FINAL DIAGNOSES

OF THE REMAINS OF:

QUILLAN E. JACOBS

I. Investigation by Stacey Huck, the Boone County Medical Examiner's Office Death Investigator, reveals that the Decedent, Quillan E. Jacobs, was "shot by police during an altercation with them." The Investigator's Report is On File.

II. There is No Reported Medical History. There are No Medical Records on File.

III. Injuries Contributing to the Cause of Death

a. Gunshot wounds "C" to the chest and "H" to the abdomen with some contribution from "I" to the right upper leg.

b. Gunshot wounds "A" to the head; "N" and "P" to the trunk; and gunshot wounds "B", "F", "G", "J", "K", "L", and "S" to the extremities.

c. Ethanol and delta-9 tetrahydrocannabinol intoxication

IV. System-Based Findings

a. Cardiovascular: focal severe coronary atherosclerotic stenosis

V. Toxicology Report Attached: Ethanol, Delta-9 THC, Cotinine, and Caffeine.

OPINION:

In my opinion, the cause of death of Quillan E. Jacobs is bleeding into the chest due to gunshot wounds "C" and "H" with some bleeding from gunshot wound "I". The manner of death is ruled a homicide.

Keith N. Norton, M.D.

July 7, 2022

POSTMORTEM EXAMINATION

OF THE REMAINS OF:

QUILLAN E. JACOBS

A postmortem examination is performed at the Boone/Callaway County Medical Examiner's office on November 16, 2021, on the remains of a man identified as Quillan E. Jacobs. The autopsy is performed under the authority of state law. The examination is conducted by Keith Norman Norton, M.D., medical examiner, assisted by ShaMarea Houston and Scott Noble, forensic technicians of the Medical Examiner's Office. The autopsy is witnessed by Darrin Haslag of the Missouri State Highway Patrol. The examination is begun at 2:20 P.M.

When first viewed, the body is clothed in shoes, socks, sweatpants, undershorts, a tee shirt, a jacket, a hat, and handcuffs.

EVIDENCE OF INJURY:

(The order in which the injuries are listed is not intended to imply the order in which they occurred nor the ranking of severity.)

Grazing Gunshot Wound "A" of the Lower Lip

1. Entrance: Located on the lower lip, centered 20 centimeters below the vertex of the skull, 0.5 centimeters to the left of the midline, and at the level of the glabella, is an abrasion measuring 1.7 by 1.3 centimeters. There is no entrance wound. There is no soot or stippling around the wound.
2. Path: The wound involves only the superficial skin of the lower lip.
3. Exit: Located on the lower lip, the end of the abrasion is included in the above-described abrasion.
4. Projectile Recovered: No projectile is recovered.
5. Trajectory: This has a very short path, and it is impossible to tell whether the direction was right to left or left to right, for instance.
6. Associated findings: There is a small amount of bleeding and pain resulting from this wound.

Graze Wound "B" to the Right Shoulder

1. Entrance: Located on the lateral aspect of the right shoulder, centered 28 centimeters below the vertex of the skull, 21.5 centimeters to the right of the midline and at the level of the acromion front-to-back, is a 4.3 centimeter by 1 centimeter abrasion. There is no soot or stippling around the wound.
2. Path: The wound path involves only the skin because this is a graze wound.
3. Exit: This is part of the graze wound itself.
4. Projectile Recovered: None
5. Trajectory: The direction relative to the body in anatomical position is vertical but otherwise it cannot be discerned.
6. Associated findings: There is slight bleeding and pain.

