EXHIBIT 2-11

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 1            UNITED STATES DISTRICT COURT

 2          NORTHERN DISTRICT OF CALIFORNIA

 3             SAN FRANCISCO DIVISION

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 6   ORACLE AMERICA, INC.,      )

 7         Plaintiff,           )

 8   vs.                        ) No. CV 10-03561 WHA

 9   GOOGLE, INC.,              ) VOLUME I

10         Defendant.           )

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12

13      HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

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15      Videotaped Deposition of ROBERT VANDETTE,

16      taken at 42 Chauncy Street, Boston,

17      Massachusetts, commencing at 10:02 a.m.,

18      Wednesday, September 7, 2011, before

19      Jill Shepherd, RPR, MA-CSR No. 148608,

20      NH-CSR No. 128, CA-CSR No. 13275, CLR,

21      and Notary Public.

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1   preserve the objection. I don't believe
2   this was produced to Oracle, but perhaps you
3   can confirm that after this deposition and
4   we can take it off line.
5 Q. Are you familiar -- have you seen this
6   presentation before?
7 A. (Witness reviewing document).
8   MS. AGRAWAL: Objection. Form.
9   MR. FRANCIS: I would note that
10   this presentation is cited in Oracle's claim
11   charts.
12   MS. AGRAWAL: The video?
13   MR. FRANCIS: So you should be
14   familiar with it.
15   MS. AGRAWAL: The video or the
16   actual presentations?
17   MR. FRANCIS: Both, I believe.
18   MS. AGRAWAL: All right. Let's
19   take it off line.
20 A. (Witness reviewing document).
21   I may have seen a presentation similar
22   to this. I can't confirm that this is the
23   exact content that I have seen or whether I
24   read through the entire presentation.
25 Q. Okay. Just for a second, jump to slide 11,

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1   there's a diagram that's labeled "Dalvik
2   Trace JIT Flow"?
3 A. Okay.
4 Q. Have you seen this before?
5 A. No, I have not.
6 Q. Now looking at slide five, the third point
7   that's listed here, it says, "Typically,
8   less than a third of time spent in the
9   interpreter."
10   Do you see that?
11 A. This is very subjective.
12   Doing what?
13 Q. Do you understand generally what it means?
14   I'm not asking if you agree, but do you
15   understand what it's saying here?
16 A. I would just like to come to your point --
17   MS. AGRAWAL: Objection. Form.
18 A. -- with the data on this slide that shows
19   that running the checkers, that you're
20   running 93 percent of the time in JIT code
21   cache. So you are using almost 100 percent
22   of the CPU when you are running checkers, so
23   how do you conclude, then, that one-third of
24   the time you are, on average, in
25   interpreter?

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1 Q. All I asked if you see this third line, and
2   if you understand what it seems to be
3   saying. I'm not asking if you agree with
4   it.
5 A. I do not agree with --
6   MS. AGRAWAL: You've got to let me
7   object. The court reporter has to be able
8   to take it down. Sorry.
9   Objection. Form.
10 A. I do see it and I do not agree with it.
11 Q. Have you run any tests to determine what
12   percentage of the time the CPU spends
13   executing byte codes as opposed to natively
14   compiled code?
15   MS. AGRAWAL: Objection. Form.
16 A. I have performance analysis in the past on
17   our own virtual machines, and it very much
18   depends on the byte codes and the program
19   that you are running whether it spends
20   little or a lot of time in the JIT -- or in
21   executing byte codes, I'm sorry.
22 Q. Maybe we can clarify just a little bit.
23   Your performance report is measuring
24   the performance of the Dalvik Virtual
25   Machine, but not Android operating system

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1   overall --
2   MS. AGRAWAL: Objection. Form.
3 Q. -- is that correct?
4   MS. AGRAWAL: Objection. Form.
5 A. It's difficult to answer that question
6   because the Dalvick Virtual Machine is part
7   of the Android operating system, so which
8   part are you --
9 Q. Is it part of the prior Android operating
10   system?
11   MS. AGRAWAL: Objection. Form.
12 A. My report states that I disabled much of the
13   Android platform so the CPU was available
14   for executing these benchmarks, so...
15 Q. In a normal environment, is much of the
16   Android platform disabled?
17   MS. AGRAWAL: Objection. Form.
18 A. In the normal Android platform, there is
19   many Dalvick Virtual Machines running, which
20   could have interfered with my results.
21 Q. In a normal environment, is there anything
22   other than a Dalvik Virtual Machine running
23   on the Android operating system?
24   MS. AGRAWAL: Objection. Form.
25 A. It's running on top of the Linux kernel, but

