The History of the United States Navy Flight Surgeon/Naval Aviator Program

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Early in the history of aviation the need for a special kind of physician who could understand the physical and psychological problems encountered by flyers was well recognized. These physicians were called flight surgeons. In 1922, RADM W. A. Moffett, USN, the first Chief of the Bureau of Aeronautics and the "Father of Naval Aviation," called for a group of Navy medical officers to be trained as flight surgeons. He believed that all Navy flight surgeons should be trained as pilots "primarily in order that they may experience the emergencies and conditions that arise in flying." This article traces the history of the Navy flight surgeon/naval aviator. It chronicles the evolution of the Navy's flight surgeon/naval aviator program from the World War I doctor who flew seaplanes at a Naval Air Station in Italy to the present day flight surgeon/naval aviator who flys operational and test aircraft as a research pilot.

THE UNITED STATES NAVY'S flight surgeon/naval aviator program had its beginnings during the First World War on a small canal leading from the old fishing village of Ravenna, Italy to the Adriatic Sea. Retired RADM Clinton Githens DeFoney, MC, USN, during an interview recorded in 1976 by the Naval Aviation Museum Foundation, said: "I was in France (Italy) at the first air station we had at Porto Corsini, 60 miles south of Venice, and I learned to fly in an old Macchi 5, which was a single engine seaplane" (2,4).

Less than 6 yr after the birth of Naval Aviation, Congress declared war on Germany. The Navy's First Aviation Detachment under the command of LT Kenneth Whiting, USN (Naval Aviator number 16) was the first unit of United States armed forces to arrive in France. Whiting's detachment had only 7 officers and 122 enlisted men. He had no aircraft and only 4 aviators, so he arranged for the French to train 50 of his enlisted men as naval aviators in French aircraft and began taking over French airfields. Before the U. S. Navy arrived, German U-boats sank a ship a day off the French coast. During the 10 months that our patrols were operational they sank only three ships in the same area. By the time of the armistice, the Navy had over 16,200 men and 500 airplanes based on 27 different naval air stations in Europe. Naval aviators were flying everything from tiny Italian chase planes (fighters) to large land-based bombers.

One of the six officers who accompanied LT Whiting was Assistant Surgeon Arthur S. Sinton. That a physician was included as a key member of this small pioneer detachment indicates that the U. S. Navy has always considered medical support vital to the Navy's mission. It's good to know that, even then, the naval aviator didn't leave home without his "flight surgeon."

The Italians were experiencing the same problems as the French (9,10). They had aircraft, but they were running out of pilots. We had no aircraft suitable for combat, but we had some good men. However, when the U. S. Navy agreed to take over an air station in Italy, it took some innovative recruiting. Some of the aviators assigned to the new air station at Porto Corsini came overseas as members of the American Ambulance Corps. These ambulance drivers were given "on the job" training in a ground school at Moutchie, France, and a flying course at the NAS Lake Bolsena, Italy, before being assigned as naval aviators at NAS Porto Corsini (13).

Even the doctor came overseas with a volunteer Presbyterian group from Philadelphia that staffed the Navy Base Hospital Number Five in Brest and operating unit on the western front. Dr. Clinton Githens DeFoney was recruited to be the "flight surgeon" at NAS Porto Corsini.

NAS Porto Corsini was established in 1918 as a bombing station on the Adriatic Sea. It was built by the Italians on a 100-ft wide canal leading through a malarial swamp from the Adriatic Sea to the old fishing village of Ravenna. The canal was the only runway, and it was oriented 90° from the prevailing wind. Porto Corsini was called "The station of the worried landings."

NAS Porto Corsini's importance lay in its strategic position. It was only 66 mi across the Adriatic sea from Austria's largest seaport at Polo. According to ADM Henry Thomas Mayo, Commander of the Atlantic Fleet, Porto Corsini was: "The most heavily engaged unit of the U. S. Naval Forces in Europe." ENS Hammann, the first naval aviator to win the Medal of Honor, flew out of Porto Corsini (6).

