

# Fatal Rollover on Eastbound Highway 401 East of Colonel Talbot Road, South-West Outskirts of London, Ontario

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A Chevrolet Equinox SUV rolled over in the south ditch of Highway 401 at approximately 2030 hours on Saturday, July 20, 2013. One of the five occupants of the vehicle, Mohamed Koko, 24, died in hospital. The driver of the Equinox was James Lugela, 25, of Calgary, Alberta. He was charged with impaired driving causing death, impaired driving causing bodily harm, failing to provide a breath sample, dangerous driving causing death and dangerous driving causing bodily harm.

Unlike its reported location of “just east of Colonel Talbot Road” the actual site was quite a bit further east. The final rest position of the Chevrolet Equinox was about 1.1 kilometres west of the Westminster Drive overpass. That would place the vehicle about 5 kilometres east of Colonel Talbot Road. So the description was not much help if one was actually trying to locate the site.

The event occurred shortly before sunset so there was evidence that police had placed flares in the driving lane about 200 metres west of the vehicle’s final rest position while likely keeping the passing lane open. We believe this simply because of the outline of flare deposits that was left on the roadway at that location.

Before reaching the actual collision site where the physical evidence was located we want to make note there can be a variety of physical evidence on a roadway that may or may not be related to the actual collision but because, we have only the site evidence to examine, we cannot be certain whether relatively fresh evidence is related to the actual event. So, for example we observed a relatively fresh tire mark in the eastbound driving lane from a vehicle that likely made a rapid exit onto the south shoulder, as noted in the photo below.



Tire mark located several hundred metres west of the rollover site indicating a vehicle had rapidly moved off the highway and onto the south shoulder.

Of course, this could have occurred when the eastbound driving lane was already shut down by police and some un-observant driver performed this action due to not recognizing stopped or slowed traffic – this is very common. Or it could be completely unrelated. You can appreciate, when we only have the site evidence to examine, these details must be kept in mind until resolved.

Anyway, as we proceed further east toward the actual collision evidence, the photo below shows a view from about 200 metres west of the final rest position (FRP) of the Chevrolet Equinox. Our car is parked off the south shoulder in the background next to the FRP of the Equinox. We placed four orange cones at 50 metre intervals westward from the Equinox FRP and so the cone at the right bottom corner of the photo is the 200 metre cone.



View, looking east, from about 200 metres west of the final rest position (FRP) of the Chevrolet Equinox.

Just further in the background you should be able to see the white deposits in the driving lane produced by the flares that were set up by the police as they continued their over-night investigation. The photo below shows a closer view of those deposits.



Closer view of white deposits in the eastbound driving lane of Highway 401 demonstrating where the police blocked off the road for their investigation.

Attention to these deposits is helpful in that they help to establish where the police determined the edge of the relevant, visible evidence. For example, if they had found tire marks or other evidence west of that 200 metre distance then they certainly would not allow traffic to drive over the evidence and the line of flares would have been set up further to the west.

Next, we draw your attention to the position of a measurement wheel that we had placed on edge of the south ditch as shown in the photo below.



View of measurement wheel referencing the location of the first small piece of red taillight lens found the south shoulder.

This measurement wheel references the location where we found the most-westerly piece of red, taillight lens on the south shoulder. There were many more pieces of this red lens material scattered further eastward from this location within the south shoulder and edge of the south ditch. Why we mention this is because the lens material looked like it had been deposited there very recently. Furthermore we will see shortly that the Chevrolet Equinox was likely, at least, partly in the driving lane in this approximate location. If you look in the background of the above photo you should be able to count that there are two orange cones visible and, since the cones are spaced 50 metres apart, the measurement wheel and the first deposit of red lens material are about 125 metres west of the FRP of the Equinox.

The photo below shows a lateral view, from the measurement wheel, looking north toward the eastbound lanes and you will be able to see a small piece of red lens material at the edge of the pavement.



View, looking north, from the position of the measurement wheel out to the south pavement edge where the first piece of lens red material is located.

The photo below shows a closer view of that pavement edge where the lens material was located.



Closer view of south asphalt edge where the first piece of red lens material was located.

The photo below shows a close view of the actual lens material.



