

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GODBERSEN-SMITH CONSTRUCTION COMPANY

d/b/a GOMACO CORPORATION,

Petitioner,

v.

GUNTERT & ZIMMERMAN CONST. DIV., INC.

Patent Owner.

Case IPR2020-01698
Patent No. 10,029,749
Case IPR2021-00050
Patent No. 9,708,029
Case IPR2021-00136
Patent No. 9,908,571
Case IPR2021-00234
Patent No. 10,196,101

Remotely via Zoom
Friday, October 22, 2021

CROSS-EXAMINATION

CARL A. NELSON, Ph.D.

REPORTED BY: SUSAN L. CIMINELLI, CRR, RPR

Henderson Legal Services, Inc.

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1 Cross-Examination of CARL A. NELSON, Ph.D., a
2 witness herein, called for examination by counsel
3 for Petitioner in the above-entitled matter,
4 pursuant to notice, the witness being duly sworn by
5 SUSAN L. CIMINELLI, CRR, RPR, a Notary Public in and
6 for the District of Columbia, taken remotely via
7 Zoom videoconference commencing at 10:30 a.m.

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1 C O N T E N T S

2 CARL A. NELSON, Ph.D.

3 EXAMINATION PAGE

4 By Mr. Mroz 6

5

6 E X H I B I T S

7 (Previously marked exhibits referred to.)

8 EXHIBIT NO. PAGE NO.

9 Exhibit 1 Paper No. 52 10

10 Exhibit 2 Paper No. 52 10

11 Exhibit 3 Paper No. 39 10

12 Exhibit 4 Paper No. 37 10

13 Exhibit 5 Exhibit 2030 (01698) 13

14 Exhibit 6 Exhibit 2030 (00050) 13

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17 Exhibit 9 GOMACO Exhibit 1001 ('749) 19

18 Exhibit 10 GOMACO Exhibit 1001 ('020) 19

19

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21 --continued--

22

1 EXHIBITS CONTINUED

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1 P R O C E E D I N G S

2 Whereupon,

3 CARL A. NELSON, Ph.D.

4 was called as a witness, and having been duly sworn,

5 was examined and testified as follows: 10:32:13

6 MR. MROZ: There is just some logistics 10:32:13

7 at the beginning. We are here for four IPRs. 10:32:25

8 IPR2020-01698, IPR2021-00050, IPR2021-00136, 10:32:29

9 IPR2021-00234. And this is the -- overall, these 10:32:47

10 all involve GOMACO Corporation as the Petitioner and 10:32:54

11 Guntert & Zimmerman, who is the Patent Owner. We 10:33:01

12 have Finnegan here on behalf of GOMACO, and 10:33:03

13 specifically Dave Mroz. And I have with me, Sonja 10:33:06

14 Sahlsten. Jeff, do you want to introduce your team? 10:33:13

15 MR. PRICE: I'm Jeffrey Price from Kramer 10:33:16

16 Levin, and I represent Patent Owner Guntert & 10:33:20

17 Zimmerman. And we are representing the witness, 10:33:22

18 Dr. Nelson, this morning. 10:33:25

19 CROSS-EXAMINATION 10:33:30

20 BY MR. MROZ: 10:33:30

21 Q. Great. So, Dr. Nelson, I have uploaded 10:33:30

22 exhibits into a shared folder. Are you able to see 10:33:35

7

1	those?	10:33:39
2	A. Yes.	10:33:39
3	Q. Okay. So there should be 12 in there	10:33:40
4	right now. Well, let's get some other things out of	10:33:42
5	the way first before we get to those. Can you	10:33:52
6	please state your name for the record?	10:33:54
7	A. Carl Nelson.	10:33:55
8	Q. And what's your address?	10:33:57
9	A. My home address?	10:33:59
10	MR. PRICE: Are we on the record? I just	10:34:01
11	want to --	10:34:02
12	MR. MROZ: I think so. Right.	10:34:05
13	MR. PRICE: Okay. Go ahead.	10:34:07
14	THE WITNESS: My home address, 4720	10:34:10
15	Pawnee Street, Lincoln, Nebraska, 68506.	10:34:13
16	BY MR. MROZ:	10:34:17
17	Q. Is there any reason you cannot testify	10:34:17
18	truthfully today?	10:34:20
19	A. No.	10:34:21
20	Q. Have you been deposed before?	10:34:21
21	A. Yes.	10:34:24
22	Q. How many times?	10:34:24

1 A. Once.

2 Q. Okay. So you probably know the drill, 10:34:27
3 but I'll go over some of this, just to be safe. 10:34:31
4 Please wait until I finish asking my question before 10:34:34
5 you answer. Sound good? 10:34:36

A. Yep.

7 Q. That way, the court reporter can capture 10:34:40
8 an accurate record. And let me know if you don't 10:34:43
9 understand my question. Sound good as well? 10:34:46

A. Sure.

11 Q. So if you don't say anything after I ask 10:34:51
12 the question about whether you understand or don't 10:34:55
13 understand, I'll just assume you understand it, 10:34:57
14 okay? 10:34:59

[illegible]

16 Q. Do you have a phone with you? 10:35:00

A. I do. 10:35:02

18 Q. Would you mind putting it on silent? In 10:35:04
19 fact, this happened to me yesterday. I have to do 10:35:06
20 the same with my phone. 10:35:08

21 A. Yes, it's already on silent. 10:35:09

22 Q. Okay, great. Thanks. When were you 10:35:10

9

1 approached by G&Z in this case? 10:35:18

2 A. I'd have to go back and look at my 10:35:21

3 records. I don't know exactly. 10:35:25

4 Q. An estimate is fine, if you know the 10:35:34

5 month even. 10:35:36

6 A. I'm just trying to track events backwards 10:35:48

7 in time. Discussion and writing in late spring 10:35:51

8 through into the summer. So I've been working with 10:35:58

9 Kramer Levin on these cases for at least since the 10:36:05

10 springtime of this year, perhaps earlier. 10:36:10

11 Q. Okay. What did you do to prepare for 10:36:12

12 today's deposition? 10:36:17

13 A. I read through my declarations and looked 10:36:18

14 at some of the exhibits that were mentioned in 10:36:26

15 those. Had discussion with counsel. 10:36:29

16 Q. Did you meet with counsel to prepare? 10:36:35

17 A. Yes, we met virtually. 10:36:41

18 Q. How many days? 10:36:42

19 A. One day. 10:36:43

20 Q. For how long? 10:36:45

21 A. Three to four hours total. 10:36:47

22 Q. Who did you meet with? 10:36:50

1 A. Mr. Price and Mr. Fuller. 10:36:53

4 A. Yes. It's just a case in which I also 10:37:03
5 worked with Kramer Levin that has to do with printer 10:37:09
6 technology. 10:37:13

8 A. Let's see. I guess it's the Masa versus 10:37:18
9 Xerox. 10:37:27

13 A. Yes. Yes, I worked with counsel to write 10:37:44
14 the declarations. 10:37:50

16 A. I wrote parts. Counsel wrote parts. We 10:37:58
17 edited together, had meetings and phone calls, and 10:38:01
18 passed drafts back and forth. 10:38:06

22 4. 10:38:13

11

1 (Exhibit Nos. 1-4 were referred to.) 10:38:16

2 BY MR. MROZ: 10:38:16

3 Q. These should be Exhibits 1 through 4. 10:38:16

4 A. **Starting with Number 1 first, I assume.** 10:38:28

5 Q. Sure. If you just want to open them up, 10:38:31

6 all four of them, and look at them. And let me know 10:38:35

7 when you're finished, and we can talk about them. 10:38:38

8 A. **Okay. I've gone through all four of** 10:40:12

9 **those first documents.** 10:40:15

10 Q. Okay. Do you recognize them? 10:40:16

11 A. **Yes.** 10:40:17

12 Q. What are they? 10:40:18

13 A. **They are labeled as -- sorry, I'm loading** 10:40:19

14 **one -- petitioner's notice of cross-examination of** 10:40:27

15 **me.** 10:40:31

16 Q. Yes. So they are essentially your 10:40:31

17 deposition notices for today. Is that fair? 10:40:35

18 A. **Yes.** 10:40:37

19 Q. Okay. And I gave you four because there 10:40:37

20 are four IPRs -- 10:40:40

21 A. **Yes.** 10:40:41

22 Q. -- that you're testifying about today, 10:40:41

12

1 right? 10:40:43

2 A. Yes. 10:40:43

3 Q. Okay. So we are basically covering four 10:40:44

4 IPRs in one deposition. Make sense? 10:40:51

5 A. Yes. 10:40:54

6 Q. Okay, great. All right. Can you please 10:40:54

7 pull down the next four exhibits, Exhibits 5 through 10:40:57

8 9 -- sorry, 5 through 8, I should say. 10:41:02

9 (Exhibit Nos. 5-8 were referred to.) 10:41:02

10 BY MR. MROZ: 10:41:07

11 Q. And open all of those, and look at them. 10:41:07

12 And let me know whenever you finish. 10:41:09

13 A. Can I keep these open simultaneously, do 10:41:15

14 you know? 10:41:18

15 Q. I can on my computer. Hopefully you can 10:41:19

16 as well. 10:41:22

17 A. Let me see. 10:41:28

18 Q. If you want to just download on your 10:41:29

19 computer, that's okay, too. They are your 10:41:31

20 declarations. 10:41:34

21 A. Yes. Yes, I'll just download them into a 10:41:34

22 separate folder. 10:41:37

13

1 Q. Okay. 10:41:38

2 A. Okay. I have each of them open. 10:43:20

3 Q. Okay. So are these the four declarations 10:43:23

4 you submitted in this case? 10:43:27

5 A. Yes. 10:43:28

6 Q. For the four IPRs? 10:43:29

7 A. Yes. 10:43:33

8 Q. Okay. And just as logistics for a Zoom 10:43:34

9 deposition, to make sure you have those. 10:43:42

10 A. Yes. 10:43:44

11 Q. Okay, great. Before you began working on 10:43:44

12 this case, have you ever worked in the road 10:43:50

13 construction machine field before? 10:43:52

14 A. No. No, I worked as a professor of 10:43:55

15 mechanical engineering. 10:43:58

16 Q. Before you worked on this case, had you 10:44:00

17 ever worked on or with a road construction machine? 10:44:11

18 A. I have never worked with a road 10:44:15

19 construction machine, but I understand some of the 10:44:19

20 operating principles. And a lot of the principles 10:44:22

21 of design and construction are derived from the same 10:44:25

22 principles and such that I practice as a mechanical 10:44:32

14

1 **engineer.** 10:44:37

2 Q. Sure. Have you ever operated a road 10:44:38

3 construction machine? 10:44:43

4 **A. I have not.** 10:44:45

5 Q. Have you ever designed a road 10:44:46

6 construction machine? 10:44:50

7 **A. No.** 10:44:51

8 Q. You had mentioned that you had gained 10:44:51

9 some experience from other areas of your work. What 10:44:57

10 types of work are you talking about? 10:45:01

11 **A. I do research in robotics, mechanical 10:45:02**

12 **system design, machine design, mechatronics, broadly 10:45:06**

13 **within the mechanical engineering field. And many 10:45:12**

14 **of these principles that I use in designing machines 10:45:17**

15 **and mechanisms on a smaller scale also apply at the 10:45:21**

16 **larger scale of road construction machines. 10:45:24**

17 Q. And why is that? 10:45:26

18 **A. Well, because of the physics principles 10:45:29**

19 **are the same. Stresses and strains, kinematics, all 10:45:31**

20 **those controls, all those types of things are the 10:45:36**

21 **same, whether they are applied to road construction 10:45:40**

22 **equipment or to other machines and mechanisms. 10:45:43**

15

1 Q. Smaller machines and mechanisms, you 10:45:46

2 mean? 10:45:49

3 A. Sure. 10:45:49

4 Q. When you talk about smaller machines and 10:45:49

5 mechanisms, what are you referring to? 10:45:54

6 A. Well, it can be lots of things, so would 10:45:56

7 you like examples from my own personal experience? 10:45:59

8 Q. Yes, perfect. Thank you. 10:46:02

9 A. So a couple of -- I'll just give you a 10:46:05

10 couple of examples of machines and mechanisms and 10:46:07

11 devices that I've been involved in designing. 10:46:12

12 Medical -- in the medical robotics field, 10:46:18

13 I've worked on surgical robots that involve 10:46:20

14 transmissions to drive and position parts of the 10:46:23

15 machine. In rehabilitation robotics, I worked on 10:46:27

16 mechanisms and linkages that, again, involved 10:46:32

17 kinematics, motion, speed, and position control, 10:46:36

18 management of stress and strain, clearances and 10:46:42

19 backlash. All of those types of things go into 10:46:49

20 those types of machinery. 10:46:52

21 And those -- those two examples range 10:46:53

22 from the centimeter scale all the way up to meters. 10:46:55

16

1 Q. When you talk about linkages, and I guess 10:47:04
2 drives, why is it that those smaller linkages and 10:47:12
3 drives can apply to the larger machines that you 10:47:15
4 worked on here? 10:47:18

