ICAO

EVENT INVOLVING RYANAIR FLIGHT FR4978 IN BELARUS AIRSPACE ON 23 MAY 2021

Report of the ICAO Fact-Finding Investigation

July 2022

Contents

Note.— Unless stated otherwise, all dates and times in this report are recorded in Co-ordinated Universal Time (UTC).

List of Acronyms

ACC	Area control centre
ALERFA	Alert phase
ALR	Alerting (message type designator)
AOC	Air operator certificate
ATC	Air traffic control
ATM	Air traffic management
ATPL	Air transport pilot license
ATS	Air traffic services
CPL	Commercial pilot license
CSS	Cabin service supervisor
CVR	Cockpit voice recorder
DGCAA	Directorate General Civil Aviation Administration of the Republic of Bulgaria
DISTRESFA	Distress phase
DLP	Data loss prevention
EDD	Explosive detection dogs
EFB	Electronic flight bag
FIR	Flight information region
FFIT	Fact-Finding Investigation Team
FL	Flight level
ICAO	International Civil Aviation Organization
ILS	Instrument landing system
IP	Internet Protocol
KGB	State Security Committee of the Republic of Belarus
MHz	Megahertz
MIA	Ministry of Internal Affairs
MSQ	IATA 3-letter designator Minsk Airport (“Mike Sierra Quebec”)
NCASP	National Civil Aviation Security Programme
NPFO	Nominated person for flight operations
NITS	Nature, Intention, Time, Special Instructions
OCC	Operational control centre
OFP	Operational flight plan
OPS	Operations
PA	Passengers announcement
PANS-ATM	Procedures for Air Navigation Services — Air Traffic Management
PIC	Pilot-in-command
PIOSEE	Problem, Information, Options, Select, Execute, Evaluate
RCAA	Romanian Civil Aeronautical Authority
RCC	Rescue coordination centre or Search and rescue coordination centre
RYR	Ryanair Designated Activity Company with its principal place of business in Ireland
RYS	Ryanair Sun S.A. (trading as Buzz) with its principal place of business in Poland
SAR	Search and rescue
SOP	Standard operating procedure
UMMS	ICAO 4-letter designator for Minsk Airport (“Uniform Mike Mike Sierra”)
UTC	Co-ordinated Universal Time

1. INTRODUCTION

1.1. On Sunday 23 May 2021, Ryanair Flight FR4978 en-route from Athens, Greece (LGAV) to Vilnius, Lithuania (EYVI) diverted to Minsk Airport (ICAO code UMMS), Belarus while passing through the airspace of the Republic of Belarus (the event). Belarus submitted to ICAO a preliminary report and additional information on an act of unlawful interference regarding the event. Subsequently, several requests were made by States to ICAO for an investigation into the event to be conducted.

1.2. At the second meeting of its 223rd Session on 27 May 2021, the Council of ICAO considered an oral report presented by the Secretary General related to the event involving Ryanair Flight FR4978 in Belarus airspace on 23 May 2021. Following consideration, the Council by a majority decision (C-DEC 223/2):

a) welcomed the presence at this meeting of the Ministers of Transport of Ireland, Lithuania, and Poland, as well as the representatives of Belarus and took careful note of their contributions to the Council's deliberations;

b) expressed strong concern at the apparent forced diversion of Ryanair Flight FR4978, a commercial passenger aircraft flying in Belarus airspace on Sunday, 23 May 2021;

c) underlined the importance of establishing the facts of what happened and understanding whether there had been any breach by any ICAO Member State of international aviation law, including the *Convention on International Civil Aviation* (Chicago Convention) and its Annexes;

d) recalling Article 55 (e) of the Chicago Convention, decided to undertake a fact-finding investigation of this event, and in this connection, requested the Secretariat to prepare an interim report to the Council for a subsequent meeting of the current session, which would present the available facts and relevant legal instruments and identify any gaps in order to safeguard international civil aviation; and

e) called upon all ICAO Member States and other relevant stakeholders to collaborate with this fact-finding investigation in the interests of ensuring the safety and security of civil aviation and offered the assistance and expertise of ICAO in the pursuit of this endeavour.

1.3. Immediately following the adoption of the Council Decision, the Secretary General established a Fact-Finding Investigation Team (FFIT), composed of ICAO staff members with competencies in the relevant areas of aviation security, aircraft operations, air navigation and international air law under the leadership of the Deputy Director, Aviation Security and Facilitation.

1.4. The FFIT received information and materials from Belarus, Bulgaria, Germany, Greece, Ireland, Latvia, Lithuania, Poland, Romania, Ukraine, United Kingdom and the United States. Information and materials were also received from Eurocontrol, European Union Aviation Safety Agency, the Interstate Aviation Committee and two Original Equipment Manufacturers. This included documents, photographs, audio and video recordings, transcripts and national laws, regulations and procedures relevant to the event. The Team conducted virtual meetings and interviews with the States, followed by missions to Poland (from 4 to 6 August 2021), Lithuania (from 9 to 11 August 2021) and Belarus (from 23 to 26 August 2021), during which in-person interviews and on-site visits were undertaken. Further meetings were held with Poland (from 27 to 29 April 2022) and the United States (13 April 2022) to obtain additional information. An interview with a key actor in the event was conducted by videoconference on 2 June 2022 with the

assistance of the authorities of the United States. The Team analysed the substantial amount of information and materials received in order to establish the facts and develop the timeline of the events in this report and identify relevant provisions in international air law instruments, Standards and Recommended Practices, procedures and guidance material as well as gaps to safeguard the safety and security of international civil aviation.

1.5. While States and entities were cooperative and forthcoming with a significant amount of information, some specific information requested was not made available. Some of the critical information requested but not provided to the Team is indicated in the Analysis section of this report and recapitulated in the conclusions. The Team was mindful too, that in some States, investigations and the gathering of information were continuing at the time of writing of this report.

2. SEQUENCE OF EVENTS BASED ON INFORMATION COLLECTED

2.1. Ryanair Flight FR4978 Operating Information

2.1.1. Ryanair Flight FR4978 on 23 May 2021 was operated by Ryanair Sun S.A. (RYS) with its principal place of business in Poland on behalf of Ryanair Designated Activity Company (RYR) with its principal place of business in Ireland, pursuant to a wet lease agreement under European Commission Regulation 965/2012. Both companies are part of the Ryanair group. Flight FR4978 was conducted on a Boeing 737-800 aircraft registered in Poland (SP-RSM), using the ICAO three letter designator RYR and call sign RYANAIR 1TZ or RYR 1TZ (referred to in radiotelephony as *Ryanair One-tango-zulu*).

2.1.2. RYS was responsible for operational control. RYS has an air operator certificate (AOC) issued by Poland. RYS contracts to RYR activities such as flight planning in accordance with its policies and procedures. The RYR and RYS operations control centres located in Dublin, Ireland and Warsaw, Poland respectively work in unison.

2.1.3. The flight crew had valid ICAO Annex 1 — Personnel Licensing compliant licenses issued by the Irish Aviation Authority. The pilot-in-command (PIC) had an Airline Transport Pilot License (ATPL) with 3,322 hours on aircraft Type and 3,600 total hours. The First Officer had a Commercial Pilot License (CPL) with 1,624 hours on aircraft Type and 1,760 total hours. Both pilots had valid medical certificates and were current with training, including security training, in accordance with the RYS training programme approved by the Polish CAA.

2.1.4. The flight and cabin crew on flight FR4978 were based in Vilnius, Lithuania. The planned rotation for that day was to fly two sectors Vilnius EYVI (VNO) – Athens LGAV (ATH) – Vilnius EYVI (VNO). The crew reported for duty at 0300hrs UTC (0600hrs Vilnius local time). The first sector of the flight (Flight FR4979) was uneventful, with minimal departure delay and arriving in Athens LGAV ahead of schedule. On arrival in Athens, a typical turnaround was conducted, departing at 0729hrs UTC (1029hrs Athens local time) for the return trip to Vilnius seven minutes late with 122 passengers and four infants.

2.2. Receipt of the bomb threat email

2.2.1. According to the Department of Aviation of Belarus, on the 23 May 2021 at 09:25:16 (12:25:16 local) an email was received in the generic mailbox info@airport.by, a screenshot of which is reproduced in Appendix H.

2.2.2. The email contained the following text: “We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight FR4978. A bomb was planted onto this aircraft. If you don’t meet our demands the bomb will explode on May 23 over Vilnius. Allahu Akbar.”

2.2.3. The SearchInform Data Loss Prevention (DLP) Software used at Minsk Airport detected and flagged the email as containing text communicating a potential threat to civil aviation. The automated detection is based on a pre-established list of keywords in several languages, including English, and triggers alerts on the computers of the Cybersecurity and Information Technology Division, in charge of the administration and oversight of the IT network of the Minsk Airport. The threat email written in English included words which are in the pre-established list of keywords.

2.2.4. Interviews revealed that emails received in the generic mailbox info@airport.by are processed by the secretarial staff in the Airport General Manager’s office during working hours on weekdays. IT Security

Officers do not review the content of the emails received on the 150 email addresses (personnel and generic) in service at the airport, unless an alert is triggered by the SearchInform DLP Software, such as the alert in question. The head of the systems administration group of the Cybersecurity Unit stated that he was remotely logged into the server on his computer while on duty at home and discovered in real time the pop-up alert regarding this email, received on the mailbox info@airport.by. His shift started at 06:00 UTC (09:00 local). The FFIT was informed that the head of the system administration group of the Cybersecurity Unit does not speak English but can understand it.

2.2.5. The bomb threat email indicated it was sent by "Hamas soldiers". The text refers to the Israeli operation in the Gaza Strip following the outbreak of violence that commenced on 10 May 2021 and demanded a ceasefire and that the European Union abandon its support for Israel in the war. The May 23 flight FR4978 to Vilnius is specifically identified as carrying participants of the 2021 Delphi Economic Forum, as well as a bomb to be detonated over Vilnius if the demands are not met. Media reports indicate that the ceasefire between Israel and Hamas came into effect on 21 May 2021, two days prior to the event. The Delphi Economic Forum took place in Athens from 10 to 15 May 2021. It is reported that at least one of the passengers participated in the Forum.

2.2.6. According to the Deputy General Director for Security, Discipline and Personnel, he was contacted by telephone at 09:27 (12:27 local) by the head of the system administration group of the Cybersecurity Unit and informed about the bomb threat email. Subsequently, the Deputy General Director for Security, Discipline and Personnel passed the information at 09:28 (12:28 local) by telephone to the Minsk Air Traffic Control Centre, as an aircraft was involved. The Deputy General Director for Security, Discipline and Personnel stated that the information he relayed to the Minsk Air Traffic Control Centre was limited to the threat itself, namely that there was an explosive device on board the aircraft on flight FR4978, on the route Athens-Vilnius, which would be detonated over Vilnius.

2.2.7. According to the Department of Aviation of Belarus, the SearchInform DLP Software detected an identical email at 09:56 (12:56 local) in the generic mailbox info@airport.by, as Ryanair Flight FR4978 had already started its descent to Minsk. A screenshot of the email is reproduced in Appendix H.

2.2.8. At about 12:00 (15:00 local) the same day, the head of the system administration group of the Cybersecurity Unit sent a copy of the threat email to the mailbox of the air navigation services provider, Belaeronavigatsia, as instructed by the Head of the Cybersecurity Unit, his immediate supervisor. The statements of the different stakeholders do not indicate that the email had been shared with any other entities before 12:00 UTC (15:00 local).

2.2.9. The Ministry of Transport and Communications of Lithuania informed the FFIT that an email was delivered at 9:25:16 UTC (12:25:16 local) on 23 May 2021 to the generic email address info@ltou.lt of the State Enterprise Lithuanian Airports as shown in the screenshot in Appendix H. This threat email was only discovered the next morning, Monday 24 May 2021, during business hours, and was forwarded to the Lithuanian Police for investigation.

2.2.10. With respect to the account from which the bomb threat email was sent, the Lithuanian authorities provided to ICAO information obtained from the Switzerland authorities, Switzerland being the State where the headquarters of the email service provider are established, through a mutual legal assistance mechanism between both States, showing that:

a) the account was created on 14 May 2021 at 15:32:01 UTC from Internet Protocol (IP) address 193.189.100.195;
b) the account was last accessed on 25 May 2021 at 8:39:42 UTC;
c) the authentication logs for the account were not activated;
d) no physical address or identity information was registered or linked to the account;

e) the account is free, therefore no payment information was recorded;
f) the content of the emails and the mailbox are fully encrypted, thus they cannot be viewed;
g) the contacts, notes and images are also fully encrypted, thus they cannot be viewed; and
h) no instant messaging information was recorded.

2.2.11. The information provided by the Lithuanian authorities also indicated that a total of six emails were sent separately from the account, respectively at 9:25 UTC (12:25 local) to Lithuanian Airports, at 09:26 UTC (12:26 local) to Athens Airport, 09:27 UTC (12:27 local) to Sofia International Airport, 09:28 UTC (12:28 local) to Bucharest International Airport, 09:34 UTC (12:34 local) to Kiev Airport and finally 09:56 UTC (12:56 local) to Minsk International Airport. All six airports are located on or near the planned route of the flight FR4978. Two of the six emails were not delivered, namely to the addresses respectively of Athens and Kiev Airports. Apart from the six emails, no record exists of any other email having been sent from this account.

2.2.12. Four emails were sent separately to Vilnius, Athens, Sofia, and Bucharest airports in a period of less than three minutes, while FR4978 was flying over the airspace of Ukraine and immediately prior to entering the airspace of Belarus. The first of these emails was sent at 09:25:12, about two hours after the take-off from Athens, five minutes before crossing the common L'viv/Minsk FIR boundary into Belarus. The fifth email was sent to Kiev Airport at 09:34:32, 4 minutes and 30 seconds after FR4978 had left the airspace of Ukraine. The last email was sent 22 minutes later, at 09:56:45 (12:56:45 local) to Minsk Airport at which point FR4978 had already initiated its descent to that airport. An illustration of the relative timings is at Appendix H.

2.2.13. Both the Directorate General Civil Aviation Administration (DGCAA) of the Republic of Bulgaria and the Romanian Civil Aeronautical Authority (RCAA) confirmed to the FFIT that bomb threat emails against Flight FR4978 sent from the same email account were received by their respective airports on 23 May 2021.

2.2.14. In the case of Bulgaria, the email was read on 25 May at 09:30 local by the Public Relations and Corporate Communications Department of SOF Connect AD, the operator of Sofia International Airport, which administers the email address: comment@sof-connect.com. The mailbox, used for alerts, complaints, recommendations, comments and questions from the public, is only checked on working days. According to the time stamp on the printout provided by the Bulgaria DGCAA, the email was received on 23 May 2021 at 12:27 local (09:27 UTC).

2.2.15. On 26 May 2021, following an information request from the Polish Civil Aviation Security Directorate, the RCAA requested all civil airports and the air navigation services provider Romatsa to report if any threat regarding flight FR4978 had been received by their services. On 8 June 2021, Bucharest Airports National Company informed RCAA that additional checks related to the flight FR4978 established that on 23 May 2021 at 12:28 local (9:28 UTC) a message sent from the same email account was received at the email address: contact@bucharestairports.ro.

2.2.16. The screenshots of the emails, available at Appendix H, received in Sofia International Airport and Bucharest Airports National Company reveal that the text of the emails is identical to the messages delivered at Vilnius and Minsk airports. The time stamps of these two emails are consistent with the information obtained from Switzerland through the Lithuanian authorities.

2.2.17. The nature and content of the emails respectively sent to Athens and Kyiv Airports have not been confirmed as these were not delivered.

2.3. Events in the Minsk ACC before contact with Ryanair Flight FR4978

2.3.1. The area surveillance controller (hereafter referred to as "the controller") who would subsequently provide area control services to Ryanair Flight FR4978, referred to in radiotelephony as Ryanair One-tango-zulu or RYR 1TZ , informed the FFIT that at approximately 06:50 – 07:00 UTC (which is 30 to 40 minutes after he took over duty and prior to the departure of FR4978 from Athens), the Director General of Belaeronavigatsia, the Belarusian air navigation services provider, entered the Minsk area control centre (ACC) with an unidentified individual presumed by the controller to be an employee of the Belarusian State Security Committee (KGB). The two men spoke to the Minsk ACC Duty Supervisor who subsequently advised the controller and another colleague that there was a Ryanair aircraft that would be flying through the Belarusian airspace from Ukraine. The Minsk ACC Duty Supervisor said that there was a bomb on board that aircraft and that the aircraft should land at Minsk Airport. To the suggestion by the controller that the Lviv Area Control Centre (ACC) should be informed, the controller was told by the Minsk ACC Duty Supervisor that there was no need to share the information with anyone. According to the controller, this discussion took place at approximately 07:10 UTC, before the aircraft entered the Minsk FIR or was visible on radar.

2.3.2. The controller was assigned by the Minsk ACC Duty Supervisor to control the flight on a dedicated frequency of 120.575 MHz. In the belief that, due to the presence of the individual presumed to be a KGB officer, the normal recordings of the air traffic control communications would be destroyed, the controller decided to record his communications with RYR 1TZ and with those in close proximity to his control position on his smartphone (Appendix I provides additional dialogue, in shaded format, obtained from the smartphone recording of the controller that was provided to the FFIT). A short moment later, the unidentified individual approached the controller and sat to the right of the controller. According to the controller, his communications with RYR1TZ were provided on instruction from the Minsk ACC Duty Supervisor, who occasionally checked with the unidentified individual before instructing the controller on his responses to RYR 1TZ. At other times, the controller's responses to RYR 1TZ were provided directly by the unidentified individual.

The unidentified individual was later recognized by the controller as also being present on the ramp during the disembarking process on video recordings taken by passengers.

2.4. Timeline of air traffic control and associated events from aircraft departure in Athens to the aircraft landing at Minsk Airport

Note 1.— The international airport at Minsk is referred to variously as "Minsk-2" (Location Indicators *(Doc 7910)) "Minsk National Airport" and "National Airport Minsk". For the purposes of this report the generic term "Minsk Airport" is used unless an alternative nomenclature is necessary to be consistent with specific information received.*

Note 2.— The following sequence of events uses a time format to describe the chronology of activities. Supplementary information relevant to the sequence of air traffic control events have also been included in boxes for context and clarity and to better illustrate the interactions within and between the various entities. Time is recorded in Co-ordinated Universal Time (UTC).

07:29 RYR 1TZ (the air traffic control call sign of Ryanair Flight FR4978, referred to in radio telephony as *Ryanair One-tango-zulu*), airborne Athens/Eleftherios Venizelos Airport, Greece, bound for Vilnius/International Airport, Lithuania. The estimated 2-hour 35-minute flight is cleared to climb to Flight Level 380 initially and later to Flight Level 390. The aircraft would be cleared to follow its flight planned route, via the Athinai, Sofia, Bucuresti, L'viv and

Vilnius flight information regions (FIRs) (**Appendices A and B refer**). The estimated time of arrival at the southern boundary of the Minsk FIR (at position SOMAT) was 09:30. A pictorial view of the primary events occurring subsequent to the aircraft's approach to this south boundary of the Minsk FIR can be found at **Appendix C.**

09:26:42 Minsk Area Control Centre (ACC) notifies L'viv ACC controller that the radio channel that RYR 1TZ is to contact Minsk ACC at SOMAT is 120.575 MHz (Transcript of L'viv ACC – Minsk ACC voice communications is at **Appendix D**).

