U.S. Department of Transportation
Federal Aviation Administration

Mike Monroney Aeronautical Center
P O Box 25082
Oklahoma City, Oklahoma 73125

Monday, August 31, 2015

National Transportation Safety Board
45065 Riverside Parkway
Ashburn, VA 20147

ACCIDENT # 0117 **INDIVIDUAL#:** 001 **NAME:** POWELL, DILLARD M. **MODE:** AVIATION
DATE OF ACCIDENT 06/21/2015 **DATE RECEIVED** 06/25/2015 **PUTREFACTION:** Yes
N # 35EP **NTSB #** ERA15FA245 **CAMI REF #** 201500117001
LOCATION OF ACCIDENT Holly Ridge, NC
SPECIMENS Gastric, Heart, Kidney, Liver, Lung, Muscle, Spleen

FINAL FORENSIC TOXICOLOGY FATAL ACCIDENT REPORT

CARBON MONOXIDE: The carboxyhemoglobin (COHb) saturation is determined by spectrophotometry with a 10% cut off and confirmed by chromatography.

>> NOT PERFORMED

CYANIDE: The presence of cyanide is screened by Conway Diffusion, when the COHb level is equal to or greater than 10% or upon special request. Cyanides are quantitated by spectrophotometry and confirmed by chromatography. The reporting cutoff for cyanide is 0.25 ug/mL. Normal blood cyanide concentrations are less than 0.15 ug/mL, while lethal concentrations are greater than 3 ug/mL.

>> NOT PERFORMED

VOLATILES: The volatile concentrations are determined by headspace gas chromatography at a cut off of 10 mg/dL. Where possible, positive ethanol values are confirmed by Radiative Energy Attenuation.

>> 79 (mg/dL, mg/hg) Ethanol detected in Muscle
>> 19 (mg/dL, mg/hg) Ethanol detected in Liver
>> N-Butanol detected in Muscle
>> N-Propanol detected in Muscle

DRUGS: Specimens are analyzed using immunoassay, chromatography, GC/MS, HPLC/MS, or GC/FTIR. Concentrations (ug/mL) at or above those in () can be determined for, but not limited to, the following drugs: amphetamines (0.010), opiates (0.010), marihuana (0.001), cocaine (0.020), phencyclidine (0.002), benzodiazepines (0.030), barbiturates (0.060), antidepressants (0.100), and antihistamines (0.020). Drugs and/or their metabolites, that are not impairing or abused, may be reported from the initial tests. See the CAMI Drug Information Web Site for additional information (http://jag.cami.jccbi.gov/toxicology/).

>> Atenolol detected in Liver
>> Norverapamil detected in Liver
>> Verapamil detected in Liver
>> Verapamil detected in Muscle
>> Warfarin detected in Liver
>> Warfarin detected in Muscle

c=US, o=U.S. Government, ou=AMC, ou=AMC, cn=RUSSELL J LEWIS
2015.08.31 15:09:59 -05'00'

CONTINUATION OF REF#: 201500117001 – POWELL, DILLARD M.

c=US, o=U.S. Government, ou=AMC, ou=AMC,
cn=RUSSELL J LEWIS
2015.08.31 15:09:41 -05'00'

Russell Lewis, Ph.D.
TC, FAA, Forensic Toxicology
Research Team CAMI

Atenolol

Description	Atenolol is a beta-adrenergic receptor antagonist, "beta blocker," used in the treatment of hypertension and certain arrhythmias. Plasma protein binding is 6-16%.
Therapeutic Low	0.4000
Therapeutic High	0.8000
Units	ug/mL
Specimen	B
Half Life Low	7.00
Half Life High	0.00
VOD Low	1.00
VOD High	0.00
Toxic Level	2.000
Lethal Level	30.000
Plasma to Whole Blood ratio	0.90
Warnings	

Butanol (N)

Description	An alcohol. It is also produced postmortem, along with ethanol and other alcohols.
Therapeutic Low	0.0000
Therapeutic High	0.0000
Units	ug/mL
Specimen	P
Half Life Low	0.00
Half Life High	0.00
VOD Low	0.00
VOD High	0.00
Toxic Level	0.000
Lethal Level	0.000
Plasma to Whole Blood ratio	0.00
Warnings	

Ethanol

Description	This is primarily a social drug with a powerful central nervous system depressant. After absorption, ethanol is uniformly distributed throughout all tissues and body fluids. The distribution pattern parallels the water content and blood supply of each organ. Postmortem production of ethanol also takes place due to putrefaction processes, but vitreous humor and urine do not suffer from such production to any significant extent in relation to blood. Vitreous humor would normally have about 12% more ethanol than blood if the system is in the post absorptive state, and urine would normally have about 25% more ethanol than blood. The average rate of elimination of ethanol from blood is 18 mg/dL (15-20 mg/dL) per hour.
Therapeutic Low	0.0000
Therapeutic High	20.0000
Units	mg/dL
Specimen	B
Half Life Low	2.00
Half Life High	14.00
VOD Low	0.43
VOD High	0.59
Toxic Level	20.000
Lethal Level	400.000
Plasma to Whole Blood ratio	1.20
Warnings	Under Federal Aviation Regulation Part 121, no covered employee shall report for duty or remain on duty performing safety-sensitive functions until the employee's alcohol concentration is less than 0.02 g/dL (20.0 mg/dL). Also, FAR Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 g/dL (40.0 mg/dL) or more alcohol in the blood. Adverse clinical symptoms have been noted with blood ethanol levels as low as 20.0 mg/dL (0.020 g/dL).

Norverapamil

Description	A metabolite of verapamil which is used in the treatment of hypertension, angina, and arrhythmias.
Therapeutic Low	0.0310
Therapeutic High	0.3610
Units	ug/mL
Specimen	P
Half Life Low	5.00
Half Life High	13.00
VOD Low	0.00
VOD High	0.00
Toxic Level	0.000
Lethal Level	0.000
Plasma to Whole Blood ratio	0.00
Warnings	

Propanol (N-)

Description	An alcohol. It is also produced postmortem, along with ethanol and other alcohols.
Therapeutic Low	0.0000
Therapeutic High	0.0000
Units	ug/mL
Specimen	P
Half Life Low	0.00
Half Life High	0.00
VOD Low	0.00
VOD High	0.00
Toxic Level	0.000
Lethal Level	0.000
Plasma to Whole Blood ratio	0.00
Warnings	

Verapamil

Description	Is an antiarrhythmic drug used in the treatment of hypertension.
Therapeutic Low	0.0500
Therapeutic High	0.5000
Units	ug/mL
Specimen	P
Half Life Low	2.00
Half Life High	7.00
VOD Low	2.00
VOD High	6.00
Toxic Level	1.000
Lethal Level	2.500
Plasma to Whole Blood ratio	0.00
Warnings	

Warfarin

Description	Warfarin is an anticoagulant medication that is administered orally or, very rarely, by injection.
Therapeutic Low	0.3000
Therapeutic High	0.8000
Units	ug/mL
Specimen	P
Half Life Low	20.00
Half Life High	60.00
VOD Low	0.14
VOD High	0.00
Toxic Level	10.000
Lethal Level	0.000
Plasma to Whole Blood ratio	0.00
Warnings	