

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

CSAR-eXit: THE FUTURE OF AIR FORCE COMBAT SEARCH
AND RESCUE

by

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A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

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April 2010

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Preface

Following the Soviet Union's fall, the US military continued to pursue procurement of weapon systems developed during the Cold War. Ongoing overseas contingency operations have forced the Department of Defense to rapidly reorganize, train and equip the Armed Forces. Critics of the Air Force accuse it of exercising a sort of "next-war-itis." The F-22 Raptor has been the most publicized example of this argument. Having flown the F-15E in three combat deployments, including the first months of Operation Iraqi Freedom, cancellation of the CSAR-X and the subsequent investigation into the continued requirement for a "single-service, single-mission" personnel recovery capability within the Air Force motivated me to write this paper. It remains my belief that the capability to rapidly respond to downed Airmen, deep behind enemy lines, is one the Air Force does best. To support my assertion, this paper looks at how the services present their personnel recovery forces. Incidentally, the DoD has apparently come to the same conclusion. During the last week of March 2010, one year after cancelling CSAR-X and one week before I sat down to type this preface, the Air Force announced that a contract for a replacement to the venerable HH-60G will be awarded by 2012. In light of this news I offer this paper as a reminder of why CSAR remains a unique capability which we must continue to conduct.

I would like to offer special thanks to Dr. Jeff Reilly for encouraging me to step out of my comfort zone. If it weren't for his early mentorship this fighter WSO would have chosen a safer topic than Combat Search and Rescue. Additional thanks go to Major Richard Dickens and Major Matt Lengel for testing the logic of my arguments. Finally, I would like to thank my wife, Amalia, for giving me those evenings at the library to work on this paper and letting me sleep in

AU/ACSC/DIVITTORIO, E/AY10

on Saturdays after some of my late night writing sessions.

Abstract

This research paper addresses the question of Air Force Combat Search and Rescue (CSAR) validity in a world dominated by irregular warfare. Following the cancellation of the CSAR-X acquisition program in 2009 the DoD tasked the Joint Personnel Recovery Agency (JPRA) to study whether Air Force CSAR represented a single service/single mission capability that could be replaced by similar/duplicate capabilities found in other services. The author studied the question by researching joint publications, DoD Directives and sister service documents on personnel recovery. He then discusses the Air Force's CSAR doctrine and TTPs using some historical examples to illustrate the unique capabilities found in the Air Force. Finally, he details why the Air Force's capabilities are so important to recovering isolated, missing, detained or captured personnel. Concluding remarks urge the DoD to maintain the current joint PR structure with no changes. In order for Air Force CSAR to remain a viable combat capability into the future, CSAR-X should be fielded as soon as possible to replace the aging fleet of HH-60G Pavehawk helicopters.

A Dark Night in Northern Afghanistan

The early morning of November 10, 2007 was dark in Northern Afghanistan. It was so dark that MSgt Tom Ringheimer, peering through night vision goggles, couldn't see the shadows being cast by trees and mountains as his HH-60G Pave Hawk made its way to the body of a fallen American soldier, Army Sgt Jeffrey Mersman. Ringheimer was the gunner on his aircraft, one of two people responsible for scanning around and under the helicopter in search of their "target," the person or persons they were sent to recover. The day had begun quietly; like so many others for the crew of DINGO 55, a two-ship of rescue helicopters that were part of the Air Force's 66 ERQS, stationed at Bagram AB supporting Operation ENDURING FREEDOM. The crews had sat down to dinner at a Bagram dining facility when they received the call to scramble for a mission. Leaving their trays at the table, the men of DINGO flight ran to the squadron, retrieved their equipment and were airborne just minutes after receiving the initial call to action. A few hours earlier, soldiers of C Company, 2nd Battalion, 503rd Airborne Infantry Regiment, 173rd Airborne Brigade Combat Team had concluded a meeting with tribal leaders in the Nuristan Province of Afghanistan and were on their way back to the nearby Bella Forward Operating Base. The men were ambushed by Taliban insurgents hiding amongst the rocks and trees that are scattered throughout the mountainous region. A massive firefight ensued; Company C would lose five men before the night was over. Sgt Mersman's body fell into a steep ravine during the firefight. Chemical lights cued MSgt Ringheimer to the body which lay on a ledge several hundred feet below the helicopter. The formation dropped off four Pararescue Jumpers (PJs) and positioned the aircraft to recover both the rescuers and the fallen American hero. During the recovery the pilot of DINGO 56, Capt Ed Blanchet, had to hover his aircraft in a ravine that provided only 10 feet of clearance for his tail rotor while the crew on-board lowered down a hoist cable to recover the PJs and Sgt Mersman. Despite the poor illumination, the

harrowing terrain and stiff winds which threatened to smash the Pave Hawk and its crew on the rocks which surrounded it on three sides, the crew was able to successfully bring everyone home.¹²³

At the time, I was the Executive Officer of the 455th Expeditionary Operations Group, Bagram AB, and had the opportunity to watch the cockpit tapes of Sgt Mersman's recovery. Hearing the rapid cadence of corrections being given to Capt Blanchet from his flight engineer and seeing the thousands of minute adjustments made to keep the aircraft in such a tight spot it was my belief that everyone on the mission deserved a Distinguished Flying Cross. However, through discussion with 66 ERQS leadership I came to realize the skill and professionalism of DINGO 55 flight was both amazing and unremarkable within the Air Force rescue community. The Airmen flying Pave Hawk helicopters and their GUARDIAN ANGELS (US Air Force moniker for human weapon system comprised of PJs, CROs and SERE Instructors)⁴ are rock stars in the Search and Rescue community. In fact, DINGO 55 was only scrambled for this mission after the sun went down and the Army's own UH-60 Black Hawk crews determined they could no longer operate in the low illumination environment with enemy combatants lurking in the mountains nearby.⁵

The Debate over Air Force Combat Search and Rescue

"By pledging to put every effort into recovering our highly trained [personnel], we send a powerful signal about their importance and help sustain their spirit under the stress of combat."

General Hugh Shelton
Chairman of the Joint Chiefs of Staff
1 October 1997 – 30 September 2001

DoD Directive (DODD) 2310.2, *Personnel Recovery*, charges the Service Secretaries and the Commander in Chief, USSOCOM, with organizing, training and equipping (OT&E) their forces to conduct personnel recovery (PR) as required by their unique missions

and the requirements of the Combatant Commands.⁶ Accordingly, each military service has a responsibility to maintain its own personnel recovery capability. However, CJCSI 3270.01A and the precedent set during operations spanning all of history demonstrates the requirement for every service to demonstrate the flexibility to recover any isolated personnel.⁷ The confidence American Soldiers, Sailors, Marines and Airmen possess on the battlefield flows in part from the institutional conviction that no person will be left behind. DODD 2310.2 establishes the preservation of life and well-being for all military service members and DoD civilians placed in danger of being isolated, detained or captured as one of the department's highest priorities.⁸ US Armed Forces must be prepared to conduct PR whenever a member of the DoD team becomes isolated, missing, detained or captured (IMDC); and anytime directed to do so by the National Command Authorities (NCA). The Defense POW/Missing Personnel Office (DPMO) defines PR as:

The aggregation of military, civil, and political efforts to recover captured, detained, evading, isolated or missing personnel from uncertain or hostile environments and denied areas. Personnel recovery may occur through military action, action by non-governmental organizations, other U.S. Government (USG)-approved action, and diplomatic initiatives, or through any combination of these options. Though personnel recovery may occur during non-combatant evacuation operations (NEO), NEO is not a subset of personnel recovery.⁹

To the service members fighting America's wars, the Combatant Commanders and our Commander in Chief, there is no contingency capability more important than those residing under the PR umbrella.

