

## MILITARY AEROMEDIC RESCUE SERVICE: A PORTRAIT OF OPERATIONS IN AMAZONAS

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**Abstract:** Introduction: Aeromedical aviation plays a crucial role in providing emergency and specialized healthcare in remote locations, difficult-to-access areas and in disaster situations. Using aircraft equipped with advanced medical technology, trained teams can quickly reach critically ill patients, providing immediate care and stabilization during transport to appropriate medical facilities. Objective: To describe and illustrate the preparation that the state of Amazonas is implementing to improve its air rescue network. Methodology: Bibliographic review and experience relate from a professional in the field. Discussion: The geographic configuration of the metropolitan area of Manaus makes the need to strengthen the air modal in rescue operations indisputable, thus, the state and CBMAM are committed to strengthening and operationalizing this type of rescue and transport system Results: aeromedical aviation it is a valuable resource that complements terrestrial healthcare services, ensuring quick and efficient access to essential medical care, especially in emergency situations.

**Keywords:** Aviation, Rescue, Aeromedic, Firefighter

## **INTRODUCTION**

Aeromedical aviation has been used in several states in the union for emergency and specialized healthcare in remote locations, difficult-to-access areas and in disaster situations. In these locations it has been vital for saving lives in situations where time is of the essence, such as in serious accidents, natural disasters or for transporting patients with delicate medical conditions to receive specialized treatment in reference hospitals.



CITIES	POPULATION (2024)	DISTANCE TO MANAUS (KM)	TIME OF FLIGHT (100 KT)
NOVA OLINDA DO NORTE	38.665	135	43,8'
BORBA	42.328	137	44,4'
CAAPIRANGA	13.482	137	44,4'
ANAMÁ	13.956	163	52,8'
ANORI	21.937	194	1h03'
BERURI	20.503	172	55,8'
<b>TOTAL</b>	<b>150.871</b>		
<b>% to the total population of Amazonas</b>	<b>3,53%</b>		

Table 1: Municipalities Possibly Included in the Aeromedical Plan

Source: Govern of Amazonas

CITIES	POPULATION (2024)	DISTANCE TO MANAUS (KM)	TIME OF FLIGHT (180 Km/h)
AUTAZES	41.582	111	36'
CAREIRO CASTANHO	30.792	87	28,2'
CAREIRO DA VÁRZEA	19.638	22	7,2'
IRANDUBA	60.993	26	8,4'
ITACOATIARA	103.598	174	56,4'
ITAPIRANGA	10.162	339	109,9'
MANACAPURU	101.883	72	23,4'
MANAQUIRI	17.107	55	18'
MANAUS	2.063.537	-----	-----
NOVO AIRÃO	15.761	118	38,4'
PRESIDENTE FIGUEIRÊDO	30.668	118	38,4'
RIO PRETO DA EVA	24.936	59	19,2'
SILVES	11.559	336	108,9'
<b>TOTAL</b>	<b>2.532.226</b>		
<b>% to the total population of Amazonas</b>	<b>64%</b>		

Table 2: Flight time from the capital (Manaus) to municipalities

MUNICÍPIO	2010	2011	2012	2013	TOTAL
<u>Itacoatiara</u>	709	691	974	149	<b>2523</b>
<u>Manacapuru</u>	-	602	-	-	<b>602</b>
<u>Presidente Figueiredo</u>	140	749	615	155	<b>1659</b>
<u>Novo Airão</u>	211	177	223	-	<b>611</b>
<b>TOTAL</b>	<b>1060</b>	<b>2219</b>	<b>1812</b>	<b>304</b>	<b>5395</b>

Table 3: Aeromedical Services Demand on 2014:

Source: Secretarias Municipais de Saúde

## OPERATION

The service will initially only operate during the day. The activation takes place via phone 192, 193 or another emergency phone. A medical moderator will triage incidents involving trauma victims. And the Fire Officer commanding the aircraft will triage incidents in support of the Fire Department and other agencies.

## MILITARY SERVICE CREW

The Military Fire Brigades (CBM) must operate in 09 (nine) major thematic areas. It will be made up of 2 pilots, 5 operational crew, 1 doctor, 1 nurse or nursing assistant and 2 ground support crew. CBMAM has 5 helicopter pilots, which to start the service, also meets the need for more than a dozen agents regularly trained for this activity. The medical team is in charge of SUSAM/SAMU.

