

EXHIBIT A

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
OAKLAND DIVISION

ORACLE CORPORATION, a)
Delaware corporation,)
ORACLE USA, INC., a)
Colorado corporation, and)
ORACLE INTERNATIONAL)
CORPORATION, a California)
corporation,)
)
Plaintiffs,)
)
vs.) No. 07-CV-1658 (PJH)
)
SAP AG, a German)
corporation, SAP AMERICA,)
INC., a Delaware)
corporation, TOMORROWNOW,)
INC., a Texas corporation,)
and DOES 1-50, inclusive,)
)
Defendants.)
_____)

VIDEOTAPED DEPOSITION OF

BRUCE SPENCER, PH.D.

FRIDAY, JUNE 4, 2010

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

REPORTED BY: HOLLY THUMAN, CSR No. 6834, RMR, CRR

(1-427339)

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11:25:21 15 Q. So then how can you say this is a large
11:25:24 16 margin of error?

11:25:35 17 A. In the statistics that I do, having a 25
11:25:39 18 percent error in what you're trying to measure
11:25:43 19 tends to be a large error. Usually we try to get
11:25:46 20 more precision than that, in my experience.

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11:29:21 6 MR. PICKETT: Q. Do you understand that

11:29:22 7 there is a burden of proof in the trial?

11:29:27 8 MR. WILKES: Objection. Form.

11:29:29 9 THE WITNESS: I would expect that there
11:29:30 10 is, yes.

11:29:31 11 MR. PICKETT: Q. Do you know what that
11:29:32 12 burden of proof is?

11:29:34 13 MR. WILKES: Objection. Form.

11:29:35 14 THE WITNESS: Not exactly.

11:29:36 15 MR. PICKETT: Q. Do you know what
11:29:38 16 confidence level the jury must have in order to
11:29:41 17 make a determination in the case?

11:29:42 18 MR. WILKES: Objection. Form.

11:29:43 19 THE WITNESS: Not exactly.

11:29:44 20 MR. PICKETT: Q. Do you have any
11:29:45 21 information on that?

11:29:46 22 MR. WILKES: Objection. Form.

11:29:48 23 THE WITNESS: Well, I would ask an expert
11:29:51 24 before I wanted to trust my own judgment on that.

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11:31:14 8 MR. PICKETT: Q. If I demonstrate
11:31:16 9 statistically that something has a confidence level
11:31:18 10 of 90 percent --
11:31:20 11 A. Yes.
11:31:20 12 Q. -- you would agree that it's more probably
11:31:22 13 true than not?
11:31:24 14 MR. WILKES: Same objections.
11:31:25 15 THE WITNESS: I would not agree.
11:31:27 16 MR. PICKETT: Q. Why not?
11:31:28 17 A. Based on what you told me, there's no
11:31:30 18 reason for believing that.
11:31:31 19 Q. Well, tell me why. That's not a reason.
11:31:34 20 That's just a repeat -- repetition of your opinion.
11:31:37 21 A. I can always come up with a 90 percent
11:31:39 22 confidence interval if I have any data.

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11:33:13 11 Q. What does a 90 percent confidence interval
11:33:15 12 mean to you, Dr. Spencer?
11:33:16 13 A. A 90 percent confidence interval is a
11:33:18 14 random interval constructed so that with 90 percent
11:33:23 15 probability, or for 90 percent of the possible
11:33:27 16 samples, your interval will include the value that
11:33:32 17 you're interested in.

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12:12:29 2 Q. Well, what does a 51 percent confidence
12:12:31 3 interval mean?

12:12:34 4 A. Well, it means that you've constructed
12:12:38 5 it -- it means to me that you've constructed it in
12:12:42 6 order that it have 51 percent probability of
12:12:48 7 covering the population value under repeated
12:12:51 8 sampling. That's what it means to me.

12:12:54 9 But that you intend it to be so and that
12:12:57 10 it is so are two different things.

12:13:03 11 Q. So if you properly do the sampling --

12:13:09 12 A. Right.

12:13:09 13 Q. -- and analyze it properly --

12:13:11 14 A. Right. Right.

12:13:13 15 Q. -- then you've constructed an analysis
12:13:19 16 that will, on repeated samples, have the value of
12:13:27 17 interest within the bounds, within the bounds of
12:13:30 18 the range 51 percent of the time -- at least 51
12:13:33 19 percent of the time. Right?

12:13:35 20 A. No.

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12:29:15 1 Q. Let's go back to your report, please.

12:29:28 2 I want to go to the sampling with
12:29:30 3 replacement versus sampling without replacement
12:29:34 4 issue.

12:29:40 5 Your position is that sampling without
12:29:43 6 replacement is preferable to sampling with
12:29:47 7 replacement?

12:29:49 8 A. Correct.

