

The Chronological History of the C-5 GALAXY



*Cover Design & Layout by Ms. Ginger Hickey
375th Communications Squadron
Visual Information Support Center
Scott Air Force Base, Illinois*

THE CHRONOLOGICAL HISTORY OF THE

C-5 GALAXY



Dr. John W. Leland
and
Ms. Kathryn A. Wilcoxson

Office of History
Air Mobility Command
Scott Air Force Base, Illinois

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One of the C-5s assigned to Westover Air Reserve Base, Massachusetts, lumbers out of its parking spot about to embark on another delivery of supplies and troops for Operation IRAQI FREEDOM. In the background, there is a C-5 from Stewart Air National Guard Base, New York, and Westover's new control tower. March 2003.

The Chronological History of the C-5 Galaxy

From its maiden flight on 30 June 1968 until the early 1980s, the C-5 Galaxy, manufactured by Lockheed Aircraft Corporation, held the distinction of being the world's largest and heaviest aircraft. Not until 1982 did the *Antonov 124*, a new Soviet air transport aircraft, top the C-5's gross weight by only 28 short tons.¹

Assigned to the Air Mobility Command (AMC) and its Air Reserve Component units at the end of calendar year 2002 was a Total Aircraft Inventory² of 126 C-5s: 74 "A" models, 50 "B" models, and 2 "C" models.³ Two active-duty wings--the 60th Air Mobility Wing, Travis Air Force Base, California, and the 436th Airlift Wing, Dover Air Force Base, Delaware--operated both C-5As and C-5Bs. A Primary Aerospace Vehicle Authorized (PAA) of 40 "A" models was assigned to the Air Force Reserve Command and the Air National Guard.⁴ The 97th Air Mobility Wing, an Air Education and Training Command wing at Altus Air Force Base, Oklahoma, had a PAA of six C-5As, which it used to train C-5 aircrews.⁵

Although the newer C-5B is nearly identical to the C-5A in appearance, it incorporates a wide range of system improvements that were developed after the Air Force took delivery of the first C-5A in early 1969. In outward appearance, the C-5 resembles the C-141 Starlifter, a much smaller Lockheed jet transport, which was also operated by the Air Mobility Command. Like the C-141, the C-5 has a distinctively high T-tail, a 25-degree wing sweep, and four turbofan engines mounted on pylons beneath the wings.⁶

From the mid-1960s to the late 1990s, the C-141 was the Air Force's core airlifter. The C-141s were being retired, however, and at the end of 2002, just 74 of the original 284 C-141s remained assigned to the Air Mobility Command, the Air Force Reserve Command, and the Air National Guard. All of the remaining C-141s would all be phased out by 1 October 2006.⁷ All 180 C-17 Globemaster IIIs, which Congress has authorized and funded as the replacement for the C-141, will be assigned to the Air Force by the end of fiscal year 2008.⁸ One of the C-17's major selling points has been its ability to carry outsize cargo,⁹ even though the C-5's ability to deliver outsize cargo over great distances has likewise been its *raison d'être* and perhaps most distinguishing performance characteristic. In terms of cargo volume, a C-5 can carry 100 percent more cargo than a C-17, that is, 36 standard 463L pallets compared with 18 pallets for the Globemaster III.¹⁰

Besides the 36 standard 463L pallets, a C-5 can carry 73 passengers and a maximum cargo of 204,904 pounds a distance of 2,150 nautical miles and then fly without cargo another 500 nautical miles before having to refuel. When supported by air refueling, the C-5's only range limitation is aircrew endurance.¹¹

One Department of Defense historian has described the C-5 as being “as long as a football field and as tall as a six-story building. Its vast cargo compartment,” he says, “is comparable to an eight-lane bowling alley.”¹² The nose and aft doors of the enormous jet transport open the full width and height of the cargo compartment, enabling ground crews to simultaneously load and unload cargo at the front and rear of the aircraft. The C-5’s landing gear can also be “knelt down” so that cargo can be driven directly on and off the aircraft.¹³

During fiscal year 2001, C-5s furnished about 50 percent of AMC’s organic strategic airlift capability. In Operation ENDURING FREEDOM, the United States military operation in the war against terrorism outside the continental United States, C-5s flew 33 percent¹⁴ of the 1,384 airlift missions completed from 11 September through 3 December 2001. C-5s carried 46 percent of the total cargo and 40 percent of the total passengers airlifted by Air Mobility Command.¹⁵

The C-5 has been a pivotal air mobility asset for more than three decades. It was the United States Air Force’s sole airlifter of outsize cargo before the C-17 became operational in 1993. Consistently disappointing reliability rates, however, have prevented the C-5 from meeting the high expectations of political and military leaders who championed its importance to the national defense strategy. The C-5’s approximate 63 percent mission capable rate¹⁶ for fiscal year 2002 was the lowest of any AMC generic aircraft, and it fell considerably below the 75 percent mission capable rate the command’s organic aircraft must maintain if they are to perform most of their peacetime and wartime missions.¹⁷ So, too, have costly piecemeal fixes of disputed value furnished plentiful ammunition to the airplane’s critics.

Presented here in a chronological format is a history that balances the C-5’s problems against its boundless achievements. Despite the problems, the C-5’s unique capabilities have enabled it to make significant, lasting contributions to upholding America’s vital interests around the world in ways not possible with any other aircraft. The chronology further shows that the C-5 has already accomplished what no other air transport has ever achieved, including the new, more reliable C-17. Not dwelt upon are the speculations of politicians, journalists, and air power academics over whether the purchase of additional C-17s or a modernization program to make the C-5 more reliable offers the best means for satisfying *all* of America’s future airlift requirements. Air Mobility Command’s analysis of alternatives concluded that the best value in terms of life-cycle costs and measures of operational effectiveness was to re-engine the Air Force’s existing C-5 aircraft and acquire additional C-17s above the 180 C-17s Congress had authorized and funded at the end of 2002.¹⁸

Representative operations and especially noteworthy, well-publicized missions have been intentionally interspersed with entries that discuss the system upgrades and programs for making the aircraft a more dependable air mobility asset. Many of the entries tell of the C-5’s critical role and proven

success in achieving national policy objectives in military operations other than war, which include humanitarian relief flights, presidential support missions, unique outsize cargo missions, and airlifting troops during military exercises.

Woven throughout the history is the premise that the C-5 remains a unique aircraft that has much structural life remaining; its capabilities are available from no other organic airlifter, and they are still much needed in the 21st century. In 1996, Air Mobility Command began an all-encompassing modernization program to make the C-5 more operationally reliable.¹⁹ Planners at Headquarters AMC believe that modernization holds the key to the C-5 making new and even greater contributions to AMC's mission of rapid, global mobility and the sustainment of America's armed forces in the 21st century. In early 1997, General Walter Kross, then AMC commander, captured the sum and substance of C-5 modernization when he said:²⁰

To do our business, we need about 250 T-tails of a significant size, 120 C-17s and 126 C-5s. We need to improve the C-5's reliability. We've been operating this plane for 25 years with ownership difficulties that no corporation in America should ever have to carry. We need to pay more attention to the C-5. Here is an airplane that has 80 percent of its structural life ahead of it. We need to start modernizing the C-5.

Against the background of General Kross' insightful comments, the history documents a wide range of C-5 operations, missions, programs, and milestones. Also discussed are a few events that simply caught the author's fancy.



C-5 on Final Approach

1961

9 Oct 61 Lieutenant General Joe W. Kelly, commander of the Military Air Transport Service, sent Headquarters USAF a Qualitative Operation Requirement defining the need for a new jet transport aircraft. The aircraft General Kelly proposed would be able to airlift outsize cargo and carry 100,000 pounds a distance of 4,500 nautical miles at 440 knots before having to refuel.²¹

1964

22 Dec 64 Secretary of Defense Robert S. McNamara announced that a new military airlifter temporarily known as the CX-HLS would be built. The super-transport, capable of transporting outsize cargo, would be the world's largest aircraft. Fifty of the new aircraft, in tandem with a future force of more than 250 C-141s, would increase the Military Air Transport Service's airlift capacity 600 percent by 1970.²²

1965

20 Apr 65 Lockheed Aircraft Corporation submitted its proposals for the CX-HLS, which it called the C-5A, to the Air Force.²³

30 Sep 65 At a specially convened press conference, Secretary of Defense Robert S. McNamara announced that Lockheed Aircraft Corporation had been selected to build a fleet of 58 four-engine C-5As, the Lockheed version of the CX-HLS. Boeing, Douglas, and Lockheed had competed for the primary contract. General Electric and Pratt & Whitney competed for the engine contract, which was awarded to General Electric for its TF39 thrust-reverse jet engines. Each TF39 engine was capable of producing 41,100 pounds of thrust.²⁴

The contract for 58 C-5As was valued at more than \$2 billion: \$1.4 billion would go to Lockheed and \$500 million to General Electric for the TF39 engines. The remaining money was set aside to fund services provided by approximately 2,000 subcontractors and suppliers. The Air Force retained the option to purchase as many as 200 C-5As.²⁵

The plane's gross weight, said McNamara, would be 350 short tons, twice that of the C-141, which in 1965 was America's largest military aircraft. Of far-reaching importance for the future of air mobility, the C-5A would be capable of carrying outsize cargo and a 250,000-pound load a distance of 3,200 miles unrefueled. No less significant, the C-5A would be capable of landing on unprepared airfields no longer than 4,000 feet. Measuring 230 feet in length and standing 63-feet high at the tail, the C-5A was truly a gigantic aircraft when compared with existing military aircraft.²⁶

1 Oct 65

General Howell M. Estes, Jr., commander of the Military Air Transport Service (MATS), described the C-5A as a "genuine breakthrough in air transport." Estes explained that a mix of C-5s and the smaller C-141s²⁷ would enable MATS to complete its most exacting requirements, which he described as the "airlifting of large combat forces to Europe *or* the Far East, *or* in both directions at once." To further dramatize how the C-5A would augment America's military airlift capabilities, General Estes recalled Operation BIG LIFT, for which, in October 1963, MATS had moved 15,500 troops and their equipment from Texas to Germany. "We used 234 aircraft [C-118s and C-124s], each flying one mission, and completed the lift in 63 hours. By comparison 42 C-5As could do the same job in only 13 hours," Estes said.²⁸

1967

1 Jun 67

The Lockheed-Georgia Company, Marietta, Georgia,²⁹ the C-5's primary contractor, announced that one of its employees, L. L. Kitchens, Jr., had been named winner of the company contest to nickname the C-5A. For the winning nickname of "Galaxy," Kitchens received a \$500 US savings bond.³⁰

1968

Mar 68

The National Society of Professional Engineers selected the Lockheed-Georgia Company's C-5A engineering test center at Marietta, Georgia, as one of the outstanding engineering

achievements of 1967. The building covered a 447,000-square-foot area, and its ceiling measured 78 feet from the ground.³¹

2 Mar 68

President Lyndon B. Johnson attended the rollout and christening ceremony of the first C-5A (tail number 66-8303) at the Lockheed-Georgia Company. Speaking under clear, blue skies to about 10,000 people, President Johnson quoted President Franklin Roosevelt when reminding the audience that the C-5A symbolized the fact that “great power involves great responsibility.” The commander in chief explained how significantly the C-5A would increase America’s military airlift capability. “Today it takes 88 cargo planes to move an infantry brigade from Hawaii to Vietnam. Their heaviest equipment would have to go by sea. That entire operation could be handled by 20 of these aircraft,” Johnson said.³²



C-5A Rollout Ceremony, 2 March 1968

Mrs. Harold Brown, wife of the Secretary of the Air Force, removed a drape from the nose of the C-5A that hid the nickname "Galaxy." Following the ceremony, a tractor pulled the enormous aircraft from its specially built hangar onto the tarmac of the test area. There, President Johnson, Senator Richard Russell (Democrat-Georgia), US Representative Carl Vinson (Democrat-Georgia), and other dignitaries toured the plane.³³

30 Jun 68

A C-5A (tail number 66-8303) made its maiden flight, thereby beginning Lockheed's extensive flight test program. The aircraft departed Dobbins Air Force Base, Georgia, located adjacent to the Lockheed-Georgia Company in Marietta, Georgia, at 7:47 Eastern Daylight Time. The flight lasted 1 hour, 34 minutes. The Lockheed crew consisted of Leo J. Sullivan, chief engineering test pilot; Walter E. Hensleigh, test pilot; Jerome "Jerry" H. Edwards, flight engineer; and E. "Mitt" Mittendorf, flight test engineer. Also aboard the C-5A was Lieutenant Colonel Joseph S. Schiele, chief test pilot for the United States Air Force. Gross weight at takeoff was 497,000 pounds. Takeoff speed was 123 knots indicated air speed, and the takeoff ground roll was 3,800 feet. The aircraft climbed to 10,000 feet at 140 knots with gear down and flaps in the takeoff position. The cruising altitude was 11,000 feet. The C-5A's top speed was 140 knots, and its speed at touchdown was 116 knots indicated air speed.³⁴

1969

17 Dec 69

Military Airlift Command³⁵ took possession of its first C-5A (tail number 67-0170) during a ceremony at the Lockheed-Georgia plant adjacent to Dobbins Air Force Base, Georgia. General Jack J. Catton, MAC commander, accepted the C-5A from General James Ferguson, commander of the Air Force Systems Command, and flew the aircraft to the 443d Military Airlift Wing at Altus Air Force Base, Oklahoma, the transitional training unit for MAC's aircrews. Delivery of the first production C-5A to Altus coincided with the 66th anniversary of the Wright brothers' flight at Kitty Hawk, North Carolina in 1903.³⁶

The C-5A's capabilities satisfied several unfilled military airlift requirements, most notably the ability to transport outside

equipment of a type the Army was using in an ever-increasing quantity, such as the 102,000-pound M-60 tank. Carrying a payload of 100,000 pounds, the Galaxy could fly at a maximum cruise speed of 470 knots over a distance of 5,500 nautical miles without refueling. With air refueling, the range of the C-5A was limited only by aircrew endurance.³⁷

1970

25 May 70

A C-5A (tail number 67-0172) assigned to Air Force Systems Command was destroyed in a fire at Lockheed Aircraft Corporation's Palmdale, California, facility with no loss of life.³⁸

6 Jun 70

Military Airlift Command took possession of its first operational C-5A (tail number 68-0212). General Jack J. Catton, MAC commander in chief, flew the C-5A from Lockheed's Marietta, Georgia, plant to the 437th Military Airlift Wing, Charleston Air Force Base, South Carolina, where a group of Lockheed officials as well as civilian and military dignitaries were on hand to greet the plane. Among those awaiting the plane was L. Mendel Rivers, the local US Representative and the principal speaker at the arrival ceremony. Congressman Rivers had been responsible for Charleston becoming the first base to have C-5As assigned. A second or two after the C-5A touched down on the concrete runway, a wheel from the left landing gear spun off and bounced behind the plane. More bad luck followed when the tire next to the departed wheel blew out.³⁹

Air Force officials explained to the well-wishers that a lock-washer failure had caused the wheel to jettison. General Catton took the offensive and described the flight to Charleston as ". . . the most beautiful airplane ride I've had." The C-5A had "handled like a Swiss watch," he said. Rivers was even more effusive and seized on the wheel incident as an occasion to lash out at the plane's critics, especially Senator William Proxmire (Democrat-Wisconsin), whom he predicted, would have much to say about the errant wheel. When members of the press corps asked Rivers about the mishap, the Congressman fired back, "That's why we put 28 wheels on one of these things . . . and if Proxmire doesn't like it, I say to hell with it. He's been saying a lot about a wing falling off. That's never happened so I guess he'll be happy with a wheel."⁴⁰

Brigadier General Clare T. Ireland, Jr., the 437th Military Airlift Wing commander, accepted the C-5A on behalf of the wing.⁴¹ The aircraft delivered to Charleston was the fifteenth C-5A manufactured by the Lockheed-Georgia Company. Of the first 14 C-5As, 8 had been dedicated to supporting various test programs. Another six C-5As were assigned to the 443d Military Airlift Wing at Altus Air Force Base, Oklahoma, for aircrew training.⁴²

3 Jul 70

The initial C-5A delivered to the 437th Military Airlift Wing departed Charleston Air Force Base, South Carolina, on the first C-5A mission outside the continental United States. The Galaxy made a 10-day tour of Air Force Pacific bases so that the plane's unique capabilities could be explained firsthand to MAC officers and airmen stationed in the Pacific theater. The C-5A made stops at Hickam Air Force Base, Hawaii; Andersen Air Base, Guam; Clark Air Base, Republic of the Philippines; Cam Ranh Bay, Vietnam; Kadena and Yokota Air Bases in Japan; and Elmendorf Air Force Base, Alaska, before returning to Charleston on 13 July. Dover and Travis Air Force Bases, located respectively in Delaware and California, were also stops for the C-5A on its 21,500-nautical-mile tour.⁴³

24-28 Jul 70

On the first C-5A flight to Europe, a Galaxy assigned to the 437th Military Airlift Wing, Charleston Air Force Base, South Carolina, made stops at three bases: Rhein-Main Air Base, Germany; RAF Lakenheath, United Kingdom; and Torrejon Air Base, Spain. More than 27,600 men, women, and children toured the C-5A while on static display at the three locations. The crew gave orientation briefings to local military and civilian dignitaries and media representatives. MAC officials considered the flight an "unqualified success."⁴⁴

16 Aug 70

Aircrews from the Air Force Flight Test Center, Edwards Air Force Base, California, flew a MAC C-5A on a 20.5-hour, nonstop flight without refueling. The Galaxy traveled more than 7,000 miles and passed over each corner of the continental United States. The flight was the C-5A's longest endurance mission to date.⁴⁵

17 Oct 70

A C-5A (tail number 66-8303) belonging to the Lockheed-Georgia Company caught fire and burned during fuel cell repair

at the C-5 manufacturing facility in Marietta, Georgia. One Lockheed employee died in the mishap, and another was injured. The destroyed aircraft was the original C-5A--the first one off the production line. President Lyndon B. Johnson had presided over its rollout ceremony on 2 March 1968.⁴⁶

24 Oct 70 The 60th Military Airlift Wing, Travis Air Force Base, California, received its first C-5A (tail number 68-0221). Local US Representative Robert L. Leggett was the keynote speaker at the colorful ceremony, which more than 15,000 people attended.⁴⁷ The C-5A was assigned to the 75th Military Airlift Squadron, the first of two C-5 squadrons programmed for Travis Air Force Base.⁴⁸

1971

12 May 71 The Air Force's first C-5 flight simulator was assigned to the 60th Military Airlift Wing, Travis Air Force Base, California.⁴⁹

15 May 71 A C-5A landed for the first time in the Southern Hemisphere when one of the aircraft deployed to Asuncion, Paraguay, for static display at the eleventh Inter-American Air Force Chiefs Conference hosted by the Paraguayan Air Force.⁵⁰

18-19 Sep 71 Military Airlift Command deployed a C-5A to Berlin's Tempelhof Central Airport for static display. Tempelhof had been the destination for most of the US Air Force's C-54 missions that were flown during the Berlin Airlift in 1948 and 1949. Over a two-day period, more than 200,000 Berliners braved heavy rain to view the Galaxy, walk through the plane, and ask questions of the crewmembers. Colonel Gail S. Halvorsen, the well-known Berlin Airlift "Candy Bomber," was commander of the 7350th Support Group, a United States Air Forces in Europe organization whose headquarters was at Tempelhof Airport. During the Berlin Airlift, then Lieutenant Halvorsen had organized Operation LITTLE VITTLES in which American pilots had dropped on their approaches to Tempelhof small parachutes of candy and chewing gum to the children of Berlin, who had long been denied such treats. Colonel Halvorsen understood better than most the potential of the C-5 for delivering especially large quantities of

humanitarian cargo to needy people over great distances. Thus, the “Candy Bomber’s” words carried weight when he described the C-5’s presence at Tempelhof as one of the city’s “most significant events since the Berlin Airlift.”⁵¹



C-5 at Lift-Off

29 Sep 71

As a C-5A assigned to the 443d Military Airlift Wing for aircrew training taxied for takeoff at Altus Air Force Base, Oklahoma, the left outboard engine broke off and fell from the aircraft. The engine, which had logged 1,300 flying hours, separated from its mountings when full power was applied. A Lockheed spokesman attributed the mishap to a structural weakness in the engine pylon. After cracks were discovered a few days later in the pylons of another Galaxy, MAC grounded all its C-5As until the engine pylon areas of every C-5A could be inspected for structural integrity with X-ray and ultrasonic devices.⁵² By the end of November 1971, 38 of MAC’s 47 assigned C-5As⁵³ had been cleared for flight.⁵⁴

1972

- 3 May 72** A trio of C-5As participated in the aircraft's first combat operation after the Military Assistance Command, Vietnam, requested an emergency airlift of six 49-ton, M-48 tanks from Yokota Air Base, Japan, to Da Nang Air Base, South Vietnam. As soon as the cargo doors were opened after landing in Vietnam, Army personnel drove the tanks off the C-5s and proceeded directly to the battle zone. The tanks were unloaded at Da Nang in less than seven minutes, and the C-5s departed the base after a ground time of only 30 minutes. C-5s continued to airlift outsize cargo to Vietnam until America's role in the Southeast Asia war ended in April 1975.⁵⁵
- 17 Nov 72** While a C-5A assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware, was at Tainan Air Base, Taiwan, a Chinese national armed with a shotgun boarded the Galaxy using the front flight deck ladder and attempted to hijack the plane. Sergeant David L. Shutvet, assigned to the 605th Military Airlift Support Squadron, followed the intruder up to the flight deck and thwarted the attempted hijacking. Sergeant Shutvet was awarded the Airman's Medal for his heroic act.⁵⁶

1973

- 17 Apr 73** The Department of Defense and the Military Airlift Command announced that the 437th Military Airlift Wing, Charleston Air Force Base, South Carolina, would swap its C-5s with the C-141 Starlifters assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware.⁵⁷ The action resulted partly from the drawdown and realignment of Air Force bases and resources after the Vietnam War. At the beginning of 1973, 16 C-5As were authorized the 437th MAW's 3d Military Airlift Squadron in addition to two C-141 squadrons authorized 18 aircraft each. At Dover Air Force Base, the 436th Military Airlift Wing's 20th Military Airlift Squadron was authorized 18 C-141s along with a C-5 squadron of 19 aircraft.⁵⁸

To consummate the swap, the 3d MAS and 13 of its 16 C-5As were transferred from Charleston to Dover and assigned to the 436th Military Airlift Wing. The 3d Military Airlift

Squadron's remaining three C-5As were assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, MAC's west-coast C-5 wing. Dover's 20th Military Airlift Squadron and its 18 C-141s were transferred to Charleston, where they were assigned to the 437th Military Airlift Wing.⁵⁹

The move consolidated a single type of strategic airlifter at both Dover and Charleston. Having like aircraft at each installation eliminated the need for lateral supply lines. It reduced aerospace ground equipment requirements and dual supervision in aircrew and maintenance standardization, and flying safety. Dover's aerial port, moreover, was the largest aerial port on the east coast. Since the C-5's cargo capacity was twice that of the C-141, colocating the east coast C-5s with Dover's aerial port eliminated the nonproductive aircraft positioning time that had occurred when Charleston-based C-5s picked up cargo at Dover.⁶⁰

When the aircraft swap was completed in late 1973, Dover Air Force Base and Travis Air Force Base each had 35 C-5As assigned. Five other C-5As were assigned to the 443d Military Airlift Wing, Altus Air Force Base, Oklahoma, for aircrew training. Fifty-four C-141s in three squadrons of 18 aircraft each belonged to the 437th Military Airlift Wing.⁶¹

- 18 May 73** The 81st and last C-5A (tail number 70-0467) to be delivered to the Military Airlift Command arrived at Dover Air Force Base, Delaware, where it was assigned to the 436th Military Airlift Wing.⁶²
- 29 Aug 73** The last C-5A (tail number 70-0467) from Charleston Air Force Base, South Carolina, arrived at Dover Air Force Base, Delaware, completing the switch of C-141s and C-5s between the two bases. The transfer of Dover's C-141s to Charleston and Charleston's C-5s to Dover had begun on 2 July 1973.⁶³
- 14 Oct 73** On 6 October 1973 Egypt and Syria attacked Israel, beginning what became known as the Yom Kippur war. On 14 October, only nine hours after President Richard M. Nixon gave the order for the United States to send military supplies to Israel, a C-5A (tail number 70-0461), carrying 186,200 pounds of cargo, landed at Tel Aviv's Lod International Airport at 2001Z, completing the first mission of Operation NICKEL GRASS.

The aircraft was assigned to the 60th Military Airlift Wing at Travis Air Force Base, California. The last leg of the C-5A's 3,163-mile-long flight from Lajes Air Base, Azores, took 6.7 hours. To expedite unloading the first Galaxy, a second C-5A carrying aerial porters and materials handling equipment followed the first aircraft. A maintenance problem, however, forced the second C-5A to divert to Lajes Air Base, requiring that MAC crewmembers and Israeli aerial porters manually unload the cargo delivered by the first C-5 arriving at Lod International Airport.⁶⁴

From the arrival of the first NICKEL GRASS mission on 14 October through the operation's last mission flown on 14 November 1973, a combined force of C-5As and C-141s airlifted 22,318 short tons of equipment and supplies to Lod International Airport. The airlift consisted of 567 airlift missions, which required 18,414 hours of flying time. The 145 missions flown by C-5As airlifted nearly half the total tonnage.⁶⁵



C-5 in Drive-On Mode

3 Nov 73

Although C-5As were equipped with an inflight refueling system, the aircraft had seldom been air refueled after its assignment to the Military Airlift Command. Before the Israeli

Airlift ended, Headquarters MAC received Headquarters USAF approval to train seven instructor aircrews assigned at the 443d Military Airlift Wing, Altus Air Force Base, Oklahoma, in the techniques of air refueling. The seven-crew cadre was vested with the responsibility of performing high-priority missions and training other C-5 aircrews in the art of air refueling. In late November 1973, MAC asked for and received Headquarters USAF approval to train one air refueling crew for each assigned C-5A in order to create a pool of approximately 70 C-5A aircrews proficient in all aspects of air refueling. Headquarters MAC had determined that a pool of 70 crews would give the C-5A a *sustained* air refueling capability during war or prolonged contingencies overseas.⁶⁶

1974

12-29 Apr 74 The Suez Canal, an international maritime shipping lane, had been closed since the 1967 Arab-Israeli war. In the spring of 1974, the United States agreed to clear mines from the canal and train Egyptian personnel in the techniques of explosive ordnance disposal (EOD) and mine-clearing operations. The United States minesweeping operation in the canal and its approaches was nicknamed NIMBUS STAR, while the airlift of US Army and Navy EOD forces to Egypt and the training and advisory assistance program was called NIMBUS STAR/MOON.⁶⁷

Eleven C-5 missions and seven C-141 missions airlifted 531 passengers and 665 short tons of equipment from the continental United States to the Royal Air Force base at Akrotiri, Cyprus, and Cairo International Airport, Egypt. The airlift included the movement of 12 helicopters, 8 of which were RH-53s.⁶⁸

21 Apr 74 A 106-pound section of wing flap from a C-5A assigned to the 105th Airlift Group, an Air National Guard unit at Stewart Airport, New York, plummeted from 3,000 feet into the front yard of a home in the town of Newburgh, New York. The following spring, in another headline-grabbing mishap, a 238-pound door fell from another of the 105th Air Group's C-5As as it was taking off from Dover Air Force Base, Delaware, on a training flight. This time the stray bit of airplane fell from a

height of 50 feet and landed some 2,000 feet from the end of Dover's runway.⁶⁹

- 1 May 74** A Strategic Air Command KC-135 performed the first air refueling of a C-5A.⁷⁰
- 15 May 74** Secretary of the Air Force John L. McLucas approved developing an expanded air refueling capability for the C-5A. Dependence on en route basing during the Israeli airlift had highlighted the critical importance of having an air refueling capability for the C-5A. From early September to mid-December 1974, an accelerated initial qualification program enabled MAC to complete 257 C-5A air refueling training missions and have 72 C-5A crews proficient in air refueling by the end of 1974.⁷¹
- 18 Jul 74** A C-5A airlifted an Atlas Centaur Missile and its 62,000-pound launch vehicle from Miramar Naval Air Station, California, to Cape Kennedy, Florida. This was the first time that both the Atlas first-stage booster *and* its Centaur upper-stage booster had been transported aboard a single aircraft. Military Airlift Command's Directorate of Information used the occasion to blithely proclaim, "if the cargo has priority and is outsized, the C-5 is airlifting it." The missile and its launch vehicle were subsequently used to propel America's Orbiting Astronomical Observatory into the stratosphere.⁷²
- 30 Aug 74** A C-5A completed Military Airlift Command's first long-range, air-refueled mission over water, when a Galaxy, assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware, flew to Clark Air Base, Republic of the Philippines. In performing the mission nicknamed COLD JUICE I, the C-5A covered 10,600 statute miles in 21 hours and 30 minutes.⁷³ The C-5 carried 99,683 pounds of cargo and received 44,200 gallons of fuel during two separate air refuelings. Air refueling saved nearly 20 hours by negating the need for three en route refueling stops. Military Airlift Command conducted seven more COLD JUICE I operational capability test and demonstration flights before the end of January 1975. COLD JUICE I developed, perfected, and validated cell air refueling procedures for MAC's entire fleet of C-5As.⁷⁴



Rainbow Frames a C-5

27 Sep 74

A C-5A (tail number 68-0227) assigned to the 443d Military Airlift Wing, Altus Air Force Base, Oklahoma, made an emergency crash landing at Clinton Municipal Airport, Oklahoma, after a fire broke out in the plane's underdeck. The

C-5, which landed and ran off the end of the runway into a field, was totally destroyed. Fortunately, there were no fatalities or injuries.⁷⁵

1975

Apr 75

Air Force Chief of Staff General David C. Jones appointed a study group known as APEX to review all facets of C-5A operations, safety, logistics, engineering, and potential service life of the aircraft. Prompting General Jones to direct the comprehensive study were: (1) delays in obtaining approval for a much-needed C-5A wing modification; (2) concern over the C-5A's "optimum effectiveness and safety;" and (3) the high interest in achieving the congressionally mandated capability of 66 million ton-miles daily for America's aggregate fleet of military airlifters.⁷⁶

The group met from April through June 1975 and found no major safety deficiencies inherent in the C-5A. It concluded that the Galaxy's outsize and oversize cargo capability was critical to the nation's wartime airlift mission and that a stronger, improved, and modified wing would make the C-5A the most cost-effective outsize strategic airlifter well into the 21st century. The study group further reported that a replacement aircraft for airlifting outsize cargo would be needed if a modified C-5A wing were not forthcoming.⁷⁷

4 Apr 75

A C-5A (tail number 68-0218) en route to Clark Air Base in the Philippines was diverted to Tan Son Nhut Air Base, Vietnam, to fly the first mission of Operation BABYLIFT, the airlift of Vietnamese orphans from Saigon to the United States. Onboard the first BABYLIFT mission on 4 April were 314 passengers of whom 228 were orphans. Fourteen minutes after takeoff, a massive decompression critically damaged the C-5's flight controls, blowing out the cargo doors and ramp to the rear of the passenger area. Heroically attempting to return the C-5 to Tan Son Nhut, Captain Dennis W. Traynor III, the aircraft commander, crash-landed the C-5 in a rice field a few miles from Tan Son Nhut's runway. Tragically, 138 adults, children, and infants perished, including 78 of the orphans. Miraculously, 176 passengers survived. General Paul K.

