IN THE UNITED STATES I FOR THE DISTRICT C	
UNITED STATES OF AMERICA, ET AL.,)
Plaintiffs,)) CV No. 20-3010
VS.) Washington, D.C.) November 6, 2023
GOOGLE LLC,) 9:30 a.m.
Defendant.) Day 35 _) Morning Session
TRANSCRIPT OF BENCH TR BEFORE THE HONORABLE UNITED STATES DIST	AMIT P. MEHTA

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Proceedings recorded by mechanical stenography; transcript produced by computer-aided transcription

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1	PROCEEDINGS
2	COURTROOM DEPUTY: All rise. This court is in
3	session. The Honorable Amit P. Mehta presiding.
4	THE COURT: Good morning, everyone. Please be
5	seated.
6	COURTROOM DEPUTY: Good morning, Your Honor.
7	This is Civil Action 20-3010, United States of America, et
8	al., versus Google LLC.
9	Kenneth Dintzer for the DOJ.
10	Jonathan Sallet and William Cavanaugh on behalf of
11	Plaintiff States.
12	John Schmidtlein on behalf of Google.
13	THE COURT: All right. Good morning, everyone.
14	I hope everybody had a nice weekend.
15	So we're ready to resume this morning. Anything
16	we need to talk about before we get started?
17	MR. DINTZER: Not from the DOJ plaintiffs,
18	Your Honor.
19	MR. CAVANAUGH: No, Your Honor.
20	MR. SCHMIDTLEIN: No, Your Honor.
21	THE COURT: All right. Great.
22	Dr. Israel, welcome back.
23	Mr. Dintzer, ready to go when you are.
24	MR. DINTZER: Thank you, Your Honor.
25	

1	
2	MARK ISRAEL, WITNESS FOR THE DEFENDANT, HAVING BEEN
3	PREVIOUSLY SWORN, RESUMED THE STAND AND TESTIFIED FURTHER AS
4	FOLLOWS:
5	CROSS-EXAMINATION (CONTINUED)
6	BY MR. DINTZER:
7	Q Good morning, Dr. Israel.
8	A Good morning.
9	Q So we're going to start out with UPXD087.
10	MR. DINTZER: May I approach, Your Honor?
11	BY MR. DINTZER:
12	Q Sir, have you been following the trial and reading
13	the trial transcripts when not in court?
14	A Yes.
15	Q And so if you'll look at UPX on the first page,
16	UPXD087, I believe you referenced Mr. Lowcock;
17	is that right?
18	A Yes.
19	Q And Mr. Lowcock this is on the subject of
20	search ads not being substitutable he testified that
21	"Display advertising is primarily to drive awareness and
22	search advertising is lower funnel, primarily intended to
23	capture intent. I would not consider them substitutable."
24	And you have no reason to disagree that that is
25	Mr. Lowcock's opinion, do you?

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1	A No, I don't I mean, obviously this is what
2	he said.
3	I wouldn't characterize it as saying search
4	advertising not substitutable. This is referring to display
5	advertising and a lot of my focus has been on social media
6	and SVP advertising.
7	Q Okay.
8	And Mr. Hurst, who testified to the question, "Why
9	did Expedia do most of its spend on search engine
10	marketing," the answer was, "There isn't a great substitute
11	for the volume of high intent customers you can find on
12	Google."
13	You have no reason to disagree with that either,
14	do you?
15	A I see that's what he said.
16	Q Okay.
17	And you have no reason to disagree with that?
18	A I mean, not I presented all of the evidence on
19	substitutability that once you dive deeper than in one
20	quote. So I don't think this correctly captures the full
21	set of evidence, but I don't I mean I recognize what
22	he said.
23	Q Well, do you understand that the testimony at
24	trial has been consistent with Mr. Hurst on this?
25	A I

Γ

MR. SOMMER: Objection. 1 2 THE COURT: Sustained. 3 Let's not ask him about trial consistency 4 testimony. Go ahead. 5 MR. DINTZER: I'm sorry, Your Honor? 6 THE COURT: I said, let's not ask him about those 7 kind of questions. 8 MR. DINTZER: Okay. Fair enough. 9 BY MR. DINTZER: 10 0 And Ms. Lim offered similar testimony. 11 Do you recognize that? 12 А I mean, I think it's similar to my earlier 13 comments. She's making a specific comment here about what 14 search can do and what other ads may try to do, but I mean, 15 I think the full body of evidence speaks for the range of substitution. 16 17 0 Did you incorporate Mr. Lowcock, Mr. Hurst, and 18 Ms. Lim into your presentation? I didn't see you cite any 19 of his testimony. 20 I certainly cited Mr. Lowcock and things he said Α 21 about substitution, but I don't know, I don't think I said 2.2 these specific quotes. 23 0 So let's go to the second page. 24 And do you agree that social ads are a type of 25 display ads?

1	A I wouldn't describe them that way.
2	Q So you break those out as completely separate?
3	A I think it's more accurate to be as precise as we
4	can, and I would describe social ads as something distinct.
5	I think that's consistent with what we see in the documents
6	and testimony.
7	Q Okay.
8	On the subject of whether search ad budgets do not
9	shift, Mr. Booth testified that Google and Bing investments
10	are pretty much interchangeable but distinct and separate
11	from social or display.
12	Do you see that?
13	A I do see that.
14	Q And Mr. Booth's testimony was testimony that you
15	yourself cited in your direct; is that right?
16	A Right, or he talks about substitution that they,
17	in fact, do. Like, for example, between search ads and PL
18	ads.
19	Q Mr. Lowcock, Ms. Lim also testified about not
20	shifting their search ad budgets between search and other
21	types of ads; is that correct?
22	A I mean, I see their testimony here.
23	There's obviously lots of evidence about
24	substitution that has occurred, but I see their statements
25	here.

And would you agree that their statements are 1 Q 2 inconsistent with the testimony that you provided? 3 А No, I think these statements are just what they 4 are, a couple of sentences. So I think what you need to do 5 is dive in. For example, Mr. Lowcock explained that his 6 agency has tools that recommend substitution and recommend channel shifting on behalf of their clients. 7 8 And let's go to the third page, sir. On the 0 9 question of search ads being high intent, and, for example, 10 Mr. Booth again, "Search ads are unique in the sense that 11 somebody is going to go in and initiating the auction, going 12 to Google, going to Bing asking for solutions." 13 "Mr. Hurst, did you consider advertising on Google 14 as essential?" 15 "Yes, it's where all the intent is." 16 Do you agree with that testimony? 17 Α I mean, they're saying two very different things. 18 So Mr. Booth is saying search ads are unique. I mean, 19 there's a thing called a search ad which has its own 20 auction, I agree with that. 21 Mr. Hurst describing where all the intent is? 2.2 I don't think that's consistent with the evidence overall. 23 But search ads are certainly a place in which you find user 24 intent. 25 You testified about Performance Max; is that Q

1	right?
2	A Yes.
3	Q Okay. Let's go to your deck, you should have that
4	in front of you, DXD. And the slide I'm looking at is
5	actually, it's not in numeric order, it's in between slides
6	72 and 73 of your deck, but it is not 72 and a half. And
7	just let me know when you're there, sir.
8	A Yeah, I see it.
9	Q Okay.
10	And this is out of order and from a different
11	deck. This deck was not deck 29 like the rest of your slide
12	deck, but from deck 21, DXD21.
13	Do you see that?
14	A I mean, I see the number. I don't I'm not
15	responsible for how things get numbered, so I don't know.
16	But I see what you're pointing to.
17	Q My question is, was this from Professor Bucklin's
18	deck?
19	A The specific graphic may have been. Obviously
20	this discussion of Performance Max appears in my report,
21	too.
22	Q Okay.
23	And my question is, do you know that Professor
24	Bucklin is no longer going to testify here?
25	A That's my understanding.

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1	Q Okay.
2	And were you asked to do this testimony in place
3	of Professor Bucklin?
4	MR. SOMMER: Objection.
5	THE COURT: I'll sustain it.
6	Go ahead. Next question, please.
7	BY MR. DINTZER:
8	Q Now, Performance Max, which you talk about here,
9	is an automatic campaign covering all of Google's ad
10	products, right?
11	A That's a fair description.
12	Q So it's not only search, right?
13	A Correct. I mean, the point I'm making is that it
14	optimizes across all of Google's ad products, including
15	display.
16	Q But the Performance Max setup process doesn't
17	permit a user to choose keywords, right?
18	A That may be. There's lots of setups in Google Ads
19	that don't choose keywords, that choose objectives. So I'd
20	have to look about whether Performance Max has a keyword
21	choice setup or not.
22	It definitely specifies objectives relative to
23	brands.
24	Q Well, you testified about Performance Max so
25	I guess we need to know. Do you know whether Performance

Max allows the user to choose keywords as you sit here? 1 2 А I don't recall as I sit here. 3 There's many campaigns on Google Ads, including search campaigns in which users don't choose keywords so I 4 5 haven't drawn that distinction for Performance Max. 6 But you understand one of the important pieces of Ο 7 search ads is that the users get to choose keywords and 8 negative keywords, they can choose -- they can control that 9 process, right? 10 Α Again, it depends on how they run their campaign. Lots of Google Ads and lots of search front ends don't have 11 12 that level of user involvement. The user specifies goals 13 and the tool optimizes. 14 And do you know what percentage of Google's text Ο 15 ad users choose their own keywords? 16 Yeah, I don't know. Α 17 Just when you say lots, you don't know what number Q 18 it is? 19 Well, a substantial portion of Google Ads' А 20 functionality is more like this, where you set up a keyword 21 with goals and Google Ads goes and finds the best -- the 2.2 best impressions for that. 23 So your understanding is that the idea behind 0 24 Performance Max is that it tell users, don't worry about the 25 keywords, we'll take care of them for you. That's your

understanding? 1 2 Α It's artificial intelligence. They tell users, 3 don't worry about whether it's search or video or display, 4 different mixes of those may be optimal and we will 5 substitute across all of those things on your behalf. 6 Q Okay. 7 And so let's go to UPX2079, this is not in 8 evidence. 9 And it's on the screen, too, sir. 10 Α Can we make it a little bigger? 11 Of course. Q 12 Okay, sir. 13 Do you see that this is --14 Actually, pull it out back a little bit, Jorge, 15 please. 16 This is a Google page about Performance Max, about 17 Performance Max campaigns. Do you see that? 18 Α T do. 19 Q Okay. 20 And now let's zoom in, please. 21 "Performance Max is a new goal-based campaign 2.2 type." Do you see that? 23 Α I do. 24 And it says, "Performance Max is designed -- it's Q 25 designed to complement your keyword-based search campaigns."

1	Do	you	see	that?

L

2	A I do.
3	Q So according to Google, it's not designed to
4	replace keyword-based campaigns for text ad. Do you see
5	that?
6	A There has been testimony about this, I know, that
7	at this point, the artificial intelligence behind
8	Performance Max is not developed to the point where it could
9	take over all campaigns. I think there was testimony saying
10	Google continued to work on that.
11	Q So Performance Max is not designed to be a
12	replacement for picking text keywords in search ad
13	campaigns, correct?
14	A I think the accurate statement is, as it stands,
15	the technology doesn't support that full function but Google
16	continues to work on it.
17	It is designed, as the next paragraph says, to be
18	a tool that lets you substitute across channels based on
19	ROAS.
20	Q Let's go to UPX0028.
21	And, Your Honor, that's in evidence.
22	I'm sorry, we'll offer 2079.
23	MR. SOMMER: No objection.
24	THE COURT: Admitted.
25	

(Plaintiffs' Exhibit 2079 1 received into evidence.) 2 THE COURT: And I'm sorry, what's the next 3 exhibit? 4 MR. DINTZER: And the next document is UPX0028, 5 Your Honor. 6 And if we could go to the second page, Jorge, 7 please. BY MR. DINTZER: 8 9 And you can see, sir, that this is a document, 0 10 Performance Max-communications document by Google. 11 Do you see that? 12 А As it stands, I can't see it. 13 MR. DINTZER: If we could bring it up a little 14 bit, Jorge, please. BY MR. DINTZER: 15 16 Do you see that, sir? Q 17 Α Yes. 18 And it's dated February 2022? Q 19 Yes. А 20 And we're going to go to Bates number 047, and 0 21 it's page 48 in the document. And we're going to put it up 2.2 on the screen for you, sir. 23 So this has not been reviewed for confidentiality 24 so I guess you're going to have to pull it up in your 25 binder, sir. I've got the red box.

THE COURT: Can I ask whether it's been reviewed 1 2 since -- has it been reviewed since last week? 3 MR. SOMMER: No, we were not asked to review this 4 one that I'm aware of, Judge. BY MR. DINTZER: 5 6 Q Do you have it in front of you, sir? 7 А I'm sorry. I was looking at the screen so I need 8 the number again. It's Exhibit No. UPX0028. And we're going to go 9 Ο 10 to page No. 47, 047. 11 THE COURT: In taking a quick look at this, 12 I'm not sure there's anything confidential on this page. 13 I recognize you haven't been asked, but --14 MR. SOMMER: We'll certainly endeavor to quickly 15 review it, Your Honor. 16 THE COURT: It seems like a Q and A or proposed 17 Q and A concerning the product. 18 But in any event, go ahead, Mr. Dintzer. 19 BY MR. DINTZER: 20 0 Okay. 21 The third paragraph down, do you see that, sir, on 22 page 47? It begins "Many Performance Max customers." 23 Do you see that? 24 I do. Α 25 And if you could read that next sentence, Q

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1	"Another option," and then the sentence after that?
2	A Sorry, I think I missed the paragraph you were on.
3	Q Okay.
4	The paragraph begins, "Many Performance Max
5	customers." Do you see that?
6	A Well, I see it.
7	Sorry, I just missed "another option." I've got
8	it now.
9	Q No, that's fine.
10	Then the next sentence, "Another option is that".
11	Do you see that?
12	A Yes.
13	Q And then it says, underlined in bold, "It is
14	highly recommended." Do you see that?
15	A I do.
16	Q And so Google said that Performance Max was not a
17	substitute for Google search campaigns; is that right?
18	A I mean, I don't think that's consistent with the
19	testimony, about what they're working on. This is a long
20	document so I don't know what all it says, but I see this
21	sentence.
22	MR. SOMMER: I'm sorry to interrupt.
23	We have no objection to that paragraph being
24	disclosed.
25	THE COURT: Thank you. I appreciate that.

