The Alford American Family Association

Serving the Alford community over 25 Years
We Are Family!!

Cecil Orie Alford

AAFA #0751 — Charter Member

September 28, 1933 – December 18, 2019

Cecil Alford, President
Pi Tau Chi Rewards Christion Service
Georgia Institute of Technology
Atlanta, Georgia

Pi Tau Chi was established to recognize outstanding Christian students. All students professing the Christian faith are eligible for membership. Members are chosen on the basis of their contributions in the form of leadership and service to religious activities on campus.

For the past five years the Pi Tau Chi chapter at Tech has taken a very active part on many religious functions and has served the needs of many Christian students by aiding them in bringing out their Christian leadership abilities.

Information and photograph copied from the 1956 Blue Print, the Georgia Tach annual.

Cecil O. Alford, 86, of Lawrenceville, GA passed away on December 18, 2019 and is survived by his wife, 3 children, 7 grandchildren, and 3 great-grandchildren. He was a man of strong faith, serving God throughout his life as a deacon, Sunday School teacher, and Bible study leader.

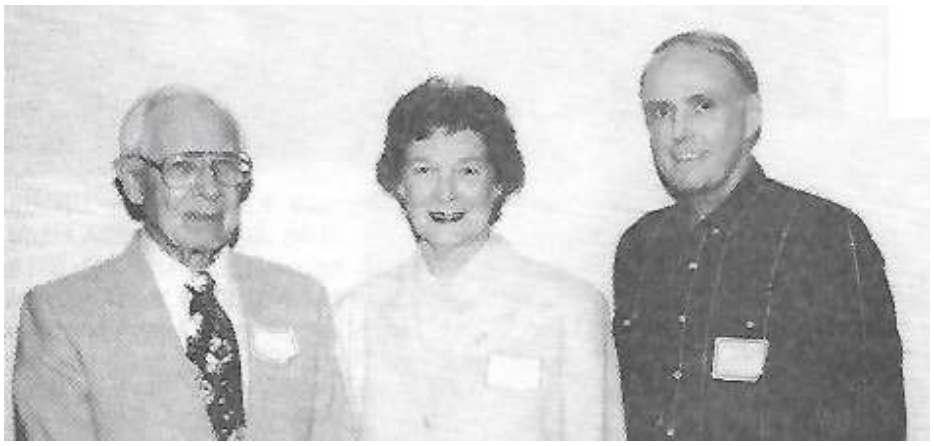
Dr. Alford was a professor of electrical and computer engineering at Georgia Tech from 1968 – 1998. In 1975 he founded the computer engineering research laboratory at Georgia Tech, where he conducted and directed research in robotics and missile defense. He was the author of numerous articles and publications in his fields of expertise. Prior to joining the Tech faculty, he held teaching positions at Tennessee Tech and Mississippi State.

During his distinguished career, he worked in private industries and was a consultant in industry and government.

A Memorial Service will be held at Johns Creek Baptist Church, 6910 McGinnis Ferry Road, Alpharetta, GA 30005 on Saturday, January 11, 2020 at 1:00PM. A reception will follow the service. In lieu of flowers, donations may be made in memory of Cecil Alford to Johns Creek Baptist Church at https://jcbc.org/give/.

Information copied from the Wages & Sons Funeral Homes & Crematories web page.

The *1956 Blue Print* Annual
Georgia Institute of Technology
Atlanta, Georgia
1956 Senior Class



1995 Meeting in Decatur, AL
Descendants of Brittain Alford, 1781 NC
Brittain is a son of Isham Alford, 1749 NC
M Theo Wesley, #0098, MS (left)
Iris Elizabeth Alford, #0728, GA (center)
Cecil Alford, #0751, GA (right)

Birth:	28 Sep 1933 Gay, Meriwether County, Georgia, USA
Death:	18 Dec 2019 (aged 86) Lawrenceville, Gwinnett County, Georgia, USA

Family Members

- Parents
  Ryburn Orie Alford, 1902-1941
  Mary Will Fitzgerald Wright, 1913-1978
- Spouse
  Rebekah Ann West (m. 1959)
  Yvonne Reeves
- Siblings
  Harry Fitzgerald Alford

Information copied from Ancestry.com web page.