5 A. Well, again, the mechanical engineering 10:47:19
6 principles are the same. You know, I'll give you 10:47:22
7 one example. Stress is transmitted through the 10:47:25
8 application of force across area in structural 10:47:31
9 numbers of large road construction machines. It's 10:47:38
10 also the same type of stress that's transmitted in 10:47:41
11 the smaller machines and mechanisms. And the 10:47:45
12 formulas are the same, and the math is the same, and 10:47:48
13 the physics behind it is the same. 10:47:52

14 Q. Okay. Something else jumped out at me on 10:47:55
15 your resume about flight science. What was that? 10:48:01

16 A. Flight science was a course that I taught 10:48:06
17 kind of when I was in between my Ph.D. studies and 10:48:08
18 my current job as a professor. It was a course I 10:48:12
19 taught in the summer, for a summer youth studies 10:48:16
20 program run by Johns Hopkins University. 10:48:22

21 Q. Interesting. Okay. So is it your 10:48:25
22 position that the work you've done on the types of 10:48:33

17

1 products we were talking about earlier, such as 10:48:38
2 robotics and medical device tools, qualifies you to 10:48:41
3 testify in this case about concrete slipform pavers 10:48:44
4 and road construction machines? 10:48:49

5 **A. Yes.** 10:48:51

6 **Q.** Is it common for engineers to borrow 10:48:52
7 concepts and designs from one field and apply them 10:48:55
8 in another field? 10:48:58

9 **A. It can be.** 10:48:58

10 **Q.** In your case, does that apply? 10:49:00

11 **A. Well, in my case, when I'm designing --** 10:49:04
12 **when I'm trying to design something new, I do try to** 10:49:09
13 **look as broadly to other application domains,** 10:49:14
14 **especially in the brainstorming process, to borrow** 10:49:17
15 **or adapt ideas.** 10:49:22

16 **Q.** So when you're designing robotic 10:49:28
17 machines, what other kinds of fields do you look to? 10:49:33

18 **A. Well, it really depends on the -- the** 10:49:35
19 **functional requirements of the system that I'm** 10:49:44
20 **trying to design. So I use kind of established** 10:49:47
21 **process and design methodology called functional** 10:49:53
22 **decomposition, where I look at -- try to label or** 10:49:58

18

1 name the functions that I want to achieve in the 10:50:02
2 designed product. 10:50:08

3 And then brainstorm. It's basically a 10:50:09
4 breaking down or a granularization of the problem. 10:50:15

5 And then I try to attack each of the subproblems by 10:50:18
6 brainstorming from really any -- it's not limited. 10:50:21

7 It's a philosophy of design or a methodology of 10:50:27
8 design that is intended to be very open-ended. 10:50:31

9 Ultimately, you know, those ideas have to be vetted 10:50:36
10 and narrowed down, and brought back to a design 10:50:41
11 concept that is thought to be, you know, feasible. 10:50:46

12 Q. Makes sense. So if you were an engineer 10:50:51
13 designing a road construction machine, specifically 10:50:59
14 a slipform paver, would you look to the designs of 10:51:06
15 other road construction machines as part of that 10:51:09
16 process? 10:51:12

17 A. Yes. 10:51:13

18 Q. Okay. The claims -- the patent claims at 10:51:14
19 issue in these IPRs -- well, before we get there, 10:51:24
20 let me give you the four patents, so you have those 10:51:27
21 as well. They are in your shared drive folder. 10:51:29

22 It should be Exhibits 9 through 12. 10:51:36

19

1 (Exhibit Nos. 9-12 were referred to.) 10:51:36

2 THE WITNESS: Would you like me to 10:51:46

3 download or bring those up? 10:51:48

4 BY MR. MROZ: 10:51:48

5 Q. If you want to. Whatever is easiest for 10:51:50

6 you. I don't know whether you want to refer to them 10:51:52

7 throughout the day or not, but I just want to make 10:51:54

8 sure you have them in case you need them. 10:51:57

9 A. I'll go ahead and download them really 10:51:59

10 quickly. 10:52:02

11 Q. Okay. 10:52:03

12 A. Okay, I have those downloaded now. 10:53:24

13 Q. Okay, great. Are you familiar with the 10:53:26

14 patent claims at issue in these IPRs? 10:53:29

15 A. Yes, I've reviewed them. 10:53:32

16 Q. So you're aware they recite a jacking 10:53:34

17 column? 10:53:40

18 A. Yes. 10:53:40

19 Q. What is a jacking column? 10:53:40

20 A. It's a device used to change the 10:53:43

21 elevation or raise or lower the body of the machine 10:53:48

22 relative to the ground. 10:53:54

20

1 Q. What components make up a jacking column? 10:53:58

2 Specifically -- let me strike that. 10:54:04

3 While I'm asking these questions here, 10:54:07

4 I'm talking about the jacking column in the four 10:54:09

5 patents at issue, in the claims in those patents. 10:54:11

6 A. Okay. I'll go ahead and open one of 10:54:15

7 those up, then, so I can refer to specific 10:54:17

8 nomenclature. 10:54:20

9 Q. Sure. Sure. Okay. So I'll repeat my 10:54:21

10 question. What components make up the jacking 10:54:25

11 column in the four patents at issue here? 10:54:30

12 A. Sorry if I'm being slow. I'm just 10:54:33

13 looking for the best diagram to refer to, to -- 10:55:30

14 Q. Not a problem at all. Which patent are 10:55:35

15 you in? 10:55:38

16 A. I'm starting in Exhibit 9. So I'm 10:55:41

17 looking at figure 4 in Exhibit 9. 10:58:32

18 Q. Is that the '749 patent? 10:58:37

19 A. Yes. 10:58:42

20 Q. Okay. Thank you. 10:58:45

21 A. So in this figure, there is some upright 10:58:51

22 columns, 50 and 52. The whole jacking column is 10:59:00

21

1 labeled as 14, I believe. And so there is some 10:59:07
2 telescoping members that are part of that assembly. 10:59:12
3 And that's -- those are the primary members of the 10:59:15
4 jacking column, the telescoping members and inner 10:59:17
5 and outer tube. And a means to extend the -- you 10:59:21
6 know, to actuate the telescoping of those mating 10:59:27
7 members. 10:59:32

8 Q. So that means a hydraulic cylinder? 10:59:33

9 A. Generally, I would say yes. I'm trying 10:59:36
10 to find the labeling, whether they call it a 10:59:46
11 hydraulic cylinder in this -- on this figure. 10:59:48

12 Q. We'll have to look at column 11, line 15 10:59:54
13 -- or 16 or 17. 11:00:21

14 A. Yes, thank you. I'm going back and forth 11:00:23
15 between the figure and the -- 11:00:27

16 Q. No, I understand. And I'll do my best to 11:00:29
17 help you through situations like that, just so we 11:00:32
18 don't waste each other's time. 11:00:34

19 A. Yes, sure. Thank you. 11:00:36

20 Q. Okay. What is the top most component of 11:00:37
21 the jacking column described in the claims of the 11:00:40
22 asserted patents? 11:00:44

22

1 **A. The top most part of the jacking column?** 11:00:46

2 **Q. Yes.** 11:01:10

3 **A. Going back to figure 4, from the picture,** 11:01:14

4 **it looks to me like the outer tube is the top most** 11:01:25

5 **part.** 11:01:31

6 **Q. Okay. What is the bottom most part of** 11:01:32

7 **the jacking column in the four patents at issue in** 11:01:34

8 **these IPRs?** 11:01:37

9 **A. I would say in this picture, figure 4, it** 11:01:39

10 **would be the bottom of the -- bottom of the inner** 11:02:43

11 **telescoping tube.** 11:02:48

12 **Q. The patent claims in the four IPRs issued** 11:02:50

13 **here require a power drive between the jacking** 11:03:01

14 **column and the crawler track, right?** 11:03:03

15 **A. Yes.** 11:03:06

16 **Q. What components make up the power drive?** 11:03:07

17 **And specifically, I'm talking about the power drive** 11:03:22

18 **in the claims.** 11:03:25

19 **A. Yes. Well, in the description, this is** 11:03:26

20 **referred to as a slew or worm gear drive, or other** 11:04:16

21 **rotary actuator.** 11:04:19

22 **Q. So what types of components make up those** 11:04:26

23

1 drives? 11:04:31

2 A. Well, for example, the worm gear has 11:04:31

3 what's called a gear and what's called a worm. And 11:04:41

4 these are -- I mean, sorry, it's just fairly 11:04:43

5 self-labeling. But the worm is a -- is an input to 11:04:46

6 the gear. They have a toothed connection between 11:04:54

7 them and the rotation of the worm drives the 11:04:57

8 rotation of the gear at a slower rate. So it's a 11:05:02

9 high reduction ratio to produce high torque. 11:05:07

10 Q. What's turning the worms? 11:05:10

11 A. Well, it depends on the power source of 11:05:14

12 the drive. If it's a hydraulic -- hydraulically 11:05:19

13 driven, then it would be a hydraulic motor input to 11:05:25

14 the worm. If it's an electric drive, it would be an 11:05:30

15 electric motor input to the worm, and so forth. 11:05:34

16 Q. I'm sorry, go ahead. 11:05:39

17 A. Sorry. The worm -- the worm gear set 11:05:42

18 itself is essentially a transmission, so it requires 11:05:44

19 an input power source to be part of that system. 11:05:47

20 Q. So when the patent claims refer to a 11:05:51

21 power drive, does that include the motor, the gears, 11:05:54

22 and the worms? 11:05:58

24

1 A. I'm looking again in the patent to see if 11:06:00
2 they added any more description. So in the patent 11:06:11
3 description, it talks about -- it says, "the worm 11:06:34
4 gear drive has a ring gear 58 that is driven by a 11:06:37
5 pair of diametrically opposite hydraulically 11:06:41
6 activated helical worm drives 61 carried on a 11:06:44
7 ring-shaped member 63," et cetera. 11:06:49

8 Q. Okay. 11:06:56

9 A. So those are shown as part of that 11:06:58
10 package. 58, 61, and 63 are shown attached to that, 11:07:06
11 that component 60, which is labeled as the rotary 11:07:17
12 actuator. So that -- that assembly is the drive. 11:07:31
13 It includes the -- the gear set, and it includes the 11:07:36
14 hydraulically activated helical worm drive 61, so 11:07:43
15 that includes essentially the power source and the 11:07:48
16 transmission. 11:07:50

17 Q. Okay. So I just want to make sure I'm 11:07:51
18 absolutely clear about this. So when you say the 11:07:56
19 power source, you mean the motor that's rotating the 11:07:58
20 worm? 11:08:05

21 A. I'm talking about the -- what's labeled 11:08:05
22 as the helical worm drive, hydraulically activated 11:08:09

25

1 helical worm drive 61. So that is the -- because 11:08:14
2 it's hydraulically activated, that is -- that 11:08:20
3 hydraulics is the power source. 11:08:23

4 Q. Okay. And where is that located, the 11:08:26
5 hydraulic actuator? 11:08:33

6 A. Well, in the labeling of the patent, it 11:08:35
7 labels the hydraulically activated helical worm 11:08:43
8 drive 61, and that is shown in figure 4 in the space 11:08:47
9 adjacent to -- basically, it's packaged with 60 and 11:08:59
10 other components that are mentioned in that same 11:09:08
11 paragraph, in between the power track below and the 11:09:11
12 jacking column above. 11:09:16

13 Q. Are any of the components in the jacking 11:09:18
14 column part of the power drive? 11:09:23

15 A. No. 11:09:25

16 Q. Are any of the components on the crawler 11:09:29
17 track part of the power drive? 11:09:34

18 A. No. 11:09:37

19 Q. Is a slew drive a type of rotary drive? 11:09:38

20 A. Yes. The word slew is one that's maybe a 11:09:55
21 little bit less common, but I've found definitions 11:10:09
22 that equated it to a worm drive. I think in some 11:10:15

