

Deposition Testimony of:

Mace Barron

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Page 8:20 to 9:15

00008:20 Q. Dr. Barron, can you please state your full
21 name for the record.
22 A. Mace Gerald Barron.
23 Q. Where are you currently employed?
24 A. The U.S. EPA.
25 Q. What is your position at EPA?
00009:01 A. I am a staff scientist.
02 Q. Do you have a particular field of
03 expertise?
04 A. Yes.
05 Q. What is it?
06 A. Ecotoxicology.
07 Q. How long have you been with EPA?
08 A. I started December of 2003.
09 Q. Before we turn to your time at the EPA,
10 can you please briefly summarize your educational
11 background?
12 A. Yeah. I have a bachelor's degree in
13 fishery science, a master's degree in fishery
14 science, and a doctorate in pharmacology and
15 toxicology.

Page 11:22 to 13:14

00011:22 Q. Can you please describe the different
23 positions you've had at EPA since 2003?
24 A. Yes. So branch chief was what I was hired
25 under, and I occupied that position up until about
00012:01 February of this year. And during my time, I also
02 worked on two -- no, three different details. So
03 temporary assignments all within the Gulf Ecology
04 Division where I'm currently located.
05 Q. How long were you in the position of
06 branch chief at EPA?
07 A. From December of 2003 until my -- my
08 position changed, which I'm not sure when the
09 government actually officially changed the date.
10 But it was about until February, I occupied that
11 position.
12 Q. Until February of?
13 A. Of 2014.
14 Q. Okay. February of 2014.
15 In February of 2014, you assumed your
16 current role as staff scientist?
17 A. Yeah. And, again, I'm -- the government
18 processes paperwork, and I'm not sure when it
19 exactly -- the date that it was -- officially the
20 record is for. But it was approximately February
21 2014.
22 Q. What were your responsibilities as branch
23 chief?
24 A. Yeah. So there -- as a branch chief, you
25 have sort of two overriding roles. One is in

00013:01 management and supervision of -- of staff direct
02 reports, and the other aspect is as a scientist.
03 Q. Were you the chief of a particular branch
04 within EPA?
05 A. Yes, ma'am.
06 Q. Which branch?
07 A. It was called Biological Effects and
08 Population Response.
09 Q. What were the responsibilities of that
10 branch generally?
11 A. Yeah. So we had two sort of general focus
12 areas. And about half of the branch was focused
13 on ecotoxicology, and the other half of the branch
14 was focused on coral reef ecology.

Page 15:02 to 15:09

00015:02 Q. Do you work for the Office of Re- --
03 Research and Development?
04 A. I do.
05 Q. Have you worked for the Office of Research
06 and Development since 2003?
07 A. Yes.
08 Q. Is it okay if I refer to that as ORD?
09 A. You may.

Page 17:02 to 17:07

00017:02 Q. Dr. Barron, I'm showing you what has been
03 previously marked as Exhibit 11921, which is
04 Defendant's 30(b)(6) notice of the United States
05 in the penalty phase.
06 Do you see that, sir?
07 A. Yeah, I see that exhibit number.

Page 17:14 to 18:23

00017:14 Q. If you turn to Page 3 of the notice --
15 A. Okay.
16 Q. -- under the heading "Areas of Inquiry,"
17 there is an item numbered No. 3. Do you see that?
18 A. Yes.
19 Q. Can you read what that says, please?
20 A. It says: "Your knowledge of and role in
21 dispersant operations during the response,
22 including the selection, approval, use,
23 limitations on use, safety, effectiveness and
24 effects of dispersants and dispersants and
25 dispersant constituents, including Corexit 9500
00018:01 and/or Corexit 9527, and BPXP's role and
02 involvement in those dispersant operations."
03 Q. Do you understand that you've been
04 designated as a representative of the United
05 States to provide testimony here today with

06 respect to Topic No. 3?

07 A. I -- I recognize that I've been an ex- --
08 I've been recognized as an expert to speak on the
09 ecotoxicology of the oil spill and -- and
10 dispersants. Role and knowledge during the
11 response -- all right. So I'm just reading this
12 again to make sure I understand this.

13 Yes.

14 Q. Specifically, you've been designated to
15 provide testimony on behalf of the United States
16 with respect to Topic No. 3 as it relates to
17 dispersant toxicology; is that right?

18 A. Correct.

19 Q. Are you prepared to provide testimony here
20 today on behalf of the United States with respect
21 to Topic No. 3 as it relates to dispersant
22 toxicology?

23 A. I am.

Page 24:17 to 26:03

00024:17 Q. Dr. Barron, were you involved in the
18 DEEPWATER HORIZON spill response?

19 A. Yes.

20 Q. How did you first become involved?

21 A. I first became involved after a few days
22 or maybe a week after the spill started related to
23 asking my opinions or understanding of -- about
24 chemical dispersants and how they work.

25 Q. Who asked you to become involved in the
00025:01 response?

02 A. I don't -- I don't recall a specific
03 person. It was more multiple in- -- inquiries
04 from various people within OEM and RRT at
05 different times, and I don't have a specific
06 recollection of who would have been the first
07 person to contact me.

08 Q. Can you please briefly summarize your
09 involvement in the spill response?

10 A. Yes. So, in general, my role in -- these
11 aren't in any sort of time sequence, but was
12 advising different parts of the agency on
13 dispersant toxicology, just giving a sort of brief
14 synopsis of -- of what dispersants are and how
15 they -- they work and what are some of the -- the
16 ecotoxicology aspects of dispersants and dispersed
17 oil.

18 I was also involved in EPA's
19 dispersant and dispersed oil testing program. I
20 was also involved in being part of OEM's deepwater
21 science team, and I -- which also that involved
22 sometimes briefing or prepping, you know, the
23 ORDAA for his Congressional testimonies. It
24 involved helping review and -- and comment on
25 press releases, Congressional questions.

00026:01 Let me think what else substantively.
02 There are probably more than that, but that's what
03 comes to mind immediately.

Page 27:04 to 27:06

00027:04 Q. You worked primarily at the direction of
05 the EPA during the response, correct?
06 A. Yes.

Page 28:02 to 28:09

00028:02 Q. You advised the EPA during this spill
03 response on ecotoxicology relating to the use of
04 dispersants and dispersed oil; is that right?
05 A. Yes.
06 Q. Did you also review monitoring data and
07 other test results gathered in connection with the
08 use of dispersants in the response?
09 A. Yes.

Page 28:14 to 28:24

00028:14 Q. Did you have any involvement with toxicity
15 testing in the spill response?
16 A. Yes.
17 Q. What was your involvement?
18 A. I was one of the coinvestigators of the
19 EPA's dispersant and dispersed oil ecotoxicology
20 testing program.
21 Q. Did you review toxicity test results in
22 connection with the response as far as providing
23 response to the agency and the use of dispersants?
24 A. Yes.

Page 29:16 to 29:19

00029:16 You're aware that the EPA and the
17 Coast Guard issued various directives to BP in
18 connection with the spill response, correct?
19 A. Yes.

Page 29:21 to 29:24

00029:21 Q. (BY MS. JAKOLA) Did you have any
22 involvement in providing input or advice in
23 connection with those directives?
24 A. So --

Page 30:02 to 30:11

00030:02 A. I'm -- I'm not sure. And the reason I --

03 I say that is because I provided various, you
04 know, personnel within the agency advice. But
05 what I don't know is how that advice was
06 incorporated into the specific directive.
07 Q. (BY MS. JAKOLA) Understood.
08 A. Okay.
09 Q. You didn't draft the directives, either,
10 correct?
11 A. Not to my recollection.

Page 31:23 to 32:01

00031:23 During the spill response, did you
24 have any involvement with the regional response
25 teams?
00032:01 A. Yes.

Page 32:03 to 32:10

00032:03 Q. (BY MS. JAKOLA) What was your
04 involvement?
05 A. My involvement was discussing -- like I
06 did with other aspects or other parts of the
07 agency, was discussing the ecotoxicology aspects
08 of dispersants and dispersed oil. Also discussing
09 monitoring plans, Rototox testing. That's what I
10 recall.

Page 32:17 to 32:18

00032:17 Q. (BY MS. JAKOLA) Did you participate in
18 conference calls with Regional Response Team 6?

Page 32:20 to 32:20

00032:20 A. Yes.

Page 32:25 to 33:02

00032:25 Q. (BY MS. JAKOLA) About how many conference
00033:01 calls did you participate in with Regional
02 Response Team 6?

Page 33:04 to 33:05

00033:04 A. I would have no idea to remember how many.
05 More than -- more than five, less than 100.

Page 33:25 to 34:02

00033:25 Q. Who contacted you to ask you to

00034:01 participate in the Regional Response Team
02 meetings?

Page 34:04 to 34:12

00034:04 A. Again, these aren't meetings -- well, I
05 mean, as I understand it, they're not necessarily
06 meetings. It might have been many times with just
07 one telephone call with one individual. Typically
08 that was Marc Greenberg.
09 Q. (BY MS. JAKOLA) Who is Marc Greenberg?
10 A. As I understand, Marc's role in the spill
11 was, he was on detail or assignment from Region 2
12 to Region 6, RRT.

Page 34:16 to 34:22

00034:16 Q. Did Mr. Greenberg work for a particular
17 agency of the government?
18 A. He works for and continues to work for the
19 U.S. EPA.
20 Q. Did you speak with other members of RRT-6
21 during the response?
22 A. Yes.

Page 34:24 to 35:09

00034:24 Q. (BY MS. JAKOLA) With whom did you speak?
25 A. One -- I don't remember all the folks that
00035:01 might have been on the call or I conversed with.
02 I believe in addition to Marc Greenberg was Sam
03 Coleman. And there were probably others. I just
04 don't recall their names.
05 Q. Who is Sam Coleman?
06 A. As I understand it, Sam Coleman is a -- at
07 the time, I don't know if he -- what his current
08 position is. But my understanding is he was
09 manager at EPA in some way related to the RRT.

Page 35:17 to 36:04

00035:17 Q. (BY MS. JAKOLA) Absolutely. During the
18 various conference calls that you had with RRT-6
19 during the response, were limitations on the use
20 of dispersants discussed?
21 A. Limitations on use of -- not to my
22 recollection.
23 Q. What types of issues did you discuss with
24 RRT-6 regarding the use of dispersants?
25 A. Again, we weren't -- so my recollection
00036:01 was we weren't specifically talking about the use
02 of dispersants, but rather monitoring plans,
03 technical issues with Rototoxicity testing. Those

04 were probably the -- the -- the fo- -- focus.

Page 36:11 to 36:14

00036:11 Q. What is a chemical dispersant?
12 A. Yes. So a chemical dispersant is a
13 product that's designed to facilitate oil
14 dispersion.

Page 36:20 to 37:07

00036:20 Q. How does a dispersant work?
21 A. So the way a dispersant works is it --
22 because of its chemical properties, it interacts
23 with the oil and will break a slick or free
24 product oil into small droplets and decreasing
25 their -- changing the -- the -- the surface area
00037:01 of the oil from being positively buoyant to be
02 neutrally buoyant and -- and increasing the
03 surface to volume ratio.
04 Q. Why are dispersants used in spill
05 responses?
06 A. Yes. As I understand it, they are used to
07 chemically disperse oil.

Page 37:19 to 37:24

00037:19 Q. Do dispersants break the oil down into
20 smaller amounts so that they can more quickly
21 biodegrade?
22 A. They can what, more --
23 Q. More quickly biodegrade.
24 A. More quickly biodegrade.

Page 38:01 to 38:12

00038:01 A. That is the theory behind their use.
02 Q. (BY MS. JAKOLA) Dr. Barron, does oil
03 disperse naturally into the water column even
04 without the use of chemical dispersants?
05 A. Yes.
06 Q. And do chemical dispersants such as those
07 used in the DEEPWATER HORIZON response speed up
08 the natural dispersion process?
09 A. It -- they can. The actual -- it's very
10 scenario-specific environmentally -- environmental
11 condition-specific. But it -- they can. That's
12 what they were designed to do.

Page 38:17 to 38:22

00038:17 Q. Did EPA monitor the effectiveness of the
18 dispersants used in the DEEPWATER HORIZON

19 response?
20 A. I don't know explicitly if we monitored
21 effectiveness. My role was more on the
22 ecotoxicology aspects.

Page 40:03 to 40:16

00040:03 Q. (BY MS. JAKOLA) Dr. Barron, do you see
04 the document we've marked as Exhibit 12038 is an
05 August 23rd, 2010, article written by Lisa
06 Jackson?
07 A. I see -- I see that, that document in
08 front of me.
09 Q. Who is Lisa Jackson?
10 A. She -- at the time of the spill, she was
11 our administrator.
12 Q. Do you see that Exhibit 12038 as an
13 article that Ms. Jackson wrote for the Tampa Bay
14 Times?
15 A. I -- I see an article that's attributed to
16 her. I don't know if she wrote it or not.

Page 42:12 to 42:16

00042:12 Administrator Jackson writes: "EPA
13 science tells us dispersant was effective in
14 breaking up the oil."
15 Do you see that?
16 A. I do.

Page 43:03 to 43:05

00043:03 What are some of the advantages of
04 dispersants as compared to mechanical recovery
05 measures such as skimming and booming?

Page 43:07 to 43:15

00043:07 A. You're asking me more of a -- a response
08 question. So I can only speak in terms of, you
09 know, what -- how -- the theory of dispersant use,
10 not as an expert in spill response. But the
11 properties of dis- -- of chemical dispersants
12 would help break up the slick. But in speaking to
13 the advantage -- the relative advantages, I'm
14 not -- not sure if I'm expert enough to give you
15 my scientific opinion on that.

Page 43:24 to 45:14

00043:24 Q. (BY MS. JAKOLA) Dr. Barron, do you see
25 that Exhibit 12039 is an E-mail chain from --
00044:01 starting from you dated May 18th, 2010?

02 A. Yes.

03 Q. Can you please turn to the second page of

04 the document, which is Bates-numbered ending

05 66799, and look at the bottom of the page. Do you

06 see an E-mail from you to Emily Zimmerman, dated

07 May 17th, 2010?

08 A. Yes.

09 Q. In this second -- strike that.

10 Is this an E-mail that you sent to

11 Ms. Zimmerman on May 17, 2010?

12 A. Yes. From what I'm looking at, yes.

13 Q. In this E-mail, you discuss dispersant

14 toxicity, correct?

15 A. Actually, I -- may I read it?

16 Q. Absolutely.

17 A. Okay. Yeah, I -- I read that E-mail.

18 Q. In your May 17th E-mail to Ms. Zimmerman,

19 are you providing information for use on EPA's

20 website about the use of dispersants?

21 A. I don't re- -- don't recall what the

22 context was. I -- I might be able to answer that

23 if you want me to read more of the E-mail string.

24 Q. Well, if you look over at the third page

25 of the exhibit, which is Bates-numbered 66800, do

00045:01 you see that Ms. Zimmerman is asking you for

02 information --

03 A. Oh.

04 Q. -- to respond to some questions to be

05 published on the EPA's website?

06 A. Yes, I see that.

07 Q. Then if you look back at the page ended

08 66799, that we were just looking at, is this your

09 response to Ms. Zimmerman's request?

10 A. Yes.

11 Q. Do you see that in response to a

12 particular question that Ms. Zimmerman had posed

13 to you regarding why using dispersants is a viable

14 option, you provided some information?

Page 45:16 to 47:15

00045:16 A. So you're -- you're asking me did I try to

17 answer her question?

18 Q. (BY MS. JAKOLA) Correct.

19 A. Yes, I tried to answer her question.

20 Q. One of the questions that Ms. Zimmerman

21 asked you is: "Why is using dispersants a viable

22 option?"

23 Do you see that?

24 A. Yes, I see -- I see that question.

25 Q. You responded to that question, correct?

00046:01 A. Yes, I did.

02 Q. Can you please read what you wrote in

03 response to Ms. Zimmerman's question?

04 A. Yes. I said -- in Item 2 there, I said --

05 and I spelled "because" wrong, but -- "Chemical
 06 dispersant is a viable option because of the
 07 trade-off is about keeping oil offshore versus
 08 allowing more to reach nearshore/inshore. Keeping
 09 offshore will allow opportunity for biodegradation
 10 and dispersion before oil reaches the beach. For
 11 deep dispersion, trade-off" -- and again, this is
 12 a typo on my part -- "trade-off os toxicity to
 13 deepwater ocean organisms (less abundant, unknown
 14 sensitivity) versus offshore and inshore
 15 organisms."

16 Q. Did you mean trade-off is toxicity to
 17 deepwater ocean organisms?

18 A. Yes.

19 Q. Can you please explain what you mean by
 20 the trade-off described in your E-mail?

21 A. Let me read it for understanding versus
 22 just telling you what it says.

23 So what I -- what I meant in this
 24 E-mail?

25 Q. Yes.

00047:01 A. So I'm going to infer that. I mean, I
 02 don't -- this was four-plus years ago. So -- but
 03 I will infer what I had meant by that.

04 And that is, that there is a balance
 05 between when you -- when you're deciding or
 06 just -- or providing rationale for dispersant use,
 07 there will -- will be a trade-off. So there is no
 08 absolute best -- best option. And that trade-off
 09 means that we -- we weigh or -- or consider
 10 potential decisions or -- or, you know,
 11 applications of dispersants relative to where we
 12 think, for example, the least regret would be.

13 Q. Are you saying that dispersants can help
 14 protect the shoreline and offshore and inshore
 15 organisms?

Page 47:17 to 47:21

00047:17 A. What I said is it's -- there's a -- a
 18 trade-off that it may provide more protection.
 19 But "protect" is an absolute term meaning we've
 20 protected them. So I did not -- would not mean to
 21 say that.

Page 49:03 to 49:06

00049:03 Q. Do you agree that the use of dispersants
 04 can help protect the shoreline and inshore and
 05 offshore organisms from exposure to oil?

06 A. Yes.

Page 49:08 to 49:08

00049:08 A. I would agree with that statement.

Page 49:18 to 50:03

00049:18 Q. (BY MS. JAKOLA) Dr. Barron, I'd like to
19 go over some background principles about
20 toxicology that may be helpful at least for me
21 today. Can you please explain what is meant by
22 the toxicity of a particular substance?
23 A. Yeah. So toxicity is -- is a term that
24 refers to adverse effects on either an organism or
25 a population.
00050:01 Q. Is it true that any substance could be
02 toxic at the right dose?
03 A. That -- that is the --

Page 50:05 to 50:08

00050:05 A. That is the principle of toxicology.
06 Q. (BY MS. JAKOLA) For example, even sugar
07 could be toxic at the right dose?
08 A. Yes.

Page 50:21 to 50:23

00050:21 Q. The presence of a particular chemical
22 doesn't necessarily indicate a risk?
23 A. Correct.

Page 50:25 to 51:02

00050:25 Q. (BY MS. JAKOLA) What is a "toxicity
00051:01 test"?
02 A. So a --

Page 51:04 to 51:10

00051:04 A. A toxicity test, in -- in the most general
05 sense, is a -- a -- typically an experimental
06 assay to determine at -- at what concentration or
07 level are there adverse effects or is a particular
08 sample causing adverse effects. And it's
09 typically performed in the laboratory.
10 Q. (BY MS. JAKOLA) How is toxicity measured?

Page 51:12 to 51:23

00051:12 A. So measures of toxicity are -- can be
13 very -- very diverse. It's a term called an end
14 point. So in some ways, toxicity could be -- the
15 end point could be lethality, the end point could
16 be some sort of sublethal effect, the end point

17 could be a in -- in vitro or test tube-type
 18 measure of response. So it's very -- can be very
 19 broadly defined.
 20 Q. (BY MS. JAKOLA) What does "LC50" mean?
 21 A. So L -- LC50 is -- the acronym is lethal
 22 concentration 50, or 50 percent. And the
 23 statistical definition is its median lethal level.

Page 52:12 to 52:23

00052:12 Q. Does a higher LC50 value mean a lower
 13 degree of toxicity?
 14 A. In general, the -- the magnitude of the
 15 LC50 is -- a higher value, a larger number
 16 generally means less toxicity, less potent.
 17 Q. Is that because that means that it
 18 requires a greater amount of a particular
 19 substance to have a negative effect?
 20 A. Yes.
 21 Q. With respect to dispersants in particular,
 22 are there particular constituents that may have
 23 toxic effects?

Page 52:25 to 53:05

00052:25 A. You're -- so you're asking me, is -- do
 00053:01 dispersants contain constituents that -- that can
 02 have toxicity?
 03 Q. (BY MS. JAKOLA) Correct.
 04 A. Yes.
 05 Q. What are those constituents?

Page 53:07 to 53:11

00053:07 A. I don't know the -- the full chemical
 08 characterization, but they would include all
 09 components, including sur- -- surfactant
 10 components; the petroleum distillate components,
 11 the...

