Международная организация гражданской авиации

DGP/24-WP/69
19/9/13

**РАБОЧИЙ ДОКУМЕНТ**

# ГРУППА ЭКСПЕРТОВ ПО ОПАСНЫМ ГРУЗАМ (DGP)

## ДВАДЦАТЬ ЧЕТВЕРТОЕ СОВЕЩАНИЕ

**Монреаль, 28 октября – 8 ноября 2013 года**

**Пункт 5 повестки дня.** **Решение, по возможности, дополнительных рабочих вопросов, определенных Аэронавигационной комиссией или Группой экспертов:**

**5.1. Рассмотрение положений, касающихся перевозки литиевых батарей**

## ДЕЙСТВИЯ ПО РЕКОМЕНДАЦИЯМ, КАСАЮЩИМСЯ РАССЛЕДОВАНИЯ АВИАЦИОННОГО ПРОИСШЕСТВИЯ

(Представлено секретарем)

**АННОТАЦИЯ**

**Действия DGP**: В окончательном отчете Главного управления гражданской авиации Объединенных Арабских Эмиратов (GCAA UAE) приводятся три рекомендации по обеспечению безопасности полетов, связанные с опасными грузами. Принимая во внимание, что вопрос о предупреждении об опасности изделий или веществ класса 9 рассматривается в другом рабочем документе (DGP/24 WP/41), Группе экспертов предлагается рассмотреть рекомендации, содержащиеся в SR 52/2013 и SR 57/2013, и разработать план действий.

## 1. INTRODUCTION

1.1 The General Civil Aviation Authority of the United Arab Emirates (GCAA UAE) issued its Final Report following its investigation of an accident involving a Boeing 747-44AF on 3 September 2010 near Dubai, UAE (Final Report is accessible at http://www.gcaa.gov.ae/en/ePublication/admin/iradmin/Lists/Incidents%20Investigation%20Reports/Attachments/40/2010-2010%20-%20Final%20Report%20-%20Boeing%20747-44AF%20-%20N571UP%20-%20Report%2013%202010.pdf); an accident synopsis is presented in the appendix to this paper). Of the seven safety recommendations contained in the report, three relate to dangerous goods.

1.2 The GCAA UAE recommends in SR 51/2013 and SR 52/2013, respectively, that ICAO:

a) reviews the hazardous materials classification for Class 9 materials packaging where the reconsideration of lithium batteries and other energy storage devices that are currently classified as a Class 9 hazardous material be subjected to a higher level of hazardous material classification, as at present time it is not clear that the current Class 9 hazard communication or quantity limits adequately reflect the inherent risks to aviation safety; and

b) develops SARPs for package level protection of batteries being shipped to include protection from thermal degradation and damage to individual cells or cell combinations in thermal runaway, and to retard the propagation of lithium battery initiated fires to other packages in the same cargo stowage location as well as to increase the amount of time it would require for the contents of the package containing lithium batteries to provide an additional source of fuel for on-board fires initiated by other sources.

1.3 Recommendation SR 57/2013 states the following:

a) ICAO Dangerous Goods Panel to amend the ICAO Technical Instructions regarding the safe carriage of lithium batteries;

b) Specifically, the request is to establish a dedicated task force within the DG Panel, including the representation of qualified stakeholders, to study the safe carriage of lithium batteries and other potentially hazardous cargo and develop recommendations to the UN Manual of Tests and Criteria, the Manual of Tests and Criteria Revision 5, Lithium Metal and Lithium Ion Batteries, 38.3.4.3, Test T3-Vibration;

c) Structural-acoustic coupling phenomenon in an aircraft fuselage is a known characteristic. In large Class E cargo compartments, the structural and acoustic modes can be derived for vibration analysis. Structural and acoustic analysis can determine possible occurrence of vibration in the fuselage structure during predetermined phases of flight where the vibro-acoustic signatures can be used to determine the principle sources and transmitting paths of the vibration;

d) Given the active failure modes of lithium batteries, the battery risk factors concerning possible susceptibility to various extraneous forms of mechanical energy, for example vibration, possibly in a harmonic form, could be an initiating action risk; and

