

UNITED STATES AIR FORCE GROUND
ACCIDENT INVESTIGATION BOARD
REPORT



On-Duty Fatality
Joint Base San Antonio, Lackland AFB, Texas

TYPE OF ACCIDENT: On-Duty Fatality

LOCATION: Joint Base San Antonio, Lackland AFB, Texas

DATE OF ACCIDENT: 19 OCTOBER 2011

BOARD PRESIDENT: COLONEL PAUL A. BUGENSKE

CONDUCTED IAW Air Force Instruction 51-507

**UNITED STATES AIR FORCE
GROUND ACCIDENT INVESTIGATION BOARD REPORT
ON-DUTY FATALITY
JOINT BASE SAN ANTONIO, LACKLAND AFB, TEXAS
19 OCTOBER 2011**

EXECUTIVE SUMMARY

On 19 October 2011, at approximately 0540 local time, an Air Force male basic trainee at Joint Base San Antonio, Lackland Air Force Base, Texas, was found to be unsteady and disoriented after completing his Air Force physical training progress check and later died. There were no other injuries resulting from this incident.

The Trainee of Concern was found to be unsteady and disoriented after completing the 1 1/2 mile run portion of the Air Force physical training progress check. Two basic trainees recognized his distress and notified a military training instructor and on-scene medical technician. With assistance, the Trainee of Concern was escorted towards the dispensary, but became weak and was helped to the ground. At approximately 0608 local time the Trainee of Concern became unresponsive, pulseless, and stopped breathing. CPR was begun and additional medical assistance was called for. The responding ambulance arrived on scene at 0612 local time and administered Advanced Cardiac Life Support. At 0632 local time, the Trainee of Concern was transported to Southwest General Hospital. The Trainee of Concern arrived at Southwest General Hospital at 0642 local time and care was transferred to the emergency department staff. The Trainee of Concern continued to have cardiac dysrhythmias (abnormal rhythm). At 0724 local time, he went into pulseless electrical activity (heart was beating but not pumping blood). At 0744 local time, the Trainee of Concern was pronounced dead by Southwest General Hospital emergency room staff.

The autopsy report indicated the Trainee of Concern was Sick Cell Trait positive and died from a cardiac dysrhythmia (abnormal rhythm) as a result of a vaso-occlusive crisis (clogging of red blood cells in the veins and arteries) due to significant sickle (abnormal) red blood cells induced by physical exertion.

**SUMMARY OF FACTS
ON-DUTY FATALITY
19 OCTOBER 2011**

TABLE OF CONTENTS

TABLE OF CONTENTS..... i
COMMONLY USED ACRONYMS & ABBREVIATION..... iii
SUMMARY OF FACTS 1
1. AUTHORITY AND PURPOSE 1
 a. Authority..... 1
 b. Purpose..... 1
 c. Circumstances..... 1
2. ACCIDENT SUMMARY 2
3. BACKGROUND 3
 a. Air Education and Training Command (AETC)..... 3
 b. Second Air Force (2 AF) 3
 c. 37th Training Wing (37 TRW) 3
 d. 59th Medical Wing (59 MDW)..... 4
 e. 737th Training Group (737 TRG)..... 4
 f. 331st Training Squadron (331 TRS)..... 4
 g. Southwest General Hospital, San Antonio, TX 4
 h. Air Force Physical Training Progress Check..... 5
 i. Independent Duty Medical Technician (IDMT) 5
 j. 59th Medical Wing Medical Response Command (MRC) 5
 k. Emergency Medical Technician (EMT) 5
 l. Paramedic 6
 m. 59th Medical Wing Emergency Medical Service Ambulance 6
 n. Sickle Cell..... 6
4. SEQUENCE OF EVENTS 7
5. MAINTENANCE 9
6. EQUIPMENT, VEHICLES, FACILITIES, AND SYSTEMS 9
7. ENVIRONMENTAL CONDITIONS 10
 a. Forecast Weather and Observed Weather..... 10
 b. Other Environmental Conditions..... 10
 c. Warnings, Restrictions and Procedures..... 10
8. PERSONNEL QUALIFICATIONS 10
 a. MTI Superintendent..... 10
 b. Training NCOIC..... 10
 c. Section Supervisor..... 10
 d. IDMT..... 10
 e. Paramedic..... 11
 f. EMT1..... 11
 g. EMT2..... 11
 h. Southwest General Hospital Personnel..... 11
9. MEDICAL 11
 a. Medical Records..... 11
 b. Injuries and Cause of Death..... 12
 c. Toxicology..... 12
 d. Lifestyle..... 12
10. OPERATIONS AND SUPERVISION 12
 a. Operations..... 12
 b. Supervision..... 12

11. HUMAN FACTORS ANALYSIS	13
a. Violations – AV002 Violation – Routine/Widespread	13
b. Adverse Physiological States – PC305 Pre-Existing Physical Illness/Injury/Deficit:	13
c. Coordinaton/Communication/Planning Factors – Communicating Critical Information	13
d. Inadequate Supervision – SI003 Local Training Issues/Programs:.....	13
(1) Sickle Cell Training	14
(2) 737 TRGI 36-3, Vol 1, paragraph 6.7.1.....	14
12. GOVERNING DIRECTIVES AND PUBLICATIONS	14
a. Primary Operations Directives and Publications.	14
b. Known or Suspected Deviations from Directives or Publications.	15
13. ADDITIONAL AREAS OF CONCERN.....	15
INDEX OF TABS.....	16

