.UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *

NEW JERSEY TRANSIT TRAIN #1614 *
ACCIDENT AT HOBOKEN TERMINAL * Accident No.: DCA16MR011
AT HOBOKEN, NEW JERSEY *
ON SEPTEMBER 29, 2016 *

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Interview of: SCOTT WORDTMANN

Via Telephone

Thursday,
February 23, 2017

APPEARANCES:

CY GURA, Railroad Accident Investigator
National Transportation Safety Board

JOE GORDON, Railroad Accident Investigator
National Transportation Safety Board

PETER LAPRE
Federal Railway Administration

DAVE TYRELL
Volpe Center

JOHN ESHRAGHI
Volpe Center

I N D E X

I N T E R V I E W

(1:06 p.m. CT)

MR. BUCHER: My name is Cy, C-y Gura, G-u-r-a. And I'm an investigator with the National Transportation Safety Board, and this informational interview is being conducted on February 23rd, 2017, at approximately 1:06 p.m. Central Time, with Mr. Scott Wordtmann. Mr. Wordtmann has agreed to share his knowledge of the bumping post, their design, and their installation process.

The purpose of this investigation is to increase safety, not to assign fault, blame or liability. The NTSB cannot offer any guarantee of confidentiality or immunity from legal certificate actions. A transcript or summary of the interview will go into the public docket.

The interviewee can have one representative of his choice.

Mr. Wordtmann, do you have a representative with you today?

MR. WORDTMANN: I do not.

MR. GURA: Okay. I'm going to have everybody identify themselves for the record. Again, my name is Cy, C-y Gura, G-u-r-a, investigator with the National Transportation Safety Board.

Mr. Wordtmann, would you please identify yourself, and your title, and who you work for?

MR. WORDTMANN: Yep. My name is Scott Wordtmann. S-c-o-t-t; Last name is W-o-r-d-t-m-a-n-n. And I'm the president of HJ (Skelton) Canada Limited.

MR. GURA: Okay. Joe, would you identify yourself?

MR. GORDON: Joe Gordon, G-o-r-d-o-n, NTSB rail accident investigator.

MR. GURA: Pete?

MR. LAPRE: Peter Lapre, L-a-p-r -- Federal Railroad Administration, Passenger Division Specialist.

MR. GURA: And Volpe?

MR. TYRELL: Dave Tyrell, T-y-r-e-l-l. Senior engineer with the Volpe Center. I also got a colleague here.

MR. ESHRAGHI: John Eshraghi, E-s-h-r-a-g-h-i.

MR. TYRELL: Your title?

MR. ESHRAGHI: Mechanical engineer.

INTERVIEW OF SCOTT WORDTMANN

BY MR. GURA:

Q. Okay. Mr. Wordtmann, do you mind if I call you Scott?

A. That would be perfect. Thank you.

Q. Okay, Scott. Scott, I'm going to -- I'll lead it off just by asking you, what is the purpose of a bumping post at the stub end of a track?

A. Well, fundamentally, it's pretty much a passive safety device. Depending on the situation and the layout, it may used in combination of other things, whether it's part of the train control, mechanical trip switches. It's sort of the last line of defense. And it's used -- the idea obviously is not to hit it, but it's used in situations where operators or unmanned trains, of course, overshoot where they're supposed to be stopping. Protecting industrial properties, obviously public, both on platforms and on the train as well. The design behind it is to safely stop the train, minimizing injury or worse, and damage to the train and infrastructure around it.

Q. Okay. And how are they designed? What parameters are used to design a bumping post?

A. The main items we require initially to engineer a solution, obviously the weight of the train and an anticipated speed in case of an impact. You get into other more minor items which are addressed during design, which is gauge of the track; is there an uphill or a downhill gradient, because that will affect obviously the forces involved; rail profiles, cant and non-canted rail, which are very minor things. I mean, that's more of a design issue. But the ultimate are the factors weight, speed, uphill/downhill, because that's going to give you your variables as the engineers go through and calculate what needs to be designed and how can we safely stop this train.

Q. Okay. And in the installation process, the installation, does it have to be precise according to the design? Can it be modified? Or if it is modified, does it have repercussions?