On April 6, 2009 Secretary of Defense Robert Gates terminated the CSAR-X acquisition program in a Defense Budget Recommendation Statement. Secretary Gates stated, "We will terminate the Air Force Combat Search and Rescue X (CSAR-X) helicopter program. This program has a troubled acquisition history and raises the fundamental question of whether this

important mission can only be accomplished by yet another single-service solution with single-purpose aircraft.”¹⁰ The reasons behind the Secretary’s decision were elaborated upon before the House Armed Services Committee the following month by Mr. David Ahern, the Director of Portfolio Systems Acquisition for the DoD.

“CSAR-X was to provide an enhanced capability to conduct long-range penetration missions for personnel recovery in combat scenarios. All Services and the U. S. Special Operations Command currently possess a wide spectrum of overlapping and complementary personnel recovery capabilities. This overlay provides a robust national combat search and rescue capability which serves the combatant commanders well. A deep penetration mission to recover downed crews in a complex threat environment requires a joint solution. Since this mission drives many of the CSAR-X requirements, it is imperative we reassess the mission in the context of joint force capabilities. Development of single-service solutions with single-purpose aircraft, especially considering joint force capability needs for personnel recovery, is not a sustainable approach.”¹¹

Debate on how to best manage CSAR has raged in the Air Force for decades. Its history is filled with stories of being built up for war only to be torn down again following the end of hostilities. With each iteration, operational control of CSAR typically moved from one major command to another. During the literature review for this paper I read a handful of opinions on how CSAR should be managed differently. Regardless of each authors’ opinion on command structure or collateral mission sets, there was agreement the CSAR capability remains vital. Neither the Air Force’s sister services or USSOCOM OT&E to conduct the CSAR mission. Personnel recovery is a doctrinally joint endeavor. Although some capabilities of CSAR exist in other services’ the fusion of capabilities within the Air Force create a synergy that has not been duplicated by any other service. Air Force operations dictate the continued requirement for the unique capabilities of its combat search and rescue force.

To support the previous statements and dispel the myth that CSAR is a single-service, single mission capability, it is necessary to know how the Army, Navy, Marine Corps and

Special Operations view PR in their doctrine as well as how they conduct the mission. After establishing an understanding of the other services' capabilities, a review of Air Force doctrine, training, equipment and CSAR collateral mission sets demonstrates the unique abilities of CSAR within joint personnel recovery operations (PRO). Finally, an explanation of why PR is so important to the American way of war clarifies the necessity for an on-call, rapid response capability.

We must remain committed to preparing for both irregular and regular warfare. Today's battlefield is non-linear and non-contiguous, but tomorrow the US may find itself engaged in major combat operations against a near-peer competitor fielding advanced surface-to-air missiles and fourth-generation fighters. If that happens the likelihood of Air Force aircrew finding themselves isolated behind enemy lines is high. At the same time the DoD must remain a trusted steward of the nation's talent and treasure. It is our Soldiers, Sailors, Airmen and Marines that are the most valuable treasure.

Personnel Recovery Outside the USAF

"We need to focus on Soldiers being able to take care of themselves, then able to take care of their buddies, then able to take care of their larger team...It's all part of the Warrior Ethos: Place the mission first, never accept defeat, never quit, and never leave a fallen comrade."

General Peter J. Schoomaker
Chief of Staff, United States Army

In the post 9/11/01 world, it is the US Army and Marine Corps that have bore the lion's share of responsibility for fighting the War on Terror. During the search to define today's counterterrorism campaign and the counterinsurgencies in Iraq and Afghanistan the term irregular warfare has emerged. Perhaps most irregular for the United States' conventional forces is they must fight a non-linear war on an asymmetric battlefield. There is no "front line" as demonstrated by the ambush and capture of Private Jessica Lynch. Today, support soldiers in

rear echelons can find themselves IMDC just as easily as those considered main-line combat forces. The realization that the US is likely to be engaged in this type of war for a long time has led all branches of the Armed Forces to revisit their PR training.

Service members today understand the increased potential for becoming IMDC. Because of this JPUB 3-50, has emphasized the need for a joint approach to PRO. However, each service still OT&E their forces in accordance with their unique circumstances.

US Army Personnel Recovery

No service has made a more drastic change to their PR program than the US Army. Prior to Operation Iraqi Freedom the Army viewpoint was aviation and special operations forces were primarily at risk of becoming IMDC. Incidents like the aforementioned capture of Pvt Jessica Lynch have demonstrated otherwise and led the Army to publish FM 3-50.1, *Army Personnel Recovery*. This official doctrine codifies the importance Army leadership places on PR and makes the tactics, techniques and procedures for conducting PR applicable to all soldiers.¹²

Despite the commitment to train every soldier in PR TTPs the reality is, regular Army forces are trained to conduct PR as a collateral mission. They do not train to or possess capabilities similar to the other services. Their UH-60 helicopters are not armored or armed like the Air Force's HH-60 and any helicopter tasked to perform PRO is unlikely to have trained to locate a IMDC person.

This is not meant to be a critique of the Army. On the contrary, the Army has gone great lengths to integrate into the Joint personnel recovery network. Guidance from DODD 2310.2 and JPUB 3-50 only require that each service OT&E for their component's unique PRO. For the Army this normally consists of one or more personnel becoming lost or separated during ground operations or a helicopter being forced down. Often the soldier on the ground is within a few

kilometers of friendly forces or the downed helicopter's wingman stops to pick up the personnel immediately.

The event just described is termed an immediate recovery. If an immediate recovery is not feasible, then a deliberate recovery or an external supported recovery (ESR) is planned.

Table 1 illustrates the Army's PR coordination matrix. In today's joint environment it is highly likely that any operation that doesn't occur immediately will be routed through the JPRC.

Additional assets would then be dedicated to the mission; many likely coming from other services.

Table 1: Army PR Coordinating Matrix

<i>Command Level</i>	<i>Coordinating Element</i>	<i>Recovery Method</i>	<i>Typical Area</i>
<i>Combatant Command Joint Force</i>	JPRC	External Supported	Anywhere in the JOA / AOR
<i>Joint Task Force</i>	JPRC	External Supported	Anywhere in the JTF JOA
<i>Component</i>	PRCC	Deliberate	Anywhere in the component's AO
<i>Major Subordinate Command</i>	PRCC	Deliberate	Anywhere in the MSC's AO
<i>Tactical units</i>	PRO	Immediate	Within immediate footprint
<i>IMDC personnel</i>	Individual responsibility	Unassisted	Wherever they are

US Navy Personnel Recovery

Amongst all the services other than the Air Force, only the Navy has anything approaching a dedicated CSAR capability.¹³ Appendix C of JPUB 3-50 states:

a. Navy units are tasked and trained to execute a full spectrum of PR missions, including over water recovery, underwater recovery, and over land recovery. NWP 3-50.1, Navy Search And Rescue (SAR) Manual, spells out Navy PR missions in permissive environment (includes surface, air, and submarine disaster SAR missions).

b. For isolated personnel located in low or medium anti-air threat areas, recoveries are assigned to units specialized in CSAR. Traditionally, CSAR assets have been trained and equipped to rescue forces most likely to be isolated during combat, including downed aviators and distressed SOF. Naval CSAR doctrine can be found in NWP 350.22, Combat Search and Rescue Manual, and Navy Tactics, Techniques, and Procedures (NTTP) 3-03.4, Naval Strike and Air Warfare.