Perforating Gunshot Wound at the Left Side of the Upper Chest "C"

1. Entrance: Located on the left side of the upper chest, centered 37 centimeters below the vertex of the skull, 5.5 centimeters to the left of the midline, and 10 centimeters anterior to the acromion, is a 1.3 centimeter in diameter abraded gunshot wound of entrance. There is no soot or stippling, but there is 0.2 centimeters of abrasion superior to the wound.
2. Path: The hemorrhagic wound path passes through the skin and soft tissue of the left side of the upper chest before perforating the left fourth rib and the left fourth intercostal space, the upper lobe of the left lung, the anterior portion of the left ventricular wall of the heart and contusing the lower lobe of the left lung anteriorly, before exiting through the left seventh intercostal space laterally before exiting through the skin of the left side of the chest laterally through gunshot wound "D".
3. Exit: This is called gunshot wound "D". It is located on the lateral aspect of the left side of the chest, centered 59 centimeters below the vertex of the skull, 15.5 centimeters to the left of the midline, and 1 centimeter posterior to the acromion, is a 1-centimeter in diameter irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None
5. Trajectory: The direction of the projectile is 22 centimeters downward, 11 centimeters from front to back, and 10 centimeters from right to left.

6. Associated findings: There was a contribution to the left hemothorax due to the injury to the heart and to the lung, though the injury to the heart did not reach the endocardium. This is a lethal wound.

Perforating Gunshot Wound "F" to the Left Upper Leg Anteriorly

1. Entrance: Located on the left upper leg anteriorly, centered 99 centimeters below the vertex of the skull, 15 centimeters to the left of the midline, and 6.5 centimeters anterior to the acromion, is a 1.5 by 1.3-centimeter abraded gunshot wound of entrance. No soot or stippling is noted around the wound.
2. Path: The hemorrhagic wound path passes through the skin and soft tissue of the left upper leg before exiting through the skin of the left upper leg through gunshot wound "E".
3. Exit: Located on lateral aspect of the left hip, centered 91 centimeters below the vertex of the skull, 20 centimeters of the left of the midline, and 4.5-centimeter posterior to the acromion, is a 1.5 by 0.8 centimeter irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None
5. Trajectory: The direction of the wound is 11 centimeters from front to back, 8 centimeters upward, and 5 centimeters from right to left.
6. Associated findings: Bleeding and pain. This is not a lethal wound in and of itself.

Perforating Gunshot Wound "G" to the Medial Aspect of the Left Upper Leg

1. Entrance: Located on the medial aspect of the left upper leg, centered 104.5 centimeters below the vertex of the skull, 5 centimeters to the left of the midline, and 3.5 centimeters anterior to the acromion, is a 2 by 1.8-centimeter abraded gunshot wound of entrance. There is a small amount of abrasion noted inferior and lateral to the wound. There is no soot or stippling around the wound.
2. Path: The hemorrhagic wound path involves the skin and muscle of the left upper leg before exiting through gunshot wound "T".
3. Exit: Exit wound "T" is located on the medial aspect of the proximal portion of the left upper leg, centered 98 centimeters below the vertex of the skull, 2 centimeters to the left of the midline, and 2 centimeters posterior to the acromion, is a 1.3-centimeter slit-like irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None

5. Trajectory: The direction of gunshot wound "G" is 6.5 centimeters upward, 5.5 centimeters from front to back, and 3 centimeters from left to right.
6. Associated findings: This wound would have caused bleeding and pain. This is not a lethal wound in and of itself.

Penetrating Gunshot Wound "H" of the Right Lower Quadrant of the Abdomen

1. Entrance: Located on the right lower quadrant of the abdomen, centered 66 centimeters below the vertex of the skull, 10.5 centimeters to the right of the midline, and 5.5 centimeters anterior to the acromion, is a 2 by 0.8-centimeter abraded gunshot wound of entrance. The abrasion extends 0.7 centimeters superior to the wound. There is no soot or stippling nearby.
2. Path: The hemorrhagic wound path involves the skin and muscle of the abdomen before perforating the ascending colon, the liver, the diaphragm, the posterior wall of the left ventricle of the heart, and the left pleural cavity, where the projectile came to rest.
3. Exit: None
4. Projectile Recovered: The projectile recovered is referred to as bullet "3". It is medium to large caliber, mushroomed, and not deformed from side to side. The location is in the pleural cavity, but the approximate location is 45 centimeters below the vertex of the skull, 15 centimeters to the left of the midline, and at the level of the acromion, front to back. The projectile is released to Darrin Haslag of the Missouri State Highway Patrol.
5. Trajectory: The direction of this wound is 25.5 centimeters from right to left, 21 centimeters upward, and 5.5 centimeters from front to back.
6. Associated findings: The results of this wound include contribution to the left hemothorax and bleeding into the peritoneum. This is a lethal wound.