Existing Agreements:

CIOPAER/AC x SAMU: R\$ 27,000.00/month

Flying or not limited to 15h/month

CBMRO x SAMU: R\$ 15,000.00/month

CBMRO x SESA: R\$35,700.00/month

No limit on hours/month

CBMSC x SES: R\$75,000/month

No limit on hours/month

CBMDF X SEC SAUDE: R\$ 27,000.00/  
month per Helicopter

No limits on hours/month

CBMPA X SESA: R\$ 165,000.00/month

Limited to 33h/month



Figure 3: Northern States that have an Aeromedical Service:

What is needed to get started?

Equipped aircraft; Crew; Trained Medical Team; Hangar; Helipads in Hospitals; Involvement of professionals.

## AIRCRAFT



We discuss here which is the best option: **Buy, Rent or Make** the most of what you have? The same applies to hangars: Make the most of what we have? Government Hangar at the flying club or Fire Protection Section at Eduardo Gomes Airport; **To hire?** Eduardo Gomes Airport or Aeroclube; **Ramp up?** Eduardo Gomes Airport, Aeroclube or other suitable location for the activity.

## HELIPADS

It is necessary to build or facilitate an approved location for landings and takeoffs in the main hospitals: João Lúcio; August 28th; FCECON; Tropical Hospital; Delphina Aziz Hospital; Hospital Platão Araújo.



Figure 04: Aeromedical SOS

## INVOLVEMENT OF PROFESSIONALS

Inform and publicize within the benefiting Municipalities how the service will operate, how it will be done and what are the cases for activating the aircraft. In the HPV prevention campaign for women, the Governor was asked by a reporter about the investment made by the State in this campaign. He replied:

“There is no way to measure the value of a life! Therefore, every investment pays off when we save someone.” (Omar Aziz – Governor of Amazonas)

OCORRÊNCIAS ATENDIDAS POR NATUREZA - ARCANJO-01-		
NATUREZA DA OCORRÊNCIA	Nº	%
Acidente de Trânsito	187	37
Afogamento / Arrastamento / Ac Náutico	28	06
Emergência Córdio-Vascular / Respiratória	79	16
Queda de Nível / Fratura / Trauma	80	16
Transporte Emergencial	59	12
Outras Emergências	67	13
<b>TOTAL</b>	<b>500</b>	<b>100</b>

Período: 20 Jan à 19 Abr e 10 Mai à 18 Nov (2010)  
 Total: 500 Ocorrências Atendidas  
 Total de Horas Voadas: 334 Horas/Voo  
 Total de Vítimas Atendidas: 414 pessoas

Fonte: Batalhão de Operações Aéreas/CBMSC e SAMU-SC (2010)

Figure 5: Airplanes of Rescue



Figure 6: Airplanes of Rescue

Military air medical rescue is considered one of the fastest and most efficient ways to provide emergency assistance in isolated regions with limited access by land.

CETRAER (Aeromedical Training Center) is considered a reference institution in terms of technical training for healthcare professionals and offers advanced certification and professional updates.



Figure 7: Training by CETRAER

Source: Google



Figure 8: Participation of the CBMAM team in the aeromedical rescue course (Brasília)

Source: Personal Collection



Figure 9: Participation of the CBMAM team in the aeromedical rescue course (Brasília)

Source: Personal Collection

## DISCUSSION

The regional context favors the use of helicopters over jet aircraft. The state has many areas that are difficult to reach and small inhabited centers in widely dispersed locations, a different reality, for example, from what is seen in reference literature on more densely populated states such as Paraná (PAZZA, 2023).

Table 2 and the map of the metropolitan region of Manaus (Figure 2) allow us to visualize the assistance area, where we can serve a radius of 185 km around the capital, including being able to include other municipalities, as long as they are within this radius. Therefore, if we combine the municipalities that make up the RMM with the municipalities that are within a radius of 185 km, we will reach 5 more municipalities. The operating radius of 185 km would theoretically be because the helicopter we currently operate has 3 hours of autonomy to operate without refueling, this would give up to 1 hour to go, 1 hour to return, 30 minutes to carry out some operation and we would still have 30 minutes of security.