Navy CSAR includes all previous CSAR requirements, but places increased emphasis on integrating rescue planning and coordination into planning and execution of all strike operations.

In his article, “*Is CSAR Really Nothing Special?*” Otto Kreisher points out that the crews specially trained to perform the CSAR mission for the Navy use TTPs adopted from the Air Force.¹⁴ Navy CSAR is relatively new and untested in actual combat to date. However, their primary limitation with respect to replacing Air Force CSAR would be their continued presence being needed at sea to provide SAR during flight operations. Additionally, any JTF stood up in a land-locked country will require the Navy to transport the helicopters into theater by Air Force airlift or obtain over flight rights of intervening nations. The latter option presents complex diplomatic issues best avoided.

US Marine Corps Personnel Recovery

If you search the Joint and Service Doctrine libraries for a Marine Corps document detailing their approach to personnel recovery nothing turns up. However, a Marine MH-53 pilot attending the Air Command and Staff College pointed me to Appendix D of JPUB 3-50. In it the Marine Corps states:

The Marine Corps views PR as an implicit requirement in all combat operations. All elements of the Marine air-ground task force (MAGTF) possess the ability to support PR operations, or participate in the recovery of isolated personnel. The MAGTF commander may, or may not, elect to dedicate forces to perform this mission; however, additional capability to perform self supporting recovery operations and external PR support is provided through a concept known as tactical recovery of aircraft and personnel (TRAP). Aviation, ground, or waterborne assets, or any combination of these may conduct a TRAP mission. The TRAP mission differs from CSAR in that it usually does not involve extended visual search procedures to locate isolated personnel, particularly in a medium- or high-air threat environment. TRAP assets may also be employed in the conduct of other, non-recovery, missions, and called upon to perform a recovery as it becomes necessary. The TRAP concept emphasizes detailed planning and the use of assigned and briefed personnel for the specific purpose of recovering personnel and/or aircraft. The MAGTF commander may utilize the TRAP force when an immediate recovery is impractical, or the tactical situation necessitates the additional capabilities a TRAP force provides. Confirmation of a survivor(s) status and location is typically required prior to committing a force to a recovery.

The above statement clearly details the combined arms concept of Marine Corps TRAP. It also differentiates TRAP from CSAR in that the former does not involve extended search for IMDC personnel, “particularly in a medium- or high-air threat environment.” Based on the absence of a dedicated PR manual for the USMC it can be inferred that PR is a collateral mission for every Marine but a dedicated mission for none. Recently a Marine Corps spokesman, interviewed for an Air Force Magazine article emphasized, “TRAP is not CSAR,” and is not intended to be conducted against enemy resistance.¹⁵

This last statement indicates that although the Marines have been very successful in PR; they are not prepared to attempt to conduct operations similar to those of Air Force CSAR. Reasons for this likely go beyond a simple issue of training or equipment. USMC doctrine focuses on combined arms combat. Every part of the MAGTF has a role in every combat operation and in the Marines there is very little “surplus” air. The TRAP recovery of Captain Scott O’Grady was well executed and demonstrated how a joint PRO can be conducted but it also occurred outside of major combat operations.

Special Operations Forces Personnel Recovery

SOF do not maintain dedicated PR forces, but they are required by DOD Directive 2310.2 to OT&E for PRO like the four services. Conduct of personnel recovery by SOF normally takes the form of SOF Recovery Operations or Unconventional Assisted Recovery (UAR). These capabilities employ the unique training and capabilities of SOF to locate and recover IMDC personnel. Because SOF operates deep behind enemy lines during the onset of hostilities in a major combat operation; they are often the only forces with the potential of being in close proximity to downed Airmen operating long of the forward line of troops (FLOT). When directed these forces will conduct a SOF Recovery Operation or UAR but these taskings come at the expense of their ability to perform their core tasks.¹⁶

Air Force rescue assets have been organized under Air Force Special Operations Command several times in the past. However, despite the similar training and high standards that both forces maintain there have been inherent complaints with this structure. SOF views PR as a collateral mission and crews commanded by AFSOC fall under the umbrella of USSOCOM. In the past this has created friction. During Operation Desert Storm, Corvette 03, an F-15E, was shot down and the crew successfully bailed out. However, because AFSOC assets were under the command of SOCCENT and not the CFACC, the Air Force could not order a rescue mission. Perception amongst aircrews was that SOCCENT personnel were planning in a vacuum and waiting for the perfect situation. During Vietnam Air Force CSAR had dedicated every asset necessary to give rescue operations every chance to succeed. Initial operations were often launched quickly. Historical studies have shown that after four hours on the ground, the chance of successfully rescuing a survivor in combat drops below 20 percent. A goal of all PRO is to bring the IMDC personnel under friendly control in less than two hours.¹⁷

Air Force Personnel Recovery Operations

*It is my duty, as a member of the Air Rescue Service, to save life and aid the injured. I will be prepared at all times to perform my assigned duties quickly and efficiently, placing these duties before personal desires and comforts.
These things I do THAT OTHERS MAY LIVE*

Brig Gen Richard Kight
Commander Air Rescue Service, 1 Dec 1946 – 8 Jul 1952

The last line of the Air Force Vision states, “We will excel as stewards of all Air Force resources in service to the American people.”¹⁸ Air Force PRO enable the service to look after its greatest single resource, the Airmen and civilians serving their country. Today, it is more likely a battlefield Airman, serving alongside the Army, will become isolated, missing or captured than it is an aircrew will be shot down by enemy fire. Army, Marines and SOF train to, and are equally

likely to execute the aforementioned PR missions, but CSAR provides some unique and useful capabilities to the fight.

Despite the apparent overlap between Air Force PRO and those of other services the Air Force's CSAR capability remains necessary and relevant. IAW DOD Directive 2310.2, the Air Force has fielded a PR capability suitable for its unique mission in joint operations. The mission of the Air Force led to the birth of CSAR beginning in World War II. Today, Air Force PRO benefits from the synergy between its specially organized, trained and equipped CSAR forces, other airborne assets and the C4ISR network which exists at the Air Operations Center (AOC). Additionally, Air Force CSAR forces train for and perform several valuable collateral missions in support of the joint force and the civil sector.