Carlton, MAC commander, called Captain Traynor's crash landing "one of the greatest displays of airmanship I have ever heard related."⁷⁸

5 Dec 75 The Lockheed-Georgia Company assigned MAC a C-5A (tail number 66-8305) it had retained for testing purposes, thus bringing the total number of C-5As in the command's inventory to 77.⁷⁹ By the end of 1975, Lockheed-Georgia had built 81 C-5As. MAC received 78 of the aircraft, and of these, two had been lost in accidents by the end of 1975. A C-5A assigned to the Air Force Systems Command and another C-5A belonging to the Lockheed-Georgia Company had been destroyed in fires.⁸⁰

1976

10 Aug 76 The Air Force Council approved procurement of a new outer wing for the C-5A, and Secretary of the Air Force Thomas C. Reed concurred.

19 Sep 76 A major fire occurred in the number two left inboard wing pylon of C-5A (tail number 66-8306) assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, severely damaging the aircraft. On the base leg of a routine training mission flown round-robin from Travis, warning lights indicated overheating in the number two engine; the crew observed gray and black smoke streaming from the number two pylon area. The crew increased final approach speed after they saw black and white smoke at the top of the left wing. After touchdown, the crew evacuated the C-5 through the crew door and assembled 250 yards upwind from the plane. Firefighters extinguished the fire in less than two minutes. The fire, caused by an electrical generator lead chaffing on the hydraulic tube,⁸¹ prompted several important modifications to the C-5's fire suppression system and wing pylons.⁸²

It took more than eight months for Travis maintainers to remove the number two engine and pylon from the damaged aircraft. On 25 May 1977, a Lockheed crew flew the crippled Galaxy under the power of only three engines from Travis to Marietta, Georgia, so that extensive repairs could be made at the Lockheed-Georgia Company.⁸³

1977

Jun 77

A C-5 Galaxy crew commanded by Captain David M. Sprinkel airlifted a 40-ton superconducting electromagnet and 45 short tons of support equipment from Chicago's O'Hare International Airport to Moscow's Shermetyevo Airport. The magnet was used in a joint Soviet-American energy research program. The flight was the C-5A's longest to date with so large and heavy a payload. The crew was composed of officers and airmen from MAC's 436th Military Airlift Wing and 512th Military Airlift Wing (Reserve Associate) at Dover Air Force Base, Delaware. In recognition of the milestone mission, the National Aeronautic Association awarded the crew the Mackay Trophy, presented annually to honor "the 'most meritorious flight of the year' by an Air Force member, members, or organization."⁸⁴



C-5s at Dover Air Force Base, Delaware

15 Dec 77

The Lockheed-Georgia Company completed installation of the first triple inertial navigation system (INS) on a C-5A (tail number 69-0013). After a series of engineering flight tests in early 1978, the aircraft underwent an operational test and evaluation of the triple INS at Travis Air Force Base, California, under the supervision of the Air Force Airlift Center.⁸⁵ Test results confirmed that the triple INS was "suitable for the

C-5A in its current operational environment.” Retrofit of the C-5 fleet began in December 1978 and was scheduled to take place over a two-year period during each aircraft’s period of programmed depot maintenance.⁸⁶

1978

- Jan 78** Major General Edward J. Nash, MAC Deputy Chief of Staff for Operations, asked for and received from the Air Staff a revision to the FY78 C-5 flying hour program based upon a 1.8 utilization rate (UTE) rather than the previous 1.5 utilization rate. General Nash based his request on the fact that a 1.8 UTE rate for channel operations had proven less stressfully damaging to the C-5’s wings than the 1.5 UTE rate, which required more high-intensity training sorties and low-level flying to complete mandated training requirements. The higher UTE rate was intended to increase the number of C-5 revenue-producing missions and aircrew training missions, thereby improving wartime readiness. The higher UTE rate was also expected to reduce the cost of commercially contracted airlift by lowering the need for commercial missions.⁸⁷
- 21 Feb 78** A C-5A assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, airlifted a ship reduction gear weighing 64 short tons from Norton Air Force Base, California, to Brunswick Naval Air Station, Maine. In February 1978, the reduction gear was the heaviest single unit of cargo ever airlifted.⁸⁸
- 14-17 May 78** Crewmembers from the 60th Military Airlift Wing and the 349th Military Airlift Wing (Reserve-Associate) at Travis Air Force Base, California, flew a nonstop, air-refueled mission from Travis to Christchurch, New Zealand. The mission aircraft (tail number 69-0013) was the 60th MAW’s first C-5A equipped with the new triple inertial navigation system (INS), which was being procured for the Military Airlift Command’s entire fleet of C-5As. From Christchurch, the crew flew a round-robin sortie to McMurdo Station, Antarctica, to evaluate the triple INS in the extreme latitudes of the Southern Hemisphere. The triple INS operated successfully in Antarctica’s high latitudes, thus demonstrating it could perform as advertised under the most difficult environmental conditions.⁸⁹

- 15 Jun 78** The Air Force and the Lockheed-Georgia Company completed the design effort for a major modification of the C-5A wing. Since MAC's acceptance of the first C-5A in December 1969, the stress of takeoffs and landings had caused cracks in the C-5's giant wings, thus threatening the long-term structural life of the aircraft. The modified wing proposed would be fabricated from a special heat-treated aluminum alloy. It would have more corrosion resistance and structural toughness than the original wing and would increase the C-5's fuel capacity from 318,000 to 332,500 pounds. The improved wing was expected to lengthen the C-5's service life by 30,000 flying hours. The strengthened wing would enable the C-5A's channel payload limit to be raised from 25 short tons to nearly 99 short tons and increase the weight of the C-5A's standard payload from 102 short tons to 121 short tons during contingencies.⁹⁰
- Jul 78** The Lockheed-Georgia Company completed building the prototype of a new, improved landing gear for the C-5A.⁹¹
- 15-17 Sep 78** In support of the joint-service exercise REFORGER '78, a C-5A from the 60th Military Airlift Wing at Travis Air Force Base, California, airlifted 282 United States Army troops from McChord Air Force Base, Washington, to RAF Mildenhall, United Kingdom, on a nonstop flight. Supported by one air refueling, the mission marked the first time that a C-5 in an "air bus" configuration had been used to airlift combat-ready troops overseas for a major joint-service exercise. To highlight the importance of the operation, General William G. Moore, commander in chief, Military Airlift Command, went to McChord where he watched the troops from nearby Fort Lewis, Washington, board the Galaxy and the aircraft lift off for England. The C-5A landed at RAF Mildenhall within three seconds of its scheduled arrival time. The soldiers immediately boarded waiting C-130s for deployment to forward airfields near the exercise area.⁹²
- 21 Sep 78** General William G. Moore, Jr., commander in chief, Military Airlift Command, approved the MAC Council's decision to buy commercial radar for the C-5 and terminate the C-5 simplified multi-mode radar program.⁹³
- 27 Nov 78** On behalf of the ailing Algerian president, Houari Boumedienne, a computerized axial tomography scanner was

airlifted to Algiers from Miramar Naval Air Station, California, aboard a C-5 Galaxy, which was the only aircraft in the world capable of transporting the outsize scanner.⁹⁴

Dec 78

General William G. Moore, Jr., commander in chief, Military Airlift Command, authorized an increased passenger capacity for the C-5 through the installation of a 75-seat configuration kit in the aft troop compartment and the movement of passengers up to the 50-ton limit.⁹⁵



Soldiers Descend from C-5 Troop Compartment

Dec 78

The triple inertial navigation system retrofit of the C-5 fleet began in accordance with Time Compliance Technical Order

1C-5A-1810. Scheduled to occur over a two-year period during programmed depot maintenance, the retrofit was expected to cost \$47.3 million initially but accrue savings of \$78 million in logistics costs over a ten-year period.⁹⁶

1979

11-17 Jan 79 At the direction of the Joint Chiefs of Staff, 8 C-5 and 4 C-141 missions delivered 25,000 sets of cold weather clothing and 10,000 insulated food containers to Tehran, Iran. MAC's strategic airlifters picked up their cargoes, which collectively weighed 497 short tons, at Richmond, Virginia, and Memphis, Tennessee. The government of Iran purchased the food containers, parkas, jacket liners, hoods, ponchos, and trousers from the stocks of the Defense Logistics Agency.⁹⁷

**31 Mar-
15 Apr 79** C-5s and other MAC aircraft played prominent roles in helping US agencies deal with a nuclear accident at a nuclear power plant located at Three Mile Island near Harrisburg, Pennsylvania. On 28 March, malfunctions in one of the plant's pressurized water nuclear reactors allowed radioactive gases to escape through the plant's venting system and then seep through the walls and containment ceiling. Officials at the Nuclear Regulatory Commission believed that a "core meltdown," the most destructive type of nuclear accident, was likely to occur.⁹⁸

Between 31 March and 15 April, MAC aircraft flew 15 missions to transport the equipment and supplies needed to detect radiation leaks and assess the dimension of the accident. On 31 March, a C-5 airlifted from McConnell Air Force Base, Kansas, to Harrisburg a 40,000-pound mobile rawinsonde station used to identify the presence and dimension of radiation in the atmosphere. A week later, on 9 April, one C-5 and five C-141 missions airlifted a water filtration unit, charcoal filters, and other equipment from Pasco, Washington, to Harrisburg. The C-5 was the only aircraft type in the United States military or civilian air fleets having a cargo compartment large enough to airlift the "outsize" radiation detecting equipment.⁹⁹

Apr 79 The 1978 Mackay Trophy was awarded to two C-5 aircrews from MAC's 436th Military Airlift Wing, Dover Air Force Base,

Delaware, who transported a 130,000-pound outsize load and passengers to Zaire in support of the Zairian efforts to defeat rebel forces trying to topple the legitimate government of Zaire. The crew, commanded by Lieutenant Colonel Robert F. Schultz and Captain Todd H. Hohberger, transported the passengers and vitally needed munitions and supplies into Zaire in an effort to break the rebel stronghold in Kolwezi, Zaire.¹⁰⁰

17-24 Jul 79 A C-5A from the 60th Military Airlift Wing at Travis Air Force Base, California, flew two 9,000-mile Special Assignment Airlift Missions¹⁰¹ (SAAMs) between Columbus, Ohio, and Dead Horse, Alaska, to deliver pumping equipment needed for expanding the flow of crude oil from Alaska's remote North Slope field through the Alaskan oil pipeline. Given the Carter administration's eagerness to lessen America's dependence on foreign oil imports, the Department of Transportation allowed the Aleyska Pipeline Services Company, a consortium of eight major US firms that operated the 800-mile-long pipeline from Prudhoe Bay to Valdez, Alaska, to pay approximately \$400,000 for the two C-5A missions. Government approval was needed whenever military airlifters were used for a purely commercial enterprise, even though the user paid for the lift. Each C-5A mission transported roughly 50 short tons of cargo and a half dozen passengers from Port Columbus International Airport, Ohio, to Dead Horse. Only the C-5's ability to airlift outsized cargo enabled the pumping equipment to be delivered and installed before Alaska's long, frigid winter began.¹⁰²

1 Oct 79 Headquarters MAC expanded the Dedicated Crew Chief Program to include all 70 active-duty C-5s as well as 12 C-141s and 12 C-130s. In a trial program begun in mid-1978 using only two C-141s and two C-130s, MAC had assigned a crew chief and an assistant crew chief to one specific aircraft. Either the crew chief or the assistant crew chief was present during home-station maintenance of "their" aircraft. One of the two noncommissioned officers accompanied the aircraft on all of its operational missions. The dedicated crew chief became the aircraft's corporate memory for every type of maintenance issue. The man or woman possessed the specialized maintenance expertise, familiarity, and continuity needed to keep a military transport aircraft moving on every type of operational mission. Crew chiefs quickly acquainted en route

maintenance teams with the background of recurring malfunctions and assisted them in making repairs.¹⁰³

By the end of 1979, logisticians at Headquarters MAC reported that aircraft supported by dedicated crew chiefs were achieving higher rates of reliability than aircraft not included in the program.¹⁰⁴

8 Oct 79

A C-5A assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, airlifted a ship reduction gear weighing 88 short tons from Norton Air Force Base, California, to Brunswick Naval Air Station, Maine, setting a new record for the heaviest single item ever airlifted. The previous record was established on 21 February 1978, when another Travis C-5A transported a ship reduction gear weighing 64 short tons.¹⁰⁵



C-5 Front-End Loading

3-4 Dec 79

On each of these dates, a C-5A from Travis Air Force Base, California, departed for Tokyo, Japan, to pick up a collective cargo of nine truck-mounted cranes and ten cargo trucks for

subsequent airlift to Phnom Penh, Democratic Kampuchea (formerly Cambodia). The cranes and trucks were urgently needed in Kampuchea's capital city to assist in unloading and distributing food and medicine shipped to Phnom Penh by the United Nations International Children's Emergency Fund (UNICEF) in the wake of famine and civil war. The outsized nature of the Japanese-made trucks and cranes precluded transporting the vehicles by commercial air carrier. The denial, however, of diplomatic clearances to overfly Vietnam and land in Kampuchea required that the two C-5s land at Tengah Air Base, Singapore, on 9 and 10 December. The cranes and trucks were offloaded at Tengah and later deployed to Kampuchea by commercial sealift arranged by UNICEF.¹⁰⁶

14 Dec 79

A C-5 assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, unloaded four F-5Fs at McClellan Air Force Base, California, for delivery to the Republic of Korea Air Force. The quartet of F-5Fs weighed 40 tons. From McClellan Air Force Base, the Galaxy transported the fighters nonstop to Taegu Air Base, South Korea, and received one air refueling en route. Since August 1974, C-5s from Travis Air Force Base had delivered 543 F-5s to friendly nations whom Congress had authorized to purchase US-manufactured military aircraft.¹⁰⁷

1980

14-16 Feb 80

A C-5 assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, delivered eight T-38 training aircraft to the Turkish Air Force at Cigli Air Base, near Izmir, Turkey. The operation was one of several T-38 deliveries made under the auspices of the Department of Defense's PEACE JEWEL program. The eight T-38s and associated equipment totaling 54 short tons were loaded onto the C-5 at McClellan Air Force Base, California, after which the Galaxy flew directly to Cigli Air Base supported by two air refuelings. A KC-135 from Pease Air Force Base, New Hampshire, performed the first air refueling off the eastern coast of the United States; a KC-135 from Zaragoza Air Base, Spain, performed the second air refueling off the coast of France. American and Turkish military officials met the C-5 when it arrived at Cigli in the

early evening of 16 February and toured the giant transport while the T-38s were being unloaded.¹⁰⁸

16 Jun-
8 Jul 80

Thirteen C-5As and one C-141B from the 60th Military Airlift Wing at Travis Air Force Base, California, supported the deployment of an F-4E squadron from Moody Air Force Base, Georgia, to Cairo West Air Base, Egypt, on behalf of Operation PROUD PHANTOM. President Jimmy Carter ordered the deployment so that personnel from the 347th Tactical Fighter Wing at Moody Air Force Base could help train Egyptian aircrews and maintainers in operating the 35 F-4Es that had been included in a recent \$1.5 billion US military aid package for Egypt. Deployed to Cairo West were 12 F-4E Phantom jet fighter aircraft, 400 aircrew and maintenance personnel, and 160 other Air Force officers and airmen from a broad spectrum of specialties. Headquarters MAC practiced and evaluated the C-5A's air refueling capabilities during the PROUD PHANTOM airlift. Seven missions flown by the Travis-based C-5As were air refueled between Dover Air Force Base, Delaware, and Cairo West. The first air refueling took place south of Sable Island near Newfoundland, and the second one occurred west of France.¹⁰⁹

Sixteen C-5A missions were flown to Cairo West Air Base from several locations in the continental United States. Holloman Air Force Base, New Mexico, home of the 4449th Mobility Support Squadron, was the principal CONUS onload point. The squadron's deployed men and women erected the portable shelters that comprised the "bare base" housing and workshops at Cairo West. Twelve missions originated at Holloman. Three other missions picked up RED HORSE¹¹⁰ civil engineering equipment and personnel assigned to the 823d Civil Engineering Squadron at Hurlburt Air Force Base, Florida. The sixteenth and final C-5 mission carried 70 short tons of cargo that was onloaded at George Air Force Base, California; Luke Air Force Base, Arizona; and Bergstrom Air Force Base, Texas.¹¹¹

After offloading cargo and passengers at Cairo West, the aircrews proceeded to Sigonella Naval Air Station, Italy, for a remain overnight stop. From Sigonella, they flew to Ramstein Air Base, Germany, where the C-5As were loaded with cargo for the return trip to the CONUS. The C-5 aircrews who flew



C-5 in Truck-Bed Mode

the PROUD PHANTOM missions staged from Dover Air Force Base and Ramstein Air Base.¹¹²

All in all, C-5s assigned to the 60th Military Airlift Wing delivered 164 military passengers and 941 short tons of palletized cargo and rolling stock to Egypt. Besides portable shelters, the cargoes included tractors, fire trucks, refrigerator units, generators, pipe racks, and runway matting.¹¹³

4-8 Aug 80

A C-5A from the 60th Military Airlift Wing at Travis Air Force Base, California, airlifted 4 USAF maintainers and 18 tons of equipment from McChord Air Force Base, Washington, to Cubi Point Naval Air Station, Republic of the Philippines. The Air Force logistics specialists helped repair crash damage aboard the aircraft carrier *USS Midway*.¹¹⁴

14 Aug 80

A C-5A (tail number 68-0214), the prototype wing-modified C-5A, made its initial flight from Dobbins Air Force Base, Georgia, adjacent to the Lockheed-Georgia Company's plant.¹¹⁵ The event began a series of Lockheed flight tests conducted from Dobbins and the Air Force Flight Test Center at Edwards Air Force Base, California.¹¹⁶ A rewinged C-5A would be

capable of routinely carrying peacetime payloads of 197,000 pounds for the duration of the aircraft's 30,000-hour service life (approximately 30 years at peacetime utilization rates), thereby fulfilling its mission of airlifting outsize and heavy-duty cargo well into the 21st century.¹¹⁷

10 Oct 80 The Lockheed-Georgia Company and the Air Force Flight Test Center, Edwards Air Force Base, California, completed preliminary evaluation of the C-5A (tail number 68-0214) equipped with the new wing design. This wing-modified prototype was scheduled to go to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, for operational testing shortly thereafter. But after a Lockheed ground vehicle damaged part of the prototype C-5, the time needed for repairs delayed deploying it to Dover until early 1981.¹¹⁸

1981

16 Jan 81 The Lockheed-Georgia Company delivered the first operational C-5A (tail number 68-0214) fitted with the new wing to Dover Air Force Base, Delaware, for further testing. During the next three months, Air Force Test and Evaluation Center project officers in charge of the wing's initial operational testing flew the prototype on numerous sorties, which produced 410.2 hours of flying time. The functional prototype fitted with the new wing design operated in a completely satisfactory manner.¹¹⁹

17 Jan 81 Three aircraft companies--Boeing, Lockheed, and McDonnell Douglas--competed for the design of the C-X, a strategic, intertheater, fuel-efficient transport capable of hauling a significant payload over intercontinental distances. To be an airlifter of outsize cargo, the C-X was also required to operate into and from small, austere airfields.¹²⁰

28 Jan 81 General Robert E. Huyser, MAC commander in chief, announced that navigators would remain permanent members of the C-5 aircrew complement. General Huyser's action trumped an earlier decision to no longer include navigators in the C-5 aircrew complement once MAC's entire fleet of Galaxys was equipped with the new weather radar. The Air Staff agreed to postpone abolishing the C-5 navigator crew position until fiscal year 1985.¹²¹

- 24 Apr 81** The Lockheed-Georgia Company completed 60,000 cyclic fatigue test hours (the equivalent of 30,000 flying hours) on the new C-5 wing and reported no problems. The \$1.39 billion contract with Lockheed called for tests of the wing design and building a functional prototype aircraft fitted with the new wing in late 1980 and 1981. Installation of the new wings was scheduled to begin on the entire C-5 fleet in February 1982. Once production began, the modification of each aircraft wing would take about eight months. The return of all the wing-modified C-5s to the operational units was scheduled to occur between March 1983 and July 1987.¹²²
- 10 Aug 81** Chief of Staff of the Air Force General Lew Allen, Jr., presented the Koren Kolligian Jr. Trophy for outstanding airmanship to Lieutenant Colonel Ricardo W. Mestre of the 349th Military Airlift Wing (Reserve-Associate), Travis Air Force Base, California.¹²³
- Colonel Mestre received the trophy for saving a C-5A (tail number 69-0016), passengers, and crew after the aircraft's number two engine caught fire while en route from Hickam Air Force Base, Hawaii, to Andersen Air Force Base, Guam, on 16 January 1980. Colonel Mestre returned the burning Galaxy to Hickam and landed it as flames continued to spew from the number two engine. None of the 94 people on board were injured.¹²⁴
- 28 Aug 81** After seven months of evaluating proposals from Boeing, Lockheed, and McDonnell Douglas, Secretary of the Air Force Verne Orr announced that the USAF source selection board had selected McDonnell Douglas to be the prime contractor for developing a C-X jet transport aircraft, the Air Force's next generation airlifter of outsize cargo. The decision was based on design, operational utility, life-cycle costs, and the long-range development programs proposed by the three companies. The McDonnell Douglas aircraft was soon designated the C-17. The number of C-17s programmed for procurement was *not* to be announced until the Department of Defense awarded the production contract, but in the summer of 1981, defense officials were discussing a buy of 144 C-17s.¹²⁵
- Awarding the source selection contract to McDonnell Douglas did *not* commit Defense Department officials to acquiring the

C-17. Air Force officials continued to believe that a mix of airlift capabilities attainable with the operation of several types of generic aircraft would best satisfy America's future military



C-5 Being Air Refueled

airlift requirements. Consequently, in mid-September 1981, as alternatives to the unproven C-17, Boeing submitted a proposal for configuring its commercial Boeing 747 air freighter for military airlift, while Lockheed submitted a proposal to build an improved C-5A (then called the C-5N). Especially attractive to Department of Defense officials was Lockheed's proposal to build 50 C-5Ns for a fixed price of \$4.6 billion (1980 dollars).¹²⁶

29-30 Sep 81 A C-5 mission flew nonstop, with the aid of air refuelings from KC-10A tankers, from Dover Air Force Base, Delaware, to Prince Hasan Air Base, Jordan, to deliver eight F-5 fighters purchased by the government of Jordan. The eight F-5s were loaded aboard the Galaxy in just two hours at McClellan Air Force Base, California, on 27 September. The C-5 flight from Dover Air Force Base to Prince Hasan took approximately 15 hours and required 340,000 pounds of fuel.¹²⁷ The mission was designed to demonstrate the increased air refueling capability provided by Strategic Air Command's new KC-10A and the diminished dependence of the United States Air Force on bases overseas.¹²⁸

To assess the new tanker in various operational scenarios, three KC-10A missions supported the flight. One KC-10A was used exclusively to air refuel the other two KC-10As. To make the test as demanding as possible, the Air Force Test and Evaluation Center lay three constraints on the mission: (1) the tankers and C-5 would not overfly any foreign country; (2) neither the tankers nor C-5 would land at any intermediate base; and (3) the C-5 would not be refueled after landing at Prince Hasan Air Base. For the C-5's two inflight refuelings, the MAC and SAC crews used the "en route cell rendezvous" procedure, instead of the "point parallel" method that required a tanker to orbit around the rendezvous point for 15 minutes before the arrival of the receiving aircraft. For the mission to Jordan, the "en route cell rendezvous" permitted the tankers and the C-5 to arrive at the air refueling point simultaneously, thereby conserving fuel and enabling both the C-5 and KC-10s to travel farther.¹²⁹

On the one hand, the demonstration proved that the Air Force could transport weapons of war to the Middle East without relying on overseas bases. On the other hand, the three

KC-10As and one C-5 consumed about 1.4 million pounds of fuel to move the 144,000 pounds of cargo, signifying an operation so costly as to be justified only for satisfying the most high-priority requirements.¹³⁰

14 Dec 81 Joint House and Senate conferees agreed to eliminate from the Fiscal Year 1982 Defense Appropriations Bill all funding requests for the C-X and to include instead \$50 million to enhance airlift capabilities *only* by acquiring existing wide-body aircraft such as the Lockheed C-5N, Boeing 747F, and the McDonnell Douglas DC-10 or KC-10. The conferees' action eliminated the C-17 alternative at least until fiscal year 1983. But before the end of 1981, the Department of Defense opted to keep the C-X program alive by including in its fiscal year 1983-1987 Program Objective Memorandum nearly \$8 billion for the C-X program.¹³¹

16 Dec 81 Major General Wayne E. Whitlatch, commander of the Air Force Test and Evaluation Center, reported to Air Force Chief of Staff General Lew Allen, Jr., that the rewinged C-5 prototype had "demonstrated satisfactory operational effectiveness and suitability while performing 73 operational sorties There were essentially no handling differences between the modified and unmodified aircraft."¹³²

1982

26 Jan 82 Lieutenant General Kelly H. Burke, Air Force Deputy Chief of Staff for Research, Development, and Acquisition, announced that the Air Force, after assessing a revised financial posture, recommended purchasing 50 C-5Ns, to be known as C-5Bs, rather than a fleet of C-17s. The 50 additional, improved C-5Bs would increase outsize airlift capability by nearly 60 percent and would provide an additional eight million ton-miles per day of airlift capability before 1990.¹³³

28 Jan 82 The first C-5A production aircraft (tail number 67-0173) arrived at the Lockheed-Georgia Company's Marietta, Georgia, plant to be fitted with the new modified wing that Lockheed had developed for the gigantic jet transport. The aircraft was assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware. From 28 January 1982 to 27 May 1987, each

of MAC's 77 C-5As received new center wings, two new inner wing boxes, and two new outer wing box sections. The improved, modified wings and their components were made of super-strong aluminum alloys, which had simply had not been available when the C-5s' original wings were produced in the late 1960s and early 1970s. Although the increased thickness of the modified wing added approximately 18,000 pounds to the aircraft, the extra weight equated to less than five percent of a C-5A's empty operating weight.¹³⁴



60K Loader Moves Cargo Onto a C-5

**20 Mar-
13 Apr 82**

Military Airlift Command flew 5 C-5 and 3 C-141 missions to transport 552 passengers and 253 short tons of cargo in support of President Ronald Reagan's trip to the Caribbean region. Representative of the numerous presidential airlift support missions flown in any year, the massive C-5 furnished the lion's share of the lift. The presidential support missions flown by Military Airlift Command were nicknamed VOLANT BANNER, but the operation's name was changed to PHOENIX BANNER after activation of the Air Mobility Command on 1 June 1992.¹³⁵

- 31 May 82** The 436th Military Airlift Wing, Dover Air Force Base, Delaware, completed a 1,400-hour test of the C-5A prototype wing with flight restrictions and accumulated more than 1,900 flying hours by 31 December 1982. Only one significant problem--a leak around the riser clips in the fuel tank--arose during Dover's evaluation of the rewinged C-5A prototype (tail number 68-0214). Lockheed engineers and an independent review team from the Aeronautical Systems Division determined that the clips needed to be repacked with a higher quality sealant when initially installed.¹³⁶
- 16 Aug 82** The conference committee of the House and Senate included in the final Fiscal Year 1983 Defense Authorization Bill \$847.5 million for production of the first 50 C-5Bs. The sum included \$50 million previously authorized for the C-5B program in the FY82 Defense Authorization Bill. Approximately \$697.5 million of the FY83 authorization was designated for facilities, materials, tooling, recurring costs, and nonrecurring costs. Another \$102.5 million was earmarked for procurement and \$47.5 million for initial spares.¹³⁷
- 31 Dec 82** The Air Force awarded Lockheed a \$609.1 million contract for the production of 50 C-5Bs. The contract also provided for spare parts and support equipment.¹³⁸

