

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
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1 Knowing the variability of this environment -- and as I
2 said before, it's such a variable environment that
3 there are good parts of all the different habitats that
4 I can see within this range. It isn't just a flat
5 homogeneous shelf like you find off many of the areas
6 of the coastline just grading out. It's -- you've got
7 rocks, you've got rises, you've got sand patches,
8 you've got mud patches good for clams, not good for
9 oysters but -- so the variability of it and the
10 diversity of it is its value.

11 MR. WILENSKY: In this construction
12 process could a process be done that would not disturb
13 the shell -- the potential shellfish beds?

14 DR. STEWART: Well again, the attempt at
15 directional drilling I think was excellent. The fact
16 that it surfaces almost smack dab in the middle of the
17 prime habitat because of engineering constraints
18 concerns me. If it were to go twice the distance, I
19 think you'd alleviate a lot of the problem, especially
20 with the bentonite release that's projected to occur
21 here right in that very transportable depth regime.
22 Essentially, the vector of that would probably be on
23 shore in towards the town shellfish beds --

24 MS. KATZ: Do you have a mile post where

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1 you would want to see the directional drill extended to
2 --

3 DR. STEWART: Well again, even -- you
4 see the point where it comes out just before 12 is
5 right within a 20-foot zone. You have a 12-foot high
6 seaward of it -- it's almost contained in a slight
7 basin -- as I read the topography -- you know, it would
8 be nice to have a good range of bathymetry when we're
9 dealing with something of this nature -- this is just a
10 chart, anyone can copy this --

11 MS. KATZ: But is 12 -- Mile Post 12 is
12 that --

13 DR. STEWART: That's a --

14 MS. KATZ: -- a leased shellfish bed?

15 DR. STEWART: Well, the point is that's
16 it's in like a near-shore -- in and around the Thimble
17 Islands, in a basin, so that if you -- as you asked me
18 if I were to suggest where a directional point outage
19 would be, it would be out past West Reef you know. It
20 would be out of that complex of containment of Thimble
21 Islands, containment circulation patterns,
22 redistribution concentrations of sediment, it would be
23 out of that really unique multiple habitat complex.
24 Now they're putting most of their energy and impacts

1 right smack dab in the middle of it. So if it goes
2 offshore, it's affecting good habitat. If it goes on-
3 shore east or west, its radius effect is much greater.
4 And once you get below 30 feet, your general
5 resuspension and transport is towards the deeper water
6 and not on-shore.

7 MR. ASHTON: Where is West Reef?

8 DR. STEWART: Well, it's on this chart
9 that I see here, Northwest Reef. It's R --

10 MR. ASHTON: I see in Inner Reef,
11 Wheaton Reef, Northwest Reef --

12 DR. STEWART: Northwest Reef, yeah.

13 MR. ASHTON: Oh, Northwest Reef, okay.

14 MS. KATZ: So it's -- you would extend
15 the directional drilling out to Northwest Reef?

16 DR. STEWART: I mean -- excuse me for
17 just suggesting that, but I mean to have it come out
18 here I think is really impactful. To have it come out
19 at just short of Mile Point 12 is right in the middle
20 of what that complex would be that anyone would judge
21 is a valuable entity. Again, I don't know whether it's
22 possible but -- or if --

23 MR. WILENSKY: Thank you, Dr. Stewart,
24 you've answered my question. Thank you, Mr. Chairman.

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1 CHAIRMAN GELSTON: Brian Emerick.

2 MR. EMERICK: Yes. Dr. Stewart, you've
3 indicated that the Thimble Island area is unique and
4 it's unique because of its variability and habitat,
5 which I don't disagree with, and I don't think anyone
6 here disagrees with. I think the question is what
7 element of that variability and uniqueness is being
8 impacted by what's being proposed here? Specifically,
9 when we're going to make a recommendation to FERC, we
10 can't merely say well the Thimble Islands are unique
11 because it has X number of various habitats, because of
12 its geology, etcetera, etcetera. I mean, you know, the
13 next question to us is okay so what, what element of
14 that uniqueness is threatened by what's before us.

15 DR. STEWART: Well, I think a lot of the
16 measures on environmental consciousness nowadays in
17 Congress and everywhere else is that diversity and
18 habitat type is the foundation of life, so that any
19 incurrence or intrusion to disrupt that diversity, to
20 partition it, or -- you know, we said several things of
21 potential impact, the trenching, the baronite, the
22 physical disturbance, the continuing siltation
23 minimizes the wholeness, the value -- you know, that's
24 why we make state parks --- and I realize -- so I'm

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1 getting off the point, but then again I'm not --

2 MR. EMERICK: Well, I'm trying to focus
3 you on --

4 DR. STEWART: Yeah --

5 MR. EMERICK: -- so that we get some
6 useful information --

7 DR. STEWART: Right.

8 MR. EMERICK: -- and so I'm taking
9 advantage of your knowledge and expertise here
10 hopefully.

11 DR. STEWART: If -- as the marine
12 resource management in this country proceeds, there's a
13 lot of tension to sanctuaries, to marine protected
14 areas to allow the continuity of the ocean bottom to
15 remain the same and to provide assemblages of species
16 and the multiple species to have some protection, and
17 that's -- and it's proven to be biologically good
18 because it spins off in productivity that can be fished
19 out adjacent to it.