Air Force Doctrine Document 2-1.6, *Personnel Recovery Operations*, dated 1 June 2005, departs from previous Air Force doctrine regarding personnel recovery. This document preceded Joint Publication 3-50, *Joint Personnel Recovery*, by eighteen months; but captures the latter document's spirit and intent. In AFDD 2-1.6, the service shifts focus from the rescue of aircrews to the recovery of all DOD isolated personnel and others designated by the President or Secretary of Defense. Regardless of the shift in focus, "CSAR is how the Air Force accomplishes the PR task. It is the Air Force's preferred mechanism for personnel recovery in uncertain or hostile environments and denied areas."¹⁹

The Air Force's Unique Mission and the Birth of CSAR

Throughout the last century, Airmen have fought in some of the most uncertain and hostile environments. AFDD 1 states, "The US Air Force provides the nation a unique capability to project national influence anywhere in the world on very short notice. Air and space forces, through their inherent speed, range, and flexibility, can respond to national requirements by delivering precise military power to create effects where and when needed."²⁰ By its very nature

the Air Force operates deep behind enemy lines during major combat operations. Only SOF conduct operations as far from the FLOT. Also similar to SOF, the Air Force can rapidly deploy and employ its forces. It is because of the unique capabilities of airpower and mission of the Air Force that CSAR has evolved.

Even before the Air Force gained its independence the need for a dedicated recovery capability was recognized. During World War II the 8th Air Force folded assets into the British Directorate for Air-Sea Rescue. By the end of the war this combined effort could claim 5,721 lives saved.²¹ On the other side of the world, the China-Burma-India (CBI) campaign led to the first pararescuemen and witnessed the introduction of the helicopter.²² The concept of CSAR that developed during WWII and Korea was finely honed in the decade following the Korean War.

Over the jungles of Vietnam, the pilots and pararescuemen of the Aerospace Rescue and Recovery Service (ARRS) developed many of the tactics, techniques and procedures still in use by CSAR crews today. During this conflict, CSAR experienced what some have termed a “golden age.”²³ As the US pulled its last soldiers, sailors, airmen and marines out of Vietnam, the ARRS had saved 2,780 lives in combat rescues.²⁴ Their success came in large part from the training and equipment they developed to conduct the mission and organization of the Combat Search and Rescue Task Force (CSARTF).

CSAR Organization, Training and Equipment

First used during Vietnam, the CSARTF has significantly enhanced CSAR operations. Flexibility allows the Air Force to tailor the CSARTF size and complexity depending on the mission requirements and threats.²⁵ When structuring the task force, five essential PR tasks are considered: Report, locate, support, recover and reintegrate. Unique capabilities which exist outside the CSAR community but within the Air Force work synergistically to enhance CSAR operations and accomplish all five of these tasks. The sum of these capabilities is used to

enhance one or more of the three components of CSAR: Command, control and coordination node; the recovery forces; and/or the isolated personnel.

Inside an AOC the Air Force component will establish its Personnel Recovery Coordination Center to command, control and coordinate PRO. During the onset of major combat operations the JFACC is usually named the supported commander for all PR and the PRCC may be designated the JPRC. This responsibility normally lies with the Air Force because Airmen will likely represent the preponderance of isolated personnel early in a conventional war. Additionally, the AOC permits rapid collaboration through its immense C4ISR network. CSAR specialists working within the PRCC integrate PR considerations into all future operations and ATOs being produced by the COMAFFOR/JFACC's staffs. When a PR incident occurs, they use their close proximity to intelligence, space and fighter liaisons to develop personal relationships. These relationships assist in reducing the time to report and locate isolated personnel. This in turn shortens the ever-important chain of events that leads to the CSARTF supporting and ultimately recovering and reintegrating an isolated person.

When executing a CSAR mission, the CSARTF has two elements: dedicated PRO assets and supplementary assets.²⁶ Unique TTPs and training between these two elements allows them to execute missions in higher risk environments than other services' PR forces. Dedicated assets currently fielded by the Air Force consist of the HH-60G Pavehawk, HC-130P King, and the GUARDIAN ANGEL weapon system. Unlike the conventional UH-60 and C-130 aircraft, these platforms possess electronics that allow them to locate isolated personnel (especially downed aircrew operating their emergency radio) and coordinate real time with the PRCC. In addition to the complex communications equipment both aircraft are air refuelable. This capability gives

them nearly unlimited range and flexibility. Finally, the HH-60 has armor and weapons not found on its conventional counterpart.

The GUARDIAN ANGEL weapon system consists of specially trained Air Force personnel that assist in the execution of all five PR tasks. Combat Rescue Officers and senior Pararescuemen work in the PRCC and JPRC to coordinate the rescue of isolated personnel. Survival, Evasion, Resistance and Escape (SERE) specialists provide initial training to Airmen that may find themselves isolated during combat and conduct refresher training for aircrew to ensure they are trained in the most current CSAR TTPs and equipment fielded. During a PRO, PJs conduct the actual recovery of the isolated personnel. In the case of an Air Force aircrew shot down deep behind enemy lines, it may not be feasible to execute a rescue mission immediately. In those instances a PJ can be inserted by an HC-130 or some other covert method. Once on the ground the isolated personnel is located and supported by the PJ who can provide both medical assistance and combat protection for the vulnerable aviator.

Assets which augment the CSARTF during a PRO can come from the Air Force, sister services or allied nations. Some of these include C2 aircraft such as the AWACS, both manned and unmanned ISR platforms, and tactical aircraft to provide rescue escort (RESCORT). In the Air Force every tactical fighter squadron is tasked to train to its supporting role in CSAR. Exercises like RED FLAG provide the opportunity for front-line units to execute these operations in a realistic environment. None of the sister services come close to this level of integration when training to conduct *Combat Search and Rescue*. Figure 1 shows how a CSARTF might operate. *Note that only the Air Force maintains all the depicted assets and trains with them regularly to conduct PRO.