26

1 terminologies, this may not be limiting as to be 11:10:20

2 exactly the same. But, yes, I would call it a slew 11:10:24

3 drive. You said, is a slew drive a rotary drive? 11:10:26

4 Q. A type of rotary drive, yes. 11:10:29

5 A. Yes. Yes. 11:10:31

6 Q. The machines claimed in the four patents 11:10:31

7 at issue have crawler tracks, right? 11:10:38

8 A. Yes. 11:10:42

9 Q. What's a crawler track? 11:10:42

10 A. The crawler track is also shown in figure 11:10:49

11 4. For example, the component labeled 16 points to 11:10:56

12 the track. So this is the assembly that essentially 11:11:05

13 moves the machine along its path. 11:11:12

14 Q. Okay. And can these crawler tracks 11:11:16

15 rotate? 11:11:18

16 A. Well, yes. I mean, the whole point of 11:11:21

17 the crawler track is that there is a rotation that 11:11:29

18 -- you know, you can think of it as a wheel that's 11:11:33

19 been elongated. So there is a rotation that is -- 11:11:36

20 that causes the driving, the forward driving motion. 11:11:39

21 I don't know if you were asking whether it rotates 11:11:43

22 around a vertical axis, or you know -- 11:11:46

27

1 Q. That's exactly why I asked. I just 11:11:50
2 wanted to make sure we are talking about the same 11:11:52
3 principles, we are not talking past each other 11:11:54
4 today. 11:11:56

5 A. Right. 11:11:56

6 Q. So I was going to ask next, does it 11:11:56
7 steer? Does the crawler track steer? 11:12:00

8 A. Yes, in this patent, it certainly does. 11:12:02
9 Yes. 11:12:04

10 Q. Okay. So I think you hit the nail on the 11:12:05
11 head when you said rotation about a vertical axis. 11:12:10
12 That's the rotation I want to talk about today. Is 11:12:15
13 that fair? 11:12:17

14 A. Okay. You're talking about the steering. 11:12:18

15 Q. The steering, yes. And rotating the 11:12:19
16 crawler track around the vertical axis. And not the 11:12:21
17 type of rotation you talked about when it's just 11:12:25
18 trundling around the ground forward, okay? So for 11:12:28
19 this type of rotation about a vertical axis, do any 11:12:31
20 of the patent claims at issue in the IPRs say how 11:12:35
21 far the crawler track must rotate? 11:12:39

22 A. You're talking specifically about the 11:12:42

28

1 language in the claims, correct? 11:12:52

2 Q. Yes. 11:12:54

3 A. Okay. Let me read through the claims 11:12:55

4 briefly. 11:12:57

5 Q. Okay. 11:12:57

6 A. I've just glanced through the claims on 11:15:10

7 only the '749 patent. And in that, those claims, I 11:15:12

8 notice specific mention of rotation angles for the 11:15:21

9 swing leg. I don't notice any specific numbers for 11:15:24

10 a range of motion on the steering. I would want 11:15:31

11 to -- if I wanted to make sure, I would want to read 11:15:34

12 very, very carefully not only those claims, but the 11:15:37

13 other sets of claims as well. 11:15:40

14 Q. Feel free. Feel free to look at the 11:15:43

15 other three patents if you want. 11:15:46

16 A. Okay. I'll do that as quickly as I can. 11:15:52

17 Q. No rush. I want the record to be 11:15:55

18 correct, so -- 11:15:58

19 A. Yes. 11:15:59

20 Q. No problem. 11:15:59

21 A. Okay. In the '020 patent, I don't see 11:18:24

22 any reference to angle numbers -- you know, number 11:18:27

29

1 of degrees, range of motion. Moving on to the next 11:18:31

2 patent. 11:18:35

3 Q. That's for the crawler track, 11:18:35

4 specifically? 11:18:37

5 A. For the crawler track, yes. 11:18:38

6 Q. Okay. 11:18:39

7 A. Okay. Finished reading the claims of the 11:21:42

8 '571 patent. And again, no specific numbers as to 11:21:45

9 the range of motion of the crawler track in that -- 11:21:48

10 around that vertical steering axis. 11:21:53

11 Q. Okay. Thanks. 11:21:55

12 A. Moving to the last patent. 11:21:57

13 Q. So that's the '101, right? 11:21:58

14 A. Yes, '101. 11:22:01

15 Q. Okay. Thank you. 11:22:07

16 A. Okay. I finished reading the claims of 11:25:10

17 the '101 patent. And similarly to the '749 patent, 11:25:13

18 which has specific numbers for the swing arm range 11:25:24

19 of motion orientation, there are numbers in the -- 11:25:30

20 in the '101 patent that describe the swing leg range 11:25:35

21 of motion. 11:25:43

22 Also, there is throughout these patent 11:25:45

30

1 **claims, discussion of kind of implicitly describing** 11:25:46
2 **how the crawler track should be oriented with** 11:25:49
3 **respect to the jacking column or with respect to the** 11:25:52
4 **swing arm, and in terms of maintaining the steering** 11:25:59
5 **direction. So there are implicit descriptions, but** 11:26:05
6 **not explicit descriptions on the steering angle** 11:26:08
7 **range of motion.** 11:26:14

8 Q. So to sum up, no claims in any of the 11:26:15
9 four patents have a requirement saying how far the 11:26:19
10 crawler track must rotate? 11:26:23

11 A. **Not explicitly with numbers, for the** 11:26:25
12 **crawler track.** 11:26:29

13 Q. All right. So there is a lot of -- there 11:26:30
14 are a lot of references in this case. Well, first 11:26:33
15 of all, thank you for going through these claims. 11:26:35
16 I'm sure that wasn't very fun. You have better 11:26:37
17 things to do with your time, but I appreciate it. 11:26:40

18 There are a lot of references in the 11:26:42
19 patents, the prior art, and various filings in this 11:26:44
20 case about the degrees of rotation of the crawler 11:26:47
21 tracks. And in your declaration, you refer to 90 11:26:49
22 degrees of rotation sometimes. I just want to make 11:26:54

31

1 sure we are not talking past each other on this 11:26:57
2 issue. When you refer to 90 degree rotation, are 11:26:59
3 you talking about one-quarter of the way around the 11:27:02
4 clock? 11:27:04

5 **A. Yes.** 11:27:05

6 Q. Okay. So facing straight forward to 11:27:06
7 straight sideways would be 90 degrees of rotation? 11:27:10

8 **A. Yes. I can't define it any differently.** 11:27:15

9 Q. You'd be surprised. Okay. So this next 11:27:17
10 part I'm going to get into is probably going to take 11:27:26
11 a half hour. Do you want to take a quick break? 11:27:29

12 **A. Yes.** 11:27:34

13 Q. 10 minutes sound good, or five? What do 11:27:35
14 you prefer? 11:27:37

15 **A. Five or 10 is fine. I'm just going to** 11:27:38
16 **grab a drink of water.** 11:27:40

17 Q. Sounds good. Let's do 10. I'll see you 11:27:41
18 back here in 10 minutes. 11:27:44

19 **A. Thank you.** 11:27:45

20 **(Recess.)** 11:27:48

21 BY MR. MROZ: 11:40:36

22 Q. Welcome back, Dr. Nelson. A quick 11:40:37

32

1 question before I move on to a different topic. So 11:40:51
2 we talked earlier about the types of machines that 11:40:53
3 you had worked on, designed in your experience as a 11:40:56
4 professor throughout your career. Have you ever 11:41:00
5 designed or developed heavy machinery? 11:41:05

6 **A. Nothing on the same scale as a paver.** 11:41:08
7 **It's much heavier than what I've ever been involved** 11:41:14
8 **in personally.** 11:41:17

9 Q. What's the largest thing you've been 11:41:18
10 involved in personally? 11:41:22

11 **A. I would say probably the several meter** 11:41:24
12 **scale, like rehabilitation equipment, something** 11:41:34
13 **weighing up to a few hundred pounds.** 11:41:39

14 Q. Okay. All right. So as you know, the 11:41:42
15 word "between" is an important word in this case. 11:41:46

16 **A. Yes.** 11:41:49

17 Q. So we mentioned this earlier, but you 11:41:49
18 agree, do you, that all the things at issue in these 11:41:55
19 four IPRs require a power drive between the jacking 11:41:59
20 column and the crawler track? 11:42:03

21 **A. Yes, I believe so. I could look back at** 11:42:04
22 **the claims and search for the word "between," but I** 11:42:10

33

1 -- yes. 11:42:14

2 Q. It's up to you. Do you want to do that 11:42:14

3 or are you confident? 11:42:17

4 A. I mean, I know that in the declarations 11:42:19

5 that I submitted, that statement is in each of them, 11:42:21

6 so I'm comfortable moving forward without looking at 11:42:27

7 the -- those patents again in detail. 11:42:29

8 Q. Okay. All right. So are you 11:42:32

9 interpreting the word "between" such that the 11:42:34

10 entirety of the power drive must be below the bottom 11:42:37

11 of the jacking column and the top of the crawler 11:42:41

12 track, or such that only a portion of the power 11:42:44

13 drive needs to be below the bottom of the jacking 11:42:47

14 column and the top of the crawler track? 11:42:50

15 A. I'm going to refer back to my report 11:42:52

16 here -- declaration here, really fast. 11:43:01

17 Q. Sure. 11:43:04

18 A. So I think there are two statements in 11:45:24

19 the -- in my declaration that are relevant, that I 11:45:28

20 should point you to, to answer that question. In 11:45:31

21 the declaration we marked as Exhibit 5, in paragraph 11:45:37

22 34, it says that -- well, I'm referring here to the 11:45:41

34

1 Board's interpretation of "between," and it says, 11:45:53
2 "first, the term means a power drive physically 11:45:58
3 between the jacking column and the crawler track, 11:46:00
4 because that is the plain and ordinary meaning of 11:46:04
5 the term in light of the specification. The '749 11:46:06
6 patent specification explains that the claimed power 11:46:10
7 drive or otherwise referred to herein as the slew 11:46:13
8 gear drive, 60, is physically located between the 11:46:14
9 jacking column and the crawler track." 11:46:16

10 So that's a partial answer to your 11:46:18
11 question. And then if we go up in the same document 11:46:21
12 just a bit, we find connect to the other place. In 11:46:29
13 paragraph 31, it says, "the hydraulic motor drive 11:46:39
14 rotary actuator slew gear is the power drive found 11:46:44
15 between the crawler track and jacking column." Does 11:46:48
16 that answer your question? 11:46:56

17 Q. Not really. I want to know if it has to 11:46:58
18 be entirely between, such that -- 11:47:02

19 A. Do you mean -- all right. Go ahead. 11:47:07

20 Q. Okay. So, yeah, I want to know if your 11:47:10
21 position is that the power drive has to be entirely 11:47:13
22 between -- or let me say it this way. Is it your 11:47:16

35

1 position that the power drive has to be below the 11:47:21
2 bottom of the jacking column? Strike that. Let me 11:47:26
3 ask it this way. Sorry. 11:47:30

4 So is it your interpretation that 11:47:32
5 between, this term means that the entirety of the 11:47:36
6 power drive must be below the bottom of the jacking 11:47:38
7 column and the top of the crawler track, or that 11:47:41
8 only a portion of the power drive needs to be below 11:47:45
9 the bottom of the jacking column and the top of the 11:47:48
10 crawler track? 11:47:50

11 MR. PRICE: Objection, form. 11:47:54

12 THE WITNESS: I would say that the 11:47:57
13 entirety of the power drive should be in between, in 11:48:00
14 other words, below the jacking column and above the 11:48:05
15 crawler track. 11:48:09

16 BY MR. MROZ: 10:34:17

17 Q. Okay. So it follows, then, that your 11:48:10
18 position is that if any part of the power drive 11:48:15
19 that's positioned at least partially below the 11:48:21
20 jacking column and above the crawler track pierces 11:48:24
21 the plane up into the jacking column, it's no longer 11:48:27
22 between the jacking column and the crawler track any 11:48:31

36

1 more? 11:48:33

2 MR. PRICE: Objection, form. 11:48:34

3 THE WITNESS: I mean, it sounds like 11:48:42

4 splitting hairs, but I guess that's -- part of what 11:48:44

5 we are here for, right, is splitting hairs. Well, I 11:48:47

6 can give you an example of what I think would not 11:48:55

7 qualify as "between." 11:48:59

8 BY MR. MROZ: 10:34:17

9 Q. Sure. 11:49:00

10 A. A substantial portion of the -- of the 11:49:01

11 drive was housed within the -- within the jacking 11:49:04

12 column rather than underneath it. 11:49:09

13 Q. In your example, is there still some 11:49:11

14 portion of the power drive housed underneath, or 11:49:15

15 below the jacking column? 11:49:17

16 A. I guess it's hard to do without a 11:49:20

17 diagram, right? But you're asking me if any part of 11:49:27

18 the -- on the power drive is above the plane that 11:49:33

19 separates the jacking column and the power drive. I 11:49:37

20 mean, I think that is actually -- there is kind of a 11:49:40

21 -- okay, I can phrase this better. 11:49:48

22 So you're asking if any of the -- any 11:49:51

37

1 parts of the power drive are above the plane of the 11:49:53
2 bottom of the jacking column, does that qualify as 11:49:57
3 between the jacking column and the -- and the 11:50:02
4 crawler track? 11:50:08