COMMONLY USED ACRONYMS & ABBREVIATION

ABC	Airway Breathing Circulation	GAIB	Ground Accident Investigation Board
ACLS	Advanced Cardio Life Support		
AED	Automated External Defibrillator	HQ	Headquarters
AETC	Air Education and Training Command	IDMT	Independent Duty Medical Technician
AF	Air Force	ISB	Interim Safety Board
AFSC	Air Force Specialty Code	IV	Intravenous
AFB	Air Force Base	JB	Joint Base
AFI	Air Force Instruction	JQS	Job Qualification Skills
ASH	American Society of Hematology	L	Local Time
BAMC	Brook Army Medical Center	LE	Law Enforcement
BEAST	Basic Expeditionary Arms Skills Training	LMR	Land Mobile Radio
BLS	Basic Life Support	LP	Lesson Plan
BMT	Basic Military Training	MDC	Military Drill and Ceremony
BP	Blood Pressure	MDOS	Medical Operations Squadron
BTMS	Basic Training Management System	MDW	Medical Wing
BVM	Ambu Basic Valve Mask	MEPS	Military Entrance Processing Station
CC	Commander	MOPP	Mission-Oriented Protective Posture
CD	Compact Disc	MRE	Meal Ready to Eat
CPR	Cardiopulmonary Resuscitation	MTI	Military Training Instructor
COT	Commissioned Officer Training	NCAA	National Collegiate Athletic Association
CQ	Charge of Quarters	NCO	Noncommissioned Officer
CSS	Commander Staff Secretary	NCOIC	Noncommissioned Officer in Charge
DC	District of Columbia	OI	Operating Instruction
DoD	Department of Defense	PT	Physical Training
DoDHFACS	Department of Defense Human Factors Analysis and Classification System	SCT	Sickle Cell Trait
EC	Entry Control	SERE	Survival Evasion Resistance Escape
EKG	Electrocardiogram	SIB	Safety Investigation Board
EMDS	Emergency Medical Squadron	TI	Training Instructor
EMS	Emergency Services	TRG	Training Group
EMT	Emergency Medical Technician	TRGI	Training Group Instruction
ER	Emergency Room	TRS	Training Squadron
ET	Endotracheal	TRSS	Training Support Squadron
FLO	Family Liaison Officer	TRW	Training Wing
G6PD	Glucose-6-Phosphate Dehydrogenase Deficiency	TX	Texas
		UCC	Urgent Care Clinic
		USAF	United States Air Force

The above list was compiled from the Summary of Facts, the Index of Tabs, and witness testimony (Tab V).

SUMMARY OF FACTS

1. AUTHORITY AND PURPOSE

a. Authority.

On 06 December 2011, Vice Commander Air Education and Training Command (AETC) appointed Colonel Paul A. Bugenske to conduct a ground accident investigation into the facts and circumstances of the on-duty fatality that occurred on 19 October 2011 of an active duty United States Air Force member at Joint Base (JB) San Antonio, Lackland Air Force Base (AFB), Texas (TX). Members of the ground accident investigation included three medical members, a legal advisor and two recorders. (Tab X-2, X-3, X-4, X-5, X-6, X-7)

b. Purpose.

The purpose of this investigation is to inquire into the facts surrounding this ground accident, to prepare a publicly-releasable report, and to gather and preserve all available evidence for use in litigation, claims, disciplinary actions, administrative proceedings, and for other purposes.

c. Circumstances.

The Ground Accident Investigation Board was convened to investigate the on-duty fatality involving a member who was participating in an Air Force physical training progress check on 19 October 2011 at JB San Antonio, Lackland AFB, TX. The investigation convened at JB San Antonio, Lackland AFB, TX from 13 December 2011 through 14 January 2012 and 19 March 2012 through 22 March 2012. The autopsy report was finalized on 15 November 2011 and was received on 12 December 2011. (Tab W-3)

2. ACCIDENT SUMMARY

On 19 October 2011, at approximately 0540 local time (L), Trainee of Concern at JB San Antonio, Lackland AFB, TX went into cardiac arrest during the cool down portion of the Air Force physical training progress check and later died at Southwest General Hospital. (Tab C-7)

Two basic trainees found the Trainee of Concern unsteady and disoriented following the 1 1/2 mile run portion of their physical training progress check. (Tab R-166) The basic trainees assisted the Trainee of Concern to the ground and notified a military training instructor (MTI). (Tab R-63) After assessing the situation, the MTI sent for the on-scene Independent Duty Medical Technician (IDMT) assigned to monitor physical training exercises. (Tab R-24)

The IDMT responded via utility vehicle. (Tab R-19) After noting some improvement (alert and responsive) and while being escorted to the dispensary, the Trainee of Concern became weak and was aided to the ground by the IDMT and assisting basic trainee. (Tab R-21, Tab V-8.5) At approximately 0608L, the Trainee of Concern became unresponsive, pulseless, and stopped breathing. The IDMT immediately began Cardio-Pulmonary Resuscitation (CPR). (Tab R-27, Tab V-8.6)

