

Exhibit No. ____ -T (TRZ-1T)
Docket No. TR-070696
Witness: Thomas R. Zeinz

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

BNSF RAILWAY COMPANY,

Petitioner,

v.

CITY OF MOUNT VERNON,

Respondent.

DOCKET NO. TR-070696

**TESTIMONY
OF
THOMAS R. ZEINZ**

**ON BEHALF OF THE STAFF OF
THE WASHINGTON UTILITIES
AND TRANSPORTATION COMMISSION**

November 5, 2007

1 **Q. Please state your name and business address.**

2 A. My name is Thomas R. Zeinz, P.E., and my business address is 4746 Hayden
3 Boulevard, Columbus, Ohio 43221

4

5 **Q. By whom are you employed and in what capacity?**

6 A. I am the owner/principal member of Highway-Railroad Safety Consulting, L.L.C., an
7 independent consulting firm.

8

9 **Q. Please state your qualifications to provide testimony in this proceeding.**

10 A. I have provided a description of my qualifications as Exhibit No. ____ (TRZ-2).

11

12 **Q. Have you presented testimony before this Commission in other cases?**

13 A. No, this is my first case in the state of Washington. However, I have previously
14 testified in numerous crossing improvement and closure/consolidation cases before
15 similar commissions in other states.

16

17 **Q. What is the purpose of your testimony?**

18 A. The purpose of my testimony, which is being entered at the behest of Commission
19 Staff, is to render an independent informed opinion relative to the crossing safety
20 aspects of both closing and not closing the crossing, which is the subject of this
21 proceeding.

22

1 **Q. Are you familiar with the Hickox Road crossing and surrounding environs?**

2 A. Yes. I made an extensive field inspection of the Hickox Road crossing and
3 surrounding area accompanied by members of Commission Staff on July 12, 2007. I
4 have also reviewed and familiarized myself with the pre-filed direct testimony of the
5 BNSF and WSDOT witnesses, and the prior filings and comments made to this
6 docket, including the *Hickox Road Railway Crossing Closure Traffic Impact*
7 *Analysis* and the *Long Range Plan for Amtrak Cascades*, both prepared by or on
8 behalf of WSDOT.

9

10 **Q. The Commission has often noted that at-grade crossings are inherently**
11 **dangerous. What dangers does an at-grade crossing present?**

12 A. Every open, at-grade crossing carries an inherent risk of a train-vehicle collision that
13 can result in injury or death to vehicle occupants, train occupants, or both. This is
14 especially true where higher-speed passenger trains or trains carrying hazardous
15 materials operate in that every train-vehicle collision also entails a risk of derailing
16 the train. If a passenger train were involved, this could result in extensive loss of life
17 or injuries to passengers aboard the train or, in the case of a freight train transporting
18 hazardous materials, a significant haz-mat release.

19

20 **Q. Would extending a siding through the Hickox Road crossing increase the risk of**
21 **a crossing collision? Could you please elaborate?**

22 A. Extending the siding through this crossing increases the likelihood of a crossing
23 collision in two very significant respects, both related to the resultant changes in

1 train operations in the crossing vicinity. First, one must recognize what this siding
2 track is used for. Its function is to (a) provide a place where two opposing trains can
3 meet and pass each other, or (b) to allow a train to get out of the way of a following
4 train (traveling in the same direction) that is overtaking it. Either way, the siding
5 needs to be of a length that will accommodate the longest train likely to be operated
6 on the line. Thus, the decision to extend the siding through this crossing location
7 infers a need or intention to operate longer trains on this line, which, in turn, implies
8 a distinct probability the Hickox Road crossing will be blocked, quite possibly for an
9 extended period of time, whenever the siding is used for its intended purpose. One
10 way collisions may increase is that there is a considerably greater likelihood that if a
11 motorist (who is otherwise familiar with the crossing) approaches the crossing and
12 realizes a train is also approaching, he/she may choose to ignore the crossing
13 warning devices and try to “beat the train” across the crossing, rather than risk
14 having to wait for what might be an extended period of time (or having to retrace
15 their path and find an alternate route). Sometimes, this behavioral decision will have
16 the desired result, but on occasion it doesn’t and a crossing collision results.

17

18 **Q. Why would a train entering the siding result in the crossing being blocked for**
19 **an extended period?**

20 A. When the train dispatcher directs the train to enter the siding, the train crew often
21 doesn’t know how long they’ll be there. It could be for just a few minutes to meet
22 one train that’s reasonably close, or it could be for an hour or longer to meet two or
23 more other trains.

