

1
2
3
4
5
6
7
8

<input type="checkbox"/> EXPEDITE
■ Hearing is set:
Date: <u>July 7, 2016</u>
Time: <u>9:00 am</u>
Judge/Calendar

9 CHRISTIAN DOSCHER, an individual
10 Plaintiff,

11 vs.

12 TRANSIT, a political
13 subdivision of the State of
14 Defendant.

No. 16-2-01487-34

**DECLARATION OF BRAD
PROBST IN RESPONSE TO
PLAINTIFF'S MOTION FOR
PARTIAL SUMMARY JUDGEMENT**

14 I, Brad Probst, Ph.D., hereby declare as follows:

15 1. I am over the age of 21, am competent to testify to the facts and
16 opinions stated herein, and make this declaration based on my personal
17 knowledge, education, training, experience and expertise.

18 2. I am an expert in biomechanics and have a degree in Biomedical
19 Engineering (the study of the response of humans to forces applied to their
20 bodies). Attached hereto as Exhibit 1 is a true and correct copy of my Curriculum
21 Vitae, which sets forth my education, training and experience in the field of
22 biomechanical engineering. I have qualified as an expert in these fields on a
23 number of occasions in superior court in the State of Washington.

24 3. I was retained by the law firm of Law, Lyman, Daniel, Kamerrer &
25 Bogdanovich, P.S., to analyze and render expert opinions regarding the forces
26 generated upon the body of passengers during the incident on February 8, 2016
when an Transit bus came to a stop at the intersection of

1 in response to the traffic signal changing from
2 green to amber. Furthermore, I was asked to analyze and and render expert
3 opinions pertaining to whether such forces would cause Mr. Doscher to be thrust
4 out of his seat without voluntary effort on his part and cause him to somersault
5 down the aisle of the bus to the operator compartment.

6 4. Attached as Exhibit 2 to this declaration is a true and correct copy of
7 my report to Mr. Daniel dated September 7, 2016 which sets forth my
8 investigation, analysis and most of my opinions with respect to this matter. In
9 addition to the opinions expressed in my report I have other pertinent opinions
10 pertaining to the claims asserted by Mr. Doscher in his motion for summary
11 judgment. These are set forth below.

12 5. All the passengers on the bus would have been subjected to the same
13 forces during the incident and their reactions should have been similar. The forces
14 generated during this event were insufficient to thrust plaintiff from his seat.
15 Furthermore, my review and study of the video in conjunction with my field testing
16 establishes plaintiff's movements were voluntary and responsible for him leaving his
17 seat and somersaulting down the bus aisle to the operator's compartment.

18 6. Based on my analysis and testing I also reached the following
19 conclusions and opinions based upon a reasonable degree of biomedical
20 engineering:

- 21 a. Mr. Doscher's motions (kinematics) are not consistent with inertial
loading (forces) due to deceleration (braking) of the bus.
- 22 b. The motions of the other passengers on the bus is consistent with the
23 laws of physics and the forces generated from the incident.
- 24 c. Mr. Doscher's movements are consistent with voluntary movement
induced by Mr. Doscher.
- 25 d. The expected kinematics due to inertial loading due to bus deceleration
is clearly demonstrated by the three rear seat passengers of the subject
26 bus.
- e. Mr. Doscher tends to roll, or somersault forward. There is not a force in
the subject incident that would induce a roll, or somersault motion of Mr.
Doscher.

1 f. The amount of longitudinal acceleration at Mr. Doscher's seat location
2 was 0.35g. In comparison a panic braking in a passenger vehicle,
3 which produces skidding, is on the order of 0.7g. The level of force due
4 to braking of the bus is less than that of panic braking in a passenger
5 vehicle.

6 g. Mr. Doscher stated in the video that he observed the traffic signal turn
7 yellow. (Video 11.22.53.00). The statement indicates Mr. Doscher was
8 aware that the bus could begin to brake and he could have braced. The
9 level of force due to braking could have been managed by simple
10 muscular bracing by Mr. Doscher.