The responding ambulance arrived on scene at 0612L. Advanced Cardiac Life Support (ACLS) was administered by the paramedic on scene and the Trainee of Concern was transported to Southwest General Hospital at 0632L. (Tab R-30)

The ambulance arrived at Southwest General Hospital at 0642L and care was transferred to the emergency department staff who continued to provide ACLS. (Tab R-41) The Trainee of Concern continued to have cardiac dysrhythmias. At 0724L, the Trainee of Concern again went into cardiac arrest and CPR was restarted. CPR was unsuccessful and at 0744L the Trainee of Concern was pronounced dead. (Tab CC-7)

There were no other injuries resulting from this mishap.

3. BACKGROUND

The Trainee of Concern was assigned to Basic Military Training (BMT), 331st Training Squadron, 737th Training Group, 37th Training Wing, JB San Antonio, Lackland AFB, TX. (Tab C-3)

a. Air Education and Training Command (AETC)



AETC's mission is to “develop America’s Airmen today...for tomorrow” with the vision to deliver unrivaled air, space and cyberspace education and training. AETC is located at JB San Antonio, Randolph AFB, TX, and the command is composed of more than 85,000 personnel. It is responsible for recruiting, training, and educating Air Force personnel by providing BMT, Technical Training, Flying Training, Expeditionary Training, and Professional Military Education. The command oversees the Air Force Recruiting Service, two Numbered Air Forces, and Air University. (Tab BB-3 through BB-4)

b. Second Air Force (2 AF)



2 AF's mission is to “Produce the world's best trained, combat ready Airmen!” Second Air Force, with headquarters at Keesler AFB, Mississippi, is responsible for conducting basic military and technical training for Air Force, Joint and Coalition partners. 2 AF also trains and provides oversight of Airmen completing Army training prior to Joint Expeditionary Tasking missions. (Tab BB-5 through BB-10)

c. 37th Training Wing (37 TRW)



The 37 TRW is the largest training wing in the United States Air Force. Its mission is to Develop and Sustain Warrior Airmen, Train Joint Forces and Strengthen Coalition Partnerships. The wing consists of five training groups and graduates more than 80,000 students annually. These five missions include basic military training of all enlisted recruits entering the Air Force, Air Force Reserves and Air National Guard; technical training encompassing hundreds of courses for a wide array of career fields and functions; Nursing and Health Services Admin officer courses and enlisted medical courses; English language training for international military personnel attending the Defense Language Institute; and specialized maintenance and security training as well as the International Squadron Officer School and International Non-Commissioned Officer Academy conducted in Spanish by active-duty Airmen for Latin American students attending the inter-American Air Forces Academy. (Tab BB-11)

d. 59th Medical Wing (59 MDW)



The 59 MDW is the Air Force’s premier healthcare, medical education and research, and readiness wing. The wing’s vision is “Partners in a high-performance health system, dedicated to excellence in global care.” Its mission is to optimize readiness and patient-centered care through collaborative health delivery, education, training, and research. (Tab BB-17 through BB-18)

e. 737th Training Group (737 TRG)



The 737 TRG is responsible for BMT. They transform civilians into motivated world-class warrior-Airmen who are ready to serve in the world's greatest Air Force. BMT is located on JB San Antonio, Lackland AFB, TX. Since this is the only enlisted basic training base in the Air Force, all new recruits attend training on JB San Antonio, Lackland AFB, TX. (Tab BB-13 through BB-15)

f. 331st Training Squadron (331 TRS)



The 331 TRS provides world-class military leadership and training necessary to transform recruits into highly motivated Airmen possessing the foundational warrior attitudes, knowledge, skills and abilities to sustain the world’s greatest Air Force. (Tab BB-19)

g. Southwest General Hospital, San Antonio, TX



Southwest General Hospital is a general medical and surgical hospital in San Antonio, TX. The fact sheet provided by the hospital states that it performed nearly at the level of nationally ranked U.S. News Best Hospitals. It scored high in patient safety, demonstrating commitment to reducing accidents and medical mistakes. Southwest General Hospital has 259 beds. The hospital had 9,868 admissions in the latest year for which data are available. It performed 1,692

annual inpatient and 2,532 outpatient surgeries. Its emergency room had 43,134 visits. It is accredited by the Joint Commission. (Tab BB-21)

h. Air Force Physical Training Progress Check

In accordance with 737 TGRI 36-3, Vol 1, paragraph 4.4, all Air Force basic trainees are required to successfully complete the Air Force physical training progress check in accordance with 737 TGRI 36-2905, paragraph 3.1. This physical training progress check is completed as an initial assessment upon entering and then in weeks two, four, and seven of basic training. (Tab AA-3, Tab AA-10)



i. Independent Duty Medical Technician (IDMT)