1983

- 23 Jan 83** A C-5A assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, hit a large flock of snow geese at an altitude of 200 feet during takeoff. Several of the geese were ingested into the aircraft's four engines. Immediately after impact, one engine overheated and commenced vibrating. The aircrew reduced it to idle. A second engine caught fire and was shut down. The two remaining engines sustained minor damage but continued to operate as the aircraft shook violently. Following an emergency fuel jettison, the aircrew landed the C-5 without further incident. Lieutenant Colonel Ralph H. Oates, the aircraft commander, was cited for his "exemplary flying skill, professionalism, and outstanding leadership throughout the life-threatening emergency." General James R. Allen, MAC commander in chief, praised the crewmembers for their "skill and superb airmanship" which

prevented the loss of the aircraft and the 59 persons onboard. Fourteen members of the 15-person crew were assigned to the 512th Military Airlift Wing (Reserve-Associate) colocated with Dover's active-duty 436th Military Airlift Wing.¹³⁹

- 28 Jan 83** A MAC Aircrew Task Force recommended that the command (1) combine C-5 simulator refurbishment with C-5B simulator acquisition; (2) develop in coordination with the Air Force Human Resources Laboratory a model aircrew training program by 1987; (3) establish a simulator certification program as the principal quality control program for aircrew training devices; and (4) make the full manning of all C-5 training positions the C-5 program's highest priority.¹⁴⁰
- Mar 83** Collins Engineering Corporation successfully completed installation of a modified new tactical air navigation (TACAN) system on a C-5A at Travis Air Force Base, California. In mid-1982, the Air Staff had awarded Collins a letter contract to produce and deliver 77 of the newer AN/ARN-118(V) TACAN units for installation on all of the C-5As at a cost of approximately \$4.8 million.¹⁴¹
- 8-16 Apr 83** The 60th Military Airlift Wing at Travis Air Force Base, California, flew two C-5A missions to airlift howitzers and ammunition from Peoria, Illinois, to Bangkok, Thailand. After the cargo of weaponry was loaded on the Galaxys at Peoria, the C-5s stopped at Travis on 9 April for refueling and crew rest. The pair of C-5As departed the northern California base on 10 April and flew directly to Bangkok with each Galaxy receiving two air refuelings en route. The large shipment of howitzers and ammunition helped the Royal Thai Army beef up its response to the accelerated violations of Thailand's northern border by the troops of neighboring Vietnam.¹⁴²
- 20 Jun 83** Military Airlift Command's first C-5A (tail number 66-8306) painted in the "European I" camouflage paint scheme was delivered to the 60th Military Airlift Wing at Travis Air Force Base, California. The mottled pattern of grays and greens served two purposes. First, it increased the plane's survivability in the European theater, and, second, it helped prevent corrosion. The entire fleet of 77 C-5As would begin cycling through the San Antonio Air Logistics Center, Kelly Air Force Base, Texas, for routine repainting in the mid-1980s, but the new requirement for camouflage paint caused the

schedule to be stepped up. Camouflage painting was a labor-intensive process. The cost was \$400,000 per plane. Twelve days were needed to strip the old paint, treat the superstructure with phosphoric acid and alkaline detergent to prevent corrosion, spray with new sealer, and apply the coat of camouflage paint. More than 90 painters worked on each aircraft around the clock until the job was finished. The San Antonio Air Logistics Center scheduled 16 C-5As to be painted annually.¹⁴³

Lieutenant Colonel Preston H. Davis, commander of the 22d Military Airlift Squadron, informally bestowed the name "Bronto" on the aircraft. Officers, airmen, and civilians assigned to the 60th Military Airlift Wing were soon calling the wing's first camouflaged C-5A "Bronto One."¹⁴⁴



C-5 in European I Camouflage Paint Scheme

31 Jul 83

A C-5A (tail number 70-0446) assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, landed short

of the runway on an instrument approach to Shemya Air Force Base, Alaska. There were no injuries. The aircraft sustained damage to its lower fuselage, main landing gear, cargo floors, and cargo doors.¹⁴⁵

At Shemya, for nearly two months, a team of logisticians from the Air Force Logistics Command and the Lockheed-Georgia Company performed a series of temporary repairs on the severely damaged aircraft to ready it for a one-time flight to the Lockheed-Georgia Company's manufacturing facility in Marietta, Georgia. On 25 September 1983, a special crew composed of Lockheed and Air Force personnel flew the damaged Galaxy to Dobbins Air Force Base, Georgia, after which complete, permanent repairs were made on the plane at the adjacent Lockheed-Georgia Company. Total cost of all the repairs was \$37 million.¹⁴⁶

The 4,945-mile, non-stop flight to Dobbins was called Pacer Gordo-Phoenix II. It last nearly 16 hours and required three air refuelings. Rescue forces escorted the C-5 for the overwater portion of the mission, while weather reconnaissance aircraft provided weather information for the entire flight. Two Aerospace Rescue and Recovery Service HC-130s flew 22 hours, and 6 WC-130s flew 62 hours. A pair of airborne WC-130s from the 54th Weather Reconnaissance Squadron, Andersen Air Force Base, Guam, operated two hours ahead of the Galaxy to scout weather conditions from Shemya to Elmendorf Air Force Base, Alaska. Two more WC-130s from the 53d Weather Reconnaissance Squadron and the 920th Weather Reconnaissance Group (Reserve) at Keesler Air Force Base, Mississippi, picked up the weather reconnaissance mission south of Elmendorf. Two other Keesler-based WC-130s performed the weather reconnaissance mission from Washington State to Dobbins. The WC-130 crews reported their weather observations directly to the C-5 crew and to Air Force Global Weather Central at Offutt Air Force Base, Nebraska.¹⁴⁷

During the 2,387-mile overwater portion of the flight, an HC-130 from the 71st Aerospace Rescue and Recovery Squadron at Elmendorf flew about 2,000 feet behind the C-5. The 41st Aerospace Rescue and Recovery Squadron at McClellan Air Force Base, California, kept a back-up HC-130

on alert. While HC-130s routinely escorted fighter aircraft when traveling over water for long periods, it was unusual for HC-130s to accompany transport aircraft and airdrop pararescuemen to assist the C-5 crew in the event the aircraft was forced to make an emergency landing. After the C-5 reached Washington state, a MAC C-130 accompanied it to Dobbins.¹⁴⁸

15 Nov-
29 Dec 83

Military Airlift Command airlifted 386 short tons of ground-launched cruise missiles and equipment from the United States to the United Kingdom and Italy on 12 C-5 and 2 C-141 missions.¹⁴⁹

1984

Jan 84

General Thomas M. Ryan, Jr., commander in chief, Military Airlift Command, requested Secretary of Defense Caspar W. Weinberger and Air Force Chief of Staff General Charles A. Gabriel to support the near-term transfer of C-5As rather than C-141s to the Air Force Reserve. General Ryan explained that “the combined transfers of C-5As in the short term and the C-141s in the midterm . . . best allows us to maintain adequate levels of wartime readiness and responsiveness.”¹⁵⁰

A MAC study group had compared the roles of the C-5 and C-141 in performing the command’s peacetime mission and found the C-141 currently *not* suitable for transfer to the Reserves. The command’s 267 C-141s were the mainstay of its intertheater airlift fleet. They furnished extensive support to special airlift operations, channel resupply missions, exercises, and joint service training. The C-5, with its high operational costs and large load capacity, was less cost effective in its peacetime airlift role. General Ryan preferred assigning C-5s rather than C-141s to the Air Force Reserve until a new generation jet transport capable of airlifting oversize cargo became operational.¹⁵¹

16 Jan 84

Airman First Class Thomas Jonsson, an aircraft mechanic assigned to the 60th Organizational Maintenance Squadron, Travis Air Force Base, California, testified before the Senate Judiciary Committee about his perceptions of gross cost overruns on C-5 spare parts. Jonsson said, for example, that

each C-5 vinyl armrest cost \$670 but could be manufactured for no more than \$10 each, thereby saving more than \$477,000 annually. The allegations of this junior, articulate Air Force member received wide media coverage.¹⁵²

22 Feb 84

The Lockheed Aircraft Corporation submitted an unsolicited proposal requesting new tests on the capabilities of the C-5A/B. The proposal rekindled the controversy over whether the C-5A/B or the McDonnell Douglas C-17 offered the best means for correcting airlift shortfalls, at the best price and earliest date.¹⁵³



C-5's General Electric TF39 Turbo Fan Engine

**2 Aug-
2 Oct 84**

In response to requests from Egypt and Saudi Arabia precipitated by mysterious explosions that damaged ships plying the Red Sea, C-5s performed the lion's share of an airlift in which MAC deployed US minesweeping assets to the Persian Gulf region. MAC flew 27 C-5, 14 C-141, and 3 C-130 missions

to transport nearly 1,000 passengers and more than 1,300 short tons of cargo.¹⁵⁴

6 Aug 84 A C-5A (tail number 69-0023) assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, became the first C-5A in the Military Airlift Command to log more than 10,000 flying hours. An aircrew from Travis' 349th Military Airlift Wing (Reserve-Associate) flew the milestone mission.¹⁵⁵

28 Aug 84 A C-5 from the 60th Military Airlift Wing, Travis Air Force Base, California, arrived at Florennes Air Base, Belgium, with the first planeload of support equipment for the ground-launched cruise missiles scheduled for deployment to Belgium.¹⁵⁶

Oct 84 In order to review program costs, Air Force officials asked for and received from the Department of Defense a delay in exercising fiscal year 1985 options for the purchase of another eight C-5Bs.¹⁵⁷

11 Oct 84 A C-5A from Travis Air Force Base, California, delivered an enormous compressor mounted on a 41-foot-long flatbed trailer from General Billy Mitchell Field, Wisconsin, to Sky Harbor Airport, Edmonton, in the Canadian province of Alberta. Total weight of the cargo was 38 short tons. The requirement for the Special Assignment Airlift Mission (SAAM) stemmed from a 16 August 1984 fire that shut down production in half the plant of Syncrude Canada Ltd. located in Mildred Lake, Alberta. The devastating fire reduced Canada's crude oil production by 10 percent and created a daily loss of \$4.5 million in oil revenue.¹⁵⁸

A contract to rebuild the Mildred Lake oil refinery was awarded to Fluor of Canada, Ltd. Two compressors critical to the plant's operation had been salvaged from the fire and returned overland to the Elliot Corporation in the United States for rebuilding. Syncrude wanted the compressors expeditiously returned so the plant could be rebuilt as quickly as possible. The Fluor construction firm soon discovered that the compressors were too large to fit into any commercial aircraft and that only C-5As were capable of airlifting them. Since approval of the United States government is required for any private entity to contract military airlift, Syncrude and Fluor

asked the Alberta Provincial Government and the Canadian Federal Government to request US approval for their chartering two C-5 missions. The Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics approved the request on 5 October 1984, thus clearing the way for the Canadians to contract two C-5 missions. The Canadian firms paid for the missions at the C-5A SAAM rate prescribed for non-government users.¹⁵⁹ The rate applicable in October 1984 was \$15,693 per C-5 flying hour.¹⁶⁰

Once delivered to Sky Harbor Airport, a commercial truck moved the compressor over land on an eight-hour road trip to Mildred Lake. On 1 November 1984, a second Travis C-5A mission airlifted the second compressor from Pittsburgh International Airport in Pennsylvania to Namao Canadian Forces Base in Edmonton. Larger and heavier than the first compressor, the second compressor was mounted on a custom-built trailer that was designed to distribute the weight of the load over the C-5A's entire cargo floor. The tractor-trailer was 83 feet long; the compressor weighed 83.5 short tons.¹⁶¹

1 Dec 84

The Air Force Reserve received its first C-5A when a C-5A (tail number 69-0016) assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, was transferred to the 433d Tactical Airlift Wing at Kelly Air Force Base, Texas. The Air Force had contracted for the purchase of 50 C-5Bs for the active-duty force. As the "B" models were phased in, a near-equal number of C-5As were programmed for transfer incrementally to the Air Force Reserve and the Air National Guard.¹⁶²

On 30 November, an aircrew from the 60th Military Airlift Wing flew the C-5A to Norton Air Force Base, California, where on the following morning, General Thomas M. Ryan, Jr., commander in chief, Military Airlift Command; Major General Donald D. Brown, commander of Twenty-Second Air Force; and 12 other men and women boarded the Galaxy for the flight to Kelly Air Force Base. General Ryan smoothly landed the C-5A at the Texas base, located five miles southwest of San Antonio. Among the dignitaries attending the transfer ceremony were Major General Sloan R. Gill, chief of the Air Force Reserve; Brigadier General John G. Sullivan, commander of the 433d Tactical Airlift Wing; Henry Cisneros, mayor of

San Antonio; and Colonel Robert V. Woods, commander of the 60th Military Airlift Wing.¹⁶³

C-5A number 69-0016 was equipped with the modified C-5A wing and the European I camouflage paint scheme. It displayed the nickname *City of San Antonio* and markings that identified it as an aircraft belonging to the Air Force Reserve and the 433d Tactical Airlift Wing.¹⁶⁴




C-5 Nose Landing Gear Block-In

1985

19 Feb 85 The Lockheed Aircraft Corporation submitted a formal proposal to the Air Force for a two-purchase option of 24 C-5Bs, 12 aircraft in fiscal year 1988 and another 12 planes in fiscal year 1989.¹⁶⁵

12 Mar 85 A C-5A aircrew assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, airlifted a rocket booster for an Inertial Upper-Stage Rocket from Moffitt Naval Air Station, California, to the skid strip at Cape Canaveral, Florida. Valued at \$25 million, the motor weighed 85,758 pounds and was used to propel satellites into a higher orbit. Because of the booster's

enormous size, weight, and bulk, greased shoring instead of the usual 40K loader shoring system was used to move it on and off the aircraft.¹⁶⁶

- 15 Mar 85** After an earthquake devastated coastal and interior regions of central Chile on 3 February 1985, a MAC C-5 airlifted from Pease Air Force Base, New Hampshire, to Santiago, Chile, approximately 1,000 rolls of plastic sheeting weighing over 60 short tons. The plastic sheeting was used to build temporary shelters for the quake victims.¹⁶⁷
- 14 May 85** A 353-pound door measuring seven by ten feet fell from a C-5A assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware, into a farmer's field 13.5 miles north of the base near the town of Smyrna. The door, which covered the plane's right aft main landing gear, fell from an altitude of approximately 6,000 feet. Two civilians saw the door tumble from the Galaxy and reported the incident to Dover Air Force Base officials.¹⁶⁸
- 4 Jul 85**  First Lieutenant Gayle I. Westbrook, the first female C-5 pilot, flew her first operational mission. Lieutenant Westbrook was assigned to the 3d Military Airlift Squadron of the 436th Military Airlift Wing, Dover Air Force Base, Delaware. On 24 April 1987, Captain Westbrook, while still assigned to the 3d Military Airlift Squadron, became the first female C-5 pilot to be certified as an aircraft commander.¹⁶⁹
- 15 Aug 85** A C-5 transporting three Boeing VETROL 107 helicopters, their support personnel, and equipment arrived at Wadi Seidna Air Base, Sudan, after picking up the helicopters in Portland, Oregon. Operating from Wadi Seidna, the helicopters played a critical role in United States famine relief efforts in Sudan.¹⁷⁰
- 21-30 Sep 85** Military Airlift Command flew four C-5 missions following massive earthquakes in Mexico on 19 and 21 September. One C-141 and five C-130 missions assisted the Galaxys in transporting about 300 persons and 375 short tons of humanitarian cargo to Mexico City.¹⁷¹
- 20 Dec 85** Major General William E. Overacker, MAC Deputy Chief of Staff for Operations, announced that the C-5A wing modification program had advanced to the point where the

aircraft had “sufficient flying capability to meet contingency plans.” The wing modification process performed by the Lockheed-Georgia Company took approximately eight months per aircraft. Since January 1982 when the modifications began, the slowness of the process had required MAC to operate for much of the time with a maximum of 58 C-5As.¹⁷²



C-5 Is Loaded at Night

1986

8 Jan 86

General Duane H. Cassidy, commander in chief, Military Airlift Command, accepted the first C-5B (tail number 83-1285) from the Lockheed-Georgia Company and flew it to the 443d Military Airlift Wing, Altus Air Force Base, Oklahoma. Due to limited C-5B spare parts and an increase in C-5 training requirements at Altus created by the transfer of some C-5As to the Air Reserve Component,¹⁷³ MAC logistics and plans officials chose to base the first four C-5Bs at Altus.¹⁷⁴

The eventual acquisition of 50 C-5Bs would increase Military Airlift Command's outsize cargo capacity by nearly 60 percent

and provide an additional 8 million ton-miles per day of airlift capability. Improved engines, a new wing, and state-of-the-art avionics were the C-5B's most sterling new features.¹⁷⁵

In keeping with the *USAF Airlift Master Plan*, the command kept the C-5 primary aircraft authorization level at 70 for the active-duty force and incrementally transferred the older C-5As to the Guard and Reserve as C-5Bs became available.¹⁷⁶ By December 1987, Military Airlift Command had received 20 C-5Bs and transferred 12 C-5As to the Air Reserve Component. Six "A" models went to the 433d Military Airlift Wing (AFRES) at Kelly Air Force Base, Texas; two to the 105th Military Airlift Group (ANG) at Stewart International Airport, New York; and four to the 439th Military Airlift Wing (AFRES) at Westover Air Force Base, Massachusetts.¹⁷⁷

21 Jan 86

Lockheed chairman Larry O. Kitchens reaffirmed his company's firm fixed-price offer to provide the Air Force 24 additional C-5Bs for \$2.161 billion. The offer, valid until November 1986, included a new option to extend the purchase over three fiscal years rather than two fiscal years, suggesting Lockheed's recognition that funding the purchase would be a controversial issue in Congress.¹⁷⁸

4 Mar 86

A C-5A from the 436th Military Airlift Wing, Dover Air Force Base, Delaware, flew the first Afghan humanitarian relief mission to Chaklala Air Base, near Islamabad, Pakistan. After the Soviet Union invaded Afghanistan in December 1979, Afghan freedom fighters, the mujahideen, waged a guerrilla war against the occupying Soviet forces. The continual fighting and unrelenting atrocities against civilians drove thousands of Afghan refugees into scores of squalid refugee camps outside Peshawar, capital of Pakistan's Northwest Frontier Province and the gateway to Afghanistan through the Khyber Pass. The Galaxy carried approximately 63 short tons of humanitarian relief supplies on this first humanitarian mission.¹⁷⁹

On the C-5's outbound leg from Chaklala, 16 Afghan war-wounded were airlifted to Europe and the United States. These, and war-wounded Afghans transported on subsequent flights, received gratuitous medical treatment at hospitals in the West. Several international relief organizations arranged for most of the patients to be returned to Pakistan on commercial airline

flights. From the first Afghan humanitarian mission on 4 March 1986 until the last such mission was completed in mid-1993, C-5s and C-141s--belonging first to the Military Airlift Command and then to the Air Mobility Command--made 115 flights to Chaklala Air Base. C-5s flew about 45 percent of the missions. During the program's 8 years of operation, approximately 900 Afghan patients received pro bono medical treatment, about half of them in American hospitals.¹⁸⁰



Helicopter Being Positioned on a C-5

14-22 Mar 86 A C-5A assigned to the 60th Military Airlift Wing at Travis Air Force Base, California, flew a lengthy mission to rotate elements of the United Nations Middle East peacekeeping force. Departing Travis on 14 March, the C-5 flew to Edmonton, Canada, and unloaded 51 Canadian troops and 9 UH-1 helicopters for transport to Ben Gurion International Airport in Tel Aviv. The mission, which departed Edmonton on 15 March, marked the first time that nine UH-1s had been airlifted in a partially disassembled configuration. A Strategic

Air Command KC-10 tanker refueled the Galaxy over Scotland during the 13.5-hour flight to Israel.¹⁸¹

After arriving in Tel Aviv on 16 March, the crew spent the following day in crew rest. On 18 March, the C-5 departed Tel Aviv for Canberra, Australia, with a contingent of Australian soldiers and eight UH-1 helicopters belonging to the Royal Australian Air Force. En route to Canberra, the C-5 made an overnight rest and refueling stop at Cairo and Diego Garcia before arriving in Canberra on 20 March. On the homeward leg of the journey, the crew stopped at Hickam Air Force Base, Hawaii, for refueling and crew rest before reaching Travis on 22 March, this completing a virtual round-the-world flight that covered 22,897 nautical miles.¹⁸²

20 Jun 86 General Duane H. Cassidy, commander in chief, Military Airlift Command, established mission capable (MC) rate objectives for the C-5, C-141, C-130, and MAC special operations forces aircraft and directed they take effect on 1 August 1986. The goal for the C-5 was set at 60 percent. The MC rate objectives were intended to focus wing commanders' attention on the importance of reliable MC reporting at a time of congressional pressure to reduce spare parts funding and make maintenance personnel more cognizant of the role that MC rates played in accurately assessing logistics readiness. General Cassidy was confident the objectives could be met without compromising the integrity of maintenance personnel who were responsible for assigning an aircraft the maintenance status codes specified in logistics regulations.¹⁸³

29 Jul 86 The 60th Military Airlift Wing, Travis Air Force Base, California, received its first C-5B (tail number 84-0062). A composite aircrew commanded by Major General Donald D. Brown, Twenty-Second Air Force commander, and members of the wing's 22d and 75th Military Airlift Squadrons flew the "B" model from the Lockheed-Georgia Company, Marietta, Georgia, to Travis.¹⁸⁴

29 Aug 86 Dover Air Force Base, Delaware, received its first C-5B (tail number 85-0001). Colonel Walter Kross,¹⁸⁵ commander of Dover's 436th Military Airlift Wing occupied the aircraft's left seat on the delivery flight from the Lockheed-Georgia Company, Marietta, Georgia, to Dover Air Force Base. Hundreds of

spectators watched as Colonel Kross taxied the Galaxy to a spot in front of the reviewing stand that had been set up for the arrival ceremony. Among the dignitaries waiting to greet Dover's first C-5B were Major General Jack W. Sheppard, Twenty-First Air Force commander; United States Senator William V. Roth, Jr. (Republican-Delaware); Crawford J. Carroll, mayor of Dover; and Brad Allison, a Lockheed executive. During the welcoming ceremony, the C-5B was officially named the *City of Dover*.¹⁸⁶

22-23 Sep 86 Two C-5s transported 174,185 pounds of humanitarian cargo to the Republic of the Philippines. The size of the shipment made the dual C-5 mission the largest humanitarian airlift operation yet conducted under the auspices of the Denton Amendment,¹⁸⁷ which authorized no-cost Department of Defense transportation of privately donated humanitarian cargo anywhere in the world.¹⁸⁸



C-5 Landing

4-14 Oct 86 Six C-5 missions supported President Ronald Reagan's trip to Reykjavik, Iceland, where he attended a hastily convened summit conference with Soviet General Secretary Mikhail Gorbachev. The objective of the Icelandic summit was to determine the broad outlines of a strategic arms limitation agreement. Three C-5s flew from Andrews Air Force Base, Maryland, to Keflavik Air Base, Iceland, on 4, 6, and 8 October, to airlift White House communications equipment, limousines, and helicopters. Three C-5 missions returned the presidential assets to Andrews Air Force Base on 12, 13, and 14 October. The Icelandic summit, subject to many optimistic predictions, ended without a disarmament agreement when President Reagan refused to accept any of Gorbachev's demands for limiting the United States Strategic Defense Initiative, more commonly known as "Star Wars."¹⁸⁹

1987

1 Jan 87 On New Year's Eve 1986, a fire destroyed the 22-story Dupont Plaza Hotel in San Juan, Puerto Rico. The fire killed 95 persons and seriously injured 106 more. It was the second worst hotel fire in US history. The government of Puerto Rico lacked the sophisticated equipment and skilled personnel needed to investigate a fire of such magnitude. On New Year's Day, a C-5 from the 436th Military Airlift Wing, Dover Air Force Base, Delaware, airlifted an arson team from the US Treasury Department's Bureau of Alcohol, Tobacco, and Firearms and the team's 13,000-pound forensic truck to Roosevelt Roads Naval Air Station, Puerto Rico. The team included arson and explosive specialists, a forensic chemist, photographer, and schematic artist. The truck was actually a mobile forensic laboratory equipped with the wide range of equipment needed to investigate and determine the cause of suspicious fires and explosions.¹⁹⁰

15 Jan 87 Negotiations were concluded between the Air Force and the Lockheed-Georgia Company for delivery of the last 21 of the 50 C-5Bs the Air Force had contracted to purchase in 1982. The January 1987 negotiations resulted in a new price of \$1.947 billion for the last 21 aircraft, a sum that equated to a reduction of \$273 million from the most recent contract price as adjusted for inflation using the Department of Defense's March 1986

inflation index. The renegotiated price resulted in the last 21 C-5Bs costing about \$92.7 million each.¹⁹¹

Since inflation had been increasing at a rate of seven percent a year when the contract for the 50 C-5Bs was first negotiated in 1982, a seven-percent inflation rate had been factored into the original contract price. The contract for the 50 C-5Bs had been renegotiated every six months to accommodate for the floating rate of inflation. At the end of 1986, the actual inflation rate in the United States since 1982 had varied between four and five percent. The low rate of inflation and a series of renegotiated contracts meant that by the end of 1986 the cost of all 50 C-5Bs was down by \$600 million from the \$7.8 billion total cost forecast in 1982 when the original contract was signed.¹⁹²

27 May 87

The Lockheed-Georgia Company completed modifying the entire fleet of 77 C-5As. The last wing-modified C-5A was returned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, in July 1987. Cracks in the wings of C-5As had appeared soon after the giant aircraft entered MAC's inventory in 1970. Headquarters MAC and the Lockheed-Georgia Company each made separate evaluations of the problem and concluded the cracks would likely appear in every C-5A. The multi-year program to rebuild the wings had commenced in January 1982. While modifying the entire fleet of C-5As cost \$1.1 billion and took 8 months per aircraft to complete, the process added 30,000 hours of flying-time life to each airframe. In early 1987, 69 C-5As were assigned to MAC active-duty units, 3 to the Air National Guard, and 5 to the Air Force Reserve.¹⁹³

Jun 87

The Lockheed-Georgia Company began modifying the first of two C-5As (tail numbers 68-0213 and 68-0216) so the aircraft could transport the unique outsize space shuttle cargoes of the National Aeronautics and Space Administration (NASA). There had been no space shuttle flights since the space shuttle *Challenger* exploded shortly after takeoff on 28 January 1986. After more than two years of assessing the causes of the explosion and correcting the identified safety problems, NASA planned to launch a new space shuttle mission before the end of 1988. Modifying the C-5As to support the NASA mission included removing the troop compartment, redesigning the aft



Loading Cargo in Visor-Up Mode

pressure door and bulkhead, and widening the aft doors so the planes could carry the space shuttle's large cargo container. The first C-5A completed modification in October 1988 and the second in early 1989. The two aircraft were redesignated C-5Cs. The cost of modifying both "A" models was \$133.8 million.¹⁹⁴

7 Jul 87

The 436th Military Airlift Wing at Dover Air Force Base, Delaware, received its last C-5A equipped with the improved C-5A wing. Colonel Douglas M. Senter, the wing's deputy commander for operations, was the pilot on the flight from the Lockheed-Georgia Company in Marietta, Georgia, to Dover.¹⁹⁵

8-20 Sep 87

For 12 days, a C-5 assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, flew missions in the continental United States on behalf of Pope John Paul II's visit to America. The White House Military Office had requested the airlift, whose missions were planned, scheduled, and flown under the rubric, VOLANT SILVER, the category of any mission flown to support the Vice President or a visiting head of state. The C-5A airlifted security specialists, the papal staff, limousines for the Pontiff's entourage, and the armored, glass-enclosed "Pope Mobile" in which John Paul II rode on his numerous travels around the world. From the port of embarkation at Andrews Air Force Base, Maryland, the Pope's C-5 made stops at New Orleans, Louisiana; Phoenix, Arizona; Monterey, California; and Selfridge Air National Guard Base, Michigan. On each mission leg, the Galaxy transported approximately 75 passengers and 49 short tons of cargo.¹⁹⁶

1988

28 Mar 88

An all-female C-5 crew from Dover Air Force Base, Delaware, began a European channel mission to help commemorate Dover's "Women's History Month." The 17-member crew included women from the 436th Military Airlift Wing and the 512th Military Airlift Wing (Reserve-Associate), as well as two artists and a photographer.¹⁹⁷ Captain Gayle I. Westbrook, MAC's first female C-5 pilot, was the aircraft commander. The crew's three other pilots were Captain Karen M. Torres, first pilot; Captain Anne C. Armstrong, copilot; and Captain Mary K. Vandevere, copilot.¹⁹⁸ The seven-day mission took the crew

to Charleston Air Force Base, South Carolina; RAF Mildenhall, United Kingdom; Incirlik Air Base, Turkey; and Rhein-Main Air Base, Germany.¹⁹⁹



All-Female C-5 Crew from Dover Air Force Base, Delaware

6 Apr 88

A C-5 from the 436th Military Airlift Wing at Dover Air Force Base, Delaware, landed at Chaklala Air Base, Pakistan, with 121,600 pounds of humanitarian aid for Afghan refugees encamped in northwestern Pakistan. The aircraft also carried seven Afghans who had completed pro bono medical treatment at hospitals in Europe and the United States. No sooner had the C-5 reached its parking spot than a fire broke out in the aircraft's right wheel well. Technical Sergeant William A. Wray, the flight engineer, quickly determined that the blaze had resulted from a brake fire fueled by grease and hydraulic fluid. No Pakistani firefighting support was immediately available, so Sergeant Wray rushed to the cargo compartment and grabbed a Halon fire extinguisher. He returned on the

run to the wheel well and commenced spraying fire retardant on the blaze.²⁰⁰

The C-5, which contained 70,000 pounds of fuel, was parked next to a ground-refueling receptacle. Using three fire extinguishers, two of them handed to him by other crewmembers, Wray could extinguish the blaze for intervals of only a few seconds because the fire re-ignited as soon as the retardant dissipated. With complete disregard for his own safety, Sergeant Wray fought the fire for five minutes until the Pakistani firefighters reached the scene. An inadvertent discharge of a chemical fire retardant by the Pakistanis temporarily blinded Wray and burned his face. Sergeant Wray was treated at a local clinic but returned a short time later to prepare the C-5 for its scheduled departure at daybreak.²⁰¹

