

UNITED STATES AIR FORCE
GROUND ACCIDENT INVESTIGATION
BOARD REPORT



Advanced Rescue Craft S/N USYAMA0697A222

**48th Rescue Squadron
355th Wing
Davis Monthan Air Force Base, Arizona**



TYPE OF ACCIDENT: WATER VEHICLE FATALITY

**LOCATION: THEODORE ROOSEVELT LAKE
GILA COUNTY, ARIZONA**

DATE OF ACCIDENT: 14 JUNE 2023

BOARD PRESIDENT: BRIGADIER GENERAL STEVEN G. BEHMER

Conducted IAW Air Force Instruction 51-307



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND

OFFICE OF THE COMMANDER
205 DODD BOULEVARD
JOINT BASE LANGLEY-EUSTIS VA 23665-2788

01 DEC 2023

ACTION OF THE CONVENING AUTHORITY

The report of the ground accident investigation board conducted under the provisions of Air Force Instruction 51-307, *Aerospace and Ground Accident Investigations*, that investigated the 14 June 2023 mishap near Davis Monthan Air Force Base, AZ, involving the fatality of an Airman assigned to the 48th Rescue Squadron, substantially complies with applicable laws and regulations, and is hereby approved.

MARK D. KELLY
General, USAF
Commander

People First... Mission Always...

Executive Summary
UNITED STATES AIR FORCE
GROUND ACCIDENT INVESTIGATION

WATER VEHICLE FATALITY
2022 Yamaha Waverunner FX Cruiser Super Vortex High Output (SVHO) (S/N)
USYAMA0697A222
Theodore Roosevelt Lake, Gila County, Arizona

14 June 2023

On 14 June 2023 at approximately 1358 hours local time (L), a 33-year-old Staff Sergeant (Mishap Operator 1 or MO1) in the 48th Rescue Squadron (48 RQS) drowned at Theodore Roosevelt Lake (Roosevelt Lake) while operating an Advanced Rescue Craft (ARC); specifically, a 2022 Yamaha Waverunner FX Cruiser Super Vortex High Output (SVHO), Serial Number (S/N) USYAMA0697A222. MO1 and his co-worker, Mishap Operator 2 (MO2), a civilian contractor employed at the 48 RQS, were operating the government owned Waverunners while waiting to support a maritime pararescue (PJ) training operation later that day. Waverunners are used in maritime training operations to freely maneuver around the aquatic environment and recover military personnel and equipment from the water. In the minutes preceding the drowning, MO1 suffered a cardiac event (possibilities include arrhythmia, ischemia and/or heart attack), causing him to fall into the water and submerge to the lake floor. He was not wearing a personal flotation device (PFD) as required by Department of the Air Force policy and Arizona law.

MO1 and MO2 departed Davis Monthan Air Force Base (DMAFB) for Roosevelt Lake at approximately 0730L on 14 June 2023, both driving government owned pickup trucks towing two Waverunners each. MO1 and MO2 were travelling to support two different training operations that week with different squadrons from DMAFB.

MO1 and MO2 arrived at Roosevelt Lake at approximately 1049L on 14 June 2023, and launched the watercraft approximately one hour later. MO1 was operating Mishap Watercraft 1 (MW1) and MO2 was operating Mishap Watercraft 2 (MW2), a 2022 Yamaha Waverunner FX Cruiser SVHO, S/N USYAM0695A222. For approximately two hours preceding the mishap, MO1 and MO2 operated the ARCs on the lake.

At 1405L, MO2 noticed MO1 was no longer operating MW1 and was not visible on the surface of the water. MO2 immediately began searching for MO1 before calling squadron leadership and the Gila County Sheriff's (GCS) office to initiate a search and rescue operation. For the next three days, various organizations assisted in the search efforts, to include local law enforcement and multiple rescue squadrons from DMAFB. The search team utilized HH-60G Pavehawk helicopters, boats with sonar devices, divers, and human remains detection (cadaver) dogs. The search extended until 1549L on 17 June 2023, when MO1's body was recovered by a Remotely Operated Vehicle (ROV) from the lake's floor, 129 feet below the surface.