The Air Force Independent Duty Medical Technician program is part of the Aerospace Medical Service career field and is governed by AFI 44-103. An IDMT is trained to deploy as the Squadron Medical Element (SME) member with operational squadrons to provide forward area medical care in an austere or bare-base environments. An IDMT renders basic medical and dental treatment and basic life support emergency care; recommends and coordinates evacuation to a location where definitive medical treatment facilities are available; and performs pharmacy, laboratory, bioenvironmental, public health, medical logistics, and medical administration duties. In accordance with AFI44-103, paragraph 3.3, IDMTs perform all medical and dental treatment using AFMAN 44-158.

j. 59th Medical Wing Medical Response Command (MRC)

The primary purpose of MRC is to answer emergency medical calls and dispatch ambulance and crews to base installation locations. Specifically, MRC answers JB San Antonio, Lackland AFB, TX and Medina Base Annex emergency 911 calls and responds to requests for medical assistance. MRC elicits information from the caller to ascertain nature, extent, and location of the emergency and then enters the call's information into the Advanced Medical Priority Dispatch System (ARPMDS) computer database while notifying ambulance crews via radio of the type and location of the emergency. 59 MRC then maintains voice contact with the caller and ambulance crew until the ambulance returns to the base and continues to probe the caller for additional information to clarify location description. (Tab AA-8 through AA-15)

k. Emergency Medical Technician (EMT)

According to the National Association of Emergency Medical Technicians, an EMT functions as a primary care provider in the pre-hospital setting. The EMT is responsible for all aspects of care provided to the sick and injured. The EMT provides basic life support, including patient

assessment, airway management, use of the automatic defibrillator, and assisting patients with taking some of their own medications. The EMT is responsible for driving the ambulance in a safe manner under all conditions. The EMT must have a thorough knowledge of the street, highway and addressing system in which he or she will be working. In organizations that provide advanced patient care, the EMT will work under the direction of a Paramedic and assume a support role. The EMT must understand all applicable legal, moral and ethical issues surrounding emergency medical service. The EMT must be dedicated to continued learning through continuing education and maintenance of licensures and certifications.

I. Paramedic

According to the National Association of Emergency Medical Technicians, a paramedic functions as the most extensively trained primary care provider in the pre-hospital setting. The paramedic is responsible for all aspects of care provided to the sick and injured. The paramedic provides both basic and advanced life support, including comprehensive patient assessment, invasive airway management, cardiac monitoring and administration of medications. The paramedic is frequently in a leadership role working with a small team of lesser-trained pre-hospital care providers. The paramedic is responsible for verbal communication with the patient, other pre-hospital providers and hospital personnel, including physician medical directors. The paramedic completes extensive written documentation on patient condition and treatment provided, and must understand all applicable legal, moral and ethical issues surrounding emergency medical service.

m. 59th Medical Wing Emergency Medical Service Ambulance

The primary purpose of the 59 EMS ambulance is to respond to emergency medical calls when dispatched by the 59 MRC to base installation locations. Specifically, the 59 EMS ambulance is dispatched to JB San Antonio, Lackland AFB, TX and Medina Base Annex emergency 911 calls and requests for medical assistance. The 59 EMS ambulance requires at least one EMT and one paramedic to be on every ambulance, but may carry an additional EMT when the need for critical care or advanced life support is anticipated.

n. Sickle Cell



Sickle Cell Disease is a condition where a person has only sickle hemoglobin (S). These patients inherit one abnormal gene from each parent. This type of hemoglobin can cause the red blood cells to change shape when stressed. Unlike normal red blood cells that are round and can easily deform to pass through small blood vessels, sickled red blood cells are rigid and cannot pass easily through blood vessels. Patients with Sickle Cell Disease suffer from numerous complications to include Sickle Cell Crisis. Sickle Cell Crisis is a condition where a significant amount of sickled red blood cells clog blood vessels leading to reduced delivery of oxygen to organs. In its severest form, it can lead to organ

failure and death. (Tab CC-3 through CC-8)

In contrast, Sickle Cell Trait (SCT) is a condition in which a person possesses both a normal (A) and an abnormal (S) copy of the hemoglobin A gene. According to the Centers for Disease Control and Prevention, SCT affects 8% of the African-American population. The disorder is differentiated from Sickle Cell Disease in that it is generally a benign condition. In population based studies, individuals with SCT do not have a decreased life expectancy compared to individuals without the trait. However, high temperature and humidity, high altitude, deconditioning (lacking physical fitness), asthma, aging, and poor hydration may be precipitating factors for potential complications. According to current literature, exertion-induced hypoxia may initiate a chain of events in persons with SCT that induces sickling, causing vascular occlusion (clogging of blood vessels), leading to worsening hypoxia and culminating in sudden death. The exact risk factors and required sequence of events to induce significant sickling in individuals with SCT is unknown. (Tab CC-3 through CC-8)

Exercise-related collapse is a rare but serious reported complication of SCT. It was initially described in military recruits undergoing intense physical training. The first known case series, describing four such deaths, was reported in 1970. All four of these deaths occurred at Fort Bliss, TX. Three of the four deaths occurred on the first day of basic training; all involved running, crawling or a combination of the two. (Tab CC-3 through CC-8)

The National Collegiate Athletic Association (NCAA) and the American Society of Hematology (ASH) have recently published conflicting recommendations/policies with regards to screening for SCT and recommendations for activities in those that test positive. NCAA screens all Division I athletes. For those that are positive, there are modifications to training and education is provided. ASH on the other hand does not recommend testing as SCT is very common and the vast majority of carriers suffer no medical complications. In addition, no modifications in activity is recommended for those with trait, rather, universal precautions for all should be practiced (i.e. adequate hydration, gradually increasing physical intensity). The US Army follows this universal precautionary training method as they do not screen for SCT, but train all recruits with a gradual increase in physical intensity. (Tab W-3, DD-45)

For a more detailed medical insight into SCT and exertional collapse, please see Tab W-3.