According to Colonel F. Keith Tedrow, commander of the 436th Military Airlift Wing, "Sergeant Wray's selfless actions prevented extensive damage to, or possible loss of, a \$139 million aircraft and prevented injury or death to numerous others" TSgt Wray received the Air Force's 1988 Cheney Award, presented annually for an act of valor or self-sacrifice in conjunction with an aircraft mishap or other aircraft emergency. Mrs. Ruth Cheney Stretters had established the Cheney Award in memory of her brother, 1st Lieutenant William H. Cheney, who died in an air collision over Foggia, Italy, in 1918.²⁰²

**17 Apr-
23 Jul 88**

Improving relations between the United States and the Soviet Union resulted in joint verification experiments to monitor nuclear weapons testing. C-5Bs, refueled by KC-10s, carried test equipment and scientists from Indian Springs, Nevada, to Helsinki, Finland, and then on to Semipalatinsk in the Soviet Republic of Kazakhstan. Semipalatinsk was the Soviet Union's center for the underground testing of nuclear weapons. The Mackay Trophy, awarded by the National Aeronautic Association to recognize the most meritorious flight of the year by Air Force members, was presented to Captain Michael Eastman and his crew for flying the first-ever USAF mission to Semipalatinsk. The C-5 aircrew receiving the 1988 Mackay Trophy was assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware.²⁰³

1-7 Aug 88

A C-5A assigned to the 60th Military Airlift Wing, Travis Air Force Base, California, transported 64 members of the Centennial Everest Expedition, 16,000 pounds of equipment, and their CH-47D helicopter to China. After unloading the helicopter at Dover Air Force Base, Delaware, the Galaxy proceeded to Elmendorf Air Force Base, Alaska, for refueling and a remain overnight (RON) stop before continuing to Kadena Air Base, Japan, for another refueling and RON. The C-5A took the CH-47D helicopter on a seven-hour flight from Beijing to Gonggar, Tibet, located approximately 300 miles from Mount Everest, but the climbers traveled from Beijing to Lhasa, Tibet, aboard a Chinese commercial aircraft. From Lhasa, the team moved to a base camp near the 29,028-foot-high Mount Everest. The C-5A returned to Travis Air Force Base on 7 August. Members of the expedition remained in Tibet until mid-October, when an Air National Guard C-5A returned the climbers, their equipment, and helicopter to Travis Air Force Base.²⁰⁴

11 Aug 88

A C-5 aircrew from Dover Air Force Base, Delaware, established an uncertified record for the heaviest airdrop ever accomplished from a single aircraft. The Galaxy airdropped on the first pass over the Army's Fort Bragg, North Carolina, drop zone four Sheridan tanks and 73 combat-equipped paratroopers on the second pass for a total of 177,000 pounds. The paratroopers and their equipment were assigned to the 82d Airborne Division's XVIII Corps based at Fort Bragg.²⁰⁵



C-5 Troop Door in Jump Platform Configuration

15-28 Aug 88 Several C-5s airlifted a 500-person United Nations peacekeeping force, their equipment, and vehicles from Trenton, Ontario, to Incirlik Air Base, Turkey, and Baghdad, Iraq, in Operation POST ROAD. Forty KC-135s and KC-10 missions provided air refueling. The peacekeeping force helped monitor a United Nations-negotiated cease-fire between Iran and Iraq, locked in a bloody, stalemated war from September 1980 to August 1988.²⁰⁶

11 Sep 88 The heaviest monsoon rains in 70 years swept over India, Bhutan, and Nepal in September 1988, flooding the Brahmaputra River, which flows through the low delta country of Bangladesh. A C-5 assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware, landed at Dhaka, the capital of Bangladesh, on 11 September. The C-5, which departed Andrews Air Force Base, Maryland, airlifted 120,000 pounds of water purification equipment, plastic sheeting, and 18 passengers, including Jay F. Morris, Acting Director of the Agency for International Development in Dhaka.²⁰⁷

The mission was flown in response to a request from Willard De Pree, the United States Ambassador to Bangladesh. The Office of Humanitarian Assistance at the Department of Defense arranged for assembling the cargo from government excess stocks. It also scheduled trucks to move the humanitarian supplies to Andrews and coordinated the flight with Military Airlift Command. Jay Morris called the flight “a complete success.” Another passenger perceptively explained how military airlift helps implement national policy objectives, when he said that the mission had “presented an outstanding opportunity to show the Muslim world how America supports its friends in time of disaster.”²⁰⁸

10 Dec 88 After an earthquake ravaged Armenia on 7 December 1988, killing approximately 25,000 people and leaving another 500,000 homeless, a C-5B from Dover Air Force Base, Delaware, landed at Incirlik Air Base, Turkey, with 33.5 short tons of medical supplies, drawn from depots of the United States Agency for International Development at Pisa, Italy, and the Office of Foreign Disaster Assistance at nearby Leghorn, Italy. At Incirlik, the cargo was unloaded and transferred to C-141s for delivery to Zvartnots Airport in Yerevan, Armenia’s capital city.²⁰⁹

On 29 December 1988, a Dover C-5B delivered 12 four-wheel-drive Dodge trucks, 50 field tents, 224 portable heaters, 464 wool blankets, and 120 pairs of insulated boots to Armenia on the first flight of a C-5 to Zvartnots Airport. C-141s had flown all of MAC's previous Armenian relief missions. Ramp saturation at Zvartnots resulting from the glut of international aircraft supporting the massive relief effort prompted Headquarters MAC to delay sending any of the enormous C-5s into Armenia until 29 December. The first C-5 mission was flown under the auspices of the Denton Amendment to the FY87 Defense Appropriations Act, which authorized the Secretary of Defense to make nonlethal DoD excess property available for humanitarian purposes worldwide. In January and February 1989, three more C-5 missions prepositioned humanitarian cargoes at Incirlik Air Base for C-141s to shuttle into Zvartnots.²¹⁰

1989

- 5-20 Jan 89** Three C-5 missions airlifted the papers of President Ronald Reagan from Andrews Air Force Base, Maryland, to Norton Air Force Base, California. From Norton, commercial trucks took the documents to a temporary storage facility in Los Angeles pending completion of the Ronald Reagan Presidential Library and Center for Public Affairs in Simi Valley, California.²¹¹
- 13 Jan 89** A C-5B operated by two crews assigned to the 436th Military Airlift Wing arrived in Shenyang, China, to airlift 2 Chinese F-8 fighters, 56 short tons of equipment, and 22 Chinese nationals from Shenyang, in northeast China, to McGuire Air Force Base, New Jersey. Contracted commercial trucks took the F-8s from McGuire to Grumman Corporation's factory on Long Island, New York, where the Chinese aircraft were fitted with Grumman avionics systems according to the provisions of a foreign military sales program called PEACE PEARL.²¹²
- 11 Mar-
15 May 89** In operation ELECTION DISTRICT, 9 C-5 missions transported 854 passengers and 1,023 short tons of cargo to Windhoek and Grootfontein, Namibia, on behalf of a United

Nations effort to supervise democratic elections for a Namibian constituent assembly.²¹³

Apr-May 89

Seventeen C-5 missions supported the cleanup of a catastrophic oil spill in Alaska's Prince William Sound. The spill, the largest ever off the shores of North America, occurred on 24 March 1989 when the oil tanker *Exxon Valdez* ran aground near Valdez, Alaska, leaking an estimated 240,000 barrels of crude oil. The C-5 cargoes included Navy oil skimmers, boats, bladders, generators, UH-60 helicopters, two rigs, and a communication trailer.²¹⁴



Helicopter Loading in Drive-In Mode

A C-5 aircrew from Dover Air Force Base, Delaware, flew the operation's longest mission. After arriving at Ramstein Air Base, Germany, on a routine channel mission, the crew commanded by Major John Sutton of the 709th Military Airlift Squadron (Air Force Reserve) was redirected to Billund, Denmark. There, it unloaded 16 pallets of equipment and

several oil booms of the type routinely used for drilling in the North Sea. From Billund, the C-5 proceeded to Helsinki, Finland, and picked up three more pallets of equipment. After remaining overnight in the Finnish capital, the crew proceeded to Elmendorf Air Force Base, Alaska, over a polar route that included a refueling stop at Keflavik Naval Air Station, Iceland.²¹⁵

7-12 Apr 89

A C-5A assigned to the 436th Military Airlift Wing, Dover Air Force Base, Delaware, delivered medical supplies, Meals-Ready-to-Eat (MREs), and other humanitarian cargoes to Gambia, Chad, and Equatorial Guinea. The operation, called AFRICA-1, was one of the largest humanitarian airlifts to Africa in the 1980s. The Galaxy transported eight pallets of medical supplies to Banjul, Gambia; a portable disaster hospital and related medical supplies to Malabo, the capital of Equatorial Guinea; and 16 pallets of MREs to Chad. The Office of Humanitarian Assistance at the Department of Defense arranged for the cargoes to be delivered to the three countries.²¹⁶

In late September and early October 1989, a Dover C-5B flew a humanitarian mission known as AFRICA-2 from Andrews Air Force Base, Maryland, to deliver 65 short tons of DoD excess hospital equipment to Monrovia, Liberia; Niamey, Niger; and Douala, Cameroon.²¹⁷

17 Apr 89

General Duane H. Cassidy, MAC commander in chief, accepted the 50th and last C-5B (tail number 87-0045) from Lockheed at Dobbins Air Force Base, Georgia. Lockheed commemorated delivery of the final C-5B by hosting a dinner the evening before the ceremony. In his dinner address, General Cassidy explained that the C-5B contained more than 100 improvements over the C-5A. It had more durable wings, more powerful engines, stronger aluminum alloys, better safeguards against corrosion, and state-of-the-art avionics.²¹⁸

Following the acceptance ceremony, General Cassidy, his wife Rosalie, and former CINCMAC, General Jack J. Catton, boarded the C-5B for the flight to the 436th Military Airlift Wing at Dover Air Force Base, Delaware. While a major-grade aide to General Catton, then Major Cassidy had accompanied General Catton on the flight that delivered the first operational C-5A to Charleston Air Force Base, South Carolina, on 6 June

1970. It was most fitting, therefore, for General Catton to join General Cassidy on the flight to Dover Air Force Base.²¹⁹

As with delivery of the first C-5A to Charleston 19 years before, the arrival of the last production C-5B at Dover began with the aircraft making a low-level pass over the runway. To spotlight the quantum advances made in aviation technology since the end of World War II, the C-5B was parked beside a C-47 Gooney Bird. In his remarks at the flightline ceremony, General Cassidy, with good humor, compared the two aircraft to “David and Goliath.” In a more serious vein, he spoke of the historic demand for airlift and the importance of airlift as a crucial instrument for implementing national policy objectives. General Cassidy predicted that America’s military airlifters would be flying C-5Bs until the year 2030.²²⁰

17 Apr 89 The 60th Military Airlift Wing accepted delivery of its final C-5B (tail number 87-0044), thus completing its portion of the Military Airlift Command’s C-5B beddown program. Accepting the aircraft completed the conversion program in which the 60th Military Airlift Wing transferred 21 C-5As to the Air Force Reserve and the Air National Guard, while gaining 21 new C-5Bs.²²¹

7 Jun 89 During Airlift Rodeo,²²² a C-5B aircrew set a new world record for a “total weight airdrop” by airdropping 4 Sheridan armored tanks and 73 paratroopers from the 82d Airborne Division at Fort Bragg, North Carolina. The combined weight of the paratroopers and armored vehicles was 190,346 pounds.²²³

Jul 89 Eight C-5s, eight C-141s, and one C-130 furnished airlift support for a trip by President George H. W. Bush to Europe, where the Chief Executive participated in France’s Bastille Day bicentennial celebration on 14 July and paid official visits to Poland, Hungary, and the Netherlands.²²⁴

7-10 Jul 89 Two C-5s assigned to the 436th Military Airlift Wing at Dover Air Force Base, Delaware, delivered more than 250,000 pounds of bridge components to Islamabad, Pakistan. The bridge parts were used in Afghanistan to build a bridge that had been destroyed by Soviet military forces that invaded the country in December 1979. The parts were manufactured by a California firm and were trucked across the continental United

States to Dover. Because some of the bridge parts were too large to be handled by a standard forklift offloader, the first C-5 mission picked up a special tactical offloader at Rhein-Main Air Base, West Germany, en route to Islamabad.²²⁵



C-5 in European I Paint Scheme Taxis In

Aug 89 Sixteen C-5 and 8 C-141 missions airlifted nearly 1,000 passengers and more than 850 short tons of cargo to Boise, Idaho, to support of the efforts of firefighters trying to contain the numerous forest fires that blazed over eastern Oregon, southwestern Idaho, and northern California.²²⁶

21-30 Sep 89 As part of humanitarian relief operations in the Caribbean basin after Hurricane Hugo, 51 C-5, 53 C-141, 23 C-130, and 1 KC-10 missions transported 1,365 passengers and 3,938 short tons of humanitarian cargo to the following locations: Roosevelt Naval Air Station, Puerto Rico; San Juan International Airport, Puerto Rico; Harry Truman Airport, St. Thomas; and Alexander Hamilton Airport, St. Croix.²²⁷



C-5 Refueling

4 Oct 89

A C-5B (tail number 87-0042) assigned to the 60th Military Airlift Wing, Travis Air Force Base, California, landed on an ice runway at McMurdo Sound, Antarctica, as part of Operation

DEEP FREEZE, the yearly resupply of National Science Foundation scientists deployed to the South Pole. The mission, made possible by an air refueling from a KC-10, marked the first time a C-5 had landed on the continent of Antarctica.²²⁸ Aboard the Galaxy were 72 passengers and 84 short tons of cargo, which included 2 UH-1N helicopters. The ice runway was 10,000 feet long, 350 feet wide, and at least 7 feet thick. It was equipped with a 450-foot turnaround area that was located slightly to the south of the McMurdo Sound scientific outpost on the Ross Ice Shelf.²²⁹

Major General Richard J. Trzaskoma, Twenty-Second Air Force commander, was a passenger on the flight. After the landing, Trzaskoma observed that the mission had “definitely demonstrated the ability of MAC to respond any place on the face of the earth.” A second C-5B from Travis landed at McMurdo Sound two days later on 6 October with 73 passengers and 83.5 short tons of cargo, which included 2 more fully assembled UH-1N helicopters.²³⁰

**17 Dec 89-
14 Feb 90**

In Operation JUST CAUSE, President George H. W. Bush ordered a United States military response to several years of illegal, corrupt, and anti-democratic activity by General Manuel Antonio Noriega, Panama’s military strongman, de facto leader, and trafficker in illegal drugs. H-hour occurred at 0545Z on 20 December 1989, but airlift support of JUST CAUSE began on 17 December.²³¹ The operation officially ended on 14 February 1990, when the last of the deployed forces returned to the United States.²³²

During the deployment, sustainment, and redeployment phases of JUST CAUSE, airlifters in the MAC system flew 1,028 missions and transported 53,051 passengers and 26,825 short tons of cargo. Although C-5s flew only 238 of the missions, Galaxy transported 23 percent of the passengers and nearly 58 percent of the cargo.²³³

1990

**11 Apr 90-
Mar 91**

A C-5 returned the first European-based ground launched cruise missile (GLCM) to the United States on 11 April for destruction in accordance with the Intermediate-Range Nuclear

Forces Treaty. The last GLCM components were airlifted from Sicily in March 1991.²³⁴



Fuel Truck Coming Off a C-5

**8 Aug 90-
10 Mar 91**

Military Airlift Command's participation in the Persian Gulf War began with the arrival of a C-141 at Riyadh Air Base, Saudi Arabia, on 8 August 1990 carrying an advance team from the United States Central Command Air Forces. By the time General Hansford T. Johnson, MAC commander, directed the deployment phase of Operation DESERT SHIELD/DESERT STORM to end on 10 March 1991, the MAC airlift system had flown 16,203 missions that transported 499,627 passengers and 526,277 short tons of cargo. C-5s airlifted 84,385 of the passengers and 201,685 short tons of cargo, thus accounting for nearly 17 percent of the total passengers and 38 percent of the total cargo moved to the Persian Gulf region by air.²³⁵

During the DESERT SHIELD/DESERT STORM deployment, C-5s flew at three times their normal rate,²³⁶ but they were plagued by more maintenance delays than expected. During



Forward Fuselage of an F-22 Fighter Aircraft Being Unloaded

the deployment phase, each available C-5 averaged a delay of nine hours for logistical reasons. The C-5 utilization rate²³⁷ averaged only 5.7 hours daily rather than the advertised, expected surge rate of 11 hours for wartime operations and 9 hours for sustained operations. For the entire operation, only 67 percent of the C-5 fleet was available daily for operational missions, while on some days, only 50 percent of the fleet was ready to fly. Thus, at various times during Operation DESERT SHIELD/DESERT STORM, poor reliability prevented the C-5 from fulfilling all of its outsize airlift requirements.²³⁸



C-5 Receives Cargo at Night

29 Aug 90

A C-5A, tail number 68-0228, crashed at 12:34 a.m. local (282234Z) after taking off from Runway 27 at Ramstein Air Base, Germany. The aircrew operating the C-5 was assigned to the 68th Military Airlift Squadron, a unit of the 433d Military Airlift Wing (Air Force Reserve) at Kelly Air Force Base, Texas. The aircraft, however, belonged to the 60th Military Airlift Wing at Travis Air Force Base, California. Aboard the Galaxy were 10 crewmembers and 7 passengers. Thirteen persons perished in the Class A mishap. Three men and one woman survived the crash. Nine of the 13 fatalities were Air Force reservists who, along with about 200 other members of the 433d Military Airlift Wing, had volunteered to participate in Operation DESERT SHIELD.²³⁹

The aircrew, commanded by Major John M. Gordon, had arrived at Ramstein from Bateen Air Base, United Arab Emirates, on 27 August. On the 29th, the C-5A was departing Ramstein in the first hour of morning on a mission to Dhahran Air Base, Saudi Arabia. It carried a relatively light cargo of 95,978 pounds, which included rations, maintenance equipment, medical supplies, and other types of general cargo. The names of the persons aboard the ill-fated flight and their units of assignment are shown below.

Fatalities

Maj John M. Gordon, Acft Cmdr
Maj Richard W. Chase, Pilot
Maj Richard M. Price, Pilot
SMSgt Carpio Villarreal, Jr., Flt Engr
MSgt Rosendo Herrera, Flt Engr
TSgt Daniel G. Perez, Loadmaster
SSgt Edward E. Sheffield, Loadmaster
TSgt Lonty A. Knutson, Crew Chief
SSgt Daniel Garza, Crew Chief
Capt Bradley R. Schuldt
MSgt Samuel M. Gardner, Jr.
SSgt Marc H. Cleyman
SSgt Rande J. Hulec

Organization

68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
68 MAS, Kelly AFB TX
433 OMS, Kelly AFB TX
7 AD, Ramstein AB GE
Det 14, 31 WS, Hahn AB GE
Det 14, 31 WS, Hahn AB GE
Det 2, 31 WS, Ramstein AB GE

Survivors

Lt Col Frederick K. Arzt, Jr.
MSgt Dwight A. Pettit, Jr.
1st Lt Cynthia A. Borecky
SSgt Lorenzo Galvan

62 MAW, McChord AFB WA
62 MAW, McChord AFB WA
Det 5, 3 WS, England AFB LA
68 MAS, Kelly AFB T

1991

19 Jan 91

At 0245Z on 19 January 1991, less than 48 hours after the outbreak of the ground war in the Persian Gulf region, the commander in chief, United States Transportation Command (USTRANSCOM), directed Military Airlift Command to deploy two Patriot missile batteries from Europe to Ben Gurion International Airport in Tel Aviv. Just 21½ hours after USTRANSCOM received the deployment order, Patriot missiles had been delivered to Israel and placed on alert outside Tel Aviv. Thirty C-5s, assisted by 9 C-141 Starlifters, airlifted 544 passengers, 70 missiles, 8 launchers, and other equipment weighing 2,776 short tons from the United States and Germany to Israel. The airlift, the largest to Israel since the Yom Kippur war in October-November 1973, kept Israeli military forces on the sidelines during the Gulf War. Preventing active Israeli participation was essential, if President George H. W. Bush was to keep several Arab states in the multi-nation coalition assembled to drive the Iraqi invasion force from Kuwait.²⁴⁰

6 Mar 91

A C-5 from Dover Air Force Base, Delaware, delivered 40 short tons of humanitarian relief supplies to Bucharest, Romania. This, the first of five C-5 missions to Bucharest in 1991, came after the “Group 24” lifted its ban on aid to Romania. The “Group 24” was an organization of the world’s leading industrial nations, and it had imposed the ban in July 1990 to express concern over the government of Romania’s disregard for human rights and democratic reforms following the overthrow of Romanian dictator Nicolae Ceausescu in December 1989.²⁴¹ The five C-5 missions brought much-needed aid to the people of Romania. On the second C-5 mission, an aircrew from Dover’s 436th Military Airlift Wing delivered an additional 10 short tons of aid to Bucharest in mid-May, while another Dover C-5 airlifted 75 short tons of medical supplies and blankets to the Romanian capital on 10 July. Two more Romanian humanitarian missions took place in 1991 when Dover C-5s transported to Bucharest 10 short tons in late September and 35 short tons in early December.²⁴²

8 Aug 91

A C-5 assigned to the 60th Military Airlift Wing, Travis Air Force Base, California, delivered 75 short tons of blankets and medical supplies to Shanghai, China. Widespread flooding in eastern and central China killed at least 1,400 people and left

several hundred thousand more homeless. So great was the devastation that China's communist government broke its isolationist tradition and asked the international community for assistance.²⁴³

23 Oct 91 Members of the 436th Aerial Port Squadron at Dover Air Force Base, Delaware, loaded two C-5s with 41 pallets of medical supplies, which private donors had collected for six cities in the Ukraine, a republic of the Soviet Union.²⁴⁴ The Galaxys picked up 19 more pallets of blankets and pharmaceuticals in Germany and delivered them to Kiev, Ukraine, for distribution to hospitals in six cities. Most of the medicine was earmarked for children hospitalized with radiation sickness resulting from the April 1986 nuclear accident at Chernobyl, Ukraine.²⁴⁵ The missions were flown under the auspices of the Denton Amendment, which permitted privately donated cargoes to be airlifted to worthy recipient nations on a space-available basis at no cost to the donor.

Nov 91 Two C-5 missions moved 72 pallets of hospital and medical equipment to Managua, Nicaragua's capital city. The need for improved medical care and better preventive medical measures were highlighted in late 1991 when an outbreak of cholera prompted the government of Nicaragua to begin a vigorous cleanup of the shantytowns around Managua. To support the ongoing cleanup effort, a C-5 delivered another 74 short tons of medical supplies to Managua in May 1992.²⁴⁶

1992

24 Jan 92 Mongolia, like many other former Soviet satellite nations, held its first free elections in the early 1990s and was slowly moving toward a market economy. Along with the transition came what American officials described as "a severe shortage of medical supplies of all kinds." On 24 January 1992, a C-5 aircrew from Travis Air Force Base, California, delivered 112,000 pounds of pharmaceuticals to Ulaan Baatar, Mongolia. The crew overcame bad weather and poor local ground-to-air communications when transporting the cargo to the distant, enigmatic land. On 2 October 1992, a second Travis C-5 landed at Ulaan Baatar with 8 ambulances and 15 pallets of medicine. The first-ever mission to Mongolia by an American military

aircraft had occurred on 22 July 1991, when a C-141 from the 63d Airlift Wing, Norton Air Force Base, California, arrived at Ulaan Baatar with 39,000 pounds of medical supplies.²⁴⁷

10 Feb 92 The first C-5 mission of Operation PROVIDE HOPE, the sustained humanitarian aid program to the states of the former Soviet Union, arrived at Zvartnots Airport in Yerevan, Armenia. Between 10 and 29 February 1992, 19 C-5 missions and 46 C-141 missions delivered 2,274 short tons of cargo to the 11 republics of the new Commonwealth of Independent States (CIS).²⁴⁸ Food comprised 82 percent of the tonnage and medical supplies the remaining 18 percent.²⁴⁹

The missions received worldwide media attention. The Department of State intended for the February flights to “jump start” a long-term program in which other western nations would join the United States in sending food and medicine to the former Soviet states on a continuing basis using less costly truck, rail, and sea transportation. Only three days after the last February flight, a C-5 arrived in Moscow with 75 short tons of medical supplies, thus beginning PROVIDE HOPE’s less intense second phase, which centered on providing the CIS pharmaceuticals, medicines, and hospital equipment.²⁵⁰

14-18 Apr 92 Five missions by C-5s assigned to the 60th Airlift Wing, Travis Air Force Base, California, transported food and medical supplies from Rhein-Main Air Base, Germany, and Pisa, Italy, to Ankara, Turkey, on behalf of earthquake relief underway at Erzincan in eastern Turkey. Erzincan, both a province and a city of 175,000 people, was the epicenter of a 13 March 1992 earthquake that measured more than 6.2 on the Richter scale. Trucks transported the C-5s’ cargoes over the 375 miles distance from Ankara to Erzincan.²⁵¹

8 May 92 In early May 1992, an aircrew from Dover Air Force Base, Delaware, flew a C-5 assigned to the 60th Airlift Wing, Travis Air Force Base, California, to St. Petersburg, Russia, and returned to the United States a pair of Soviet Topaz II nuclear reactors recently purchased by the American government. On 8 May, a C-5 crew from the 60th Airlift Wing delivered the reactors to the Phillips Laboratory at Kirtland Air Force Base, New Mexico.²⁵² The reactors, valued at \$13 million, converted nuclear power into electrical power with a conversion

technology relatively unfamiliar to American engineers. After a month-long orientation from Russian scientists, government and university scientists tested the reactors at the Phillips Laboratory to discover how the Topaz II technology might be adapted to American nuclear reactors.²⁵³



C-5 Prepares to Land

1-6 Nov 92

Four C-5 missions were flown to Yerevan, Armenia, to deliver 236 metric tons of flour in response to an urgent request from the Armenian government. Two C-5s from the 436th Airlift Wing, Dover Air Force Base, Delaware; one C-5 from 60th Airlift Wing, Travis Air Force Base, California; and one C-5 from the 439th Airlift Wing (Air Force Reserve), Westover Air Force Base, Massachusetts, picked up their cargoes at Kelly Air Force Base, Texas. Intended to help alleviate a serious bread shortage, the flour came from US Department of Agriculture (USDA) stockpiles and was given to Armenia according to the provisions of the Title II Food for Progress program. Commercial trucks moved the flour from an USDA warehouse in Kansas City, Missouri, to the pick-up location at Kelly Air Force Base. The aircrews made a remain overnight stop at

Rhein-Main Air Base, Germany, en route to Yerevan, Armenia's capital city.²⁵⁴

6-20 Dec 92 Six C-5 missions transported 415 short tons of vehicles and equipment to Islamabad, Pakistan, to help with flood relief.²⁵⁵

1993

3-9 Feb 93 As part of Operation RESTORE HOPE--the United Nations-sanctioned military intervention in Somalia to safeguard the delivery of food to starving Somalis--C-5 aircrews from the 436th Airlift Wing at Dover Air Force Base, Delaware, and the 349th Airlift Wing (Reserve-Associate) at Travis Air Force Base, California, airlifted 621 Nigerian soldiers and 495 short tons of equipment from Murtala Mohammed International Airport in Lagos, Nigeria, to Mogadishu, Somalia. Department of Defense officials called the airlift a demonstration of "maximum cooperation" among the Defense Attache Office, elements of the military-led Nigerian government, and the United States Central Command.²⁵⁶

11-15 Apr 93 Three C-5Bs assigned to Travis Air Force Base, California, and Dover Air Force Base, Delaware, delivered the components of three Bailey bridges from RAF Mildenhall, United Kingdom, to Katmandu, Nepal. The C-5's ability to airlift outsize cargo was needed to move the long, heavy components of the dissembled bridges. Monsoon rains were an annual occurrence in Nepal, but in late 1993, the rains swept farther south than usual and produced exceptionally severe flooding, which claimed more than two thousand lives. All 13 of the bridges that connected the Katmandu Valley with India were washed away. After unloading the bridge components at RAF Mildenhall, the three C-5s made brief stops in Bombay to refuel before proceeding to Katmandu. On the return flight to the United States, the C-5 crews remained overnight (RON) at New Delhi's Indira Gandhi International Airport before making a second RON at Cairo West Air Base, Egypt.²⁵⁷

General Ronald R. Fogleman, AMC commander, later described the airlift as a "classic case" of how Air Mobility Command's humanitarian operations help advance America's national interests.²⁵⁸

- 18-22 Apr 93** A C-5 aircrew from the 60th Airlift Wing, Travis Air Force Base, California, supported the first joint military search and rescue exercise conducted by the United States and Russia. The Galaxy transported 2 HH-60 helicopters, 34 exercise participants, and 2 interpreters from Elmendorf Air Force Base, Alaska, to Tiksi Air Base, Siberia. American and Russian search and rescue specialists responded to a simulated aircraft crash on an Arctic Ocean island located 225 miles north of Tiksi.²⁵⁹
- 24 Apr 93** In an address to the 55th annual conference of the Mississippi National Guard, General Ronald R. Fogleman, AMC commander, reminded his audience that 61 percent of the C-5's aircrews were assigned to either the Air National Guard or the Air Force Reserve.²⁶⁰
- 5-12 Jul 93** C-5s flew most of the airlift missions that deployed 334 US Army soldiers and 850 short tons of equipment from Tegel Airport in Berlin, Germany, to Skopje, Macedonia. In an operation known as ABLE SENTRY, 15 C-5, 2 C-141, and 3 C-130 missions transported the American Force, which joined 700 United Nations troops already deployed to the Former Yugoslavian Republic of Macedonia. The mission of the UN peacekeeping force was to prevent Yugoslavia from waging war against its former republic, which had proclaimed its independence on 8 September 1991.²⁶¹
- 4 Oct 93** Two Air Mobility Command C-5s airlifted relief supplies to Bombay, India, after an earthquake struck the country on 29 September, killing 11,000 people. The US Office of Disaster Assistance furnished 1,000 rolls of plastic sheeting, 950 tents, and 18,550 five-gallon water containers. The Department of Defense donated 22 pallets of blankets and medical supplies. Mr. Raymond L. Flynn, US ambassador to the Vatican, traveled aboard one of the C-5s as President Bill Clinton's personal envoy.²⁶²
- 5-13 Oct 93** Over a nine-day period, in a classic display of rapid global reach, Air Mobility Command airlift and tanker aircraft moved about 1,300 troops and their heavy equipment to Mogadishu, the capital city of Somalia. Included among the cargoes were 18 M-1 tanks and 44 Bradley infantry vehicles. The reinforcements were rushed to Mogadishu following a 15-hour pitched battle between US Army Rangers and forces loyal to

