



**OFFICE OF THE MEDICAL EXAMINER
701 W. Jefferson St.
Phoenix, AZ 85007**

MEDICAL EXAMINER REPORT

DECEDENT: Eric Marsh

CASE: 13-04435

DATE OF EXAMINATION: 07/02/2013

TIME: 1314 Hours

PATHOLOGICAL DIAGNOSES

- I. Thermal injuries and smoke inhalation.
 - A. Predominantly 3rd degree burns with areas of charring (more than 95% of entire body surface involved).
 - B. Soot mostly present in the upper airways.
 - C. Carboxyhemoglobin (10% saturation).

CAUSE OF DEATH: Fire related injuries
MANNER: Accident

08.01.2013
Date Signed


VLADIMIR SHVARTS, MD
MEDICAL EXAMINER

CIRCUMSTANCES OF DEATH

On July 1, 2013, Yavapai County officials requested assistance from the Maricopa County Office of the Medical Examiner with the medicolegal death investigations of 19 firefighters who died in the Yarnell Hill wildfire on June 30, 2013. Under the Maricopa County Manager's authority and direction, the Maricopa County Office of the Medical Examiner examined the firefighters' remains for the purpose of forensic identification and postmortem evaluation. The Maricopa County Office of the Medical Examiner also agreed to provide consultative services to investigating authorities and the Yavapai County Medical Examiner. The Yavapai County Medical Examiner agreed it will certify the firefighters' death certificates. The following Maricopa County Office of the Medical Examiner case numbers were designated for this incident: 13-04425, 13-04426, 13-04427, 13-04428, 13-04429, 13-04430, 13-04431, 13-04432, 13-04433, 13-04434, 13-04435, 13-04436, 13-04437, 13-04438, 13-04439, 13-04440, 13-04441, 13-04442, and 13-04443.

EXTERNAL EXAMINATION

The body is received in a zippered body pouch secured by evidence seal # 026414.

CLOTHING AND PERSONAL EFFECTS

The body is clad in the items of clothing as detailed in the property inventory list.

1. Remnants of upper part of green pants (size 30-34 regular).
2. Belt with metal buckle with engraving "Granite Mountain" on the top and "Hotshot Crew" on the bottom.
3. Partially preserved front portion of the yellow coat; back portion is completely burnt out.
4. Pair of boots (size 8-1/2 E).
5. Preserved remnant of the black tee shirt with logo "Granite Mountain Interagency Hotshot Crew".
6. Left glove, mostly preserved.
7. Two pair of socks.
8. Gray underwear (size 36-38, Hanes).
9. White metal ring on the left fourth finger with mountain design on outside and engraved letters "MSK" on the inside).
10. Cell phone, mirror and compass in the shirt pocket.

EVIDENCE OF THERMAL INJURIES

The entire body is covered by soot. There are predominantly 3rd degree burns present on the head, neck, torso, and extremities. There are some areas of 4th degree burns with charring and tissue loss present on the left arm and lower abdomen with extension to the right anterior thigh. The lower legs show 2nd and 3rd degree burns.

ERIC MARSH

13-04435

SCARS, TATTOOS, AND OTHER IDENTIFYING BODY FEATURES

1. There is a tattoo (Chinese characters) on the left side of the anterior chest wall.
2. There is a tattoo (naked woman with dragon) on the left side of the back.
3. There is an ill defined tattoo (probably woodpecker) on the right arm.
4. There is a 4 cm scar on the anterior aspect of the left wrist.

GENERAL EXTERNAL EXAMINATION

The body is that of a male, 69-1/2 inches in length and weighing 176 pounds. The body shows pugilistic position with heat related contractures. There is some preserved head hair present; they appear to be brown-gray. The color of the irides cannot be determined due to decomposition. Dentition is natural. There are no acute oral mucosal lesions. Small amount of soot is present in the oral cavity. The trachea is in the midline. The thorax is well developed and symmetrical. The abdomen is slightly distended. The external genitalia are those of a normal male, with testes in the scrotal sac. The extremities are well developed and symmetrical.