Penetrating Gunshot Wound "I" to the Lateral Aspect of the Proximal Portion of the Right Upper Leg

1. Entrance: Located on the lateral aspect of the proximal portion of the right upper leg, centered 79.5 centimeters below the vertex, 14.5 centimeters to the right of the midline, and 1 centimeter posterior to the acromion, is a 1 by 0.8-centimeter abraded gunshot wound of entrance. The abrasion extends 0.2 centimeters posterior and inferior from the wound. There is no soot or stippling around the wound.

2. Path: The path of the projectile is through the skin and muscle of the right upper leg, the right psoas muscle, and the stomach, with the projectile coming to rest in the stomach as bullet number "4".
3. Exit: None
4. Projectile Recovered: Bullet number "4" is found in the stomach. It is medium to large caliber, mushroomed, and not deformed side to side. It is recovered 60 centimeters below the vertex of the skull, 10 centimeters to the right of the midline, and 3 centimeters anterior to the acromion. It is released to Darrin Haslag of the Missouri State Highway Patrol.
5. Trajectory: The direction of the wound is 19.5 centimeters upward, 4.5 centimeters from right to left, and 4 centimeters from back to front.
6. Associated findings: There is a contribution to the hemoperitoneum. This is a potentially lethal wound.

Perforating Gunshot Wound "J" to the Lateral Aspect of the Mid-Portion of the Right Upper Leg

1. Entrance: Located on the lateral aspect of the middle portion of the right upper leg, centered 98.5 centimeters below the vertex of the skull, 15 centimeters to the right of the midline, and 1 centimeter anterior to the acromion, is a 1 by 0.7-centimeter abraded gunshot wound of entrance. The abrasion extends 0.2 centimeters anterior to the wound. There is no soot or stippling around the wound.
2. Path: The hemorrhagic wound path involves the skin and musculature of the right upper leg before there is an exit through gunshot wound "Q".
3. Exit: Exit wound "Q" is on the posterior aspect of the right upper leg, centered 103 centimeters below the vertex of the skull, 6 centimeters to the right of the midline, and 5 centimeters posterior to the acromion. It consists of a 1 by 0.8-centimeter irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None
5. Trajectory: The direction of the wound is 9 centimeters from right to left, 6 centimeters from front to back, and 4.5 centimeters downward.
6. Associated findings: The results of this wound include bleeding and pain. This is not a lethal wound in and of itself.
7.

Perforating Gunshot Wound "K" to the Lateral Aspect of the Right Knee Anteriorly

1. Entrance: Located on the anterior aspect of the lateral portion of the right knee, centered 118.5 centimeters below the vertex of the skull, 13 centimeters to the right of the midline, and 1 centimeter anterior to the acromion, is a 1 centimeter in diameter abraded gunshot wound of entrance. The abrasion extends 2 centimeters anterior to the wound. There is no soot or stippling near the wound.
2. Path: The hemorrhagic wound path extends through the skin and fascia of the right knee before exiting again through the skin at gunshot wound "U".
3. Exit: Through gunshot wound "U", located on the right knee laterally and posteriorly, centered 119 centimeters below the vertex of the skull, 13 centimeters to the right of the midline, and 3 centimeters posterior to the acromion, is a 1.5 by 0.8-centimeter irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None
5. Trajectory: The direction of this wound is 4 centimeters from front to back, 0.5 centimeters downward, and neither right nor left.
6. Associated findings: The results of this wound include bleeding and pain. This is not a lethal wound in and of itself.

