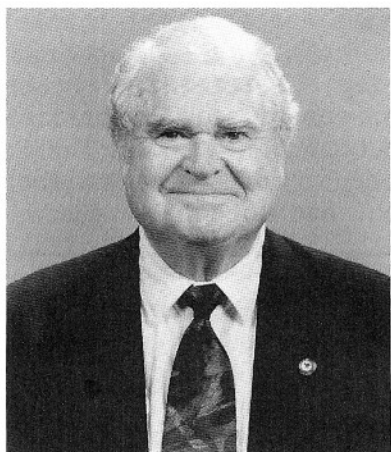# A Career Built on SIGINT
by Dan Hearn

Mr. Dan Hearn, now a consultant, is the former Vice President and General Manager of the Greenville Division of TEMCO, now submerged with E-Systems corporation. He represents a seldom recognized portion of the "family" of intelligence professionals - those who are part of Corporate America. Dan Hearn "stuffed" various air and seaborne reconnaissance platforms with SIGINT equipment and thus built his connection to the many reconnaissance/ intelligence personnel engaged in massive peripheral surveillance of the Soviet bloc over the past four decades. SIGINT is not merely systems; it is people. Dan Hearn continues, as President of the Reconnaissance Fund, to honor both the participants and those who sacrificed in the Silent War - the Intelligence War.

As an engineer, I have devoted most of my professional life to the design and production of Signal Intelligence (SIGINT) Collection Systems. Because SIGINT has played a critical role in U.S. military strategy since before World War II, my work has involved me in the defense of our nation during most of the Cold War and beyond. Like my colleagues, I have always been deeply concerned that our soldiers, sailors, and airmen, who are risking their lives have the best technology we can produce.

How I became involved in SIGINT is a long and convoluted story, but some of the events and systems may be of interest to the "old hands". I spent most of my early career in the Greenville Division of Texas Engineering and Manufacturing Company (TEMCO), which went through repeated mergers and transformations during the 20+ years I was there. We became TEMCO Aircraft Corporation, Ling TEMCO Electronics and Missiles Company, Ling TEMCO Vought Incorporated, LTV Electrosystems and, finally, E-Systems, Inc., but the group of highly qualified people remained the same.

In 1951, I moved to the Greenville Division, 50 miles Northeast of Dallas, as the only engineer in a group of 300 people and in 1965, I became the division's Vice President and General Manager. By 1969, the division staff had grown to 5,000, including over 1,000 engineers. The Division experienced the largest growth in its history during 1965 to 1969, growing from $4 million to $125 million in annual sales. Together, we played a critical role in the formation of the world's foremost airborne/ shipborne SIGINT collection capability.

TEMCO, the company which is now E-Systems, evolved into this high technology business from humble beginnings. During the late 1940s, it was busy building tractors, popcorn machines, and Fairchild F-24 and Globe Swift aircraft in Grand Prairie, Texas. It became financially successful as a result of its speed and skill at overhauling C-54 aircraft for the Berlin Airlift. Twenty-one days after arrival, an aircraft would be flown back to Germany almost like new.

Now based in Greenville, Texas, our Engineering Department began providing special electronic systems services on a quick reaction basis in 1955. The addition of this Engineering capability signaled the Greenville Division's gradual transition from an aircraft overhaul and modification center to a major electronic systems integration organization. This could not have been accomplished without our sound experience and skills in aircraft overhaul and production.

In 1956, we won a long-term renewable contract that involved the installation of special electronic mission systems and the overhaul and modification of a number of B-50 aircraft. The contract, Project 'HAYSTACK," eventually spanned three years and involved a total of ten aircraft. This program represented the beginning of a series of contracts for the

USAF that has resulted in well over a billion dollars in sales for the Greenville Division over 30 plus years. Many key people say "Big Safari" is the most outstanding example of "more bang for the buck" that they are aware of. This program was originally called "BIG FIVE," for the five contractors involved, but was renamed later to "Big Safari." **A National Airborne SIGINT collection effort** was underway.

Because even the acronym COMINT (Communications Intelligence) was classified in 1956 most programs were described as special electronic systems. The existing overhaul program gave TEMCO and the USAF a good cover.

The next year (1957) marked the beginning of a 17-year program for conversion of C-130 aircraft including installation of special purpose electronic systems, known as Project Sun Valley. In 1958, we felt the chill of the Cold War when one of our C-130 Sun Valley aircraft was shot down over Soviet Armenia. **The entire 17 man crew was lost.** We had been specially aware of the need for tight security, but this sad event made us more aware of its importance.