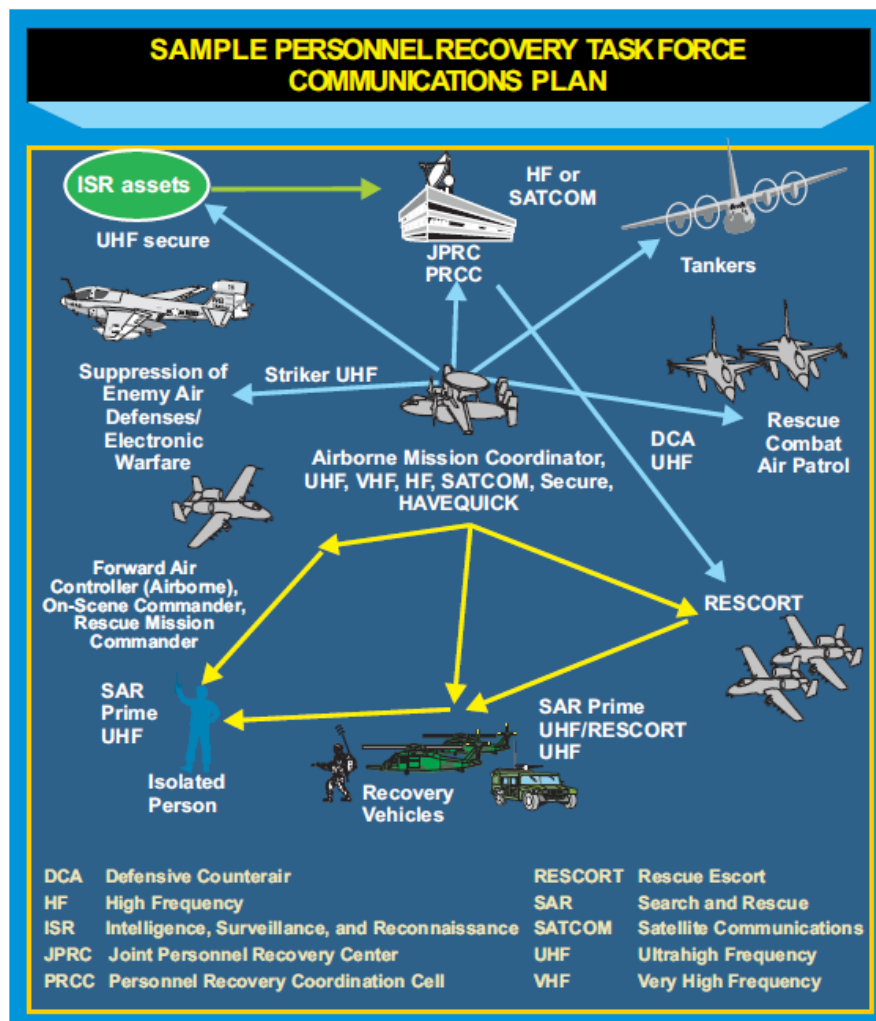


Figure 1. Sample CSARTF Command and Control Plan

CSARs many Collateral Missions

The CSAR mission has vacillated between several MAJCOMs. More than once the mission and crews have been assigned to AFSOC. Today, Air Force CSAR is managed by ACC. However, because SOF and CSAR share many similarities; the two communities still work and train alongside one another throughout their careers. This allows them to build important relationships which become useful during contingency operations or when conducting one of their many collateral missions.

In a 2005 Maxwell Paper titled, *USAF Combat Search and Rescue: Untapped Combat Power*, Colonel Lee dePalo proposes using Air Force CSAR for infiltration and exfiltration of SOFs in support of the continued war on terrorism.²⁷ CSAR forces now provide support to the Joint Special Operations Task Forces in both Afghanistan and Iraq. In addition to support of SOF, CSAR crews are now conducting casualty evacuation (CASEVAC) in support of the joint force. This is especially valuable when casualties are located in areas that are higher risk due to enemy fire. The armor and offensive capability of the HH-60G and PJs on-board mitigate some threats that would face an Army UH-60.²⁸

AFDD 2-1.6 summarizes many of collateral missions of Air Force PRO:

The primary mission of Air Force PRO is to utilize a combination of specially trained Airmen and unique equipment to recover any isolated personnel. By virtue of the inherent capabilities of PRO forces, they can accomplish other collateral missions. Historically, these collateral missions have included: casualty evacuation, civil SAR, counter-drug activities, emergency aeromedical evacuation, homeland security, humanitarian relief, international aid, non-combatant evacuation operations, support for National Aeronautics and Space Administration flight operations, infiltration and exfiltration of personnel in support of air component commander missions, and special operations missions, including PR of special operations forces.²⁹

Air Force CSAR provides much more to the US than simply the capability to rescue Airmen shot down behind enemy lines. As stated in the 2010 Air Force Posture, “Personnel recovery remains an important commitment the Air Force makes to the Joint force.”³⁰ Sergeant Mersman’s story at the beginning of this paper demonstrates just how far the rescue professionals of the Air Force will go to ensure that every American makes it home, no matter the circumstances. Why this contingency mission is so important, despite the risk to lives and diversion of assets, is a multi-faceted answer.

Impact of Isolated Personnel

To me it has always been a source of wonder and pride that the most potent and destructive military force ever known should create a special service dedicated to saving a life. Its concept is typically American—we hold human lives to be the most precious commodity on earth.

Brigadier General Thomas J. Dubrose
Commander, Air Rescue Service, 1952 -1959

Why bother fielding a unique CSAR capability? Are PR operations even important? There are many well-educated people that believe CSAR is not mission essential. Others feel the US emphasis on rescue operations is misguided. Speaking at the 2001 DOD Personnel Recovery Conference, AFSOC Commander Lt Gen Maxwell Bailey said, “CSAR is an ancillary capability. It does not help CINCs win wars.”³¹ If you were to freeze time and look at any given moment of a major regional conflict, General Bailey’s comments could prove quite accurate. However, if viewed over a longer period the benefits of PR and specifically the CSAR capability can be seen. The “Why conduct CSAR?” question has been researched and reported on by numerous people in the past. Instead of “recreating the wheel” to answer this question, I will draw heavily upon these previous works. Any desire to further study this topic would be better spent reading their papers. In his thesis for the School of Advanced Airpower Studies, Billy Thompson outlines four

principles which guide the DOD's decision to place a high value on PR: 1) the intrinsic value of human life; 2) the cost prohibitive nature of losing such a valuable resource; 3) the desire to deny the enemy an opportunity to collect intelligence and use our personnel for propaganda; and 4) the positive impact that PR has on morale.³² A fifth principle is not regularly discussed in conversations on CSAR but deserves consideration; the geopolitical ramifications of losing a service member to an antagonistic nation or non-state actor. An informed appreciation of the CSAR mission's multi-faceted value strengthens the argument for a new Air Force CSAR platform.

Sanctity of Life

Americans put a high value on not only the sanctity of human life but on the quality of that life as well. In an article which argues that the US places too much emphasis on the recovery of POWs and hostages, Professor Dominic Tierney recently wrote, "In many respects the US concern for captive nationals is profoundly moral. Americans care about their fellow citizens when they are at their most vulnerable."³³ Not all nations feel the same way about their soldiers. During World War II the Soviets depicted POWs as traitors and expected soldiers to fight to the death. Perhaps influenced by their own mistreatment of prisoners, Japanese sailors and airmen that were in the water often swam away from potential rescuers. In the Vietnam War, the North Vietnamese paid little attention to the fate of their captured men and seemed to resent having to repatriate their forces.³⁴ Why then are Americans different?

As a nation, the United States is idealistic, professing a creed of liberalism fixed in the ideas of John Locke: freedom, individualism, democracy, limited government, the rule of law and free expression.³⁵ The plight of an isolated US soldier tugs at America's heartstrings. This has led many to believe that Americans are casualty averse. Following the 1993 incident in Somalia, which led to 18 dead US Army Rangers and televised footage of the body of an

American soldier being dragged through the streets, sociologist Charles Moskos documented a condition that appears to have developed which he calls the Somalia Syndrome. The result of this circumstance is an effort to control the image being portrayed to the American public. As a result of the debacle in Mogadishu, an increased value has been placed on PR efforts with an even greater expectation that these missions will be successful.³⁶ The desired result is to preclude negative perceptions in the public; which civilian policy makers believe hinders coercive diplomacy and limits future military options. In contrast to Moskos' hypothesis, Eric Larson concludes the US is no more casualty-averse than it was in World War II. He states, "Americans have always had a high regard for human life, but they balance that regard within a continuous cost-benefit analysis which ultimately determines support."³⁷ Regardless of where the truth lies in the debate over casualty-aversion, certain perceptions and expectations exist. "The perception is that the US will go to great lengths to minimize casualties, perhaps at the expense of prosecuting the mission. The expectation of Americans is that when leaders commit US forces to battle, they do so when it is in the interest of the US and they articulate these interests to the public."³⁸ When America goes to war it brings with it a strongly rooted sense of morality and value for human life. However, there is also a monetary value to personnel recovery.