Perforating Gunshot Wound "L" of the Ulnar Aspect of the Distal Portion of the Right Forearm

1. Entrance: Located on the ulnar aspect of the distal portion of the right forearm, centered 49.5 centimeters below the acromion (the acromion is 27 centimeters below the vertex), at the side (the side is 12 centimeters to the right of the midline), and 1.5 centimeters anterior to the dorsum of the forearm, is a 0.7 centimeter in diameter abraded gunshot wound of entrance. There is no soot or stippling around the wound.
2. Path: The hemorrhagic wound path involves the skin and muscle of the right forearm before exiting through the skin at gunshot wound "M".
3. Exit: Gunshot wound "M", located on the radial aspect of the distal portion of the right forearm, centered 48.5 centimeters below the acromion, 3.5 centimeters to the right of the side, and 5 centimeters anterior to the dorsum, is a 1.5 by 2-centimeter, irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None

5. Trajectory: The direction of this wound is 3.5 centimeters ulnar to radial, 3.5 centimeters volar to dorsal, and 1 centimeter distal to proximal.
6. Associated findings: The results of this wound include bleeding and pain. This is not a lethal wound in and of itself.

Perforating Gunshot Wound "N" to the Right Scapular Region Superiorly and Medially

1. Entrance: Located on the superior medial portion of the right scapular region, centered 34 centimeters below the vertex of the skull, 11.5 centimeters to the right of the midline, and 11 centimeters posterior to the acromion, is a 2.5 by 1-centimeter abraded gunshot wound of entrance. There is abrasion that extends 1 centimeter superior and medially from the wound. No soot or stippling is noted near the wound.
2. Path: The hemorrhagic wound path extends through the skin and muscle to reach the skin of the right scapular region lower and more laterally where there is exit wound "O".
3. Exit Through Gunshot Wound "O": Located on the lower and lateral portion of the right scapular region, centered 37 centimeters below the vertex of the skull, 14 centimeters to the right of the midline, and 11 centimeters posterior to the acromion is a 3 by 1.5-centimeter, irregularly lacerated gunshot wound of exit. A small amount of abrasion is noted inferiorly and laterally from the wound. There is no soot or stippling nearby.
4. Projectile Recovered: None
5. Trajectory: The direction of the wound is 3 centimeters downward, 2.5 centimeters from left to right, and neither forward nor backward.
6. Associated findings: The result of this wound includes bleeding and pain. This is not a lethal wound in and of itself.

Graze Wound "P" of the Right Buttock Region

1. Entrance: Located on the right buttock, centered 85 centimeters below the vertex of the skull, 6 centimeters to the right of the midline, and 12 centimeters posterior to the acromion, is a 7.5 by 2.5-centimeter abraded gunshot wound of entrance and exit since this is a graze wound. There is also an abrasion which extends 2.8 centimeters superior to the graze wound.
2. Path: The hemorrhagic wound path involves only the skin and fat of the right buttock.
3. Exit: The exit is part of the graze wound on the right buttock.

4. Projectile Recovered: None
5. Trajectory: The direction of the wound relative to the anatomical position is vertical, but whether going upward or downward is not something that can be determined.
6. Associated findings: This would have caused bleeding and pain. This is not a lethal wound in and of itself.

Perforating Gunshot Wound "S" to the Lateral Aspect of the Right Knee

1. Entrance: Located on the lateral aspect of the right knee, centered 124 centimeters below the vertex of the skull, 9 centimeters to the right of the midline, and at the level of the acromion, is a 0.9-centimeter in diameter, abraded gunshot wound of entrance. There is 2.4 centimeters of abrasion extending anteriorly from the wound. No soot or stippling are noted near the wound.
2. Path: The hemorrhagic wound path involves the skin and muscle and skin of the right knee with an exit through gunshot wound "R".
3. Exit: Gunshot wound "R" is located on the popliteal fossa of the right knee, centered 124 centimeters below the vertex of the skull, 10 centimeters to the right of the midline, and 5 centimeters posterior to the acromion where there is a 1.5 by 0.8-centimeter, irregularly lacerated gunshot wound of exit.
4. Projectile Recovered: None
5. Trajectory: The direction of the wound is 5 centimeters from front to back, 1 centimeter from left to right, and neither up nor down.
6. Associated findings: The results of this wound include bleeding and pain. This is not a lethal wound in and of itself.