Ninteen-fifty nine was a very eventful year. The Division won, along with Gene Fubini's AIL, the contract to design and install the An/ASD-1 system in a KC135 aircraft. This gave us our first opportunity to use our new runway and even more significant, our new IBM360-50 computers. Joe Reynolds, one of our talented Twin Navion engineers, used these computers in the design of the aircraft installation. The USAF added eleven new C-130B aircraft to the Sun Valley Program, and we moved into our first new engineering building. After five years in a converted WWII Officer's Club, it was a great relief to have 40,000 new square feet including a "vault" SCIF.

The company became Ling-TEMCO-Vought (LTV) in 1961, after buying Chance-Vought Aircraft. The change helped the Division win the contract to develop and build the SIGINT system on the RC-135 "Office Boy" aircraft, first in the current Rivet Joint fleet, a valuable asset in the recent Gulf War. The RC-135 included better SIGINT systems including more operators. Since these aircraft were operated "over the pole" on extended missions, we developed the G-1080 Stellar, Inertial, Doppler Navigation System and the first inflight refueling system so the Office Boy aircraft could take on fuel from KC-135 tankers. These missions of 18-20 hours, now routine for Rivet Joint and Burning Wind, required

extensive modification for the additional crew including a new "bail out" hatch.

This period saw a reorganization of the USAF and LTV into what was then called the **Program Manager concept**. Prior to this, three internal factions were always at work in each organization. In the USAF it was the Buyer, the Project Engineer and the ultimate user. Each had his own view of the Program and no one was really in charge. A similar situation also existed within LTV. The Contracts Department, the Project Engineer and the Production Department had three different views of each program.

The adoption of the Program manager concept by both the Air Force and LTV made the Program Manager the one point of contact both in USAF and the company. I was made Vice President Systems, with the Director of Engineering, the Director of Programs and the Director of Customer Requirements, reporting to me. (Having learned early in the game that talented people in the intelligence units of the services did not want to talk to marketing types, we assembled a group of engineers, experienced retired service people, and support persons to form the Customer Requirements Department.) It worked well.

We formed LTV Electrosystems Inc., a separate subsidiary in 1965 and successfully expanded the electronic systems business with all branches of the service. We won a US Navy contract for the **USS Banner**, the first Shipborne SIGINT System, and a large ground tracking system and the RU8D aircraft for the US Army. We also made our first two entries into Airborne Command and Control systems by winning program expanded in later years to include four E-4A and E-4B aircraft (Boeing 747) Airborne National Command Systems.

In 1966, we started seven more RC-135 Rivet Joint aircraft as well as six more C-130 ABCCC aircraft, two C-123 Blackspot weapon systems for the USAF, the USS Pueblo, the USS Palm Beach, five R7VS and two P2VS for the Navy, and 50 more RU8, U-1 and U-6 aircraft for the Army.

Nineteen sixty-eight marked the beginning of the Peace Peek program. That program consisted of the modification and installation of SIGINT Systems in five Briguet Atlantic aircraft and two complete ground stations. This was the beginning of a 25-year 500 million dollar plus program that it is still active in 1994. We won this contract as a direct result of

the SIGINT experience gained on RB-50, C-130 and RC-135 aircraft. We also started the L450 HALE (High Altitude Long Endurance) aircraft that year, on company funded R & D. The goal was to design an aircraft with a SIGINT payload of 500 to 1000 pounds, fly over 50,000 feet for over 24 hours, We elected to make it an OPV (Optionally Piloted Vehicle). It was successful and the L450 was the forerunner to the EGRETT Program with GROB. Unfortunately, with the end of the Cold war, reunification, and tight budgets, the Germans canceled the EGRETT follow-on program.

...during my career, my interest in SIGINT was primarily technical, but now I am focussed on the people who risked their lives with the systems we built...

The tragic capture of the USS Pueblo deeply saddened me and several of my key people. During SIGINT Systems design, the customer, in this case Commander Lloyd Bucher and his crew spent a great amount of time in the facility learning all there is to know about the system. Pete, as Bucher was called, being a submarine skipper, was keenly interested in the crew and system to aid them in their mission. An early Pentagon meeting and decision would later turn out to be a tragic mistake. The decision was made to install automatic destruction systems. Seven tons of paper manuals made a formidable destruction problem, as did a WWII multi-compartmented cargo ship. In one heated meeting Navy seniors questioned why such systems were needed. "When was the last time a U.S. Navy ship was captured?" Added to this were concerns for the dangers presented the ship and the crew by such systems. May sordid stories have been written on the Pueblo. None have told the true story. Pete and the crew were tasked with "Mission Impossible."

