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POSTMORTEM EXAMINATION REPORT

NAME: Kenneth Lay **CASE #:** 06-117 Complete Autopsy

IMMEDIATE CAUSE OF DEATH

A. Arteriosclerotic cardiovascular disease

INTERVAL

Years

OTHER SIGNIFICANT CONDITIONS: Old myocardial infarcts.

The decedent is a 64 year-old male who experienced an unwitnessed collapse at his home. He was last seen alive by his wife at approximately 1 a.m. and had awoken from sleep. According to his wife, they were talking, and he subsequently went into the bathroom. Minutes later she heard a "thump" and when she checked on her husband he was laying unresponsive on the floor following an apparent collapse from the commode. He had vomited and had brief seizure-like activity. "911" was called and life support was initiated and continued following the arrival of EMS. The decedent was transported to Aspen Valley Hospital where he was pronounced dead. Prior to his collapse the decedent did not report any chest pains, nausea or shortness of breath, but he had recently been experiencing upper gastrointestinal symptoms for which he was taking medication. Postmortem examination revealed severe 3-vessel coronary artery disease with evidence of at least 2 prior myocardial infarcts (heart attacks). All three of the main coronary arteries had greater than 75% occlusion with extensive diffuse calcified plaque and focal areas of plaque hemorrhage. The postmortem examination also revealed 2 patent coronary artery stents. There was no other significant pre-existing disease. The decedent did not have any significant trauma. There were superficial abrasions typical of a terminal fall consistent with the reported circumstances. Analysis of the postmortem body fluids did not reveal any significant toxicology findings. In consideration of the findings of the postmortem examination and the reported circumstances, the immediate cause of death is arteriosclerotic cardiovascular disease with severe blockage of all three coronary arteries with evidence of at least two previous myocardial infarcts. There are no other significant findings and the manner of death is natural.

MANNER OF DEATH: Natural

Robert A. Kurtzman, DO
Forensic Pathologist

AGE: 64 **RACE:** Caucasian **GENDER:** Male

DATE OF BIRTH: April 15, 1942

DATE & TIME OF DEATH: Wednesday, July 5, 2006 at 311

PRONOUNCED DEAD BY: Eric Hansen, Deputy Coroner Pitkin County

DATE & TIME PRONOUNCED DEAD: Tuesday, July 5, 2006 at 311

LOCATION OF DECEDENT: Aspen Valley Hospital, Aspen, Pitkin County, CO

LAW ENFORCEMENT AGENCY INVESTIGATING DEATH: Pitkin County Sheriffs Office

EXAMINATION AUTHORIZED BY: Pitkin County Coroner's Office

BODY TRANSPORTED TO MORGUE BY: Garfield County Coroner Office (Fred Glammeyer)

ACCESS TO MORGUE BY: Jill Johnson-Dare on Wednesday, July 5, 2006 at 855

TIME OF REFRIGERATION: 855 **BODY WRAP:** Linens

BODY IDENTIFICATION: Visual and physical identification.

LOCATION OF POSTMORTEM EXAMINATION: Community Hospital, Grand Junction, CO

DATE & TIME OF POSTMORTEM EXAMINATION: Wednesday, July 5, 2006 at 1100

AUTOPSY ASSISTANT: Jill Johnson-Dare

EXTERNAL EXAMINATION: The body is that of a normally developed, well nourished male who appears appropriate for the reported age. The body length is 68 inches and the weight is 172.5 pounds. The body is well-preserved in the absence of embalming and lividity is posterior and fixed. Rigidity is complete. The head is normocephalic and the scalp is covered by slightly wavy gray hair up to 4 inches in length. The decedent has balding of the vertex and frontal scalp. The ears are normally formed. The eyes are brown and the corneae are clear with slight arcus. There are no petechiae on the conjunctivae or sclerae. The periorbital regions are not remarkable. The nose is intact to palpation. There is no external deformity or midline shift. The teeth are natural. There are no focal lesions on the oral or buccal mucosa. The neck, chest and abdomen have normal contour without deformity. All four extremities are present and are normally developed. The penis is circumcised and both testicles are descended.

SCAR(S): See body diagram

TATTOO(S): None

EVIDENCE OF MEDICAL TREATMENT: See body diagram.

EVIDENCE OF INJURY: The decedent has a fresh 7/16" x 1/4" non-patterned transverse abrasion on the left forehead, adjacent to two recent round contusion/abrasions that are 5/16" and 1/4" in diameter. The underlying subcutis is focally hemorrhagic. There is no skull fracture or brain injury. The pattern and location of the fresh abrasion is typical of a terminal fall striking a bony prominence. There is a fresh 3/8" non-patterned abrasion on the left knee. The pattern and location of this abrasion is typical of a terminal fall striking a bony prominence. There is a superficial 1/8" laceration on the right side of the lower lip with minimal hemorrhage in the surrounding dermis. The pattern and location is typical of a traumatic intubation and in addition there is contusion of the mucosa adjacent to the epiglottis (greater on the right than the left) and contusion just below the vocal cords due to intubation. The sternum has a transverse fracture at the level of the 2nd rib with minimal hemorrhage. The pattern and location of the sternum fracture is typical of a postmortem injury due to chest compressions in association with cardiopulmonary resuscitation. There is a 3/8" abrasion of the superior helix of the right ear without any underlying injury.