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ACRONYMS AND ABBREVIATIONS

5W's	Who, What, Where, When, Why	DO	Director of Operations
AAR	After Action Report	DZ	Drop Zone
ACC	Air Combat Command	DZCO	Drop Zone Control Officer
ADCON	Administrative Control	FAR	Family Assistance Representative
ADO	Assistant Director of Operations	FTU	Formal Training Unit
AFB	Air Force Base	GA	Guardian Angel
AFE	Aircrew Flight Equipment	GAIB	Ground Accident
AFI	Air Force Instruction		Investigation Board
AFMAN	Air Force Manual	GATR	Guardian Angel
AFR	Air Force Reserve		Technical Rescue
AFRCC	Air Force Rescue	GCS	Gila County Sheriff
	Coordination Center	GOV	Government Owned Vehicles
AFSC	Air Force Specialty Code	GPS	Global Positioning System
AFSOC	Air Force Special	HAF	Headquarters Air Force
	Operations Command	HPAC	High-Pressure Air Compressor
AGR	Air Guard and Reserve	HQ	Headquarters
AIB	Accident Investigation Board	IAW	In Accordance With
AIE	Alternate Insertions	ICS	Intercom System
	and Extractions	IDMT	Independent Duty
ARC	Advanced Rescue Craft		Medical Technician
AZ	Arizona	IFE	Inflight Emergency
BC	Buoyancy Compensator	IR	Infrared
BO	Boat Operator	IRF	Immediate Response Force
CATM	Combat Arms Training	JM	Jump Master
	and Maintenance	K-9	Canine
CDL	Commercial Driver's License	L	Local Time
CFETP	Career Field Education	LG	Logistics
	Training Plan	LGR	Logistics Request
CIVSAR	Civilian Search and Rescue	LOX	Letter of Qualifications
CLC	Combat Leader Course	LPU	Life Preserver Unit
CMS	Combat Mission Support	MALFO	Malfunction Officer
CONOP	Concept of Operations	MCA	Multi-capable Airmen
COR	Contracting Officer's Representative	MCSO	Maricopa County
CPR	Cardiopulmonary Resuscitation		Sheriff's Office
CRO	Combat Rescue Officer	METT	Mission, Enemy,
CSAR	Combat Search and Rescue		Terrain, Troops
CTMC	Combat Team Member Course	METTC	Mission, Enemy, Time Trained,
DAFI	Department of the		Troops Available, Civilians
	Air Force Instruction	MO	Mishap Operator
DEMA	Department of Emergency	MOA	Memorandum of Agreement
	and Military Affairs	MPH	Miles Per Hour
DM	Davis Monthan	MW	Mishap Watercraft
DMAFB	Davis-Monthan Air Force Base	NCO	Non-Commissioned Officer

NCOIC	Non-Commissioned Officer in Charge	SARM	Squadron Aviation Resource Manager
NVG	Night Vision Goggles	SCI	San Clemente Island
O&M	Operations and Maintenance	SEI	Special Experience Identifiers
OI	Operating Instructions	SEL	Senior Enlisted Leader
OIR	Operation Inherent Resolve	SERE	Survival, Evasion, Resistance, Escape
OOC	Overseas Operating Costs	SET	Small Engine Technician
OPCON	Operational Control	SMA	Special Mission Aviator
OPSYNC	Operational Synchronization	SME	Subject Matter Expert
ORM	Operational Risk Management	SNCO	Senior Non-Commissioned Officer
OSC	On-Scene Commander	SOP	Standard Operating Procedures
OSM	Operational Support Medicine	SVHO	Super Vortex High Output
PCA	Permanent Change of Assignment	SWMS	Special Warfare Mission Support
PCS	Permanent Change of Station	TACON	Tactical Control
PFD	Personal Flotation Device	TDUCKS	Tethered Duck
PJ	Pararescuemen	TDY	Temporary Duty
PPE	Personal Protective Equipment	TO	Technical Order
PWS	Performance Work Statement	UMD	Unit Manning Document
QTP	Qualitative Training Plan	USAF	United States Air Force
RAB	Restricted Area Badge	USFS	United States Forest Service
RFF	Request for Force	UTC	Unit Type Codes
RITS	Rescue Instructional and Training Services	VA	Virginia
ROC	Rescue Operation Center	VM	Vehicle Maintenance
RON	Remain Overnight	VTC	Video Teleconference
ROV	Remotely Operated Vehicle	WARNORD	Warning Order
RQS	Rescue Squadron	WDZ	Water Drop Zone
RTB	Return to Base	WG	Wing
S/N	Serial Number	WIT	Witness
SAR	Search and Rescue	WOPS	Water Operations

SUMMARY OF FACTS

1. AUTHORITY AND PURPOSE

a. Authority

On 23 June 2023, General Mark D. Kelly, Commander, Air Combat Command (ACC), appointed Brigadier General Steven G. Behmer as Board President of a Ground Accident Investigation Board (GAIB) to investigate an Advanced Rescue Craft (ARC) mishap that occurred near Davis Monthan Air Force Base (DMAFB), Arizona (AZ) on 14 June 2023 (Tab Y-1 to Y-2). The GAIB conducted its investigation at Davis Monthan AFB between 25 September 2023 and 22 October 2023 in accordance with (IAW) Air Force Instruction (AFI) 51-307, *Aerospace and Ground Accident Investigations* (Tab Y-1 to Y-2). Additional members of the GAIB included a Legal Advisor (Major) and a Recorder (Staff Sergeant) (Tab Y-3 to Y-4). Two Medical personnel (Lieutenant Colonel and Major) were appointed as Subject Matter Experts (SME) to advise and assist the Board (Tab Y-5 to Y-6).

b. Purpose

In accordance with AFI 51-307, *Aerospace and Ground Accident Investigations*, this GAIB conducted a legal investigation to inquire into all the facts and circumstances surrounding this Air Force ground accident, prepare a publicly releasable report, and obtain and preserve all available evidence for use in litigation, claims, disciplinary action, and adverse administrative action.