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1	MR. DINTZER: I'll go ahead and read that.
2	THE COURT: Thank you, Mr. Sommer.
3	BY MR. DINTZER:
4	Q "Another option is that a channel agnostic
5	performance budget can be carved out for Performance Max as
6	an always-on strategy."
7	Underlined and bolded, "It is highly recommended
8	that performance budgets do not cannibalize Google Ads
9	search budgets as Performance Max is not," is not "a
10	substitute for Google search campaigns. For Google,
11	incremental performance, more conversions at same CPA leads
12	to opportunities for larger budget pictures."
13	Do you see that?
14	A I do.
15	Q Google's internal documents are saying that
16	Performance Max is not a substitute, that it does not
17	cannibalize Google search ads budgets; is that right?
18	A I mean, the sentence says does not cannibalize.
19	I mean, again, the tool is used to substitute
20	across campaigns, and I think the more current testimony
21	than February 22 is they continue to work on it such that it
22	could be used for everything.
23	Q Well, so they continue to work on it. That's a
24	future thing, right, sir?
25	A It's an AI technology limitation that they have

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1	now that they are working on.
2	Q And so let's go to page 23 of this document, same
3	document, page 23 at the bottom. This doesn't have a red
4	box so we can put it on the screen.
5	And at the very bottom, it says, under the
6	heading, "How does Performance Max interact with existing
7	campaigns in the account."
8	Do you see that?
9	A I do.
10	Q Okay.
11	And the last sentence on the page says,
12	"Performance Max does not have keywords. So we and,
13	again, bolded "we recommend continuing to run keyword
14	search campaigns alongside PMax, and that advertisers
15	continue to expand their use of search automation, RSA,
16	broad targeting, like broad match and smart bidding."
17	Do you see that?
18	A I do.
19	Q Okay.
20	And so forgetting about I mean the future is
21	the future. In 2022 when this was written, Google's
22	position was Performance Max was not a substitute for
23	keywords search campaign; is that right?
24	A I mean, that's that sentence.
25	I would encourage reading this entire page and the

whole document which seems to be all about using 1 2 Performance Max to increase cross-channel substitution. 3 0 No further questions on that document, sir. 4 Now, you said Performance Max has been discussed 5 at trial. 6 Mr. Dischler discussed Performance Max; is that 7 right? 8 Α Yes. 9 And let's put up his testimony, UPXD089. Q 10 And he was asked this question, "Performance Max 11 is not a replacement for text ads or shopping ads, correct?" "Answer: That's correct." 12 13 And you don't have any reason to suspect he 14 doesn't know what he's talking about, do you? 15 Α I mean, I think I would agree with this statement 16 in a sense that Performance Max is a way to buy those kinds 17 of ads, it's a front end. It's not a form of advertisement. 18 Now, things displayed in response to search Q 19 queries are search ads, right? 20 THE COURT: Can I just get some clarification? 21 To the extent you know, Dr. Israel, say I'm a 22 first-time customer to Google advertising. 23 THE WITNESS: Okay. 24 THE COURT: And I want to purchase text ads. Can 25 I do that through Performance Max in the first instance

through identification of keywords? 1 2 THE WITNESS: No. If you know that you just want 3 to purchase text ads and you want to do it through keywords, 4 you would set up a text campaign that would just do that. 5 THE COURT: Okay. 6 But in other words, you couldn't initiate -- even 7 if you wanted a campaign that was across multiple channels, 8 you couldn't initiate a text ad channel advertising through 9 Performance Max? 10 THE WITNESS: You can institute text ads, it will 11 definitely buy you text ads, but put as we're saying, the 12 way it will do that is you'll say, this is my company, these 13 are my goals, you go out and find me good keywords for that. 14 Your question was, could you set up --THE COURT: Right. 15 16 THE WITNESS: You can't go into Performance Max 17 and say, I want the following keywords. You say, I want to 18 get stuff that's good for selling basketball shoes to high 19 school students, and it optimizes uses its AI, the keywords. 20 THE COURT: Your understanding is that 21 Performance Max will develop the keywords for the 2.2 advertising. 23 THE WITNESS: It will choose what keywords to bid 24 on. 25 THE COURT: Okay.

BY MR. DINTZER: 1 2 Q Things displayed in response to search queries are 3 search ads, right? 4 Α That sounds correct. 5 0 And display ads are not done that way? 6 Α That sounds right. 7 0 And display ad is distinguished from -- well, let 8 me do it. Google search ad auction is separate from other auctions that Google runs, including display ads? 9 10 Α Correct. There's -- I mean, there's separate 11 auctions for everything, literally every impression in any 12 form. 13 And advertisers for display ads use whatever Ο 14 information they can get about the display page and the 15 person. That's how they try to figure out which place to 16 put their ads, right? 17 Α At that level, that sounds right. For any kind of 18 ad, I think advertisers use whatever information they can get. 19 20 Q But for search ads, the advertiser relies 21 primarily on the query that's been inserted into the query 2.2 box, right? 23 I think it depends on the specific search ad, but Α 24 certainly the query is an important piece of information in 25 the case of search ads.

Now, during your direct testimony, the Court asked 1 Q 2 about privacy. Do you recall that? 3 Α Yes. 4 0 And some privacy initiatives affect the 5 information available for display or social ads? 6 Α I mean, at that level, I think that's probably 7 true. I think it's quite different for display versus 8 9 most social ads, which is a reason why that distinction 10 becomes increasingly important. 11 Social ads have an awful lot of first-party 12 information, their own information that wouldn't be 13 affected. 14 But in general, privacy initiatives can limit the 15 information that you can use. 16 Cookie deprecation is limiting the extent to which 0 17 cookies can be used or added to user web pages, right? 18 Again, that's very general, but, yeah. There's А 19 discussion in the future, there could be third-party cookie 20 deprecation which would mean certain cookies may not follow 21 a user between web pages. 2.2 Q Cookie deprecation limits the ability of 23 advertisers to get certain information about the users? 24 Yeah, at that level certain information, the А 25 cookie would no longer be there. So the question is what

1	other information would you have, which generally is an
2	advantage to places like Facebook and Amazon that have a lot
3	of first-party information.
4	Q We'll get to Facebook in just a moment, sir.
5	Privacy initiatives have affected the consumer
6	information available for non-search ads, right?
7	A I think privacy initiatives have affected the
8	information available for all ads, to the extent they take
9	place.
10	Q Privacy initiatives have not affected Google's
11	ability to serve search ads in response to queries, though?
12	A I mean, the query itself is still there, I agree
13	with that.
14	Q So privacy initiatives have not affected Google's
15	ability or Bing's ability to serve search ads in response to
16	queries, right?
17	A I think "not affected" is too broad.
18	There are effects on the information that you can
19	use in targeting, but I think it does not affect the query
20	itself generally.
21	Q And that's the primary source of the user intent,
22	right?
23	A I think that depends on the site and what they're
24	doing.
25	Q For Bing and Google, sir.

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1	A Certainly it's an important source of information
2	in the case of Bing and Google.
3	Q I just want to be clear. Is it your testimony
4	that the user intent as displayed by putting in the query is
5	not the most important element and signal for Bing and
6	Google and general search engines?
7	A I think it's fair in general that it's the signal
8	those two rely the most on.
9	Q Now, are you aware that that Meta testified in
10	this case about how privacy initiatives are affecting the
11	precision of its ads?
12	A Yes.
13	Q Okay.
14	And have you read that testimony?
15	A Yes.
16	MR. DINTZER: So we will go to UPXD213 and 214.
17	And, Your Honor, this testimony is has not been
18	deconfidentialed, and so we are presenting it here. This is
19	submitted testimony. We're submitting we are providing
20	it here on slides, Your Honor.
21	BY MR. DINTZER:
22	Q So, sir, we're going to start with UPXD213.
23	Do you have it in front of you?
24	A Yes.
25	Q And this was from Mr. Levy, from Meta ad Meta

ads vice president. 1 2 Do you see that? 3 Α I do. 4 0 And he's testifying about the effects of privacy 5 change. 6 Do you see that? 7 Α Yes. 8 MR. DINTZER: And it's our understanding, 9 Your Honor, that the Levy video will be played by Google 10 this week. 11 BY MR. DINTZER: 12 And do you see that Mr. Levy testified that 0 13 Apple's plan would have an impact on advertisers' ability to 14 target ads? 15 Do you see that? 16 Α It looks to me like he was being shown a document. 17 Q Right. 18 And he said that was Michael's statement. Α 19 And then in blue, he testifies about Meta's Q 20 ability. 21 Do you see that? 2.2 Α I don't know from just this statement if he was 23 summarizing what Michael said or if he was giving his own 24 views. I see the sentence. 25 THE COURT: Why don't you just ask him what the

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sentence is so it's on the record.
 1
 2
               Meta has acknowledged the very thing this sentence
 3
     says in public statements about the impact of Apple's
 4
     decisions on its ability to --
 5
               MR. DINTZER: Will do, Your Honor.
 6
               THE COURT: -- target advertisers.
 7
               MR. DINTZER: I'm sorry, Your Honor.
 8
               THE COURT: No, go ahead.
 9
     BY MR. DINTZER:
10
          Q
               "And you mentioned that Apple has, in fact, now
11
     implemented the changes that you guys were discussing here
12
     when they were announced. Has Meta's ability to target its
13
     ads been crippled?"
14
               "Answer: This was Michael's statement.
                                                         Our
15
     ability to help advertisers target their ads has been
16
     impacted negatively.
17
               "I don't know that I would use the word
     'crippled'."
18
19
               Do you see that he testified to that?
20
               I do.
          Α
21
          Q
               Okay.
22
               MR. DINTZER: And then if you go to UPX214, and
23
     with the Court's permission, I -- along the same lines, I'd
24
     like to read this.
25
               THE COURT: I think that's fine.
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1 MR. DINTZER: Okay. 2 BY MR. DINTZER: 3 0 "Question: And did Apple's privacy changes also 4 affect Meta's ability to do retargeting ads?" 5 "Answer: Could you repeat the question?" 6 "Did Apple's iOS 14 privacy changes also affect 7 Meta's ability to effectively retarget ads?" "Answer: I believe it -- I believe it did." 8 "Question: Negatively, correct?" 9 10 "Yes. 11 "As far as I understand it, it made it much 12 harder, or potentially even not possible in some circumstances." 13 14 Do you see that? 15 Α I do. 16 So Meta was affected by Apple's and other privacy Q 17 initiatives; is that correct? 18 Α It was affected. 19 And it is -- important context of this is about 20 retargeting, which is using information that came from 21 somewhere else. 2.2 So everything Meta's done for the last couple 23 years has been, as I see it, to increase, as I said earlier, 24 its first-party information so it doesn't to have to rely as 25 much or at all on retargeting.

1	Q My question is, you don't disagree that Meta was
2	negatively impacted by privacy initiatives?
3	A Oh.
4	I think a fair statement is it was negatively
5	impacted. You see its market cap respond to that. It
6	strategized around it to rely more on first-party
7	information than it has. Now its targeting strategy is
8	now different.
9	Q And search ads were not impacted by these privacy
10	strategies, right?
11	A Again, I think that that statement, that's too
12	general.
13	Q Let's go to the slide in your deck, the one that
14	you presented, Slide 55.
15	And it's on the screen, sir.
16	Do you see that?
17	A I do.
18	Q And to be clear, you have not defined a specific
19	search ads market; is that right?
20	A That's correct, I have not I don't think there
21	is a market limited to search ads.
22	Q And you conclude that ad markets are defined by
23	the product being advertised and alternatives for
24	advertising that product, right?
25	A Yeah, it's I mean, market definition is a

demand-side exercise, as we went through. So the question 1 2 is what options are open to the advertiser. 3 0 And I just want to be clear, you have not defined 4 any market on the advertising side, correct? 5 Α I would think I would say I have not defined how 6 far out it goes, the precise bounds. I've given evidence 7 about why social SVP, certain types of display advertising should be included. 8 9 Under your theory, the advertising market for a Ο 10 hotel in Denver would be the places that the hotel could 11 advertise, right? 12 А If you went down to that level, the demand-side 13 choice is the places the hotel could advertise. 14 I mean, I think in general -- on the user side, I 15 talked about a lot about clustering and the need for 16 separate markets. 17 I focus less on that on the advertising side 18 because I think these buckets capture things pretty well. 19 But I do think if you're going to do market definition on 20 the demand side, which is what we have to do, you look at 21 what options are open to advertisers. 2.2 Q So under your theory, the advertising market for a 23 gas station in Denver would be different than for a hotel in 24 Denver, right? 25 The set of options that those particular А

advertisers would look at might vary. Again, I don't think 1 2 that's as important here to getting your arms around 3 relative -- the relevant set of options. 4 You have not performed groupings of advertising 0 5 options to create markets; is that right? 6 А Yeah, I think it's fair, I have not given the 7 exact groupings. 8 Again, I think these are the categories that 9 generally should be included. That's going to be true 10 across all advertisers. The specific ones may vary, but 11 I think you can get the categories by -- by thinking about 12 advertisers and what their options are. 13 You have not provided groupings for search ads, Ο 14 correct? 15 I don't know what that means exactly. Α 16 You have not provided groupings of advertising for Q 17 search ads; is that correct? 18 THE COURT: I'm sorry, what do you mean by 19 "groupings," Mr. Dintzer? 20 MR. DINTZER: Well, the -- the witness has 21 testified that he looks at different -- the advertising 22 options that each advertiser would look at. He has not 23 grouped them together into anything that resembles a market for search ads or for any types of ads. 24 25 THE COURT: Okay. I mean, I think he's

1 acknowledged that.

2 BY MR. DINTZER:

3 And just to be clear, sir, you're not testifying 0 4 that aggregation is appropriate, just that it might be? 5 Α I think aggregation is legitimate. I don't know 6 the word "appropriate." 7 As I said, I think on to the side of advertising, 8 if by aggregation you mean looking at different advertisers, 9 I think you can aggregate them and see that they generally 10 have social options and display options and search options. 11 I have not given you a specific breakdown into different buckets of advertisers because I don't think it 12 13 changes that conclusion. 14 Q Okay. 15 So competition takes place when Crest decides to 16 advertise a toothbrush, right? 17 Α Definitely. 18 And you conclude that Crest's decision to Q 19 advertise a toothbrush differs from a decision to advertise 20 dental floss? 21 It's probably a different campaign, it's a Α 2.2 different decision. 23 I don't think that's critical to any opinion in 24 this case. But they're probably different ad campaigns. 25 Well, you conclude that creating a relevant market Q

for advertising should start with identifying each campaign 1 2 run by each advertiser, right? 3 Α Again, I think we should look at the demand side, 4 as we have to when we do market definition, and the demand 5 side is going to be an advertiser running a campaign. So 6 those are -- those are the data points that we build up to 7 do our analysis. 8 0 Okay. 9 And you cite no documents showing that Google, 10 Bing, or advertisers considered each advertising opportunity 11 or each campaign as a separate product, right? Do you cite 12 any documents? 13 I don't -- I mean, that's a supply side question. Α 14 I think there's documents all over the record that on the 15 demand side, advertisers think of campaigns separately. 16 I didn't -- I didn't look at the supply side to answer a demand-side question. 17 18 Q Okay. 19 Well, on either side, you don't cite any documents 20 showing anybody considering this on an 21 advertising-option-by-advertising-option basis, do you? 2.2 Α I think if you look at any document from the 23 agencies or the advertisers in the case, they talk about 24 their options for each campaign. 25 And you don't cite any of them in your slide deck, Q

1	do you?
2	A I'd have to look to see if there's
3	campaign-specific stuff in the slide deck. I don't
4	remember.
5	But I don't I mean, the simple idea here is
6	when advertisers run different campaigns, they think about
7	what channels to use for that campaign.
8	Q You talked about Nike. Nike decided to stop using
9	a form of advertising and re-allocate its dollars, right?
10	A I wouldn't say a form of advertising. An
11	important thing about that event is they decided to stop
12	using a platform, Facebook.
13	Q You had data for 12 other advertisers that paused
14	spend on Meta; is that right?
15	A Correct, and I think I tried to say all of them
16	were much shorter so I didn't see there just wasn't a lot
17	of variation.
18	Q So you only reported analysis for one firm?
19	A Right well, yeah. The idea was to restrict it
20	to anyone who would reduce the spending on Facebook for a
21	significant period of time. That turned out to only be
22	Nike.
23	Q So it's one data point?
24	A It's one advertiser. Depends on how you define
25	data point, but, yes, it's the experience of one advertiser.

