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2 UNITED STATES PATENT AND TRADEMARK OFFICE

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3  
4 BEFORE THE PATENT TRIAL AND APPEAL BOARD

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5 BAKER HUGHES INCORPORATED,

6 Petitioner,

7  
8 v.

9 LUBRIZOL SPECIALTY PRODUCTS, INC.,  
10 Patent Owner.

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11 Case IPR2016-00734  
12 U.S. Patent No. 8,022,118

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16 DEPOSITION OF THOMAS H. EPPS, III

17 Chicago, Illinois

18 Wednesday, November 30, 2016

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24 Reported by: PAULA CAMPBELL, CSR, RDR, CRR, CRC

25 Job No: 115404

1 T. EPPS

2 necessary is shear resistance for the polymer to 11:12  
3 effectively function as a drag reducing polymer in 11:12  
4 crude oil. 11:12

5 Q. And why is that the case? 11:12

6 A. I believe that's known to someone of 11:12  
7 ordinary skill in the art. 11:12

8 Q. Explain why shear resistance is needed for 11:12  
9 a polymer to effectively function as a drag reducing 11:12  
10 polymer in crude oil. 11:12

11 A. So the problem relates to transport of a 11:13  
12 fluid or flow of a fluid in a pipeline. There is 11:13  
13 friction between the fluid and the walls of the 11:13  
14 pipeline, and that can lead to shear. 11:13

15 Q. Can you explain what you mean by "shear"? 11:13

16 A. A standard indication or definition of 11:14  
17 shear for a person of ordinary skill in the art 11:14  
18 would be flow/movement of one reference point of a 11:14  
19 fluid relative to another. 11:15

20 Q. Are you talking about shearing of the drag 11:15  
21 reducing polymer? 11:15

22 A. In what sense? 11:15

23 Q. Well, earlier you testified that shear 11:15  
24 resistance is needed for a polymer to effectively 11:15  
25 function as a drag reducing agent in crude oil; 11:15

1 T. EPPS

2 affinity with a crude oil in order to act as a drag 11:19  
3 reducer in that crude oil? 11:19

4 MR. HART: Objection. Scope. 11:19

5 A. I have no opinion on that. 11:19

6 Q. Are you familiar with the concept of 11:19  
7 affinity in the context of the '118 patent? 11:19

8 MR. HART: Objection. Scope. 11:19

9 A. I have no opinion on that. 11:19

10 Q. Can you identify any specific polymer that 11:20  
11 would actually cause drag reduction in a heavy 11:20  
12 asphaltenic crude oil? 11:20

13 MR. HART: Objection. Scope. 11:20

14 A. I have no opinion on that question. 11:20

15 Q. If you could look back at the '118 patent, 11:20  
16 looking at claim 1 of the '118 patent, if you look 11:21  
17 at column 19, line 35, it says "such that the 11:21  
18 friction loss associated with the turbulent flow 11:21  
19 through the pipeline is reduced by suppressing the 11:21  
20 growth of turbulent eddies." 11:21

21 Do you see that? 11:21

22 A. I see the sentence, yes, "such that such 11:21  
23 that the friction loss associated with the turbulent 11:21  
24 flow through the pipeline is reduced by suppressing 11:21  
25 the growth of turbulent eddies." 11:21

1 T. EPPS

2 3:22 P.M.)

03:16

3 BY MR. McCLELLAN:

03:22

4 Q. Sir, are you aware of any person anywhere  
5 that ever attempted to design a DRA polymer based on  
6 the asphaltene content of a crude oil prior to the  
7 filing of the '118 patent?

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8 MR. HART: Objection. Scope.

03:23

9 A. I have no opinion on that question.

03:23

10 Q. Is it true that compositions A and B in  
11 Eaton were prepared using a Ziegler-Natta  
12 polymerization process as described in Eaton?

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13 A. Eaton indicates that a Ziegler-Natta  
14 polymerization process was used.

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15 Q. And that Ziegler-Natta process from Eaton  
16 doesn't work for DRA polymers with heteroatoms, does  
17 it?

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18 MR. HART: Objection. Scope.

03:26

19 A. I have no opinion on that question.

03:27

20 Q. So I'm handing you what's been previously  
21 marked as Exhibit 2012. Do you see that  
22 Exhibit 2012 is an excerpt from a publication by  
23 Zerong Wang? It's entitled Comprehensive Organic  
24 Name Reactions and Reagents.

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25 A. Volume 3.

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