Page 53:22 to 53:23

00053:22 Q. Are surfactants present in common
 23 household items?

Page 53:25 to 54:19

00053:25 A. Yes.
 00054:01 Q. (BY MS. JAKOLA) Well, can --
 02 A. To my understanding.
 03 Q. Can you give some examples of some of the
 04 types of products --
 05 A. Yeah.

06 Q. -- that surfactants are present?

07 A. The -- maybe the most common one would be
08 laundry detergent.

09 Q. Are surfactants also present in dishing
10 washing detergent?

11 A. I think so, yes. Now, just to be -- to
12 be -- to clarify that there's a diverse chemistry
13 of dispersants in -- so a surfactant is not a
14 single compound, but rather a -- a class of
15 compounds.

16 Q. Understood.

17 Is it fair to say, though, that there
18 are common household products that con- -- contain
19 components that may have toxic effects?

Page 54:21 to 54:24

00054:21 A. Yes.

22 Q. (BY MS. JAKOLA) Dr. Barron, isn't it true
23 that there are common household products that are
24 more toxic than dispersants?

Page 55:01 to 55:07

00055:01 A. I think so. You know, I haven't

02 explicitly reviewed the LC50 values of common
03 household products, but I do know the -- the
04 toxicity values of dispersants, and I would --
05 it's very conceivable that there are products that
06 would have an LC50 value that would be lower than
07 a dispersant.

Page 56:18 to 56:21

00056:18 Can you give me some examples of the
19 types of common household products that have lower
20 LC50 values than dispersants?

21 A. I --

Page 56:24 to 57:06

00056:24 A. I don't -- again, I have not reviewed the
25 LC50 values of common household chemicals, so I

00057:01 wouldn't know specifically that -- the answer to
02 that question.

03 Q. (BY MS. JAKOLA) It wouldn't surprise you,
04 however, that there are various common household
05 products that have lower LC50 values than
06 dispersants?

Page 57:09 to 57:14

00057:09 Q. (BY MS. JAKOLA) Correct?

10 A. And you mean chemical dispersants like
11 Corexit 9500A --
12 Q. Correct.
13 A. -- for example?
14 Yeah, that would not surprise me.

Page 58:20 to 58:23

00058:20 Q. (BY MS. JAKOLA) Dr. Barron, do you see
21 that Exhibit 12040 is a manuscript titled
22 "Comparison of the Acute Toxicity of Corexit 9500
23 an Household Cleaning Products"?

Page 59:01 to 59:01

00059:01 A. Yes.

Page 59:05 to 59:11

00059:05 Have you seen Exhibit 12040 before
06 today?
07 A. Have I seen this specific exhibit? I have
08 not.
09 Q. Have you seen the manuscript in Exhibit
10 12040 before today?
11 A. I --

Page 59:13 to 59:16

00059:13 A. I may have seen the manuscript before.
14 Q. (BY MS. JAKOLA) When --
15 A. But I don't know if I saw this specific
16 version.

Page 59:18 to 59:20

00059:18 When may have -- when did you see the
19 manuscript?
20 A. Yeah, so --

Page 59:22 to 60:03

00059:22 A. So Jack Word is a colleague of mine, and
23 he -- I -- I recollect he may have sent me -- I
24 don't know if he sent me the manuscript. It may
25 have been a proof, which is a more -- a typeset
00060:01 version of this article. Or he may have sent me
02 the published version. I -- but it was related to
03 this paper. I...

Page 60:20 to 60:21

00060:20 Q. (BY MS. JAKOLA) Is Dr. Word a
21 toxicologist?

Page 60:23 to 61:02

00060:23 A. My understanding is he is. I have not
24 reviewed his CV to verify that. But he -- he
25 practices toxicology, so...

00061:01 Q. (BY MS. JAKOLA) Do you believe that
02 Dr. Word is highly regarded in his field?

Page 61:05 to 61:08

00061:05 A. I do.

06 Q. (BY MS. JAKOLA) Who -- do you know either
07 of the other two authors of the manuscript in
08 Exhibit 12040?

Page 61:11 to 61:14

00061:11 A. -- I know Jim Clark. And I don't know
12 Lucinda.

13 Q. (BY MS. JAKOLA) Who is Jim Clark?

14 A. Jim --

Page 61:16 to 61:18

00061:16 A. Jim Clark is -- as I understand it,
17 currently he's a retired ExxonMobil scientist, and
18 he also is a former EPA employee.

Page 61:23 to 61:24

00061:23 Q. (BY MS. JAKOLA) Is Dr. Clark a
24 toxicologist?

Page 62:01 to 62:03

00062:01 A. Yes.

02 Q. (BY MS. JAKOLA) Do you believe that
03 Dr. Clark is also highly regarded in his field?

Page 62:06 to 63:08

00062:06 A. Yes.

07 Q. (BY MS. JAKOLA) Dr. Barron, can you turn
08 to the second page of the manuscript, please. In
09 the middle of the page, there is a sentence that
10 reads: "To help put dispersant toxicity in
11 context."

12 A. Okay. I see that sentence.

13 Q. Do you see that?
 14 A. Yes.
 15 Q. Can you read that sentence, please.
 16 A. Yes. "To help put dispersant toxicity in
 17 context, two independent accredited labs were
 18 commissioned to conduct parallel studies compared
 19 the acute toxicity of Corexit 9500 to common
 20 household cleaning agents."
 21 Q. Can you read the next sentence, as well,
 22 please?
 23 A. "The results indicate that the acute
 24 toxicity of Corexit 9500 to marine organism" --
 25 which is a typo -- "is either within the median
 00063:01 range or less toxic than the household cleaning
 02 agents tested."
 03 Q. Dr. Barron, if you turn to the seventh
 04 page of the manuscript, there is a heading titled
 05 "Test Organisms." Do you see that?
 06 A. I see that.
 07 Q. What organisms did the authors of the
 08 study use to perform their toxicity test?

Page 63:10 to 64:12

00063:10 A. I don't know what they tested. But based
 11 on the statement in this paper, they tested
 12 Mysidopsis, bahia, and Menidia Beryllina of fish
 13 and of crustacean.
 14 Q. (BY MS. JAKOLA) Is Mysid- -- is that
 15 shrimp? Is that right?
 16 A. You would call it a type of shrimp. It's
 17 not actually a shrimp.
 18 Q. Okay. And is it fair if I refer to it as
 19 the "Mysid shrimp" today?
 20 A. You may.
 21 Q. And they also tested a fish called
 22 Menidia; is that right?
 23 A. Yes.
 24 Q. Is that also known as the inland
 25 silverside fish?
 00064:01 A. It is.
 02 Q. Are these two test organisms commonly used
 03 in toxicity tests?
 04 A. In ecotoxicity tests. In -- in --
 05 specifically in marine or estaurine toxicity
 06 tests, but not in general, because they're
 07 specific to their -- to salt water.
 08 Q. The Mysid shrimp and the Menidia fish are
 09 commonly used in marine eco- --
 10 A. Marine or estaurine toxicity.
 11 Q. -- marine ecotoxicity tests?
 12 A. Correct.

Page 67:08 to 67:20

00067:08 The study conducted by Dr. Word and
 09 his colleagues compared Corexit to eight common
 10 household products, including Dawn Dish Soap, Tide
 11 Laundry Detergent, and Johnson's Baby Shampoo,
 12 correct?
 13 A. That's correct.
 14 Q. Compared Corexit to these household
 15 products using the two species we discussed, the
 16 shrimp and the small fish, correct?
 17 A. Correct.
 18 Q. According to the results of this study,
 19 Dawn Dish Soap was found to be more toxic than
 20 Corexit in all the tests conducted, correct?

Page 67:23 to 68:09

00067:23 A. Yeah. That's a little broad of a -- a
 24 statement. More specifically, the results of this
 25 study show specifically that the LC50 value for
 00068:01 Dawn Dish Soap was lower than the -- the LC50
 02 value for -- for example, for dispersants that we
 03 tested. But the end point here is acute
 04 lethality. So to say the toxicity is different is
 05 only correct in the context of the end point,
 06 which in this case is le- -- acute lethality.
 07 Q. (BY MS. JAKOLA) Okay. As measured by
 08 LC50 values, Dr. Word's study shows that Dawn Dish
 09 Soap is more toxic than Corexit, correct?

Page 68:12 to 68:15

00068:12 A. Yeah. Under the constraints of this
 13 study, the end point of acute lethality, the
 14 measure of these species, these test conditions,
 15 yes.

Page 69:19 to 69:22

00069:19 Q. (BY MS. JAKOLA) Is it fair to say that,
 20 according to Dr. Word's study as measured by LC50
 21 values, Corexit and Johnson's Baby Shampoo have
 22 substantively similar toxicity?

Page 69:25 to 70:04

00069:25 A. Yes.
 00070:01 Q. (BY MS. JAKOLA) Dr. Barron, what
 02 dispersants were used in the DEEPWATER HORIZON
 03 response?
 04 A. My --

Page 70:06 to 70:07

00070:06 A. My understanding is primarily 9500A and
07 a -- a smaller volume of Corexit 9527.

Page 70:16 to 71:04

00070:16 Q. (BY MS. JAKOLA) Can we turn to Tab 8,
17 please, in your binder?
18 MS. JAKOLA: We'll mark this as
19 Exhibit 12041.
20 (Marked Exhibit No. 12041.)
21 Q. (BY MS. JAKOLA) Dr. Barron, have you seen
22 Exhibit 12041 before?
23 A. I have.
24 Q. For the record, Exhibit 12041 is an
25 article titled, "Science-Based Decision Making on
00071:01 the Use of Dispersants in the DEEPWATER HORIZON
02 Oil Spill."
03 Do you see that, sir?
04 A. I do.

Page 71:07 to 71:24

00071:07 Are you one of the authors of this
08 article?
09 A. I am.
10 Q. Can you please take a look at Page 4?
11 A. Okay. Do you want me to read it or --
12 Q. One -- one second.
13 A. Okay.
14 Q. At the top of the page, there's a sentence
15 in the middle of the paragraph that begins: "This
16 was followed by Corexit 9500."
17 A. All right. Hold on. Sorry.
18 Yes. Okay. I'm there.
19 Q. Do you see? Can you read that sentence?
20 A. Yeah. "This was followed by Corexit 9500
21 in the mid-1990s, and this dispersant is still the
22 predominant one in supply in much of the United
23 States, being one of the most used in the
24 DEEPWATER HORIZON spill."

Page 72:19 to 72:21

00072:19 Corexit 9500A was the dispersant most
20 used in the DEEPWATER HORIZON spill, correct?
21 A. That is my understanding.

Page 73:21 to 73:24

00073:21 Q. Dr. Barron, sitting here today, do you
22 know whether Corexit 9500A is the most
23 predominantly used dispersant in the world?
24 A. I'm not familiar.

Page 74:01 to 74:04

00074:01 A. I don't know if that's true or not.
02 Q. (BY MS. JAKOLA) Okay. You're not aware
03 of any dispersant that is more commonly used in
04 response to oil spills?

Page 74:06 to 74:07

00074:06 A. That's not an area I have sufficient
07 knowledge to -- to com- -- to -- to answer with.

Page 74:09 to 74:09

00074:09 A. Or knowledge, anyway.

Page 74:12 to 74:21

00074:12 Q. You do know that the Corexit dispersant
13 products have been studied for many years,
14 correct?
15 A. Yes. And when you mean "studies," I'm
16 under the assumption that you mean for toxi- --
17 for ecotoxicology?
18 Q. Yes.
19 A. Okay. Yes.
20 Q. A substantial body of knowledge exists on
21 the toxicology relating to dispersants, correct?

Page 74:23 to 75:22

00074:23 A. I'm -- I'm -- I -- I'm only familiar with
24 the ecotoxicology part of that literature. But if
25 for ecotoxicology, yes.
00075:01 Q. (BY MS. JAKOLA) We know a lot about the
02 ecotoxicology of dispersants, correct?
03 A. We -- we mostly know about the acute
04 lethality of dispersants. We know substantially
05 less about the other ways that dispersants can
06 cause toxicity.
07 Q. Dr. Barron, what is the National
08 Contingency Plan Product Schedule?
09 A. Yes. So the -- the NCP, if we can use
10 that acronym. The NCP product schedule is a --
11 contains a -- a list of -- of dispersants --
12 chemical dispersants that have been -- that were
13 the -- the Office of Emergency Management has
14 approved their listing.
15 Q. The National Contingency Plan, we'll --
16 we'll refer to that as the "NCP" today, is that
17 fair --
18 A. Uh-huh.
19 Q. -- as you said?

20 The NCP requires the EPA to maintain
 21 the product schedule; is that correct?
 22 A. My understanding is yes.

Page 76:09 to 76:20

00076:09 Q. (BY MS. JAKOLA) The NCP product schedule
 10 reflects the EPA's list of dispersants that could
 11 be used in response to an oil spill, correct?
 12 A. That's my understanding.
 13 Q. To be used in response to an oil spill in
 14 the United States, a dispersant must be included
 15 on the product schedule maintained by the EPA
 16 correct?
 17 A. That's my understanding.
 18 Q. To be included on the product schedule, a
 19 dispersant manufacturer must submit information
 20 about the dispersant to EPA, correct?

Page 76:22 to 77:05

00076:22 A. Specific information.
 23 Q. (BY MS. JAKOLA) What specific information
 24 must a dispersant manufacturer provide to EPA to
 25 have its dispersant considered for inclusion on
 00077:01 the product schedule?
 02 A. Yeah. As I understand it, they would
 03 require Mysid and Menidia acute lethality tests
 04 for -- for the dispersant product and also a
 05 measure of its efficacy.

Page 77:14 to 77:23

00077:14 Q. (BY MS. JAKOLA) The EPA reviews
 15 information provided by the manufacturers relating
 16 to toxicity and efficacy of dispersants in
 17 considering whether to include the dispersant on
 18 the product schedule, correct?
 19 A. That's my understanding.
 20 Q. When the EPA reviews this toxicity and
 21 efficacy information, it considers whether the
 22 dispersant meets certain criteria to be included
 23 on the product schedule; is that right?

Page 78:01 to 78:02

00078:01 A. That, I am uncertain about. If there are
 02 criteria used, I don't know what they are.

Page 78:08 to 78:18

00078:08 You do understand that the toxicity
 09 information that is provided to the EPA is

10 reviewed by the agency in considering whether to
 11 include the dispersant on the national product
 12 schedule?
 13 A. I agree with that statement.
 14 Q. Sitting here today, though, you don't know
 15 what toxicity requirements or standards the EPA
 16 might apply to decide whether a dispersant should
 17 be included on the product schedule?
 18 A. I do not.

Page 78:20 to 78:22

00078:20 Q. (BY MS. JAKOLA) To be included on the
 21 product schedule, the dispersant must also meet
 22 certain efficacy requirements, correct?

Page 78:25 to 79:02

00078:25 A. That's a very broad statement. Meet
 00079:01 certain -- yes. That's, in the very general
 02 sense, yes.

Page 79:21 to 80:19

00079:21 Q. (BY MS. JAKOLA) If you look back at your
 22 article, which is Exhibit 12041 --
 23 A. Okay.
 24 Q. -- at Page 4 --
 25 A. Okay.
 00080:01 Q. -- at the second-to-the-last paragraph --
 02 A. Okay. Second-to-the-last paragraph.
 03 Q. It's -- the paragraph begins "To be
 04 considered."
 05 A. Okay. I'm there.
 06 Q. You see that?
 07 Towards the end of the paragraph,
 08 there's a sentence beginning, "Listing of a
 09 dispersant." Do you see that?
 10 A. Yes.
 11 Q. Can you read that sentence, please?
 12 A. Yeah. It says: "Listing of a dispersant
 13 on the product schedule has been contingent on the
 14 dispersant being at least 45 percent effective in
 15 dispersing Prudhoe Bay and South Louisiana crude
 16 oils in the SFT laboratory test," which I believe
 17 is swirl- -- swirling flash test, probably.
 18 Q. Do you have any reason to disagree with
 19 the statement in your article that you just read?

Page 80:22 to 81:03

00080:22 A. No. It's just not an area that I'm -- my
 23 expertise is not in dispersant efficacy. And so

24 if that's true, I can't verify whether it's not.
 25 I do read it, though.
 00081:01 Q. (BY MS. JAKOLA) You have no reason,
 02 sitting here today, to think that that's not
 03 correct, correct?

Page 81:05 to 81:16

00081:05 A. It surprises me, although I'm sure I have
 06 read this before and that for the toxicity
 07 testing, they use a different oil. So again,
 08 efficacy is not an area that I have expertise in
 09 or spent time reviewing. So I -- I -- I don't
 10 know if it's true or not.
 11 Q. (BY MS. JAKOLA) In any event, the EPA
 12 reviews the efficacy and toxicity information that
 13 a manufacturer provides in deciding whether to
 14 include a dispersant on the national product
 15 schedule, true?
 16 A. Correct.

Page 82:07 to 83:05

00082:07 Q. (BY MS. JAKOLA) Corexit 9527A and 9500A
 08 are included on the National Contingency Plan
 09 Product Schedule, true?
 10 A. True.
 11 Q. Can you please turn to Tab 10 in your
 12 binder?
 13 A. Tab 10. Okay. Okay.
 14 MS. JAKOLA: We'll mark this as
 15 Exhibit 12042.
 16 (Marked Exhibit No. 12042.)
 17 Q. (BY MS. JAKOLA) For the record, Exhibit
 18 12042 is titled "U.S. Environmental Protect Agency
 19 National Contingency Plan Product Schedule," dated
 20 April 2014. Do you see that, sir?
 21 A. I do.
 22 Q. Can you please turn to Page 4?
 23 A. Okay.
 24 Q. Okay. Does Page 4 show that both Corexit
 25 9527A and Corexit 9500A are included on the NCP
 00083:01 Product Schedule?
 02 A. I think so. Let me just take -- if I may,
 03 take a minute just to verify what I'm actually
 04 looking at here.
 05 Yes.

Page 84:03 to 84:18

00084:03 Exhibit 12042 is a current version of
 04 the National Contingency Plan Product Schedule,
 05 correct?
 06 A. It appears to be April 2014.

07 Q. And on Page 4, we see that both Corexit
08 9527A and 9500A are included on the NCP Product
09 Schedule, correct?
10 A. Correct.
11 Q. With respect to Corexit 9527A, do you see
12 that that dispersant has been included on the NCP
13 Product Schedule since March 1978?
14 A. Yeah, that would be my interpretation.
15 Q. It was relisted in December 1995, correct?
16 A. That is what's reported here.
17 Q. So Corexit 9527A has been included on NCP
18 Product Schedule since March 1978 --

Page 84:20 to 85:01

00084:20 Q. (BY MS. JAKOLA) -- continuously?
21 A. Yeah. That's an -- that's an inference.
22 It says "Date listed." It doesn't say "Date first
23 listed." We can infer that date listed means date
24 first listed. But I would say yes.
25 Q. Corexit 9527A has been included on the
00085:01 product schedule for more than 35 years, correct?

Page 85:03 to 85:11

00085:03 A. I've got to do some math here if you're
04 going to ask me numbers. So 35 plus 78. Yes.
05 Q. (BY MS. JAKOLA) Looking at Corexit 9500A,
06 that dispersant has been included on the NCP
07 Product Schedule since April 1994, correct?
08 A. Yes. That's what's reported.
09 Q. Corexit 9500A has been included on the
10 product schedule continuously for more than 20
11 years, correct?

Page 85:13 to 85:18

00085:13 A. It appears so. Again, we're basing this
14 on this. I don't know if there's typos in this.
15 I'm -- you know, I'm answering the question based
16 on the document in front of me.
17 Q. (BY MS. JAKOLA) EPA periodically updates
18 the NCP Product Schedule, correct?

Page 85:20 to 85:24

00085:20 A. That's my understanding.
21 Q. (BY MS. JAKOLA) Sometimes products are
22 removed from the product schedule, as you
23 mentioned earlier?
24 A. Yes.

Page 86:01 to 86:10

00086:01 Q. (BY MS. JAKOLA) If you look back at
 02 Page 2 of the product schedule, do you see a list
 03 of products that have been removed from the
 04 product schedule?
 05 A. I do.
 06 Q. There are a list of many dispersants that
 07 have been removed over the years, correct?
 08 A. Yes.
 09 Q. Neither Corexit 9527A or 9500A have ever
 10 been removed from the product schedule, true?

Page 86:12 to 86:19

00086:12 A. I don't know that with certainty. But
 13 based on the information at hand, that would be my
 14 interpretation.
 15 Q. (BY MS. JAKOLA) Both Corexit products,
 16 Corexit 9500A and 9527A, are still available for
 17 use as reflected on the current NCP Product
 18 Schedule, correct?
 19 A. That's my understanding.

