

OWI Predicate Questions

Model Direct Examinations for the Alcohol
or Drug Driving Case

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Predicate Questions for the OWI Case

In admitting evidence at trial, it is often necessary to lay a foundation or introduce a new topic. What follows in this chapter are lists of predicate questions to assist in that process. These questions are intended to help prosecutors handle the evidence necessary to obtain a conviction. They are also intended to help in perfecting the record and protecting convictions from the inevitable appeals. Please note, however, that these questions should serve as a starting point only. They should be adapted to conform to local practices and the unique facts and circumstances of each case.

I. OWI—Alcohol

A. The Arresting Officer

- Please state your name and address.
- What is your occupation/profession?
- What law enforcement agency are you employed by?
- How long have you been employed by that agency?
- Were you working on _____ (date of arrest)?
- What were your duties on that date?
- Do you have any training in the detection of intoxicated drivers?
- Please describe this training.
- Approximately how many times have you stopped a driver you believed might be intoxicated?
- Do you arrest everyone whom you initially believe to be intoxicated?
- Why not?
- How many times have you arrested someone for driving while intoxicated?
- When you do arrest someone who you believe to be intoxicated, do you arrest based on one indication of intoxication.
- What do you base your arrest on?
- Where were you at _____ (approximate time of offense)?
- Were you alone?
- Were you in uniform?
- Were you on patrol?
- Did you observe anything unusual?
- What did you observe?
- Please describe the car you observed.

- Where did you observe this car?
- Is that location in _____, _____ (county and state)?
- Describe the roadway.
- Were you able to observe the driver of the car?
- Is the driver of that car in the courtroom today?
- Where is he?
- What is he wearing?

B. The Driving

- Will you please describe the defendant's driving that night to the jury?
- Where was your vehicle with respect to the defendant's?
- Were you able to clearly view the defendant's vehicle?
- Please describe the lighting conditions at that time and location.
- Did any traffic or other obstacle interfere with your ability to observe the defendant's driving?
- How long have you been a licensed driver?
- How often do you drive?
- From your experience in observing vehicles in motion and from your experience driving, can you fairly judge or estimate the speed of a moving vehicle?
- When you first saw the defendant's car, did you form any estimate as to the speed it was traveling?
- How fast do you believe the defendant was going?
- Did the defendant drive his car within his lane of traffic?
- Did the defendant cross any painted lane dividers?
- Which lane dividers did the defendant cross?
- Was the line the defendant crossed visible to you?
- How many times did you see the defendant cross the lane line?
- What distance did he cover when crossing that line?
- Did you activate your emergency equipment and attempt to stop the defendant's car?
- How far did the defendant drive after you activated your emergency equipment?
- Where did he stop the car?
- What position was his car in when it came to a stop?
- Did you approach the driver after he stopped?
- Did the defendant remain in the car as you approached?
- Why did you stop the car?

C. Personal contact

- Did you ask the defendant for his license, registration and proof of insurance?
- Was the defendant able to produce these items for you?
- Please describe the defendant's actions as he sought these items for you.
- Were you able to see inside the defendant's car?
- Did you see anything unusual?
- How far away from the defendant were you during this time?
- Were you able to smell any odor?
- What did you smell?
- Where was it coming from?
- During this initial contact, did the defendant say anything to you?
- Will you please describe his speech?
- Could you describe how the defendant's eyes looked at this time?
- How did his face appear?
- Can you describe the state of his clothing?
- Did you notice anything else unusual about the defendant?
- Did you ask the defendant if he had been drinking recently?
- Did you ask him how much?
- Did you ask him where he had been drinking?
- Was the defendant responsive to your questions?
- Did you have to repeat yourself?
- How much did the defendant tell you he drank?
- At some point, did you ask the defendant to get out of the car?
- How did the defendant get out of the car?
- Did you observe the defendant walk?
- Please describe how he walked.

D. Field Sobriety Tests

- Did you ask the defendant to perform field sobriety tests?
- Why?
- Have you had training in administering field sobriety tests?
- Please describe this training.
- Approximately how many times have you administered field sobriety tests?
- What is the purpose of administering field sobriety tests?
- What are divided attention skills?

- How do field sobriety tests measure divided attention skills?
- Does a person need divided attention skills to safely drive a car?
- Why?
- How many tasks is someone required to perform while driving?
- Did the defendant agree to perform the field sobriety tests?
- Did you ask the defendant if he had any injuries or illnesses that would affect his performance on the field sobriety tests?
- What was his response?
- Where did you conduct these tests?
- What was the surface condition in the area where you conducted the tests?
- What were the weather conditions when you conducted the tests?
- Which field sobriety tests did you ask the defendant to perform?

1. Horizontal Gaze Nystagmus

- What is horizontal gaze nystagmus?
- What causes a person's eyes to display this motion?
- Are there different types of nystagmus?
- Are these other types of nystagmus caused by the ingestion of alcohol?
- Have you had any training with regard to the proper administration and scoring of the horizontal gaze nystagmus test?
- Please describe this training.
- How many hours of training have you had?
- Did you explain the test to the defendant?
- Did he appear to understand your instructions about how to perform the test?
- Please describe how you instructed the defendant to perform this test.
- How is the HGN test administered?
- Did you follow this procedure in administering the test to the defendant?
- What are you looking for when you perform this test?
- Was the defendant's left eye able to track smoothly?
- Was the defendant's right eye able to track smoothly?
- Did the defendant display nystagmus?
- At approximately what angle did the nystagmus become visible in the defendant's left eye?

- At what angle did the nystagmus become visible in the defendant's right eye?
- Did you observe the defendant's left eye at maximum deviation?
- What did you observe?
- Did you observe the defendant's right eye at maximum deviation?
- What did you observe?
- What did the results of the HGN test indicate to you with regard to the defendant's intoxication?

2. Walk and Turn

- What was the next test you performed?
- Is the Walk and Turn test a divided attention test?
- How so?
- Have you received training in how to administer this test?
- Did you instruct the defendant how to perform this test?
- Did you also demonstrate the test for the defendant, at least in part?
- Did he indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What did he say?
- Please describe how you instructed the defendant to perform this test?
- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test.
- What did the results of this test indicate to you with regard to the defendant's intoxication?

3. One Leg Stand

- What was the next test you administered?
- Is this also a divided attention test?
- How so?
- Have you received training in how to administer this test?
- Did you instruct the defendant how to perform this test?
- Did you also demonstrate this test for the defendant, at least in part?
- Did he indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What did he say?
- Please describe how you instructed the defendant to perform this test.

- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test.
- What did the results of this test indicate to you with regard to the defendant's intoxication?

4. Other Field Sobriety Tests (repeat for any other tests administered)

- Did you ask the defendant to perform any other tests?
- Which test(s) did you ask him to perform?
- Did you instruct the defendant how to perform this test?
- Please describe how you instructed the defendant to perform this test.
- Did the defendant indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What was his response?
- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test?
- What did the results of this test indicate to you with regard to the defendant's intoxication?

E. The Arrest

- Have you had occasion to see intoxicated persons during the course of your career?
- Approximately how many times have you had contact with intoxicated persons in the line of duty?
- Based on your experience and training and your observations of the defendant did you form an opinion as to whether he was too intoxicated to safely operate a car at the time he was arrested?
- What was your opinion?
- What did you do as a result?
- Did you advise the defendant of his constitutional rights?
- Did he agree to talk to you?
- What did the defendant tell you about his activities leading up to the time he was stopped?
- Did you transport the defendant to the station?
- Did you observe any unusual behaviors by the defendant as you drove him to the station?
- Did you observe any unusual behaviors by the defendant while he was being booked?

- When you arrived at the station did you request that the defendant take a breath test?
- Did you tell him why you were requesting him to take the test?
- Did you inform him of his rights under the Michigan Implied Consent Law?
- Did you inform him of the consequences should he refuse to take the test?
- Did the defendant agree to take the breath test?

F. Appearance in Court vs. Night of Arrest

- Have you had the opportunity to observe the defendant at the courthouse today?
- Is there any difference between the way he looks today and the way he looked on the night you arrested him?
- Do his eyes look different, how so?
- Does his face look different?
- Any difference in the way he sounds?
- Is there any difference in his balance?
- Do you notice any other differences?
- Overall, what is the difference between how the defendant looks today and how he looked that night?

G. The Breath Test

1. The Breathalyzer Operator

- Please state your name and address.
- What is your occupation?
- What law enforcement agency are you employed by?
- How long have you been employed by that agency?
- Have you had any special training in administering breath tests?
- When did you receive that training?
- As a result of that training, did you receive a certificate authorizing you to administer breath tests?
- What type of certificate did you receive?
- Was that certificate in effect on _____ (date of test)?
- What instrument did it authorize you to operate?
- Have you administered breath tests prior to testing the defendant?
- Approximately how many times have you administered breath tests?

- I'm showing you what has been marked as People's Exhibit ____, do you recognize that document? What is it?
- Is that a true and accurate copy of your permit?

2. The Test

- On _____ (date of arrest), did you offer to administer a breath test to the defendant?
- Did he agree to take the test?
- Before administering the test, did you observe the defendant for at least 15 minutes?
- During the time you were observing the defendant, did he put anything in his mouth?
- Did he smoke?
- Did he vomit?
- Did he belch?
- Did he take anything out of his mouth?
- How do you know that the defendant did not do any of these things?
- What instrument did you use to administer the test to the defendant?
- Did you use the required checklist when you administered the test to the defendant?
- Does this checklist conform to the way you were trained to operate the instrument?
- Were the weekly simulator tests accurately performed?
- Was the 120 day simulator test accurately performed by a Class IV operator?
- I hand you what's been marked as People's Exhibit ____, do you recognize it?
- What is it?
- Is that the checklist you completed while administering the breath test to the defendant?
- Did you complete each step on the checklist prior to going to the next step?
- Did you enter the information on the checklist at or near the time you completed each step?
- Did anything happen that indicated to you that the instrument was not functioning properly at the time of the test?
- Did you observe the defendant blow into the instrument?
- Did the instrument appear to function normally before, during and after the time he blew into it?

- Did the instrument give a reading after the defendant blew into it?
- What was that reading?
- Did you record that reading on the checklist?
- Did the instrument produce a printout?
- I hand you what has been marked as People's Exhibit ____, do you recognize it?
- What is it?
- Is that the printout produced by the instrument as a result of the test administered to the defendant?

3. Refusal

- On _____ (date of arrest), did you offer to administer a breath test to the defendant?
- Did he agree to take the test?
- Prior to offering to administer the test to the defendant, did you make him aware of Michigan's Implied Consent law?
- What does the implied consent law provide?
- Did you inform the defendant of the potential consequences of refusing to submit to the test?
- Even after being informed of these consequences, did the defendant continue to refuse the test?

H. The Blood Test

1. The Arresting Officer

- Please state your name.
- What is your occupation?
- How long have you been employed by that agency?
- On _____ (date of incident), did you come into contact with someone who later became known to you as _____ (defendant)?
- Do you see that person in the courtroom today?
- What is he wearing?
- How did you come into contact with the defendant?
- Was the defendant in the car when you came into contact with him?
- If not, where was he in relation to the car when you first came into contact with him?
- Was the car registered to the defendant?

- Did he have the keys in his possession?
- Did he have injuries consistent with having been in the driver's seat of the car at the time of the crash?
- Did he exert ownership over the car in any way?
- Did you speak with the defendant about the crash?
- What did he tell you?
- Did you notice anything unusual about the defendant's breath?
- Did you notice anything unusual about the defendant's eyes?
- Did you notice anything unusual about the defendant's speech?
- Did you investigate what had caused the crash?
- Did you determine whether the defendant was the driver?
- Did you ask the defendant if he had been driving?
- What did he say?
- Was there anyone else present at the scene?
- Was there anyone else injured?
- What was the defendant's condition when you came into contact with him?
- Did he have any injuries?
- Was he bleeding?
- Did the defendant require any medical treatment?
- Was the defendant taken to the hospital?
- Were any alcoholic or intoxicating beverages found in or near the car?
- Did you ask the defendant to perform any field sobriety tests?
- If no, why not?
- If yes, what tests, describe performance on each?
- Did you arrest the defendant for driving while intoxicated?
- Did you advise him of his rights under the Michigan implied consent law?
- Was it possible or practicable to offer a breath test to the defendant?
- Did you ask that he take a blood test?
- Did he agree to take it?
- Did you direct someone to take his blood?
- Who?
- Where was this done?
- Did you fill out any forms in connection with this blood test?
- What forms did you fill out?
- Was the transmittal slip filled out in the regular course of business?
- Was the transmittal slip filled out at or near the time of the event?

- Did you personally fill out the transmittal slip?
- Did you observe _____ (name of blood drawer) draw blood from the defendant?
- Did he voluntarily submit to having his blood drawn?
- What happened to the tube right after the blood was taken?
- Was the blood in a sealed vessel when it was given to you?
- Did the person drawing the blood write anything on the tube?
- Did the person drawing the blood sign anything?
- Do you recall how you labeled the vial?
- What did you do then?
- Did you add any additional seals or tape to the vial?
- Did you write your initials on the tape?
- What did you do with the vial then?
- Did you mail it or take it to the lab yourself?