2. ACCIDENT SUMMARY

From approximately 1100L to 1400L on 14 June 2023, Mishap Operator 1 (MO1) and Mishap Operator 2 (MO2), from the 48th Rescue Squadron (48 RQS), DMAFB, were operating MW1 (Yamaha Waverunner FX Cruiser SVHO, S/N USYAMA0697A222) and MW2 (Yamaha Waverunner FX Cruiser SVHO, S/N USYAMA0695A222) on Theodore Roosevelt Lake (Roosevelt Lake) in Gila County, AZ, preparing to support pararescue training later that day (Tabs D-44, J-1 to J-2, R-44 to R-46, V-12.4 to V-12.5, V-20, K-26, L-875, L-2034)). MW1 and MW2 are Yamaha Waverunners, referred to by the Air Force as “Advanced Rescue Craft” or “ARCs” (Tabs D-41, J-1 to J-2, V-1.8, V-12.7, and BB-1). At approximately 1357 local time (L), MO1 experienced a cardiac event (possibilities include arrhythmia, ischemia and/or heart attack) that rendered MO1 unable to control MW1 (Tabs L-1011 and X-1 to X-2). Due to the cardiac event, MO1 fell into the water and was unable to stay afloat (Tab X-1 to X-2). MO1 was not wearing a personal flotation device (PFD) as required by Arizona state law and Air Force directives (Tabs BB-10, BB-28, V-6.5 to V-6.6, V-11.5, V-16.9, V-16.11, and Z-9). At approximately 1405L, MO2 noticed that MO1 was separated from MW1 and MO2 immediately initiated a search and rescue mission that lasted more than three days, involving members of four Air Force rescue squadrons and multiple civilian law enforcement organizations (Tabs L-2101 to L-2102, R-46, R-84, V-1.8, V-3.6, V-11.4 to V-11.7, V-11.12, V-15.5, and V-16.4 to V-16.11). On 17 June 2023 at approximately 1549L, MO1’s body was recovered from the bottom of

Roosevelt Lake, approximately 129 feet below the surface and 100 feet north of where MW1 was discovered three days earlier (Tabs L-1010 to L-1011, V-16.4, and V-16.9). MO1's body was then transported to the Pinal County Medical Examiner's Office (Tab V-16.10).

3. BACKGROUND

a. Air Combat Command (ACC)

ACC is one of nine major commands in the United States Air Force (USAF), headquartered at Joint Base Langley-Eustis, Virginia (Tab CC-1 to CC-2). As the lead command for fighter, command and control, intelligence, surveillance and reconnaissance, personnel recovery, persistent attack and reconnaissance, electronic warfare, and cyber operations, ACC is responsible for providing combat air, space, and cyber power and the combat support that assures mission success to America's warfighting commands (Tab CC-2). The Command operates 1,097 aircraft, 27 wings, 1,122 units and has more than 201 operating locations, with more than 157,000 total force active-duty and civilian personnel (Tab CC-2).

b. 355th Wing (355 WG)

The 355 WG is the host unit for DMAFB in Tucson, AZ, home to over 5,000 military and civilian members (Tab CC-5, CC-7 to CC-8). The wing is responsible for the initial qualification training and deployment of A-10C Thunderbolt II pilots and the sustainment and training of Combat Search and Rescue (CSAR) capabilities in support of combatant commanders worldwide (Tab CC-7 to CC-8).

c. 48th Rescue Squadron (48 RQS)

The 48 RQS trains, equips, and employs combat-ready pararescuemen (PJs), combat rescue officers (CROs), and supporting personnel worldwide in support of U.S. national security interests (Tab CC-10). The squadron provides survivor contact, treatment, and extraction during combat rescue operations, and uses various fixed and rotary wing insertion and extraction assets (Tab CC-10). It employs by any means available to provide combat and humanitarian search, rescue, and medical assistance in all environments (Tab CC-10). PJs and CROs are highly trained USAF forces dedicated to conducting full-spectrum personnel recovery operations (Tab CC-12). Their extensive training and skills encompass advanced weaponry, various parachute operations over land and water, combat diving, and trauma care (Tab CC-12).

d. Theodore Roosevelt Lake

Theodore Roosevelt Lake is in Gila County, AZ within the Tonto National Forest (Tab K-119 to K-125). It is 22.4 miles long with 128 miles of shoreline (Tab CC-16). It covers 21,493 acres and has a maximum depth of 188 feet (Tab CC-16). The 48 RQS and other rescue squadrons within the 355 WG conduct maritime training operations at Roosevelt Lake in accordance with formal agreements between the USAF and the United States Forest Service (USFS) (Tab K-119 to K-125).

e. Advanced Rescue Craft (Yamaha Waverunner)

The ARC is a high-performance commercial watercraft (Tab BB-29 and BB-32). The 48 RQS owns several versions of these vehicles, most recently purchasing six 2022 Yamaha Waverunner FX Cruiser Super Vortex High Output (SVHO) models in May 2022 (Tabs D-1 to D-9 and V-14.2 to V-14.4). Formally referred to in the Air Force as an “Advanced Rescue Craft” or “ARC,” the watercraft is used by the 48 RQS and other rescue squadrons to support maritime pararescue operations and training (Tabs V-1.8, and BB-5 to BB-11).

4. SEQUENCE OF EVENTS

a. Narrative

On 14 June 2023, MO1 and MO2 departed the 48 RQS maritime vehicle compound, commonly referred to as the “boat shop,” Building 4868, DMAFB, at approximately 0730L (Tabs R-44, R-74 to R-75, and V-13.7). They were both operating government owned (GOV) white Ford pickup trucks, each towing two ARCs on a single Triton trailer (Tabs R-44 and V-14.3 to V-14.4).

On the way to Roosevelt Lake, MO1 and MO2 stopped for groceries in Globe, AZ (Tab R-44). MO2 reported that MO1 appeared stressed that morning while running late to the boat shop and while stopping for groceries (Tab R-44). Otherwise, the road trip to Roosevelt Lake was uneventful (Tab R-44). MO1 and MO2 arrived at the Gila County Sheriff’s (GCS) substation at Roosevelt Lake at approximately 1049L (Tabs L-875, R-44, and R-76).