12:29:50 9 Q. But isn't it the case that sampling with
12:29:52 10 replacement is an acceptable method of sampling
12:29:57 11 under sampling theory?

12:30:12 12 A. It can be used. It's often not the best
12:30:15 13 thing to use, but it -- yes, it can be used.

12:30:18 14 Q. And you've described it in your own
12:30:24 15 literature as an option. Right?

12:30:33 16 A. I don't know. I sometimes use theory for
12:30:37 17 sampling with replacement when I have sampling with
12:30:40 18 unequal probabilities. I'm not sure that I've used
12:30:45 19 it as a way of sampling populations where we sample
12:30:50 20 them with replacement. That's -- I'm not
12:30:53 21 recollecting that.

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12:33:34 16 Q. And do you have any evidence that he was
12:33:35 17 lying when he so testified?
12:33:37 18 MR. WILKES: Objection. Form.
12:33:40 19 THE WITNESS: I have no evidence that he
12:33:43 20 was lying, and I've never stated that he was lying.

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14:03:37 18 Q. Is your z statistic analysis a hypothesis
14:03:43 19 test?
14:03:48 20 A. I haven't set it up that way.
14:03:53 21 Q. Well, isn't the hypothesis you're testing
14:03:56 22 that Dr. Levy did not perform a random sampling of
14:03:58 23 the Critical Support population?
14:04:03 24 A. I just said I didn't set it up as a
14:04:05 25 hypothesis test.

14:04:06 1 Q. Isn't that your hypothesis that you're
14:04:09 2 trying to test, whether you set it up that way or
14:04:11 3 not? Isn't that what you did?
14:04:12 4 MR. WILKES: Objection. Form.
14:04:14 5 THE WITNESS: I'm not doing a formal
14:04:16 6 hypothesis test in this analysis.
14:04:18 7 MR. PICKETT: Q. Are you doing an
14:04:19 8 informal one?
14:04:19 9 A. No.

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15:14:30 2 Q. Does it impact the confidence interval for
15:14:33 3 the sampled measures?

15:14:36 4 A. The underlying skewness, I believe, will
15:14:40 5 affect the coverage properties of the confidence
15:14:43 6 intervals for the sampled measures, yes.

15:14:46 7 Q. How?

15:14:49 8 A. When you have large skewness, it appears
15:14:53 9 that the coverage will tend to be lower than the
15:14:58 10 advertised rate.

15:14:59 11 Q. Large skewness in the fully enumerated
15:15:02 12 samples?

15:15:03 13 MR. WILKES: Objection. Form. Vague and
15:15:04 14 ambiguous, asked and answered --

15:15:06 15 MR. PICKETT: Q. What did you mean when
15:15:07 16 you said, when you tend to have -- I'm sorry, when
15:15:09 17 you have large skewness? Did you mean large
15:15:12 18 skewness in the fully enumerated samples?

15:15:15 19 A. I -- I meant large skewness with the
15:15:21 20 variable for which you're calculating a confidence
15:15:24 21 interval, whether it's fully enumerated or sampled.

15:15:31 22 Q. How does skewness in one measure affect
15:15:33 23 the confidence interval of another measure?

15:15:39 24 A. Directly, it does not.

15:15:41 25 Q. Well, how does it, then?

15:15:46 1 MR. WILKES: Objection. Form.

15:15:48 2 THE WITNESS: Can you state the question
15:15:50 3 more fully? I'm not understanding the reference of
15:15:53 4 "it."

15:15:55 5 MR. PICKETT: Q. Well, is it the case
15:15:56 6 that skewness in one measure does not affect the
15:15:58 7 confidence interval of another measure?

15:16:07 8 A. That's right. We calculate the confidence
15:16:08 9 interval one measure at a time. Finding that
15:16:15 10 skewness is a problem for some measures where we
15:16:18 11 can test it gives us insight that it's also a
15:16:21 12 problem for measures where we can't directly test
15:16:24 13 the coverage of the confidence intervals.

15:16:27 14 Q. So you're assuming some kind of
15:16:29 15 relationship between the samples?

15:16:30 16 A. There's an established mathematical
15:16:32 17 relationship between coverage and skewness. And
15:16:36 18 here, we had opportunity, we had data, we had
15:16:40 19 measures that Mandiant had fully enumerated the --
15:16:45 20 we had some measures that were fully enumerated, so
15:16:49 21 we could actually test empirically what the
15:16:52 22 coverage was and was the skewness associated with
15:16:59 23 problematic coverage.

15:17:01 24 Q. So is it your testimony that there's an
15:17:02 25 established mathematical relationship between

15:17:04 1 coverage and skewness across measures?

15:17:09 2 A. That's not what I said.

15:17:10 3 Q. Well, I asked you in my question you're
15:17:14 4 responding to, I said, you're assuming some kind of
15:17:16 5 relationship between the samples.

