



## **DANGEROUS GOODS PANEL (DGP)**

### **TWENTY-NINTH MEETING**

**Montréal, 13 to 17 November 2023**

#### **Agenda Item 7: Review of Annex 6 provisions having an impact on dangerous goods (REC-A-DGS-2025)**

#### **PROVISIONS FOR THE USE OF ELECTRONIC DATA FOR INFORMATION TO THE PILOT-IN-COMMAND**

(Presented by S. Schwartz)

##### **SUMMARY**

This information paper summarizes previous discussions regarding the proposed amendments to the Technical Instructions to allow the electronic provision of information to the pilot-in-command required in 7;4.1 without a written or printed copy, and highlights unresolved issues not addressed in current proposals.

The DGP is invited to consider the discussion below and previous Panel direction in considering how to proceed on the issue.

#### **1. INTRODUCTION**

1.1 The DGP has discussed several proposals to permit the provision of information required by Part 7;4.1 of the Technical Instructions to be fulfilled electronically without a written or printed copy.

1.2 In addition to discussions at the DGP, talks have also taken place between representatives of the International Federation of Air Line Pilots' Associations (IFALPA) and the International Air Transport Association (IATA), both directly and at meetings of the IATA Dangerous Goods Board, and at the DGP-recognized working group of relevant stakeholders.

1.3 There is broad agreement that if certain conditions are met, a dangerous goods notification to the captain (NOTOC) provided electronically could improve the safety level and enhance the utility of dangerous goods information provided to the flight crew. However, simply allowing for the electronic provision of the information does not by itself accomplish either. An e-NOTOC that is electronically searchable, has the capability of utilizing bookmarks, and contains hyperlinks to

additional information regarding the dangerous goods loaded in cargo compartments would be more useful than the current paper system. However, these safety enhancements will not be realized by simply allowing for the provision of information to the pilot in command to be done electronically — operators must provide them.

1.4 While e-NOTOC has been discussed at multiple panel and working group meetings, during the most recent discussion of the proposal it was noted that “Most supported the intent of the proposal, but not as written.” (see paragraph 4.9.1.1.5 of the DGP-WG/23 Report). Additionally, the DGP-recognized working group of relevant stakeholders has not yet completed their assigned work, and “The panel agreed to wait until the work of this group was completed before considering amending the Technical Instructions.” (see paragraph 2.2.9.1 of the DGP/27 report; paragraph 2.2.8.3 of the DGP/28 report; paragraph 4.9.1.3.1 of the DGP-WG/22 report; paragraph 4.9.1.1.2 of the DGP-WG/23 report)

1.5 The proposal has been revised to include a requirement that the information to the pilot in command must be available “at all times during flight”. It is our understanding that this is meant to ensure the NOTOC information remains available during aircraft abnormal situations and inflight emergencies. We believe adding the qualifier “at all times during flight, including system abnormal situations and inflight emergencies” would make the intent unambiguous.

1.6 The DGP-recognized working group of relevant stakeholders has met twice since DGP/27. The first meeting was held in May 2020, with the only participants being IFALPA and IATA, to define the problem and mutually recognize outstanding issues. Unfortunately, due to COVID, the group did not meet again until December 2021 after DGP/28. At this meeting, in addition to IFALPA and IATA, representatives from operator members of IATA, the Aircraft Rescue & Fire Fighting Working Group (ARFFWG) (an international safety organization of aircraft rescue and firefighting professionals) and the Global Express Association (GEA) also participated. (see the appendix for reports of the meetings).

1.7 We believe relevant stakeholders should not speak for the needs of other stakeholders, but we recognize that first responders have an interest in the form and content of the NOTOC partly because many airlines have written into their Flight Operations Manuals that a primary purpose of the paper NOTOC is for the flight crew to deliver important information to first responders in the case of an incident. Therefore, we have made efforts to ensure that first responders were part of the DGP-recognized working group of relevant stakeholders and that their concerns and requirements were taken directly from them. Additionally, we coordinated direct input to the DGP from the ARFFWG during DGP/28 (see paragraph 2.2.8.2.f of the DGP/28 Report).