While MO2 launched the first two ARCs from his trailer and tied them to the dock, MO1 took his personal items into the GCS substation (Tab R-44). MO2 then assisted MO1 with launching the other two ARCs and securing them to the dock near the substation boat ramp (Tab R-44).

A review of both ARCs’ Global Positioning System (GPS) data revealed that MW1 and MW2 were launched onto Roosevelt Lake at 1056L (Tab L-875 and L-2034). Between approximately 1100L and 1143L, MO1 and MO2 continued preparing the ARCs, securing the vehicles and trailers at the substation, and gathering their gear before proceeding to operate the ARCs on Roosevelt Lake (Tabs L-876, and R-44 to R-45). The evidence shows that MO1 did not put on a PFD prior to operating the ARC (Tabs V-6.5 to V-6.6, V-16.9, V-16.11, and Z-9).

From 1143L until 1358L, MO1 operated MW1 and MO2 operated MW2 on Roosevelt Lake while waiting for the training mission to begin (Tabs L-876 to L-1010, L-2034 to L-2035, R-45 to R-46, R-78 to R-82, V-12.11, and V-19.1). During this time, MO1’s and MO2’s activities included talking on their phones, operating the ARCs at speeds between zero and 65 miles per hour (mph) and stopping occasionally to rest (Tabs L-876 to L-1010, L-2034 to L-2101, R-45 to R-47, R-78 to R-85, V-12.11, and V-19.1). MO1 and MO2 also briefly encountered members of the 306 RQS and 68 RQS on the water, who were conducting a separate training mission on the east side of Roosevelt Lake (Tab R-45 to R-46).

At 1355L, MO1 separated from MO2 while MO2 had stopped in the center of Roosevelt Lake west of Windy Hill (a prominent landmark that separates the west and east sides of Roosevelt Lake) (Tabs L-1005, L-2101, and R-46). Over the next two minutes MO1 passed within 100 feet of MO2 on two occasions (Tab L-1005 to L-1010 and L-2101). Between 1358L and 1404L, MO2 was not observing MO1's activities, as he was using an app on his phone to determine the status of the 55 RQS helicopters for the mission that was planned to occur that afternoon (Tab R-46). The final encounter between MO1 and MO2 was at approximately 1357L (Tab L-1009 to L-1010 and L-2101).

Approximately 30 seconds after their final encounter (while separated from MO2 by approximately 1500 feet), MO1 experienced a cardiac event that rendered MO1 unable to control MW1 (Tabs L-1011 and X-1 to X-2). GPS data reveals a deceleration of MW1 from 63 mph at 1357:42L to one mph at 1358:02L (Tab L-1010 to L-1011).

At 1358:39L, MW1's GPS lost power and stopped recording GPS information (Tabs L-1011 and V-14.4). MW1's GPS lost power when the engine shut-off cord (safety lanyard) was disconnected, thus causing the ARC to slow down and drift with the current (Tabs L-1011, R-47, and V-14.4). The safety lanyard from MW1 was later found during the search and rescue effort (Tab R-47).

MO1's entrance into the water was not observed by any known witnesses (Tab R-46). Due to the cardiac event, MO1 unintentionally fell into water and was unable to stay afloat (Tab X-1 to X-2). MO1 was not wearing a PFD and succumbed to drowning (Tabs V-6.5 to V-6.6, and Z-9). Wearing a PFD while operating this type of watercraft is required by Arizona Revised Statutes 5-350 (Tab BB-28). Further, Air Force Manual (AFMAN) 10-3511, *Pararescue and Combat Rescue Officer Operations*, paragraph 11.7.2.2, states that the personal equipment required to operate an ARC includes "flotation (hard flotation is required)" (Tab BB-10).

At 1404L, MO2 realized he did not see MO1 (Tabs L-2101 and R-46). MO2, operating MW2, proceeded in the direction of MO1's last perceived location (Tabs L-2101 to L-2102, and R-46). At approximately 1405L, MO2 located MW1 on Roosevelt Lake, but MO1 and the safety lanyard were missing (Tabs L-2101 to 2102, and R-46). MO2 continued the visual search for MO1 until 1409L (Tabs L-1195 and R-46). At 1409:42L, MO2 pressed the "Man Overboard" function button on MW2's GPS device (Tabs L-1195 and R-46).

Between 1405 and 1417, MO2 called WIT06 (located at DMAFB) and reported MO1 missing (Tabs R-47 and V-6.3 to V-6.4). WIT06 directed MO2 to call the authorities (Tabs R-47 and V-6.3 to V-6.4). MO2 then called the GCS office at 1417 and then Emergency-911 at 1422 to report MO1 missing (Tabs R-47 and V-16.5).

b. Search and Rescue

Multiple organizations and personnel supported the search and rescue (SAR) effort for MO1 between 1417L on 14 June 2023 and 1549L on 17 June 2023 (Tab V-16.5 to V-16.9).

After receiving the initial notification call from MO2, WIT06 briefed 48 RQS and 68 RQS leadership on the situation (Tab V-6.4). A Rescue Operations Center (ROC) was immediately established at DMAFB with 68 RQS as the USAF SAR lead (Tab V-2.7 and V-21). The ROC contacted the Air Force Rescue Coordination Center (AFRCC) to assist in coordinating the SAR efforts (Tab V-2.7 and V-16.5). Subsequently, AFRCC sought additional support from the Department of Emergency and Military Affairs (DEMA) (Tab V-16.5).