Page 90:06 to 90:10

00090:06 Q. Okay. Sitting here today, you're not
 07 familiar with the RRT pre-approval --
 08 A. I'm not.
 09 Q. -- dispersant plan?
 10 A. I am not.

Page 93:01 to 93:05

00093:01 Q. Dr. Barron, sitting here today, you have
 02 no reason to disagree that in developing its
 03 dispersant pre-approval plan, RRT-6 considered the
 04 potential toxic effects of the use of dispersants
 05 as outlined in the plan --

Page 93:07 to 93:08

00093:07 Q. (BY MS. JAKOLA) -- correct?
 08 A. I --

Page 93:11 to 93:16

00093:11 A. I don't know. I've never read the plan.
 12 I don't know what it did or did not do.
 13 Q. (BY MS. JAKOLA) You have no reason to
 14 disagree with the statement that RRT-6 considered
 15 the toxicity of dispersants in preparing its plan,
 16 correct?

Page 93:19 to 94:04

00093:19 A. I have no reason to disagree -- yes, I
20 have a reason to disagree, because you're -- I'm
21 here as a representative of the EPA. I'm -- and
22 so I cannot -- and you say "no reason to," you
23 know, the double negative. But without having
24 read this plan, I -- I -- you're -- I don't think
25 I can answer that question --
00094:01 Q. (BY MS. JAKOLA) Okay.
02 A. -- whether I disagree or don't agree
03 without having -- being allowed to review the
04 plan.

Page 94:21 to 94:24

00094:21 Q. As a representative of the United States
22 here today, you're not prepared to offer testimony
23 about what toxicity information RRT-6 considered
24 in preparing the plan in Exhibit 11835?

Page 95:01 to 95:01

00095:01 A. I'm not.

Page 97:07 to 97:09

00097:07 Q. (BY MS. JAKOLA) Dr. Barron, the federal
08 on-scene coordinator approved dispersant
09 applications during the response, correct?

Page 97:11 to 98:03

00097:11 A. Yeah. I'm -- I'm really not expert in the
12 command structure. I don't know if the -- the --
13 if the on-scene coordinator approves or if it's
14 the incident command. I don't really understand
15 the -- the organizational structure or
16 decision-making structure of the incident command.
17 Q. (BY MS. JAKOLA) You understand that the
18 Unified Command approved dispersant applications
19 in the response, right?
20 A. That -- that's my understanding.
21 Q. EPA provided input to Unified Command with
22 respect to dispersant use, correct?
23 A. That's my general understanding, but I
24 don't have any firsthand knowledge of that. It's
25 more of a -- what I understood to be occurring.
00098:01 Q. From the outset of the response, EPA was
02 involved in assessing potential risks associated
03 with the use of dispersants, true?

Page 98:05 to 98:12

00098:05 A. I'm just read- -- reading your question to
06 make sure I understand it.
07 Potential risks. Not exactly. Your
08 question seems to imply, you know, risk
09 assessment, which is a very formal process. I
10 think we were assessing -- potential risks. I
11 guess I would just -- for now, just disagree with
12 that statement --

Page 98:14 to 98:19

00098:14 A. -- assessing potential risks.
15 Q. In particular, from the outset of the
16 response, EPA was involved in assessing
17 information relating to the use of dispersants in
18 the response, correct?
19 A. Yes.

Page 98:21 to 98:25

00098:21 Q. (BY MS. JAKOLA) EPA provided input to the
22 Unified Command regarding potential effects of
23 dispersants, correct?
24 A. I don't have any knowledge -- firsthand
25 knowledge of that.

Page 99:03 to 99:07

00099:03 EPA, NOAA, the U.S. Coast Guard, and
04 BP monitored dispersant use during the response,
05 correct?
06 A. I don't have any firsthand knowledge of
07 who monitored what.

Page 100:03 to 100:06

00100:03 Q. The EPA was involved in monitoring
04 dispersant use in the response, correct?
05 A. We -- we were involved in monitoring
06 dispersant use.

Page 101:16 to 101:18

00101:16 Dr. Barron, do you agree that efforts
17 to monitor dispersants during the response were
18 both extensive and multifaceted?

Page 101:21 to 102:02

00101:21 A. I -- as -- as previously stated, I -- my

22 role in general or specific knowledge was -- was
23 very focused on ecotoxicology aspects. So the --
24 the -- the large comprehensive programs that EPA
25 may have been engaged in substantively, I'm not
00102:01 necessarily familiar with all that. So I'm not
02 sure if I could answer that question --

Page 102:04 to 102:04

00102:04 A. -- correctly.

Page 102:19 to 102:21

00102:19 Q. Do all of the authors of this article in
20 Exhibit 12041 work or formally work at the EPA?
21 A. Yes.

Page 103:12 to 103:14

00103:12 Q. Do you understand that the monitoring
13 efforts in connection with dispersant applications
14 and the response were extensive and multifaceted?

Page 103:16 to 103:22

00103:16 A. I -- I agree that that's what the
17 statement says. I -- I -- if you -- as you noted,
18 the multiple authors here. I don't dispute the
19 statement at all; and as a coauthor, it means I
20 concur, as being the coauthor. But it does not
21 mean I have knowledge of that specific aspect,
22 which I do not.

Page 105:12 to 105:24

00105:12 Q. There were many different types of
13 monitoring that were conducted in connection with
14 the DEEPWATER HORIZON response, true?
15 A. Yes. But more -- more accurately in -- in
16 connection with the DEEPWATER HORIZON oil spill.
17 Because response -- I just want to make sure that
18 response -- because I don't understand, as I've
19 mentioned to you, the -- all the -- everything
20 about the incident command and the response
21 operations. I don't want to imply that an
22 activity was part of the response which might be
23 interpreted as being part of the Unified Command
24 response.

Page 106:11 to 106:14

00106:11 Q. Field monitoring of dispersant toxicity

12 was conducted in connection with the spill,
13 correct?
14 A. Yes.

Page 106:22 to 107:20

00106:22 Can you describe some of the types of
23 toxicity monitoring that was conducted in
24 connection with the DEEPWATER HORIZON spill?
25 A. Yes. So one component that I'm familiar
00107:01 with was the Rototox testing program in the
02 subsea. And as I understand that program, samples
03 were taken between, say, 3 meters and -- and at
04 over 1,000 meters. But not at the -- the -- so in
05 surface waters, shallow -- shallow depths, but
06 not, as I'm aware, at the actual physical surface
07 of the water.
08 So -- so I'm aware that -- I'm
09 also -- I'm most familiar with the Rototox testing
10 program. I'm less familiar with surface --
11 shallow surface water measures. So when you ask
12 me was there monitoring of those shallow -- at
13 shallow depths, I'm less familiar with that,
14 except where Rototox testing was involved.
15 Q. You're aware that also UV fluorescent
16 testing was conducted, correct?
17 A. I'm aware of that.
18 Q. You're aware that dissolved oxygen was
19 also measured at various intervals from the
20 surface to 550 meters?

Page 107:23 to 107:25

00107:23 A. I'm aware of that.
24 Q. (BY MS. JAKOLA) Are you aware of towed
25 fluorometer testing?

Page 108:02 to 108:07

00108:02 A. I'm aware that it occurred based on my
03 document review. I don't have familiarity with it
04 other than that.
05 Q. (BY MS. JAKOLA) Are you aware of CTD
06 testing at various intervals from surface to 550
07 meters also occurred?

Page 108:09 to 108:14

00108:09 A. Not CTD testing but CD -- CTD sampling or
10 measurement.
11 Q. (BY MS. JAKOLA) You're aware that CTD
12 sampling occurred at various intervals from
13 surface to 550 feet -- 550 meters during the -- in

14 connection with the response, correct?

Page 108:17 to 109:23

00108:17 A. Yes. And I'm aware of that because I
18 reviewed a document that said that. But I didn't
19 have direct knowledge of that.
20 Q. (BY MS. JAKOLA) Which document did you
21 review that said that?
22 A. Oh, man. Okay. It was -- that's a good
23 question. It -- you know, I don't remember the
24 exact name of the document. I just -- it might
25 have been in a directive, possibly Directive 1,
00109:01 maybe.
02 Q. Can you please turn to Tab 17 in your
03 binder.
04 MS. JAKOLA: Which we will mark as
05 12044.
06 A. So 17?
07 Q. (BY MS. JAKOLA) Yes, sir.
08 (Marked Exhibit No. 12044.)
09 Q. (BY MS. JAKOLA) For the record, Exhibit
10 120- --
11 A. I'm sorry.
12 Q. -- -44 is a document titled, "Dispersant
13 Monitoring and Assessment Directive for Subsurface
14 Dispersant Application," dated May 10th, 2010.
15 Dr. Barron, is Exhibit 12044 the
16 directive to which you were referring?
17 A. Let me -- may I look at it?
18 Yes.
19 Q. If you look at Page 2 of the directive.
20 Is there a description of types of monitoring and
21 sampling that would be conducted in connection
22 with the spill?
23 A. Yes.

Page 113:12 to 113:17

00113:12 Q. You understand that you're here to testify
13 today on behalf of the United States with respect
14 to dispersant toxicology as it relates to the use
15 of dispersants in the DEEPWATER HORIZON response,
16 correct?
17 A. Yes.

Page 113:19 to 115:10

00113:19 Are you prepared to testify today as
20 to the ways in which dispersant toxicity was
21 measured in connection with the spill response?
22 A. Yes.
23 Q. Can you please summarize to me the ways in
24 which dispersant toxicity was measured in

25 connection with the DEEPWATER HORIZON response?
00114:01 A. Yes. So specifically at -- are you
02 talking about in general or the subsea or just
03 everything?
04 Q. I'm talking about everything.
05 A. Everything. Okay. So in the -- in the --
06 in the subsea, the -- the one specific aspect
07 of -- related to marine organisms, a toxicity was
08 Rototox. There was also dissolved oxygen measures
09 that were related to reaching hypoxic levels of
10 oxygen in the deep ocean that could result in
11 toxicity, as well as in -- impaired by
12 degradation. So some of these elements might be
13 multifaceted.
14 There was also -- unrelates -- not
15 part of this direc- -- at least that I don't see
16 as part of this directive, is -- there was also
17 bioassays -- sediment bioassays performed in
18 the -- in the coastal areas, estaurine areas, to
19 assess toxicity of oiled and non-oiled areas. So
20 that was part of this that doesn't appear to be
21 part of this directive.
22 There was -- I'm less familiar with,
23 but I recall reviewing -- there was -- there was
24 also monitoring in surface waters for toxicity
25 by -- that the agency was either involved in
00115:01 reviewing or -- but I don't know -- I don't have
02 firsthand knowledge of whether they were directly
03 involved in -- in the collection. That might have
04 been performed by the RRT. And I can certainly --
05 if given the -- you know to review, I can
06 certainly speak to you on -- in helping you --
07 interpreting those results. But having firsthand
08 knowledge of all of the various activities that I
09 might not have been engaged with, I can't speak to
10 that.

Page 116:04 to 117:08

00116:04 Q. (BY MS. JAKOLA) Can you please turn back
05 to your article at Tab 8 --
06 A. Tab 8?
07 Q. -- going to Page 3.
08 A. Okay.
09 Q. At the top of the page in the first full
10 paragraph about midway down, there's a sentence
11 that says, "As a result of this collaborative
12 effort." Do you see this?
13 A. Not yet. Sorry. So I've gone on Page --
14 Q. Page 3.
15 A. Are you on Page 1?
16 Q. Page 3.
17 A. Oh, Page 3. Okay.
18 Q. Yes, sir.
19 A. Okay.

20 Q. At the top -- at the top of the page,
21 there's a paragraph -- the first full paragraph
22 begins, "Several government agencies" --

23 A. Yeah, yeah.

24 Q. -- "and stakeholders were involved in this
25 monitoring effort..."

00117:01 Do you see that?

02 A. Yes, I do.

03 Q. And the article goes on to say that
04 several agencies, including NOAA, the U.S.
05 Geological Survey, the Department of Fisheries and
06 Oceans, as well as BP, were involved in monitoring
07 efforts with respect to toxicity in connection
08 with the spill response. Do you see that?

Page 117:10 to 117:19

00117:10 A. Yes, I do.

11 Q. (BY MS. JAKOLA) And the following
12 sentence begins, "As a result." Can you please
13 read that?

14 A. Yeah. "As a result of this collaborative
15 effort, the response community has learned a great
16 deal about subsea dispersion, the behavior of
17 dispersed oil plumes as they advect, how best to
18 monitor oil plumes, and the acute toxicity of
19 certain dispersants."

Page 118:23 to 119:16

00118:23 Q. Do you agree that the monitoring efforts
24 in connection with the use of dispersants in the
25 DEEPWATER HORIZON spill response was

00119:01 collaborative?

02 A. I -- I don't have firsthand knowledge of
03 that. That's my -- my understanding is, is that
04 would have been under the direction of the -- the
05 incident command, and I don't -- I'm not really
06 familiar with whether it was collaborative or not.

07 Q. Okay. You had a chance to review the
08 article that you coauthored in Exhibit 12041
09 before it was published, correct?

10 A. Yes.

11 Q. And you did read the article, correct?

12 A. I did.

13 Q. You had an opportunity to suggest changes
14 to anything that you thought was incorrect; is
15 that right?

16 A. Yes.

Page 119:18 to 119:20

00119:18 You never suggested to your coauthors

19 that the paragraphs we've been discussing on Pages

20 2 and 3 should be changed, correct?

Page 119:22 to 119:22

00119:22 A. That's correct.

Page 120:03 to 120:05

00120:03 Q. (BY MS. JAKOLA) You concur with all of
04 the statements in your article in Exhibit 12041?
05 A. I would --

Page 120:07 to 120:21

00120:07 A. In general, I concur with this. But if --
08 I would need to read every -- read this in its
09 entirety to -- to say yes to that. But in
10 general, yes. But if -- I have not reviewed every
11 sentence for three years, so I don't know if I had
12 an issue with one sentence but that I conceded
13 with that as, you know, deferred to someone else
14 who's more expert in that. I don't recall the --
15 you know, back then. But, in general, I would
16 concur with the statements. But every sentence, I
17 would need to read it.
18 Q. (BY MS. JAKOLA) Do you agree that the
19 results of dispersant testing and monitoring were
20 used to help inform daily operations as part of
21 the spill response?

Page 120:23 to 122:14

00120:23 A. I -- I disagree with that. And the reason
24 I disagree with that is because speaking
25 specifically to Rototox, there were many days
00121:01 where the results were uninterpretable and, to me,
02 would have very limited value in -- in forming the
03 response.
04 Q. (BY MS. JAKOLA) Can you please turn to
05 Page 7 of your article, the bottom of the page?
06 A. Okay.
07 Q. The last sentence states: "Collectively,
08 these monitoring results were helpful for daily
09 decisions on the use of dispersants during the
10 spill, including the reduction in dispersant
11 application rate as the response unfolded."
12 Do you see that, sir?
13 A. I don't, sorry. I'm on Page 7, but I'm
14 trying to --
15 Q. The last sentence at the bottom of the
16 page starts "Collectively." Do you see that?
17 A. No. The one -- oh, "Collectively." Okay.
18 "Collectively" -- I'm sorry, I was looking for the

19 first complete sentence. "Collectively, these
 20 monitoring results were helpful for daily
 21 decisions." It says "collectively."
 22 Q. Okay. I'm going to read the sentence
 23 again. Do you see the sentence that says:
 24 "Collectively, these monitoring results were
 25 helpful for daily decisions on the use of
 00122:01 dispersants during the spill, including the
 02 reduction in dispersant application rate as the
 03 response unfolded."
 04 Do you see that?
 05 A. Yes.
 06 Q. Do you concur with that statement?
 07 A. "Collectively, these" -- collectively?
 08 Yeah, I don't disagree with it.
 09 Q. Okay. Dr. Barron, on May 20th, 2010, the
 10 EPA and the Coast Guard issued a directive
 11 requiring BP to evaluate potential alternative
 12 dispersants for use in the DEEPWATER HORIZON
 13 response, correct?
 14 A. That's my understanding.

Page 122:24 to 124:10

00122:24 For the record, we'll mark this as
 25 Exhibit 12045, which is a May 20th, 2010,
 00123:01 dispersant monitoring and assessment directive
 02 addendum.
 03 (Marked Exhibit No. 12045.)
 04 A. I'm there.
 05 Q. (BY MS. JAKOLA) Dr. Barron, do you see
 06 that Exhibit 12045 is an addendum that the U.S.
 07 Coast Guard and EPA issued to BP in the spill
 08 response?
 09 A. Issued by the U.S. and EPA to be -- yes.
 10 Q. This is specifically Addendum 2 to the
 11 Dispersant Monitoring and Assessment Directive
 12 that would have been issued on May 10th, 2010. Do
 13 you see that?
 14 A. I do.
 15 Q. Did you have any personal involvement in
 16 preparing Addendum 2?
 17 A. May I just take a minute to familiarize
 18 myself with this?
 19 Q. Let me ask you: Have you seen Addendum 2
 20 before?
 21 A. I have.
 22 Q. Did you help to draft Addendum 2?
 23 A. May I look at it again?
 24 Q. Yes.
 25 A. Thank you.
 00124:01 I -- I don't recollect having
 02 direct -- I don't know how to say this. My
 03 discussions may have informed this addendum, but I
 04 didn't have any direct involvement in crafting it

05 or direct knowledge of what information was used
 06 in developing the addendum. My recollection is
 07 the first time I saw the addendum -- doesn't mean
 08 I hadn't seen it previously, but my first
 09 recollection was as -- in preparation for this
 10 trial -- or this deposition, sorry.

Page 126:06 to 127:08

00126:06 Q. (BY MS. JAKOLA) Okay. Let's look at
 07 the -- let's look at the language. Dr. Barron,
 08 does Addendum 2 require that: "...BP shall
 09 identify to the FOSC and the EPA RRT co-chair for
 10 EPA's and the FOSC's approval, one or more
 11 approved dispersant products from the National
 12 Contingency Plan Product Schedule that are
 13 available in sufficient quantities, are as
 14 effective at dispersing the oil plume, and have a
 15 toxicity value less than or equal to 23 ppm LC50
 16 toxicity value for Menidia or 18.00 ppm LC50 from
 17 Mysidopsis, as indicated on the NCP Product
 18 Schedule"?
 19 Do you see that?
 20 A. Yes, that's -- that's what it says.
 21 Q. For starters, is it fair to say that
 22 there's probably a typographical error in this
 23 addendum with respect to the toxicity value
 24 indication? In other words, sir, where Addendum 2
 25 requires BP to look for alternative dispersants
 00127:01 that may have a toxicity value of less than --
 02 A. Yeah, I'm --
 03 Q. -- LC50 values --
 04 A. I'm aware of this. Yeah, I'm aware of
 05 the -- this --
 06 Q. What -- what should it say?
 07 A. -- this sentence.
 08 It should say greater than.

Page 127:24 to 128:12

00127:24 Q. Sorry. Specifically, EPA was -- was
 25 directing that BP consider whether there was a
 00128:01 less toxic dispersant that could be used in
 02 connection with the response?
 03 A. That's my understanding.
 04 Q. And when I say "a less toxic," I mean less
 05 toxic than Corexit 9500, correct?
 06 A. That -- that seems to be implied here, but
 07 it's not -- as written, it's not very clear to me.
 08 Q. Okay. Are the LC50 toxicity values
 09 provided in Item No. 2 the LC50 values for Corexit
 10 in connection with the species indicated?
 11 A. I would have -- I don't -- I'd have to
 12 verify that. I don't know.

Page 129:05 to 129:22

00129:05 Q. Okay. Now, on May 20th, 2010, BP and the
06 Coast Guard were using Corexit 9500A as part of
07 the spill response, correct?
08 A. That's my understanding.
09 Q. At that time and still to this day,
10 Corexit 9500A was included on the NCP Product
11 Schedule, correct?
12 A. Yes.
13 Q. As of May 20th, 2010, didn't EPA have
14 information about the comparative toxicity of
15 dispersants included on the product schedule?
16 A. They did.
17 Q. As of May 20 --
18 A. They did. Sorry.
19 Q. As of May 20th, 2010, did EPA know the
20 relative toxicities of the approved dispersants
21 that were included on the product schedule?
22 A. And --

Page 129:24 to 130:04

00129:24 A. -- again, just to -- I'm -- I think this
25 is what you mean by that word -- when you say
00130:01 "relative toxicity," we're talking about acute
02 lethality as measured by an LC50 value in the --
03 just so we're clear. But, yes, those data were
04 available on the NCP.