A. Well, you've got several types -- or you've got three main types of bumper stops. In general, when it's designed, you've got a pure friction one which is sliding, and friction itself is dissipating the energy and bringing the train to a stop. Then you have fixed ones with hydraulic shock absorbers. It could be one, could be two, could even be three, depending on the application. And then you have, I'll call it a hybrid, which is the friction with a hydraulic on it for certain circumstances.

In all cases, you're looking at the energy that needs to be dissipated and then the distance it's going to be dissipated in. In the case of a pure hydraulic, you have a much shorter distance obviously. It could be a 3-foot stroke. It could be, you know, less than that. So you are somewhat limited as far as speed and weight in a pure hydraulic situation. Notwithstanding, there are some very large ones, but still.

In a friction application, you are using slide distance. So as these are engineered, we take what the client's requirements are, such as -- for an example, 10 miles an hour and it's a 1 million pound train. And as we go through the process, we will come up with a solution that will say it's going to slide X number of feet or you need a hydraulic shock absorber that's this size. And so the parameters are very specific based on what we're told from the client -- speed, weight -- this is what you can do.

What we engineer towards is we like to see an average deceleration rate of 0.3 g’s or lower. Some places will go as high as 0.5 g’s. It's not really all that bad. They probably -- going through a switch, the passengers would feel more of a jolt than that would be. But we aim for 0.3 g’s, which we -- Rawie (ph.), the people we represent, have learned over the last 105 years that you're going to very much minimize or negate injury, damage to train and property, and things of that nature.

So that's the grail, the 0.3 g decelerate. And then we put all that together and do the calculations and come up with a suitable size bumper stop, a suitable combination, whether it's a hydraulic plus a friction, and how much room it's going to take to install this, because that usually is the number one issue as we're going through these processes. Especially in the existing locations, how much space can you give up, for lack of a better word, to install such a safety device.

Q. Okay. And the retardation of the kinetic energy, that is under the assumption that it's not under power, it's under a slowing condition? Or what is the difference, you know, if it's under -- if the train is still under power or if there's an emergency braking from an overspeed or something of that nature?

A. Everything is designed on the assumption that there is no power at the point of impact. I don't know of any time they designed anything to arrest a train that's under power because it's probably safe to say a train that's carrying a million pounds worth of cars, passengers, whatever the case is, is going to just continue pushing this down until it runs out of room. And then, as we've seen before, it either vaults out of the track or, you know, does a combination of things. So the criteria is there's no load on it at the point of impact on; you're still not driving the wheels.

If we know in an under power situation what the force is, you can comment on it and say, okay, you're going to need something of this size. But it becomes a very tricky situation. Obviously, the trains, as you know, are very powerful and they can push that a lot quite nicely, unfortunately.

Q. Okay. From our previous conversation we had, you mentioned that you had been down in Hoboken terminal; is that correct?

A. Yes.

Q. Okay. And you've seen the bumping posts that are present over there. Basically they're a concrete block.

A. Yes.

Q. And I believe their design dates back to like 1907 or something of that nature.

A. That's my understanding. About 100 years old. Yeah.

Q. Correct. Now could you tell me, what are the problems with having 100 year-old bumping blocks as compared to the train changes and stuff of that nature now?

A. The primary thing is it's a non-energy absorbing way to stop a train. So it's really -- even in a case of a very low speed impact, you are going to have passengers tumble. Your only, usually, way you dissipate energy is in the coupler itself, which has some give on the train. And that's a very, very, very limited piece of equipment to handle something that's, you know, significant weight. And even at 3 miles an hour, when you go to 3 miles an hour to zero in the space of, you know, a couple of inches, that's not a good idea from a passenger standpoint because it comes out of the blue and that's where the tumbling comes in obviously, and things even worse than them.

So we don't, as a rule, recommend anything that's not energy absorbing. We do have them in yards with very, very low speed, with just a fixed bumping post where, you know, the train sort of rests up against it and that's it, when they're parking cars. But not in revenue service. We would never recommend anything that's non-energy absorbing in revenue service. Just, it's not going to do the job. It's either going to shear off and become useless anyways, or if it is strong enough to stop the train, it's pretty safe to say that there will be significant damage to the train, and more importantly, there would be significant injuries to the passengers, I would suspect.