4. SEQUENCE OF EVENTS

The Trainee of Concern enlisted in the United States Air Force in Detroit, Michigan. Prior to his enlistment, he worked as a landscaper. He had completed seven of eight weeks of basic training prior to the incident. (Tab CC-5) The Trainee of Concern was recognized in basic training for his leadership and was assigned as his training flight's dormitory chief. (Tab R-74) The Trainee of Concern was well respected by his fellow basic trainees and MTIs. (Tab R-184) He was posthumously awarded the rank of Airman First Class. (Tab C-3)

During zero week of BMT all trainees submit to routine screening labs. This routine screening includes testing for SCT. (Tab CC-5 through CC-6) On 9 September 2011, the 331 TRS was notified via email that the Trainee of Concern was required to attend a SCT and Glucose-6-Phosphate Dehydrogenase deficiency (G6PD) mandatory medical briefing. (Tab O-3) The Trainee of Concern attended the briefing on 12 September 2011. (Tab O-7; Tab V-4.5) No other actions were taken upon his return from the briefing to include issuance of mandated white arm band in accordance with 737 TRGI 36-3 Vol 1. (Tab V-9.3; V-10.2 through 10.3; V-12.6, Tab AA-4)



On 19 October 2011, Trainee of Concern's flight was completing an Air Force physical training progress check on the physical training pad outside of building 9085, basic trainee dormitory, JB San Antonio, Lackland AFB, TX. (Tab C-7) This assessment involved four parts: push-ups, sit-ups, a 1 1/2 mile run, and pull-ups. (Tab AA-5) Subsequent to the push-ups and sit-ups, Trainee of Concern completed his run and began his cool down walking lap. At approximately 0540L, Trainee of Concern was found to be unstable and disoriented. (Tab R-166) Two basic trainees, Trainee 1 and Trainee 2, recognized his distress and assisted him to the ground. While Trainee 2 remained with the Trainee of Concern, Trainee 1 alerted the MTI Superintendent. (Tab R-63; Tab R-164; Tab V-5.2)

After assessing the situation, the MTI Superintendent sent Trainee 1 to alert the on-scene IDMT. (Tab R-24) The IDMT was located between both physical training areas adjacent to building 9085. (Tab S-15)

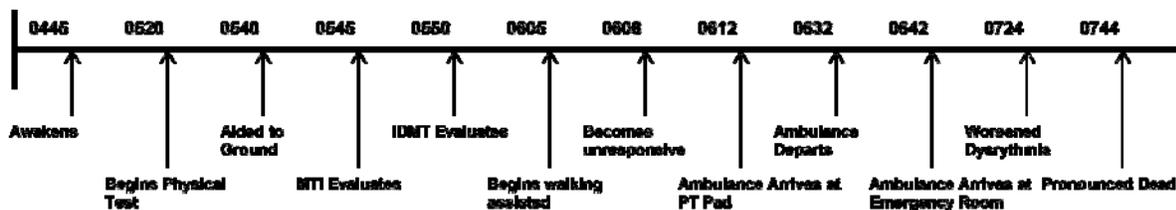
The IDMT responded with medical supplies and a utility vehicle. (Tab R-19, Tab V-8.5, Tab Y-) The IDMT evaluated the trainee and accessed his vital signs over the next several minutes. (Tab R-233) After approximately five minutes of additional rest, the Trainee of Concern reported that he felt he could walk. (Tab R-233, Tab V-8.5) While the IDMT would have preferred to transport the Trainee of Concern in one of the two utility vehicles, both vehicles had been returned to their respective squadrons as is customary at the completion of physical training and were not available. (Tab V-16.1) The IDMT also stated that she wasn't apprehensive about the Trainee of Concern walking the short distance to the squadron infirmary. (Tab V-16.2) Aided by the IDMT and Trainee 1, the three began to slowly make their way to the dispensary located in building 9085. (See Tab Y-3) Enroute to the dispensary, supported primarily by Trainee 1, the Trainee of Concern was responsive and talking. (Tab R-233, Tab V-8.6) However, shortly before they reached the end of the track area, the IDMT and Trainee 1 felt the Trainee of Concern's legs become weak and observed his eyes roll to the back of his head. (Tab R 233, Tab V-17.4) The IDMT and Trainee 1 helped the Trainee of Concern to the ground. (Tab R-21, Tab V-8.6) At approximately 0608L, the Trainee of Concern became unresponsive, pulseless, and stopped breathing. (Tab R-233, Tab V-8.6) The IDMT immediately began one-person Basic Life Support (BLS) CPR in accordance with American Heart Association 2010 BLS guidelines.