1	Q And your assumption is that Nike substituted to
2	the forms of ads that were most attractive in place of
3	Facebook; is that right?
4	A I don't know if I'd call that an assumption.
5	I think it's both what they said in their documents and sort
6	of in my opinion as an economist of what they would do.
7	Q Now, Nike decided to stop advertising on Facebook
8	altogether, right?
9	A Correct, it was like an extreme price increase for
10	one particular channel.
11	Q So from Nike's point of view, Facebook was gone
12	for however long the boycott lasted?
13	A I agree with that.
14	So I would not use this to say how much came out
15	of Facebook. That's a big number based on this.
16	I would use this to see, given that it came out of
17	Facebook, where it did it go: Did it go to other social,
18	did it go to display, did it go to search, and so on.
19	Q So the Court asked you a question regarding
20	cellophane about this, correct?
21	A Yes.
22	Q And the idea of price increasing so much customers
23	have to substitute to something. That's the idea here,
24	right, or they could have stopped advertising altogether?
25	A Right.

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Again, as I explained, cellophane to me would say 1 2 there were no other options out there, right. 3 The reason this experiment is interesting to me is 4 it was just one particular social option that went down. 5 So every other option remains on the table. 6 So again, to be clear, I would not use this to measure the amount of substitution out of Facebook in 7 8 response to a small price change. I would use it to say, 9 given that stuff is leaving Facebook and only Facebook, 10 where did it go. And just to put a number on it, your study doesn't 11 Q tell how much Nike would have reduced Facebook advertising 12 13 in the face of a 5 percent price increase, right? 14 I would not use this to say if there was a smaller А 15 price change, how much would have come out of Facebook. The 16 question is, given that it left Facebook, where did it go. 17 Q And it's not a measure of elasticity of Facebook 18 ads? 19 I agree with that. It's a measure of cross А 20 elasticity; given that it left, how did it divide up. 21 And so in your report, you show -- it's Slide 84, Q 22 we're going to do the document that underlies Slide 84, and 23 that's UPX2076, and that's in your binder, sir. 24 Your Honor, this is not in evidence so we'll offer 25 it and we'll put it on the screen.

MR. SOMMER: No objection. 1 2 THE COURT: Okay. UPX2076 will be admitted. 3 (Plaintiffs' Exhibit UPX2076 received into evidence.) 4 5 BY MR. DINTZER: 6 And this is the report you relied on; Q 7 is that right, sir? 8 It's a Nike document that I relied on, yes. А 9 And if we go to page that's Bates numbered 152, Ο 10 this is the one you cited in your report -- in your presentation, right? And we're going to put it on the 11 12 screen. 13 That looks right. А 14 And the middle two pie charts, if you look at the Ο 15 top, what we see is the before pause, the during pause, and 16 the post pause for the Facebook boycott; is that right? 17 Α When I mentioned this in my testimony, the pie 18 charts themselves are one-week snapshots so the data that I 19 used covers more fully the before pause, during pause, and 20 post-pause periods. 21 But this gives you a one-week snapshot and then a 22 longer snapshot post pause. 23 So it's one-week snapshot -- each of these is a 0 24 one-week snapshot during each of these phases, right? 25 А Correct. I relied on the full data which I also

1	put up. But these pie charts are a one-week snapshot.
2	Q So the non-Meta so let's go for the non-Meta
3	social spend. Do you see that?
4	A Yes.
5	MR. DINTZER: And, Jorge, if we could please bring
6	that up in for the middle two pie charts, please.
7	BY MR. DINTZER:
8	Q You'll see that before the pause on the non-Meta,
9	social spend was 1 percent; is that right?
10	A For that particular week.
11	Q And then during the boycott, it rose, the non-Meta
12	social spend rose to 10 percent, right?
13	A For that one week.
14	Q For that one week.
15	And now, if we go down to the bullets below this
16	and you read some of what was in the bullets, but there's
17	one part that you didn't read that I'd like to read. And it
18	says
19	THE COURT: I'm sorry, can you just you know,
20	I'm sorry to interrupt but, so
21	BY MR. DINTZER:
22	Q If you look at the first pie chart, Dr. Israel,
23	the 1 percent is from Pinterest, the non-Meta social spend;
24	is that right?
25	A From Pinterest, yes.

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1 THE COURT: You're talking about the non-Meta 2 social spend. 3 MR. DINTZER: So we can get a level set. 4 BY MR. DINTZER: 5 0 During the pause week, the non-Meta social spend, 6 Twitter, Snapshot [sic] and Pinterest rose to 10 percent; 7 is that right? 8 Right, for one week, yes. Α 9 0 For that one week. 10 Do you have any reason to think that these weeks 11 are not representative? 12 А Yes, because I analyzed the whole period and I 13 showed what happened. 14 0 Okay. 15 And the overall, the increase in non-Meta social Α 16 spend was much smaller. 17 0 And so then it reads at the -- underneath these 18 pie charts, it reads -- the second bullet under the pie 19 chart reads, "During the pause, social investment shrunk by 20 more than half to just 8 percent of overall PM budget 21 allocation due to limitations on scale opportunities within Snapchat, Pinterest, and Twitter." 2.2 23 Do you see that? 24 Yes. Α 25 So Nike wanted to invest more on these but there Q

was limitations on scale opportunities within those three 1 2 social media opportunities, right? 3 Α I mean, that's not how I would describe it. 4 I mean, I hear what you're saying. 5 I would say Nike looked at the other options that 6 were out there in the market as it exists and it allocated 7 where it found it optimal. 8 I mean, yeah, it saw the opportunities. Ιt 9 describes that as limitations on scale opportunities within 10 the other social channel to be less attractive than display 11 and search. 12 0 Okay. 13 And then we go to the post-pause week and the 14 post-pause week shows that non-Meta social now drops down to 15 7 percent, is that right, in this pie chart? 16 Yes, in the pie chart, that's correct. Α 17 Q If the price increase on Meta was only 5 percent, 18 if it had only been a 5 percent price increase as opposed to 19 what we talked about where it became completely unavailable, 20 Nike was shifting less spend -- it may have been able to 21 shift solely to non-Meta spend, non-Meta social, right? It 2.2 could have shifted 5 percent off Meta and not had to go 23 anywhere, right? 24 I mean, we just never saw that experiment, so Α 25 I can only go on what I see.

I mean there, as I said elsewhere in the document, 1 2 they talk about satisfaction with what happened in search and display; but, yeah, we don't have the experiment, we 3 4 don't have that alternative experiment. 5 I understand. With the numbers, they could have \cap 6 moved some of their spend up to 7 percent or up to 7 10 percent off to non-Meta social, correct? 8 Again, that's one week, so I don't want to rely Α 9 too much on it. If it had only been 5 percent, you could speculate 10 this mix might have been different, we just don't have that 11 12 experiment. 13 Q Okay. 14 Now, search spend rose from the pre to the boycott 15 week, it rose from 48 percent to 51 percent; is that right? 16 Yeah, again, for that one week, my analysis, and А 17 the chart I showed looks at all weeks, but for that one 18 week, that's correct. 19 Okay. 48 percent to 51. 0 20 THE COURT: Just to be clear, is this -- that last 21 post-pause, is that not over four weeks? 2.2 THE WITNESS: It's one week before, one week 23 during, and four weeks post. 24 THE COURT: Right. Okay. So we are comparing the 25 post pause is a four-week comparison.

1 THE WITNESS: Right. THE COURT: Got you. 2 3 THE WITNESS: That last piece, the post pause is 4 not come back to Meta and that's four weeks for sure. 5 Bought the pause itself was three months long and 6 we're looking at one week of those three months. 7 THE COURT: Understood. BY MR. DINTZER: 8 9 And the search spend, even after the pause was 0 10 over, it stayed up at 50 percent, right? So it didn't drop 11 down to where it had been before; is that correct? 12 А For those weeks, yeah. I mean, again, that's four 13 weeks after, maybe even five weeks after, but there's lots 14 of fluctuations in the full data; but, yes, search in those 15 five weeks stayed above. 16 And then we'll look at DBM. 0 17 And you understand what DBM is, right? 18 Yes. Α 19 What is it? 0 20 I don't remember what the letters are. I take it А 21 to be display. 2.2 Q And display goes -- before the pause, display goes 23 from 19 percent to -- during the pause to 31 percent? 24 А Yes. 25 I mean, again, in that one week, but overall there

definitely because shifting from social to search and 1 2 definitely shifting to display as well. 3 0 But the rise in display was significantly greater 4 percentage-wise than the rise in search, correct? 5 А In that week. 6 The full analysis measures those overall weeks. 7 0 And then in the post-pause week, it falls back to 8 21 percent after the boycott, right? 9 Right, for those weeks that's what happens, yes. Α 10 So once the boycott was over, Facebook moved Ο 11 almost to where it had started with respect to its display 12 spend; is that correct? 13 Again, that's five weeks, but in those weeks, yes. Α 14 I mean, the overall chart that I showed will tell you more. 15 I apologize, I said Facebook, but so that the 0 16 record is clear, Nike's spend on Facebook returned to the 17 19 percent; is that correct? 18 I do that all the time when I'm talking about this Α 19 experiment. 20 Yeah, for those weeks, it fell back. Again, the 21 full data will tell you more completely, but for those 2.2 weeks, that is correct. 23 0 No further questions on that document, sir. 24 On the subject of auction tuning, that's Google's 25 term for changing an auction's rules to influence the

outcome; is that right? 1 2 Α I don't want to speak for what term everyone at 3 Google uses. I'm comfortable with auction tuning being 4 changing the parameters of the auction to, in some sense, 5 influence the outcome. 6 0 And Google tunes its auctions with an intent to 7 maximize profits? Yeah, I think, as an economist, my maintained 8 А 9 assumption of the discipline is firms make choices to 10 maximize profits. 11 Q Google has tuned the auction to increase price 12 per ad? 13 Well, that depends. I don't think that's fair at Α 14 all. 15 So Google has not tuned the auction to increase 0 16 price per ads? 17 Α Sorry, I didn't hear you say "has." 18 I'm sorry, so let me restate the question, sir. Q 19 Google has tuned the auction to increase price 20 per ad? 21 I don't think that's a complete statement. Α 22 I think Google has tuned the auction in the ways I talked 23 about, to try to implement auction quality changes, in some 24 cases and not reduce price, but I don't think there's any 25 case where the tuning was simply to increase price.

Some of the tunings have sought to increase the 1 Ο 2 price per ad; is that correct? 3 А Again, I don't think that's a complete statement. 4 I mean, I tried to go through them. I think some 5 of the tunings have tried to -- I guess I would agree at the 6 level some of the tunings have tried to share in the value 7 of other changes that have been made. 8 And so if the value went up, quality --9 quality-adjusted prices went down, some of the tunings have 10 tried to have Google share in some of that value. 11 0 There have been tunings that were focused on price 12 increases, correct? 13 Certainly there have been tunings that were Α 14 focused on prices. 15 I only struggle with "increases" because it's 16 relative to what. 17 But there certainly have been tunings that have 18 noticed what's happened to price in response to some other 19 quality change or something and have sought to correct for 20 that. I -- I talked about that a lot in my testimony. 21 But I need you to answer my question, sir. My Q 2.2 question is: There have been tunings that were focused on 23 price increases, right? 24 I just struggle with "increases" relative to what. Α 25 But there have been tunings. You talked about

squashing where the idea was to undo some of the downward 1 2 pressure that had happened on price. So if you want to call 3 that a price increase, then I would agree, it's just as 4 important to say price relative to what. 5 0 Let's go to your slide, 126, from your 6 presentation. 7 And this is where you talk about the pricing knobs; is that right? 8 9 Among other things, yes. Α 10 Q And you say that the pricing knobs -- and again, 11 I'm using your words, show, "reveal Google's limited pricing 12 power." 13 Do you see that? 14 Α I do. 15 MR. DINTZER: And we're going to go to UPXD212. 16 This will appear on the screen. 17 May I approach, Your Honor? 18 THE COURT: You may. 19 BY MR. DINTZER: 20 Sir, there's been testimony at this trial that 0 21 Google has used its pricing knobs to increase prices; 2.2 is that correct? 23 А I don't think that's a full characterization of 24 the testimony as I read it. 25 I think there's certainly been testimony about

using knobs, if that's the term we're using, in order to 1 2 attempt to influence prices. 3 0 As Mr. Dischler testified: 4 "Sir, would you agree that Google has raised 5 search ad prices by 10 percent for some queries?" 6 "By 10 percent for some queries, it's possible, 7 yes." 8 You don't disagree with that, do you? 9 Yeah, I'm not guarreling with him that there's Α 10 some queries, it's possible. 11 Q Okay. 12 And he said -- and he was asked: "Do you agree 13 that format pricing is just one of the pricing knobs that 14 Google has to adjust the search ads auction?" "Answer: Yes." 15 16 You're not disagreeing with that? 17 Α Certainly format pricing was an adjustment to the 18 auction. 19 And it adjusted the price; is that right? 0 20 Well, that's not in this Q&A. Α 21 I would say it adjusted the four -- it adjusted 22 the way in which formats were accounted for in the auction, 23 and that, you know, anything that happens to the auction 24 affects prices one way or the other or could. 25 I think format pricing is best understood as

Google's attempt to more fully reflect the value of formats 1 2 when doing the auction ranking. 3 0 And let's go to the second page. 4 Have you reviewed UPX0059? 5 Α Sorry, what's the -- have I reviewed this page 6 that's in front of me? 7 0 Well, these are excerpts from a document in evidence. 8 9 А I don't remember from this cut if I have or not, 10 I'd have to look at the document. 11 Q We'll come back to that, sir. 12 Now, prices for Google's ads have risen over the 13 past decade; is that right? 14 Overall -- nominal prices on average, I think it's Α 15 fair that they have gone up. It depends a lot on what you 16 look at and what index you use, but I think it's fair that 17 on average, they've gone up. 18 I mean, so have most oft- -- you know, Bing and 19 Meta as well. So I think it's fair that auction prices on 20 average have gone up. 21 Q Okay. 2.2 And when you say Google had the ability to capture 23 some of the value it creates, it captures that value by 24 raising price, right? 25 I'm trying to think if that's complete. А