Q. Okay. What happens when a carrier railroad makes a change in their equipment or design, do things have to be reconsidered with the bumping post? More of a system engineering if there's a change in track structure and a change in the equipment, does the bumping post need to be looked at also?

A. Yes. The biggest occurrence we're seeing as time goes by is weights of the train are changing. As transit gets more popular, cars are added and so the weight changes. And that significantly -- talking in terms of, say, a friction buffer stop, will change; it's going to slide further. Which is fine, it will dissipate the energy. But if your design at the end of track is just a little bit further than the original design for the slide distance, you're going to run out of room and either hit the end of the platform with a buffer stop, which at that point in time it becomes a non-energy absorbing obstacle to the train.

Anytime where there's speed, or more standard is the weight of the train changes, a transit or anybody using anything like that should examine and talk to the manufacturer and determine can the frame, the exisiting frame of the buffer stop withstand the changes, the parameters. And if that's a yes, how will it act at that point in time.

What we would do is, assuming the bumper stop frame itself can withstand the new forces being exerted on it, and the client says, okay, we need to move it further out, 10 feet for argument sake, we would actually -- we have data plates on all our bumper stops that list the parameters,: train weight, speed, any spacing of the friction shoes behind it if that design calls for it, so all the things that the transit or user needs to know for installation. We would put a new data plate on to reflect the new conditions.

That way -- and we recommend from a maintenance standpoint, that as people go around, they can reaffirm that it hasn't been lightly hit and maybe moved a short distance, which is going to infringe on the available slide distance. So it allows you to quickly look at it and determine distance now reflecting today's reality as opposed to 10 years ago when it was first applied, and it's installed correctly.

So that is important for any user to keep track on that if things change. And it can be an insidious little creep of a change as you add things, and we do run into it. Most of them are pretty good, but you need to keep an eye on that because it does change your parameters.

Q. Well, that would be part of what the new FRA regulation might be, and consider it like a hazard analysis once that is identified in some of these stations. Would that be considered like a possible hazard analysis then of the bumping post?

A. Yeah. I mean, as a good exercise, like many other things, obviously, when you're transporting people. I mean, auditing, for lack of a better word, any changes that happen with your trains -- you get new locomotives, you add cars, you change your track even and now you've got a downhill gradient of 2 percent -- you know, these locations evolve and it really is imperative if you are going to use a passive safety device such as a buffer stop, bumping post, whatever you want to call it, that you keep track of that and check with the manufacturer: Are you still in a compliant environment for that, or do you need to make adjustments, whether just moving it further out, or you may need a sturdier buffer stop.

Q. Okay. Now if I recall, one of the bumping posts that are manufactured through your company or through the corporation you represent is at Hoboken; is that correct?

A. Correct. We have one on the main line there, and then we have a number of them over where the light rail comes in there off to the side of the main terminal. But we have one main -- one on the main line there where the incident occurred. That was supplied I think around the mid-90's or so.
Q. Okay. And did you get an opportunity to look at that to see if it was installed properly or if anything has changed with it?
A. It's in its original position. They were doing work at the back of the track. It looks like they were rearranging some wiring, whether it's signals or power feeds to lights. And some of the rail had been disturbed at the back, which would in infringe on the total slide area, which is not a good idea in that if you do have, you know, a full speed impact, based on how it was designed, it's going to slide X number of feet. And if you've got X minus 4 feet, it's going to come off the back, obviously. It relies on the rail to produce a friction with the shoe. So that needs to be respected in that slide test, that track occupancy, for lack of a better choice of words.
Q. Okay. And I also noticed myself, when I was looking at that bumping post, that there was a pair of insulated joints ahead of that bumping post. Does that interfere with the bumping posts' performance?
A. It can. And it depends on the distance in front. The other thing that you need to be mindful of, regardless of the style, is the uplift force on an impact. And that comes down to -- once we

analyze the site conditions and make a recommendation, we would also say, okay, these are the forces your track is going to experience. Because uplift will tear it out of the rails, tear up the track, and do a bunch of things which basically negates having a buffer stop at the first place.