INTERNAL EXAMINATION

The body is opened by a standard Y-shaped thoracoabdominal incision. All viscera occupy their appropriate anatomic relationships. Subcutaneous adipose tissue ranges up to 1.5 cm in thickness over the abdominal wall. Serous surfaces are smooth. There are no adhesions or significant free fluid accumulations in the body cavities.

CARDIOVASCULAR SYSTEM

The 400-gram heart occupies its usual mediastinal site. The external configuration is not remarkable. The epicardial surfaces are smooth. All major vessels arise in their appropriate anatomic relationships. The coronary arteries arise normally and are distributed in a left dominant pattern. They show no significant atherosclerosis. The myocardium is firm and red-brown, without areas of softening, hemorrhage, or gross scarring. Cardiac chambers are not dilated. Ventricular thicknesses are: left 1.6 cm, right 0.5 cm, and 1.5 cm in the interventricular septum. The cardiac valves have thin, pliable leaflets. The valve circumferences are appropriate to the caliber of the cardiac chambers. The valve cusps and surfaces are free of fusion or vegetations.

The aorta is of normal caliber, with all major arterial branches arising in their appropriate anatomic relationship. It shows no significant atherosclerosis, aneurysm formation, or dissection. No systemic venous abnormalities or thrombi are present.

RESPIRATORY SYSTEM

The lungs weigh 925 grams left and 1100 grams right. The pleural surfaces are smooth. The lungs are distended. The parenchyma is dark brown and shows marked congestion and edema. There are no areas of consolidation, hemorrhage, or gross

ERIC MARSH

13-04435

scarring. The bronchi are patent and of normal caliber. No identifiable soot is noted on the bronchial mucosa. The upper airway is patent. There is a small amount of soot present in the larynx.

DIGESTIVE/HEPATOBIILIARY SYSTEM

The oropharynx is grossly normal. The esophagus is of normal caliber, with a smooth, gray-white mucosal lining. The gastroesophageal junction is well defined. The stomach has intact mucosal surfaces and the lumen is empty. No areas of ulceration, hemorrhage, or scarring are present. The small and large intestines externally are not remarkable. The appendix is present. The pancreas is unremarkable.

The liver weighs 1550 grams. The capsule is intact. The parenchyma is red-brown with no localized masses or areas of hemorrhage on external or cut surfaces. The gallbladder contains viscid bile. The gallbladder mucosa is grossly normal.

GENITOURINARY SYSTEM

The kidneys weigh 150 grams left and 125 grams right. They are grossly similar. The capsules strip with ease from the smooth, red-brown cortical surfaces. The cortices are sharply delineated from the medullary pyramids. The calyces, pelves and ureters are unremarkable. The renal vessels are patent and of normal caliber.

The urinary bladder contains approximately 3 cc of yellow urine. The mucosal surfaces are flat and pink-tan. The prostate and seminal vesicles are not remarkable.

HEMATOPOIETIC SYSTEM

The 225-gram spleen occupies its usual anatomic site, with an intact, smooth and glistening capsule covering dark purple, moderately firm parenchyma. Regional lymph nodes have their usual distribution and appearance.

ENDOCRINE SYSTEM

The thyroid, parathyroid and adrenal glands are grossly not remarkable.

NECK

The cervical spine is structurally intact. The hyoid bone and thyroid cartilage are intact. There are no hemorrhages in the strap muscles or soft tissues of the neck.

MUSCULOSKELETAL SYSTEM

There are no gross skeletal abnormalities. The muscles are well developed and show dark brown discoloration.

ERIC MARSH

13-04435

NERVOUS SYSTEM

The scalp is reflected in the usual fashion. There are no contusions, lacerations, or abrasions. There is no skull fracture. The 1400-gram brain is covered by thin, clear, delicate leptomeninges. There are no abnormal collections of fluid or hemorrhage over the surfaces of the brain. There is good preservation of cerebral symmetry without flattening of gyri or widening of sulci. Convolutional patterns remain intact. There is no evidence of herniation or either diffuse or localized swelling. The cerebral vessels are intact with no evidence of aneurysm or significant atherosclerosis. Cranial nerves are paired, symmetrical, and grossly normal. Multiple coronal sections of cerebrum, cerebellum, and brain stem reveal no localized hemorrhages, or other lesions. The ventricular system is symmetrical, non-dilated and filled with clear fluid. The atlanto-occipital articulation is intact.