5 Q. Yes. Assuming also that there are parts 11:50:09
6 of the power drive completely below the bottom part 11:50:12
7 of the jacking column. 11:50:16

8 A. Yeah. I mean, I'll just go back to the 11:50:18
9 language of my report, and just say that the -- the 11:50:19
10 hydraulic motor drive rotary actuator or slew gear 11:50:24
11 which is the example from the patent is -- is found 11:50:28
12 between the crawler track and jacking column. And 11:50:34
13 that -- you know, whether, for example, some portion 11:50:40
14 of, like, the actual driving unit, the hydraulics 11:50:44
15 may be -- if it's outside of the jacking column, for 11:50:52
16 example, but maybe comes up, has some kind of a 11:50:55
17 protrusion, but attaches essentially to the bulk of 11:50:59
18 the power drive, I wouldn't split hairs on that and 11:51:05
19 say that it's not between. 11:51:08

20 You know, the -- where I draw the line is 11:51:12
21 there is -- there is physical connection, right, 11:51:18
22 between the jacking column and the drive below. If 11:51:21

38

1 the -- if the components of the driver are not up 11:51:24
2 inside the jacking column, but rather below, then 11:51:28
3 it's between. 11:51:32

4 Q. Okay. So in example 1, where I have a 11:51:37
5 power drive with two components of that power drive 11:51:42
6 below the bottom of the jacking column, but a 11:51:47
7 portion of that power drive goes up into the jacking 11:51:50
8 column, and my understanding is that your position 11:51:54
9 is that that would not be between. Is that correct? 11:51:57

10 A. Assuming that the -- assuming that the 11:52:02
11 power drive itself has a flat surface. I mean, we 11:52:15
12 were talking about planes. This is an idealization, 11:52:19
13 right, of the geometries, so we can ideally say that 11:52:23
14 there is a plane that slices between the jacking 11:52:27
15 column and the power drive, but that may not always 11:52:33
16 be literally the case, right? 11:52:36

17 There may be rounded surfaces instead of 11:52:38
18 plane or flat surfaces, so I hesitate to say that 11:52:41
19 you can slice a plane and use that term arbitrarily 11:52:44
20 to define exactly what's above and what's between. 11:52:47

21 Q. Okay. So you agree, though, that if I 11:52:51
22 have a slew drive with large worms, and that those 11:53:04

39

1 worms protrude up above the plane of the bottom of 11:53:11

2 the jacking column, that would be between? 11:53:15

3 A. I would say it might depend how it 11:53:18

4 protrudes. Let me try to give you -- let me go back 11:53:24

5 into the '749 patent and the pictures, and see if I 11:53:28

6 can create a better description. Since we already 11:53:32

7 looked at figure 4, and come back towards figure 4 11:53:43

8 to see if there is -- 11:53:46

9 Q. Sure. 11:53:50

10 A. So for example, you've got the component 11:54:47

11 labeled 16, the slew gear drive rotary actuator, and 11:54:53

12 you have the hydraulically activated helical worm 11:54:58

13 drive 61 in figure 4. 11:55:02

14 Q. Yes, I'm with you. 11:55:05

15 A. Okay. So for example, in 61, you see how 11:55:07

16 61 is not kind of regular in shape? It looks like 11:55:13

17 it has kind of a rectangular shape with the part 11:55:16

18 sticking to the left? 11:55:21

19 Q. Yes. 11:55:22

20 A. Okay. So imagining -- I mean, it's 11:55:22

21 substantially mounted with 60 and kind of showing to 11:55:25

22 the side in this picture. If part of that protruded 11:55:30

40

1 upwards past the plane of the jacking column, I 11:55:36
2 would not exclude that from being between, since 11:55:39
3 it's substantially -- it sits potentially with -- 11:55:42
4 you know, in between -- underneath the plane of the 11:55:50
5 jacking column. 11:55:53

6 So again, I don't think that there is -- 11:55:54
7 that I'm, you know, qualified to say what the word 11:56:00
8 "between" means. It's, you know, again, back to a 11:56:04
9 legal definition. But in my opinion of judging how 11:56:07
10 these machines are configured, and the system of 11:56:12
11 components are packaged, I would say I'm looking at 11:56:17
12 the overall package of what that drive is, and that 11:56:20
13 it's connected, that there is a connection between 11:56:24
14 that joins that to the jacking column. 11:56:28

15 And there is a -- there is a surface 11:56:32
16 essentially in between the -- the power drive and 11:56:34
17 the jacking column, power drive below and jacking 11:56:43
18 column above, which is more or less, you know, 11:56:45
19 defined by a plane, but not -- it doesn't have to be 11:56:50
20 exactly defined by a plane. 11:56:53

21 Q. Understood. Now, what if instead of the 11:56:55
22 worms or where 61 was, I put a rotary drive, I 11:57:00

41

1 attach it to 60, but I put it up inside of the 11:57:05
2 recess of the jacking column and rotated the track 11:57:09
3 that way. Would that drive, which would include 60, 11:57:12
4 plus the rotation device and motor above what's in 11:57:17
5 the jacking column, would be between the jacking 11:57:24
6 column and the crawler track? 11:57:27

7 **A. Essentially, you're saying there is a 11:57:39**
8 **part of -- a part of the power drive that protrudes 11:57:41**
9 **up into the jacking column, but there is also a 11:57:44**
10 **large portion of it that's below. Is that your 11:57:48**
11 **question? 11:57:51**

12 **Q. Correct. And in the situation, we have 11:57:52**
13 **part of the rotary drive below the jacking column, 11:57:55**
14 **but part of it goes up into the recess of the 11:58:00**
15 **jacking column. Is that between the jacking column 11:58:03**
16 **and the crawler track? 11:58:06**

17 **A. I would say probably because the mount -- 11:58:07**
18 **the connection between the jacking column and the 11:58:17**
19 **power drive is, you know, with the -- the main part 11:58:21**
20 **of the power drive below. And if there is space 11:58:27**
21 **that's -- that can be utilized, you know, I think 11:58:31**
22 **it's up to the designer to efficiently package the 11:58:36**

1 power drive and determine what shape it is. 11:58:40

8 MR. PRICE: Objection to form. Objection 11:59:23
9 to form. 11:59:26

13 BY MR. MROZ: 11:59:51

A. Go ahead. 11:59:56

22 Would that be a design where the rotary drive is 12:00:12

43

1 between the jacking column and the crawler track? 12:00:15

2 A. So in my declaration, Exhibit 5, 12:00:18

3 paragraph 40, I'll just read you part of this. It 12:00:21

4 says, "the Board should reject GOMACO's 12:00:24

5 interpretation of the term, i.e. that the relative 12:00:27

6 rotational movement limitation is met when the 12:00:31

7 crawler track rotates in unison with some components 12:00:32

8 of the jacking column, but relative to other 12:00:35

9 components that do not rotate because they are 12:00:36

10 fixed, for example, the outer cylinder." 12:00:38

11 Because it rewrites the plain language of 12:00:40

12 the claims, in particular, GOMACO would have the 12:00:43

13 Board rewrite the claim language to say a rotary 12:00:46

14 connection between a portion of the jacking column 12:00:49

15 and the crawler track, permitting relative 12:00:53

16 rotational movements of the crawler track and the 12:00:55

17 portion of the tracking column about a first upright 12:00:55

18 axis. 12:00:58

19 So it sounds to me what you described in 12:01:00

20 this question is this case, that the portion of the 12:01:02

21 jacking column would be rotating with the crawler 12:01:04

22 track, and therefore, it does not meet the 12:01:07

44

1 **limitation.** 12:01:11

2 Q. This is the limitation of between that's 12:01:13
3 in all four asserted patents? 12:01:15

4 A. **Right. This scenario that you've** 12:01:19
5 **described is the scenario that -- where a portion of** 12:01:22
6 **the jacking column and the crawler track is rotating** 12:01:29
7 **together. This would be -- this would not be** 12:01:34
8 **between the jacking column and the crawler track.** 12:01:38

9 Q. Okay. So is it fair to say that any time 12:01:42
10 the lower -- any time -- any time a portion of the 12:01:46
11 jacking column rotates with the crawler track, that 12:01:49
12 cannot be a situation, in your view, that is -- 12:01:52
13 where the rotary drive is between the jacking column 12:01:57
14 and the crawler track? 12:02:02

15 A. **I believe that's what I said in this** 12:02:03
16 **paragraph 40, yes.** 12:02:06

17 Q. Understood. Okay. What if I have a 12:02:08
18 power drive that is entirely below the bottom of the 12:02:17
19 jacking column and the top of the crawler track, but 12:02:19
20 there is also another component that is not a power 12:02:23
21 drive above the power drive that is also between the 12:02:28
22 bottom of the jacking column and the top of the 12:02:32

45

1 crawler track. Is the power drive between the 12:02:35
2 jacking column and the crawler track for purposes of 12:02:38
3 the claims in the four patents? 12:02:42

4 **A. Can you repeat that, and maybe clarify 12:02:43**
5 **what component you're referring to? 12:02:47**

6 Q. Sure. It can be any component. Just a 12:02:48
7 non-rotary drive component. So I have a situation 12:02:51
8 where I just have two things that are between the 12:02:54
9 jacking column and the crawler track, one of which 12:02:58
10 is the rotary drive. So I'll just restate my 12:03:02
11 hypothetical with that in mind. 12:03:06

12 **A. Okay. 12:03:08**

13 Q. So if I have a power drive that is 12:03:08
14 entirely below the jacking column and the top of the 12:03:10
15 crawler track, but there is also another component 12:03:13
16 that is not a power drive that is also between the 12:03:15
17 bottom of the jacking column and the top of the 12:03:19
18 crawler track, is that covered by the four -- by the 12:03:21
19 claims of the patents, and specifically the "between 12:03:25
20 the jacking column and crawler track" limitation? 12:03:29

21 **A. Well, if you have components that aren't 12:03:32**
22 **the power drive, then I mean, just -- I'm just 12:03:38**

46

1 **thinking logic here, and what the claim limitation** 12:03:42
2 **is, which states that it's -- that the power drive** 12:03:45
3 **is between the jacking column and the crawler track.** 12:03:48
4 **The presence or absence of other components that are** 12:03:53
5 **not the power drive doesn't seem to have any bearing** 12:03:56
6 **to me on whether that is limiting.** 12:04:00

7 Q. Okay. What if I used extension 12:04:02
8 components to fix the top of a power drive to the 12:04:11
9 machine frame or an upper leg to -- from the jacking 12:04:16
10 column. And I position the power drive below the 12:04:20
11 jacking column, such that there is space between the 12:04:22
12 top of the power drive and the bottom of the jacking 12:04:25
13 column, but it's connected, the power drive is 12:04:28
14 connected to the crawler track. Is this design one 12:04:30
15 where the rotary drive is between the jacking column 12:04:34
16 and the crawler track? 12:04:37

17 A. You're starting to get into scenarios 12:04:38
18 that I would want to study in depth before providing 12:04:43
19 an opinion on, where I would want to see a diagram 12:04:46
20 and study carefully as to what components are what 12:04:49
21 and what goes where. You know, we can go through a 12:04:51
22 hundred hypotheticals. I don't know if I would 12:04:57

47

1 really add to what I've been able to say so far. 12:04:59

2 Q. Okay. Understood. Can there -- let me 12:05:02

3 ask it this way. Can there be space between the 12:05:05

4 power drive and the bottom of the jacking column to 12:05:11

5 satisfy -- and still satisfy the "between the 12:05:19

6 jacking column and crawler track" limitation? 12:05:21

7 MR. PRICE: Objection, vague. 12:05:27

8 THE WITNESS: I mean, what do you mean by 12:05:31

9 space? Like space with nothing there or space with 12:05:34

10 other things there? 12:05:37

11 BY MR. MROZ: 12:05:40

12 Q. Good point. So let's think of just like 12:05:40

13 a sandwich. 12:05:46

14 A. Yes. 12:05:47

15 Q. Where you have a -- the bottom of the 12:05:47

16 crawler track, and you have the rotary drive or the 12:05:50

17 power drive attached to that, and then you have the 12:05:55

18 crawler track apparatus below that. There is 12:05:57

19 physical connection between the crawler -- between 12:06:00

20 the jacking column, the power drive, and the crawler 12:06:05

21 track. 12:06:09

22 A. Okay. 12:06:09

48

1 Q. What if I eliminate the physical 12:06:10
2 connection between the jacking column and the power 12:06:12
3 drive? I only have a physical connection between 12:06:16
4 the power drive and the crawler track. Is that 12:06:19
5 design covered by the "between the jacking column 12:06:22
6 and crawler track" limitation? 12:06:23