The Minsk Area Surveillance (Radar) controller (hereafter referred to as "the controller" or "Minsk ACC") that would become responsible for controlling RYR 1TZ during this phase of flight was interviewed during the fact-finding investigation on 2 June 2022, subsequent to the production of C-WP/15284. According to information provided by other air traffic control personnel the purpose for the change in radio channel from the primary frequency was to check the range performance of the radio channel 120.575 MHz. However, the controller informed the FFIT that the communication range of this frequency was known, that it was not typical to transfer an aircraft to a new frequency to check its range performance and there was no regulation specifying such a procedure.
According to a statement dated 9 December 2021, posted on the website of the Government of Poland (https://www.gov.pl/web/sluzby-specjalne/operacja-bialoruskiego-kgb-nowe-fakty-dot-samolotu-ryanair), the Internal Security Agency of Poland, in conducting an investigation under the supervision of the prosecutor's office regarding the event, obtained an account and materials from a direct witness of the actions taken on 23 May 2021. This is now understood to be the area surveillance controller who controlled RYR 1TZ on entering the Minsk FIR. The Team requested from the authorities of Poland and the United States access to the witness and information collected in their investigation, resulting in the interview on 2 June 2022.

09:28 The Deputy Director-General for Security, Discipline and Personnel of the National Joint Enterprise "Minsk National Airport" informs the Minsk ACC Duty Supervisor via mobile telephone, that an email message about a bomb threat that had been received by the airport stating that there was an explosive device on board the aircraft "FR4978", on the route Athens to Vilnius, which would be detonated over Vilnius.

The exact time and duration of the telephone call by the Deputy Director-General to the Minsk ACC Duty Supervisor or the fact that it was made could not be verified, as no supporting evidence was provided by the authorities of Belarus. *This telephone call was also not corroborated by statements of the controller to the FFIT.*
The Minsk ACC Duty Supervisor stated that, using a combination of Google and Flightradar24 internet applications, he was able to correlate "FR4978" with the call sign and flight plan of Ryanair "RYR 1TZ" and, subsequently, an associated radar-displayed target and label approaching the southern boundary of the Minsk FIR.
This event is not corroborated by statements of the surveillance area controller interviewed by the team.

09:28:39 The controller, assigned to an air traffic control (ATC) Sector West procedural position at that time, enters a personnel access code at a vacant air traffic control workstation with the intention of controlling only RYR 1TZ.

The rationale for communicating with RYR 1TZ, including carrying out the radio channel performance check, at a dedicated workstation was not established.

09:28:58 RYR 1TZ contacts Minsk ACC on the radio channel 120.575 MHz, approaching position SOMAT on the southern boundary of the Minsk FIR. RYR 1TZ is identified on radar by the controller. (For this interaction and the following sequence of Minsk ACC voice communications with RYR 1TZ refer to Appendices E and I. The latter Appendix provides additional dialogue, in shaded format, obtained from the smartphone recording of the controller).

09:29 The Minsk ACC Duty Supervisor, in conveying the bomb threat information received to the controllers of the joint sector "West", directs the controllers to place RYR 1TZ on a dedicated ATS radio channel. However, the Minsk ACC Duty Supervisor was informed that this had already been done. The Minsk ACC Duty Supervisor advises the Minsk Tower Duty Supervisor about the aircraft and the information received regarding the explosive device, and the aircraft's possible diversion to Minsk Airport.

09:30:49 The controller conveys to the flight crew of RYR 1TZ the information received from the Minsk ACC Duty Supervisor "… we have information from special services that you have bomb on board. The bomb can be activated over Vilnius". RYR 1TZ responded by requesting the controller to standby.

The pilots look for the Standard Operating Procedures (SOPs) related to an airborne bomb threat in the approved Electronic Flight Bag (EFB) provided by RYS.

09:31:42 The controller contacts RYR 1TZ and states "…for security reasons, we recommend you land at Uniform Mike Mike Sierra".

RYR 1TZ attempts to contact their Operational Control Centre (OCC). It should be noted that RYS aircraft have limited capability to contact their OCC while airborne (see analysis section below).

09:32:59 RYR 1TZ requests clarification on where the bomb threat message came from. The controller advised RYR 1TZ that "airport security staff... informed they received email" and when further queried by the flight crew whether this was Vilnius airport security staff or from Greece, the controller responds with "...this email was shared to …several airports".

The FFIT was informed by the controller that, on being asked by the pilot where the information came from, the Duty Supervisor referred the inquiry to the unidentified individual who responded by saying that the information was conveyed by email from the airport, which was further expanded by the Duty Supervisor as "airport security staff got email". In responding to a further request for clarification, the unidentified individual explained "Well, it was kind of a mass mailing to all airports". On the question of providing a recommendation for RYR 1TZ to land in Minsk, the controller noted that "it is up to the captain to choose the landing site and I had no right to say this and make such recommendations. It was against our rules." (paragraph 3.4 below refers).

09:34:49 RYR 1TZ requests from the controller any frequency that would be available "from this range" to talk to the operations of the company.

09:35:39 Minsk ACC Duty Supervisor asks Vilnius ACC Duty Supervisor for the frequency of the Ryanair representative. After speaking to Vilnius Tower, the Vilnius ACC Duty Supervisor contacts the Minsk ACC Duty Supervisor and provides the Litcargus ground services frequency 131.750 MHz. During this discussion, at time 09:39:24, the Minsk ACC Duty Supervisor advises Vilnius ACC Duty Supervisor "… they might have a bomb on board and they wanted to consult their airlines, what should be done, should they change the route… Minsk, we recommend landing… that is why they have been asking for such a frequency, meaning, the issue does not concern engineering matters, it concerns the decision to be made." (For these interactions and subsequent coordination between Minsk and Vilnius Air Traffic Services (ATS) units refer to ***Appendix F).***

The crew was looking for a RYR frequency other than the one for Litcargus, the ground service provider in Vilnius, which they had already attempted to contact but to no avail.

09:39:30 RYR 1TZ requests from the controller if there is any update on their request. The controller advises the flight crew to standby as he is still waiting for the information.

09:39:57 RYR 1TZ requests the IATA 3-letter code of the airport that authorities had recommended the diversion to.

Company, or ground service provider frequencies for RYR are listed in the Electronic Flight Bag (EFB) directory with the IATA 3-letter code.

09:41:00 After initially advising RYR 1TZ to standby, the controller returns to the radio channel and advises the flight that the IATA code for the airport is MSQ.

09:41:58 RYR 1TZ requests further clarification on where the recommendation to divert to Minsk came from and whether it was from Company or departure airport authorities or arrival airport authorities. The controller responds that the recommendation "was our recommendation".

09:42:49 Controller advises RYR 1TZ that the Vilnius ground staff frequency is 131.750 MHz. RYR 1TZ responds that they have the frequency already, however, no one is answering.

09:43:39 – 09:44:41 Minsk ACC Duty Supervisor informs Vilnius ACC Duty Supervisor of the following: "The crew has not made a decision yet, so the information we have here is this: representatives of all institutions shared the information that they have received an e-mail, it was sent to multiple recipients at several airports, stating that there is a bomb on the aircraft… which may explode when the aircraft is above Vilnius… the crew … was recommended landing at Minsk. So far, it is following the route. We are waiting for them to make a decision."

09:44:38 Controller requests RYR 1TZ to advise its decision regarding the recommended diversion.

09:44:52 RYR 1TZ requests information from the controller on the code of the threat – whether it is green, yellow, amber or red.

In the RYS SOP, it is the OCC that assesses the threat and defines a colour code for it. Lacking that trigger point, from which flight crew actions are clearly defined, the crew assesses alternatives using a PIOSEE methodology. The colour code question seeks

information from the controller on the assessed threat to support subsequent actions based on their SOPs.

The FFIT was informed by the controller that when he asked how to respond to the request for information on the threat code, the unidentified individual responded "Let's make it red."

09:45:09 After requesting RYR 1TZ to standby, the controller subsequently advises that "Ryanair one-tango-zulu, they say code is red". RYR 1TZ responds, "in that case, we request holding at present position", which is subsequently approved by the controller.

09:45:52 Minsk ACC advises Vilnius ACC that the intentions of RYR 1TZ is to hold at current location.

Having been advised by the controller of the colour threat code red, the crew enter a right-hand hold to determine subsequent actions based on their SOPs.

The controller informed the FFIT that his choice of words "they say code is red" was used so that the crew knew that there were other people in the control room dictating what to say.

09:47:12 RYR 1TZ declares MAYDAY and advises controller "our intentions would be to divert to Minsk". The controller acknowledges the MAYDAY, informs the Minsk ACC Duty Supervisor and the Minsk Approach controller and, over the next approximately ten minutes, provides descent clearances, routing and weather avoidance instructions, and flight information, typical for arriving aircraft to Minsk Airport.

09:47:34 RYR 1TZ selects transponder code 7700.

09:48 RYR OCC is alerted that RYR 1TZ has declared an emergency via observation of changes to flight characterization on Flightradar24.

09:48 RYR 1TZ requests clearance to descend to Flight level 100 and initiates a rapid descent to that altitude where the airplane can be depressurized and minimize the effect of a possible detonation.

RYR OCC (Ireland) contacts RYS OCC (Warsaw) and both attempt to get more information on the reason for the emergency and diversion.

RYR OCC contacts Litcargus at VNO and learns that Vilnius ATC had informed them that RYR 1TZ was diverting to Minsk Airport due to a bomb threat but had no further details.

09:47 – 09:55 Minsk ACC Duty Supervisor declares emergency phase ALERFA and notifies the following of the circumstances:

- *Belarus Search and Rescue Coordination Centre (RCC)*
- *Vilnius ACC Duty Supervisor*
- *Operations Duty Officer of the Belarus Air Force and Air Defence Forces Command Centre.*

09:55 The Belarus RCC commences notification of the alert phase via a national automated telephone notification scheme.

The operator RYR as listed on the flight plan, was not notified of the alert phase.

The FFIT was informed by the controller that the unidentified individual left the control room once it was confirmed to him that the flight crew had made the decision to land at Minsk Airport.

09:57:12 The controller gives instructions to RYR 1TZ to contact Minsk Approach controller, the latter of which subsequently provides descent clearances and radar vectors for weather avoidance and for an Instrument Landing System (ILS) approach Runway 31 Right. The approach controller also inquires if any assistance is required on arrival. RYR 1TZ responds by asking if a parking location is available for this kind of event, to which the controller replies, "yes we have special area".

10:00 A Distress phase (DISTRESFA) notification is issued by the Minsk Tower Duty Supervisor via the national automated telephone notification scheme: an aircraft, proceeding on the route Athens–Vilnius as flight FR4978, had sent a "MAYDAY" distress signal (code 7700) and has requested an emergency landing at Minsk National Airport.

In the period between 10:01 and 12:17 there were at least 12 calls made by the RYS and RYR OCCs trying to establish communication with the authorities in Minsk to get more detailed information on the security threat that led to RYR 1TZ diverting to the Minsk Airport. For example, a copy of the threat email was requested on numerous calls and it was not provided.

10:04:14 RYR 1TZ inquires, "if our company was informed about this case… about this event?" The Approach controller responds, "we will try to pass information to your company during 5 minutes".

10:10 According to Litcargus Ramp Shift Leader, Litcargus (the ground handling service provider at Vilnius Airport) tries to contact Minsk ATC by telephone (3 attempts until 10:13).

10:12:35 After being cleared for an ILS Approach Runway 31 Right, RYR 1TZ is instructed to contact Minsk Tower controller on 130.4 MHz.

10:12:48 RYR 1TZ reports established on the ILS Runway 31 Right to the Minsk Tower controller and is provided with surface wind 240 degrees, 8 metres per second, gusting 11, and cleared to land Runway 31 Right. RYR 1TZ is also told to expect Stand One.

10:15 RYR 1TZ lands Runway 31 Right.

Litcargus Ramp shift Leader contacts Belavia OPS at Minsk Airport and is provided with confirmation of an approach to Minsk Airport by RYR 1TZ.

10:16:09 RYR 1TZ is instructed to vacate the runway via taxiway M2 and to contact Minsk Ground Control on 129.950 MHz.

10:17:51 After being instructed to follow the "Follow Me" vehicle, RYR 1TZ requests confirmation that Ryanair Operations has been informed about the incident. The Ground controller responds, "Yes, affirmative", at which point RYR 1TZ asks "Did you have a message from them to us? The controller replies that they "did still not have additional message".

There is no evidence that RYR was informed about the event or either of the emergency phases, at this time.

10:25 Litcargus Ramp shift Leader contacts Minsk Airport dispatch service by telephone, however, no information could be made available.

10:26:24 RYR 1TZ requests again from the Ground controller if any message has been received from its company. Minsk Ground Control advises that they had not.

10:29:18 RYR 1TZ again raises the issue of communications with the company, and the Ground controller responds with "If you ask me about your company representative, I don't have any information about him."

2.5. Events on board the Ryanair Flight FR4978 prior to landing at Minsk Airport

2.5.1. The chronology of the following events is based on in-person interviews of the crew members as well as the written statements and reports provided by crew members and passengers.

2.5.2. All cabin crew were at the back galley finishing last inflight duties and their meal. The flight had been so far uneventful according to the crew. At 09:42 the PIC contacted the Cabin Service Supervisor (CSS) to provide him with a briefing about the bomb threat, in the NITS (Nature, Intention, Time, Special Instructions) briefing format, used by the RYS crews whilst in a high stress situation. The CSS reminded the PIC to request air traffic control to indicate the type of alert (Green/Amber/Red). About twenty minutes before landing, the PIC updated the CSS about the situation and the imminent landing in Minsk and they agreed that there was no time for the crew to conduct a sterile search of the cabin. The CSS delivered the NITS briefing to the three other cabin crew members, highlighting the bomb threat and advising of the diversion to Minsk.

2.5.3. The PIC made a Passengers Announcement (PA) informing the passengers of a diversion to Minsk due to security issues. As the crew was preparing the cabin for landing, immediately after the PA, one of the passengers, stood up and shouted to one of the cabin crew that he could not land in Minsk as "I'm wanted there, they'll kill me". The CSS, informed about the incident by the cabin crew, attempted to reassure the panic-stricken passenger. The CSS then reported the situation to the flight deck; it was about 10 minutes before landing. There is a convergence in the statements of the crew that the passenger was not considered unruly or disruptive.

2.5.4. Before the landing, another passenger questioned the flight crew about the possibility to stay in Minsk, as she was a national of Belarus and Minsk was her final destination.

2.6. Timeline of events concerning the use of military aircraft

09:48 Minsk ACC Duty Supervisor informs Operations Duty Officer of the Belarus Air Force and Air Defence Forces Command Centre that Alert phase has been declared with respect to RYR 1TZ, diverting to Minsk Airport as a result of a bomb threat. Operations Duty Officer informs Military Commander and is given delegated authority to take appropriate action and keep

Commander informed. Level One of Readiness triggered and instructions provided to MIG-29 flight crew.

10:04 MIG-29 gets airborne from Baranovichi Air Base, controlled by military controller based in Minsk ACC. At a distance of 130 km from RYR 1TZ, the MIG-29 is given instructions to route to Minsk Machulishchi (UMLI), a military operational area near Minsk (Charts indicating relative distances between military aircraft and RYR 1TZ is at **Appendix G**).

10:15 The distance between FR4978 and the MIG-29 is 55 km at the time of its landing at Minsk Airport.

10:19 Minsk ACC Duty Supervisor advises the Operations Duty Officer that RYR 1TZ had landed. The MIG-29 returns to base.

2.7. Timeline of events from the landing of Ryanair Flight FR4978 at Minsk Airport until its departure

10:15 Ryanair Flight FR4978 lands at Minsk Airport and is directed to aircraft parking stand No. 1.

According to the report of the Minsk Airport Shift Supervisor, the units and resources of the Minsk Airport Emergency Rescue Command were deployed to aircraft parking stand No. 37 from 10:04 to 10:08 UTC (13:04 to 13:08 local), ready to respond to the act of unlawful interference.

In addition, 17 vehicles, including eight fire-fighting vehicles arrived at Minsk Airport between 10:23 and 10:43 UTC (13:23 and 13:43), according to the information provided by Belarus.

10:24 Aircraft arrives at parking stand No 1, parking brakes are set.

10:26 Boarding stairs are positioned at the doors of the aircraft.

The Minsk Airport Control Dispatcher stated that the stairs were positioned at the doors of the aircraft with the permission of PIC. The Control Dispatcher went up the stairs and greeted the PIC through an open window on the left side of the cockpit and asked him where the threat was on board the aircraft. According to the Control Dispatcher, the PIC answered that there was no threat. The Control Dispatcher then asked the PIC whether he needed assistance from the Police and also suggested opening the aircraft doors. The Control Dispatcher informed the cabin crew that they can open the doors of the aircraft.

10:30 Aircraft doors are opened.

The Control Dispatcher entered the aircraft and suggested that the airport could provide any assistance requested by the crew. The Control Dispatcher informed the PIC of the necessity to disembark the passengers together with their cabin baggage, as well as to unload hold baggage on the ramp of parking stand No 1 to be screened by Explosive Detection Dogs (EDDs), and to search the aircraft cabin and aircraft hold. The PIC gave instructions to the cabin crew to disembark the passengers.

10:38 The passengers start disembarking from the aircraft.

The passengers disembarked from the aircraft in groups of five and were asked to put their cabin baggage on the ramp to be screened by EDDs. After screening, the passengers were asked to take their cabin baggage and proceed to the bus.

There are differing accounts by the crew, collectively, and the Control Dispatcher as to who decided on the procedure for the passengers to disembark from the aircraft in groups of five. However, the Minsk Airport Aviation Security Service EDD unit informed the team that they requested passengers disembark in groups of five as the dogs could not handle larger groups.

10:43 The Ministry of Internal Affairs (MIA) aircraft search specialists arrive at the aircraft.

10:47 "Cancel DISTRESS" signal sent by Head of Flight Operations at Minsk Airport.

After receiving the "Cancel DISTRESS" signal from the Tower Duty Supervisor, the Minsk Airport Shift Supervisor of the emergency and rescue services stood down the Minsk Airport emergency rescue team.

The 17 vehicles, including eight fire-fighting vehicles, left the airport.

11:00 Aircraft baggage hold is opened.

11:05 Baggage loading/unloading equipment arrive at the hold of the aircraft. The baggage hold is checked by Minsk Airport Aviation Security Service EDD unit.

11:19 Baggage unloading is started.

11:21 Passengers are transferred on two buses to the Passenger Terminal international arrivals sector.

While it was determined that the passengers commenced disembarking in groups of five at 10:38 UTC and were transferred on two buses to the Passenger Terminal at 11:21 UTC, an accurate time of when all passengers and crew had disembarked is estimated at 11:14, but could not be verified as the video evidence for this time period is from a different camera, located further away and not providing a clear view of the aircraft.

After all passengers had left the aircraft, all crew (except for the PIC) were escorted to the passenger terminal, where they were screened together with their belongings. The PIC remained on-board.

11:26-11:58 Hold baggage is screened by EDD on the ramp.

