

The Imperial Airline

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General Jorge M. Brochado de Miranda, a former Chief of Staff of the Força Aérea Portuguesa (FAP), recalled the date of 18 May 1957 as the moment in which the full attention of the FAP shifted 180 degrees from its concentration on the defense of Europe under the NATO umbrella to its preparation for defense of the *ultramar*¹. On this particular date, Kaúlza de Arriaga, Subsecretary of State for Aeronautics, penned note N°195 directing the FAP Chief of Staff to prepare and deploy units to the 2nd and 3rd Air Regions, Angola and Mozambique respectively, and specifically to the cities of Luanda, Lobito, Beira, and Lourenço Marques.

The execution of Arriaga's directive prompted critical thinking from his talented and imaginative staff, and in November 1957, Lieutenant Colonel Joaquim Brilhante Paiva, chief of the 2nd Division (intelligence), presented a study to Arriaga conceptually detailing how the FAP should proceed in installing itself in Africa². His concept of power projection was an "Imperial Airline" built on modern aviation capabilities and serving as a rapid and reliable aviation line of communication between the *metrópole* and the *ultramar*.

Up until this time, the Portuguese had relied almost exclusively on their commercial maritime capability to link the *ultramar* with the *metrópole* and to move the bulk of the troops and materiel to Africa. This process would foreseeably become less and less attractive as any war progressed, for with the advent of modern aviation, it was becoming increasingly expensive to operate a ship compared with an aircraft, particularly in moving people. Troops were unable to perform their duties while on a voyage and, indeed, travelled in unhealthy conditions, often packed into the vessel like sardines in a tin³. For a nation pressed for manpower and cash, it made less and less sense to have an unusable manpower pool hostage to an expensive transit process. An aircraft could transport troops and priority cargo far more efficiently when all associated costs were considered.

The thesis of the report was that in order to project power throughout the Empire, there needed to be a communications network supported by a fleet of military air transports.

This versatile network would have many potential benefits in that it could rapidly reinforce the *ultramar* with troops and urgently needed supplies, and transfer resources from one theater to another, as required. It could also evacuate the sick and wounded to the *metrópole* for advanced care, an enormous factor in troop morale. At the time, military air transport was limited to metropolitan Portugal, and Brilhante Paiva advocated vastly increasing this capability and extending it throughout the *ultramar* in support of both the political and military dimensions of security. There was, however, a drawback in that the FAP barely had the technical means to cover the vast spaces of Portuguese Africa and satisfy the critical requirement of having to use its own airfields exclusively, as in a continent hostile to colonial empires, it could obtain few landing rights outside of its territories.

The basis for Brilhante Paiva's concept was the appearance during World War II and immediately afterwards of large, reliable, four-engine military transports, such as the Douglas C-54 *Skymaster*, the Boeing C-97 *Stratofreighter*, and the Lockheed C-121 *Constellation*⁴. Portugal in 1947 had just begun to receive deliveries of the *Skymaster* and possessed only two in its inventory⁵. It would require many more such aircraft with its 3,650-mile range and useful cargo capacity of 28,000 pounds to execute Brilhante Paiva's concept successfully. Likewise, an accelerated upgrade of the Bissau airfield would be needed to accommodate the anticipated aircraft traffic and handling requirements, as it would be an important refueling stop for aircraft on their way to Portuguese possessions further south and east. Despite the lack of wherewithal, Arriaga would use this thinking as a springboard to build a robust air network with the improvement of existing airfields, the creation of new ones, and the acquisition of new, more capable aircraft. The Brilhante Paiva study led to the obvious conclusion that even with thin transport resources and an incomplete infrastructure; the FAP had the capacity to begin immediate air operations to link the *metrópole* with the widely scattered overseas provinces.

Portugal in 1936 had acquired ten export versions of the Junkers Ju-52 transport aircraft, which could be adapted to bombing missions⁶. During the 1940s some of the aircraft had the armament capability removed, while others continued to serve in this role, but by the 1950s all of these transports had been relegated to training navigators, radio operators, and parachutists, and to domestic transport duties. It had the capability of dropping a modest stick of 14 paratroopers, and its relatively small cargo door limited its ability for both airlift and cargo drops by parachute. The Portuguese substituted the Pratt & Whitney R-1340-AN-1 *Wasp* powerplants with their increased reliability for the original BMW 132A-2 engines, and went on to acquire two additional Ju-52s of German manufacture and 15 of the French version in the closing months of 1950. Even with the engine upgrade, however, the Ju-52 was outmoded with its fixed narrow-track main landing gear and 132-knot cruise speed⁷. While the fleet had come cheaply, the Ju-52 was no bargain, as neither its 590 mile range nor its 4,067-pound payload would help realize the "Imperial Airline" concept, and the next generation of transport was needed⁸.