7 A. Well, I'm not a lawyer. 12:06:26

8 MR. PRICE: Object to form. 12:06:30

9 THE WITNESS: So I -- I don't want to 12:06:32
10 come across as an authority on the meaning of the 12:06:36
11 words, but you know, in the -- I would say a 12:06:40
12 sandwich -- you know, in a sandwich analogy, if you 12:06:48
13 have cheese and meat in your sandwich, let's say you 12:06:52
14 have cheese and meat and cheese in between the two 12:06:59
15 breads. The meat is between the breads and the 12:07:02
16 cheese is also between the breads. You know, but 12:07:06
17 again, I don't want to opine too heavily on a 12:07:13
18 non-technical kind of word. 12:07:16

19 BY MR. MROZ: 10:34:17

20 Q. Okay. Well, I guess I just -- I guess, 12:07:21
21 why don't you want to opine? Are you talking about 12:07:26
22 the word "between"? 12:07:28

49

1 A. Well, just overall. It sounds like 12:07:29
2 you're asking me whether there has to be a physical 12:07:36
3 connection between the jacking column and the power 12:07:38
4 drive. 12:07:44

5 Q. Correct. And what's your answer to that? 12:07:45

6 A. Let me look back in my declaration really 12:07:46
7 fast, and see if I can find a place where I 12:07:55
8 described that as well as I would like. 12:07:58

9 Q. Okay. Sure. 12:08:00

10 A. So I'll direct you to a part of my 12:11:05
11 declaration that I think maybe addresses this. So 12:11:08
12 in paragraph 39, it talks about a rotary connection. 12:11:13
13 "A rotary connection between the jacking column and 12:11:21
14 the crawler track permitting relative rotational 12:11:23
15 movements of the crawler track." 12:11:27

16 And this has to do with the idea that 12:11:31
17 there is relative motion in between the jacking 12:11:34
18 column and the crawler track that's, you know, 12:11:40
19 controlled in some sense by the actuator, the power 12:11:44
20 drive. 12:11:48

21 As part of that power drive assembly or 12:11:49
22 in that space between, let's say, the jacking column 12:11:52

50

1 and crawler track, there may be components like 12:11:58
2 bearings, for example, that are part of that rotary 12:12:01
3 connection that enable that to happen, and that 12:12:03
4 enable the transfer of forces between the various 12:12:06
5 components. 12:12:09

6 So I mean, you can parse out what's part 12:12:12
7 of the power drive and what's not part of the power 12:12:15
8 drive, but all of that essential functionality has 12:12:18
9 to be in between -- physically in between the 12:12:22
10 tracking column and the crawler track, so I don't 12:12:30
11 know if that helps clarify what I mean. 12:12:32

12 Q. I think, yes, it does. Thank you. It 12:12:36
13 does. Okay. All right. Can you please take out 12:12:38
14 the '020 patent or pull it up? The '020 patent? 12:12:45

15 A. Which is? 12:12:50

16 Q. Which is Exhibit 10. 12:12:51

17 A. Thanks. Okay, I have it open. 12:12:53

18 Q. Okay. And these patents talk in places 12:12:58
19 about -- you mentioned this earlier, Dr. Nelson, 12:13:07
20 where you pivot the swing arm or swing leg while -- 12:13:10
21 sorry, one second. So strike that. 12:13:23

22 This patent, all four patents, correct me 12:13:29

51

1 if I'm wrong, describe a design, in some situations, 12:13:34
2 where as the swing leg pivots, the crawler track can 12:13:39
3 rotate, correct? 12:13:42

4 **A. Yes.** 12:13:44

5 Q. And the patent talks -- well, different 12:13:45
6 ways to do this, correct? Might be easiest. Let's 12:13:55
7 go to column 6 of the '020 patent, paragraph 44. Or 12:14:06
8 sorry, line 44. 12:14:13

9 **A. Line 44. Crawler track positions.** 12:14:14

10 Q. Yes. Can you please read that paragraph 12:14:17
11 and let me know -- you don't have to read it out 12:14:19
12 loud. And just let me know when you're finished. 12:14:21

13 **A. Okay. Okay.** 12:14:25

14 Q. Okay. So this paragraph is in the brief 12:14:56
15 summary of the invention section, correct? 12:15:08

16 **A. Yes.** 12:15:10

17 Q. Just to get our bearings. And what does 12:15:10
18 it describe? And for the record, this is the 12:15:13
19 paragraph in column 6 of the '020 patent beginning 12:15:17
20 line 44 and ending at line 56. 12:15:23

21 **A. Yes. So it starts with, "thus, the 12:15:26
22 crawler track positions can be relocated." 12:15:28**

52

1 Q. Yes. 12:15:31

2 A. So this paragraph is talking about how 12:15:32

3 the crawler tracks can be maintained in their 12:15:37

4 steering position, you know, referred to in here as 12:15:42

5 a straight ahead normal operating orientation, as 12:15:45

6 well as the second method of adjustment, which I 12:15:50

7 think is what you were referring to, where the 12:15:57

8 weight of the machine is supported off the ground. 12:16:01

9 And then the crawler tracks are lifted one at a time 12:16:04

10 off the ground, using the swing leg hydraulic 12:16:09

11 cylinder working in conjunction with the power drive 12:16:17

12 or steering cylinder between the jacking column and 12:16:19

13 the crawler track from moving the crawler track from 12:16:21

14 the position. 12:16:26

15 So you have one case in which the 12:16:26

16 adjustment is done on the fly -- well, the weight of 12:16:27

17 the machine is being borne by the -- through the 12:16:30

18 crawler tracks to the ground. And then a separate 12:16:33

19 mode in which the tracks are lifted. 12:16:37

20 Q. So we have one mode where, when the swing 12:16:41

21 arm or swing leg is pivoting -- strike that. 12:16:49

22 So we have one mode where when the swing 12:16:53

53

1 leg is pivoting and the crawler track is rotating 12:16:56
2 during that pivoting, the crawler tracks are rolling 12:17:01
3 along the ground. Is that correct? 12:17:05

4 A. Yes. 12:17:08

5 Q. And we have another mode described in 12:17:08
6 here where when the swing leg is pivoting, then the 12:17:10
7 crawler tracks are rotating during that pivoting. 12:17:14
8 The swing leg and crawler track apparatus is 12:17:18
9 suspended in the air, is that correct? 12:17:21

10 MR. PRICE: Objection. 12:17:25

11 THE WITNESS: So -- sorry, the weight of 12:17:29
12 the load transferred, typically transferred through 12:17:36
13 the crawler track and swing leg would be removed 12:17:39
14 during that second mode, if I'm understanding your 12:17:44
15 question correctly. 12:17:47

16 BY MR. MROZ: 12:17:48

17 Q. Yes. I'm asking -- I mean, we have one 12:17:48
18 mode where the crawler track is rolling around the 12:17:53
19 ground. That's what we just talked about? 12:17:56

20 A. Yes. 12:17:58

21 Q. And my question is, for the second mode 12:17:58
22 here, the one at a time mode, when -- when we are 12:18:00

54

1 doing this pivoting and simultaneous rotation of the 12:18:04
2 crawler track, is the crawler track in the air, 12:18:08
3 jacked up in the air whenever that's going on? 12:18:11

4 **A. Yes, the patent says that the machine is 12:18:16**
5 **stationery by supporting the weight of the machine 12:18:21**
6 **off the ground and each -- sorry, each crawler track 12:18:25**
7 **is hydraulically lifted one at a time off the 12:18:31**
8 **ground. So, yes, it is off the ground. 12:18:34**

9 Q. So that's all I'm trying to -- just to 12:18:35
10 see if we can agree that there is one mode where the 12:18:37
11 crawler track is on the ground during this process, 12:18:39
12 and one mode where the crawler track is suspended in 12:18:43
13 the air during this process. 12:18:47

14 **A. Yes. 12:18:48**

15 Q. So do you know if the claims at issue in 12:18:49
16 the four IPRs require the crawler tracks to be on 12:18:55
17 the ground or in the air during this pivoting of 12:19:02
18 simultaneous rotation process? 12:19:08

19 **A. I would have to look back at the claims 12:19:11**
20 **to see if that's specifically mentioned. Would you 12:19:14**
21 **like me to do that? 12:19:18**

22 Q. Yes, if you don't mind. 12:19:20

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1 A. Okay. I'll start with -- I guess which 12:19:22

2 one were we in? 12:19:25

3 Q. We are in '020. The '020. This should 12:19:28

4 be the last time we have to go through all the 12:20:07

5 claims like this, just so you know. I'm not trying 12:20:11

6 to torture you. 12:20:13

7 A. Okay. Thank you. So I've read through 12:20:15

8 the claims of the '020 patent. And didn't see 12:23:21

9 anything specifically saying whether the crawler 12:23:28

10 track had to be touching the ground or whether it 12:23:38

11 had to be elevated. There is an implication -- 12:23:41

12 there was kind of an implied message in the claims 12:23:45

13 because it talks about maintaining a travel 12:23:51

14 direction. And so if the -- if the machine is not 12:23:55

15 traveling and if the weight is being supported 12:23:57

16 stationary, then there isn't the travel direction. 12:24:01

17 So there is at least implication of the 12:24:05

18 first mode that we discussed earlier where the -- 12:24:08

19 where the crawler tracks are touching the ground. 12:24:10

20 I'm going to go next to the '749, and see if it's 12:24:14

21 any different. 12:24:20

22 Q. So is it your position that for the 12:24:20

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1 second mode in the air that the crawler track is not 12:24:46
2 pivoting as the swing leg -- or the crawler track is 12:24:49
3 not rotating at the swing leg pivots? 12:24:55

4 A. Well, so far I haven't seen any 12:24:57
5 constraint, one way or the other. 12:25:00

6 Q. Okay. 12:25:01

7 A. Just based on, you know, what I 12:25:02
8 understand about the claims, and the way that the 12:25:04
9 embodied machine works, those motions that, you 12:25:06
10 know -- kind of switch back to the Zoom, so I can 12:25:11
11 see you. 12:25:15

12 You know, if the swing leg is moving, and 12:25:16
13 while the -- while the machine is unloaded, where 12:25:20
14 the crawler track is off the ground, if your goal is 12:25:23
15 to put the swing leg into a particular position like 12:25:27
16 for transport or for operation, and to align the 12:25:31
17 crawler track in a certain direction, I didn't see 12:25:37
18 anything so far in the reading of the claims that 12:25:42
19 describes whether that has to be done sequentially 12:25:45
20 or that has to be done concurrently. 12:25:48

21 And just kind of logically, you know, I 12:25:50
22 don't see why there would be much difference in 12:25:59

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1 terms of the outcome if the -- while the crawler 12:26:04
2 track is off the ground. It's much different when 12:26:07
3 the crawler track is on the ground. 12:26:09

4 Q. Gotcha. 12:26:11

5 A. Okay. Let me go back to the '749 really 12:26:12
6 fast if that's all right. 12:26:15

7 Q. Sure. 12:26:17

8 A. Okay. I finished the claims of the '749 12:29:37
9 patent, and likewise did not see anything that 12:29:41
10 specifically says that the crawler track has to be 12:29:45
11 on or off the ground, except that there is implicit 12:29:51
12 functionality described in these claims that has to 12:29:54
13 do with the steering. 12:29:57

14 Q. Okay. So that just leaves the '571 and 12:30:00
15 the '101, right? 12:30:04

16 A. Yes. Going to the '571 right now. 12:30:05

17 Q. Thank you. 12:30:08

18 A. Nothing particularly new in the '571 12:34:50
19 patent claims related to this question of on the 12:34:52
20 ground versus off the ground. 12:34:55