12:11 Hold baggage is transferred from the ramp to the baggage make-up area for secondary screening.

11:30-13:12 Passengers and their cabin baggage are screened at the Minsk Airport transfer passenger screening checkpoint.

After screening, the passengers proceed to Waiting Area No. 3 of the International Departures sector under the supervision of the personnel of Minsk Border Control Division.

12:16-12:32 Hold baggage is screened at the baggage make-up area by the Minsk Airport Aviation Security Service, in the presence of Customs and Police, using X-ray screening equipment.

Screened hold baggage remains at the baggage make-up area until 12:52 when it is transferred to parking stand No. 1 to be reloaded onto the Ryanair aircraft.

12:04-12:22 Aircraft is searched by the MIA Special Services.

No explosives or explosive devices are found following the screening of the passengers, their cabin and hold baggage and the search of the aircraft.

14:37 The crew return to the aircraft. Upon return to the aircraft, the cabin crew complete a security search of the aircraft cabin, while the First Officer completes a security search of the exterior compartments of the aircraft. The security searches were completed with no findings.

14:30-14:44 Aircraft refuelling.

15:30-16:40 (*Approximate time based on interviews*) PIC checks and approves paperwork on ground handling services provided to Ryanair aircraft.

15:52 Hold baggage is transferred from baggage make-up area to parking area No. 1.

16:06-16:22 Hold baggage is loaded.

16:25-16:35 Passengers board.

Once boarding of passengers was completed, cabin crew conduct a headcount of passengers and establish that five passengers are missing. No explanation was provided to the Ryanair crew by the Minsk Airport ground staff.

16:53 Boarding stairs are removed from the aircraft doors.

17:07 Engine start-up.

The flight from Minsk to Vilnius was conducted under the flight number and call sign RYR 497.

17:14 RYR 497 commences taxi from Stand No. 1 to Runway 31 Right for departure to Vilnius. While taxiing out, the air traffic controller asks whether RYR 497 had the latest weather information "do you have the latest information about thunderstorms forecasted in Minsk FIR". The air traffic controller subsequently provides information on a thunderstorm-related SIGMET affecting the entire Minsk FIR. RYR 497 is cleared to LINE UP AND WAIT on Runway 31 Right. Once in position, the pilots observe the meteorological conditions in the departure path and request an immediate left turn onto a heading of 265 after take-off. The tower controller coordinates with approach control and after a five-minute delay, the aircraft is redirected to Runway 13 Left for departure.

Following the runway change, the flight crew informed the Tower controller that they need 10 minutes at the runway-holding position to contact the Performance Department and

recalculate the figures. Minsk Tower provided a new instrument departure procedure for runway 13 Left.

The flight crew attempted to call the Performance Department, but was unsuccessful, so the crew used RTOW tables to complete performance calculations. A re-brief for the new departure took place and a revised final altitude for the flight was requested. Subsequent coordination with air traffic control followed. When the flight crew was ready for departure, an additional delay occurred due to passengers using the toilets.

17:48 Aircraft departs from Runway 13 Left.

3. ANALYSIS

3.1. Transmission of the bomb threat information

3.1.1. The bomb threat emails were received by four airports. Information obtained from Switzerland through the Lithuanian authorities shows that only one email was sent to Minsk Airport (info@airport.by) at 09:56:45 (12:56:45 local). Although Belarus showed the FFIT a copy of an email received at 09:25 UTC (12:25 local) in the Minsk Airport (info@airport.by) mailbox, the information obtained from Switzerland through the Lithuanian authorities did not show that such an email had been sent to the Minsk Airport (info@airport.by) mailbox.

3.1.2. The FFIT was not provided with saved electronic copies of the emails received at info@airport.by in their original format, as, according to the Department of Cybersecurity and Information Technology of Minsk National Airport, messages on the said email address are only stored for seven days, after which they are automatically overwritten. The FFIT was provided an image (screenshot) of an email, thus the metadata was not reviewable. Although the team viewed the saved email files during the onsite visit, the Belarus Department of Aviation answered the FFIT's request for these files by indicating that they were no longer available. Similarly, the airport.by server logs were not provided to the FFIT as these too were no longer available after a specified time.

3.1.3. According to the authorities of Belarus, the information about the receipt of the bomb threat email was communicated through telephone calls between Minsk Airport and Minsk ACC personnel. Telephone records related to the numbers contacted, and time and duration of calls would have been necessary to corroborate the timeline of the actions by various personnel of Minsk Airport, Minsk ACC and Belarus security services regarding the receipt of the bomb threat email and the related timings. However, these records, although requested, were not availed to the Team. The Belarus Department of Aviation stated that due to legal protections stipulated in Article 28 of the Constitution of the Republic of Belarus which grants to every citizen the right to protection from unlawful interference in their private life, including interference with their correspondence, telephone and other messages, they were unable to provide the requested details on the exact time specific cellular phone calls were made or received and the duration of such calls. Article 181 of the Resolution of the Council of Ministers of the Republic of Belarus No. 1005 dated 17 August 2006 "On Approval of the Rules for the Provision of Telecommunication Services" and Article 42 of the Law of the Republic of Belarus No. 45-3 dated 19 July 2005 "On Telecommunications" also stipulate that telecommunications operators and telecommunications service providers are obliged to safeguard the confidentiality of telephone and other messages.

3.1.4. The controller informed the FFIT that, soon after he took over duty and after the Director General of Belaeronavigatsia accompanied by an unidentified individual had entered the Minsk ACC ATC operations room, there were discussions about the presence of a bomb on board a Ryanair flight that would fly from Ukraine into Belarus airspace and that the plane should land at Minsk Airport. These discussions took place at approximately 07:10 UTC which is prior to the departure of the flight from Athens and the time the first email was purportedly received at 09:25 UTC. In light of this information and in the absence of saved electronic copies of the emails received at info@airport.by in their original format and telephone records to corroborate the transmission of the bomb threat from the Minsk Airport to the Minsk ACC, the FFIT could not confirm that the email and the telephone communications were the means by which the bomb threat was communicated to the Minsk ACC in order to initiate preparations to contact the flight. Based on the information provided by the authorities of Belarus, the FFIT could not independently verify the claim by Belarus that the bomb threat procedures were in fact triggered by the alleged receipt of the first email at Minsk Airport at 09:25 UTC or upon its subsequent transmission via telephone from the Minsk

Airport to the Minsk ACC at 09:28 UTC. On the contrary, the controller's testimony provides a different explanation of the origin of the actions taken by the Belarusian authorities in relation to the Ryanair flight.

3.2. The provision of ATS to an aircraft subjected to unlawful interference

3.2.1. If an aircraft is subjected to unlawful interference, the PIC shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the appropriate authority unless considerations aboard the aircraft dictate otherwise (Annex 2 — Rules of the Air, 3.7.2).

3.2.2. Responsibilities of ATS units in situations of unlawful interference are contained in Annex 11 — Air Traffic Services. An aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, shall be given maximum consideration, assistance and priority over other aircraft as may be necessitated by the circumstances (Annex 11, 2.24.1). When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall attend promptly to requests by the aircraft. Information pertinent to the safe conduct of the flight shall continue to be transmitted and necessary action shall be taken to expedite the conduct of all phases of the flight, especially the safe landing of the aircraft (Annex 11, 2.24.2). ATS units shall also, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the operator or its designated representative (see paragraph 3.6 below).

3.2.3. Related ATS procedures are contained in Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), predominantly Chapter 15, and central to these procedures is the recognition that aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, shall be given priority over other aircraft. ATS units shall therefore promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the route of flight and at any aerodrome of intended landing, and shall take such action as is necessary to expedite the conduct of all phases of the flight. Circumstances might also require the application of separations larger than the specified minima, between the aircraft being subjected to unlawful interference and other aircraft.

3.2.4. Belarus ATS-related regulations mirror ICAO provisions with respect to the provision of ATS to an aircraft subjected to unlawful interference, with no significant gaps.

3.2.5. With respect to the implementation of the Belarus ATS-related regulations during the event and, particularly, the extent to which ATS units promptly attended to requests by or anticipated the needs of the aircraft, the following information is relevant:

a) the Ryanair aircraft was singularly controlled by an area surveillance controller at a dedicated workstation. Priority was afforded to the flight and subsequent to its diversion to Minsk airport one other commercial flight arrival being controlled by the Minsk Approach controller was delayed for the purposes of providing additional air traffic spacing;
b) the flight crew was advised of the bomb threat immediately after contacting the Minsk ACC;
c) in the contexts of the totality of the information available in the bomb threat email and the need to attend to the anticipated needs of the aircraft, including the provision of relevant details, information provided to the flight crew was incomplete, of varying degrees of clarity and only volunteered over an extended period of transmissions and numerous pilot inquiries. That the bomb threat had been communicated via email was only provided subsequent to the recommendation for diversion to Minsk Airport. Pertinent information included in the bomb threat email was not passed on to the flight crew such as that specific reference to the flight number FR4978 had been made, the time of receipt of the message, the identified organization/sender, and the reasons for placement

of a bomb on board that specific flight. This, together with the use of phrases lacking in specificity, such as "security services" and "security reasons" added to the challenge brought upon the flight crew to determine the appropriate course of action in an efficient and effective manner;

d) the flight crew was informed that the bomb threat message was received via email, however, the relative times of email arrival and its discovery were not provided to the crew;

e) while the rationale for recommending diversion to Minsk Airport was exclusively stated to be "security reasons", the reasons were not volunteered nor was the specific entity who had made this recommendation identified. The flight crew was not informed that the bomb threat was assessed as credible nor the basis for this assessment; and according to interviews during the investigation, that the assessment was made singularly by the Minsk ACC Duty Supervisor, after consultation with senior air traffic control staff only, and that no external consultation had been carried out. These details were not corroborated by audio recordings and statements of the controller interviewed by the team who countered that there was no assessment of the bomb threat credibility by senior air traffic control staff; rather, the information to be provided to the flight crew came directly or indirectly from the unidentified individual;

f) both the flight crew and subsequently Vilnius ACC were advised by Minsk ACC that the bomb threat email was sent to several airports. The fact that emails were sent to different airports was found to be correct. However, the FFIT could not establish how the information about the sharing of the email with other airports came to the knowledge of the area surveillance controller or Minsk ACC Duty Supervisor based on the statements of the Belarusian authorities. The testimony of and audio recordings provided by the controller suggest that this information was provided by the unidentified individual;

g) although at several times, the flight crew requested information from various controllers on whether the company had been informed of the situation and if any message had been received from them, only limited information was provided to the flight crew on efforts and progress to contact the company. At 10:17 UTC, in response to another request of the flight crew to the ground controller for confirmation that the company had been informed about the incident, the controller responded, "Yes, affirmative". There was no confirmation availed to the FFIT that the company had been informed of the event by the Belarus authorities. RYR provided the transcripts of calls made by the RYS and RYR OCCs in the period between 10:01 UTC and 12:17 UTC trying to establish communication with the authorities in Minsk to get more detailed information on the security threat that led to RYR 1TZ diverting to Minsk Airport. A copy of the threat email was requested on numerous calls and it was not provided; and

h) although the bomb threat was said to have been first communicated to the Minsk ACC via telephone, records to verify the exact time the call was established or received, or its duration were not provided to the FFIT for the reasons specified in 3.1.3. Furthermore, that the bomb threat was first communicated by telephone, is not corroborated by statements made by the controller interviewed by the FFIT.

3.2.6. The frequent use of cellular telephones, including instant messaging services, particularly by ATS personnel and others meant that recordings and resultant transcriptions of critical operational communications were not available. Consequently, details of the sequence of events, in some cases, were based on information provided by individuals involved from their memory, personal notes taken at the time or details in statements or reports made after the fact.

3.3. Ryanair Procedures

3.3.1. Operational Control

3.3.1.1. Annex 6 — *Operation of Aircraft,* Part I — *International Commercial Air Transport — Aeroplanes* defines Operational control as "The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight." Ryanair Sun has established a system for exercising operational control over any flight operated under the terms of the Ryanair Sun AOC. This function is exercised by the Ryanair Sun Operations Control Department, under the supervision of the Nominated Person for Flight Operations (NPFO).

3.3.1.2. In Ryanair Sun (RYS), the NPFO is responsible for the safe conduct of all flight operations carried out under the Ryanair Sun AOC issued by the Polish Civil Aviation Authority. The PIC is responsible for the operation and safety of the aircraft, from the moment it is first ready to move for the purpose of taxiing prior to take-off, until the moment it finally comes to rest at the end of the flight and the engines are shut down. The Ryanair group has its main OCC in Dublin, Ireland. It supports RYR operations and also provides support for all the Ryanair group operator OCC's, including RYS, located in Warsaw, Poland. The operational control centres of RYR and RYS, are linked, have the same systems and both have access to all RYS operations. The means for pilots to communicate from the aircraft, while airborne, to the OCCs (RYS and RYR) is published in the Operational Flight Plan (OFP). For the Athens - Vilnius leg, the published frequency was 131.750 Dispatch. This frequency corresponds to a radio operated by Litcargus, RYR's ground handling services provider in Vilnius. Litcargus can relay messages between the aircraft and the OCCs in either direction.

3.3.2. Selection of alternate aerodromes

3.3.2.1. The criteria and responsibilities for determining the adequacy of aerodromes, including alternate aerodromes, is contained in the Operations Manual, which is issued under the authority of the NPFO. RYS only uses aerodromes that are adequate for the Boeing 737 aircraft and the operations concerned.

3.3.2.2. Aerodromes are categorized based on several factors, including but not limited to, type of instrument approaches available, night operations capability, and aircraft performance requirements. Flight crew aerodrome familiarization requirements are based on the RYS aerodrome category and may require a specific sign-off from the NPFO. In normal operations, RYS uses the concept of a "commercial alternate" aerodrome. These are adequate aerodromes selected and approved by the company that may not be the nearest to the destination or route, but may be more desirable for commercial reasons, such as passenger and ground handling. One or more commercial alternate aerodromes may be listed in the OFP. When there is more than one, they are ranked in order of company preference.

3.3.2.3. The only alternate aerodrome listed in the OFP for flight RYR 1TZ was Riga International Airport (EVRA) in Latvia. The Minsk Airport has no RYS category assigned to it since it is neither an airport in the RYR destinations network, nor considered as an alternate aerodrome. Operation to a non-categorized aerodrome requires approval from the NPFO. However, in an abnormal or emergency situation, the PIC is authorised to use any aerodrome providing an equivalent level of safety, if time permits.

3.3.3. Security threats while an aircraft is en-route

3.3.3.1. Any security threat or warning is seriously considered according to RYS manuals. Actions for when the aircraft is on the ground are detailed in the airline's Security Manual. The procedures when

the aircraft has been dispatched (i.e., the aircraft is en-route) are contained in the Operations Manual. Upon receipt of a threat against a dispatched aircraft, the OCC will complete a full threat assessment according to established procedures to determine the associated risk and the appropriate actions to be taken. The results of the risk assessment are communicated by the OCC to all relevant stakeholders in the company, including the flight crew using a three-colour code for the specific threat. Based on the determined colour code, the PIC will do one of the following:

- GREEN No credible threat exists. Diversion not required. Continue to destination as planned.
- AMBER Credibility uncertain. The flight will continue to the planned destination or divert to a suitable alternate, as designated by OCC or the national Authorities.
- RED There is a credible threat and the PIC should land at the nearest suitable airport as directed by ATC or the National Authorities.

3.3.3.2. On the event day, RYR 1TZ was informed by Minsk ACC of a bomb threat and the recommendation to divert to Minsk Airport. The pilots were unable to establish contact with RYR or RYS OCC to determine the threat risk assessment (i.e., colour-code). It is not uncommon for RYR to communicate with RYR group aircraft using air traffic control to relay messages. At 09:44:52 the flight crew asks the Minsk ACC "…I need to ask you a question, what is the code of the threat, ...is it green, yellow or amber or red". In less than a minute, at 09:45:09, the Minsk ACC responded "Ryanair one-tango-zulu, they say code is red." Based on this information, the pilots elected to follow their procedures for a code RED threat.

3.3.3.3. The subsequent actions by the RYR 1TZ flight crew were in accordance with established procedures. These included declaring an emergency; descending, as fast as practicable to an altitude where the aeroplane cabin differential pressure could be reduced to zero; and diverting to a suitable airport.

3.3.3.4. The flight crew received a recommendation from the air traffic controller to divert to Minsk Airport because of a bomb threat. The RYS SOPs specify that the OCC determines the security risk and based on their assessment subsequent actions follow. The flight crew attempted to contact their company; however, contact could not be established as the frequency listed in the operational flight plan for that purpose was the one for the Litcargus radio in Vilnius and it had an approximate range of 20 to 30 nautical miles. At 09:34:49, the flight crew asked the controller for a frequency, within range of their position, which they could use to communicate with their company. The controller provided the frequency for Litcargus, whom they had already attempted to contact to no avail.

3.3.3.5. According to interviews with the NPFO and aligned with company established procedures, had the flight crew been able to make contact with the RYR or RYS OCC through the Litcargus frequency (131.750 MHz), any other RYR frequency, or via ATC relay, it is unlikely the aircraft would have diverted to Minsk Airport because the OCCs did not have access to the threat email at that time. The RYR and RYS OCCs learned about the diversion when the emergency was declared. At that point they attempted, on several occasions, to obtain a copy of the bomb threat email from the Belarus authorities without success. Ryanair learned of the actual email text when information on "Incident with emergency landing of the Ryanair aircraft" was published in the Belarus Department of Aviation website (http://caa.gov.by/ru/news-ru/view/1-203/) several hours after the aircraft landed. Without access to all the details contained in the email, and following their established procedures, it is improbable that the resulting company security threat assessment would have been red. Had the risk assessment been coded in any other colour instead of red (e.g., amber), and the OCC had determined that the aircraft still needed to divert, an airport in the RYR network or one they consider as an alternate airport would likely have been chosen following their

established procedures since ground-handling arrangements in place would have facilitated operations at the airport.

3.3.3.6. Under the RYS established procedure, the OCC assesses the security threat and assigns a colour code. This procedure assumes that the OCC learns about en-route security threats before the flight crew does. Subsequent flight crew actions are based on the assigned colour code. In this case, the air traffic controller informed the flight crew that "they say code is RED". It was not clear what the air traffic controller meant when he said "they" as it could have been other Belarus authorities or a relay message from RYR. Absent communication with the company and based on their training, the flight crew, took this as a confirmation of the threat level.

3.3.3.7. RYS flight crew are trained to use a time-critical decision-making methodology called PIOSEE (problem, information, options, select, execute, evaluate) when dealing with abnormal operational issues. Before declaring an emergency and deciding to divert to Minsk, the flight crew had at least the following elements to conduct a PIOSEE methodology as follows:

Problem	The flight crew understood that an email had been received with a security threat that there was a bomb on board flight FR4978 (RYR 1TZ) which would be activated over Vilnius.
Information	The flight crew understood the controller's recommendation to divert to Minsk Airport and that the threat level was code red. They sought more information about the bomb threat email and were informed by ATC that the email was shared with several airports. They confirmed that they had approach charts for Minsk Airport.
Options	The flight crew reviewed their procedures for actions applicable to a credible code red alert. The procedures stated that, in such cases, "… the PIC should land at the nearest suitable airport as directed by ATC or the National Authorities."
Select	The flight crew elected to follow the ATC recommendation to divert and land in Minsk.
Execute	The flight crew declared an emergency MAYDAY; informed ATC of their intention to divert to Minsk; requested descent to 10,000 feet and clearances to proceed and land at Minsk Airport.