11 7. Furthermore, the video of the incident demonstrates that contrary to the
12 movement of the other passengers, Mr. Doscher keeps gathering momentum and
13 increasing the severity of his physical reaction while the other passengers come to
14 rest. This can only occur if another interfering force is introduced to account for Mr.
15 Doscher's movements. This other force that was introduced is the voluntary
16 movement input from Mr. Doscher. The inconsistencies in movements and reactions
17 between the other passengers and Mr. Doscher raises questions as to whether his
18 movements were contrived, exaggerated and staged.

19 8. In reviewing my report I noted one mistake which I am hereby correcting.
20 "Figure 6" in my report is mislabeled. It should refer to the "left" rather than "right" foot
21 movement. On page 12 of my report I correctly note that "figure 6" to my report shows
22 Mr. Doscher's "left" foot movement.

23 9. All of the opinions expressed herein are based on my expertise in this
24 area and in accord with accepted scientific standards and practices in the field of
25 biomechanical engineering.

26 I declare under penalty of perjury and the laws of the State
that the foregoing is true and correct.

Dated at this 20th day of June, 2017.


Bradley W. Probst, MSBME

EXHIBIT 1

Incident Description:

According to the available documents, on February 8, 2016, Mr. Christian Doscher was a passenger on an _____ Transit bus travelling northbound on _____. As the bus approached the intersection of _____ : SW, the bus driver observed the traffic signal turn yellow. The driver then brought the bus to a quick controlled stop. Mr. Doscher contends that the force of the stop caused him to come out of his seat, tumble down the aisle, and come to rest near the driver.

List of Materials Reviewed:

In preparing this report, I reviewed the following information:

- Surveillance video of the subject incident
- ARCCA, Inc. inspection and testing of the subject bus, July 25, 2016

Discussion:

The following sequence of still images captured from the surveillance video below shows the kinematics of Mr. Doscher. The first image is at the time just prior to brake application. The following images show perceptible or significant movements that follow.