Somali warlord General Mohammed Farah Aidid. A dozen American soldiers were killed, and another 70 were wounded in the fighting. A total of 56 C-5 and C-141 missions operating primarily from Hunter Army Airfield, Georgia, and Griffiss Air Force Base, New York, airlifted the troops and approximately 3,000 short tons of cargo. C-5s performed the lion's share of the missions. The Galaxy flew nonstop to Mogadishu and air refueled four times before recovering at Cairo, Egypt. Tanker crews flew 169 refueling missions and offloaded 13.4 million pounds of fuel.²⁶³

24 Oct 93

The first of three C-5Bs from the 60th Airlift Wing, Travis Air Force Base, California, departed Katmandu, Nepal, carrying Nepalese soldiers and equipment to Mogadishu, Somalia, where they joined the United Nations peacekeeping force working to thwart the fighting between Somali warlords. The remaining two C-5 missions were flown on 29 and 30 October. A total of 350 soldiers and 250 short tons of cargo were airlifted.²⁶⁴

1994

Jan 94

To support an oil spill cleanup in Puerto Rico, 2 C-5 missions and 2 C-141 missions airlifted 10 passengers and 298 short tons of cargo to San Juan, Puerto Rico's capital city. The airlift was in response to an oil spill which occurred on 7 January, when a barge loaded with 1.5 million gallons of heating oil rammed into a reef about 500 yards off the shore of San Juan. About half of the vessel's oil leaked into the sea. The spillage polluted three miles of beach at the height of the island's tourist season.²⁶⁵

17-25 Jan 94

After an earthquake measuring 6.8 on the Richter scale struck the Los Angeles area on the morning of 17 January, Air Mobility Command aircraft rushed emergency personnel and equipment to March Air Force Base near Riverside, California, and to Los Alamitos, California. Six C-5 and 4 C-141 missions delivered 270 disaster specialists and 340,000 pounds of cargo, including five trucks, generators, and communications vans.²⁶⁶

10-14 Apr 94

A dozen C-5 missions airlifted Belgian troops and their equipment from Brussels to Nairobi, Kenya. From Kenya, the Belgian soldiers remained ready for possible intervention into

neighboring Rwanda where genocide was underway. Violence had erupted in the Rwandan capital of Kigali after the suspicious crash there of an airplane carrying the presidents of Rwanda and Burundi. An internecine civil war between Hutu and Tutsi, respectively the majority and minority ethnic groups in Rwanda, resulted in the murder of more than 500,000 people.²⁶⁷

23-25 May 94 Headquarters Fifteenth Air Force hosted an AMC-wide conference for C-5 loadmasters at Travis Air Force Base, California. Nearly a decade had passed since experienced C-5 loadmasters had met to discuss common issues and concerns. Attending the conference were loadmasters from AMC's two C-5 wings as well as loadmasters from Headquarters AMC and the command's two numbered air forces. One of the most important issues addressed was the importance of acquiring a new heavy-duty winch for the C-5, since the Galaxy's current winch was the same one used by the C-133 Cargomaster, the USAF aircraft responsible for transporting outsize cargo before the C-5 became operational.²⁶⁸



C-5s Lined Up at Travis Air Force Base, California

26 Jun 94 A C-5, assigned to the 60th Airlift Wing, Travis Air Force Base, California, arrived in Chernobyl, Ukraine, with a magnetic resonance imaging (MRI) machine. Members of the 436th Aerial Port Squadron loaded the 68,500-pound MRI aboard the C-5 at Dover Air Force Base, Delaware. The mission was flown in response to World Health Organization concerns over the sharp increases in infant mortality and cancer among children living near the site of the April 1986 Chernobyl nuclear disaster.²⁶⁹

26 Jul 94

Interneecine civil war in Rwanda between Hutu and Tutsi tribesmen, respectively the country's majority and minority ethnic groups, resulted in more than two million Rwandan refugees fleeing to Kenya, Burundi, Uganda, and Zaire in mid-1994. On 26 July, after President Bill Clinton announced a military airlift to provide humanitarian relief to the refugees, a C-5 landed in Goma, Zaire, after a 22-hour non-stop flight from Travis Air Force Base, California. The mission, which covered 9,904 nautical miles, required three air refuelings.²⁷⁰

Since pure water was critical to saving the lives of the refugees, the cargo included a portable water supply system, eight water purification units, a submersible hydro-pump, and seven technicians to operate the equipment. The equipment was capable of producing 3,000 gallons of clear, pure, clean water every hour. Also onboard the Galaxy were two fire trucks needed for pumping water from Lake Kivu, located between Zaire and Rwanda, into the purification system.²⁷¹ The 26 July C-5 mission and subsequent AMC flights to the region were conducted as part of Operation SUPPORT HOPE, a much larger humanitarian effort to assist the Rwandans.²⁷²

23 Aug 94

A C-5 Air Force Reserve crew from the 439th Airlift Wing, Westover Air Force Base, Massachusetts, delivered a flying replica of a World War I-era Vickers Vimy bomber to RAF Mildenhall, United Kingdom. The Vickers Vimy had a wingspan of 70 feet and, when manufactured in 1919, it was the world's largest airplane. A Vickers Vimy bomber had flown from England to Australia in 1919, making numerous stops along the way. Later in 1994, the replica Vickers Vimy duplicated the 1919 mission to commemorate the 75th anniversary of the historic flight from England to Australia.²⁷³

21-23 Nov 94

C-5s assigned to the 436th Airlift Wing transported more than 1,300 pounds of enriched uranium from the former Soviet republic of Kazakhstan to Dover Air Force Base, Delaware. President Bill Clinton approved the airlift, called PROJECT SAPPHIRE, in order to keep Kazakhstan's large supply of uranium from falling into the hands of terrorists, smugglers, or rogue states. Two C-5s airlifted the nuclear material; a third Galaxy carried US nuclear technicians and their equipment. The C-5s were air refueled twice on the nonstop flights from Kazakhstan to Delaware. From Dover,

Department of Energy trucks transported the uranium to the Oak Ridge, Tennessee, nuclear storage facility where it was converted into commercial nuclear fuel.²⁷⁴

1995

- 3 Feb 95** Six C-5s and more than 120 aircrew members and maintenance personnel from the 436th Operations Group, Dover Air Force Base, Delaware, completed three weeks of six-aircraft formation testing at Pope Air Force Base, North Carolina. The participating aircrews assessed the feasibility of three-ship and six-ship C-5 airdrop formations and the ramifications of aircraft wake turbulence when C-5s flew in multiple aircraft formations. Never before had C-5s taken part in airdrop formation testing.²⁷⁵
- 4 Jul-
10 Aug 95** On 4 July 1995, a C-5 carrying personnel and equipment from the 621st Tanker Airlift Control Element (TALCE), McGuire Air Force Base, New Jersey, landed at Split, Croatia. For more than a month, the TALCE assisted with the deployment of a United Nations reaction force composed of British and Dutch troops to Croatia in Operation QUICK LIFT. From Croatia, the troops joined the United Nations peacekeeping effort already underway in Bosnia. From the first QUICK LIFT mission flown by a C-141 Starlifter on 30 June to the operation's conclusion on 10 August 1995, the Air Mobility Command flew 27 C-5 missions and 53 C-141 missions to transport 4,742 passengers and 1,504 short tons of cargo.²⁷⁶
- 13 Aug 95** A C-5 Galaxy from the 60th Air Mobility Wing,²⁷⁷ Travis Air Force Base, California, transported 75 short tons of food from Ramstein Air Base, Germany, to Zagreb, Croatia, for distribution to victims of the civil war that raged in the former Yugoslavia.²⁷⁸
- 7 Sep 95** Two C-5s from the 436th Airlift Wing, Dover Air Force Base, Delaware, airlifted gas turbine generators from Ramstein Air Base, Germany, to Incirlik Air Base, Turkey. The generators were Department of Defense excess property, and they were used to furnish electrical power for Kurdish refugees living in northern Iraq.²⁷⁹

1996

- 27 Jun 96** A C-5 returned to the port mortuary at Dover Air Force Base, Delaware, the remains of 19 Air Force officers and airmen killed on 25 June 1996, when terrorists exploded a gasoline truck outside the Khobar Towers housing area on King Abdul Aziz Air Base in Saudi Arabia.²⁸⁰ Khobar Towers was the residence of Air Force members supporting Operation SOUTHERN WATCH.²⁸¹ Another 300 men and women were injured in the blast.²⁸²
- 17-18 Sep 96** A C-5, assisted by a C-141, moved an air transportable hospital and a 44-member medical team from Yokota Air Base, Japan, to Andersen Air Force Base, Guam. The mobile hospital furnished medical care to 2,500 Kurdish refugees who had been evacuated to Andersen from northern Iraq. The medical team was assigned to the 374th Medical Group at Yokota, and when deployed to Andersen, its members became part of the US Pacific Command's PACIFIC HAVEN joint task force, responsible for overseeing the refugee evacuation.²⁸³



C-5 at Yokota Air Base, Japan, with Mount Fuji in Background

1997

- 17 Jun 97** A C-5 assigned to the 436th Airlift Wing, Dover Air Force Base, Delaware, launched from Andrews Air Force Base, Maryland, on the 500th mission of Operation PROVIDE HOPE, the ongoing airlift of humanitarian cargo to the states of the former Soviet Union. Since PROVIDE HOPE's inception in February 1992, C-5s had played a critical role in delivering more than \$1.8 billion worth of assistance to the former Soviet republics, which had organized into a Commonwealth of Independent States. By 1997, PROVIDE HOPE had evolved into a cooperative effort among more than 400 private volunteer organizations, US pharmaceutical companies, the Department of State, and the Department of Defense. First Lady Hillary Rodham Clinton watched the C-5 depart from Andrews with a planeload of privately donated medicines for a hospital in Tashkent, Uzbekistan.²⁸⁴
- 22 Aug 97** A C-5 aircrew from Dover Air Force Base, Delaware, delivered a National Aeronautics and Space Administration weather satellite from Andrews Air Force Base, Maryland, to Kagoshima, Japan, after a 4-hour loading process and a direct flight of more than 16 hours. The Galaxy received two air refuelings: the first by three KC-135s assigned to Fairchild Air Force Base, Washington, over Alaska, and the second by KC-135s from Kadena Air Base, Japan, over the Pacific Ocean. The satellite, valued at \$250 million, was part of the Tropical Rainfall Measuring Mission, the first joint space project between the United States and Japan. The C-5 mission was flown nonstop to Japan to avoid shocking and vibrating the finely calibrated satellite during takeoffs and landings.²⁸⁵
- 4 Sep 97** The Warner Robins Air Logistics Center was named the winning bidder for C-5 depot maintenance over the San Antonio Air Logistics Center, the existing C-5 depot maintenance contractor. Approximately 20 C-5s were scheduled to enter the Warner Robins depot annually, and the first Galaxy arrived there in October 1997. The contract was valued at \$434 million over a seven-year period.²⁸⁶
- 13 Nov 97** Six snow geese struck a C-5B (tail number 83-1285) assigned to the 436th Airlift Wing, Dover Air Force Base, Delaware. At 1115 local, as the aircrew practiced touch and go landings, the

geese collided with the aircraft on its approach to the Dover runway at an altitude of 1,000 feet. Several geese were ingested into the number one engine; other geese impacted the aircraft's nose, radome, and windshield. The crew landed the C-5B safely. The cost of the repairs was \$530,098, which qualified the incident as a Class B aircraft mishap.²⁸⁷ The damaged aircraft was the first C-5B that the Lockheed-Georgia Company had delivered to the Air Force.²⁸⁸

1998

- 15-18 Jan 98** Thirteen C-5 missions deployed civilian workers and their trucks, chain saws, and other equipment to New York and Maine after an intense ice storm pulled down countless power lines, leaving approximately 500,000 households without electricity. The C-5s picked up most of their passengers and cargoes at Pope Air Force Base, North Carolina, and delivered them to Stewart International Airport, New York, and Brunswick Naval Air Station and Bangor International Airport in Maine.²⁸⁹
- 10 Jun-
8 Jul 98** Air Mobility Command flew 33 C-5, 2 C-141, and 7 KC-135 missions to support President Bill Clinton's nine-day trip to China in late June and early July. In this first visit to China by an American president since 1989, President Clinton met with Chinese president Jiang Zemin in Beijing on 27 June and then made stops in Shanghai and Xian, China's ancient capital, before returning home aboard Air Force One. C-5s transported the lion's share of the presidential cargo that was airlifted during the month-long operation.²⁹⁰
- 24 Jun 98** General Walter Kross, AMC commander, announced that during the next 10 to 12 years the Air Force would equip its entire fleet of 126 C-5s with new engines. Simultaneously, he combined the engine acquisition initiative with a comprehensive avionics upgrade program already funded to form a single modernization initiative that would fully exploit the several decades of structural life remaining in the C-5. General Kross wanted the C-5 modernization program to begin with installation of Global Air Traffic Management equipment and a new All-Weather Flight Control System. The two

modifications were programmed for installation from 2000 through 2004.²⁹¹

4 Sep 98 The last C-5A (tail number 69-0008) to complete depot maintenance at the San Antonio Air Logistics Center departed the Texas facility. One year before, on 4 September 1997, the Warner Robins Air Logistics Center had been named the winning bidder over the San Antonio Air Logistics Center in the Air Force's public and private source selection of the depot maintenance facility for C-5s. The San Antonio Air Logistics Center had been the sole provider of C-5 depot maintenance since August 1972.²⁹²

1999

Feb 99 The Assistant Secretary of the Air Force for Acquisition directed that an independent study be conducted to determine how many years of structural life remained in the C-5. The study concluded that the C-5 fleet could be operated efficiently and economically to the year 2040.²⁹³

18 Aug 99 Only hours after one of the twentieth century's most devastating earthquakes rocked western Turkey, Air Mobility Command kicked off an international relief effort known as AVID RESPONSE. Late in the evening on 18 August, a C-5 from the 436th Airlift Wing, Dover Air Force Base, Delaware, departed the United States for Istanbul. Aboard the Galaxy were 5 search and rescue dogs, 56,000 pounds of equipment, 3 vehicles, and 70 search and rescue specialists assigned to the United States Agency for International Development. The team set up operations in the city of Izmit, located 50 miles east of Istanbul.²⁹⁴

14 Oct 99 A C-5 aircrew from the 436th Airlift Wing, Dover Air Force Base, Delaware, transported the first portion of a KC-97L, the tanker version of the Boeing Stratofreighter, from Beale Air Force Base, California, to the Air Mobility Command Museum at Dover Air Force Base. The reciprocating KC-97L had been on static display at the Beale Air Force Base Museum since 1980. Beale's museum closed in February 1995, but the KC-97L had remained at the base for several years until arrangements could be made for its transfer to the AMC

Museum. So large was the KC-97L that only a C-5 Galaxy had a cargo compartment large enough to accommodate sections of the plane.²⁹⁵

2000

- 17 Jan 00** A C-5B equipped with the new Traffic-Alert and Collision Avoidance System (TCAS) was successfully tested. The TCAS-equipped C-5B flew a pattern that intentionally included several “near misses” with a C-130 orbiting off the coast of Georgia. The successful test cleared the way for Lockheed Martin, the contractor for the C-5 Avionics Modernization Program, to begin installing the TCAS on AMC’s entire fleet of 126 C-5s. The installation process was scheduled for completion in the third quarter of fiscal year 2002.²⁹⁶
- 2 Feb 00** A C-5 aircrew assigned to the 349th Air Mobility Wing (Reserve Associate), Travis Air Force Base, California, supported search and rescue activities that followed the 31 January 2000 crash of an Alaskan Airlines MD-83 off the coast of California, 12 miles northwest of Los Angeles. The Galaxy transported Navy passengers and more than 160,000 pounds of their equipment from Andrews Air Force Base, Maryland, to Point Mugu Naval Air Station, California. The cargo included a side-scanning radar and a remotely operated underwater vehicle capable of locating the downed aircraft’s Flight Data Recorder and Cockpit Voice Recorder (the “black boxes”). The National Transportation Safety Board contracted AMC to fly the Special Assignment Airlift Mission.²⁹⁷
- 1 Mar-
16 Apr 00** In February 2000, two cyclones and intervening periods of torrential rains caused extensive flooding in southern Africa, especially in Mozambique. The government of Mozambique estimated that 200,000 of its citizens had been left homeless. Joint Task Force ATLAS RESPONSE was the American military component of a larger international relief effort that brought humanitarian aid to flood victims. C-5s, primarily, and other AMC airlifters flew 29 intertheater missions to transport 937 passengers and 920 short tons of cargo. Included among the cargoes were MH-60G Pave Hawk and MH-53 Pave Low helicopters.²⁹⁸



C-5 with Gray Paint Scheme against Backdrop of San Francisco's Golden Gate Bridge

May 00

To deal aggressively with the consistently poor reliability rates of the C-5 fleet, General Charles T. Robertson, Jr., AMC commander, and General Lester L. Lyles, commander of the Air Force Materiel Command, formed a multidisciplinary "Tiger Team." The team was chartered to identify ways for improving the C-5's availability, reliability, and maintainability. It examined Air Force policies applicable to C-5 operations, maintenance, supply, sustainment, and logistics support. The Tiger Team included representatives from Air Mobility Command, Air Force Materiel Command, Headquarters USAF, Air Education and Training Command, Air Force Reserve Command, Air National Guard, Air Force Logistics Management Agency, Defense Logistics Agency, Delta Airlines, and Northwest Airlines.²⁹⁹

22 Jul 00

The first of four sections of an inoperable C-133 Cargomaster (tail number 59-0536) arrived at Dover Air Force Base, Delaware, aboard one of only two C-5Cs specially configured to support the unique outsize cargo requirements of the

National Aeronautics and Space Administration. The C-133, previously exhibited at the Strategic Air Command Museum at Offutt Air Force Base, Nebraska, was loaded aboard the C-5C at Offutt. Once all four sections of the C-133 had been delivered to Dover, the vintage airlifter would be reassembled and displayed at Dover's Air Mobility Command Museum.³⁰⁰

8 Oct 00

General Charles T. Robertson, Jr., AMC commander, signed the Operational Requirements Document (ORD) for the C-5 Reliability Enhancement and Re-engining Program. The ORD concurred with the Air Force plan to first modernize and re-engine the command's 50 C-5Bs and, if the upgrade of the "B" models proved successful, then modernize the remaining 76 C-5As at some later date. Ultimately, however, the total number of C-5s that would be modernized and the number of additional C-17s purchased above the 180 C-17s Congress had authorized and funded would depend on the outcome of the congressional Mobility Requirements Study 05.³⁰¹

2001

23-27 Jan 01

A C-5 from Dover Air Force Base, Delaware, was placed on an elaborate static display at MacDill Air Force Base, Florida, in conjunction with the National Football League's (NFL) Super Bowl XXXV championship game held in nearby Tampa on Sunday, 28 January. The brightly decorated C-5 served as the "gateway" for two Super Bowl XXXV events held at MacDill on 23 and 27 January. Professional athletes, pop stars, and Hollywood celebrities passed through the Galaxy on their way to the NFL-sponsored "Huddle Party" held in MacDill's Hangar 1 on 23 January and the CBS "Super Bowl Saturday Night Gala" held in Hangar 3 on 27 January. The carpeted, ingeniously lighted C-5 was decorated with numerous historical displays that explained the proud history of the United States Air Force. Among the topics featured were the beginning of powered flight, the successful application of air power in major wars, and the expected future missions of America's aerospace forces. Besides the celebrities, thousands of Tampa-area residents and members of the base community toured the C-5, which had been brought to MacDill first and foremost to support Air Force retention and recruiting efforts in the Sunshine State.³⁰²

- 27 Jan 01** Concluding an operation that began on 18 November 2000, an AMC aircrew flew the last of eight C-5 missions that moved 664 short tons of President Bill Clinton's papers, gifts, artifacts, and other official materials from Andrews Air Force Base, Maryland, to Little Rock Air Force Base, Arkansas. Commercial trucks transported the cargoes from the base to the National Archives storage facility in Little Rock, where they were to remain until completion of the Clinton presidential library in 2004.³⁰³
- 31 Jan-
3 Feb 01** Two C-5s and four C-17s transported 115 short tons of humanitarian cargo to Ahmedabad, India, after an earthquake that registered 7.7 on the Richter scale devastated western India on 26 January 2001. Each C-5 Galaxy flew nonstop from Travis Air Force Base, California, to Andersen Air Force Base, Guam. KC-135 tankers flown by aircrews from the Hawaii Air National Guard refueled each C-5 en route to Guam. At Andersen, each C-5's cargo was transloaded onto two C-17s belonging to the 62d Airlift Wing at McChord Air Force Base, Washington. A hub-and-spoke operation was needed at Andersen because Ahmedabad's ramp space was too restricted to accommodate the enormous C-5s. KC-135s operated by aircrews assigned to the 18th Wing, Kadena Air Base, Japan, refueled the C-17s on their 13-hour flights between Guam and India.³⁰⁴
- 2 May 01** A C-5 aircrew from the 60th Air Mobility Wing, Travis Air Force Base, California, made an emergency landing without their aircraft's front landing gear on the Rogers Dry Lake runway at Edwards Air Force Base, California. The eight crewmembers and nine passengers walked away from the plane unharmed. The C-5 was en route from Travis Air Force Base to Colorado Springs, Colorado, when the crew discovered that the nose landing gear door was stuck, thus preventing the landing gear from being lowered. Major Greg Lloyd, the aircraft commander, was an Air Force reservist assigned to the 301st Airlift Squadron at Travis. Skillful flying and the smooth dry surface of the runway averted a potential disaster.³⁰⁵
- 24 May 01** A flock of ring-billed gulls struck a C-5A (tail number 69-0024) belonging to the 436th Airlift Wing, Dover Air Force Base, Delaware, at 1933 local. The aircrew, assigned to Dover's 512th Airlift Wing (Reserve-Associate), was practicing touch-and-go

landings. Several of the pigeon-sized birds were ingested into the aircraft's number three engine at an altitude of 300 feet. The crew landed the plane without incident, but the damage sustained in the Class B mishap amounted to \$779,180.³⁰⁶

18 Sep 01 The Aeronautical Systems Center, Robins Air Force Base, Georgia, published the Single Acquisition Management Plan (SAMP) for the C-5 Reliability Enhancement and Re-engining Program. The SAMP defined a streamlined acquisition approach for developing and fielding a modernized fleet of C-5 aircraft.³⁰⁷

5 Nov 01 The most significant C-5 modernization milestone of 2001 occurred when Assistant Secretary of Defense E. C. Aldridge, Jr., approved the Single Acquisition Management Plan *and* Operational Requirements Document for the C-5 Reliability Enhancement and the Re-engining Program (RERP). Secretary Aldridge's action cleared the way for a RERP system development and demonstration contract with the Lockheed Martin Aeronautics Company.³⁰⁸

5 Dec 01 The Air Force awarded a \$1.1 billion contract to Lockheed Martin, manufacturer of the C-5 Galaxy, for the system development and demonstration (SDD) phase of the C-5's Reliability Enhancement and Re-engining Program. The principal reliability enhancements included hydraulic upgrades; structural improvements to ensure the life of the C-5 to the year 2040; and environmental control system improvements related to the aircraft's Avionics Modernization Program, which was also being performed by Lockheed Martin. During the SDD phase, four C-5Bs would be equipped with higher-thrust General Electric CF6 engines, replacing the original GE TF39 engines. The CF6 engine was found on many commercial airliners, including Boeing's 747 and 767 as well as the Airbus A300.³⁰⁹

2002

10 Jul 02 A C-5 assigned to the 436th Airlift Wing departed Dover Air Force Base, Delaware, for Kabul, Afghanistan, with a 13,115-pound cargo of school supplies collected by children from 58 American schools for the New York City-based charity, Chances for Children. Included among the boxed school supplies were

pencils, sharpeners, crayons, reams of paper, and exercise books. Chances for Children was founded in 1994 by The Duchess of York, the former Sarah Ferguson, the attractive, high-spirited redhead widely known throughout the world as "Fergie." The 10 July mission transported the first shipment of cargo to Afghanistan under the auspices of the Denton Amendment. Passed by Congress in 1985, the amendment enabled privately donated humanitarian goods to be airlifted on Department of Defense aircraft on a space-available basis at no cost to the donor.³¹⁰

**20 Jul -
2 Aug 02**

Five C-5s, launching from a forward operating location, flew 23 combat missions to Kandahar, Afghanistan, to redeploy more than 780 troops and 13,500 short tons of equipment assigned to Canada's Princess Patricia's Light Infantry Regiment. The C-5s took the Canadians back to the Galaxy's point of embarkation where the soldiers were returned to Canada by commercial airliners, and their equipment was ferried by sealift. The C-5s flew to the austere, Soviet-built airfield at Kandahar fully loaded with fuel. Each mission departed Afghanistan with approximately 60 short tons of cargo. The aircrafts' increased weight, the hot, humid weather, and the high atmospheric pressure created the requirement for one air refueling on each of the return legs. Five C-5 aircraft, three crews each from Travis Air Force Base, California, and Dover Air Force Base, Delaware, a C-5 leadership package consisting of a seventh aircrew, and 44 maintainers operated from the forward operating location as the 782d Expeditionary Airlift Squadron. A 31-person Tanker Airlift Control Element from the 615th Air Mobility Operations Group supported the C-5s at Kandahar. The C-5s' redeployment of the Canadian regiment demonstrated that the Air Force's largest jet transport aircraft could successfully operate at a remote, austere airfield.³¹¹

24 Oct 02

A C-5 and aircrew from Travis Air Force Base, California, departed Andrews Air Force Base, Maryland, for Tashkent International Airport, Uzbekistan, with 40 volunteer physicians, and medicines, pharmaceuticals, and medical supplies worth nearly \$10 million. The doctors were members of Physicians With Heart, an affiliate of Heart-to-Heart International, a philanthropic organization, which, since 1992, had delivered more than \$250 million worth of medicines and

pharmaceuticals to the world's most needy people. The mission was launched on 24 October to commemorate the tenth anniversary date of a joint State Department and Physicians With Heart program for furnishing medical assistance to the people of Uzbekistan. The flight was a Special Assignment Airlift Mission chartered and paid for by the Department of State. The Galaxy's departure from Andrews was preceded by a ceremony that included remarks by Deputy Secretary of State Richard L. Armitage and Dr. Gary Morsch, president and founder of Heart-to-Heart International.³¹²

14-18 Dec 02 Aircrews assigned to the 60th Air Mobility Wing and 349th Air Mobility Wing (Reserve-Associate) flew approximately 58 C-5 sorties to assist with typhoon relief efforts at Andersen Air Force Base, Guam. The base's electrical and water systems were badly damaged after Super Typhoon Pongsona struck the island on 8 December. The Federal Emergency Management Agency assembled the more than 1,200 short tons of relief cargo, which included several generators used to restore power on the base.³¹³

21 Dec 02 The first C-5 Galaxy (tail number 85-0004) equipped with avionics modernization program equipment made its maiden flight, two months ahead of schedule. Departing and recovering at Dobbins Air Force Base, Georgia, the 5.2-hour mission demonstrated the basic flying qualities of the new avionics and navigational system. The flight confirmed the basic airworthiness of the new avionics suite and collected critical flight data that would be used to develop additional capabilities in 2003. The C-5's modernized avionics system was the first phase of a \$13 billion program that would enable the C-5 fleet to continue operating safely and efficiently through 2040.³¹⁴

Epilogue

By the summer of 2002, the C-5's future appeared bright, rosy, and full of promise. The Air Force, Department of Defense, and Congress had not yet decided how many C-5s in the total inventory of 126 C-5s should be modernized. To a large extent, this depended upon how closely the modernization schedule stayed on track and whether or not there were large cost overruns. In April 2002, Major General Arthur J. Lichte, AMC Director of Plans and Programs, discussed the size of a modernized C-5 fleet with AMC's numbered air force,

wing, and group commanders at the spring 2002 PHOENIX RALLY conference³¹⁵ held at Scott Air Force Base, Illinois. General Lichte reported that the command's position on the size of a modernized C-5 fleet was based on a strategic airlift requirement of 54.5 million ton-miles per day (MTM/D). The 54.5 MTM/D capability was predicated on the Mobility Requirements Study 2005 (MRS-05)³¹⁶ and the recent lessons of ENDURING FREEDOM, America's war against terrorism outside the continental United States. To achieve the 54.5 MTM/D objective, General Lichte explained that "the correct strategic airlift mix should include *at least* 222 C-17s and 52 RERPed C-5s." This combination of airlifters would provide the flexibility needed to airlift outsize and oversize cargo over long distances into airfields equipped with short, unimproved runways and to retain the capability of moving 54.5 million ton-miles per day. It made no difference whether the 52 C-5s were "A" or "B" models. AMC planners were proposing that the criteria for identifying individual C-5s to be modernized should be based on a plane's historic performance, that is, its mission capable rates and overall structural integrity.³¹⁷

General John W. Handy, who succeeded General Charles T. Robertson, Jr., as AMC commander on 5 November 2001, wanted the discussions over the size of the future C-5 fleet kept general and non-committal. General Handy's preferred statement on the proper mix of strategic airlifters was that the Air Mobility Command needed a minimum of 222 C-17s and "some" modernized C-5s of a number not yet determined.³¹⁸



ENDNOTES

¹Known by the NATO nickname *Condor*, the Soviet Union's *Antonov 124* made its maiden flight in December 1982 and was used operationally for the first time by the Soviets in early 1987 (*Brassey's World Aircraft & Systems Directory*, [London: Brassey's Ltd., 1998], pp 254-255).