1.8 At DGP/28, the Secretariat noted that there were two additional efforts ongoing at International Civil Aviation Organization (ICAO) that might provide relevant input to our NOTOC discussions and the effort to amend the language in the Technical Instructions (see paragraph 2.2.8.3 of the DGP/28 Report). Specifically, there was a joint FLTOSP/AIRP/PTLP working group, and a group working to update the *Airport Services Manual* (Doc 9137). Although the relevant FLTOSP Report indicated “...that there would also need to be coordination with DGP regarding [their effort]”, no coordination was initiated. At IFALPA’s request, a meeting was arranged between IFALPA, FLTOSP, and the ICAO Rescue & Fire Fighting Working Group (RFFWG) in November of 2022 to meet this requirement.

1.9 In June of 2023, the DGP Secretariat briefed the ICAO Rescue & Fire Fighting Working Group on the DGP discussions concerning e-NOTOC. The draft meeting report states that the ICAO RFFWG determined that “E-NOTOC is feasible if there is time while aircraft in the air, but that

may not be the case always.” It continued, “...eNOTOC is a good idea but it cannot be the only way, (we) need a failsafe system.” The report concluded, “The meeting agreed that e-NOTOC may not be the solution from an RFF perspective due to the challenges in receiving the DG related information during an emergency.” The “RFFWG agreed to review the proposal from DGP on this matter after its November meeting.” IFALPA looks forward to continued discussions on the subject with the ARFFWG and ICAO RFFWG included as relevant stakeholders going forward.

1.10 Pilot concerns regarding e-NOTOC provisions have been consistent since the first substantive discussions of the topic at DGP/27, and were detailed at the first meeting of the relevant stakeholders working group with IATA in May of 2020. Specifically:

- a) The information provided on the NOTOC must remain readily available to the flight crew at all times during the flight, especially during system abnormal situations and in-flight emergencies.
- b) The recommendations and needs of RFF first responders must be considered in the decision to amend NOTOC provisions in the Technical Instruction’s since first responders are recognized as relevant stakeholders.
- c) Any assumed enhancements in utility of the e-NOTOC must be ensured by a regulatory requirement. Otherwise, operators are unlikely to provide the proposed enhancements and changes will likely degrade the quality, survivability, and utility of the DG information provided to the PIC. Operators can provide any or all of the stated benefits of e-NOTOC now, yet, to our knowledge, none of them do. It is unrealistic to assume that they will provide the promised enhancements without a regulatory requirement.
- d) As stated in IFALPA Position Paper 18POS16, *NOTOCs*, released 5 December 2018, “IFALPA supports the evolution towards a portable, electronic format of the NOTOC that uses technology to improve the functionality and usability of the dangerous goods information provided to flight crew. Such a format should, however, be available at all times in flight, including emergencies, and allow the onward dissemination of dangerous goods information to RFFS first responders in a robust, clear, and expedient manner that meets or exceeds the effectiveness of the current process.”

1.11 As detailed above, IFALPA has been engaged with, and fully supports, the DGP-recognized e-NOTOC working group of relevant stakeholders. IFALPA has organized each meeting of the group, and has hosted both meetings not held in ICAO headquarters and ensured that relevant stakeholders were invited to participate. IFALPA concurs with the direction given numerous times by the DGP that “A holistic review of the provisions for information to the pilot-in-command following the completion of the stakeholder group and ICAO working groups was the preferred approach.” (see paragraph 4.9.1.1.2 of the DGP-WG/23 Report). IFALPA remains ready and available to meet with any of the other stakeholders to continue and finish the work assigned by the DGP at DGP/27 (see paragraph 2.2.9.1 of the DGP/27 Report), DGP/28 (see paragraph 2.2.8.3 of the DGP/28 Report), and at WG/23 (cited above).

2. **ACTION BY THE DGP**

2.1 The DGP is invited to consider the discussion above in any proposed amendments to Part 7;4.1 of the Technical Instructions.

