



## *The Daedalean*

**Semper Discens**

*Monthly Aerospace Education Newsletter of the Connecticut  
Wing of the Civil Air Patrol*

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### **FOR FUTURE PLANNING**

21-25 JUN-National AEO School  
15 JUL-KC-10 Field Trip-McGuire AFB  
9-16 JUL-RSC-McGuire AFB  
9-16 JUL-Reg. Cadet Ldrshp School-Concord, NH  
23 JUL-07 AUG-NESA (two sessions)  
08-14 AUG-CTWG Encampment  
13-20 AUG-Reg. Cadet Ldrshp School-McGuire  
17-20 AUG-CAP Nat'l Summer Conference  
22-24 SEP-AOPA Summit-Hartford  
22-23 OCT-CTWG Convention

### **COMMUNICATIONS WITH THE DAE**

***Squadron Commanders and Aerospace Education Officers are requested to send the following information to [rocketto@aquilasys.com](mailto:rocketto@aquilasys.com):***

- 1. The name of the current AEO.***
- 2. Any new Yeager Awards.***
- 3. Any changes in AEO Specialty Tracks***
- 4. Any information about current squadron activities in aerospace such as special events or field trips.***
- 5. Cadet rocketry badge awards.***

### **CAP AEROSPACE EDUCATION MONTHLY NEWSLETTER**

The spring edition of the CAP Aerospace Education Newsletter and an archive of past editions is available on the CAP A/S Education main page at:

[http://members.gocivilairpatrol.com/aerospace\\_education](http://members.gocivilairpatrol.com/aerospace_education).

Each issue contains information on aerospace current events, CAP Aerospace Educators, curriculum ideas, and CAP aerospace activities.

### **ROAD TRIP-2011 NATIONAL CONFERENCE**

The DAE will be attending CAP's National Conference in Louisville in August. If any other members are interested in driving down and perhaps sharing a room, please contact [srocketto@aquilasys.com](mailto:srocketto@aquilasys.com).

### **CROSS COUNTRY TO THE SQUADRONS**

*399TH COMPOSITE SQUADRON-DANBURY*

Capt John Dellavecchia reports that the 388th is joining Experimental Aircraft Association Chapter 130 in a project to build an all wood and fabric Pietenpol light sport aircraft. The aircraft will be powered by a Continental engine and will be able to fly for 2.5 hours at 70 knots. The project is expected to take two years and will commence construction on June 6<sup>th</sup>.

Minnesotan Bernard Pietenpol designed and built the first "Air Camper" in 1929 and powered it with a Ford Model A engine. *Modern Mechanics* published the plans and they are still being built today.



*Pietenpol B4A, an early model, at the Hiller Museum*

**THAMES RIVER COMPOSITE SQUADRON-GROTON**

Capt Robin Wojtcuk has instituted a new program in which cadets assume major shares of the responsibility for for teaching safety, aerospace education, military customs and traditions, drill, drug demand reduction, and character development. Cadets are assigned responsibilities weeks in advance and are expected to study the material, consult with senior members when necessary, plan the lesson, and then deliver it to the entire cadet squadron



*TRCS Eyrie*

**CTWG GLIDER PROGRAM**

Lt Johnny Burke, CTWG Glider Project Officer reports that the Wing has been assigned 25-26 July for flights at Van Sant Airport, Erwinna, Pennsylvania.

Due to the driving distance, Eastern Connecticut Squadrons will have the option of scheduling their flights out of Springfield, Vermont later in the summer.

Cadet requirements for participation are as follow:

CAP ID card and Form 60, a weight less than 240 pounds, height not over six feet, four inches, age less than 18, no medication that would prevent operation of equipment, completion of online video Wing Runner Course on the Soaring Society of American website at

<http://www.soaringsafety.org/school/wingrunner/toc.htm>

Complete the test at the end of the presentation. Log on with the CAP ID number and last name and print the certificate.

Uniform for the event will be BDUs with sneakers (no boots) and hats.

Squadrons are asked to send a list of prospective participants with the following information: full name of cadet with rank, CAP identification number, and unit, date of last glider flight, and the syllabi numbers of the remaining glider orientation flights.

**NEW CTWG YEAGER AWARD WINNERS**



The following officers have completed the Aerospace Education Program for Senior Member and been awarded the Yeager Ribbon.

- SM Jason D. Pampena-New Haven Minutemen
- SM Patricia E. Sterling-186th Composite Squadron

and from the 103<sup>rd</sup> Composite Squadron

1Lt Abraham G. Hakim-Zargar  
1 Lt Rand P. Parent  
1Lt Tabitha A. Parnet  
2Lt Stephen P. Nolan

### **GREAT STARTS WEEKEND**

*13-15 MAY, 2011*

*reported by*

*Capt Robin Wojtcuk*

Thirty-six cadets attended the Great Start Weekend (GSW), hosted by Waterbury's 143rd Composite Squadron at Camp Niantic.



*Where's Waldo?*

*Find your squadrons cadets in this formation!*

The purpose of the GSW is to give new cadets a concentrated introduction to CAP, its core values and missions, drill, AE, and Leadership, and to prepare the cadets for the larger CTWG Encampment on August 7-14. Many of the classes were taught by Cadet Staff members and some were taught by Senior Officers. On Saturday evening the cadets watched the movie *Master and Commander* and discussed the different styles of leadership modeled in the movie.

On Sunday, at a church service, TRCS Cadet Commander C/1stLt Brendan Flynn played "Eagle's Flight", a piano piece which he also composed.

### **AEROSPACE CURRENT EVENTS**

#### ***Pakistan Returns Copter Wreckage***

Last weekend, the Pakistani government returned the wreckage of the helicopter which made the hard landing in the assault on the bin Laden compound. A military spokesman said that parts have been transferred back to the United States.

#### ***Court Casts Out Contractor Case***

Two decades ago, the Pentagon cancelled the contract for the Navy's A-12 Avenger aircraft which was 18 months behind schedule and one billion dollars over budget. Since that time, the government and the contractors, Boeing and General Dynamics, have disputed who is responsible for the program's demise. The government claims that the contractors owe some 3.8 billion in penalties and interest for default. The contractors claim the government owes them 1.2 billion for a termination of convenience. The Supreme Court ruled that neither side may "pass Go and collect" some billions of dollars. Since state secrets might be revealed to promote both sides of the case, The Court has ruled that both parties must return to the point which they were both at before litigation began.