20 If you were to look at the coast of
21 Connecticut and say where would you like a nice marine
22 sanctuary to be, this might be one of them.

23 MR. ASHTON: Let me help if I can. If
24 FERC were about to approve this pipeline in this

1 location, what recommendations specifically would you
2 make to FERC to advise them on the construction of this
3 pipeline?

4 DR. STEWART: Do the directional
5 drilling beneath it to eliminate the shellfish impacts,
6 the habitats to multiple -- or the impacts to multiple
7 habitat fishery -- essential fish habitat within the
8 region, and assure there are no leakages over this
9 passage.

10 MR. ASHTON: By the longest directional
11 drill possible --

12 DR. STEWART: Or -- or skirt it, or go
13 around it and to where there may be less of a bed crop
14 harder directional drilling -- or easier directional
15 drilling aspect. You know, I don't know, they probably
16 -- they obviously don't because their right-of-ways
17 have another out -- you know, a sea fall here or a land
18 side access -- but I would either directionally drill,
19 or in the first place if it could have all be avoided
20 by getting to a coastal zone that had a long shoreline
21 that was homogenous and relatively free of bedrock,
22 then that would make the most -- you know, all these
23 fiber optic cables are coming on where they've pre-
24 routed to be minimum impact.

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1 MS. KATZ: Where in the Branford area
2 might one of those --

3 DR. STEWART: I -- you know, again, I
4 don't know the area thoroughly enough, but there are
5 several people or biologists that would know, or could
6 know -- I think the companies know themselves, they've
7 done most of the seismic work here, so they know what
8 the subsurface structure is.

9 CHAIRMAN GELSTON: The only trouble is
10 no matter where you put that, you've got to get the gas
11 line to it.

12 DR. STEWART: Yeah, that's --

13 CHAIRMAN GELSTON: That's the major
14 problem today.

15 DR. STEWART: You know, I'm wondering is
16 there a land side option to bring -- to bring the
17 pipeline to the shore in other locations? I mean
18 obviously there are other companies with other routes,
19 but --

20 CHAIRMAN GELSTON: Brian.

21 MR. O'NEILL: Yes, thank you, Mr.
22 Chairman.

23 So far we've talked about the trench.
24 We haven't really discussed from Mile Post 10.9 to 32.

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1 There's a possibility that there might be -- let's call
2 it a small wall of pipe, concrete pipe coming up
3 approximately 20 inches tall by 38 inches wide. Would
4 this stretch of exposed pipe have any affect on the
5 migration patterns of the bottom fish or the lobster
6 that you can definitively explain to us?

7 DR. STEWART: Again, I would be
8 surmising by my observations of underway behavior.
9 However, I'm glad you brought this point up because
10 it's a forgotten part about this whole project. The
11 majority of the transect across the seabed in the Sound
12 is of this cement encapsulated pipe. The animal
13 behavior is somewhat immediate. An animal with a
14 directional cue will -- after being diverted for about
15 you know a couple hundred feet, will tend to try to go
16 above -- around an obstacle. And lobsters -- we've
17 sonic tracked lobsters up and over rocky reefs. You
18 know, we put a sonic track -- tracking pack on the back
19 of a lobster and tracked with the hydrophones, and they
20 can go up to five miles in one night. And if they want
21 to go in one direction, they'll go up and over. They
22 glide on their walking legs.

23 Another concern is for very soft
24 unconsolidated silt channels. It's easier for them to

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1 just -- to scale up with their swimmerets. And they
2 push themselves, they don't swim backwards, they just
3 push themselves up and glide over it. But when they
4 come to a very soft sediment basin, they tend to avoid
5 that. They don't like going through the silt, it clogs
6 their gills. So they may follow that for a long way.
7 But the cement barrier I see much more of an entrapment
8 zone for the anephloid layer, the very small organisms
9 being contained there. Again, I don't -- I don't see
10 any -- you know, it would be nice to run some
11 videotapes and look at that periodically on some
12 existing pipelines, but we just haven't been able to do
13 it.

14 One other major points that occurred to
15 me when I was reading that is the vulnerability of
16 those lines to commercial trawling. We have an
17 illuminated commercial auto trawls from Long Island
18 Sound and the doors could easily impact a structure
19 like that. I don't see any reference to commercial
20 fishing fleets being polled for their regular routes in
21 trawling for fish. I know this is a popular winter
22 flounder fishing spot.

