International Civil Aviation Organization

WORKING PAPER

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COMMITTEE A

Agenda Item 4: Implementing the global air navigation system and the role of planning and implementation regional groups (PIRGs)
4.4: Implementing search and rescue (SAR) processes and procedures

CONTRIBUTION OF ASECNA TO THE GRICAS PROJECT (Galileo MEOSAR RLS Improvement for Better Civil Aviation Security)

(Presented by the Agency for Air Navigation Safety in Africa and Madagascar (ASECNA) on behalf of its Member States[2])

EXECUTIVE SUMMARY

This information paper presents the contribution of the ASECNA in the GRICAS project (Galileo Middle Earth Orbit Search and Rescue (MEOSAR) Return Link Service (RLS)) Improvement for Better Civil Aviation Security) introduced by the European Commission, through the research and innovation program on the 2020 horizon.

This information paper also highlights, the cooperative approach between several public and private actors of the domain of the civil aviation and of the spatial, the innovative projects of research and development to improve the safety of the international civil aviation in connection with the strategic directions of the ASECNA.

1. INTRODUCTION

1.1 The Contracting States of the International Civil Aviation Organization (ICAO) are requested, in accordance with Article 25 of the Chicago Convention and Annex 12 to the Chicago Convention, to set up an organization allowing to supply Search and Rescue (SAR) services for any aircraft in distress in their territory.

[1] English and French versions provided by ASECNA
[2] Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Equatorial Guinea, France, Gabon, Guinea-Bissau, Madagascar, Mali, Mauritania, Niger, Senegal, Togo

1.2 The unfortunate events of these last years concerning the flight AF447 of Rio-Paris, the flight MH370 of Malaysia Airlines or other events such as the flight of Air Algeria on the route Ouagadougou-Alger highlighted the necessity to develop new solutions in the field of SAR.

1.3 In response to these tragedies, ICAO, in collaboration with the industry, developed the Global Aeronautical Distress and Safety System (GADSS) concept of operations that addresses all phases of flight, under all circumstances including distress. The GADSS will maintain an up-to-date record of the aircraft progress and, in case of a crash, emergency landing, the location of survivors, the aircraft and recoverable flight data.

1.4 In line with the requirements of ICAO concerning SAR services, the European Commission, through the research and innovation program on the 2020 horizon, introduced the project called GRICAS (Galileo Middle Earth Orbit Search and Rescue (MEOSAR) Return Link Service (RLS) Improvement for Better Civil Aviation Safety).

1.5 In Africa, ASECNA participates in this project within the consortium led by Thales Alenia Space and constituted by Pildo Labs, ELTA, Aéroclub Barcelona Sadabell, British Light Aviation Centre Limited and STMicroelectronics.

1.6 The activities of the GRICAS project are made within the framework of the development of a solution for the autonomous distress tracking (in-flight distress tracking) of the GADSS defined by the EUROCAE.

2. DISCUSSION

GRICAS project

2.1 The GRICAS study began in February 2016 and finished in April 2018. Its development leans on the performances and the services offered by the MEOLUT Next Solution, which were developed by Thales Alenia Space and are in accordance with the needs of SAR for aeronautics.

2.2 The Project also leans on the recommendations of ICAO in favour of the development of an airborne autonomous alarm system allowing to identify in-flight distress situations.

2.3 The global objective of the GRICAS project is to propose and demonstrate innovative and global solutions based on the MEOSAR system to improve the safety and security of air navigation. GRICAS also proposes to experiment and validate a set of innovative operational procedures for in-flight activation of airborne beacons using the Galileo SAR service.

The concept of operations proposed by GRICAS project

2.4 The concept of operations proposed for GRICAS is composed of 3 sub-systems:

a) aircraft sub-system: monitored sub-system;

b) MEOSAR sub-system: distress situation signals; and

c) operational sub-system: makes decisions and communicates them to rescue teams if needed.

2.5 The GRICAS concept of operations promotes the integration of the SWIM in information management during distress alerts as a complementary service to the existing communication link and information sharing system of COSPAS-SARSAT distress alert chain of operation.

Demonstration tests for the new second generation distress beacons

2.6 The demonstration tests of the GRICAS concept of operations and the validation of the performances of the ELT-DT made in Europe (Toulouse and Barcelona) and in Africa (Dakar) with the Medium Earth Orbit Local User Terminal (MEOLUT)-Next active antenna were satisfactory in terms of precision and location.

2.7 With regards to Africa, ASECNA had organized in February 2018, in Dakar, operational tests of the new second generation distress beacons for commercial aviation. The results were satisfactory.

2.8 The performances of the new second generation distress beacons are excellent and significantly better that the COSPAS-SARSAT specification T.019 of 5 km in 95 per cent, is less of 1 km in 95 per cent.

Contribution of ASECNA for the GRICAS project

2.9 The roles of ASECNA as full member of the consortium of the GRICAS project consist of:

a) collect and analyse the needs and requirements of the users of the air spaces of ASECNA (RCC, Pilots, airline companies, air traffic controller);

b) participate in the definition and the development of the operational concept taking in consideration of the real needs for Africa;

c) provide its in-flight check aircraft for the tests of the new distress beacons in Dakar; and

d) ensure the dissemination of the results of the tests to its Member States.

GRICAS project advantages

2.10 Besides the publication of a document of innovative and ambitious operational concept, the consortium developed within the framework of the MEOSAR approach to the COSPAS-SARSAT system, the distress beacon, called ELT-DT, has the capability of being activated automatically or manually during flight in case of detection of an abnormal situation.

2.11 This GRICAS beacon has the capability of being remotely activated through the “Return-Link Galileo”, allowing for immediate location of the aircraft, identifying the problem on board and rescuing the passengers and the crew. The global system, combining the precision of the location of the aircraft with the speed of intervention of bodies of rescue, will allow to save human lives.

3. CONCLUSION

3.1 ASECNA salutes the cooperative approach which allowed several specialized structures to combine their know-how to propose to the global aeronautical community, the innovative operational solutions in the field of SAR.

3.2 The African States that would like to benefit from this innovative technology should implement MEOLUT stations and MCC in their air spaces.

3.3 The implementation of the GRICAS Project in the AFI Region and in other regions is a major opportunity to improve the efficiency of the SAR services in particular, the management of aircrafts in abnormal situations and in distress. GRICAS is thus, an operational solution for the SAR services that will enable saving more lives.

3.4 The Conference is invited to take note of the contents of this information paper.

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