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РАБОЧИЙ ДОКУМЕНТ

ГРУППА ЭКСПЕРТОВ ПО ОПАСНЫМ ГРУЗАМ (DGP)

ДВАДЦАТЬ ШЕСТОЕ СОВЕЩАНИЕ

Монреаль, 16–27 октября 2017 года

Пункт 2 повестки дня. **Разработка рекомендаций относительно поправок к *Техническим инструкциям по безопасной перевозке опасных грузов по воздуху* (Doc 9284) в целях их внесения в издание 2019–2020 гг.**

ПОРТАТИВНЫЕ ЭЛЕКТРОННЫЕ УСТРОЙСТВА, ПЕРЕВОЗИМЫЕ ПАССАЖИРАМИ И ЧЛЕНАМИ ЭКИПАЖА

(Представлено А. Стабблефильдом)

АННОТАЦИЯ

В настоящем рабочем документе предлагается внести поправку в перечень опасных грузов, разрешенных для перевозки пассажирами или членами экипажа (таблица 8-1), для решения проблем безопасности полетов, связанных с портативными электронными устройствами (PED), которые размещены в зарегистрированном багаже.

Действия группы экспертов DGP: Группе экспертов DGP предлагается рассмотреть предлагаемые поправки к таблице 8-1, как показано в добавлении А к настоящему рабочему документу.

1. INTRODUCTION

1.1. The Dangerous Goods Panel (DGP) met as a working group from 24 to 28 April 2017 (DGP-WG/17). The meeting considered proposed amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Technical Instructions, Doc 9284) which will be reviewed by the panel at its twenty-sixth meeting (DGP/26) for incorporation in the 2019-2020 Edition. One of the adopted proposals addresses the safety impact of recent security restrictions on the carriage of portable electronic devices (PEDs) and provides safety enhancements which justified incorporation in the current edition of the Technical Instructions (2017-2018 Edition). The enhancements required PEDs to be completely powered down to the OFF position (they should not be left in sleep mode), protected from accidental activation, and packed so they are protected from damage. This working paper builds upon those actions.

* Переведены только аннотация и добавление А.

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1.2. As a result of recent security measures that prohibited the carriage of PEDs larger than a cell phone or smartphone in the cabin on flights from certain points of departure into the United States and the United Kingdom; one option on these flights was for passengers to place their large PEDs into their checked baggage if they wanted to transport them. This created an unexpected increase in the number of lithium battery-powered devices in the passenger aircraft cargo compartment transported as checked baggage. It was noted that there was little research data available on the behavior, effects and risks associated with PEDs being placed in a passenger's checked baggage.

1.3. Although most consumer PEDs (including but not limited to cell phones, smart phones, personal digital assistants (PDA) devices, electronic games, tablets, laptop computers, cameras, camcorders, watches, calculators) containing batteries are currently allowed in both carry-on and checked baggage, we believe that there is a very low frequency of lithium battery-powered devices larger than a cell phone or smartphone being transported in checked baggage currently. This belief is largely predicated on the extremely low occurrences of documented incidents involving PEDs larger than a cell phone or smartphone in the cargo compartment (i.e. checked baggage) (only one such incident occurred between May 2016 and May 2017), as opposed to the number of documented in-flight incidents involving PEDs in the aircraft cabin (i.e. carry-on baggage) (twenty-five such incidents occurred between May 2016 and May 2017). Anecdotally, we believe that this could be attributed to the majority of the traveling public not typically placing their PEDs in checked baggage. Given the lack of data regarding the likelihood of a given PED to enter thermal runaway in a cargo-hold context and the lack of specific data regarding the number of large PEDs that passengers currently stow in their checked baggage, an analysis of the probability of an incident in the cargo hold or in the cabin would rely on broad-based data that has not been specifically verified and is not specific to the aviation environment. We would welcome specific data from the international community that could provide a basis to conduct an accurate analysis (e.g. probability, cost, impacts, etc.), as such an analysis is not possible with the data available at this time.

1.4. Appendix A of this working paper provides a provision for operator approval for the unique passenger circumstances that may arise for the carriage of PEDs larger than a cell/smartphone in checked baggage. Additionally, passengers may place PEDs larger than a cell/smartphone in checked baggage if the lithium battery(ies) is removed from the device and stowed in the cabin in accordance with Table 8-1.

1.5. With regard to the safety risk posed by PEDs, the Technical Instructions currently recommend that these devices be carried in the cabin on the basis that, should a PED initiate a fire, the cabin crew can expeditiously identify the incident, take appropriate firefighting action, and monitor the device for possible re-ignition. Operators have dedicated resources to provide firefighting materials in the cabin and train cabin crew on how to properly respond to a PED fire.