An insulated joint is a relatively weak part of the track, obviously, in a case like that. So we try to design -- we want to -- we don't want the -- obviously you cannot have a joint behind the buffer, any sliding buffer stop, because it's not going to slide past that joint.

In front, we look at, especially looking at high uplift situations, how far from the front of the buffer stop any joint would be. We like to design around or ask the client to make sure sometimes they need to relocate these joints.

We like to see the center of the front bogie of the car that would be hitting the buffer stop to be past that joint, because the weight of the train now, or at least the first bogie, is going to assist in keeping that rail down where it's supposed to be and not letting the uplift possibly break that joint. So the train itself protects the joint. But we like to design around that because it is a weak link with the uplift. Longitudinal a little bit, but uplift is a bigger danger obviously to the joint.

Q. Have you been -- have you had an opportunity to go to the Brooklyn Station and look at the Long Island Rail Road's bumping post?

A. No, we have not been out there. We -- on these things, we've supplied a number of buffer stops to -- in the New York area, an awful lot of them, and we always make the offer we'll come out and take a look at things, and if they want recommendations or thoughts and all that. But at this stage of the game, we have not been invited out there to look at it.
Q. Okay. In our conversation yesterday, you had had opportunity to look at the one that was on the CTA, where they basically negated some of the friction slide on the bumping post that was originally installed. Could you tell us a little bit about what was done there?
A. My understanding -- the original buffer stops that were at O'Hare there in the CTA, are very, very old, are Godwin Warren actually, and there was a licensing arrangement between Rawie and Godwin Warren decades ago.
Same basic principle as the friction stop. And from my understanding, it's long before my time, they slowed the potential impact speed down, which allowed them to have less slide distance. And that center track being the shortest of the three, they put that into play, and moved it back a little bit -- you have less slide -- in anticipation of a lower impact speed. That's how I understand it. Again, before my time, but that's sort of the understanding on my part.
Q. Has a new bumping post been installed there since that time?
A. Yes.

Q. Okay.
A. Yeah. We put a -- fairly interesting design, in that normally a friction buffer stop has the shoes either under the physical stop itself, and in cases where you need even more stopping power without getting too high of a deceleration rate, we can either put shoes inboard on two auxiliary rails inside the gate, or stack them behind. Stacking behind obviously increases your track occupancy because they physically take space as it all collects and slides back.

In the case of Chicago there at O'Hare, again, with the limited space, the design actually pulls the shoes. So the train would pass over the friction shoes themselves and hit a very compact buffer stop upright. So it maximizes the space they have for slide distance, but it also gave the opportunity to put enough friction shoes on the apparatus to control the train under the parameters that they gave us.

So it's a fairly unique design in that regard. But the intent is, as is normal on a lot of these existing sites, is to minimize how much track occupancy you need behind the buffer stop.
Q. Okay. Those shoes that you are speaking of, would they be on the running rail prior to the bumping post, or are they in parallel rails that are underneath the bumping post?
A. In the Chicago one, they're on auxiliary rails inboard.
Q. Okay.
A. And that's just the nature of the design. Because that

had -- it's a fairly old installation as far as the concrete and everything. We did not have, or it was discovered by Chicago, there's not a lot of concrete depth and the danger that they wanted to identify and mitigate is pulling out of the fasteners going into this concrete. So the forces that would have been involved, the decision was made just to add the auxiliary rails in there too to sort of spread out the overall forces so we didn't have any failures of the fasteners. And that's how that design evolved.

Normally we like them on the running rails, if the running rails can do it. It's a simple way to do it. It's already there. And as long as they can withstand the longitudinal forces and the uplift forces, it's a very simple installation.

In cases where the rail fixation is possibly too weak to hold an impact in that case, then we would add or we recommend adding auxiliary rails or things of that nature to kind of spread out the overall impact there and work with it that way.

Q. Okay. So pretty much the design is based on the parameter that the estimated impact speed is not going to be exceeded by too much. Is there like a safety factor in that too much? As an example, you have a 15-mile-an-hour bumping post, would it be able to withstand an 18-mile-an-hour, or a 20-mile-an-hour impact?

