FlightPlan

A VOLUNTEER NEWSLETTER BY VOLUNTEERS

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EVERGREEN AVIATION & SPACE MUSEUM

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FROM THE EDITOR

" That Others May Live"

BILL KOLB

FLIGHTPLAN EDITOR, MONDAY DOCENT

Few promises define the spirit of American military aviation more deeply than the solemn commitment to never leave a comrade behind. From the rugged flying boats of World War II to today's high-tech rescue helicopters and unmanned systems, the U.S. military's Combat Search and Rescue (CSAR) and Personnel Recovery forces have embodied this ethos for more than eight decades.

In this edition, we explore the organizations, history, aircraft, and people who make that promise a reality. We begin with an overview of the current U.S. military CSAR structure, the complex web of Air Force, Army, Navy, and joint special operations units that work together when an airman or soldier is isolated in hostile territory. We then trace the evolution of these missions from the Korean War through Vietnam, the Gulf War, and the conflicts in Afghanistan, Iraq and most recently Iran, highlighting how tactics, technology, and inter-service coordination have advanced over time.

A recent example of these efforts is the April 2026 rescue of the F-15E crew in Iran, one of the largest and most complex combat search-and-rescue operations in modern U.S. history. We also look through the eyes of a Pararescueman (PJ), and gain an intimate perspective on what it takes to reach, treat, and extract isolated personnel under fire.

Finally, we turn to the remarkable aircraft in Evergreen Aviation & Space Museum's collection that have played, or continue to play, vital roles in search and rescue. From the legendary PBY Catalina and the A-1 Skyraider to the A-10 Warthog, UH-1 Huey, and RQ-4 Global Hawk, these aircraft represent the evolution of a mission that remains as critical today as it was in 1945.

GUIDELINES FOR SUBMITTING ARTICLES TO FLIGHTPLAN

1. The FlightPlan (FP) is published on the 1st of each month
2. Stories for the next issue can be filed up to the 10th of the prior month
3. Articles should be associated with an artifact at the Museum
4. Sources for specific information in the article should be provided
5. Stories should be approximately 500 words long
6. If appropriate, include one or two photos for publication with the article
7. Include name, day, and title at the bottom of each article submitted
8. Email articles to: **flightplan@evergreenmuseum.org**
9. Feedback is encouraged; submit to **flightplan@evergreenmuseum.org**

CAPTAINS CORNER

JERRY SAUTER

TUESDAY DAY CAPTAIN

June 2026 BOC meeting. Topics are presented below; to avoid a multi-page report, anyone with further questions regarding the discussions can contact their Day Captain.

Terry Howell – Chief Operating Officer

- Planning for the August 14-16 air show is ongoing. With the Blue Angels coming, more amenities are planned. There will be food trucks, more widely spaced than previously, distilleries will also have booths. There will be a beer garden. The entry fee will be per person rather than per car. Docent help will be needed. Docents who work 4 hours or more that weekend will have free entry for themselves and their families. Docents who do not work will have free entry but will be charged for family members. There will also be a large tent for retail sales.
- The Blue Angels will perform a complete practice on Thursday, August 13, in the late afternoon, Greg Wooldridge, museum board member and three-time boss of the Blue Angels, will narrate the performance, explaining the various moves and reasons for them.
- A reminder that covered drinks and selfie sticks are now allowed on the museum floor.
- A reminder that the Facilities Discrepancy form should the given to Terry Howell and that Exhibits Change form should go to Bill Veith.
- The XF-11 model aircraft has been removed from the floor to repair a propeller that was broken.
- A reminder to just cover the penny pressing machines if they are out of order and to notify the office.
- The "Aviator" movie diorama has been moved off the floor for cleaning and upgrading. It was recommended that it be returned to the Hercules floor since many tour guides use it in the presentations.
- The entry code log at the Titan display is no longer needed.
- The recent change to docent vests were optional has been rescinded to avoid confusion. Vests are recommended.
- Summer camps will need some docent assistance. More details will be forthcoming.
- There will be more after-hours tours. The ones held recently have been well-received and profitable.

Training Officer's Report

- Jerry Sauter reported that 4 candidates attended the June 30 orientation session.
- Training Officer Ron Williamson is recovering from surgery.
- Donn Anderson presented the orientation, with the assistance of Jerry Sauter and Andy Meyer.

Old Business:

- A training syllabus for new docent officers will be prepared. Further discussion postponed until August.

New Business:

- A new logo is being designed for the museum name change. New signage and sales items are being manufactured for the Gift Store.

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CAPTAINS CORNER

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- The proposed August 1 date for launching the new museum name has been pushed back to around the time of the air show.
- A discussion about allowing weapons/firearms into the museum took place. It was pointed out that current Oregon law allows visitors to carry firearms, even on private property. It was recommended that more prominent signs banning firearms be posted to discourage bringing them into our buildings.
- An update of the binder listing the museum's artifacts on display is needed. A committee will be formed to complete that update. Volunteers are needed.

Upcoming Events

- No special events are planned for July 4th. Flags will be placed along the entryway.
- There will be a car show on July 11. Approximately 32 cars will be displayed in both buildings.

The meeting was adjourned at 11:13 am.

MONTHLY THEMES

JULY.....SEARCH & RESCUE
AUGUST .....AVIATION: INTERWAR PERIOD
SEPTEMBER.....SPACE FLIGHT: EARLY MERCURY THROUGH GEMINI
OCTOBER.....AVIATION: WWII
NOVEMBER.....AVIATION: POST-WWII THROUGH KOREA
DECEMBER .....SPACE FLIGHT: APOLLO

“That Others May Live”
The U.S. Military’s Combat Search and Rescue Forces

BILL KOLB
MONDAY DOCENT

Summary

*The U.S. military maintains a sophisticated, multi-service personnel recovery system centered on the U.S. Air Force’s dedicated combat search and rescue (CSAR) units. Supported by elite Pararescuemen (PJs), A-10 “Sandy” aircraft, HH-60W Jolly Green II helicopters, and the Army’s 160th SOAR Night Stalkers, these organizations stand ready to locate and extract downed aircrews and isolated personnel from hostile environments. Their motto, **“These things we do, that others may live”** reflects a solemn commitment that has saved thousands of lives across decades of conflict.*

Joint Personnel Recovery Agency (JPRA)

The foundation of modern U.S. personnel recovery lies with the Joint Personnel Recovery Agency (JPRA). Established in the wake of the failed 1980 Iran hostage rescue (Operation Eagle Claw), JPRA develops doctrine, policy, and training standards for the entire Department of Defense. It operates the Personnel Recovery Academy, providing rigorous Survival, Evasion, Resistance, and Escape (SERE) training to high-risk personnel across all services.

U.S. Air Force

The U.S. Air Force serves as the primary service for combat search and rescue. Two major rescue groups form the core of this capability: the 563rd Rescue Group at Davis-Monthan Air Force Base and the 347th Rescue Group at Moody Air Force Base. These units operate the advanced HH-60W Jolly Green II combat rescue helicopter, equipped with defensive systems, forward-looking infrared, in-flight refueling capability, and enhanced medical suites. The Jolly Green II is designed to penetrate contested airspace day or night to recover isolated personnel.

Closely integrated with the rescue helicopters are the A-10C Thunderbolt II “Sandy” aircraft of the 23rd Wing at Moody Air Force Base. These rugged, heavily armored jets provide RESCAP (rescue combat air patrol), using their powerful 30 mm GAU-8 cannon, rockets, and precision munitions to suppress enemy forces threatening rescue operations. The “Sandy” mission, inherited from the A-1 Skyraider in Vietnam, remains one of the most dangerous and respected roles in the Air Force.

Air Force Pararescuemen (PJs)

At the heart of every rescue mission are the Air Force Pararescuemen (PJs). These elite special operators undergo one of the longest and most demanding training pipelines in the U.S. military — nearly two years. Qualified as combat medics, free-fall parachutists, combat divers, and mountain rescue specialists, PJs are inserted into hostile areas to provide advanced trauma care and orchestrate extraction under fire.

U.S. Army

The U.S. Army contributes critical high-risk support through the 160th Special Operations Aviation Regiment (Night Stalkers). Flying MH-47 Chinooks, MH-60 Black Hawks, and MH-6/AH-6 Little Birds, the Night Stalkers specialize in night operations and deep penetration missions. They frequently support Delta Force and other special operations units during complex recoveries in denied territory.

The Navy and Marine Corps maintain additional capabilities with MH-60S Seahawk helicopters equipped with rescue swimmers and DEVGRU (SEAL Team Six) operators who often participate in high-threat ground recoveries.

Joint Special Operations Command (JSOC)

All services coordinate through Joint Special Operations Command (JSOC) for the most demanding missions.

Together, these organizations form a comprehensive, multi-domain rescue network capable of operating across the full spectrum of conflict, from conventional battlefields to deep behind enemy lines.

U.S. Military Combat Search and Rescue (CSAR) & Personnel Recovery Structure

BILL KOLB
MONDAY DOCENT

Joint Personnel Recovery Agency (JPRA)

- Reports to the Chairman of the Joint Chiefs of Staff
- Develops doctrine, policy, and training for all services
- Runs the Personnel Recovery Academy (SERE training)

U.S. Air Force (Primary / Lead Service for CSAR)

- **Pararescue (PJs)** – Elite ground special operators (combat medics, parachutists, divers)
- **Rescue Groups:**
    - 563rd Rescue Group (Davis-Monthan AFB)
    - 347th Rescue Group (Moody AFB)
- **Aircraft:**
    - HH-60W Jolly Green II (primary rescue helicopter)
    - HC-130J Combat King II (tanker / command & control)
    - A-10C Thunderbolt II "Sandy" (armed RESCAP / close air support)
- **Key Units:** 55th, 79th, and 41st Rescue Squadrons

U.S. Army

- **160th Special Operations Aviation Regiment (Night Stalkers)**
    - Provides specialized helicopters for high-risk recoveries (MH-47 Chinook, MH-60 Black Hawk, MH-6/AH-6 Little Bird)
- **Delta Force (1st SFOD-D)** – Often leads ground recovery teams in denied areas

U.S. Navy / Marine Corps

- **Navy Helicopter Sea Combat Squadrons** (MH-60S Seahawk with rescue swimmers)
- **DEVGRU (SEAL Team Six)** – Participates in high-threat ground recoveries
- **Marine Corps aviation support** (CH-53, MV-22 Osprey)

Joint / Theater Level

- **Joint Special Operations Command (JSOC)**
    - Coordinates complex, multi-service rescue missions
- **Theater Special Operations Commands (TSOCs)**

A History of Combat Search and Rescue (CSAR)

BARRY BROWN
MONDAY DOCENT

Combat Search and Rescue (CSAR) is one of the most demanding and culturally important missions in modern air warfare: the deliberate recovery of isolated personnel from hostile or denied territory. From its crucible in Vietnam to its highly networked, joint-force form in recent operations involving Iran in the 21st century, CSAR has evolved from ad hoc helicopter extractions into a complex, multi-domain system built around intelligence fusion, special operations integration, and the enduring principle of "leave no one behind." This is the Air Force and Navy system that is still utilized today.

1. Origins of CSAR Before Vietnam: From Improvisation to Doctrine

Although CSAR is usually associated with Vietnam, its roots stretch back to the First World War. Early aviation created a new battlefield problem: downed airmen behind enemy lines. Initial rescues were improvised—ground parties or even fellow pilots landing in dangerous conditions to retrieve comrades.

Between the world wars and into World War II, recovery efforts became more systematic. Air-sea rescue units and specialized aircraft emerged. By the Korean War, helicopters began to transform rescue operations.

2. Vietnam War: The Birth of Modern CSAR

The Vietnam War defined modern CSAR doctrine. The U.S. Air Force Air Rescue Service expanded dramatically. Key elements included:

- HH-3E "Jolly Green Giant" and HH-53 helicopters
- A-1 Skyraider escort ("Sandy" role)
- HC-130 tanker/command aircraft
- Pararescuemen (PJs)

CSAR became a coordinated task force designed to penetrate hostile territory and recover personnel under fire.

3. Post-Vietnam Evolution

After Vietnam, CSAR became formalized doctrine. The HH-60 Pave Hawk replaced earlier helicopters. Joint operations improved integration. The Iran hostage rescue failure (Operation Eagle Claw) exposed coordination weaknesses and drove reform.

4. Post-9/11 Era

CSAR expanded globally across Afghanistan, Iraq, and other theaters. It integrated real-time ISR, satellite communications, and special operations forces.