2. The Blood Drawer

- Please state your name.
- What is your occupation?
- Where are you employed?
- How long have you held that position?
- Do you have any specialized medical training?
- Please describe that training.
- Were you a _____ (licensed physician, registered nurse, trained medical technician) in the State of Michigan on _____ (date of blood draw)?
- What were your duties at _____ Hospital?
- On _____ (date of blood draw), did you come into contact with a person who later became known to you as _____ (defendant)?
- Do you see that person in the courtroom today?
- What is he wearing?
- Were you requested by a law enforcement officer to draw blood from the defendant?
- Did you, in fact, draw blood from the defendant?
- What procedure was used to draw the blood?
- Did you put the blood sample into a gray-topped and vacuum sealed tube?
- Did you draw the blood from a vein?

- Did the officer watch you draw the blood?
- After the blood was drawn, did you make any marks on the blood tube?
- What marks did you make?
- What did you do with the tube then?
- In drawing the blood, did you use the same type of equipment you regularly use in your day-to-day duties at the hospital where you are employed?
- In drawing his blood, did you observe anything unusual about the defendant?
- Did he appear to be intoxicated?

3. The Toxicologist

- Please state your name.
- What is your occupation?
- Where are you employed?
- How long have you held that position?
- Please describe your educational background and training.
- Have you received any specialized training in the testing of blood to determine the alcohol content?
- Please describe that training.
- How many times have you conducted tests of blood to determine the alcohol content?
- Have you ever been qualified as an expert in analyzing blood for alcohol content?
- How many times?
- Please describe the process used to test blood for alcohol content.
- What instrument do you use to test blood?
- How does a gas chromatograph work?
- Do you use any control samples in testing blood?
- What is the purpose of the control sample?
- Is the gas chromatograph generally accepted in the scientific community as a reliable method for testing the alcohol content of a blood sample?
- On or about _____ (date of test), did you test a sample of blood taken from _____ (defendant)?
- I'm showing you what has been marked as People's Exhibit ____, do you recognize it?

- How do you recognize it?
- What is it?
- Do you know who that blood was taken from?
- How do you know?
- Whose blood is it?
- How did that blood come into your possession?
- How was it packaged and marked?
- Was it in a sealed container?
- Was the seal intact when you received it?
- Was there any kind of identification on or with the tube of blood when you received it?
- How were you able to identify the blood and letter as belonging together?
- Where do you store blood prior to testing?
- Was the defendant's blood stored in that area?
- Who has access to that area?
- Did you test the defendant's blood using the gas chromatograph?
- Was that instrument working properly?
- How could you tell?
- What did you do with the blood sample when you finished?
- From the time you opened the blood kit until the time you tested the sample, was the sample in your care, custody and control?
- Did you fill out a report when you tested the defendant's blood?
- Was the report filled out at or near the time of the test?
- Are these reports made in the regular course of business?
- I'm handing you what has been marked as People's Exhibit ____, do you recognize it?
- What is it?
- How can you identify that report as the report you filled out with regard to the test of defendant's blood?
- What was the result of the test you performed on defendant's blood?
- Was that result recorded on your report?

I. Potential Areas of Attack on Cross-Examination

1. The Arresting Officer

- Training and experience
- Ability to make stated observations

- Knowledge of NHTSA “OWI Detection and Standardized Field Sobriety Testing” curriculum
- Administration of standardized field sobriety tests
- Lack of bad driving
- Knowledge of intoxicated driving cues
- Alternative explanations for observed indicators of intoxication
- Lack of detail in report
- When determination to arrest was made
- Alternative explanations for bad driving
- Officer not aware of defendant’s normal behavior, appearance, etc.

2. The Standardized Field Sobriety Tests

- People can’t do when sober
- SFSTs don’t test intoxication
- SFSTs don’t relate to driving
- Defendant was overweight
- Defendant was nervous
- Defendant suffered from medical condition which affected his performance
- Defendant’s performance looks fine on video
- Not properly administered
- Not validated for intoxication for drugs other than alcohol
- Validation studies are flawed
- Injuries suffered in crash caused problems
- Optokinetic nystagmus
- Rotational, post-rotational nystagmus
- Natural nystagmus

3. The Breath Test

- Instruments don’t measure true blood alcohol content
- Observation period
- Mouth alcohol
- Gastroesophageal reflux disease (GERDS)
- One sample test
- Maintenance of instrument
- No check against standard at time of test
- Rising blood alcohol
- Does not establish BAC at time of driving

- Unapproved alterations or repairs to instrument
- Interference
- Breath partition ratio
- Defendant's temperature

4. The Blood Test

- Use of alcoholic swab in taking blood
- Storage of sample
- Qualifications of blood drawer
- Serum versus whole blood
- Does not establish BAC at time of driving
- Retrograde extrapolation

II. OWI—Other Drugs

A. The Arresting Officer

- Please state your name and address.
- What is your occupation/profession?
- What law enforcement agency are you employed by?
- How long have you been employed by that agency?
- Were you working on _____ (date of arrest)?
- What were your duties on that date?
- Do you have any training in the detection of intoxicated drivers?
- Please describe this training.
- Approximately how many times have you stopped a driver you believed might be intoxicated?
- Do you arrest everyone whom you initially believe to be intoxicated?
- Why not?
- How many times have you arrested someone for driving while intoxicated?
- When you do arrest someone who you believe to be intoxicated, do you arrest based on one indication of intoxication.
- What do you base your arrest on?
- Where were you at _____ (approximate time of offense)?
- Were you alone?
- Were you in uniform?
- Were you on patrol?
- Did you observe anything unusual?

- What did you observe?
- Please describe the car you observed.
- Where did you observe this car?
- Is that location in _____, _____ (county and state)?
- Describe the roadway.
- Were you able to observe the driver of the car?
- Is the driver of that car in the courtroom today?
- Where is he?
- What is he wearing?

