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## ASSEMBLY — 39TH SESSION

### TECHNICAL COMMISSION

#### Agenda Item 33: Aviation safety and air navigation monitoring and analysis

#### JAPAN'S SAFETY RULES ON UNMANNED AIRCRAFT (UA)

(Presented by Japan)

#### EXECUTIVE SUMMARY

In Japan, an amendment to the Aeronautical Act was passed on 11 September, 2015, to introduce safety rules on unmanned aircraft and the new rules came into force on 10 December, 2015. This paper introduces an overview of the new rules on unmanned aircraft in Japan. The conference is convened to exchange information on the rules of unmanned aircraft in each country.

<i>Strategic Objectives:</i>	This working paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	Not applicable
<i>References:</i>	

## 1. INTRODUCTION

1.1 On 22 April 2015, an unmanned aircraft (DJI Phantom2 Vision+) was found upside down on the roof of the Prime Minister's official residence. This incident alerted public on the danger of unregulated flights of this nature. And therefore, Japan has taken the necessary first steps on this matter to enhance the safety requirements and healthy development of the safe use of an UA and established new rules for this purpose.

1.2 Accordingly, an amendment to the Aeronautical Act was passed on 11 September 2015, to introduce safety rules on unmanned aircraft, which came into force on 10 December 2015.

## 2. DISCUSSION: OVERVIEW OF JAPAN'S SAFETY RULES ON UNMANNED AIRCRAFT

### 2.1 Definition

2.1.1 The term "Unmanned Aircraft" means any airplane, rotor-craft, glider or airship which cannot accommodate any person on board and can be remotely or automatically piloted (excluding those lighter than 200g). The weight of an unmanned aircraft includes the weight of its battery).

### 2.2 Prohibited Airspaces for such Flights

2.2.1 Any person who intends to operate an unmanned aircraft in the following airspaces is required to obtain prior permission from the Minister of Land, Infrastructure, Transport and Tourism.

- a) Airspaces over 150m above the ground level;
- b) Airspaces above the obstacle limitation surface\* around airports; and
- c) Above Densely Inhabited Districts (DID), which are defined and published by the Ministry of Internal Affairs and Communications.

\*Obstacle limitation surfaces: approaching surface, horizontal surface, transitional surface, extended approaching surface, conical surface and outer horizontal surface

### 2.3 Operational Limitations

2.3.1 Any person who intends to operate an unmanned aircraft is required to follow the operational conditions listed below, unless approved by the Minister of Land, Infrastructure, Transport and Tourism.

- a) Operating an UA during the daytime;
- b) Operating an UA within the Visual Line of Sight (VLOS);
- c) Maintaining a 30m operating distance between an UA and the persons or properties on the ground/ water surface;
- d) Do not operate an UA over event sites where many people gather;

- e) Do not transport hazardous materials, such as explosives, onboard an UA; and
- f) Do not drop any objects from the UA.

## 2.4 Exceptions

2.4.1 Requirements as stated in “Prohibited Airspaces for Flight” and “Operational Limitations” are not applied to flights conducted during search and rescue operations by public organizations in case of accidents and disasters.

## 2.5 Penalty

2.5.1 If the above rules are violated, the unmanned aircraft operator is liable to be fined up to 500,000 yen.

## 2.6 Permissions & Approvals

2.6.1 The operator is required to submit an application seeking permission or approval to the Ministry of Land Infrastructure, Transport and Tourism at least 10 days (excluding Saturdays, and holidays) before the date he/she wishes to fly an unmanned aircraft.

2.6.2 If the operator can demonstrate that the operation can be safely conducted, he/she may receive the permission or approval limited to a period of 1 year, even without specifying the flight route of such an unmanned aircraft.

## 2.7 Safety Standards

2.7.1 The safety standards are respectively set to specifications and performances of the unmanned aircraft, required skills and knowledge of the operator, and the systems and procedures for the flight of the unmanned aircraft. The standards consist of minimum standards and additional standards for each flight situation, such as operations above DID during night-time, BVLOS, etc..

2.7.2 Unmanned aircraft flights above the airspaces of a third party is not allowed, unless the flight satisfies strictly specified requirements.

2.7.3 The minimum standards are outlined as follows:

### 2.7.3.1 Specifications and Performances of the UAs

- a) Not to have any unnecessarily sharp parts;
- b) The status of fuel and battery be checked;
- c) To be controlled stably during the flight, departing and landing without any special control skills nor requiring excessive attention; and
- d) (For automated flights) Allowing the operator to intervene in case of an emergency.

### 2.7.3.2 Skills and Knowledge of the Operator

- a) To have the UA operating experience of more than ten hours;
- b) To have necessary knowledge of the Aeronautical Act , meteorology, safety functions of the UA (e.g. fail-safe functions), and checking procedures according to operator's manual of the UA;
- c) To have skills to stably control the UA without GPS signals; and
- d) (For operation of an automated UA) To have skills of intervention in case of an emergency.

#### 2.7.3.3 Systems and Procedures for the UA Flight

- a) Not to fly the UA over the property of a third party;
- b) Not to fly the UA near a manned aircraft;
- c) Not to fly the UA when intoxicated;
- d) To keep flight logs; and
- e) To report to the JCAB if a third party is injured, or if his property is damaged, or if the UA is lost, or if it approaches a manned aircraft.

#### 2.7.4 Examples of the additional standards are outlined as follows:

##### 2.7.4.1 Flights above Densely Inhabited Districts (DID), above a distance of less than 30m from any persons or properties, or over event sites where many people gather

- a) The UA shall be structured to reduce any harm (e.g. propeller guard);
- b) Operator shall have the skills to operate the UA at his/her discretion; and
- c) An assistant shall be positioned to inform the operator if any change of flight occurs or if the weather condition worsens, and also to alert the third party to keep out of the intended flight area.

##### 2.7.4.2 Night-time Flight

- a) The UA shall be equipped with lights to denote the direction;
- b) Operator shall have the skills to operate the UA at his/her discretion during the nighttime; and
- c) An assistant shall be positioned to inform the operator of any change of flight or weather condition, and to alert the third party to keep out of the intended flight area.

##### 2.7.4.3 BVLOS Flight

- a) The UA shall have an automatically piloted system and a camera system to monitor the surroundings;
- b) The UA shall be able to inform the operator of its position and its failure, if any;
- c) In the case of a failure, the UA shall be able to automatically run a fail-safe function (e.g. must be equipped with an auto-return function);
- d) The Operator shall have the skills to operate the UA at his/her direction BVLOS; and
- e) The Assistant shall be positioned to inform the operator of the change of flight or weather condition, and to alert the third party to keep out of the intended flight area (excluding such cases when flying above man-less areas);

## 2.8 Operating Status

2.8.1 Since December 10, 2015, 7183 applications have been accepted and as of July 9, 2016, 5461 permissions have been issued. And as of June, 2016, the JCAB has received 20 reports of accidents and failed flights as well as witnessed such cases when the UA approached manned air crafts.

## 2.9 Further Considerations

2.9.1 On December 7, 2015, we established a conference consisting of private and public stakeholders to discuss possible policies and regulations to enhance safety for conducting UA operations.

2.9.2 And in this summer, we released a safety enhancement report on conducting safe UA operations. In accordance with the report, we are considering the following issues:

- a) To introduce the scheme to transport properties using UA over un-populated areas in around 2018;
- b) To introduce airworthiness certification and remote pilot certification to transport properties using UA in populated areas in around 2020s; and
- c) To make rules of collision avoidance guidelines for manned aircraft and UA, UAs.