I mean, I think I would say it captured the value 1 2 by raising price or increasing the quantity itself. 3 But one form, if there's more value created and 4 there's a price increase, then Google gets some and the 5 advertiser is better off. 6 Q And have you done an econometric analysis about 7 quantity increases and price increases for Google? 8 Certainly I've put forward empirical evidence. А 9 I guess by "econometric analysis," you mean have I run a 10 regression on that topic? Not that I can recall. 11 Q Okay. 12 And so let's go to your Slide 133. And we'll put 13 it up on the screen. 14 And at the bottom, you write, "Squashing addresses 15 this issue by reducing the gap between the LTVs so that 16 improvements in PCTR do not crush Google's revenue." 17 Do you see that? 18 Yes. Α 19 And that means it increases the price, right? 0 20 Relative -- this is the example I gave earlier. Α 21 Relative to the 39 cents. So relative to what would have 2.2 happened without squashing. Certainly not relative to the 23 initial \$1.30. 24 Well, squashing increased the cost per click 0 25 60 percent of the time and reduced it 40 percent of the

time, right? 1 2 Α Yeah, I think all else equal, when they 3 implemented squashing, that's correct. 4 0 And on average, squashing text ads means the 5 winner pays more, right? 6 Α I mean, again, I just -- I think it's important to be clear relative to what. 7 8 Everything else the same and you squash, and I 9 agree that 39 cents would go up. Now, it only happens 10 60 percent of the time because of how advertisers react, 11 but, yes, relative to a world in which you implement the 12 improvement to PCTR and the CPC goes way down, squashing 13 increases CPC relative to that world. 14 Google used squashing to raise ad prices -- let 0 15 me -- let me try it this way. 16 Let's go to your Slide 134. 17 Which is the next slide. 18 And this is where you explain the relationship 19 between Google's ads quality increases and their price 20 increases, right? 21 I mean, more generally. The relationship between Α 2.2 ads quality increases and what happens to prices with and 23 without squashing. 24 And it says, "Ads quality wants to continue 0 25 launching such advertiser value-creating launches, but needs

1	a mechanism to help Google share in the value that our
2	launches create," right?
3	A Yes.
4	Q Otherwise, as you've described it, sometimes an ad
5	launch might mean negative revenue for Google, right?
6	A Right.
7	Well, in particular here, improvements in the PCTR
8	will often lead to lower prices.
9	Q Okay.
10	And what this paragraph doesn't say is it doesn't
11	mention competition at all, does it?
12	A This paragraph? I don't see competition.
13	I mean, we talked a minute ago about advertisers
14	reacting to what Google does, and that's where competition
15	happens.
16	Q But my point is, sir, is that in considering
17	whether they raise prices or whether they're going to launch
18	an ads quality increase, there's no discussion of what
19	competitors are doing, just in this paragraph that you
20	cited; is that correct?
21	A Not in this paragraph. There's lots and lots of
22	consideration, in fact, on the part we can't see on the
23	screen about how advertisers will react.
24	Q How advertisers will react?
25	A Advertiser reactions are where competition comes

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in because advertisers react given what their options are. 1 2 Ο And your understanding is elsewhere on this page, 3 there's an express discussion of competition and how -- and 4 what competitors are doing in the market? 5 А There's an express discussion of advertiser 6 reactions. There's other Google documents where they have 7 back-and-forth about, How do we think about competition, and 8 the pricing people say, The way competition comes in is we 9 look at how our advertisers react, and the advertisers are 10 reacting based on the options they have. 11 So Google can only see their own advertisers, they 12 don't have full information about the competition. So the 13 way competition comes in is through elasticity through how 14 their advertisers react. 15 And I -- all of that, I just want you to answer my 0 16 question. My question is simple. Is there a discussion 17 about what Google's competitors are doing or the need to do 18 this, to make this increase, to keep up with competitors? 19 MR. SOMMER: Objection. Asked and answered twice. 20 THE COURT: Sustained. Next question. 21 BY MR. DINTZER: 2.2 Q Sir, you'll agree that GSEs compete with each 23 other for advertisers? 24 Yeah, I think GSEs are generally part of this Α 25 advertising market.

1	Q And some advertisers advertise on Google but not
2	Bing?
3	A Yeah, generally, smaller ones; I went through
4	that, but, yes that's correct.
5	Q And all else equal, more advertisers in an auction
6	tend to lead to a higher price?
7	A That's a tricky one in a second-price auction.
8	I think it's probably true on average, but there was
9	testimony about this, it depends who you're bringing in.
10	So if you're bringing in somebody with low value,
11	it's not going to have any effect. If you bring in somebody
12	with very high value, it can push the price down, for the
13	reasons we talked about, because their PCTR will be so high
14	that they won't have to pay a high price.
15	So I think I agree with your statement on average,
16	but in a second-price auction, it's tricky.
17	Q More advertisers in an auction lead to a higher
18	price, and there are more advertisers on Google than on
19	Bing; is that right?
20	A Again, the first statement I just explained is
21	tricky.
22	The second statement, I agree there are more
23	advertisers on Google than Bing, but that, you know, it
24	doesn't there's also more auctions on Google than on
25	Bing. So what how many advertisers there are per auction

1	depends.
2	Q And you haven't done that research?
3	A I think it's fair, I don't have a quantification
4	of advertisers per auction.
5	Q There are fix costs associated with advertising on
6	search engines?
7	A Yeah, I think they're relatively small. I talk
8	about this in the report. This isn't an industry with big
9	fixed costs, but they're not zero.
10	Q You have conducted no econometric analysis on the
11	cost of joining a new ad platform and optimizing keywords?
12	A Econometric analysis is fair. There's analysis of
13	sort of what the cost levels are, of the fact that there's
14	lots of multi-homing, which speaks to how high the cost
15	could be, but I haven't done a regression.
16	Q And the fixed costs, I think you said this, on
17	joining a new platform are more material for small
18	advertisers than large because they have fewer ads to spread
19	the fixed costs over, right?
20	A I think that's fair.
21	Q So smaller advertisers prefer larger ad platforms?
22	A All else equal, they probably prefer a place where
23	they can get more ads. I mean, obviously lots of other
24	things vary.
25	Q Google uses the funnel concept internally when

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1	discussing ad markets; is that right?
2	A I don't know about when discussing ad markets.
3	I think they use funnel language.
4	Q Google uses the funnel concept when talking to
5	advertisers?
6	A That's probably true. It's just sort of the lingo
7	everybody uses.
8	Q And I think you said the marketing funnel was
9	taught in marketing school, which is why probably they call
10	it the marketing funnel?
11	A Yeah, I mean, it's sort of taught the way we teach
12	the most basic models of competition in economics as kind of
13	a strawman against which to say how the real world varies.
14	Q Advertisers try to influence the way consumers
15	move along their journey to an ultimate decision to purchase
16	their product?
17	A Sorry, I just got distracted for a second. Can
18	you repeat that.
19	Q Of course. Take a second.
20	Advertisers try to influence the way consumers
21	move along their journey to an ultimate decision to purchase
22	their product?
23	A That sounds right.
24	Q Advertisers seek different types of advertisements
25	forming different tools along the journey to make a sale?

1	A I just missed a word there in the middle. I just
2	couldn't hear you.
3	Q Sure. Advertisers seek different types of
4	advertisements forming different tools along the journey to
5	try to make a sale?
6	A I mean, maybe. It depends on the advertiser,
7	which tools they use.
8	Q So let me just see if I get this right.
9	Advertisers see different types of advertisements forming
10	different tools along the journey to try to accomplish the
11	goal of making a sale; is that correct?
12	A At that level, generality, yeah.
13	It depends on the advertiser, which tools that
14	they're using, and those could differ.
15	Q Now, turning to the subject of ROI, ROI is how
16	much money you make divided by how many dollars you invested
17	to make them, right?
18	A Generally, yes.
19	Q Incremental ROI is how much you invested in that
20	campaign relative to how much money you made in that from
21	that campaign, right?
22	A Right.
23	I tend to think in incremental when I say ROI. So
24	it would be how much extra did I invest and how much money
25	did I make as a result.

1	Q And ROI is difficult to measure on almost every
2	investment a business makes, right?
3	A Difficult to measure perfectly. I mean,
4	businesses tend not to perfectly know their ROI.
5	Q And every investment a business makes could be
6	subject to an ROI analysis, is it worth buying this or this
7	or investing in this or this, right?
8	A That's fair, yes.
9	Q One difficulty with advertising ROI is figuring
10	out how much revenue and cost was due to the different
11	advertisements, right?
12	A I think that's fair.
13	I mentioned in my earlier testimony the world of
14	digital advertising has changed a ton in the last few years
15	and that's a big area is improvements in ROI measurement.
16	But it's a challenge that has you know, that is being
17	dealt with.
18	Q Now, one difficulty is that some users clicking on
19	an ad, say a search ad, would have clicked on an organic
20	link if the ad wasn't there, right? I mean, if you have an
21	organic and a search ad, it's hard to know the value of the
22	search ad and what the user would have done on the organic
23	instead, correct?
24	MR. SOMMER: Objection to the form.
25	THE COURT: It's overruled.

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If you can understand the question. 1 2 THE WITNESS: It certainly is something that has 3 to be considered. 4 I mean, whether it's -- there are experiments are 5 done and so on to try to measure it, that's an area of 6 improvement, but it certainly is one of the challenges. 7 THE COURT: I'm sorry, when you say one of the 8 challenges, you mean a challenge in distinguishing or in 9 determining the ROI of a text ad versus an organic link that 10 would otherwise be clicked? 11 THE WITNESS: Or even just the ROI of the text ad. 12 It just, I have to know, I pay some money on a text ad and 13 I'd like to know if I didn't have it here, what would they 14 have done. I don't ever know that perfectly. You try to 15 measure that by doing A-B experiments with the ad, without 16 the ad and compare, but it's an issue that needs to be 17 studied. 18 BY MR. DINTZER: 19 So under the SERP, I mean on a lot of SERPs, a 0 20 company will buy a text ad even though it appears as an 21 organic ad -- I mean, organic as well, correct? 2.2 Α That's fair. 23 And just the difficulty we're talking about is, 0 24 it's difficult to measure ROI. And if you didn't do the 25 text ad because you don't know how many people would have

clicked on the organic ad -- or the organic link? 1 2 Α I'm not sure that I would characterize it as that 3 difficult anymore. Firms study this in-depth. One way to 4 do it is have a week when you turn off the text ads and see 5 what the difference is. It certainly is a challenge that 6 has to be considered. 7 0 The challenge with ROI is breaking down the revenue between different ads and other actions a firm 8 9 takes, right, that's another challenge? 10 Α Right, yeah, the things that are being studied and 11 improved over time include -- I agree with your general 12 principle that you're trying to measure the effect of the ad 13 all else equal. 14 Part of the challenge of ROI is certainly which 0 15 advertisement may have led to the purchase? 16 Again, that's another challenge. It tends -- it's Α 17 being dealt with quite well over time with the sort of 18 experiments, but these are the things that need to be 19 studied. 20 So we talked about how businesses have ROIs on all 0 21 of the various investments that they might make in the 2.2 business, right? 23 А They could. So you consider a restaurant, there would be an 24 0 25 ROI on the possibility of hiring a new employee, right?

1	A Yeah, I don't know that they would run an ROI for
2	that, but you could.
3	Q Or a new freezer or a new location?
4	A The new location probably most apt to find the
5	ROIs in their documents, but, yeah, the concept of how much
6	am I spending and how much does it improve my profit is
7	quite general.
8	Q And so freezer or person, and then we know that
9	there's ROIs on ad spend, right?
10	A Yes.
11	Q And location.
12	And the ad spend could be on a search ad or a
13	radio ad, is that right? I mean, it could be any kind of ad
14	that you'd figure out an ROI, right?
15	A At that level, sure, you could compute the ROI on
16	different types of ads.
17	Q Search, radio?
18	A You know, generally when people do ROIs they're
19	comparing they're looking across a particular set of
20	options, but you could compute an ROI wherever you want.
21	Q You could compute the ROIs for all of these
22	things, correct?
23	A I mean, you could try. There's been a ton of
24	attention to computing them on ad spends. That's a huge
25	focus in the last few years. I'm not sure there's been much

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1	attention to how to compute an ROI on a freezer, but the
2	concept applies.
3	Q If the ROI was the same for each of these just
4	hypothetically, was the same for each of these, exactly the
5	same, that wouldn't mean that each of these are in the same
6	antitrust market, right, the fact that they happen to have
7	the same ROI?
8	A Yeah, I agree that I would not put those things in
9	the same market.
10	As I said a minute ago, you need to combine that
11	with sort of the narrow set of choices that firms are
12	looking at. So what matters here is ROI, you know, and lots
13	of statements about looking at ROI across digital ads as a
14	way to do channel optimization.
15	Q Right, but the simple fact that different things
16	have the same ROI, that doesn't tell us whether they're in
17	the same antitrust model?
18	A I agree with that entirely, but the fact that
19	there's ROIs that are fed into general optimization models
20	that look across types of digital ads tell you about
21	substitution.
22	Q Let's go to Slide 113.
23	So this is your share of U.S. digital that you
24	calculated that you took from eMarketer, marketing
25	revenue 2008 to 2021, right?

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1	A Right, this is data from eMarketer, and then I
2	computed the numbers and put them on the slide.
3	Q And this is net, is this right?
4	A Net of acquisition if that's what you mean, net
5	of
6	Q TAC?
7	A TAC, yeah.
8	Q Just for the record, TAC is what?
9	A Traffic acquisition cost.
10	Q And so Google pays billions of dollars in traffic
11	acquisition costs to Apple and Android OEMs and carriers;
12	is that right?
13	A Right, Google does and so do most of the platforms
14	on this page.
15	Q Let's just focus on Google for a second.
16	Google's TAC is taken out before Google is put on
17	in the green bars here; is that correct?
18	A Right, TAC is taken out of everybody's numbers
19	here.
20	Q Have you done any kind of analysis to see if any
21	of these other companies are paying TAC anywhere near in the
22	range of what Google is for its agreements?
23	A Yes.
24	Since you asked me this is at my deposition,
25	I went back and looked, and the TAC on average of social and

display is higher than the TAC on average of search.
Q Oh, and that wasn't in your report, was it?
A You asked me in the deposition so I went back and
looked at it.
Q Okay. And was that part of your presentation?
A No. These are all net of TAC.
But since you're asking, the TAC is out of all of
them. And if you were to ad TAC back in, it would tend to
make the non-Google bars relatively a little bit bigger.
Q Can you find TikTok here?
A Yes, TikTok's in the pink there.
Q That pink sliver; is that right?
A It's the one you can see growing over the last
three or four years.
But, yes, relative to the total here, it's the
pink field, if that's what you want to call it.
Q You'll agree that's relatively small compared to
the others?
A I would agree that as of, 2021 TikTok is a
relatively small part of the total.
TikTok really to me is the example of the next one
where the projections of over 10 billion by next year are
telling but or in 2021, TikTok was relatively small.
Q I direct your attention to the Y axis of
I'm sorry, let's go to slide 117, then

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1	THE COURT: Before you do that, can I just ask, so
2	could you just give me an example or some examples of what
3	the traffic acquisition costs are for social?
4	THE WITNESS: I mean, a lot of it is what they pay
5	into the ad tech providers. I mean, one way to think about
6	it is what would they have pay to develop content. The
7	number I'm really quoting is there are people who run their
8	auctions and their demand-side platforms and so on, they're
9	like service providers who help bring together the demand
10	and create the match. And so those guys charge a fee for
11	bringing so if a demand-side provider is representing a
12	bunch of advertisers, they bring that demand to a social
13	platform or a display platform, they charge something like
14	15 or 20 percent of the total ad value as their fee for
15	bringing that demand.
16	THE COURT: And that's done by whom? We haven't
17	focused on this so I'm just trying to understand who it is
18	that's
19	THE WITNESS: So yeah.
20	THE COURT: doing this.
21	THE WITNESS: So in the case where it's not you
22	know, it's not in Google's case, obviously they were
23	talking about Apple and things, because Google has got
24	Google Ads, and it's mostly feeding demand into its own
25	auctions.

