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The use of special purpose aircraft in different sectors of the national economy under the current conditions in ukraine

The article considers the use of special purpose aircraft in different sectors of the national economy while providing assistance to patients and conducting search and rescue and emergency rescue works in the event of natural disasters.

Ukraine is one of the few states which carry out a complete cycle of processing, manufacturing and operating the most advanced special purpose aircraft in the modern world. Today, more than eighty aircraft have been designed. They perform a wide range of tasks. They are used to control pests in agriculture and forestry, plant nutrition, airspace monitoring and Earth remote sensing, fire fighting, aerial photography, assistance to sick and wounded, salvation of those who suffer from disasters, and various tasks in space programs.

Ukraine's fire-fighting aircraft is represented by An-32P aircraft of the modern generation, which was created on the basis of AN-32 – the only aircraft in the world, designed for aerodromes located at an altitude of over 4.000 meters. This machine is capable of throwing at once 8 tons of flame-retardant liquid from the two groups of tanks at a height of 40-50 meters [1].

The idea of creating a fire-fighting aircraft based on An-32 appeared in the 80s of the last century. The re-equipment of the serial An-32 into the fire option began in 1992. The first AN-32P flight was carried out on February 16, 1993, navigated by the crew consisting of the commander A. Slobodianiuk and the co-pilot V. I. Tersky, and on March 15 of the same year, the first discharge of water was performed. And the first public demonstration of the aircraft took place in the summer of 1993 at Le Bourget and MAX aeroshows.

In the autumn of 1993, before the completion of the tests, the plane was used to extinguish a forest fire in the Crimea. This case demonstrated the high efficiency of the AN-32P in combating large forest fires.

In June 1994, the An-32P tests were completed. Three of An-32P had been assembled by this time. In July they were sent to Portugal to fight the fire. In total three crews made 545 flights. On July 6, one of the planes fell into a plane crash. Still, in March 10, 1995, the aircraft received a certificate of airworthiness [5].

Since 2008, 4 An-32P aircraft are part of the Special Airborne Division of the SESU. They were involved in providing assistance during forest fire extinguishing on the territory of the Voronezh region on August 3, 2010 [5]. On November 26, 2016 they set about to extinguish fire in Israel near the settlement of Umm Al-Fahm [3]. On July 19, 2017, an An-32P firefighter of State Emergency

Service of Ukraine arrived in the city of Tivat in Montenegro to assist in the extinction of large-scale forest fires [3].

However, the AN-32P is not just a firefighter. Rather, it should be considered as a comprehensive response to various emergencies. After all, the aircraft is able not only to extinguish the fire, but also deliver the rescuers and urgent cargoes to the place of disaster, evacuate the victims and conduct air monitoring of the accident area.

The peak of the development of sanitary aviation coincided with the second half of the twentieth century, while the experience of creating a specialized medical aircraft was needed after a quarter century [4]. In the early 2000s, experts from the Military Medical Center of the Ukrainian Air Force, located in Vinnytsia, offered to create a "flying hospital", the need for which was based on the experience of armed conflicts in the world in the past decades. Initially, it was proposed to create it on the basis of An-30, but because of the high cost of this aircraft, the choice fell on the cheap An-26. In 2001, one An-26SH aircraft from the Ukrainian Air Force was transferred to the Odessa Aircraft Repair Plant, where the aircraft underwent a corresponding re-equipment. Its cost was about 1 million hryvnias, but the funds were off-budget [5]. Four departments were equipped in the cabin of the aircraft: operational, intensive care, household and compartment for medical staff. The medical configuration of An-26 can provide evacuation of four lying severely injured or 12 seated patients. The reconfigured aircraft was named An-26 "Vita" (meaning "Life" in Latin) and the flight number "25" became part of the 456th Air Force of the Ukrainian Air Force in 2002. A military medical team was assigned to the crew of the aircraft. In the same year "Vita" began to be used for its intended purpose. According to the information released on July 15, 2005, during the three years of service, the aircraft carried out 101 sorties, during which medical aid was provided to 160 people. Based on the positive experience of operating the An-26 Vita, the leadership of the Ministry of Defense of Ukraine has planned further development of medical aviation.

In accordance with the Program for the Development of Medical Support of the Armed Forces of Ukraine for 2006-2011 it was envisaged to create a mixed aviation and transport subdivision of sanitary aviation consisting of two An-26 (An-32, An-70) and six helicopters on the basis of the 456th Aviation Brigade. The unit was subordinated to the Director of the Department of Health of the Ministry of Defense of Ukraine. However, due to lack of funds, this part of the program of development of the medical support of the Armed Forces of Ukraine for 2006-2011 was not implemented in full, and the An-26 "Vita" aircraft remained the only specialized aircraft of the Air Force.

In the second half of 2007, the An-26 "Vita" was maintained, received navigational equipment that complies with the ICAO requirements and was certified for flights on international routes. Along with the implementation of sanitary-evacuation flights, the An-26 "Vita" was involved in international exercises.

