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FOURTH MEETING OF THE AVIATION SECURITY AND FACILITATION REGIONAL GROUP (AVSEC/FAL/RG/4)

ICAO NACC Regional Office, Mexico City, Mexico, 3 to 5 June 2014

Agenda Item 9: Other business
9.1 Interference to Air Traffic Management Systems

INTERFERENCE TO AIR TRAFFIC MANAGEMENT SYSTEMS

(Presented by Argentina)

EXECUTIVE SUMMARY

This Working Paper addresses the possibility of misleading Air Traffic Management (ATM) Systems, and the importance of studying this issue in as a preventive measure to unlawful interference.

Action:	Action is presented in Section 4.
Strategic Objectives:	• Security and Facilitation
References:	• Chicago Convention • Annex 17 – *Security* • Doc. 8973/8 • Doc. 9924 • Doc. 9985 • AVSECP/25 *Final Report*

1. Introduction

1.1 Besides of the possibilities of unlawful interference in the Air Traffic Management (ATM) Systems processing and aircraft on board equipment leading to errors in communications, navigation and surveillance, through infringement of “cybersecurity”, there are other possibilities of CNS/ATM systems violation that do not have the imperative need to attack these systems computer networks.

1.2 It is worth to point out that preoccupation for the referred issue was debated opportunely during the 25th ICAO AVSEC Panel, in Montreal, from 17 to 21 March 2014, when this issue was addressed only within the frame of terrorist attacks, i.e. deliberate and malicious acts intended to cause loss of lives and/or important disruption and harm in the aviation sector economic activity. The evaluation is concentrated in attacks to the air traffic management (ATM) systems based in information technology (IT) and does not include more ample nor less specific attacks that could affect inadvertently the aviation activity.

2. Development

2.1 In this regard, there are other possibilities, based in fraud produced by the secondary radars trial systems (PARROT's), which are operationally valid when the Civil Aviation Administration authorities adequately report the aeronautical community through the Aeronautic Information Publications (AIP) or until its formalization in the AIP using NOTAM messages (notice to airmen).

2.2 This trial equipment can be remotely programmed to indicate a position, altitude, or flight level, and an identification code. The effect operationally produced by this equipment brings up a series of facts that could be enumerated as follows:

a) Confusion within the air traffic controller personnel;
b) Warning notices and, in the worst case, on board collision systems resolution notices.

2.3 As result of this, air situation would be altered, especially in high density air traffic zones, which would trigger a domino effect between controlled aircrafts positions. What has been described above would be the result of an error or omission regarding the trial equipment that should be used to ensure a normal operation of the secondary radar surveillance system.

2.4 Presently, PARROTS are managed starting from a secondary radar responder used by aircrafts at conventional modes (A and C) as well as in mode S, adding an interface module with the capacity of programming the above mentioned parameters indicating position, flight level and identification code.

2.5 Since any person having aviation basic knowledge can purchase this equipment (transponders), the possibility of its malicious use exists, which may affect safety. This will trigger a high risk situation between aircrafts in flight, varying from difficulties in controlling air environment or, in the worst case, occasioning a serious air incident such as a collision between aircrafts in flight.

2.6 It is also worth to point out that, through different internet pages, accurate information on world flights is available, where one can find flights indicatives and identification codes.

2.7 The conjunction of easy-to-access equipment and handy real time aircraft data represent a mix that could enable criminal individuals and organizations to generate scenery difficult to dominate. Once triggered, to re-establish situation conscience would be difficult, in air traffic control centres, in aircrafts cockpits, coordination between different air traffic services offices, and this with the aircraft under their respective jurisdiction, as well as the determination of the false information produced intentionally.

3. Conclusion

3.1 Summarizing, the result of this action, though it has not yet been put into practice, would affect air traffic management automated systems, basically in the secondary radar identification codes, ADS-B, ACAS systems and oral data communications congestion..

4. Suggested action

4.1 The Meeting is invited to:

a) analyse this Working Paper, discuss criteria and suggest pertinent measures; and
b) request States that have analysed this kind of menace, or those who are interested in doing this analysis, to contribute to this work.

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