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A History of Combat Search and Rescue (CSAR)

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5. Modern CSAR (2010s–2020s)

The HH-60W "Jolly Green II" represents the modern platform. CSAR now includes:

- HH-60W helicopters
- HC-130J tankers
- Fighter escort aircraft (A-10, multirole jets)
- Pararescue teams

6. Iran and Contemporary Operations

Modern CSAR operates in contested, heavily defended environments with integrated air defense systems. Recovery missions may involve hundreds of assets across air and intelligence domains. This mission included:

- **HH60W "Jolly Green II"** helicopters
- **HH60 "Pave Hawks"**
- **55th Rescue Squadron**
- **MC-130J Commando II** Special Operations Aircraft
- **HC-130J Combat King II** tankers
- **MQ9 Reaper** drones for intel, surveillance and reconnaissance (ISR)
- **F-35** fighter escort and suppression of enemy air defense
- **A-10C** for close air support (CAS)
- **KC-135** aerial refueling

Personnel were the **Air Force 427th Special Operations Squadron**, elite US Army Special Forces units including the 160 Special Operations Aviation Regiment (SOAR) and the **1st Special Forces Operational Detachment – Delta**, and the **Navy's Special Warfare Development Group - Seal Team Six**

7. Continuities

- Dedicated rescue task force structure
- Pararescuemen as core operators, along with Special Forces from across the military
- High-risk commitment to recovery
- Dependence on air superiority or control

8. Changes Since Vietnam

Then: Analog, limited ISR, fragmented coordination

Now: Digital, networked ISR, joint multi-domain operations, precision extraction

Conclusion

CSAR has evolved from improvised wartime rescues to a global, highly integrated system. Despite technological change, its core principle remains unchanged: recovering isolated personnel at any cost.

Army Aviation Search and Rescue

From Korea through Afghanistan & Iraq

BARRY BROWN
MONDAY DOCENT

Army Aviation Search and Rescue (SAR) and its closely related mission set—combat search and rescue (CSAR), medical evacuation (MEDEVAC), and humanitarian assistance/disaster response (HA/DR)—has evolved from improvised helicopter extractions in Korea into a highly integrated, night-capable, joint-force capability by the wars in Afghanistan and Iraq. While "SAR" in the strict sense is often associated with civilian rescues, Army Aviation has always operated in a blended space: rescuing soldiers under fire, evacuating civilians in crises, and supporting inter-agency disaster relief at home and abroad.

Korean War: The Birth of Rotary-Wing Rescue

The Korean War (1950–1953) marked the first major use of helicopters for battlefield rescue. Early Army Aviation units operated light helicopters such as the Bell H-13 Sioux, famously recognizable from MASH*-style imagery. These aircraft were fragile, slow, and had limited lift, but they transformed survivability on the battlefield.

Before helicopters, wounded soldiers were carried by ground ambulance or fixed-wing aircraft operating from longer, secured runways. In Korea, rugged terrain and fluid front lines made that approach inadequate. Helicopters enabled "front-door pickup," landing near forward aid stations and extracting casualties quickly.

This era saw the informal emergence of what would later be called MEDEVAC doctrine: rapid evacuation under the call sign "Dustoff," which would become iconic in Vietnam. Although primarily Army Medical Service rather than formal "SAR," these missions established core principles:

- Rapid response time
- Minimal delay from injury to treatment
- Forward positioning of rotary-wing assets
- Acceptance of high-risk extraction zones

Civilian rescue involvement in Korea was limited, but helicopters occasionally assisted displaced populations and refugee movements, foreshadowing later humanitarian roles.

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Army Aviation Search and Rescue

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Vietnam War: MEDEVAC Becomes a Core Capability

Vietnam (1960s–1975) was the defining era for Army Aviation SAR-adjacent missions. The introduction of the Bell UH-1 Iroquois ("Huey") revolutionized battlefield mobility and rescue operations. Its versatility allowed it to perform troop transport, gunship escort, and critical MEDEVAC missions.

The "Dustoff" MEDEVAC crews became legendary for flying into active combat zones unarmed or lightly armed to retrieve wounded soldiers. Their motto, "When I have your wounded"—reflected a doctrinal commitment to never refusing a pickup if aircraft performance allowed it.

- Key developments during Vietnam included:
- Standardized helicopter evacuation chains from battlefield to surgical hospitals
- Dedicated medical evacuation units under Army Aviation command
- Expansion of night and low-visibility operations
- Integration of escort gunships for protection

CSAR also developed in parallel, though more formally under Air Force control. However, Army aviation frequently supported rescue of downed pilots and isolated units, often inserting infantry or Special Forces teams via helicopters like the Huey or heavy-lift Boeing CH-47 Chinook.

Civilian assistance expanded significantly. Helicopters were used for:

- Evacuation of Vietnamese civilians from combat zones
- Flood relief in rural areas
- Transport of medical supplies to isolated villages

Vietnam cemented a dual identity for Army Aviation SAR: battlefield lifeline and humanitarian responder.

Post-Vietnam to Cold War: Formalization and Expansion

After Vietnam, Army Aviation reorganized and professionalized its aviation brigades. Mevevac became fully institutionalized, with standardized "golden hour" evacuation doctrine emphasizing rapid transport to surgical care. The introduction of the Sikorsky UH-60 Black Hawk in the late 1970s and 1980s marked a major leap in survivability, speed, and avionics. The UH-60 replaced earlier Huey variants in many MEDEVAC roles, offering:

- Improved lift and range
- better crash survivability
- Advanced navigation systems
- Ability to operate in adverse weather

During this period, Army Aviation SAR capabilities expanded beyond war zones into domestic disaster response:

- hurricane evacuation and relief operations in the southeastern United States
- flood rescues in the Midwest
- wildfire support and personnel evacuation

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Army Aviation Search and Rescue

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- search operations coordinated with civil authorities like FEMA and state National Guard units

In operations such as Grenada (1983) and Panama (1989), Army Aviation provided rapid insertion, extraction, and casualty evacuation under contested conditions, demonstrating increasingly joint interoperability with Air Force CSAR and Navy aviation.

Gulf War: Industrial-Scale MEDEVAC and CSAR Integration

The 1990–1991 Gulf War marked a shift toward large-scale, mechanized warfare with highly integrated air operations. Army Aviation MEDEVAC and SAR roles expanded dramatically in scope. UH-60 Black Hawks became the backbone of forward MEDEVAC, supported by CH-47 Chinooks for heavier casualty loads.Bell Huey's were still used by many units also during this time frame. Missions often involved:

- rapid battlefield pickup during armored engagements
- night operations using night vision goggles (a major technological leap)
- coordination with air superiority operations for protected corridors

CSAR became highly synchronized across services. Downed coalition pilots were recovered through joint task forces involving Air Force units, Army helicopters, and Special Operations forces. Civilian rescue operations were less prominent in-theater but increased in postwar humanitarian missions in Iraq, Kuwait, and Kurdish regions, where helicopters evacuated displaced populations and delivered aid.

Balkans: Precision, Peacekeeping, and Urban SAR

During the 1990s Balkans conflicts (Bosnia and Kosovo), Army Aviation SAR adapted to peace enforcement and multinational operations. The environment shifted from open desert warfare to:

- mountainous terrain
- urban combat zones
- politically constrained airspace

UH-60 Black Hawks performed:

- MEDEVAC for NATO peacekeeping forces
- civilian evacuation from besieged areas
- humanitarian supply delivery

This period emphasized restraint and precision. Helicopters often operated under strict rules of engagement, requiring coordination with NATO command structures and local ceasefire agreements. SAR became as much about diplomacy and logistics as battlefield recovery.

Afghanistan: High-Altitude CSAR and Night Operations

Following 2001, Army Aviation SAR entered one of its most demanding environments: Afghanistan's mountainous terrain, thin air, and dispersed insurgent warfare. The 160th Special Operations Aviation Regiment (Airborne) (known as the "Night Stalkers") became central to high-risk rescue and infiltration missions, operating modified MH-60 and MH-47 variants.

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Army Aviation Search and Rescue

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Key challenges included:

- high-altitude performance limitations
- extreme temperature variation
- long-range missions without forward basing
- persistent insurgent anti-air threats

MEDEVAC became a strategic capability rather than just a medical service. The "golden hour" doctrine evolved into "platinum 10 minutes" concepts where rapid extraction was critical to survival against blast and ballistic injuries from IEDs. Civilian assistance expanded significantly:

- evacuation of villages during combat operations
- disaster relief during earthquakes and avalanches
- medical outreach in remote districts

Army Aviation often worked alongside coalition forces and National Guard Organizations (NGOs), blurring lines between military SAR and humanitarian relief.

Iraq: Urban Combat, IED Warfare, and Mature MEDEVAC Systems

In Iraq (2003–2011 and beyond), Army Aviation SAR reached a high level of maturity. The battlefield was urbanized, and threats were often small-unit ambushes and roadside bombs rather than front-line engagements.

UH-60 MEDEVAC helicopters operated under heavy escort and complex airspace control systems. Innovations included:

- real-time casualty tracking and evacuation coordination
- armed escort helicopters protecting MEDEVAC flights
- rapid hospital triage integration at Combat Support Hospitals
- widespread night operations as standard procedure

Civilian rescue became a major component of operations:

- evacuation of wounded civilians from urban combat zones like Fallujah and Mosul
- disaster response during flooding and infrastructure collapse
- transport of humanitarian supplies in coordination with international organizations

The Iraq experience reinforced that SAR was no longer a niche function but a continuous operational requirement across the full spectrum of conflict.

Modern Synthesis: A Dual-Use Rescue System

From Korea through Iraq and Afghanistan, Army Aviation SAR evolved into a dual-use system with three overlapping roles:

1. Combat Search and Rescue (CSAR): recovering isolated personnel under fire
2. MEDEVAC: rapid medical evacuation from battlefield to surgical care

Army Aviation Search and Rescue

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3. Civilian/Disaster SAR: humanitarian rescue and relief operations

Aircraft like the Sikorsky UH-60 Black Hawk and Boeing CH-47 Chinook became the backbone of this system, supported by specialized units such as the 160th Special Operations Aviation Regiment (Airborne) and conventional aviation brigades.

Over time, several themes emerged:

- speed and proximity save lives more than technology alone
- night operations became standard rather than exceptional
- joint integration across Army, Air Force, and coalition partners is essential
- humanitarian and combat rescue roles are inseparable in modern doctrine

Conclusion

Army Aviation SAR from Korea to Iraq and Afghanistan reflects a continuous evolution from improvised helicopter extractions to a highly structured, technologically advanced rescue network. What began with fragile H-13 helicopters landing near rice paddies became a global capability enabling night-time extractions in mountains, urban battlefields, and disaster zones.

Over seven decades, the core mission has remained consistent:

- reach the injured or isolated as quickly as possible
- stabilize them in the air
- bring them to safety—whether they are soldiers under fire or civilians caught in catastrophic conditions

Combat Search and Rescue
CSAR Through the Eyes of a PJ

BARRY BROWN
MONDAY DOCENT

Combat Search and Rescue (CSAR) originated in WWI when pilots were shot down behind enemy lines – how do we get them? WWII and Korea had similar experiences, but Vietnam was when it really started to take shape, because of the helicopter and its capabilities. There is another subcategory that we will explore in the next article – Search and Rescue Army style. What follows is a story passed down through generations of one man – an Air Force Pararescueman-Jumper, known as a PJ.

The first time the radio called him in, it wasn't even called CSAR yet in his world. It was Vietnam, late afternoon heat thick enough to feel like weight. The transmission crackled through the headset of a rescue helicopter crew chief: "Jolly Green, this is Sandy lead. We've got a downed pilot, grid reference coming in hot, he's alive, he's moving."

Inside the HH-3E "Jolly Green Giant," the aircraft shuddered as it turned toward the coordinates. The PJ checked his gear again, though nothing had changed in the last thirty seconds: med kit, strobe, sidearm, rope. He had done this before, but the jungle never cared about repetition. Every time felt like the first time, because every time someone was still down there waiting.

Below them, Vietnam was a wall of green that swallowed men whole. "Distance to survivor?" he asked. "Ten minutes," the pilot said. The PJ looked out at the canopy and thought about how strange it was that survival depended on finding a single man in something that looked endless.

The aircraft dipped low, and the world narrowed to rotor wash and gunfire. The "Sandy" escort—A-1 Skyraiders rolled in first, thundering low, marking targets with smoke rockets. Somewhere below, enemy guns woke up. Tracers stitched red lines through the air like someone trying to sew the sky shut, then came the hover.