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For many of these other sources, there's a broader 1 ecosystem of people who are rep -- like representing 2 3 advertisers. So if I'm -- Nike and I have a demand-side 4 platform, it's called, that helps me allocate my ads. 5 So Nike goes to them and says, I'd like to bid 6 across a variety of places, and they go out and help find 7 those places, and they're --THE COURT: So this is like Mr. Lowcock's firm? 8 9 THE WITNESS: Well, they're an agency, they're --10 but they're a part of that process. 11 The agency would tend -- would probably go to a 12 demand-side platform -- The Trade Desk is the name of one --13 and say, Help us bid across auctions, and The Trade Desk 14 takes a 20 percent cut out of that. That's what they do. 15 Like when we bid -- you give us \$100 to bid, we'll bid \$80 16 in, and we keep \$20. 17 That's called the ad tech stack. That's basically 18 the source of these acquisition costs for these guys, they 19 have to pay that stack to people who are bringing together 20 the demand. 21 THE COURT: Thank you. 2.2 BY MR. DINTZER: So we can move on from this, but just for the 23 0 24 record, you did not disclose this in your report, you did 25 not disclose this in your deposition, correct?

1 Α No, I mean, I knew these things existed, but yeah, 2 to be clear, I looked up the numbers after you asked me the 3 question. 4 0 Let's go to Israel Slide 117, please. 5 So this is the rise of TikTok; is that right? 6 Α Correct, through 2021. 7 As you've said, it -- relatively low total in 8 2021. More interesting action is where they are now and 9 what's being projected. But these are the numbers that 10 underlay that TikTok bar. 11 And so in your slide, as you say, and what's being Q 12 projected is -- among other things, it's not on the slide. 13 So just on the slide, the -- the Y axis here is \$2 billion, 14 right? 15 Α Correct. 16 And as we saw on the bar, clearly 2 billion is 17 well below Meta and Google and Amazon. 18 No further questions on that. Q 19 Let's go to Slide 137. 20 THE COURT: Let me just ask another question about 21 your 113. 2.2 THE WITNESS: Sorry, I need to --23 THE COURT: That's okay. This is your --24 THE WITNESS: Okay, yeah. 25 So would it be a fair inference from THE COURT:

1	this, I mean, you've testified that the ads Google's
2	share of the digital advertising revenue has decreased over
3	the last five years or so, not by a huge percentage but by
4	some.
5	Would you say that based on that, that the actual
6	ad spend has shifted away from Google or rather, just the ad
7	spend has gotten bigger and Google has just gotten a smaller
8	chunk of it because there are new, for example,
9	opportunities on Facebook? TikTok didn't exist five years
10	ago.
11	THE WITNESS: Yeah, to be clear, they're all
12	growing.
13	Google is not shrinking. They're all growing.
14	The other ones are growing faster. So these are share
15	numbers out of a pile that's getting bigger.
16	But, I mean, we tend to look at shares to see sort
17	of how successful are we being in capturing that total.
18	So but I think the right read of this is not
19	that Google is getting smaller, that's not what I would say;
20	it's that the firms that I clearly, you know, opine are
21	competitors are growing rapidly.
22	MR. DINTZER: And I'm sorry, Your Honor.
23	THE COURT: No, go ahead.
24	BY MR. DINTZER:
25	Q And so to be clear, the pie is getting bigger,

1	correct?
2	A Yeah.
3	Q The ad pie is the mount of spend is going up?
4	A Yeah.
5	As I said, output is definitely going up. I I
6	see that as the ultimate indicator of what this competition
7	is doing.
8	But, yes, the pie is getting bigger.
9	Q And the pie is getting bigger for search ads
10	specifically as well, correct? I understand that you don't
11	identify that as an ad as an antitrust market, but that
12	market is growing; is that correct?
13	A Yes, the absolutely.
14	Q So if the pie is getting bigger, then Amazon and
15	Facebook have grown but not at the expense of ads actually
16	being shifted off of Google, right?
17	A Yeah, that I don't agree with.
18	The way competition works is firms fight with each
19	other, and they compete, and one of the effects of that if
20	it's working well is output goes up, right?
21	So I would say the reason we look at both
22	market shares and output is two different metrics of
23	competition.
24	So I think what's what I would say is these
25	competitors are growing, they're competing for every dollar,

1	all of them are growing, and that's all a sign of healthy
2	competition.
3	Q Let's go to Israel Slide 137.
4	I take it back. We're on 135. And it's on the
5	screen. The heading is "rGSP Creates Benefits for Users
6	and Advertisers."
7	A Yes.
8	Q Do you see that?
9	A I do.
10	Q And to be clear, you do no econometric or
11	egression analysis to determine the quality-adjusted price
12	for rGSP; is that correct?
13	A That's correct.
14	For my analysis of rGSP is what it does. And
15	my analysis of quality-adjusted price is reporting the
16	numbers Google has computed.
17	Q Right. You don't try to determine what portion of
18	nominal price changes is due to changes in quality;
19	is that correct?
20	A I mean, I report what Google has done in measuring
21	that. I don't do a separate econometric sturdy.
22	Q Now, you said rGSP promotes ad diversity by
23	swapping ads when their LTV scores are close; is that right?
24	A I'm not sure I used the word "ad diversity," just
25	to be clear, but I I would say it helps discover it, it

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1	helps
2	Q Discover?
3	A learn about ads that otherwise would not
4	have won.
5	Q Okay.
6	And just so that we're clear, the rGSP,
7	there's when there's a certain distance between the first
8	one and second one, Google will swap the ads sometimes;
9	is that right?
10	A If they're close I agree. If they're far
11	enough apart, it won't. If they're close enough together
12	with probabilistically it will flip them.
13	Q And what's that distance, do you know?
14	A I don't remember.
15	Q And so if if this one, the top one, if they
16	bid high enough, then they won't get swapped, right, because
17	then they won't be close enough?
18	A Yeah, if the LTV, which is a combination of their
19	PCTR and their bid, is high enough, they won't get swapped.
20	Q Okay.
21	So one of the things that rGSP does is, it says
22	if you are bidding high enough, you don't have to worry
23	about the swap, correct?
24	A I think I mean, I think it incentivizes
25	advertisers who have a high value on the spot to bid higher

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1	if they put a high value on the slot.
2	Q Okay.
3	Now, the Court has heard about how search relies
4	on different modules that are trained on different amounts
5	of data. I don't know if you've plugged into that testimony
6	or not?
7	A In general. It's not a yeah, I'm not an IT
8	guy, so I I read it.
9	Q Okay.
10	And do you know if the search ad system also has
11	different modules in the same way that the and if I
12	didn't say search ads do you know if the search ad system
13	also has different modules in the same way that the search
14	system does?
15	A I wouldn't think it would be in the same way. But
16	I don't recall the use of word of the "module" so
17	Q Do you understand that the search ad system is
18	also trained on user data?
19	A That's correct. I mean, things like the
20	learning about the PCTR score rely on clicks, or it relies
21	on data.
22	Q And at least one of the models in the search ad
23	system uses 12 months of data, correct?
24	A I don't recall the exact number of months.
25	I mean, it may be, I just I've seen 8 to 12

I've seen different numbers, I just don't remember. 1 2 Q So let's go to your report. 3 Α I don't think I have it. 4 0 Do you not have that there? 5 Let's pull that for him. 6 MR. DINTZER: May we approach, Your Honor? 7 THE COURT: Uh-huh. 8 BY MR. DINTZER: 9 And we're going to go to your first report, Ο 10 page -- I'm sorry -- well, we're going to go to 11 Footnote 526, so I believe that that's attached to 12 paragraph 321. 13 Α I'm sorry, 321? 14 Q Yes, sir. 15 Α And then -- okay. 16 And just let me know when you're at Footnote 526. Q 17 Α Okay. 18 And it's a long footnote, and I'm going to draw Q 19 your attention to the part that bleeds over onto page 253, 20 and let me know when you see that. 21 Α Okay. 22 Q And the footnote is attached to a discussion of 23 ads; is that right? 24 А It's attached to a discussion of predicted 25 clickthrough rates on ads.

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Q	Okay.
	And and in the second part of the footnote, in
the part	that bleeds over, it says, "This allows for a
reductio	n of 15 percent of initial training time."
	Do you see that?
А	No.
Q	It's sort of in the middle of that paragraph.
	"By reducing the training dataset," do you see
that?	
А	I do.
Q	And then is cites a document, Goog-DOJ-279-70688.
	Do you see that?
А	I do.
Q	And then it says, in paren, "This change reduces
the trai	ning data by 6 months, from 18 months to 12 months."
	Do you see that?
А	I do.
Q	So according to the document that you cite in your
report,	at least one of the models in the search ads stack
requires	12 months of user data.
	Do you see that?
А	No, I don't think I would say "requires," but
there's	one place where they have made a change and reduced
from 18	to 12.
Q	Okay.
	the part reductio A Q that? A Q the trai A Q the trai A Q the trai A Q the trai A 1 Q the trai

1	No further questions on that document, sir.
2	And you understand that 12 months of Google data
3	is it takes Bing a significantly longer amount of time to
4	obtain the same amount of user data, right?
5	A Yeah, I mean, it would 12 months of Google data
6	would be more than 12 months of Bing data.
7	Q By an order of seven, eight?
8	A By the difference in their queries, I don't
9	remember the exact number as I sit here.
10	MR. DINTZER: And, Your Honor, this would be a
11	good place for a break if it pleases the Court, but I'm
12	happy to go on if
13	THE COURT: No, that's all right, we can break
14	now. It's a little bit before 11:00. We'll resume
15	at 11:15.
16	Mr. Dintzer, where are we in terms of
17	MR. DINTZER: We're rounding third and heading
18	home. You asked us to stay within the two-hour limit and
19	we will keep to that.
20	THE COURT: All right. Terrific.
21	COURTROOM DEPUTY: All rise.
22	This Court stands in recess.
23	(Recess from 10:57 a.m. to 11:16 a.m.)
24	THE COURT: All right. Mr. Dintzer, whenever
25	you're ready.

1	MR. DINTZER: Thank you.
2	BY MR. DINTZER:
3	Q Sir, we're going to go to your Slide 132 in your
4	deck.
5	Let me know when you're there. We're going to put
6	it on the screen, too, if that helps.
7	And here you talk about semantic matching.
8	Do you see that?
9	A I do.
10	Q And you testified that semantic matching helps
11	advertisers enter more auctions; is that right?
12	The words you use are "benefits advertisers by
13	allowing them." Do you see that?
14	A Right.
15	I mean, what I say here is allowing them to bid on
16	the intent behind the query.
17	Q Semantic matching is not optional, right?
18	A I think it's the I mean, there's always some
19	matching in the Google system and I think semantic matching
20	is the current matching system. So you can opt out of
21	certain keywords but semantic matching is the Google system.
22	Q Some advertisers prefer not to enter certain
23	auctions, you'll agree with that?
24	A At that level of generality that sounds right.
25	Q But those advertisers are stuck bidding in an

auction they don't want to participate in or unless they 1 create negative keywords, right? 2 3 Α Well, I -- sorry, my answer to the earlier 4 question was general, not about semantic matching. 5 I mean, I haven't seen evidence at least that 6 semantic matching -- I mean, given that the idea is to match 7 to words that have the same intent, I haven't seen evidence 8 saying that people don't want to bid on the intent. 9 All I'm asking, sir, is that if an advertiser Ο doesn't want to match and doesn't want to be in an auction, 10 11 they have to create negative keywords, correct? 12 А Right. If they want -- yeah, if they can 13 create -- if there are certain version that would 14 semantically match and they don't want to be there, they 15 could put in negative keywords. 16 And the more that have advertisers use negative 0 17 keywords, the more they take themselves out of auctions, the 18 thinner the auctions get? 19 I would agree that as advertisers take themselves А 20 out of auctions, all else equal, that makes the auction 21 thinner. 2.2 Q Let's go to UPX49. 23 I believe this is in your binder. 24 Your Honor, this is in evidence. 25 And it's titled "Targeting & automation, ads

1	quality 2	015 strategy workshop."
2		Do you see that?
3	А	Yeah, it's kind of small, but I see the top.
4	Q	We'll bring up the top. Do you see that, sir,
5	"Targetin	g and automation"?
6	А	I do.
7	Q	This is dated August 2014?
8	А	Yes.
9	Q	And then we're going to go down on this page to
10	about mid	-range and Jorge will pull this up.
11		MR. SOMMER: Counsel, do you have a copy? It's
12	not in th	e binder.
13		MR. DINTZER: Of course.
14		May I approach, Your Honor?
15		Would you like a copy, sir, or do you want to use
16	the scree	n?
17		THE WITNESS: The screen is fine well, maybe
18	I'll take	a copy.
19		MR. DINTZER: Of course.
20	BY MR. DI	NTZER:
21	Q	So in the middle of the page, and it's on the
22	screen bu	t you're welcome to look at it yourself, there's a
23	line ther	e are that begins, "We also."
24	A	I see that.
25	Q	And it says, "We also lack a way beyond adding

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negative keywords for advertisers to react to unwanted 1 2 matches." 3 Do you agree with that? That the only way to get 4 rid of unwanted matches is negative keywords? 5 I mean, it sounds very general so I don't want to Α 6 make an overbroad statement about the auction. 7 I think if you bid on a certain term and they're a 8 semantic matching, in that context if there are certain 9 semantic matches you don't want, the way to avoid them would 10 be negative keywords. 11 If we skip a sentence and it says, "On the other Q 12 hand, a single negative broad keyword will not remove, the 13 presumably also unwanted, close variants, which forces 14 advertisers to go through the tedium of continuously adding 15 more and more negatives that are very similar to the ones 16 that they already have." 17 Do you see that? 18 T do. Α 19 Do you have any reason to doubt that that is the 0 20 case today? 21 I mean, yeah, I think this is a challenge of an Α 2.2 auction process. 23 I mean, my own view is semantic matching makes 24 sense because you're trying to bid on running shoes, you 25 probably want to bid on shoes for running too.

But that system, you know, requires work if there 1 are certain terms that you don't want. 2 3 0 And you make a point, running shoes takes you to 4 shoes for running as an example of a semantic match, right? 5 Α Yes. 6 Q And here's the question, though. There's no 7 little box, right, where they can say, turn it off; there's 8 no place on the advertising platform where an advertiser can just turn off semantic matching if they don't want it? 9 10 Α That's my understanding. 11 I mean Google, the way I think about it, Google 12 used to have syntactic matching. They're trying to get the 13 auction as close to what it was meant to be as possible. 14 And so this is the matching system. 15 The way I look at it, you need some matching 16 system or you have all these different terms and that would 17 be incredibly difficult so they need some matching system. 18 And there's no perfect matching system. 19 But my view of semantic matching is the right --20 was the good way to try to get the right people in the 21 auction. 22 Q When you were previously testifying the Court 23 asked you about advertisers' ability to opt out of semantic 24 matching. Do you recall that? 25 Α Yes.