Although Dr. Defoney, at that time, had no training in aviation medicine, he faced the whole gamut of operational and preventive medical problems you would expect at a remote air station in time of war. Even the fresh

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water had to be shipped in. That he found time to learn to fly the Macchi 5 seaplane under these trying conditions is remarkable, but Clint DeFoney was a remarkable man. After the war Dr. Sinton returned to medical duties at the U. S. Naval Hospital in Gulfport, MI, but Dr. DeFoney continued his interest in aviation medicine. He practiced medicine in Seattle, WA, for a short time, but missed the excitement of naval aviation, so he came back to Pensacola. He continued to fly Navy planes with the permission of his commanding officers and accumulated more flight time than many of the senior naval officers. Most of them took flight training only to qualify for command of the early aircraft carriers. In addition to flying with these aviation legends, he headed the Navy's psychological testing effort and performed psychological evaluations on most of the early naval aviators.

Perhaps RADM William A. Moffett, USN, was thinking of Dr. DeFoney's World War I record when he said that all Navy flight surgeons should have flight training. As the first Chief of the Navy's Bureau of Aeronautics (BUAER), RADM Moffett outlined this policy in a letter to the Chief of the Bureau of Navigation (BUNAV) dated 6 January 1922. He stated: "It is believed vitally important that these men be pilots as well as doctors for two reasons. Primarily, in order that they may experience all the emergencies and conditions that arise in flying and, secondly, in order that they may accompany expeditionary flights without being dead weight."

This letter was endorsed favorably by the Navy Surgeon General E. R. Stitt. Later, in a letter dated 12 June 1922 to the Commandant of the Naval Air Station, Pensacola, FL, the Chief of BUNAV, Thomas Washington, stated: "There will be sent to Pensacola for the class beginning 1 July a certain number of officers of the Medical Corps and possibly one or two of the Construction Corps." The letter made it clear that these officers were to "maintain their identity as to the profession to which they belong," but "at the completion of the course they shall be designated naval aviators." The letter further stated that this program was "to be considered for the present in the light of an experiment." The Chief of BUNAV solicited comments and recommendations at the end of the experiment.

Lieutenants Bertram Groesbeck and George O. Thompson successfully completed flight training on 22 December 1922 and were designated Naval Aviators 3058 and 3059. From the comments and recommendations in BUAER's letter of 30 December 1922 and BUMED's endorsement, it was clear that RADM Moffett still strongly supported the program and Surgeon General Stitt believed that, "due to the shortage of doctors," the program was "quite impractical—in fact impossible." He was not convinced that flight training was "necessary or even advisable." Perhaps due to BUMED's objections, BUNAV did not approve Groesbeck's and Thompson's naval aviator designations at this time.

LT Page O. Northington, MC, USN, completed flight training on 12 July 1923, and BUMED requested that these three medical officers be designated as naval aviators. Again, the designations were not approved. This early experiment in training flight surgeons as naval aviators came to an end because the Surgeon General saw no need for this training. (These letters and others mentioned later are found in BUMED file number 125221 in the National Archives, Washington, DC.)

RADM Moffett and Surgeon General Stitt did sign an agreement on 4 November 1924 (approved by BUNAV on 6 December 1924) that set the requirements for the designation of a naval flight surgeon. These requirements were:

(1) Three months at the Army's school of Aviation Medicine.
(2) Three months of satisfactory service in a naval aviation unit.

There was no requirement for the flight surgeon to fly except in an emergency, but he could fly if he so desired. This agreement, for the first time, made it possible to designate medical officers in the Navy as flight surgeons.

We know the idea of flight training for naval flight surgeons was still alive, because LCDR Frederic Russell Haselton, MC, USN, was designated Naval Aviator Number 4149 on 17 June 1935 and sent to duty aboard the USS Saratoga. Although Doctors Groesbeck, Thompson, and Northington had been trained as naval aviators over 12 yr before this, and Dr. DeFoney had been flying for 17 yr, Dr. Haselton was the first naval flight surgeon to be designated a naval aviator. However, the political climate was changing.

Commanders Groesbeck and Thompson were given a refresher course in 1936 and given new designation numbers, 4278 and 4279. By this time, Dr. Northington had dropped out of flying at his own request. The next year Clint DeFoney, at age 50, was sent to a formal flying course and finally designated a naval aviator in 1937. This was nearly 20 yr after he flew a Macchi 5 seaplane at Porto Corsini. The same year, LT Lester E. McDonald, MC, USN, completed flight training at Pensacola on 7 May 1937 and was designated Naval Aviator Number 5213.