No part of CSAR ever felt natural, a massive helicopter hanging motionless over jungle that wanted it dead. "Go," the PJ heard; the rope dropped; he went down into green chaos. The landing zone wasn't a zone; it was a hole cut into existence by explosives and luck. The downed pilot was there, half-conscious, blood in his helmet, eyes still tracking the sky like he didn't fully believe it was real.

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Combat Search and Rescue
CSAR Through the Eyes of a PJ

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"Hey," the PJ said, kneeling, "you're coming home." The man tried to respond, but the words didn't form; then the jungle erupted again. The extraction was never clean; it never had been. The PJ braced the pilot against him as bullets cracked through leaves and metal. The hoist line tightened, dead weight lifted, and the helicopter shuddered as it took hits and power surged through engines that refused to quit.

Upward motion felt like being pulled out of a grave. When they finally cleared the canopy, the PJ looked down at the jungle shrinking beneath them and understood something he would carry for the rest of his life: this was not rescue because it was a negotiation with death, and sometimes death let go.

Years later, the war changed shape, and he was older now, but so was CSAR. The aircraft changed to smaller, faster, quieter. The Sikorsky HH-60 replaced the old giants, radios became clearer, and Night Vision Goggles turned darkness into something you could navigate instead of fear. But the job stayed the same: a blinking beacon on a screen, a name, a last known position, and then the words: "Isolated personnel recovery tasking received."

The new doctrine called it Personnel Recovery now, clean language, structured, joint, efficient; but in the helicopter, nobody used those words. They still said, "We're going in."

By the time the Desert Wars came back into full force after 9/11, CSAR was no longer improvisation. It was well-coordinated architecture, and aircraft no longer went alone. They went as a package:

- Rescue helicopters
- Tanker aircraft
- Fighter escorts
- Command planes orbiting like nervous guardians
- Intelligence feeds streaming positions in real time
- Elite special forces from multiple force structures

The PJ wasn't just a rescuer anymore; now he was part of a system. In Afghanistan, the mountains replaced the jungle, and in Iraq, cities replaced both. But the feeling of descent never changed. A pilot shot down in rugged terrain, a radio beacon blinking in the dark, a voice saying, "I'm on the ground, I'm okay, but they're close," he whispered. Then the mission begins.

Night vision turns the world into shades of green or yellow. The helicopter flies low, terrain-hugging, skimming ridgelines. The escort aircraft circles above like a predator. The PJ checks his gear—still the same ritual as Vietnam, only now with better tech and heavier consequences. "Thirty seconds," the pilot says. The PJ answers without thinking: "Let's get him."

The survivor is found faster now, and this is what technology has changed: a blinking signal, a thermal signature, a pinpoint. But the landing zone is worse than Vietnam ever was—high altitude, narrow valley, enemy movement on ridgelines, and the helicopter cannot stay long, because it never can. The PJ drops, and cold air replaces the jungle heat; wind tears at his gear, and he hits ground hard, already moving before impact finishes.

The survivor is a soldier this time, not a pilot, but younger and shocked. He is awake enough to stand, not steady enough to run. "You're real?" the soldier asks. "Afraid so," the PJ says, then the world lights up with incoming fire.

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Combat Search and Rescue
CSAR Through the Eyes of a PJ

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The extraction becomes choreography: suppressing fire from above; smoke deployment; rapid movement to the hoist; constant radio chatter that sounds calm only because training demands it. Close Air Support aircraft roll in to assist as needed with the extraction, while the the RQ-4 Global Hawk or MQ-9 Reaper is overhead with its intelligence systems sending information to everyone involved – from the ground, to the aircraft above, to the commands orbiting or in DC.

They lift off under fire again, and again, the PJ looks down at shrinking earth and thinks the same thought he always has: we rescued him from the ground, and now we return him home.

The next war doesn't feel like the last ones, but Iran and future Large Scale Combat Operations are looming. It feels more controlled, more monitored, but somehow more dangerous because of it. Airspace is no longer just defended; it is layered, watched, computed. Integrated air defense systems track movement before humans even react, and electronic warfare scrambles certainty.

When the call comes in, it is not dramatic; it is precise: "Aircraft down", "Personnel recovery required." The room where the PJ stands is quieter than Vietnam ever was; multiple big screens show grids, tracks, probabilities, and intelligence updates stream continuously across them. There is no jungle now, and there is nowhere to disappear. The mission brief is short, because everyone already understands the stakes: this is not a rescue into confusion; this is a rescue into systems designed to prevent rescue.

The aircraft take off in layers. First the Intelligence, Surveillance & Reconnaissance (ISR) assets, watching, then the escorts, then the tankers, then the rescue package itself. The PJ sits in the helicopter, watching the mission unfold on a screen that feels too calm for what it represents. Somewhere ahead, a pilot is back on the ground. That part never changes. The terrain is desert, mountainous, with ridgelines, but the danger is invisible now: radar bands, heat signatures, data points.

"Two minutes," the pilot says, the PJ checks his harness and gear, and he doesn't think about Vietnam. But Vietnam is still there anyway, in muscle memory and instinct. The helicopter arrives low, and the PJ goes down.

The wind is sharp, carrying sand instead of humidity. The survivor is already moving, trying to evade capture, trying to follow training that tells him to survive long enough to be found.

The PJ reaches him fast, "U.S. forces," he says immediately. "We're getting you out." The pilot looks at him like he can't decide whether to believe it. Above them, the sky is alive with distant motion—friendly aircraft, hostile tracking systems, invisible calculations deciding what can and cannot survive.

This is CSAR now, not just rescue, a negotiation between systems of war. They move to the extraction point, fast, no hesitation. And no pause for reflection, because modern CSAR does not allow time for it. The helicopter arrives exactly when it is supposed to—timing coordinated across dozens of nodes that the PJ will never fully see. They climb suspended by cable again, and for a moment, everything is still, never changing.

Later, when the mission is over, no ceremony captures what happened. There is the debrief, data input, reports, replays, and rehearsals for the next one. But none of this contains the thing that matters the most, because CSAR has always been the same at its core.

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Combat Search and Rescue
CSAR Through the Eyes of a PJ

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A human being is alone in hostile space.

And someone goes to get them.

Vietnam had jungle, gunfire and improvisation.

Post-war years had refinement and doctrine.

Afghanistan and Iraq had integration and precision.

The Iran-era conflict has systems and denial layers and electronic ghosts, and advanced weapon systems.

But the center never moved.

The PJ still steps out of an aircraft into danger.

Still finds the isolated person.

Still says the same words:

"You're coming home."

And still, somewhere above him, aircraft circle in patterns that look like chaos from the ground but are something older than doctrine.

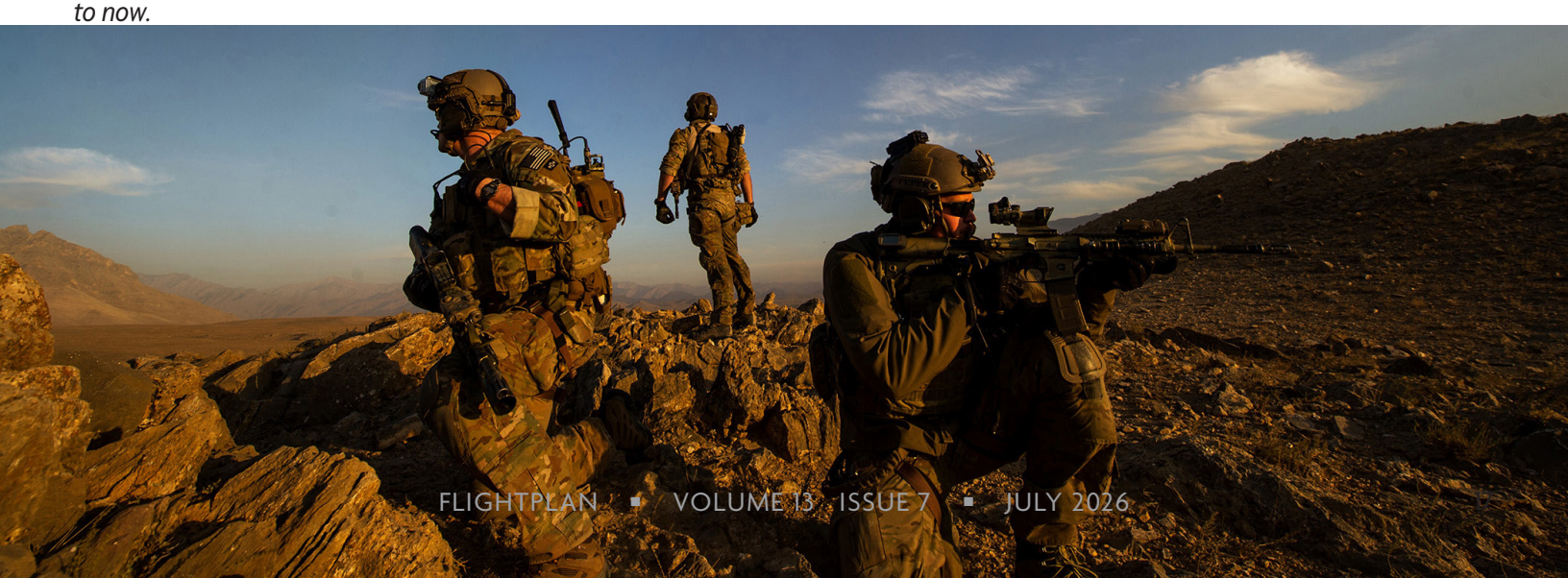
A promise kept under pressure.

Leave no one behind.

Even when everything else changes.

The author gathered his material for this article from personal experiences across 41 years with multiple deployments in Vietnam, Bosnia, and Iraq as an Army SAR pilot in Hueys and Blackhawks; plus conversations with fellow crewmembers from Vietnam through Afghanistan and Iraq that performed the missions – including PJ's from the 304th Pararescue Squadron based in Portland that he trained with. The Iran mission information is online but formatted to fit the style of this article.

If you substitute "medic" for "PJ" in this article, you have Army SAR combat medics doing Dustoff or MEDEVAC missions from Vietnam to now.



The Rescue of the F-15E Crew in Iran

One of the Largest Combat Search and Rescue Operations in Modern U.S. History

BILL KOLB
MONDAY DOCENT

Summary

On April 3, 2026, an F-15E Strike Eagle call sign Dude 44 was shot down over southwestern Iran during Operation Epic Fury. Both crew members ejected into hostile territory. What followed was a massive, multi-service combat search-and-rescue effort involving over 150 aircraft, special operations force from the Air Force, Army, and Navy, and support from the CIA. The pilot was recovered within hours; the weapons systems officer evaded capture for nearly 48 hours before being rescued in a daring nighttime operation. The mission succeeded with no American fatalities despite significant aircraft losses, marking one of the most complex CSAR operations in decades.

The Shootdown – April 3, 2026

In the early morning hours of April 3, 2026, an F-15E Strike Eagle from the 494th Fighter Squadron was conducting a deep-strike mission over southwestern Iran as part of Operation Epic Fury. The aircraft, call sign **Dude 44**, was struck by an Iranian shoulder-fired missile. Both the pilot (Dude 44 Alpha) and the Weapons Systems Officer (Dude 44 Bravo, a colonel) ejected safely. Still, they landed miles apart in rugged terrain near the Zagros Mountains.

The Initial Response: Saving Dude 44 Alpha

U.S. forces responded rapidly. Within hours, a rescue package located and extracted the pilot under fire. An HH-60W Jolly Green II helicopter from the 41st Rescue Squadron, supported by A-10C Thunderbolt II "Sandy" aircraft, successfully recovered Dude 44 Alpha the same day despite intense ground fire during the extraction.

Dude 44 Bravo: On His Own

While his pilot was rescued relatively quickly, Dude 44 Bravo's ordeal was far more harrowing. The Weapons Systems Officer landed several miles away from the pilot in much steeper, more remote mountainous terrain. He suffered significant injuries during ejection and landing, including a broken leg, cracked ribs, and deep lacerations. Despite the pain and limited mobility, he immediately began moving to higher ground to avoid detection by Iranian search parties.

Over the next 48 hours, Dude 44 Bravo displayed extraordinary courage and resourcefulness. He climbed over 7,000 feet in elevation up a treacherous mountain ridgeline to avoid capture and reach a more defensible position for potential rescue. He maintained

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The Rescue of the F-15E Crew in Iran

One of the Largest Combat Search and Rescue Operations in Modern U.S. History

intermittent radio contact with overhead U.S. aircraft using his survival radio, providing brief updates on his condition and location while conserving battery life. At night, he slowly trekked uphill, dragging his injured leg and using makeshift crutches fashioned from branches. He treated his own wounds as best he could with his survival kit and found shelter in rock crevices during the day to avoid detection. His calm radio transmissions and determination to keep moving gave rescue planners critical information while buying precious time for the complex operation to come together.