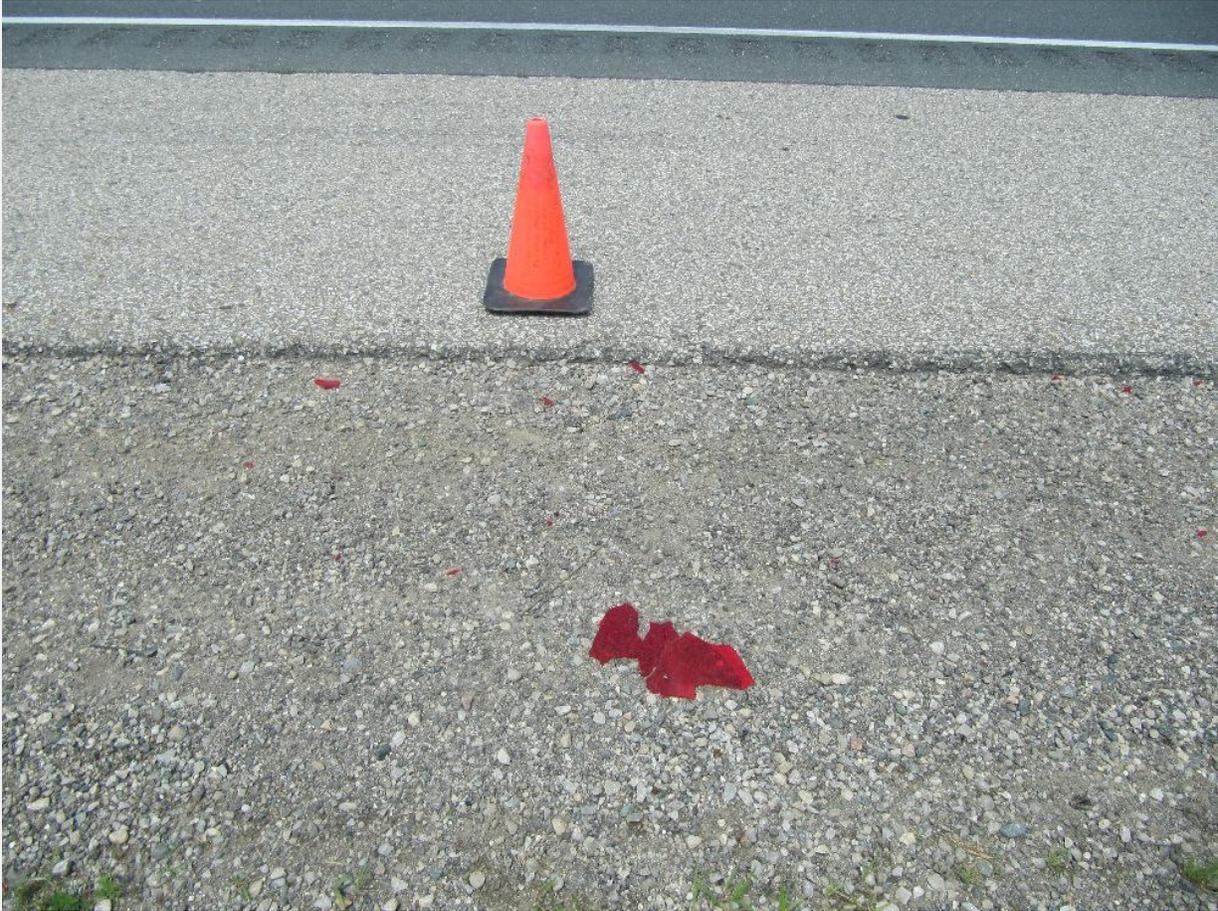
Close-up view of the most-westerly deposit of red lens material.

As we look further to the east the photo below shows the deposit of many more pieces of red lens material and the 100 metre cone is visible in the background.



View, looking east, with the 100 metre cone visible in the background, showing the larger deposits of red taillight lens material lying on the south shoulder.

For example, the photo below shows one of those larger areas of deposit of the red lens material.



View of larger deposit of red lens material located immediately at the 100 metre cone.

Of course, as discussed in our other website articles, it is possible to assemble such deposits to re-create the broken lens as shown below.



View, showing partial reconstruction of broken lens fragments.

The photo below shows the first evidence of a yaw mark in the eastbound driving lane which provides the first evidence of the motion of the Equinox as it began to rotate clockwise to its eventual departure into the south roadside. If you look you can see only one cone in the view so the tire mark must have commenced before at 50 metre cone.



View, looking east, showing the first evidence of yaw mark in the driving lane.

If we turn around to face westward, the photo below also shows the beginning of that yaw mark with the 100 metre cone shown on the left side of the view.



View, looking west, showing the beginning of the yaw mark in the foreground and the 100 metre cone on the extreme left edge of the photo.

And, if we recall, the first evidence of red taillight lens was at about the 125 metre location. So, is this a coincidence? Well obviously we have no other evidence to say yes or no other than what we see on this site. But in our opinion, the freshness of the evidence and its location suggests that this could all be related.

So we are prepared to state the following: It is possible that a rear end impact occurred on Highway 401 where the front end or right side of the Equinox came into contact with the left rear of a vehicle in the driving lane, or perhaps mid-way between the two lanes. This impact could have occurred in the vicinity 125 to 150 metres west of the final rest position of the Equinox. Obviously, this is a hypothesis, and it cannot be proven without further information. If we were officially retained on this matter we would have that “further information” but as we are simply performing this work as an educational exercise we are unlikely to be able to state anything further as to the cause of this collision.

However, we can examine the rest of the evidence with respect to the vehicle's exit into the ditch and its rollover. The photo below shows a view of the yaw mark further to the east and you can see it as it passes the 50 metre cone. Of course, you can recall that the vehicle came to rest adjacent to the parked position of our vehicle in the background.