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1 Q. I'm not asking you for a specific number.
2　Give me a general ballpark figure.
3　　　MS. AGRAWAL: Objection. Form.
4 A. You are asking me to describe changes or
5　incremental performance improvements in
6　groups that I really wasn't involved in.
7 Q. Turning to page eight, paragraph 28 of your
8　report, you discuss the modifications that
9　you made to conduct your experiments; is
10　that correct?
11 A. Yes.
12 Q. And you created these modifications based on
13　what you were told by Professor Mitchell and
14　Peter Kessler; is that correct?
15　　　MS. AGRAWAL: Objection. Form.
16 A. Yes. We discussed the functionality, and
17　Peter I both looked through the sources to
18　try to find out how to properly disable this
19　functionality, and we came to a consensus.
20 Q. It appears that you attempted two out of
21　three possible scenarios here?
22 A. That's correct.
23　　　MS. AGRAWAL: Sorry, objection.
24　Form.
25 Q. The first scenario in paragraph 28 is

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1　building side tables, but not quickening
2　instructions, and the second scenario is not
3　building side tables or quickening
4　instructions; is that correct?
5 A. That's correct.
6 Q. Is there a third possibility of not building
7　side tables, but building quickening
8　instructions?
9　　　MS. AGRAWAL: Objection. Form.
10 A. The quickening was dependent upon the side
11　table for its implementation in order to
12　avoid, you know, any possible error in the
13　results. We did not want to substantially
14　modify Dalvick in order to try to attempt
15　that. We wanted to restrict our changes to
16　just simple commenting out of code that
17　would provide the before and after.
18 Q. So if it got too complicated, you did not
19　attempt it?
20　　　MS. AGRAWAL: Objection. Form.
21 A. It's not an issue of complication. It's an
22　issue of possibly altering the Dalvick to
23　the point where I wouldn't be measuring what
24　I wanted to measure.
25 Q. It would be --

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1 A. It would impact the results potentially,
2　since I'd be adding additional functionality
3　to Dalvick that it doesn't currently have.
4 Q. It would, however, be technically possible
5　for someone to do so?
6　　　MS. AGRAWAL: Objection. Form.
7 A. Let's see. It may be technically possible
8　to build a system that does quickening
9　without side tables, but it would involve
10　adding additional overhead that Dalvick
11　doesn't currently have.
12 Q. In paragraph 36, you state that you did not
13　try running the trace compiler; is that
14　correct?
15 A. Oh, paragraph -- sorry. That is correct,
16　for the same reason that we didn't do the
17　quickening alone.
18 Q. What is the trace compiler?
19　　　MS. AGRAWAL: Objection. Form.
20 A. That is Dalvick's implementation of a JIT.
21 Q. Are you saying that for your performance
22　benchmark regarding the '104 patent you had
23　to disable the JIT?
24　　　MS. AGRAWAL: Form.
25 A. That's correct.

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1 Q. Do you understand that the JIT is not part
2　of the accused functionality of the '104
3　patent?
4　　　MS. AGRAWAL: Objection. Form.
5 A. I'm not certain that it isn't somehow
6　involved in some of the claims, but we
7　focused on turning off the functionality in
8　a mode that was possible.
9 Q. If, in fact, JIT is not part of the accused
10　functionality, then wouldn't disabling it
11　affect the performance of this benchmark?
12　　　MS. AGRAWAL: Objection. Form.
13 A. I do believe that the numbers would be
14　slightly different; however, the overhead of
15　having to re-resolve all of the classes,
16　fields, and methods is a fixed overhead that
17　the JIT could not compensate for. So I
18　believe the performance reduction or
19　degradation would still be substantial.
20 Q. Despite fixed overhead, you are referring to
21　other aspects of the benchmarking programs
22　might execute faster if the JIT was enabled;
23　is that correct?
24　　　MS. AGRAWAL: Objection. Form.
25 A. They would be severely diminished by the