#### ***The Flesh are Willing but Spirit is Kaput***

NASA all too human engineers and administrators who have vainly tried for two years to get the robotic Mars explorer *Spirit* to "call home" have given up. After some years of successful surveying, *Spirit* became trapped in a patch of soft ground. Its solar cells could not be aligned to charge its batteries and keep its heaters running. Two frigid Martian winters wrote *fini* to its career.

Before its demise, *Spirit* had completed its planned 90 day mission and continued to function for six years more, sending mineralogical data back to earth while traveling some six miles over the Martian surface.

NASA official David Lavery says that the *Spirit* controllers will hold an Irish wake to celebrate its remarkable life.

**AEROSPACE CURRENT EVENTS**  
**TECHNICAL NOTE**

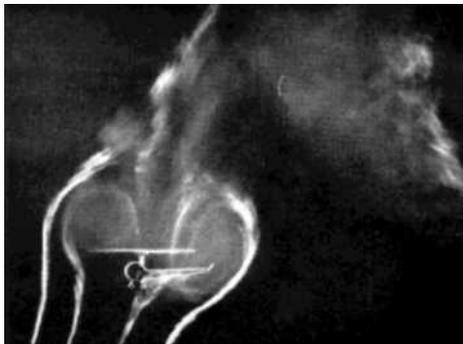
by

*Maj Stephen Rocketto, Maj John deAndrade, Capt Edward Miller*

***Loss of the Helicopter on the bin Laden Raid***

A reasonable explanation for the crash of the helicopter during the bin Laden raid in Abbotabad, Pakistan might be a phenomenon known as vortex ring state. This is a result of operating within one rotor diameter of the ground, in ground effect.

What likely occurred as the helicopter slowly moved forward and descended over the compound's wall is that air which was being driven down struck the ground and reversed direction, moved upward and passed around the rotor disc. Since the rotors were producing lift, a low pressure area existed above them. Therefore, the higher pressure ascending air was then redirected inward and down. The helicopter was now in a parcel of air which was descending so its descent rate also increased. The walls of the compound probably contributed to this condition of flight, containing the downwash of the helicopter and redirecting it upwards.



*A smoke tunnel picture shows a model helicopter enveloped in a fully developed vortex ring state.*

(from Drees and Hendl)

This effect would be amplified by the higher than sea level altitude of Abbotabad, slightly over 4,000 feet. Higher than average temperatures also existed and the landing area may have been even hotter, as the heat absorbed by the surrounding building and wall during the day, radiated into the courtyard. Both high altitude and high temperature would decrease the density of the air and reduce lift, aggravating a bad situation.

According to experienced chopper pilots, when this situation occurs, the rate of descent cannot be arrested by the use of increased power and full collective (increasing the angle of attack of the rotor blades). The solution in an aircraft is to decrease the angle of attack and use power if it is available. In a helicopter, one must pitch down, and move forward out of the disturbed air. Additional power must be used judiciously because if applied to early, it will only increase the rate of descent.

A series of crashes of the Marine Corps' MV-22 Osprey tilt rotor aircraft were attributed to this vortex ring state conditions. Two prototypes crashed in the early '90s and two operational aircraft crashed in 2000. The loss of control is even more vicious in an Osprey than in a normal helicopter since the rotors are mounted at the tips of the wings so asymmetric thrust and ring vortex interference not only causes a loss of lift but a loss of stability.



*Prototype Osprey at West Chester, Pennsylvania bears USMC marking.*

Testing, analysis, and pilot training have solved the problem and Ospreys avoid flight regimes in which vortex ring state conditions are likely.

What is so remarkable about the hard landing of the Blackhawk at Abbotabad is that the entire complement aboard not only survived unharmed but exited the helicopter, armed and ready to fight. This was due to the extraordinary skill of the aircraft crew who were wearing night vision devices and flying a loaded copter into a restricted, a very restricted, landing zone. The reputation of US Army's 160<sup>th</sup> Special Operations Regiment and the men they carry into battle is well deserved.

### **BLACK HELICOPTERS!**

#### *How Sikorsky Got Into the Business*

It is highly likely that the 160<sup>th</sup> Special Operations Aviation Regiment (SOAR) used some flavor of a Sikorsky MH-60 on the bin Laden raid. They are known to have the K, L, and M variations in their inventory. It is also highly likely that Sikorsky has been involved in developing a helicopter for them as a black project.

Here are some arguments which butters the claim that there is something spooky in the Sikorsky corporate structure.

First, Schweizer Aircraft of Elmira, New York, became part of Sikorsky Aircraft in 2004. Now Schweizer is well known for its gliders but little known for its production of a small family of rather specialized aircraft in association with Lockheed, famous for unusual aircraft produced by its Skunk Works. So how did three brothers from rural New York fall in with the aeronautical cloak and dagger fraternity.

During the Vietnam War, the US Army and the Central Intelligence Agency were interested in procuring a light reconnaissance aircraft which had a very low acoustic footprint. Lockheed adapted Schweizer's SGS 2-32 glider and produced a series of prototypes with the generic name Q-Star. Basically, they had large, slow turning propellers,

huge mufflers modifications which reduced noise caused by the passage of air over the structure. Ling-Temco-Vought followed a similar path for similar reasons and built the LTV L450F, also based upon the SGS 2-32 fuselage.



*One Variant of the Q-Star*



*Wankel Powered Lockheed QT-2 Quiet Thruster*

Two QT-2s were designated QT-2PC (for **P**rize **C**rew Operational Evaluation) and tested in Vietnam.. The number one on the stabilizer of 71W indicates that this was the first of the two Prize Crew aircraft. They were then returned to the Navy Test Pilot School, Patuxent River Md., re-designated as X-28Bs, and used for training pilots to investigate yaw/roll coupling and spins. Navy interest in quiet aircraft was provoked by the problem of noise generated by the rotors of anti-submarine helicopters which could be detected by submerged submarines.

