			Page	219
1	L	B. Evans		
2	2 UNITED	STATES PATENT AND TRADEMARK OFFICE		
3	BEFORE	THE PATENT TRIAL AND APPEAL BOARD		
4	1			
5	5			
6	5	PETROLEUM GEO-SERVICES INC.		
7	7	Petitioner		
8	3	v.		
ç)	WESTERNGECO LLC		
10)	Patent Owner		
11	-			
12	2 Case No.	IPR2014-01475, -01476, -01477, -914	78	
13	3	Patent No. 7,162,520 B2		
14	ł	Patent No. 7,162,967 B2		
15	5	Patent No. 7,080,607		
16	5 -			
17	7			
18	3			
19)	DEPOSITION OF DR. BRIAN EVANS		
20)	Washington, D.C.		
21		Volume Two - July 10, 2015		
22				
23				
24	neporet	ed by: Mary Ann Payonk		
25	Job No	. 94682		

	Page 220		Page 221
1	B. Evans	1	B. Evans
2	D. Livins	2	APPEARANCES:
3		3	ON BEHALF OF PETITIONER:
4		4	THOMAS FLETCHER, ESQUIRE
5	July 10, 2015	5	JESSAMYN BERNIKER, ESQUIRE
6	8:01 a.m.	6	DAVID BERL, ESQUIRE
7	0.01 d.m.	7	CHRISTOPHER SUAREZ, ESQUIRE
8	Deposition of DR. BRIAN J. EVANS,	8	WILLIAMS & CONNOLLY
9	Ph.D., Volume Two, held at the offices of	9	725 Twelfth Street, N.W.
10	Williams & Connolly, 725 Twelfth Street, N.W.,	10	Washington, D.C. 20005
11	Washington, D.C., pursuant to Notice before	11	Washington, D.C. 20005
12	Mary Ann Payonk, Nationally Certified Realtime	12	ON BEHALF OF PATENT OWNER:
13	Reporter and Notary Public of the District of	13	MICHAEL KIKLIS, ESQUIRE
14	Columbia, Commonwealth of Virginia, and New	14	CHRISTOPHER RICCIUTI, ESQUIRE
15	York, CA-CSR No. 13431.	15	KATHERINE CAPPAERT, ESQUIRE
16	Tork, CA-CSK 110. 15451.	16	OBLON, McCLELLAND, MAIER & NEUSTADT
17		17	1940 Duke Street
18		18	Alexandria, VA 22314
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20		20	SIMEON PAPACOSTAS, ESQUIRE
21		21	KIRKLAND & ELLIS
22		22	300 North LaSalle
23		23	Chicago, IL 60654
24		24	ALSO PRESENT:
25		25	Kevin Hart. Petroleum Geo-Services
			Revin Har, Feroleum Geo Bervices
	Page 222		Page 223
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1 2	B. Evans	1 2	B. Evans
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 B. Evans threshold parameter in Workman's control system to a maximum distance. Do you see that? A. I see the first sentence says that. Q. The first sentence says that; right? A. Yeah. Q. So my question to you, sir, is if you set the steerable components along the length of the streamer in Workman to enforce a maximum distance separation, wouldn't those steerable components generate a lot of turbulence? MS. BERNIKER: Objection. A. This depends on when on the reason for setting the components for a maximum distance. BY MR. KIKLIS: Q. Okay. Could you explain that? A. Under some conditions, poor weather, high sea state levels, causes noise. The separation of streamers makes no difference to the noise, in many cases, under poor weather 	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	 B. Evans MS. BERNIKER: Objection. A. If there were normal weather conditions, the maximizing of streamer separation could still remain within threshold levels of the noise limits. BY MR. KIKLIS: Q. Well, my question is let me start over. To enforce a maximum distance by the steerable components along the length of the streamer would require a significant amount of steering; isn't that right? MS. BERNIKER: Objection. A. Not necessarily. BY MR. KIKLIS: Q. Okay. And what do you mean by that? MS. BERNIKER: Objection. A. It depends on current directions, near-surface wind forces, sea state.
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high sea state levels, causes noise. The separation of streamers makes no difference to	20	
separation of streamers makes no difference to		poor surface wind forces see state
	21	near-surface wind forces, sea state.
the noise, in many cases, under poor weather		BY MR. KIKLIS:
	22	Q. So assuming that there was no force
conditions.	23	that is pulling the streamers to their maximum
Q. Assuming that there weren't poor	24	distance, with that assumption, if you set the
weather conditions.	25	steerable components along the length of the
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B. Evans	1	B. Evans
streamer in Workman to enforce a maximum	2	to pull the front ends over.
distance separation, wouldn't these steerable	3	And that does not mean that any force
components generate a lot of turbulence?	4	is then exerted on the other streamer steering
MS. BERNIKER: Objection.	5	devices, they take the force on their own.