During the most of my years as a systems engineer, my interest in SIGINT was technical and professional. I did not fully understand the importance of SIGINT in combat. However, as I met more US servicemen who used our technology, like USS Pueblo skipper Pete Bucher, I became more interested in understanding the challenges they faced. I later made a point of reading Earl Telford's books

Crosswinds and Setup, which explain TEABALL or RTIC-Real Time Intel to the Cockpit, a use of SIGINT technology in Vietnam. In 1972 U.S. aircrews faced a very threatening North Vietnamese Air Defense. Air crews claimed that defenses around Hanoi and Haiphong were worse than those encountered over Nazi Germany. In addition to practicing with ground controllers, (North Vietnamese) MIG crews engaged each other in mock aerial combat to sharpen dog fighting skills. The increased proficiency of the MIG force soon became evident. The kill ratio, which had stood at 2.2 to 1 in favor of the USAF dipped, and by June of that year, when the MIGS downed seven Air Force Fighter-Bombers while losing only two of their own, the MIGS had gained the upper hand.

What the Air Force had, however, was the ability to apply technology to make up for tactical shortcomings. One example was the establishment of TEABALL, a weapon control center that proved indispensable in overcoming the MIG challenge. Using a combination of radar and other intelligence-gathering sources and the downlinking capabilities of aircraft involved in the gathering and monitoring of various electronic signals, TEABALL analysts utilized all the up-to-the-moment information on enemy aircraft position: and TEABALL controllers passed this information directly to air crews so they could take whatever action was necessary. With TEABALL and Combat Tree, the kill ratio swung back to favor the USAF with five Phantoms lost to 19 MIGS downed between August and October 1972.

The current version of TEABALL is called FASTBALL and uses the F-16. Even though RTIC is now being pursued in a somewhat disconnected fashion within DOD, it has the potential to be just as important in future combat as it was in Vietnam, especially if all the "Turf" problems can be solved and some real technology and systems engineering issues can be addressed. The Binocular Program is an important preparatory step by NSA, which could be very helpful and deserves the support of the services. Frankly, when I returned to the SIGINT business as a consultant in 1980, I was surprised that turf problems had become worse and still remain a problem. I have observed and worked closely with all the individual services since 1951 and I am proud to have played a part. In these tough budget times, however we need to think, plan, and work jointly. We can no longer go out separate service ways.

Though it was gratifying to learn more about how SIGINT technology had saved the lives of US

servicemen, I was still deeply saddened that many brave US servicemen had lost their lives to the Cold War in spite of it. The loss of the 17-man crew shot down over Soviet Armenia in 1958, and the 19-man crew lost off the Kamchatka Peninsula in 1969 all affected me deeply, in part because the Greenville Division had converted the planes they were flying and installed their SIGINT systems. The systems had worked, but, SIGINT alone had not been enough to save the lives of the men lost. I was also saddened by the USS Pueblo incident in which one man died and 80 were captured and imprisoned in North Korea, and by the death of all U.S. servicemen lost on reconnaissance missions. These young soldiers, sailors, and airmen risked their lives on missions to reconnoiter the enemy around the world as Electronic Warfare became the norm. To quote Admiral Gorshov of the former Soviet Navy, "He who controls the EW battle will win the war." Although these are called reconnaissance or "peacetime" missions, over 200 men have been killed or captured carrying them out.

After beginning my work as a consultant, I decided to do all I could to honor the sacrifices made by these U.S. servicemen. The P.O.W. medal award ceremony for the crew of the U.S.S. Pueblo in San Diego in May 1990 compelled me and my friends to focus our energies in this direction. Before the ceremony, I learned that many of the members of the crew could not afford to bring their families to San Diego and many others were in such dire straits that they themselves would have difficulty financing the trip. The crew of the USS Pueblo was at long last being welcomed home, but far too late and totally inadequately. Because I felt that our brave men deserved more support, I led the drive to organize the Intelligence Reconnaissance Fund as a part of the Intelligence Scholarship Foundation. The purpose of the Intel/Recce fund is to honor the personnel of all services who served and, in some cases, sacrificed their lives on Cold War reconnaissance missions. We are now working to raise money to offer educational scholarships to deserving members of the families of the lost crews and other personnel, and to memorialize air, sea, and land missions and personnel.

I see my work with the **Intelligence Reconnaissance Fund** as the natural growth of my 40+ years experience in military intelligence. It has been over 40 years since I first went to work in Greenville and I have seen many brave men go to their death in service to this country, many of them aboard ships and planes I helped to build. I believe that these brave men and their families deserved our generous and wholehearted support.

****

Reconnaissance Fund

The Reconnaissance Fund is dedicated to the participants in the silent war -- the decades of air and sea reconnaissance intelligence missions along the periphery of the Soviet Union. It seeks to provide public education on the effort to the extent possible, and scholarship and other support to the participants and to dependents of survivors and casualties alike.

Contact Mr. Dan Hearn, Recce Fund President (619) 462-8932 or Col (Ret) R. Jonkers (703) 818-5947 for information about tax-exempt donations or other assistance.