The Q-Stars evolved into the Lockheed YO-3A Quiet Star and in 1968, Schweizer subcontracted to Lockheed to build about a dozen of the acoustically stealthy aircraft. They were equipped with advanced sensors including a forward looking

infrared (FLIR) system and used at night for low altitude surveillance.



*YO-3A at the Hiller Museum*

Some survived the war. Two were used by the Louisiana Fish and Game Department to hunt poachers. The Federal Bureau of Investigation operated one for a time. NASA used one for acoustic research. Interestingly, this was flown by CAP Colonel Ed Lewis, a NASA test pilot and before his death, a very active member in the Pacific Region who had, incidentally, learned to fly as a cadet.



*USCG RG-8A Condor*

*(USCG Photo)*

While all of this *sub rosa* work was going on, Schweizer was expanding its line of aircraft and making a name producing both fixed wing aircraft and helicopters as well as components for other manufacturers.

Schweizer's relationship with Sikorsky might be traced to 1944 when Air-cooled Motors contracted for Schweizer to build the engine housing and external cooling system for the Sikorsky R-6 helicopter. In 1981, direct relationship with

Bridgeport was formed and Schweizer entered into production of UH-60 Black Hawk gunner windows.



*R-6A Hoverfly II-The First Sikorsky-Schweizer Collaboration*

In 1948, Chase Aircraft's C-122 empennage was a Schweizer product and when the C-122 evolved into Fairchild's C-123, Schweizer built the loading ramp and rudder. A year later, Bell Aircraft tendered its first contract to Schweizer for fuselage structures and then stabilizers and continued this relationship for the next half century. In 1951, the moveable control surfaces for Fairchild's C-119 came from Schweizer.

Major steps were taken by Schweizer in 1960 and 1983. In 1960, their relationship with Grumman to build tail sections for the Gulfstream I led to production of the Grumman designed Ag-Cat. When Gulfstream purchased Grumman's commercial line, Schweizer bought the Ag-Cat rights and developed a turbine powered variant.

In 1983, Hughes Helicopters agreed to make Schweizer the licensed manufacturer and product support source for the Model 300 helicopters which were then manufactured under the Schweizer name.

Schweizer entered the "spook" aircraft market directly in 1986 when they obtained a contract to modify their 2-37 motorized glider into a quiet surveillance and reconnaissance vehicle. Incidentally, the US Air Force Academy bought a handful of SGM 2-37s and designated them as the

TG-7A, using them for cadet training.

Over time, this new vehicle morphed into the Condor family: the SA-37, the RU-37 Condor, and the RU-38 Twin Condor.



*SA 2-37A in Mexico*

*(photo by Sergioo Echeverria Garcia)*



*RU-38 Twin Condor*

The -37 models were flown by the CIA, US Army, and US Coast Guard and the Mexican and Columbian Air Forces. The turbine powered twin engine -38s were employed by the CIA and the US Coast Guard. In general, these aircraft were utilized on counter-narcotics and anti-terrorist missions. It is known that the CIA flew RG-8s over Serbia to support NATO forces during the Kosovo Conflict.

Which brings us to 2004 and Sikorsky's purchase of Schweizer. The next year, Sikorsky announced plans for the X2 Technology Demonstrator helicopter to be built at the newly acquired Schweizer facility.

Coincidentally, at about the same time, the Army, for budgetary reasons, cancelled the Boeing-Sikorsky RAH-66 Comanche. The Comanche was designed to be an armed reconnaissance helicopter and it had a number of notable features which are worth mentioning. Its radar cross section was reduced by the use of flat and slanted surfaces on the fuselage, retractable landing gear, a stowable cannon, fenestron tail rotor, and internal weapon bays. The infra-red (IR) signature was reduced by careful mixing and then venting exhaust gases with cooler ambient air. A five bladed rotor contributed to noise suppression. One would be hard pressed to believe that all of this tested technology would be discarded.

The illustration below, from the Federation of American Sciences website, compares the radar, IR, acoustic, and visual appearances of the Hughes OH-58D Cayuse and the Bell AH-64 Apache to the Boeing-Sikorsky RAH-66 Comanche with the Comanche used as the benchmark.

Type of Detection	OH-58D	RAH-66	AH-64
<b>• Radar</b> Front Sector 10 Gigahertz	 263X 32X	 X	 663X
<b>• Infrared Radar</b> Side Sector Source Signature No Solar Load Stinger	 1.15X	 X	 2.75X
<b>• Acoustic</b> Front Sector Moderate Ambient	 1.1X	 X	 1.6X
<b>• Visual</b> Front Sector Unaided Eye Terrain Background Sector Search	 1.2X	 X	 1.8X

In 2006, Sikorsky opened a new “Rapid Prototyping and Military Derivatives Completion Center” which acquires the sobriquet of “Hawk Works.” What the “Center” does is common in the aircraft industry. A model is mass built at the main plant to standard specifications and then shipped to a secondary plant for modifications demanded by the customer. This allows for efficiency in the main production line and a cheaper way of satisfying the unique requests of a customer.

Sikorsky had been already performing post manufacturing modifications in Connecticut. TRCS Capt Edward Miller, formerly of Sikorsky Aircraft, states that prior to acquiring Schweizer and its manufacturing plant, Sikorsky had a Manufacturing Development Center in Stratford which took selected aircraft off the line for custom modification. That is where the SOAR MH-60Ks were built. The SOAR modified MH-60As were painted black. When they went to the Kilo they reverted to the basic army green.

In addition, SOAR maintains its own facility of helicopter modification and special equipment installation at the Blue Grass Army Depot in Lexington, Kentucky.

One can conclude that a combination of experience with quiet fixed wing aircraft and the exploitation of the technology developed for the Comanche might well be applied to special modifications of the special operations Blackhawks by either Sikorsky's post production modification center or SOAR's Kentucky facility or most likely both.