The Organizations Behind the Mission

The Dude 44 rescue required seamless coordination across multiple organizations:

- **U.S. Air Force:** Primary CSAR responsibility (HH-60W Jolly Green II helicopters, HC-130J tankers, and A-10C RESCAP aircraft).
- **U.S. Army:** Delta Force established a forward operating base inside Iran and led ground recovery; the 160th SOAR ("Night Stalkers") provided MH-6/AH-6 Little Birds.
- **U.S. Navy:** DEVGRU (SEAL Team Six) contributed to the ground recovery team.
- **Central Intelligence Agency (CIA):** Provided critical signals intelligence, deception operations, unique technology and unconventional assisted recovery support.
- Joint Special Operations Command (JSOC): Overall command and control of the multi-service effort.

Deception, Ground Recovery & Losses

The recovery of Dude 44 Bravo proved far more difficult than the initial extraction. What unfolded over the next 48 hours was a complex, high-risk operation that combined deception, intelligence, airpower, and ground combat deep inside Iranian territory.

1. Planning & Coordination between Service Branches
JSOC served as the central integrator, running continuous planning sessions that brought together Air Force CSAR planners, Army Delta Force, Navy DEVGRU, and 160th SOAR aviators. The primary challenge was deconflicting a massive air package while maintaining operational security.

2. The Involvement of the CIA
The CIA played a pivotal role beyond traditional intelligence support. Agency teams ran an aggressive disinformation campaign, deliberately leaking false information that the WSO had already been rescued or was hiding in a completely different region. CIA officers also used signals intelligence to help pinpoint Dude 44 Bravo's position and coordinated with local contacts for potential "unconventional assisted recovery" options.

It is also suggested that the CIA played a pivotal and highly classified role in the operation. Beyond traditional intelligence and deception efforts, the Agency deployed a cutting-edge quantum magnetometry system known as "Ghost Murmur." This long-range sensor, co-developed by the Agency and Lockheed Martin Skunk Works, is said to detect the faint electromagnetic signature of a human heartbeat from tens of miles away. Using advanced AI to filter out background noise, Ghost Murmur helped pinpoint Dude 44 Bravo's location. This was fused with other intelligence (drone imagery, signals intelligence, etc.) to guide the special. This was reportedly the first operational use of the system and proved decisive in guiding the rescue force to his position.

3. The Chronology of All the Moving Parts
On the night of April 4–5, a large and complex force package launched. It included HH-60W Jolly Green II rescue helicopters, MH-47 Chinooks and MH-60 Black Hawks carrying Delta Force and DEVGRU operators, AH-64 Apache and MH-6/AH-6 Little Bird gunships for close support, A-10C "Sandy" aircraft for RESCAP, F-15E

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The Rescue of the F-15E Crew in Iran

One of the Largest Combat Search and Rescue Operations in Modern U.S. History

and F-35 escort fighters, EA-18G Growlers for electronic warfare, and multiple KC-135 and KC-46 tankers. MQ-9 Reaper drones provided persistent overhead surveillance.

4. What Happened on the Ground in Battle

The ground element inserted under cover of darkness near a remote mountain site where Dude 44 Bravo had been sheltering. As the team moved to secure the area and reach the WSO, they made contact with units of the Iranian Revolutionary Guard Corps. A sharp firefight erupted. Delta Force and DEVGRU operators suppressed the Iranian forces while the rescue helicopters landed. The WSO was located, treated on site, and loaded onto a waiting HH-60W. The extraction occurred under fire, with gunships providing suppressive fire as the helicopters lifted off.

5. The Losses of the Aircraft and Why They Had to be Destroyed

The operation came at a significant material cost. One A-10C Thunderbolt II was shot down while providing close air support during the extraction. Two MC-130J Commando II aircraft that had been prepositioned for the mission were intentionally destroyed on the ground after being damaged. Several MH-6/AH-6 Little Birds were also destroyed in place. Two UH-60 Black Hawks were heavily damaged by ground fire but managed to return to friendly territory. These deliberate losses reflected the harsh reality of operating deep in hostile territory, sensitive equipment and technology could not be allowed to fall into Iranian hands.

Outcome, Cost, and Historical Significance

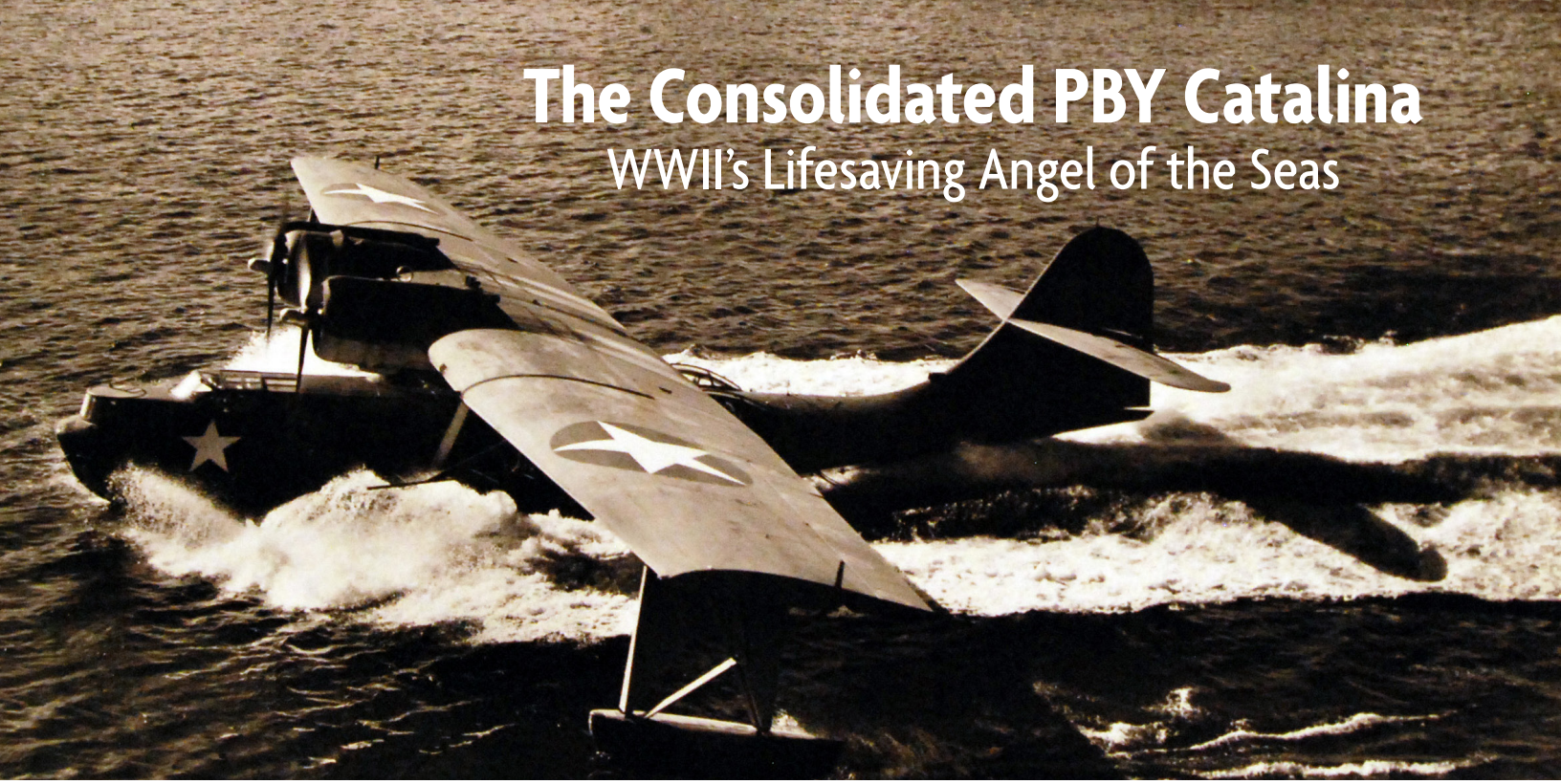
Both crew members of Dude 44 survived and were returned safely. No American personnel were killed during the rescue operation. President Trump publicly described the mission as "one of the largest, most complex, most harrowing combat search-and-rescue missions ever attempted by the military."

The Dude 44 rescue has been compared to the failed 1980 Operation Eagle Claw, with many observers noting it as a dramatic full-circle moment for U.S. special operations forces.

About Our Artifacts

We have a couple of the aircraft types used in the operation. They include:

- F-15 Eagle
- A-10 Thunderbolt II (Sandy or Warthog)



The Consolidated PBY Catalina

WWII's Lifesaving Angel of the Seas

BILL KOLB
MONDAY DOCENT

Summary

The Consolidated PBY Catalina was one of the most important and adaptable aircraft of World War II. This long-range amphibious flying boat excelled in maritime patrol, anti-submarine warfare, and especially search-and-rescue missions across every theater. More than 4,000 Catalinas were built from 1936 to 1945. The PBY-5A variant added retractable landing gear for greater flexibility. Its rugged construction, exceptional endurance, and ability to land on water made it indispensable for rescuing downed aircrews and shipwreck survivors, including the crew of the famous USS Indianapolis.

The Consolidated PBY Catalina emerged in the mid-1930s as the U.S. Navy sought a modern long-range patrol flying boat to replace earlier types. Designed by Isaac M. Laddon at Consolidated Aircraft, the prototype XP3Y-1 first flew in 1935. The Navy quickly ordered production versions, and the aircraft entered service in 1936 as the PBY-1. Its parasol wing, large hull, and stabilizing floats gave it excellent seakeeping qualities while allowing impressive range and payload for the era.

The PBY's specifications made it a true workhorse for search and rescue. It featured a wingspan of 104 feet, a length of approximately 63 feet 10 inches, and was powered by two Pratt & Whitney R-1830 Twin Wasp radial engines producing around 1,200 horsepower each. Typical crew numbered seven to nine, including pilots, navigator, radioman, flight engineer, and gunners. Maximum range reached about 2,520 miles, with a service ceiling near 15,800–18,100 feet depending on variant. The aircraft could carry life rafts, survival gear, and medical supplies in addition to its defensive armament.

During World War II the Catalina served with the U.S. Navy, Army Air Forces (as the OA-10), Coast Guard, and numerous Allied nations. It performed long-range reconnaissance, located enemy fleets, hunted submarines, and conducted dramatic rescues of downed aircrews and shipwreck survivors. In the Pacific, specially modified "Black Cat" PBYs flew nocturnal missions while also standing ready for rescue. The type's ability to land on water in open ocean gave it unmatched operational flexibility in remote areas.

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The Consolidated PBY Catalina
WWII's Lifesaving Angel of the Seas

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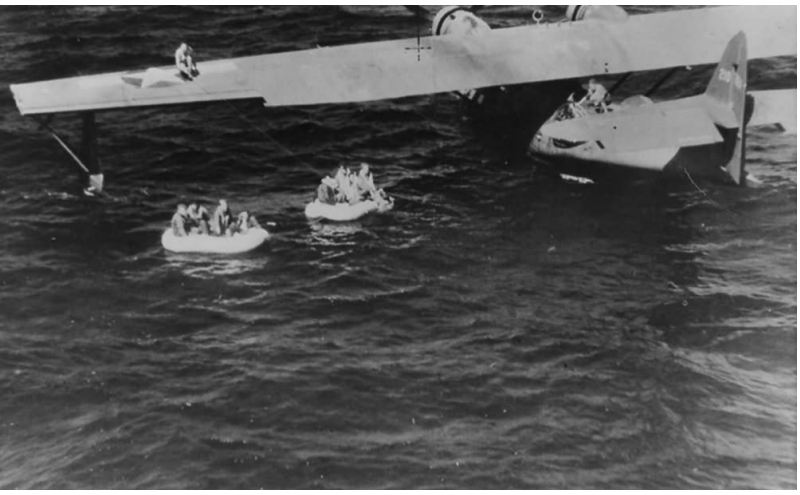

One of the most famous SAR missions involved the USS Indianapolis. After the cruiser was torpedoed in July 1945, survivors drifted for days in shark-infested waters. A PBY Catalina crew spotted the men and landed in heavy seas to begin the rescue, radioing for additional help. The Catalina's crew pulled as many survivors as possible aboard while coordinating with other aircraft and ships. This effort, along with countless other open-ocean rescues, highlighted the PBY's critical role in saving lives.