ICAO Dangerous Goods Panel is requested to evaluate data relative to the UN Manual of Tests and Criteria, Lithium Metal and Lithium Ion Batteries, 38.3.4.3, Test T3-Vibration and advise the UNECE Committee of Experts/Working Party on the Transport of Dangerous if additional criteria should be adopted for the carriage of lithium metal and lithium ion batteries by air transport. Refer to SR 4.25.

1.4 An extract from SR 4.25 states:

Currently there is no data for the class E cargo compartments of the B744F. If such data was available through a process of acoustic mapping for structural-acoustic coupling, this

data could be used to expand the UN Manual of Tests and Criteria Para. 38.3.4.3 Test T.3: Vibration test and verification data.

2. Noting that the issue of hazard communication of Class 9 articles or substances is the subject of another working paper (DGP/24-WP/41), the panel is invited to consider the recommendations contained in SR 52/2013 and SR 57/2013 and to develop an action plan to respond to the issues raised.

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# APPENDIX

# ACCIDENT SYNOPSIS

## ACCIDENT SYNOPSIS

On September 3rd 2010, a Boeing 747-44AF departed Dubai International Airport [DXB] on a scheduled international cargo flight [SCAT-IC] to Cologne [CGN], Germany.

Twenty two minutes into the flight, at approximately 32,000 feet, the crew advised Bahrain Area East Air Traffic Control [BAE-C ] that there was an indication of an on-board fire on the Forward Main Deck and declared an emergency.

Bahrain Air Traffic Control advised that Doha International Airport [DOH] was 'at your ten o'clock and one hundred miles, is that close enough?', the Captain elected to return to DXB, configured the aircraft for the return to Dubai and obtained clearance for the turn back and descent.

A cargo on the main cargo deck had ignited at some point after departure. Less than three minutes after the first warning to the crew, the fire resulted in severe damage to flight control systems and caused the upper deck and cockpit to fill with continuous smoke.

The crew then advised Bahrain East Area Control [BAE-C] that the cockpit was 'full of smoke' and that they 'could not see the radios', at around the same time the crew experienced pitch control anomalies during the turn back and descent to ten thousand feet.

The smoke did not abate during the emergency impairing the ability of the crew to safely operate the aircraft for the duration of the flight back to DXB.

On the descent to ten thousand feet the captains supplemental oxygen supply abruptly ceased to function without any audible or visual warning to the crew five minutes and thirty seconds after the first audible warning. This resulted in the Captain leaving his position. The Captain left his seat and did not return to his position for the duration of the flight due to incapacitation from toxic gases.

The First Officer[F.O], now the Pilot Flying [PF] could not view outside of the cockpit, the primary flight displays, or the audio control panel to retune to the UAE frequencies.

Due to the consistent and contiguous smoke in the cockpit all communication between the destination [DXB] and the crew was routed through relay aircraft in VHF range of the emergency aircraft and BAE-C.

BAE-C then relayed the information to the Emirates Area Control Center (EACC) in the UAE via landline, who then contacted Dubai ATC via landline.

As the aircraft approached the aerodrome in Dubai, it stepped down in altitude, the aircraft approached DXB runway 12 left (RWY 12L), then overflew the northern perimeter of the airport at 4500 ft at around 340 kts . The PF could not view the Primary Flight Displays [PFD] or the view outside the cockpit.

The PF was advised Shajah International Airport [SHJ] was available at 10 nm. This required a left hand turn, the aircraft overflew DXB heading East, reduced speed, entering a shallow descending right-hand turn to the south of the airport before loss of control in flight and an uncontrolled descent into terrain, nine nautical miles south west of Dubai International Airport.

There were no survivors.

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