B. The Driving

- Will you please describe the defendant's driving that night to the jury?
- Where was your vehicle with respect to the defendant's?
- Were you able to clearly view the defendant's vehicle?
- Please describe the lighting conditions at that time and location.
- Did any traffic or other obstacle interfere with your ability to observe the defendant's driving?
- How long have you been a licensed driver?
- How often do you drive?
- From your experience in observing vehicles in motion and from your experience driving, can you fairly judge or estimate the speed of a moving vehicle?
- When you first saw the defendant's car, did you form any estimate as to the speed it was traveling?
- How fast do you believe the defendant was going?
- Did the defendant drive his car within his lane of traffic?
- Did the defendant cross any painted lane dividers?
- Which lane dividers did the defendant cross?
- Was the line the defendant crossed visible to you?
- How many times did you see the defendant cross the lane line?
- What distance did he cover when crossing that line?
- Did you activate your emergency equipment and attempt to stop the defendant's car?
- How far did the defendant drive after you activated your emergency equipment?
- Where did he stop the car?
- What position was his car in when it came to a stop?
- Did you approach the driver after he stopped?

- Did the defendant remain in the car as you approached?
- Why did you stop the car?

C. Personal Contact

- Did you ask the defendant for his license, registration and proof of insurance?
- Was the defendant able to produce these items for you?
- Please describe the defendant's actions as he sought these items for you.
- Were you able to see inside the defendant's car?
- Did you see anything unusual?
- How far away from the defendant were you during this time?
- Were you able to smell any odor?
- What did you smell?
- Where was it coming from?
- During this initial contact, did the defendant say anything to you?
- Will you please describe his speech?
- Could you describe how the defendant's eyes looked at this time?
- How did his face appear?
- Can you describe the state of his clothing?
- Did you notice anything else unusual about the defendant?
- Did you ask the defendant if he had been drinking recently?
- Did you ask him how much?
- Did you ask him where he had been drinking?
- Did you ask the defendant whether he was under the influence of any medications or other drugs?
- Did you ask him what he had taken?
- Did you ask him when he had taken it?
- Did you ask him how much he had taken?
- Was the defendant responsive to your questions?
- Did you have to repeat yourself?
- At some point, did you ask the defendant to get out of the car?
- How did the defendant get out of the car?
- Did you observe the defendant walk?
- Please describe how he walked.

D. Field Sobriety Tests

- Did you ask the defendant to perform field sobriety tests?
- Why?
- Have you had training in administering field sobriety tests?
- Please describe this training.
- Approximately how many times have you administered field sobriety tests?
- What is the purpose of administering field sobriety tests?
- What are divided attention skills?
- How do field sobriety tests measure divided attention skills?
- Does a person need divided attention skills to safely drive a car?
- Why?
- How many tasks is someone required to perform while driving?
- Did the defendant agree to perform the field sobriety tests?
- Did you ask the defendant if he had any injuries or illnesses that would affect his performance on the field sobriety tests?
- What was his response?
- Where did you conduct these tests?
- What was the surface condition in the area where you conducted the tests?
- What were the weather conditions when you conducted the tests?
- Which field sobriety tests did you ask the defendant to perform?

1. Horizontal Gaze Nystagmus

- What is horizontal gaze nystagmus?
- What causes a person's eyes to display this motion?
- Is nystagmus also caused by the ingestion of certain drugs?
- Are there different types of nystagmus?
- Are these other types of nystagmus caused by the ingestion of alcohol or other drugs?
- Have you had any training with regard to the proper administration and scoring of the horizontal gaze nystagmus test?
- Please describe this training.
- How many hours of training have you had?
- Did you explain the test to the defendant?
- Did he appear to understand your instructions about how to perform the test?
- Please describe how you instructed the defendant to perform this test.

- How is the HGN test administered?
- Did you follow this procedure in administering the test to the defendant?
- What are you looking for when you perform this test?
- Was the defendant's left eye able to track smoothly?
- Was the defendant's right eye able to track smoothly?
- Did the defendant display nystagmus?
- At approximately what angle did the nystagmus become visible in the defendant's left eye?
- At what angle did the nystagmus become visible in the defendant's right eye?
- Did you observe the defendant's left eye at maximum deviation?
- What did you observe?
- Did you observe the defendant's right eye at maximum deviation?
- What did you observe?
- What did the results of the HGN test indicate to you with regard to the defendant's intoxication?

2. Walk and Turn

- What was the next test you performed?
- Is the Walk and Turn test a divided attention test?
- How so?
- Have you received training in how to administer this test?
- Did you instruct the defendant how to perform this test?
- Did you also demonstrate the test for the defendant, at least in part?
- Did he indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What did he say?
- Please describe how you instructed the defendant to perform this test?
- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test.
- What did the results of this test indicate to you with regard to the defendant's intoxication?

3. One Leg Stand

- What was the next test you administered?
- Is this also a divided attention test?
- How so?
- Have you received training in how to administer this test?
- Did you instruct the defendant how to perform this test?
- Did you also demonstrate this test for the defendant, at least in part?
- Did he indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What did he say?
- Please describe how you instructed the defendant to perform this test.
- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test.
- What did the results of this test indicate to you with regard to the defendant's intoxication?

4. Other Field Sobriety Tests (repeat for any other tests administered)

- Did you ask the defendant to perform any other tests?
- Which test(s) did you ask him to perform?
- Did you instruct the defendant how to perform this test?
- Please describe how you instructed the defendant to perform this test.
- Did the defendant indicate whether he understood your instructions?
- Did you ask the defendant whether he believed he was physically capable of performing the test as instructed?
- What was his response?
- Did you observe the defendant perform this test?
- Please describe how the defendant performed this test?
- What did the results of this test indicate to you with regard to the defendant's intoxication?

E. The Arrest

- Have you had occasion to see intoxicated persons during the course of your career?
- Approximately how many times have you had contact with intoxicated persons in the line of duty?

- Based on your experience and training and your observations of the defendant did you form an opinion as to whether he was too intoxicated to safely operate a car at the time he was arrested?
- What was your opinion?
- What did you do as a result?
- Did you advise the defendant of his constitutional rights?
- Did he agree to talk to you?
- What did the defendant tell you about his activities leading up to the time he was stopped?
- Did you transport the defendant to the station?
- Did you observe any unusual behaviors by the defendant as you drove him to the station?
- Did you observe any unusual behaviors by the defendant while he was being booked?
- Did you believe that the defendant was under the influence of a drug other than alcohol?
- What made you think so?
- What did you do as a result?

F. Appearance in Court vs. Night of Arrest

- Have you had the opportunity to observe the defendant at the courthouse today?
- Is there any difference between the way he looks today and the way he looked on the night you arrested him?
- Do his eyes look different, how so?
- Does his face look different?
- Any difference in the way he sounds?
- Is there any difference in his balance?
- Do you notice any other differences?
- Overall, what is the difference between how the defendant looks today and how he looked that night?

G. The Drug Recognition Expert

1. Background information

- Please state your name.
- What is your occupation?
- How long have you held that position?