A. I mean, the buffer stop itself would. If it's a sliding one, 18 -- I mean, no matter what, it's going to -- anything over that rate is going to slide a little bit more. Now there are --Rawie, the designer and manufacturer of these, they do put a safety (indiscernible). Normally it's about a 50 percent safety factor. And that takes into account condition of the rail. Is it new rail, old rail, is it rusty, is it -- you know, it's life. And then there are different parameters out there that can change things a little bit.

So they like to build in about that 50 percent factor to make sure that -- they call it worst-case scenario. If it's rated for 10, then your rail is in bad shape or whatever the case is. They know it's going to perform to that, if not exceed it. When I say exceed, obviously a shorter slide distance or things of that nature.

So that's -- they design for the worst, I guess, based on the parameter. So you should see a little bit better performance, I guess, in the case of slide distance or deceleration rates and stuff like that in the real world. So they do build a factor into it.

MR. GURA: Okay. I believe I don't have any further questions. I'm going to pass it over to Mr. Gordon.

Mr. Gordon, will you please identify yourself and ask any questions that you have?

BY MR. GORDON:

Q. Yes. Joe Gordon, NTSB. Scott, I appreciate the information that you've given so far. And you know, very thorough answers to the questions. I think -- I've been marking questions off that I had written down as you're doing such a good job answering these.

You just spoke about your company, I guess, would send like a factory rep out that could go out and analyze site conditions for a carrier prior to making a recommendation for their different type of bumping post?

A. Yes. We normally -- a lot of the times the standard, I guess, would be if it was a new installation, say, a new transit or an industrial application. Most of it's done with emails back and forth, but there are some times the clients want us to come out and look at the site conditions. And especially if it's a little out of the ordinary, such as, you know, it's an oil refiner and a loading rack and 5 feet away is a place you don't want to park a train. A lot of times as a comfort level, we'll come out and look at it.

There have been cases -- in the case of Chicago where actually Rawie's engineers came up from Germany to look at it, because that was a pretty tricky one in that it's old structure underneath and a very limited space to work with. So there was a lot more people involved in that. So we will do that in the design of things like that.

And I mean, from our role, as we represent Rawie in North America in the function of a sales process, I mean, in all honesty, from our side of things, we want to recommend the correct equipment for the situation and give our understanding and move through it.

And the other thing we will do, once it's installed, there are a lot of times where transits or industrial customers, we will come out and certify the installation, make sure that the torque settings are correct, and it's set to where it's supposed to be. All those things, and we sign off that they've installed it correctly and, therefore, it's going to operate under the conditions that it was designed for.

Q. Okay. And once again, very, very good answer to the question. I think you've marked another one off my list.

So yeah, the only -- and I think you have spoken this when you talked about some of the different installations, and you know, there's a hazardous material unloading facility beyond the end of the stub track, and that would be taken into account.

Would that be similar to a passenger terminal where there was a walkway beyond the end of the track? That would also be something that was taken into consideration, an outside assessment?

A. Yeah, absolutely. I mean, that is -- you know, the goal for this type of material, obviously number one is nobody gets hurt or worse. You can replace the train, you can repair a train, you can patch concrete, but the whole design behind it is for the safety of the public, both on the train and around the train. And that is, you know, what dictates, what drives us in our recommendations.

We will get requests to stop a 2 million pound train at 50 miles an hour in 8 feet. That's not going to happen. And so we are -- and Rawie, more importantly, are very, very adamant in that we're not going to tell you something that doesn't make any sense from a safety standpoint, passenger, and an equipment standpoint, and an infrastructure standpoint. We will tell you what you can do and what you can't do. And then the decision-making process, obviously, leaves our orbit and goes back to the client and they need to either find more space, control the train at a lower speed, or a combination of all of the above.

And this is -- some of these take 3 years, as we go around and around and around. It can be quite a long process. But what our recommendation would be is what we stand on in that regard. We design it based on safety number one, and everything else sort of trickles down from there.

MR. GORDON: Okay. I appreciate that. I believe that's all the questions I have at this time. I will pass it on back to Mr. Gura for him to move it around the room there.

MR. GURA: Okay, thank you, Joe. Mr. Lapre, Pete, do you have any questions?

MR. LAPRE: Yes, I do.