And you talked about small advertisers who don't 1 Ο 2 have big teams to identify every applicable keyword. 3 I'm not quoting you, but that was the idea of your 4 testimony, right? 5 Α That was one thing I said, yes. 6 Ο But those same small advertisers don't have teams 7 to identify every negative keyword either, do they? 8 А Yeah, they have smaller teams. I mean, again, I haven't seen evidence of enormous 9 10 numbers of keywords that you wouldn't want if a semantic 11 match is working well. The semantic match needs to work well so you're 12 13 actually getting the same meanings. 14 Do you understand that advertisers such as Amazon Ο 15 and the like, they keep extensive lists of negative 16 Is that your understanding? keywords? 17 А I don't know advertiser by advertiser. I do know 18 that negative keywords are used. I don't know the counts. 19 And until an advertiser knows everybody possible 0 20 semantic match that Google will do, they will be matched. 21 So if I'm seeking running shoes, until I find out that shoes 2.2 for running are going to appear, I won't know to use 23 negative keywords, right? 24 I mean, you would have to do some experimentation Α 25 to see what the matches are.

Now, you talk about Nike and let's talk about 1 Ο 2 Kohl's for a second. 3 On your -- and we'll go to your Slide 68 and we'll 4 put it on the screen. 5 And you actually cited Kohl's; is that right? 6 Α Yes. 7 And you say, "They continue to leverage MMM and Q testing insights to optimize media mix and maximize ROIs." 8 9 Do you see that? 10 Α Yes. 11 I promised the court reporter I'd slow down when Q 12 I'm reading so I will do that. 13 "To continue to leverage MMM and testing insights 14 to optimize media mix and maximize ROI." 15 And this is from an exhibit, right? You took this 16 pull-out from an exhibit? 17 Α Perhaps. I took it from what was in the record. 18 I just -- what's an exhibit and what's called an 19 exhibit and what's not, I don't totally understand. 20 I don't --21 Let's be clear. There's a DX number, DX412 and Q 2.2 there's a document. Did you look at that document, sir? 23 А Yes. 24 Did you read the document? Q 25 А I have, yes.

So let's go to DX412. 1 Q MR. DINTZER: May I approach, Your Honor? 2 3 Your Honor, this is a Kohl's document that Google 4 itself has put in front of the witness as part of his 5 testimony. We'd like to offer it. 6 MR. SOMMER: No objection. 7 THE COURT: Okay. It will be admitted. 8 (Defendant's Exhibit DX412 received into evidence.) 9 10 BY MR. DINTZER: 11 Q And so -- and you're familiar with the document, 12 right, sir? 13 А Yes, it's been a while since I read the whole 14 thing, but I have. 15 So let's go to page 66 -- Bates number 665, and 0 16 this one is redacted, but I think we can talk through that. 17 Are you there, sir? 18 I'm getting there. Α 19 665? 20 Yes, sir, Bates number 665. Q 21 Α Okay. 22 Q Okay. 23 And do you see that there's some circles in the 24 upper left corner, and then there's a line chart, a time 25 chart.

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	Do you see that?	
A	I do.	
Q	Okay.	
	And it's heading is "Flighting approach."	
Do you se	e that?	
А	Yes.	
Q	And so the digital video line goes up and down	and
up and do	wn, do you see that, over a period of time?	
A	Yes.	
Q	And the social line goes up and down and up and	
down. Do	you see that?	
A	Yes.	
Q	Display, a little more tightly constrained, but	a
little bi	t up and down. Do you see that?	

14 little bit up and down. Do

15 А Yes.

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And then search, the search spend is perfectly 16 Q horizontal; is that right? 17

18 Α Well, on this page, yes.

The other channels increase above or below search 19 0 20 but search does not change; is that correct?

21 Α I mean, on this page, that's what the line shows 22 yes.

23 Q And it's in the document you cited, sir, correct? 24 А All right. 25 But the document has many other pages that have

lots of discussion about shifting between channels. 1 2 Q No further questions on that document, sir. We're going -- we're heading home, and we just 3 4 have a few more pages here, sir. 5 So I'm going to show you -- we're going to go back 6 to the search issue, and we're going to put up UPXD071. 7 MR. DINTZER: May I approach, Your Honor? 8 THE COURT: You may. 9 BY MR. DINTZER: 10 And so, sir, this is multiple pages that -- in the Q 11 handout because, you know, obviously the SERPS are long. 12 Here's a Google query for -- for an Apple air tag. 13 Do you know what an air tag is? 14 Generally, yes. Α 15 Okay. Q 16 And if you wanted to learn more about what it is, 17 on the right, there's a -- Google provides the Wikipedia 18 page for AirTags. 19 Do you see that? It's in green on the screen. 20 I do. Α 21 And if you're interested in comparing prices for Q 22 AirTags, you can see that -- you can see them across the 23 top. 24 Do you see that? 25 Yeah, those look like three -- prices from А

three retailers for Apple AirTags. 1 2 Q And on the second page, if we go down a little 3 further, if you're trying to figure out are Apple AirTags 4 actually worth it, there's an NBC News article that actually 5 is titled "Are Apple AirTags Actually Worth It. We Say 6 Yes." You can get that information, again, just by being on 7 the SERP. Do you see that? 8 9 Α I see it on the SERP, yes. 10 Q Okay. 11 And so a -- the -- a variety of information --12 we've talked about this, but I -- I'm coming to a point 13 here. 14 There's a variety of information from a variety of 15 places on a Google or Bing SERP; is that right? 16 That's fair. Α 17 Q Okay. 18 So now, have you read or did you see the testimony 19 of Elizabeth Reid, a Google employee? 20 I don't know about that one. I think it might А 21 have been like the morning before I was coming on, very 22 recent, I think. 23 Q Okay. 24 So we're going to put that up for you on the 25 screen, sir, and this is what she said.

And she was asked, "What is it that Google
creates why is it that Google creates these vertical
experiences within the search results page?"
And she said, "Yeah, I think if you go back to the
original mission Google had, that Larry and Sergey created,
they said, 'Organize all the world's information.' They
didn't say organize all the web information. They really,
really had the desire that you could come here and get any
question answered. Right? If you think what you used with
the library, why is something that's available in the
library not going to be available on search just because it
wasn't on a web page? So they really wanted to answer all
those questions."
Do you see that?
A I do.
Q And that's part of Google's mission statement,
right?
A I don't know about
Q Organizing all the world's information?
A I think if we were going to describe Google from
the supply side, this is the part of Google's mission.
Q And and what she's describing here is a
one-stop shop for information, right?
A That's not the terms that I would use. From the

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1	She's describing one place that you can get all of
2	this different information. That's very different from
3	saying, Users come at it in one stop. Right? That's a
4	supply-side versus demand-side distinction that's quite
5	important.
6	MR. DINTZER: And with that, Your Honor, we pass
7	the witness.
8	THE COURT: Okay. Thank you, Mr. Dintzer.
9	MR. DINTZER: Thank you, Your Honor.
10	THE COURT: We'll get started then, Mr. Cavanaugh.
11	MR. CAVANAUGH: Sure.
12	Your Honor, may I approach?
13	THE COURT: You may.
14	MR. CAVANAUGH: Your Honor, I promise the size of
15	the binder and the number of documents is not reflective of
16	the length of the cross. We ran out of smaller binders, and
17	I don't intend to use all these documents.
18	THE COURT: It's been a good few months for the
19	binder business.
20	MR. CAVANAUGH: Right.
21	
22	
23	
24	
25	

8895 1 2 CROSS-EXAMINATION 3 BY MR. CAVANAUGH: 4 0 Good morning, Doctor. 5 Α Good morning. 6 Q We haven't met before. 7 I'm Bill Cavanaugh --8 Α Nice to meet you. -- on behalf of Colorado and Nebraska. 9 0 10 Let's start with your demonstrative deck, 151. 11 Most of these I can put up on the screen. 12 А It's helpful if you can. Thank you. 13 Now, you were not suggesting here that there was Q 14 no change in Bing's share within SA360 from September 2019 15 until March 2021, correct? 16 Α Not literally zero. The change is what the line 17 shows. 18 Q Okay. 19 So if you could turn to PX157 -- PSX157. We 20 took --21 I'm sorry, I'm just not -- I'm not very good at Α 2.2 this. 23 Q It's 1257. Apologies. 24 I can't read my own handwriting. 25 THE COURT: It's toward the back. Fourth to the

1	last.
2	THE WITNESS: Okay.
3	BY MR. CAVANAUGH:
4	Q Okay.
5	This is the we took the actual data that you
6	used. And would you agree with me that if you look from
7	September 2019 to March 2021, Bing's share drops from 13.26
8	to 11.01?
9	A Yeah, I see that.
10	Q Okay.
11	A It's continuing the trend that it was on, was the
12	point that I was making.
13	Q And the Google share increases from 86.69 to
14	88.95?
15	A Yes, I see that.
16	Q And Google's drop reflects about a 17-percent drop
17	on a percentage basis, if you go from 13.26 to 11.01?
18	THE COURT: You mean Bing.
19	MR. CAVANAUGH: Bing, sorry.
20	THE WITNESS: That may be, yeah.
21	I mean, I haven't done my percentage calculation,
22	but that sounds right.
23	BY MR. CAVANAUGH:
24	Q Okay. Well, I had Mr. Sallet do it, and he's
25	better at math than I am.

Γ

Now -- and you're aware that before September of 1 2 2019, Google was engaged in open beta testing incorporating 3 auction-time bidding into SA360, correct? 4 Α Sorry, say that again. 5 0 Sure. 6 You're aware that prior to September of 2019, 7 Google was engaged in open beta testing incorporating auction-time bidding into SA360? 8 9 Auction-time bidding for Microsoft Ads, for Bing Α 10 ads? 11 For Bing -- I'm sorry, for Google. Q 12 Α Yeah, I know there was some beta testing. I don't 13 remember the exact dates. But it would have been before the rollout. 14 15 0 All right. 16 Well, you're familiar with Mr. Varia's testimony 17 that prior to September of 2019, they did some closed beta 18 testing, but then they did open beta testing that any 19 interested advertiser could participate in? 20 That sounds familiar. Α 21 Q Okay. 22 Now, if we could turn to your slide in your deck, 23 I believe it's 147. 24 And if we look in the -- what you've done on the 25 right-hand side, would you agree with me that over time,

Bing has become increasingly reliant for ad revenue 1 2 on SA360? 3 А I don't think this tells you about reliant. 4 The share of SA360 has gone up. 5 0 All right. 6 And to the point where, would you agree that the 7 percentage that you provide for percent of Bing's search 8 spend through SA360, that's material, is it not? 9 I mean, I agree that SA360 is delivering a Α 10 material amount of revenue to Bing. 11 Q Thank you. 12 And would you agree with me that the advertisers 13 that utilize SA360 tend to be large advertisers? I don't know if I have the breakdown here. 14 Α 15 Certainly, I mean, large advertisers make up the bulk of the 16 I don't know if I've looked at the count recently. dollars. 17 MR. CAVANAUGH: Oh, Your Honor, we'd move PSX1257, 18 the data chart, into evidence. 19 THE COURT: It will be admitted. 20 (Plaintiffs' Exhibit PSX1257 received into evidence.) 21 2.2 MR. CAVANAUGH: May I approach, Your Honor? 23 BY MR. CAVANAUGH: 24 Doctor, I've handed you PSX1203, which is already 0 25 in evidence, and I'd ask you to turn to page 992.

1	And I'll start with the heading. Does that
2	reflect the percentage of SA360 spend and what percentage of
3	customers are providing it?
4	A Right.
5	So this is what I was remembering, which is,
6	like all these tools, including native tools, the bulk of
7	the spend comes from larger customers.
8	Q Let me show you it will come up on the
9	screen PXXD11.
10	Now, this is a chart prepared by Dr. Baker. Are
11	you familiar with this?
12	A I have seen it, yes.
13	Q All right.
14	And this indicates that for the period 2016 to
15	2020, SA360 share has gone from 40 percent to 76 percent
16	within SEM tools, correct?
17	A I can't it's blocked out on my screen so I
18	can't see the years.
19	Q Well, I'll represent to you it's 2016 to 2020.
20	A Yes.
21	So within those four SEM tools, it shows SA360's
22	share of those four tools going what you said is correct.
23	Q Okay.
24	And in that same period of time, Skai has their
25	share has dropped by almost half?

Г

1	A Yeah. Within these four tools, yes, that's
2	correct.
3	Q All right.
4	And Adobe's gone down, and Marin has gone down
5	significantly, correct?
6	A Yes.
7	Q Let me ask you to turn in your binder to PSX631.
8	MR. CAVANAUGH: Your Honor, this is this is in
9	evidence.
10	BY MR. CAVANAUGH:
11	Q Let me ask you to turn to page, Bates page 462.
12	This is an incremental study done by Google in
13	2018, and we've been requested to redact this information.
14	But would you agree with me that what this study
15	determined is that customers who use SA360 have an increase
16	in Google spend?
17	Are you up to my are you with me, Doctor?
18	A Yeah, there's just this is just a long
19	document.
20	Q Yeah.
21	A But this page indicates I mean, it says what
22	you said, in 2018, right? Which was pre to full rollout, I
23	think, there was this funding of this 2.5 increase in Google
24	spend.
25	Q Okay.

Γ

And so Google saw that there would be an increase 1 2 in its ad spend if folks utilized -- if advertisers utilized 3 SA360, correct? 4 Α You know, I think that that's what this earlier 5 result indicated. 6 And it was also showing at that time a lower Q 7 percentage increase in Google spend attributed to other SEM tools, correct? 8 9 When I see the number on the page, what exactly Α 10 they're measuring for the other tools, I don't know. 11 Q Well, would you agree with me that the percentage 12 spend increase noted for Google, if you compare that to the 13 number for other SP tools, it's about five times larger for 14 Google ad spend, correct? 15 Α Right. 16 So this seems to be saying generally the use of 17 SA360, not auction-time bidding, the use of SA360 leads to 18 an increase in spend, and there's a smaller increase in 19 spend but some on the other tools. 20 So if an advertiser utilizes SA360, they're likely 0 21 to spend more money on Google Ads than if the advertiser 2.2 utilizes an independent SEM tool, correct? 23 А Yeah, I'd rather -- I don't think I can comment on causality having not reviewed the whole study. 24 25 All right. Q

1If you look at the text at the bottom, it says,2"SA360 covers X billion dollars of revenue in 2018." So at3the percentage uplift reflected in the document, this4represents an incremental revenue an X dollar incremental5revenue opportunity to have customers on SA360, correct?6A Right, and that's what it says.7Q9Okay.8Would you agree with me that the that the9reference to B should probably be an M?10A Given the numbers, that sounds right.11Q12And this uplift in Google ad spends from SA36013would be one reason for Google to promote the use of SA360,14correct?15A Yeah, my opinion, I think I stated, is Google has16said and is advancing SA360 to try to increase search ad
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16 said and is advancing SA360 to try to increase search ad
17
17 spend.
18 Q For Google?
19 A I think search ad spend in general.
20 Q But the document we just showed, so that you see
21 an increase for Google Ads?
22 A Right, I mean.
23 Q At X percent?
A I would assume that's what Google has the data to
25 study. It even says "This data is highly internal."