EVIDENCE

The following items of evidence are collected:

1. All items of personal protective equipment.
2. Signal mirror.
3. Compass.

TOXICOLOGY SPECIMENS

Samples of the blood, vitreous fluid, bile, urine, spleen, liver, kidneys, and psoas muscles are collected and submitted for toxicological testing.

FINAL SUMMARY

Based on the autopsy findings and investigative history, as available to me, it is my opinion that Eric Marsh, a 43-year-old firefighter, died as a result of thermal injuries sustained when he participated in liquidation of wildfire.

The manner of death is accident.

VS/gz

D 7/3/13

T 7/5/13

The Maricopa County Medical Examiner's Office is required by statute (A.R.S. § 11-594(A)(2) and (4)) to certify the cause and manner of death following completion of the death investigation of each case over which it assumes jurisdiction, and to promptly execute a death certificate, on a form provided by the state registrar of vital statistics, indicating the cause and manner of death. The form provided by the state registrar of vital statistics includes five manners of death: homicide, suicide, accident, natural, and undetermined. The determination of manner of death is a forensic determination by the pathologist predicated upon the totality of all then-known forensic evidence and other circumstances surrounding the

ERIC MARSH

13-04435

cause of death; it is not a legal determination of criminal or civil responsibility of any person(s) for the death.



Maricopa County
Forensic Science Center

701 West Jefferson Street
Phoenix, Arizona 85007-2908
Phone: (602) 506-3322
Fax: (602) 506-1546

July 8, 2013

Vladimir Shvarts, M.D.
Maricopa County Forensic Science Center
Phoenix, Arizona

Re: Maricopa County Medical Examiner Case # 13-4435

Dear Dr. Shvarts,

On July 3, 2013, a dental examination including dental radiographs was completed at the Maricopa County Forensic Science Center on Medical Examiner Case # 13-4435.

Also on July 3, 2013, I received the dental radiographs of Mr. Eric Marsh from the dental office of Dr. Joseph Savoini in Prescott, Arizona for a comparison to Case #13-4435.

Upon comparing the antemortem dental radiographs of Mr. Eric Marsh and the postmortem dental radiographs of Case # 13-4435, a positive identification has been established, meaning that the antemortem and postmortem dental radiographs match in sufficient detail to establish that they are from the same individual.

Sincerely,

John A. Piakis DDS
John Piakis D.D.S., D.A.B.F.O.

Forensic Odontologist
Maricopa County
Phoenix, Arizona

SA

MARICOPA COUNTY OFFICE OF THE MEDICAL EXAMINER

REPORT OF TOXICOLOGICAL EXAMINATION

Case Number: 13-04435
Decedent: ERIC SHANE MARSH
Date Submitted: 07/02/2013
Report Date: 08/02/2013

Specimens Collected: KNOWN HEAD HAIR, NASAL CAVITY SWABS,
SUBCUTANEOUS ADIPOSE TISSUE, BLOT/FILTER PAPER,
VITREOUS, ILIAC BLOOD, BILE, URINE, SPLEEN, LIVER,
PSOAS MUSCLE, KIDNEY, LUNG, BRAIN

Medical Examiner: VLADIMIR SHVARTS, MD

RESULTS*:


Vitreous: None detected for ethanol, methanol, isopropanol and acetone

Iliac Blood: Positive for
Ethyl alcohol 0.03 g%
None detected for methanol, isopropanol, acetone, amphetamine,
methamphetamine, phencyclidine, cocaine, benzoylecgonine,
methadone, morphine, codeine, benzodiazepines, barbiturates,
antihistamines, phenothiazines, tricyclic antidepressants, fentanyl,
oxycodone, acid neutral drugs, and carboxyhemoglobin saturation

Brain and Lung: Positive by GC/MS for
Benzene
Toluene

Urine: None detected for amphetamine, methamphetamine,
phencyclidine, cocaine, methadone, codeine, antihistamines,
phenothiazines, and tricyclic antidepressants

*If results are not listed for any specimen(s), that/those specimen(s) is/are deemed to be on "HOLD"


Norman A. Wade
Laboratory Director