3.3.3.8. Once the threat level was established, the flight crew followed actions applicable to a code red situation as enumerated in the procedures, including a rapid descent to Flight level (FL) 100 where the aircraft could be depressurized to minimize the possible impact of an explosion.

3.3.3.9. The RYR and RYS operational control centres work very closely. When they finally received more information on the email that triggered the diversion, after the aircraft had landed, the RYR OCC conducted a post-mortem security threat risk assessment and determined that the threat colour code would not have been red.

3.3.4. **CVR procedures**

3.3.4.1. The aircraft used in the RYR 1TZ operation on the event day, registration SP-RSM, was fitted with a Honeywell HFR5-V cockpit voice recorder (CVR). The CVR can capture audio input signals from one wide-band area channel and three narrow-band voice channels. The wide-band channel is used to capture the flight deck acoustic environment. The three narrow-band channels are used to capture audio

from the headsets and microphones used in each flight deck position (i.e., Captain, co-pilot, and observer seat). Each narrow-band channel records at least the last two hours and the wide-band channel records at least the last three hours before overwriting previous recordings. This CVR meets or exceeds the Annex 6 Part I requirements.

3.3.4.2. The procedures in the RYS Operations Manual establish that no flight can be dispatched with a pulled CVR circuit breaker or operate unless equipped with a recorder which, with reference to a time scale, records:

- Voice communications transmitted from or received on the flight deck by radio;
- The aural environment of the flight deck, including without interruption, the audio signals received from each boom and mask microphone in use;
- Voice communications of Flight Crew members on the flight deck using the aeroplane's interphone system;
- Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker; and
- Voice communications of Flight Crew members on the flight deck using the public address system.

3.3.4.3. The RYS Operations Manual also establishes that it is mandatory to preserve CVR data after an incident/accident and it is the responsibility of the aircraft PIC to ensure that the CVR circuit breaker is pulled at the earliest opportunity on the ground following the occurrence of any of the listed serious incidents, which includes "Any flight where a MAYDAY is declared." CVR data is preserved by removing power to the CVR (i.e., pulling the circuit breaker). This avoids overwriting recorded data with new data. Exceptions to that procedure can only be made following consultation with the NPFO or his nominated management pilot(s), or the safety and compliance manager.

3.3.4.4. The RYS operations manual mandates the CVR to be functional for an aircraft to be dispatched, and that once a circuit breaker is pulled it can only be reset by maintenance personnel licenced or approved by the State of Registry (i.e., Poland), with an appropriate technical log entry and subsequent engineering release.

3.3.4.5. On the day of the event, after engine shut down at parking stand 1, the flight crew discussed whether they should pull the CVR circuit breaker. The flight crew consulted with the NPFO. After consulting with several internal departments in RYS and RYR the NPFO took the decision that the CVR circuit breaker should not be pulled and instructed the Captain accordingly. The instruction was complied with by the flight crew. According to Ryanair, the main reasons why the NPFO took the decision not to pull the CVR circuit breaker were that the aircraft had no malfunction, the operation was conducted using normal flight procedures and the RYR and RYS OCCs had not yet received a copy of the bomb threat email, despite many requests to the authorities of Belarus. Keeping the CVR energized also avoided dispatch complications for departure since there was no maintenance personnel that could perform and log the work to re-energize the CVR. The OCC had also determined that it would be desirable for the aircraft to continue to Vilnius (EYVI) as soon as possible.

3.3.4.6. As a result of not pulling the CVR circuit breaker, the recordings of channels 1, 2 and 3 (the flight deck positions) only contained data from when the aircraft was on short final to Minsk Airport. The recordings on the ambient wide-band area channel included the timeframe of the event. However, most of the internal flight crew communications in that channel were not audible because the flight crew used the headsets and microphones for all communications, which is in line with normal procedures. When a

headset and microphone is used, the individuals using them need not speak very loud, making it difficult for the ambient microphone to pick up such conversations.

3.4. Recommendation by the air traffic controller for RYR 1TZ to land at Minsk Airport

3.4.1. According to information provided by the Minsk ACC Duty Supervisor, he made the determination that the bomb threat was deemed credible on his own, after consultation with senior controllers on duty, and that the assessment was based on guidance available in the Aviation Security Manual (Doc 8973 – Restricted). In their written statements, finalized over the following days, both the Minsk ACC Duty Supervisor and the area surveillance controller indicated that the reasons for recommending to the flight to land at Minsk was based on the flight path of the aircraft and that Minsk Airport was the nearest suitable aerodrome in the event that an emergency landing was necessary. The Minsk ACC Duty Supervisor also considered the time required for the flight crew to make a decision.

Note. — The controller, on being interviewed by the FFIT, retracted his written statement referred to herein (paragraph 3.4.5 refers).

3.4.2. In its official report (preliminary) of 22 June 2021, the Belarus Interdepartmental Commission for the Investigation of the circumstances of an act of unlawful interference in the activities of civil aviation noted that the grounds for the recommendation conveyed to the flight crew to land at Minsk Airport were determined by the requirements of paragraph 121 of the Instructions for the Use of the Airspace of the Minsk Flight Information Region, ratified by decision No. 21 of 13 November 2017 of the Ministry of Defence of the Republic of Belarus, which states that "For aircraft performing international flights, Minsk National Airport and Gomel aerodrome shall serve as permanently operating alternate aerodromes."

3.4.3. The objectives of air traffic services, as stipulated in Annex 11, 2.2, include the provision of advice and information useful for the safe and efficient conduct of flights. The determination of the portions of airspace where this flight information service is to be provided is through the designation of FIRs, of which Minsk FIR (UMMV) is one. Because air traffic controllers face a wide variety and an almost unlimited set of circumstances surrounding communications with aircraft, particularly in emergency situations, the establishment of exact detailed procedures in all cases is precluded. This is borne out in PANS-ATM, Chapter 15, in relation to emergencies, communication failure and other contingencies, where the procedures are intended as a general guide to air traffic services personnel. Air traffic control units shall maintain full and complete coordination, and personnel shall use their best judgement in handling emergency situations (15.1.1.1).

3.4.4. Procedures and guidance material in ICAO documentation on providing advice to flight crew are, to the largest extent, limited to a) traffic avoidance advice, sometimes on pilot request, and normally as a result of surveillance information available to the controller and flight path monitoring; b) advice on how to best circumvent adverse weather, again normally as a result of available surveillance data; and c) the provision of air traffic advisory service to aircraft operating within Class F airspace. All three circumstances are irrelevant to the events that took place on 23 May. It is also notable that, in terms of the controller taking appropriate and relevant action when an emergency is declared, unlawful interference is suspected or a bomb threat has been received, PANS-ATM does not make specific reference to the need to provide advice (15.1.1.2 and 15.1.3). Similarly, neither do the regulations of Belarus. In this context, as well as the circumstances surrounding the bomb threat and the aircraft's geographical location, the provision of information about all aerodromes potentially suitable for diversion, including associated facilities and services would have been ideal, rather than recommending a single option.

3.4.5. The controller interviewed by the team indicated that his written statement was inaccurate in a number of respects and was drafted in a manner to not mention anything unusual or out of the ordinary. In providing "typical information" only in his statement, no mention was made of the unidentified individual being present in the control room, the role that he had played, nor any indication he had received information from him or the Duty Supervisor to be conveyed to the flight crew. The controller contended that controllers at Minsk ACC would not make a recommendation on which airport should be used as an alternate, in the circumstances of 23 May, and that a variety of airports might prove to be suitable to a flight crew of a B737 in an emergency situation, needing to land with some urgency. These airports included, amongst others, Brest, Warsaw, Gomel or Minsk, however, determination of suitability could only be made by the flight crew.

3.4.6. Moreover, the FFIT was informed by the controller that on 1 June 2021, he and the Duty Supervisor at the time of the Ryanair event on 23 May, met with the Deputy General Director in his office in the Headquarters of Belaeronavigatsia in Minsk. This meeting was recorded by the controller on a smartphone, the transcript of which is at Appendix J. Of significance in this recording is the direction by the Deputy General Director to the controller and Duty Supervisor to amend the details within their individual incident reports of what occurred on 23 May: – "So, look, now I will give you the sheets, you will need to make some adjustments, they are insignificant, but ... why, because, uh, little different times appear in the radio exchange ... a little different time appears. Therefore, it is necessary to write closer to the radio exchange, so that you ... uh, well, less fantasies, right?" (Appendix J refers). This appears to include the technical means by which receipt of the information of the bomb threat was received and the time at which the receipt of the information was received (Appendix J refers) e.g. "… write "approximately, at nine twenty-eight, I received via mobile communication"... "by means of mobile communication". Additionally, there appears to be reference to removal of operational recordings – "Well, then I'll ask the technicians to remove it all."

3.4.7. In the absence of the information provided by the controller interviewed subsequently by the team, a lack of clarity also existed concerning the sequence of events related to the actual timing of the assessment on the credibility of the bomb threat within the Minsk ACC vis-à-vis the flight crew being advised of same. One might assume that the assessment was made by the Minsk ACC Duty Supervisor prior to the recommendation being made by the area controller for RYR 1TZ to land at Minsk Airport (between 0928 UTC, when Minsk ACC Duty Supervisor was notified of the bomb threat, and 09:31:42 UTC, when the controller recommended Minsk Airport for a diversion). The flight crew, however, only understood that the threat had been deemed credible, in a formal sense, 13 minutes later at 09:45:09 when Minsk ACC responded to the aircraft's inquiry with "they say code is red". The testimony of and audio recordings provided by the controller however, indicate that no formal assessment was made on the credibility of the bomb threat within the Minsk ACC by senior air traffic control staff, and the timing of advising the flight crew of such an assessment was more a consequence of the timing of the inquiries of the flight crew and the determination by the unidentified individual on how to respond.

3.5. Notification to ATS units and RCCs that an aircraft is the subject of unlawful interference

3.5.1. When an aircraft known or believed to be the subject of unlawful interference, it is considered to be within the Alert phase, or ALERFA, as defined in Annex 11, Chapter 5. ATS units shall notify RCCs (5.1.1) and other ATS units that may be concerned (PANS-ATM, Appendix 3, Section 1), with such information as is available. This includes, inter alia, the emergency phase, nature of the emergency, significant information from the flight plan, any action taken by reporting office, and other pertinent remarks. The mechanism for meeting these obligations is contained in the PANS-ATM whereby an alert (ALR) message with this information shall be transmitted to any ATS unit that may be concerned with the flight and to the associated RCCs. Similarly, Annex 17, 5.2.2, requires that each Contracting State responsible for providing air traffic services for an aircraft, which is the subject of an act of unlawful

interference, shall collect all pertinent information on the flight of that aircraft and transmit that information to all other States responsible for the air traffic services units concerned, including those at the airport of known or presumed destination, so that timely and appropriate safeguarding action may be taken en-route and at the aircraft's known, likely or possible destination.

3.5.2. While the Belarus regulations largely mirror the ICAO provisions, the following variations between the ICAO provisions and the Belarus regulations were identified:

a) the Belarus Air Traffic Management (ATM) Aviation Regulations, (paragraph 7.6.9), specify that the ALR message is to be sent within five minutes of the emergency phase being determined, while the ICAO provisions do not specify a time limit; and

b) the Belarus Search and Emergency Rescue Aviation Regulations (paragraph 2.3.16), specify a different set of information that is to be forwarded from the official who takes the decision to declare an emergency phase to the associated RCC compared with the details contained in Annex 11, 5.2.2. Noteworthy amongst these is the absence of specific reference to significant flight plan information in the Belarus regulations.

3.5.3. The Alert phase (ALERFA) was not declared by the Minsk ACC until 09:47 UTC, when the pilot declared MAYDAY and informed the controller that they had decided to proceed to Minsk Airport. Under both Belarus regulations and ICAO provisions the aircraft should have been considered to have entered the ALERFA when the flight was known to be the subject of unlawful interference. By definition, this occurred on receipt of the bomb threat information in the Minsk ACC at 09:28 UTC. Another opportunity to declare the ALERFA was at 09:31 UTC when the Minsk ACC Duty Supervisor, in consultation with other senior controllers on duty, had determined that the bomb threat was credible and the controller recommended to the flight crew that the aircraft divert to Minsk Airport. This sequence of events and consultation amongst senior controllers, however, is not corroborated by the controller in his interview with FFIT or the recording provided by the controller.

3.5.4. Irrespective of when the ALERFA was declared by the Minsk ACC, an ALR message was never sent. Instead, at 09:55 UTC, after receiving details from the Minsk ACC Duty Supervisor, the Belarus RCC commenced notification of the ALERFA via a national automated telephone notification plan, whereby details were provided to fifteen different State entities in Belarus. These included the Duty Officers of the Command Centre – Air Force and Air Defence, National Centre of Control and Response on Emergency Situations – Ministry of Extraordinary Situations, National Centre of Operational Medical Response, Ministry of Internal Affairs, State Border Committee, State Customs Committee, the State Security Committee (KGB), the Centre of Coordination and Flight Support, the Information Centre of the Ministry of Transport and Communication, and various senior supervisory and Director-level air traffic management, security, safety and search and rescue (SAR) personnel. The Belarus RCC sent another notification by the same means to a larger set of subscribers when the emergency entered the distress phase following the declaration of MAYDAY and selection of the transponder code 7700 by the flight crew.

3.5.5. While this telephone notification plan broadly supported the need to notify the State entities and officials concerned within Belarus, once the Alert and Distress phases were declared, the plan did not provide for notification to RCCs or to ATS units outside Belarus that could have been concerned. Nor did it provide for informing the operator of the aircraft about the threat.

3.5.6. The Vilnius ACC Duty Supervisor was informed by the Minsk ACC Duty Supervisor about the bomb threat at 09:39:24 UTC in an incidental reference as part of a telephone call to obtain the frequency for Ryanair. Subsequently, at 09:44, in a deliberate notification, the Vilnius Duty Supervisor was provided

with more detailed information concerning what was transpiring - 16 minutes after the Minsk ACC became aware of the bomb threat and, potentially, only 4 minutes prior to RYR 1TZ crossing the Minsk/Vilnius FIR boundary, should the flight crew have chosen to continue into Lithuanian airspace. The Vilnius RCC was subsequently advised by the Vilnius ACC on receipt of the information from the Minsk ACC.

3.5.7. It was indicated during interviews that as the Alert phase was declared only when the flight crew had taken the decision to divert to Minsk Airport, a telephone call from the Minsk ACC Duty Supervisor to the Vilnius ACC Duty Supervisor conveying the diversion information was deemed sufficient notification by Minsk ACC.

3.5.8. Singularly, or in combination, the non-inclusion of significant information from the flight plan in the notification of the Belarus RCC by Minsk ACC, and the decision to not dispatch an ALR message resulted in an early opportunity being lost, in identifying contact details for Ryanair Operations. Field 18 (Remarks) of the RYR 1TZ flight plan contained the relevant phone number (Appendix A refers). Meeting the obligations of Annex 11, 5.2.2 and PANS-ATM, Appendix 3, Section 1, therefore, would conceivably have identified a means to communicate with the Operator for the purposes of exchanging necessary information.

3.6. Notification to the Operator that an aircraft is the subject of unlawful interference

3.6.1. When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the operator or its designated representative (Annex 11, 2.24.3). In this context, and in accordance with Annex 12, 4.1.1, each RCC shall have readily available at all times, up-to-date information concerning addresses and telephone numbers of all operators, or their designated representatives, engaged in operations in its search and rescue region.

3.6.2. Belarus ATM Aviation Regulations require that the operator or the operator’s authorized representative, be informed by the air traffic control authority upon receiving information from other sources about the threat of an explosive device being placed on board an aircraft.

3.6.3. No evidence was provided by the Minsk ACC or Belarus RCC of any attempt to contact the Operator. The flight plan contained a telephone number for direct contact with the RYR OCC, albeit its inclusion was not based on any ICAO provision. However, there is evidence in telephone recordings and transcripts that the RYR OCC tried, on multiple occasions, to get information on the diverted aircraft to no avail until hours after the aircraft landed at Minsk Airport.

3.6.4. Amongst alternatives available to facilitate communications between ATS units and operators, is the ICAO OPS control directory (www4.icao.int/opsctrl) established for the purpose of aircraft tracking (Doc 8168, Procedures for Air Navigation Services — Aircraft Operations, Volume III – Aircraft Operating Procedures Chapter 1). The controller, when interviewed by FFIT, indicated that a variety of options are available to controllers to contact an Operator or obtain Operator contact details, including requesting the information from the Belarus RCC or adjacent area control centres, or relay request through same. A review of the RYR 1TZ flight plan, particularly Field 18 (Remarks) would also be an opportunity for obtaining pertinent information.

3.7. Belarus Contingency procedures related to bomb threats in flight

3.7.1. Chapter 22 of the National Civil Aviation Security Programme (NCASP) of Belarus approved by the Government of Belarus on 10.10.07, last amended on 13.11.19 establishes the responsibilities of entities

involved in countering acts of unlawful interference in the activities of civil aviation. It highlights the need for a plan of action to be developed by airport and aircraft operators to respond to incidents of various types, taking into account specific local circumstances and the availability and preparedness of personnel and equipment. The plan of action shall set out measures to protect and render necessary assistance to passengers and crew members and to ensure the integrity of the aircraft, baggage, cargo and postal items, and also to put into effect other measures provided for in special operation plans drawn up by the State security authorities to suppress acts of unlawful interference in the activities of civil aviation.

3.7.2. The NCASP also establishes that the National-level Operations and Situation Centre is the command centre in charge of measures to suppress acts of unlawful interference and minimize possible negative consequences.

3.7.3. The NCASP establishes the national policies applicable whenever there is a threat of an explosion in an aircraft on the ground, and requires the aircraft operator, in conjunction with airport management and in agreement with law enforcement authorities, to organize and carry out:

- disembarkation of all passengers and crew members from the aircraft, together with their cabin baggage, and subjecting these to a second inspection;
- offloading of baggage, cargo and postal items transported in the cargo hold, together with catering supplies and stores carried on board, and subjecting these to a second inspection;
- towing of the aircraft to a special isolated parking place;
- inspection of the aircraft by specially trained law enforcement personnel working in cooperation with the aircraft operator's engineering staff to search for and identify explosive devices; and
- any other necessary actions consistent with the response plans for incidents (situations) of different types.

3.7.4. In the event that an act of unlawful interference affects the interests of another State, the NCASP requires a representative of that State to be permitted in the prescribed manner by a designated authority of the Republic of Belarus to participate in the investigation of that act. The findings of the investigation shall be made available to that State in the prescribed manner.

3.7.5. The Minsk Airport Security Programme contains procedures related to an aircraft subjected to a bomb threat, such as:

- unloading of all passengers and crew members together with their cabin baggage from the aircraft and subjecting these to a second inspection;
- unloading of check-in baggage, cargo, mail, on-board food and supplies carried in the cargo compartment and subjecting these to a second inspection;
- towing the aircraft to a special isolated parking position;
- inspection of the aircraft by specially trained law enforcement officers in cooperation with the engineering and technical staff of the aircraft operator for the purpose of search and detection of explosive devices;
- other necessary actions in accordance with the action plans for response to various types of accidents (situations).”

