Q.** Do you have an understanding of how the
6 registrar in San Diego draws the sample, the random draw
7 using ping-pong balls and picking precincts and batches
8 in that method?

9 **MS. KARNAVAS:** Objection. Leading.

10 **THE COURT:** One moment, sir. In part it may
11 be, but it's foundational in nature. The question calls
12 for a yes-or-no answer only.

13 Madam Reporter, can you reread the question,
14 please.

15 (The question was read by the reporter.)

16 **THE WITNESS:** Yes, I read a description of the
17 method that was attached to the second amended
18 complaint. I understand that to be the method that
19 San Diego currently uses.

20 **BY MR. GERACI:**

21 **Q.** What is your understanding?

22 **A.** My understanding is that it involves four
23 groups of ping-pong balls, three groups numbered zero
24 through nine, and one group numbered zero and one. And
25 that the procedure is to -- first, they are designated
26 as these -- the first group of balls corresponds to the
27 ones digit in a random number, the second to the tens,
28 the third to the hundreds and the fourth to the

1 thousands.

2 My understanding is that there is approximately
3 1,684 precincts in San Diego County, and that the
4 procedure is to first draw a ball at random from the
5 ones digit then the tens then the hundreds. If the
6 resulting number is bigger than -- is less than
7 680-something, whatever that number is, then the
8 thousands digit is drawn, otherwise the precinct with
9 that number that's just represented by the first three
10 digits is selected.

11 Q. Is that procedure statistically flawed?

12 MS. KARNAVAS: Objection. Lacks foundation.
13 Also relevance. There is no allegation in this case
14 pertaining to the draw.

15 THE COURT: Overruled. Overruled.

16 THE WITNESS: That procedure has the
17 consequence that precincts that are numbered
18 680-something to 999 are twice as likely to be selected
19 as other precincts. My understanding is that the intent
20 of the 1 percent manual tally --

21 MS. KARNAVAS: Objection, your Honor, about to
22 opine -- about to give a legal opinion. Move to strike.
23 He just said his intent -- his understanding of the
24 intent of the 1 percent manual tally.

25 THE COURT: All right. The Court was not
26 hearing nor understanding this to fall within the area
27 of legal opinion but instead from a statistical
28 perspective Professor Stark was expressing his view.

1 Now, you did use the word "intent." That may suggest
2 that you're trying to express a legal opinion. Did you
3 want to refrain -- or rephrase your answer, Mr. Stark?

4 THE WITNESS: I get that impression from
5 reading the legislative history.

6 THE COURT: All right. Well, Madam Reporter,
7 let's reread the question and the beginning of Professor
8 Stark's answer, and what I'm going to ask you to do is
9 just limit the focus of your testimony to -- your
10 qualifications are that of a statistician. I want to
11 hear what you've got to say from a statistical
12 perspective. I don't want nor care for you to express
13 your legal opinion. So with that in mind -- and I'm not
14 being critical of that, so please understand, but to
15 that extent, defense counsel's objection is well taken.

16 So Madam Reporter, may I ask you to reread the
17 last question and the beginning of Professor Stark's
18 answer, and if you haven't finished, feel free to do so.
19 If you have, move on to the next question.

20 (The record was read by the reporter.)

21 THE COURT: All right. Did you finish your
22 answer, Mr. Stark?

23 THE WITNESS: I would like to continue, if I
24 may.

25 THE COURT: All right. Feel free.

26 THE WITNESS: The Elections Code says selected
27 at random, using a random number generator or other
28 method approved by the Secretary of State to regulation

1 or something to that effect.

2 MS. KARNAVAS: Your Honor, the witness is
3 struggling because he is about to opine what the
4 intent --

5 THE COURT: Well, counsel, what's your
6 evidentiary objection?

7 MS. KARNAVAS: Calls for a legal conclusion.

8 THE COURT: That objection is overruled.
9 There's nothing inappropriate by anybody referring to
10 the Elections Code. Mr. Vu did it countless numbers of
11 times, and the Court gave him wide latitude to express
12 his views. The Court intends to give the other side's
13 expert just as much latitude.