During 1943 and 1944, six Consolidated B-24D *Liberators* were forced to land in Portugal and were interned, as Portugal was a neutral at the time. Because they were of no use to

the Portuguese as bombers, they were employed experimentally by the Transport Section of the Army Air Arm (*Secção de Transportes de Aeronáutica Militar*) as makeshift long-range transports. In April and May 1944, some long flights were made to Sal in the Cape Verde archipelago and Lajes in the Azores. In truth, the state of the *Liberators* and the lack of aircrew training in heavy aircraft restricted their utility. Nevertheless, this limited exposure opened a window on the sophisticated maintenance support system, infrastructure, and training needed to operate a fleet of heavy, four-engine aircraft⁹.

When the war ended in 1945, Portugal had only three interned C-47 *Dakotas* and four flyable *Liberators* of the original six for heavy air transport and hence no true capability. Nevertheless, it clearly saw the need for such a fleet and made the first tentative steps at acquiring one. Between the end of 1946 and the middle of 1947, it began to increase its competence in operating and supporting heavy aircraft with a mission to the United States to receive instruction in the flying and maintenance of the Boeing B-17 *Flying Fortress* and the Douglas C-54 *Skymaster*. The five crews under training took delivery of three B-17s modified for search and rescue (SAR) and two C-54s, and flew them from Kansas to Lajes Field in the Azores via New York, Boston, and Nova Scotia. This represented a major move forward in not only the acquisition of new technology but also the professional development of pilots, aircrew, and maintenance personnel. Indeed, it marked the beginning of modern military aviation in Portugal¹⁰. In the years immediately following, two additional SAR B-17s and six more C-54s were added to inventory, and these were lodged at Lajes in the Transport Squadron (*Esquadilha de Transporte*), which had been formed in 1947 to accommodate the earlier acquisitions and represented the first step in establishing the Military Air Transport (*Transporte Aéreo Militar* or TAM) of FAP¹¹. Subsequently, four additional C-54s were added in 1958 and 1959, providing a total inventory of twelve.

In the mid-1960s, five SAR versions of the C-54 were added to the fleet, bringing the total C-54 family to 18¹². These last aircraft were part of a joint effort with the United States at maintaining a SAR capability along the North Atlantic air routes, and their operations widened the competencies within the FAP of skilled pilots, navigators, aircrew, and maintenance personnel, and laid important groundwork toward the acquisition of more capable transport aircraft. By agreement with the United States, the six SAR C-54s were restricted to the North Atlantic, and this situation left eleven available for the "Imperial Airline." The C-54, however, was a World War II-vintage machine, and as such, it was limited in its capability. It could just barely fly the 5,700 nautical mile distance from Lisbon to Luanda following the Lisbon-Bissau-São Tomé-Luanda route exclusively through Portuguese territory. This entailed two en route stops to refuel and change crews. The C-54 was slow with a cruise speed of 165 knots and took effectively two days to fly from Lisbon to Luanda¹³. Despite its load capacity, eleven aircraft would have no appreciable consequence in supplying the *ultramar* in a major emergency. Further, the C-54s were complicated and difficult to maintain and thus uneconomical to operate alongside more modern aircraft. The "Imperial Airline" concept would require something else to be successful.



Photograph 1 - Douglas DC-6A *Cloudmaster*, FAP Serial 6703, Taxiing in Luanda
Source: Colonel Carlos Costa

In 1961, Pan American World Airways was facing a decision about whether to conduct a major overhaul on two of its high-flight-hour Douglas DC-6A (cargo) and eight of its DC-6B (passenger) *Cloudmaster* transport aircraft or simply to retire them. Coincidentally, Portugal was looking for a more capable aircraft to augment the C-54, and these were made available. The DC-6 *Cloudmaster* and its military version, the C-118 *Liftmaster*, were developed as faster, larger, pressurized versions of the C-54, and in fact, the initial model was a cargo transport. When the powerful Pratt & Whitney R-2800-CB-17 “Double Wasp” radial engine became available, Douglas engineers decided that they could extend the fuselage of the DC-6A by 4.5 feet to produce the DC-6B, a major advance in passenger aircraft. The “Double Wasps” were the most efficient piston engines available at the time and gave the aircraft the best operating economies of any large contemporary piston airliner. Likewise, passengers and crew appreciated its relative quietness, smoothness, and general comfort over others in its generation.