3.7.6. The Minsk Airport Contingency Plan (ACP) provides for actions to be taken when checking a threat that an explosive device has been placed on board an aircraft. These actions include:

- disembarkation from the aircraft of all passengers and crew members together with their cabin baggage and subjecting these to a second inspection;
- off-loading of hold baggage, cargo, mail, on-board catering supplies and equipment carried in the cargo compartment and subjecting these to a second inspection;
- towing of the aircraft to a special isolated parking place;
- inspection of the aircraft by specially trained law enforcement officers in cooperation with the engineering and technical personnel of the aircraft operator for the purpose of the discovery and detection of explosive devices.

3.7.7. The Minsk ACP further requires the Deputy Director General for Aviation Security and Discipline (the aviation security service shift supervisor) to organize shift personnel of the aviation security service to conduct the second inspection of:

- passengers, their cabin baggage and members of the aircraft crew of:
    - international flights, at the inspection point for transit and transfer passengers;
    - flights to the Russian Federation, at inspection point "P";
- checked baggage and postal items at the baggage inspection point; and
- cargo at the transport and logistics centre inspection point.

3.7.8. After the inspection, passengers shall be escorted by screeners from the inspection unit of the aviation security service to the appropriate assembly point in the departure lounge until the inspection of the baggage, cargo, and on-board catering supplies and equipment carried in the cargo compartment and a special inspection of the aircraft have been concluded. In addition, the Deputy Director General for Aviation Security and Discipline (or the aviation security service shift supervisor) shall tighten the checkpoint controls at personnel screening points for access to the sterile area of the airport and, together with the head of the paramilitary security detachment, shall determine the procedure for the guarding of screened baggage, cargo and postal items.

3.8. Security measures applied to flight FR4978 on the ground

3.8.1. The National Civil Aviation Security Programme (NCASP) of Belarus requires the State bodies and aviation organizations to participate in measures to suppress acts of unlawful interference in the activities of civil aviation within the limits of their competence. When carrying out a special operation to suppress an act of unlawful interference in the activities of civil aviation, the Republican operational-situational headquarters directly supervises measures to suppress it and minimize possible negative consequences. The FFIT was advised that the National Security Committee (NSC) decides whether to conduct an antiterrorist operation or not. In the case of Ryanair flight FR4978, the NSC did not activate an anti-terrorist operation. The Minsk Airport Shift Supervisor, was in charge of the operational control of the management of response to Act of Unlawful Interference (AUI). Communication on the ground with the Ryanair crew was conducted by the Minsk Control Dispatcher after the aircraft was parked at Parking Stand No. 1 and during disembarkation.

3.8.2. The NCASP of Belarus and the Minsk Airport Security Programme (ASP) and ACP require the disembarkation of all passengers and crew members together with their cabin baggage from an aircraft under bomb threat and the conduct of screening. However, the PIC of Ryanair flight FR4978 remained on board the aircraft. The FFIT received contradictory information on this matter. According to the written and oral statements of the Ryanair crew, they were told by Minsk Airport ground personnel that one of them should stay on-board while the search of the aircraft was conducted. On the other hand, the Minsk Airport Control Dispatcher stated that the decision to leave one crew member on-board the aircraft was

taken by the crew. The view of the cabin crew was that, if the aircraft was under bomb threat, all crew members should disembark. The response from the Minsk Airport ground personnel was that they had airport procedures and the crew had to do what the airport authorities said. The Ryanair PIC stayed on board the aircraft, and the rest of the crew disembarked the aircraft, taking their personal belongings with them, shortly after the disembarkation of the passengers had been completed.

3.8.3. The disembarkation of passengers from the aircraft, which was under bomb threat, took more than half an hour. This was due to the fact that the passengers were requested to disembark in groups of five for their cabin baggage to be screened by EDD. The Minsk Airport Shift Supervisor gave instructions to the Head of the Minsk Airport Aviation Security Services to start screening of passengers' cabin baggage using EDD on the ramp. It was agreed with the Aviation Security Services that the passengers and their belongings should disembark in groups of five, as the EDD cannot efficiently screen all passengers at the same time. The EDD unit from the MIA screened cabin baggage of passengers disembarking by the rear door of the aircraft, while the Airport EDD unit conducted the screening of passengers' cabin baggage at the front door of the aircraft.

3.8.4. The Ryanair cabin crew confirmed that the Minsk Airport Control Dispatcher boarded the aircraft through the front door and informed the Ryanair cabin crew that the passengers should disembark the aircraft in groups of five and stand at the bottom of the stairs, where they would be screened together with their belongings. As mentioned earlier, the cabin crew queried that if there was a suspected security threat, all passengers and the crew should disembark as quickly as possible. The Minsk Airport Control Dispatcher explained that airport procedures take precedence, and passengers will only be permitted to disembark in groups of five. Notwithstanding the above, the Minsk Airport Control Dispatcher stated that the instruction to disembark in groups of five came from the crew.

3.8.5. The total time from the moment the aircraft came to a stop until the passengers were taken to the Airport Passenger Terminal was 57 minutes. At 10:24 UTC (13:24 local), the aircraft arrived at parking stand No 1, and parking brakes were set. At 10:38 UTC (13:38 local), the passengers started disembarking from the aircraft. Passengers left the aircraft in groups of 5 or 6 people and their cabin baggage was screened with EDD on the ramp of parking stand No 1. Following the screening of their belongings, they boarded buses and were taken to the Minsk Airport Passenger Terminal at 11:21 UTC (14:21 local).

3.8.6. The representative of the MIA Search Team informed the FFIT that a full aircraft search covering the interior of the aircraft, cargo compartments, and landing gear wheel wells – had been performed. According to the report of the MIA, three technicians and one EDD conducted the search of the cabin of the aircraft, using visual checks, EDD and mirrors. The search of the cabin lasted 18 minutes from 12:04 to 12:22.

3.8.7. The representative of the MIA Search Team indicated that the technicians had received specific training in aircraft searches but did not remember the aircraft type used for recurrent training. He further explained that the team conducted a visual search of the aircraft exterior checking open compartments but not closed ones. The representative of the MIA Search Team also indicated that they have specific search instructions, but no checklists for aircraft cabin searches. The PIC indicated that he was not requested to participate in the search of the aircraft but was able to observe the work performed by the search team from the front of the cabin. The PIC stated that the search team was not thorough and omitted areas that would be covered under normal procedures.

3.8.8. According to their statements, the cabin crew performed a sterile search of the cabin twice, the first time after the disembarkation of the last passenger and the second time when the crew came back on-board and prepared for flight to Vilnius.

3.8.9. The Aviation Security Manual (Doc 8973 – Restricted), recommends the following best practices for security measures applied on the ground to aircraft under bomb threat:

"17.14.4 Threats on the ground

If a threat is associated with an aircraft that is still on the ground, aircraft operators, in consultation with airport authorities and other law enforcement entities responsible, should, if the warning has been assessed as credible:

a) disembark all passengers and crew normally with all their cabin baggage by steps or jetties, escape slides should only be used in extreme emergencies;
b) move the aircraft to a remote location such as the isolated aircraft parking position;
c) isolate and re-screen all passengers and their cabin baggage and hold them in a separate area until the crew members, hold baggage and cargo, and in-flight supplies have been inspected and/or screened, searched and declared safe;
d) unload all hold baggage and require passengers to identify their baggage, which should then be screened or searched before it is reloaded;
e) unload all cargo, which should then be screened or searched before it is reloaded;
f) check the integrity of in-flight supplies; and
g) search the aircraft. Such a search should be conducted only by designated and appropriately trained staff from law enforcement authorities."

Attachment C to Appendix 38. Response to Threats against Aircraft
12. If an aircraft lands following receipt of a bomb threat that has been assessed as AMBER or RED, provision should be made to disembark passengers and crew with a minimum of delay, with their cabin baggage when circumstances permit. The necessary emergency services should be provided to preserve life and prevent injury, and the aircraft should be parked where it will not hazard people or premises in the event of an explosion. The actions for a bomb threat against an aircraft on the ground should then be implemented.

3.8.10. Based on the information availed to the FFIT, the following variances were identified:

a) procedures were not implemented by Minsk Airport ground staff to:

   i) ensure the disembarkation of passengers as soon as possible;
   ii) require passengers to positively identify their hold baggage;
   iii) implement screening of passengers' cabin baggage in a place, where the aircraft under bomb threat will not pose a hazard to people in the event of an explosion.

b) in relation to the aircraft cabin search:
   i) a checklist for the search of an aircraft under bomb threat was not available; and
   ii) recurrent training of the MIA search team on aircraft searches was not documented, and in particular, not for the aircraft type in question. The date of the last training on an aircraft could not be specified.

3.8.11. According to Annex 11, Distress phase is a situation wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance. Effectively, when there is reasonable certainty that the aircraft and its occupants are not threatened by grave and imminent danger and do not require immediate assistance, the distress phase can be cancelled. In the

particular case of FR4978, it is estimated that the disembarkation of the passengers was completed at about 11:14. However, the "Distress" signal was cancelled, and emergency and rescue services stood down, at 10:47, when the screening of passengers' cabin baggage on the ramp was still in progress, the aircraft baggage hold was yet to be opened and the security search of the aircraft had not started.

3.8.12. The FFIT was informed that the Distress phase was cancelled in accordance with the Belarus Search and Rescue Support of Flights in Civil Aviation Regulations, paragraphs 4.2.7.3 and 4.2.11.3. The aircraft had made a safe landing, had reached its parking stand, an initial inspection had been carried out, and no damage to the aircraft had been found and no threats to the life and health of the passengers and crew were identified. Further actions related to the inspection of aircraft and passengers, their baggage and carry-on luggage continued until 13:20 UTC, at which point the RCC was advised.

3.9. The involvement of Belarus military aircraft

3.9.1. At 10:04 UTC, a MIG-29 fighter aircraft took off from Baranovichi Air Base, 130km southwest of the position of RYR 1TZ (Appendix G refers). RYR 1TZ was at 6000 feet in the arrival phase about to commence vectors for approach to Runway 31 Right at Minsk Airport. The MIG-29 was cleared by a military controller to the operational area Minsk Machulishchi (UMLI) near Minsk. Mission tasks were to:

a) monitor communication activity;
b) provide communications back-up between RYR 1TZ and air traffic control, if necessary; and
c) prevent any act of terrorism over Minsk.

3.9.2. At 10:15 UTC, when RYR 1TZ was landing, the MIG-29 was recorded 55km southwest of RYR 1TZ. From the evidence provided by Belarus, no escort or intercept occurred between the MIG-29 and RYR 1TZ and no communications by the MIG-29 was recorded on the radio channels used by RYR 1TZ. According to information provided by the flight crew and cabin crew and, subsequently, the controller, there was no communication, interaction, visual sighting or other knowledge of military aircraft involvement with the flight.

3.9.3. During the period from 09:30 to 10:15 UTC when RYR 1TZ was operating in the Minsk FIR, a Belarus military Mil Mi-24 helicopter was operating in an area of Belarus territory close to the north western border at altitudes up to 1200 metres. The helicopter played no role in the circumstances associated with RYR 1TZ.

3.9.4. One passenger aboard the Ryanair flight filmed what appeared to be a jet fighter in a turn manoeuvre at some distance, in the 2 o'clock quadrant. The video was determined to have been created at 18:04 UTC, 16 minutes after the departure of RYR 497 from Minsk to Vilnius, and interviews confirmed that a Lithuanian fighter aircraft was tasked to escort the aircraft from the border to final destination.

3.9.5. No escort nor intercept by military aircraft occurred with respect to RYR 1TZ within the airspace of Belarus.

3.10. Meteorological conditions

3.10.1. Meteorological conditions did not play a role in the diversion of RYR 1TZ to Minsk Airport. However, the presence of thunderstorms and cumulonimbus clouds explain the indirect route flown by RYR 1TZ to Minsk Airport and the provision of weather avoidance radar vectors following the initiation of the diversion.

3.10.2. The specific terminal area forecast (TAF), METAR, and SIGMET conditions are as follows:

TAF UMMS 231113Z 2312/2412 25007G12MPS 9999 BKN010
TEMPO 2312/2320 27012G17MPS 0800 +TSRAGR BKN005 BKN020CB
TEMPO 2320/2406 27006MPS 1200 BCFG BR BKN005
TEMPO 2406/2412 30007G12MPS 2100 -SHRA BKN005 BKN020CB=

Plain language translation:
TAF (Aerodrome Forecast) for UMMS (Minsk National Airport) issued on the 23rd of the month at 1113 UTC valid from 1200UTC on the 23rd of the month to 1200 UTC on the 24th of the month; surface wind direction 250 degrees; wind speed 7 metres per second gusting to 12 metres per second; visibility 10 kilometres or more; broken cloud at 1000 feet;
Temporarily between 1200 UTC and 2000 UTC on the 23rd of the month; surface wind direction 270 degrees, wind speed 12 metres per second gusting to 17 metres per second; visibility 800 metres in a heavy thunderstorm with rain and hail, broken clouds at 500 feet and broken cumulonimbus cloud at 2000 feet;
Temporarily between 2000UTC of the 23rd of the month and 0600UTC of the 24th of the month; surface wind direction 270 degrees; wind speed 6 metres per second; visibility 1200 metres in patchy-fog and mist and broken cloud at 500 feet;
Temporarily between 0600 UTC and 1200 UTC of the 24th of the month; surface wind direction 300 degrees, wind speed 7 metres per second gusting to 12 metres per second; visibility 2100 metres in light shower rain and broken cloud at 500 feet and broken cumulonimbus clouds at 2000 feet.

METAR UMMS 230930Z 26007G10MPS 230V290 9999 BKN034 15/08 Q1009 R31R/CLRD// R31L/////// TEMPO 25011G16MPS=
Plain language translation:
METAR (aerodrome routine meteorological report) for UMMS (Minsk National Airport) issued on the 23rd of the month at 0930 UTC; surface wind direction 260 degrees; wind speed 7 metres per second gusting to 10 metres per second; significant directional variations between 230 and 290 degrees; prevailing visibility 10 kilometres or more; broken cloud at 3400 feet; air temperature 15 degrees Celsius and dew-point temperature 08 degrees Celsius; QNH 1009 hectopascals; contaminations on the runway 31 Right has ceased to exist; state of runway information for the runway 31 Left is not reported; Trend during next 2 hours, temporarily surface wind direction 250 degrees; wind speed 11 metres per second gusting to 16 metres per second.

UMMV SIGMET 1 VALID 230933/231200 UMMS-UMMV MINSK FIR EMBD TS FCST INTIRE FIR TOP FL270 MOV NE 30KMH INTSF=
Plain language translation:
The first SIGMET issued for the MINSK FIR (identified by UMMV (Minsk) area control centre) by UMMS (Minsk) meteorological watch office since 0001 UTC of the day; the message is valid from 0933UTC to 1200UTC on the 23rd of the month; embedded thunderstorm is forecast to expand across entire FIR and the top of cloud is FL270; the thunderstorm is expected to move northeastward at the speed of 30 kilometres per hour and to strengthen in intensity;*
**"INTIRE" in the SIGMET message is considered as a typo for "ENTIRE", according to Annex 3 Table A6-1 A. Template for SIGMET and AIRMET messages.*

3.11. The identification of the five passengers who remained in Minsk

3.11.1. Ryanair flight FR4978 departed Athens with 126 passengers while 121 passengers reboarded the flight from Minsk to Vilnius. After being advised of the number of passengers re-boarding, the crew performed a headcount once boarding for the flight from Minsk to Vilnius was completed which established the number of passengers on this segment as 121 (113 adults, 4 children and 4 infants). The Belarus authorities confirmed to the FFIT that five passengers remained in Belarus. According to interviews with the crew and Ryanair management, it is not unusual for a passenger to be allowed to stay at a location to which the flight has been diverted, as was the case for the flight FR4978. The only condition is that they are in possession of adequate documents to allow them to stay in the territory concerned. An Immigration Officer on duty at Minsk Airport on 23 May 2021 stated that anyone wishing to remain in Belarus with a legal right to enter the country was permitted to do so.

3.11.2. According to interviews with the crew and information gathered by the Lithuanian authorities from interviewing the passengers that disembarked in Vilnius, one Belarussian passenger who expressed the wish to stay in Minsk was denied entry into Belarus and continued the trip to Vilnius. The team was unable to gather any information on the reasons why the passenger's request to stay in Minsk was denied or if the request was actually made as Belarusian authorities indicated that all passengers who asked to remain in Belarus were allowed to enter the country.

3.11.3. According to the Head the Immigration Services of the Minsk Airport, Immigration Services were notified approximately between 19:30 and 20:20 (local time) that five passengers wished to remain in Minsk. This included three passengers of Belarusian nationality, one passenger of Greek nationality, and one passenger of Russian nationality. Each of the five passengers was processed individually and promptly after they had each expressed the desire to enter the country. They were each escorted to Immigration Officers present and observing in the waiting area of the terminal before being brought downstairs to the immigration desk for processing and all five passengers crossed the border unescorted, on their own initiative. The Belarus authorities communicated to the FFIT that it was not possible to provide audio and video recordings of the immigration service showing the processing of the five passengers from flight FR4978 admitted into Belarus, since the video archive was stored for 30 days. However, extracts were provided from the State Border Committee's database regarding the immigration clearance performed for those five passengers, which shows that these passengers were registered in the database on 23 May 2021 at 19:43, 19:47, 20:27, 20:29 and 20:51 local time.

3.11.4. The FFIT interviewed representatives of the MIA-Safety and Security Air Transport of Minsk Airport about the reported arrest of some passengers on the flight. According to the duty officer of MIA-Safety and Security Air Transport of Minsk Airport, while he was on duty at the airport on 23 May 2021, he was informed of the imminent arrival of an aircraft subjected to a bomb threat. He proceeded together with his staff to parking stand No. 1, to secure the area and the aircraft, in line with the responsibilities of his unit in case of an act of unlawful interference. The MIA-Safety and Security Air Transport personnel witnessed the disembarkation of all passengers and the screening of their cabin baggage from a distance and accompanied them on two buses to the terminal where they were screened in the transit area. The duty officer of MIA-Safety and Security Air Transport of Minsk Airport informed the FFIT that he received a telephone call from the duty officer at the Central Duty Station who informed him that one of the passengers was a wanted person. The duty officer of MIA-Safety and Security Air Transport of Minsk Airport received a photograph of this wanted person via a messaging application on his telephone from the duty officer at the Central Duty Station. He was able to identify the passenger in question who was dressed in the same clothes as in the photograph. He introduced himself to the passenger, asked for his passport and, after confirming his identity as Mr. Raman Pratasevich, invited the passenger to follow him to the Central Duty Station where he left him.

3.11.5. According to Belarus authorities, MIA employees received information about the presence of Mr. Pratasevich (wanted for offences under the Belarus Criminal Code) and his partner, Ms. S. Sapega on board Ryanair flight FR4978 after their mobile devices logged into the public communications network of Belarus at 10:07 and 10:11 hours UTC (13:07 and 13:11 hours local time) respectively. Subsequently, information about the flight was circulating on the internet and social media. After landing, the MIA officers detained Mr. Pratasevich after confirming his identity.