(Tab R-27, Tab R-233, Tab V-8.6, Tab V-17.4) At the direction of the IDMT, Trainee 1 attempted to call for an ambulance using the IDMT's mobile phone. After several rings and no answer, the IDMT directed Trainee 1 to seek help at the 331 TRS Charge of Quarters (CQ). (Tab R-234, Tab R-7.175, Tab V-8.6) The IDMT successfully reached the base dispatcher using her cell phone. (Tab R-234, Tab V-8.6) Continuing CPR and basic life support, the Trainee of Concern began to gasp for breath and developed a slow, weak pulse. (Tab R-234, Tab V-8.6) The IDMT continued her efforts until an ambulance arrived on-scene at 0612L. (Tab R-234, Tab V-8.6)

On arrival, the paramedic began prescribed ACLS protocols. In accordance with standard care, the paramedics placed a breathing tube, established an intravenous (IV) line, and administered resuscitation medications including Atropine, Epinephrine, and Versed. (Tab V-15.3) The Trainee of Concern responded to the medical therapy briefly, but retained a very low blood pressure and was transported to Southwest General Hospital at 0632L. (Tab R-41, Tab V-15.4, Tab CC-7)

The ambulance arrived at Southwest General Hospital at 0642L, and the paramedic transferred the Trainee of Concern to the emergency department staff. Hospital staff continued ACLS measures in the emergency department. (Tab R-41) The Trainee of Concern failed to improve. The Trainee of Concern continued to have cardiac dysrhythmias, and at 0724L, he went into pulseless electrical activity. At that time, CPR was again performed. The Trainee of Concern was pronounced dead at 0744L. (Tab CC-7)

Timeline of Events



Note: Times leading up to 0608 are approximate based on testimony. All other times are based on ambulance and hospital reports. (Tab CC-7 through CC-8)

5. MAINTENANCE

Not applicable.

6. EQUIPMENT, VEHICLES, FACILITIES, AND SYSTEMS

The 737 TRGI 36-2905 provides guidance of required equipment and personnel that are to be present at any trainee PT aerobic evaluation. (Tab AA-5) Each IDMT confirms equipment availability and utility vehicle operability daily prior to any physical training. The equipment carried by the IDMT included an oxygen cylinder, Automated External Defibrillator (AED), and

Ambu Bag Valve Mask (BVM). The equipment was present and functioned normally without incident. (Tab D-5, D-7)

All 59 MDW ambulances and equipment are checked for operability twice daily. The ambulances are checked at the beginning of each shift to ensure they are fully stocked with the standardized medications and supplies. (Tab V-15.2) The equipment used by the ambulance crew in response to the Trainee of Concern's emergency was a LIFEPAK 12 monitor/defibrillator, a 7.5mm endotracheal tube with BVM and oxygen tanks, two IV start kits with fluids, and medications to include Atropine, Epinephrine, and Versed. (Tab D-3)

7. ENVIRONMENTAL CONDITIONS

a. Forecast Weather and Observed Weather.

The observed weather at JB San Antonio, Lackland AFB, TX on the morning of the mishap was clear skies with a temperature of 10-13 degrees Celsius (50-55 degrees Fahrenheit) and with light winds ranging from 5-8 knots (6-9 miles per hour). (Tab F-3)

b. Other Environmental Conditions.

No other environmental conditions were relevant to the mishap.

c. Warnings, Restrictions and Procedures.

No other warnings, restrictions, or procedures were relevant to the mishap.

8. PERSONNEL QUALIFICATIONS

a. MTI Superintendent.

Completed Self-Aid and Buddy Care on 15 December 2010. (Tab CC-9)

b. Training NCOIC.

Completed Self-Aid and Buddy Care on 7 December 2010. (Tab CC-9)

c. Section Supervisor.

Completed Self-Aid and Buddy Care on 10 December 2010. (Tab CC-9)

d. IDMT.

100% current on all job related training. Completed IDMT School, 22 December 2010; Licensed EMT-Basic (expires 31 March 2012); ACLS Providers Course, 29 November 2010 (expires 29 November 2012); Basic Life Support Providers Course, March 2011 (expires March 2013); and Prehospital Trauma Life Support Course, December 2010 (expires December 2014). (Tab CC-9)

e. Paramedic.

100% current on all job related training. Licensed in the state of Texas (expires 30 November 2013); National Registry of Emergency Medical Technicians (expires 31 March 2013); ACLS Instructor Course, June 2011 (expires June 2013); and Basic Life Support providers course, February 2010 (expires February 2012). (Tab CC-9)

f. EMT1.

100% current on all job related training. Certified as EMT-Basic (expires on 31 March 2013); and Basic Life Support for Providers Course, July 2010 (expires July 2012). (Tab CC-9)

g. EMT2.

100% current on all job related training. Certified as EMT-Basic (expires on 31 March 2012); and Basic Life Support for Providers Course, July 2010 (expires July 2012). (Tab CC-9)

h. Southwest General Hospital Personnel

The Southwest General Hospital emergency department technicians, nurses, and physician were all hospital privileged. They were all licensed in the state of Texas and credentialed by Bexar County to provide emergency care within their respective scope of practice. It is accredited by the Joint Commission. (Tab BB-21, Tab CC-9 through CC-10)

9. MEDICAL

a. Medical Records.