Portugal undertook to overhaul and modify the ten Pan American DC-6s for its use and put them to work on the *metrópole-ultramar* route. Round trips to the theaters were flown two or three times per week from Lisbon to Mozambique and took two days to perform the entire mission, about half the time as the C-54. Like the C-54, however, these missions always required relief crews stationed en route to maintain the schedule. The aircraft were operated safely at very high utilization rates and never had an accident. While laudable, this safety record should not be surprising, as with the acquisition of the DC-6, the experienced C-54 pilots were all assigned to the new aircraft. This left the C-54 community short of experienced crew, and its safety record suffered accordingly with the loss of four aircraft within the year following the reassignments¹⁴.

While a significant advance, the DC-6 was still not the perfect answer. Because of the mechanical nature of piston-engine aircraft and their consequent high maintenance requirement, DC-6 availability never exceeded six aircraft at any one time. The DC-6 series could carry only about 50,000 pounds of cargo, and thus this small fleet together

with the C-54s still had a very limited impact on the overall logistic picture. The Portuguese were always short of spare parts to maintain the aircraft, and while there were measures taken to skirt this problem, such as chrome-plating the engine cylinders to retard wear, the situation never improved significantly. Cannibalization within the fleet ensued, and by August 1967 only a single DC-6 was flyable¹⁵. By April 1968 the fleet had recovered to the level of seven operable aircraft, and the crisis passed; however, severe limitations remained. By now the entire fleet needed a major overhaul, and because of this requirement, many DC-6s were limited in their cargo loads, able to carry little more than a C-54¹⁶. The ageing of both the DC-6 and C-54 fleets threatened to turn the TAM into a spent force, as one by one the aircraft were parked in front of the maintenance hangar at Alverca awaiting their major overhauls¹⁷. Even the seemingly advanced DC-6 was now considered outmoded by airlift standards of the day¹⁸.

In 1967, the Portuguese flag carrier airline TAP (*Transportes Aéreos Portugueses*) **had shifted completely to a jet aircraft fleet and** operated the Boeing B-707¹⁹. This experience prompted the FAP in 1969 to consider buying three similar aircraft to resuscitate its transport capability. This was a controversial decision because of the expense of acquiring a new airframe and training its dedicated flight and ground support personnel. Ultimately, however, when the dust settled, two aircraft were authorized in February 1970²⁰. These Boeing B-707-3F5C models were the last two of this type produced and were delivered in a relatively quick 18 months. They were purpose-built aircraft with a strengthened undercarriage and a mixed cargo and passenger cabin. Flown according to Pan American operating standards, they ultimately realized in Portuguese hands the highest utilization of any B-707 worldwide, a fact confirmed by Boeing. One of the two aircraft was always on a mission, and the reliability and flexibility of the plane made a dramatic difference in the logistic picture. In 1973 the two B-707s together flew 299 missions alongside 209 missions for the remaining fleet of DC-6s²¹. The DC-6s had by then been relegated to the shorter missions to Guiné, the Azores, Madeira, and Europe, and the B-707s were serving Angola and Mozambique. A B-707 typically left Lisbon at 11.30, flew to Luanda, was unloaded, serviced, and loaded, and returned to the *metrópole* by 22.30 the same day²². According to FAP records for 1972, transporting passengers and their luggage by B-707 instead of by ship saved the armed forces 266,633 contos or about \$10.1 million. In 1973 comparable savings were 267,633 contos or about \$10.6 million. These savings over two years paid for the two B-707s²³. Finally, with this breakthrough in technology, the “Imperial Airline” was truly realized.



