

## The Advent of Stealth

In the early 1970's, both the United States and Israeli Air Forces sustained unusually high losses of aircraft to advanced Soviet air defense systems during combat operations. These events triggered the thinking of both military and aerospace industrial communities regarding how best to counter those advanced systems.

**1974-1975:** In 1974, Ken Perko joined the Defense Advanced Research Projects Agency (DARPA); leaving his position with the Special Projects Group at Wright-Patterson AFB, Ohio, where he had developed a unique perspective regarding the difficulty of detecting targets with radar. He was familiar with ongoing work at the Air Force Research Laboratory (AFRL) solving some missions with "reduced signature stuff." So, the question was: How low does the Radar Cross Signature (RCS) need to be to defeat the new (and future) threats? Bill Bahret (AFRL) gave Perko the needed RCS levels.

Perko soon became aware of industry's RCS reduction efforts. He requested study proposals from five companies asking how low did they think they could get. Of the five, Northrop and McDonnell Douglas were the only potentially sound submittals. However, Lockheed heard of the study efforts and accepted a \$1.00 contract to buy their way in. The study contracts were to be managed by the mini-RPV office by Major Bob Bowen, before Jack Twigg. Perko only wanted to hear results that met the needed numbers, nothing else. In the spring of 1975, Lockheed hit the numbers; two months later, Northrop hit the numbers. Time to tell George Heilmeyer, the head of DARPA.

The next step was to build two large models and test them on a pole; but that would cost about \$35 million. So, the strategy became to split the bill three ways with the Air Force and industry; DARPA putting in 34%. The next task was to get the Air Force to commit to their share.

George Heilmeyer scheduled a meeting with **Dr. Malcolm Currie** to tell him what DARPA had discovered.



**Currie** immediately called (then) **Maj Gen Al Slay** in the Air Force's R&D office for Aircraft...they met and laid out the results of DARPA's work and the plan to move forward. **Slay** said "no" to the Air Force giving DARPA \$10 million. **Currie** then decided to go see (then) **Lt Gen William Evans** the Air Force's Deputy Chief of Staff for Research & Development... but found **Slay** already in his office. They briefed **Evans**...who said to **Slay**... "gee **Al**, I don't see how we can't do this..." **Slay** agreed, as did the Air Force Chief of Staff **Gen David Jones**. DARPA made preparations for conducting a competition between Northrop and Lockheed to measure the RCS of two large low observable aircraft models. The results of this competition lead to a technology demonstration flight program to be named "Have Blue."

**1975-1977:** In June 1975, (then) **Major Ken Staten** took on a new job in the Air Force's Fighter Requirements Office. He recognized the importance of finding a way to reduce the RCS for future fighter aircraft, but he couldn't find any interest on the part of the senior Air Force leadership to pursue an alternate strategy to designing future aircraft requirements. While searching around for possible ideas, one of **Staten's** office mates suggested that they should go visit DARPA to see if they might be working on anything of interest, and **Staten** met Ken Perko. Perko laid out the DARPA plan for the "Have Blue" demonstrator aircraft. **Staten** continued his search for leadership interest in what is now a viable alternative design approach; but had little success. **Staten** worked directly for (then) **Brig Gen (Sel) Bobby Bond**, who was responsible for

tactical aircraft requirements. He chatted with **Bond** about what he learned at DARPA and **Bond** suggested he write down his thoughts and "we'll see where it goes;" so, **Staten** started writing "thought papers" covering a wide range of issues and opportunities. Sometime in the fall of 1976, after reading a number of **Staten's** "thought papers," **Bobby Bond** decided that this was important. He then tasked **Staten** to put together a two-part briefing that they could take to Gen Bob Dixon at HQ Tactical Air Command. The first part dealt with mission analysis which was presented by (then) Major Joe Ralston, who was assigned to the Air Force's Mission Analysis shop. **Staten** was to give the technology portion of the briefing. Dixon only took the first part of the briefing. So, **Staten** and Ralston took the briefing to HQ SAC and told them what they wanted to do; then worked their way up through **Slay**, **Gen Jones**, the Secretary, and **Bill Perry**. **Bill Perry** saw stealth better than most of the "blue suiters" and here's what he said: "Start full scale development. Start the preliminary design on a fighter, make the program black, and run it out of the Pentagon."

**1977-1978:** In April 1977, the Air Force established a new office, RDPJ in room 5D156, and assigned five officers. The group that was eventually assembled had the dubious honor of being known as "The Magnificent Five." The leader of the group was **Colonel Dave Williams**; **Major Ken Staten**, Major Joe Ralston, **Major Bob Swarts**, and Major Jerry Baber were the team members.