Blunt Force Injuries

Abrasions are noted on both knees with the larger one being on the right.

EVIDENCE OF THERAPY:

There is no evidence of therapeutic intervention other than the attachment of an identification tag to the left great toe.

EXTERIOR:

The remains are those of a well-developed, well-nourished man whose appearance is consistent with the given age of 30 years. The length of the body from the bottoms of the feet to the top of the head is 5 feet and 8 inches. The weight is 145 pounds for a body mass index of 22 kg/m^2. Rigor mortis is completely developed. Livor mortis is posterior. The body is ambient temperature. There are no signs of decomposition.

The injuries described above are identified. The head hair is black and tightly curled. Both a mustache and beard are present. The irides are brown and there are no petechiae of the conjunctivae or sclerae. The nose, ears, and mouth are unremarkable. The teeth are the decedent's natural teeth and are in good condition, but numbers 6-11 are encrusted with a shiny metal appliance. The frenulum is intact and not contused. There are tattoos on the lateral aspect of the right upper arm, around the left forearm, and on the dorsum of each forearm, but also on the anterior aspect of the neck, the posterior aspect of the right side of the neck, and on the dorsum of the left hand. No scars are noted. The neck, chest, back, and abdomen are unremarkable except for the injuries described above. The external genitalia are those of an adult circumcised male. The extremities are unremarkable except for the injuries and findings described above.

There is a cut on the palm of the left hand between the second and third metacarpals. This measures 1-centimeter in length and is curvilinear.

INTERIOR:

The injuries described above are identified. The thoracic and abdominal organs are in their normal relations except for the movement due to bleeding into the pleural, pericardial, and peritoneal cavities. The pericardial sac is displaced to the right because of the left hemothorax. The pericardial sac has been disrupted by the gunshot wounds described above. The diaphragmatic leaflets are remarkable for one perforation as the result of a gunshot wound, but they are otherwise normally situated. There is no hemorrhage into the right pleural cavity, but the left pleural cavity contains 1600 cubic centimeters of blood while the peritoneum contains 150 cubic centimeters of blood.

NECK:

There are no hemorrhages or other abnormalities of the soft tissues of the neck, larynx, trachea, or cervical vertebral column. The hyoid bone has two pseudarthrosis. There are no subcapsular hemorrhages of the thyroid gland, and the thyroid parenchyma is tan.

CARDIOVASCULAR:

The injuries described above are identified. The heart weighs 370 grams. The epicardial surface is remarkable for the graze wounds anteriorly and posteriorly. The coronary arteries have a normal right dominant distribution, and the origins and paths of the coronary arteries are normal. There is approximately 95% atherosclerotic narrowing of the left anterior descending coronary artery; otherwise, the coronary arteries are free of obstruction including thrombi. The epicardial surface is remarkable for injuries to the left ventricular wall both anteriorly and posteriorly, despite which neither gunshot wound reaches the endocardium. No thrombi are present in the coronary arteries. The left ventricular posterior wall thickness is 1.5 centimeters. The interventricular septal thickness is 1.7 centimeters. The right ventricular wall thickness is 0.3 centimeters. The valve circumferences are tricuspid 11 centimeters; pulmonic 6.2 centimeters; mitral 9.6 centimeters; and aortic 6.2 centimeters. The four heart chambers are unremarkable. The valves are unremarkable. The foramen ovale is closed and there are no atrial or ventricular septal defects. There are no thrombi within the chambers. There are no abnormalities of the papillary muscles or chordae tendineae. The myocardium is dark red-brown and without evidence of scarring. There are no thrombi within the pulmonary artery. The aorta and its major branches are unremarkable. The great veins are unremarkable.