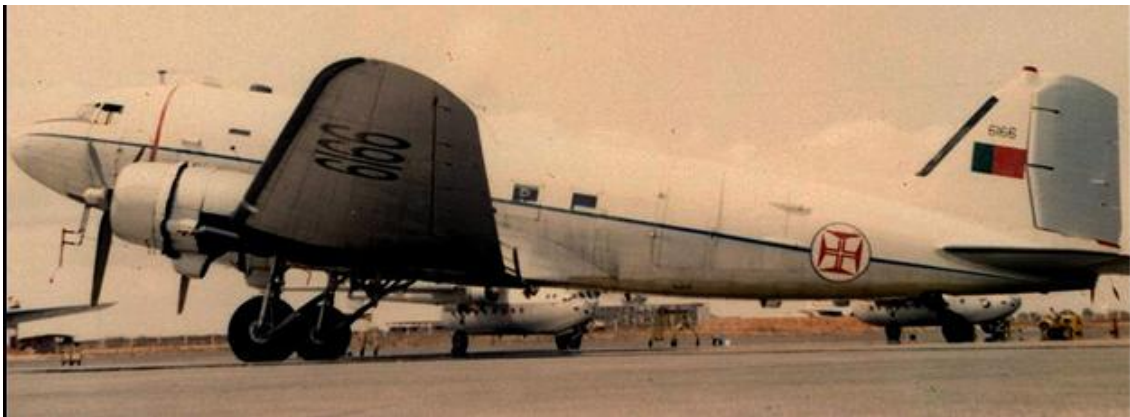
Photograph 2 - B-707, FAP Serial 8801, Parked on Ramp in Lagos
Source: Goldentiger

While the Portuguese began their counterinsurgency operations some twelve years after the Berlin Airlift (June 1948-September 1949), the lessons in this application of logistic power were an integral part of *Brilhante Paiva's* thinking. The Berlin Airlift had demonstrated that, given the machines and bases, air transport was more than a prop for short-term logistic emergencies. The intensive operational techniques developed there showed the way to a sure alternative to surface transport, providing the procedures and infrastructure were in place. Portugal sought to embrace these lessons in its airlift operations²⁴. Except for U.S. operations in Vietnam, other governments fighting comparable insurgencies seemed less attuned to airlift calculations. Malaya was the most comparable in distances and troop numbers, but there the British made no such effort. There was an endless stream of British troopships arriving in Singapore to support the war, and one newly commissioned subaltern described this expensive and leisurely process, in which "We spent hours eating huge P. and O. meals, and then more hours after them recovering in deckchairs, watching waves sliding past the ship, endlessly, without pause...."²⁵. This process was neither a focused preparation for counterinsurgency nor an efficient troop insertion into the local environment, and was all the more surprising and inconsistent for a country that had in 1950 developed the first propeller-jet airliner, the *Vickers Viscount*, and the first turbojet airliner, the *DeHavilland Comet*, two years later. The Portuguese had sought the rapid and cost-effective avenue of air transport to move troops and critical supplies, a choice that improved the sustainability of their war effort. Likewise, the shift from high-profile troopships arriving and departing with fanfare to the more subtle aircraft reinforced the low-key nature of their fight. For the Portuguese, routine aircraft traffic providing timely deliveries and a rapid response to needs in the theaters better fit the tenor of counterinsurgency.

Intra-Theater Extension

The “Imperial Airline” simply could not terminate at the primary theater air base and be effective. Perforce, there needed to be an air network that extended the transoceanic line of communications put in place by the intercontinental air bridge. Each of these intra-theater systems would combine a web of variably capable airfields with an array of aircraft able to operate across the range from developed airfields to the very rudimentary strips in bringing air support to the entire theater. This capability would be built with two complementary efforts, the acquisition of the proper aircraft and the construction of the needed airfields.

Using the three *Dakotas* acquired during World War II, the FAP began in 1958 to build this fleet by acquiring three additional aircraft and adding to this inventory through 1972, as suitable *Dakotas* became available. The FAP would ultimately acquire a total of 28 *Dakotas*, mainly for use in the *ultramar* for short-and medium-range tasks. These came from diverse sources, primarily from the air forces of the United States, Australia, Israel, the United Kingdom, and South Africa, all of which were shedding their obsolete aircraft at bargain prices²⁶.



Photograph 3 - Douglas C-47, FAP Serial 6166, Parked on Ramp in Luanda
Source: Colonel Carlos Costa

The decision to pursue the acquisition of *Dakotas*, a proven and capable aircraft, was controversial within the air staff, and there were two lines of thought on the issue. The first or “pro-*Dakota*” position held that the *Dakota* would be adequate for local air transport in the *ultramar*, as it could land on unimproved fields with its wide-stance retractable main landing gear and carry a useful cargo load of about 6,000 pounds. The drawback with the C-47 as well as the earlier Ju-52 was that, while both had given good service, their basic landing gear design with a tail wheel gave them a nose-up attitude when parked, and this characteristic complicated cargo handling. Adding to this constraint was the comparatively small and restrictive cargo side door that limited its ability to make supply drops. There were more modern aircraft available that would lift a

heavier payload and had been designed for more efficient cargo handling.