²Air Mobility Command uses four types of aircraft authorization to manage its fleets of organic aircraft types. Primary Aerospace Vehicle Authorized (PAA) refers to the number of aircraft authorized for the performance of a unit's mission (e.g. combat, combat support, or training). The PAA forms the basis for the allocation of resources such as manpower, support equipment, and funded flying hours. Each operating command determines the PAA required to perform all of its assigned missions. Primary Aerospace Vehicle Inventory (PAI) denotes the number of aircraft that are authorized to meet the PAA. Backup Aerospace Vehicle Authorized (BAA) are the aircraft authorized over and above the PAA to compensate for the aircraft that are unavailable because of scheduled and unscheduled depot level maintenance, modifications, inspections and repairs, thereby ensuring that a flying organization is still capable of performing all of its assigned missions. The Attrition Reserve (AR) refers to aircraft that are procured to replace projected losses of PAI resulting from peacetime mishaps or wartime attrition. Finally Total Active Aerospace Vehicle Inventory (TAI) equals the total of *all* aircraft that are authorized an organization, and it is determined by adding the PAI, the Backup Aerospace Vehicle Inventory (BAI), and the AR (AFI 16-402 (U), USAF/XORPI, "Aerospace Vehicle Programming, Assignment, Distribution, Accounting, and Termination," 1 Aug 97, p 2).

³In the late 1980s, two C-5As were modified and designated C-5Cs to support the outsize cargo requirements of the National Aeronautics and Space Administration (NASA). Both aircraft in 2002 were assigned to the 60th Air Mobility Wing, Travis Air Force Base, California. The two "C" models, tail numbers 68-0213 and 68-0216, were nearly identical in appearance to the C-5 "A" and "B" models. The "C" model's modifications included removal of the troop cargo compartment and a portion of the rear fuselage to provide clearance for NASA's Space Cargo Transportation System (SCTS). The aft center doors of the "C" models were split down the centerline and attached to the side doors at the right and left rear of the aircraft. The C-5Cs have the same kneeling capabilities as the C-5As and C-5Bs. (TO 1C-5A-9-1 (U), WR-ALC, "Supplemental Loading Instructions Manual to AF68-213 and AF68-216," 15 Jan 99.)

⁴Assigned to the active-duty force at the end of 2001 was a Total Active Aerospace Vehicle Inventory (TAI) of 81 C-5A/Bs and a Primary Aerospace Vehicle Inventory (PAI) of 70 C-5A/Bs. The Air Force Reserve Command's TAI was 32 C-5As; its PAI was 28 "A" models. The Air National Guard had a TAI of 13 C5As and a PAI of 12 C-5As. Air Force Reserve Command's C-5As were assigned to the 433d Airlift Wing, Kelly Air Force Base, Texas, and the 439th Airlift Wing, Westover Air Force Base, Massachusetts. Two Reserve Associate wings--the 349th Air Mobility Wing, Travis Air Force Base, California, and the 512th Airlift Wing, Dover Air Force Base, Delaware--helped operate and maintain the C-5A/Bs that were assigned to the 60th Air Mobility Wing and the 436th Airlift Wing. All of the Air National Guard's C-5As belonged to the 105th Airlift Wing, Stewart International Airport, New York.

⁵Rpt (FOUO), AMC/XPME, "Command Data Book," Nov 01, pp 12-13, info used is not FOUO; Memo (U), AMC/XPRA, "C-5 Authorized Aircraft," 4 Dec 01.

⁶Fact Sheet (U), USAF/SAFPA, "C-5 Galaxy," 29 Jul 99; Article (U), "C-5 in Review," *Lockheed Martin Today*, 9 Apr 97; Fact Sheet (U), AMC/PA, "Air Mobility Command . . . Providing America's Global Reach," Aug 97.

⁷E-Mail (U), AMC/LGMAD, to J. W. Leland, AMC/HO, "C-141 Phaseout," 15 Nov 02.

⁸By the end of fiscal year 2001, the Air Force had accepted 75 of the 120 C-17s from Lockheed. The fiscal year 2000 budget funded another 14 C-17s for special operations duty. The 120 C-17s will be based at Charleston Air Force Base, South Carolina; McChord Air Force Base, Washington (first aircraft arrived in July 1999); Altus Air Force Base, Oklahoma; and an Air National Guard unit in Jackson, Mississippi. Where to base the additional 14 Globemaster IIIs funded for special operations duty had not been decided by the end of calendar year 2001 (Fact Sheet (U), AMC/PA, "C-17 Globemaster III," 26 Oct 01).

⁹"*Outsize*" denotes a piece of cargo so large that it exceeds the capabilities of a C-141 and requires air movement by a C-5. "*Oversize*" describes an item of cargo that exceeds the usable volume of a 463L pallet (104 inches x 84 inches x 8 feet), the standard pallet carried by all USAF military cargo aircraft. Stated differently, "outsized" cargo was simply cargo that would not fit in the cargo compartment of a C-141 or C-130.

¹⁰A C-141 can carry a maximum of 13 pallets.

¹¹Fact Sheet (U), USAF/SAFPA, "C-5 Galaxy," 29 Jul 99; Article (U), "C-5 in Review," *Lockheed Martin Today*, 9 Apr 97.

¹²Book (U), J. K. Matthews and C. J. Holt, USTRANSCOM/RC, *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*, Joint History Office, Office of the Chairman of the JCS, and Research Center USTRANSCOM, 1996, p 37.

¹³Fact Sheet (U), USAF/SAFPA, "C-5 Galaxy," 29 Jul 99; Article (U), "C-5 in Review," *Lockheed Martin Today*, 9 Apr 97.

¹⁴Memo (U), AMC/XPRA, "C-5 Operations in Operation ENDURING FREEDOM, 11 Sep - 3 Dec 01," 4 Dec 01.

¹⁵Brfg Slide (U), AMC TACC/Fusion Cell, "Airlift Tally: ENDURING FREEDOM," 030600Z Dec 01.

¹⁶A Mission Capable aircraft was able to fly one or more of its assigned missions according to the Mission Essential Subsystem List (MESL). A Partial Mission Capable aircraft could not fly all of its assigned MESL missions, but it could fly one or more of them. A Fully Mission Capable aircraft could fly all of its assigned MESL missions, while a Non-Mission Capable aircraft could not fly any of its assigned missions (AFI 21-103 (U), AFMC/LGMM, "Equipment Inventory, Status, and Utilization Reporting," 20 Jul 98; AFI 21-101, Sup 1 (U), AETC/LGMMP, "Aerospace Equipment Maintenance Management," 21 Feb 03; Intvw (U), J. W. Leland, AMC/HO, with Jack Odle, AMC/LGMAQ, 21 Apr 03.

¹⁷Rpts (U), AMC/LGXI, "Health of the Force: C-5, C-17, C-130, C-141, KC-10, and KC-135 Possessed Aircraft Availability," Oct 01-Sep 02.

¹⁸E-Mail (U), Maj Randolph Hildebrandt, AMC/XPRA, to J. W. Leland, AMC/HO, "Number of C-17s Funded," 5 Aug 02.

¹⁹Staff Summary w/atch (U), Maj Gen W. S. Hogle, Jr., AMC/XP, to AMC/CV, "C-5 Modernization Briefing," 31 Mar 97; Staff Summary w/atchs (U), Maj Gen W. S. Hogle, Jr., AMC/XP, to AMC/CV, "SA-ALC/Lockheed Martin C-5 Modernization Study (Phase II)," 22 Oct 96.

²⁰Address (U), Gen Walter Kross, USCINCTRANS and AMC/CC, to Air Mobility History Symposium, Andrews AFB, MD, 19-20 Sep 97, in *Air Mobility Symposium Proceedings*, pp 263-264.

²¹Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, May 91, p 122.

²²Article (U), Richard Reston, "World's Largest Plane Ordered by President," *Los Angeles Times*, 23 Dec 64, pp 1, 3; Hist (S/Decl OADR), MATS, Jul 64-Jun 65, p 172, info used is Unclassified.

²³MATS Staff Digest (U), 30 Apr 65.

²⁴News Release (U) Air Force News Service, "USAF Adopts 'Total C-5A Contract,'" 19 Mar 65.

²⁵Ibid; Article (U), E. E. Ulsamer, "How the World's Largest Aircraft Revolutionizes Strategy and Technology," *Air Force Magazine*, Apr 68, p 66.

²⁶News Release (U), Air Force News Service, "USAF Adopts 'Total C-5A Contract,'" 19 Mar 65.

²⁷MATS received its first C-141 Starlifter on 19 October 1964. The first C-141 operational mission was flown in April 1965. Sixty-five Starlifters were assigned to MATS by the end of calendar year 1965; by the close of 1967, MATS was operating its fully programmed inventory of approximately 275 C-141s (Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, May 91, pp 111, 282).

²⁸News Release (U), MATS/PID, "MATS to Get Lockheed C-5A," 1 Oct 65.

²⁹The Lockheed-Georgia Company was and is--in 2002--a division of Lockheed Aircraft Corporation.

³⁰News Release (R-65-67) (U), MAC/IO, "Huge Air Force Airlifter Nicknamed 'Galaxy,'" Jun 67.

³¹Article (U), "C-5 Test Center Cited As Engineering Marvel," *Lockheed Southern Star*, 21 Mar 68.

³²*Airlifters* (U) (A Service Publication of the Lockheed-Georgia Company, Vol 2, Number 3), April Quarter, 1968; Article (U), Bill Winn, "LBJ Defends Policy As C-5 Is Unveiled," *The Atlanta Constitution*, 3 Mar 68, p 1A. (President Johnson borrowed the quotation from a speech prepared but never delivered by President Franklin Roosevelt, who died in Warm Springs, Georgia, on 12 April 1945.)

³³Article (U), Bill Winn, "LBJ Defends Policy As C-5 Is Unveiled," *The Atlanta Constitution*, 3 Mar 68, p 14A; Article (U), "Mighty C-5 Galaxy Rolls Out; LBJ Hails Lockheed Craftsmen," *Lockheed Southern Star*, 7 Mar 68, p 1.

³⁴Msg (U), J. E. May, Lockheed-Georgia Company, to C. A. Curnane, Lockheed Representative in Belleville IL and St. Louis MO, 1 Jul 68; Progress Report 11 (U), Lockheed-Georgia Company, "First C-5 Flight," ca Jul 68; Article (U), "Hensleigh Says C-5 Handles So Easily It Is Difficult to Make Bad Landing," *Lockheed Southern Star*, 19 Dec 68; Article (U), "Gigantic C-5 Climbs High For First Flight," *The Skywriter* (Wright-Patterson AFB, OH), 5 Jul 68, p 1.

³⁵The Military Air Transport Service was redesignated the Military Airlift Command (MAC) on 1 January 1966 to reflect more accurately the organization's worldwide airlift mission.

³⁶News Release (U), 443 MAW/IO, [Delivery of First C-5A to Altus AFB OK], 17 Dec 69.

³⁷Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 31. Sources cited in the chronological entry are: Hist (S/Decl OADR), MAC, Jul 69-Dec 70, p 85, info used is Unclassified; Hist (S/Decl OADR), Jul 64-Jun 65, pp 170-171, info used is Unclassified; News Release (U), MAC/OI, "C-5 Airlifter in Service by 1969," 15 Oct 66; News Release (U), Lockheed-Georgia Company, "U.S. Air Force C-5A," 1 Jan 66; Hist (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, 1993, p 123.

³⁸Ltr (U), Lockheed-Georgia Company to ASD/ASQK, "Contract AF 33(657)-15053, Model C-5A Aircraft, Submittal of Airplane 68-212 (0015) Delivery Document and Notice of Deficiencies," 15 Apr 70; Hist (S/Decl 31 Dec 06), MAC, CY76, p 365, info used is Unclassified.

³⁹News Release R-81-70 (U), MAC/IO, [Delivery of First Operational C-5A to Charleston AFB SC], ca 6 Jun 70.

⁴⁰Article (U), Ron Brinson, "'Big Wheels' Put Down at Charleston Air Force Base," *Charleston Evening Post*, 6 Jun 70.

⁴¹News Release R-81-70 (U), MAC/IO, [Delivery of First Operational C-5A to Charleston AFB SC], ca 6 Jun 70.

⁴²Article (U), "Go, Galaxy Number 15, Go . . .," *Southern Star* (Lockheed-Georgia Company), 18 Jun 70, p 1; Article (U), "Second Galaxy Is Put In Service," *News and Courier* (Charleston, SC), 27 Jun 70, p 1B.

⁴³News Release R-106-70 (U), MAC/IO, [C-5 Begins Its Global Mission with Tour of U.S. and Pacific Bases], 1 Jul 70; News Release R-114-70 (U), MAC/IO, [C-5 Completes Tour of Pacific Bases], ca 13 Jul 70.

⁴⁴Rpt (U), Col W. H. Spiller, Jr., Dir, C-5 Cat III Joint Test Force, Charleston AFB SC, to MAC/MAORQ, "Summary Report, Initial C-5 Orientation Flight to the European Area," 14 Aug 70.

⁴⁵Hist (S/Decl OADR), MAC, FY71, p xi, info used is Unclassified.

⁴⁶Hist (S/Decl 31 Dec 06), MAC, CY76, p 365, info used is Unclassified.

⁴⁷Hist (U), 60 MAW/HO, "Chronology of the 60th Military Airlift Wing, October 1970-June 1971," ca Jul 71.

⁴⁸Hist (S/Decl OADR), MAC, FY71, p xiii, info used is Unclassified.

⁴⁹Hist (U), 60 MAW/HO, "Chronology of the 60th Military Airlift Wing, October 1970-June 1971," ca Jul 71.

⁵⁰News Release (U), R-154-71 (U), MAC/IO, "C-5 Visits Latin America," 3 Jun 71.

⁵¹Ltr (U), Col G. S. Halvorsen, 7350 Support Group/CC, to 437 MAW/CC, "Letter of Commendation," 29 Sep 71.

⁵²Article (U), "Accident Grounds C-5As," *Air Force Times*, 21 Oct 71, p 8.

⁵³Another six C-5As were assigned to the Air Force Systems Command and Lockheed Aircraft Corporation for testing (Article (U), "Lockheed C-5," *Command Post* (Scott AFB, IL), 22 Oct 71, p 8).

⁵⁴Article (U), "Lockheed's C-5A Slated for Another Evaluation," *Wall Street Journal*, 30 Nov 71.

⁵⁵Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, 1993, p 131.

⁵⁶Hist (S/Decl OADR), MAC, FY73, pp xv, 285, 335, info used is Unclassified; Hist (U), SSgt J. T. Murphy, 436 AW/HO, "History of the 436th Airlift Wing," 1996, p 13.

⁵⁷Hist (U), MSgt Dennis Pinner, 437 AW/HO, "Heritage of the 437th Airlift Wing," Dec 00.

⁵⁸Command Data Book (FOUO), MAC/ACMM, Mar 73, p 10, info used is not FOUO; Hist (U), 437 MAW, Apr-Jun 73, pp 5-6, 12; MO-4 (U), MAC, 21 May 73; MO-5 (U), MAC, 21 May 73; Hist (U), 436 MAW, Apr-Jun 73.

⁵⁹Hist (U), MSgt Dennis Pinner, 437 AW/HO, "Heritage of the 437th Airlift Wing," Dec 00; Hist (U), 436 MAW, Apr-Jun 73.

⁶⁰See note above.

⁶¹Command Data Book (FOUO), MAC/ACMM, Dec 73, p 10, info used is not FOUO; Hist (S/Decl 31 Dec 05), MAC, FY74, p 377, info used is Unclassified.

⁶²News Release (U), MAC/IO, "Last C-5 Galaxy Received by Dover," ca 1 Jun 73; Hist (S/Decl OADR), MAC, FY73, p xxv, info used is Unclassified.

⁶³Hist (C/Decl OADR), 436 MAW, Jul-Sep 73, p vii, info used is Unclassified; Hist (U), SSgt J. T. Murphy, 436 AW/HO, "History of the 436th Airlift Wing," 1996, p 12.

⁶⁴Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, p 156.

⁶⁵Ibid, pp 156-157.

⁶⁶Ibid.

⁶⁷Hist (S/Decl on 31 Dec 05), MAC, FY74, pp 165-166, info used is Unclassified.

⁶⁸Ibid.

⁶⁹Article (U), W. A. Hall and Oliver Mackson, "Door Drops from C-5," *Times-Herald Record* (Newburgh, NY), 12 Jul 95, p 3A.

⁷⁰Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, 1993, p 159.

⁷¹Ltr (U), Gen P. K. Carlton, MAC/CC, to Gen R. E. Dougherty, SAC/CC, [No Subject], 20 Jan 75; Rpt (U), MAC/DOOA, "C-5 Strategic Airlift Force Aerial Refueling," n.d.; Fact Sheet (U), SAC/DOTK to SAC/DO, "C-5 Air Refueling

Information,” 19 Dec 74; Hist (U), SAC/HO, “Seventy Years of Strategic Air Refueling, 1918-1988,” Aug 91 (Second Printing), p 57.

⁷²Article (U), MAC/OI, “C-5 Airlifts Atlas Centaur Missile for First Time,” 24 Jul 72.

⁷³Book (U), D. J. Burkard, MAC/HO, *Military Airlift Command: Historical Handbook, 1941-1984*, Dec 84, p 11.

⁷⁴Book (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, 1993, p 159.

⁷⁵Hist (S/Decl 31 Dec 06), MAC, CY76, p 365, info used is Unclassified

⁷⁶GAO Report to Senator Proxmire (U), atch/w, Ltr (U), Brig Gen C. F. G. Kuyk, Jr., Dep Dir for Strategic Forces, USAF Directorate of Operational Requirements, to Gen P. K. Carlton, MAC/CC, [No Subject], 18 Dec 75; Article (U), E. H. Kolcum, “Low Inflation Enables USAF to Cut C-5B Production Cost by \$600 Million,” *Aviation Week & Space Technology*, 4 Aug 86, p 127.

⁷⁷GAO Report to Senator Proxmire (U), atch/w, Ltr (U), Brig Gen C. F. G. Kuyk, Jr., Dep Dir for Strategic Forces, USAF Directorate of Operational Requirements, to Gen P. K. Carlton, MAC/CC, 18 Dec 75.

⁷⁸Hist (U), Coy F. Cross II, MAC/HO, *MAC and Operation Babylift*, Nov 89, pp 33-44.

⁷⁹Memo for Record (U), MAC/HO, “C-5 Production,” 24 Mar 83.

⁸⁰Ibid; see entries in this chronology for 25 May 1970, 17 October 1970, 27 September 1974, and 4 April 1975.

⁸¹Hist (FOUO), 60 MAW, Jul-Sep 76, pp 18-20, info used is not FOUO.

⁸²E-Mail (U), Charles Brown, AMC/LBM (Regional Manager, Lockheed Martin Aero), to J. W. Leland, AMC/HO, “C-5 History,” 28 Aug 02.

⁸³Hist (FOUO), 60 MAW, Apr-Jun 77, p x, info used is not FOUO.

⁸⁴News Release (U), MAC/OI, “MAC Crew Awarded Mackay Trophy,” 3 Apr 78; Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, pp 36, 57.

⁸⁵Hist (S/Decl 31 Dec 08), MAC, CY78, pp 174-175, info used is Unclassified; Rpt (U), USAF Airlift Center, "MAC Project 5-37-77, Operational Test and Evaluation, C-5 Triple INS: Final Report," Oct 78. The USAF Airlift Center officially opened at Pope Air Force Base, North Carolina, on 15 January 1976, to serve as the focal point for test and evaluation of new equipment and techniques to further improve worldwide airlift capabilities (Hist (S/Decl 31 Dec 06), MAC, CY76, p xi, info used is Unclassified; MACR 23-51 (U), "Organization and Mission--Field: USAF Airlift Center," 10 Mar 76, Sup Doc I-6, in Hist (S/Decl 31 Dec 06), MAC, CY96, info used is Unclassified).

⁸⁶Qtr Log Brochure (U), Dec 78, Sup Doc III-74 in Hist (S/Decl 31 Dec 08), MAC, CY78, info used is Unclassified; Hist (S/Decl on 31 Dec 08), MAC, CY78, p 175, info used is Unclassified.

⁸⁷Msg (U), USAF DCS/Ops Plans and Readiness, Dir Ops and Readiness, and USAF DCS Programs and Resources, Dir of Programs, to MAC DCS/Ops and MAC DCS/Compt, "Adjustment of the C-5 Flying Hour Program," 271750Z Feb 78, Sup Doc III-77 in Hist (S/Decl 31 Dec 08), MAC, CY78, p 171.

⁸⁸Hist (FOUO), 60 MAW, Jan-Mar 78, p 8, info used is not FOUO.

⁸⁹Ltr (U), Col A. L. Trott, Jr., 60 MAW/CC, to 61 MASW/CC, "C-5 Christchurch Mission," 15 Jun 78; Hist (FOUO), 60 MAW, Apr-Jun 78, p 24, info used is not FOUO.

⁹⁰Qtr Log Brochure (U), Dec 78, Sup Doc III-74 in Hist (S/Decl 31 Dec 08), MAC, CY78; Hist (S/Decl 31 Dec 08), MAC, CY78, pp 172-173, info used is Unclassified; Staff Summary w/atchs (U), MAC/XPQA, "C-5 Wing Modification," 5 Oct 76, Sup Doc 4-36 in Hist (S/RD), MAC, CY80; Hist (S/RD), MAC, CY80, p 302, info used is Unclassified.

⁹¹Qtr Log Brochure (U), Dec 78, Sup Doc III-74 in Hist (S/Decl 31 Dec 08), MAC, CY78; Hist (S/Decl 31 Dec 08), MAC, CY78, p 177, info used is Unclassified.

⁹²Msg (U), MAC/OI to AIG 7212/OI, "REFORGER 78," 172100Z Jul 78; Hist (FOUO), 60 MAW, Jul-Sep 78, pp xi, 5-6, info used is not FOUO.

⁹³Memo (U), Vice CINCMAC to CINCMAC, "C-5 Radar," n.d., Sup Doc III-89 in Hist (S/Decl 31 Dec 08), MAC, CY78; Staff Summary w/atc (U), MAC Ass't DCS/LG, "C-5A Simplified Multi-Mode Radar (SMMR)," 30 Sep 78, Sup Doc III-91 in Hist (S/Decl 31 Dec 08), MAC, CY78; Hist (S/Decl 31 Dec 08), MAC, CY78, 177-178, info used is Unclassified.

⁹⁴Hist (S/Decl 31 Dec 08), MAC, CY78, p xx, info used is Unclassified.

⁹⁵Ltr (U), CINCMAC to CSAF, 13 Dec 78, Sup Doc III-81 in Hist (S/Decl 31 Dec 08), MAC, CY78; Hist (S/Decl 31 Dec 08), MAC, CY78, p 172, info used is Unclassified.

⁹⁶Qtr Log Brochure (U), Dec 78, Sup Doc III-74 in Hist (S/Decl 31 Dec 08); Hist (S/Decl 31 Dec 08), MAC, CY78, p 174, info used is Unclassified.

⁹⁷Msg (U), Def Log Agency to MAC DCS Ops and DCS Air Trnsp, "Emergency Cold Weather Requirements Iran," 122050Z Jan 79, Sup Doc 2-27 in Hist (S/RD), MAC, CY79; Ltr (U), Gen W. G. Moore, Jr., CINCMAC, to Gen Lew Allen, CSAF, "Quarterly Report," 3 Apr 79, Sup Doc 1-76 in Hist (S/RD), MAC, CY79; Hist (S/RD), MAC, CY79, pp 102-103, info used is Unclassified.

⁹⁸Ibid, pp 120-121, info used is Unclassified.

⁹⁹Ibid.

¹⁰⁰Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 57; Hist (S/Decl 31 Dec 08), MAC, FY78, pp 41-42, info used is Unclassified.

¹⁰¹Special Assignment Airlift Missions (SAAMs) satisfied the special, unusual, or sensitive requirements of the United States government and other approved users. Often they were flown to accommodate special circumstances such as the size, weight, or sensitivity of the cargo and the need to pick up or deliver cargo to locations not served by the channel system. Aircrews and aircraft from the active-duty force, the Air Force Reserve Command, and Air National Guard all flew Special Assignment Airlift Missions.

¹⁰²Hist (FOUO), 60 MAW, Jul-Sep 79, pp 9-10, info used is not FOUO.

¹⁰³Hist (S/RD), MAC, CY79, pp 244-246, info used is Unclassified.

¹⁰⁴Ibid.

¹⁰⁵Hist (U), 60 MAW, Oct-Dec 79, p 35.

¹⁰⁶Msg (U), SECDEF/OASDPA/DDI to CINCMAC et al, "Khmer Relief/Press Guidance for C-5 Airlift of UNICEF Cranes," 052240Z Dec 79; Hist (U), 60 MAW, Oct-Dec 79, p 11.

¹⁰⁷Hist (U), 60 MAW, Oct-Dec 79, p 34.

¹⁰⁸Hist (FOUO), 60 MAW, Jan-Mar 80, pp 22-23, info used is not FOUO.

¹⁰⁹Hist (FOUO), 60 MAW, Apr-Jul 80, pp 42-45, info used is not FOUO.

¹¹⁰RED HORSE is an acronym for "Ready Engineer Deployable - Heavy Operations Repair Squadron Engineer."

¹¹¹Hist (FOUO), 60 MAW, Apr-Jul 80, pp 43-44, info used is not FOUO.

¹¹²Ibid, p 44, info used is not FOUO.

¹¹³Ibid.

¹¹⁴Hist (FOUO), 60 MAW, Jul-Dec 80, p 35, info used is not FOUO.

¹¹⁵Hist (U), Lockheed-Georgia Company, "Spreadsheet History of C-5s by Tail Number and Production Number," n.d.

¹¹⁶Staff Summary (U), MAC/XPQT, "C-5 Test Aircraft Delivery to MAC," 8 Jun 81, Sup Doc 4-24 in Hist (S/FRD), MAC, CY81; Hist (S/FRD), MAC, CY81, p 273, info used is Unclassified.

¹¹⁷Hist (S/FRD), MAC, CY83, pp 357, 359, info used is Unclassified.

¹¹⁸Hist (S/FRD), MAC, CY81, p 273, info used is Unclassified; Staff Summary (U), MAC/XPQT, "C-5 Test Aircraft Delivery to MAC," 8 Jan 81, Sup Doc 4-24 in Hist (S/FRD), MAC, CY81.

¹¹⁹Hist (S/FRD), MAC, CY81, p 273, info used is Unclassified; Staff Summary (U), MAC/XPQT, "C-5 Test Aircraft Delivery to MAC," 8 Jan 81, Sup Doc 4-24 in Hist (S/FRD), MAC, CY81.

¹²⁰Hist (S/FRD), MAC, CY82, pp 81-82, info used is Unclassified.

¹²¹Hist (S/FRD), MAC, CY81, p 201, info used is Unclassified.

¹²²Staff Summary (U), MAC/XPQT, "C-5 Test Aircraft Delivery to MAC," 8 Jun 81, Sup Doc 4-24 in Hist (S/FRD), MAC, CY81; Hist (S/FRD), MAC, CY81, p 273, info used is Unclassified.

- ¹²³Hist (FOUO), 60 MAW, Jul 81-Dec 82, p 35, info used in not FOUO.
- ¹²⁴Ibid; Hist (RD), MAC, CY80, p 190, info used is Unclassified.
- ¹²⁵Hist (S/FRD), MAC, CY82, p 82, info used is Unclassified.
- ¹²⁶Ibid.
- ¹²⁷Hist (S/FRD), MAC, CY81, pp 133-136, info used is Unclassified.
- ¹²⁸The KC-10A tanker, nicknamed the "Extender," was the military version of the McDonnell Douglas DC-10. The KC-10's primary mission was air refueling, but it also had an airlift capability and was often used in that role.
- ¹²⁹Hist (S/FRD), MAC, CY81, pp 133-136, info used is Unclassified.
- ¹³⁰Ibid, p 135, info used is Unclassified.
- ¹³¹Article (U), "House/Senate Appropriations Conferees Try to Kill C-17," *Armed Forces Journal International*, Jan 82, p 64; Hist (S/FRD), MAC, CY82, p 84, info used is Unclassified.
- ¹³²Ltr (U), AFTEC/CC to USAF/CS, [No Subject], 16 Dec 81, Sup Doc 4-25 in Hist (S/FRD), MAC, CY81; Hist (S/FRD), MAC, CY81, pp 273-274, info used is Unclassified.
- ¹³³Hist (S/FRD), MAC, CY82, p 86, info used is Unclassified.
- ¹³⁴Article (U), "Pacer Wing: The C-5 Wing Mod," *The MAC Flyer*, Jan 84, pp 8-11; Hist (S/FRD), MAC, CY82, pp 315-317, info used is Unclassified.
- ¹³⁵Ibid, p 167, info used is Unclassified.
- ¹³⁶Ibid, p 315, info used is Unclassified.
- ¹³⁷Article (U), A. K. Marsh, "Defense Authorization Passed by Congress," *Aviation Week & Space Technology*, 23 Aug 82, pp 14-16.
- ¹³⁸Hist (S/FRD), MAC, CY82, p 92, info used is Unclassified.
- ¹³⁹Article (U), "Reserve Crew 'Saves' C-5 Transport After Birdstrike," MAC News Service, 25 Feb 83; Hist (FOUO), 436 MAW, Jan-Mar 83, pp 22A, 22B, 22C, and 22D, info used is not FOUO.