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## APPENDIX

### REPORTS OF E-NOTOC MEETINGS

#### **IFALPA / IATA e-NOTOC Virtual Meeting**

VARIOUS LOCATIONS, VIA GOTOMEETING, 8 MAY 2020

PREPARED BY DAVID SCHLICHTING, ALPA

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#### **EXECUTIVE SUMMARY**

An e-NOTOC Virtual meeting was held on 8 May 2020 via GoToMeeting between IFALPA and IATA representatives, as a follow-up to the meeting of the IFALPA DG WG on e-NOTOC held in Frankfurt in January (report available from the IFALPA Hub as paper 20DGC04). The meeting was held to begin discussions on the proposal by IATA to allow for the substitution of an electronic NOTOC in lieu of the current paper requirement. The meeting attendees were:

Capt Scott Schwartz  
Ms Candy Chan, IATA  
Capt Arnaud Du Bédât  
Capt Timo Lempiäinen  
First Officer Dave Schlichting

#### **REPORT**

##### **Opening of the meeting and introductions**

Dave Schlichting opened the meeting by thanking those who were able to attend, and everyone on the call gave a brief personal introduction. It was noted that Scott Schwartz was on the call from a commercial airline flight and due to the potential intermittent connectivity, he would be listening only, as able.

##### **Timeline and milestones**

It was noted that, due to Coronavirus, a number of conferences and meetings that the participants thought would provide opportunities for IFALPA and IATA to meet on the e-NOTOC subject had been cancelled. Arnaud and Candy were able to confirm that, for the foreseeable future, any meetings of their respective Organizations would be held virtually. Also, the fall ICAO DGP is still scheduled for Sept 2020 in Montreal, although it is unknown if it will be held in person or via teleconference. All agreed that our shared initial objective is to have an initial joint IFALPA / IATA proposal for presentation at the 2020 DGP.

##### **Items developed as part of e-NOTOC initiative**

Ahead of the meeting, Dave had provided the following list of topics that have come up in discussions on the topic over the last 6 months:

- 1) NOTOC provided to PIC by electronic means vs. paper (written/printed) means
  - a. (Allowed to be?) Already being provided by electronic means only
- 2) Electronic means as redundancy to paper means
- 3) Required information to be included in NOTOC
- 4) Prescription on the format in which it is provided – to PIC? To ARFF?
- 5) When the NOTOC is provided to PIC
- 6) Paper requirement for flight crew to provide to ARFF

- 7) Whatever means, e-NOTOC must provide equivalent level of safety
  - a. Must remain available to crew throughout flight, especially during emergencies
  - b. E-NOTOC should take advantage of technology to provide increased utility
- 8) Include Regulators views in developing proposal?
- 9) Timeline

Candy and IFALPA attendees agreed that this represented a complete list going forward.

It was agreed by IATA that items 3 and 5 would remain unchanged for the time being, and that item 8 did not need to be addressed as the Regulators had already expressed agreement with an e-NOTOC.

It was agreed that the current language on item 6 did not to be changed at this time. There was discussion on having the ARFF notification be a summarized one-page document and IFALPA stated they had developed potential options for the summary that had been seen by the ARFF community. IATA asked to see the draft documents and IFALPA agreed to provide them for their review.

### **Current usage of e-NOTOC**

It was noted that some airlines are already providing NOTOCs via electronic means. IATA was asked if the Operators were doing this redundantly to the paper means stipulated in the TIs, or if the Operators felt that there was language that allowed them to provide e-NOTOCs only. During discussion on the topic IATA said that the question of using e-NOTOCs exclusively was addressed with a few Regulators and that initially the US FAA and the European Regulators did not see problem with it, but that the UK CAA initially felt an e-NOTOC was not in compliance with the TIs. IATA said that ultimately the Regulators determined that the current language did not allow for exclusively electronic NOTOCs, hence the need for a jointly agreed upon update to the language.

### **Determination on standard data format for DG information**

IATA stated that they did not want to be prescriptive in requiring a particular format to its Operators for how the data is laid out in the e-NOTOC. For now, IFALPA did not voice an opposition.

IFALPA stated that the e-NOTOC would have to be standardized in that the document was searchable and markable, and, ideally, translatable into other languages. All agreed that an e-NOTOC should take advantage of technology and allow aircrew to search through what could be dozens of pages to quickly find the information that they need.