(1) USAF Assets at Roosevelt Lake

Two USAF HH-60G Pavehawk helicopters arrived at Roosevelt Lake at approximately 1415L, each carrying four crewmembers and four passengers (six PJs and two CROs total) for the pre-planned 48 RQS alternate insertion and extraction (AIE) training mission scheduled for later that day (Tab V-13.2 to V-13.3).

At 1457L, WIT07, returned to the water with members of the 68 RQS (who were at Roosevelt Lake to support the 306 RQS training earlier in the day) and began using MW1 to aid in the search (Tabs L-1011 and V-7.9 to V-7.10). WIT07 operated MW1 until approximately 2000L to assist in the search (Tabs L-1192 and V-7.11).

(2) Arrival of On-Scene Commander (OSC)

At 1549, a GCS Deputy (WIT13) arrived at Roosevelt Lake and assumed the role as OSC (Tab V-16.5). The OSC immediately traveled by boat to the last known location of MO1, where he was briefed by MO2 (Tab V-16.5). At this time, the SAR effort consisted of 21 personnel spread out as follows: two HH-60G helicopters from 55 RQS with eight personnel each, one boat (32-foot Munson PAK-CAT) from 68 RQS with four personnel (WIT07 was one of these four personnel and was operating MW1), and one ARC from 48 RQS (MO2 operating MW2) (Tab V-11.7, V-11.12, and V-13.5).

These assets were visually searching the shorelines and water near MO1's last known location (Tab V-22). Later that afternoon, two boats (a 25-foot Safe-boat and a Zodiac) with multiple personnel from the 306 RQS joined the search effort (Tabs R-55 and V-11.13). Two PJs later disembarked the HH-60Gs and operated from the 306 RQS government owned boats (Tab V-13.5).

WIT13, as OSC, requested keeping a rotation of USAF helicopters, with the air assets visually searching the area above the water during the day and using infrared (IR) and night vision goggles at night (Tab V-16.6 to V-16.7). On the surface, the search effort utilized USAF boats with sonar and rescue divers (Tab V-16.6). After approximately two hours of supporting the SAR, the two HH-60Gs with the original 16 personnel returned to DMAFB (Tab V-13.5). At approximately 1900L, the Maricopa County Sheriff's Office (MCSO) Sonar and Remotely Operated Vehicle (ROV) teams arrived at Roosevelt Lake to support this effort (Tab V-23). The ROV team was deployed to conduct search and rescue operations at approximately 2230L (Tab V-16.8).

Underwater search strategies involved utilizing two canine (K-9) units from the Tonto Rim Search and Rescue Human Remains Detection team to air scent for the odor of human remains (Tab V-16.7). Sonar-equipped boats scanned the lake floor and, when K-9 units detected a scent pool, divers were dispatched to the location (Tab V-16.6 to V-16.7). Similarly, when sonar teams pinpointed a target, the dive team would investigate the item (Tab V-16.6 to V-16.8). Each K-9 team (one handler and one dog each) was assigned to an Air Force boat while scenting the water (Tab V-16.7).

(3) MW1 Initial Inspection

On 14 June 2023, WIT13 photographed MW1 and its contents in the dry storage compartment (Tab V-16.7). In the rear dry storage, there were unopened chemlights (glow sticks) (Tab V-16.7). In the dry storage between the rider seat and handlebars, there was food, an extra engine shut-off cord (safety lanyard), a water bottle, two vaping devices, and cordage for tying the ARC to a dock (Tab V-16.7). The front dry storage contained a pair of tan sandals, an orange dry bag and an impact vest for wakeboarding and waterskiing (Tabs V-16.7 and Z-2). This impact vest was purchased by MO2 and was not certified by the United States Coast Guard for flotation (Tabs R-73 to R-74, V-5.11, and Z-2). The dry bag contained a wallet and MO1's iPhone (Tab V-16.7). A rescue sled was attached to the back of the ARC (Tabs R-79 to R-80 and V-16.7).

(4) Continued Search Efforts on 15-17 June 2023

On 15 June 2023, USAF sonar teams arrived from DMAFB (Tab V-16.7).

The daytime SAR continued from approximately 0700L until 2200L on 15 June 2023 and 16 June 2023 (Tab V-16.8). At night, sonar operations were conducted between 2200L and 0700L on both days (Tab V-16.8).

On 16 June 2023 at approximately 2230L, the forensics analysis of the GPS data conducted by MCSO revealed the precise GPS location of MW1 at the time of the incident (Tab V-16.8). A deliberate search at these coordinates was conducted over night by the sonar teams (Tab V-16.8). At approximately 0500L on 17 June 2023, the USAF sonar team reported an image of a body believed to be MO1 (Tab V-16.8).

c. Recovery of Remains

At 1300L, the recovery ROV arrived on scene and by 1531L the ROV had a visual on MO1 (Tab V-16.9). MO1's body was believed to be at a depth of 130 feet below the surface, a distance beyond safe dive limits of all divers on scene (Tab V-16.3 and V-16.8). The ROV pilot was able to grab MO1's left ankle and raise his body (Tab V-16.9). MO1's body was brought to the surface at 1549L, approximately 100 feet north of where MW1 was first discovered without an operator by MO2 three days earlier (Tabs L-1011 and V-16.9).