The medical records of the Trainee of Concern were reviewed for any issues that may be pertinent to the mishap. The Detroit Military Processing Station (MEPS) completed an enlistment physical on the Trainee of Concern on 31 March 2011. The Trainee of Concern reported he was in good health, with no significant medical conditions other than a right shoulder dislocation that occurred on 01 August 2004. The Trainee of Concern failed the depth perception test on his entrance physical. A waiver for his prior shoulder dislocation was granted by AETC Surgeon General on 6 May 2011. Screening for sickle cell disease or trait is not conducted for entrance physicals. (Tab CC-5)

After arriving at BMT, the Trainee of Concern had routine screening labs drawn on 31 August 2011. At that time, his labs showed he had SCT. The Trainee of Concern was notified of the findings and attended a group briefing on SCT and G6PD on 12 September 2011. His individual counseling and attendance at the briefing were documented in his medical record. (Tab V-4.5; Tab CC-5)

The Trainee of Concern had one clinic visit during BMT for a cold on 19 September 2011. The Trainee of Concern was placed on Tylenol, Cepacol, and Sudafed for five days. There are no other medical visits reported in the Trainee of Concern's medical record. (Tab CC-6)

During Basic Expeditionary Arms Skills Training (BEAST) week, the sixth week of BMT, the Trainee of Concern had one episode of near urinary incontinence where he had to relieve himself quickly and was unable to make it to a latrine. The Trainee of Concern urinated behind and facing away from his BMT flight. After the incident, the Trainee of Concern was evaluated medically by the Field IDMT (BEAST1). When questioned by BEAST1, the Trainee of Concern reported that he was unable to make it to the latrine. The Trainee of Concern reported this was an isolated incident and would not happen again. BEAST1 reported this event is not uncommon due to the personal protective equipment, hydration requirement, and stressful environment of BMT. BEAST1 stated he may have as many as three basic trainee incidents a week similar to the one outlined. (Tab V-7.2) There was no documentation of the event in the Trainee of Concern's medical record. (Tab CC-5 through CC-6)

b. Injuries and Cause of Death.

According to the autopsy, there was widespread microscopic evidence of red blood cell sickling and vascular congestion involving his brain, heart, lungs, liver, spleen, and kidneys. The autopsy in conjunction with the abnormal electrocardiogram support the findings that the Trainee of Concern sustained a fatal cardiac dysrhythmia from an acute vaso-occlusive crisis brought on by red blood cells sickling under the stress of extreme physical exertion. The manner of death is natural. (Tab W-3)

c. Toxicology.

Toxicology was negative. (Tab W-3)

d. Lifestyle.

The Trainee of Concern was in the seventh of eight weeks of BMT and heavily supervised. No lifestyle factors were found to be relevant to the mishap. (Tab CC-5)

10. OPERATIONS AND SUPERVISION

a. Operations.

The fatality occurred shortly after completing the 1 1/2 mile run portion of the Air Force physical training progress check. (Tab C-3) The personnel involved in the training were appropriately scheduled, trained, and prepared for operations that day. (Tab V-13.2 through Tab V-13.5) Operations tempo was not relevant to the fatality.

b. Supervision.

Squadron commanders have the overall responsibility of basic military trainees. Flight MTIs have the day-to-day direct responsibility for the trainees. MTIs are responsible for ensuring all basic trainees are properly trained, managed, and when injured, seek proper medical care. (Tab AA-3)

11. HUMAN FACTORS ANALYSIS

Human factors consider how people's tools, tasks and working environment systematically influence human performance. The Department of Defense (DoD) developed the Human Factors Analysis and Classification System (DoD HFACS) to provide a common system of cross-feeding human error data using a common human error categorization system, and the model is designed to present a systematic, multidimensional approach to error analysis. The following paragraphs outline the DoD HFACS codes applicable to this mishap.

a. Violations – AV002 Violation – Routine/Widespread

Violation – Routine/Widespread applies when a procedure or policy violation is systemic in a unit and not based on a risk assessment for a specific situation.

737 TRGI 36-3, Vol 1, paragraph 6.7, states that any individual found to be SCT positive must have appropriate documentation entered into their BMT Form 105a and issued a white armband denoting SCT. (Tab AA-4) Evidence and testimony obtained during the investigation indicated these actions were not performed. (See Tab G-3) As a result, no one involved in the incident on 19 October 2011 knew the Trainee of Concern was SCT positive. (Tab V-2.4, Tab V-5.5, Tab V-8.4, V-11.5, V-13.5, V-15.4)

b. Adverse Physiological States – PC305 Pre-Existing Physical Illness/Injury/Deficit:

Pre-Existing Physical Illness/Injury/Deficit applies when a pre-existing illness, injury, or deficit causes an unsafe situation.

The Trainee of Concern had a documented case of SCT. The autopsy report shows that this underlying condition led directly to his death. (Tab W-3)

c. Coordinaton/Communication/Planning Factors – PP106 Communicating Critical Information:

Communicating critical information is a factor when known critical information was not provided to appropriate individuals in an accurate or timely manner.