View, looking east, along the yaw mark as the vehicle rotates toward the south roadside.

We would want to be careful at this point because, although the tire mark evidence indicates that the vehicle is rotating clockwise, the evidence is not exactly typical of what you would see. Typically, you would see at least three, curved, yaw marks and perhaps a faint fourth coming from the right rear tire. But that is not the case. There is only one prominent mark and there is also a very short tire mark along side the prominent one as shown in the above photo.

If we were officially retained we would have a total station or laser scan of the site which would allow us to plot a scale diagram of the vehicle through the evidence. We would also conduct an analysis of the speed reduction of the vehicle as it passed through the

site. And obviously, our examination of the collision-involved vehicle would provide much valuable evidence. But that is not the case. So we have to be careful when we see evidence like this that is not exactly typical of a single-vehicle, loss-of-control event. Obviously, the unusual evidence could be explained if there indeed was a rear-end impact which then caused the Equinox loss-of-control.

As we move further eastward the photo below shows how the loss-of-control tire marks become visible as the vehicle exits the pavement and travels into the south roadside.



View of tire marks as they exit the pavement and enter the south roadside.

And the photo below shows the tire marks of the Equinox in the grass of the south ditch indicating that it is still upright at this point.



View of loss-of-control tire marks in the grass of the south roadside.

But as is typical, once the vehicle reaching the bottom of the ditch and the tires dig into the earth the vehicle is tripped and it begins to roll. One might detect the location of the initial gouging of the earth in the above photo although is it not particularly clear.

The gouging is more clearly visible in the photo below when we look back toward the direction from which the vehicle came.



View, looking north-west at the gouging of the earth at the end of the tire marks where the vehicle began to rollover at the bottom of the south ditch.

The photo below shows that, after the Equinox began its rollover it came to a halt after only a short distance as indicated by the area of trampled grass and debris in the photo below.



View, looking east, along the trampled grass of the south ditch where the Equinox rolled and then came to a halt.

Although we typically do not take detailed site measurements in situations like this we decided to conduct a general evaluation by anchoring a measurement tape to the furthest eastward evidence of the Equinox final rest position (FRP), as shown in the photo below, and this allowed us to take some general measurements of the location of some of the more prominent facts.



Measurement tape anchored to post at FRP of Equinox so that measurements can be taken to various points of interest.

As seen in the photo below we pulled the tape over to the gouges where the vehicle first began to rollover.



View, showing how the distance was measured from the Equinox final rest position to the gouges in the earth where it first began to rollover.

As shown in the photo below, that distance was about 18 metres.



View showing a reading of 18 metres on the measurement tape when measuring from the Equinox FRP to the point where it began its rollover.

If we used a tumble number (0.5g) to represent the rate of deceleration of a soft roll over the distance of 18 metres then we could say that the vehicle's speed was approximately 48 km/h when it began to roll. In fact this is an exaggeration since we took the measurement to the furthest eastward evidence for the FRP and other measurements were taken of other gouges which would place them in the range of 15 to 18 metres. So, overall, the vehicle's speed would certainly be less than 48 km/h when it began to roll. Not a low speed rollover but certainly not a high speed rollover either.

We also stretched the measurement tape from the Equinox rest position to the point where its tire first entered the grass ditch as shown in the photo below. That distance was 39 metres.



View of measurement tape stretched from the Equinox FRP to the tire marks at the edge of the grass of the south ditch.

If we applied an overall deceleration rate of  $0.4g$  over that entire distance we would obtain a speed of about  $63 \text{ km/h}$  for the vehicle as it entered the grass ditch.

And if we applied an overall deceleration rate of 0.3g for the entire distance from the beginning of the yaw mark at 100 metres from the Equinox FRP then we would get an initial speed of about 87 km/h. This approximation is rather crude but it demonstrates that the vehicle speed in the vicinity of where it produced the initial yaw marking on the road was not unusually high. That does not negate the possibility that it was speeding much faster somewhere prior to the production of those visible yaw marks.

As a final exercise, we found some red taillight lens lying on the ground at the Equinox FRP and it is reasonable to believe that it came from that vehicle, as shown below.



View of broken taillight lens debris obtained near the Equinox FRP.

As a comparison we took that material over to the 100 metre cone where we showed you the other red lens material earlier in this article, as shown below.



View of lens material taken from Equinox FRP being taken over to the lens material at the 100 metre cone to make a comparison.

The comparison of the two samples is shown in the photo below.



View of comparison between two lens samples.

The characteristics of the two samples do not match as can be seen from the detailed photo below.



Close up view of comparison being made between the two samples of red lens material indicating that they do not match.

So whatever caused the red lens material to be strewn across the south shoulder of the highway is not known but we know that it did not come from the taillights of the Equinox. Obviously there could be numerous explanations for the existence of this evidence but we hope this is an interesting exercise to demonstrate what can be done to reconstruct motor vehicle collisions.

This is a typical part of our daily work when we examine a collision site or vehicle where we are involved in an actual assignment. There are a variety of activities performed depending on the what type of assignment is involved.

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