AAFA NOTES:

1. Cecil's Alford lineage: Cecil Orie 1933 GA[1], Ryburn Orie 1902 GA[2], Julius Ceasar 1869 GA[3], Brittain Washington 1826 GA[4], Brittain Washington 1782 NC[5], Isham 1755 NC[6].
2. Cecil was a Distinguished Member twice
   a. 1997 - Outstanding Internet work for AAFA
   b. 2000 - Accomplished excellent work collecting and converting Alford social security decedent data, processing city directory data on Alfords as substitute for lost 1890 census and has contributed articles for the Association quarterly as well as a member of the Editing Committee
3. He was on the Board of Directors from Fall, 1996 to Fall, 2000.
4. Janice M. Smith to Lisa Alford Freschi: … he was a great AAFA member. At one of the meetings, Cecil gave an excellent presentation on the line of Brittain Alford who was a son of Isham Alford. He also contributed a lot of information on this branch of the Genealogy of the family of Isham Alford born 1755 in North Carolina. [AAFA] is grateful for all of Cecil's contributions to the Alford Association. …

Georgia Tech lands 'Star Wars' computer contract

ATLANTA (UPI) – A Georgia Tech engineer and his associates have helped the school land the largest contract in the university's research history - $21.3 million – to design a computer so fast that it can tract missiles for a "Star Wars" defense system.

The high-speed computer – to be named SPOCK IV – will involve special purpose differential equations needed to track a fast-moving target, according to **Dr. Cecil Alford** of the school's electrical engineering department. **Alford** heads a 40-member research team that will be developing the computer for the Defense Department based on an early model he and a Ph.D. student put together.

The computer will allow a defensive missile to track, intercept and destroy missiles high in the earth's atmosphere and even into space.

"This computer is for a special purpose and it's going to be considerably faster than computers on the market today," **Alford** said Friday. The computer is a parallel-processing system – meaning it is capable of simultaneously solving a very high number of mathematical problems.

The SPOCK computer – Special Purpose Operational Computing Kernel – incidentally also is the name of a popular science fiction character – Dr. Spock, first officer of the spaceship Enterprise in the television series "Star Trek."

Alford said the first SPOCK built was a working model and is about the size of a standard size automobile. The Army, after seeing promise in SPOCK I, awarded **Alford** a series of one-year contracts to design a more sophisticated version of SPOCK I which came to be known as SPOCK II.

The electrical engineer said the research team will be working on VSLIs – very large scale integrated circuits – "which just means there are a lot of transistors placed on a single micro chip" in developing the computer for the federal government's Strategic Defense Initiative (SDI).

"Right now, we don't have a computer that's really fast enough to do the job and those that do run with fairly good speed require an awful lot of software to drive them," said **Alford**. "We're trying to build one that doesn't require all that software, that performs special purposes in a smaller space.

"Through VSLI we want to make the computer smaller. When we've accomplished that, we'll probably have one somewhere in the size of a cubic foot to maybe three times that."

A SPOCK III computer using current day technology will be built "at the same time we're developing new VSLI chips that should enable us to build SPOCK IV," said **Alford**.

"Most readers would not understand the kinds of equations we're talking about having this computer perform," said **Alford**. "It's a very complicated series of equations needed to make it work."

Published in the Marietta Journal, Marietta, GA, Sat, Aug 24, 1985, page 9.
Information copied from the Genealogy.com web page.

Cecil Alford

cecil.alford@ee.gatech.edu

Professor - The School of Electrical and Computer Engineering, Georgia Tech

Dr. Cecil O. Alford received the B.E.E. and M.S.(E.E.) degrees from the Georgia Institute of Technology in 1956 and 1960 respectively. He received the Ph.D. in Electrical Engineering from Mississippi State University in 1966. He has worked at Harris Corporation and Martin Marietta in Melbourne and Orlando, Florida in developing guidance and control techniques for missile systems. He was one of four designers of the control system for the SPRINT missile. Dr. Alford has also worked at Boeing Company (Huntsville, Alabama), the Aerospace Corporation (Cape Kennedy, Florida), and ARO, Inc. (Tullahoma, Tennessee). At these companies he worked on control systems for the Saturn V, Titan and Atlas boosters, computer simulation hybrid computing, and techniques for partial differential equations.