In 1939, the same year that the Naval School of Aviation Medicine in Pensacola was established, CAPT John C. Adams, Chief of the Aviation Division of BUMED, reported that permission had been granted to train a number of flight surgeons each year as naval aviators (1). Doctors Thenton Boaz and Sam Wisler were designated naval aviators in 1941.

At the beginning of World War II, there were only 49 naval flight surgeons, but 7 of these were naval aviators. By 1945, 22 flight surgeons were naval aviators (11). These names and those from other eras are listed in the **Appendix**.

In 1942, CAPT Bertram Groesbeck was called back from his wartime assignment on VADM William F. Halsey's staff to become the second Officer-in-Charge of the Naval School of Aviation Medicine (3,12). ADM "Bull" Halsey, Commander Aircraft Battle Force and the leader of the carriermen in the Pacific would not have let his medical officer go if he had not been convinced that training flight surgeons was of prime importance.

CAPT Groesbeck knew the kind of flight surgeon Halsey's fleet needed, so he completely revised and updated training to fill this need. Groesbeck emphasized training in tropical medicine, neuropsychiatry, and physiology

Fig. 1. The Author in the Navy's Mark IV full pressure suit at NAS Point Mugu, CA in 1959. Doctor Frank Austin was the first test pilot to fly in this suit. It was later adapted for Project Mercury. (Photo courtesy of the U.S. Navy.)

and established a research laboratory (now NAMRL) under his command. His main legacy might have been that he gave the student flight surgeon a formal, miniature course in flying that covered every phase of training given to a student naval aviator. The 6-week course included primary training up to solo, day and night formation work, air-to-air gunnery, dive bombing, and ground school including communication and navigation.

CAPT Groesbeck, in a report to the Aero Medical Association in October of 1943, stated: "Our aim is to make the flight surgeon an officer of the greatest value to aviation, and it seems that the inclusion of practical material in the syllabus of naval aviation medicine has been a definite step in that direction" (8).

RADM Moffett would have taken parental pride in CAPT (later RADM) Groesbeck's success. He had foreseen a requirement for this kind of flight surgeon 20 yr before and had taken bold steps to make it happen. In a letter as Chief of BUAER dated 30 December 1922, he had stated: "This Bureau is convinced that the only way a medical officer can acquire the feeling of ease and comfort in the air, and the desired knowledge of the art of flying, is by undergoing the course of flight training."

RADM "Billy" Moffett (The first designated Naval Flight Officer) was not a naval aviator, but as Chief of BUAER through three 4-yr terms, he shunned promotions and higher commands to stay at his post during the formative years and to see that naval aviation (and naval aviation medicine) was firmly established. He earned the title "Father of Naval Aviation." Unfortunately, in 1933 he died when the Navy Airship Akron (ZRS-4) crashed at sea. Tragically, the Akron carried no life jackets. ADM Moffett was survived by three naval aviator sons.

After the war, new problems confronted aviators as they entered the jet and the space age. No longer was it enough for flight surgeon/naval aviators (FS/NAs) to simply go through the rigors of flight training so they might understand the aviators under their care. Thanks to the vision of Dr. (RADM) Groesbeck, all naval flight surgeons had enough flight training to relate well with the aviator.

Flight surgeon/naval aviators had evolved into the role of operational and research pilots. They were important members of the aerospace medical team. Unless they were designated naval aviators on official flight orders involving the actual control of aircraft, and unless they flew regular operational, training, and test flights, they could not do their jobs.

CAPT Roland A. Bosee, MSC, USN, played a pivotal role in the evolution of the flight surgeon/naval aviator program by personally demonstrated the value of medically oriented research pilots. Dr. Bosee was a World War II naval aviator who had earned his Ph.D. in biochemistry from Syracuse University in 1937. Shortly after the war, he was assigned to the Naval Air Test Center at Patuxant River, MD, as head of what would become the Aviation Medicine Branch. He soon transferred to the newly formed Medical Service Corps. Even though he was now a staff officer, he continued to fly as a research pilot and worked on ejection seats and positive pressure oxygen equipment. Later, from 1953 to 1956, he served as Test Director at the Naval Aerospace Recovery Facility at El Centro, CA. Here he participated in many parachute jumps and ejection seat tests, and worked on the development of the integrated parachute harness and the automatic parachute release system.