Figure 1. Mr. Doscher seated just prior to brake application



Figure 2. Mr. Doscher at time of brake application

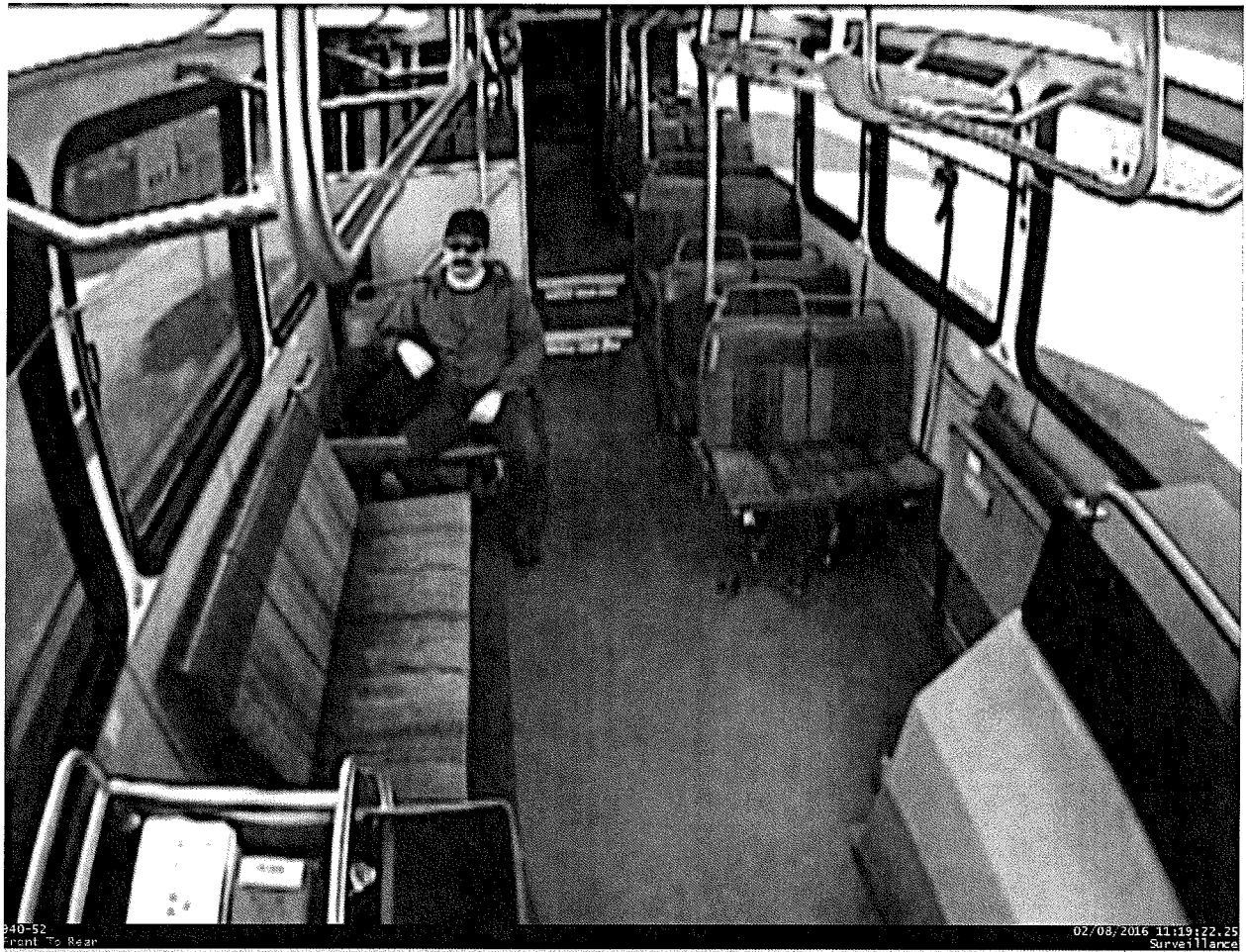


Figure 3. First perceptible movement, minor head flexion



Figure 4. Torso flexion and left hand rearward movement



Figure 5. More significant rearward left hand movement



Figure 6. Right foot movement



Figure 7. Torso twisting and left arm lateral movement



Figure 8. Lateral hip movement



Figure 9. More lateral hip movement

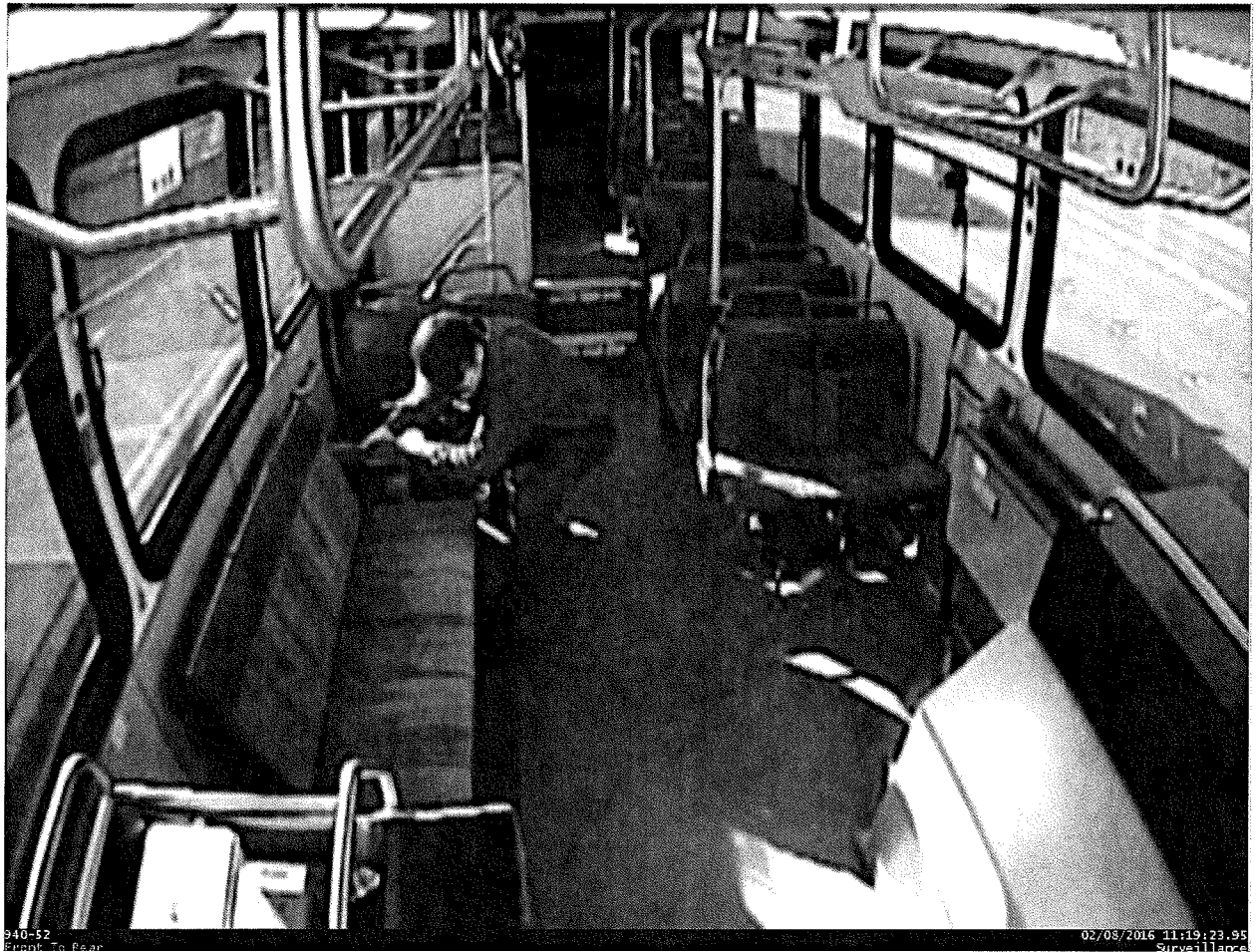


Figure 10. Left foot rotation



Figure 11. Right foot movement

Kinematics of an Unrestrained Occupant

Based upon the fundamental laws of physics, during the subject incident, the Transit bus would have decelerated longitudinally. Mr. Doscher would have inertial loading such that if the force is great enough Mr. Doscher would continue to move at his pre-impact speed and direction. This process would have resulted in a primarily forward motion of Mr. Doscher's body relative to the interior of the bus. In an incident where an occupant is unrestrained, the occupant is free to move unabated inside the vehicle. This unrestrained motion would continue until the occupant's body impacted the interior of the vehicle (i.e. second collision). However, as noted in the figures above, Mr. Doscher's motion is contrary to this basic law of physics.

As stated above, the law of inertia dictates that a body left to itself will remain at rest, or, if it is put into motion, it will continue to move in a straight line indefinitely unless interfered with in its movement. Therefore, an interfering force must be present to introduce movement of Mr. Doscher's body that is not straight forward. In the subject incident, this force is due to voluntary muscular input of Mr. Doscher. Figure 4 and Figure 5 show some expected inertial movement and some voluntary movement of Mr. Doscher. The forward head flexion is consistent with inertial movement. However, it should be noted that Mr. Doscher's left hand moves rearward. This not due to the deceleration force of the bus, but is instead voluntary input by Mr. Doscher. Figure 6 shows forward movement of Mr. Doscher's left foot. This movement is unexpected for several reasons. First, the floor of the bus is



coated with a slip resistant surface with texture. This, combined with the low acceleration, should not allow for slipping of a typical shoe. Additionally, Mr. Doscher's right foot was on the same flooring surface and subjected to the same forces, yet did not have any appreciable forward slip.