The PBY-5A, introduced in 1941, became the most numerous and versatile variant by adding retractable tricycle landing gear. This allowed operations from conventional runways while retaining full water capability. Later models incorporated improved radar and enhanced defensive armament. Production continued through 1945, with additional aircraft built in Canada (as the Canso) and under license in other countries. Total output exceeded 4,000 airframes across all variants.

After the war, many Catalinas continued to serve with the U.S. Coast Guard in air-sea rescue until the mid-1950s. Civilian operators converted surplus aircraft into luxurious flying yachts or rugged firefighting water bombers. The type's long endurance, large cabin, and ability to operate from unprepared locations proved ideal for these roles. Today, a healthy number of Catalinas remain airworthy or are meticulously preserved in museums around the world, serving as tangible links to the Greatest Generation's aviation heritage.

The Consolidated PBY Catalina's combination of range, versatility, and ruggedness made it one of the truly indispensable aircraft of the Second World War. From spotting enemy fleets to plucking survivors from shark-infested waters in missions like the USS Indianapolis rescue, it earned a legendary reputation as a lifesaver. Its postwar civilian career and continued presence in museums ensure that new generations can appreciate this remarkable flying boat.

About Our Artifact

Our aircraft is a Canadian-built version of the Consolidated PBY Catalina, known as the Vickers Canso. This aircraft was delivered to the RCAF on June 2, 1943, and served with the Eastern Air Command, No. 13 P Squadron at Rockcliffe, and RCAF Sea Island between 1945 to 1951. After being leased to a French Civil Protection force in the 1960s, Nanaimo Airport in Vancouver, Canada purchased the aircraft, intending to modify it for tourist work in Malaysia. The conversion was never completed, and the aircraft was eventually flown to McMinnville in August 2011.

On loan from McMinnville Properties.

The Douglas A-1 Skyraider

The Mighty "Spad" That Punched Above Its Weight

BILL KOLB

MONDAY DOCENT

Summary

The Douglas A-1 Skyraider was a rugged, propeller-driven attack aircraft that defied the jet age. Designed late in World War II, it entered service in 1946 and earned legendary status for its massive payload, long loiter time, and battle-damage tolerance. Single-seat Skyraiders excelled in close air support, interdiction, MEDEVAC escort, and search-and-rescue missions during the Korean and Vietnam Wars. Variants served the U.S. Navy, Marines, Air Force, and allies into the 1970s. Its versatility and toughness made it a favorite of pilots and ground troops alike.

Development of the Skyraider began in 1944 as the U.S. Navy sought a replacement for older dive and torpedo bombers. Douglas designer Ed Heinemann led the effort, creating a straightforward, low-wing monoplane powered by the massive Wright R-3350 Duplex-Cyclone radial engine. The prototype first flew on March 18, 1945. Although too late for World War II combat, the aircraft—initially designated AD—entered production and service in 1946.

The Skyraider's specifications highlighted its brute strength. It measured approximately 38 feet 10 inches long with a 50-foot wingspan and was powered by an 18-cylinder engine producing up to 2,700 horsepower. Empty weight was around 11,000–12,000 pounds, with maximum takeoff weight exceeding 25,000 pounds. Top speed reached roughly 320 mph, but its real strengths were range (over 1,000 miles), endurance (up to 10+ hours), and payload—up to 8,000 pounds or more of bombs, rockets, napalm, gun pods, or other stores on 15 hardpoints. Armament typically included four 20 mm cannons. The rugged airframe could absorb tremendous punishment and still bring pilots home.

In Korea, Skyraiders excelled in close air support, interdiction, and night attack roles. They operated effectively from carriers and land bases, delivering heavy ordnance where jets struggled to loiter. The type transitioned smoothly into the jet era because of its unmatched ability to carry heavy loads slowly and precisely over the battlefield.

The aircraft truly shone in Vietnam, particularly in MEDEVAC escort and search-and-rescue operations. Both Navy and Air Force versions provided vital close air support to troops in contact and flew RESCAP (rescue combat air patrol) missions to protect helicopters and fixed-wing aircraft during daring extractions of downed pilots. The Skyraider's slow speed and long endurance allowed it to orbit targets effectively, suppress enemy

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The Douglas A-1 Skyraider

The Mighty "Spad" That Punched Above Its Weight

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defenses, and cover rescue teams in contested areas. Famous missions include Medal of Honor actions, such as Major Bernard Fisher's daring rescue in an A-1E. Navy Skyraiders flew the last piston-engine attack sorties of the war. Variants such as the A-1H and multi-seat A-1E/G served extensively with the Republic of Vietnam Air Force as well.

Post-Vietnam, some Skyraiders continued in foreign service, while U.S. examples found new lives as warbirds or museum displays. Its propeller-driven simplicity, massive payload, and ability to operate from austere fields kept it relevant long after faster jets arrived. The nickname "Spad" (evoking the tough WWI fighter) reflected the affection of those who flew and maintained it.

The Douglas A-1 Skyraider proved that propeller-driven aircraft still had a vital place in modern warfare. Its combination of power, payload, endurance, and toughness — especially in lifesaving MEDEVAC escort and search-and-rescue missions — earned it a special place in aviation history. From Korea's rugged terrain to the jungles of Vietnam, the "Able Dog" delivered when it mattered most.

About Our Artifact

This Skyraider was acquired by Evergreen Aviation & Space Museum in 2005 after spending many years in the yard of a Pennsylvania boys' school. It has been restored through the efforts of the Museum's team of restoration experts and volunteers.

Transferred to the Museum's Permanent Collection.

The Bell H-13 Sioux

The "Angel of Mercy" That Changed Battlefield Medicine

BILL KOLB
MONDAY DOCENT

Summary

The Bell H-13 Sioux, derived from the civilian Bell 47, became iconic during the Korean War for its lifesaving medical evacuation role. As the "Angel of Mercy," it rapidly transported wounded soldiers from front lines to MASH units, dramatically improving survival rates and establishing modern helicopter MEDEVAC doctrine. It also performed reconnaissance and training missions. Its bubble canopy and "MASH" fame symbolize compassion and ingenuity in military aviation.

The H-13 story begins with the Bell Model 47, which first flew in 1945 and became the first helicopter certified for civilian use (Cavanaugh Flight Museum). The U.S. military quickly recognized its potential, ordering versions for the Army, Navy, and Air Force. Designated H-13 (and later OH-13 in some variants), the Sioux featured a simple single-rotor design with a distinctive plexiglass bubble canopy that offered excellent visibility. Production spanned many years, with thousands built for American forces and allies.

Key specifications made the H-13 practical and reliable. It was powered by a single Lycoming or Franklin piston engine producing 200–260 horsepower. The aircraft had a rotor diameter of about 35 feet, an overall length of about 27–32 feet depending on variant, and a typical cruise speed of 70–85 mph. The range was approximately 200 miles, with a service ceiling near 13,000 feet. It could carry a pilot plus one or two passengers—or, crucially, two litter patients externally in Korean War configuration. The rugged skid landing gear allowed operations from rough terrain or small clearings.

During the Korean War, the H-13 proved revolutionary. Army units used it extensively for forward observation and artillery spotting, but it gained lasting fame in the MEDEVAC role (U.S. Army historical records). Previously, wounded soldiers faced long, jolting ground transports that worsened injuries and delayed treatment. H-13s could land near the front lines, load casualties, and fly them directly to MASH units, often within the critical "golden hour." This innovation saved countless

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The Bell H-13 Sioux

The "Angel of Mercy" That Changed Battlefield Medicine

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lives and shaped future aeromedical evacuation tactics. The helicopter's reliability in harsh conditions earned it the affectionate nickname "Angel of Mercy" among troops.

The Sioux continued serving into the Vietnam era, primarily as a trainer and light observation platform before more advanced types like the OH-6 Cayuse took over frontline scout duties. Armed variants were tested with machine guns to explore helicopter gunship concepts. Its simple maintenance and forgiving flight characteristics made it ideal for pilot training programs. Many H-13s remained in U.S. and allied inventories well into the 1960s and 1970s.

The Bell H-13 Sioux, though small and unassuming, left an outsized mark on military aviation. From pioneering helicopter MEDEVAC in Korea to training generations of pilots, it proved that simple, reliable designs could deliver outsized results. Its legacy lives on in modern rotary-wing tactics and in the preserved aircraft that continue to educate the public about the bravery of those who flew and supported them.

About Our Artifact

Acquired from Jack Lenhardt of Hubbard, Oregon, this aircraft was previously a civilian helicopter used for spraying in Alabama. It was restored in Army colors by Lenhardt.

The Piasecki H-21 Shawnee

The "Flying Banana" That Pioneered Heavy-Lift Helicopters

BILL KOLB
MONDAY DOCENT

Summary

The Piasecki H-21 Shawnee, nicknamed the "Flying Banana" for its distinctive tandem-rotor configuration, was a groundbreaking helicopter designed for heavy transport and rescue operations. Entering service in the early 1950s, it excelled in troop movement, cargo hauling, medical evacuation, and cold-weather search-and-rescue operations during the Korean War and early Vietnam era. Its ability to lift heavy loads and operate from austere sites helped prove the value of large helicopters for military logistics and lifesaving missions. Variants served the U.S. Army, Air Force, and international operators, laying the groundwork for future tandem-rotor designs like the CH-47 Chinook.

The H-21 originated from Piasecki Helicopter Corporation's pioneering work with tandem-rotor designs. The company's earlier HRP "Rescuer" helicopters demonstrated the configuration's stability and lifting power. The H-21 prototype first flew in 1952 as a larger, more capable evolution. The U.S. Air Force ordered it as the YH-21 for search-and-rescue duties, while the Army adopted it as a utility transport. The aircraft's upward-sloping fuselage and twin rotors gave it the memorable "banana" profile.

The Shawnee was powered by a single Wright R-1820 radial piston engine producing around 1,425 horsepower, driving two large rotors mounted fore and aft. It had a fuselage length of approximately 52–55 feet, rotor diameter of about 44 feet each, and a maximum takeoff weight near 15,000–16,000 pounds depending on variant. Cruise speed was roughly 100–110 mph, with a range of 400+ miles and useful load capacity for up to 20 troops, heavy cargo, external sling loads, or multiple litters for MEDEVAC. The tandem layout provided excellent lift, stability in hover, and redundancy.

In Korea, late in the conflict, H-21s proved their worth in troop movements, logistics, and especially medical evacuation and rescue in difficult terrain. They shone even more in Arctic and high-altitude testing and operations, where they conducted daring search-and-rescue missions in extreme cold, extracting downed aircrews and personnel from remote or icy locations where other helicopters struggled. The design's forward and aft rotor configuration minimized torque issues and allowed heavy external loads, making it ideal for lifting multiple casualties or delivering medical teams. Early Vietnam deployments saw the H-21 used for troop

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The Piasecki H-21 Shawnee

The "Flying Banana" That Pioneered Heavy-Lift Helicopters

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insertions, supply delivery, medical evacuation, and search-and-rescue support in Southeast Asia's challenging environment before larger types supplemented it.

The H-21 came in several variants, including the H-21B/C with improved engines and systems for better hot/high performance. It served as a testbed for tactics that influenced later heavy-lift doctrine. International operators, including France in Algeria, also flew the type successfully for troop transport and extensive MEDEVAC operations. Its reliability and versatility helped transition the military from small utility helicopters to true battlefield transports capable of lifesaving rescue missions.