¹⁴⁰Hist (S/FRD), MAC, CY83, pp 305-306, info used is Unclassified.

¹⁴¹Ibid, p 366, info used is Unclassified.

¹⁴²Hist (FOUO), 60 MAW, CY83, p 25, info used is not FOUO.

¹⁴³Article (U), TSgt Dan Allsup, "The Galaxy's New Look," *Airman*, Feb 84; Hist (S/FRD), MAC, CY83, p 359, info used is Unclassified.

¹⁴⁴Hist (FOUO), 60 MAW, CY83, pp xx, 117, info used is not FOUO.

¹⁴⁵Hist (FOUO), 60 MAW, CY83, p 39, info used is not FOUO; Hist (S/FRD), MAC, CY83, p 21, info used is Unclassified; Article (U), "Class A Mishap Briefs[1983]," *The MAC Flyer*, Apr 84, p 7; Article (U), "Rescue Forces Aid Damaged C-5 in Flight to Factory," MAC News Service, 3 Oct 83.

¹⁴⁶See note above.

¹⁴⁷Article (U), "Rescue Forces Aid Damaged C-5 in Flight to Factory," MAC News Service, 3 Oct 83.

¹⁴⁸Ibid.

¹⁴⁹Hist (S/FRD), MAC, CY83, p xxix, info used is Unclassified.

¹⁵⁰Hist (S/FRD), MAC, CY84, pp 370-375, info used is Unclassified; Ltr (U), Gen T. M. Ryan, Jr., CINCMAC, to Gen C. A. Gabriel, CSAF, ["Quarterly Report"], 9 Jan 84, Sup Doc 5-48 in Hist (S/FRD), MAC, CY84; Ltr (U), Gen T. M. Ryan, Jr., CINCMAC, to C. W. Weinberger, SECDEF, ["Quarterly Report"], 2 Apr 84, Sup Doc 5-6 in Hist (S/FRD), MAC, CY84; Plan (U), MAC/XPPB, "USAF Airlift Total Force Plan," 17 Sep 84, Sup Doc 5-45 in Hist (S/FRD), MAC, CY84.

¹⁵¹See note above.

¹⁵²Hist (S/FRD), MAC, CY84, p 325, info used is Unclassified; Testimony of A1C Thomas Jonsson, Before the Administrative Practices and Procedures Subcommittee of the Senate Judiciary Committee (U), 19 Sep 84, pp 1-5, Sup Doc 4-5 in Hist (S/FRD), MAC, CY84.

¹⁵³Staff Summary w/atchs (U), MAC/XPQT, "Lockheed C-5A Test Proposal," 3 Mar 84, Sup Doc 5-2 in Hist (S/FRD), MAC, CY84; Article (U), "C-5 Versus

C-17: Round 2 Coming?," *St. Louis Post-Dispatch*, 29 Feb 84, p 8A, Sup Doc 5-3 in Hist (S/FRD), MAC, CY84.

¹⁵⁴Ibid, p xxiv, info used is Unclassified.

¹⁵⁵Hist (FOUO), 60 MAW, Jul-Dec 84, p xiii, info used is not FOUO.

¹⁵⁶Ibid.

¹⁵⁷Ibid, p 368, info used is Unclassified; Article (U), "USAF Asks C-5B Option Delay for Review of Costs," *Aviation Week & Space Technology*, 1 Oct 84, p 22, Sup Doc 5-43 in Hist (S/FRD), MAC, CY84.

¹⁵⁸Hist (FOUO), 60 MAW, Jul-Dec 84, pp 28-30, info used is not FOUO.

¹⁵⁹Ibid.

¹⁶⁰Hist (S/RD), MAC, CY85, p 168, info used is Unclassified. Airlift customers paid hourly SAAM rates for the C-5s, C-141s, C-17s, C-130s, commercial carriers, and for the KC-10s and KC-135s when the tankers operated in an airlift role. At the beginning of each fiscal year, the Secretary of Defense set hourly rates for each organic aircraft type. For the civil air carriers, a per-mile SAAM rate was established for each commercial aircraft type based upon the number of seats and/or allowable cabin load. Department of Defense customers--most often the Army, Air Force, Navy, and Marines--received the most favorable rates. The next most favorable rates went to non-DoD US government agencies, such as the Department of State or the Federal Emergency Management Agency. The highest rates applied to non-US government customers.

¹⁶¹Hist (FOUO), 60 MAW, Jul-Dec 84, pp 28-30, info used is not FOUO.

¹⁶²Article (U), "AFRES Receives First C-5A," *The Air Reservist*, Winter, 1984-85, p 4; Hist (FOUO), 60 MAW, Jul-Dec 84, pp xx, 7, info used is not FOUO.

¹⁶³See note above.

¹⁶⁴See note above.

¹⁶⁵Staff Summary w/atch (U), MAC DCS Plans/XPSA, "Secretary Orr's Letter to Congress on C-5B Unsolicited Proposal," 4 Mar 85, Sup Doc 4-2 in Hist (SRD), MAC, CY85; Point Paper (U), MAC DCS Plans/XPPP, "Additional C-5Bs," 4 Mar 85, Sup Doc 4-3 in Hist (S/RD), MAC, CY85.

¹⁶⁶Hist (FOUO), 436 MAW, Jan-Jun 85, p 47, info used is not FOUO.

¹⁶⁷Hist (S/RD), MAC, CY85, p 225, info used is Unclassified.

¹⁶⁸Hist (FOUO), 60 MAW, Jan-Jun 85, pp 54-55, 55A, info used is not FOUO.

¹⁶⁹Point Paper w/atchs (U), MAC/DPXPA, "Women in the Air Force (for Gen Ryan's Trip to CORONA SOUTH 85)," 6 Feb 85; Hist (U), SSgt J. T. Murphy, 436 AW/HO, "History of the 436th Airlift Wing," 1996, p 14.

¹⁷⁰Hist (S/RD), MAC, CY85, p 222, info used is Unclassified.

¹⁷¹Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 45; Hist (S/RD), MAC, CY85, pp 225-228, info used is Unclassified.

¹⁷²Msg (U), MAC/DO to 21 AF/DO and 22 AF/DO, "C-5 Peacetime Management Plan," 202130Z Dec 85; Hist (S/FRD), MAC, Jan 86-Dec 87, p 256, info used is Unclassified.

¹⁷³Air Reserve Component is an umbrella term used to denote *both* the Air Force Reserve and the Air National Guard.

¹⁷⁴Hist (S/RD), MAC, CY85, pp 381-382, info used is Unclassified.

¹⁷⁵Ibid.

¹⁷⁶Hist (U), MAC/HO, *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991*, 1993, p 178.

¹⁷⁷Ibid.

¹⁷⁸Ltr (U), L. O. Kitchens, Lockheed Board Chair, to Gen L. A. Skantze, AFSC/CC, 21 Jan 86, Sup Doc 5-4 in Hist (S/FRD), MAC, Jan 86-Dec 87.

¹⁷⁹Hist (S/Decl OADR), J. W. Leland, MAC/HO, "MAC and the Afghan Humanitarian Relief Program," May 89, pp vii, 77-89, info used is Unclassified.

¹⁸⁰Ibid; Article (U), J. W. Leland, AMC/HO, "Aeromedical Airlift of Afghan WarWounded," *The Afghanistan Studies Journal*, Vol 5, 1997, pp 75-88.

¹⁸¹Hist (FOUO), 60 MAW, CY86, pp 27-28, info used is not FOUO.

¹⁸²Ibid.

¹⁸³Msg (U), CINCMAC to 21 AF/CC et al, "Aircraft Mission Capable (MC) Rates," 201645Z Jun 86, Sup Doc 3-5 in Hist (S/FRD), MAC, Jan 86-Dec 87.

¹⁸⁴Hist (FOUO), 60 MAW, CY86, p 65, info used is not FOUO.

¹⁸⁵After being promoted to four-star rank, General Kross served as commander in chief, United States Transportation Command, and commander, Air Mobility Command, from 15 July 1996 to 3 August 1998.

¹⁸⁶Hist (FOUO), 436 MAW, Jul-Dec 86, p 14, info used is not FOUO.

¹⁸⁷Sponsored by and named for Senator Jeremiah Denton (Republican-Alabama), a retired US Navy admiral and a former American prisoner of war in Vietnam.

¹⁸⁸Hist (S/FRD), MAC, Jan 86-Dec 87, p xix, info used is Unclassified; Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 47.

¹⁸⁹Rpt (U), MAC/DOOMS, "Monthly Summary of MAC SAAMs," Oct 86, Sup Doc 4-3 in Hist (S/FRD), MAC, Jan 86-Dec 87; Rpt (U), USAF/CVAM to MAC/TRKS, "Special Assignment Airlift Missions (1A1) for October 1986," 17 Nov 86, Sup Doc 4-43 in Hist (S/FRD), MAC, Jan 86-Dec 87; Hist (S/FRD), MAC, Jan 86-Dec 87, pp 309-310, info used is Unclassified.

¹⁹⁰Ltr w/atchs (U), F. A. Keating II, Dept of the Treasury, Asst Sec/Enforcement, to R. B. Costello, Asst Sec Def for Acquisition and Logistics, 31 Mar 87, Sup Doc 4-80 in Hist (FRD), MAC, Jan 86-Dec 87; Article (U), "A New Year We'll Never Forget," *Time*, 12 Jan 87, pp 19-20; Msg (U), MAC/DOOMS to AIG 8329, "January SAAM 1956," 021558Z Jan 87, Sup Doc 4-82 in Hist (S/FRD), MAC, Jan 86-Dec 87; Hist (S/FRD), MAC, Jan 86-Dec 87, pp 349-352, info used is Unclassified.

¹⁹¹Article (U), "Air Force, Lockheed Conclude C-5B Cost Negotiations," MAC News Service, 30 Jan 87.

¹⁹²Article (U), E. H. Kolcum, "Low Inflation Enables USAF to Cut C-5B Production Cost by \$600 Million," *Aviation Week & Space Technology*, 4 Aug 86, p 127.

¹⁹³Hist (S/FRD), MAC, Jan 86-Dec 87, pp 256-257, info used is Unclassified.

¹⁹⁴Ibid, pp 258-259, info used is Unclassified.

¹⁹⁵Hist (FOUO), 436 MAW, Jul-Dec 87, p 39, info used is not FOUO.

¹⁹⁶Ibid, p 19, info used is not FOUO.

¹⁹⁷Hist (U), SSgt J. T. Murphy, 436 AW/HO, "History of the 436th Airlift Wing," 1996, p 14.

¹⁹⁸E-Mail (U), Col Karen Torres, AMC TACC/XOC, to J. W. Leland, AMC/HO, "RE: C-5 Flight in March-April 1988," 19 Dec 01. The other 13 crewmembers were: Capt Carol S. Ramsey; MSgt Frances M. Cardaci; MSgt Stephanie J. Leatherman; TSgt Gail G. Moore; TSgt Donna J. Lehmann; SSgt Carol A. Reese; SSgt Vicky L. Feeney; SSgt Elizabeth Tejera; Sgt Joan E. Mullen; Sgt Belinda G. Byrns; A1C Marian E. Kellogg; A1C Diane G. McLendon; and A1C Tina M. Klein (MAC Form 41 (U), 3 MAS, Dover AFB, DE, "Flight Authorization #416: Mission ABA2F3088," 25 Mar 88).

¹⁹⁹Hist (U), SSgt J. T. Murphy, 436 AW/HO, "History of the 436th Airlift Wing," 1996, p 14; E-Mail (U), Col Karen Torres, AMC TACC/XOC, to J. W. Leland, AMC/HO, "RE: C-5 Flight in March-April 1988," 19 Dec 01.

²⁰⁰Ltr (U), Col F. K. Tedrow, 436 MAW/CC, to 21 AF/CC, "Field of Aeronautics, Cheney Award for 1988," 9 Sep 99, Sup Doc 4-59 in Hist (S/FRD), MAC, CY88.

²⁰¹Ibid.

²⁰²Ibid.

²⁰³Rpt (U), Maj J. L. Cirafici, 436 MAW/3 MAS, "Airlift to Soviet Central Asia," 26 Jan 89, Sup Doc 4-82 in Hist (S/FRD), MAC, CY88; Ltr (U), L. D. Welch, CSAF, to Gen D. H. Cassidy, CINCMAC, 9 Feb 89; Ltr (U), Brig Gen J. F. Sievertson, 21 AF/CV, to MAC/DP, "Field of Aeronautics - Mackay Trophy," 21 Sep 88, Sup Doc 4-88 in Hist (S/FRD), MAC, CY88.

²⁰⁴Rpt (U), MAC/DOOMS, "Monthly Summary of MAC SAAMS," Aug 88, Sup Doc 4-1 in Hist (S/FRD), MAC, CY88; SAAM Memo (U), MAC/TRKS, "Alft CH-47 to China, #1954," Aug 88, Sup Doc 4-43 in Hist (S/FRD), MAC, CY88; Hist (S/FRD), MAC, CY88, pp 227-228, info used in Unclassified.

²⁰⁵Hist (S/Decl FRD), MAC, CY88, pp 321-322, info used in Unclassified.

²⁰⁶Hist (S/FRD), MAC, CY88, pp 221-223, info used is Unclassified; Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 49.

²⁰⁷Hist (S/FRD), MAC, CY88, pp 228-231, info used is Unclassified.

²⁰⁸Ibid; Ltr (U), Lt Col J. J. Berardino, USAF/Bangladesh-1 Mission Dir, to W. K. Wolthuis, DoD Dir Humanitarian Assistance, [No Subject], 24 Oct 88, Sup Doc 4-47 in Hist (S/FRD), MAC, CY88; Ltr (U), W. K. Wolthuis, DoD Dir Humanitarian Assistance, to Gen D. H. Cassidy, CINCMAC, [No Subject], 3 Nov 88, Sup Doc 4-48 in Hist (S/FRD), MAC, CY88.

²⁰⁹Hist (U), J. W. Leland, MAC/HO, *Humanitarian Airlift to Soviet Armenia*, Sep 90, pp 7-9.

²¹⁰Ibid; Hist (S/Decl OADR), MAC, CY89, pp 226-233, info used is Unclassified.

²¹¹Rpts (U), USAF/CVAM to MAC DCS Air Trnsp/TRKS, "Monthly Special Assignment Airlift Missions (1A1)," 1989, Sup Doc 3-9 in Hist (S/Decl OADR), MAC, CY89; Memo for Record (U), D. Van Tassel, NARA/Supervisory Archivist, Office of Presidential Libraries, "Transfer of Reagan Presidential Records from Washington to California," 28 Apr 89, pp 1-3, Sup Doc 3-10 in Hist (S/Decl OADR), MAC, CY89; Hist (S/Decl OADR), MAC, CY89, pp 173-176, info used is Unclassified.

²¹²Article (U), MAC/PA, "Air Force Lauds MAC For International Mission," 24 Mar 89; Staff Summary w/atch (U), MAC/DOOMS to MAC/CC, "Letter of Appreciation--MAC Airlift into China in Support of PEACE PEARL," 3 Feb 89, Sup Doc 3-24 in Hist (S/Decl OADR), MAC, CY89, pp 194-196.

²¹³Hist (S/Decl OADR), MAC, CY89, pp 187-194, info used is Unclassified.

²¹⁴Point Paper (U), MAC/PAMM, "MAC Participation in Alaska Oil Spill Operation," 25 Apr 89; Hist (S/Decl OADR), MAC, CY89, pp 196-202, info used is Unclassified.

²¹⁵Hist (U), 436 MAW, Jan-Jun 89, pp 20-21.

²¹⁶Msg (U), AMEMBASSY Malabo to 436 MAW/DOOS et al, "MAC Mission AJM 1959-01 Humanitarian Assistance Program," 131230Z Apr 89, Sup Doc 3-60 in Hist (S/Decl OADR), MAC, CY89, pp 239-244.

²¹⁷Memo for Correspondents (U), DOD Ofc of Humanitarian Assistance, "Africa II," n. d.; Msg (U), SECDEF/USDP/ISA to AMEMBASSY Monrovia, "Proposed DOD Excess Medical Equipment and Supplies for Liberia and Delivery Schedule," 182333Z Aug 89, Sup Doc 3-64 in Hist (S/Decl OADR), MAC, CY89; Hist (S/Decl OADR), MAC, CY89, p 242, info used is Unclassified.

²¹⁸Hist (S/Decl OADR), MAC, CY89, pp 417-418, info used is Unclassified.

²¹⁹Ibid, p 418, info used is Unclassified.

²²⁰Ibid.

²²¹Hist (FOUO), 60 MAW, Jan-Jun 89, pp viii, 55-56, info used is not FOUO.

²²²In 1989, Airlift Rodeo was an annual airlift competition that showcased airdrop, short-field landings, related ground operations, and other specialties associated with the airlift mission of the United States Air Force. Several international teams routinely competed. After activation of the Air Mobility Command on 1 June 1992, air refueling events were added. The competition became a *biennial* event and was renamed "Air Mobility Rodeo."

²²³Article (U), MAC/PA, "MAC Sets Airdrop Record at Airlift Rodeo," 16 Jun 89.

²²⁴Rpts (U), MAC/DOOMS, "Monthly Summaries of MAC SAAMs," Jul 89, Sup Doc 3-8 in Hist (S/Decl OADR), MAC, CY89; Hist (S/Decl OADR), MAC, CY89, p 168, info used is Unclassified.

²²⁵Article (U), "MAC C-5s Airlift Bridge Parts to Pakistan," MAC News Service, 11 Jul 89.

²²⁶Rpt (U), MAC/DOOMS, "Monthly Summary of MAC SAAMs," Aug 89, Sup Doc 3-8, in Hist (S/Decl OADR), MAC, CY89; Hist (S/Decl OADR), MAC, CY89, pp 257-258, info used is Unclassified.

²²⁷Point Paper (U), MAC/DOOMT, "Hurricane Disaster Relief Operation," 27 Sep 89, Sup Doc 3-74, in Hist (S/Decl OADR), MAC, CY89; Hist (S/Decl OADR), MAC, CY89, p 247, info used is Unclassified.

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²²⁹Msg (U), COMNAVSUPPFORANTARCTICA to CINCMAC, "C-5 SAAM In Support of Operation DEEP FREEZE," 060051Z Oct 89, Sup Doc 3-49, in Hist (S/Decl OADR), MAC, CY89; Article (U), MAC/PA, "MAC C-5 Makes History in

Antarctica Operation,” 3 Nov 89; Brgf Slides (U), MAC/DOO, “C-5 to McMurdo,” May 89.

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²³¹Hist (S/Decl OADR), MAC, CY89, p 269, info used is Unclassified.

²³²Point Paper (U), J. W. Leland, MAC/HO, “Overview of MAC’s Participation in Operation JUST CAUSE and Events Leading to Military Intervention in Panama,” 31 Jul 90.

²³³Ibid.

²³⁴Book (U), R. deV. Brunkow, AMC/HO, *Toward the Air Mobility Command: A Chronology of Tanker and Airlift Events*, 1993, p 52.

²³⁵Table III-2 (U), “Desert Shield/Desert Storm Strategic Airlift Summary Completed by Aircraft Type (Cargo in Short Tons) (As of 10 Mar 91)” in Book(U), J. K. Matthews and C. J. Holt, USTRANSCOM/RC, *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*, Joint History Office, Office of the Chairman of the JCS, and Research Center USTRANSCOM, 1996, p 40; Article (U), J. W. Leland, AMC/HO, “Air Mobility in Operation DESERT SHIELD/STORM,” in Book (U), William Head and E. H. Tilford, Jr., ed, *The Eagle in the Desert: Looking Back on U.S. Involvement in the Persian Gulf War*, Greenwood Publishing Group, Inc., 1996.

²³⁶Speech (U), Gen H. T. Johnson, CINCMAC, to IMPRO ‘91, Atlanta, GA, 28 Oct 91.

²³⁷A utilization (UTE) rate measures the productivity of an *entire* fleet of generic aircraft, including aircraft not flown. The UTE rate is calculated by totaling the hours flown by all aircraft of a given type and dividing the hours by the total number of assigned aircraft. The aircraft total includes both non-mission-capable aircraft and mission-capable aircraft not flown (Study (U), John Lund, Ruth Berg, and Corinne Replege, RAND, *Project AIR FORCE Analysis of the Air War in the Gulf: An Assessment of Strategic Airlift Operational Efficiency*, 1993, p 19).

²³⁸Ibid, pp xv, 19.

²³⁹Rpt (U), 375 MAW/CV, Vol I (Statement of Authority and Purpose, and Summary of Facts), "Class A Flight Mishap Accident Investigation Report C-5A 680228, 60th Military Airlift Wing, Ramstein AB, Germany, 29 Aug 1990," ca 31 Dec 90, Sup Doc 3-35 in Hist (S/Decl OADR), MAC, CY90.

²⁴⁰Book (U), J. K. Matthews and C. J. Holt, USTRANSCOM/RC, *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*, Joint History Office, Office of the Chairman of the JCS, and Research Center USTRANSCOM, 1996, p 58.

²⁴¹Article (U), "Industrial Nations Lift Aid Ban," *Facts On File*, 21 Mar 91, p 201.

²⁴²Rpts (U), MAC/DOOMS, "Summary of MAC SAAMS," Mar, May, Jul, Sep, and Dec 91, Sup Doc 2-25 in Hist (S/Decl OADR), MAC, Jan 91-May 92; Hist (S/Decl OADR), 21 AF, CY91, pp 94-96, info used is Unclassified; Hist (S/Decl OADR), MAC, Jan 91-May 92, p 138, info used is Unclassified.

²⁴³Article (U), "China: Severe Floods Hit Southeast," *Facts On File*, 1 Aug 91, p 583; Hist (S/Decl OADR), MAC, Jan 91-May 92, p 158, info used is Unclassified.

²⁴⁴With the dissolution of the Soviet Union, Ukraine became an independent state in December 1991.

²⁴⁵Article (U), "Aerial Port Loads Pharmaceuticals for Soviet States," MAC News Service, Nov 91, Sup Doc 2-151 in Hist (S/Decl OADR), MAC, Jan 91-May 92; Hist (S/Decl OADR), MAC, Jan 91-May 92, p 141, info used is Unclassified.

²⁴⁶Rpt (U), MAC/XOOMS, "Summary of MAC SAAMS," Nov 91, Sup Doc 2-25 in Hist (S/Decl OADR), Jan 91-May 92; Rpt (U), AMC TACC/XOOMS, "Summary of MAC SAAMS for May 92," [Jun 92], Sup Doc 2-26 in Hist (S/Decl OADR), MAC, Jan 91-May 92; Hist (S/Decl OADR), MAC, Jan 91-May 92, pp 159-160, info used is Unclassified.

²⁴⁷Msg (U), SECDEF/USDP: ISA to MAC/XOOM, "DoD Excess Property Flight to Mongolia, SAAM 1960," 261350Z Sep 91, Sup Doc 2-175 in Hist (S/Decl OADR), MAC, Jan 91-May 92; Article (U), "Travis Aircrew Flies Relief to Mongolia," *Tailwind* (Travis AFB, CA), 7 Feb 92, pp 1, 3, Sup Doc 2-176, in Hist (S/Decl OADR), MAC, Jan 91-May 92; Hist (S/Decl OADR), MAC, Jan 91-May 92, p 157, info used is Unclassified.

²⁴⁸On 10 December 1991, the leaders of Russia, Ukraine, and Byelarus announced their decision to leave the Soviet Union. On 21 December 1991, eleven of the remaining Soviet republics signed a series of accords that created a Commonwealth of Independent States (CIS). Estonia, Latvia, and Lithuania were already independent states and had been recognized as such by the United States on 2 September 1991. The republic of Georgia, embroiled in a civil war, did not sign. The Union of Soviet Socialist Republics was officially disbanded on 25 December 1991 (Article (U), "Soviet Union Disbands," *Facts On File*, 31 Dec 91, p 969).

²⁴⁹Hist (U), J. W. Leland, AMC/HO, *Operation Provide Hope, Feb 92-Apr 93*, Jul 93; Hist (S/Decl OADR), MAC, Jan 91-May 92, pp 141-142, info used is Unclassified.

²⁵⁰See note above.

²⁵¹Hist (S/Decl OADR), MAC, Jan 91-May 92, p 137, info used is Unclassified.

²⁵²The Phillips Laboratory, a component of the Air Force Materiel Command, supported and reported to the Space and Missile Systems Center at Los Angeles Air Force Base, California. It was the Air Force's focal point for all space- and missile-related research and technology associated with geophysics, propulsion, space vehicles, survivability, and directed-energy weapons. In 1997, Phillips Laboratory employed nearly 1,700 officers, airmen, and civilians assigned to the following locations: Kirtland Air Force Base, New Mexico; Hanscom Air Force Base, Massachusetts; and Edwards Air Force Base, California (Fact Sheet (U), Phillips Laboratory/PA, "Phillips Laboratory," Jan 97).

²⁵³Rpt (S/NF/WN/NC/ORCN), USTRANSCOM/TCJ2-O, "Executive Intelligence Summary," 23 Apr 92, info used is Unclassified, Sup Doc 2-46 in Hist (S/Decl OADR), MAC, Jan 91-May 92; Article (U), "MAC C-5 Airlifts Russian Topaz II Space Reactors," MAC News Service, May 92, Sup Doc 2-47 in Hist (S/Decl OADR), Jan 91-May 92; Rpt (U), AMC TACC/DOOMS, "Summary of MAC SAAMs for May 92," Sup Doc 2-26 in Hist (S/Decl OADR), Jan 91-May 92.

²⁵⁴Article (U), AMC/PA, "Airlifters Fly Emergency Relief Supplies to Armenia," Nov 92, Chron-157 in Hist (S/Decl OADR), AMC, Jan 92-Dec 94; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p 1, info used is Unclassified.

²⁵⁵Rpt (U), AMC/HO, "Air Mobility Command Historical Highlights for 1992," 6-20 Dec 92.

²⁵⁶Article (U), AMC News Service, "AMC Airlifts Nigerian Forces to Somalia," Mar 93, in the *North Country Champlanner* (Plattsburgh AFB NY), 12 Mar 93; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p lxiv, info used is Unclassified.

²⁵⁷Msg (U), AMC TACC/CC to USDAO/AIRA, "Airlift of Nepal Contingent," 181819Z Oct 93, Sup Doc 2-524 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Article (U), Capt G. L. Niles, 62 AW/PA, "Team McChord Builds Bridges in Nepal," *Northwest Airlifter* (McChord AFB, WA), 3 Sep 93.

²⁵⁸Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p 260, info used is Unclassified.

²⁵⁹Article (U), Patti Rogers, 60 AW/PA, "Travis Team Members Fly C-5 Into History," *Tailwind* (Travis AFB, CA), 28 May 93, pp 13-15, Chron-254 in Hist (S/Decl OADR), AMC, Jan 92-Dec 94; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p lxxiv, info used is Unclassified.

²⁶⁰Speech (U), Gen R. R. Fogleman, AMC/CC, to 55th Annual Conference, Mississippi National Guard, "America's National Guard, Our Reservoir of Strength," Biloxi, Mississippi, 24 Apr 93.

²⁶¹Msg (U), AMC/PA to AIG 7393/CC/PA, "07-04 AMC Helps Move Troops to Macedonia," 121525Z Jul 93; Article (U), "U.S. Troops Join U.N. Force Today," *St. Louis Post-Dispatch*, 7 Jul 93, p 9A; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, pp lxiv-lxv, info used is Unclassified.

²⁶²Msg (U), AMCONSUL Bombay to SECSTATE, "Earthquake SITREP Eleven," 061840Z Oct 93; Article (U), "US Sends Disaster Aid to India," AMC News Service, 4 Oct 93; Article (U), AMC/PA, "AMC Airlifts Relief Supplies to India," *AMC Global Reach*, Oct 93.

²⁶³Rpt (U), AMC/HO, "AMC Historical Highlights for 1993," 5-13 Oct 93; Article (U), "U.S. Sets Somalia Pullout Deadline," *Facts On File*, 7 Oct 93.

²⁶⁴Rpt (U), AMC/HO, "AMC Historical Highlights for 1993," 24 Oct 93.

²⁶⁵Rpt (U), AMC TACC/XOOMS, "Summary of AMC SAAMs," Jan 94; Article (U), "Barge Spills Oil Near Puerto Rico," *Facts On File*, 3 Feb 94, p 65.

²⁶⁶Article (U), AMC/PA, "AMC Assists In Los Angeles Earthquake Relief," 18 Jan 94; Article (U), G. W. Poindexter, "Air Force to the Rescue," *Air Force Times*, 31 Jan 94, p 16; Article (U), "AMC Crews, Aircraft Rush to Aid a Shaken L. A.," *The Airlifter* (Dover AFB, DE), 21 Jan 94, pp 1, 14; Article (U), "Some

Major Earthquakes,” *The World Almanac and Book of Facts, 1999* (Mahwah, NJ: World Almanac Books), p 234.

²⁶⁷Article (U), Vago Muradian, “In Africa, Airlifters Respond to Call for Help,” *Air Force Times*, 25 Apr 94, Chron-226 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Article (U), “Rwanda,” *The World Almanac and Book of Facts, 1999* (Mahwah, NJ: World Almanac Books), p 837.

²⁶⁸Msg (U), 15 AF/CC to AMC/CV, “C-5 Loadmaster Conference,” 110758Z Jul 94, Chron-109 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p xxxix, info used is Unclassified.