Page 130:19 to 130:22

00130:19 To your knowledge, EPA did not base
20 its decision to issue Addendum 2 on any newly
21 acquired toxicity data relating to Corexit or
22 other dispersants, correct?

Page 130:24 to 131:06

00130:24 A. Not to my knowledge. We had not initiated
25 our testing program. Or if we had, it --
00131:01 certainly there was no data by then.
02 Q. (BY MS. JAKOLA) Addendum 2 to your
03 knowledge was not issued to BP due to any
04 evolution in the science regarding the toxicity of
05 Corexit or the dispersants?
06 A. So -- so, ma'am, what --

Page 131:08 to 131:16

00131:08 A. -- what I had said before is I don't know
09 the -- I can read this explicitly and understand
10 to the best of my knowledge, but what I can't do

11 is infer the thinking or the knowledge that the
 12 people that developed this addendum, because I --
 13 to the best of my knowledge, I was not consulted
 14 in the crafting of -- specifically crafting of the
 15 language of this addendum. So I don't know what
 16 they considered or had available to them. Sorry.

Page 131:18 to 131:22

00131:18 Q. (BY MS. JAKOLA) As far as you know,
 19 Addendum 2 was not based on any evolution in the
 20 science or understanding of the toxicity of
 21 Corexit or other dispersants on the product
 22 schedule, correct?

Page 131:24 to 133:11

00131:24 A. I -- I can answer it this way: I can't --
 25 I can't answer what those people con- -- whoever
 00132:01 did this considered. I can tell you this: There
 02 was no evolution, in my -- my understanding as an
 03 ecotoxicologist, there was no evolution in the
 04 knowledge of dispersants in -- in recent history,
 05 at least as I can determine through being an
 06 expert in the area. But I don't know what they
 07 considered.

08 Q. (BY MS. JAKOLA) Do you know who at EPA
 09 was involved in making the decision to issue
 10 Addendum 2?

11 A. Did I -- did I -- was aware that this was
 12 happening?

13 Q. Do -- do you know who at EPA --

14 A. Oh.

15 Q. -- was involved in even the decision to
 16 issue Addendum 2?

17 A. I don't. I don't.

18 Q. Do you know if any EPA toxicologists were
 19 consulted in connection with Addendum 2?

20 A. Now, in connection -- I may have been
 21 consulted in connection with Addendum 2. I -- but
 22 I was not explicitly told, to my recollection, "We
 23 are writing Addendum 2 and we are consulting you."
 24 But throughout the spill, I did provide ecotox
 25 advice to my agency. So -- but what they

00133:01 considered in developing this, I don't know.
 02 Okay.

03 Q. That's fair.

04 A. Okay.

05 Q. To your knowledge, were any toxicologists
 06 at EPA consulted about the decision of whether to
 07 issue Addendum 2?

08 A. Whether to issue -- not -- not to my
 09 knowledge. But, again, there was a large number
 10 of people involved in -- I don't -- I don't know.
 11 It's possible. I don't know.

Page 133:25 to 134:16

00133:25 Q. (BY MS. JAKOLA) For the record,
 00134:01 Exhibit 12046 is a May 20th, 2010, letter to Rear
 02 Admiral Mary Landry. Do you see that, sir?
 03 A. I do.
 04 Q. Have you seen Exhibit 12046?
 05 A. May I just scan through it just to
 06 familiarize myself with it?
 07 Q. Yes, sir.
 08 A. Okay. I -- I recognize this.
 09 Q. What is Exhibit 12046?
 10 A. What -- what I see is it's a letter from
 11 Douglas J. Suttles to Admiral Landy [sic] and Sam
 12 Coleman of EPA. And it has to do -- something to
 13 do with Addendum 2.
 14 Q. Is Exhibit 12046 a copy of BP's response
 15 to Addendum 2?
 16 A. It --

Page 134:18 to 134:25

00134:18 A. It -- it appears to be. It's not in
 19 letterhead. It's not signed. So I don't know if
 20 this is actually the response that Mr. Suttles
 21 provided. Alls I can see is this looks like maybe
 22 a draft of it or something. I'm not really sure.
 23 I don't have the --
 24 Q. (BY MS. JAKOLA) Did you review --
 25 A. -- final one.

Page 136:12 to 136:20

00136:12 Q. (BY MS. JAKOLA) Is it your understanding
 13 that in response to Addendum 2, BP took the
 14 position that Corexit 9500A continued to be the
 15 best available dispersant for use --
 16 A. Yeah. From the in- --
 17 Q. -- in the spill response?
 18 A. From the information in front of me, yes.
 19 Q. Okay. Can you please turn to Tab 35?
 20 A. Okay. Okay.

Page 136:24 to 137:06

00136:24 Q. (BY MS. JAKOLA) For the record,
 25 Exhibit 12047 is a May 26th, 2010, letter to
 00137:01 Mr. David Rainey from Ms. Lisa Jackson.
 02 Do you -- you see Exhibit 12047?
 03 A. I do.
 04 Q. Have you seen a copy of Exhibit 12047
 05 before today?

06 A. I have.

Page 138:07 to 138:09

00138:07 Q. Administrator Jackson does not provide an
08 explanation as to why she believes BP's response
09 was supposedly insufficient, correct?

Page 138:11 to 138:20

00138:11 A. I do not see it in this letter. Whether
12 she provided that in a phone call or another
13 letter that I don't have that followed up with
14 this -- so I can only speak to this specific
15 letter. In this specific letter, I do not see an
16 explanation.
17 Q. (BY MS. JAKOLA) Administrator Jackson's
18 letter does not identify any specific information
19 that BP supposedly failed to provide in response
20 to Addendum 2, correct?

Page 138:22 to 138:22

00138:22 A. I do not see it in this -- in this letter.

Page 141:13 to 142:07

00141:13 Q. (BY MS. JAKOLA) Dr. Barron, before the
14 lunch break, we were discussing Addendum 2 that
15 was issued to BP in connection with the spill
16 response.
17 Do you remember that?
18 A. Yes.
19 Q. And, in particular, we were talking about
20 BP's response to Addendum 2.
21 Do you remember that?
22 A. Yes.
23 Q. We've handed you what has been marked as
24 Exhibit 12050, which, for the record, is
25 US_PP_EPA014955 through 56.
00142:01 Do you have a copy of that in front
02 of you, sir?
03 A. I do.
04 (Marked Exhibit No. 12050.)
05 Q. (BY MS. JAKOLA) Is Exhibit 12050 a May
06 25, 2010, E-mail from you to Michele Conlon?
07 A. Yes.

Page 142:17 to 143:01

00142:17 Q. Can you turn to the backside of your
18 document --
19 A. Okay.

20 Q. -- which is Bates number ending 14956. Do
21 you see that attached to the E-mail is a draft
22 letter to Mr. Rainey from Administrator Jackson?
23 A. Yes.
24 Q. Did you receive a draft of the letter in
25 Exhibit 12050?
00143:01 A. Yeah. Based on this, I would say I did.

Page 143:10 to 146:07

00143:10 Exhibit 12050 is an E-mail in which
11 you received a draft letter to Mr. Rainey.
12 Do you agree with that?
13 A. Yes.
14 Q. Do you agree that the letter to Mr. Rainey
15 concerns BP's consideration of alternative
16 dispersants for use in the BP DEEPWATER HORIZON
17 spill?
18 A. Yes.
19 Q. Now, who is Dana Tulis?
20 A. Dana Tulis is, according to this-- and I
21 don't know whether -- if she's still acting -- but
22 according to this E-mail, she was the acting
23 office director for -- for OEM.
24 Q. Who is Paul Anastas?
25 A. Paul Anastas, at that time, was the
00144:01 assistant administrator for -- of ORD.
02 Q. Do you see in Exhibit 12050 that
03 Mr. Anastas -- strike that.
04 Do you see in Exhibit 12050 that
05 Mr. Anastas forwards the draft letter to
06 Mr. Rainey to a Cynthia Sonich-Mullin?
07 A. Yes.
08 Q. And Mr. Anastas states: "Please read the
09 attached letter ASAP and make sure that it doesn't
10 make promises we can't keep."
11 Do you see that?
12 A. I do.
13 Q. Who is Cynthia Sonich-Mullin?
14 A. So she is a EPA employee. During the
15 spill, my recollection, she had been working in
16 ORD's Department of Homeland Security and then
17 was -- assisted Dr. Anastas in coordinating ORD's
18 responses during the spill to information
19 inquiries and things like that.
20 Q. Occasionally, information inquiries would
21 come to ORD?
22 A. Yes.
23 Q. Correct? And Ms. Sonich-Mullin helped
24 shepherd those inquiries --
25 A. Yeah.
00145:01 Q. -- to the right people?
02 A. Yeah. Yes, ma'am.
03 Q. Now, Ms. Sonich-Mullin forwards
04 Mr. Anastas' E-mail to you and others, correct?

05 A. I'm just looking to -- yes. She sent it
06 to three people, it looks like.

07 Q. She writes in her E-mail to you, quote,
08 "Please read the attached to verify its accuracy
09 in the commitments it makes to conduct specific
10 tests and getting the needed information to
11 informed decision-making."

12 Do you see that?

13 A. I do.

14 Q. Did you review the letter attached to
15 Ms. Sonich-Mullin's E-mail as she requested?

16 A. I did.

17 Q. Okay. Can we look back, please, at Tab 37
18 in your binder, which we marked as Exhibit 12049.

19 A. Yes.

20 Q. Do you see that Exhibit 12049 is a May 25,
21 2010 letter from you to Mr. Rick Greene,
22 Mr. Michael Hemmer and others?

23 A. I do. They're -- they're doctors but
24 that's just FYI.

25 Q. Thank you.

00146:01 A. Yes.

02 Q. Who is Dr. Rick Greene?

03 A. Rick Greene at -- at that time was our
04 acting division director at the Gulf Ecology
05 Division.

06 Q. Is Dr. Greene also with ORD?

07 A. He is.

Page 146:10 to 147:09

00146:10 In this E-mail, are you referring to
11 the draft letter to Dr. -- strike that.

12 In this E-mail, are you referring to
13 the draft letter to Mr. Rainey that you had been
14 asked to review?

15 A. Can I take a quick review of this -- this
16 E-mail?

17 Q. Yes, sir.

18 A. Yeah. I've read this now.

19 Q. Dr. Barron, in your E-mail to Dr. Greene
20 and others in Exhibit 12049, you write: "Rick, I
21 just left you a message. Just spoke with Cindy.
22 It was given to ORD from OEM without allowing our
23 review. I told her the memo is wrong and I will
24 edit it."

25 Do you see that?

00147:01 A. I do.

02 Q. Did you see that at the end of your
03 E-mail, you say, quote, "She did not want me to
04 call Deb directly to try and pull it back. She
05 wants to talk with Anastas. She understands that
06 we do not support the statements or commitments in
07 the letter."

08 Do you see that?

09 A. I do.

Page 148:09 to 149:23

00148:09 Q. Let me ask you. Do you have -- going back
10 to Exhibit 12049, where you write to Dr. Greene
11 that the memo --
12 A. Sorry.
13 Q. -- is wrong.
14 A. What -- what tab was that?
15 Q. Tab 37.
16 A. 37. Okay.
17 Q. Exhibit 12049. You write that the memo is
18 wrong, correct?
19 A. Yeah. And that I think that was referring
20 to this memo.
21 Q. And by "this memo" you mean the memo in
22 Exhibit 12050?
23 A. Yes. Correct.
24 Q. You also write that you do not support the
25 statements or commitments in the letter, correct?
00149:01 A. Correct.
02 Q. What --
03 A. So, yeah, let me read this.
04 Q. -- in Exhibit 12050 did you think was
05 wrong?
06 A. Okay. May I -- let me read this. Yeah,
07 there's multiple things wrong with this.
08 Q. Can you give me an example?
09 A. Yeah. So the first one is that it
10 mentions -- excuse me -- determines 100 percent
11 seawater samples that cause acutely lethality.
12 I -- you know, again, I'm just making an inference
13 here. But she was probably or whoever wrote this
14 is thinking that that was maybe their
15 understanding of what -- what a Rototox test might
16 do versus comparative dispersant testing. They
17 also mention -- she said minnow, which was not one
18 of our test species or intended to be one of our
19 test species. So as -- okay.
20 Q. Dr. Barron, without giving an exhaustive
21 list of what was wrong with the original draft, is
22 it fair to say that the draft contained
23 inaccuracies that you wanted to correct?

Page 149:25 to 149:25

00149:25 A. Yes. Correct.

Page 150:12 to 152:17

00150:12 Q. Is it fair to say that the draft of the
13 letter to Mr. Rainey was given to ORD from OEM
14 without allowing ORD review?

15 A. That's what it stated.
16 Q. That's what she wrote, correct?
17 A. Yes, exactly. That's what is stated.
18 Q. Now, can you please look at Exhibit 12051,
19 which, for the record, is US_PP_EPA044347 to 48.
20 (Marked Barron Exhibit No. 12051.)
21 Q. (BY MS. JAKOLA) Do you have it in front
22 of you, sir?
23 A. I do.
24 Q. Do you see that this is a May 25th, 2010,
25 E-mail from you to Deborah McKean and others?
00151:01 A. Yes.
02 Q. And do you also see that you attach some
03 revisions to the letter to Mr. Rainey?
04 A. I see what is attached as something that's
05 called "BP letter less" -- "letter less toxic."
06 Again, I would -- I'm just trying to understand
07 this. So this -- it looks like this -- because
08 you've told me this is correct. You've said this
09 is this attachment. You have told me this.
10 Q. That's how it's been produced to us in
11 this litigation --
12 A. Yes, okay.
13 Q. -- by the United States.
14 A. Okay. So with that, that I have attached
15 this -- this letter here it looks like.
16 Q. In Exhibit 12051 --
17 A. Yes.
18 Q. -- there's a second page of that
19 exhibit --
20 A. Okay.
21 Q. -- which is 44348 --
22 A. Oh, this again.
23 Q. -- which appears to be --
24 A. My edits.
25 Q. -- your edits to the letter.
00152:01 A. Oh, okay.
02 Q. Is that correct?
03 A. Yes. May I? Yeah. Correct.
04 Q. All right. You did provide comments on
05 the draft letter to Mr. Rainey, correct?
06 A. I don't know if I provided comments or if
07 I just edited it.
08 Q. Okay. Well, you --
09 A. From this it looks like -- I mean, I don't
10 see tracked changes so it -- I mean --
11 Q. I'm not trying to be -- I'm not trying to
12 quibble.
13 A. Okay.
14 Q. You -- you edited the letter to --
15 A. I did.
16 Q. -- Mr. Rainey, correct?
17 A. I did.

00152:21 The draft of the letter to Mr. Rainey
22 that you reviewed started out by thanking
23 Mr. Rainey for his response, correct?
24 A. Yes.
25 Q. The draft of the letter to Mr. Rainey that
00153:01 you reviewed did not identify any deficiencies in
02 BP's response regarding the consideration of all
03 alternative dispersants, correct?
04 A. I'm just -- yeah, I'm just reading to
05 verify that statement. Correct.
06 Q. Ultimately, EPA did perform its own
07 toxicity testing of various dispersants on the NCP
08 product schedule, correct?
09 A. Yes.

Page 154:07 to 154:22

00154:07 Q. (BY MS. JAKOLA) For the record, Exhibit
08 12052 is an article titled "Comparative Toxicity
09 of Eight Oil Dispersant Products on Two Gulf of
10 Mexico Aquatic Test Species"; is that correct?
11 A. Correct.
12 Q. And it's dated June 30th, 2010?
13 A. Correct.
14 Q. Is Exhibit 12052 a report that you and
15 others prepared?
16 A. Yes.
17 Q. Were you asked to analyze the comparative
18 toxicity of dispersants listed on the NCP product
19 schedule?
20 A. Not explicitly. We -- we were asked to
21 coordinate the test program of eight of those
22 dispersants.

Page 154:24 to 155:20

00154:24 As part of that analysis, did you
25 analyze the toxicity of eight dispersants listed
00155:01 on the NCP product schedule?
02 A. Yes.
03 Q. Why did you conduct this analysis?
04 A. We conducted this -- we initiated this
05 testing program because we were asked by OEM to
06 direct this program.
07 Q. What was your understanding about why OEM
08 was asking that you conduct this analysis?
09 A. Yeah. My understanding for -- for
10 directing this testing program was to be
11 responsive to Administrator Jackson's directive --
12 or not directive -- those are specific -- need to
13 or desire to find a less toxic chemical
14 dispersant.
15 Q. You prepared this report along with
16 Dr. Hemmer and Dr. Greene, correct?

17 A. Yes, I did.
18 Q. In the report, you summarized the results
19 of toxicity tests conducted on eight dispersants
20 in the product schedule, correct?

Page 155:22 to 158:25

00155:22 A. Correct.
23 Q. (BY MS. JAKOLA) You used two aquatic
24 species, correct?
25 A. Correct.
00156:01 Q. Which two?
02 A. Mysids and Menidia.
03 Q. One of the dispersants you tested was
04 Corexit 9500A, correct?
05 A. Correct.
06 Q. The other dispersants you tested are
07 listed on Page 2 of your report; is that right?
08 A. Let me look, please. I'm just counting to
09 make sure they're all there. Yes.
10 Q. How did you select the eight dispersants
11 to include in your test?
12 A. I -- I -- I did not select the eight
13 dispersants.
14 Q. How were the dispersants selected?
15 A. We were informed by OEM of what those
16 eight dispersants would be.
17 Q. Do you have any understanding as to why
18 the eight dispersants were selected for inclusion
19 in your test?
20 A. My -- my understanding is one needed to be
21 Corexit 9500 because that was being used in the
22 Gulf and that the others, I don't -- we weren't --
23 for me at least, that information was not shared
24 of how the others were -- were picked.
25 Q. Can you please turn to Page 7 of your
00157:01 report.
02 A. Page 7. Yes.
03 Q. There is a section titled "Conclusions."
04 Do you see that, sir?
05 A. I do.
06 Q. In the middle of that first paragraph,
07 there's a sentence that begins "The rank order
08 toxicity..."
09 A. I see it.
10 Q. Do you see that? Can you read that,
11 please.
12 A. "The rank order toxicity of the eight
13 dispersants was generally similar to the
14 information provided in the NCP Product Schedule."
15 Q. What does that mean?
16 A. That they -- of the eight dispersants,
17 chemical dispersant products that we tested, that
18 the information that we determined in our testing
19 program was similar to what had been the data that

20 were listed in the NCP.
 21 Q. In other words, that the results of your
 22 toxicity tests were consistent with the
 23 information that had been provided in connection
 24 with the NCP listing?
 25 A. Exactly.
 00158:01 Q. At the end of that same paragraph, there's
 02 a sentence that begins, "Overall, the
 03 dispersants..." Do you see that?
 04 A. Yes.
 05 Q. Can you read that sentence into the
 06 record, please.
 07 A. "Overall, the dispersants were classified
 08 as being slightly to practically nontoxic to both
 09 test species, with the exception that Dispersit
 10 SPC1000 would be considered toxic to Menidia."
 11 Q. Can you continue, please.
 12 A. "Corexit 9500A, the dispersant currently
 13 applied offshore at the surface and underwater,
 14 falls into the slightly toxic category for mysids
 15 and the practically nontoxic category for
 16 Menidia."
 17 Q. Tables 1 and 2 to your report, which
 18 appear on Pages 9 and 10 --
 19 A. Okay. I'm there.
 20 Q. -- report the results of your test,
 21 correct?
 22 A. Correct.
 23 Q. Do you agree that the toxicity of Corexit
 24 9500A to the two species tested is equivalent to
 25 the toxicity of the other dispersants tested?

Page 159:02 to 159:09

00159:02 A. Not -- I would not agree with the word
 03 "equivalent," but I would tree with the word
 04 "similar."
 05 Q. (BY MS. JAKOLA) How would you
 06 characterize the results of your study as it
 07 relates to the toxicity of Corexit 9500 when
 08 compared to the other dispersants you were looking
 09 at?

Page 159:11 to 160:10

00159:11 A. That based on the LC50 values and the --
 12 that the results were generally similar. There
 13 are two dispersants here at the bottom that had
 14 higher LC50 values. And if you can -- you'll see
 15 that the numbers in the brackets, which are sort
 16 of the uncertainty range, they don't overlap with
 17 the others. So -- so of the top six, they're in
 18 the general range.
 19 Also, a way of interpreting this data
 20 is general between laboratory variability is

21 typically about threefold. So for the most part,
22 you know, the majority of these compounds -- or
23 sorry -- chemical dispersant products had very
24 similar toxicity. The one, this JD-2000 for
25 dispersant only test for Mysids was, and also for
00160:01 Menidia, which is Table 2, was -- appeared to be
02 substantively less toxic than the -- the others
03 while the others were reasonably similar.
04 Q. (BY MS. JAKOLA) You agree that the
05 toxicity of Corexit 9500A to the two species
06 tested is -- is similar to the toxicity of the
07 other dispersants tested?
08 A. Yeah. With the exception of JD-2000,
09 which seemed to be in order of magnitude less
10 toxic under these test conditions.