An examination of MO1's body revealed MO1 was not wearing any footwear, a helmet, or a PFD (Tabs V-6.5 to V-6.6, V-11.5, V-16.9, V-16.11, Z-9, and Tab BB-10). MO1 was wearing a

GoPro Hero 8 video camera and chest mount (Tab V-16.9). MO1's body was transported to the Pinal County Medical Examiner's Office (Tab V-16.10).

5. MAINTENANCE

a. Forms Documentation

MW1 and MW2 are small watercraft, and, therefore, not maintained IAW Department of the Air Force Instruction (DAFI) 24-302, *Vehicle Management* (Tab BB-13). All maintenance and repairs performed on both ARCs were only tracked locally on an excel spreadsheet by MO2 (Tabs D-44 and V-12.4).

b. Inspections

A civilian vendor in Tucson, AZ performed a post-mishap inspection of MW1 (Tab J-1 to J-2). This inspection did not reveal any maintenance problems that would have caused the ARC to malfunction prior to the mishap (Tabs J-1 to J-2 and V-12.5).

c. Maintenance Procedures

Routine maintenance on ARCs in the 48 RQS is performed in accordance with manufacturer's recommendations in each owner's manual (Tabs V-12.4 and BB-29 to BB-32). MW1 was 13 months old at the time of the mishap with approximately 40 hours (Tabs V-14.3, Z-5, and Z-7). The only recommended maintenance performed on MW1 was engine oil replacement (recommended at 10 hours or 12 months) on 27 July 2022 (Tabs V-12.4 and BB-31). MO2 also replaced the engine spark plugs on both vehicles on an unknown date prior to the mishap to enhance ARC performance. (Tab V-12.4 to V-12.5 and V-14.5). The sparkplug change is not documented on any of the maintenance logs (Tab D-44).

d. Maintenance Personnel and Supervision

ACC has contracted maintenance on the ARCs (Tab BB-37). Maintenance on the ARCs is performed in accordance with the Performance Work Statement (PWS) for the Dive Locker and Maritime Maintenance contract, dated 16 June 2020 (Tab BB-37 to BB-91). Per the PWS, the contractor is responsible for, among other things, providing maintenance support for maritime operations within certain Air Force rescue squadrons (Tab BB-37 and BB-45). This necessitates offering on-site maritime maintenance and technical expertise, maintaining and operating a wide array of equipment, boats, and their associated outboard motors, ARCs, and all-terrain vehicles (Tab BB-37 and BB-43).

The Boat Operators/Small Engine Technicians (BO/SET) provided by the contractor must have a minimum of three years of experience and relevant current certifications in the maintenance and use of High-Pressure Air Compressors (HPACs), small engines and watercraft and must also comply with licensing requirements, maintain a secret security clearance, and ensure their qualifications, certifications, and licenses are duly documented and updated (Tab BB-57).

The Contracting Officer's Representative for this contract is located at HQ ACC, Langley AFB, Virginia (VA) (Tab V-1.15).

e. Fuel and Oil Inspection Analyses

The post-mishap inspection of MW1 revealed no issues with fuel or oil (Tab J-1 to J-2).

f. Unscheduled Maintenance

MW1 and MW2 had not required any unscheduled maintenance (Tabs R-89 and V-12.5). MO2 replaced the engine spark plugs on both ARCs on an unknown date prior to the mishap to enhance ARC performance (Tab V-12.4 to V-12.5 and V-14.5).

6. EQUIPMENT, VEHICLES, FACILITIES, AND SYSTEMS

a. Structures and Systems

The 48 RQS maritime vehicle compound, building 4868, is adjacent to the 48 RQS headquarters at DMAFB (Tab V-6.3 and V-13.7). It is the primary duty location for one contractor and one uniformed member of the 48 RQS, which was MO1 and MO2 at the time of the mishap (Tabs R-124, V-1.14, V-6.3, and V-14.2). The building houses small boats, ARCs, trailers, and equipment used to support maritime training and operations (Tab V-14.2, and V-14.3). When training at Roosevelt Lake, the squadron frequently secures its boats at the GCS Substation at the Roosevelt Lake Marina in Roosevelt, AZ (Tabs R-76, R-142, and V-13.6).

b. Functional Status

Both ARCs were assets procured by the 48 RQS in January 2022 for use as ARCs to support PJ and CRO maritime training operations (Tab D-1). Both ARCs were operable and in good condition on the day of the mishap (Tab V-7.11).

c. Equipment Condition Post-Mishap

WIT07 operated MW1 as a search watercraft immediately following the mishap (Tab V-7.9 to V-7.11). It was functioning properly at this time (Tab V-7.11). After approximately four hours of active searching, MW1 became inoperable after it entered a shallow area and seemingly sucked rocks into the impeller (Tab V-7.11). The post-mishap assessment performed on MW1 by a civilian vender revealed that rocks were found wedged into the impeller, causing the post-mishap malfunction (Tab J-1 to J-2). MW1 was then towed back to the Sheriff's boat ramp by the 68 RQS boat driven by WIT11 (Tab V-7.12). The post-mishap assessment also found a loss of speed signal from the GPS device (Tab J-1 to J-2).