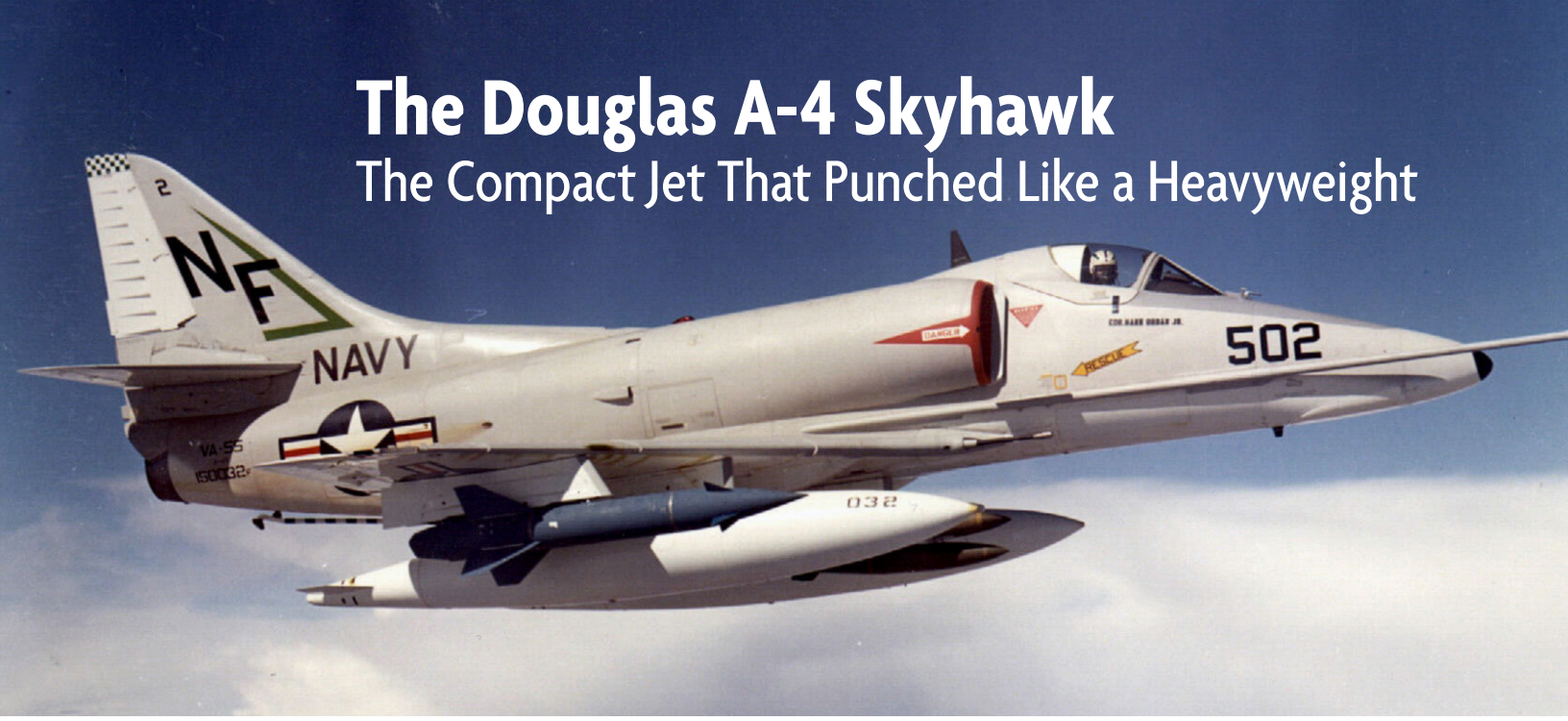
The Piasecki H-21 Shawnee, though eventually overshadowed by turbine-powered successors, played a vital transitional role in helicopter aviation. Its tandem-rotor innovation and heavy-lift capability — especially in MEDEVAC and search-and-rescue roles — proved key concepts that shaped designs still in use today. Preserved examples continue to illustrate the rapid evolution of rotary-wing technology during the early Cold War period.

About Our Artifact

This H-21C Shawnee is on loan from the National Museum of the United States Air Force.

The Douglas A-4 Skyhawk

The Compact Jet That Punched Like a Heavyweight



BILL KOLB

MONDAY DOCENT

Summary

The Douglas A-4 Skyhawk was a small, lightweight carrier-based attack jet that delivered outsized performance. Designed in the 1950s as a simple, cost-effective nuclear-capable bomber, it became a versatile workhorse in the Vietnam War and beyond. Known for agility, ruggedness, and high payload relative to its size, the "Scooter" served the U.S. Navy, Marines, and numerous allies for decades. Its combat record, including critical reconnaissance, MEDEVAC escort, and search-and-rescue support, made it one of the most successful jet attack aircraft ever built, with many examples preserved in museums today.

Development of the A-4 began in the early 1950s when the Navy sought a lightweight replacement for heavier attack aircraft. Douglas engineer Ed Heinemann proposed a minimalist design emphasizing simplicity and performance. The prototype XA4D-1 first flew in 1954, and the aircraft entered service in 1956. Its compact size, earning the nickname "Scooter", belied its capabilities, including the ability to operate from smaller carriers.

The Skyhawk was powered by a single Pratt & Whitney J52 turbojet engine producing 8,500–11,000+ pounds of thrust depending on variant. It measured about 40 feet long with a 27-foot wingspan and a maximum takeoff weight of around 24,500–27,000 pounds. Top speed exceeded 670 mph, with excellent maneuverability and a combat radius suitable for carrier operations. The aircraft could carry up to 8,000+ pounds of ordnance on multiple hard points, including bombs, rockets, missiles, and cannons. Later models added advanced avionics and improved engines.

In Vietnam, A-4s flew thousands of combat sorties, delivering precision strikes and close air support while also excelling in reconnaissance and vital search-and-rescue support missions. Photo-reconnaissance variants provided critical intelligence over hostile territory, capturing imagery that guided larger strikes and rescue operations. Skyhawks frequently flew RESCAP (rescue combat air patrol) and escort duties, protecting helicopters and fixed-wing aircraft during daring search-and-rescue operations for downed pilots. Their agility and endurance allowed them to loiter effectively, suppress enemy defenses, and cover extraction teams in contested areas, often making the difference between life and death for fellow aviators. Notable examples include A-4s providing cover during the dramatic recovery of pilots shot down over North Vietnam, using rockets and cannons to suppress anti-aircraft fire while SAR helicopters moved in. Navy and Marine squadrons operated them intensively from carriers and land bases. The Skyhawk's small size made it harder to hit, while its durability allowed it to bring

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The Douglas A-4 Skyhawk

The Compact Jet That Punched Like a Heavyweight

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pilots home despite battle damage. It also served in "Iron Hand" missions against North Vietnamese radar and SAM sites.

Export versions equipped air forces worldwide, seeing action in conflicts such as the Falklands War and Middle East operations. The A-4's simplicity, low operating costs, and upgraded potential kept it flying long after more complex jets retired. Variants like the two-seat TA-4 served as advanced trainers, helping qualify generations of naval aviators.

The Douglas A-4 Skyhawk proved that a well-designed lightweight jet could outperform expectations and remain relevant for decades. Its combat effectiveness in strike, reconnaissance, and especially MEDEVAC escort and search-and-rescue support roles, combined with ease of maintenance and carrier compatibility, set standards for attack aircraft. Preserved examples continue to inspire as tangible reminders of ingenuity and service in the jet age.

About Our Artifact

This A-4E (Bureau Number 152070) joined the U.S. Navy in 1965 and remained in service for nearly 30 years. The aircraft served with a number of Navy attack squadrons, and from December 1968 through August 1974 this aircraft flew with Marine Attack Squadron 311 (VMA-311) while stationed in Japan and South Vietnam. Later in its career, this A-4E returned to the Navy and flew as an "Aggressor" aircraft for VF-45. It had accumulated 7,589 flight hours when retired in 1994.

Acquired by the Museum in 2004, this aircraft wears the unique markings of the A-4E of VA-46 ("The Clansmen") flown by then Lieutenant Commander John McCain in the summer of 1967. On the morning of July 29, 1967, while awaiting launch from the aircraft carrier USS Forrestal (CVA-59) on a strike mission into North Vietnam, an accidentally fired rocket triggered an inferno on the flight deck that destroyed McCain's A-4E and 21 other aircraft. McCain escaped with burns and shrapnel wounds, but 134 sailors and airmen perished in the fires and explosions that ravaged the carrier. The Museum presents this aircraft as a tribute to the valiant crew of the USS Forrestal.

The Sikorsky H-34D Seahorse

The Versatile Piston-Powered Workhorse of the Cold War Era

BILL KOLB

MONDAY DOCENT

Summary

The Sikorsky H-34, known as the Choctaw, Seabat, and Seahorse in its various military roles, was a highly successful piston-engine utility helicopter that served from the mid-1950s into the 1970s. Designed primarily for anti-submarine warfare, it proved exceptionally adaptable for troop transport, medical evacuation, search and rescue, and combat assault. The H-34 saw extensive service with the U.S. Navy, Marines, Army, and allies, most notably in Vietnam. Its reliability and versatility made it a transitional aircraft between early piston helicopters and the turbine-powered machines that followed.

The Sikorsky H-34 originated from a U.S. Navy requirement in the early 1950s for an improved anti-submarine warfare helicopter to succeed the HSS-1. Sikorsky developed the S-58 design, which first flew on March 8, 1954. The Navy initially designated the anti-submarine version HSS-1 Seabat and the utility version HUS-1 Seahorse for the Marines. The Army adopted it as the H-34 Choctaw. In 1962, under the new tri-service designation system, these became SH-34, UH-34, and CH-34, respectively.

Powered by a Wright R-1820 radial piston engine producing approximately 1,525 horsepower, the H-34 featured a single main rotor and tail rotor. It measured about 56 feet 8 inches in length with a rotor diameter of 56 feet. Depending on variant, it could carry 12 to 18 troops, 8 litters for MEDEVAC, or substantial cargo loads. Maximum speed was around 122 mph, with a range of roughly 190–300 miles depending on configuration. The aircraft's robust construction and folding rotor blades made it well-suited for shipboard operations.

Although originally designed for anti-submarine warfare with sonar and torpedoes, the H-34 quickly demonstrated broad utility, particularly in medical evacuation and rescue. French forces in the Algerian War used large numbers for troop transport and extensive MEDEVAC operations, conducting thousands of casualty evacuations — including many at night — and helping pioneer modern helicopter air assault tactics. In Vietnam, U.S. Marine Corps UH-34D Seahorses performed critical search-and-rescue and MEDEVAC missions, often flying into hot landing zones under fire to extract wounded Marines and deliver them to medical facilities. These operations saved countless lives and highlighted the H-34's ruggedness and reliability in combat environments. The type also supported troop insertions, resupply, and armed escort duties (National Museum of the Marine Corps; Pacific Aviation Museum).

The H-34 proved rugged and reliable under demanding conditions. Marine Seahorses were among the first

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The Sikorsky H-34D Seahorse

The Versatile Piston-Powered Workhorse of the Cold War Era

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helicopters to be armed with rockets and machine guns for close support. The helicopter's piston engine provided good low-speed handling but also required more maintenance than later turbine designs. Production of the H-34 totaled more than 2,300 aircraft, with additional licensed production in France and the United Kingdom. Many continued in reserve, Coast Guard, and civilian roles long after frontline retirement.

The Sikorsky H-34 demonstrated the growing importance and versatility of helicopters in military operations during the Cold War. From hunting submarines to inserting Marines under fire and performing lifesaving MEDEVAC and rescue missions, it performed a remarkable range of missions with durability and effectiveness. Its legacy lives on in preserved aircraft and in the tactics it helped develop.

About Our Artifact

When the U.S. Marines replaced their Seahorses with the Boeing Vertol CH-46 Sea Knight and Sikorsky CH-53 Sea Stallion in 1968, the remaining UH-34s were turned over to the South Vietnamese Air Force (VNAF). This UH-34D was one of those given to South Vietnam. Its unique history was discovered during restoration, and the decision was made to restore it to its appearance during its service with the VNAF.

The Bell UH-1 Iroquois

The Huey That Defined the Helicopter Age

BILL KOLB

MONDAY DOCENT

Summary

The Bell UH-1 Iroquois, universally known as the "Huey," became the iconic helicopter of the Vietnam War and a cornerstone of modern military aviation. Developed in the 1950s as the first turbine-powered U.S. Army utility helicopter, it excelled in troop transport, medical evacuation, command and control, and armed escort roles. Its distinctive sound, rugged reliability, and versatility saved countless lives and shaped air assault tactics still used today. The Huey served with the U.S. Army, Marines, and dozens of allied nations for decades, with many variants still flying in civilian and military roles worldwide.

The Huey originated from a 1955 U.S. Army requirement for a turbine-powered utility helicopter. Bell Helicopter's Model 204 won the competition, with the first flight occurring in 1956. The aircraft was initially designated HU-1 (later UH-1), giving rise to the enduring "Huey" nickname. Early models used the Lycoming T53 turboshaft engine, a major advance over piston-powered predecessors, providing better power-to-weight and performance in hot/high conditions.