- Have you had any special training in detecting and apprehending drivers who are intoxicated by alcohol and other drugs?
- Have you ever participated in what's known as a drinking lab?
- What is a drinking lab?
- During these labs, did you have the opportunity to administer field sobriety tests to individuals and then compare your opinions regarding their level of intoxication with the results of a breath test?
- Are you generally able to accurately and reliably discern their level of alcohol intoxication?
- Have you ever participated in any labs where individuals were provided with illegal or illicit drugs?
- Why not?
- Approximately how many times have you stopped drivers you believed might be intoxicated?
- Did you arrest all of these drivers?
- Why not?
- How many arrests have you made for OWI?
- When you arrest someone for OWI, is this based on only one thing?
- What do you base your arrest on?

2. DRE Training

- Are you familiar with the national Drug Evaluation and Classification Program?
- What is this program?
- What is the National Highway Traffic Safety Administration?
- How is NHTSA involved in the DEC Program?
- How many states participate in this program?
- How many other countries participate in this program?
- What is a drug recognition expert?
- Are you a certified DRE?
- Who certified you?
- When were you certified as a DRE?
- How does an officer become a certified DRE?
- Can anyone undergo the training to become a DRE?
- Why not?
- How many hours of training are required?
- What is involved in the training period?
- Are any tests or exams required?

- What score do you need to achieve on that test to pass?
- Once this training is complete and the test has been passed, is an officer automatically certified as a DRE?
- What else is the officer required to do?
- Once these evaluations have been completed, is the officer then certified as a DRE?
- What else has to happen before an officer can become certified as a DRE?
- Is the officer then issued a certification card?
- Does that certification last forever?
- How often does it expire?
- What do you have to do to renew that certification?
- Who issues that card?
- Have you completed all the training, testing and evaluations we just discussed?
- Do you have a certification card?
- I'm showing you what's been marked as People's Exhibit ____, do you recognize it?
- What is it?
- Is that the original card or a photocopy?
- Is it a true and exact copy of the original?

3. The Drug Influence Evaluation

- What procedures do DREs use to determine whether or not someone is under the influence of a drug or drugs?
- What is a drug influence evaluation?
- Is the DRE protocol generally accepted to be an accurate and reliable means of identifying drug influence and intoxication?
- How many people have you evaluated for drug influence and intoxication?
- Is this evaluation done if someone is determined to be under the influence of alcohol?
- Why not?
- Approximately how many times have you determined that a OWI suspect was under the influence of drugs?
- Have you ever confirmed your opinions by taking urine samples?
- Based on your training and experience, can you accurately and reliably determine whether someone is under the influence of drugs?

- In determining whether someone is under the influence of drugs, do you determine which precise drug he has used?
- Why not?
- Do you instead determine which category of drug he is under the influence of?
- How many drug categories are there?
- How are the drugs grouped?
- Does each category of drug cause certain unique and identifiable signs and symptoms?
- What are the drug categories?
- Can you briefly describe how a drug influence evaluation is performed?
- Did you perform a drug influence evaluation on the defendant in this case?

a. The Breath Test—Step 1

- What is the first step in the drug influence evaluation?
- Was the defendant given a breath test in this case?
- Are you familiar with the results of that test?
- How are you familiar with the results of that test?
- What experience do you have in recognizing alcohol-induced intoxication?
- What did the breath test results indicate to you with regard to whether alcohol was the sole cause or a contributing factor to the defendant's intoxication?

b. Interview of Arresting Officer(s)—Step 2

- What is the next step in the drug influence evaluation?
- Did you interview the arresting officer(s) in this case?
- Did the arresting officer tell you how the defendant behaved and what, if anything, he said?
- What did you learn from that interview?

c. Preliminary Examination and First Pulse—Step 3

- Please describe the next step in the evaluation.
- What is the purpose of the preliminary examination?
- Did you conduct a preliminary examination in this case?
- Did you ask the defendant some questions?

- Did you ask the defendant if he knew what time it was?
- What did he say?
- Did you ask the defendant when he last slept?
- What did he say?
- Did you ask the defendant how long he had slept?
- What did he say?
- Did you ask the defendant if he was sick or injured?
- What did he say?
- Did you ask the defendant if he was diabetic?
- What did he say?
- Did you ask the defendant if he was epileptic?
- What did he say?
- Did you ask the defendant if suffered from allergies?
- What did he say?
- Did you ask the defendant if he took insulin?
- What did he say?
- Did you ask the defendant if he had any physical defects?
- What did he say?
- Did you ask the defendant if he was under the care of a doctor or dentist?
- What did he say?
- Did you ask the defendant if he was taking any medications or drugs?
- What did he say?
- What observations did you make of defendant's speech?
- What observations did you make of defendant's eyes?
- What observations did you make of defendant's face?
- What observations did you make of defendant's breath?
- What observations did you make of defendant's balance?
- Did you check the defendant's pulse rate?
- How did you do this?
- Were you trained how to do this?
- What was defendant's pulse rate?
- How does that compare to a normal pulse rate?
- Based on your training and experience, what did the results of the preliminary examination mean to you?
- Did you rule out the possibility that the defendant was suffering from a medical problem?

d. Eye Examination—Step 4

- What is the next step in the evaluation?
- What is the first eye test administered?
- How is the HGN test performed?
- What do you mean by smooth pursuit?
- Why is this test important?
- Can you please describe how smooth pursuit is checked?
- Did you perform this part of the test on the defendant?
- Did you check for smooth pursuit in the defendant's left eye?
- What observations did you make?
- Did you check for smooth pursuit in the defendant's right eye?
- What observations did you make?
- What is the second part of the test?
- What do you mean by maximum deviation?
- How long do you have the subject hold his eye at the outer corner?
- Did you check for this in defendant's left eye?
- What observations did you make?
- Did you check for this in defendant's right eye?
- What observations did you make?
- What is the third part of the test?
- How is this portion of the test performed?
- Why do you estimate the angle of onset?
- Did you check for this in defendant's left eye?
- What did you observe?
- Did you check for this in defendant's right eye?
- What did you observe?
- Based upon your training and experience, what did the defendant's performance on the HGN test indicate to you?
- What is the second eye test that DREs perform?
- How is the VGN test performed?
- Did you perform the VGN test in this case?
- What did you observe?
- Based upon your training and experience, what did this indicate to you?
- What is the third eye test performed?
- How is this test performed?
- What does lack of convergence mean?
- Did you perform this test in this case?