INTERNAL EXAMINATION: The body is opened utilizing a Y-incision. The adipose tissue is bright yellow and the cut surface is unremarkable. The underlying skeletal muscle is unremarkable.

THORACOABDOMINAL CAVITY: The contents of the thorax and abdomen are present in their usual location and have normal anatomic relationship. The sternum is fractured at the level of the 2nd rib. The fracture is transverse and there is minimal hemorrhage in the surrounding soft tissue. The pleura and peritoneum are smooth and there is no excess free fluid or free air.

CARDIOVASCULAR SYSTEM: The aorta is normally developed and has normal distribution. There is marked atherosclerosis of the distal aorta with calcification in the wall. The venae cavae are unremarkable. The pericardial sac lining is smooth and the pericardial fluid is not increased. The epicardium of the heart is smooth and unremarkable, and the heart is 440 grams. The great vessels arise in the usual manner, and the right and left atrium are normally formed. The right and left ventricles are normally formed and are 0.5 cm and 1.7 cm in thickness respectively. There is focal fibrosis of the endocardium of the anterior and posterior left ventricle. On the cut surface of the myocardium there are two fibrotic regions adjacent to the regions of endocardial fibrosis. The anterior fibrotic region is nearly transmural and is approximately 1.5 x 1.5 cm while the posterior region is transmural and extends into the posterior septal myocardium. The posterior region of fibrosis is 1.5 x 3 cm. The cardiac valves are normally formed, soft and pliable without calcifications, vegetations or fibrosis with the exception of the aortic valve which has some fibrosis and plaque. The coronary ostia are slightly narrowed with plaque. The coronary arteries are normally formed and have normal distribution with the posterior descending coronary artery arising for the right. All three coronary arteries are diffusely calcified and hard (radiographs obtained) and the left anterior descending and right coronary arteries each incorporate one metallic stent. There is marked atherosclerosis with greater than 75% occlusion of all three main coronary arteries with hemorrhage in the vessel wall and soft clot in some of the vessel lumens.

RESPIRATORY SYSTEM: The right and left lungs are 760 and 730 grams, respectively. Both lungs have normal lobulation and the pleura is smooth and pink-red. There are no focal lesions. On cut surface the pulmonary parenchyma is slightly congested and edematous. The bronchi and pulmonary vasculature are normally formed. There are no foreign objects in the airways.

NECK ORGANS: The tongue is normally formed and there are no bite marks on the surface. The epiglottis is not enlarged and the laryngeal mucosa is smooth, however, there is hemorrhage adjacent to the epiglottis, greater on the right than on the left. The hemorrhage is consistent with traumatic intubation. There is slight hemorrhage on the surface of the laryngeal mucosa inferior to the vocal cords, consistent with intubation. There are no foreign objects in the upper airway. The thyroid cartilage, thyroid cornu and hyoid bone are intact. The strap muscles of the neck are unremarkable.

GASTROINTESTINAL SYSTEM: The esophagus traverses the posterior mediastinum in the usual manner before passing through the intact diaphragm and connecting with the stomach. The stomach contains approximately 500 milliliters of turbid, light brown liquid with fragments of tomatoes, sliced meat (bacon) and pasty yellow-white material consistent with cheese. In addition to the food, there are 3 partially dissolved capsule halves and one intact partially dissolved pink capsule. The capsules are retained. The mucosa is smooth and there is no ulceration. The small intestine, large intestine, mesentery and omentum are unremarkable. The appendix is unremarkable.

HEPATOBIILIARY SYSTEM: The liver is 1750 grams and has normal lobulation. The surface is smooth, brown with focal fibrosis of the capsule of the right lobe. There are no other focal lesions. The cut surface of the liver is unremarkable. The intrahepatic and extrahepatic bile ducts appear normally formed and there are no calculi. The gallbladder is normally formed and filled with yellow-green bile. The mucosa is smooth and there are no calculi. The pancreas is firm, tan and lobular, and there are no focal lesions on the normal appearing cut surface.

LYMPHORETICULAR SYSTEM: The spleen is 180 grams. The smooth, red-blue capsule is intact and there are no focal lesions on the normal appearing cut surface. There is no cervical, thoracic or abdominal lymphadenopathy, and the thymus is unremarkable.

