

# DELAWARE STATE POLICE COLLISION RECONSTRUCTION UNIT

**TROOP 2 – New Castle County**

**Sgt. John Jefferson**

**Cpl/3 John Forester**

**Cpl/2 Matthew Calio**

**Cpl/1 Patrick McAndrew**



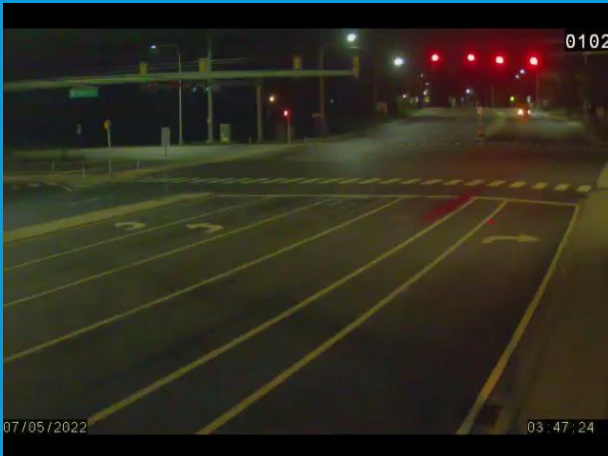
# WHO ARE WE?

The Delaware State Police Collision Reconstruction Unit (C.R.U.) consists of 11 troopers throughout the state. Those troopers receive extensive training in the investigation and reconstruction of motor vehicle collisions.



# WHO ARE WE?

Our primary responsibilities are the investigation of fatal crashes; however, we also investigate crashes that involve emergency vehicles, such as other police cars, fire trucks, and ambulances. We also teach both crash investigation to other police officers and talk to students in schools about roadway safety.



# HOW DOES IT WORK?

When a serious crash occurs a trooper that is working the road responds to the scene of the crash. If it is very serious, or a confirmed fatality, that officer notifies their supervisor, and that supervisor notifies the “On-call” C.R.U. Team members. We then respond to the scene.