THE WITNESS: Could you rephrase	6	That's their raison d'etre.
that, that long question?	7	BY MR. KIKLIS:
MR. KIKLIS: I will say it again.	8	Q. But in the situation you just
BY MR. KIKLIS:	9	described, the paravanes would be creating a
	10	lot of turbulence, wouldn't they?
	11	A. The paravanes may create turbulence,
	12	but this does not follow that it's passed onto
•	13	the seismic cable. Paravanes do not need to be
	14	established at the head of each streamer.
	15	Q. So assuming a situation where there
	16	is now a current, a small current going from
•	17	right to left, to maintain I'm sorry, let me
	18	start over.
	19	So now assume that there's a small
	20	current going from right to left. In that
generate a lot of turbulence?	21	situation, if you set the steerable components
	22	along the length of the streamer in Workman to
MS. BERNIKER: Objection.	23	enforce a maximum distance separation, wouldn't
MS. BERNIKER: Objection. A. The paravane or paravanes are at the	24	those steerable components generate a lot of
MS. BERNIKER: Objection. A. The paravane or paravanes are at the front of the cable or cables. They can be		turbulence?
	 Q. So assuming there was no force that was pulling the streamers to their maximum distance are you with me so far? A. Yes. Q. So we don't have a situation where there are currents pulling the streamers apart. In that situation, if you set the steerable components along the length of the streamer in Workman to enforce a maximum distance separation, wouldn't those steerable components generate a lot of turbulence? MS. BERNIKER: Objection. A. The paravane or paravanes are at the front of the cable or cables. They can be 	Q. So assuming there was no force that10was pulling the streamers to their maximum11distance are you with me so far?12A. Yes.13Q. So we don't have a situation where14there are currents pulling the streamers apart.15In that situation, if you set the steerable16components along the length of the streamer in17Workman to enforce a maximum distance18separation, wouldn't those steerable components19generate a lot of turbulence?20MS. BERNIKER: Objection.21A. The paravane or paravanes are at the23

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1	B. Evans	1	B. Evans
2	MS. BERNIKER: Objection.	2	you set the steerable components along the
3	BY MR. KIKLIS:	3	length of the streamer in Workman to enforce a
4	Q. So I'm not talking about a stormy	4	maximum distance situation, wouldn't those
5	situation.	5	steerable components generate a lot of
б	A. First of all	6	turbulence?
7	Q. Let me just I want to make sure	7	MS. BERNIKER: Objection.
8	we're clear on the hypothetical, okay? Not	8	A. In this hypothetical, why would you
9	talking about a stormy situation. All I'm	9	put the streamer where there are normal
10	talking about is a small current traveling from	10	currents at a maximum distance? I don't
11	right to left. We're assuming the vessel is	11	understand the even the hypothetical.
12	going straight.	12	BY MR. KIKLIS:
13	A. That's what I was going to say. I	13	Q. I
14	don't know which way the vessel's going.	14	A. We put them at a maximum distance for
15	Q. Polar coordinates, I guess. So the	15	at-risk situations.
16	vessel	16	Q. Sir, it's not important that you
17	A. Cartesian.	17	understand why I ask the question. Please
18	Q. The Cartesian. Okay. So let's	18	answer my hypothetical.
19	assume that the vessel is traveling north.	19	MS. BERNIKER: Objection, asked and
20	A. Okay.	20	answered.
21		21	A. The hypothetical
22	Q. Due north, okay? Streamers of course	22	MR. KIKLIS: Well, wait. Wait a
23	trailing south. There is a small current going from east to west, and those are and that's	23	
23		24	minute. You've got to be kidding me. Your witness has refused to answer
25	all there is to the hypothetical, and those	25	
23	storms nothing else. In that situation, if	25	the
	Page 230		Dago 221
			Page 231
1	D Evons	1	_
1	B. Evans MS. PEDNIKEP: He answered it	1	B. Evans
2	MS. BERNIKER: He answered it.	2	B. Evans My understanding of your situation is
2 3	MS. BERNIKER: He answered it. MR. KIKLIS: question, and your	2 3	B. Evans My understanding of your situation is that it is not at-risk and that there's a minor
2 3 4	MS. BERNIKER: He answered it. MR. KIKLIS: question, and your objection is	2 3 4	B. Evans My understanding of your situation is that it is not at-risk and that there's a minor cross-flowing current. There is no
2 3 4 5	MS. BERNIKER: He answered it. MR. KIKLIS: question, and your objection is MS. BERNIKER: He told you it	2 3 4 5	B. Evans My understanding of your situation is that it is not at-risk and that there's a minor cross-flowing current. There is no hypothetical that this would never happen in
2 3 4 5 6	MS. BERNIKER: He answered it. MR. KIKLIS: question, and your objection is MS. BERNIKER: He told you it wouldn't happen.	2 3 4 5 6	B. Evans My understanding of your situation is that it is not at-risk and that there's a minor cross-flowing current. There is no hypothetical that this would never happen in practice, to my understanding, according to
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	Page 232		Page 233
1	B. Evans	1	B. Evans
2	than was already there.	2	Q. So if you set your streamers to a
3	Q. Okay. Your answer, sir, you referred	3	maximum distance, you're not going to be doing
4	to streamers not put at their maximum, but	4	recording; is that right?