3.11.6. During the site visit to Minsk Airport, the FFIT identified cameras from which video footage would have helped corroborate the sequence of events regarding the processing of passengers from the point of disembarkation. However, the team was not given the additional video footage it requested, including footage from: a camera located adjacent to aircraft parking stand 1 at Minsk National Airport where the Ryanair aircraft was positioned; the passengers' entry into the terminal building; their screening; the holding area in the terminal building where the passengers waited prior to re-boarding; and the interaction between passengers that remained in Belarus and the authorities at the airport and their processing to enter Belarus. The team was informed that these recordings were no longer available due to the length of time that had elapsed since the event. However, very small extracts of the additional video footage requested by the team had been used in a documentary type video that was shared by the authorities with the team.

3.11.7. While five passengers did not re-board the Ryanair aircraft at Minsk Airport, there is no documented evidence that a reconciliation was performed at Minsk Airport to ensure that only hold baggage of passengers continuing their flight to Vilnius was loaded. Nevertheless, the representative of Litcargus, in Vilnius, confirmed that they did not have unclaimed baggage following the arrival of the aircraft.

4. RELEVANT INTERNATIONAL AIR LAW INSTRUMENTS

4.1. States connected to the event

4.1.1. The event occurred in relation to a flight originating in Athens, Greece and destined for Vilnius, Lithuania, which diverted to Minsk, Belarus in response to a potential act of unlawful interference. The affected aircraft is registered in Poland which is also where the AOC is issued for RYS. The flight crew are licenced by Ireland. Nationals from Belarus, Cyprus, France, Germany, Greece, Iraq, Latvia, Lithuania, Nigeria, Poland, Russia and Syria were passengers on board the aircraft as indicated in the passenger manifest. As indicated on the US indictment (referenced in paragraph 4.8.1 below), some of the passengers held additional nationalities including four nationals of the United States. Other States overflown prior to diverting to Minsk were Bulgaria, Romania and Ukraine. Bomb threat emails were addressed to airport entities in Belarus, Bulgaria, Greece, Lithuania, Romania and Ukraine sent through a server located in Switzerland. The emails were sent through an account on a free email service provided by a firm based in Switzerland. The emails to Greece and Ukraine were not delivered. No explosives or explosive devices were found or detected on board the aircraft following pre-departure screening in Greece and searches in Belarus and Lithuania by the responsible authorities.

4.1.2. Based on the facts established and the States identified to be connected to the event, the following international air law instruments are relevant to the event.

4.2. Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation, 1971

4.2.1. All the States connected to the event are parties to the Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation, signed at Montréal on 23 September 1971 (Montréal

Convention). The following provisions of the Montréal Convention are relevant to the facts established in relation to the event.

Article 1
1. Any person commits an offence if he unlawfully and intentionally:

(c) places or causes to be placed on an aircraft in service, by any means whatsoever, a device or substance which is likely to destroy that aircraft, or to cause damage to it which renders it incapable of flight, or to cause damage to it which is likely to endanger its safety in flight; or
...
(e) communicates information which he knows to be false, thereby endangering the safety of an aircraft in flight.

2. Any person also commits an offence if he:

(a) attempts to commit any of the offences mentioned in paragraph 1 of this Article; or
(b) is an accomplice of a person who commits or attempts to commit any such offence.

Article 3

Each Contracting State undertakes to make the offences mentioned in Article 1 punishable by severe penalties.

Article 5

1. Each Contracting State shall take such measures as may be necessary to establish its jurisdiction over the offences in the following cases:

(a) when the offence is committed in the territory of that State;
(b) when the offence is committed against or on board an aircraft registered in that State;
(c) when the aircraft on board which the offence is committed lands in its territory with the alleged offender still on board;
(d) when the offence is committed against or on board an aircraft leased without crew to a lessee whose principal place of business or, if the lessee has no such place of business, whose permanent residence is in that State.

3. This Convention does not exclude any criminal jurisdiction exercised in accordance with national law.

Article 10

1. Contracting States shall, in accordance with international and national law, endeavour to take all practicable measures for the purpose of preventing the offences mentioned in Article 1.

2. When, due to the commission of one of the offences mentioned in Article 1, a flight has been delayed or interrupted, any Contracting State in whose territory the aircraft or passengers or crew are present shall facilitate the continuation of the journey of the passengers and crew as soon as practicable, and shall without delay return the aircraft and its cargo to the persons lawfully entitled to possession.

Article 11

1. Contracting States shall afford one another the greatest measure of assistance in connection with criminal proceedings brought in respect of the offences. The law of the State requested shall apply in all cases.

2. The provisions of paragraph 1 of this Article shall not affect obligations under any other treaty, bilateral or multilateral, which governs or will govern, in whole or in part, mutual assistance in criminal matters.

Article 12

Any Contracting State having reason to believe that one of the offences mentioned in Article 1 will be committed shall, in accordance with its national law, furnish any relevant information in its possession to those States which it believes would be the States mentioned in Article 5, paragraph 1.

Article 13

Each Contracting State shall in accordance with its national law report to the Council of the International Civil Aviation Organization as promptly as possible any relevant information in its possession concerning:

(a) the circumstances of the offence;
(b) the action taken pursuant to Article 10, paragraph 2;
(c) the measures taken in relation to the offender or the alleged offender and, in particular, the results of any extradition proceedings or other legal proceedings.

4.3. The Convention for the Suppression of Unlawful Seizure of Aircraft, 1970

4.3.1. All the States connected to the event are parties to the Convention for the Suppression of Unlawful Seizure of Aircraft, signed at The Hague on 16 December 1970 (Hague Convention). Additionally, as at the date of the event, Cyprus, France and Switzerland were party to the Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft done at Beijing on 10 September 2010 (Beijing Protocol) which modernizes the Hague Convention. Germany became party to the Beijing Protocol with effect from 1 May 2022. The following provisions of the Hague Convention are relevant to some of the investigations initiated by certain States in relation to the event:

Article 1

Any person who on board an aircraft in flight:

(a) unlawfully, by force or threat thereof or by any other form of intimidation, seizes, or exercises control of, that aircraft, or attempts to perform any such act, or
(b) is an accomplice of a person who performs or attempts to perform any such act

commits an offence (hereinafter referred to as “the offence”).

Article 2

Each Contracting State undertakes to make the offence punishable by severe penalties.

Article 4

1. Each Contracting State shall take such measures as may be necessary to establish its jurisdiction over the offence … in the following cases:

(a) when the offence is committed on board an aircraft registered in that State;
…
2. Each Contracting State shall likewise take such measures as may be necessary to establish its jurisdiction over the offence in the case where the alleged offender is present in its territory and it does not extradite him ….

3. This Convention does not exclude any criminal jurisdiction exercised in accordance with national law.

Article 6

1. Upon being satisfied that the circumstances so warrant, any Contracting State in the territory of which the offender or alleged offender is present, shall take him into custody or take other measures to ensure his presence. …

2. Such State shall immediately make a preliminary enquiry into the facts.
…

4. … The State which makes the preliminary enquiry contemplated in paragraph 2 of this Article shall promptly report its findings to the said States and shall indicate whether it intends to exercise jurisdiction.

Article 7

The Contracting State in the territory of which the alleged offender is found shall, if it does not extradite him, be obliged, without exception whatsoever and whether or not the offence was committed in its territory, to submit the case to its competent authorities for the purpose of prosecution. …

Article 11

Each Contracting State shall in accordance with its national law report to the Council of the International Civil Aviation Organization as promptly as possible any relevant information in its possession concerning:

(a) the circumstances of the offence;
…
(c) the measures taken in relation to the offender or the alleged offender, and, in particular, the results of any extradition proceedings or other legal proceedings.

4.3.2. Article II of the Beijing Protocol replaces Article 1(a) of the Hague Convention with the following:
Article 1

1. Any person commits an offence if that person unlawfully and intentionally seizes or exercises control of an aircraft in service by force or threat thereof, or by coercion, or by any other form of intimidation, or by any technological means. …

4.4. Investigation by Belarus

4.4.1. The Investigative Committee of the Republic of Belarus, which is the criminal investigative authority of Belarus, initiated an investigation on 23 May 2021, in criminal case No. 21121040620, regarding the commission by an unidentified person of an offence under paragraph 1 of article 340 of the Criminal Code of the Republic of Belarus. A translated extract of the provision establishing the offence is set out below:

Article 340 – Knowingly false warning of danger

1. A deliberately false message about an impending explosion, arson, or other actions creating danger to the life and health of people, or causing damage on a large scale, or the onset of other serious consequences, shall be punished by a fine, or arrest, or restriction of liberty for a term of up to three years, or deprivation of freedom for up to five years.

2. The same act committed anew, or by previous concert by a group of persons, or causing damage on a large scale, or causing other grave consequences, shall be punished by the restriction of freedom for a term of up to three to seven years.

4.5. Investigation by Lithuania

4.5.1. The Criminal Police Bureau of Lithuania, which is the criminal investigative authority of Lithuania, initiated an investigation on 23 May 2021, in criminal case No.01-1-16513-21, regarding the commission of an offence under Item 1 of Article 7, Article 100-1 (enforced disappearance), and Item 10 of Article 7 and Paragraph 4 of Article 251 (hijacking of an aircraft for terrorist purposes) of the Criminal Code of the Republic of Lithuania. A translated extract of the provisions establishing the offenses is provided below.

Article 7. Criminal Liability for the Crimes Provided for in International Treaties
Persons shall be held liable under this Code regardless of their citizenship and place of residence, also of the place of commission of a crime and whether the act committed is subject to punishment under laws of the place of commission of the crime where they commit the following crimes subject to liability under international treaties:

1) crimes against humanity and war crimes (Articles 99-113)
…
10) acts of terrorism and crimes related to terrorist activity (Article 252(1) and (2)).

Article 100. Enforced Disappearance

A person who, while acting as an agent of the State or as a person or a group of persons acting with the authorisation, support or acquiescence of the State, detains, abducts a person or otherwise deprives him of liberty, followed by a refusal to acknowledge such a detention, abduction or deprivation of liberty or by concealment of the fate or whereabouts of the disappeared person, shall be punished by a custodial sentence for a term of three up to fifteen years.

Article 251. Hijacking an Aircraft, Vessel or another Public or Freight Vehicle or Fixed Platform on the Continental Shelf

1. A person who hijacks an aircraft, vessel or fixed platform on the continental shelf shall be punished by arrest or by a custodial sentence for a term of up to five years.

2. A person who hijacks an aircraft, vessel or fixed platform on the continental shelf by using physical violence or threatening the use of violence shall be punished by a custodial sentence for a term of three up to eight years.

3. A person who hijacks an aircraft, vessel or another public or freight vehicle or fixed platform on a continental shelf by using a firearm, explosive or another means posing a threat to the life or health of the crew or passengers of the aircraft, vessel or another public or freight vehicle or the persons present on the fixed platform on the continental shelf shall be punished by a custodial sentence for a term of five up to ten years.

4. A person who commits an act provided for in paragraph 1, 2 or 3 of this Article for terrorist purposes shall be punished by a custodial sentence for a term of five up to fifteen years.

5. A person who commits an act provided for paragraph 1, 2, 3 or 4 of this Article, where this results in an accident, breakdown or causes other grave consequences, shall be punished by a custodial sentence for a period of ten up to twenty years or by a custodial life sentence.

6. A legal entity shall also be held liable for the acts provided for in this Article.

4.6. Investigation by Poland

4.6.1. The Public Prosecutor's Office of Poland initiated an investigation on 24 May 2021, in criminal case No. PK V WZ Ds. 42.2021, with regard to piracy and illegal imprisonment (Article 166 § 1 and 2 and Article 189 § 1 in connection with Article 11 § 2 of the Criminal Code). A translated extract of the provisions establishing the offenses is provided below.

Art. 166. Piracy.

§ 1. Anyone who uses deceit or violence, or the threat of violence, to take control of a ship or an aircraft is liable to imprisonment for between two and 12 years.

§ 2. Anyone who, acting in the manner specified in § 1, brings about a direct danger to the life or health of many people is liable to imprisonment for a minimum term of three years.

Art. 189. Illegal imprisonment.

§ 1. Anyone who deprives another person of their freedom is liable to imprisonment for between three months and five years.

Art. 11. Overlapping provisions.

§ 2. If an act has the features specified in two or more provisions of criminal law, the court sentences the offender for one offence on the basis of all the applicable provisions.

4.7. Investigation by Latvia

4.7.1. The State Police of Latvia initiated an investigation on 11 June 2021 in criminal case no. 11817002521 with regard to criminal offences against “Personal Liberty, Honour and Dignity” in Chapter XV of the Criminal Law.

4.8. Investigation by the United States

4.8.1. Based on investigations by the Federal Bureau of Investigations, the United States Attorney filed an indictment 22 CRIM 38 in the United States District Court - Southern District of New York charging four individuals who are government officials of Belarus with conspiracy to commit aircraft piracy (the US Indictment). The offence carries a maximum penalty of life in prison and a mandatory minimum sentence of 20 years. The text of the provisions prescribing the offence, jurisdictional basis and penalty is set out below:

> **§46502. Aircraft piracy**
>
> (a) IN SPECIAL AIRCRAFT JURISDICTION.-(1) In this subsection-
> (A) "aircraft piracy" means seizing or exercising control of an aircraft in the special aircraft jurisdiction of the United States by force, violence, threat of force or violence, or any form of intimidation, and with wrongful intent.
> (B) an attempt to commit aircraft piracy is in the special aircraft jurisdiction of the United States although the aircraft is not in flight at the time of the attempt if the aircraft would have been in the special aircraft jurisdiction of the United States had the aircraft piracy been completed.
>
> (2) An individual committing or attempting or conspiring to commit aircraft piracy-
> (A) shall be imprisoned for at least 20 years; or
> (B) notwithstanding section 3559(b) of title 18, if the death of another individual results from the commission or attempt, shall be put to death or imprisoned for life.
>
> (b) OUTSIDE SPECIAL AIRCRAFT JURISDICTION.-(1) An individual committing or conspiring to commit an offense (as defined in the Convention for the Suppression of Unlawful Seizure of Aircraft) on an aircraft in flight outside the special aircraft jurisdiction of the United States-
> (A) shall be imprisoned for at least 20 years; or
> (B) notwithstanding section 3559(b) of title 18, if the death of another individual results from the commission or attempt, shall be put to death or imprisoned for life.
>
> (2) There is jurisdiction over the offense in paragraph (1) if-
> (A) a national of the United States was aboard the aircraft;
> (B) an offender is a national of the United States; or
> (C) an offender is afterwards found in the United States.

4.8.2. The US indictment mentions that four individuals who are Belarusian government officials were critical participants in a conspiracy to divert the flight to Minsk Airport. The individuals worked with air traffic control staff at Minsk ACC to convey a false bomb threat to the flight in order to cause its diversion to Minsk Airport and were subsequently involved in falsifying reports to conceal their actions. This information is derived from testimony of the controller responsible for communicating with the flight including recordings made by him of the events in the Minsk ACC.

4.9. Compliance with the Montréal Convention

4.9.1. Suspects have been named and charges preferred in one case, but not in the other cases and no arrests have been made in any of the above cases. The investigations are still ongoing in the concerned States. Articles 11 and 12 of the Montréal Convention govern the provision of mutual assistance and furnishing of relevant information by the concerned States. Belarus and Lithuania informed the FFIT that they had requested mutual assistance from other States connected to the Event.

4.9.2. As neither a bomb nor evidence of its existence was found during pre-departure screening in Athens, Greece and after various searches of the aircraft in Belarus and Lithuania it is considered that the bomb threat was deliberately false.

4.9.3. It is observed that a number of States connected to the event are investigating related offenses in accordance with the enabling provisions of their national laws as stipulated in the Montréal Convention. In particular, the transmission by an individual acting alone or with others of a deliberately false bomb threat thereby endangering the safety of an aircraft in flight is an offense under Articles 1 (1) (e) and 2 of the Montréal Convention. Some States by initiating criminal investigations have taken measures to establish jurisdiction over the offences as contemplated in Article 5 of the Montréal Convention. Considering the timelines of the event detailed in paragraph 2.4 and the analysis and findings in paragraph 3.2.5 e), f) and h), it appears that individuals with sufficient authority to enter the Minsk ACC participated or were involved in providing information about a false bomb threat to the flight leading to its diversion to land at Minsk Airport.

4.9.4. With regard to the obligations in Article 10 of the Montréal Convention to facilitate the continuation of the journey of the passengers and crew as soon as practicable, there does not appear to be undue delay in providing services to re-establish the flight following the searches of the aircraft, the passengers, their cabin and hold baggage to determine whether there was a bomb as indicated in the timeline of events from the landing of Ryanair Flight FR4978 at Minsk Airport until its departure in paragraph 2.7 above.

4.9.5. Belarus reported the occurrence of an act of unlawful interference to ICAO on 24 May 2021 followed by a preliminary report on 26 June 2021 as required in Annex 17. The reports submitted by Belarus could also be considered relevant information under Article 13 of the Montréal Convention. Belarus set up an interdepartmental Commission for the investigation of the circumstances of an act of unlawful interference in respect of the event (the "Commission"). It is indicated in the preliminary report that the Commission was unable definitively to conclude its investigation as it is still awaiting receipt of information requested from other States.

4.10. Applicability of the Hague Convention

4.10.1. Under the Hague Convention, the State of registration, the State of landing and the State of the operator are specified to have mandatory jurisdiction over the offence relating to unlawful seizure of aircraft. However, the Hague Convention does not prevent any State from exercising criminal jurisdiction in accordance with its national law as set out in Article 4(3).

4.10.2. The presence of the alleged offender on board the aircraft is an essential ingredient for the offence established under Article 1 of the Hague Convention. Based on the facts established no persons alleged to have committed the relevant offences were on board the aircraft at the material time. However, for those States that are parties to the Beijing Protocol, the presence of the alleged offender on board is not a requirement for the commission of the offence.

4.11. The Convention on International Civil Aviation, 1944

4.11.1. A number of States connected to the event shared their analyses with the Organization indicating that the event likely implicated certain provisions of the Chicago Convention, including Article 3bis (b) regarding the rights and obligations of States when requiring the landing of civil aircraft, Article 4 which obliges States not to use civil aviation for any purpose inconsistent with the aims of the Convention and Article 22 regarding measures to facilitate and expedite navigation by aircraft and the obligation to prevent unnecessary delays. Based on the analysis of the information collected, the Team did not identify non-compliance with Articles 3bis (b) and 22 of the Chicago Convention.

4.11.2. In terms of the preamble and Article 44 of the Chicago Convention, the aims of the Convention include the safe and orderly development of international civil aviation and promoting the safety of flight in international air navigation. The use of civil aviation by any State for any purpose inconsistent with the aims of the Convention would therefore contravene the spirit of the Convention as well as Article 4. Under Article 28 of the Chicago Convention, the State is responsible for the provision of radio services and other air navigation facilities within its territory.

4.11.3. Based on the facts established, the safety of Ryanair Flight FR4978 was endangered when a false bomb threat was communicated to the crew leading to its diversion. As indicated in paragraph 2.3 above, the false bomb threat was communicated to the crew by the Minsk ACC on the instructions of an unidentified individual who had been given access to the Minsk ACC.