Professor Alford's current research interests are in designing and building proprietary, high performance, special purpose, parallel computers. He directs research in the Computer Engineering Research Laboratory. Under a multi-million-dollar contract from the Army Strategic Defense Command, he leads undergraduate and graduate students, engineers, faculty, and staff developing new VLSI chips, ADA programming tools, algorithms for signal processing, guidance, navigation and control, and packaging techniques. Designs include new computer architectures for molecular dynamics, fluid flow, weather modeling and other computer-bound problems.

Published in the *AAFA ACTION*, Fall 1995, page 35.

Words from Wick

Cecil O. Alford, AAFA #751

A relatively new member, Cecil is married and is professor at Georgia Tech. He volunteered to help as soon as he joined AAFA, signing up to key in the 1920 Georgia census. He proposed a new project and took on the job of managing it: coordination of a team to extract all the published information about Alfords in Georgia libraries.

Published in the *AAFA ACTION*, Spring 1996, page 10.

Digging Up Bones!

By Yvonne R. Alford

As the spouse of an AAFA member [Cecil O. Alford, Director and AAFA #751], I understand and support my husband's interest in exploring his family history. Since our first AAFA meeting in Decatur, Alabama I have helped Cecil locate material and address AAFA correspondence. However, when he announced that our summer vacation needed to be spent pouring over old records in courthouses and traipsing through overgrown cemeteries in the hot, sticky south; I decided that was a bit much!

Assuring me that there would be fun things to do in each town, I reluctantly agreed! So during the months of June and July, we converged on the Georgia towns of Gay, Zebulon, Covington, Greenville, Thomaston, and Fayetteville. We talked with local residents, "camped out" at courthouses, and searched out abandoned cemeteries. At the end of the summer, I decided that it had been a positive experience after all.

In case there are other reluctant Alford spouses, I decided to share my observations and reactions! Perhaps they too will be encouraged to go digging up bones!

First of all, our experience was that each courthouse had a unique personality, ambiance and operating procedure. In some we worked in small, cramped rooms and handled enormous record books dating back to the early 1800's. We used a magnifying glass to help examine beautiful penmanship with flourishes and curls! It was awesome touching and handling books where people who lived so long ago had actually signed their names and recorded important events of their lives. We read about the trading of horses, furniture, land and other possessions. These transactions served As wedding gifts or payment for debts.

In other courthouses, the facilities were very modern with records on microfilm. In all cases, people were friendly And helpful with locating material and making copies.

The second meaningful part of the summer was revisiting parts of Georgia we had not seen in many years. Traveling the backroads from Atlanta to the small Southern towns made us realize how diverse our state really is. In Gay, Cecil's hometown, it seems that time has stood still. The stores were barren of merchandise, no dogs or people wandered the streets, and no cars disturbed the peace. Except for the "cotton-pickin' fair," not much seems to be happening in Gay these days. Cecil did enjoy seeing his old church, school, home, and the river where he fished as a boy.

For our efforts, Cecil has found more missing pieces to his family puzzle, and each discovery is exciting to him! I'm sure he will share his findings soon with the AAFA membership.

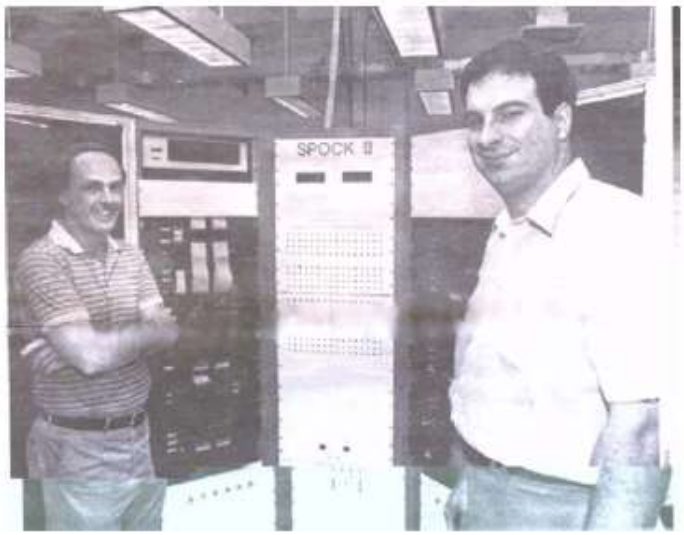
Published in the *AAFA ACTION*, Fall 1999, page 67.