15:17:17 6 So I'm asking you to look at a
15:17:18 7 relationship between one sample and the other. And
15:17:20 8 you testified that there was an established
15:17:21 9 mathematical relationships between coverage and
15:17:24 10 skewness.

15:17:25 11 Is that across measures or isolated to a
15:17:27 12 single measure?

15:17:28 13 MR. WILKES: Objection. Form.
15:17:29 14 Argumentative, vague and ambiguous. Compound,
15:17:32 15 asked and answered. Misquotes the testimony.

15:17:36 16 THE WITNESS: The skewness for one measure
15:17:39 17 is what directly affects the coverage rate of the
15:17:42 18 confidence interval for that measure. And once you
15:17:45 19 take that into account, the skewness for another
15:17:48 20 measure doesn't matter.

15:17:51 21 MR. PICKETT: Q. So it's not across the
15:17:52 22 measures?

15:17:53 23 MR. WILKES: Objection. Form. Asked and
15:17:55 24 answered.

15:17:56 25 THE WITNESS: The skewness for one

15:17:57 1 variable doesn't affect the coverage rate of the
15:18:05 2 skewness for another variable, except to the extent
15:18:08 3 that they're correlated, and that the skewness
15:18:12 4 measures for the two variables tend to be related
15:18:14 5 to each other.

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15:30:02 11 Q. On the next page of your report, in
15:30:04 12 paragraph 6.34, at the very end of the page, you
15:30:18 13 state:
15:30:19 14 This point applies with particular force
15:30:20 15 to his confidence intervals for measures
15:30:23 16 available only for his sample, because their
15:30:26 17 coverage rates could be much less than the 90
15:30:28 18 percent that Dr. Levy claims.
15:30:31 19 A. I see that statement.
15:30:33 20 Q. What did you mean by that statement?
15:30:39 21 A. I'll have to read the paragraph.
15:30:40 22 (Examining document.)
15:31:17 23 So I say:
15:31:18 24 Using the Student's t distribution does
15:31:20 25 not solve the larger problem, which is that

15:31:22 1 for some measures, his confidence intervals
15:31:24 2 can have coverage rates that are much poorer
15:31:28 3 than what Dr. Levy claims. This point
15:31:31 4 applies with particular force to his
15:31:33 5 confidence intervals for the measures
15:31:35 6 available only for his sample, because their
15:31:39 7 coverage rates could be much less than the 90
15:31:41 8 percent that Dr. Levy claims.

15:31:47 9 Yeah. So I don't know why I said this
15:31:54 10 point applies with particular force, because these
15:31:56 11 are the confidence intervals that we're most
15:32:00 12 interested in. Or these are the ones that we are
15:32:02 13 interested in. The ones available for the sample
15:32:04 14 only measures.

15:32:08 15 So -- but the point applies there that
15:32:14 16 having seen that for the population measures, many
15:32:18 17 of the coverage rates are less than 90 percent, and
15:32:21 18 sometimes considerably less than 90 percent, the
15:32:24 19 same may hold for the sampled measures as well,
15:32:27 20 even though we can't directly verify that.

15:32:32 21 Q. Right. May hold, but you don't know one
15:32:34 22 way or the other. Right?

15:32:38 23 MR. WILKES: Objection. Form.

15:32:41 24 THE WITNESS: Well, we have -- we have
15:32:44 25 some related evidence such as Exhibit 3100.

15:32:51 1 MR. PICKETT: Q. Well, what did --

15:32:52 2 A. Indicating that for some of them, the

15:32:54 3 coverage rates we can be confident will be less

15:32:57 4 than 90 percent.

15:32:59 5 Q. Well, you said could be much less than 90

15:33:01 6 percent.

15:33:02 7 When you said much less than 90 percent,

15:33:03 8 what did you mean?

15:33:07 9 A. In the 70s.

15:33:09 10 Q. And --

15:33:11 11 A. Or lower.

15:33:11 12 Q. -- Exhibit 3100 doesn't indicate 70s. It

15:33:15 13 indicates 84 and above, doesn't it?

15:33:17 14 MR. WILKES: Objection. Form.

15:33:19 15 THE WITNESS: It indicates that if the

15:33:21 16 sample skewness, as you report, is equal to the

15:33:25 17 population skewness. But if the population

15:33:28 18 skewness is double what the sample skewness is,

15:33:30 19 then your coverage is likely going to be much

15:33:34 20 lower.

15:33:35 21 MR. PICKETT: Q. But you have no evidence

15:33:36 22 that it's double do you?

15:33:38 23 MR. WILKES: Objection. Form.

15:33:39 24 THE WITNESS: Well, we can see that for

15:33:40 25 some of the population measures, when you calculate

15:33:43 1 the skewness for the sample, the skewness for the
15:33:46 2 sample considerably underestimates the skewness in
15:33:50 3 the population.