Monetary Value

The US is trying to climb out of an economic recession and the current administration needs money to implement new domestic policies. Therefore, every dollar saved is already spent somewhere else. Successful PR missions ensure the taxpayer continues to see return on the investment it has made in a valuable asset: its soldiers, sailors and airmen. The long war against terrorism that lies ahead is extolling a huge sum of money from the DOD's budget. Each service has been required to cut big ticket items in order to pay for the war. Currently it costs \$5.71M to train an F-15C pilot. This figure does nothing to account for the experience that a crew might

already have and a new crew will have to accrue over time which is priceless during combat. In comparison, the price to train an HH-60 rescue crew is \$3.22M. Assuming a crew of two pilots, two flight engineers and two pararescuemen, the replacement training cost is still close to one-half the cost for a single F-15C pilot.³⁹ If a capability exists to retrieve our expensively trained airmen then it makes sense since we do so from a moral standpoint as well as a cost-benefit analysis. However, military and civilian leaders must also consider the opportunity a captured airman presents an enemy in terms of potential intelligence and exploitation for propaganda.

Intelligence/Propaganda

The ability to rescue and repatriate airmen before they are exploited or information is extracted from them is an important part of why we continue to conduct CSAR. History has shown that public support for military operations will suffer after captured Americans are exploited on television or in pictures. During the 1993 debacle in Somalia, images of POW Michael Durant incited vitriol in the American public. In response President Clinton ordered all US troops to withdraw from Somalia. This order was given on October 7, 1993; one week before Durant was released.⁴⁰ Most recently the internet has been saturated with images of captive westerners being held by Al Qaeda and Taliban fighters for the purpose of propaganda. In Somalia and Afghanistan the enemy did not sign the Geneva Conventions Relative to the Treatment of Prisoners of War. However, even nations that have signed the convention violate the protections it grants captives. American service members have been exploited during every major conflict of the twentieth century.

Vietnam veterans have a tough time forgetting Jane Fonda's visit to the Hanoi Hilton during their internment. Furthermore, the threat of a downed aviator divulging important information while under duress is credible and information possessed by our aircrews could be used to help mitigate the United States' combat advantage. Gender equality in combat aviation

was the right move. Female aviators have been permitted to fly combat aircraft since 1993. A captive female will have an even greater psychological affect on the American public as evidenced by the amount of press Jessica Lynch received when she went missing. In 2003, Capt Kim Campbell's A-10 Thunderbolt II was hit by a shoulder fired surface to air missile. Due to redundant flight controls and expert airmanship she was able to recover her aircraft. The next woman may not be so lucky. However, as more women fly combat aircraft the probability a female aviator will be captured, interrogated and exploited increases. In order to preclude the domestic blowback from such an incident the US must be prepared to rescue its aviators as quickly as possible.

The home front is not the only place that support and opinion may suffer if isolated personnel aren't recovered. Our servicemen and women trust that the US will do everything within its considerable power to bring them home.

Morale of Troops

There is a line in the recently published Airman's Creed that reads: "I am an American Airman. Wingman, leader, warrior. I will never leave an Airman behind. I will never falter and I will not fail."⁴¹ By codifying the concept that we will never leave a man behind, the Air Force has joined the Navy SEALs, Marine Corps and Army in expressing our commitment to bringing everyone home. Stories like that of Sgt Mersman's recovery, which introduced this paper, depict precisely the type of dedication our servicemen and women have come to expect. This is not a new or novel concept. In the history of the 1st Emergency Rescue Squadron, a World War II unit, it is written, "the very presence of an Emergency Rescue Squadron promotes the realization that help and protection are there, should the exigency arise. This will give to the airmen an additional measure of confidence, so vital to mental composure, for no man is unafraid."⁴²

Fear is a natural reaction to war and the first decade of the 21st century has witnessed continuous fighting. Despite the apprehension that accompanies war the US continues to maintain an all-volunteer military force. A powerful reason many people choose to remain in the US Armed Forces is the camaraderie and sense of obligation they feel toward their peers. By maintaining a dedicated and well-trained CSAR force a strong message is sent to these troops as well. One that says their national leadership, is willing to do everything they can to bring them home. When speaking on personnel recovery, General Hugh Shelton once said, “it’s the right thing to do...It’s good for morale. By pledging to put every effort into recovering our highly training soldiers, sailors, airmen and marines, we send a powerful signal about their importance and help sustain their spirit under the stress of combat.”⁴³ Morale, money, fear of exploitation and the sanctity of life aren’t the only reasons to train and equip forces for PR. There are international repercussions that stem from the capture of downed aircrew.

Geopolitical Ramifications

Incidents involving downed aircrew have had a significant impact on politics even during times of relative peace and stability. On May 1, 1960 the U-2 spyplane piloted by Francis Gary Powers was shot down by the Soviet Union inside their territorial border. Without confirmation of the pilot’s condition the US assumed that Powers had blacked out due to hypoxia and drifted into Soviet airspace. Once it was revealed that the pilot of an American spyplane was not only alive but in Soviet custody a maelstrom of political repercussions ensued. Ultimately the event led to the Soviets walking away from a summit with the US in Paris that was set to take place the same month.⁴⁴ In the past decade the emergency landing of a Navy EP-3 on Hainan Island increased tensions between the US and China.

In both incidents the ability to recover the aircrew prior to their capture would have significantly changed the political calculus. I am not suggesting that a recovery would have been

operationally feasible in either case although I could argue the potential of the latter. What I am saying is if there were an incident/accident in the future near or over territory which is politically sensitive the best chance the crew has for a quick recovery is by a well-equipped, dedicated rescue force. This is why the US Air Force conducts CSAR.

Recommendations and Conclusion

Airpower provides our civilian masters a rapid and flexible response capability.

Operations Allied Force and Desert Fox are two examples of airpower being used exclusively to secure desired US and allied concessions from belligerents. The ability to bring aircrew home before they fall into enemy hands is part of an American way of war.⁴⁵ Because they often conduct missions deep behind enemy lines the mission to report, locate, support, recover and reintegrate these isolated persons is complex. Air Force CSAR is the recognized expert in PR operations. I offer only two recommendations on how to proceed:

1. Maintain the status quo with respect to the structure of Joint Personnel Recovery,
2. Field a replacement aircraft for the HH-60G, a program commonly referred to as CSAR-X.

Maintain the Status Quo

The Department of Defense should leave the current personnel recovery apparatus in place. In accordance with Title 10 and DODD 2310.2, each service has organized, trained and equipped its forces to conduct PR operations in a manner befitting their unique operational environment. While there is clearly some overlap in capabilities and equipment amongst each service's PR construct, this provides flexibility not redundancy. When diplomatic and civil options cannot bring someone home; the JPRC construct can provide military and civilian leaders unique alternatives by utilizing each service's forces. Only Air Force CSAR regularly trains to conduct PRO on-the-fly, in environments ranging from permissive to high risk.

