International Civil Aviation Organization

The Twenty-Second Meeting of the APANPIRG ATM/AIS/SAR Sub-Group (ATM/AIS/SAR/SG/22)

Bangkok, Thailand, 25 June – 29 June 2012

Agenda Item 5: Provision of ATM/AIS/SAR in the Asia/Pacific Region, including associated CNS matters

SEARCH AND RESCUE USE OF REMOTELY-PILOTED AIRCRAFT (RPA)/UNMANNED AIRCRAFT SYSTEM (UAS)

(Presented by the United States of America)

SUMMARY

ICAO has begun the task of developing Standards and Recommended Practices (SARPs), Procedures for air navigation services (PANS), and guidance material related to remotely-piloted aircraft (RPA) and their associated systems. Also, many States, regional bodies and standards-making organizations are working to develop regulations and technical specifications related to RPA. The Asia-Pacific region, and search and rescue (SAR) in particular, can benefit from phasing in the lower cost capabilities offered by RPA and unmanned aircraft system (UAS) technology.

Strategic Objectives:

A: ***Safety*** *– Enhance global civil aviation safety*

Global Plan Initiatives:

GPI-1 Flexible use of airspace

1. INTRODUCTION

1.1 Now is the time to consider how to make use of the capabilities offered by remotely-piloted aircraft (RPA) and unmanned aircraft system (UAS) technology. (Note: *Circ 328, Unmanned Aircraft Systems (UAS),* contains explanatory information related to remotely-piloted aircraft systems.) RPA capability can be launched from land or from vessels at sea. Many different tasks could be performed by this technology, and search and rescue (SAR) should be a major part of this discussion as national agencies determine how a State may want to implement this capability.

1.2 ICAO's Unmanned Aircraft Systems Study Group (UASSG) and several Panels of the Air Navigation Commission are actively engaged in developing SARPs to address the full range of issues to resolve so that RPA/UAS can be introduced in a logical, phased manner over the next several years. Concurrently, many States, regional bodies and standards-making organizations are working to develop regulations and technical specifications related to these same issues. The goal is to have a complete regulatory framework in place such that when the technological advances are achieved, RPA systems will be able to integrate with manned aircraft in non-segregated airspace and at aerodromes. This methodical approach will enable States to decide what they want the RPA to be able to do, allow manufacturers to design the RPA to meet those requirements, and hopefully provide the time for the State to obtain funding and the equipment itself.

1.3 Until recently, RPA supported military and security operations, but that is rapidly changing – this technology now promises new ways for government agencies to increase efficiency, save money, enhance safety, and save lives. RPA should be considered as a means to address gaps in SAR capability, a deficiency common among many States around the globe. RPA could provide a lower cost alternative to long range aircraft as detailed in the ICAO Regional Air Navigation Plan; serve as a long-range search platform with good loitering time; conduct electronic searches; and, possibly provide aerial delivery of life support supplies and equipment.

2. DISCUSSION

2.1 RPA come in a variety of shapes and sizes, and perform a variety of tasks. They can be land-based or sea-based. This capability allows government agencies to consider new ways to increase efficiency, save money, enhance safety, and save lives. Uses for RPA include situational awareness, aerial photography, monitoring environmental conditions, protecting borders and ports, communications relay, surveying land and crops, and more. National authorities should anticipate eventual approval for the use of RPA and start planning on how to make best use of this capability, particularly in the conduct of SAR.

2.2 SAR authorities need to work with their respective civil aviation authorities to ensure that SAR needs are given due consideration. It is recognized that the general use of RPA needs attention to ensure its safe, secure and efficient integration into non-segregated airspace, but national authorities need to work concurrently to make quick use of this capability once the integration is attained. As in other ICAO regions, Asia-Pacific has States which find it difficult to meet their SAR responsibilities within their SAR regions, particularly regarding long distances to the search area and the need for long searches or remaining on scene to assist. RPA can be a lower-cost method to fix this deficiency.

2.3 In the United States, the U.S. Coast Guard is responsible for aeronautical and maritime SAR in the maritime U.S. SAR regions – including oceanic and coastal waters. The U.S. Coast Guard also performs other civil missions including, law enforcement, fisheries enforcement, and pollution response. The RPA could be used to cover many missions for the U.S. Coast Guard or it could also be used in support of other U.S. civil agencies, such as customs, immigration, law enforcement and others. Using RPA for multiple missions and/or by multiple agencies may help establish justification to obtain as well, as to further reduce, or share costs of this new capability.

2.4 Tasks which can be performed by RPA for search and rescue include:

- direction finding on all distress frequencies and locating devices, including the 406 MHz distress beacon;
- investigate the distress alert (is it an actual distress or is it a false alert);
- rapid initial search to locate debris to decrease the size of search area;
- communications relay;
- deliver emergency supplies such as a radio or medicine;
- expand the search area covered by a vessel (the vessel could divert to investigate or perform the rescue); and
- search in coordination with an aircraft which could divert to investigate (that is, reduce the number of manned search aircraft or using them in the area where they are most needed).

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) note that a remotely-piloted aircraft (RPA)/ unmanned aircraft system (UAS) could be considered as a means to address gaps in search and rescue capability, a deficiency common among many States around the globe; and,

c) encourage member States to support the concept of remotely-piloted aircraft/unmanned aircraft systems and their usefulness for search and rescue, as appropriate, at the Air Navigation Conference scheduled for November 2012 in Montreal, Canada.

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