*Disclaimer*

*No Sikorsky, Schweizer, or SOAR personnel were harmed in the production of this article. Water-boarding was done under the supervision of a licensed veterinarian.*

**AEROSPACE HISTORY**

*The following article is a continuation of our series on notable air missions.*

**Operation Vittles/Operation Plane Fare  
The Berlin Airlift  
24 June, 1947-13 May, 1948**

*The Political Situation*

When World War Two in Europe ended in April of 1945, the major allied nations, the United States, Great Britain, and the Soviet Union established

zones of occupation in the national territory of Germany. Throughout the war, the Allies considered their policies in respect to a defeated Germany but no firm decisions were made. The British were extremely suspicious about Soviet intentions in Europe. George Kennan, a most perceptive US Foreign Service Officer and specialist in Soviet affairs warned the State Department that Soviet ambitions in eastern Europe would be inimical to the formation of independent states from the pre-war nations.

Berlin, the German capital, had been a valued prize but General Eisenhower, the commander of the Allied Expeditionary Force in Europe, was reluctant to risk the casualties since Soviet troops were so much closer. Soviet forces took the city and as the dust of battle settled, the Roosevelt and Churchill governments accepted a plan which would place the western sector of Germany under the control of the Great Britain, France, and the United States and the eastern region under Stalin's Soviet Union. Berlin would be located some 100 miles inside the Soviet zone but occupied by the four powers. Just as the war ended, President Roosevelt died and was succeeded by Harry Truman who decided to accept this plan.

The Western Zone was the most heavily industrialized regions of Germany, stretching from the seaports on the Baltic to the Ruhr Basin in the south. Russia occupied the agrarian east upon which much of pre-war Germany depended for its food. Byzantine negotiations ensued to divide the "spoils" and these were complicated by differences in policy; the United States and Britain on one side and the Russians and the French on the other. Fundamentally, the differences had their roots in historical experience. Both France and Russia had suffered enormously from German aggression in World Wars One and Two. Their objective was to reduce Germany to a third class agrarian nation so as to never again threaten either of them.

To this end, the Soviet Union stripped their occupied territories of industrial resources,

machinery, and tooling. Factories were denuded of everything from their power plants down to their simplest tools. In addition, Russia had parts of eastern Germany annexed to Poland, soon to be a Soviet vassal state, and France demanded the Ruhr Basin as compensation for their losses.

On the other hand, Great Britain and the United States remembered the lessons of World War One and how the draconian peace treaty obligations forced on the Weimar Republic at Versailles had led to the rise of Adolph Hitler. They also believed that a strong industrial Germany was necessary for the economic health of Europe in general.

### *The Soviet Bluff*

During April and May of 1947, Russia decided to squeeze the Allied powers by exercising their right, under the four power agreement, to govern traffic over the rails, roads, and barge canals which served Berlin. They made numerous and questionable demands which delayed and sometimes halted traffic entirely. In response, the western allies instituted what came to be called the "Little Lift." A scant force of USAF and RAF C-47s and British chartered commercial aircraft brought supplies to the allied garrisons. Harassment continued. In the most serious incident, a Russian Yak-3 had collided with a British European Airways Viking which was on approach to Gatow Airport. Both aircraft crashed killing all aboard.



*This C-47, the TICO Belle, flew the Airlift towed gliders on D-Day and participated at Arnhem, the Bulge, and the Rhine Crossing.*

Negotiations among the four "allies" became paradigms of intransigent behavior and deadlock resulted. In another context, George Kennan opined that "nations do not have allies, they have

interests" and the morass of arguments, threats, bluffs, claims, and counter claims soon led to a showdown over one such interest, monetary policy.

Any functioning civilization needs a stable fungible medium of exchange, money. Immediately after the end of the war, currency inflation struck the German economy. The old Reichsmark, overprinted as occupation money by the Allies, flooded the market and the value of the Reichsmark for the purchase of goods plummeted. Consequently, a barter economy developed in which cigarettes and chocolate became a substitute medium of exchange. A cigarette was equivalent to five marks or about five dollars and a chocolate bar was worth about 15 dollars worth of marks, far more than the official exchange rate. Foodstuffs and other necessities of life could not be purchased with German money and the population suffered while the currency manipulators profited.

The economy was in chaos as inflation drove prices beyond the reach of the average citizen and commercial establishments were forced to close. The western Allies decided to issue a new currency at the rate of one to ten of the old. The Soviets offered their currency at the rate of one to one but certain portions of the population would even be denied an exchange. Neither side could come to an agreement and the meetings between them ended. On June 24<sup>th</sup>, 1947, Berlin's surface access from the west was cut by Soviet force of arms. The blockade had started. What the Russians had not counted on was a cast of characters who understood poker and its strategy of bluffing and stake raising and who could finesse the deck.

### *The Western Allies Call the Bluff*

First among the players was the new President of the United States, Harry S Truman, a wily street-smart poker playing politician who had quickly grasped the implications of the Soviet actions. When confronted with the abandonment of Berlin

during a staff meeting, he succinctly stated that “There is no discussion on this point. We stay in Berlin-period.” Another player at the table was a brilliant administrator, Lt. Gen. Lucius D. Clay, Deputy for Military Government to the Supreme Allied Commander. When the Russian initiated the blockade, his first thoughts were to run an armored convoy down the *autobahn* and into Berlin. However, an alternate was proffered by an RAF officer who knew that the convoy plan would mean war at a considerable disadvantage to the western allies. For the Soviets had over 300,000 troops on hand in the Berlin environs while the Western allied force numbered only 6,500. The RAF officer, Air Commodore Reginald Waite had considered the possibility of supplying Berlin by air and Clay, who had previously dismissed this method, was quickly convinced to make the attempt. The Soviet Union had no means except acts of war to close down the three air corridors that previous negotiations had created. Clay believed that the Russians were unwilling to start a full scale war and called their bluff. He ordered the commencement of a full scale airlift.

#### *Some Previous Attempts at Airlift Operations*

Supplying an enclave from the air had been tried before with mixed results. The first effort occurred during the siege of Kut el Amara in what was then Mesopotamia, now Iraq, during World War One. British Imperial Forces under Maj. Gen. Charles Townshend were trapped by Ottoman forces about 100 miles north of Basra. Elements of the Royal Flying Corps, the Royal Naval Air Service, and the Australian Flying Corps flew 140 sorties and dropped some nine tons of supplies in a fortnight. The effects were minimal and the garrison eventually surrendered to the Turks.