# HOW DOES IT WORK?

The scene of a crash is considered a CRIME SCENE until it is determined otherwise. The roadway is closed, and access to the area of the collision is limited, preserving the physical evidence at the scene. Depending on the investigation, there could be several different results.



# HOW DOES IT WORK?

- 1) If the investigation reveals the crash was an “Accident” or the at fault operator dies, then there are no charges filed.
- 2) If the investigation reveals the crash was the result of someone committing a traffic violation, then the person could be charged with Operation of a Vehicle Causing Death, a misdemeanor charge in the traffic code.
- 3) If the investigation reveals criminal elements, such as excessive speed, alcohol, drugs, or recklessness, then an operator can be charged criminally.



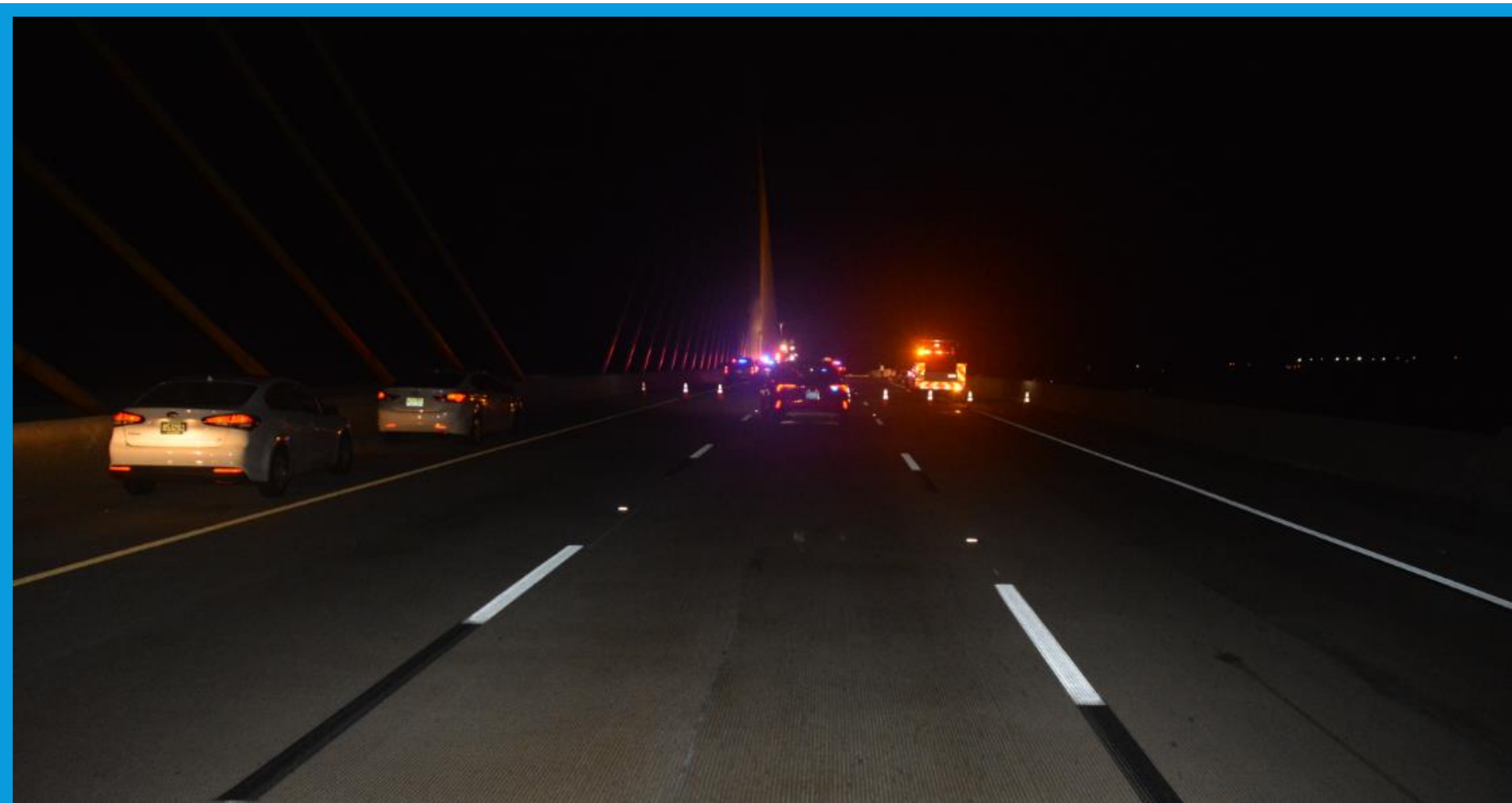
# HOW CAN YOU TELL?