Another reason to maintain the status quo is the cost-benefit involved with a change to the PR force. President Obama is trying to fund several domestic initiatives. These programs cost money; something which the US is running low on. In a time of recession everyone is expected to save money; even the DoD. If the alternative to the Air Force maintaining its indigenous CSAR capability is to stand up some sort of Joint PR Task Force, or bolster another service's equipment and personnel in order to conduct the CSAR mission, now is not the time. The infrastructure required to satisfactorily accomplish these tasks doesn't exist and will require both time and money; commodities that are scarce today.

Field the CSAR-X to replace the HH-60G

Once the decision to leave the current PR force structure as it is, the need to field a replacement for the HH-60G is apparent. Current Pavehawks are past their service lives and underpowered for operations in the mountainous terrain of Afghanistan. CSAR-X does not represent a single service/single purpose solution to personnel recovery. It is a unique platform which enables CSAR crews to perform several invaluable missions.

In the post Cold War era the work done by the Air Force's CSAR aircraft, aircrew and GUARDIAN ANGELS can hardly be termed single mission. Collectively they train for and perform a bevy of collateral missions. Additionally, their specialized training makes them indispensable during times of natural disaster domestically. Air Force CSAR leads the service in short-notice, time sensitive PR operations. It is often the "go-to guy" when another service cannot recover one of their own.

Final Thoughts

The Chief of Staff, General Norton Schwartz, has committed the Air Force to being "all in" the long war on terrorism. Current overseas contingency operations led the Air Force to

recently change the core function of CSAR to PR. This change aligns the service with Joint doctrine and demonstrates its understanding of the complex environment faced on an asymmetric battlefield, fighting an irregular war. Aircrew flying and fighting in today's war do so in a permissive environment with minimal threats.

There are some people who believe CSAR-X should have been cancelled and the CSAR mission rolled into the other services because the risks to aircrew have changed. The irregular wars we are fighting promise to drag out for many more years. However, the need to be prepared for other contingencies is understood by everyone including Secretary Gates. In the 2008 National Defense Strategy he states:

*The United States, our allies, and our partners face a spectrum of challenges, including violent transnational extremist networks, hostile states armed with weapons of mass destruction, rising regional powers, emerging space and cyber threats, natural and pandemic disasters, and a growing competition for resources. The Department of Defense must respond to these challenges while anticipating and preparing for those of tomorrow.*⁴⁶

What tomorrow's challenge might be is unknown. Dr. Colin Gray writes, "the more one worries about future warfare, the more one is drawn to the view that history is by far the best guide available."⁴⁷ History indicates the US is unlikely to remain the sole superpower and major wars between states will happen again. As Russia and China endeavor to expand their sphere of influence, their interests will almost certainly conflict with those of the US and her allies. In the Middle East, Iran has paid for advanced surface-to-air missile systems that pose a considerable threat to American airpower. There is also North Korea and its extensive integrated air defense system (IADS). If the US goes to war with any of these countries it is Air Force CSAR that stands the best chance of bringing airmen shot down behind enemy lines home.

America's commitment to bringing everyone home is codified in the creed of each military service and well documented throughout its short but violent history. In a country

defended by an all-volunteer force, the ability to retain current troops and recruit future ones constitutes an invaluable strategic center of gravity. CSAR helps to protect our center of gravity.

Endnotes

¹ Tom Bowman, "Missions Leave No Soldier Behind in Afghanistan," *National Public Radio*, 9 January 2009, <http://www.npr.org/templates/story/story.php?storyId=99161763>.

² Maj Ernesto M. DiVittorio (Author), personal account of events.

³ Maj Victor Pereira (66th Expeditionary Rescue Squadron), interview by author, 12 December 2009.

⁴ TSgt Shane A. Cuomo, "Career fields meld expertise in recovery missions," *US Air Force News Service*, 29 November 2006, <http://www.af.mil/news/story.asp?id=123033078>.

⁵ Maj Ernesto M. DiVittorio (Author), personal account of events.

⁶ DOD Directive (DODD) 2310.2, *Personnel Recovery*, 22 December 2000, 10.

⁷ Air Force Doctrine Document (AFDD) 2-1.6, *Personnel Recovery Operations*, 1 June 2005, 5.

⁸ DOD Directive (DODD) 2310.2, *Personnel Recovery*, 22 December 2000, 3.

⁹ DPMO Website, Personnel Recovery Definition, http://www.dtic.mil/dpmo/personnel_recovery/prp_factsheet01.pdf.

¹⁰ Secretary of Defense Robert M. Gates, *Defense Budget Recommendation Statement*, 6 April 2009, <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1341>.

¹¹ David Ahern, *Statement before the House Armed Services Committee*, 20 May 2009, 8.

¹² J.D. Leipold, "Personnel Recovery training to begin for all soldiers," *US Army News Service*, 26 September 2006, http://www.armywell-being.org/skins/wblo/display.aspx?ModuleID=f6c229ca-03ae-4c81-8d0a-81a5a0c208f9&Action=display_user_object&CategoryID=5b03cbe2-1f7c-4d7f-bc2a-0c5344090f60&ObjectID=8c16653e-aedd-4b4f-a22e-a0235a6d9773&AllowSSL=true.

¹³ Otto Kreisher, "Is CSAR Really Nothing "Special"?," *Air Force Magazine*, November 2009, 48.

¹⁴ Ibid, 48.

¹⁵ Ibid, 48.

¹⁶ Joint Publication (JPUB) 3-50, *Personnel Recovery*, 5 January 2007, G-1.

¹⁷ AFDD 2-1.6, *Personnel Recovery Operations*, 1 June 2005, 8.

¹⁸ Air Force Vision, <http://www.af.mil/information/factsheets/factsheet.asp?id=2>.