²⁶⁹Msg (U), AFNEWS/IIO to AIG 9333/PA, “AMC Airlifts MRI System to Ukraine,” 152200Z Jul 94; Article (U), “AMC Airlifts MRI System to Ukraine,” AMC News Service, 15 Jul 94; Article (U), 1st Lt Joel Miller, 22 AS, “22d Airlift Squadron Brings Hope to Children by Flying ‘Monster’ into Ukraine,” *Tailwind* (Travis AFB, CA), 22 Jul 94, p 2; Article (U), 436 AW/PA and 436 APS/CCRF, “Dover Airlifts MRI System to Ukraine,” *The Airlifter* (Dover AFB, DE), 1 Jul 94, pp 1, 6.

²⁷⁰Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p 197, info used is Unclassified; Brfg (U), AMC/DOO, “Support Hope Hot Wash,” 24 Aug 94, Sup Doc 2-323 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Article (U), “Support Hope,” *AMC Global Reach*, Sep 94, Sup Doc 2-339 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94.

²⁷¹See note above.

²⁷²Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p 193, info used is Unclassified.

²⁷³Msg (U), Joint Staff/J4/LRC to USTRANSCOM, “Movement of Personnel and Vickers Aircraft to RAF Mildenhall,” 182242Z Aug 94, Chron-235 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Article (U), TSgt P. M. McKenna, 60 AW/PA, “Historic England-to-Australia Flight Begins at Travis,” *Tailwind* (Travis AFB, CA), 26 Aug 94, pp 3, 6, Chron-236 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Article (U), Don Hamess, “England-to-Australia by Way of Travis,” *The Reporter* (Vacaville, CA), ca 15 Aug 94, Chron-237 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Msg (U), AFNEWS/IIO to AIG 9333/PA, “Bomber Gets Boost,” 312305Z Aug 94, Chron-238 in Hist (S/Decl OADR), AMC, Jun 92-Dec 94; Hist (S/Decl OADR), AMC, Jun 92-Dec 94, p lxxix, info used is Unclassified.

²⁷⁴Article (U), "Galaxys Fly Uranium to U.S.," *Air Force Times*, 5 Dec 94; Article (U), J. K. Scudder, 436 AW/PA, "Dover Aids Kazakhstan Mission," *The Airlifter* (Dover AFB, DE), 2 Dec 94; Hist (S/Decl OADR), Jun 92-Dec 94, pp 254-256, info used is Unclassified.

²⁷⁵Article (U), 436 AW/PA, "Dover Completes Six-Ship Formation Testing," reprinted in AMC/PA, *AMC Global Reach*, Mar 95.

²⁷⁶Rpt (U), AMC TACC/XOCZR, "Quicklift," Aug 95; Hist (S/OADR), AMC, CY95, pp 52-54, info used is Unclassified.

²⁷⁷On 1 October 1994, the 60th Airlift Wing and the 305th Air Refueling Wing were redesignated the 60th Air Mobility Wing and the 305th Air Mobility Wing. The redesignated wings were located respectively at Travis Air Force Base, California, and McGuire Air Force Base, New Jersey (AMC SO GAXP-33, 9 Aug 94; AMC SO MOXP-13, 26 Aug 94).

²⁷⁸Article (U), 60 AMW/PA, "Travis C-5 Flies 75 Tons of Food to Zagreb," *Daily Republic* (Fairfield, CA), 22 Aug 95, p 5A.

²⁷⁹Article (U), "AMC Delivers Goods," *Tailwind* (Travis AFB, CA), 15 Sep 95, p 12.

²⁸⁰Hist (S/Decl OADR), AMC, CY96, pp 101-102, info used is Unclassified.

²⁸¹Operation SOUTHERN WATCH enforced the United Nations-imposed no-fly zone south of 32 degrees. In August 1992, the United Nations established a no-fly zone along the 32d parallel after the government of Iraqi dictator, Saddam (S/Decl OADR), AMC, CY99, p 180, info used is Unclassified).

²⁸²Hist (S/Decl OADR), AMC, CY96, p 101, info used is Unclassified.

²⁸³*Ibid*, p xxxv, info used is Unclassified.

²⁸⁴Article (U), 1st Lt Neil Nipper, 89 AW/PA, "First Lady, Ambassadors Celebrate Provide Hope's 500th Mission," AMC News Service, 19 Jun 97.

²⁸⁵Article (U), SrA Alexa Faulkner, 89 AW/PA, "Andrews Helps With NASA 'Lift Off,'" *Capital Flyer* (Andrews AFB, MD), 22 Aug 97, p 1; Article (U), 2d Lt David Westover, "Dover Team Airlifts NASA Satellite to Japan," USAF News Service, 3 Sep 97.

²⁸⁶Point Paper (U), W-R ALC/LCW, "C-5 Transition," 15 Sep 97; Brfg Extract (U), AMC/LG, "Phoenix Rally Logistics Issues," Apr 98; Article (U), "Robins Wins C-5 Workload," AMC News Service, 5 Sep 97.

²⁸⁷For a Class B aircraft mishap, the total cost of the damage is \$200,000 or more but less than \$1 million, or there is a permanent partial disability, or inpatient hospitalization of three or more persons.

²⁸⁸E-Mail (U), 1Lt M. E. Granger, AFSC/SEFW, to J. W. Leland, AMC/HO, "C-5 Historical Bird Strikes," 3 Oct 02; E-Mail (U), 1Lt M. E. Granger, AFSC/SEFW, to J. W. Leland, AMC/HO, "RE: From the AMC Historian," 3 Oct 02.

²⁸⁹Msg (U), CINCUSACOM to COMFORSCOM/G3 et al, "Northeastern Storm Relief Operations," 131130Z Jan 98; Article (U), 2d Lt Mike Chavis, 43 AW/PA, "Pope Acts As Staging Ground for Winter Storm Relief Airlift," *Carolina Flyer* (Pope AFB, NC), 23 Jan 98, p 1; Article (U), Maj Kirk Faryniasz, 436 AW/PA, "Dover Hauls Help to Maine," *The Airlifter* (Dover AFB, DE), 23 Jan 98, p 3; Hist (S/Decl OADR), AMC, CY98, p xvi, info used is Unclassified.

²⁹⁰Hist (S/Decl OADR), AMC, CY98, pp 96-99, info used is Unclassified.

²⁹¹Article (U), Brendan Sobie, "Air Force Plans to Begin Re-Engineering C-5 Fleet in Out Years of New POM," *Inside the Air Force*, 26 Jun 98.

²⁹²Hist Extract (U), SA-ALC/HO, *The History of Aircraft Maintenance at Kelly Air Force Base*, pp 35-38; Article (U), Dave Stokes, "Center Turns Out Last C-5, Team Kelly Bids Farewell," *The Kelly Observer* (Kelly AFB, TX), 17 Sep 99, pp 1, 12; Article (U), Cindy Tumiel, "Departure of Last C-5 Marks End of Era at Kelly," *San Antonio Express News*, 16 Sep 98, pp 1A, 4A.

²⁹³Brfg (U), AMC/XPR, "C-5 Modernization," 13 Mar 01, Sup Doc 3-36 in Hist (S/Decl OADR), AMC, CY00.

²⁹⁴Hist (S/Decl OADR), AMC, CY99, p 174, info used is Unclassified; Article (U), "AMC C-5 Flies Search, Rescue Team to Turkey," *Air Force News*, 18 Aug 99.

²⁹⁵Article (U), TSgt P. A. Fazzini, 436 AW/PA, "AMC Museum Gets Tanker," *The Airlifter* (Dover AFB, DE), 15 Oct 99, p 1; Article (U), James Merriweather, "Bringing Back 'Gasoline Station in the Air,'" *The News Journal* (Wilmington, DE), 4 Nov 99; E-Mail (U), Coy Cross, 9 RW/HO, to J. W. Leland, AMC/HO, "RE: Beale AFB Museum," 12 Oct 01.

²⁹⁶Hist (S/Decl OADR), AMC, CY00, pp xvi, 299, info used is Unclassified.

²⁹⁷Article (U), "USTRANSCOM Supports Search and Recovery Efforts at Alaskan Airlines Crash Site," AMC News Service, 4 Feb 00; Article (U), Capt Tania Daniels, 349 AMW/PA, "Travis Aids in Recovery Efforts," *Tailwind* (Travis AFB, CA), p 1; Article (U), "Navy Expands Debris Search at Flight 261 Crash Site," *Thunderbolt* (MacDill AFB, FL), 18 Feb 00, p 7.

²⁹⁸Book (U), R. deV Brunkow, AMC/HO, *Poised for The New Millennium: The Global Reach of the Air Mobility Command*, Apr 01, p 38.

²⁹⁹Point Paper (U), AMC/LGAA, "C-5 Tiger Team," 17 May 00, Sup Doc 3-56 in Hist (S/Decl OADR), AMC, CY00; Hist (S/Decl OADR), AMC, CY00, pp 301-302, info used is Unclassified.

³⁰⁰Newsletter (U), AMC Museum Foundation, Inc., *Hangar Digest*, Summer 00, pp 1-4; Article (U), A1C Shane Sharp, 436 AW/PA, "C-5's Predecessor Returns to Dover," *The Airlifter* (Dover AFB, DE), 28 Jul 00; Article (U), Joanne Wilson, "Coming Home: A Piece of Dover's Heritage, A C-133 Will Become Part of Air Mobility Command Museum," *The Wilmington News-Journal* (Wilmington, DE), 2 Aug 00.

³⁰¹Hist (S/Decl OADR), AMC, CY00, pp 300-301, info used is Unclassified; Staff Summary w/atchs (U), AMC/XP to AMC/CC, "Operational Requirement Document (ORD) for C-5 Reliability Enhancement and Re-Engining Program (RERP)," 26 Sep 00, Sup Doc 3-53 in Hist (S/Decl OADR), AMC, CY00.

³⁰²Support Plan (U), Lt Col Tony Hinen, 6 OG/CD, "6th Air Refueling Wing Super Bowl 35," 1 Nov 00; Brfg (U), Lt Col Tony Hinen, 6 OG/CD, "Super Bowl XXXV Air Force & MacDill Events," 26 Nov 00; E-Mail (U), Maj John Beaulieu, AF/HO, to J. W. Leland, AMC/HO, "RE: The C-5 at Super Bowl XXXV," 5 Nov 01; Article (U), TSgt P. A. Fazzini, AMC/PA, "C-5 Galaxy Museum Projects AF to NFL Players, Celebrities," AMC News Service, 29 Jan 01; Article (U), SrA Jerron Barnett, AMC/PA, "'Air Force Experience' Promotes Recruiting, Retention During Super Bowl XXXV," AMC News Service, 18 Jan 01.

³⁰³Memo (U), USTRANSCOM/TCJ3-OD to Dir, Dept of the Army, Office of the Deputy Chief of Staff for Ops and Plans, "Presidential Materials Move After-Action Report," 4 Apr 01; Brfg (U), Maj Rob Goodrich, USTRANSCOM/TCJ4-LPD, to NARA Records Adm Managers, "Presidential Materials Move: After Action Review," ca 1 Mar 01; E-Mail (U), Kent Beck, USTRANSCOM/TCJ3-ODR, to J. W. Leland, AMC/HO, "Airlifting Presidential Papers," 8 Feb 01.

³⁰⁴CONOPS (U), AMC TACC/XOO, "India Relief Effort," 1 Feb 01.

³⁰⁵Article (U), 2d Lt Dan Bernath, AFFTC/PA, "Aircrew Skill, Dry Lakebed Credited with Safe Landing of Crippled C-5," *Air Force Link*, 3 May 01.

³⁰⁶E-Mail (U), 1Lt M. E. Granger, AFSC/SEFW, to J. W. Leland, AMC/HO, "C-5 Historical Bird Strikes," 3 Oct 02; E-Mail (U), 1Lt M. E. Granger, AFSC/SEFW, to J. W. Leland, AMC/HO, "RE: From the AMC Historian," 3 Oct 02.

³⁰⁷Single Acquisition Management Plan (U/Restricted by Arms Export Control Act), Aeronautical Systems Center, Warner-Robins Air Logistics Center, "C-5 Reliability Enhancement and Re-Engining Program (RERP) (Acquisition Category ID)," 18 Sep 01, no restricted info used.

³⁰⁸Memo w/atchs (U), E. C. Aldridge, Jr., Ass't Sec of the Air Force, to Sec of the Air Force, "C-5 Reliability Enhancement and Re-Engining Program (RERP) Milestone B Decision," 5 Nov 01.

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³¹⁰E-Mail (U), Maj S. R. Harbula, 436 APS Ops Officer, to TSgt Theresa Lashley, 436 AW/HO, "Denton Mission on Behalf of Chances for Children," 31 Dec 02.

³¹¹Brfg (U), Lt Col Mark Dillon, 22 AS/CC and 782d EAS/CC, to Gen J. W. Handy, AMC/CC, "782 EAS Wrap-Up," 19 Aug 02; Telecon (U), J. W. Leland, AMC/HO, with Lt Col Mark Dillon, 22 AS/CC, 26 Sep 02; Article (U), SSgt Jim Verchio, 60 AMW/PA, "Air Mobility Operations Group Crucial Link to Mission Success," AMC News Service, 23 Aug 02.

³¹²Article (U), American Academy of Family Physicians, "State Department Deputy Secretary Keynotes Celebration as Physicians With Heart 10th Anniversary Airlift Kicks Off," 24 Oct 02; Article (U), Physicians With Heart, "Physicians With Heart Donates Over \$8 Million in Medicines and Supplies to Uzbekistan: Humanitarian Partnership Celebrates 10th Anniversary," 25 Oct 02; E-Mail (U), Capt Mario Escalante, 6 AS/DOIB, to J. W. Leland, AMC/HO, "RE: From HQ AMC History Office," 11 Dec 02.

³¹³Article (U), "Travis Supports Relief Mission in Guam," AMC News Service, 18 Dec 02.

³¹⁴E-Mail (U), Charles Brown, Lockheed-Georgia Contractor, AMC/LGM, to J. W. Leland, AMC/HO, "First C-5 AMP EMD Mission," 8 Jan 03.

³¹⁵Twice annually, in the spring and autumn, the AMC commander convened a conference of his senior commanders to discuss significant issues. The conferences were nicknamed PHOENIX RALLY.

³¹⁶MRS-05 was a follow-on study to the previous 1994 Mobility Requirements Study Bottom-Up Review Update (MRS BURU). Completed in December 2000, MRS-05 was the most comprehensive mobility study of all time. It was a cooperative effort by the Office of the Secretary of Defense, the Joint Staff, the unified commands, and the service staffs. MRS-05 examined strategic mobility requirements for two near-simultaneous major theater wars in Southwest Asia and Northeast Asia. The study recommended changing the million-ton-mile per day strategic airlift objective from 49.7 MTM/D (MRS BURU) to an objective of between 48.3 to 67.0 MTM/D. The Joint Chiefs of Staff and the joint commanders in chief split the difference between the high and low objectives and unanimously agreed to support a requirement of 54.5 MTM/D (Hist (S/Decl OADR), AMC, CY00, p 280).

³¹⁷Brfg (U), Maj Gen A. J. Lichte, AMC/XP, to Spring 2002 PHOENIX RALLY, "AMC Airlift Gameplan . . . 21st Century Transformation Enabler," 25 Apr 02; Rpt (FOUO), HQ AMC Studies and Analysis Flight, "AMC Outsize and Oversize Cargo Airlift Capability Analysis of Alternatives, Final Report," May 01, info used is not FOUO.

³¹⁸Notes (U), J. W. Leland, AMC/HO, at Spring 2002 PHOENIX RALLY, "Overview from Gen John W. Handy, AMC/CC," 24 Apr 02.

APPENDIX A

C-5s LISTED BY PRODUCTION NUMBER AND TAIL NUMBER

Type	Production Number	Tail Number
C-5A	0001	66-8304
C-5A	0003	66-8305
C-5A	0004	66-8306
C-5A	0005	66-8307
C-5A	0006	67-0167
C-5A	0007	67-0168
C-5A	0008	67-0169
C-5A	0009	67-0170
C-5A	0010	67-0171
C-5A	0012	67-0173
C-5A	0013	67-0174
C-5A	0014	68-0211
C-5A	0015	68-0212
C-5A	0016	68-0213
C-5A	0017	68-0214
C-5A	0018	68-0215
C-5A	0019	68-0216
C-5A	0020	68-0217
C-5A	0022	68-0219
C-5A	0023	68-0220
C-5A	0024	68-0221
C-5A	0025	68-0222
C-5A	0026	68-0223
C-5A	0027	68-0224
C-5A	0028	68-0225
C-5A	0029	68-0226
C-5A	0032	69-0001
C-5A	0033	69-0002
C-5A	0034	69-0003
C-5A	0035	69-0004
C-5A	0036	69-0005
C-5A	0037	69-0006
C-5A	0038	69-0007
C-5A	0039	69-0008

Type	Production Number	Tail Number
C-5A	0040	69-0009
C-5A	0041	69-0010
C-5A	0042	69-0011
C-5A	0043	69-0012
C-5A	0044	69-0013
C-5A	0045	69-0014
C-5A	0046	69-0015
C-5A	0047	69-0016
C-5A	0048	69-0017
C-5A	0049	69-0018
C-5A	0050	69-0019
C-5A	0051	69-0020
C-5A	0052	69-0021
C-5A	0053	69-0022
C-5A	0054	69-0023
C-5A	0055	69-0024
C-5A	0056	69-0025
C-5A	0057	69-0026
C-5A	0058	69-0027
C-5A	0059	70-0445
C-5A	0060	70-0446
C-5A	0061	70-0447
C-5A	0062	70-0448
C-5A	0063	70-0449
C-5A	0064	70-0450
C-5A	0065	70-0451
C-5A	0066	70-0452
C-5A	0067	70-0453
C-5A	0068	70-0454
C-5A	0069	70-0455
C-5A	0070	70-0456
C-5A	0071	70-0457
C-5A	0072	70-0458
C-5A	0073	70-0459
C-5A	0074	70-0460
C-5A	0075	70-0461
C-5A	0076	70-0462
C-5A	0077	70-0463
C-5A	0078	70-0464
C-5A	0079	70-0465

Type	Production Number	Tail Number
C-5A	0080	70-0466
C-5A	0081	70-0467
C-5B	0082	83-1285
C-5B	0083	84-0059
C-5B	0084	84-0060
C-5B	0085	84-0061
C-5B	0086	84-0062
C-5B	0087	85-0001
C-5B	0088	85-0002
C-5B	0089	85-0003
C-5B	0090	85-0004
C-5B	0091	85-0005
C-5B	0092	85-0006
C-5B	0093	85-0007
C-5B	0094	85-0008
C-5B	0095	85-0009
C-5B	0096	85-0010
C-5B	0097	86-0011
C-5B	0098	86-0012
C-5B	0099	86-0013
C-5B	0100	86-0014
C-5B	0101	86-0015
C-5B	0102	86-0016
C-5B	0103	86-0017
C-5B	0104	86-0018
C-5B	0105	86-0019
C-5B	0106	86-0020
C-5B	0107	86-0021
C-5B	0108	86-0022
C-5B	0109	86-0023
C-5B	0110	86-0024
C-5B	0111	86-0025
C-5B	0112	86-0026
C-5B	0113	87-0027
C-5B	0114	87-0028
C-5B	0115	87-0029
C-5B	0116	87-0030
C-5B	0117	87-0031
C-5B	0118	87-0032
C-5B	0119	87-0033

Type	Production Number	Tail Number
C-5B	0120	87-0034
C-5B	0121	87-0035
C-5B	0122	87-0036
C-5B	0123	87-0037
C-5B	0124	87-0038
C-5B	0125	87-0039
C-5B	0126	87-0040
C-5B	0127	87-0041
C-5B	0128	87-0042
C-5B	0129	87-0043
C-5B	0130	87-0044
C-5B	0131	87-0045

SOURCE: Rpt (U), Lockheed Company Georgia, "C-5s Listed by Production Number and Tail Number," Jan 02.

APPENDIX B

C-5s LISTED BY WING, BASE, AND TAIL NUMBER (As of January 2002)

Wing/Base	Tail Number
60th Air Mobility Wing, Travis AFB CA	68-0213
60th Air Mobility Wing, Travis AFB CA	68-0216
60th Air Mobility Wing, Travis AFB CA	69-0001
60th Air Mobility Wing, Travis AFB CA	69-0010
60th Air Mobility Wing, Travis AFB CA	69-0023
60th Air Mobility Wing, Travis AFB CA	69-0026
60th Air Mobility Wing, Travis AFB CA	70-0449
60th Air Mobility Wing, Travis AFB CA	70-0450
60th Air Mobility Wing, Travis AFB CA	70-0451
60th Air Mobility Wing, Travis AFB CA	70-0456
60th Air Mobility Wing, Travis AFB CA	70-0457
60th Air Mobility Wing, Travis AFB CA	70-0459
60th Air Mobility Wing, Travis AFB CA	70-0464
60th Air Mobility Wing, Travis AFB CA	84-0060
60th Air Mobility Wing, Travis AFB CA	84-0062
60th Air Mobility Wing, Travis AFB CA	85-0002
60th Air Mobility Wing, Travis AFB CA	85-0004
60th Air Mobility Wing, Travis AFB CA	85-0006
60th Air Mobility Wing, Travis AFB CA	85-0008
60th Air Mobility Wing, Travis AFB CA	85-0010
60th Air Mobility Wing, Travis AFB CA	86-0012
60th Air Mobility Wing, Travis AFB CA	86-0014
60th Air Mobility Wing, Travis AFB CA	86-0016
60th Air Mobility Wing, Travis AFB CA	86-0018
60th Air Mobility Wing, Travis AFB CA	86-0021
60th Air Mobility Wing, Travis AFB CA	86-0022
60th Air Mobility Wing, Travis AFB CA	86-0024
60th Air Mobility Wing, Travis AFB CA	86-0026
60th Air Mobility Wing, Travis AFB CA	87-0028
60th Air Mobility Wing, Travis AFB CA	87-0030
60th Air Mobility Wing, Travis AFB CA	87-0032
60th Air Mobility Wing, Travis AFB CA	87-0034
60th Air Mobility Wing, Travis AFB CA	87-0036
60th Air Mobility Wing, Travis AFB CA	87-0038
60th Air Mobility Wing, Travis AFB CA	87-0040

Wing/Base	Tail Number
60th Air Mobility Wing, Travis AFB CA	87-0042
60th Air Mobility Wing, Travis AFB CA	87-0044
97th Air Mobility Wing, Altus AFB OK	69-0014
97th Air Mobility Wing, Altus AFB OK	69-0018
97th Air Mobility Wing, Altus AFB OK	69-0024
97th Air Mobility Wing, Altus AFB OK	69-0025
97th Air Mobility Wing, Altus AFB OK	70-0452
97th Air Mobility Wing, Altus AFB OK	70-0454
97th Air Mobility Wing, Altus AFB OK	70-0455
97th Air Mobility Wing, Altus AFB OK	70-0462
105th Airlift Wing, Stewart IAP, Newburgh, New York	67-0169
105th Airlift Wing, Stewart IAP, Newburgh, New York	67-0170
105th Airlift Wing, Stewart IAP, Newburgh, New York	67-0173
105th Airlift Wing, Stewart IAP, Newburgh, New York	67-0174
105th Airlift Wing, Stewart IAP, Newburgh, New York	68-0212
105th Airlift Wing, Stewart IAP, Newburgh, New York	68-0224
105th Airlift Wing, Stewart IAP, Newburgh, New York	68-0226
105th Airlift Wing, Stewart IAP, Newburgh, New York	69-0008
105th Airlift Wing, Stewart IAP, Newburgh, New York	69-0009
105th Airlift Wing, Stewart IAP, Newburgh, New York	69-0012
105th Airlift Wing, Stewart IAP, Newburgh, New York	69-0015
105th Airlift Wing, Stewart IAP, Newburgh, New York	69-0021
105th Airlift Wing, Stewart IAP, Newburgh, New York	70-0460
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	66-8305
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	66-8306
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	66-8307
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	67-0168
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	67-0171
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	68-0220
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	68-0221
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	68-0223
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	69-0002
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	69-0004
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	69-0006
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	69-0007
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	69-0016
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	70-0445

Wing/Base	Tail Number
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	70-0446
433d Airlift Wing, Kelly Field Annex, Lackland AFB TX	70-0458
439th Airlift Wing, Westover ARB MA	66-8304
439th Airlift Wing, Westover ARB MA	67-0167
439th Airlift Wing, Westover ARB MA	68-0211
439th Airlift Wing, Westover ARB MA	68-0215
439th Airlift Wing, Westover ARB MA	68-0219
439th Airlift Wing, Westover ARB MA	68-0222
439th Airlift Wing, Westover ARB MA	68-0225
439th Airlift Wing, Westover ARB MA	69-0003
439th Airlift Wing, Westover ARB MA	69-0005
439th Airlift Wing, Westover ARB MA	69-0011
439th Airlift Wing, Westover ARB MA	69-0013
439th Airlift Wing, Westover ARB MA	69-0017
439th Airlift Wing, Westover ARB MA	69-0019
439th Airlift Wing, Westover ARB MA	69-0020
439th Airlift Wing, Westover ARB MA	69-0022
439th Airlift Wing, Westover ARB MA	70-0448
436th Airlift Wing, Dover AFB DE	68-0214
436th Airlift Wing, Dover AFB DE	68-0217
436th Airlift Wing, Dover AFB DE	69-0027
436th Airlift Wing, Dover AFB DE	70-0447
436th Airlift Wing, Dover AFB DE	70-0453
436th Airlift Wing, Dover AFB DE	70-0461
436th Airlift Wing, Dover AFB DE	70-0463
436th Airlift Wing, Dover AFB DE	70-0465
436th Airlift Wing, Dover AFB DE	70-0466
436th Airlift Wing, Dover AFB DE	70-0467
436th Airlift Wing, Dover AFB DE	83-1285
436th Airlift Wing, Dover AFB DE	84-0059
436th Airlift Wing, Dover AFB DE	84-0061
436th Airlift Wing, Dover AFB DE	85-0001
436th Airlift Wing, Dover AFB DE	85-0003
436th Airlift Wing, Dover AFB DE	85-0005
436th Airlift Wing, Dover AFB DE	85-0007
436th Airlift Wing, Dover AFB DE	85-0009
436th Airlift Wing, Dover AFB DE	86-0011
436th Airlift Wing, Dover AFB DE	86-0013

Wing/Base	Tail Number
436th Airlift Wing, Dover AFB DE	86-0015
436th Airlift Wing, Dover AFB DE	86-0017
436th Airlift Wing, Dover AFB DE	86-0019
436th Airlift Wing, Dover AFB DE	86-0020
436th Airlift Wing, Dover AFB DE	86-0023
436th Airlift Wing, Dover AFB DE	86-0025
436th Airlift Wing, Dover AFB DE	87-0027
436th Airlift Wing, Dover AFB DE	87-0029
436th Airlift Wing, Dover AFB DE	87-0031
436th Airlift Wing, Dover AFB DE	87-0033
436th Airlift Wing, Dover AFB DE	87-0035
436th Airlift Wing, Dover AFB DE	87-0037
436th Airlift Wing, Dover AFB DE	87-0039
436th Airlift Wing, Dover AFB DE	87-0041
436th Airlift Wing, Dover AFB DE	87-0043
436th Airlift Wing, Dover AFB DE	87-0045

SOURCE: Rpt (U), Lockheed Company Georgia, "C-5s Listed by Production Number and Tail Number," Jan 02.

APPENDIX C

C-5 NICKNAMES BY UNIT AND TAIL NUMBER

At the beginning of 2002, only six C-5s had been assigned commemorative nicknames.

Unit	Type	Tail Number	Name
436th Airlift Wing Dover AFB DE	C-5A	70-0447	<i>Nickel Grass</i>
	C-5B	85-0001	<i>The City of Dover</i>
	C-5B	85-0003	<i>Chevrons of Dover</i>
	C-5B	86-0019	<i>The First State</i>
	C-5B	87-0033	<i>The Spirit of Tuskegee Airmen</i>
433d Airlift Wing Kelly Field Annex Lackland AFB TX	C-5A	66-8306	<i>The City of San Antonio</i>

SOURCE: E-Mail (U), AMC/LGMJS to AMC/HO, "C-5 Aircraft Names," 23 Jan 02.

APPENDIX D

C-5 AIRCRAFT DESTROYED

Type	Production Number	Tail Number	Cause
C-5A	0011	67-0172	Burned at Palmdale, California, during flight test on 25 May 1970
C-5A	0001	66-8303	Burned at Marietta, Georgia, during flight test on 17 October 1970
C-5A	0030	68-0227	Crashed at Clinton Municipal Airport, Oklahoma, on 27 September 1974
C-5A	0021	68-0218	Crashed at Saigon on 5 April 1975 during Operation BABYLIFT
C-5A	0031	68-0228	Crashed at Ramstein Air Base, Germany, on 29 August 1990 during Operation DESERT SHIELD

SOURCE: Rpt (U), Lockheed Georgia Company, "C-5 Fleet History," Jan 02.

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- Air refueling of C-5s, 14-16, 22, 27-29, 33-34, 37, 39, 58, 65, 76, 78, 81, 89
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ADDENDUM

- 29 June 84 Captain Cynthia Hubbard, the first Air Force female C-5 pilot and assigned to the 22d Military Airlift Squadron (MAS), Travis Air Force Base (AFB), California, flew her first operational mission. Captain Hubbard previously flew her first training mission at Altus AFB, Oklahoma on 29 May 1984.
- 4 July 85 First Lieutenant Gayle L. Westbrook, the first female C-5 pilot assigned to Dover AFB, Delaware, flew her first operational mission. Lieutenant Westbrook was assigned to the 3d Military Airlift Squadron of the 436th Military Airlift Wing, Dover AFB, Delaware.
- 3 December 85 Captain Cynthia Hubbard, while assigned to the 22 MAS, Travis AFB, California, became the first female C-5 Aircraft Commander when she began her qualification checkrides.
- 24 April 87 Captain Westbrook, while still assigned to the 3 MAS, became Dover's first female C-5 pilot certified as an Aircraft Commander.