- What did you observe?
- Based upon your training and experience, what did this indicate to you?

e. Divided Attention Psychophysical Tests—Step 5

- What is the next step in the drug influence evaluation?
- What tests do you administer in this step?
- Are these divided attention tests?
- What is a divided attention test?
- Why are divided attention tests important?
- How do these tests relate to driving?
- Are these tests used exclusively by DREs?
- Are the subjects instructed how to properly perform the tests?
- Do you demonstrate each test for the subject?
- What is the first divided attention test administered?
- Would you explain and demonstrate the Romberg test in the same manner that DREs do for each subject?
- What do DREs look for when administering this test?
- Did you administer this test to the defendant?
- Did you fully explain and demonstrate this test to the defendant?
- Did he perform the test?
- What observations did you make?
- Based upon your training and experience, what did this indicate to you?
- What is the second divided attention test you administered?
- Would you explain and demonstrate the Walk and Turn test in the same manner that DREs do for each subject?
- What do DREs look for when administering this test?
- Did you explain and demonstrate the WAT test to the defendant in this case?
- Did you ask the defendant to perform this test?
- Did he agree?
- What observations did you make?
- Based upon your training and experience, what did this indicate to you?
- What is the next divided attention test administered as part of the evaluation?
- Would you explain and demonstrate the One Leg Stand test in the same manner that DREs do for each subject?

- What do DREs look for in administering this test?
- Did you explain and demonstrate the OLS test for the defendant in this case?
- Did you ask the defendant to perform this test?
- Did he agree?
- What observations did you make?
- Based upon your training and experience, what did this indicate to you?
- What is the final divided attention test administered during an evaluation?
- Would you explain and demonstrate the Finger to Nose test in the same manner that DREs do for each subject?
- What do DREs look for when administering this test?
- Did you explain and demonstrate this test to the defendant in this case?
- Did you ask the defendant to perform the Finger to Nose test?
- Did he agree?
- What observations did you make?
- Based upon your training and experience, what did this indicate to you?

f. Vital Signs and Second Pulse—Step 6

- What is the next step in the drug influence evaluation?
- Why do you check a suspect's vital signs?
- What is the first vital sign checked?
- How do you check a pulse rate?
- Have you received training in how to check a pulse rate?
- Do you check a suspect's pulse more than once?
- Why do you take it more than once?
- Is there a normal range into which most peoples' pulses fall?
- What is that range?
- Is that range medically accepted?
- Did you take the defendant's pulse during this portion of the evaluation?
- What was the rate?
- Based on your training and experience, what did that indicate to you?
- This is actually the second time his pulse was checked, correct?

- How did the pulse rates compare the first and second time they were checked?
- What did that indicate to you?
- What is the next vital sign checked?
- Why do you check the blood pressure?
- What do you use to check the blood pressure?
- Have you been trained to use that instrument?
- How do you check blood pressure?
- Is there a normal range into which most peoples' blood pressures fall?
- What is that range?
- Is that range medically accepted?
- Did you check the defendant's blood pressure?
- What was it?
- Based upon your training and experience, what did that indicate to you?
- What is the next vital sign checked?
- How do you check a subject's temperature?
- Have you been trained to do so?
- Is there a normal range into which most peoples' temperatures fall?
- What is that range?
- Is that range medically accepted?
- Did you check the defendant's temperature?
- What was it?
- Based upon your training and experience, what did that indicate to you?

g. Dark Room Examination—Step 7

- What is the next step in the drug influence evaluation?
- What does this consist of?
- In this eye examination, what are you looking for?
- How do you measure pupil size?
- Is there a normal range for pupil size?
- Under what lighting conditions are the pupils examined?
- Why are the pupils examined under different lighting conditions?
- Are both eyes checked under all three lighting conditions?
- What is the first lighting condition you check?
- Is there a normal range for pupil size in room light?
- What is that range?

- Did you check the defendant's pupils under room light?
- What did you observe?
- What did this indicate to you?
- What is the next lighting condition you check?
- How do you check pupil size in near total darkness?
- Did you check the defendant's pupils in near total darkness?
- What did you observe?
- What did this indicate to you?
- What is the next lighting condition you check?
- How do you check pupil size in direct light?
- Did you check the defendant's eyes in direct light?
- What did you observe?
- What did this indicate to you?
- When you check the oral and nasal cavities, what are you looking for?
- What kinds of things indicate recent drug use?
- Did you examine the defendant's mouth and nasal cavities?
- What did you observe?
- What did this indicate to you?

h. Examination for Muscle Tone—Step 8

- What is the next step in the drug influence evaluation?
- Why do you examine a subject's muscle tone?
- How do you examine muscle tone?
- Did you examine the defendant's muscle tone?
- What did you observe?
- Based upon your training and experience, what did this indicate you?

i. Check for Injection Sites and Third Pulse—Step 9

- What is the next step in the drug influence evaluation?
- Why do you check for injection sites?
- How do you check for injection sites?
- How can you tell if bumps are caused by injections?
- Did you examine the defendant for injection sites?
- What did you observe?
- What did this indicate to you?
- Why do you check a suspect's pulse again?
- Did you check the defendant's pulse for the third time?
- What was the rate?

- How did this rate compare to the two previous checks?
- What did this indicate to you?

j. Suspect's Statements and Other Observations—Step 10

- What is the next step in the drug influence evaluation?
- Prior to asking the subject any questions, do you read him his Miranda rights?
- Did you read the defendant in this case his rights?
- Did he agree to answer your questions?
- Did you ask the defendant what he had eaten the day of his arrest?
- What did he say?
- Did you ask him when he had eaten?
- What did he say?
- Did you ask the defendant what he had been drinking?
- What did he say?
- Did you ask the defendant how much he had to drink?
- What did he say?
- Did you ask him what time he had his last drink?
- What did he say?
- Did you ask the defendant what time it was?
- What did he say?
- What time was it?
- Did you ask the defendant when he had last slept?
- What did he say?
- Did you ask him how long he had slept?
- What did he say?
- Did you ask the defendant if he had been driving?
- What did he say?
- Did you ask the defendant if he felt he was under the influence?
- What did he say?
- Did you ask the defendant what medicine or drug he had been using?
- What did he say?
- Did you ask him how much he had used?
- What did he say?
- Did you ask him what time he had used?
- What did he say?
- Did you ask him where the drugs were used?