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But I don't think anything about Google's behavior 1 2 or the effects it's had over time on those sorts of uplifts 3 have been unique to Google Ads. 4 0 Well, based on the document we were just looking 5 at, it's five times higher for Google Ads, correct? 6 Α What's five times higher? 7 0 The spend -- the increased spend for Google Ads compared to when other SEM tools are utilized? 8 9 Well, yeah, I think this is saying SA360 provides Α 10 a good boost. I just -- I don't think there's any evidence 11 that that boost hasn't also applied to Bing. 12 0 So would you agree with me Google's value 13 proposition for SA360 for advertisers is that SA360 provides 14 cross-engine support for search advertising? 15 Α I mean, I think that's one of them. That's 16 certainly a part of it. 17 So in order to keep that value proposition, do you Ο 18 agree SA360 has to offer some degree of functionality for 19 competing general search engines? 20 Yeah, I would agree it needs to give you the Α 21 ability to bid on more than one search engine or it wouldn't 2.2 be a cross-platform tool. 23 Now, you testified in direct that if Google wanted 0 24 to foreclose Bing, an obvious thing to do would be don't 25 support the functionality or don't invest in being able to

1	advertise into Bing at all.
2	Do you recall that testimony?
3	A Something like that.
4	Generally I would say that if you're trying to
5	harm Bing, then providing a tool that seems to be generating
6	a lot of revenue for Bing wouldn't be a good way to go about
7	it.
8	Q But if you didn't provide functionality for Bing
9	at some level, then you wouldn't have an SEM tool, correct?
10	A I mean, it wouldn't work with Bing. But, I mean,
11	obviously it provides functionality I mean, my point,
12	that's why I focus on the revenue, is that it's providing
13	sufficient functionality for Bing but it's generating a lot
14	of revenue for Bing.
15	Q And the current split of ad revenue as between
16	Google and Bing, Google had about 92 percent of the ad
17	revenue, right?
18	A In total?
19	Q Yeah.
20	A Or on SA360?
21	Q In total.
22	A That's I might have said 90/10 so that's
23	roughly correct.
24	Q Now, would you agree with me that within SA360 if
25	Google provided comparable features for Google Ads and for

1	
1	Microsoft Ads, that runs the risk of reducing spend on
2	Google Ads, correct?
3	A Yeah, I'd based on all of my testimony, I don't
4	think that's correct.
5	Q Well, do they currently provide comparable
6	features for Google Ads and Microsoft Ads?
7	A Lots of them, yes.
8	I mean, each of the native tools is different and
9	so they're never going to be identical, they provide some
10	subset of the native tools on each side.
11	Q So let's focus on auction-time bidding. You'd
12	agree that auction-time bidding from Google Ads through
13	SA360 has been available for a number of years now, right?
14	A That's correct.
15	Q And it is currently it's now, according to
16	Google, in testing for Microsoft Ads through SA360, correct?
17	A Yes.
18	Q And no date's been provided as to when that would
19	be fully introduced, correct?
20	A I don't know.
21	Q Okay.
22	Would you agree that there's evidence in the
23	record that Microsoft viewed having an auction-time bidding
24	feature available through SA360 would be beneficial?
25	A I think there's I think there's evidence that

Microsoft views it as beneficial to Microsoft. 1 And when -- are you familiar with the deposition 2 Ο 3 testimony of Mr. Indacochea who said that when Skai 4 implemented auction-time bidding in its SEM tool, that 5 Microsoft saw a meaningful lift in conversions? 6 Α Yeah, I don't remember whose testimony it was. 7 I recall his testimony saying there was an 8 increase -- something like an increase in conversions at the 9 same RPM -- or at the same ROI, which would mean there was 10 an increase in conversions but also an increase in the cost 11 per click such that the ROI stayed the same. 12 0 And that increase, an increase in conversion can 13 produce an increase in revenue for the search engine, 14 correct? 15 Yeah, I think -- yeah, I think that testimony Α 16 would say that if there was auction-time bidding, there 17 would -- and there were more conversions, there would be at 18 least some revenue uptick if that happened. That's a 19 different statement from whether that would increase 20 competition or draw anything away from Google. 21 Now, you're also aware of internal Microsoft Ο 2.2 estimates that auction-time bidding, if implemented through 23 SA360, would increase Bing's revenues? 24 Generally, yes. Α 25 And you're familiar with Mr. Jason Krueger's Q

statements that, for Google Ads, he expected that its 1 2 implementation into SA360 would drive one to \$2 billion --3 strike that -- would drive overall meaningful increase in 4 Google Ads revenue, correct? 5 Α Yeah, I don't specifically remember who said what. 6 I remember statements that said that Google 7 thought that its spending would go up but also saw no 8 negative effect on Bing. Just one question about Performance Max. 9 Q 10 If you could turn to slide, I think it's 21.017. 11 Α Sorry, which page? 12 Oh, okay. I see it. 13 This is from your demonstratives. Q 14 It refers to Performance Max and goes on to say, 15 in the highlighted, "Optimizing performance in real time and 16 across channels using smart bidding." 17 Smart bidding is what Google calls its 18 auction-time bidding feature, correct? 19 I'm not sure -- I mean -- I don't know. Α We should 20 check documents to be sure that it's precisely the same, but 21 I think it refers to similar ideas. 2.2 Q If you could turn back to PSX631, to page 452, 23 is there a reference to what Google intends to do in SA360 24 with respect to Google features in item number two? 25 А Yes.

Well, I mean, the language, there's words about 1 2 Google features. 3 0 And it also goes on to note what Google expects 4 with respect to the timing of marketing Google ad features, 5 correct? 6 Α Yes. 7 I would note that the first bullet supports what I 8 said earlier about the overall goal being search specific 9 and not Google specific. 10 Let's turn to your slide 159. Q 11 THE COURT: This slide deck is 154. 12 MR. CAVANAUGH: Oh, 148. 13 THE WITNESS: Trying to make me sound even longer 14 than I was? 15 MR. CAVANAUGH: Yeah. 16 BY MR. CAVANAUGH: 17 And you were pointing out here that SA360's Q 18 failure to adopt auction-time bidding within SA360 is no 19 different than what Adobe and Marin have done, correct? 20 That was your point? 21 More generally that all of the SEM tools have Α 22 adopted auction-time bidding for Google so that's not 23 unique. And three of the four have not adopted it for Bing 24 so that's not unique. 25 So you're comparing SA360 with a 76 percent share Q

of SEM tools to Adobe with its 6 percent and Marin with its 1 2 4 percent? 3 А Yes, they're competitors here. 4 I mean, one way to help that comparison is they've 5 all adopted Google. So they've all made a decision to adopt 6 auction-time bidding for Google. Three out of the four of them have not done so for Bing. 7 Do you think that has anything to do with the fact 8 0 that Google has 92 percent share of ad revenue? 9 10 Α I think that's probably an important part of the decision for all three of them. 11 12 My point would just be that, you know, is exactly 13 that, that they've all decided to adopt auction-time bidding 14 for the larger platform and not for the smaller platform, and SA360 doesn't stand out on that basis. 15 16 Were you also aware that those SEM tools are under 0 17 contractual obligations to do that with respect to Google? 18 I don't know the specifics of the contracts. А 19 You're not familiar that there's terms with a 0 20 required minimum functionalities, and that would include 21 auction-time optimization? 2.2 Α Yeah, I don't know the specifics of the contracts. 23 I'm sure those speak for themselves. They enter contracts 24 with each platform to agree what they're going to do, but 25 I don't know the specifics of the contracts.

So you didn't consider to what extent those 1 Ο 2 contractual obligations led to Adobe, Marin implementing auction-time bidding? 3 4 Α I didn't study the specifics of the contracts. 5 I studied what happened in the market. 6 As an economist, contracts get agreed to in the 7 market and I just try to look at what decisions are made for 8 each platform. 9 Now, when it was announced in September of 2019 Ο 10 that auction-time bidding was going to be incorporated into 11 SA360 now that the open beta testing had been completed, 12 Google announced that they were seeing an average lift in 13 conversions of 15 to 30 percent, correct? 14 Α I'd have to look at something specific. Like I 15 said, the two things I remember in the record are an 16 increase in conversions but with the same ROI, and then a 17 statement that Google got more revenue but didn't see a 18 reduction at Bing. 19 So if you can turn to PSX909. 0 20 And if you look at the last sentence, it states, 21 "During beta testing, hundreds of Search Ads 360 advertisers 2.2 enabled Google Ads auction-time bidding and saw an average 23 lift in conversions of 15 to 30 percent at the same or 24 better ROI." 25 Do you see that?

1	A Yeah, this is one of the statements I was
2	remembering.
3	Q And you don't have any reason to disagree with
4	that, do you?
5	A No.
6	Again, there may have been an increase in
7	conversions. The same ROI, if it was the same, would say
8	cost per click just went up too.
9	But as I said, the other statement that I remember
10	is later studies saying there was no reduction in spending
11	at Bing.
12	Q That was based on the one-month analysis. Are you
13	referring then to the analysis that was done based on
14	October of 2019?
15	A I mean, Google did an analysis. I don't remember
16	what months it would be.
17	It would also be based on my own analysis that
18	there was no change in the trends of the shares.
19	Q Okay.
20	And would you agree with me that by 2022,
21	80 percent of SA360 advertisers had adopted Google Ads'
22	auction-time bidding?
23	A I don't recall that number.
24	Q If Mr. Krueger testified to that here in this
25	court, you'd have no reason to disagree with that?

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Yeah, that's right. 1 Α 2 I don't -- I -- yeah, I just didn't remember the 3 number. I have no reason to disagree with him. 4 0 And Google's aspired to have 100 percent adoption 5 of auction-time bidding, correct? 6 Α That may be. Again, Google can speak for itself, 7 I don't recall that specific statement. 8 Now, advertisers can set a budget on SA360 and 0 9 then ask SA360 to manage the advertiser's bidding strategy 10 to maximize their return on ad spend, correct? 11 Α That sounds right. 12 0 Okay. 13 And when an advertiser uses SA360's target return 14 on ad spending bid strategy, it lets SA360 decide how to 15 allocate funds for bidding between and among multiple search 16 engines, correct? 17 Α That sounds right. 18 All right. Q 19 And so if one search engine has a more efficient 20 feature than another search engine, those dollars would then 21 be allocated more to the one with the more efficient 2.2 feature, correct? 23 А Yeah, I don't see how that follows. They're going to put bids in on each side that 24 25 they think would capture a value for them. So the fact that

it's not auction-time bidding still means there's bids at 1 2 which you think you would capture value at Bing, and you 3 would put those in. 4 But SA360 is deciding what the allocation should 0 5 be, not the advertiser, correct? That's the purpose of it. 6 Α Well, sure, but it's deciding to do it based on an 7 objective that the advertiser puts in. 8 So if the advertiser says, I want to maximize ROI, 9 SA360 is going to allocate funds. 10 The bidding at Bing will be based on however many updates it gets, not real-time bidding, but there's still 11 12 value in those queries. It will just bid on them based on 13 the information it has. 14 And based on the efficiency such as a 15- to Ο 15 30-percent lift in conversions, right? 16 Well, that's why I've been stressing so much that Α 17 it says that with the same ROI in cases, right, because that 18 would mean the conversion goes up but the cost per click 19 just goes up with it. 20 So you're going to put in bid at Bing that are 21 cost-per-click bids that make it profitable to bid there. 2.2 Now, those might be different for different advertisers if 23 there's auction-time bidding, but logically that doesn't 24 mean you would just stop bidding there, and that doesn't 25 show up in the data; we don't see a reduction in spending at

1 Bing. 2 MR. CAVANAUGH: Your Honor, DX179 is already in 3 evidence. 4 But don't put it up on the screen. 5 We provided this to counsel late last night, so I 6 won't put it up on the screen. 7 THE COURT: Is this something that's been -- if 8 it's already in, has it been reviewed or -- I mean, I 9 presume it's been reviewed if it's already in evidence? 10 MR. SOMMER: Objection. We were not alerted that 11 it needed to be reviewed for public display, so it has not 12 been reviewed for that purpose yet. 13 MR. CAVANAUGH: Well, we asked for a 14 confidentiality review, but admittedly, we did it last 15 night, Your Honor. 16 THE COURT: All right. If it's already in, was a 17 portion of it already disclosed, or maybe it's a different 18 portion you're going to point to? I just don't know the answer to that. 19 20 MR. SOMMER: Yeah, I don't think there's been 21 public disclosure. I think part of this document. But I 22 may be wrong. We're certainly willing to look at the part 23 that Mr. Cavanaugh is going to use and let Your Honor know 24 whether or not it will need to be disclosed. 25 Thank you, Mr. Sommer. THE COURT: Thanks.

BY MR. CAVANAUGH: 1 Let me ask you to turn to -- strike that. 2 Q 3 If you would turn to Bates page 6425. 4 Actually, it's 425. 5 Do you have it? 6 Α Yeah. 7 Q And you see at the bottom, it references "Full 8 American Microsoft-Specific Survey Results," 21 responses. 9 Do you see that? 10 Α I do. 11 Q If you turn to the next page. 12 THE COURT: Maybe I'm not with you. 13 You're at 425, you said? 14 MR. CAVANAUGH: Yes, Your Honor. 15 THE COURT: Okay. 16 MR. CAVANAUGH: Do you see the bottom? I started 17 with the column "Full American Microsoft." 18 THE COURT: Oh, I see what you're talking about. 19 Sorry, I was looking at the bullets, not the headers. 20 BY MR. CAVANAUGH: 21 Do you see a reference to "Feature" at the top --Q 2.2 Α Yes. -- on 426? 23 Q 24 And the third one down is "Real-time Bidding for 25 Bid Strategies (top of list), " correct?

I see that. 1 Α 2 Q All right. 3 And the number is 6. 4 So it appears that 6 out of 21 survey participants 5 had identified real-time bidding for bid strategies, 6 correct? 7 Α That may be. There's -- I have no context of really what this is. 8 9 0 All right. 10 And one of the things you noted in your direct is 11 that Google would evaluate the adoption of features based on 12 business evaluations? 13 Α Yeah, that's fair. 14 I mean, they're regularly evaluating features for 15 all of the engines, and they don't have all of them for any of them. 16 17 0 And this indicates that at least some advertisers 18 were interested in adopting real-time bidding within SA360 for Microsoft, correct? 19 20 Again, I just don't recall who was being surveyed Α 21 here or anything. So I assume the document will speak for 2.2 itself, but I -- I don't recall who this was asking. 23 MR. CAVANAUGH: Can I approach, Your Honor? 24 THE COURT: Yes. Thank you. 25

BY MR. CAVANAUGH: 1 2 Q Doctor, I'll represent to you that this is the 3 Meta data for this -- for DX179. 4 And I'll just draw your attention to, in the upper 5 right-hand corner, "Date Saved." 6 Α Okay. 7 0 Is that December 10th, 2019? That's what it says on the document. 8 Α 9 MR. CAVANAUGH: Your Honor, we would move PSX1264 10 into evidence. 11 MR. SOMMER: Okay. I have no objection. 12 THE COURT: Okay. It will be admitted. 13 (Plaintiffs' Exhibit PSX1264 received into evidence.) 14 15 BY MR. CAVANAUGH: 16 Let's turn to some of your testimony regarding 0 17 market definition. 18 If I understood your testimony correctly, in your 19 view, the query is the product, not the SERP? 20 I said answers to questions. А 21 So responses to queries. 2.2 So if Google responds to queries with the SERP, 23 others responds to queries in other ways. So... 24 So the response is the product? Q 25 The response to the -- the answer to the question, А

the response to the query.