The UH-1 featured a single main rotor and tail rotor configuration with a spacious cabin. Early "short-body" variants (UH-1A/B) seated 6–8 troops, while longer "stretched" models (UH-1D/H) accommodated up to 14 troops or 6 litters for critical MEDEVAC and Dustoff missions. Powered by variants of the T53 engine (up to 1,400+ shaft horsepower), the Huey had a cruise speed of about 110–120 mph, a range of 300+ miles, and excellent hover performance. Its skid landing gear allowed operations from unprepared landing zones, and the design proved exceptionally durable under combat stress.

In Vietnam, the Huey became synonymous with air mobility and lifesaving medical evacuation. "Dustoff" MEDEVAC crews flew day and night into contested landing zones, often under heavy fire, to extract wounded soldiers and deliver them to field hospitals within the critical golden hour. This capability dramatically improved survival rates compared to previous ground-based evacuation methods. The Huey's spacious cabin allowed rapid loading of litter patients, while its reliability and maneuverability enabled operations in dense jungle and mountainous terrain where fixed-wing aircraft could not go. Beyond MEDEVAC, it enabled the first large-scale helicopter air assaults, rapidly inserting troops into battle and extracting them under fire. Armed UH-1C "Gunship" variants and later models provided close fire support, while others handled command and control, resupply, reconnaissance, and VIP transport. The distinctive "whop-whop" rotor sound became the auditory signature of the war (Vietnam-era operational

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The Bell UH-1 Iroquois

The Huey That Defined the Helicopter Age

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histories from U.S. Army and Marine Corps sources; Dustoff mission accounts). The MEDEVAC role was particularly transformative. Nicknamed "Dustoff" missions, Huey crews, often called "Dustoff" pilots and medics, operated under extreme danger, hovering into hot landing zones amid intense enemy fire to evacuate the wounded. These daring flights frequently meant the difference between life and death, with the "golden hour" concept of rapid transport to surgical care dramatically improving survival rates for thousands of soldiers. Pilots and crews flew day and night, in all weather conditions, demonstrating unparalleled courage and skill. The UH-1's spacious cabin and quick-loading litters made it exceptionally effective for this humanitarian mission, far surpassing previous ground-based or slower evacuation methods.

In addition to MEDEVAC, the Huey excelled in search-and-rescue (SAR) operations. Crews plucked downed airmen from dense jungles, rivers, and rugged mountains, often deep behind enemy lines, in coordination with fixed-wing assets and other helicopters. These SAR missions highlighted the UH-1's versatility, range, and hover performance in the most challenging environments. Stories of Dustoff and SAR Hueys are legendary in military aviation lore, embodying the helicopter's role as a true lifesaver and a symbol of hope on the battlefield. This capability was vital during intense Dustoff extractions under fire.

Post-Vietnam, the Huey continued in U.S. service into the 2000s in training, utility, and special operations roles. Upgraded variants with composite blades, modern avionics, and improved engines extended their life. The design was license-produced or copied by several nations, and civilian versions (Bell 204/205/212) are widely used today in firefighting, logging, and emergency medical services.

The Bell UH-1 Iroquois transformed military operations by proving the helicopter's value as a battlefield multiplier. From pioneering air assault doctrine, legendary Dustoff MEDEVAC, and search-and-rescue (SAR) missions in Vietnam to decades of reliable service worldwide, the Huey's versatility and toughness set the standard for utility helicopters. Its legacy endures in museums and active fleets, reminding new generations of the courage of the crews who flew "into the valley."

About Our Artifact

This helicopter, serial number 64-13502, flew with the 116th Assault Helicopter Company in Vietnam in 1966. It received significant battle damage in 1967 and went into prolonged maintenance. It eventually found its way back to the States, providing years of helicopter rescue service to several agencies, including Miami, FL, Concord, NH, and the Salem, OR based National Guard. It was retired from service in September 1994 and is on loan from the U.S. Army Tank-automotive and Armaments Command (TACOM).

The Bell UH-1P Huey (P-Model)

The Green Hornet Gunship of Special Operations

BILL KOLB

MONDAY DOCENT

Summary

The Bell UH-1P Huey, a specialized gunship variant of the UH-1, served the U.S. Air Force's 20th Special Operations Squadron ("Green Hornets") in Vietnam. Converted for armed escort and special operations, the P-model excelled in protecting medical evacuation and search-and-rescue missions. Its miniguns and rockets allowed it to suppress enemy fire while escorting rescue helicopters into hot landing zones. The UH-1P's speed, firepower, and reliability made it a vital asset for combat search and rescue, special operations, and psychological warfare throughout Southeast Asia.

The UH-1P was a modified version of the Bell UH-1F Huey developed for U.S. Air Force special operations. Based on the successful UH-1 platform, the P-model was converted into a gunship with twin mini-guns and rocket pods. It was primarily operated by the 20th Special Operations Squadron, known as the "Green Hornets," for covert missions in Vietnam.

The UH-1P retained the reliable Lycoming T53 turboshaft engine of the Huey family, providing good power and maintainability in forward operating conditions. It featured the classic Huey cabin with armament modifications, including door-mounted 7.62 mm miniguns and external rocket pods. This configuration gave the aircraft significant firepower while maintaining the versatility and ruggedness that made the Huey legendary.

In Vietnam, the UH-1P's primary contribution was in armed escort and search-and-rescue support. Green Hornet crews flew alongside MEDEVAC and CSAR helicopters, using their miniguns and rockets to suppress enemy ground fire during extractions from hot landing zones. This allowed wounded soldiers and downed air crews to be safely recovered from contested areas. The P-model's speed and firepower enabled it to provide effective covering fire while rescue forces operated in high-threat environments. Many successful rescues in Vietnam owed their success to the protective presence of UH-1P gunships,

The UH-1P's SAR support methods relied on its combination of mobility and firepower. Crews used door guns for suppressive fire and rockets to mark or destroy enemy positions threatening rescue operations. The aircraft's ability to operate from small clearings and its familiarity with ground forces made it an ideal escort platform.

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The Bell UH-1P Huey (P-Model)

The Green Hornet Gunship of Special Operations

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After Vietnam, some UH-1P aircraft continued in training and utility roles. The type represented an important step in the evolution of armed helicopter operations and special operations aviation. Its success helped pave the way for more advanced gunships and dedicated CSAR platforms.

The Bell UH-1P Huey proved the value of armed helicopter escorts in combat search-and-rescue operations. Its firepower, speed, and dedication to protecting MEDEVAC and rescue forces saved countless lives during the Vietnam War. The "Green Hornet" UH-1P remains a powerful symbol of special operations aviation and the critical role helicopters play in bringing personnel home safely.

About Our Artifact

Our P-Model is currently in Restoration, where it is being returned to its original condition.

The Bell AH-1 Cobra

The Snake that Guarded the Rescues

BILL KOLB
MONDAY DOCENT

Summary

The Bell AH-1 Cobra was the world's first dedicated attack helicopter, entering service in 1967 and becoming a legend in Vietnam. Its sleek design, powerful armament, and agility made it ideal for close air support and armed escort missions. The Cobra excelled in protecting medical evacuation and search-and-rescue helicopters, using rockets and guns to suppress enemy fire during extractions. Variants served the U.S. Army, Marines, and allies for decades, proving the value of dedicated gunships in combat search-and-rescue operations.

The AH-1 Cobra was developed by Bell Helicopter as a private venture to meet the U.S. Army's need for a fast, armed escort helicopter. Based on the UH-1 Huey's dynamic components, the Cobra featured a narrow fuselage, tandem seating for pilot and gunner, and stub wings for weapons. The prototype first flew in 1965, and the aircraft entered combat in Vietnam in 1967.

The Cobra was powered by a Lycoming T53 turboshaft engine, giving it a maximum speed of about 170 mph and excellent maneuverability. Early models carried 2.75-inch rockets, 7.62 mm miniguns, and 40 mm grenade launchers. Later variants added TOW anti-tank missiles and more powerful engines. The aircraft's low silhouette and agility allowed it to operate effectively at treetop level, making it a formidable escort for slower helicopters.

In Vietnam, the Cobra's most critical role was often protecting medical evacuation ("Dustoff") and search-and-rescue missions. As armed escorts, Cobra crews flew alongside Huey MEDEVAC helicopters, using rockets and guns to suppress enemy ground fire during extractions from hot landing zones. This allowed wounded soldiers to be rapidly evacuated to medical facilities. The Cobra's speed and firepower enabled it to loiter over rescue areas, providing covering fire while helicopters performed pickups. Many downed pilots owed their lives to Cobra crews who marked enemy positions and directed strikes during CSAR operations.

The Cobra's SAR support methods relied on its agility and heavy armament. Pilots used rockets to mark targets and suppress anti-aircraft positions, while the gunner provided precise minigun and grenade fire. The tandem seating allowed the crew to focus on different threats simultaneously. This teamwork proved vital in contested areas where rescue forces were highly vulnerable. The aircraft's ability to withstand damage and continue fighting further enhanced its effectiveness in rescue-escort roles.

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The Bell AH-1 Cobra
The Snake that Guarded the Rescues

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Post-Vietnam, upgraded Cobra variants continued serving in the Marine Corps and with international operators. The AH-1W Super Cobra added more powerful engines, advanced avionics, and Hellfire missiles. The type saw action in Operations Desert Storm, Iraqi Freedom, and other conflicts, where it continued to provide armed overwatch for rescue and MEDEVAC missions.

The Bell AH-1 Cobra revolutionized attack helicopter tactics and proved indispensable in protecting search-and-rescue operations. Its speed, firepower, and dedication to escorting vulnerable MEDEVAC and CSAR helicopters saved countless lives. The Cobra's legacy as a guardian of the rescues endures in modern gunship doctrine and preserved museum examples.

About Our Artifact

This aircraft is on loan from the U.S. Army Tank-Automotive and Armaments Command (TACOM).

The Cessna O-2 Skymaster

Eyes in the Sky for Search and Rescue

BILL KOLB
MONDAY DOCENT

Summary

The Cessna O-2 Skymaster, a military version of the civilian 337, served as a vital forward air control and search-and-rescue support aircraft during the Vietnam War. With its distinctive push-pull twin-engine design, excellent visibility, and long loiter time, the "Oscar Deuce" excelled at locating downed aircrews, marking targets with smoke rockets, and coordinating helicopter rescues over hostile terrain. Its slow-speed handling and reliability made it indispensable for directing SAR missions and protecting rescue forces. The O-2 played a key role in saving lives while operating in some of the most dangerous conditions of the war.

The Cessna O-2 Skymaster was developed in the mid-1960s as the U.S. Air Force sought a more capable replacement for the aging O-1 Bird Dog in the forward air control (FAC) role. Based on the civilian Cessna 337 Super Skymaster, the military O-2A featured a unique push-pull engine configuration with one engine in the nose and one in the rear fuselage. This design provided excellent visibility, redundancy, and low-speed handling, making the aircraft well-suited for observation and search missions.

The O-2 carried a crew of two and was equipped with wing pylons for smoke rockets, flares, and light ordnance. Its slow cruising speed and ability to loiter for extended periods allowed pilots to conduct thorough visual searches over dense jungle or mountainous terrain where downed pilots might be located.

During the Vietnam War, the O-2's most critical mission often involved search-and-rescue support. When aircraft were shot down, O-2 FACs were frequently the first on scene. They conducted visual searches, used smoke rockets to mark enemy positions threatening the rescue area, and directed strike aircraft to suppress ground fire. The O-2 also served as a radio relay between downed crews and incoming rescue helicopters, guiding "Sandy" A-1 Skyraider escorts and HH-3 or HH-53 "Jolly Green Giant" helicopters to the precise location. This coordination was essential in contested areas where enemy forces could quickly reach crash sites.

One notable example involved O-2 crews supporting the dramatic rescue of downed air crews in areas like the A Shau Valley. FACs flew dangerously low and slow, marking targets and maintaining contact with survivors while coordinating complex, multi-aircraft rescue operations under heavy fire. Their efforts often made the difference between successful extraction and

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The Cessna O-2 Skymaster

Eyes in the Sky for Search and Rescue

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capture or death for isolated personnel.

The O-2's push-pull design gave it a significant advantage in SAR work. If one engine was damaged by ground fire, the aircraft could often still fly home on the remaining engine — a feature that endeared it to crews operating in high-threat environments. Its quiet operation compared to jet aircraft and excellent low-speed maneuverability also helped it evade detection while searching for survivors.

Although primarily an observation and FAC platform, the O-2's contributions to search and rescue were profound. By providing real-time eyes over the battlefield and precise coordination, it helped establish many of the tactics still used in modern combat search and rescue.

The Cessna O-2 Skymaster proved that a relatively simple, slow-moving aircraft could perform one of the most dangerous and important missions in modern warfare. Its role in locating and protecting downed aircrews through visual search, target marking, and rescue coordination saved countless lives during the Vietnam War.