23 Again, it's an engineering
24 consideration. It shouldn't be square. If anything it

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1 should be trapezoidal just like the trench was upside
2 down trapezoidal. Everything we design underwater to
3 be free of snags. If we were putting scientific gear
4 in, it usually has a pyramid shape to allow something
5 to go up and over it. So again, this -- and this would
6 allow organisms to transect that barrier much more
7 easily and allow the tidal flow to carry the anephloid
8 layer up and over. As you'd see in your backyard on a
9 stone wall, if you want things to come and go -- or
10 those Jersey barriers in the middle of the highway,
11 they're one of the worst ecological problems. Animals
12 go across and get nailed in the middle, so -- so this
13 has the same aspects of trying to design biologically
14 compatible installations.

15 MR. O'NEILL: Thank you.

16 CHAIRMAN GELSTON: Mr. Fitzgerald, I
17 have a lot more questions, but I think it's just
18 beating a dead horse to death, so I'm going to let you
19 --

20 MR. FITZGERALD: Thank you. I just have
21 a couple of factual things. Could you please give us
22 the references -- the publication references to the
23 articles you referred to that concerned bentonite?

24 DR. STEWART: Yes. Right as soon as we

1 break -- or do you want them for the record?

2 MR. FITZGERALD: If you know, yes, I'd
3 like them on the record.

4 DR. STEWART: The first is by Taggerts
5 ME IV Deblow and Ogglesby (phonetic) and it's a journal
6 of citations. It's "Responses of Developing Estuarine
7 Macro Benthic Communities to Drilling Muds". It's an
8 EPA sponsored journal and I can give you the grant
9 number if you want. It was in Estuaries, Volume 5,
10 Issue 2, page 131 to 137. It's available from MTIS,
11 Springfield, Virginia.

12 The second was by Yalla Attima, Dale
13 Leavitt, Marshall and Camella Como (phonetic). It's
14 "Effects of Drilling Muds on Behavior of the American
15 Lobster, Amerus Americanus (phonetic) in Water Column
16 and Substrate Exposures", and that was the Canadian of
17 Fish and Aquatic Science, Volume 39, Issue 5, page 675-
18 689.

19 MR. FITZGERALD: Did you get those, Joe?

20 MR. SNOOK: We can provide copies.

21 MR. REINEMANN: That would be most
22 helpful. Thanks.

23 MR. SNOOK: Yep.

24 MR. FITZGERALD: Do you know whether or

1 not these articles dealt with the drilling muds from
2 offshore oil wells?

3 DR. STEWART: Yes, I believe this might
4 have been in preparation for Canadian Browns Bank or
5 Grand Bank work --

6 MR. FITZGERALD: And do you know whether
7 there is any difference in the composition of the
8 drilling muds that are used for vertically drilling oil
9 wells and those that are used for horizontal
10 directional drills of the type that we're talking about
11 here?

12 DR. STEWART: Yes, I do know there are
13 several different types of drilling muds.

14 MR. FITZGERALD: Okay. And do you know
15 whether or not the articles that you referenced are
16 pertinent to the solutions that are going to be used in
17 this project?

18 DR. STEWART: Just by the terminology of
19 bentonite.

20 MR. FITZGERALD: Alright. You know that
21 the term bentonite is used to refer both to oil field
22 drilling muds and to horizontal directional drill
23 solutions, right? It covers -- it covers both, like
24 the different kinds of clams --

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1 DR. STEWART: Uh -- yeah --

2 MR. FITZGERALD: Right?

3 DR. STEWART: -- sure.

4 MR. FITZGERALD: Okay. But that doesn't
5 mean that they're the same animal, does it?

6 DR. STEWART: No. I think what -- no,
7 but -- but the basis of the article suggested it's the
8 heavy clay fraction plus some of the heavy salts that
9 are added, so --

10 MR. FITZGERALD: That are added --

11 DR. STEWART: -- all are suspect. And
12 again, it did mention the seven different types -- they
13 tested seven different types with the same effect --

14 MR. FITZGERALD: Okay --

15 DR. STEWART: -- so the composition
16 didn't appear to me to be as much concern, but --

17 MS. KATZ: But doctor, did the articles
18 say whether the bentonite was the causative factor or
19 the other additives?

20 DR. STEWART: They used a compound that
21 would be in the environment, so they didn't -- the
22 article didn't go into multiple tests --

23 MS. KATZ: Could there be different
24 additives for oil drilling muds as opposed to

1 horizontal drilling muds?