BY MR. LAPRE:

Q. This is Peter Lapre. Scott, you're doing a great job. It'll be a short (indiscernible) because you answered my 20 questions I had already.

I do have a question. You had talked about the use of auxiliary rails. You talked about placing friction shoes in front of the post. And these additional devices could be incorporated to reduce the amount of space behind of the bumping post?

A. Yes.

Q. Is there a limit to the amount of auxiliary devices that you could place in front of the post and still be effective?

A. Your limiting factors are going to be your deceleration rate that you're trying to achieve and the capability of your track structure itself to withstand the longitudinal forces and the uplift, obviously, at point of impact. The more friction shoes, you've got to get them moving, for a lack of a better word, so that uplift is going to be reflected. So those are your two main limiting factors.

The way your track structure is like and your decelerate, you want to keep this into an area -- 0.3 g's ideally, up to 0.5 g's, but we shoot for 0.3. And again, to minimize danger to the public, injuries, worse, both on the train and obviously off around the area, platforms, things of that nature. So those are your limiting factors.

Q. Okay. And as related to the strength of a post itself, you talked about -- you talk about (indiscernible) from leaving the locomotive on the rail, like a bumping post it's attached to. Is there any other special consideration that should be considered with regard to (indiscernible)?

A. No, that's basically it is your -- again, as you mentioned (indiscernible) is in front. You want to overlap with the train. We like a nice clean shiny rail, which doesn't last that long anyways. And we see that more in industrial application. Some of these sidings are a pretty (indiscernible) looking rail, which does not lend to a very good smooth deceleration with friction shoes. So we like a clean rail. If it's really badly pitted, we will even recommend that it's changed. But that's the main thing: Can your track structure handle the impact, the uplift and the longitudinal; and do you have not have any joints in front of the train there because that's going to be your weakest link.

And that's pretty much it. We will come up with -- we will tell the client what these forces are, and then the track engineers have got to sit down and decide can they do -- if they need to reinforce, you need to add ties, and extra (indiscernible). That leaves our realm.

We can only say this is what this is going to generate. We are not going to design your track for you because we don't know obviously what your site conditions and things like that. That's not our place. We'll give you the tool, but you need to make sure that it -- what you have on site can handle the forces involved.

Q. Okay. Without oversimplifying, I'll make the (indiscernible) that there's somewhat of a marriage that occurs between the equipment that the railroad operates and the bumping post. So transit rails typically operate many different types, you know, of equipment, some being locomotive, some being cab cars and stuff like that.

With regard to the impact (indiscernible), the equipment versus the bumping post, what considerations do you take (indiscernible)?

A. We prefer to strike an anti-climber if it's equipped with such. Most LRTs are. And that kind of locks everybody together so we don't get situations -- I think if you go back to the '90s in Baltimore at the airport there, I think they had two hits about 6 months apart and it drove the trains up in the ceiling, I think, of the underground there. Engage the anti-climber because, if your buffer stop -- we use a guide (indiscernible) that holds it down on the rail from the uplift. They lock the train and it keeps it from rearing up. So we like to hit anti-climbers. We don't like to hit couplers. In cases of Class 1's and freights, obviously couplers are the only game in town, but it's obviously not a revenue passenger situation, so it's probably less likely.

But we like anti-climbers. We always recommend saying, you know, we want to contact the anti-climber; we get a drawing of the train, we design the anti-climber to mesh with the trains. And so the two of them lock in at that point of impact, and so as it's pushing it along or moving the hydraulic, you kind of keep them together as long as possible to keep things from wandering off the track or derailing or rearing up, anything of that nature. So that's what we like to see, anti-climbers. We like those a lot.

Q. Okay. So you could have a bumping post with a rather large (indiscernible) for lack of a better description?

A. Yeah. We have trains that'll have two anti-climber plates on either side, with a coupler in the center. Obviously, you'll have two impact points if you hit the anti-climbers. And then you've got a cutout where the coupler would go in there and not have an impact hit.

We can design, and have designed, pretty much everything out there. Toronto Transit up here, they are in the process of introducing new trains into their system which are significantly different on the front end. So we have strike faces on the buffer stops that actually will handle old and new trains, depending on how far couplers stick out or anti-climbers. For Rawie, I think they've done over 45,000 buffer stops around the world. There's nothing they haven't seen.