RESPIRATORY:

The injuries described above are identified. The right and left lungs weigh 500 and 315 grams, respectively. The pleural surfaces are smooth and glistening except for the perforation of the upper lobe of the left lung and the contusion of the lower lobe of the left lung anteriorly. There are no thrombi or emboli within the pulmonary arteries. The pulmonary arteries, bronchi, and their major branches are unremarkable. The parenchyma in all five lobes is unremarkable except for the hemorrhage into the area surrounding the perforation of the upper lobe of the left lung and the area of contusion of the anterior portion of the lower lobe of the left lung that are contused by the bullet. There are no cystic lesions, nodules, or distinct consolidations.

LIVER, COMMON BILE DUCT, GALL BLADDER, AND PANCREAS:

The liver weighs 1380 grams and there is perforation from the inferior aspect of the right lobe through the gall bladder and the upper portion of the left lobe. Otherwise, the capsule is smooth and glistening. The parenchyma is soft and brown without fibrosis, nodules, or focal lesions. The gall bladder is remarkable for perforation by one of the gunshot wounds.

The common bile duct is unremarkable. There is no bile in the gall bladder. The pancreas has an unremarkable, firm, tan, lobulated parenchyma.

GASTROINTESTINAL:

The injuries described above are identified. The esophagus is unremarkable. The stomach contains 40 cubic centimeters of pink fluid. No pill fragments are identified. The gastric and duodenal mucosae are unremarkable except for the perforation of the stomach that allowed one bullet to come to rest within the gastric lumen. The remaining portions of the small intestine and colon are unremarkable. The appendix is present.

GENITOURINARY:

The right and left kidneys weigh 140 and 125 grams, respectively. The capsules strip with ease to reveal smooth subcapsular surfaces. The cortices and medullae are distinct and unremarkable. There are no abnormalities of the papillae, calyceal systems, pelves or ureters. The urinary bladder contains 17 cubic centimeters of straw-colored, but cloudy, urine. Its mucosa is unremarkable. The prostate is unremarkable. The testes are descended and without masses.

ENDOCRINE:

Each adrenal gland has an unremarkable yellow cortex and gray medulla. The thyroid is tan in color, and the pituitary gland is unremarkable.

SPLEEN:

The spleen weighs 80 grams. The capsule is smooth and glistening, and the white and red pulp are distinct.

LYMPHATIC:

No lymphadenopathy is identified.

MUSCULOSKELETAL:

The injuries described above are identified. There are no apparent abnormalities of the axial or appendicular skeletal systems other than the injury to the left fourth rib because of the gunshot wound. There are injuries to the muscles due to the gunshot wounds. There is no osteoporosis.

HEAD:

There is a small nodule noted in the right side of the frontal scalp. There are no contusions of the scalp or fractures of the skull. There is no epidural, subdural, or subarachnoid hemorrhage. The brain weighs 1330 grams. The cranial nerves and cerebral vessels are unremarkable. There is moderate edema of the tops of gyri and narrowing of the sulci. The cerebral hemispheres are symmetrical and there are no cortical lesions. Grossly, the brainstem and cerebellum are unremarkable. There is mild uncal notching and no evidence of cerebellar tonsillar prominence.

Sections of the cerebral hemispheres, brainstem, and cerebellum are symmetrical and there are no pre-existing lesions. All structures appear normal in size and shape.

MICROBIOLOGY:

A nasopharyngeal swab was obtained on November 15, 2021, submitted for RT-PCR for COVID-19, and reported as "negative".

RADIOGRAPHS:

Many radiographs are taken and reveal the presence of four bullets. One is near the base of the neck posteriorly. Two projectiles are recovered, one over the chest, and one is closer to the left iliac crest.

TOXICOLOGY:

Samples of blood from the left pleural cavity, vitreous humor, urine and liver are obtained from the body at the time of the autopsy and submitted to the NMS Forensic Toxicology Laboratory.