Page 160:23 to 161:23

00160:23 Q. Tab 31. While you're turning there, I'll
24 state for the record, Exhibit 12053 is a report
25 titled "Analysis of Eight Oil Spill Dispersants
00161:01 Using In Vitro Tests for Endocrine and Other
02 Biological Activity."
03 Do you see that?
04 A. I do.
05 Q. It's dated June 30, 2010, correct?
06 A. Correct.
07 Q. Is this a report that was prepared by the
08 U.S. EPA in connection with analysis of
09 dispersants using in vitro tests?
10 A. Yes.
11 Q. Isn't it true that as a result of this
12 study, it was found that none of the eight
13 dispersants tested, including Corexit 9500,
14 displayed biologically significant endocrine
15 disrupting activity?
16 A. With the caveat that as measured in in
17 vitro cell assays.
18 Q. As measured in in vitro cell assays, isn't
19 it true that this study found that none of the
20 eight dispersants tested, including Corexit 9500,
21 displayed biologically significant endocrine
22 disrupting activity?
23 A. Correct.

Page 163:02 to 163:04

00163:02 Q. EPA never required BP to change the
03 dispersant it was using in connection with the
04 response, right?

Page 163:06 to 163:14

00163:06 A. I -- require? I -- I don't know if the

07 agency required it or not. My understanding is
08 that Corexit was continued to be used during the
09 spill, but what the agency at above my pay grade
10 required, I don't know.

11 Q. (BY MS. JAKOLA) To your knowledge,
12 Corexit 9500 was continued to be used throughout
13 the response?

14 A. Yes.

Page 164:08 to 164:11

00164:08 Q. You never recommended that BP or the Coast
09 Guard change dispersants that were being used in
10 connection with the DEEPWATER HORIZON spill
11 response, correct?

Page 164:13 to 164:19

00164:13 A. I -- I personally did not make that
14 recommendation -- I did not recommend that.
15 Q. (BY MS. JAKOLA) Are you aware of anyone
16 else in the EPA who recommended that some
17 dispersant, other than Corexit, should be used in
18 the oil spill response as a result of the testing
19 you performed in Exhibit 12052?

Page 164:22 to 164:22

00164:22 A. I'm -- I'm not aware of that information.

Page 165:24 to 166:03

00165:24 As far as you're aware, there was no
25 toxicity or other scientific data that suggested
00166:01 that a dispersant, other than Corexit, should be
02 used in the DEEPWATER HORIZON response --
03 A. I --

Page 166:05 to 166:20

00166:05 Q. (BY MS. JAKOLA) -- based on your testing,
06 correct?
07 A. Yeah. I understand. There -- I'm trying
08 to phrase this exactly correct. Is that -- the
09 data we had available or was made available to the
10 administrator from our testing program was --
11 again, there may have been results, certainly not
12 in the -- in the cytotoxicity assays, there was
13 really no -- all products were substantively
14 similar in the in vitro testing. In the
15 dispersant only testing, one product, as we, you
16 know, we just discussed, one product was -- was --
17 had lower toxicity. That was JD-2000. What I

18 don't recall is -- if that magnitude of difference
19 that we saw in -- I would just have to, you know,
20 glance at -- at that report. But if -- if you had

Page 167:22 to 168:06

00167:22 Q. To your knowledge, EPA never requested
23 that a dispersant other than Corexit should be
24 used in the DEEPWATER HORIZON response as a result
25 of your testing in Exhibit 12052, true?
00168:01 A. I -- I do not know what the -- what -- at
02 the level of those decisions, I do not know what
03 information they would consider. The -- what I
04 know can speak factually to is -- is my
05 understanding that 9500 continued to be used
06 during the spill.

Page 168:14 to 169:02

00168:14 Q. (BY MS. JAKOLA) For the record, Exhibit
15 12054 is testimony of Lisa P. Jackson, dated May
16 19, 2010.
17 Dr. Barron, have you seen Exhibit
18 12054 before?
19 A. Let me just take a -- sorry. Excuse me.
20 Let me take a quick glance to make sure I
21 understand what I'm looking at.
22 Q. While you're doing that, Exhibit 12054 is
23 the Congressional Testimony of Lisa P. Jackson,
24 Administrator, U.S. Environmental Protection
25 Agency, before the Committee on Transportation and
00169:01 Infrastructure, United States House of
02 Representatives, dated May 19, 2010.

Page 169:06 to 169:25

00169:06 Q. I'd like to direct your attention to a
07 specific portion of Administrator Jackson's
08 testimony on Page 6--
09 A. Okay.
10 Q. -- at the bottom of the page.
11 A. Okay.
12 Q. Can you please read the sentence which is
13 the last full sentence at the bottom of Page 6
14 which begins "The test data..."
15 A. Yes. "The test data was evaluated to
16 determine the efficacy of subsurface application
17 and it was determined that BP can move forward
18 with full-scale application contingent upon
19 following an adaptive monitoring plan."
20 Q. On May 19th, Administrator Jackson told
21 Congress that BP could proceed with full scale
22 subsurface applications of dispersants, correct?
23 A. Correct. And, of course, it says it's

24 contingent upon following an adaptive monitoring
25 plan.

Page 170:07 to 171:12

00170:07 Q. (BY MS. JAKOLA) For the record, Exhibit
08 12055 is a document Bates numbered HCG188-067580
09 through 687. Dr. Barron, do you see that Exhibit
10 12055 is a report titled "DEEPWATER HORIZON
11 Dispersant Use Meeting Report"?
12 A. Yes.
13 Q. Do you see that this report is dated June
14 4, 2010?
15 A. Yes.
16 Q. And it was prepared by the Coastal
17 Response Research Center, correct?
18 A. Yes.
19 Q. Are you aware that the Coastal Response
20 Research Center is a partnership between NOAA and
21 the University of New Hampshire?
22 A. I may have -- I may have read that
23 somewhere. I'm not intimately familiar with their
24 organization.
25 Q. The report summarizes a meeting that took
00171:01 place in Baton Rouge on May 26th and May 27th.
02 A. Correct.
03 Q. The meeting was organized by the Coastal
04 Response Research Center, correct?
05 A. Correct.
06 Q. And that meeting related to the use of
07 dispersants in the DEEPWATER HORIZON response,
08 correct?
09 A. Correct.
10 Q. You attended the meeting in Baton Rouge on
11 May 26 and May 27th; is that right?
12 A. Correct.

Page 171:18 to 172:08

00171:18 Q. Okay. On Page 1, at the end of the first
19 paragraph, do you see that NOAA requested that a
20 meeting be held --
21 A. Yes.
22 Q. -- on May 26th and May 27th?
23 A. I do.
24 Q. The purpose of the meeting was to focus on
25 use of dispersants in the DEEPWATER HORIZON spill
00172:01 response, correct?
02 A. Correct.
03 Q. The meeting was attended by over 50
04 scientists; is that right?
05 A. That's what it states. Now, what I
06 haven't done is actually count the number of
07 attendees. But there was a large number. I do
08 recall that.

Page 173:04 to 174:25

00173:04 Other than yourself, other
05 representatives of EPA also attended the meeting,
06 correct?
07 A. Yes.
08 Q. Who else from EPA was at that meeting in
09 Baton Rouge?
10 A. So -- so I didn't know everybody from EPA
11 was there so I may miss some folks. But Lek
12 Kadeli was there. Al -- Albert Venosa was there,
13 myself was there. And I recall, but I don't
14 recall the name of -- I think some folks from
15 maybe from one of the regional response teams was
16 there, but I don't remember exactly. They might
17 be listed here. I don't --
18 Q. Was that Craig Carroll?
19 A. That's the name that -- yeah, that I --
20 that I recognize. But I don't know him
21 personally.
22 Q. Does Craig Carroll also work for EPA?
23 A. I -- according to this, he does. I don't
24 know him personally.
25 Q. Did Duane Newell also attend the meeting
00174:01 for EPA?
02 A. Let me -- I'm just looking at the list
03 here. Duane Newell. Yes. But I -- again, I
04 don't know Duane and I don't know if I ever met
05 him. I can't remember.
06 Q. Do you know Jim Staves?
07 A. Also the same. I don't know if I met him.
08 I may have.
09 Q. Was anyone from EPA's OEM present at the
10 meeting in Baton Rouge?
11 A. Not -- not that I recall. And if -- if
12 you want, I can look through the -- this list and
13 see if I recognize anybody. So, in other words,
14 it's possible somebody attended. I don't -- but I
15 didn't know -- I didn't know them personally, so I
16 wouldn't recognize them as an OEM representative.
17 I -- I -- I'm looking here. I don't see anybody
18 specifically that -- the names I rec- -- I
19 recognize.
20 Q. Okay. Representatives from NOAA also
21 participated in the Baton Rouge meeting, right?
22 A. Correct.
23 Q. And the goal of the meeting was to provide
24 input to Regional Response Team 6 on the use of
25 dispersants in the spill response, correct?

Page 175:02 to 176:02

00175:02 A. That was the -- the stated objectives of
03 my understanding in attending it was the -- the

04 primary purpose of the workshop, what I recall is
 05 was to bring together, as you can see here, a -- a
 06 large group of sort of interdisciplinary experts
 07 to -- to evaluate current dispersing -- or
 08 dispersant use in the spill.

09 I -- I understand the explicitly
 10 stated purpose was to provide advice. My purpose
 11 in attending was to learn, and as well as to
 12 provide my ecotoxicology expertise, you know, to
 13 add that to the -- you know, to the workshop in
 14 general.

15 Q. (BY MS. JAKOLA) Can you please turn to
 16 Page 4 of the report.

17 A. Oh, okay.

18 Q. Page 4 reflects an executive summary?

19 A. Yes.

20 Q. Correct?

21 A. Correct.

22 Q. Under the first item listed under the
 23 executive summary on Page 4 it states, "Chemical
 24 dispersants, mechanical recovery and in situ
 25 burning are components of an effective response to
 00176:01 surface oil pollution."
 02 Correct?

Page 176:04 to 176:04

00176:04 A. Yeah, it's stated that, correct.

Page 176:07 to 176:12

00176:07 Isn't it true, sir, that the
 08 consensus of the meeting participants concluded
 09 that chemical dispersants, mechanical recovery,
 10 and in situ burning are components of an effective
 11 response to oil pollution?
 12 A. I understand.

Page 176:14 to 177:07

00176:14 A. What -- What I understand from this report
 15 and I -- and I did review this report and I tried
 16 to reflect on this report since it was -- it was
 17 so many years ago, but some of these -- just to
 18 sort of give you some advance warning here is that
 19 some of these conclusions, I don't specifically
 20 recall coming to a consensus on these. But I
 21 concur that these are the stated consensus
 22 opinions from the report.

23 Q. (BY MS. JAKOLA) Did you have an
 24 opportunity to review Exhibit 12055 before --

25 A. I did, yes.

00177:01 Q. -- it was finally issued?

02 A. Yes, of course.

03 Q. Did you offer any comments or revisions to
 04 the report before it was issued on June 4th?
 05 A. I -- so I don't recall whether I did that
 06 and I don't recall whether I was given the
 07 opportunity to do that.

Page 178:01 to 178:04

00178:01 Sitting here today, as a
 02 representative of the United States, do you
 03 disagree that chemical dispersants are a component
 04 of an effective response to surface oil pollution?

Page 178:06 to 179:03

00178:06 A. I would -- I would say, you know, as a
 07 scientist, I'm most comfortable if it said "can be
 08 components" versus "are" because "are" to me is an
 09 absolute that implies that they all are
 10 potentially appropriate under a spill scenario
 11 when we know that spill scenarios are different.
 12 Q. (BY MS. JAKOLA) Let's look on Item No. 6
 13 on Page 4. Can you please read that.
 14 A. "It is the consensus of this group that up
 15 to this point, use of dispersants and the effects
 16 of dispersing oil into the water column has
 17 generally been less environmentally harmful than
 18 allowing the oil to migrate on the surface into
 19 the sensitive wetlands and near shore coastal
 20 habitats."
 21 Q. Do you agree that the consensus of the
 22 group was that the use of dispersants and the
 23 effects of dispersing oil into the water column in
 24 connection with the DEEPWATER HORIZON response was
 25 generally less environmentally harmful than
 00179:01 allowing the oil to migrate onto the surface into
 02 the sensitive wetlands and near shore coastal
 03 habitats?

Page 179:05 to 179:24

00179:05 A. I -- I neither agree or disagree with this
 06 statement and let me explain why. One, I don't
 07 recall that conclusion. But I do -- I have read
 08 it and I have considered it before coming here
 09 today.
 10 What concerns me about this statement
 11 or puzzles me about this statement is that --
 12 how -- when you're making a statement like this
 13 that there is less harm from this versus than --
 14 versus not using dispersants, how was that harm
 15 weighed? In other words, did we know harm at that
 16 time.
 17 And so I think I would be more

18 comfortable if this had been worded differently
 19 with words like "likely" or "potentially." But
 20 this is an explicit statement that I highly doubt
 21 that this group, who apparently made this -- and I
 22 was one of them -- I was with this group -- how we
 23 made this statement without measures of harm. And
 24 if harm was measured, how was it harmed.

Page 180:05 to 181:05

00180:05 unanimous. And I do not disagree that this could
 06 accurately reflect the consensus. But me,
 07 personally, as a -- as a scientist, I would want
 08 to have actual evidence of harm or quantification
 09 of harm, even if preliminary.

10 And one of the things I had asked
 11 Dr. Venosa about was does he remember reviewing
 12 much data. You know, this is early on in the
 13 spill, did we -- as a group, did we have -- what
 14 data did we have available to us that we could
 15 have considered, that we could have weighed. And
 16 he also didn't recollect having a large quantity
 17 of data. And -- and my personal opinion is that,
 18 you know, this harm will -- will probably require,
 19 you know, some very sophisticated studies,
 20 modeling studies, a lot of deepwater oceanography,
 21 and a lot of that data was still being -- wasn't
 22 even being made available yet. It's probably a
 23 lot of that data is provided through the NRDA
 24 which -- I -- was probably not available for this
 25 meeting.

00181:01 So I'm not trying to dispute this.
 02 I'm just saying, this is a very broad statement
 03 about harm. And I am -- as a ecotoxicologist,
 04 this is in our -- this is in my -- my lane, as
 05 they say.

Page 181:09 to 181:12

00181:09 Q. You're aware, sir, that several
 10 representatives of the United States Government
 11 participated in preparing the draft of Exhibit
 12 12055, correct?

Page 181:15 to 182:08

00181:15 A. I -- I do not recall who actually prepared
 16 this report.

17 Q. (BY MS. JAKOLA) If you look at Page 2 of
 18 the report, under "Acknowledgments," the first
 19 paragraph --

20 A. Page 2.

21 Q. -- lists several people from the U.S.
 22 Government who were involved in providing input

23 and comments to the report. Do you see that, sir?
24 A. Yes.
25 Q. It includes representatives of the U.S.
00182:01 EPA, several representatives of NOAA,
02 representative of the U.S. Coast Guard. Do you
03 see that, sir?
04 A. I do.
05 Q. You have no reason to disagree with the
06 statements on Page 2, that the individuals listed
07 provided input and comments on the draft report in
08 Exhibit 12055, do you, sir?

Page 182:10 to 182:15

00182:10 A. I totally agree, but what that doesn't say
11 is that they were authors of the report or that
12 their comments were incorporated. It doesn't --
13 it may imply that, but I don't see an explicit
14 statement that says who actually wrote the report
15 and if those comments were incorporated. I'm

Page 182:17 to 182:21

00182:17 Q. (BY MS. JAKOLA) My -- my question, sir,
18 was: You have no reason to disagree with the
19 statement on Page 2 that the individuals listed
20 provided input and comments on the report that is
21 in Exhibit 12055, true?

Page 182:24 to 183:05

00182:24 A. I have no reason to disagree with that
25 statement.
00183:01 Q. (BY MS. JAKOLA) As of May 26, 2010, did
02 the United States Government have ecotoxicological
03 data that suggested that the statement on Page 4,
04 Item No. 6 was wrong?
05 A. Okay. So --

Page 183:07 to 183:13

00183:07 A. So I've got a sort of capture this. So
08 we're talking about on Page 4, Item 4?
09 Q. (BY MS. JAKOLA) Item 6.
10 A. Item 6. I'm sorry. So did the United
11 States Government have data to indicate that this
12 wasn't true?
13 Q. Correct.

Page 183:16 to 184:09

00183:16 A. I -- I do not know that because I think
17 that a lot of the data that the United States

18 Government had was probably under the -- in the
 19 context of the NRDA. As I understand it, they
 20 were doing some of the most extensive surveys in
 21 sampling and -- so I -- I know that data wasn't --
 22 I won't say "I know."

23 I think it's likely that that data
 24 wasn't made available at -- the NRDA data was not
 25 made available at this meeting.

00184:01 Q. (BY MS. JAKOLA) Regardless of whether it
 02 was made available --

03 A. Okay.

04 Q. -- to people at the meeting --

05 A. Okay.

06 Q. -- did the U.S. Government have toxicity
 07 data as of May 26th, 2010 indicating that the
 08 statement on -- in No. 6, Page 4 of this report
 09 was incorrect?

Page 184:15 to 184:18

00184:15 A. Let me answer it this way, if I may. I do
 16 not know, me personally know, if they had data --
 17 if there was U.S. data or knowledge to dispute
 18 this or not. I do not know.

Page 184:23 to 185:16

00184:23 Q. Now, for starters, the participants in the
 24 meeting broke into four working sessions; is that
 25 right?

00185:01 A. Correct.

02 Q. And the first working group examined
 03 dispersant efficacy and effectiveness for surface
 04 and deep ocean application, correct?

05 A. Correct.

06 Q. And if we look at Page 8 of the report --

07 A. Okay.

08 Q. -- at the bottom of the page under "Input
 09 For RRT's" --

10 A. Yes.

11 Q. -- there's an Item No. 1. Isn't it true
 12 that the first working group of scientists at the
 13 Baton Rouge meeting concluded that, quote,
 14 "Surface application of dispersants have been
 15 demonstrated to be effective for the DEEPWATER
 16 HORIZON incident and should continue to be used."

Page 185:18 to 185:21

00185:18 Q. (BY MS. JAKOLA) Correct?

19 A. What I -- I'm uncertain. What I -- what I
 20 know -- what I can concur with is that the report
 21 says this and then it came out of this workgroup.

Page 186:04 to 186:23

00186:04 Q. The report also states that the working
05 group concluded that the use of chemical
06 dispersants is needed to augment other response
07 options. Do you see that, sir?
08 A. I do.
09 Q. Can you please turn to Page 13 of the
10 report.
11 A. Okay.
12 Q. Another working group considered the
13 potential biological effects of dispersants on
14 deep ocean species, correct?
15 A. Yes.
16 Q. If you turn to Page 15 of the report --
17 A. Okay.
18 Q. -- under "Input For RRT's," Item No. 2,
19 isn't it true that the report states that the
20 consensus of this working group concluded that,
21 quote, "There is a net benefit to continued
22 subsurface dispersant use and application should
23 continue"? Correct?

Page 186:25 to 187:11

00186:25 A. I don't recall the first part of your
00187:01 sentence again. Under "Input for RRT's," isn't it
02 true where it states -- the -- this -- so there's
03 two aspects of your question. One is does -- the
04 workgroup says this is a consensus report. But
05 the explicit statement you're asking me to agree
06 to doesn't say there's a consensus. It just says
07 explicitly there's a net benefit to continued
08 subsurface dispersant use and application should
09 continue.
10 Q. (BY MS. JAKOLA) Okay.
11 A. Just slightly different.

Page 187:19 to 188:13

00187:19 Q. (BY MS. JAKOLA) Dr. Barron, at the
20 dispersant meeting in Baton Rouge, you were in one
21 of the working groups that related to the
22 biological effects of dispersants on surface water
23 species, correct?
24 A. Correct.
25 Q. Can you please take a look at Page 17 of
00188:01 Exhibit 12055, please.
02 A. Okay.
03 Q. Do you see a heading there, "Input for
04 RRTs"?
05 A. Uh-huh.
06 Q. And under Item No. 1, it states: "Surface
07 application of dispersants is acceptable"; is that

08 right?
09 A. That's what the report states.
10 Q. The report states that the input for the
11 RRTs coming out of the working group in which you
12 participated was that surface application of
13 dispersants is acceptable, correct?