In July of 1956, Dr. Bosee was assigned to the Aerospace Crew Equipment Laboratory (ACEL) in Philadelphia and played a major role in the development and testing of the Navy's full pressure suit. He served as Director of ACEL from 1958 to 1964 and was a mentor

Fig. 2. The Author prepares to record ECG and EEG signals from Lt. Bill Elliott during a high altitude F4-Sparrow III missile test flight at the Naval Missile Center in 1959. Lt. Elliott wore the Mark IV full pressure suit during these test flights. Observing, from left to right, are Captain Carl Pruitt, MC, USN, Pacific Missile Range Medical Officer, Dr. Orr Reynolds, DOD Director of Science, Research, and Engineering, and Dr. Clark Randt, Director of NASA Life Sciences. (Photo courtesy U.S. Navy.)

for many of the flight surgeon/naval aviators who came along after the war (**Fig. 1**).

CDR Sid Brody became the first dually designated flight surgeon/naval aviator to enter the jet age in 1949 when he flew the FH-1 Phantom. He was the first FS/NA to land on an aircraft carrier, the first Senior Medical Officer of the new Saratoga and the first Commanding Officer of the USNH at Quonset Point, RI.

CAPT Norman Barr, a FS/NA who won his Army Air Corps wings in 1936, invented what he called a "radio-electrocardiograph" in 1953. This might have been the first operational use of biotelemetry. Besides flying around in his R4D demonstrating this new technology, he used it to monitor physiological data from pilots during high altitude balloon flights and from monkeys sent into space aboard suborbital flights (5,7) (**Fig. 2**).

CDR Frank Austin, MC, USN, used Dr. Barr's invention to monitor Navy pilots during carrier operations, and I followed up on Dr. Barr's work while I was at the Naval Missile Center by developing and patenting a floating electrode for inflight ECG's and EEG's. We were now able to get relatively noise free recordings and evaluate the active pilot as an integral part of the weapon system.

CDR Austin, in 1957, was the first FS/NA to complete test pilot training and the first test pilot to fly the Navy's full pressure suit. He tested this suit on zoom flights above 60,000 ft, on unpressurized flights, during carrier operations, and on free fall parachute jumps. LT Commander Dick Tabor flew operational jet aircraft in this pressure suit and tested it in the altitude chamber. This suit would later be adapted for Project Mercury (**Fig. 3**).

In 1965, CDR Joseph P. Kerwin, MC, USN, became one of the first two physicians to be chosen as NASA astronauts and the first U. S. physician to fly in space on the first Sky Lab mission in 1973. Dr. Kerwin continues to be active in aerospace medicine as Head of KRUG Life Sciences (**Fig. 4**).

Unfortunately, it is impossible to mention many of the accomplishments of the giants in this field in such a limited space. Some of their contributions to aerospace medicine are well known. Names like Chuck Gell, J. C. Early, Cliff Phoebus, Mel Snowden, Merrill Goodwin, and RADM Frank Voris are a part of aerospace medicine history.

There have been 45 additional naval medical officers who have been dually designated as flight surgeon/naval aviators since World War II; the total number is 67. Five of these completed test pilot training; three were chosen as astronauts; three became presidents of the Aerospace Medical Association; and five lost their lives in aircraft accidents. Porter Hoidale and Tom Flattery were killed during World War II, Andy Stevenson died in 1969 as a passenger in a helicopter crash. A year later Don Sampson was killed in an F-4 on an instrument approach into NAS Point Mugu, CA, after being up most of the night on medical duties. In 1991, we lost Astronaut Sonny Carter in a commercial aircraft accident. Considering the inherent dangers in naval aviation, this is a remarkable safety record. Out of 67 FS/NAs, over a time span of 9 decades, only 1 was in actual control of the aircraft at the time of a fatal accident.

