



*International Civil Aviation Organization*

**Fourth Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/4) and the Twenty-First South East Asia ATM Coordination Group (SEACG/21)**

Hong Kong, China, 24 – 28 February 2014

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**Agenda Item 3: Review of Current Operations and Problem Areas**

**GOOGLE PROJECT**

(Presented by the Secretariat)

**SUMMARY**

This paper presents information on Project Loon, a heavy free unmanned balloon project being trialed by Google, Inc. The project uses high-altitude balloons in the stratosphere at an altitude of approximately 60,000ft (18 km) to create an aerial wireless network with up to 3G-like Internet speeds.

**1. INTRODUCTION**

1.1 On 16 June 2013, Google began an experiment in the South Island of New Zealand, launching about 30 heavy free unmanned balloons in coordination with the Airways Corporation of New Zealand and the Civil Aviation Authority of New Zealand. The project tested wireless Internet connections to the network of balloons equipped with special antennas.

1.2 Google plans to release about 300 balloons around the world in the Southern Hemisphere that would provide coverage to New Zealand, Australia, Chile, and Argentina, and eventually hopes to have thousands of balloons flying in the stratosphere.

**2. DISCUSSION**

**UAE Incident**

2.1 On 08 January 2014, the Area Control Centre serving United Arab Emirates airspace were advised by Google that an heavy free unmanned balloon had drifted from its intended course after being released in North Africa. It was observed above 50,000ft within a UAE restricted area on 09 January 2014, and was observed to ascend above 60,000ft.

2.2 The UAE wrote to ICAO expressing concern about this operation, and in particular the lack of notice required to ensure safety of aviation. ICAO responded (**Attachments A and B**) by corresponding with Google Inc. and the UAE, outlining the requirements of Annex 2. Some relevant excerpts from Annex 2, Appendix 4 are provided below:

*2.1 An unmanned free balloon shall not be operated without appropriate authorization from the State from which the launch is made.*

*2.2 An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the appropriate authority, shall not be operated across the territory of another State without appropriate authorization from the other State concerned.*

*2.3 The authorization referred to in 2.2 shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation, that the balloon may drift into airspace over the territory of another State. Such authorization may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.*

*2.4 An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be overflown.*

*2.5 An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property not associated with the operation.*

*2.6 A heavy unmanned free balloon shall not be operated over the high seas without prior coordination with the appropriate ATS authority.*

2.3 In addition, the promulgation requirements under Annex 15 needed to be considered when an operation involves a mass release of balloons or a potential hazard to aviation.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to note the information contained in this paper.

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гражданской  
авиации

منظمة الطيران  
المدني الدولي

国际民用  
航空组织

Tel.: +1 514-954-8219 ext. 8026

Ref.: AN 13/22.1-ATM 51114

Mr. Michael Trinh  
Senior Counsel  
Google Inc.  
1600 Amphitheatre Parkway  
Mountain View, California  
United States 94043

**FEB 07 2014**

Dear Mr. Trinh,

I wish to inform you that the Secretary-General of the International Civil Aviation Organization (ICAO) is in receipt of a letter from the Director General of the United Arab Emirates (UAE) General Civil Aviation Authority, dated 9 January 2014, on the subject of an untethered free balloon operating in the Emirates Flight Information Region (FIR) in the early hours of 9 January 2014. The Director General also informed that only short prior coordination had occurred and that discussion between staff at the UAE's Sheikh Zayed Air Navigation Centre and a Google representative took place on that same day on the subject of the balloon's expected trajectory.

On the basis of ICAO's commitment to fostering the development of all international civil aviation, in partnership with its 191 Member States, ICAO remains responsive to the evolving needs of the civil aerospace industry and operators, as this pertains to ICAO's domains of responsibility. This commitment extends to the very interesting project initiated by your company employing the use of free untethered balloons. The information your company has recently provided to my staff, describing the subject operations and your company's assessment of the balloon operations' compliance with the Standards of Annex 2 to the Convention on International Civil Aviation, are very much appreciated and have been most informative.

On the basis of the foregoing, it is the intention of my office to raise the awareness of all ICAO regional offices on the subject of your company's initiative, so as to ensure that ICAO remains prepared to meet its role in supporting future operations by your company. In addition, you may continue to rely on my staff here at ICAO Headquarters, the contact details for whom I understand you have, for any immediate queries or requests.

We look forward to continued productive dialogue.

Yours sincerely,

Nancy J. Graham  
Director  
Air Navigation Bureau



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THE SECRETARY GENERAL

Ref.: AN 13/22.1-ATM 50987

**FEB 11 2014**

Mr. Saif Mohammed Al Suwaidi  
Director General  
General Civil Aviation Authority  
P.O. Box 6558  
Abu Dhabi  
United Arab Emirates

Dear Mr. Al Suwaidi,

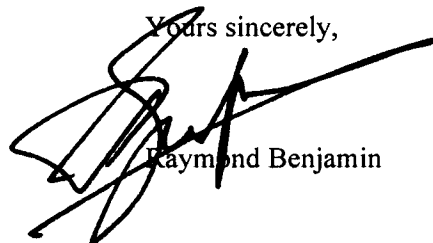
I wish to refer to your letter dated 9 January 2014, reference GCAA/DG/07-14, regarding the operation of an untethered balloon in the Emirates flight information region (FIR).

As you have rightly pointed out, lack of sufficient advance notice with respect to international operations of unmanned free balloons is a safety concern. Indeed, Annex 2 — *Rules of the Air*, Appendix 5, contains Standards intended to mitigate against such safety risks.

As a consequence of your correspondence, I am bringing this matter to the attention of each of the ICAO Regional Directors, underscoring the importance of adherence to the aforementioned Standards.

In addition, the Director of the Air Navigation Bureau, Ms. Nancy Graham, is in contact with Google Inc. in the interest of supporting effective coordination of their future operations involving untethered free balloons.

Yours sincerely,



Raymond Benjamin

cc: Representative of the United Arab Emirates  
on the Council of ICAO