1

2 **Q. Yes, but isn't there a rule that limits the time a standing train can block a**
3 **crossing to 10 minutes. Are you saying the railroad won't or can't comply with**
4 **these rules?**

5 A. It's not that they wouldn't if they could, but from a purely practical perspective, they
6 can't. These days, trains are operated with 2 or 3 man crews, all of which are aboard
7 the locomotive(s). If the train is too long to avoid blocking the crossing (too long to
8 fit between Hickox Road and Blackburn Road), they'd have to put a crew member
9 on the ground at the crossing to break the train ("cut the crossing"). That part is do-
10 able. But once they subsequently obtained permission to move the train, the time
11 required to re-couple the train, pump off the air brakes, and get the crew member
12 back on board the locomotive would more than exceed the 10 minute limitation in
13 the vast majority of instances. It becomes a "Catch-22" situation.

14

15 **Q. Would waiving or suspending the crossing blockage rule at this location be**
16 **beneficial?**

17 A. From the railroad's perspective, it would be an operating necessity, if the decision
18 was made not to close the crossing. But even that doesn't mitigate the aforesaid
19 increased risk of a crossing collision.

20

1 **Q. You suggested previously there were two ways crossing collisions at the Hickox**
2 **Road crossing might increase if it were to remain open. What is the second**
3 **way?**

4 A. The second and, in my opinion, more serious risk of increased crossing collisions
5 would occur when a stopped train is short enough to fit between the Hickox Road
6 and Blackburn Road crossings. The railroad would, with good intention, instruct its
7 crews to stop the train at a location such that neither crossing is blocked when it is
8 possible to do so. Assuming the warning devices at Hickox Road are equipped with
9 control circuitry that would deactivate the crossing lights and gates when a train is
10 stopped a sufficient distance from the crossing on either track, a motorist would still
11 be able to use the crossing until the train again starts to move or a second train
12 arrives and reactivates the crossing signals. The problem occurs when a second train
13 approaches. A motorist approaching the crossing can see that the crossing lights and
14 gates are activated, but also sees the stopped train. If the second train movement is
15 not immediately apparent, a motorist may falsely presume the signals are activated
16 by the stopped train and mistakenly believe it to be “safe” to drive around the
17 lowered gates. They may not realize that the lights and gates are really being
18 activated by a second train on the other track which may be screened from their view
19 by the stopped train. This is a major cause of crossing collisions at multiple track
20 crossings adjacent to locations where trains may stop or be moving very slow.

21

1 **Q. OK, but in both instances you relate the increased risk to motorists driving**
2 **around the existing gates. Why is this? Isn't such behavior clearly illegal?**

3 A. It is never legally permissible for a motorist to drive around a lowered gate at a
4 railroad crossing, regardless of whether they believe no train movement across the
5 crossing is imminent or even if they suspect the gates to be malfunctioning. By the
6 same token, it's likewise illegal to fail to stop at a STOP sign or to run a red traffic
7 signal, but we know it happens from time to time. Thus, while flashing light signals
8 with standard 2-quadrant gates are quite adequate at the vast majority of crossings,
9 including many with multiple tracks, crossing collision data suggests additional
10 strategies be considered at locations where certain risk factors exist. These factors
11 include where excessive motorist delays can result if the motorist does stop (causing
12 the "beat the train" scenario described earlier), where motorists may, mistakenly or
13 otherwise, believe the gate operation to be unwarranted (*i.e.*, they can see the train
14 and it appears to be stopped or moving so slowly that they don't deem it a hazard);
15 where highly unusually roadway geometrics may exist in the immediate crossing
16 vicinity; or where the result of a crossing collision could be particularly catastrophic
17 (such as derailing a high speed passenger train).