There are three main sources that we use to reconstruct a crash to determine its cause....

- 1) Statements from operators involved and witnesses to the crash.
- 2) Examination of the vehicles involved; both their general condition and damage analysis.
- 3) Examination of the physical evidence left at the scene of the crash.



# ARRIVAL AT THE SCENE





# EXAMINING THE SCENE...



# AT THE SCENE...

- INTERVIEWS
- SCENE PHOTOGRAPHS
- SCENE MAPPING
  - SURVEYING EQUIPMENT
  - DRONES
- COLLECTING EVIDENCE
  - DEBRIS (HIT AND RUN)
  - DUI / DRUG PARAPHERNALIA
  - VEHICLE HOLDS
    - TOWYARD EXAMINATIONS
    - AIRBAG CONTROL MODULES



# EXAMINING THE SCENE / PHYSICAL EVIDENCE




# PHYSICAL EVIDENCE

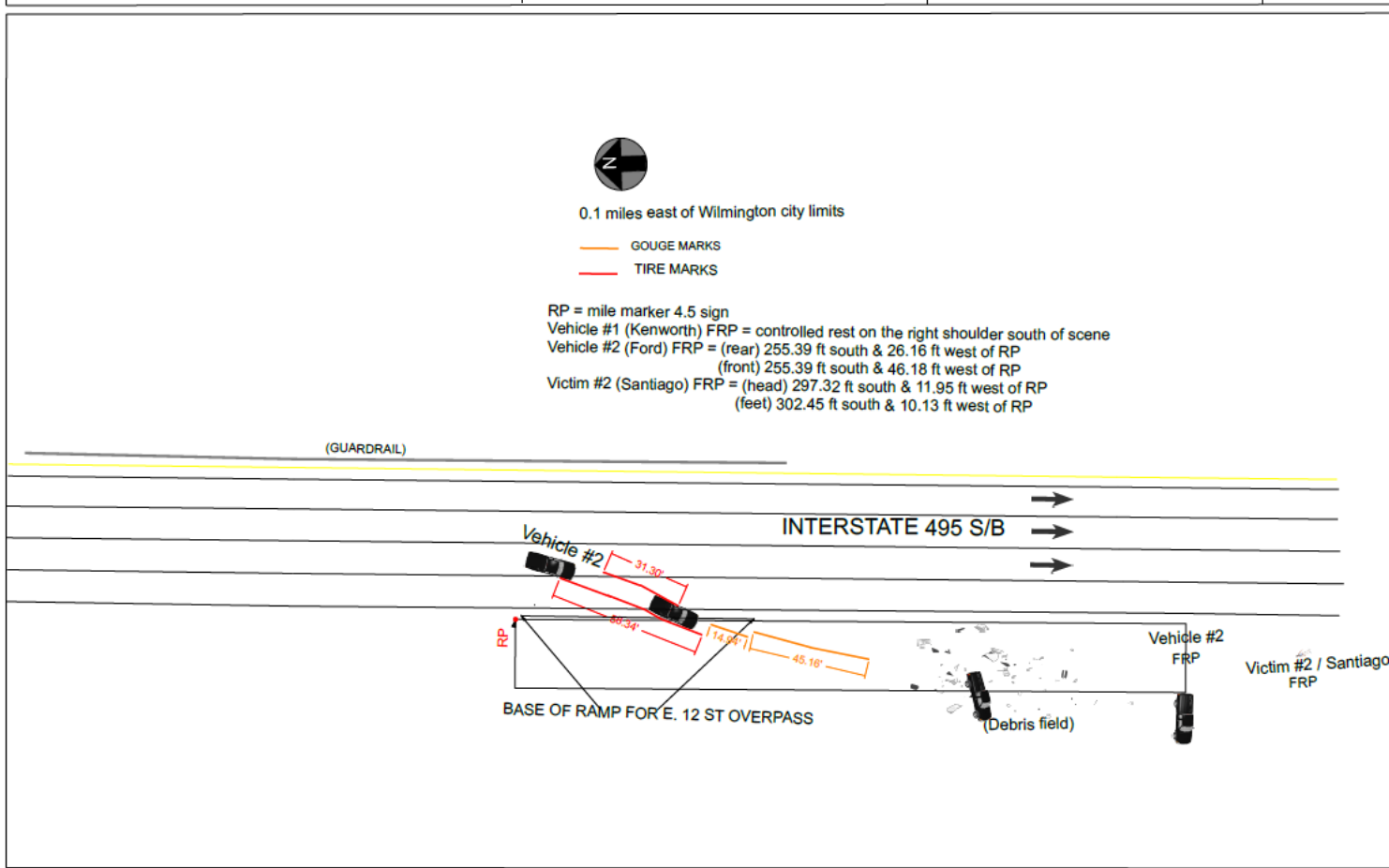


# PHYSICAL EVIDENCE



# MAPPING THE SCENE...

 <b>Delaware State Police</b> <b>Collision Reconstruction Unit</b>	Complaint Number: 01-23-58243	Date of Collision: 6/26/2023	Investigating Officer's Name: Sgt John Jefferson	IBM: 1192
	Crash Location: I-495 SB & E 12 ST, Wilmington DE			County: New Castle
	Date Drawn: 12/21/2023	Case Name: Vazquez & Santiago fatal MVC		Scale: 1 inch = 53 ft



# INVESTIGATION PHASE

- DISPATCH REPORTS & 911 CALLS
- INTERVIEWS
- REVIEW VIDEO EVIDENCE
  - DASH CAMERA (CIVILIAN AND POLICE)
  - BODY WORN CAMERA FOOTAGE
  - DELDOT CAMERAS
  - PRIVATE SURVEILLANCE
- RECONSTRUCTION



# RECONSTRUCTION

- PHYSICS / MATHEMATICAL FORMULAS

$$S = \sqrt{30df}$$

$$W_1V_1 + W_2V_2 = W_1V_3 + W_2V_4$$

- EVENT DATA RECORDERS





# LET'S LOOK AT A CASE...

- Tuesday December 27, 2022  
8:54 PM
- DE SR 4 (Ogletown Stanton Rd)  
west of Harmony Rd, Newark DE