During World War Two, Germany attempted to resupply the trapped 6<sup>th</sup> Army, invested by the Soviets at Stalingrad. Some quarter-million German and allied troops required 800 tons daily but the *Luftwaffe* only had a maximum capability of supplying about 100 tons. Under the best

conditions, the operation was doomed from the start. The conditions were unfavorable for a successful airlift. The weather was atrocious and Soviet fighter, anti-aircraft, and artillery forces destroyed around 500 aircraft. Stalingrad fell and almost 100,000 German troops became prisoners of war.

One great success at aerial resupply emerged from World War Two. In the China--Burma-India Theatre, the Chinese army, acting as a force in being, forced the Japanese to maintain approximately half of their entire army in China and Manchuria. Supplies were shipped over the Burma Road, from the British held seaport of Rangoon to Chinese bases in western China. When the Japanese captured Rangoon and cut the Burma Road, the only resupply option was to transport the supplies by aircraft from India to China over the southwest Asian jungles and the Himalayan Mountain range, some of the most forbidding terrain in the world.

The resupply effort came to be known as “flying The Hump.” Starting with a few dozen aircraft in early 1942, by 1945, the young Air Transport Command had committed over 600 transports to the effort and maintained supplies not only for the Chinese but for US forces in China. US Army Air Force leaders gained experience in mounting large scale aerial supply operations, lessons and experiences which would soon be applied in Europe, half a world away.



*Hump Workhorse;  
The Curtiss C-46  
Commando.*

#### *The Berlin Airlift is Initiated*

In the poker game with Berlin as the stakes, a hand was dealt to Lt. Gen. Curtis LeMay, Commander of the United States Air Forces in Europe, As it

was, the hand was weak. LeMay had some 275 aircraft while the Soviets had some 4000 to put into the pot. General Clay made a decision and, without receiving permission from Washington, called LeMay and asked whether or not he could haul coal, LeMay was not dismayed and replied, "...the USAF can deliver anything. How much coal do you want us to haul." "All you can," replied Clay. Clear decisive decisions were being made by strong men from Harry Truman on down. Clay, like Truman, sensed that even though the Soviets possessed an overwhelming local military advantage, they would not raise the stakes and risk a war with the West.

The operation needed a name. The former British colonial cousins chose the colloquial "Operation Vittles." An erudite British punster came up with "Operation Plane Fare" for their part in the airborne relief of Berlin.

At the start, finding the necessary resources to deliver the goods was the problem. The RAF and USAAF managed to make thirty four flights into Tempelhof Airport, delivering 80 tons of food and medicine in four days. This was far too little.

*The Operational Problems Involved in Staging an Airlift with Specific Considerations About the Berlin Blockade and Some Details About the Solutions*

Eight problems needed to be solved. First, the entire effort had to be organized in such a way as to coordinate all of the disparate elements of the operation and to solve problems as they arose. The commander and planners had to be as flexible as a politician's promises.

The military also had diplomatic problems to resolve with their political masters, German civilians, and probably most difficult and frustrating, those dealing with their own varied military departments, each like a feudal fiefdom, often dominated by the ego of a rival commander.

Gen. LeMay, without delay, appointed Brig. Gen. Joseph Smith as the Provisional Task Force Commander. Operation Vittles began immediately after the Russians broke off negotiations. When it became certain that a long term effort would be needed, Maj. Gen. William Tunner, a Military Air Transport Service Deputy Commander and the leader of the extraordinary difficult but highly successful "Hump" resupply effort in World War Two was placed in charge. There is some irony in that an expert in moving cargo should have a surname which is a near homonym for the standard shipping weight of 2,000 pounds



General William "Willy the Whip" Tunner  
(USAF Photo)

The second problem was aircraft. Berlin required approximately 4,500 tons per day: 3,000 tons of fuel and 1,500 of food. The Douglas C-47, the most common air-lifter, might carry around 2.5 tons. Assuming the aircraft might make six trips each day, it would require a minimum fleet of 300 aircraft to meet the quota, not counting spares to make up for grounded and lost aircraft.

The largest usable aircraft was the Douglas C-54 Skymaster. The "Four" had four times the payload of the C-47. Therefore, if it were the main aircraft utilized, the number of aircraft movements and crew requirements would radically reduced, the problems of air traffic control would be simplified, and loading and unloading the freighters would be faster. Tunner and his team called in C-54s from all over the world. Within three months, over 200 Skymasters were engaged in the airlift. This accounted for almost 50% of the entire USAAF fleet. The US Navy even sent two squadrons of their C-54s, which they designated as R5Ds, in from the Pacific.



*The Douglas C-54 Skymaster At McClellan AFB*

The third issue was crews. Each plane flew with two pilots and a flight engineer or radio operator. A minimum number of personnel would be two crews per plane totaling 1200 pilots and 600 engineers and radio men.



*A C-54 analog computer used to calculate how much weight could be placed in each section of the aircraft.*

Crew requirements were rationalized and special training programs were established to provide more crews. During the Airlift, reservists were recalled and the Great Falls, Montana air base operated a special 21 day training unit for the Airlift bound crews. Planes were ballasted with full loads, frequencies were the same as used in Germany, controllers followed the Tempelhof guidelines, and approaches and landing were made on runways with the same headings and lengths as those in Berlin.

Tunner had little control over personnel assignments and temporary duty, austere living conditions, and a heavy work load contributed to morale problems. Tunner had to work tactfully around the command prerogatives of fellow commanders and the conflicting interests of their commands. This task may have been one of his most difficult but he was aided by the enormous amount of good will which the relief operation

engendered and very favorable publicity produced by the news organizations.

Airplane maintenance was the fourth problem. They require minor maintenance, oil changes, and a schedule of major phase checks. Maintenance requires skilled workers, tools, and facilities. With most of the US military demobilized and that the bulk of the remaining technicians stationed everywhere but Germany, serious problems arose.

Tunner's solution was to task his statistically astute staff to design a plan to rationalize the scheduling of aircraft so as to allow a certain portion of the fleet to enter maintenance status in defined intervals of time. For example, suppose ten aircraft each requires one day of maintenance every ten days. A rational schedule to allow for smooth operations would have one aircraft in maintenance every ten days and on any day, 90% or the fleet would be flying. This method has been successfully used in the China-Burma-India Theatre during the "Hump" airlift.