2	Q Okay.
3	Now, if I do a query on the Google search engine,
4	would you agree with me that quite often, the query may be
5	classified in a particular vertical by Google, but all the
6	results on the SERP are not necessarily within that
7	vertical?
8	A Results aren't they don't really classify
9	results into verticals, but I agree what I where I think
10	you're going, which is when I gave the Patagonia example.
11	So one issue that a general search engine can be good or bad
12	depending on the situation is it's going to list queries
13	answers in a variety of categories.
14	The users generally know which of those they're
15	interested in, and the GSE responds by putting a bunch of
16	them on the page.
17	Q So if it's a travel-related query, your point is
18	that you will get responses outside of the travel vertical,
19	correct?
20	A I mean, I think it will.
21	So if you're looking to go to Patagonia, Google
22	will give you some information about that, perhaps, about
23	others. Expedia would just give you information about the
24	trip.
25	Q Now, if we could go to your in your

demonstratives, 020. 1 2 I want to understand and walk through how you did 3 this analysis. 4 So if I do a search for blue sneakers on Google, I 5 might get an Amazon PLA, correct? 6 Α I mean, you wouldn't get an Amazon PLA on Google. 7 You might get a Google PLA. Will I get a Google -- will I get an Amazon ad? 8 0 9 Α Possibly. 10 So assume for purposes of my question, I search Q 11 for blue sneakers and an Amazon ad comes up? 12 Α Okay. 13 All right. Q 14 I then click on that ad, it takes me to the Amazon 15 website, correct? 16 А Okay. 17 Q Okay. And if I did a similar search for blue sneakers 18 19 there within Amazon, for purposes of your chart, that would 20 be an overlap, correct? It would appear in your Google 21 numbers and it would appear in your Amazon numbers, right? 2.2 Α I mean, if somebody went while they were on 23 Amazon -- I mean, just to be clear, not if they clicked on 24 the ad on Google and went to Amazon that way, but if at some 25 point later in the process they typed blue sneakers into

Amazon and called for a SERP, that would count. 1 2 Q Okay. 3 Even if they got there by virtue of clicking on an 4 Amazon ad in Google? 5 Α Yes, because they've entered a SERP -- they've 6 entered a search at Amazon. 7 0 And Amazon paid Google for that ad, correct? 8 Α Yes. 9 And the reason Amazon pays billions to Google is 0 10 to get people to click on those types of ads to get into the 11 Amazon website, correct? 12 Α That's fair. 13 They pay for ads to get people to come to Amazon. 14 I think I talked about advertising by SVPs on 15 It's a natural place to advertise because they're Google. 16 competing for user queries. 17 0 If the -- now, if a user goes directly to Amazon 18 and does a search for blue sneakers, the user is not going 19 to get an ad to search for blue sneakers on Google, correct? 20 That's correct. Α 21 Now, let's talk about your Google and Bing Q 2.2 numbers. 23 If a user on an Apple or Android device doesn't 24 change the default setting for their general search engine, 25 they'd end up doing a search for blue sneakers on Google,

1	right?
2	A I mean, if they go to the default bar, that would
3	be a Google Search.
4	Q Okay.
5	And you'd agree with me, it's unlikely that a user
6	would then go into their search settings, change the setting
7	to Bing, and then do a search on Bing for blue sneakers
8	after they've done that search on Google?
9	A I mean, I think I I have not studied changing
10	of the defaults so I don't want to weigh into that.
11	I think I have testified that you're unlikely to
12	enter the same search on two different GSEs.
13	Q And so your comparison of Google and Microsoft
14	would involve typically different users, correct?
15	A Perhaps, or the same user at two different times.
16	I mean, you might enter it my testimony about
17	not using both was really in one shopping journey or a close
18	period of time. You might enter it in Bing later on a
19	different device or the same device.
20	Q And would you agree with me that Google has
21	roughly 90 percent of the market share for general search
22	services and Bing shares about 5 percent?
23	A I don't remember first of all, just to be
24	I think I've said this, but I don't think that's a market
25	share.

But, secondly, those numbers sound -- I think 1 2 Google around 90 sounds roughly correct. 3 0 And Bing around 5 percent is about right? 4 Α I had it a little higher in my head, but the data 5 will say what it says. 6 0 And so the numbers you have here, the 5.1 and the 7 .4, that's roughly equivalent to what the market shares are? 8 А Yeah, those seem -- and, I mean, those seem in 9 line with overall shares. 10 These are queries shares on this page. Basically 11 it's just showing how different the query shares look if you 12 include queries at Amazon. 13 Now, you said your -- you note up top, and counsel 0 14 for the United States asked you a couple of questions about 15 this. Your query overlap excludes navigational queries, 16 correct? 17 Α Yes. 18 And Google sells ads in response to navigational Q 19 queries? 20 That's correct. А 21 And navigational queries are a substantial use Q 2.2 case for general search engines, correct? 23 А Yeah, they're immaterial -- I think I said -- as I 24 said, I think of them myself as kind of another vertical, 25 but definitely there are a large number of navigational

queries. 1 2 Q And according to Google's own analysis, many of 3 Google's highest revenue earning queries are navigational, 4 right? 5 Α I'd have to look. I don't recall. 6 I mean, they certainly have it where they break it 7 down by shopping high tech navigational so I don't quarrel 8 on navigational as a category of revenue. I don't remember where it ranks. 9 10 Now, would you -- you're aware that even for a 0 11 navigational query, Google will sell ads to the company 12 that's directly responsive to the navigational query and to 13 its competitors, correct? 14 In principle, yes. It would be affected by the А 15 auction score, which I think is generally quite a bit lower 16 for the competitor. But in principle, yes. 17 And if you could turn to PSX00869.002, and we're Q 18 going to put it up on the screen. 19 This is from, I believe, Dr. Baker's report. 20 And you see in a search for Expedia, it produces 21 text ads for Expedia, but also text ads for Bookings, 2.2 correct? 23 А I see that. I don't know when this was --24 I assume somebody went and did that and I see that. 25 And you don't have any doubt that that occurs, Q

1	correct?
2	A Yeah, as I said, it's possible to buy that
3	others could be buying ads here.
4	Q And you didn't look at the frequency with which it
5	occurs, correct?
6	A I don't have an account of the frequency by who
7	the advertiser is.
8	Q All right.
9	And are you familiar with Dr. Baker's analysis
10	that showed that roughly in 20 percent of the cases, the
11	user clicks on the competing ad?
12	A That sounds vaguely familiar, I haven't looked at
13	it recently.
14	Q Okay.
15	You didn't do a comparable analysis, correct?
16	A That's correct.
17	Q And roughly if it's if Dr. Baker's correct and
18	it's roughly 20 percent of the time, that's reflecting that
19	the user was willing to go to a competing website?
20	A I suppose the user must have been willing to go.
21	I mean, the user clearly was looking for Expedia but the ads
22	seems to have influenced them.
23	Q If we could turn to your demonstrative, 062.
24	And you note here the heading is "ROI is the
25	key metric."

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1	You did not calculate ROI?
2	A I'm just trying to get to the paper one.
3	Q Oh, I'm sorry. My fault. My time estimate to the
4	judge.
5	A No, I know. It's blacked out on the screen, so
6	go ahead.
7	Q All right.
8	Your heading is "ROI is the key metric," correct?
9	A Correct.
10	Q All right.
11	You didn't actually calculate the ROI for any of
12	the ad types listed on this page, correct?
13	A Right. I mean, these are yes, they're
14	nothing I don't have the data the advertisers have.
15	These are data from the platforms.
16	So you would need to know from the advertiser
17	something about sales per click, and I don't have those
18	data.
19	Q All right.
20	And did you have the actual conversion data for
21	each of the ad types you list here?
22	A Again, I don't have the conversion data. The
23	advertiser presumably would have that. I have the you
24	know, the impressions, the clicks, the revenue to compete
25	with what's on this page.

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1	Q But you didn't have the conversion rates?
2	A Yeah, I just those would be advertiser or
3	advertiser agency data that I just don't have for
4	certainly not for anything close to all of these purchases.
5	Q And the conversion rates would be informative in
6	trying to calculate an ROI, correct?
7	A Yes, they certainly go into the ROI.
8	I mean, I say even at the bottom, "Slight
9	differences in sales per click would equalize the ROI."
10	So in general, you know, you'd expect these prices
11	to be reflecting what advertisers thing they can generate
12	from the ads.
13	So advertisers and their agencies, when they do
14	their cross-channel modeling, are incorporating data about
15	conversions.
16	Q Let me ask you to go to your demonstrative 29.071.
17	Now, this was a slide you took back from this
18	Skechers' document.
19	Let me ask you to turn to 1249, which is the
20	actual document.
21	A It looks like it's on the screen.
22	Q Well, there will be redacted pages.
23	MR. CAVANAUGH: Your Honor, we raised this with
24	Skechers and they came back requesting a number of
25	redactions.

BY MR. CAVANAUGH: 1 2 0 And let's start with, if you turn to Bates page 239. 3 4 And you see there's a reference to GDN. That's 5 the Google Display Network, correct? 6 А That sounds right to me. 7 0 Okay. And when they referred to RTG site visitors, 8 9 that's referring to retargeting, correct? 10 It could be. I don't actually know that for А 11 certain. 12 Q Okay. 13 I'm going to ask you to turn to 232. 14 Α Okay. 15 And that's for the week of March 28th, 2020, 0 16 correct? 17 А I take your word that it's -- yeah, March 28th, 18 2020. 19 And if you turn to the following page, 233, we're Q 20 looking at week-to-week data. And if you look at the 21 actuals, there's a reference to ROAS. What is ROAS? 2.2 А Return on ad spend. It's really just another 23 version of ROI. 24 0 That was my question. Do you use those terms 25 interchangeably in this context?

1	A	I do.
2		Sometimes people might one of them mean they
3	subtract o	one, but it's the same it's the same idea with
4	sometimes	slightly different presentation.
5	Q	And you agree with me the ROAS for branded Google
6	Search is	significantly higher than the ROAS of the other
7	non-brande	ed search ad types?
8	A	That looks right.
9	Q	All right.
10		And the same would be true, Bing has a similar
11	high ROAS	?
12	A	For branded search, yeah.
13		I mean this is a point I made in the report, that
14	there's a	big variation in ROAS across types of search ads,
15	and other	types of ads are often in between those two.
16	Q	And just if you would just note the budget numbers
17	that appea	ar in the third column under "Targets," do you see
18	those num	bers?
19	A	Yes.
20	Q	Because I'm going to ask you about another weekly
21	period.	
22		Could you turn to 246.
23	A	Okay.
24	Q	And this is for the week prior of March 21st,
25	correct?	

A That looks right.
Q All right.
And the budget numbers, the target budget numbers
are the same as for the week of 3/28 that we were just
looking at?
A That looks right. It looks like, these are pacing
reports, which tend to be advertiser reports of how people
are doing relative to budget. So it looks like this is a
budget for some longer period of time.
Q And so no indication of any changes in the budget
in that period, correct?
A Yeah.
I would expect, and I don't know if Skechers
I mean, it will be in the documents, that people have
budgets for quarters or half years and then they move them
around. And pacing reports, what that name means is they're
performance relative to budget.
Q And, again, we see that the ROAS, the actual ROAS
for Google brand ads and Bing brand ads are significantly
higher than the others listed here, correct?
A Yeah, that's correct.
I mean, these actually seem to be the same numbers
as the previous page. So, again, I think these are just
numbers they're giving for a longer period of time and these
reports are just pacing reports against those budgets.

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1	Q If we could turn to 255 for the week of 3/14, and,
2	again, the budget numbers stay the same?
3	A Yeah, I mean, the numbers we were just looking at
4	appear the same. So, again, I think this is a weekly pacing
5	report against at least a quarterly budget.
6	Q And, again, the ROAS numbers again show that
7	Google brand and Bing ad brand ads have significantly
8	higher ROAS than the other ad types identified here,
9	correct?
10	A Yeah.
11	Again, I think those are identical to the previous
12	page.
13	Q And if we stay on 256, the last bullet point
14	reflects, "As shown in chart above, every channel except for
15	Google brand is above ROAS target. That is our largest
16	channel as well so most of our optimization focus is there
17	this week."
18	Do you see that?
19	A I do.
20	Q All right.
21	And what they're referring to is that if you look
22	at the numbers, there's an ROAS target for Google brand at a
23	certain percentage and the actual is a bit below that,
24	correct?
25	A Yes.

All right. 1 Q 2 But they're not suggesting any movement to -- of 3 ad spend to any other channels, correct? 4 Α I mean, they say that's where their optimization 5 focus is. So you'd have to -- often optimization means 6 reallocation of dollars. I assume the broader document 7 speaks it for itself on that. Well, when they say "optimization focus," doesn't 8 0 9 that indicate that they're going to focus on trying to improve their ROAS within the Bing brand ad channel? 10 It just says "optimization focus." 11 Α 12 If you read more generally what they and others 13 say when they refer to optimization, it's often with a media 14 mix model that refers to reallocating dollars. 15 Again, I assume the document will speak -- I mean, 16 completely? The document certainly has lots of discussion 17 about moving dollars between categories. 18 And the -- you'd agree with me that the budget for Q 19 Google branded ads is significantly higher than the budget 20 for anything else on this page, correct? 21 Yeah, across these categories of search ads, Α 2.2 that's correct. 23 MR. CAVANAUGH: Okay. Your Honor, I have a --24 probably another 10, 15 minutes, but I'm happy to break for 25 lunch now, I'll just finish after.

1THE COURT: Why don't we go ahead and just break2for lunch, and we'll resume after lunch.3All right. So, Dr. Israel, we'll return and we'll4resume at 1:35. Again, just ask you not to discuss your5testimony during the break. Thank you, sir.6And could I ask the parties to just do some7housekeeping around Dr. Israel for what he needs for the8afternoon so that we have a more seamless transition with9the next witness.10Thank you, everyone.11COURTROOM DEPUTY: All rise.12This court stands in recess.13(Proceedings concluded at 12:32 p.m.)141516171819202122232425		8932
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13 (Proceedings concluded at 12:32 p.m.) 14 15 16 17 18 19 20 21 22 23 24	11	COURTROOM DEPUTY: All rise.
14 15 16 17 18 19 20 21 22 23 24	12	This court stands in recess.
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CERTIFICATE

I, William P. Zaremba, RMR, CRR, certify that the foregoing is a correct transcript from the record of proceedings in the above-titled matter.

Date:__November 6, 2023_



William P. Zaremba, RMR, CRR

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[11] 8895/3 8896/3	8844/2 8845/19 8846/1		8870/19 8870/23	5.1 [1] 8922/6
8896/23 8898/23	8848/20 8848/24	113 [2] 8868/22	8873/6 8873/8 8895/15	50 [1] 8849/10
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8823/5 8823/19 8825/3	8881/13 8881/20	8878/25 8880/15	8915/8 8916/4	
8829/1 8832/21	8881/24 8889/7 8891/8	8880/20 8880/24	21.017 [1] 8907/10	6 percent [1] 8909/1
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8884/20 8889/10	8915/15 8915/18	8896/17	232 [1] 8927/13	8889/19 8889/20
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