In the *ultramar*, the *Dakotas* would show their versatility and be used for many types of missions, such as aerial reconnaissance, paratroop drops, medical evacuation, and search and rescue. They were even used as makeshift bombers in Guiné, including night missions, and in psychological operations in Mozambique²⁷. While the *Dakota* had proven itself time and again, it had severe limitations in that its load capacity was relatively modest, and its maintenance was becoming an increasing problem because of its age as a World War II-vintage machine. No matter its venerable history, the *Dakota* clearly had its limits.



Photograph 4 - Nord Aviation *Noratlas* Dropping a Stick of Paratroops
Source: Museu do Ar

The second line of thought argued that the FAP needed a more robust, capable, and modern aircraft along the lines of the Fairchild C-119 *Flying Boxcars*, which had proven themselves in Indochina. There were at the time medium-weight cargo aircraft that could carry multiples of the *Dakota* load, could land on unimproved runways, were similarly easy to maintain, and were available at affordable prices. The obtainable aircraft of choice at the time was the Nord Aviation *Noratlas* with its two powerful Bristol Hercules 2,040-horsepower radial engines, each driving a Rotol four-bladed propeller. It was similar to the C-119 with its twin-boom nacelle-empennage construction and a large, pod-like fuselage slung under the high wing connecting the nacelle booms. This design was well conceived for operations under Spartan conditions in that the propellers were positioned to clear rough terrain on landing, and the landing gear were widely separated for stability. Further, its soft fat tires gave it ideal unimproved field capability. The cargo bay with its rear-opening clam-shell doors was positioned near ground level for easy

cargo handling. Its useful cargo load was 18,647 pounds.

The French air force had begun taking delivery of the military version of the *Noratlases*, the N-2501, in July 1951 and had eventually acquired a fleet of 228²⁸. The West German Luftwaffe was faced with a similar obsolescence in its cargo fleet of Ju-52s and C-47s, and it too chose the *Noratlases*. It eventually acquired a fleet of 187, 25 of which were manufactured in France, and 162 of the N-2501D model in West Germany²⁹. The Luftwaffe began disposing of its *Noratlases* as surplus in 1964.

A civil version of the aircraft, the N-2502, was offered by Nord Aviation with a small Turbomeca Marboré II turbojet added at each wingtip. It was adapted to the specifications of its two customers, and seven of the N-2502/N-2502A version were used by the Union Aéromartime du Transport (UAT), and three of the N-2502B version by CGTA - Air Algérie. Neither operator found much success in this civil adaptation of a military transport, and thus only ten were built.

When Portugal decided to augment its C-47 fleet with a heavier, more capable aircraft, it was offered six of the N-2502As by UAT³⁰. These aircraft were based in Douala, Cameroon, and had been operated in Francophone Africa under grueling and harsh conditions. They were flown to Le Bourget outside of Paris, where they were overhauled, and where the Portuguese acceptance pilots and maintenance personnel were trained during the first half of 1960. These six aircraft were deployed to Angola in November 1960 as part of Squadron 92 and began operations from Luanda.

In 1962, six more *Noratlases* were acquired from the Israeli Air Force and, after overhaul, were designated N-2502Fs. In the same year, the three N-2502Bs owned by Air Algérie were also added to the fleet. The primary drawback of the nine civil models was an absence of personnel doors in the rear of the fuselage for paratroop drops. This shortcoming was corrected with their first major overhaul at Alverca.

Over the years 1965-1970, thirteen N-2501Ds were acquired from the Luftwaffe, bringing the total acquisition to 28 *Noratlases*. On balance, the *Noratlases* delivered good service in the *ultramar* and was a tactical airlift mainstay. If it had a single weakness, it lay in its acquisition from four different sources and hence with four very different instrumentation and electronics suites. This caused significant difficulties for the aircrews and maintenance personnel in flying and maintaining the aircraft³¹.