2 DR. STEWART: There could be, yes. And
3 I guess that would be the direction, to look for the
4 least consequential.

5 MR. ASHTON: And is barium, which you
6 cited as a pollutant or the toxic element, present in
7 bentonite for horizontal --

8 DR. STEWART: It's the sulfate I think
9 that's more -- barium sulfate -- there are --

10 MR. ASHTON: Okay, is there --

11 DR. STEWART: -- (indiscernible, overlap
12 of talking) -- sulfates that are in the drilling muds
13 of other types of -- so whatever it's compound with or
14 carrier or heavier, but it's the sulfate --

15 MR. ASHTON: Are the sulfates then
16 present in the HDD mud --

17 A VOICE: The toxic --

18 A VOICE: The bio --

19 A VOICE: Physiological --

20 MR. FITZGERALD: Okay --

21 MS. KATZ: Just a second. Could he
22 answer Mr. Ashton's question.

23 MR. ASHTON: Yeah, I didn't hear an
24 answer.

1 DR. STEWART: Again, I'm just
2 suggesting. I know a little biochemistry and so I
3 understand a few of the things that affects --

4 MR. ASHTON: The answer is you don't
5 know?

6 DR. STEWART: No, I'm just suggesting
7 that the sulfates rather than the barium --

8 MR. ASHTON: But, the answer is you do
9 not know whether sulfates --

10 DR. STEWART: No --

11 MR. ASHTON: -- are present in the HDD
12 drilling mud?

13 DR. STEWART: No.

14 MR. ASHTON: Thank you.

15 DR. STEWART: No, I don't.

16 MR. FITZGERALD: You were asked some
17 questions about the cable -- the effect of the cables
18 that would run from the barges to the anchors. And I
19 was not clear whether you were saying that you assumed
20 that those cables were going to create trenches?

21 DR. STEWART: No, I'll be clear. I've
22 seen several offshore oil rig mooring lines, we studied
23 them on Georges way back when. You know, the cable
24 sweep was of concern. I know you intend to put some

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1 buoys on it. And I realize it wouldn't trench, it's
2 just the anchor itself that would be dragged when
3 you're tightening the moor --

4 MR. FITZGERALD: Oh, okay, fine. You
5 gave -- in that same answer you went on at some length
6 about the effect of trenches and I just want to be
7 clear that what you were talking about was the cable
8 trench there?

9 DR. STEWART: No, it was the anchor drag
10 trench. When you're tautening the moors in that soft
11 substrate, you create a trench where the anchor has
12 dragged over the course of laying and not the cable
13 swath, so --

14 MR. FITZGERALD: Okay --

15 DR. STEWART: -- and that's another --
16 another consideration when you have a scope out of over
17 a thousand feet, how much of your cable and your taut
18 moor is sweeping bottom. It certainly would have a
19 greater effect than an auto trawl flying over the
20 bottom. It would disrupt the habitats of lobsters, so
21 --

22 MR. FITZGERALD: The -- thank you. The
23 Applicant has stated in response to Council
24 interrogatory 14 that it intends to bury the pipeline

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1 at a depth with at least three feet of cover throughout
2 its length and not leave it exposed in any location.
3 Would you agree that were it to do that, that the
4 existence of the pipeline does not present a barrier to
5 lobster migration?

6 DR. STEWART: I would agree, that would
7 be the more perfect world to have the horizon of the
8 cement casing at the sediment horizon so that there was
9 no trenching either, to eliminate trenching, but to
10 just bury it sub-bottom enough so you would be
11 satisfied there would be no vulnerability for trawling
12 traffic where the doors that may weigh up to 500
13 pounds, which would be a liability.

14 MR. FITZGERALD: No further questions.

15 MR. SNOOK: May I -- Mr. Chairman, may I
16 pose --

17 CHAIRMAN GELSTON: You may have -- dig
18 your witness out of whatever he said.

19 MR. SNOOK: The only question I am
20 trying to dig out is the last question that was posed.
21 Mr. Stewart, did you understand Mr. Fitzgerald's
22 question to suggest the emplacement of the pipeline at
23 the sediment water interface?

24 DR. STEWART: Yes, that's what I

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1 understood.

2 MR. SNOOK: And is that what you
3 understand this application in its current form to be?

4 DR. STEWART: I had read it differently.
5 I had read what the -- I'm sorry, I forgot your name --
6 but that the majority of the length of the line would
7 be a cement square, a coffin box type of arrangement
8 across the seabed.

9 MR. SNOOK: And did you understand that
10 the Applicant was going to be doing some trenching as
11 well?

12 DR. STEWART: Yes, in the shoaler.

13 MR. SNOOK: And was it your testimony
14 that the trenching was the biggest of the problems?

15 DR. STEWART: Yes, correct.

16 CHAIRMAN GELSTON: Have you read the
17 application, sir?

18 DR. STEWART: Yes, two or three
19 different forms of the engineering aspects of it.

20 CHAIRMAN GELSTON: And it was your
21 supposition it was going to be buried in a cement
22 trench?

23 DR. STEWART: No, that the cement casing
24 would be laid at a point when they got deeper than the