21 Going to the last one, the '101. 12:34:58

22 Q. Okay. Thank you. 12:35:00

58

1 MR. PRICE: Dr. Nelson, did you have more 12:35:07

2 to say? 12:35:09

3 THE WITNESS: Sorry? 12:35:11

4 MR. PRICE: Did have you more to say or 12:35:13

5 did you get cut off? 12:35:14

6 THE WITNESS: I'm going to the '101 12:35:16

7 patent to read those claims finally. And then I 12:35:19

8 will -- I think have addressed all the questions. 12:35:21

9 Okay. I finished reading the claims of '101, and 12:40:12

10 likewise didn't see anything that specifically 12:40:15

11 talked about it being off the ground. 12:40:18

12 BY MR. MROZ: 12:40:20

13 Q. Okay. 12:40:20

14 A. **Hopefully I've answered your questions.** 12:40:22

15 Q. I think you have. So just to confirm or 12:40:24

16 summarize, no limitation -- there is no limitation 12:40:28

17 in the patent claims at issue in the four IPRs that 12:40:33

18 says the crawler tracks have to be on the ground or 12:40:36

19 in the air while the plane pivoting and steering 12:40:38

20 processes are performed? 12:40:41

21 A. **Nothing explicit. There is the mention** 12:40:43

22 **of the steering direction which implies that the** 12:40:46

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1 **tracks are on the ground while the machine is** 12:40:48
2 **moving, but there is not a specific description of** 12:40:51
3 **on the ground, off the ground in that language.** 12:40:55

4 Q. Gotcha. Okay. So I guess it's 11:40 12:40:58
5 your time. We can take a break. I don't know what 12:41:05
6 you want to do with lunch, or I can keep going. 12:41:08
7 It's up to you guys. Really up to you, Dr. Nelson. 12:41:10
8 I just want to make sure you're comfortable. Do you 12:41:14
9 want to take a quick break? Do you want to go to 12:41:16
10 lunch or do you want me to keep going? 12:41:18

11 A. Well, it depends on how much more do you 12:41:21
12 **have for me, roughly?** 12:41:23

13 Q. It depends. Probably a couple hours 12:41:25
14 maybe. 12:41:30

15 A. Okay. I'm okay with a lunch break, a 12:41:31
16 **brief lunch break.** 12:41:34

17 Q. How long do you -- what do you want to 12:41:35
18 do, half hour, hour? I can do whatever. 12:41:39

19 A. Half-hour is plenty. 12:41:41

20 Q. All right. Perfect. So I'll see you 12:41:42
21 back 1:10 my time, and 12:10 your time. 12:41:47

22 A. Okay. 12:41:53

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1 MR. MROZ: Sound good, Jeff? 12:41:55

2 MR. PRICE: Sounds great to me. 12:41:57

3 MR. MROZ: Thanks, everyone. 12:41:59

4 (Whereupon, at 12:41 p.m., the deposition

5 in the above-entitled matter was

6 recessed, to reconvene at 1:10 p.m.)

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1 AFTERNOON SESSION

2 (1:16 p.m.)

3 Whereupon,

4 CARL A NELSON, Ph.D.,
5 the witness on the stand at the time of recess,
6 having been previously duly sworn, was further
7 examined and testified as follows:

8 CROSS-EXAMINATION (RESUMED)

9 BY MR. MROZ: 13:16:32

10 Q. Welcome back, Dr. Nelson. I put another 13:16:32
11 document in your share drive folder. It's Exhibit 13:16:39
12 13. 13:16:43

13 A. Okay. 13:16:44

14 Q. It should be the Rio reference. 13:16:44
15 (Exhibit No. 13 was referred to.) 13:16:51

16 THE WITNESS: It's making me log back in. 13:16:51
17 Give me a second. 13:16:53

18 BY MR. MROZ: 13:16:55

19 Q. Yes, I had to do the same thing. 13:16:55

20 A. Okay. I have it up. 13:17:31

21 Q. Okay, great. So do you agree that 13:17:33
22 Exhibit 13 is the Rio prior art reference? 13:17:35

1	A.	Yes.	13:17:38
2	Q.	This is the one you addressed in your	13:17:40
3		declaration?	13:17:43
4	A.	Yes.	13:17:44
5	Q.	Okay. Can you please read paragraph 4,	13:17:44
6		lines 25 through 30 of Rio.	13:17:55
7	A.	Column 4?	13:18:02
8	Q.	Yes, lines 25 through 30.	13:18:02
9	A.	Okay. Starting with "steering the rear	13:18:05
10		ground"?	13:18:08
11	Q.	Yes. You can just read it to yourself.	13:18:08
12	A.	Okay. Okay.	13:18:11
13	Q.	The reason I wanted you to read that is	13:19:01
14		just so we can get the terminology straight. So you	13:19:04
15		see how it refers to a retracted and a projecting	13:19:08
16		position?	13:19:12
17	A.	Yes.	13:19:12
18	Q.	Do you know what Rio means when it refers	13:19:16
19		to a projecting or retracted position?	13:19:19
20	A.	I'd like to look at one of the figures	13:19:22
21		here, and see if they -- are you referring to one of	13:19:28
22		the figures in this section?	13:19:32

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1 Q. Sure. In this part, they don't, but you 13:19:33
2 can look at figures 3 and 4, and that might make it 13:19:35
3 easier. And specifically, with the specification, 13:19:39
4 if you look at lines 38 through 50, it links figure 13:19:48
5 4 and figure 3 to those two positions. So if you 13:19:59
6 don't mind taking a look at that, I'll ask my 13:20:02
7 questions again. 13:20:05

8 A. Okay. Tell me those lines again, please? 13:20:05

9 Q. Sure. So it's exactly the paragraph 13:20:08
10 right below the one you read. 13:20:09

11 A. Okay. 13:20:11

12 Q. So it's lines -- it's column 4, lines 38 13:20:12
13 through 50. 13:20:14

14 A. Okay. I've had a look at figures 3 and 13:23:04
15 4, and read the text. 13:23:07

16 Q. Okay. Can you describe to me what Rio 13:23:08
17 means when it describes its retracted position? 13:23:11

18 A. Well, it looks like the -- in the 13:23:14
19 figures, it looks like the retracted position is 13:23:21
20 when the crawler track is -- I guess ground engaging 13:23:23
21 unit in this terminology. 13:23:33

22 Q. We can call it a crawler track if you 13:23:34

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1 want. 13:23:36

2 A. Okay. It's brought in closer to the body 13:23:36

3 of the machine. 13:23:39

4 Q. What's the projecting position? 13:23:41

5 A. It looks like figure 4 shows the ground 13:23:45

6 engaging unit kind of outside the footprint, out 13:23:53

7 away from the body of -- the main body of the 13:23:57

8 machine, which I'm assuming is 12. I didn't check 13:23:59

9 that, but -- 13:24:02

10 Q. Okay. And does the swing leg in Rio 13:24:03

11 pivot between the projecting and the retracted 13:24:09

12 positions? I can direct you to column 8, lines 18 13:24:14

13 through 59. I'm sorry, what was that? 13:24:43

14 A. What line again? 13:24:47

15 Q. Column 8, lines 18 through 59 might help. 13:24:48

16 A. Okay. Yes, it looks like they mentioned 13:24:54

17 specifically a pivot sensor of this tracking motion 13:25:25

18 of the swing arm. And I think that was your 13:25:34

19 question, right, does the swing arm pivot? 13:25:37

20 Q. Does it pivot between the retracting and 13:25:40

21 the projecting positions? 13:25:42

22 A. Yes, it does appear to. 13:25:43

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1 Q. Okay. I'm just trying to make sure we 13:25:48

2 are on the same page about everything the Rio does. 13:25:50

3 A. Yes. 13:25:53

4 Q. Okay. So I'm going to ask you some 13:25:54

5 questions about the subject matter in -- well, 13:25:56

6 really, all of Rio, but specifically that column 8, 13:25:58

7 lines 18 through 59. So do you mind giving that a 13:26:01

8 close read? It will make it easier to do the next 13:26:05

9 set of questions. 13:26:09

10 A. Sure. 18 through 59? 13:26:09

11 Q. Yes, in column 8. 13:26:12

12 A. Yes. Okay. I've read that section. 13:26:14

13 Q. Okay. Thank you. So do you agree that 13:29:33

14 in Rio, during the pivoting process of the swing 13:29:35

15 leg, the crawler track can be counter rotated, such 13:29:41

16 that it remains parallel to the machine frame at all 13:29:44

17 points of the pivot arc? 13:29:47

18 A. Yes, that's what's described in this 13:29:49

19 text. 13:29:51

20 Q. Do you agree that the operator of a Rio 13:29:51

21 machine can initiate the pivoting process by 13:29:56

22 flipping a switch? 13:29:59

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1 **A. Is it does mention operator controlled** 13:30:01

2 **switches. Or locking devices.** 13:30:15

3 **Q. Can you take a look at column 8, lines 18** 13:30:23

4 **through 21.** 13:30:26

5 **A. Just the pivot switch. Yes. I see what** 13:30:33

6 **you're saying.** 13:30:41

7 **Q. Okay. So you agree that the operator can** 13:30:42

8 **initiate the pivoting process for the swing leg by** 13:30:44

9 **flipping a switch?** 13:30:47

10 **A. Yes.** 13:30:49

11 **Q. Okay. Do you agree that after that** 13:30:49

12 **switch is flipped, the pivoting of the swing arm,** 13:30:55

13 **swing leg, and the simultaneous crawler track** 13:31:03

14 **rotation that we just talked about can be** 13:31:05

15 **automatically controlled by a control system?** 13:31:07

16 **A. Yes, the text mentioned the controller** 13:31:10

17 **can coordinate the actuator in a manner to cause the** 13:31:20

18 **counter rotation of the one ground engaging unit to** 13:31:22

19 **continuously and precisely offset the rotation** 13:31:26

20 **caused by the pivoting of the swing arm, yes.** 13:31:30

21 **Q. So I can just push a button on the Rio** 13:31:32

22 **machine and the pivoting and counter rotation** 13:31:36

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1 happens from there, being governed by the control 13:31:38

2 system automatically? 13:31:40

3 A. Yes. 13:31:41

4 (Exhibit No. 14 is referred to.) 13:31:41

5 BY MR. MROZ: 13:31:42

6 Q. Okay. So I'm going to talk -- or ask you 13:31:42

7 about figures 3 and 4, talk with you about those, 13:31:48

8 but it might be easier. I have an annotated exhibit 13:31:51

9 here I'm going to put into your share drive folder. 13:31:54

10 It might make it easier to talk about, so I don't 13:32:00

11 have to hop around from page to page. So this is 13:32:02

12 Exhibit 14. Let me go grab that. This is just one 13:32:06

13 page. So it should be pretty easy for loading. 13:32:13

14 A. Okay. So just a color-coded version of 13:32:29

15 the figures? 13:32:31

16 Q. Yes. 13:32:32

17 A. Okay. 13:32:33

18 Q. And let me know -- 13:32:34

19 MR. PRICE: Just let me wait until -- can 13:32:37

20 I just refresh? Let me take a look. 13:32:39

21 MR. MROZ: Sure thing. 13:32:43

22 MR. PRICE: Counsel, is this of record in 13:32:56

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1 the proceeding already, in any of the proceedings 13:32:58

2 already? 13:33:00

3 MR. MROZ: No, it's not. This is just 0a 13:33:00

4 separate annotated page of figures 3 and 4 from Rio. 13:33:03

5 MR. PRICE: I'm just going to object to 13:33:07

6 it on the basis of foundation. 13:33:09

7 MR. MROZ: Okay. 13:33:10

8 MR. PRICE: You can go ahead. 13:33:11

9 BY MR. MROZ: 13:33:14

10 Q. Dr. Nelson, is there any reason to -- 13:33:14

11 well, do you agree that these -- this document shows 13:33:18

12 figure 3 and figure 4 from Rio? 13:33:22

13 A. I'm flipping back to Rio really fast just 13:33:25

14 to compare. Yes. 13:33:31

15 Q. So, yes, you agree that Exhibit 14 shows 13:33:52

16 figure 3 and figure 4 from Rio? 13:34:00

17 A. Yes. 13:34:03

18 Q. Okay. And the annotated coloring, I just 13:34:03

19 want to make sure we are all on the same page, the 13:34:10

20 annotated coloring is enough to make it easier for 13:34:12

21 us to talk about this drawing or figure over a Zoom 13:34:14

22 deposition. So the yellow -- the portion 13:34:20

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1 highlighted in yellow, what would you call that? 13:34:23