Page 188:15 to 188:25

00188:15 A. That's what the report says. I -- if
16 you're asking me -- I don't have any specific
17 recollection of, you know, making that statement.
18 But I don't -- I don't doubt that it -- that it --
19 that we came up with it. But I don't recall it
20 specifically. But that's what it says.
21 Q. (BY MS. JAKOLA) At any time during the
22 meeting in Baton Rouge on May 26th or May 27th,
23 did you voice the opinion that dispersant
24 applications in the DEEPWATER HORIZON spill
25 response should be reduced?

Page 189:02 to 189:14

00189:02 A. I did not and we -- the reason I know I
03 did not is not because I have perfect recollection
04 of this meeting, which I do not -- absolutely do
05 not, but the reason I -- I'm certain of that is
06 because we were -- I was specifically instructed
07 to not engage in any discussions of agency policy.
08 I wouldn't have done that anyway. That's not what
09 I feel my role is as a scientist.
10 But -- so I'm certain that I did not
11 do that. And that would be from what you said as
12 a -- as a -- what I would interpret as a policy
13 statement.
14 Q. (BY MS. JAKOLA) Did you voice a meeting

Page 189:16 to 189:20

00189:16 Did you voice a view at the Baton
17 Rouge meeting that toxicity or other scientific
18 data suggested that surface application of
19 dispersants in the DEEPWATER HORIZON response
20 should stop?

Page 189:23 to 190:05

00189:23 I did not voice that view. Again,
24 that would be a policy type statement. If I
25 voiced any opinions, it would be focused on the
00190:01 specific artifacts occurring, but not whether we
02 would have -- I would not provide any
03 recommendation or opinion on whether the

04 continuance of dispersant application. That's not
05 my -- that's -- was not my role in the spill.

Page 190:12 to 190:16

00190:12 To your knowledge, nothing in Exhibit
13 12055 indicates that the scientist who
14 participated in the Baton Rouge dispersant meeting
15 concluded that the application of dispersants in
16 the DEEPWATER HORIZON response should be reduced?

Page 190:19 to 190:19

00190:19 A. I -- I agree with your statement.

Page 191:07 to 191:10

00191:07 To your knowledge, there was no
08 discussion at the meeting in Baton Rouge about an
09 overall 75 percent reduction in dispersant
10 application?

Page 191:13 to 192:03

00191:13 A. I was not privy to all discussions and --
14 and I think I was only in one of maybe three or so
15 work groups. But I can tell you that I was not
16 involved in those discussions, at least to any
17 recollection I have.
18 Q. (BY MS. JAKOLA) Can you please turn to
19 Tab 42 in your binder, which has been previously
20 marked as Exhibit 11844. Dr. Barron, do you see
21 that Exhibit 11844 is a May 26th, 2010,
22 "Dispersant Monitoring and Assessment Directive -
23 Addendum 3"?
24 A. Yes, I see that.
25 Q. This May 26, 2010, Addendum 3 was issued
00192:01 to BP in the DEEPWATER HORIZON spill response,
02 correct?
03 A. Uh --

Page 192:05 to 192:14

00192:05 A. That's my understanding.
06 Q. (BY MS. JAKOLA) Through this directive,
07 the EPA directed BP to limit the amount of
08 dispersant that could be used during the response,
09 correct?
10 A. May I just look through this? What it
11 actually said -- if I'm -- let me finish reading
12 it before I say that.
13 Okay. So -- limit the amount of
14 dispersant used -- yes. I'll concur with that.

Page 192:17 to 192:20

00192:17 The directive called for a goal of a
18 75 percent overall reduction in the maximum daily
19 amount of dispersants used, correct?
20 A. Correct.

Page 192:24 to 193:02

00192:24 The addendum also required the
25 elimination of surface application of dispersants
00193:01 altogether except in rare circumstances; is that
02 correct?

Page 193:04 to 193:08

00193:04 A. Correct.
05 Q. (BY MS. JAKOLA) And the addendum also
06 limited the subsurface application of dispersants
07 to not more than 15,000 gallons in a single
08 calendar day, correct?

Page 193:10 to 193:20

00193:10 A. That's -- that's what it says.
11 Q. (BY MS. JAKOLA) Addendum 3 was issued on
12 May 26th, 2010, correct?
13 A. That's -- I mean, I don't know when it was
14 issued. That's what it's dated.
15 Q. The dispersant meeting in Baton Rouge took
16 place on May 26 and May 27th, 2010, correct?
17 A. Correct.
18 Q. Before May 26th, 2010, did anyone discuss
19 the substance of Addendum 3 with you?
20 A. Not to my recollection.

Page 193:22 to 194:11

00193:22 Q. (BY MS. JAKOLA) Before May 26th, did
23 anyone consult with you about whether limitations
24 on the use of dispersants should be imposed in the
25 DEEPWATER HORIZON response?
00194:01 A. Now, you have -- I just want to make sure
02 I get this right. You said "anyone." It's
03 possible someone consulted me. Could have been a
04 colleague, could have been a friend. Could have
05 been a neighbor. I -- but is that who you mean
06 "anyone"?
07 Q. Let me -- no.
08 A. Okay.
09 Q. That isn't.
10 Did anyone at the EPA consult with

11 you about whether Addendum 3 should be issued?

Page 194:14 to 194:21

00194:14 A. Not to my recollection.
15 Q. (BY MS. JAKOLA) To your knowledge, did
16 you or any of your other colleagues from EPA who
17 attended the Baton Rouge meeting notify anybody at
18 the meeting that the EPA was about to issue a
19 directive substantially limiting the use of
20 dispersants in the DEEPWATER HORIZON spill
21 response?

Page 194:24 to 195:23

00194:24 A. I -- I can speak for myself that I did not
25 and -- and I wasn't aware -- to my recollection, I
00195:01 wasn't aware of this. And I don't recall any
02 specific discussions that I was engaged in. But I
03 don't know what they might have communicated or
04 did not communicate.
05 Q. (BY MS. JAKOLA) Dr. Barron, were you
06 involved in any toxicity or other scientific
07 testing that formed the basis for the proposal to
08 reduce dispersant use in the DEEPWATER HORIZON
09 response by 75 percent?
10 A. I do not know what information or
11 scientific data that I was engaged with that was
12 considered in developing this directive. I don't
13 know what -- if -- but, I mean, I don't recall any
14 conference calls or things like that that were
15 specific to the directive. But whether my
16 opinions or data were considered in this --
17 developed in this, I don't know.
18 Q. The dispersant use limitations in Addendum
19 3 --
20 A. Okay.
21 Q. -- were not based on recommendations made
22 during the dispersant use meeting in Baton Rouge,
23 correct?

Page 195:25 to 196:04

00195:25 A. Not -- not to my recollection.
00196:01 Q. (BY MS. JAKOLA) The dispersant use
02 limitations in Addendum 3 were not based on
03 toxicity or other data presented at the dispersant
04 meeting in Baton Rouge, correct?

Page 196:06 to 196:15

00196:06 A. Again, I -- I can't tell you what this
07 directive was based on. I -- I don't know.

08 Q. (BY MS. JAKOLA) What -- what was the
09 basis of Addendum 3?
10 A. I -- I don't know. I was not privy to
11 those types of discussions that I would recollect.
12 Q. EPA's decision to issue Addendum 3
13 limiting the use of dispersants was not based on
14 any toxicity or other data relating to the effects
15 of Corexit, correct?

Page 196:18 to 196:20

00196:18 A. That -- to me, you -- I certainly cannot
19 agree with that statement, because as I've stated,
20 I don't know what data they considered.

Page 198:01 to 198:05

00198:01 Q. (BY MS. JAKOLA) There had been no new
02 substantive data or information on toxicity of
03 dispersants gathered between the time the spill
04 started in April 2010 and the time that Addendum 3
05 was issued on May 26th, 2010, correct?

Page 198:07 to 198:21

00198:07 A. Now, this -- just to be specific, here.
08 You said "substantive data or information." Do
09 you mean data on toxicity or data in general?
10 Because data on volumes of dispersant use was new
11 data that I would think would be provided. But
12 new data on toxicity of dispersants, in general, I
13 don't believe that would be new toxicity data.
14 Now, new data that was being
15 generated as part of the spill response was the
16 Rototox testing, but that was largely equivocal.
17 So -- but for toxicity data explicitly, I don't
18 think there would be any new evolution or
19 substantive increase in the understanding of
20 dispersant toxicity. But there was new data on
21 dispersant volumes being used.

Page 199:18 to 199:22

00199:18 Q. Is -- to your knowledge, there was no new
19 substantive toxicity information about the use of
20 dispersants that was developed between April 2010
21 and May 26, 2010, correct?
22 A. Not to my knowledge.

Page 200:18 to 200:22

00200:18 Q. Are you aware of any toxicity data that
19 might have informed the decision of the U.S. EPA

20 on May 26th, 2010, to direct that surface
21 applications of dispersants should be stopped
22 entirely except under rare circumstances?

Page 200:25 to 201:20

00200:25 A. Sorry. I'm just read -- reading the
00201:01 question, make sure I answer it.
02 I'm not personally aware of those
03 toxicity data that -- but your question is pretty
04 broad. It says, "Are you aware of any data that
05 might have informed a decision?" I would probably
06 say yes.
07 Q. (BY MS. JAKOLA) I asked about toxicity
08 data.
09 A. Yeah. But even toxicity data, there is --
10 again, I don't know what data are considered, but
11 our -- were there toxicity data available that
12 might be used to inform a decision, I would say
13 yes.
14 Q. Okay.
15 A. But it -- it doesn't mean it would --
16 would be one of many things that you might
17 consider. Yeah. I'm trying to answer your
18 question.
19 Q. In deciding to issue Addendum 3, did the
20 U.S. undertake any toxicity studies?

Page 201:23 to 201:25

00201:23 A. First of all, I didn't decide -- I don't
24 know what factors were used to decide to issue
25 Addendum 3.

Page 202:04 to 202:06

00202:04 You're not aware of any connection
05 between any toxicity analysis of Corexit and the
06 issuance of Addendum 3 --

Page 202:08 to 202:08

00202:08 Q. (BY MS. JAKOLA) -- as you sit here today?

Page 202:11 to 202:12

00202:11 A. That I'm personally aware? I'm not
12 personally aware of that.

Page 202:16 to 202:16

00202:16 Q. -- which is Exhibit 12041.

Page 203:13 to 204:05

00203:13 Q. Okay. Now, nowhere -- now, let me back
 14 up. Your article is titled "Science-Based
 15 Decision Making on the Use of Dispersants in the
 16 DEEPWATER HORIZON Oil Spill," correct?
 17 A. Correct.
 18 Q. And do you see that you do discuss the
 19 comparative toxicity testing that we discussed
 20 earlier, correct?
 21 A. Yes.
 22 Q. And you also discussed the in vitro
 23 testing that we discussed earlier?
 24 A. Correct.
 25 Q. There's no discussion in your article
 00204:01 about EPA's decision to limit dispersant -- strike
 02 that.
 03 There's no discussion in your article
 04 about any testing done relating to EPA's decision
 05 to limit dispersant use, correct?

Page 204:07 to 204:23

00204:07 A. Yeah. Let me just look here. It says
 08 this, the last sentence on Page 7, Section 1.4.1,
 09 it says: "The results of EPA's dispersant
 10 toxicity testing were made publically available on
 11 the EPA Internet site and facilitated the EPA
 12 administrator's advice and support to the incident
 13 command of the decision regarding dispersant use
 14 during the spill."
 15 So this implies to me that toxicity
 16 data were considered by the administrator.
 17 Q. (BY MS. JAKOLA) Certainly there's no
 18 discussion in your article about a 75 percent
 19 reduction of a dispersant, correct?
 20 A. Correct.
 21 Q. There's no discussion in your article that
 22 dispersant application on the surface should cease
 23 entirely, correct?

Page 204:25 to 205:04

00204:25 A. Correct.
 00205:01 Q. (BY MS. JAKOLA) You don't engage in any
 02 kind of discussion in your article about any kind
 03 of scientific basis for any of the limitations in
 04 Addendum 3, correct?

Page 205:06 to 205:10

00205:06 A. Correct. But just to be clear, this was

07 not the -- that -- that's a policy area. It was
08 not the intent of this chapter, which was a
09 summary of the science performed during the -- the
10 response phase of the spill.

Page 206:08 to 206:19

00206:08 You were involved in the Phase 2
09 testing, right?
10 A. Correct.
11 Q. Can you describe what the Phase 2 testing
12 entailed?
13 A. Yes. I'm just going to refresh my memory.
14 But I -- I do have a recollection of it.
15 Yeah, in phase -- so in Phase 1, we
16 just looked at the -- the ecotoxicity of the
17 dispersants alone, and in Phase 2, we looked at
18 the toxicity of the dispersants mixed with
19 Louisiana crude oil.

Page 207:16 to 208:01

00207:16 Q. Yes. I've handed you a copy of what we'll
17 mark as Exhibit 12056.
18 (Marked Exhibit No. 12056.)
19 A. Okay. All right.
20 Q. (BY MS. JAKOLA) Dr. Barron, can you
21 identify what 12056 is?
22 A. Yes. This is a published journal article
23 on the "Comparative Toxicity of Eight Oil
24 Dispersants, Louisiana Sweet Crude Oil, and
25 Chemically Dispersed Louisiana Crude Oil to Two
00208:01 Aquatic Test Species."

Page 208:04 to 209:05

00208:04 Can you describe how you went about
05 conducting the test in Exhibit 12056?
06 A. Yes. So as -- as we discussed, there was
07 two phases of -- of this testing program. The
08 first was testing each of the eight chemical
09 dispersants alone with two test species, Mysids
10 Menidia, and these were standard toxicity tests
11 performed in a laboratory. They're called dose
12 response studies, which means that in order to --
13 to determine this LC50 value, or medium lethal
14 concentration, we use different concentrations of
15 the -- in this case, for example, Corexit 9500A,
16 and then we look -- we measure the mortality
17 response in each of the test chambers over time
18 and then use -- statistically analyze the data to
19 come up with that LC50 value.
20 So those were the dispersants alone.
21 So you mix dispersants and water -- test water

22 together. And for the -- the oil only component,
23 we would use what's called an -- a water
24 accommodate or fraction, which is a mixture of oil
25 and water, and then take the aqueous phase and
00209:01 then, again, test in a dose response fashion.
02 And then finally, we will take, for
03 the chemically dispersed crude oil, we would add
04 dispersant to the oil and then mix it and then
05 take the aqueous phase and test that.

Page 209:10 to 209:24

00209:10 Is it correct that the results of the
11 study you performed indicate that Corexit 9500A
12 had generally similar toxicity to other available
13 dispersants when tested alone?
14 A. When tested alone -- with -- with -- that
15 was a general conclusion of this report. The one
16 specific caveat of that is, again, looking at
17 the -- the JD -- the JD-2000, which had a very
18 high or low toxicity value. But in general, yes,
19 that was the conclusion.
20 Q. The way you've written it is correct? The
21 results of the present study indicate that Corexit
22 9500A had generally similar toxicity to other
23 available dispersants available?
24 A. It did, correct.

Page 212:04 to 212:21

00212:04 Q. Your study found that Corexit 9500A had
05 generally similar toxicity to the other available
06 dispersants when tested alone?
07 A. Correct.
08 Q. You also found that the dispersants tested
09 were less toxic than the oil itself.
10 A. Correct.
11 Q. Correct?
12 A. Correct.
13 Q. When the dispersants were mixed with the
14 oil, you also found that the dispersant oil
15 mixtures were not more toxic than the oil itself,
16 correct?
17 A. Correct. That's exactly correct, how you
18 stated that.
19 Q. In other words, there wasn't an additive
20 effect of adding the dispersants in terms of
21 increasing toxicity of the oil?

Page 212:23 to 213:11

00212:23 A. For -- that is correct. With the
24 acknowledgment that the -- our measure of toxicity
25 is acute lethality. We did not measure the

00213:01 toxicity or -- I forgot the word you used --
 02 additive. We did not measure -- it was beyond the
 03 scope of this study to assess the additive effect
 04 in terms of other types of toxicity end points.
 05 Q. (BY MS. JAKOLA) Put more simply --
 06 A. Okay.
 07 Q. -- using the measures in your study --
 08 A. Yes.
 09 Q. -- you found that adding dispersants to
 10 the oil didn't make the oil more toxic, correct?
 11 A. Correct.

Page 213:13 to 214:13

00213:13 A. What it -- what it did do, if I can -- is
 14 it increased the bioavailability of the oil.
 15 Q. (BY MS. JAKOLA) Understood.
 16 A. And that -- those data are also reported
 17 here though maybe a little more difficult --
 18 more -- less directly interpretable, but the
 19 percent dilution. So when -- in others -- many
 20 others have found the same type of results that
 21 the intrinsic toxicity of the oil does not
 22 necessarily change with the addition of
 23 dispersants.
 24 But the dispersant, as they are
 25 designed to do, puts more oil in the water so it
 00214:01 takes much less of that aqueous phase to kill
 02 organisms.
 03 Q. Uh-huh. Controlling for concentration --
 04 A. Exactly.
 05 Q. Controlling for concentration --
 06 A. They are equivalent.
 07 Q. Okay. Let me try to ask it and then --
 08 A. Sorry.
 09 Q. No. I appreciate it. This is very
 10 helpful.
 11 Controlling for concentration, the
 12 addition of dispersants to the oil did not
 13 increase the toxicity of the oil?

Page 214:15 to 215:15

00214:15 A. That's correct. That's correct.
 16 Q. (BY MS. JAKOLA) Can I look back at your
 17 article now?
 18 A. Yes. Yes.
 19 Q. Tab A. We talked about the lab tests.
 20 Now, I would like to talk about the field
 21 monitoring that was conducted --
 22 A. Okay.
 23 Q. -- which is on Page 7 --
 24 A. Okay.
 25 Q. -- of your paper. You note that EPA
 00215:01 conducted extensive monitoring of the nearshore

02 environment and communities during the DEEPWATER
03 HORIZON response, correct?
04 A. Correct.
05 Q. Now, you agree that this monitoring was
06 extensive, correct?
07 A. Yes.
08 Q. In fact, are you aware that tens of
09 thousands of water and sediment samples were taken
10 during the DEEPWATER HORIZON response?
11 A. Yeah. But are you specifically referring
12 to EPA's monitoring and tens of thousands of
13 samples or just in general?
14 Q. In general.
15 A. Yes, I'm aware.

Page 215:17 to 215:20

00215:17 Q. (BY MS. JAKOLA) You're also aware that
18 the Unified Command chartered an operational
19 scientific advisory team to analyze data in
20 connection with this sampling, correct?

Page 215:23 to 216:05

00215:23 A. I don't have -- I have -- I'm -- yes.
24 Yes, I'm aware of that.
25 Q. (BY MS. JAKOLA) And the operational
00216:01 scientific advisory team is also known as OSAT?
02 A. Yes.
03 Q. And OSAT prepared a report commonly
04 referred to as OSAT-1, which looked at data
05 relating to certain benchmarks; is that correct?

Page 216:07 to 216:10

00216:07 A. I would need to -- I'm familiar with the
08 OSAT report. But I would need to refresh my
09 memory here on -- on what -- what they exactly
10 did.

Page 217:01 to 217:04

00217:01 Q. (BY MS. JAKOLA) Okay. And, specifically,
02 are you aware that the OSAT-1 team found no
03 exceedences of EPA's dispersant benchmark in their
04 observations?

Page 217:06 to 217:10

00217:06 A. I just want to -- I don't recall the --
07 I've reviewed that report. I've summarized that
08 report. But I -- it's been such a long time since
09 I read it, I don't remember the exact conclusion.

10 So --

Page 217:22 to 218:06

00217:22 Q. Now, you go on in your article under the
23 in-field monitoring section to discuss certain
24 toxicity testing associated with some samples in
25 Alabama, Mississippi and Florida. Do you see
00218:01 that?
02 A. Uh-huh.
03 Q. And you state that -- you go on to
04 summarize what those tests showed; is that
05 correct?
06 A. Right.

Page 218:24 to 219:06

00218:24 Q. Okay. Without going back to look at that
25 report --
00219:01 A. Okay.
02 Q. -- you have no reason to think that your
03 description in your article of that report is
04 incorrect, right?
05 A. I -- I have no reason to believe it's
06 incorrect.

Page 219:19 to 220:06

00219:19 Q. You also describe various toxicity
20 monitoring that was conducted in connection with
21 the subsea dispersant applications. Do you see
22 that?
23 A. I'm getting there. Is that in the second
24 paragraph --
25 Q. Correct.
00220:01 A. -- or farther down? Okay. I've looked at
02 this.
03 Q. Does your summary of the subsurface
04 monitoring that appears on Page 7 and 8 of Exhibit
05 12041 accurately reflect the monitoring that was
06 done?