Supervision ensured the Trainee of Concern was present at his mandatory SCT/G6PD medical briefing. (Tab V-4.5) Supervision failed to update the Trainee of Concern's BMT Form 105a and issue a reflective armband denoting SCT. (Tab G-3) Flight MTI failed to follow up with the Trainee of Concern upon returning from the mandated medical briefing as required by 737 TRGI 36-3, Vol 1, paragraph 6.2.1. (Tab R-77; Tab V-9.3; V-10.2 through 10.3; V-12.6; Tab AA-4)

d. Inadequate Supervision – SI003 Local Training Issues/Programs:

Local Training Issues/Programs are a factor when one-time or recurrent training programs, upgrade programs, transition programs, or any other local training is inadequate or unavailable (etc) and this creates an unsafe situation.

(1) Sickle Cell Training

The mandated SCT training does not address or educate of the rare potential complications of SCT. (Tab V-4.6; Tab DD-4; Tab DD-24 through DD-29) The training dated 12 September 2011, speaks to what is SCT and how it is passed genetically. (Tab DD-5) It concludes that SCT carriers should avoid unpressurized aircraft, high altitudes, scuba diving, and iterates the importance of hydration. (Tab DD-28)

(2) 737 TRGI 36-3, Vol 1, paragraph 6.7.1.

This instruction directs trainees identified with SCT to attend a mandated medical brief, directs MTIs to annotate the trainee's BMT Form 105a that the trainee is SCT positive, and issue the trainees a reflective armband to wear during all outside activities. The armband identifies the individual as having a greater risk for heat/exercise induced injury. It does not give any further guidance or procedures in regard to SCT trainees when they encounter medical problems or medical distress. (Tab AA-4) Interviews disclosed that MTIs had different understandings as to what the armband program identifies. (Tab V-5.5 through V-5.6; V-6.7; V-9.3; V-11.3 through V-11.4; V-11.12 through V.11.14; V-12.6; V-13.4.) Additionally, neither the IDMT nor the base assigned ambulance crew were trained on the armband program. (Tab V-8.4, Tab V-15.5) The IDMTs, and base assigned ambulance crews testified the armbands would not change or alter the emergency treatment protocol. (Tab V-8.8; V-15.5)

12. GOVERNING DIRECTIVES AND PUBLICATIONS

a. Primary Operations Directives and Publications.

- (1) 737 TRGI 36-3, Vol 1, *Basic Military Training (BMT)*, 1 Oct 10, IC 6 Jan 2011
- (2) AFI 48-123, *Medical Examinations and Standards*, 18 Oct 2011
- (3) DoDI 6130.3, *Medical Standards for Appointment, Enlistment, or Induction in the Military Services*, 13 September 2011
- (4) AETCI 48-101, *Prevention of Heat Stress Disorder*, 4 Oct 2000
- (5) AETCI 48-101, LAFB Sup 1, *Prevention of Heat Stress Disorder*, 16 May 2006
- (6) 737 TRGI 48-101, *Prevention of Heat Stress Disorder and Heat Stress Monitoring*, 11 Apr 2011
- (7) 737 TRGOI 36-2905, *BMT Physical Training (PT) Program*, 21 Sep 2011
- (8) AFI 36-2905, *Fitness Program*, 12 Jan 2010
- (9) Air Force Instruction 51-507, *Ground Accident Investigations*, 28 May 2010

(10) Air Force Instruction 44-102, *Medical Care Management*, 1 May 2006

b. Known or Suspected Deviations from Directives or Publications.

(1) 737 TRG SCT management procedures were not followed or completed. 737 TRGI 36-3, Vol 1, paragraph 6.7, directs the screening, identification and management of basic trainees with SCT. 737 TRGI 36-3, Vol 1, paragraph 6.7, states that any individual found to be SCT positive must have appropriate documentation entered on their BMT Form 105a and must be issued and wear a white armband. (Tab AA-4)

(2) AETCI 48-101, Prevention of Heat Stress Disorders, paragraph 3.1, was not followed. Specifically, it states personnel working and/or training in hot environments must be educated on the causes, signs and symptoms, first-aid treatment, and prevention of heat disorders. These heat disorders include SCT. (Tab AA-3)

(3) 737 TRG physical training communication procedures were not followed. 737 TRGI 36-2905, BMT Physical Training Program, paragraph 1.4, states that the Physical Training NCO will brief radio procedures for contacting the Medical Response Center, ensure correct radio frequencies, and ensures radio checks are conducted prior to beginning physical training. (Tab AA-8 through AA-9) No evidence exists that radios were used during physical training periods. On 19 October 2011, the MTI Superintendent physically sent a basic trainee runner for IDMT assistance. (Tab V-5.2)

13. ADDITIONAL AREAS OF CONCERN

AFI 2906 para 1.3.2 states there will be a minimum of one IDMT and one Gator for medical coverage at all times during the PT aerobic evaluation. On the morning of 19 October 2011, both on-scene Gators were returned to their respective Squadrons while the Trainee of Concern was being evaluated by the IDMT.

21 March 2012

PAUL A. BUGENSKE, Colonel, USAF
President, Ground Accident Investigation Board