However, with the onset of the armed conflict in eastern Ukraine in the spring of 2014, the situation is radically changing, with the only reanimation-operating aircraft having to work full-time. Anatoly Shudrak, Chief Surgeon of the Ministry of Defense of Ukraine, in an interview published on June 14, 2014, noted

that the An-26 “Vita” makes two sorties daily, evacuating injured to medical institutions in the central and western regions. During the first three months of the antiterrorist operation, this aircraft evacuated more than 300 wounded and sick soldiers to military medical institutions. The successful use of the An-26 Vita and the large amount of necessary air medical transportations has led to the expansion of the sanitary aviation fleet. In November 2014, the Chief of the Military Medical Department of the Ministry of Defense of Ukraine, Colonel V. B. Andronatiy, announced his intention to manufacture another similar aircraft for the Air Force. The new aircraft was equipped not in the intensive care unit version, but in the sanitary-evacuation configuration. It can transport 24 wounded on stretchers. The medical equipment is provided with a resuscitation kit to assist in emergencies. All medical and sanitary equipment can be dismantled within an hour and continue to use the AN-26 as a transport aircraft. The redesigned airlifter was named “Riatunchyk” (the so called 'Rescuer') and got the flight number “08”. On May 22, 2015, this aircraft was transferred to the 15th Brigade of Transport Aviation (Boryspil). Russian aggression encouraged the emergence of specialized medical planes not only in the Armed Forces of Ukraine, but also in other state structures. In particular, in 2015, an An-26 Special Aircraft Detachment of the State Emergency Service of Ukraine (SESU) was re-equipped into the medical version.

The re-equipment, combined with major repairs, was completed by the aircraft repair plant “Plant 410” in Kyiv. The aircraft can transport two seriously ill (wounded) in special resuscitation modules, as well as six patients on stretchers or 14 seated. If you compare this aircraft with the one for medical purposes used by the Ukrainian Air Force, it can be noted that it occupies an intermediate position: An-26 Vita is a surgery and intensive care unit y aircraft, the An-26 Riatunchyk is a sanitary-evacuation aircraft and An-26 SESU is a resuscitation and evacuation one.

The application of aviation in agriculture has a particularly important practical significance. The implementation of aviation works in agriculture consists in the introduction of agrochemicals; pest and disease control; biological protection of plants from pests of crops; aerospace agriculture and other types of aviation works. As you can see, the range of aviation technology is considerable and diverse. However, the dynamics of the volume of aviation agricultural productivity in the last decade shows that the potential of the opportunities of Ukraine’s agricultural aviation is not used in its entirety.

Currently, 40 air companies and airlines of various forms of ownership are registered in Ukraine, which carry out aviation works in the national economy, 30 of them have licenses for performing aviation-chemical works and provide services to agricultural producers. According to the current classification, light aircraft (LA) of agricultural configuration which have a certificate of LA type and valid certificates of airworthiness are used for agricultural works, namely: light aircraft AN-2; ultra-light planes NARP-1 and X-32 (“Bekas”); Ka-26 and Mi-2 helicopters, which are equipped with agricultural facilities [6].

The AN-3SH aircraft is the further development of the well-known An-2 aircraft, which has been operating in many countries around the world for 50 years. The distinctive feature of AN-2 is its simplicity, high reliability, unpretentiousness and the possibility of exploitation from ground platforms in the length of only 500

m. The modification of An-2 in An-3 is to replace the more powerful turbo-propeller engine, internal equipment and improved hinged agricultural equipment.

Many years of experience in agricultural aviation in Ukraine proved that the aviation method for biological and economic productivity is not inferior to terrestrial, and sometimes even exceeds it.

Thus, the use of domestic combat support aviation is important in various sectors of the economy, providing emergency medical care to the population and conducting search-and-rescue and rescue-and-emergency operations in the event of natural disasters.

References

1.Вісник Національного університету цивільного захисту України. Електронний ресурс. – Режим доступу: http://repositsc.nuczu.edu.ua

2.Державна служба України з надзвичайних ситуацій. Електронний ресурс. – Режим доступу: http://www.dsns.gov.ua/ua/Ostanni-novini/55087.html

3.РІА Новини України. Електронний ресурс. – Режим доступу: https://rian.com.ua/society/20170719/1025966666.html

4.Державна авіаційна служба України. Електронний ресурс. – Режим доступу:http://www.dsns.gov.ua/ua/Upravlinnya-aviaciyi-ta-aviaciynogo-poshuku-i-ryatuvannya.html

5. Сегодня.ua. Електронний ресурс – Режим доступу: https://www.segodnya.ua/criminal/ukrainckie-camolety-tushat-pozhary-v-roccii.html

6.Лагуточкін В. Сільськогосподарська авіація України // Пропозиція. Електронний ресурс – Режим доступу: http://propozitsiya.com/ua/silskogospodarska-aviaciya-ukrayini