Page 220:09 to 220:16

00220:09 A. I would say it does to the best of my
10 knowledge.
11 Q. (BY MS. JAKOLA) Dr. Barron, can you now
12 turn please to Tab 26.
13 A. Okay. That's in the new book?
14 Q. That will be in Binder No. 2.
15 A. Okay.
16 Q. And we'll mark this as Exhibit 12057.

Page 220:25 to 222:05

00220:25 Q. (BY MS. JAKOLA) Dr. Barron, from time to
 00221:01 time in your position with the EPA, are you called
 02 upon to review publications reporting on toxicity
 03 tests and studies?
 04 A. Yes.
 05 Q. And I'm showing you now what's been marked
 06 as Exhibit 12057, which for the record is
 07 US_PP_EPA70277 through 78. Do you see that, sir?
 08 A. I do.
 09 Q. Is Exhibit 12057 a review that you
 10 prepared of a study called Ortmann?
 11 A. Yes.
 12 Q. Can you please turn to Page -- strike
 13 that.
 14 Can you please turn to Tab 25 --
 15 A. 25.
 16 Q. -- in your binder. And let's mark this as
 17 Exhibit 12058. For the record, Bates number
 18 US_PP_EPA007208 through 16.
 19 (Marked Exhibit No. 12058.)
 20 Q. (BY MS. JAKOLA) Dr. Barron, is Exhibit
 21 12058 a copy of the Ortmann study that is referred
 22 to in Exhibit 12057?
 23 A. Yes.
 24 Q. You reviewed the Ortmann article and
 25 prepared the document that is Exhibit 12057,
 00222:01 correct?
 02 A. Along with the listed colleagues.
 03 Q. Okay. You reviewed the Ortmann study and
 04 prepared Exhibit 12057 along with others?
 05 A. Correct.

Page 222:07 to 222:09

00222:07 Now, Ortmann analyzed certain issues
 08 relating to dispersants; is that right?
 09 A. Not really issues.

Page 222:11 to 224:03

00222:11 A. I mean, I -- I think it's -- it's nicely
 12 summarized here --
 13 Q. (BY MS. JAKOLA) Can you read that,
 14 please.
 15 A. -- under -- yes.
 16 "Ortmann et al. (2012) used mesocosm
 17 exposures," which are like instead of a
 18 laboratory, it's sort of a larger ecological
 19 exposure, "to determine how microbial communities
 20 collected from coastal Alabama may respond to oil
 21 and dispersant mixtures."
 22 That was what they did.
 23 Q. What did the Ortmann team purport to find

24 in their study?

25 A. Yeah, "the authors reported" -- if I may

00223:01 read. "The authors reported that the addition of

02 dispersant or dispersed oil resulted in" -- and I

03 won't read you the technical terms -- but resulted

04 in some increase of small organisms and inhibition

05 of other groups of small organisms.

06 They concluded -- they concluded that

07 they suggested a reduction in some ecological

08 processes that would be transferred up to higher

09 levels in the ecosystem and they speculated that

10 dispersant and dispersed oil may have impacted

11 invertebra in fish communities on the Continental

12 Shelf of Alabama.

13 Q. Now, you identified some concerns about

14 the Ortmann study, correct?

15 A. Correct.

16 Q. Those concerns are described in Exhibit

17 12057, true?

18 A. Correct.

19 Q. You provided a summary at the top of

20 Exhibit 12057 of some of those concerns; is that

21 right?

22 A. I'm sorry. What was --

23 Q. Sure. In the first --

24 A. -- the top?

25 Q. In the first paragraph of Exhibit 12057,

00224:01 do you describe some of the concerns that you had?

02 A. The very first paragraph here?

03 Q. Yes, sir.

Page 224:05 to 224:10

00224:05 A. Okay. Let me read it. Yes.

06 Q. (BY MS. JAKOLA) Now, for starters, you

07 found that the environmental relevance of the

08 result of the Ortmann study were highly uncertain,

09 correct?

10 A. Correct.

Page 224:12 to 224:13

00224:12 Q. (BY MS. JAKOLA) What is environmental

13 relevance?

Page 224:16 to 225:11

00224:16 A. So environmental relevance is the concept

17 that the experiments or testing that you performed

18 is how sort of relevant or interpretable the

19 results were or the experimental design would be

20 for inferring or translating the -- the

21 conclusions to the environment. So environmental

22 in a nutshell -- environmental relevance is sort

23 of how -- not necessarily realistic, but how --
 24 can we use the data to infer something that would
 25 happen in the environment, based on an
 00225:01 experimental protocol.
 02 Q. (BY MS. JAKOLA) How much -- environmental
 03 relevance means how much you can extrapolate from
 04 a study into the --
 05 A. So that's one aspect of extrapolation,
 06 but, yes.
 07 Q. In the second sentence of the first
 08 paragraph, you describe some of your chief
 09 concerns. Do you see that?
 10 A. Yes, I do.
 11 Q. Can you read that sentence, please.

Page 225:13 to 225:20

00225:13 A. "Chief concerns are detailed below and
 14 include inadequate oil weathering, inadequate oil
 15 and dispersant mixing and characterization, high
 16 oil and dispersant exposures in a closed
 17 artificial system, and unclear or inadequate
 18 sampling and analytical procedures."
 19 Q. (BY MS. JAKOLA) Why was inadequate oil
 20 weathering a concern?

Page 225:22 to 226:05

00225:22 A. Because the oil that was reaching the
 23 shoreline in and, in fact, on the surface of the
 24 Gulf of Mexico was weathered. It was not fresh
 25 oil.
 00226:01 Q. (BY MS. JAKOLA) And why was high oil and
 02 dispersant exposures in a closed artificial system
 03 also a concern that led you to criticize the
 04 Ortmann study?
 05 A. Yeah. So --

Page 226:07 to 227:12

00226:07 A. So a closed system -- and, again, I'm --
 08 I'm just sort of paraphrasing our critique of the
 09 study. To know specifically I would need to go
 10 back and review the study. It's been -- it sounds
 11 like two years or so since I -- since I read
 12 this -- read the paper. But -- so I'll just give
 13 you the assessment based on -- on what we've
 14 written here.
 15 So -- so a closed system would imply
 16 that there's no continued evaporative -- for
 17 example, continued evaporative losses of
 18 hydrocarbons.
 19 Q. (BY MS. JAKOLA) Now, turning to Page 2 of
 20 your review of the Ortmann article.

21 A. Okay.
 22 Q. The -- in the first full paragraph, you
 23 write, quote, "The ecological relevance of the
 24 dispersant applications to the tested near shore
 25 microbial community is uncertain."
 00227:01 A. I'm sorry. I'm --
 02 Q. It's on the second page.
 03 A. Yeah.
 04 Q. Bates-numbered ending 70278.
 05 A. Yeah. Is it Section C you're at?
 06 Q. Under Section C.
 07 A. Okay.
 08 Q. There's a sentence that begins "The
 09 ecological relevance." Do you see that, sir?
 10 A. I do now, yes.
 11 Q. Can you please read that sentence and the
 12 following one into the record, please.

Page 227:14 to 227:20

00227:14 A. "The ecological relevance of the
 15 dispersant applications to the tested near shore
 16 microbial community is uncertain. Federal law
 17 prohibits dispersant application within 3 miles of
 18 the shoreline and no dispersant applications were
 19 performed near shore during the DEEPWATER HORIZON
 20 spill."

Page 228:09 to 228:12

00228:09 One of the reasons you were concerned
 10 about the ecological relevance of the Ortman
 11 study was because the Ortman study tested
 12 dispersants on a near shore microbial community?

Page 228:14 to 228:17

00228:14 A. Correct.
 15 Q. (BY MS. JAKOLA) And that concerned you
 16 because no dispersants in the DEEPWATER HORIZON
 17 response were applied near shore, correct?

Page 228:19 to 229:06

00228:19 A. I -- I can't -- my understanding is you
 20 are correct. But I don't have any way of
 21 verifying that. What this states is that federal
 22 law prohibits it, dispersant application. Whether
 23 there was a dispersant application in the near
 24 shore that someone knows or doesn't know about, I
 25 can't speak to. But I can tell you -- I do
 00229:01 understand that they are not allowed.
 02 Q. (BY MS. JAKOLA) And in reviewing the

03 Ortmann paper which considered near shore
 04 microbial communities, you considered that problem
 05 because of the limitation on dispersant
 06 applications near the shore, correct?

Page 229:08 to 230:14

00229:08 A. Correct. Correct.
 09 Q. (BY MS. JAKOLA) And --
 10 A. If -- if I may?
 11 Q. Uh-huh.
 12 A. The -- the issue here is that if you're
 13 going to extrapolate to the areas of the Gulf
 14 where dispersant application was known to occur,
 15 then you should be testing or developing
 16 experimental design that has greater relevance or
 17 ecological similarity to the offshore environment.
 18 Q. That's exactly what I was going to ask you
 19 next.
 20 A. Yes.
 21 Q. On Page 1 of your summary, which is
 22 Exhibit 12057, Bates No. 70277.
 23 A. Okay.
 24 Q. The last sentence of the first full
 25 paragraph there. You -- at the beginning,
 00230:01 "Overall, the results of the study..."
 02 Do you see that, sir?
 03 A. Yeah, of course.
 04 Q. Can you read that into the record?
 05 A. Yes. It says: "Overall, the results of
 06 this study should not be broadly extrapolated to
 07 the Gulf of Mexico because of apparent lack of
 08 environmental -- environmental relevance to oil
 09 and dispersant exposures during the DEEPWATER
 10 HORIZON spill in Gulf habitats."
 11 Q. Does that summarize your view that the
 12 Ortmann study should not be broadly extrapolated
 13 to the Gulf of Mexico?
 14 A. It does.

Page 231:11 to 232:12

00231:11 MS. JAKOLA: We'll mark it as Exhibit
 12 12059. For the record, it's US_PP- --
 13 MS. FIDLER: I can do it.
 14 MS. JAKOLA: -- EPA 013446 to 47.
 15 (Marked Exhibit No. 12059.)
 16 Q. (BY MS. JAKOLA) Dr. Barron, have you seen
 17 Exhibit 12059 before?
 18 A. Yes.
 19 Q. What is it?
 20 A. It is a critical review I -- I provided on
 21 a paper by Rico-Martinez et al. (2013).
 22 Q. Did anyone else review the article with
 23 you?

24 A. With me, not -- not that I recall or as --
25 and not -- that is not indicated in this document.
00232:01 Q. Did Dr. Hemmer also review --
02 A. Oh, there it is.
03 Q. -- the Rico-Martinez article?
04 A. Sorry. Sorry.
05 Q. No problem.
06 A. Yes, yes, Michael Hemmer also. I
07 apologize.
08 Q. Dr. Hemmer is one of your colleagues at
09 EPA?
10 A. He is.
11 Q. Can you please turn to Tab 28, which we'll
12 mark as Exhibit 12060.

Page 232:14 to 232:18

00232:14 A. Okay. You got me multitasking here. I'm
15 putting stickers on. Okay. All right.
16 Q. (BY MS. JAKOLA) Is Exhibit 12060 the
17 Rico-Martinez article that you are reviewing in
18 Exhibit 12059?

Page 232:21 to 233:12

00232:21 Q. (BY MS. JAKOLA) Looking at Exhibit 12060
22 under the abstract, there's a sentence in the
23 middle of the paragraph that begins, "However,
24 when Corexit 9500A..." Do you see that?
25 A. I do.
00233:01 Q. Can you read that sentence into the
02 record.
03 A. "However, when Corexit 9500A and oil are
04 mixed, toxic -- toxicity to B. manjavacas
05 increases up to 52-fold."
06 Q. And the next sentence as well, please.
07 A. "Extrapolating these results to the oil
08 released by the Macondo well, suggests
09 underestimation of increased toxicity from Corexit
10 application."
11 Q. You reviewed the Rico-Martinez article as
12 we discussed, correct?

Page 233:14 to 233:14

00233:14 A. Correct.

Page 233:22 to 233:23

00233:22 Q. (BY MS. JAKOLA) Can you describe some of
23 your concerns with the Rico-Martinez study?

Page 233:25 to 234:13

00233:25 A. In -- in summary, I state -- include
00234:01 uncertainty in methods and results, lack of
02 analytical verification and over speculation.
03 Q. (BY MS. JAKOLA) In the first paragraph of
04 your review in Exhibit 12059, at the end of that
05 sentence -- strike that.
06 The end of the paragraph, can you
07 read the last sentence, please?
08 A. "Overall, the results of this toxicity
09 study with rotifers should not be broadly
10 extrapolated to impacts of dispersed oil in the
11 Gulf of Mexico."
12 Q. Can you please describe what led you to
13 that conclusion?

Page 234:16 to 235:18

00234:16 A. I will have to refresh my memory since it
17 was -- it looks like over a year since I wrote and
18 reviewed this paper. So let me just -- just in
19 summary, I had concerns with use of nonstandard
20 oil mixing regimes and these would include related
21 to mixing energy, a lack of analytical
22 verification, and it says confounding results.
23 It looks like this increased above
24 viability rather than -- yeah. So I -- I note
25 that it was more -- a more likely interpretation
00235:01 of the results was that the dispersing increased
02 the bioavailability of the free product oil rather
03 than increasing its intrinsic toxicity, as the
04 authors had suggested.
05 And then I also noted, unclear
06 quality control -- if key quality control
07 requirements were met, such as minimum control
08 survival, and then I noted other concerns of -- of
09 the basic scientific standard of providing
10 sufficient detail in the methodology that the
11 results could be repeated.
12 So what that means is did they
13 provide you enough information to be able to
14 understand what they did and -- and potentially
15 replicate the -- the experiment.
16 Q. (BY MS. JAKOLA) It's fair to say you had
17 several concerns with the Rico-Martinez article,
18 correct?

Page 235:20 to 236:23

00235:20 A. Correct.
21 Q. (BY MS. JAKOLA) Can you please turn to
22 Tab 30 in your binder, Dr. Barron --
23 A. 30 okay.
24 Q. -- which we'll mark as Exhibit 12061.
25 MS. JAKOLA: For the record, this is

00236:01 US_PP_EPA007234 through 36.
02 (Marked Exhibit No. 12061.)
03 Q. (BY MS. JAKOLA) Dr. Barron, do you see
04 that Exhibit 12061 is a December 7, 2012, E-mail
05 from you to William Benson?
06 A. I do.
07 Q. Can you please look at the second page of
08 the E-mail which is Bates-numbered 7235?
09 A. Okay.
10 Q. Do you see an E-mail from you to Robert
11 Kavlock?
12 A. I do.
13 Q. And it's dated December 7, 2012.
14 Do you see that?
15 A. I do.
16 Q. Who is Robert Kavlock?
17 A. Robert or Dr. Bob Kavlock, he -- he's
18 changed jobs so I'm trying to reflect where
19 he's -- he's actually at now. But he is a senior
20 EPA scientist and manager within ORD, and he
21 continues in that type of role.
22 Q. Did Dr. Kavlock ask you and Dr. Greene to
23 critique the Rico-Martinez --

Page 236:25 to 236:25

00236:25 Q. (BY MS. JAKOLA) -- article?

Page 237:02 to 237:08

00237:02 A. Yes, he did.
03 Q. (BY MS. JAKOLA) On December 7, 2012, you
04 responded to Dr. Kavlock with your E-mail that's
05 shown on 7- -- Bates No. 7235, correct?
06 A. Correct.
07 Q. You provided comments to Dr. Kavlock on
08 the Rico-Martinez rotifer paper, correct?

Page 237:10 to 237:13

00237:10 A. I did.
11 Q. (BY MS. JAKOLA) And the comments that you
12 provided on the Rico-Martinez paper are the same
13 ones that we looked at in Exhibit 12059, correct?

Page 237:16 to 237:22

00237:16 A. I would say -- answer it this way, that it
17 included these comments and I also provided some
18 additional opinion or comments also within the
19 E-mail.
20 Q. (BY MS. JAKOLA) I wanted to ask you about
21 some of your E-mail comments.

22 A. Okay.

Page 238:22 to 239:03

00238:22 Q. You continue to say, quote, "Unfortunately
23 in papers like this one on rotifers and the
24 Ortmann one previously reviewed for ORD
25 headquarters, the authors (and the press) are
00239:01 speculating way beyond the rather narrow limits of
02 the research."
03 Do you see that, sir?

Page 239:05 to 239:09

00239:05 A. I do.
06 Q. (BY MS. JAKOLA) What do you mean when you
07 say that the "authors and the press are
08 speculating beyond the rather narrow limits of the
09 research"?

Page 239:12 to 240:06

00239:12 A. What -- what I mean by that is -- and
13 we'll just use the two examples -- specific
14 examples rather than talking in hypotheticals.
15 That in cases like this, even though these are
16 published in peer-reviewed journals, sometimes
17 authors will -- so I'll speak, first, to authors
18 and then the press. For authors, sometimes
19 authors will speculate or -- or potentially
20 misinterpret their results.
21 The -- the job of journals in the --
22 the scientific peer-review process is to minimize
23 that. But occasionally, those come out -- there's
24 also -- this is, you know, based on opinion. And
25 so this is my opinion. It may not be someone
00240:01 else's opinion. But -- so my issue is if you
02 are -- what I consider you've done a experiment --
03 it's what we talked about earlier today, that you
04 do an experiment. It's -- you -- your
05 interpretation is -- is confined within the
06 context of that experiment.

Page 241:05 to 241:13

00241:05 Your opinion, the authors of the
06 Rico-Martinez rotifer paper were speculating
07 beyond the narrow limits of their research,
08 correct?
09 A. Yes.
10 Q. In your opinion, the authors of the
11 Ortmann study that we reviewed were also
12 speculating way beyond the narrow limits of their

13 research, correct?

Page 241:16 to 242:01

00241:16 A. The -- yes. Yeah. The Ortmann one was
17 where the -- they -- they extrapolated -- I'm just
18 making sure I understand this. They extrapolated
19 their data based on sort of near -- near shore to
20 offshore. So, yes, you're correct.
21 Q. (BY MS. JAKOLA) You continue to write in
22 your E-mail, quote, "Additionally, I think
23 journals are eager to publish articles on the
24 spill and possibly the peer review is not as
25 rigorous as it could be (e.g., this is a paper
00242:01 that should have had major revisions)."

Page 242:03 to 242:09

00242:03 Q. (BY MS. JAKOLA) Do you see that?
04 A. Yes, I do. And that opinion is formed
05 from having been an author of multiple papers. So
06 having gone through this process and also having
07 served as an associate editor of one of the
08 premier ecotoxicology journals so I understand the
09 peer-review process and what is expected of it.

Page 244:04 to 244:12

00244:04 Q. Sir, with respect to --
05 A. Okay.
06 Q. -- your comments on the Rico-Martinez and
07 Ortmann article --
08 A. Okay.
09 Q. -- and specifically your E-mail in
10 December 2012, you believe that articles on the
11 spill may not be as rigorously peer reviewed as
12 they otherwise should be, correct?

Page 244:15 to 244:20

00244:15 A. I think -- at least what I believe I was
16 trying to communicate was that was a possibility.
17 I'm not saying that was the case.
18 Q. (BY MS. JAKOLA) Okay. Well, you write
19 with respect to the Rico-Martinez article that the
20 paper should have had major revisions, correct?

Page 244:22 to 244:25

00244:22 A. That's my opinion. Others would have a
23 different opinion or could.
24 Q. (BY MS. JAKOLA) I'm asking you about your
25 opinions.

Page 245:02 to 245:03

00245:02 A. Yeah, my opinion is, yeah, it should have
03 had major revisions.

Page 246:05 to 246:10

00246:05 Q. Other than the Rico-Martinez and Ortmann
06 articles that we've discussed, are there other --
07 other articles of which you are aware regarding
08 the use of dispersants in the -- in the spill that
09 speculate beyond the narrow limits of the
10 research?

Page 246:13 to 246:24

00246:13 A. I am, but I don't have any, like a
14 specific paper in mind. But it's -- I've, you
15 know, read a lot of papers and that's just part of
16 being a practicing scientist. So not specific to
17 providing a critical review, but I think it likely
18 that I had concerns with some -- some papers,
19 either -- but, you know, I do a lot of critical
20 reviews and I have a -- I -- it's my -- it's your
21 scientific nature to be critical and to look for
22 ways that the paper could have been better. It's
23 part of our sort of internal practice as a
24 scientist.

Page 258:21 to 259:01

00258:21 Dr. Barron, as we've discussed, you
22 understand that you're the designated
23 representative of the United States in this
24 litigation with respect to dispersant toxicology
25 as it relates to topic 3 in BP's 30(b)(6) notice?