So you can allow for that and engineer if you've got the drawings. And again, pick your points. You want to find the strongest point of the car, which it usually is where the anti-climbers are attached to, and use that as your impact zone.

Q. And I guess lastly, would you recommend that whenever a railroad buys a new car or a locomotive, that that piece of equipment be taken -- the differences in that piece of equipment be taken into consideration with the design of the bumping post?

A. I would say so. If it's available, it is a good idea. Because again, you want to lock that train with the buffer stop as it's going through its motions, and keep it from jumping up with the uplift, because then you do run the risk of it leaving the track, which obviously creates more situations than you necessarily want in that case. So if the option is there, absolutely, anti-climbers are a nice way to go.

Q. Okay. Thank you very much.

A. No problem.

MR. LAPRE: That's good for me, Cy.

MR. GURA: Okay, Pete. Thank you.

From the Volpe Center, who wants to speak first?

BY MR. TYRELL:

Q. I guess I'll speak briefly. This is Dave Tyrell. And I think the only real question -- I mean, we've gotten a lot of good questions. The only real question I have is in terms of you said the bump stops were open designed on the order of 50 percent?

A. Yes.

Q. Is that for speed or for energy?

A. It's for the energy. What they'll -- if you look at -- in the case, say, of friction buffer stop, each friction shoe handles 40 kilojoules. So it's a math problem; obviously it's physics, because you've got the speed and the weight and all those good things. You divide it all out and that's where you get your slide distance. And Rawie has built in there about a 50 percent factor. If you have a case where, again, you're in a hazardous area. It could be a platform with, you know, pedestrians or an oil refinery, they will sometimes go beyond that as well for obvious reasons. So that's kind of the standard, is the 50 percent they'll build into it. And --

Q. Okay. Thank you.

A. And that'll dictate the number of friction shoes or the size of the hydraulic or the combination of the two.

Q. Okay. Yeah. Again, that makes sense. But you know, in terms of the physics, if it's able to absorb 50 percent more energy, that ends up being a little less than 25 percent more speed (indiscernible).

A. Um-hum.

MR. TYRELL: Okay. Okay. That was the only clarification I was looking for. John?

MR. ESHRAGHI: No. All my questions are answered.

MR. TYRELL: Yes. So I think we're good here. Thank you.

MR. WORDTMANN: Okay, no problem.

MR. GURA: Well, I don't have any further questions. Does anyone else have any further questions?

Okay. Well with that said, Scott, earlier you sent me some pictures. Would you mind if I added those pictures along with the interview transcript as examples of bumping posts and stuff of that nature?

MR. WORDTMANN: Not a problem at all.

MR. GURA: Okay.

MR. WORDTMANN: A lot of those are on our website, or Rawie's, and you're free to use those in any way you need to.

MR. GURA: Okay. Well, it's -- looks like we've been on the interview for about 43 minutes. So with that, I'd like to conclude this interview. And Scott, thank you for -- thank you very much. I mean, it was very informative and I appreciate your time.

MR. WORDTMANN: Oh, my pleasure. Any questions or anything of that nature, please feel free to get a hold of us. And we can help you out as best we can.

MR. GURA: Okay. Well, what my plan is now, I will get this interview transcribed, and it usually takes about 20 days. And I will send it to you via email for you to review, to make sure everything is correct as you can remember. And then once it is, I will enter it into the docket, along with the pictures that you supplied. And it will be -- your statements I know will be used in our reports. I can tell you that already.

MR. WORDTMANN: Okay. That's no problem.

MR. GURA: Okay. Again, thank you very much. And with this, I'm going to hang up and take care everybody.

UNIDENTIFIED SPEAKER: Thank you very much.

MR. WORDTMANN: All right. Bye-bye.

(Whereupon, the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	NEW JERSEY TRANSIT TRAIN #1614 ACCIDENT AT HOBOKEN TERMINAL AT HOBOKEN, NEW JERSEY ON SEPTEMBER 29, 2016 Interview of Scott Wordtmann
DOCKET NUMBER:	DCA16MR011
PLACE:	Via Telephone
DATE:	February 23, 2017

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

Katie Leach
Transcriber