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22 (Pages 82 - 85)

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1 JIT compiler?
2 MS. AGRAWAL: Objection. Form,
3 beyond the scope.
4 A. I understand that HotSpot method-based JIT
5 compiler and Android is a trace-based JIT
6 compiler.
7 Q. If Android was using a method-based JIT
8 compiler, is it your belief that it would
9 infringe the patent?
10 MS. AGRAWAL: Objection. Form,
11 beyond the scope.
12 A. You'd have to show me and my team the
13 implementation in order to determine that.
14 Q. Does HotSpot practice -- strike that.
15 Does the HotSpot Just-In-Time compiler
16 practice the '205 patent?
17 MS. AGRAWAL: Objection. Form,
18 beyond the scope.
19 A. It's my understanding that this patent was
20 issued around the time of early Java, but we
21 had alternative -- we had a -- you know, a
22 pre-computer HotSpot compiler, so it's hard
23 to say. My guess, I would believe it would.
24 Q. The current HotSpot Just-In-Time compiler
25 practices the '205 patent?

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1 MS. AGRAWAL: Objection. Form,
2 beyond the scope, and calls for a legal
3 conclusion.
4 A. From my understanding, I believe it does.
5 Q. Did you try comparing the performance of a
6 current HotSpot Just-In-Time compiler with
7 one that existed before the '205 patent?
8 MS. AGRAWAL: Objection. Form,
9 beyond the scope.
10 A. From my report, I measured the current
11 HotSpot implementation.
12 Q. Looking at page 18 of your report, the chart
13 here is entitled "Android CaffeineMark JIT
14 Improvement Results."
15 Does this reflect the difference
16 between running Android with and without a
17 JIT?
18 MS. AGRAWAL: Objection. Form.
19 I also just note for the record that
20 we produced this to Google in color, and so
21 this isn't the original that was -- the
22 report wasn't what was given to Google; but
23 you can answer the question.
24 A. The command that I used to execute is in the
25 report. It's on paragraph 49. I used

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1 -Xint:fast mode and the -Xint:jit mode for
2 the interpreter versus the JIT-enabled
3 results.
4 Q. Paragraph 49, you say, "These tests show the
5 performance difference that JIT provides
6 above and beyond interpreter only"; is that
7 correct?
8 A. Yes.
9 Q. Is the accused functionality the entire JIT
10 or only a specific portion within the JIT?
11 MS. AGRAWAL: Objection. Form.
12 A. As I understand it, it's the technique used
13 to store the results of the JIT and such.
14 If you are unable to store the results of
15 the trace JIT, you wouldn't have a JIT;
16 therefore, disabling the JIT is comparable
17 to disabling the patent.
18 Q. Are there other ways to store the results of
19 the JIT?
20 MS. AGRAWAL: Objection. Form,
21 beyond the scope.
22 A. I don't know. You are asking: Are there
23 other ways to store the results that are not
24 infringing? Is that what you are asking me?
25 Q. I'm asking you: Is the only way to

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1 implement a JIT is by using the '205 patent?
2 MS. AGRAWAL: Objection. Form,
3 beyond the scope.
4 A. I don't know.
5 Q. If there was a way to implement a JIT
6 without practicing the '205 patent, would it
7 make sense to benchmark the performance
8 between that JIT and the current Android JIT
9 that Oracle alleges infringes the '205
10 patent?
11 MS. AGRAWAL: Objection. Form,
12 beyond the scope.
13 A. You are asking me to speculate on something
14 which I have already stated that I don't
15 know how you would do. So, again, the
16 answer is, I don't know.
17 Q. In paragraph 53, you say, "Before starting
18 each benchmark run, the script cleans out
19 the dalvik-cache."
20 Do you see that?
21 A. Yes.
22 Q. What is in the dalvik-cache?
23 MS. AGRAWAL: Objection. Form.
24 A. The dalvik-cache contains an optimized
25 version of the dex file, and if you run --

26 (Pages 98 - 101)