NMS LABS

NMS Labs
200 Welsh Road, Horsham, PA 19044-2208
Phone: (215) 657-4900 Fax: (215) 657-2972
e-mail: nms@nmslabs.com
Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

CONFIDENTIAL

Toxicology Report

Report Issued 12/20/2021 15:07

To: **10821**
University of Missouri Pathology Department - Med
Attn: Dori Burke
1 Hospital Dr, M173
Columbia, MO 65212

Patient Name	JACOBS, QUILLAN
Patient ID	2021-483
Chain	21412180
Age 30 Y	**DOB** 04/26/1991
Gender	Male
Workorder	21412180

Positive Findings:

Compound	Result	Units	Matrix Source
Ethanol	**166**	**mg/dL**	**001 - Pleural Blood**
Blood Alcohol Concentration (BAC)	**0.166**	**g/100 mL**	**001 - Pleural Blood**
Caffeine	**Positive**	**mcg/mL**	**001 - Pleural Blood**
Cotinine	**Positive**	**ng/mL**	**001 - Pleural Blood**
11-Hydroxy Delta-9 THC	**1.7**	**ng/mL**	**001 - Pleural Blood**
Delta-9 Carboxy THC	**30**	**ng/mL**	**001 - Pleural Blood**
Delta-9 THC	**5.1**	**ng/mL**	**001 - Pleural Blood**

See Detailed Findings section for additional information

Testing Requested:

Analysis Code	Description
8052B	Postmortem, Expanded, Blood (Forensic)

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Labeled As
001	Gray Top Tube	9.7 mL	11/16/2021 14:50	Pleural Blood	2021-483
002	Gray Top Tube	9.7 mL	11/16/2021 14:50	Pleural Blood	2021-483
003	Red Top Tube	5 mL	11/16/2021 14:50	Vitreous Fluid	2021-483
004	White Plastic Container	20 mL	11/16/2021 14:50	Urine	2021-483
005	White Plastic Container	61.9 g	11/16/2021 14:50	Liver Tissue	2021-483

All sample volumes/weights are approximations.

Specimens received on 11/24/2021.

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Ethanol	166	mg/dL	10	001 - Pleural Blood	Headspace GC
Blood Alcohol Concentration (BAC)	0.166	g/100 mL	0.010	001 - Pleural Blood	Headspace GC
Caffeine	Positive	mcg/mL	0.20	001 - Pleural Blood	LC/TOF-MS
Cotinine	Positive	ng/mL	200	001 - Pleural Blood	LC/TOF-MS
11-Hydroxy Delta-9 THC	1.7	ng/mL	1.0	001 - Pleural Blood	LC-MS/MS
Delta-9 Carboxy THC	30	ng/mL	5.0	001 - Pleural Blood	LC-MS/MS
Delta-9 THC	5.1	ng/mL	0.50	001 - Pleural Blood	LC-MS/MS
Ethanol	Confirmed	mg/dL	10	001 - Pleural Blood	Headspace GC

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. 11-Hydroxy Delta-9 THC (Active Metabolite) - Pleural Blood:

   11-Hydroxy Delta-9 THC is an active intermediate metabolite of tetrahydrocannabinol (THC) the active component of marijuana. Usual peak levels: Less than 10% of THC levels after smoking.

2. Caffeine (No-Doz®) - Pleural Blood:

   Caffeine is a xanthine-derived central nervous system stimulant. It also produces diuresis and cardiac and respiratory stimulation. It can be readily found in such items as coffee, tea, soft drinks and chocolate. As a reference, a typical cup of coffee or tea contains between 40 to 100 mg caffeine.

   The reported qualitative result for this substance was based upon a single analysis only. If confirmation testing is required please contact the laboratory.

3. Cotinine (Nicotine Metabolite) - Pleural Blood:

   Cotinine is a metabolite of nicotine and may be encountered in the fluids and tissues of an individual as a result of tobacco exposure.

   Anabasine is a natural product occurring in tobacco, but not in pharmaceutical nicotine and a separate test for anabasine in urine can be used to distinguish tobacco from pharmaceutical nicotine use.

   The reported qualitative result for this substance was based upon a single analysis only. If confirmation testing is required please contact the laboratory.