4.11.4. A number of provisions in the Annexes to the Chicago Convention and related ICAO guidance materials that were not followed are identified in paragraphs 3.2, 3.5, 3.6, 3.8 and 3.10. However, these pertain mainly to screening, notifications and exchange of information, which relate to the responses by various parties following information about an act of unlawful interference. The Chicago Convention does not expressly stipulate the measures the Organization may take in the event an international standard is not implemented by a State that has not filed a difference. This notwithstanding, the Organization has established the USOAP-CMA and USAP-CMA Audit programmes through which it is possible to identify and address non-compliance with international standards

5. CONCLUSIONS AND MISSING INFORMATION

5.1. As stated in paragraph 3.1 e) of its Terms of Reference, the FFIT was expected to “identify pieces of information potentially missing and that would be necessary to complete the investigation”. As indicated in paragraph 1.5 above, some specific information, including critical information indicated in the Analysis section of this report as highlighted below, was requested but not made available to the Team. Considering the above, the Team’s conclusions below are based exclusively on the information availed to it as of the time of this report.

5.2. According to the authorities of Belarus, a first email was received at 09:25 UTC (12:25 local) followed by a second email at 09:56:45 UTC (12:56:45 local), both containing identical information about the bomb threat. On the other hand, information obtained from Switzerland through the authorities of Lithuania shows that only the second email was sent to Minsk Airport at 09:56:45 UTC (12:56:45 local). The FFIT was not able to verify that the first email was effectively received at 09:25 UTC (12:25 local) as the authorities of Belarus did not provide logs of the email server airport.by nor the email files containing the threat messages saved in their original format including their metadata, citing their erasure in accordance with their data retention policy. The receipt of the first email is crucial to explain the basis for the communication of the bomb threat by Minsk ACC to the flight crew, which occurred at 09:30:49 UTC (12:30:49 local). In the absence of the first email, it could be presumed that the information about the bomb

threat would have been obtained by the authorities of Belarus by other means, which the FFIT could not establish. If the first email was in fact received at Minsk Airport, the diversion of the flight to Minsk Airport could be considered to be a tenable option in view of the circumstances.

5.3. The FFIT could not corroborate the information provided by the authorities of Belarus regarding the transmission by phone of the contents of the threat email from airport personnel to Minsk ACC personnel leading to the notification of the threat to RYR 1TZ. As cellular phone records of the personnel involved documenting the time and duration of the calls and person or entity contacted were not made available, those statements could not be supported by evidence.

5.4. As neither a bomb nor evidence of its existence was found during pre-departure screening in Athens Greece and after various searches of the aircraft in Belarus and Lithuania, it is considered that the bomb threat was deliberately false. Knowingly communicating false information which endangers the safety of an aircraft in flight is an offence under Article 1 (1) (e) of the Montréal Convention.

5.5. Prior to the issuance of the report in January 2022, the FFIT was neither able to meet with, nor interview the Minsk ACC controller who was assigned to the RYR 1TZ flight. The authorities of Belarus informed the Team that this individual did not report for duty after his summer leave and that they had no information on his whereabouts and no way to contact him. Subsequently, with the assistance of the authorities of the United States, the FFIT gained access to interview the controller whose testimony materially contradicts the information and materials provided by the authorities of Belarus about the events of 23 May 2021 including with regard to the email as the origin of the bomb threat information, and reflects the involvement of an unidentified individual who had been given access to the Minsk ACC.

5.6. The authorities of Belarus did not provide the FFIT information demonstrating that attempts were made to contact the Operator (RYR or RYS) for the purposes of meeting the obligations contained in Annex 11, 2.24.3 and Belarus ATM Aviation Regulations, 15.12.9. to exchange information with the operator or its designated representative.

5.7. Communications were not established between the flight crew and the OCC during the flight when such communications would have been necessary in line with the operator's procedures. Had such communications between the flight crew and the OCC been established it would have impacted the course of events.

5.8. Video recordings from cameras located adjacent to aircraft parking stand 1 and inside the terminal which could have shown certain significant activities regarding the processing of passengers from the point of disembarkation and in the terminal building were not provided to the FFIT. Although short extracts of the said video recordings had been used in a documentary type video that was shared with the Team, the authorities of Belarus explained that not all recordings were available due to the length of time that had elapsed since the event. The FFIT was not provided with a satisfactory rationale to explain why records had not been preserved considering that criminal and other investigations in respect of the event had been initiated by the authorities of Belarus and had not been completed.

5.9. Inter flight-crew coordination conversations that led to their decision to divert to Minsk Airport could not be fully confirmed since the CVR circuit breaker was not pulled after landing in Minsk. As a result, the full flight-crew conversations, prior to the period when the aircraft was on short final to Minsk Airport, were not preserved.

5.10. From the evidence provided by Belarus, no escort or intercept occurred between the MIG-29 and RYR 1TZ and no communications by the MIG-29 was recorded on the radio channels used by RYR 1TZ.

According to information provided by the flight crew and cabin crew, there was no communication, interaction, visual sighting or other knowledge of military aircraft involvement with the flight.

5.11. Some of the States connected to the event have issued formal requests to other States for information and assistance in connection with criminal and other investigations into the event. Such investigations could assist in establishing any missing facts relating to the event. In this regard, States and entities that have received such formal requests should be encouraged to respond as appropriate.

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APPENDIX A
FLIGHT PLANS RELEVANT TO FACT-FINDING INVESTIGATION

1. Flight Plan for Ryanair Flight FR4978 (Call sign: RYR 1TZ) Athens to Vilnius – 23 May 2021

(FPL-RYR1TZ-IS
-B738/M-SDGIJ1RWY/SB1
-LGAV0710
-N0439F350 KRO UG33 AMISI/N0442F370 UG33 KOROS/N0443F380 UN133 ATFIR
M987 SOMOV DCT ROMOL DCT SOMAT Z364 SOGBI
-EYVI0235 EVRA
-PBN/B1B5D1D3O1S2 NAV/RNP2 COM/TCAS DOF/210523 REG/SPRSM EET/LBSR0045 LRBB0105 UKBU0140 UMMV0213 CODE/48C22C RVR/200 OPR/RYS
ORGN/DUBOEFR PER/C TALT/LGTS RMK/CONTACT +353 1 9451990 TCAS)

2. Flight Plan for Ryanair Flight FR497 (Call sign: RYR 497) Minsk to Vilnius – 23 May 2021

(FPL-RYR497-IS
-B738/M-SDGIJ1RWY/SB1
-UMMS1130
-N0326F160 OSMUS2F OSMUS M996 DUKAT
-EYVI0021 EYPA EVRA
-PBN/B1B5D1D3O1S2 NAV/RNP2 COM/TCAS DOF/210523 REG/SPRSM CODE/48C22C
RVR/200 OPR/RYS ORGN/DUBOEFR PER/C RMK/CONTACT +353 1 9451990 TCAS)

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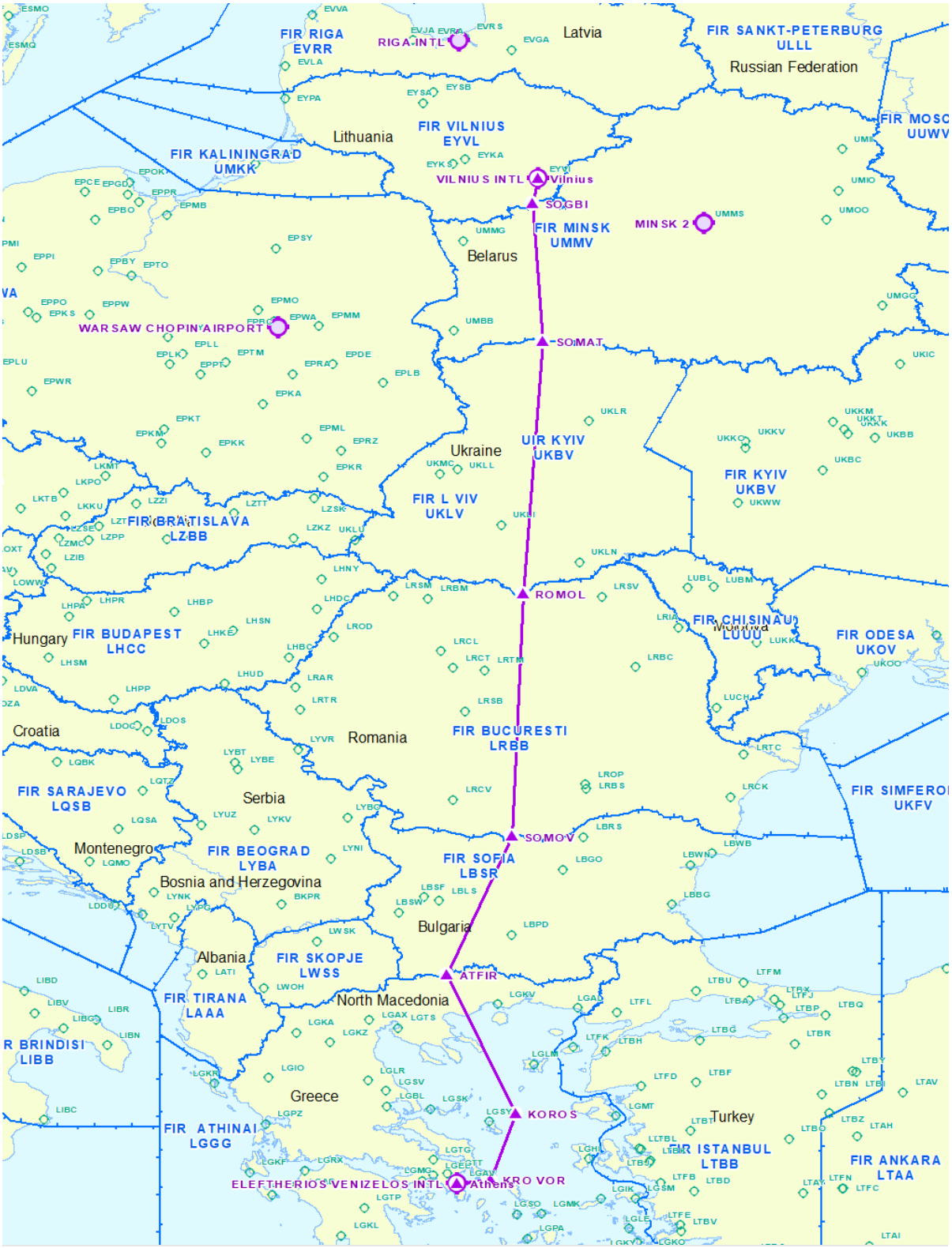
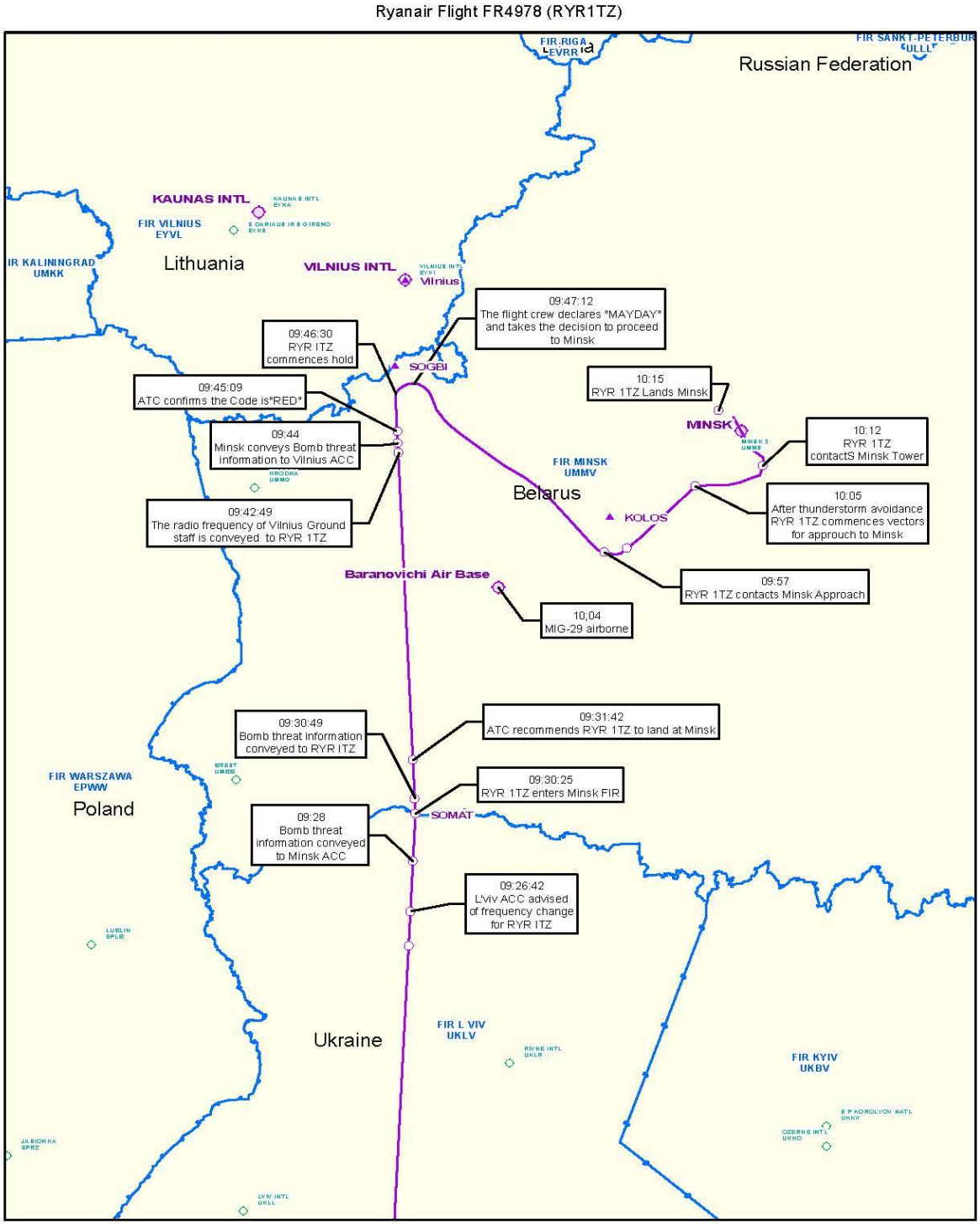
APPENDIX B
MAPPING OF RYANAIR FLIGHT 4978 FLIGHT PLANNED ROUTE ON 23 MAY 2021



APPENDIX C
MAPPING OF ACTUAL RYANAIR FLIGHT 4978 FLIGHT PATH ON 23 MAY 2021



APPENDIX D
TRANSCRIPT OF COMMUNICATION BETWEEN MINSK AREA CONTROL CENTRE AND L'VIV AREA CONTROL CENTRE RELEVANT TO RYANAIR FLIGHT 4978 (CALL SIGN RYR1TZ) 23 MAY 2021
Received from Ukraine

ВЫПИСКА ПЕРЕГОВОРОВ
Львовский РСП

23.05.2021 р Kb. LVC EXE.

Время	Абоненты	СОДЕРЖАНИЕ ПЕРЕГОВОРОВ	
		Kb.LVCEXE.	
09:18:43	Минск	Да, слушаю.	
	Львов	Алло колега, день добрый.	
	Минск	Добрый.	
	Львов	Там Ryanair к тебе на SOMAT будет через десять минут . . .	
	Минск	. . . так . . .	
	Львов	. . . значит у него триста девяностый, он поворачивает на запад после SOMAT-а, менять ему эшелон?	
	Минск	Пока следует пускай ...	
	Львов	Пускай идет триста девяносто?	
	Минск	Да.	
	Львов	Хорошо.	
09:26:42	Львов	Да коллега.	
	Минск	Соседу.	
	Львов	Ов.	
	Минск	Для Ryanaii·-a . . .	
09:26:46			(переговоры диспетчера Львов с ЭВС)
09:26:57	Львов	Да.	
	Минск	Для Ryanair-a один Tango Zulu частота будет сто двадцать пятьсот семьдесят пять, только для него пока.	
	Львов	Сто двадцать пятьсот семьдесят пять, принял.	
	Минск	Сто двадцать пять семь пять.	
	Львов	Понял , понял.	
	Минск	Спасибо.	

COMMUNICATION EXTRACT

Appendix D
English and
Russian only

L'viv ACC
23.05.2021 year Kb. LVC EXE.

Time (UTC)	Speaker	Transcript	
		Kb. LVC EXE.	
09:18:43	Minsk	Yes, go ahead	
	L'viv	Hello colleague, good day	
	Minsk	Good day	
	L'viv	There is Ryanair heading towards you to SOMAT, ..it will be there in ten minutes	
	Minsk	… And …	
	L'viv	… He is at three nine zero. He'll be turning to the west after SOMAT, should I change his flight level?	
	Minsk	For the time being, let him stay on the same flight level	
	L'viv	Let him stay at three nine zero?	
	Minsk	Yes	
	L'viv	Okay.	
09:26:42	L'viv	Yes, colleague.	
	Minsk	To my neighbour.	
	L'viv	Yes.	
	Minsk	For Ryanair …	
09:26:46			Exchanges between L'viv controller and flight crew
09:26:57	L'viv	Yes?	
	Minsk	For Ryanair one-tango-zulu, the frequency will be one twenty, five seven five. Only for him for the time being.	
	L'viv	One twenty, five seven five, got it.	
	Minsk	One twenty, five seven five	
	L'viv	Roger, roger	
	Minsk	Thank you	

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APPENDIX E
DEDICATED AREA SURVEILLANCE POSITION – MINSK AREA CONTROL CENTRE (ACC)
Voice Transcript
23 May 2021

	Time *(UTC)*	Speaker	Transcript	
Position opened 09:28:39				
	09:28:58	RYR 1TZ	(unreadable) Good day, Ryanair one-tango-zulu, Flight level three-niner-zero, approaching SOMAT	
	09:29:04	Minsk ACC	Ryanair one-tango-zulu, Minsk Control, good afternoon, radar contact	
	09:30:49		Ryanair one-tango-zulu, Minsk	
		RYR 1TZ	Yes Ryanair one-tango-zulu, go ahead	
		Minsk ACC	Ryanair one-tango-zulu for your information, we have information from special services that you have bomb on board and that can be activated over Vilnius	
		RYR 1TZ	One-tango-zulu, standby	
	09:31:17		Okay, Ryanair one-tango-zulu, could you repeat the message?	
		Minsk ACC	Ryanair one-tango-zulu, I say again, we have information from special services that you have bomb on board. That bomb can be activated over Vilnius	
		RYR 1TZ	Roger that, standby	
	09:31:42	Minsk ACC	Ryanair one-tango-zulu, and for emer… security reasons we recommend you to land at Uniform Mike Mike Sierra	
		RYR 1TZ	Okay...that's… understood… give us a minute please	
	09:32:59		Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	The bomb... threat message, where did it come from? Where did you find the information about it from?	
		Minsk ACC	Ryanair one-tango-zulu standby please	
	09:33:42		Ryanair one-tango-zulu	
		RYR 1TZ	Go ahead	
		Minsk ACC	Ryanair one-tango-zulu airport security staff …informed they received e-mail	
		RYR 1TZ	… Roger, …was it Vilnius airport security staff or from Greece?	
		Minsk ACC	Ryanair one-tango-zulu this e-mail was shared to …several airports	