2 A. Well, it's labeled 12. Should we call it 13:34:28

3 whatever 12 is labeled in the patent? 13:34:37

4 Q. That makes sense to me. And column 7, 13:34:40

5 line 51 or 52 calls it the machine frame. 13:34:42

6 A. Okay. 13:34:45

7 Q. Okay. Can you confirm that? I don't 13:34:46

8 want to put words in your mouth. 13:34:49

9 A. We said column -- 13:34:52

10 Q. Column 7, line 52 -- 51, sorry. Go 13:34:55

11 ahead. 13:35:04

12 A. Yes, I see where you're pointing out. 13:35:05

13 Yes, the machine frame 12 is -- we'll call it the 13:35:06

14 machine frame. 13:35:10

15 Q. So we'll agree that a portion of yellow 13:35:10

16 in Exhibit 14 is the machine frame 12, correct? 13:35:13

17 A. Yes. 13:35:16

18 Q. Okay. And then the portion in green, 13:35:17

19 what's that? 13:35:24

20 A. It looks like it's labeled 76. Would you 13:35:24

21 agree? It says, swing arm 76. 13:35:33

22 Q. Yes, I agree. 13:35:39

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1 **A. Okay. So we'll call it the swing arm.** 13:35:41

2 Q. Okay. And then the blue colored portion 13:35:43
3 in Exhibit 14 is what? 13:35:50

4 **A. It looks like it's labeled 20, so ground** 13:35:52
5 **engaging unit.** 13:35:56

6 Q. Okay. So figure 3 in this drawing or in 13:35:58
7 this exhibit, does it show the crawler track in the 13:36:12
8 retracted position as we discussed earlier? 13:36:20

9 **A. Yes.** 13:36:22

10 Q. And does this figure 4 show the crawler 13:36:23
11 track in the projecting position? 13:36:28

12 **A. Yes.** 13:36:29

13 Q. We talked earlier about how the swing leg 13:36:30
14 in Rio can move between -- and pivot between the 13:36:36
15 projecting and the retracted position, correct? 13:36:41

16 **A. Yes, it is definitely a relative rotation** 13:36:45
17 **of the swing arm.** 13:36:50

18 Q. What do you mean by relative rotation? 13:36:52

19 **A. The angle, its orientation is different** 13:36:56
20 **in the two figures.** 13:36:58

21 Q. Yes. Okay. Do you see in figure 3, the 13:36:59
22 crawler track is in line with swing leg lengthwise? 13:37:08

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A. Yes.

2 Q. And both are horizontal on the page? 13:37:13

3 A. Yes.

4 Q. And then in figure 4, the crawler track 13:37:20

5 is no longer in line with the swing leg lengthwise, 13:37:25

6 is it? 13:37:29

7 A. No, they are at different orientations. 13:37:29

8 Q. And in figure 4, the crawler track is 13:37:32

9 still parallel to the machine frame, right? 13:37:35

10 **A. Yes, it has the same orientation as in** 13:37:38

11 figure 3, where it's in the retracted position. 13:37:41

12 Q. All right. So that means, doesn't it, 13:37:45

13 that the crawler track must have counter rotated at 13:37:48

14 some point during its pivot from the position in 13:37:51

15 position 3 to the position in position 4? 13:37:55

[illegible]

17 Q. Do we know that that crawler track 13:37:59

```
18 rotated at least 90 degrees? 13:38:05
```

19 A. Based on this -- this pair of images, 13:38:08

20 **yes. The relative counter rotation is greater than 13:38:26**

21 **90 degrees.** 13:38:29

22 0. And that's because the pivot arm pivots 13:38:30

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1 more than 90 degrees, right? 13:38:33

2 A. Exactly. 13:38:35

3 Q. Okay. I'll just put Exhibit 14 away. If 13:38:35

4 you don't mind, I'm just going to ask you those 13:38:55

5 questions about figure 3 and figure 4 in Rio just 13:38:58

6 because of the objection that counsel has, just to 13:39:01

7 make sure that testimony applies to that as well. 13:39:03

8 So just looking at figure 3 and figure 4 in Rio and 13:39:05

9 not Exhibit 14. 13:39:10

10 A. Okay. 13:39:13

11 Q. The crawler track in figure 3 is in line 13:39:16

12 with the swing leg lengthwise, right? 13:39:20

13 A. Yes. 13:39:24

14 Q. Both are horizontal on the page? 13:39:25

15 A. Yes. 13:39:27

16 Q. And figure 4 of the crawler track is no 13:39:28

17 longer in line with the swing leg lengthwise? 13:39:30

18 A. Figure 4, correct, no longer aligned. 13:39:33

19 Q. And figure 4 of the crawler track is 13:39:39

20 still parallel to the machine frame, correct? 13:39:41

21 A. Yes. 13:39:44

22 Q. So that means the crawler track must have 13:39:44

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1 counter rotated in figures 3 and 4 at some point 13:39:47

2 during the pivot process? 13:39:52

3 **A. Yes.** 13:39:53

4 Q. In viewing figures 3 and 4 together, how 13:39:54

5 many degrees did the swing leg pivot when moving 13:40:00

6 between the projecting and retracted positions? 13:40:03

7 **A. I would say more than 90.** 13:40:05

8 Q. Okay. And is that because we know that 13:40:11

9 the swing leg pivoted more than 90 degrees? 13:40:16

10 **A. Yes.** 13:40:18

11 Q. Okay. Next question. Viewing figures 3 13:40:19

12 and 4 together, how many degrees did the crawler 13:40:26

13 track pivot when moving between the projecting and 13:40:28

14 retracted positions? 13:40:31

15 **A. With respect to the swing arm or with 13:40:31**

16 **respect to the machine frame?** 13:40:35

17 Q. Machine frame, sorry. Let me ask this 13:40:37

18 again. So -- well, with respect to anything. I 13:40:40

19 mean, it turned a certain amount during this 13:40:45

20 process, right? 13:40:49

21 **A. Well, every rotation is with respect to 13:40:49**

22 **some reference frame, so I want to make sure that we 13:40:54**

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1 are speaking the same language. 13:40:58

2 Q. Let's use the same reference frame you 13:40:59
3 used when you were talking about Exhibit 14. 13:41:01

4 A. Okay. So can you repeat the question, 13:41:04
5 please? 13:41:06

6 Q. Yes. So whenever -- I'm going to give 13:41:06
7 you a new question. Using the same reference frame 13:41:12
8 you used when you answered the questions for Exhibit 13:41:16
9 14 -- actually, strike that. 13:41:19

10 When the pivot arm moved from its 13:41:23
11 retracted position shown in figure 3 to its 13:41:32
12 projecting position shown in figure 4, how much did 13:41:35
13 the crawler track rotate? 13:41:40

14 A. With respect to the swing arm, the amount 13:41:42
15 of counter rotation would have to be equal to the 13:41:51
16 amount of pivoting of the swing arm in order for the 13:41:54
17 crawler track to remain parallel to the machine 13:41:59
18 frame. Does that answer your question? 13:42:01

19 Q. So in that scenario I just described, did 13:42:04
20 the crawler track rotate more than 90 degrees? 13:42:07

21 A. Well, again, relative to the swing arm, 13:42:11
22 the crawler track has counter rotated more than 90 13:42:13

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1 **degrees.** 13:42:16

2 Q. Okay. Now, if I started with the 13:42:17
3 position in figure 3, the retracted position, and I 13:42:36
4 rotated the -- or pivoted the pivot arm to a 13:42:40
5 position where it was perpendicular to the machine 13:42:49
6 frame and the crawler track is still parallel to the 13:42:52
7 machine frame, how much would the crawler track have 13:42:58
8 rotated at that point? 13:43:01

9 A. So compared to figure 3, if the swing arm 13:43:02
10 rotates out 90 degrees, and the crawler track 13:43:08
11 counter rotates so as to remain parallel to the 13:43:12
12 machine frame, then the crawler track or ground 13:43:16
13 engaging unit has counter rotated 90 degrees with 13:43:18
14 respect to the swing arm. 13:43:22

15 Q. Okay. All right. You can put the Rio 13:43:23
16 exhibits -- you can put Exhibits 13 and 14 away. 13:43:29
17 I'm going to put another exhibit in your folder. 13:43:42
18 This is Exhibit 15. 13:43:52

19 (Exhibit No. 15 was referred to.) 13:44:06

20 MR. MROZ: I'm also going to put Exhibit 13:44:06
21 16 in while we are at it, so feel free to pull them 13:44:08
22 both up and look at them. 13:44:11

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1	(Exhibit No. 16 was referred to.)	13:44:14
2	THE WITNESS: Okay.	13:44:14
3	BY MR. MROZ:	13:45:21
4	Q. Do you recognize Exhibit 16?	13:45:22
5	A. That looks familiar.	13:45:25
6	Q. Okay. Is it the Miller reference?	13:45:34
7	A. That's how you have it labeled.	13:45:36
8	Q. Okay. Well, let's just look at the first	13:45:47
9	page.	13:45:51
10	A. Yes.	13:45:51
11	Q. Just so we are on the same page. I'm not	13:45:52
12	trying to pull a fast one on you. I just want to	13:45:54
13	make sure you have the document.	13:45:57
14	A. No, I know. I just want to make sure	13:45:58
15	that I -- let's see. So on Exhibit 16, it doesn't	13:46:00
16	say Miller, but I guess 15 is the complete Miller	13:46:05
17	reference, right?	13:46:08
18	Q. Yes.	13:46:09
19	A. Yes. So looking towards figure 1, okay,	13:46:10
20	figure 1 in Miller. Yes, it's just sideways. Okay.	13:46:16
21	Yes. So I see, you just pulled out some figures	13:46:35
22	from Miller.	13:46:38

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1 Q. And put some purple highlighting on them, 13:46:39

2 right, rotations? 13:46:42

3 A. Okay. Right. 13:46:43

4 Q. All right. Does Miller disclose a 13:46:45

5 concrete slipform paver? If it makes it easier, I 13:46:47

6 can refer to you column 8, lines 55 through 65. 13:46:55

7 A. Column 8, which lines again, please? 13:47:01

8 Q. 55 through 65. 13:47:14

9 A. Okay. Yes. 13:47:30

10 Q. So you agree Miller discloses a concrete 13:47:31

11 slipform paver? 13:47:35

12 A. Yes. 13:47:36

13 Q. Now, looking at figure 1 in Miller, what 13:47:36

14 does the number 122 refer to? And feel free to also 13:47:43

15 reference other figures in Miller, for the 122 13:47:51

16 number. 13:47:56

17 A. Steering housing. 13:48:11

18 Q. Okay. Sorry, did you say something after 13:48:12

19 steering housing? 13:48:17

20 A. Just the number 122. Steering housing is 13:48:18

21 what 122 is used to refer to in Miller. 13:48:22

22 Q. Got it. And is the steering housing 13:48:25

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1 component shown in purple in Exhibit 16 in the 13:48:28

2 various drawings? 13:48:37

3 **A. Yes.** 13:48:37

4 **Q. Okay. Let's go to figure 7 now in** 13:48:38

5 **Miller. Its description as well, which is column 7,** 13:48:53

6 **lines 35 through 70. So can you please read column** 13:49:10

7 **7, lines 35 through 60, in view of figure 7. Let me** 13:49:17

8 **know when you've finished.** 13:49:28

9 **A. Okay. I'm just having a quick glance of** 13:49:31

10 **figure 7 before you go down to those lines. I'll** 13:49:34

11 **ask you to repeat the location here in a second.** 13:49:36

12 **Q. No problem, yes.** 13:49:38

13 **A. Column? Sorry, say again, please?** 13:50:09

14 **Q. Sure. Column 7, lines 35 through 60.** 13:50:11

15 **A. Okay. Okay, I've had a look at those.** 13:50:23

16 **Q. Okay. Can you describe to me how the** 13:54:08

17 **design in figure 7 of Miller works?** 13:54:10

18 **A. Sure. So the -- I'll go back down to the** 13:54:12

19 **text, so I can refer to the right numbers. So to** 13:54:21

20 **simplify a little bit, what's described in the text** 13:54:51

21 **and related to the figure, there is a drive pinion** 13:54:54

22 **and then there's a driven gear, so 238 and 232 in** 13:55:02

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1 the figure. And they don't show the drive motor, 13:55:05
2 but mentioned that it would be a non-turning part, 13:55:08
3 such as the lock in beam 64. 13:55:11

4 So the drive motor is mounted remotely, 13:55:13
5 engages the pinion drive gear 238 to drive the 13:55:16
6 driven gear. And then, of course, simplifying all 13:55:22
7 of the other bearings and such, that transmission 13:55:24
8 relationship there allows steering of the -- 13:55:28
9 steering of the -- I'm trying to see what they call 13:55:35
10 the -- do they call it a crawler track or do they 13:55:39
11 call it something else? 13:55:43

12 Q. We can call it a crawler track for 13:55:44
13 purposes of today, yes. So is that mechanism you 13:55:47
14 just described in figure 7 a rotary drive? 13:55:50