About AAFA Members

Cecil O. Alford, AAFA #0751

PHOTOGRAPH:
Dr. Cecil Alford (L), SPOCK II (C) and Dr. Jim Hamblen are all smiles as their research efforts pay off in a $21.3 million Strategic Defense Initiative contract. (This is the heading for the photo of Spock and Cecil Alford and James Hamblen.)

Comment by Cecil Alford 1 The following article was published in the Georgia Tech Whistle, Volume 11, Number 21, July 29, 1985. Mark Hodges interviewed the two of us and took the picture. The article was sent out to newspapers all over the U.S. and was picked up by quite a few. Some who saw the article in their local newspaper, and knew one or the other of us, mailed us copies of the article.



Electrical Engineering Professors' SPOCK Earns Tech Largest Research Contract In Its 100 Years

By Mark Hodges, Research Communications Office, Georgia Institute of Technology

A computer named SPOCK, playing a role in Star Wars, has won Georgia Tech the largest contract in its research history. This "Star Wars" isn't a movie. It's the catch phrase for the Strategic Defense Initiative (SDI), a $1.5 billion effort to build a defense shield against the threat of a nuclear missile attack on the United States.

SPOCK is a computer which figures heavily in a five-year, $21.3 million SDI contract awarded to Tech by the Army's Ballistic Missile Defense Command Advanced Technology Center. Through this program, Georgia Tech engineers are designing ultrafast computers so that an autopilot on a satellite can track, intercept, and destroy missiles high in the earth's atmosphere and even out into space.

Tech's research in this field of computer engineering began in 1975, when Dr. Cecil Alford, an electrical engineering professor, and a Ph.D. student, Mike McQuade, designed a prototype computer they called "SPOCK I." This acronym only coincidentally matched the name of the popular science fiction character. It actually was a shortened form of "Special Purpose Operational Computing Kernel."

The computer is a parallel processing system, meaning it is capable of simultaneously solving a very high number of mathematical problems. The Army saw such promise in SPOCK I that, after three years, the Ballistic Missile Defense Command awarded Dr. Alford a small, five-year contract to design a more sophisticated version of the computer which came to be known as SPOCK II. A former Ph.D. student of Alford's, now assistant professor of electrical engineering, Dr. Jim Hamblen, designed the second SPOCK. Hamblen is co-principal investigator with Alford on the current project. . "We started out building a computer that we thought was useful just in the scientific community," Alford says. "Then, when the Strategic Defense Initiative began it became obvious that large amounts of data have to be computed almost instantaneously for any space-based defense system to work. This is a good example of how adequate funding can stimulate good science. We've been able to make strides with SPOCK that we'd never have been able to do otherwise."

It now appears that Alford and his associates will be able to design a computer with considerably greater power than the first- and second-generation SPOCK's. SPOCK II has 32 parallel processing elements. The new contract calls for Georgia Tech to design and evaluate a third-generation SPOCK computer with 128 of these elements. Faculty and students also will be producing a version of SPOCK II with VLSI microchips 100 times more powerful than those currently in use. This research will pave the way for them to design a SPOCK IV computer with a phenomenal 1,000 processing elements.

High-speed computation isn't the only objective of the program. The researchers also will be designing a system which doesn't require extensive software. "The Army doesn't want a computer that they have to add several thousand lines of computer programs to," Alford explains. "They're too hard to keep checked out. So, our design minimizes software."