1.6. To address the lack of sufficient research data on the behavior and effects of additional PEDs placed in the cargo hold on passenger aircraft, the Fire Safety Branch at the Federal Aviation Administration (FAA) William J. Hughes Technical Center conducted limited tests to assess the potential hazards from the carriage of laptop computers and other large PEDs in thermal runaway in checked baggage. Included was research to identify possible risk mitigation options. The objectives of the testing were to:

a) determine the relative effectiveness of the cargo compartment Halon 1301 fire suppression system against the potential fire scenarios involving devices containing lithium batteries that are currently allowed as checked baggage; and

b) determine whether there are potential mitigation options, such as the use of enhanced packaging to contain flames and gas from spreading outside a package. The specific

tests reflect cargo compartment loading procedures in use by air carriers affected by the security policy.

1.7 The FAA Fire Safety Branch has conducted 10 tests utilizing a fully charged laptop computer inside a suitcase. The suitcases varied in construction and in the density and types of items inside, as well as, the construction of the outer case. A heater was placed against a lithium ion cell in the battery of a laptop to force it into thermal runaway. For the first five tests, the suitcases were filled with clothes, shoes, etc., but no other currently permitted dangerous goods. In four of those tests, the fire was contained and eventually self-extinguished, and the suitcases were not breached. In one test, conducted without the Halon fire suppression system, the resulting fire burned out of the suitcase and fully consumed it; in this test, the battery burned a hole in the suitcase, which may have allowed oxygen to enter to fuel the fire. A test of this same scenario was also conducted with an eight-ounce aerosol can of dry shampoo strapped to the laptop battery and added to the suitcase contents. The dry shampoo is currently permitted to be carried in checked baggage. This test yielded the most troubling results. Fire was observed almost immediately after thermal runaway was initiated. The fire rapidly grew, and within 40 seconds, the aerosol can of shampoo exploded with the resulting fire rapidly consuming the bag and its contents. This test showed that, given the rapid progression of the fire, a Halon fire suppression system cannot dispense Halon quickly enough to reach a sufficient concentration to suppress the fire and prevent the explosion. Four additional tests were conducted to further characterize the risk. In addition to the dry shampoo, a 6 oz. bottle of nail polish remover, 2 oz. bottle of hand sanitizer and a 16 oz. bottle of 70% ethyl rubbing alcohol were included. Three of those tests resulted in the can or bottle containing the dangerous goods bursting leading to a large fire. In only one test was the fire contained within the case. As a result of this, it was concluded that if a PED is packed in a suitcase with an aerosol can and a thermal runaway event occurs, there is the potential for an aerosol can explosion. The explosion itself may or may not be strong enough to structurally damage the aircraft, but in a Class C cargo compartment it will most likely compromise the Halon fire suppression system by dislodging blow panels or cargo liners, rendering the compartment unable to contain the Halon. The fire suppression system of the aircraft is then compromised, which could lead to the loss of the aircraft.[1] See Appendix B for links to more information about the FAA Fire Safety Branch testing.

1.8. The outcome of the testing indicates that large PEDs in checked baggage mixed with an aerosol can produce an explosion and fire that the aircraft cargo fire suppression system in Class C cargo compartments may not be able to safely manage. Globally, there are aircraft in the commercial fleet that do not have the same level of cargo fire suppression in the cargo hold, which places passengers in greater jeopardy if a PED catches fire in checked baggage. Additionally, even if individual operators voluntarily implemented policies to forbid the carriage of large PEDs in checked baggage, the risk associated with large PEDs in checked baggage could be transferred to their flights from the aircraft during interlining of passengers and baggage—and without the operators' knowledge.

1.9 The following alternatives to a prohibition on large PEDs in checked baggage to prevent a possible catastrophic outcome were considered. The rationale for not proposing these alternatives are included as appropriate below.

a) **Allowing PEDs in checked bags that do not contain any dangerous goods**: We believe that it would be difficult for passengers to understand and correctly meet requirements that vary based on the specific content of their checked baggage.

[1] DOT has not tested the ability of an aircraft cargo compartment Halon 1301 fire suppression system to safely manage a PED-lithium battery fire in luggage. A Halon test was conducted with a laptop wrapped in bubble wrap inside a cardboard box in the unit loading device. The box was charred, but otherwise, the fire was suppressed. Another Halon test was conducted with a fire load of one box filled with shredded newspaper surrounded by suitcases inside the ULD. Ignition occurred inside the cardboard box. While there was charring of some suitcases, the Halon suppressed the fire, as expected.

Complexity increases the likelihood of non-compliance and continued presence of the risk.

Many of the toiletries carried by passengers in checked baggage exceed security size limits for carriage in the cabin. Additionally, passengers do not identify common toiletries that they use on a daily basis as dangerous goods. For these reasons, expecting passengers to make this type of determination accurately would be unrealistic.

b) **Varying the checked bag packing requirement based upon the aircraft type and its fire suppression system:** When dangerous goods are packed with PEDs, even the most effective fire suppression system in Class C cargo compartments may not be effective in safely managing a fire, as evidenced by the testing results in which an aerosol can exploded with enough pressure to dislodge cargo panels well before Halon would have reached a concentration to suppress the fire. In addition, operationally, this is potentially complicated to implement and could still allow vulnerability into the system. There are numerous aircraft designs and capabilities that would need to be evaluated, and either passengers would have to distinguish one type of aircraft from another or operators would have to provide that information, which would be resource-intensive and operationally infeasible due to, among other things, last minute changes in aircraft used for a given flight. In addition, due to the interlining of passengers and their baggage, passengers may travel on different aircraft with different requirements in one trip, and would not have access to their checked baggage during the trip to remove their bags depending on the aircraft in use.