The "Imperial Airline" from its inception in 1957 until its rudimentary but reliable functioning in 1960 was moved from concept to reality in three short years. It would be expanded and refined over the course of the war and would reach its optimum efficiency with the acquisition of the two B-707s in 1971. Deployment of the "Imperial Airline" followed a classic step-down pattern in which long-range transoceanic air routes terminated at a major airfield in each theater, and these in turn were connected by tactical transports to intermediate airbases. These short-field capable aircraft could also land on unimproved strips cleared from jungle and manned by small detachments to

provide close support of army units in the field. This network was built, adapted, improvised, and later expanded to address the widening threat as the conflict matured. Ultimately, there was an extensive air logistic system stretching from the *metrópole* to the *ultramar*, having been constructed at a pace that would appear to be beyond the capabilities of the relatively limited Portuguese resources. This system remains a testimony to “doing more with less” in extending the strategic reach of a nation and its armed force.



PORTUGUESE AFRICA

Transoceanic Air Routes of the Imperial Airline
Map drawn by the author

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- 1 Jorge M. Brochado de Miranda, "Palavras de Abertura" [Opening Remarks], *Infra-Estruturas Aeronáuticas em África* - Colóquio, VI Encontro da Associação da Força Aérea Portuguesa [Aviation Infrastructure in Africa - Colloquium, 6th Meeting of the Portuguese Air Force Association], proceedings of a conference held at the Academia da Força Aérea, Granja do Marquês, on 18 October 1997, 12.
- 2 Arquivo Histórico da Força Aérea, Informação n.º 226/57 in *A Força Aérea em África*, Lisbon, EMFA, 2ª Repartição, April 1959.
- 3 Rui Tavares Monteiro, "Transporte Aéreo na FAP, Do zero aos 707" [Air Transport in PoAF, from Zero to the 707], *Mais Alto* 283 (May-June 1993): 5.
- 4 Mário Canongia Lopes, "Os Últimos Skymasters - Aviões Quadrimotores de Transporte da Aviação Militar Portuguesa (1952-1976) - II Parte" [The Last *Skymasters* - The Four-Engined Air Transports of Portuguese Military Aviation (1943-1951), Part II], *Mais Alto* 325 (May-June 2000): 20-23.
- 5 Mário Canongia Lopes, "Os Liberators e os Primeiros Skymasters, Aviões Quadrimotores de Transporte a Aviação Militar Portuguesa (1943-1951), I Parte" [The *Liberators* and the First *Skymasters* - The Four-Engine Air Transports of Portuguese Military Aviation (1943-1951), Part I], *Mais Alto* 324 (March-April 2000): 34-40.
- 6 Mário Diniz, and Luís Proença, "Junkers Ju-52 N.º 6304: Da Alemanha ao Museu do Ar um Percurso de 73 Anos" [Junkers Ju-52 N.º 6304: From Germany to the Air Museum a journey of 73 years], *Mais Alto* 385 (May/June 2010): 39-44.
- 7 The fixed narrow-track main landing gear made the Ju-52 prone to bouncing from side to side on landing. Originally it was fitted with large spats to streamline the main wheels, but these were removed in the operational environment, as they quickly became clogged with sand and mud.
- 8 Mário Canongia Lopes, *Os Aviões da Cruz de Cristo* [Airplanes of the Cross of Christ] (Lisbon: Dinalivro, 2001), 298 and 333.
- 9 Lopes, "Os Liberators e os Primeiros Skymasters, Aviões Quadrimotores de Transporte a Aviação Militar Portuguesa (1943-1951), I Parte," 34-36.
- 10 José Krus Abecasis, "A Génese dos 'Transportes Aéreos Militares': As limitações, o ordem lógica e a competência técnica, 1947-1962" [The Genesis of the "Military Air

Transports”: The limitations, the logical order and the technical competence, 1947-1962], *Mais Alto* 285 (September/October 1993): 13-19. See also José Krus Abecasis, *Bordo de Ataque, Memórias de uma Caderneta de Voo e um Contributo para a História* [Attack Heading, Memories from an Aviation Log Book and a Contribution to History] (Coimbra: Coimbra Editora, 1985), 101.

11 Lopes, “Os **Últimos** Skymasters - II Parte” [The Last *Skymasters* - Part II], 20.

12 Mário Canongia Lopes, “Os **Últimos** Skymasters e os Searchmasters - Aviões Quadrimotores de Transporte da Aviação Militar Portuguesa (1952-1976) - III Parte” [The Last *Skymasters* and the *Searchmasters* - The Four-Engine Air Transports of Portuguese Military Aviation (1943-1951), Part II], *Mais Alto* 326 (July-August 2000): 20-23.