7. ENVIRONMENTAL CONDITIONS

The reported weather on 14 June 2023 in Mesa, Arizona indicated clear and sunny conditions with a temperature of approximately 90°F (Tabs V-11.15 and W-3). Winds were light and variable contributing to calm lake conditions (Tabs V-11.15 and W-3). These conditions were consistent with what was observed on that day (Tab V-11.15). Such weather conditions are typical for the location and season, and there is no evidence to suggest that weather or other environmental conditions played a role in the mishap (Tab W-70). There were no weather-related restrictions or warnings issued that day that would limit operations (Tab W-70). Post-accident weather remained consistent with both the reported and observed conditions (Tabs V-11.15 and W-2 to W-3).

8. PERSONNEL QUALIFICATIONS

MO1's initial active-duty date of service was 18 November 2008 (Tab G-89). He was 33 years old and a Staff Sergeant at the time of the mishap (Tab G-12 and G-85). MO1's AFSC was 4A151 (commonly called "medical logistician"), assigned to the Operational Support Medical Flight in the 48 RQS at DMAFB (Tabs G-14, R-111, and V-9.3). In February 2023, MO1 was detailed to the maritime section of the 48 RQS where he assumed the role of a boat master (Tabs R-124, V-1.11, and V-9.2 to V-9.3). In this capacity he provided maritime support for PJ and CRO training operations requiring the maintenance and operation of all unit watercraft (Tab BB-34). This often involved transporting watercraft on large trailers to different bodies of water, and then operating the watercraft during the training operations (Tabs K-55 to K-64, V-4.6, V-11.2 to V-11.3, and BB-34).

MO1 became qualified as an ARC operator and boat master in November 2022 after he completed all relevant training in the Guardian Angel (GA) ARC Qualification Training Plan (QTP), January 2011 and GA Boat Master QTP, February 2019 (Tabs G-2, K-55 to K-62, and K-97). Neither of these qualifications had been documented with the squadron training manager, so they were not reflected on the 48 RQS Letter of Certifications dated 2 June 2023 and signed on 13 June 2023 by 48 RQS leadership (Tabs K-26 and V-1.11).

MO1 also completed Boat U.S. Foundation's Boating Safety Course in March 2021 and recently earned his Commercial Class A Driver's License to drive oversized trucks and large commercial trailers (Tabs G-5, and R-189 to R-190). MO1 was competent and capable when operating watercraft (Tab R-70). Operators of Air Force "water vessels" are not subject to additional specialized licensing requirements as required by AFMAN 24-306, *Operation of Air Force Government Motor Vehicles*, 30 July 2020, para 3.4 (Tab BB-3).

MO1 was not qualified as a rescue swimmer as documented on the Letter of Certifications for the 48 RQS (Tab K-26). MO1 was a competent swimmer (Tab R-73). Being a rescue swimmer and/or competent swimmer was not required for MO1 to operate an ARC (Tabs K-55 to K-64 and V-3.5).

9. MEDICAL FACTORS

a. Qualifications

At the time of the mishap, MO1 was medically qualified for duty without restrictions (Tabs R-115 and X-1).

b. Health

Review of medical records did not identify chest pain, dizziness, syncope, heart attack or arrhythmia in MO1's personal medical history (Tab X-1). Pertinent family medical history included heart attack (Tab X-1). Pertinent social history included history of tobacco use (quit in 2021) (Tab X-1). MO1 was not known to be taking any medications at the time of the mishap (Tab X-1).

c. Pathology

The autopsy was performed by a medical examiner at the Pinal County Medical Examiner's office, Florence, AZ, on 19 June 2023 (Tabs V-16.1 and X-1). The report stated that drowning was documented as the cause of death (Tab X-1). Additionally, examination of the heart revealed severe coronary artery atherosclerosis (80% stenosis) of the right proximal coronary artery (Tab X-1). The autopsy also included two abrasions of the head that were not found to be attributable to cause of death (Tab X-1 to X-2). There were no findings of significant trauma to the head, neck, or body (Tab X-1).

A board-certified USAF Cardiologist and board-certified USAF Pathologist served as Subject Matter Experts (SME) for the GAIB (Tabs X-1, Y-5, and Y-6). The SMEs reviewed the medical records, incident report, relevant witness statements, GPS data, autopsy report, and interviewed the medical examiner who performed the autopsy (Tab X-1). The SMEs concluded that MO1 had a cardiac event that caused him to fall into the water and rendered him unable to swim, subsequently leading to drowning (Tabs V-6.5 to V-6.6, V-11.5, V-16.9, V-16.11, X-1 to X-2, and Z-9). The toxicology report was negative for illicit substances, pain medications and alcohol (Tab X-1).

d. Lifestyle

Review of medical records revealed MO1 had a prolonged use of tobacco products but had quit in 2021 (Tab X-1). The use of tobacco products is a known risk factor for heart disease (Tab X-1).

10. OPERATIONS AND SUPERVISION

a. Operations

There were three distinct training activities planned on Roosevelt Lake between 14-16 June 2023, requiring coordination between the four participating squadrons (306 RQS, 68 RQS, 48 RQS and 55 RQS) that planned to participate (Tab V-1.8, V-3.6, V-5.2 to V-5.3, and V-11.4).