The program is barely underway, but its presence at Tech has made the Institute an important player in the Strategic Defense Initiative. Several months ago, two other Electrical Engineering School faculty members, Dr. Tom Gaylord and Dr. Bill Rhodes, received a large contract to design an optical computer for the Initiative. Other research proposals are now in the works on the campus, and as SD! evolves, Georgia Tech may start to play other key roles in the pioneering research effort.

Additional comments by Cecil O. Alford, Nov. 5, 1999: The research continued for a full five years running out the full contract. During the fourth year, 1989, we wrote a new proposal for an additional five-year effort with potential funding of $7.5M. By 1991 this contract was in trouble as Star Wars began to wind down and money was pulled out of the program. We eventually ended the program around 1994 having spent around $24M on first class research . Many students were involved in the research, several receiving their Master of Electrical and Computer Engineering degree and/or their Doctor of Philosophy degree. James Hamblen was not the first student to work on this project. The honor goes to Mike McQuade, who built the very first version called Spock I. He earned his Ph.D. degree and now works for Dupont. Hamblen is an Associate Professor in the School of Electrical and Computer Engineering at Georgia Tech.

Mark was somewhat confused over the technology and did not give an accurate description of the project and its application. The essentials are as follows. In those days we anticipated a missile attack which might contain a large number of missiles carrying nuclear warheads. The mission of SDI was to develop a shield to protect the U.S. from this threat. Many people were involved in developing technology to support this program. The program at Georgia Tech centered on developing on-board computers to steer the missiles (often called an autopilot borrowing the term from the old days), and a ground-based computer to pass information from ground-based radar to the missiles. The computer in the picture was the Georgia Tech version of a potential ground-based computer to solve this problem. We built the hardware and developed the software and demonstrated the performance numerous times to government and industry personnel. This particular computer is called a “parallel computer” since it contains 32 processing units which are running at the same time solving one single complex problem. This was necessary to get the compute speed that was needed. Our technology was running at the enormous rate of 20 Mhz, which was state-of-the-art in those days. The most amazing thing is that we took a software system, written in Fortran for the U.S. Army and ported it to our computer. This was done to assure the Army that our work was based on their software system and not something that we had generated for show. We then demonstrated this software running on SPOCK II, at real-time speeds. This means the computer was solving the program fast enough to keep up with the real missiles when they replaced their software counterpart in the software. The next thing we did was to

convert our software code to ADA, which was the standard for the military. We then demonstrated this code running even faster than the Fortran code, which was absolutely incredible, and many refused to believe it. It took lots of patience and hours of explanations since no one had ever achieved anything this spectacular using ADA code.

The second thing we did was to build an on-board processor to guide the missile. In the initial phase of flight, the missile is launched by the ground based computer and is directed to a po int in space. The ground-based computer controls this p art of the trajectory. Information is being sent to the ground based computer concerning the incoming missiles which must be destroyed. The job of the ground based computer is to place attacking missiles in position to counter these incoming warheads. When the interceptor missiles reach a certain point in space they are in a position to see the warheads using an on-board seeker (a device much like the new digital cameras). Now comes the major problem of the interceptor. The seeker will see many warheads and must select one as its target. This requires enormous processing capability to track the warhead s, select one for a target, and then continue to track this target and guide the interceptor o n a course that will collide with th e target. Georgia Tech, on this project, built another parallel processor, much, much smaller than SPOCK II, to accomplish this purpose. This computer was also built and teste using the SPOCK II computer to simulate the warheads and the interceptor, without the flight processor. The actual hardware for the flight processor was connected to SPOCK II to calculate all the guidance functions for the interceptor as SPOCK II simulated the warheads and the interceptor. Using this technology, we were able to demonstrate that our flight processor was capable of solving the required equations to guide the interceptor on a collision course with the warhead . This simulation of a missile attack and an interceptor response was demonstrated many times to military and industrial personnel.

Published in the *AAFA ACTION*, Winter 2000, page 79-80.

2000 Meeting in Augusta, GA
Lisa and Joseph Freschi, GA with
daughter, Juliana Burnette,
son, Andrew Joseph and
parents Yvonne and Cecil Alford