18
19 **Q. What would mitigate such increased collision risks?**

20 A. The strategies used in such instances include closing or grade separating the crossing
21 (when feasible) or augmenting the lights and gates with supplemental devices
22 intended to preclude, or significantly discourage, the likelihood of a motorist
23 attempting to circumvent the gates. The latter typically involves installing some

1 fashion of raised median barrier—such as a non-mountable curbed median or vertical
2 delineators—extending along the roadway for some distance on either side of the
3 crossing. The intent is to make it more difficult or to discourage motorists from
4 crossing over the roadway centerline in order to drive around the crossing gates.
5 Barring that, the other option is to install four-quadrant gates. At Hickox Road, since
6 the crossing is likely to be blocked for extended periods of time, any manner of
7 raised median barriers would interfere with a motorist’s ability to turn their vehicle
8 around should they choose to seek an alternate route. Thus the only real option here,
9 as I see it, is to install four-quadrant gates, which, incidentally, the Federal Railroad
10 Administration will likely require anyway if the state is ever to achieve its stated
11 goal of 110 MPH passenger operations on this line and this crossing remained open.
12 Also, there would be a need to create, at least on the west side of the tracks, a “turn-
13 around” of some fashion—some place where motorists could turn their vehicles
14 around—should they choose to seek an alternate route instead.

15

16 **Q. So you’re saying the crossing could safely remain open if four-quadrant gates**
17 **were installed, turn-arounds were provided on one or both sides of the tracks,**
18 **and the Commission’s crossing blockage rule(s) were suspended or waived at**
19 **this location?**

20 A. Yes, it could safely remain open under those circumstances. I would add, however,
21 that the public would also need to be made aware, by appropriate signage or other
22 methods, that the crossing could be blocked by a stopped train for extended periods
23 of time and that they should be prepared to seek an alternate route if they prefer not

1 to wait. It should also be recognized there would still be a risk, albeit small, that a
2 crossing collision could still occur if someone (intentionally or otherwise) ran
3 through the gates.

4

5 **Q. On that basis, what costs would keeping the Hickox Road crossing open likely**
6 **entail?**

7 A. I would anticipate the costs of upgrading the existing signals to four-quadrant gates
8 with constant warning time circuitry on both tracks; installing some manner of
9 intrusion detection to delay the descent of the exit gates in the event the crossing is
10 occupied by a vehicle (to avoid “trapping” a vehicle on the tracks), installing an
11 appropriate crossing surface for the second track, re-profiling one or both roadway
12 approaches as necessary (to avoid having a “humped” crossing), and installing turn-
13 arounds on one or both sides of the tracks together with any needed supplemental
14 signage to run upwards of \$400,000 to \$500,000. In part, it becomes a value
15 judgment as to whether the potential advantages of retaining the crossing can justify
16 such expense, especially considering the fact that it will still be blocked and rendered
17 unusable from time to time.

18

1 **Q. If the Hickox Road crossing is closed, let's focus on what, if any, crossing safety**
2 **improvements may be needed at the adjoining crossings. Do you foresee any**
3 **resultant negative impacts on crossing safety at the Stackpole Road crossing?**

4 A. Assuming petitioner's assertion that the Stackpole Road crossing will be upgraded to
5 include flashing light signals and gates in the event the Hickox Road crossing is
6 closed, no.

7
8 **Q. What about at the Blackburn Road crossing?**

9 A. I do foresee there being safety related issues at the Blackburn Road crossing, but
10 these are irrespective of whether Hickox Road is closed or not and, quite frankly,
11 whether the siding is extended or not.

12
13 **Q. Please explain.**

14 A. Recall what I stated previously regarding what could happen if the siding was
15 extended through Hickox Road and the Hickox Road crossing was left open,
16 specifically how a motorist approaching the crossing observes the crossing lights and
17 gates are activated, but also sees a stopped train in close proximity to the crossing.
18 They may not realize that the lights and gates are really being activated by a second
19 train on the other track, which may be screened from their view by the stopped train,
20 and mistakenly believe it's safe to drive around the lowered gates. Well, the same
21 situation can exist, in fact already exists, at the Blackburn Road crossing. Secondly,
22 there's the matter of there being unusual and complex roadway geometrics at this
23 location.

1

2 **Q. What do you mean by “unusual and complex roadway geometrics,” and how do**
3 **they relate to the safety of the Blackburn Road crossing?**

4 A. There are actually two roadways—Blackburn Road and South Second Street/Old
5 Highway 99 that both intersect each other and two (2) railroad tracks at this location.
6 The result is four roadway approaches (rather than the typical two) to this multiple
7 track highway-rail crossing, and approaches for South Second Street/Old Highway
8 99 cross the tracks at a skewed angle. This skewed angle complicates maneuvering
9 over the crossing for both bicycle and motor cycle traffic (by increasing the
10 likelihood of their narrow wheels becoming caught in the crossing flangeways),
11 requiring them to focus more on navigating over the crossing itself rather than
12 observing traffic (both highway and rail) and changes in the aspects of the traffic
13 control devices. The coincidence of the highway-highway intersection and railroad-
14 highway intersection further complicates traffic signal placement and coordination,
15 turning movements for motor vehicles, sight lines both along the roadways and
16 tracks, and increases the likelihood a motorist may become confused.