00259:01 A. I --

Page 259:03 to 259:08

00259:03 A. I do.
04 Q. (BY MS. JAKOLA) Dr. Barron, is it the
05 contention of the United States, in this
06 litigation, that the use of dispersants during the
07 DEEPWATER HORIZON response negatively affected the
08 health of people living on the Gulf Coast?

Page 259:11 to 259:19

00259:11 A. In -- that's -- in -- you are -- if I
12 understand your question, you're talking about

13 human health toxicology.
14 Q. (BY MS. JAKOLA) Yes, sir.
15 A. And that is -- my understanding is not
16 what I have been identified to speak to.
17 Q. Who is the United States's representative
18 with respect to whether dispersants negatively
19 affected human health?

Page 260:03 to 260:04

00260:03 A. I don't know. I don't know who that
04 person is.

Page 260:13 to 260:18

00260:13 Q. (BY MS. JAKOLA) Dr. Barron, I understand
14 then as far as you're concerned today, you're not
15 prepared to talk about any human health or worker
16 health issues relating to the use of dispersants
17 in the DEEPWATER HORIZON response?
18 A. I am not.

Page 260:20 to 260:24

00260:20 Q. (BY MS. JAKOLA) Are you similarly not
21 prepared to testify here today about any effects
22 the use of dispersants may or may not have had
23 with respect to seafood safety?
24 A. I am not.

Page 262:04 to 262:09

00262:04 Q. I'm asking about the United States'
05 position in this Clean Water Act litigation, and
06 specifically, I'm asking about which, if any,
07 natural resources the United States contends may
08 have been adversely affected by the use of
09 dispersants in the response.

Page 262:12 to 262:19

00262:12 A. I -- I haven't -- I don't know. I haven't
13 been consulted in those aspects of the case.
14 Q. (BY MS. JAKOLA) Sitting here today, as
15 the representative of the United States, you're
16 not prepared to identify any natural resources
17 that the United States claims were negatively
18 affected by the use of dispersants in their
19 response; is that right?

Page 262:21 to 262:21

00262:21 A. That's correct.

Page 263:07 to 263:22

00263:07 Q. (BY MS. JAKOLA) You understand that
08 you're here today to testify in the Clean Water
09 Act litigation, correct?
10 A. Yes.
11 Q. And you understand that you've been
12 designated on behalf of the United States to
13 address issues relating to dispersant toxicology
14 as it relates to use of dispersants in the
15 response, correct?
16 A. Correct.
17 Q. My question is whether you are prepared to
18 testify here today about any factual bases for any
19 contention the United States may make in the Clean
20 Water Act litigation that any natural resources
21 were adversely affected by the use of dispersants
22 in the response?

Page 263:25 to 264:18

00263:25 A. Yeah. That's -- my -- my focus has been
00264:01 on very specific to ecotoxicology and has -- I
02 have not been engaged or asked to be engaged in --
03 in determining impacts to natural resources.
04 Q. (BY MS. JAKOLA) Can you tell -- again,
05 without -- I want to be clear about what my
06 question is.
07 A. Okay.
08 Q. I'm not asking about measuring the degree
09 of any impacts to natural resources right now.
10 I'm simply asking what the contention of the
11 United States will be in the Clean Water Act
12 litigation. With that -- with that background --
13 A. Okay.
14 Q. Let me rephrase the question.
15 Does the United States contend in the
16 Clean Water Act litigation that any natural
17 resources were adversely impacted by the use of
18 dispersants in the response?

Page 264:21 to 264:22

00264:21 A. I don't -- I don't know what the United
22 States is contending.

Page 265:04 to 265:09

00265:04 Q. With respect to the topic on which you've
05 been designated, dispersant toxicology, you're not
06 prepared to tell us here today which, if any,

07 natural resources the United States contends were
08 actually affected by the use of dispersants?
09 A. I -- I am not.

Page 265:12 to 265:16

00265:12 Q. (BY MS. JAKOLA) And sitting here today,
13 you can't identify whether or not the U.S. intends
14 to contend in the Clean Water Act litigation that
15 any particular natural resources were harmed from
16 the use of dispersants, correct?

Page 265:19 to 266:01

00265:19 A. Yeah. That sounds to me like litigation
20 strategy and I'm not -- that information is not
21 shared with me.
22 Q. (BY MS. JAKOLA) Can you identify any
23 factual basis for of any position the United
24 States is going to take in this litigation that
25 dispersants in the response impacted natural
00266:01 sources?

Page 266:04 to 266:09

00266:04 A. I -- I'm not -- that information has not
05 been shared with me.
06 Q. (BY MS. JAKOLA) To your knowledge, the
07 United States does not contend in this litigation
08 that the use of dispersants injured any natural
09 resources, correct?

Page 266:13 to 266:13

00266:13 A. I don't know.

Page 271:20 to 271:24

00271:20 Q. Dr. Barron, you've testified earlier today
21 that you were providing toxicological advice to
22 the agency regarding the use of dispersants during
23 the May 2010 time period and throughout the spill;
24 is that correct?

Page 272:03 to 276:23

00272:03 A. Ecotoxicology advice.
04 Q. (BY MS. FIDLER) And what was that advice?
05 A. It -- it -- it varied from explaining
06 how -- from an ecotox perspective how dispersants
07 work, the trade-offs between dispersing and non --
08 or potential trade-offs between dispersing --

09 chemical dispersing and not chemically dispersing
10 oil, what are some of the factors that might
11 affect dispersant efficacy in persistence of
12 dispersed oil, things like that.

13 Q. Could you elaborate? You mentioned that
14 you provided advice on how dispersants work. What
15 was that advice?

16 A. That would include explaining how -- which
17 we've -- we did touch bases on that a little bit
18 about how drop formation, how dispersants move oil
19 from the free product phase or the slick into
20 the -- into the surface water, how there can be
21 increased concentrations of -- of oil and higher
22 oil exposure from the use of dispersants.

23 I also would discuss the -- the
24 rationale for dispersant use including as a
25 response strategy in terms of dispersing the plume
00273:01 before it would maybe move to the shoreline and
02 the -- the relative hazards of having, you know,
03 persistent oil on a shoreline versus in the ocean.

04 I also early on in the spill when
05 subsea dispersant use became an issue for the
06 agency, I also would sort of discuss how that
07 could potentially -- this was -- at least for me
08 and I think most people, it was a new potential
09 use of dispersants in the -- in the deep ocean,
10 what were the uncertainties in terms of the
11 ecological receptors in -- in the deep ocean,
12 what, based on my understanding, was the
13 likelihood of -- that dispersed oil would stay in
14 the subsea and not re-coalesce and thus become
15 possibly buoyant and then resurface in a different
16 location.

17 So I -- I had recommended during
18 the -- during the spill, during the early days of
19 the spill that I thought deep -- deep ocean
20 dispersion was -- not based on efficacy. That was
21 not my -- my area of expertise, but based on what
22 I understood of potential relative hazards of
23 dispersing in the deep ocean versus the -- the
24 surface waters, how I thought that was a -- I -- I
25 advised the folks I had talked to within the
00274:01 agency and that could have -- I don't remember
02 specifically who I would have talked to. But it
03 was likely folks in senior management and ORD
04 and -- and in OEM that I thought this was a -- I
05 thought -- thought that the agency should support
06 that application if there was evidence of -- of
07 efficacy which -- because I thought that keeping
08 the oil, that dispersant use in the deep ocean
09 would -- that the trade-offs to hazards to deep
10 ocean biota simply based on their relative
11 density, I mean, in the simplest sense that in the
12 surface waters, you can have a much denser form of
13 biota. You know, higher concentrations of finfish
14 and plankton in the food chain. And then the deep

15 ocean, because it's very cold and dark and
 16 hypersaline there's -- as I understood it, there's
 17 less resources.

18 Now, we also understood, you know,
 19 that there were unique resources down there. We
 20 knew that there were things like deepwater corals
 21 and, you know, unique biota, but in the sort of
 22 trade-off perspective, you know, my advice was
 23 if -- if, you know, we could confirm that the
 24 oil -- that it was efficacious and that it would
 25 stay in the subsea, that that was a -- a good
 00275:01 trade-off versus letting it come -- more of it
 02 coming to the surface. So I remember that what
 03 was some key aspects.

04 I also, as I mentioned earlier, was
 05 that -- you know, I also provided expertise in --
 06 you know, doing my best to ensure that press
 07 releases and Congressional testimony was -- was --
 08 on the ecotox aspects were -- were correct.

09 Q. Could you explain a little more -- you
 10 mentioned the trade-offs. Could you explain a
 11 little bit more what the various trade-offs are in
 12 dispersant use versus --

13 A. Yeah.

14 Q. -- other means of oil response?

15 A. Yeah. So the -- in the -- in the typical
 16 scenario, which is surface dispersion, the -- the
 17 trade-off is typically dispersing the oil and
 18 transiently increasing, substantially increasing
 19 the toxicity in the surface water with the
 20 trade-off of keeping at least some fraction of
 21 that oil from reaching the shoreline where the oil
 22 could become more persistent or impact, you know,
 23 sensitive areas such as wetlands and -- and
 24 beaches and things like that.

25 So -- but, you know -- so the
 00276:01 trade-off in -- I guess in the simplest sense is
 02 that -- and I -- these are terms I recall, you
 03 know, using in the spill to make sure our -- my
 04 agency understood the trade-offs was we're going
 05 to kill -- we're either going to kill more in the
 06 deep ocean or we're going to kill more in the --
 07 in the offshore pelagic area or we're going to
 08 kill more on the shoreline.

09 And so by -- so when you make these
 10 decisions, you know, realize there is no good
 11 choice. And it's so -- you're -- you're usually
 12 trying to select against bad choices, which one do
 13 you feel you'll have the least regret for. And
 14 there's also huge uncertainties with, you know,
 15 how the oil will really behave and how well it
 16 will disperse and what -- what organisms are --
 17 will be exposed. You know, the ocean is a dynamic
 18 area. Organisms are not necessarily all sessile.
 19 And so that's also a large uncertainty.

20 So part of the trade-off is making

21 decisions under large uncertainty and accepting
22 the fact that you're going to kill more where you
23 disperse, likely.

Page 277:25 to 278:01

00277:25 Q. (BY MS. FIDLER) And it's been marked
00278:01 previously as Exhibit 11844, correct?

Page 278:03 to 278:09

00278:03 Q. Okay. So we discussed -- you discussed
04 this quite a bit in your earlier testimony.
05 Setting aside the response and the, you know,
06 particular amount of dispersant that's being
07 required in the addendum, do you agree with the --
08 the general directive to use less surface
09 dispersant?

Page 278:19 to 280:01

00278:19 A. Given what we understood in terms that
20 subsea dispersion was working or appeared to be
21 working, and we were not seeing oil resurfacing in
22 other areas. So in other words, surface
23 dispersion -- subsurface -- subsea dispersion
24 seemed to be a viable alternative to only surface
25 dispersion, also based on the understanding that
00279:01 the amount of oil reaching the surface was being
02 substantively lowered because of the use of subsea
03 dispersants, I would -- based on that which was
04 the knowledge I had in -- and still have, I would
05 say, yeah, that would be a -- from an ecotox
06 perspective, a reasonable objective.

07 Also, given that the surface
08 dispersion or surface application was of unknown
09 efficacy, we know that -- that there was surface
10 dispersion of oil but the oil was weathered. I --
11 I think there's also -- well, I'll just leave it
12 at that.

13 From an ecotox perspective, the fact
14 if we could reduce surface dispersion and increase
15 mechanical recovery of oil, I -- given what I also
16 understood of the sensitive life stages, such as
17 tuna were out there, I think that that would be a
18 good decision to minimize surface applications
19 where viable alternatives were available. And
20 that's simply just from a -- a relative hazard or
21 trade-off, sort of concept. If, you know, we can
22 keep oil out of the surface water, that would be
23 a -- a good thing.

24 Q. (BY MS. FIDLER) And -- you had -- had you
25 generally provided that view, as you've described
00280:01 it, to EPA at that time?

Page 280:04 to 280:11

00280:04 A. Not -- no, not specifically to that.
05 What -- not specific to recommending -- which I
06 did not and I testified I did not, that I did not
07 recommend that they reduced to surface dispersion
08 use. That was not -- I did not recommend that. I
09 did explain the concerns about surface dispersant
10 use. But in terms of recommending policy or
11 response actions, I -- I did not do that.

Page 281:03 to 281:07

00281:03 Q. At the time that EPA issued Addendum 3 on
04 May 26, 2010, the U.S. had not conducted any
05 toxicity or other scientific studies regarding the
06 environmental trade-offs associated with the
07 dispersant limitations in Addendum 3, true?

Page 281:09 to 281:23

00281:09 A. You -- you said "the U.S.," do you mean
10 EPA or --
11 Q. (BY MS. JAKOLA) I mean the United States.
12 A. I -- not to my knowledge. But you're
13 speaking of the whole entire United States. I
14 don't know what was done.
15 Q. Again, you understand that you're here as
16 a representative of the United States with respect
17 to dispersant toxicology during the response,
18 correct?
19 A. Yes.
20 Q. As of May 26th, 2010, the United States
21 had conducted no studies regarding the degree to
22 which the dispersant limitations in Addendum 3 may
23 increase shoreline oiling, true?

Page 281:25 to 282:05

00281:25 A. That's my understanding.
00282:01 Q. (BY MS. JAKOLA) And as of May 26th, 2010,
02 the U.S. had conducted no studies regarding the
03 degree to which the dispersant limitations in
04 Addendum 3 may increase exposure to certain
05 organisms to oil, correct?

Page 282:07 to 282:13

00282:07 A. Yeah. Let me sort of read that sentence
08 again. Not to my knowledge.
09 Q. (BY MS. JAKOLA) To this day, has the
10 United States conducted any toxicity or other

11 scientific studies regarding the environmental
12 effects that the dispersant limitations in
13 Addendum 3 may have had?

Page 282:16 to 283:03

00282:16 A. I -- yeah, the -- I can't answer that
17 because it's possible that in the NRDA or BP could
18 have done a study which might encompass modelling
19 that would provide scenarios that you could model
20 dispersant use or application at this rate or this
21 location. So it's -- it's conceivable, but I'm
22 not aware of any.
23 Q. (BY MS. JAKOLA) As you sit here today,
24 are you aware of any toxicity studies upon which
25 the United States intends to rely in the Clean
00283:01 Water Act case relating to the affects of the
02 dispersants limitations in Addendum 3 may have
03 had?

Page 283:06 to 283:13

00283:06 A. Okay. Let me read that one again. I'm
07 not aware of any.
08 Q. (BY MS. JAKOLA) As you sit here today,
09 are you aware of any toxicity studies upon which
10 the United States intends to rely on the Clean
11 Water Act case relating to the effects of
12 dispersants used in the DEEPWATER HORIZON
13 response?

Page 283:16 to 284:03

00283:16 A. I'm -- I'm not aware of this, but this
17 isn't necessarily -- all of that information would
18 be shared with me.
19 Q. (BY MS. JAKOLA) Again, regarding your
20 testimony, your response to counsel's questions,
21 you discussed certain trade-offs with respect to
22 deep ocean environment, the deep ocean
23 environment, correct?
24 A. Correct.
25 Q. Has the United States conducted any
00284:01 toxicity or other scientific studies assessing any
02 effects of dispersants in the deep ocean
03 environment?

Page 284:06 to 284:08

00284:06 A. I am not aware of that, but there may be
07 as -- for example, as part of the -- the NRDA, I'm
08 not -- that information is not shared with me.

Page 285:13 to 285:17

00285:13 Q. (BY MS. JAKOLA) To be clear, also, you're
14 not aware of any toxicity data that forms a
15 factual basis for any contention by the United
16 States relating to the effects of dispersants in
17 the response, correct?

Page 285:20 to 285:25

00285:20 A. Okay. I'm just reading your question
21 again.
22 Since I don't understand conten- --
23 contentions are, I would say I'm not aware of what
24 the data that forms the contention or is used in a
25 contention. So I would say I don't know.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

IN RE: OIL SPILL)	MDL NO. 2179
BY THE OIL RIG)	
"DEEPWATER HORIZON" IN)	SECTION "J"
THE GULF OF MEXICO, ON)	
APRIL 20, 2010)	JUDGE BARBIER
)	MAG. JUDGE SHUSHAN

VOLUME 1

Deposition of MACE G. BARRON, Ph.D., taken at
Pan-American Building, 601 Poydras Street,
11th Floor, New Orleans, Louisiana, 70130, on the
24th day of June, 2014.

1 THE STATE OF TEXAS)
2 COUNTY OF HARRIS)
3

4 I, Donna L. Garza, Certified Shorthand
5 Reporter in and for the State of Texas, do hereby
6 certify that the above and foregoing contains a
7 true and correct transcription of all portions of
8 evidence and other proceedings in the above-styled
9 and numbered cause, all of which occurred and were
10 reported by me.

11 I further certify that I am neither
12 counsel for, related to, nor employed by any of
13 the parties or attorneys in the action in which
14 this proceeding was taken, and further that I am
15 not financially or otherwise interested in the
16 outcome of the action.

17 GIVEN UNDER MY HAND AND SEAL OF OFFICE
18 on this, the 1st day of July, 2014.

19 *Donna Garza*



20 DONNA L. GARZA
21 TEXAS CSR NO. 4785
22 Expiration Date:
23 12-31-15
24
25

26 WORLDWIDE COURT REPORTERS, INC.
27 Firm Registration No. 223
28 3000 Weslayan, Suite 235
29 Houston, Texas 77027
30 (800) 745-1101

I, MACE G. BARRON, Ph.D., have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted above.

Mace G. Barron

MACE G. BARRON, Ph.D.

STATE OF FLORIDA *

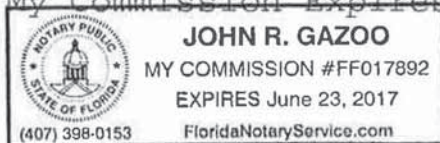
COUNTY OF SANTA ROSA *

Before me, John R. Gazoo, on this day personally appeared MACE G. BARRON, Ph.D., known to me, or proved to me under oath or through U.S. Gov't ID (description of identity card or other document), to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office on this, the 24th day of July, 2014.

John R. Gazoo
Notary Public, State of FLORIDA

My Commission Expires: 23 June 2017



WITNESS CORRECTIONS AND SIGNATURE

Please indicate changes on this sheet of paper, giving the change, page number, line number and reason for the change. Please sign each page of changes.

PAGE/LINE	CORRECTION	REASON FOR CHANGE
23/5	Also spoke with Dana Talis, Greg Wilson and Craig Matthiessen of OEM about Rotatoxin preparation for deposition.	Failed to recall during testimony. → Correct for accuracy.
27/12	change 'Incardena' to 'ecotoxicology'	→ Correct for accuracy
40/12	change 'as' to 'is'	→ correct typo
41/25	change 'write' to 'right'	→ correct typo
42/6	change '2' to 'o'	→ correct typo
63/12	change 'Beryllina of' to 'beryllina a'	→ correct typo
63/13	change 'of' to 'a'	→ correct typo
80/17	change 'flash' to 'flask'	→ correct typo
87/3	change 'compromized' to 'compriwed'	→ correct for accuracy
101/13	change 'that' to 'than'	→ correct typo
102/20	change 'formally' to 'formerly'	→ correct type
113/2	change 'Solidity' to 'salinity'	→ correct type
114/14	change 'relates' to 'related'	→ correct type
121/2	change 'in formay' to 'informing'	→ correct type



62-24-14

MACE G. BARRON, Ph.D.

WITNESS CORRECTIONS AND SIGNATURE

Please indicate changes on this sheet of paper, giving the change, page number, line number and reason for the change. Please sign each page of changes.

PAGE/LINE	CORRECTION	REASON FOR CHANGE
124/18	change 'was' to 'were'	→ correct grammar
134/21	change 'Alls' to 'All'	→ correct typo
136/8	change 'alls' to 'all'	→ correct typo
159/3	change 'tree' to 'agree'	→ correct typo
160/9	change 'in' to 'an'	→ correct typo
190/1	change 'artifacts' to 'facts'	→ correct typo
197/9	change 'feel' to 'field'	→ correct typo
200/24	change 'accommodate or' to 'accommodated'	→ correct typo
218/19	change 'info ped once' to 'information provided'	→ correct for accuracy
223/15	change 'invertebrate in' to 'invertebrates and'	→ correct typo
224/18	change 'is how' to 'is some how'	→ correct grammar
272/18	change 'drop' to 'droplet'	→ correct for accuracy
273/15	change 'possidly' to 'positively'	→ correct typo
280/7	change 'reduced to' to 'reduce'	→ correct grammar
283/17	change 'would' to 'would not'	→ correct for accuracy

 7-25-17

MACE G. BARRON, Ph.D.