The Magnificent Five were ready thanks to all of the work **Ken Staten**, with Joe Ralston's Mission Analysis experienced help, began to define what this revolutionary aircraft should be. So, in April 1977, they started a six-month, Phase I configuration definition study on a \$1.9 million dollar cost-plus fixed-fee [CPFF] contract. The Phase I program eventually became the F-117. This program was initiated in October 1977 (before Have Blue flight testing had begun) by way of an \$11.1 million, one-year CPFF study contract to study two variants: an F-15-sized A-model and a 90,000-pound B-model.

**Staten** was now the Program Manager, and heavily influenced all the technical aspects of the design so as to make the F-117 an effective penetrating strike aircraft. He wrote what were actually the requirements for the airplane, which said this is what its job is going to be, this is what kind of avionics it's going to have, this is the kind of weapons it's going to use, this is what the mission is going to be, and that it would be a single-seat aircraft. There were lots of issues in the fighter-pilot community that he had to step up to, and they were all decided by **Ken Staten** and Joe Ralston. They set the contractual relationship and how that was going to work. They wrote the vehicle specification and the management plans. All this stuff was just done by a handful of people - Joe Ralston, **Ken Staten**, **Bob Swarts**, Jerry Baber and so they pressed on.

In 1978, when they briefed **Bill Perry** on their progress, he issued a letter for them to proceed and then said he wanted it to be a compartmented program. The objective of the security program was to protect the technology for 3-5 years.

In addition to these five officers, there were some Air Force Office of Special Investigation Special Agents with counterintelligence backgrounds collocated in 5D156. By that time, **Captains Bob Bird** and **John Hartford** had established the bedrock security policies and direction that would allow the protection of the technologies and programs well beyond the initial goal of buying 3-5 years of lead time.

In November of 1978, the Magnificent Five awarded a contract to Lockheed to develop and manufacture the F-117 aircraft. At the same time, the Air Force was beginning to transition responsibilities and authorities for program management and security to the Aeronautical Systems Division at Wright-Patterson AFB, Ohio. **Col Dave England** was tasked to establish a new covert Program Office which would become the Air Force's lead acquisition authority for low observable aircraft programs.



## Pioneers of Stealth HONOREES

### 1990

Bill Elsner

### 1992

Ben Rich

### 1994

Alan Brown

John Cashen

Ken Perko

Dick Scofield

Jack Twigg

### 1996

Allen Atkins

Jerry Baber

Paul Kaminski

Denys Overholser

Pat Sharp

### 1998

Ken Dyson

John Griffin

Skip Hickey

Sue Hoag

Fred Oshiro

Joe Ralston

Dick Sherrer

Irv Waaland

### 2000

Rob Bongiovi

Hal Farley

Keith Glenn

Jim Kinnu

Pete Knauth

Yu Ping Liu

Dave Lynch

Don Merkl

Norm Nelson

Steve Smith

John Summerlot

Dick Thomas

### 2002

Jim Bottomley

J. J. Campbell

Dick Cantrell

Woody Gibson

Ken Hasson

George Heilmeier

Dick Hilderbrandt

Bob Loschke

Sherm Mullin

Steve Sloan

### 2004

Skip Anderson

Carl Conklin

Jack Gordon

Ed Martin

David Maunder

John "Tack" Nix

Charlie Tomita

Alan Wiechman

### 2006

Dick Bertelson

Henry Combs

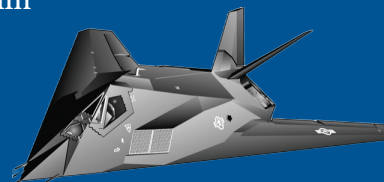
Gary Ervin

Ralph Grimm

Allen Koester

Ed Lovick

Jim Uphold



PIONEERS OF STEALTH  
[www.pioneersofstealth.org](http://www.pioneersofstealth.org)

## Pioneers of Stealth Memorial Dedication

# THE ADVENT OF STEALTH



*From 1990-2006, the Pioneers of Stealth Association honored some 57 individuals for their contribution to the success of the four programs which are part of this Memorial Dedication. Their names are listed in this brochure, and in some cases in the narrative. This narrative also recognizes those individuals who played an important role in the early days of the programs but have not been previously recognized; their names are in **BOLD** type.*

National Museum of the USAF  
Memorial Park  
Wright-Patterson Air Force Base, Ohio  
July 17, 2023