There was additional discussion on the electronic format of the data. IATA pointed out that TI Part 5, Chapter 4 (among others), "...allows electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an alternative to paper documentation." It was agreed that we needed to understand what the definition of EDP/EDI was and if it answered the concerns of the electronic data format. In closing comments, Timo reiterated that all concerned need to make sure the electronic format is standardized such that it can be used by different developers on different platforms and with different organizations. EDP/EDI definitions, and input from programmers on electronic format standardization are open items.

### **Availability of e-NOTOC DG information throughout flight**

It was brought up that testing had been done in the late 2000s on laptop computers to determine if they would remain usable in the event of a decompression. Tests at the time showed that they would not, due to the screens failing. It was agreed that IATA would query the Operators to see if they could confirm that the cockpit tablet devices had been tested to continue to function in a high-altitude decompression, IFALPA would query their committees, and Arnaud said he would ask a contact at the electronic charts provider Jeppesen. A definitive answer to this question is an open item.

**Next steps**

All agreed that the meeting was a productive first step between IATA and IFALPA in developing a joint proposal. IATA is going to take the items discussed at the meeting and share them with Operators and solicit feedback, and IFALPA will share the meeting discussions with their DG committee members. It was agreed that a similar meeting should be scheduled in the next few months to continue discussions on the specifics of the open items, and items 1, 2, and 7 above.



## Electronic Notice TO Captain (e-NOTOC) Stakeholders Virtual Meeting

VARIOUS LOCATIONS, VIA WEBEX, 10 DECEMBER 2021

PREPARED BY DAVID SCHLICHTING, IFALPA

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### SUMMARY

An e-NOTOC virtual meeting was held on 10 December 2021 via WebEx with representatives from IFALPA, IATA, ARFFWG and GEA. This meeting was a follow up from the IFALPA-IATA virtual meeting on 8 May 2020, and represents relevant, interested stakeholders as discussed at DGP/27 and DGP/28 on the topic of e-NOTOC. The group met to start working some of the details on the proposals to allow for the substitution of an electronic NOTOC in lieu of the current paper requirement. The meeting attendees were:

|        |   |   |
|--------|---|---|
| IFALPA | First Officer Dave Schlichting<br>Captain Timo Lempiäinen   |   |
| IATA   | Candy Chan<br>Florence Lam<br>Tim Rogers<br>Gaj Sokayan<br>Mike Tobin<br>Lance Wiley<br>Jennifer Littenberg | Cathay Pacific Airways<br>United Parcel Service<br>Singapore Airlines<br>Alaska Airlines<br>Delta Airlines<br>Hawaiian Airlines |
| ARFFWG | Fire Chief Tony Gutierrez   |   |
| GEA    | Alex McCulloch  | United Parcel Service   |

### REPORT

#### Opening of the meeting and introductions

Dave Schlichting opened the meeting by thanking those who were able to attend, and everyone on the call gave a brief personal introduction. He noted that this was not specifically an IFALPA issue and that this was not “their” meeting, but rather he was simply acting as moderator for the meeting of stakeholders and looked forward to everyone’s input as equal participants in the process.

#### Working Group name, commission, and characterization

Before the meeting opened for discussion, Alex McCulloch raised the appropriate question of the name of the working group and what their commission was. It was noted that it was inappropriate to call the group a Working Group of the DGP as there was no attendance by ICAO and no formal invitation to States to attend. Dave conceded those points and noted the language in the DGP/27 report “that a group had been established to study the emergency response information needs.” All agreed that the group

would not call nor characterize itself as a WG of the DGP, but that it was a group of relevant, interested stakeholders meeting to do the detailed work on the e-NOTOC proposal outside of the formal Panel meeting environment with the goal of working toward a resolution on amending NOTOC language in the ICAO Technical Instructions that the participants could endorse for approval when brought before the DGP.

### **Relevant document review**

Dave then conducted a review of relevant documents on NOTOC and parallel efforts on moving to electronic documentation usage. This summary is included as Attachment 1 to this report. It was noted that the language in a number of these other documents should be considered for update along with a proposal to allow for e-NOTOC. Also, Timo reiterated that one of the purposes of the NOTOC is to aid in handling an emergency. If it is done correctly, transitioning to an e-NOTOC would be an improvement in that regard.