14 So, again, I've admonished the witness who is
15 clearly qualified to understand the meaning between
16 giving an opinion on legal opinion or not, so with that
17 in mind, continue on, Professor Stark.

18 THE WITNESS: Yes, sir. The code doesn't
19 specify the probabilities that should be used in the
20 legislative history. There is language that says
21 equally likely or equal chance of selecting each
22 precinct or something to that effect. That doesn't
23 appear in the final law.

24 MS. KARNAVAS: Your Honor, again, move to
25 strike. He is now testifying --

26 THE COURT: Counsel, what is your evidentiary
27 objection?

28 MS. KARNAVAS: Lacks foundation. Is testifying

1 based on --

2 THE COURT: Overruled. The objection is
3 overruled.

4 THE WITNESS: So the statistical consequence of
5 this is that different precincts get different levels of
6 scrutiny. If I wanted to alter the results of the
7 election, I as a black hat would know that there were
8 some precincts that I could alter the results of with a
9 smaller probability of being -- of that alteration being
10 discovered.

11 BY MR. GERACI:

12 Q. Are you familiar with provisional ballots, what
13 provisional ballots are?

14 A. Yes, sir.

15 Q. What's your understanding?

16 A. They are ballots where it has not yet been
17 established whether the person who seeks to cast the
18 ballot is entitled to cast a ballot of that style or
19 ballot period.

20 Q. From a statistical standpoint, is it proper to
21 conduct the 1 percent manual tally before you verified
22 and included the verified provisional ballots in the
23 pool or sample?

24 A. To omit any ballots that are contributing --
25 that ultimately will contribute to the outcome of the
26 contest from scrutiny impairs the ability of the
27 1 percent manual tally to find problems. An analogy
28 would be it's like performing a final safety inspection

1 on an automobile before the rear brakes have been
2 installed. You can do it, but you're leaving something
3 out.

4 **Q. That would be the same case if you've left out**
5 **some part of the vote-by-mail ballots?**

6 A. Yes, sir, would not be a check of the election,
7 it would be a check of part of the election.

8 **Q. What is a frame bias?**

9 A. In sampling, usually there is a population that
10 one would like to study and often if there is -- let me
11 start over again. In trying to learn something about a
12 population from a random sample, typically the name for
13 the collection of things from which the sample is drawn
14 is called the frame. The frame is not always identical
15 to the population that one wishes to study. When they
16 are not identical, there can be bias as a result of the
17 mismatch between the frame and the population.

18 This can happen in sampling humans, it can
19 happen in sampling objects. If the goal is to learn
20 about all of the ballots that were cast in an election,
21 that's the population, if one draws the sample only from
22 ballots that were cast in precinct or ballots that were
23 cast in precinct and vote-by-mail ballots that had been
24 processed as of a certain date but not the end of the
25 canvas, then the frame is not the same as the
26 population, and in general, there is sampling -- there
27 is frame bias as a result of that.

28 **Q. And does that make the 1 percent manual tally**

1 if it's done without conducting it on a hundred percent
2 of the population, does that create a frame bias?

3 A. Yes, sir.

4 Q. Nothing further.

5 (End of portion.)

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REPORTER'S CERTIFICATE

COUNTY OF SAN DIEGO,)
STATE OF CALIFORNIA,)

I, Kristy A. Montalban, Certified Shorthand Reporter licensed in the State of California, License No. 13551, hereby certify that the foregoing proceeding was reported by me and was thereafter transcribed with Computer-Aided Transcription; that the foregoing is a full, complete, and true record of said proceeding.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named or in any way interested in the outcome of the cause in said caption.

In witness whereof, I have hereunto set my hand this day:

Kristy A. Montalban
CSR No. 13551

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