- What did he say?

k. Opinions of the Evaluator—Step 11

- What is the next step in the drug influence evaluation?
- Did you form an opinion in this case?
- What was that opinion?
- What did you base that opinion on?
- Are you familiar with _____ (drug found in tox screen)?
- Is that drug within the category of drugs that you believed was influencing the defendant on the night of his arrest?

l. Toxicological Examination—Step 12

- What is the next step in the drug influence evaluation?
- Why do you request a urine sample?
- Did you request a urine sample in this case?
- Did you inform the defendant of his rights under the Michigan Implied Consent Law?
- Did he agree to provide a urine sample?
- Did you collect the sample?
- How did you collect the sample?
- Did you witness the defendant provide the sample?
- Did the defendant make any attempt to add anything to the sample?
- What did you do with the urine sample after you obtained it?
- Did you in any way change, alter or add anything to the sample?
- Did you allow anyone else to change, alter or add anything to the sample?
- Did you seal it in any way?
- Did you ultimately send the sample to a laboratory for drug testing?

I. Potential Areas of Attack on Cross Examination

1. The DRE

- No medical training
- Not trained by medical professionals
- DRE does not know defendant's normal vital signs
- Missing signs and symptoms of drug category
- Drug categories are not scientifically based

- Passive inhalation/ingestion
- Alternative explanations for observed indicators of intoxication

II. Collision Reconstruction

A. The Reconstructionist

- Please state your name.
- What is your occupation?
- Where are you employed?
- How long have you held that position?
- Describe your law enforcement training.
- Do you hold any special position within your agency?
- What is that position?
- What is crash reconstruction?
- Were you required to undergo specialized training to become an accident reconstructionist?
- Please describe that training.
- How many hours was that training?
- Were you required to take a written examination as part of that training?
- Did you receive any type of certification as a result of that training?
- In the course of this training do you learn certain laws of physics that apply to the reconstruction of motor vehicle crashes?
- Since you received that training have you investigated any motor vehicle crashes?
- How many crashes have you investigated?
- How many times have you been asked to perform a reconstruction of a crash?
- Are there certain “terms of art” that are used by crash reconstructionists that are pertinent to an investigation?
- What are those terms?
- Could you explain those terms for the jury?
- Did you become involved in the investigation of a crash that occurred on _____ (date of crash)?
- How did you become involved in that investigation?

B. The Reconstruction

- Did you visit the scene of the crash?
- When did you visit the scene?
- When you visited the scene what did you observe?
- What was the nature of the roadway and the general area where the crash occurred?
- Did you visit the scene soon after the crash?
- What were the lighting conditions at that time?
- What were the weather conditions at that time?
- Did you make any measurements at the scene?
- Did you measure the general dimensions of the roadway?
- Did you make note of any signs, guardrails or other objects in or near the roadway?
- Were there any skid marks present at the scene?
- Did you measure those skid marks?
- Was the point where the skid marks started of any special significance to you in reaching an opinion in this case?
- Did you measure the drag factor of the road surface?
- Did you determine the point of impact in this crash?
- Where was that point of impact?
- Did you determine the final rest position of the vehicles involved?
- Did you determine the final rest position of any bodies at the scene?
- Did you determine the position of any debris at the scene resulting from the crash?
- Why did you make all those measurements?
- Please describe how you made those measurements.
- Is that method of measuring what was taught to you as part of your training in accident reconstruction?
- How many times have you made those types of measurements as part of an investigation of a crash?
- What type of devices did you use to make those measurements?
- Did you take any photographs of the scene of the crash?
- Did you take photographs of the physical evidence found at the scene of the crash?
- Did you document in any other way the measurements that you made and your observations of the scene?
- At some point did you make a scale drawing of the scene of the crash?

- Why did you make this drawing?
- Were you trained to make such drawings as part of the investigation of a crash?
- What is perception-reaction time?
- How does that affect the reconstruction of a crash?
- Have you received special training in measurement of perception-reaction time?
- Have you received any special training in the measurement of a vehicle operator's perception-reaction time?
- Have you received any special training in what can cause a vehicle operator's perception-reaction time to be lengthened?
- Have you used the concept of perception-reaction time in previous reconstructions?
- Did you determine the defendant's perception-reaction time in this case?
- Do you have any opinion regarding the defendant's perception-reaction time relative to what would ordinarily be considered a normal perception-reaction time under similar circumstances?
- What is that opinion?
- At the conclusion of your investigation, were you able to form an opinion as to how the crash occurred?
- What is that opinion?

1. Skid Mark Evidence

- In regards to the evidence on the road, what did you observe?
- Were the tire marks related to the crash?
- How did you know that?
- What type of tire marks were they?
- What's a skid mark?
- How did you know that these were skid marks?
- Can you describe the skid marks?
- Were the skid marks straight or curved?
- What caused the skid marks to be curved?
- What is crowning?
- Did you determine the direction of the skid marks?
- How did you determine the direction?
- Did you compare the skid marks to the vehicle(s) involved in the crash?

- How?
- What is track width?
- What is the track width of the skid mark?
- What was the track width of the defendant's vehicle?
- Were both the front and rear axles of the defendant's vehicle the same track width?
- Were the front and rear skid marks left by the same vehicle?
- What is tread width?
- What was the tread width of the defendant's vehicle?
- What was the width of the skid marks?
- What is a tread pattern?
- Did you document the tire marks?
- How?
- Did you measure the skid marks?
- How did you measure them?
- Is that part of your normal practice and routine?
- What were the lengths of the skid marks?
- Could you determine what tire left what marks?
- How?

2. Drag Factor Measurements

- You said that you measured the skid marks?
- Why did you do that?
- To compute a speed estimate, do you need to do anything else?
- What else do you need to do?
- What is drag factor?
- What is the significance of the drag factor to a collision investigation?
- What effect does the drag factor have on a vehicle?
- How is the drag factor measured?
- What is a drag sled?
- Are there any other components?
- I'm showing you what's been marked as People's Exhibit ____, what is that a picture of?
- Using a drag sled, how do you perform the measurements?
- Are there any other measurements performed?
- Are there any specific considerations when performing these tests?
- What are those considerations?

- Do you measure the drag factor adjacent to and in the same direction as the skid marks?
- Why do you do that?
- When did you conduct these measurements?
- Why did you perform the tests at that time?
- After performing these tests, did you form any conclusions?
- What were those conclusions?
- Are these tests normally done in the course of a crash investigation?
- Have you received training relative to the use of a drag sled?
- Please describe that training.

3. Minimum Speed from Skid Marks Calculation

- Based on the skid mark evidence and the drag factor determined for the roadway, were you able to determine a speed of the defendant's vehicle in the crash?
- What do you mean by minimum initial speed?
- Is that an exact speed?
- Why not?
- Is the speed you calculated slower than the defendant's actual speed then?
- How did you arrive at the defendant's minimum initial speed?
- What was the defendant's minimum initial speed?
- Are you certain of that number?
- Do you figure in some degree of error?
- Why do you do that?
- How much does that affect your determination of the speed?