GENITOURINARY SYSTEM: The right and left kidneys are 190 and 220 grams, respectively. The capsules strip easily and the cortex is red and smooth. On cut surface the cortex and medulla are distinct and there is no blunting of the calyces or papillae. The ureters traverse the retroperitoneum in the usual manner before passing through the wall of the normally formed bladder. The bladder mucosa is smooth and tan. The prostate is enlarged, and the cut surface is nodular.

ENDOCRINE: The right and left adrenal glands are normally formed. The golden brown cut surface is unremarkable and there are no focal lesions. The thyroid has normal lobulation and there are no focal lesions on the normal appearing cut surface. The parathyroid glands are not enlarged and the pituitary is unremarkable.

CENTRAL NERVOUS SYSTEM: The scalp is reflected in the usual manner and there are no contusions. The calvarium is intact without fracture. The dura is soft and pliable and

there are no focal lesions. The leptomeninges are clear and the brain is 1540 grams. There is no swelling, midline shift or herniation. The gyri and sulci are normally formed. The vessels at the base of the brain and cranial nerves are normally formed. The cut surface of the cortex, white matter, central gray matter, brain stem and cerebellum are unremarkable. The ventricular system is normally formed and is not enlarged. The angles of the lateral ventricles are slightly rounded.

MICROSCOPIC EXAMINATION

CARDIOVASCULAR: The serially-sectioned left circumflex coronary artery has marked atherosclerosis with diffuse calcified plaque occluding 75 to 90% of the vessel lumen. There is hemorrhage in the plaque wall and poorly-organized thrombus in the lumen. Sections of the left anterior descending coronary artery have similar histologic features; however, the proximal portion of the artery is patent. Distal portions of the left anterior descending artery beyond the stent have greater than 90% occlusion of the artery lumen. Serial sections of the right coronary artery have severe atherosclerosis with greater than 90% occlusion of the lumen, plaque hemorrhage and diffuse calcification. Sections of the left ventricle have fibrosis extending through the full thickness of the wall. There is no acute inflammation or coagulative necrosis in these sections.

RESPIRATORY SYSTEM: The lungs have orderly architecture. In some of the sections, there is vascular congestion and extravasation of erythrocytes into some of the alveoli. Some of the peripheral alveoli incorporate duct cells. There is no acute inflammation, significant fibrosis, or organized thrombi. There is focal, noncaseating granuloma formation in the lung periphery. Sections of the lungs stained for acid-fast and fungal organisms are negative.

HEPATOBIILIARY: Sections of the pancreas have orderly lobular architecture. There is some autolysis. The endocrine and exocrine components appear otherwise unremarkable, and there are no atypical features. The liver has orderly lobular architecture. There is no acute or chronic inflammation, and there is no fibrosis.

GENITOURINARY SYSTEM: The kidneys have orderly architecture. There is no acute or chronic inflammation. There is vascular congestion and focal calcification at the tips of the papilla. The prostate has hyperplastic fibromuscular stroma surrounding benign gland and ducts. Some are filled with inspissated secretory material, and there is a chronic inflammatory cell infiltrate in the stroma surrounding some of the glands. There is no malignancy.

LYMPHORETICULAR SYSTEM: Sections of the spleen are congested and have otherwise orderly architecture. There are no atypical features.

ENDOCRINE: Sections of the thyroid have orderly architecture and consist of fairly uniform colloid-filled follicles. There is slight fibrosis in the interstitium and part of the thyroid. There are no atypical features. Sections of the pituitary have orderly architecture without histologic abnormality. The adrenal glands have orderly architecture, and there is no histologic abnormality.

CENTRAL NERVOUS SYSTEM: Sections of the cortex, medulla and pons have orderly architecture. There are a few neuritic plaques confirmed with a Bielschowsky stain. There is no acute inflammation. The changes are appropriate for the age of the decedent.

RADIOGRAPHS

Whole body CT scan obtained.

Coronary artery radiographs obtained.

SUMMARY OF AUTOPSY

CARDIOVASCULAR: Old transmural anterior left ventricle myocardial infarct.,

- Old transmural posterior left ventricle/septal myocardial infarct.
- Severe 3-vessel coronary artery disease, greater than 90% occlusion, right coronary artery, 90% occlusion left circumflex coronary artery, and 90% occlusion distal left anterior descending coronary artery.
- Plaque hemorrhage.
- Diffuse calcification of all 3 coronary arteries.
- Right coronary artery stent.
- Left anterior descending coronary artery stent.

RESPIRATORY: Slight pulmonary edema and congestion.

NECK ORGANS: Laryngeal mucosal hemorrhage consistent with traumatic intubation.

GASTROINTESTINAL: Unremarkable.

HEPATOBIILIARY: Focal scar, capsule right lobe of the liver.

LYMPHORETICULAR: Unremarkable.

GENITOURINARY: Benign prostatic hypertrophy.

ENDOCRINE: Unremarkable.

CENTRAL NERVOUS SYSTEM: Unremarkable.

MUSCULOSKELETAL/CUTANEOUS: Unremarkable.