### **Respective concerns**

The discussion was then opened to participants to detail their concerns with a transition to e-NOTOC, or how that would be enacted.

Candy and a number of the Operator representatives appreciated the opportunity to work the details outside of a formal DGP meeting, and to have an ARFF representative present to better understand their requirements. The points noted were that:

- the proposal was not to mandate that the NOTOC be provided by electronic means only but to provide an option of either a paper copy or electronically, as is currently being done with the flight plan, passenger list, etc.
- with an e-NOTOC, if there was still a requirement to provide a paper copy then it would likely necessitate maintaining two systems and increase costs.
- the discussion of an e-NOTOC for the crew and providing emergency response information for ARFF are two different requirements
- Operators cautioned against being overly prescriptive as the effort moves forward

Questions posed were:

- Whether the current 12 items of information in a NOTOC listed in TI 7; 4.1.1.1 is still the valid requirement. It is asked if some of this data is no longer deemed essential and could be removed.
- If the crew is provided with a paperless e-NOTOC, does that still meet the requirements for ARFF.

Tony stated that, much like with rail and road transport, the paperwork is provided for the operators, but ARFF crews have to use it in response to a fire on that mode. In the US, ARFF will likely have connectivity / computers, but that is not usually the case in a number of international locations, and even in the US it is not conducive to incident response as crews will be in firefighting gear and on scene at the incident. The more data, concisely presented, that can be brought off of the aircraft and shared with ARFF on scene will help the response effort.

Possible solutions were discussed as 1) a pilot e-NOTOC and an ARFF e-notification, and 2) a pilot e-NOTOC and a summary paperwork for the crew to provide to ARFF. IFALPA asked whether there was a single set of DG data in the proprietary database program that could be sorted or filtered for the pertinent data and then transmitted or printed as required. The Operators noted that solution #2 proposed above would likely require two separate systems, and the maintenance cost of, for example, printers at every gate / ramp / crew office. The two-part question in response was 1) what information does ARFF need, and 2) what does the crew need to provide to ARFF on scene.

Tony stated that the ARFF requirement was hazard class of the DG on board, quantity of each respective item, and location of the DG as loaded. He stated that UN ID number would be helpful, if available. He and IFALPA agreed that the information would need to be provided by the aircrew in a format usable to ARFF on scene.

It was discussed that Operators usually have the DG data at stations they serve, and could transfer the data electronically if aircraft land remotely. Tony stated that ARFF is usually not manned, nor do they have the equipment, to reach out to Operators and request that data be sent while responding to an incident. Also noted was that some of the ICAO documents state that “the operator shall provide [DG] information to emergency services responding.” Timo provided the example that diversions of Finnair long-haul flights have been to airports where most ARFF crews do not speak English.

The question regarding the information items that are required to be included in a NOTOC came up throughout the discussion. Also, the cost and complexity of making changes to the DG software was emphasized. The question was asked that, since the group is looking at changes to how the information may be provided to crews and ARFF, can we also look at what information is required, so that all of the changes can be made at one time.

### **Discussions going forward**

Although the group did not reach any decisions on resolving the proposal to amend the ICAO publications regarding e-NOTOC, all felt this was a productive next step in understanding the concerns of the various stakeholders, and identifying questions to be answered and issues to be focused on going forward.

The consensus was to add a review of the items required to be included in a NOTOC to the current effort.

It was agreed that there needs to be a balance between what specifics IFALPA would require of an e-NOTOC to maintain a comparable level of safety with the status quo in a transition to e-NOTOC.

If the transition to an e-NOTOC is going to be exclusively electronic, a solution for how to provide DG data to responding ARFF crews needs to be resolved.

An understanding of relative costs and savings of no longer having to print paper NOTOCs and expend paper, ink, and maintain the printer network, versus simply transferring the current NOTOC system to electronic delivery, versus incorporating additional electronic changes to the data would be helpful.

### **Next meeting**

With the holidays imminent and the need to discuss the results of this meeting with their respective member organizations, it was agreed that the next meeting would not be until late winter or early spring. The Associations at the meeting today would contact each other in a couple of months and set up the next meeting date and agenda.