Specific training for the health team for aeromedical work will be provided by the UAP (Safety Aviation Unit). This training can be done here in Manaus or in partnership with a federation unit. The pilot's role is to guide the aircraft safely to its destination in compliance with current legislation. While the aerotactical operator will provide the necessary safety for the other crew members, acting directly on landing and takeoff safety, especially in restricted areas. As for pilots and crew members, their training and qualifications will be carried out in the same way, that is, in the unit itself or in another unit outside the state.

From a military perspective, as a military firefighter within this context, this type of air medical service is another mission that the

firefighter is involved in. He already carries out ground rescue in the city. We can add more to this service for the benefit of our population. With the aerial vector we can reach an isolated location to assist those in need. So it would be a timely service, within medical legislation and the SUS itself, in which several states of the federation already provide aeromedical services and the results and population satisfaction with the service are excellent.

Regarding the SUS, once an agreement is signed, it will become a source of resources to help maintain the service, as is the case with several aerial military fire units spread across Brazil. Likewise, we can enter into an agreement, for the same purpose, with the Amazonas Health Department.

Bringing it to Brazil, Amazonas is one of the states that is not yet implementing this aerial service system, and the legislation itself suggests its implementation in populations above 2 million inhabitants. However, when the government or municipality needs it, they hire private airline companies to provide such a service, using, for example, planes for transport.

In municipalities where there is no runway for planes, the idea is to cover these areas where the private system cannot reach, at a low cost and at no cost to the population, who would benefit from the system. In the municipality of Novo Airão, which for example does not have an approved runway, our team was there to look for a patient with a very serious heart problem and we landed the helicopter in front of the hospital. The ambulance moved about 50, 70 meters, we put him in the helicopter and brought him to Manaus. We managed so that the ambulance was already there at the flying club waiting and transported him to the hospital in the capital. A couple of days later, the victim's relative informed us that if it hadn't been for the speed of this care, he might not have survived and suffered a heart attack,

reducing the likelihood of survival.

This proposal was created very quickly and objectively at the time of the 2014 World Cup, where the capital was one of the venues. As shown in Table 3, a statistical survey was carried out on the use of land transport in incidents, in 4 municipalities in the metropolitan region, one in the north (Presidente Figueiredo), another in the east (Itacoatiara), another in the west (Novo Airão) and another in the south (Manacapuru), between the years 2010-2013. A total of more than 400 incidents were observed, including the municipalities, which alerted the team that there would probably be days when it would be necessary to carry out two transports in one day. The unforeseen events such as the collapse of a bridge in Itacoatiara, which isolated the municipality and the airstrip, which is far from the municipality, at the time, were impractical for landing a fixed-wing aircraft and only the helicopter could get there. . But despite the setbacks, rescues were carried out, which proves the versatility of using the helicopter in this type of activity. Another service we performed, for example, was for a baby who was born prematurely, in the municipality of Presidente Figueiredo, brought inside the incubator, and landed in the parking lot of the Ana Braga maternity ward in the capital.

From the beginning of the study in 2014 until the current year, there have been 5 trained aero-tactical operators, firefighters, in addition to a trained health team of doctors, nurses,

in other words, there will be no shortage of specialized human material to carry out this service. Soon the cost becomes even lower, the system has HR, qualified people to work who are now part of the CBMAM staff. In fact, the service can operate in different ways, in addition to the firefighter's constitutional missions, when it comes to aeromedical, it can also transport organs, work in support of civil defense, in support of vaccination, fires, etc.

## **FINAL CONSIDERATIONS**

RAM (Military Aeromedical Rescue) is an essential activity for the Amazon context as it enables help in a challenging scenario. With the use of the helicopter, we can serve remote and difficult-to-access areas, as long as it is within a 180 km radius, and does not have a landing or take-off runway, providing survival for the victims treated. It is worth noting that this service adds to the transport that is already provided by private airlines, which use the plane. They would continue to serve municipalities that are outside this range of operations.

With this, the population only stands to gain, the presence of the government would reach further, we would be able to reduce the response time in responding to incidents, especially because the 14 municipalities that make up the 180 km radius of the service's operations, concentrate almost 68% of the population of Amazonas.

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