Mechanics were another problem. Then, the US command realized that a large pool of highly skilled former Luftwaffe mechanics were available and very willing to work. Tunner located Gen. Hans von Rohden who not only had been involved in air transport while serving in the Luftwaffe but also was fluent in English. Gen. von Rohden recruited and organized a complement of German mechanics and also translated US maintenance manuals into German.

Inadequate facilities in Germany also impinged on efficient maintenance. To meet the need, Tunner has RAF Burtonwood, a huge base near Liverpool, reactivated and staffed with mechanics brought in from the United States. The facilities were more than adequate in size and offered more amenities than the war-torn German bases. Aircraft in need of major work could be quickly flown to England for repairs and periodic inspections.

Fifth, airbases are needed from which to launch and receive aircraft. Each base requires sufficient

runway length, runway strength, and ramp space to allow the aircraft to operate. Most German airfields, heavily damaged by bombs and artillery during the war were not an option.

The air heads for the US effort were situated in the western zones of Germany at Rhein-Main and Wiesbaden and the terminal was located at Berlin's Tempelhof. The British flew south from their zone of occupation into Gatow. They used a grab-bag fleet of RAF and civilian two and four engine taildraggers: Lancasters, Tudors, Hastings, and Yorks to name just a few. They also used Sunderland flying boats to fly corrosive materials like salt onto Lake Havel. When the Lake froze over, Handley-Page Halifax bombers with special cargo panniers were used instead. The land airports were first jury-rigged with pierced steel planking and then improved with hard surfaces. The rubble of Berlin provided much of the base over which the concrete was laid and local labor supplied the manpower. The French even allowed the United States to construct a new field at Tegel.



*Handley Page Hastings*



*Avro York C1*

Sixth, if you want to fly supplies, they must be delivered to an airhead and loaded and then unloaded when delivered. The work crews which loaded and unloaded the aircraft were recruited from the German population. The promise of employment, a hot meal in the middle of day, and opportunities for scavenging attracted a very enthusiastic labor force. Unloading time was reduced to under a half hour and a record set when a ten ton shipment was removed from a C-54 in five minutes!

Some of the commodities shipped required special handling. Coal and flour were both packaged in sacks but the dust from both of these necessities could lead to serious maintenance problems. The coal dust was so valuable that it was swept out and repackaged for heating fuel. Some very large items required considerable amounts of ingenuity to ship. Bulldozers were cut into segments and then welded back together in Berlin. A few of the brand new Fairchild C-82 Flying Boxcars transported some bulky items. Flight Refueling, Ltd., a British company founded by the great long distance flyer, Alan Cobham, used converted Lancasters to ferry gasoline, kerosene, and oil into Berlin.



*Under the tutelage of Bill Maroon, retired USAF navigator and docent at Dover AFB's Air Mobility Command Museum, CTWG Cadets view artifacts of the Airlift.*

In order to speed up movements, crews did not leave the vicinity of their aircraft during loading

and unloading. Food and snacks were brought to the plane and operations would deliver the clearance and manifest documents directly to the aircraft commander.

Seventh, hostile acts by the enemy will impede any operation and the Russians, although not overtly hostile, were obstructive. As Kennan had pointed out, our erstwhile allies, the Russians, had overriding interests which were diametrically opposed to those of Great Britain and the United States. Consequently, in addition to their ground blockade, they, engaged in aerial provocations. They staged anti-aircraft practice in close proximity to the air corridors used by the airlift. At night, searchlights were used to illuminate the supply planes in an effort to dazzle and disorient the pilots. Tunner stated that the nastiest of their acts was the posting of poison pen letters to the crews which falsely reported the infidelities of their wives. Some of these letters were mailed from the United States!

The eighth problem, European weather, seriously hampered air service to Berlin. Rain and fog are characteristic of central European weather and can easily disrupt air operations. Central Europe is a continental temperate climate and average 90 days of fog each year.. In the vicinity of Berlin, one can expect pleasant summers but June and August are the rainiest months. Continental winters are characterized by bitter cold and snow.



*Diagram Illustrating the Four Occupation Zones and the Air Corridors to Berlin*

The solution was to run the entire operation under Instrument Flight Rules, in all weather, using an invariant schedule of flight and parameters. First, two inbound flight corridors were established into Berlin: one from the British zone in the northwest and one from the US zone in the southwest. Departures were dispatched through a central westward corridor with US and British aircraft changing course and returning to their home bases after departing the western end of the corridor.

Altitude assignments and aircraft separation criteria were established. Aircraft were assigned for take-off in blocks with the slower C-47s preceding the faster C-54s. Aircraft were separated by three minutes in time and as little as 200 feet in altitude. Landing minimums were a four hundred foot ceiling and one mile visibility.

Anything less and the pilot was required to fly a missed approach and return to the originating base via the central corridor. Standardized procedure, a systematic schedule, and a precise rhythm were established. In Tunner's own words:

It is this beat, this precise rhythmical cadence, which determines the success of an airlift. This steady rhythm, constant as the jungle drums, became the trade-mark of the Berlin Airlift, or any airlift I have operated. I don't have much of a natural sense of rhythm, incidentally; I'm certainly no threat to Fred Astaire, and a drumstick to me is something that grows on a chicken. But when it comes to airlifts, I want rhythm.

And regimentation. I insisted on complete regimentation in every aspect of flying for every pilot, co-pilot, and radio operator. There was only one best technique for each flying maneuver—take-off, climb out, cruise, descent, and landing. No variations.

At maximum effort, the Tempelhof runway recorded a take-off and a landing every 90 seconds, 24 hours a day.

### *Three Anecdotes*

The raw statistics and a retelling of the events given in this essay do little to portray the human story of the Berlin Airlift. Three anecdotes may help to illustrate some of the human dramas which occurred.