c) **Directing airport security screening personnel to identify commonly carried items in checked baggage that were packed with PEDs to enable removal:** Airport security screening of baggage is focused exclusively on identifying security risks. The ICAO Technical Instructions cannot compel airport screeners to screen for dangerous goods that do not pose a security risk. Furthermore, such requirements would distract resources from their security mission.

d) **Allowing airlines to collect PEDs for carriage in the cargo compartment for transport in fire containment packaging:** Operationally, this option could be costly, resource-intensive and complicated for airlines to manage. We believe that airlines would be reluctant to opt into this alternative. It could also negatively impact the passenger’s ability to board tightly-timed connecting flights. Additionally, passengers may be reluctant to relinquish their PEDs to the airline for fear of damage, loss, or theft.

As such, requiring the large PEDs to be carried only in the cabin is the simplest, most effective, and most efficient option for addressing this identified safety risk.

1.10 The ICAO Multidisciplinary Cargo Safety Group met in Paris, France during the week of July 17, 2017. The meeting opened with a brief recap of the ICAO Aviation Security Panel meeting held earlier in the week. The FAA presented the results of the various tests involving PEDs in checked luggage, as well as, in some form of protective package. The result of the discussions was an agreement by the group that the current allowance for passengers to pack PEDs in checked baggage should be revisited. In particular, that this should not be allowed, without a specific approval by the operator. Representatives from the following groups concurred that PEDs should not be permitted in checked baggage, based on the test results presented:

a) European Aviation Safety Agency (EASA);

b) Airbus;

c) International Coordinating Council of Aerospace Industries Association; and

d) International Federation of Airline Pilots' Association.

2. ACTION BY THE DGP

2.1 The DGP is invited to consider the amendments in Appendix A that require devices larger than a cell phone or smartphone containing lithium metal or lithium ion batteries (laptops, smartphones, tablets, etc.) to be transported in carry-on baggage and not be placed in checked baggage unless approved by the operator.

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ДОБАВЛЕНИЕ А

ПРЕДЛАГАЕМАЯ ПОПРАВКА К ЧАСТИ 8 ТЕХНИЧЕСКИХ ИНСТРУКЦИЙ

Часть 8

ПОЛОЖЕНИЯ, КАСАЮЩИЕСЯ ПАССАЖИРОВ И ЧЛЕНОВ ЭКИПАЖА

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Таблица 8-1. Положения, касающиеся опасных грузов, перевозимых пассажирами или членами экипажа

Предметы или изделия	*Местоположение*			*Требуется разрешение эксплуатанта(ов)*	*Командир воздушного судна должен быть проинформирован*	*Ограничения*
	Зарегистрированный багаж	*Ручная кладь*	*При себе*			
Изделия широкого потребления						
. . .						
20) Портативные электронные устройства (такие как часы, счетные машины, камеры, сотовые телефоны, портативные компьютеры, видеокамеры)						
Крупные портативные электронные устройства, содержащие литий-металлические или литий-ионные элементы или батареи	(см. п. 20 d))	Да	Да	(см. п. 20 d))	Нет	a) Для целей настоящего раздела крупное портативное электронное устройство определяется как портативный компьютер, планшетный компьютер или аналогичное устройство, которое крупнее сотового телефона или смартфона; b) перевозимые пассажирами или экипажем для личного пользования; c) батареи и элементы должны относиться к типу, который отвечает требованиям прохождения каждого испытания, изложенного в подразделе 38.3 части III *Руководства ООН по испытаниям и критериям*; d) крупные портативные электронные устройства могут перевозиться в зарегистрированном багаже с разрешения эксплуатанта
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APPENDIX B

FAA FIRE SAFETY BRANCH PED TESTING IN BAGGAGE

Additional information and details regarding the testing that was conducted by the FAA's William J. Hughes Technical Center's Fire Safety Branch has been included in the following presentations:

- "Safe Transport of PEDs in Passenger Aircraft." The presentation can be accessed by visiting: https://www.fire.tc.faa.gov/temp/LT_FH/NoVideos_Safe_Transport_of_Laptops.pptx.

- "Laptop Luggage Tests – Progress Report." The presentation can be accessed by visiting: https://www.fire.tc.faa.gov/temp/LT_FH/LaptopLuggageTests_6-22-17_Update_NOvids.pptx

How to Optimally View the Presentation:

To access the links, the presentations must be in slide show mode. In the first presentation, move through it to slide 22, which is a flow chart. There are five embedded links in slide 22. If you move your mouse pointer along the boxes, the mouse pointer will turn into to a "hand". This "hand" indicates there are embedded links to subsequent slides. There are additional video links throughout the slide deck.

The second presentation will work in the same way. When you see a hand, click and it will take you to the slides associated with the test that corresponds to the information/assessment.

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