4. Delta-9 Carboxy THC (Inactive Metabolite) - Pleural Blood:

   Delta-9-THC is the principle psychoactive ingredient of marijuana/hashish. Delta-9-carboxy-THC (THCC) is the inactive metabolite of THC. The usual peak concentrations in serum for 1.75% or 3.55% THC marijuana cigarettes are 10 - 101 ng/mL attained 32 to 240 minutes after beginning smoking, with a slow decline thereafter. The ratio of whole blood concentration to plasma concentration is unknown for this analyte. THCC may be detected for up to one day or more in blood. Both delta-9-THC and THCC may be present substantially longer in chronic users. THCC is usually not detectable after passive inhalation.

Reference Comments:

5. Delta-9 THC (Active Ingredient of Marijuana) - Pleural Blood:

   Marijuana is a DEA Schedule I hallucinogen. Pharmacologically, it has depressant and reality distorting effects. Collectively, the chemical compounds that comprise marijuana are known as Cannabinoids.

   Delta-9-THC is the principle psychoactive ingredient of marijuana/hashish. It rapidly leaves the blood, even during smoking, falling to below detectable levels within several hours. Delta-9-carboxy-THC (THCC) is the inactive metabolite of THC and may be detected for up to one day or more in blood. Both delta-9-THC and THCC may be present substantially longer in chronic users.
   THC concentrations in blood are usually about one-half of serum/plasma concentrations. Usual peak levels in serum for 1.75% or 3.55% THC marijuana cigarettes: 50 - 270 ng/mL at 6 to 9 minutes after beginning smoking, decreasing to less than 5 ng/mL by 2 hrs.

6. Ethanol (Ethyl Alcohol) - Pleural Blood:

   Ethyl alcohol (ethanol, drinking alcohol) is a central nervous system depressant and can cause effects such as impaired judgment, reduced alertness and impaired muscular coordination. Ethanol can also be a product of decomposition or degradation of biological samples. The blood alcohol concentrations (BAC) can be expressed as a whole number with the units of mg/dL or as a decimal number with units of g/100 mL which is equivalent to % w/v. For example, a BAC of 85 mg/dL equals 0.085 g/100 mL or 0.085% w/v of ethanol.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded one (1) year from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Workorder 21412180 was electronically signed on 12/20/2021 14:24 by:

A. Carolina Noble, Ph.D.
Forensic Toxicologist

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Acode 52198B - Cannabinoids Confirmation, Blood - Pleural Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
11-Hydroxy Delta-9 THC	1.0 ng/mL	Delta-9 THC	0.50 ng/mL
Delta-9 Carboxy THC	5.0 ng/mL		

Acode 52250B - Alcohols and Acetone Confirmation, Blood - Pleural Blood

-Analysis by Headspace Gas Chromatography (GC) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL

Acode 8052B - Postmortem, Expanded, Blood (Forensic) - Pleural Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

Analysis Summary and Reporting Limits:

Compound	Rpt. Limit	Compound	Rpt. Limit
Barbiturates	0.040 mcg/mL	Gabapentin	5.0 mcg/mL
Cannabinoids	10 ng/mL	Salicylates	120 mcg/mL

-Analysis by Headspace Gas Chromatography (GC) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL

-Analysis by High Performance Liquid Chromatography/Time of Flight-Mass Spectrometry (LC/TOF-MS) for: The following is a general list of analyte classes included in this screen. The detection of any specific analyte is concentration-dependent. Note, not all known analytes in each specified analyte class are included. Some specific analytes outside of these classes are also included. For a detailed list of all analytes and reporting limits included in this screen, please contact NMS Labs. Amphetamines, Anticonvulsants, Antidepressants, Antihistamines, Antipsychotic Agents, Benzodiazepines, CNS Stimulants, Cocaine and Metabolites, Hallucinogens, Hypnosedatives, Hypoglycemics, Muscle Relaxants, Non-Steroidal Anti-Inflammatory Agents, Opiates and Opioids.