#### *The Chocolate Flier*

The most celebrated pilot to emerge from the Airlift was an Iowa bachelor, Lt. Gail Halvorsen. Halvorsen, somewhat of a romantic, volunteered as a replacement for a friend whose wife had just given birth to twins. Halvorsen was somewhat more than a run-of-the-mill aviator, not interested in just flying in and flying out. He brought a movie camera with him and wanted to actually visit Berlin and take some pictures. During his off-duty time, he scrounged flights into Berlin and while taking pictures of the operations at the airfield, noticed a gaggle of children watching the airplanes from beyond the fence. A combination of Halvorsen's limited German and the children's limited English sufficed to carry on a conversation and then Halvorsen noticed that the children had never asked him for anything. "You got gum, Joe?" was a phrase used by children all over the world whenever they encountered a GI so Halvorsen found two sticks of gum in his pocket and split them up among the children who had acted as interpreters. Impulsively, he promised that he would drop candy to them from his plane on his next trip if they promised to share it. He would identify his plane by wiggling his wings.



*Lt. Halvorsen  
attaching  
handkerchief  
parachutes to bags  
of candy and gum.  
(USAF Photo)*

Halvorsen talked both members of his crew, Capt. John Pickering and Sgt. Herschel Elkins to assist. Pickering said that "you're going to get us in a big mess of trouble," and then he and Sgt. Elkins contributed their rations of sweets to the pool. On a subsequent flight, as they approached, Halvorsen wiggled his wings as Pickering pushed three packages of candy, each attached to a parachute fashioned from a handkerchief, out the flare chute. They continued their unofficial airdrops for the next two flights. Then, a few days later, deteriorating weather grounded Halvorsen and his crew at Tempelhof. He checked in at base operations to determine how long a delay might be expected. In a corner of the room, he noticed an enormous pile of mail. Glancing at the letters, he saw that they were addressed to *Onkel Wackelflügel* (Uncle Waggle Wings) and *Der Schokoladen Flieger* (The Chocolate Flier). He told the crew and they wondered about the official reaction to their unauthorized supply mission.

They decided to back off and did not drop any sweets for two weeks but unilaterally, all three of them started saving their candy and gum. The crowd of kids had been growing at the airport boundary so they decided to risk the wrath of officialdom and make one more drop. The next day, they were summoned to the office of Col. James Haun, the squadron commander who informed them that their activities were making headlines all over the world and that they were to report to Frankfurt for a press conference. Haun also casually reminded them that, in the future, they ought keep their commanding officer informed.

The word spread and military personnel and stateside civilians started sending candy, gum, and handkerchiefs to Halvorsen. In Chicopee, Massachusetts, a former fire station was converted into an assembly point and at its peak, shipped a ton of goodies weekly! Halvorsen was relieved of regular flying and turned into a roving ambassador, visiting schools and playgrounds in

Berlin and then, on a subsequent flight, started dropping candy over East Berlin. This cheeky act generated a diplomatic protest from the Russians who accused the western allies of a “capitalistic trick to influence the minds of young people.” The protest was duly noted and Halvorsen was sent back to the United States for a publicity tour and made contact with an officer of the American Confectioners Association. This resulted in two shipments of some 7,000 pounds of candy and gum and an increase in the flow of candy to the children of Berlin. On Christmas Eve, 1947, the USAAF and the German Youth Organization staged a series of parties for children. In the cold war skirmish called “Operation Little Vittles,” the West counted coup and embarrassed the Soviet occupation forces.

#### *Slaker Scores a Home Run*

Not every episode in the Berlin Airlift was so light-hearted. Capt. Kenneth Slaker, a 50 mission survivor of the bombing raids over Germany, was flying right seat in a C-47 and was 50 miles into the Soviet zone when both engines quit and refused to restart. He and his pilot, Lt Clarence Steber parachuted into the darkness. Slaker was knocked unconscious upon landing and when he awoke, decided to try to evade any Eastern forces searching for him and cross the border back into the west. While walking west, he met a German ex-POW, Rudolph Schnable, foraging for food. Schnabel had had his leg saved by an American doctor and was ready to repay the debt in kind. He found clothing for the flier and took him to his home.

Schnabel then guided Slaker to a meeting with some men who could help them cross the border. Schnabel would act as guide and then using his own documents, return to the Eastern Zone. Getting out of East Germany was the problem. Getting back in was easy. Arrangements were made to bribe an East German policeman. In the

final rush to get across, Slaker got tangled up in barbed wire and the East Germans started shooting. He got free and ran, fell, and then was dragged across the border to freedom. Unfortunately, Schnable lost his papers in the rush and, while Slaker was returned to his unit,

Schnable could not get back to his family and was held by the US Army and somewhat abused. Slaker got Schnable released to Air Force custody and helped him get a job with the German Post Office. Later, his wife and daughter joined him in West Berlin.

#### *The French Demonstrate That Although Faith Might Move Mountains, Dynamite Does Remove Towers*

And then there are the French. Given the troubles reconstructing their own country and their military's difficulties with some insurgents in a far off colony called Indo-China, they contributed far less to the Airlift than the British and US forces. They did use some confiscated Junker JU-52s to fly supplies and did allow the United States to construct a new airfield in their zone at Tegel from scratch. The first plane in carried ten tons of cheese! However, a singular event occurred at Tegel which deserves mention.



*Queen of the Luftwaffe Transport Fleet, Hugo Junkers “Tanta Ju” the JU-52/3 assisted in the Airlift.*

Radio Berlin had a towers located on the approach to Tegel which posed a clear danger to landing aircraft. The French Commandant, Gen. Jean Ganeval, formally requested the station director to

have the towers removed. That request and a second request went unanswered. At nine-o'clock on a December morning, the French shut down the airport and diverted all incoming traffic. Near the towers, French military police entered the small building which housed a small group of Soviet

radio engineers. The Russians tried to telephone for instructions but the French has cut the telephone lines. Demolition experts set to work. Two and three quarter hours after the airport had been closed, the French set of demolition charges and the towers came tumbling down. The now unobstructed airport opened for business once again.

According to some reports, when Gen. Ganeval was asked by Soviet Commander Gen. Alexander Kotikov how he could have done such a deed, Ganeval dryly replied, "With dynamite." It was also reported that NKVD Col. Sergei Tulpanov, head of the Soviet Information Section, became so enraged that he suffered a gallstone attack. Such is the price of commissarship.

### *The Easter Parade*

The will of the Soviet blockaders was broken on April 10<sup>th</sup> 1949. Tunner decided to break all previous records and stage a marathon delivery day. He had used this technique three years earlier running a "Derby Day" which broke airlift records for "the Hump" and on Air Force Day, September 18, 1945, when the Berlin airmen celebrated by setting a record and moving 7,000 tons of cargo into the city. Tunner selected Easter Sunday, 1946 for the the next big push.