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15:34:42 19 MR. PICKETT: Q. So what evidence do you
15:34:43 20 have that the coverage rates for the sampled
15:34:47 21 measures would be 70 percent or lower?
15:34:50 22 MR. WILKES: Objection. Form.
15:34:57 23 THE WITNESS: Well, we could -- and I have
15:34:59 24 to do this more carefully than I'm doing it right
15:35:03 25 now.

15:35:05 1 Look at the comparison of the sample
15:35:09 2 skewness measures and the population skewness
15:35:12 3 measures for the fully enumerated variables, and
15:35:16 4 see, do we have some significant -- or I shouldn't
15:35:20 5 say significant -- some appreciable understatement
15:35:24 6 of the population skewness.

15:35:27 7 MR. PICKETT: Q. Have you done that?

15:35:29 8 A. I've looked at it. And for some of them,
15:35:32 9 there is a substantial underestimation by the
15:35:35 10 sample skewness.

15:35:37 11 Q. Which ones?

15:35:39 12 A. We'd have to look at some tables and pick
15:35:41 13 it out. As I sit here, I don't know which ones.

15:35:44 14 Q. Is there an audit trail for your analysis?

15:35:47 15 A. The tables exist. Any one of us could do
15:35:49 16 the analysis.

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15:59:18 9 Q. In other words, you eyeball it?

15:59:21 10 A. I wouldn't say eyeballing is. An example

15:59:27 11 would be with the correlation tables that we

15:59:29 12 recently turned over, we have the RMS correlation

15:59:36 13 size. And if the RMS correlation size is .6, then

15:59:41 14 the square of that is about .36, which means you'd

15:59:47 15 get an effective reduction in sampling variance of

15:59:51 16 about 35 percent.

15:59:52 17 Q. And you did this analysis with respect to

15:59:55 18 the degree of the lower variance using

15:59:58 19 stratification?

15:59:59 20 A. Yes.

16:00:00 21 Q. Did you leave an audit trail for us to

16:00:02 22 figure out what you did in that respect?

16:00:06 23 MR. WILKES: Objection. Form.

16:00:16 24 THE WITNESS: Well, at the time I wrote

16:00:17 25 the report, I hadn't done that calculation.

16:00:23 1 MR. PICKETT: Q. Well, did you leave an
16:00:24 2 audit trail after you did the calculation, whenever
16:00:27 3 you did it?
16:00:27 4 MR. WILKES: Objection. Form.
16:00:36 5 THE WITNESS: Well, I can leave an audit
16:00:37 6 trail right now. I'll just tell you how to do it.
16:00:42 7 That's you take the RMS correlation for
16:00:45 8 one of the population measures and square it, and
16:00:52 9 that gives you the approximate variance reduction
16:00:57 10 if you do proportional allocation stratifying on
16:01:01 11 that variable.

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18:27:44 1 A. I believe so.
18:27:45 2 MR. PICKETT: I have nothing further.
18:27:47 3 MR. WILKES: We'll reserve.
18:27:49 4 THE VIDEO OPERATOR: This concludes Volume
18:27:50 5 1 in the deposition of Dr. Bruce Spencer. We're
18:27:53 6 off the record at 6:27.

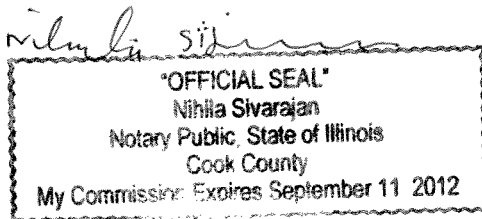
18:29:14 7 (Time noted, 6:27 p.m.)

18:29:18 8 --o0o--

18:29:18 9 I declare under penalty of perjury that
18:29:18 10 the foregoing is true and correct. Subscribed at
18:29:18 11 _____, California, this 6th day of
18:29:18 12 July 2010.

18:29:18 13 
18:29:18 14 _____

18:29:18 15 BRUCE SPENCER, PH.D.



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CERTIFICATE OF REPORTER

I, HOLLY THUMAN, a Certified Shorthand Reporter, hereby certify that the witness in the foregoing deposition was by me duly sworn to tell the truth, the whole truth, and nothing but the truth in the within-entitled cause;

That said deposition was taken down in shorthand by me, a disinterested person, at the time and place therein state, and that the testimony of said witness was thereafter reduced to typewriting, by computer, under my direction and supervision;

That before completion of the deposition review of the transcript [X] was [] was not requested. If requested, any changes made by the deponent (and provided to the reporter) during the period allowed are appended hereto.

I further certify that I am not of counsel or attorney for either or any of the parties to the said deposition, nor in any way interested in the event of this cause, and that I am not related to any of the parties thereto.

DATED: June 8, 2010
Holly Thuman
HOLLY THUMAN, CSR