At the present time there are five flight surgeon/naval aviators on active duty in operational and test billets, and CDR Dave Brown, MC, USN, is serving as a mission specialist with NASA. There are several naval aviators in the

Fig. 3. Five flight surgeon/naval aviators meet at the Johnson Space Center in 1964 to train as aeromedical flight controllers for the Gemini Program. Standing from left to right are Drs. Fred Kelly, Jeff Jeffery, Joe Kerwin, Bob Kelly, and Ed Jacobs. A year later Dr. Kerwin was selected as a NASA Astronaut. (Photo courtesy NASA.)

medical corps who have chosen not to be dually designated, but who are, also, doing a great job for the Navy.

The International Association of Military Flight Surgeon Pilots (IAMFSP), an affiliate organization within the Aerospace Medical Association, has members from over ten countries and has recently sponsored scientific sessions on problems in operational military aviation each year at the annual meeting of the AsMA. This session is consistently well attended by AsMA members and has begun to document some of the accomplishments of those involved in this program. At the 1997 meeting in Chicago, the scientific session was on night vision goggles. This program was chaired by CAPT Chuck Antonio, USN(Ret), a FS/NA who flew 100 combat missions over Vietnam in an A-7 before turning to aerospace medicine.

While the role of the FS/NA continues to evolve, it is obvious that many of the advances in aerospace medicine have been made by men and women who were neither flight surgeons or pilots. The aerospace medical community consist of physicians, nurses, physiologists, psychologists, bioengineers, and a host of other individuals who regularly make significant contributions to aerospace medicine, but who might never consider landing a jet on the deck of an aircraft carrier.

However, the flight surgeon/naval aviator brings a dimension to aerospace medical research that might not be available otherwise. Those close to aviation know that aviators and test pilots are programmed to make any system "work" and not complain. If they complain that a system is too hard to operate, it might be considered a reflection on their macho image or their aeronautical competence. The flight surgeon, the human engineer, and the system designer cannot be expected to always know that a system is sub-optimal because they haven't flown it in an operational environment.

The flight surgeon/naval aviator examines the system close up as a pilot and views it through the critical eyes of a flight surgeon. This is true whether it's a weapon system, a cockpit design, or an item of personal flight equipment.

Naval aviation medicine has a long history of contributions to the specialty of aerospace medicine. The Navy also has nine decades of experience with a select group of specialists trained as both flight surgeons and naval aviators. If the flight surgeon/naval aviator is carefully selected, well trained, and properly assigned, he (or she) will continue to make significant contributions to flight