5	A. Right.	5	MS. BERNIKER: Objection.
6	Q I'm asking you, sir, if they were	6	A. The reason for setting streamers at a
7	put at their maximum, maximum distance in the	7	maximum distance is to prevent them from
8	hypothetical that I gave you, wouldn't that	8	tangling essentially when weather conditions
9	generate a lot of turbulence?	9	are inclement, poor, rough seas. That is the
10	MS. BERNIKER: Objection.	10	condition. And you make that decision
11	A. I did answer before that the the	11	abandoning the seismic survey at that point in
12	paravanes take the maximum noise. They take	12	time, and the first to go are the paravanes.
13	the noise away from the cable when they tow to	13	MR. KIKLIS: I'm handing you what's
14	a maximum distance. They don't necessarily	14	been marked as Exhibit 1058.
15	have to be at the front end of the cable.	15	THE WITNESS: We've finished with
16	In other words, in that case, the	16	that one, have we?
17	cable positioning devices would not have a lot	17	MR. KIKLIS: For the moment, yes.
18	of noise and you could, in this situation, in	18	You can put that aside.
19	your hypothetical, you would not be recording,	19	BY MR. KIKLIS:
20	of course.	20	Q. I've handed you what's been marked
21	BY MR. KIKLIS:	21	Exhibit 1058, Dr. Evans. Do you recognize
22	Q. Why wouldn't you be recording?	22	this?
23	A. You've taken your streamers far away	23	A. I do.
24	from the locations on the pre-plots and you'll	24	Q. What is it?
25	have shut down recording.	25	A. A paper by Gikas or Gikas. Which
	Page 234		Page 235
1	D F		
	B. Evans	1	B. Evans
2		1 2	B. Evans to page 11.
2 3	B. Evans interpretation would you like me to use? Q. Gikas.		B. Evans to page 11. A. Yeah.
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3	interpretation would you like me to use? Q. Gikas.	2 3	to page 11.
3 4	interpretation would you like me to use? Q. Gikas. A. You say Gikas? I'll use your	2 3 4	to page 11. A. Yeah. Q. Do you see where it says
3 4 5	interpretation would you like me to use?Q. Gikas.A. You say Gikas? I'll use yourterminology just to keep you happy.	2 3 4 5	to page 11. A. Yeah. Q. Do you see where it says "Introduction"? A. Yes. Q. The first paragraph under
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3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 interpretation would you like me to use? Q. Gikas. A. You say Gikas? I'll use your terminology just to keep you happy. Q. Okay. A. A paper published in the London Hydrographic Journal in July 1995 by Gikas, who was a Ph.D. student at the University of New Castle. This, as all Ph.D. students have to in my department, produce at least one paper per year in an accepted publication, journal, or conference. The title is, "A Rigorous and Integrated Approach to Hydrophone and Source Positioning During Multistreamer Offshore Seismic Exploration." Q. Can we just refer to Exhibit 1058 as Gikas? A. Okay, that's fine. Q. Have you read Gikas? A. I have. Q. You understand its contents? 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 to page 11. A. Yeah. Q. Do you see where it says "Introduction"? A. Yes. Q. The first paragraph under "Introduction." A. Yes. Q. There's a few introductory sentences which talk about the basic configuration of an offshore seismic exploration survey, and then at the end of that paragraph is the following sentence: "The surveying problem is to determine the position of the guns and hydrophones at the instance of firing and reception respectively." Do you see that sentence, sir? A. I do. Q. Did I read that right? A. You read that correctly. Q. So the problem that Gikas is trying to address is to determine the position of the
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3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 interpretation would you like me to use? Q. Gikas. A. You say Gikas? I'll use your terminology just to keep you happy. Q. Okay. A. A paper published in the London Hydrographic Journal in July 1995 by Gikas, who was a Ph.D. student at the University of New Castle. This, as all Ph.D. students have to in my department, produce at least one paper per year in an accepted publication, journal, or conference. The title is, "A Rigorous and Integrated Approach to Hydrophone and Source Positioning During Multistreamer Offshore Seismic Exploration." Q. Can we just refer to Exhibit 1058 as Gikas? A. Okay, that's fine. Q. Have you read Gikas? A. I have. Q. You understand its contents? 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 to page 11. A. Yeah. Q. Do you see where it says "Introduction"? A. Yes. Q. The first paragraph under "Introduction." A. Yes. Q. There's a few introductory sentences which talk about the basic configuration of an offshore seismic exploration survey, and then at the end of that paragraph is the following sentence: "The surveying problem is to determine the position of the guns and hydrophones at the instance of firing and reception respectively." Do you see that sentence, sir? A. I do. Q. Did I read that right? A. You read that correctly. Q. So the problem that Gikas is trying to address is to determine the position of the

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