Walgreens

The UPS Store

Saladworks

McDonald's

Seasons Pizza

Volkswagen GTI

Exxon Harmony

Ogletown Stanton Rd & Harmony Rd

Honda Accord

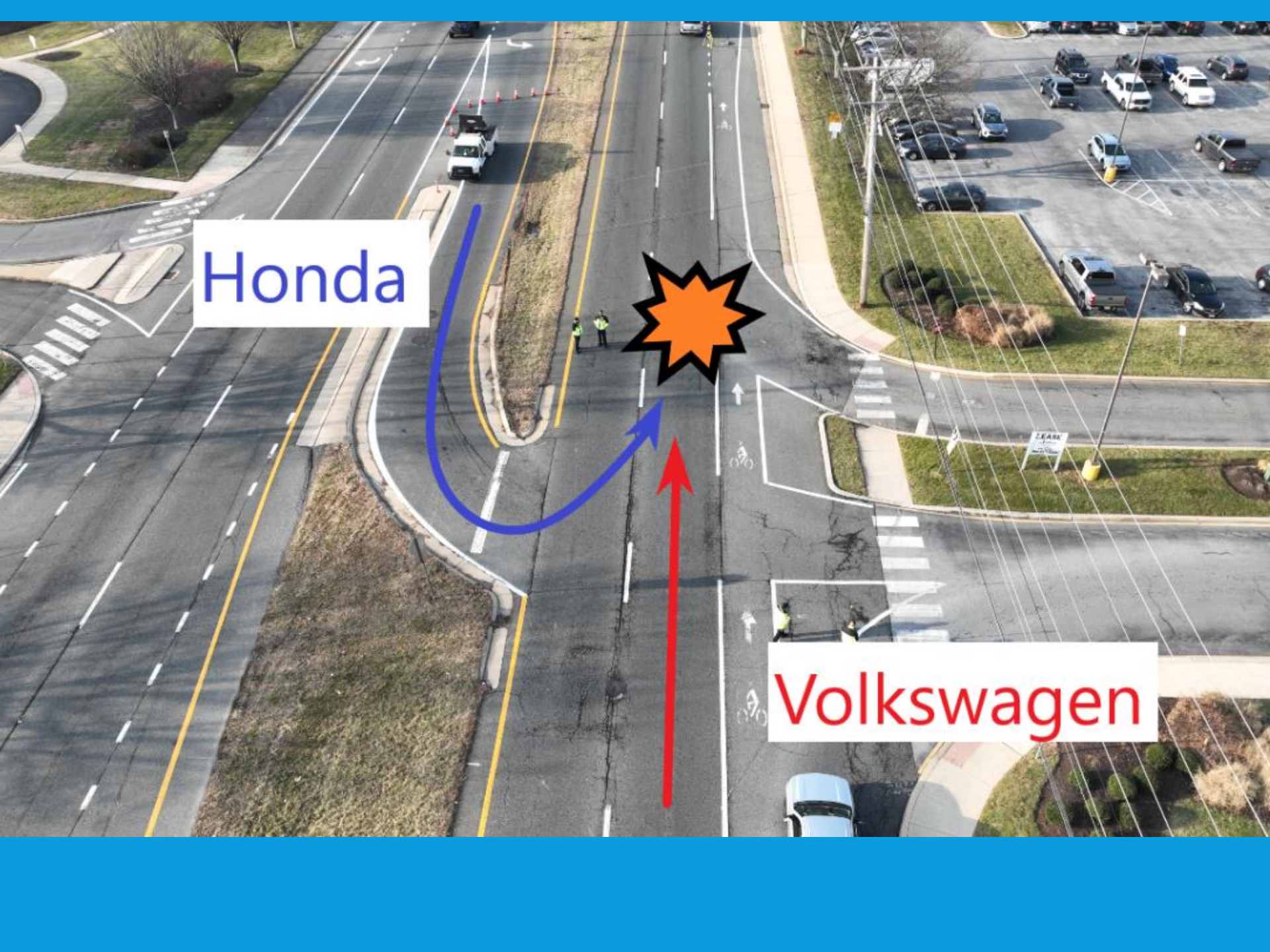


Ogletown Stanton Rd (DE SR 4) westbound west of Harmony Rd, Newark DE

Honda



Volkswagen



# VOLKSWAGEN GTI (DEFENDANT)



# HONDA ACCORD (VICTIM)



# RECONSTRUCTION PROCESS

## AIRBAG CONTROL MODULE : VOLKSWAGEN GTI

### Pre-Crash Data -5 to 0 sec (Record 3)

Time (sec)	Engine RPM (Combustion Engine) (RPM)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal (%)	Service Brake Activation
-5.0	5,248	137 [221]	100	Off
-4.5	5,312	139 [224]	100	Off
-4.0	5,376	140 [226]	100	Off
-3.5	5,440	142 [228]	100	Off
-3.0	5,440	143 [230]	100	Off
-2.5	4,288	144 [231]	100	Off
-2.0	4,288	144 [232]	100	Off
-1.5	4,352	145 [233]	46	Off
-1.0	4,160	140 [225]	0	On
-0.5	3,968	133 [214]	0	On
0.0	3,712	124 [200]	0	On

## TIME AND DISTANCE ANALYSIS

		5 sec prior	4.5 sec prior	4 sec prior	3.5 sec prior	3 sec prior	2.5 sec prior	2 sec prior	1.5 sec prior	1 sec prior	0.5 s prior
Vehicle #1	Speed	137 mph	139 mph	140 mph	142 mph	143 mph	144 mph	144 mph	145 mph	140 mph	133 mph
	Distance	100.44 ft	101.89 ft	102.64 ft	104.09 ft	104.83 ft	105.55 ft	105.56 ft	106.22 ft	102.54 ft	97.33 ft



# CONCLUSION

- DEFENDANT PLEAD GUILTY TO:
  - MURDER 2<sup>ND</sup> DEGREE (*and related charges*)
  - SERVING 18 YEARS IN PRISON