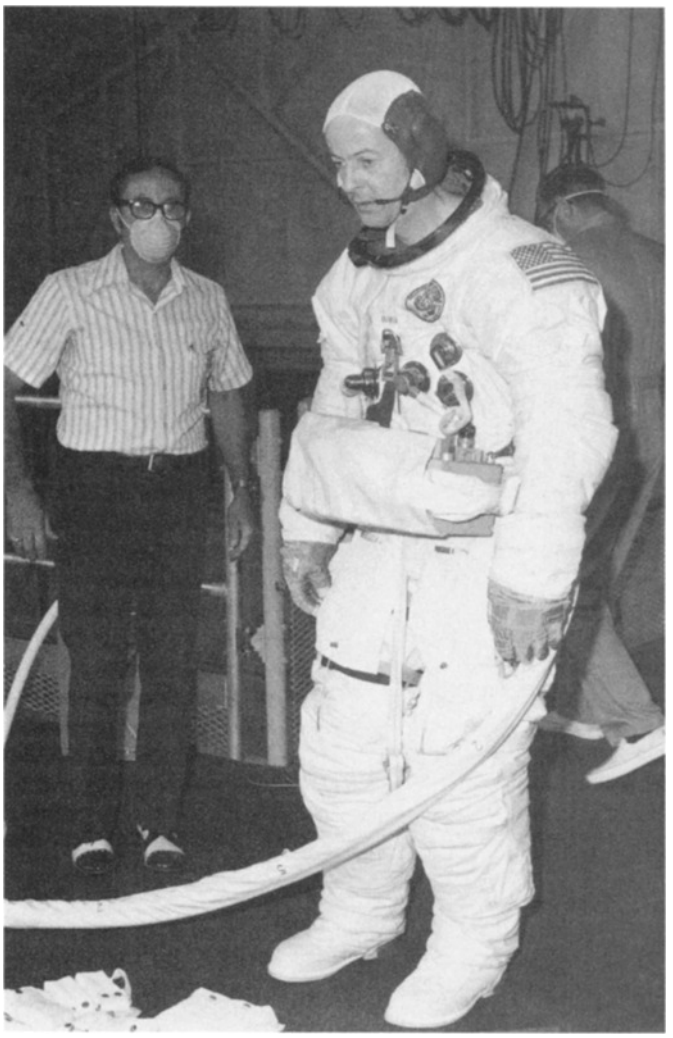

Fig. 4. Dr. Joe Kerwin, a flight surgeon/naval aviator, was the first U.S. Physician to fly in space aboard the 1973 Sky Lab mission. Astronauts Kerwin and Conrad performed a crucial EVA to deploy a damaged solar panel that would make the Sky Lab habitable for subsequent flight crews. (Photo courtesy NASA.)

APPENDIX:

The following list is intended to include all United States Navy physicians who served as dually designated flight surgeons/naval aviators. Many other physicians chose to serve as naval aviators and flight surgeons at different points in their careers and made significant contributions to both fields. While compiling this list, I received information and assistance from many individuals and other reliable sources. Any errors, misinformation, or opinions expressed herein are those of the author and in no way reflect the official position of the U.S. Navy.

Flight Surgeon/Naval Aviators Trained Before and During World War II

1918

Clinton Githens DeFoney (Trained in 1918 and designated a naval aviator in 1937).

1920's

Bertram Groesbeck — George Dennis Thompson

Page O. Northington (Both Groesbeck and Thompson were trained in 1922 and designated naval aviators in 1936. Northington was trained in 1923 but never designated).

1930's

Frederick Russell — Haselton Lester E. McDonald

1940's

Thenton David Boaz — Samuel J. Wisler
Normal Lee Barr Harold — Aasvald Smedal (Hal)
Julius Cherry Early (JC) — Tom Titian Flaherty
Porter M. Hoidale — John Richard Marron
Marion Tuttle Martin (Mino) — Merrill H. Goodwin
Clifford P. Phoebus (Cliff) — Charles F. Gell (Chuck)
Lewis S. Sims (Lou) — William M. Snowden (Mel)
Earl Milton Spaulding — James Llewellyn Waters
Ralph Davis Whitley

Flight Surgeon/Naval Aviators Trained After World War II

1940's

Sidney Irving Brody (Sid) — Edward Milton Wurzel (Ed)
Frank B. Voris

1950's

H. C. Nordstrom (Hi) — T. R. McKinley
Frank Feodore Kalchuk — Frank H. Austin
Lawrence E. Banks — Joseph H. Britton
Richard Hugh Tabor (Dick) — Glenn F. Kelly (Fred)

1960's

Andrew W. Stevenson (Andy) — John Leslie Moore (Jack)
Edmund Perry Jacobs (Ed) — Joseph P. Kerwin (Joe)
John P. Skelly — Clyde Grey Jeffrey (Jeff)
Robert John Kelly (Bob) — John Lucas
Allen Jerome Adeeb — Stewart Ragland (Stu)
James B. Boorstin (Jim) — Phillip Thomas Briska
William Roderic Crawford — Donald E. Sampson (Don)
Romaine Leroy Bendixen — John T. Chambers
Harrison G. McDonald — Harry P. Hoffman

1970's

Axel F. Campbell (Frank) — James Hershel Baker (Jim)
Loys Eugene Williams — Dennis McPhate
Robert E. Hughes (Hawkeye) — William Scott (Bill)
William R. Davis (Bill) — Manley L. Carter (Sonny)

1980's

Robert J. Shields (Jack) — Joseph C. Antonio (Chuck)
Ken Koskella — William F. Miller (Bill)
William T. Busch

1990's

David Brown — Eric H. Schindler
Kris Belland

safety, test and evaluation, and operational readiness in today's and tomorrow's Navy.

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