About Our Artifact

The Museum's O-2A has a particularly notable history, as it took part in the famous "Bat 21" rescue operation made famous in the 1988 movie of the same name. On April 2, 1972, a North Vietnamese surface-to-air missile (SAM) shot down an American EB-66 aircraft behind enemy lines. Only one crew member, Lt. Colonel "Gene" Hambleton, managed to escape the plane. The Museum's O-2A called in a flight of A-1E Skyraiders to drop small aerial mines around Hambleton's position to protect him from thousands of North Vietnamese troops closing in on him. Hambleton ended up evading capture for eleven and a half days before being rescued.

Evergreen Aviation & Space Museum purchased this O-2A in 2014 and it was restored on site by our team of restoration experts and volunteers.

The Fairchild Republic A-10 Thunderbolt II

The Warthog That Guards the Rescues

BILL KOLB
MONDAY DOCENT

Summary

The Fairchild Republic A-10 Thunderbolt II, affectionately known as the "Warthog," is a rugged close-air-support jet renowned for its ability to support search-and-rescue operations. Designed to survive heavy ground fire, the A-10 excels in RESCAP (rescue combat air patrol) missions, loitering over battlefields to suppress threats while escorting rescue helicopters and coordinating extractions of downed aircrews. Its massive 30 mm GAU-8 cannon, long endurance, and durability have saved countless lives in conflicts from the Gulf War through Afghanistan, Iraq, and now Iran. The Warthog remains a vital asset in combat search and rescue.

The A-10 Thunderbolt II was developed in the 1970s specifically for close air support of ground troops against armored threats. Fairchild Republic created a heavily armored twin-engine jet with exceptional survivability. The aircraft first flew in 1972 and entered operational service in 1977. Its design prioritized low-speed maneuverability, large payload capacity, and the ability to absorb battle damage while continuing the mission.

The A-10 is powered by two General Electric TF34 turbofan engines, giving it excellent loiter time and the ability to operate from forward airfields. It features a 30 mm GAU-8 Avenger cannon capable of firing depleted uranium rounds, along with multiple hardpoints for bombs, rockets, and missiles. The aircraft's titanium "bathtub" armor protects the pilot and critical systems, enabling it to withstand direct hits from small arms fire and anti-aircraft fire.

While best known for close air support, the A-10 has played a crucial role in combat search and rescue (CSAR) missions. In the Gulf War, A-10s flew RESCAP missions, providing armed overwatch for rescue helicopters attempting to recover downed pilots. Their prolonged loiter time allowed them to remain on station for hours, using the GAU-8 cannon and rockets to suppress enemy forces that threatened rescue operations.

In Afghanistan and Iraq, the A-10 continued this vital SAR support role. Its ability to fly low and slow over rugged terrain made it ideal for locating isolated personnel, marking enemy positions, and protecting rescue teams. A-10 pilots often coordinated complex extractions under fire, using their cannon to create safe corridors for helicopters. The aircraft's durability proved essential — many Warthogs returned to base with significant battle damage after protecting SAR forces.

The A-10's SAR methods rely on its unique combination of endurance, firepower, and survivability. Pilots

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The Fairchild Republic A-10 Thunderbolt II

The Warthog That Guards the Rescues

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use the aircraft's sensors and visual reconnaissance to locate survivors, then suppress threats while directing rescue assets. This "Sandy" role — inherited from earlier A-1 Skyraider pilots — requires specialized training and close coordination with Joint Rescue Coordination Centers.

The Fairchild Republic A-10 Thunderbolt II has proven that dedicated close-air-support aircraft can be decisive in search-and-rescue operations. Its ability to deliver sustained, accurate firepower while surviving in contested airspace has saved numerous lives across multiple conflicts. As one of the most beloved and effective aircraft in the U.S. inventory, the Warthog continues to serve as a guardian for those in peril.

About Our Artifact

80-0186 is a Gulf War veteran. This Thunderbolt II was deployed to Saudi Arabia for Operations Desert Shield and Desert Storm, where it was piloted by Col. D.E. Sawyer. On February 15, 1991, it was struck in the tail by an Iraqi SAM (surface-to-air missile) and sustained over 300 shrapnel holes. The aircraft was offline for 11 days, and after 139 hours spent on repairs, it rejoined air operations.

This A-10 was used in several other operations and was last flown by the Defense Advanced Research Projects Agency (DARPA) for avionics research. This "Hog" was then retired and spent time on static display outside the Raytheon Company facility at the Tucson Municipal Airport in Arizona.

After several years of moving from one airbase to another, the aircraft was acquired and transported to join the Museum's collection on October 31, 2016.

The Northrop Grumman RQ-4 Global Hawk

High-Altitude Eyes for Global Search and Rescue

BILL KOLB
MONDAY DOCENT

Summary

The Northrop Grumman RQ-4 Global Hawk is a high-altitude, long-endurance unmanned aerial vehicle (UAV) that provides critical intelligence, surveillance, and reconnaissance support for search-and-rescue operations worldwide. Capable of flying for over 30 hours at altitudes above 60,000 feet, the Global Hawk delivers real-time imagery and data to locate downed personnel, map disaster areas, and coordinate rescue forces. Its ability to operate in contested or remote environments has made it an invaluable asset in combat search-and-rescue and humanitarian missions, from the Middle East to natural disaster zones.

The RQ-4 Global Hawk was developed in the 1990s as part of the U.S. Air Force's effort to create a persistent, high-altitude surveillance platform. Northrop Grumman's design emphasized long endurance, advanced sensors, and satellite communications for beyond-line-of-sight control. The aircraft first flew in 1998 and reached initial operational capability in 2001.

The Global Hawk is powered by a Rolls-Royce F137 turbofan engine, allowing it to cruise at altitudes up to 65,000 feet with a range exceeding 14,000 miles and an endurance of over 30 hours. It carries a sophisticated suite of sensors, including synthetic aperture radar (SAR), electro-optical/infrared cameras, and signals intelligence equipment. These systems provide high-resolution imagery day or night, in all weather conditions.

While primarily an ISR platform, the RQ-4 Global Hawk has become a key enabler of search-and-rescue missions. In combat operations, it provides persistent overhead surveillance to locate downed air crews, identify threats, and relay real-time data to rescue forces. Its high-altitude vantage point allows it to cover vast areas quickly, mapping potential survivor locations and enemy activity without risking manned aircraft. During disaster response, Global Hawks have delivered critical imagery of flooded or earthquake-damaged regions, helping coordinate humanitarian SAR efforts.

The Global Hawk's SAR support methods rely on its advanced sensors and long endurance. Operators use synthetic aperture radar to penetrate clouds and foliage, identifying heat signatures or movement from survivors. Electro-optical systems provide detailed visual confirmation, while the aircraft's communications relays ensure seamless coordination between ground teams, rescue helicopters, and command centers. This persistent presence has proven invaluable in operations such as the search for downed pilots in contested airspace and large-scale disaster response.

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The Northrop Grumman RQ-4 Global Hawk

High-Altitude Eyes for Global Search and Rescue

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The RQ-4 has supported numerous real-world SAR missions, including post-disaster assessments after major earthquakes and floods, as well as combat recoveries in the Middle East. Its ability to remain on station for extended periods allows rescue forces to operate with better situational awareness and reduced risk.

The Northrop Grumman RQ-4 Global Hawk has transformed search and rescue by providing unmatched high-altitude, long-endurance surveillance. Its sensor suite and communications capabilities enable faster location of survivors and more effective coordination of rescue forces. As unmanned systems continue to evolve, the Global Hawk remains a vital guardian in both combat and humanitarian search-and-rescue operations.

About Our Artifact

The Museum's RQ-4A Global Hawk is a mock-up of a Block 10, one of the aircraft's earlier versions, and was donated by Northrop Grumman Corporation. Block 10 Global Hawks saw combat in Afghanistan and Iraq, before being transferred to the U.S. Navy and NASA in 2011. Today, larger Global Hawk models (the Block 20, 30, and 40) are in service all over the world with the U.S. Air Force, as well as the U.S. Navy's MQ-4C Triton, a maritime variant of the Global Hawk. It is part of the Museum's permanent collection.

Mystery Corner

ALLYN VANNOY
ARCHIVES

Editor's Note: *Last month, the Mystery Corner item was the group of ribbons shown below. The question was, "What is the ribbon at the bottom-right of the group?" It is the Croix de Guerre from France. It was awarded to soldiers who distinguished themselves through acts of heroism in combat with the enemy. This particular collection of ribbons belonged to Major Don Beerbower. His story is below:*

Found on the shelves of the Archives, a memorial with a pilot's scarf, photos, and ribbons for Major Don M. Beerbower, USAAF, Commanding Officer, 353rd Fighter Squadron, killed in action on August 9, 1944.

Born August 26, 1921, to Clarence W. Beerbower and Josephine F. (Carson) Beerbower in Davidson, Saskatchewan, Beerbower flew his first combat mission on December 1, 1943, and scored his first victory, a Bf 109 on January 5, 1944. Beerbower named his P-51B 'Bonnie B', in honor of his daughter, Bonnie.

He scored additional victories in January 1944 and was promoted to captain on January 15, 1944. He finally achieved "ace" status on February 20, 1944. On April 8, 1944, Beerbower destroyed three German planes and damaged two others while escorting a bomber formation. Beerbower became a double ace on August 8, 1944, scoring his tenth victory, receiving the Silver Star- the third-highest decoration for valor in combat.

Though fellow pilots were transitioning to the newer P-51D 'Mustang' fighter plane, Beerbower chose to retain his B-model, as it had four .50-cal. machine guns and, as a result, was lighter, with better speed, climb, and maneuver characteristics.

Beerbower scored his final victory, a Focke-Wulf Fw 190 on July 7, 1944, bringing his total aerial victories to 15 and 2 aircraft destroyed on the ground.

During his final mission on August 11, 1944, Beerbower destroyed one enemy plane and a gun emplacement and was targeting a second when his plane was hit in the wing and fuselage. The aircraft entered a vertical climb, stalled, and dove straight into the ground. Beerbower jettisoned the canopy during these maneuvers and managed to get out of the aircraft, only to be hit by the tail. He never opened his chute.

He was posthumously awarded the Distinguished Service Cross - the second highest decoration for extraordinary heroism in combat.

Major Beerbower's ribbons below the pilot wings:

Distinguished Unit Citation (later changed to the Presidential Unit Citation)

Top: *Distinguished Service Cross / Silver Star with bronze oak leaf cluster / Distinguished Flying Cross with two bronze oak leaf clusters*

Middle: *Purple Heart / Air Medal with four bronze oak leaf clusters and silver oak leaf cluster / American Campaign Medal*

Bottom: *European-African-Middle Eastern Campaign Medal with four bronze stars / World War II Victory Medal / Croix de Guerre (France)*

Mystery Corner

ALLYN VANNOY
ARCHIVES

In this and future editions of the FlightPlan, Archives will provide a picture of an artifact/item for which they have no idea what it is, how it came about, or where it originated.

The following month, Archives will provide the answer or the best-guess submissions, if any.

THIS MONTH'S MYSTERY:
This is a Why instead of a What.

Why are the wheel well doors on the F-117A Nighthawk different colors? One is silver-metallic, and the other is dull black. Answer to be revealed in the August edition.

Readers are encouraged to provide Archives with their best answer/guess by responding to Jean Herkamp at: **jean.herkamp@evergreenmuseum.org.**

Band of Brothers

The McMinnville, Oregon Band of Brothers meets on the **first Thursday of each month.** Because of changes, we are not sure of the location at the Museum. The **meetings start at 11:30 am** and run about an hour, with coffee and cookies served. More details can be found at the group's **Facebook page: https://www.facebook.com/groups/838928846550343**

We are currently looking for speakers. If you would like to become one of the monthly speakers, please contact **Al Arguedas** at **aja@onlinemac.com.**

MUSEUM MISSION

Evergreen Aviation & Space Museum is a force of curiosity and courage for kids of all ages to gain the confidence to take flight.

APRIL FLIGHTPLAN NEWSLETTER CONTRIBUTORS

EDITOR: BILL KOLB BILL@KOLBVINEYARDS.COM

FEATURE WRITERS: BARRY BROWN, JEAN HERKAMP, BILL KOLB, JERRY SAUTER, ALLYN VANNOY

LAYOUT: ROB ZEH

EMAIL SUBMISSIONS TO: FLIGHTPLAN@EVERGREENMUSEUM.ORG