13 Monteiro, “Transporte Aéreo na FAP, Do zero aos 707,” 5.

14 Lopes, “Os Últimos Skymasters e os Searchmasters - Aviões Quadrimotores de Transporte da Aviação Militar Portuguesa (1952-1976) - III Parte,” 20-23.

15 Monteiro, “Transporte Aéreo na FAP, Do zero aos 707,” 5.

16 *Ibid.*, 6.

17 Depoimento do Gen. Tavares Monteiro em 05 Abril de 1995 Sobre a Ponte Aérea Metrópole-Ultramar [Deposition of Gen. Tavares Monteiro on 05 April of 1995 on the Air Bridge *Metrópole-Ultramar*], Livro de Actas 1997, item 6, page 35, annex III, Archivo Histórico de Força Aérea, Alfragide.

18 General Tomás George Conceição Silva, interview by the author, 3 April 1995, Lisbon. General Conceição Silva was Chief of Staff of the Portuguese Air Force from 1988 to 1991, and had extensive airlift experience in Africa.

19 The military version is the C-135 *Stratolifter*.

20 Monteiro, “Transporte Aéreo na FAP, Do zero aos 707,” 7.

21 Commander, 1st Air Region, “Resumo Estatístico das Missões Realizadas e Passageiros Transportados (Ida e Volta), 1972 e 1973” [Statistical Résumé of Missions Flown and Passengers Transported (Round Trip), 1972 and 1973], 30 September 1974.

22 Monteiro, “Transporte Aéreo na FAP, Do zero aos 707,” 7.

23 Commander, 1st Air Region, “Resumo Estatístico das Missões Realizadas e Passageiros Transportados (Ida e Volta), 1972 e 1973.”

24 Kaulza de Arriaga, *Sínteses* [Synthesis] (Lisbon: Privately published, 1992), 190. General Arriaga served as the Subsecretary of State for Aeronautics from 1955 to 1962.

25 Oliver Crawford, *The Door Marked Malaya* (London: Rupert Hart-Davis, 1958), 13-14. The term “P and O” refers to the Peninsular and Oriental Steam Navigation Company, a British shipping and logistics company that dated from the early 19th century, which is usually known as P&O. In March 2006, it was sold to Dubai Ports World; however, the P&O brand has been retained.

26 César Rodrigues, “Douglas C-47 ‘Dakota’ e C-54 ‘Skymaster’” [Douglas C-47 “Dakota” e C-54 “Skymaster”], *Mais Alto* 385 (May-June 2010): 35.

27 *Ibid.* See also Mário Canongia Lopes, “*Dakotas*: Aviões bimotores de transporte da Força Aérea Portuguesa -1944-1977, II Parte” [*Dakotas*: Twin engine transport aircraft of the Portuguese Air Force -1944-1977, Part II], *Mais Alto* 311 (February-March 1998): 34-35. One C-47, for example, was due for its 300-hour inspection at the OGMA works in Alverca in mid-1965 and was converted at this time into an “intervention aircraft” or “*avião de intervenção*.” This transformation into a night bomber or “*bombardeiro*”

nocturno” was made by attaching racks for six 50-kilogram and two 200-kilogram general purpose bombs under the wings. Storage was also built into the cargo bay for twenty 15-kilogram fragmentary bombs and 50 magnesium illumination flares, both of which could be launched from a free-fall chute. The pilot seat was also equipped with a bombsight. When work was completed in October 1965, the aircraft was flown to Guiné and participated in operations in December over Cacine and Cantanhez. Later in August 1966, it flew in support of operations at Medina de Boé and in the region of Cassebeche. Such fire support operations continued for the C-47s in Guiné until 1975.

28 Mário Canongia Lopes, “*Noratlas* 1960-1977: Aviões bimotores de transporte da Força Aérea Portuguesa, I Parte” [*Noratlas* 1960-1977: Twin engine transport aircraft of the Portuguese Air Force, Part I], *Mais Alto* 312 (April-May 1998): 3-4.

29 Ibid.

30 Of the seven purchased by UAT, one was destroyed in an accident near Boukpayanga, Central African Republic, in March 1959, and the remaining six were subsequently made available to Portugal.

31 Rui Tavares Monteiro, “Recordando os *Noratlas*” [Remembering the *Noratlas*], *Mais Alto* 279 (September-October 1992): 12.