Coal would be the only cargo flown and it was stockpiled. Maintenance schedules were manipulated to deliver the largest number of usable aircraft, and flight and ground crews were

made ready to fly an Easter Parade of aircraft through the corridors and into Berlin. Squadrons were assigned quotas and the enthusiasm of the participants was peaking. At noon on Saturday, the clock started. Tunner moved from base to base, encouraging the troops, and broke the previous record of 7,000 tons around the 22 hour mark. When the timer stopped at noon on Easter Sunday, the tote board indicated that 1,398 flights had shifted 12,941 tons of coal into Berlin. A day has 1,440 minutes so the crews were running a round trip for about every minute of the day. They had moved the equivalent of twelve 50 car coal trains by air. More remarkably, from then on, the deliveries never fell below 9,000 tons per day.

UNITS	TRIPS PERIOD HOUR	FROM 1200 TO PREVIOUS HOUR TRIPS	TONS	SHORTAGE TRIPS	OVER/UNDER TRIPS
11 <sup>th</sup> SQ	1	08		104	4
10 <sup>th</sup> SQ	1	11			
9 <sup>th</sup> SQ		25			
8 <sup>th</sup> GP	16	314	3140	200	4
7 <sup>th</sup> GP	24	250		172	8
3812566390					

*U.S. Personnel View the Airlift Scoreboard.*

*Tunner used the innate competitive desire of the airmen to foster higher and higher achievement in tonnage moved. (USAF Photo)*

A month later, the Soviets recognized the futility of the blockade and opened up the roads, rails, and canals. Not trusting the Russians, the airmen continued for three more months, building up a surplus of supplies in case the blockade resumed. The final figures were over 2.3 million tons flown in by 276,926 flights. The first battle of the Cold War had ended with a victory for the West. But victory has its price and seventy two British Commonwealth and US fliers, military and civilian, paid that price in blood.

### *Airlifts After Berlin*

After Berlin, Tunner did not leave the airlift business. When the Korean War broke out, he headed up the organization of the Combat Cargo Command (CCC). He managed to wrestle the transports husbanded by the Army, Navy, Marines, and Fifth Air Force into a combined air transport fleet under his direction. They CCC supported Douglas MacArthur's landing at Inchon, the Marines at Wosan, numerous parachute drops, and a host of smaller operations.

When the Chinese People's Army intervened, the CCC evacuated almost 5,000 casualties from the primitive strip at Haguru and then delivered by air drop, six spans of an M-2 treadway bridge, each span weighing two tons. The bridge allowed 20,000 men of the First Marine Division and elements of the Army's Seventh Division to cross a 1,500 foot deep gorge and fight their way south to freedom.

Tunner finished his military career serving as Commander, US Air Forces Europe and then most fittingly, commander of the Military Air Transport Service.

But not all airlifts which followed were, successful. The Indo-Chinese insurgency which has distracted the French during the Berlin Airlift, became the main focus of French Union military efforts. In the spring of 1954, the French attempted to lure the Viet Minh forces into a set-piece battle in a valley near the town of Dien Bien Phu. Operation Castor was initiated by a paratroop assault and supported by airlift using a runway in the valley. However, the Viet Minh moved in major military units, seized the high ground, and used 105 mm howitzers, captured by the Chinese from UN forces in Korea, to bombard the French garrison and rendered the airstrip useless. Continued air support continued using

parachute drops but the effort suffered from too few French resources. Arguably, the first US citizens to die in what would be called the Vietnam War were the near legendary soldier of fortune, James McGovern, better known as "Earthquake McGoon" and his co-pilot, Wallace Buford, killed when their C-119 was shot down while dropping supplies, the day before the fortress fell.



*"Earthquake's Final Flight", a painting by Jeffrey Bass, depicts the damaged C-119, left prop feathered, engine streaming oil, dropping its load into the French strongpoints at Dien Bien Phu.*

But the United States Air Force has capitalized on all of its past experience and engaged in many humanitarian and military airlifts after Berlin. The aerial supply of the USMC enclave at Khe Sanh, Vietnam during early 1968 was a model for flying supplies into a hostile environment. Ammunition, food, fuel, bunkering materials, and medical supplies flowed in and casualties flew out. Assault landings, low altitude parachute extraction techniques, and classic parachute drops were all used as dictated by the tactical situation. Restricted approaches, anti-aircraft fire, and the prevalent fog all limited the operation's efficiency and forced the employment of a surge tempo rather than a steady flow but the besieged Marines were well supplied and held out until relieved.



*Arguably, the greatest tactical airlifter in history, the newest model of the Lockheed C-130, flown by the Rhode Island National Guard's 147<sup>th</sup> Airlift Wing demonstrates an airdrop.*

This first Cold War victory, won by the air, ground, and command staff of the Berlin Airlift, was a propaganda bonanza for the West. But more importantly, it signaled the Russians that appeasement would not be the way of the future and also sent a message to our allies that we had the will to stand behind them. The Cold War would not end for another half century but air power had made a unique contribution towards the ultimate victory.



*Der Luftbrücke Memorial, Tempelhof  
The three prongs represent the three air corridors.  
The base is inscribed with the names of the airmen  
who were killed during the Airlift. A  
corresponding monument stands at Rhein Main  
Air Base*



*A C-54E, the Spirit of Freedom, is maintained and flown by the Berlin Airlift Historical Foundation. The aircraft bears the flags of the United States, Great Britain, and Germany. The aircraft also served the Navy and Marines as an R5D-4*



*Capt. James A Vaughn, New Haven, Conn.  
18 October, 1948*

*Connecticut Citizen Lost on the Airlift*

*“Upon such sacrifices, my Cordelia,  
The gods themselves throw incense.”*

*William Shakespeare  
King Lear, Act V, Scene III*



*Emblem of the Air Transport Command*

*Readers are encouraged to visit the website of the Berlin Airlift Historical Foundation at <http://www.spiritoffreedom.org/> Click on “What was the Berlin Airlift to view eight 1940s newsreels about the Berlin Airlift and an extensive slide collection of aircraft.*