(1) 306 RQS (supported by 68 RQS) Training Operation – 14 June 2023

The 306 RQS is an Air Force Reserve (AFR) Rescue Squadron within the 943 Rescue Group at DMAFB, a geographically separated unit within the 920th Rescue Wing at Patrick Space Force Base, Florida (Tab CC-9). The 306 RQS was at Roosevelt Lake on 14 June 2023 conducting continuation training involving fixed-wing parachute jumps utilizing approved water drop zones (WDZs) on Roosevelt Lake (Tab V-11.4 to V-11.5). CMS members from the 68 RQS were supporting this operation with government owned boats (Tab V-11.4 and V-11.7). No members of the 48 RQS (including MO1 and MO2) were involved (Tab V-11.4 and V-11.7).

MO1 and MO2 encountered 306 RQS and 68 RQS members while they were operating the ARCs on the day of the mishap (Tabs V-11.4 to V-11.5, V-7.6 to V-7.7, and R-75). Witnesses reported that they were unsure whether MO1 and MO2 were wearing PFDs on Roosevelt Lake that day (Tab V-7.15, V-11.5, and V-12.10). MO2 appeared to have some type of “survival vest” holding radios (Tab V-7.6 to V-7.7). MO1 appeared to be wearing something around his waist (Tab V-11.5 and V-12.10). Video from the day of the event confirms MO2 wearing a survival (non-flotation) vest and MO1 wearing a GoPro assembly around his chest and waist (Tab Z-9).

(2) 48 RQS (supported by the 55 RQS) Training Operation – 14 June 2023

On 14 June 2023, the 48 RQS and 55 RQS planned an alternate infiltration and extraction (AIE) training mission (Tab V-1.8 and V-3.6). No watercraft or personnel on the water (ARCs, safety boats, safety swimmers or boat masters) were required or expected for this mission (Tabs R-45 to R-46, R-78 to R-82, V-12.11, and V-19.1). The pre-mission brief between the 55 RQS aircrew and the 48 RQS training participants (PJs and CROs) was conducted at 0930L and MO1 and MO2 were not present (or expected to be) because they were not required for the mission or expected to be at Roosevelt Lake to participate in the mission (Tabs K-16 and V-13.4). MO2 was aware that this operation did not require MO1 and MO2 support, but MO2 decided they would support anyway by “keep[ing] boat traffic out of the area” due to the busy summer season (Tab V-19.1).

(3) 68 RQS Training Operation – 15 and 16 June 2023

The 68 RQS, the Guardian Angel (GA) formal training unit (FTU) also located at DMAFB, planned a training mission as part of their Combat Teams Member Course (CTMC) for 15-16 June 2023 (Tabs V-5.2 to V-5.3 and CC-10). This training mission included fixed-wing parachute operations utilizing approved water drop zones (WDZs) on Roosevelt Lake (Tabs V-5.6 and BB-14 to BB-27). Two ARCs were required for this mission (Tabs K-119 to K-125, V-5.6, and BB-14 to BB-27). Because the 68 RQS only had one operational ARC, they requested support from the 48 RQS (Tab O-6). The 48 RQS maritime section agreed to support with two ARCs (MW1 and MW2) and two ARC operators (MO1 and MO2) (Tab O-5). 48 RQS leadership approved of its maritime section supporting this operation (Tabs O-4 to O-5 and V-3.6).

On 12 June 2023, MO1 and MO2 attended a pre-mission coordination meeting for the 15-16 June 2023 training (Tab V-4.7 to V-4.8). Emphasis was made during this meeting (and depicted on the slides) that all parties would travel on the morning of 15 June 2023 (Tabs V-4.7 to V-4.8 and BB-14 to BB-27). MO1 and MO2 proceeded to Roosevelt Lake on 14 June 2023 despite the planned departure time for their mission being the following day (Tabs R-44 and BB-14 to BB-27).

b. Supervision

A risk management worksheet was completed by the 48 RQS as part of the pre-mission planning for the 48 RQS training mission on 14 June 2023 (Tab K-93). This mission did not require support from MO1 and MO2 (Tabs R-45 to R-46, R-78 to R-82, V-12.11, and V-19.1). 48 RQS squadron leadership reviewed and approved the worksheet although the worksheet is not initialed or signed (Tab V-3.8 to V-3.9). A separate risk management worksheet was completed by the 68 RQS (supported by the 48 RQS) for the training mission on 15-16 June 2023 (Tab K-75). Squadron leadership from the 68 RQS reviewed but did not sign this worksheet (Tab K-75).

11. GOVERNING DIRECTIVES AND PUBLICATIONS

a. Publicly Available Directives and Publications Relevant to the Mishap

AFI 51-307, *Aerospace and Ground Accident Investigations*, 18 March 2019, Air Combat Command Supplement, 3 December 2019

DAFI 24-302, *Vehicle Management*, 21 February 2020

AFMAN 24-306, *Operation of Air Force Government Motor Vehicles*, 30 July 2020

AFMAN 10-3511, *Pararescue and Combat Rescue Officer Operations*, 2 December 2020

NOTICE: All directives and publications listed above are available digitally on the Air Force Departmental Publishing Office Website at <https://www.e-publishing.af.mil>.

b. Other Directives and Publications Relevant to the Mishap

Arizona Revised Statutes 5-350. *Personal Watercraft; Requirements for Operation; Definitions.*

c. Known or Suspected Deviations from Directions or Publications

All deviations previously discussed.

22 NOVEMBER 2023

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N.G.

STEVEN G. BEHMER
Brigadier General, USAF
President, Ground Accident Investigation Board

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