15 A. It's part of a rotary drive. The 13:55:53
16 remotely mounted drive -- what do they call it -- 13:55:56
17 drive motor, so the non-turning part that they don't 13:56:02
18 picture is important. The drive motor which they 13:56:10
19 don't picture or number would be mounted on a 13:56:13
20 non-turning part. 13:56:17

21 So it's off on another piece of the 13:56:17
22 structure of the machine. And that's -- so if you 13:56:21

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1 want to refer to like just 232 and 238, it's a 13:56:26
2 transmission. It's a way of transmitting power from 13:56:30
3 that unshown drive motor through -- and as shown in 13:56:33
4 figure 7 -- through a right angle, I believe. Let 13:56:41
5 me just scroll back up. What appears to be a right 13:56:43
6 angle type gear transmission through the crawler 13:56:51
7 track. 13:56:57

8 Q. Okay. So earlier when we were talking 13:56:58
9 about the power drive, for example -- 13:57:00

10 A. Uh-huh. 13:57:01

11 Q. -- we talked about a slew drive, slew 13:57:02
12 gear drive, right? 13:57:05

13 A. Yes. 13:57:06

14 Q. And I believe, and correct me if I'm 13:57:06
15 wrong, but I believe you mentioned that a slew gear 13:57:09
16 drive is a type of power drive. 13:57:12

17 A. Yes, that includes the drive part. Yes. 13:57:16
18 So in some terminologies I've seen, slew gear 13:57:19
19 referred to worm gear. So a slew gear drive would 13:57:22
20 be -- if we follow that convention of terminology, a 13:57:25
21 power drive that includes a worm gear. 13:57:28

22 Q. Okay. So applying that same terminology 13:57:31

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1 here to this reference for power drive, what would 13:57:34
2 the power drive be in Miller? 13:57:37

3 A. The power drive would be the combination 13:57:39
4 of the gears and -- well, really, it's -- I don't 13:57:41
5 want to exclude the bearing supports as well. So 13:57:50
6 this whole assembly that allows power input, so the 13:57:53
7 unshown actuator with the pinion gear and the driven 13:57:57
8 gear and the support bearings and such, that would 13:58:04
9 be the entirety of the power drive unit if you want 13:58:09
10 to call it a unit. 13:58:14

11 Q. Okay. And do you see the 122 number in 13:58:15
12 figure 7? 13:58:21

13 A. Yes. 13:58:21

14 Q. Does that mean that this design in figure 13:58:26
15 7 shows the power drive in the steering housing? 13:58:31

16 A. Not the entirety of the power drive, 13:58:36
17 because there is no actuator showing. There is just 13:58:40
18 the transmission showing. The pinion gear, driven 13:58:43
19 gear, and the bearing supports. 13:58:48

20 Q. What parts of the power drive are 13:58:49
21 included in the steering housing? 13:58:51

22 A. The -- let's see, pinion gear and 13:58:52

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1 steering gear are shown as outside of the steering 13:59:01
2 housing. So I'm going to look at the terminology of 13:59:05
3 the other members there. So for example, they 13:59:08
4 reference a spindle and bearings and bearing 14:00:30
5 supports. That can be considered part of the power 14:00:34
6 drive unit. And those are inside the -- or at least 14:00:39
7 mostly inside the 122, the steering housing. Is 14:00:47
8 that what it's called? 14:00:54

9 Q. Yes. Okay. So if you go back to Exhibit 14:00:56
10 16. 14:00:58

11 A. Okay. 14:01:01

12 Q. If you apply this figure 7 design to the 14:01:01
13 machines shown in Exhibit 16, would parts of the 14:01:10
14 power drive be inside the purple steering housing 14:01:20
15 components? 14:01:24

16 A. The parts that we already talked about, 14:01:25
17 yes, as being -- talked about as being inside of the 14:01:37
18 steering column. 14:01:40

19 Q. Okay. Doesn't -- well, does Miller also 14:01:41
20 teach that a sensor can be used to measure the 14:02:01
21 rotation of the crawler track? I'll refer you to 14:02:04
22 column 12, lines 23 through 46. 14:02:07

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1 A. Can you repeat your question? I've read 14:03:17

2 the text now. 14:03:19

3 Q. Sure. Does Miller also teach that a 14:03:19

4 sensor can be used to measure the rotation of the 14:03:21

```
5 crawler track? 14:03:24
```

A. Yes. 14:03:26

7 Q. And my next question is going to be about 14:03:27

8 how much the crawler tracks in Miller can rotate, so 14:03:38

9 it might help to look at figure 14. And column 6, 14:03:42

```
10    lines 26 through 34.                                     14:03:52
```

11 A. The new question is how much rotation can 14:04:38

```
12 the crawler tracks -- 14:04:40
```

13 Q. It's how much can the power drive in 14:04:42

14 Miller rotate the crawler tracks? 14:04:44

15 **A.** It's shown as at least 90 degrees. 14:04:47

16 Q. Okay. And then let's go to one more 14:04:52

17 example, column 7, lines 54 to 60? 14:04:58

18 **A.** **Okay, I've read that.** 14:05:21

19 Q. The question is, in some designs in 14:05:23

20 Miller, is it possible for the power drive to rotate 14:05:25

21 the crawler track 180 degrees? 14:05:30

22 A. I guess that's what's stated here. 14:05:34

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1 Q. All right. I'm going to give you another 14:05:37

2 exhibit. This should be Exhibit 17. 14:05:45

3 (Exhibit No. 17 was referred to.) 14:05:45

4 BY MR. MROZ: 14:05:45

5 Q. It should be in your share drive folder 14:05:56

6 now. 14:05:59

7 A. Okay. I have Exhibit 17 for Littman 14:06:32

8 referenced. 14:06:35

9 Q. And you analyze this reference in your 14:06:37
10 declaration, right? 14:06:40

11 A. Yes. 14:06:41

12 Q. Can you please read column 9, lines 45 to 14:06:41

13 63. Actually, let's read line -- column 9, lines 42 14:06:52

14 through column 10, line 8. 14:07:07

15 A. Okay. Okay, I see that text. 14:07:12

16 Q. Okay. What does that describe, what you 14:09:43

17 just read? 14:09:46

18 A. It describes orientation modes or wheel 14:09:46

19 positioning functions for the device described in 14:09:53

20 this patent. 14:09:57

21 Q. Is there a parallel mode and a 14:09:59

22 perpendicular mode? 14:10:01

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1 A. There is a perpendicular mode. There is 14:10:03
2 a parallel mode. It's described as a wheel position 14:10:08
3 parallel to the leg position, and then there is a -- 14:10:14
4 another -- I can call it a steering mode. 14:10:20

5 Q. So does this passage describe steering 14:10:26
6 the wheels as the pivot arms are pivoting? 14:10:29

7 A. You mean simultaneously? 14:10:33

8 Q. Yes. 14:10:39

9 A. Not necessarily. 14:10:44

10 Q. Why not? 14:10:45

11 A. Because these modes are just describing 14:10:53
12 the -- basically, positions that the wheels are 14:10:56
13 homed to for different types of operations. And 14:11:06
14 it's described in this text. So for example, if -- 14:11:10
15 let's see. Does it have four legs in the picture? 14:11:20

16 Q. Yes. If you want to go to figure -- 14:11:23
17 figures 9 through 12, that might help. 14:11:28

18 A. Okay. Yes, so it's shown with four legs, 14:11:33
19 right. 14:11:46

20 Q. Yes. 14:11:46

21 A. So going back to the text, so this is a 14:11:47
22 mode switching description where in the -- I'll 14:11:59

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1 start with the parallel mode, because it's described 14:12:06
2 first. So this allows the length adjustment of the 14:12:10
3 leg, and that requires for the length adjustment of 14:12:15
4 the leg, that requires the wheel orientation be 14:12:19
5 aligned with the direction of extension or 14:12:26
6 retraction of the leg, if it's in the angled 14:12:29
7 position or extended position. 14:12:32

8 And so the way I understand this text is 14:12:34
9 that if one of the legs is to be extended, the wheel 14:12:38
10 would be first homed to the equal position or the 14:12:41
11 parallel position. And then the leg would be 14:12:50
12 extended. And then the mode could be switched to a 14:12:53
13 steering mode or switched to a perpendicular mode, 14:12:55
14 depending on what the next phase of motion is. 14:12:59

15 Similarly, in the perpendicular mode 14:13:04
16 that's described, the wheels would be homed into the 14:13:07
17 perpendicular position, so that the leg can be 14:13:12
18 rotated around its pivot point. So I don't -- the 14:13:14
19 way this is described suggests to me that the 14:13:21
20 motions of the legs and the motions of the wheels 14:13:24
21 for steering are not being done at the same time. 14:13:30

22 Q. Okay. So the movement of the wheels are 14:13:34

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1 being done, though, when they are being homed while 14:13:40
2 the wheels are on the ground supporting the weight 14:13:43
3 of the machine, right? 14:13:46

4 **A. That's the implication that I gather from 14:13:46**
5 **this text, yes. 14:13:56**

6 Q. Okay. Well, it says, column 9, lines 45 14:13:58
7 through 49, "while the wheel is on the ground and 14:14:03
8 supporting the vehicle." 14:14:06

9 **A. Yes. So the length adjustment of the 14:14:09**
10 **leg. They are stating in here the length adjustment 14:14:12**
11 **of the leg can be done while the wheel is on the 14:14:14**
12 **ground and supporting the vehicle on its leg. 14:14:18**

13 Q. So we are talking about two different 14:14:20
14 kinds of movements here, right? The rotation of the 14:14:22
15 wheels, and the pivoting of the legs? 14:14:24

16 **A. Right. 14:14:26**

17 Q. And both of these movements are done 14:14:28
18 while the wheels are on the ground supporting the 14:14:32
19 weight of the machine, correct? 14:14:34

20 **A. Yes, that's my -- that's the way I read 14:14:35**
21 **this text. 14:14:39**

22 MR. MROZ: Okay. I don't have any more 14:14:40

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1 questions. Thank you. 14:14:45

2 THE WITNESS: Thanks to the support team 14:14:49

3 for the remote meeting. 14:14:51

4 MR. MROZ: I agree. 14:14:53

5 MR. PRICE: I'm just going to take a 14:14:55

6 five-minute break and we can return. 14:14:58

7 MR. MROZ: Great. Okay. 14:15:01

8 (Recess.) 14:15:05

9 MR. PRICE: I have no redirect today. 14:25:27

10 MR. MROZ: That's it for me, then. I 14:25:31

11 just want to say thank you, Dr. Nelson. I really 14:25:35

12 appreciate you bearing with me today, and thanks to 14:25:38

13 everyone. 14:25:41

14 (Whereupon, at 2:25 p.m., the taking of 14:25:44

15 the deposition ceased.)

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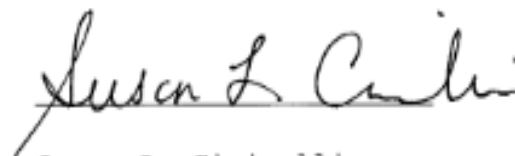
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6 transcript is a true and accurate record of these
7 proceedings; that said proceedings were taken in
8 Stenotype notes by me on the 22nd day of October,
9 2021, commencing at 10:30 a.m. and ending at 2:25
10 p.m.

11 I further certify that present on behalf of
12 Party GOMACO Corporation were David Mroz and Sonja
13 W. Sahlsten of Finnegan, Henderson, Farabow, Garrett
14 & Dunner, LLP and on behalf of Party Guntert &
15 Zimmerman Cons. Div., Inc. was Jeffrey Price of

16 I further certify that I am not related to, nor
17 associated with any of the parties or their
18 attorneys, nor do I have any disqualifying interest,
19 personal or financial in the actions within.

20 Dated this 25th day of October, 2021 at
21 Washington, D.C.

22

Susan L. Ciminelli

1 ACKNOWLEDGMENT OF DEPONENT

2

3 I, _____, do hereby

4 acknowledge that I have read and examined the

5 foregoing testimony, and the same is a true, correct

6 and complete transcription of the testimony given by

7 me, and any corrections appear on the attached Errata

8 Sheet signed by me.

9

10 _____

11 (DATE)

(SIGNATURE)

12

13 NOTARIZATION (If Required)

14 State of _____

15 County of _____

16 Subscribed and sworn to (or affirmed) before me on

17 this _____ day of _____, 20____, by

18 _____, proved to me on the

19 basis of satisfactory evidence to be the person who

20 appeared before me.

21 Signature: _____

22 (Seal)

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