After the initial rearward movement of Mr. Doscher's left hand, it is noted to move laterally rightward across his body as noted in Figure 7. Again, this is contrary to the most basic laws of physics that dictates force due to deceleration of the bus would produce forward motion and not lateral motion of Mr. Doscher's arm. Therefore, this movement is voluntary.

The next significant movement of Mr. Doscher that is contrary to the laws of physics and the direction of force application in the subject incident is the lateral and rotational motion of Mr. Doscher's hips as noted in Figure 10. Again, inertial motion is such that only longitudinal, or forward, motion of Mr. Doscher would result due to deceleration force of the bus. Aside from voluntary movement, the only means by which Mr. Doscher would rotate would be to move forward, strike his right knee on the seat in front of him, constrain his right side, and pivot about his right leg. However, there is no significant forward movement of Mr. Doscher's right knee, nor does it strike anything in front of him.

Mr. Doscher tends to roll, or summersault, forward. Again, his whole body would tend to move forward. There is not a force in the subject incident that would induce a roll, or summersault, motion of Mr. Doscher.

A series of tests were performed utilizing the subject bus, the speed the bus was travelling prior to braking, and brake application was matched to the subject incident. The measured longitudinal acceleration at the seating location of Mr. Doscher was on the order of 0.35g. For purposes of comparison, panic braking in a passenger vehicle, which produces skidding, is on the order of 0.7g. Therefore, the level of force due to braking of the bus is less than that of panic braking in passenger vehicles. Finally, it should be noted that Mr. Doscher was aware, or should have been aware, of the impending situation. Mr. Doscher stated, in the surveillance video that he observed the yellow traffic signal. This statement indicates that Mr. Doscher was aware that the bus could begin to brake and he could have braced. Again, the level of force due to braking during the subject incident is not outside the range of protection due to simple muscular bracing.



Figure 12. Rear passengers prior to braking



Figure 13. Rear passengers at time of foot movement and twisting of Mr. Doscher

Expected Kinetics:

Three other passengers were on the bus at the same time as Mr. Doscher. Their pre and post brake application motion is shown in Figure 12 and Figure 13. Their motion is consistent with the laws of physics and the forces of the subject incident. As seen in Figure 13, only slight forward movement of the upper torso has occurred. There is no significant movement of the lower torso due to frictional forces between their clothing and seats.

Findings and Conclusions:

Based upon a reasonable degree of biomedical engineering certainty, I find and conclude the following:

1. On February 8, 2016, Mr. Christian Doscher was a passenger on an Transit bus travelling northbound on (
2. Mr. Doscher claimed that, as a result of the bus deceleration and stop, he was dislodged from his seat and tumbled forward down the aisle.
3. The kinematics of Mr. Doscher are not consistent with inertial loading due to deceleration of the bus. Mr. Doscher's kinematics are consistent with voluntary movement induced by Mr. Doscher.



4. Expected kinematics due to inertial loading due to bus deceleration is clearly demonstrated by the three rear seat passengers of the subject bus.

If you have any questions, require additional assistance, or if any additional information becomes available, please do not hesitate to call. This preliminary analysis is intended for use by the addressee, who assumes sole responsibility for any dissemination of this document.

My opinions are provided on a more probable than not basis.

I declare, under the penalties of perjury, that the information contained within my report was prepared by and is the work of the undersigned, and is true and correct to the best of my knowledge and information.

Sincerely,

A handwritten signature in black ink, appearing to read "Bradley W. Probst", with a stylized flourish at the end.

Bradley W. Probst
Senior Biomechanist