4. Time and Distance Analysis/Acceleration Tests

- Do you have any photographs that depict the scene of the crash?
- Do those photographs accurately represent this area?
- Did you make any measurements of visibility distance?
- How did you make those measurements?
- Were there any permanent view obstructions in the area that would have limited the line of sight?
- What was the posted speed limit on the roadway?
- At a known speed, would you be able to tell us how much time it would take to cover that distance?

- If a vehicle is traveling at a constant speed of ____, is it possible to determine how much time it would take to travel ____ feet?
- How much time would it take?
- If a vehicle were traveling at the posted speed limit, how long would it take to travel that distance?
- What does this analysis allow you to conclude?
- What is the significance of this difference?
- Did you find any evidence that the defendant had taken any evasive action?
- Why was that significant?
- Were you able to conduct any tests to determine at what rate a vehicle like that of the defendant's is able to accelerate?
- What were the results?
- If you use that acceleration, are you able to determine the maximum speed obtained by the vehicle prior to the area of impact?
- What were the results?
- Why was that significant?

5. Yaw Mark Evidence

- During the course of your scene examination, what evidence did you observe on the roadway?
- With reference to the tire marks, how would you describe the tire marks you saw?
- What is a yaw mark?
- What do you mean by diagonal striations?
- What is the cross-over?
- What is a decreasing radius?
- How is a yaw mark made?
- Can you explain the difference between a tire yaw mark and other tire marks?
- What else does a yaw mark indicate about the actions of the vehicle?
- How many of these yaw marks did you observe at the scene?
- Can you describe the appearance of these yaw marks?
- Of what importance are these yaw marks to your investigation?
- How can these yaw marks be used to determine speed?
- Did you observe any other evidence that would indicate to you that the vehicle in question was in a yaw?
- What evidence did you observe?

- In the totality of this investigation, is there any other way the yaw marks could have been made?

6. What if Defendant had been Traveling at the Speed Limit?

- What is the posted speed limit in the area of the crash?
- How is that posted?
- Were the signs clearly visible at the time of the crash?
- How far from the collision scene was that roadway posted at ____ mph?
- What time of day did the crash occur?
- What were the weather conditions?
- Is there anything else you observed at the scene?
- What is sight distance?
- Did you determine a sight distance for the defendant's vehicle?
- How did you determine the sight distance?
- How long was the sight distance?
- Did you observe any view obstructions?
- In regard to the roadway surface, what examinations did you make?
- What conclusions did you draw from that examination?
- Where in the roadway did the crash occur?
- Based upon your training, experience and evidence observed at the scene, were you able to determine what the vehicles were doing prior to the crash?
- What was that determination?
- Your calculations have shown that at the time of the crash the defendant's vehicle was traveling at ____ mph in a ____ mph zone and the victim's vehicle was traveling ____ mph. Are you able to determine what would have happened if the defendant's vehicle at been traveling at the posted speed limit prior to the crash?
- What would have happened?
- What affect would this extra time have on the location of the victim's vehicle?
- Why is that significant?

7. Night Time Visibility Test

- What other tests did you conduct during the course of your investigation?
- What is a night time visibility test?

- How do you conduct a night time visibility test?
- Please describe the vehicle used in the test.
- Please describe the operator of the test vehicle.
- Please describe the pedestrian used in the test.
- What were the conditions of the roadway at the time of the test?
- What was the result of this test?
- Were you able to make any conclusions relative to the defendant involved in the crash?

8. Headlight Cold Shock

- Did you inspect the defendant's vehicle after the crash?
- Did you specifically examine the headlights?
- What did you find?
- What is the significance of cold shock?
- Could you explain what cold shock is?
- What is a lamp filament?
- What does cold shock look like?
- What made you determine that cold shock was present in the headlight removed from the defendant's vehicle?
- Would the filament have looked differently if the headlight was on at the time of the crash?
- How would it have looked?
- What does the presence of cold shock in the headlight indicate?

C. Potential Areas of Attack on Cross-Examination

1. Experience, Training and Education

- Books considered authoritative
- Treatises consulted in investigation
- Use of squares of speeds in combined speed equation
- Constant factor in speed from skid marks equation
- Constant factor in speed from yaw marks equation
- ACTAR certification

2. Incomplete Investigation

- Not at scene at time of crash
- Did not personally process scene
- Acceleration tests—driver input different from defendant

- Did not have defendant do any tests
- Did not have timing pattern of traffic lights
- Measuring equipment not calibrated or checked against a standard
- Did not check for recall on defendant's vehicle
- Did not do mechanical inspection of defendant's vehicle
- Did not do inspection of road for defects
- Did not weigh defendant's vehicle, incorrect weight in calculations
- Drag factor measurement was greater than range published in charts
- Did not inspect vehicles
- Was not able to recreate weather conditions for visibility assessment
- Visibility test with different vehicle
- Visibility test done by alerted operator
- Attacks on drag sled measurement
- Unable to identify exact point of impact

3. Errors in Investigation or Reconstruction

- Yaw-tire mark radius not equal to CM radius
- Did tests but did not use true exemplar
- Rolling f —did not use where no marks
- Did not consider all possible means of getting to final rest position
- Did not take into account tire pressure, radius, bias ply, tread pattern and depth
- Vehicles do not all brake equally
- Drag factor depends on speed—was not considered

4. Credibility

- Did not have all materials before reaching conclusions
- Changed or supplemented report after seeing defense expert's report
- Did not videotape
- Has not published papers or tests
- No special training
- No consultation, check on work
- Not qualified to inspect vehicle for mechanical defects
- No formal training in physics
- Did not repeat measurements to avoid error
- Did not return to scene of night time crash to look for additional evidence in day light
- Did not measure and document witness locations

- Did not take photos showing witness perspective
- Did not confirm accuracy of scale drawing
- Did not re-interview important witnesses
- Did not interview witness at location where observations were made

5. Certainty of Opinion

- Did not do sensitivity analysis
- Point of impact—no scuff marks, no debris pattern, no jog in tire mark, gouges, scrapes
- If gouge was found, did not match specific contact point on undercarriage of vehicle
- Did report include ABS scuff marks
- MC rear only skid—include a range of front braking in speed estimates
- Use of assumptions—what happens with different assumptions
- Momentum calculation—uncertainties in angles, post-impact motion to FRP
- Were uncertainties in evidence cumulative in the calculations?
- Incomplete reconstruction of motion of victim's vehicle