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- ¹⁹ AFDD 2-1.6, *Personnel Recovery Operations*, 1 June 2005, 3.
- ²⁰ AFDD 1, *Air Force Basic Doctrine*, 17 November 2003, ix.
- ²¹ Maj Michael J. Martini, "Air Rescue in the US Air Force: A Historical Perspective," Research Paper no. 87-1660, (Maxwell AFB, AL: Air Command and Staff College, April 1987), 35-36.
- ²² Billy D. Thompson, "For Valor or Value: An Examination of Personnel Recovery Operations," (Maxwell AFB, AL: School of Advanced Airpower Studies, 2001), 12.
- ²³ Ibid, 5.
- ²⁴ Maj Michael J. Martini, "Air Rescue in the US Air Force: A Historical Perspective," Research Paper no. 87-1660, (Maxwell AFB, AL: Air Command and Staff College, April 1987), 35-36.
- ²⁵ AFDD 2-1.6, *Personnel Recovery Operations*, 1 June 2005, 12.
- ²⁶ Ibid, 13.
- ²⁷ Lee K. dePalo, *USAF Combat Search and Rescue: Untapped Combat Power*, Maxwell Paper no. 35, (Maxwell AFB, AL: Air University Press, September 2005), 30-32.
- ²⁸ "Rescue Crews fly into hostile zones to save lives," Air Force News Service, 30 March 2010, http://www.af.mil/news/story_print.asp?id=123197419.
- ²⁹ AFDD 2-1.6, *Personnel Recovery Operations*, 1 June 2005, 3.
- ³⁰ United States Air Force, *2010 United States Air Force Posture Statement*, 9 February 2010, 11.
- ³¹ Billy D. Thompson, "For Valor or Value: An Examination of Personnel Recovery Operations," (Maxwell AFB, AL: School of Advanced Airpower Studies, 2001), 55.
- ³² Ibid, 41.
- ³³ Dominic Tierney, "Prisoner Dilemmas: The American Obsession with POWs and Hostages," *Orbis*, Winter 2010, 138.
- ³⁴ Ibid, 133.
- ³⁵ Ibid, 134.
- ³⁶ Billy D. Thompson, "For Valor or Value: An Examination of Personnel Recovery Operations," (Maxwell AFB, AL: School of Advanced Airpower Studies, 2001), 44.
- ³⁷ Ibid, 46.
- ³⁸ Ibid, 47.
- ³⁹ Cost to train aircrew based on FY09 Cost Factor Tables: A18-1a (2x Pararescuemen), A-34-2 (2x HH-60 Pilot & 1x F-15C Pilot) and A-35 (1x HH-60 FE and 1x HH-60 Aerial Gunner); <https://www.my.af.mil/gcss-af/USAF/ep/browse.do?programId=t6925EC2D4BC30FB5E044080020E329A9>.
- ⁴⁰ R. Snyder, Operation Restore Hope/The Battle of Mogadishu, <http://novaonline.nvcc.edu/eli/evans/his135/Events/Somalia93/Somalia93.html>.
- ⁴¹ United States Air Force, *The Airman's Creed*
- ⁴² Billy D. Thompson, "For Valor or Value: An Examination of Personnel Recovery Operations," (Maxwell AFB, AL: School of Advanced Airpower Studies, 2001), 51.
- ⁴³ Ibid, 51.
- ⁴⁴ Department of State, "U-2 Overflights and the Capture of Francis Gary Powers, 1960;" <http://www.state.gov/r/pa/ho/time/lw/107188.htm>.
- ⁴⁵ LCDR Christopher C. Dunphy, "Combat Search and Rescue: An American Way of War." (Quantico, VA: Marine Corps Command and Staff College, 2001), 54.
- ⁴⁶ Department of Defense, *National Defense Strategy*, p. 1
- ⁴⁷ Colin S. Gray, *Another Bloody Century: Future Warfare* (London, UK: Orion Books, 2005), 396.

Bibliography

Ahern, David G., Director, Portfolio Systems Acquisition, Office of the Under Secretary of Defense, Address. House Armed Services Committee, Subcommittee on Air and Land Forces, Washington DC, 20 May 2009.

Air Force Doctrine Document (AFDD) 1. *Air Force Basic Doctrine*, 17 November 2003.

AFDD 2-1.6. *Personnel Recovery Operations*, 1 June 2005.

Bissonnette, Stephen H. *Joint CSAR: Does the Current Organization Provide the Joint Task Force with the Most Effective Tools?* Thesis, Newport, R.I.: U.S. Naval War College, 2002.

Blumentritt, John W. *PLAYING DEFENSE AND OFFENSE: EMPLOYING RESCUE RESOURCES AS OFFENSIVE WEAPONS*. Thesis, Maxwell AFB, AL: School of Advanced Airpower Studies, 1999.

Bowman, Tom. "Missions Leave No Soldier Behind In Afghanistan." *National Public Radio*. January 9, 2009. <http://www.npr.org/templates/story/story.php?storyId=99161763> (accessed December 12, 2009).

Cuomo, TSgt Shane A. "Career fields meld expertise in recovery missions." *U.S. Air Force*. November 29, 2006. <http://www.af.mil/news/story.asp?id=123033078> (accessed December 12, 2009).

dePalo, Col Lee K. "USAF Combat Search and Rescue: Untapped Combat Power." Maxwell Paper no. 35. Maxwell AFB, AL: Air University Press, September 2005.

Department of Defense (DOD) Directive 2310.2. *Personnel Recovery*, 22 December 2000.

Donley, Michael B. and Schwartz, General Norton A. "Fiscal Year 2010 Air Force Posture Statement." Presentation. Committee on Appropriations, Subcommittee on Defense, Washington DC, 3 June 2009.

Dorl, Thomas R. *Personnel Recovery and the DOTMLPF Changes Needed for the Twenty-First Century*. Thesis, Joint Advanced Warfighting School, Norfolk, VA: Joint Forces Staff College, 2005.

Dunphy, LCDR Christopher C. "Combat Search and Rescue: An American Way of War." Quantico, VA: Marine Corps Command and Staff College, 2001.

Ebert, Major Douglas A., "Combat Search and Rescue of Distressed Aircrew in the Year 2010." Unpublished Research Paper, Air Command and Staff College, Maxwell Air Force Base, Alabama: May 1995.

Fabey, Michael. "Congressional desires, DOD needs, turf wars clipped CSAR-X." *Aerospace Daily & Defense Report*, 4 June 2008,
http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=defense&id=news/2CSAR060408.xml.

Fortunato, Paul A. *Tactical Recovery of Aircraft and Personnel: A Relevant Capability for a Moral Obligation*. Thesis, Quantico, VA: U.S. Marine Corps Command and Staff College, 2002.

Gates, Robert M. *Defense Budget Recommendation Statement*, 6 April 2009, HYPERLINK "<http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1341>"
<http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1341> .

Gates, Robert M. and Mullen, Adm Mike, "SECDEF/CJCS House Armed Service Committee Testimony regarding FY 2010 Budget Request," Testimony. House Armed Services Committee, 111th Cong., 1st sess., 13 May 2009, HYPERLINK "<http://www.jcs.mil/speech.aspx?ID=1181>"
<http://www.jcs.mil/speech.aspx?ID=1181> .

Joint Publication (JP) 3-50, *Personnel Recovery*, 5 January 2007.

Leahy, Timothy J. *The Future of USAF Combat Search and Rescue*. Thesis, Maxwell AFB, AL: School of Advanced Airpower Studies, 1998.

Leipold, J.D. "Personnel recovery training to begin for all Soldiers." *Army News Service*, 26 September 2006. http://www.armywell-being.org/skins/wblo/display.aspx?ModuleID=f6c229ca-03ae-4c81-8d0a-81a5a0c208f9&Action=display_user_object&CategoryID=5b03cbe2-1f7c-4d7f-bc2a-0c5344090f60&ObjectID=8c16653e-aedd-4b4f-a22e-a0235a6d9773&AllowSSL=true.

Looney, Lt Col David A. *Current Air Force Combat Search and Rescue Challenges*. Thesis, Maxwell AFB, AL: Air War College, 2009.

Martini, Maj Michael J. *Air Rescue in the US Air Force: A Historical Perspective*, Thesis, Maxwell AFB, AL: Air Command and Staff College, 1987.

Nelson, Eric M. *Combat Search and Rescue: Building a Joint Capability to Meet the Combatant Commander's Requirements*. Thesis, Carlisle Barracks, Carlisle, PA: U.S. Army War College, 2004.

Thompson, Billy D. *Valor or Value: An Examination of Personnel Recovery Operations*. Thesis, Maxwell AFB, AL: School of Advanced Airpower Studies, 2001.