17

18 **Q. What would you recommend be done to improve the Blackburn Road crossing?**

19 A. The existing siding currently extends approximately 2000 feet north of the Blackburn
20 Road crossing. Assuming the intent of the siding extension project is to create a
21 siding of sufficient length that a maximum length train could be stopped south of
22 Blackburn Road, then that portion of the existing siding north of Blackburn Road
23 serves no real purpose and isn't needed. Also, especially if the Hickox Road

1 crossing is closed, the last thing the public would want is for a train to stop such that
2 this crossing was blocked as well. Although that's not likely to happen, as long as
3 this siding continues to extend though Blackburn Road, such possibility exists. The
4 first thing I'd recommend is to relocate the north siding switch to a point at least 250
5 to 300 feet south of Blackburn Road and eliminate that portion of the existing siding
6 both through and north of Blackburn Road. That would eliminate the second track
7 through (and north of) this crossing, together with the associated track and crossing
8 maintenance, and preclude any possibility of a train in the siding also blocking this
9 crossing.

10

11 **Q. Does that resolve the problem(s)?**

12 A. No, not entirely, but it's a good start. A second issue, even if the north end of the
13 siding is shortened, is that a train stopped at the relocated siding clearance point (say,
14 500 feet south of the crossing) could still cause some motorist confusion—as to
15 whether the stopped train or a second train is the cause of the flashing light and gate
16 operation—again possibly causing someone to falsely conclude it's "safe" to
17 circumvent the gates. Ordinarily, this wouldn't be a significant issue were this a
18 simple, 90 (+/-) degree, single track crossing that just happened to be near the end of
19 a siding. In that event, it would typically be a relatively simple matter to install
20 raised center medians or center delineators to supplement the gates if one were
21 inclined to do so. However, addressing this issue at this location in such manner is
22 precluded by the fact that there are two streets crossing each other at the same point
23 they both cross the tracks. If sufficient funding could be found, I would suggest

1 realigning South Second Street and Old Highway 99 in this vicinity (effectively
2 creating two “T” intersections with Blackburn Road, one on either side of the tracks)
3 so that only one roadway (Blackburn Road) crosses the tracks at this location,
4 preferably at or close to a 90 degree angle, and hopefully in a manner that would also
5 permit installing raised center medians on both sides of the tracks. Finally, should
6 South Second Street and Old Highway 99 not be realigned or, even if they are but
7 not in a manner conducive to installing raised medians on either side of the resulting
8 crossing, then I’d be inclined to suggest installing four-quadrant gates at this crossing
9 for similar reasons previously expressed for doing so at Hickox Road should the
10 latter remain open. And again, unless this crossing is eventually grade separated, the
11 FRA will likely require four-quadrant gates be installed anyway before the state’s
12 desire to operate 110 MPH passenger trains can be realized.

13
14 **Q. And you’re saying these improvements should be considered at the Blackburn**
15 **Road crossing whether Hickox Road is closed or not?**

16 A. In my opinion, yes.

17

1 **Q. In your opinion, as between the following alternatives, which would you deem**
2 **safer: (a) leaving the Hickox Road crossing open, but with four-quadrant gates,**
3 **or (b) closing the Hickox Road crossing and diverting the traffic to the**
4 **Blackburn and Stackpole crossings with no improvements to either of these**
5 **alternate crossings?**

6 A. Under the specific circumstances described, (a) leaving the Hickox Road crossing
7 open, but with four-quadrant gates would be safer.

8

9 **Q. In your opinion, as between the following alternatives, which would you deem**
10 **safer: (a) leaving the Hickox Road crossing open, but with four-quadrant gates,**
11 **or (b) closing the Hickox Road crossing and diverting the traffic to the**
12 **Blackburn and Stackpole crossings with improvements being made to both of**
13 **these alternate crossings?**

14 A. Under those circumstances, (b) closing the Hickox Road crossing and improving
15 both adjoining crossings would be safer.

16

17 **Q. Does that conclude your testimony?**

18 A. Yes.

19