		RYR 1TZ	…Roger, standby	
	09:34:49		Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	Could you give us frequency …for …of the company so that we would be able to talk to	
		Minsk ACC	Ryanair one-tango-zulu say again what frequency do you need	
		RYR 1TZ	We just need to talk with the operations of the company, is there any frequency for that from this range	
		Minsk ACC	Do you mean Ryanair operations frequency?	
		RYR 1TZ	That's the one, Ryanair one-tango-zulu	
		Minsk ACC	Standby please	
			Ryanair one-tango-zulu, standby please	
		RYR 1TZ	Standing-by	
	09:39:30		Ryanair one-tango-zulu, any updates?	
		Minsk ACC	Ryanair one-tango-zulu standby, waiting for ~~the~~ information	
		RYR 1TZ	Could you say again the IATA code for the …airport that authorities were recommending for us to …to divert to	
		Minsk ACC	Ryanair one-tango-zulu . . .read you THREE, say again please	
	09:39:57	RYR 1TZ	Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu, go	
		RYR 1TZ	Can you say again the IATA code of the airport that authorities have recommended us to divert to?	
		Minsk ACC	Ryanair one-tango-zulu, roger, standby please	
		RYR 1TZ	Okay, I hear you TWO out of FIVE, can you say again the IATA code of the airport that authorities have recommended us to divert to?	
		Minsk ACC	Ryanair one-tango-zulu, standby	
		RYR 1TZ	Standby, roger	
	09:41:00	Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	Go ahead	
		Minsk ACC	IATA code is Mike Sierra Quebec.	
		RYR 1TZ	Can you say again please?	
		Minsk ACC	IATA code Mike Sierra Quebec	
		RYR 1TZ	Mike Sierra Quebec, thanks.	
	09:41:58		Ryanair one-tango-zulu, again, this recommendation to divert to Minsk where did it come from? Where did it come from? Company? Did it come from. . . departure	

			airport authorities or arrival airport authorities?	
		Minsk ACC	Ryanair one-tango-zulu, this is our recommendations.	
		RYR 1TZ	Can you say again?	
		Minsk ACC	Ryanair one-tango-zulu, this is our recommendations.	
		RYR 1TZ	Okay, I read you TWO out of FIVE	
			Did you say this was your recommendation?	
		Minsk ACC	Ryanair one-tango-zulu, Charlie-Charlie.	
	09.42.49		Ryanair one-tango-zulu, we have ground staff frequency for Vilnius one-three-one decimal seven-five-zero	
		RYR 1TZ	One-three-one-seven-five, (unreadable) we got that down, not answering	
	09:44:38	Minsk ACC	Ryanair one-tango-zulu, advise your decision please	
		RYR 1TZ	Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu, advise your decision please	
	09:44:52	RYR 1TZ	…I need to ask you a question, what is the code of the threat, ..is it green, yellow or amber or red	
		Minsk ACC	Standby	
	09:45:09		Ryanair one-tango-zulu, they say code is red	
		RYR 1TZ	Roger that, in that case we request holding at present position	
		Minsk ACC	Ryanair one-tango-zulu, roger, hold over your position, maintain Flight level three-niner-zero, turns at own discretion	
		RYR 1TZ	Okay holding at our discretion at present position maintaining Level three-nine-zero, Ryanair one-tango-zulu	
	09:47:12		Ryanair one-tango-zulu, we are declaring an emergency MAYDAY, MAYDAY, MAYDAY, Ryanair one-tango-zulu, our intentions would be to divert to Minsk airport	
		Minsk ACC	Ryanair one-tango-zulu, MAYDAY, roger. . .standby for vectors	
		RYR 1TZ	Standing-by Ryanair one-tango-zulu	
	09:47:53	unknown	(unreadable)	Ground-ground coordination
	09:48:10		Ryanair one-tango-zulu, request descent to ten thousand feet.	

		Minsk ACC	Ryanair one-tango-zulu, descend Flight level one-zero-zero	
		RYR 1TZ	Flight level (unreadable) Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu from present position cleared direct point KOLOS, Kilo Oscar Lima Oscar Sierra	
		RYR 1TZ	Direct to KOLOS, Ryanair one-tango-zulu	
	09:50:15	Minsk ACC	Ryanair one-tango-zulu, how do you read me?	
		RYR 1TZ	I read you FIVE, Ryanair one-tango-zulu	
		Minsk ACC	Roger	
	09:50:24		Ryanair one-tango-zulu do you need any aerodrome details and weather information?	
		RYR 1TZ	We can pick up the ATIS from Minsk ...(unreadable) enough.	
		Minsk ACC	Ryanair one-tango-zulu do you need ATIS frequency?	
		RYR 1TZ	We got it. Is it one-two-eight-eight-five-zero, One-tango-zulu.	
	09:50:56	ATIS	Information Delta, 0936, Eye Ell…	
Translated from Russian	09:51:14	Unknown	Yes? …Yes?	Ground-ground coordination
		Minsk ACC	Do you hear?	
		Unknown	Yes	
		Minsk ACC	Listen, Ryanair is now heading to KOLOS. Will you bring it via (unreadable)?… I need a runway, three-one Right?	
		Unknown	Three-one Right, KOLOS Two Hotel Arrival	
		Minsk ACC	Two Hotel. Runway?	
		Unknown	Three-one Right	
		Minsk ACC	Okay	
		Unknown	ATIS one-two-eight eight-five-zero	
		Minsk ACC	Okay.	
	09:51:50	Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	One-tango-zulu, go ahead	
		Minsk ACC	Ryanair one-tango-zulu, KOLOS Two Hotel Arrival, Runway-in-use Three-one Right and if you need vectors advise.	
		RYR 1TZ	Okay, KOLOS, could you say the (unreadable).	
		Minsk ACC	KOLOS Two Hotel Arrival.	
		RYR 1TZ	KOLOS Two Hotel Arrival, Runway Three-one Right, Ryanair one-tango-zulu	
		Minsk ACC	And ATIS frequency is one-two-eight decimal eight-five-zero	

		RYR 1TZ	Two-eight-eight-five	
	09:52:29	Minsk ACC	Ryanair one-tango-zulu and advise passengers on board and if any dangerous goods on board	
		RYR 1TZ	No dangerous goods, standby...and we need one-three-zero to avoid	
	09:53:00		Ryanair one-tango-zulu, turning heading one-three-zero to avoid	
		Minsk ACC	Ryanair one-tango-zulu roger heading one-three-zero. Report clear of weather.	
		RYR 1TZ	Wilco.	
	09:54:45		Ryanair one-tango-zulu, souls on board is one-three-three.	
		Minsk ACC	Persons on board one-three-three, copied, thank you.	
	09:55:33		Ryanair one-tango-zulu, when ready report estimated time of arrival.	
	09:56:48	RYR 1TZ	Ryanair one-tango-zulu, request descent to nine thousand feet.	
		Minsk ACC	Ryanair one-tango-zulu, descend Flight level niner zero	
		RYR 1TZ	Descend Flight level nine zero, Ryanair one-tango-zulu.	
Translated from Russian	09:57:01	Minsk Approach	Yes? ...Hello?	Ground-ground coordination
		Minsk ACC	Are you ready to accept?	
		Minsk Approach	Yes	
		Minsk ACC	Is descending to Flight level nine zero, with heading one-three-zero	
		Minsk Approach	Okay	
	09:57:12	Minsk ACC	Ryanair one-tango-zulu, now contact Minsk approach on one-two-five decimal niner.	
		RYR 1TZ	One-two-five-niner, Ryanair one-tango-zulu	
Position closed 10:04:30				

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APPENDIX F
TRANSCRIPT OF CONVERSATIONS BETWEEN AIR TRAFFIC CONTROL ENTITIES IN VILNIUS, LITHUANIA AND MINSK, BELARUS CONCERNING RYANAIR FLIGHT FR4978 (CALL SIGN RYR 1TZ), 23 MAY 2021

Explanation of Terms	
Vilnius ACC Sup.	Duty Supervisor – Vilnius Area Control Centre
Vilnius ACC	Area Controller – Vilnius Area Control Centre
Vilnius Tower Sup.	Duty Supervisor – Vilnius Tower
Minsk ACC Sup.	Duty Supervisor – Minsk ACC
Minsk ACC	Area controller – Minsk ACC
[…]	Words not comprehended or identified

Line number	Time (UTC)	Speaker	Conversation contents
Duty Supervisor – Minsk ACC and Duty Supervisor – Vilnius Area Control Centre			
1.	09:35:39	Vilnius ACC Sup.	Vilnius.
2.	09:35:40	Minsk ACC Sup.	Hello, Vilnius.
3.	09:35:42	Vilnius ACC Sup.	Hello.
4.	09:35:43	Minsk ACC Sup.	We have a Ryanair aircraft flying from Athens to Vilnius, they are asking for the frequency of their representative, Ryanair most probably. Do you have something like that in Vilnius, so that they would be able to talk to them?
5.	09:35:56	Vilnius ACC Sup.	Well, we have to ask our tower. So, they want a representative, you mean, some kind of Ryanair representative in Vilnius.
6.	09:36:06	Minsk ACC Sup.	Well, yes, the closest one, so that they would be able to contact the representative.
7.	09:36:12	Vilnius ACC Sup.	Just a moment, I will try to find something out and let you know.
8.	09:36:17	Vilnius ACC Sup.	I will call you back.
9.	09:36:21	Minsk ACC Sup.	Okay. I will wait, thank you.

Conversation between Duty Supervisor – Vilnius Area Control Centre and Duty Supervisor – Vilnius Tower			
10.	09:36:59	Vilnius Tower Sup.	Hello.
11.	09:37:01	Vilnius ACC Sup.	Hello.
12.	09:37:03	Vilnius ACC Sup.	Look, Minsk is calling us, asking about as they put it "some representative of Ryanair" that is needed by Ryanair aircraft. Do we have any contact data, anything else concerning that?
13.	09:37:12	Vilnius Tower Sup.	No... we do not have anything, but there is the airport service, we may tell the airport ground service.
14.	09:37:17	Vilnius ACC Sup.	Well, maybe just give me some frequency, something you have, who is providing services to Ryanair.
15.	09:37:20	Vilnius Tower Sup.	Just a minute...
16.	09:37:33	Vilnius Tower Sup.	We will find out in just a moment, just wait a little bit.
17	09:38:02	Vilnius Tower Sup.	I will call you back... we'll find out soon.
18.	09:38:05	Vilnius ACC Sup.	OK.
19.	09:38:29	Vilnius ACC Sup.	Hello.
20.	09:38:31	Vilnius Tower Sup.	Yes, 131.750.
21.	09:38:35	Vilnius ACC Sup.	131.750... that is?
22.		Vilnius Tower Sup.	Yes, that is Litcargus.
23.		Vilnius ACC Sup.	Litcargus.
24.		Vilnius Tower Sup.	But we also have the frequency of BGS.

Coordination between Duty Supervisor – Vilnius ACC and Duty Supervisor – Minsk ACC			
25.	09:39:02	Minsk ACC Sup.	Minsk… [name withheld]
26.	09:39:04	Vilnius ACC Sup.	Hello, Ryanair was asking about a frequency.
27.	09:39:06	Minsk ACC Sup.	Yes, yes, yes.
28.	09:39:10	Vilnius ACC Sup.	Well, we do have frequency 131.750, it sort of belongs to Litcargus, our ground service. Most probably, they will be arranging everything that is necessary for them, I mean, Ryanair.
29.	09:39:24	Minsk ACC Sup.	Well, yes, yes, he was sort of just asking, there kind of was a question, there was some information received that they might have a bomb on board and they wanted to consult

			their airlines, what should be done, should they change the route [...]. Minsk, we recommend landing, that is why they have been asking for such a frequency, meaning, the issue does not concern engineering matters, it concerns the decision to be made.
30.		Vilnius ACC Sup.	So, they have to contact the airlines in some way?
31.		Minsk ACC Sup.	Yes, yes, yes.
32.		Vilnius ACC Sup.	Well, we do not have such frequency. Then we need... well, well, well. I might try to find out some number, but how can we contact the aircraft... I am not sure there is such a possibility at all... so to say. They should know themselves, how to make the contact... operational....
33.		Minsk ACC Sup.	I understand. Okay. What about 131.750, what kind of frequency is that? Who uses it?
34.		Vilnius ACC Sup.	That is Litcargus. Well, it is our ground service company, so to say.
35.		Minsk ACC Sup.	Ground service. I understand.
36.	09:40:17	Vilnius ACC Sup.	Yes. Most probably then, they will not be able to help.
37.		Minsk ACC Sup.	Well, yes, yes.
38.		Vilnius ACC Sup.	Anyway, tell me... In case I find out something, so they want to [...]
39.	09:40:32	Minsk ACC Sup.	Just a minute... ok, ok, ok. Thank you, if necessary, we will call additionally.
40.	09:40:36	Vilnius ACC Sup.	Yes, thank you.

Flight RYR1TZ coordination between Vilnius ACC and Minsk ACC			
41.	09:43:08	Minsk ACC	Hello.
42.	09:43:11	Vilnius ACC	Concerning RYR1TZ.
43.		Minsk ACC	Yes.
44.		Vilnius ACC	Confirm you will maintain 390.
45.		Minsk ACC	Do you have information from your supervisor?
46.		Vilnius ACC	Yes, l have information. I am just asking you, could you... (connection is lost)

Coordination between Duty Supervisor, Vilnius ACC and Duty Supervisor, Minsk ACC			
47.	09:43:39 - 09:44:41	Vilnius ACC Sup.	Hello.
48.		Minsk ACC Sup.	Vilnius, it is Minsk Supervisor [name withheld]
49.		Vilnius ACC Sup.	Yes, yes.
50.		Minsk ACC Sup.	Well, in respect of Ryanair. The crew has not made a decision yet, so the information we have here is this: representatives of all institutions shared the information that they have received an e-mail, it was sent to multiple recipients at several airports, stating that there is a bomb on the aircraft.
51.		Vilnius ACC Sup.	Aha... mhm.
52.		Minsk ACC Sup.	Which may explode when the aircraft is above Vilnius.
53.		Vilnius ACC Sup.	Well, well.
54.		Minsk ACC Sup.	The crew, mhm... was recommended landing at Minsk-2. So far, it is following the route, we are waiting for them to make a decision.
55.		Vilnius ACC Sup.	Well, ok, we will be aware of that. Thank you.
56.		Minsk ACC Sup.	Yes, you are welcome.
57.			[Subsequently, at 09:46, Vilnius ACC Supervisor contacted the Rescue Coordination Centre using the internal channel and notified them about the received information concerning RYR1TZ.]

Coordination between Area Controller – Minsk ACC and Area Controller – Vilnius ACC			
58.	09:45:52	Vilnius ACC	Yes, colleague.
59.		Minsk ACC	Well, RYR1TZ, for the time being, will be circling at its current location, making decision.
60.		Vilnius ACC	OK, so for this moment it will be in the holding area, on your frequency. In your area, on your frequency..?
61.		Minsk ACC	Yes, yes.

62.		Vilnius ACC	Okay. We are looking forward to further information, thank you.
63.	09:46:20	Vilnius ACC	Hello.
64.		Minsk ACC	Hello, Vilnius?
65.		Vilnius ACC	Yes.
66.		Minsk ACC	For now, it will make a turn, executed at 390.
67.		Vilnius ACC	Roger. Will it be turning and on your frequency?
68.		Minsk ACC	So far, yes. We are looking forward for the decision, looking forward for the solution.
69.		Vilnius ACC	OK, we will be waiting for the information. Thank you.
70.	09:47:31	Vilnius ACC	Hello.
71.	09:47:32	Minsk ACC	Hello. RYR1TZ, he is declaring MAYDAY (...) now.
72.		Vilnius ACC	Yes.
73.		Minsk ACC	His decision is to descend and land at UMMS.
74.		Vilnius ACC	At Minsk, roger. Thank you very much.

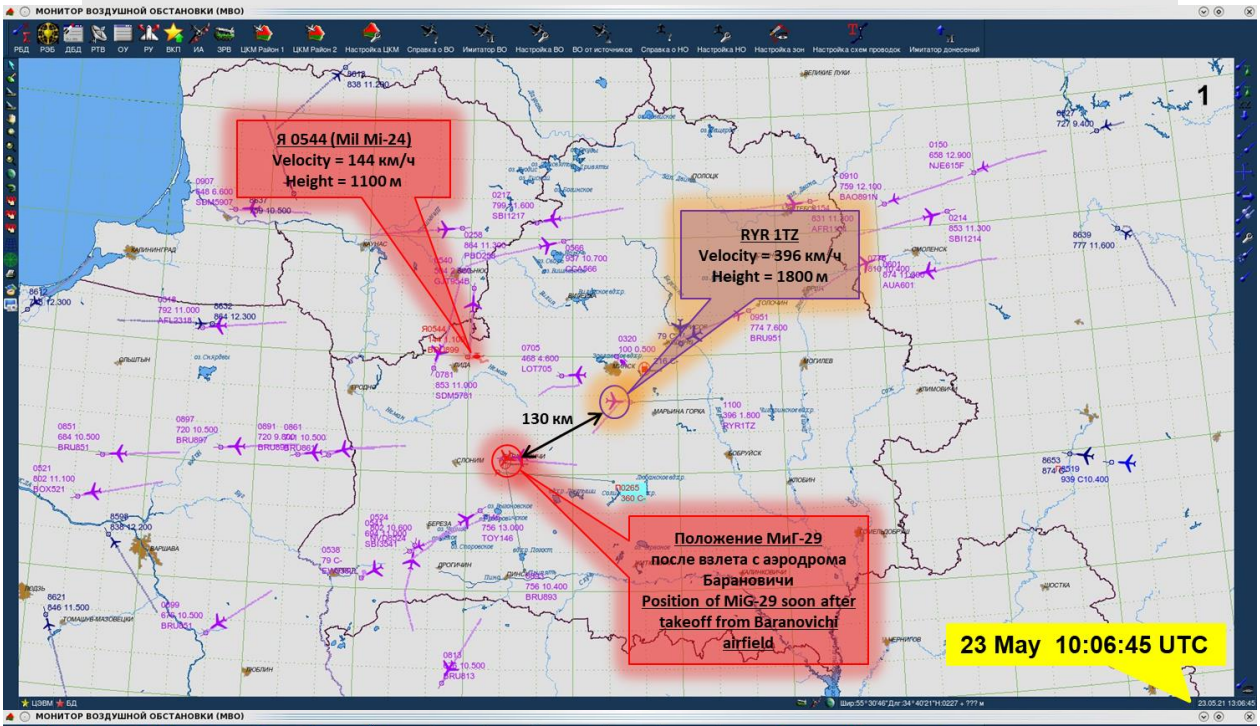
Coordination between Duty Supervisor – Vilnius ACC and Duty Supervisor – Minsk ACC			
75.	09:49:58-09:50:16	Minsk ACC Sup.	Supervisor [name withheld].
76.		Vilnius ACC Sup.	Neighbour, please clarify, is Ryanair going to land in Minsk?
77.		Minsk ACC Sup.	Yes, all done, assigned squawking 7700, made a decision to land in Minsk-2.
78.		Vilnius ACC Sup.	OK. Information received, thank you.
79.		Minsk ACC Sup.	Goodbye.

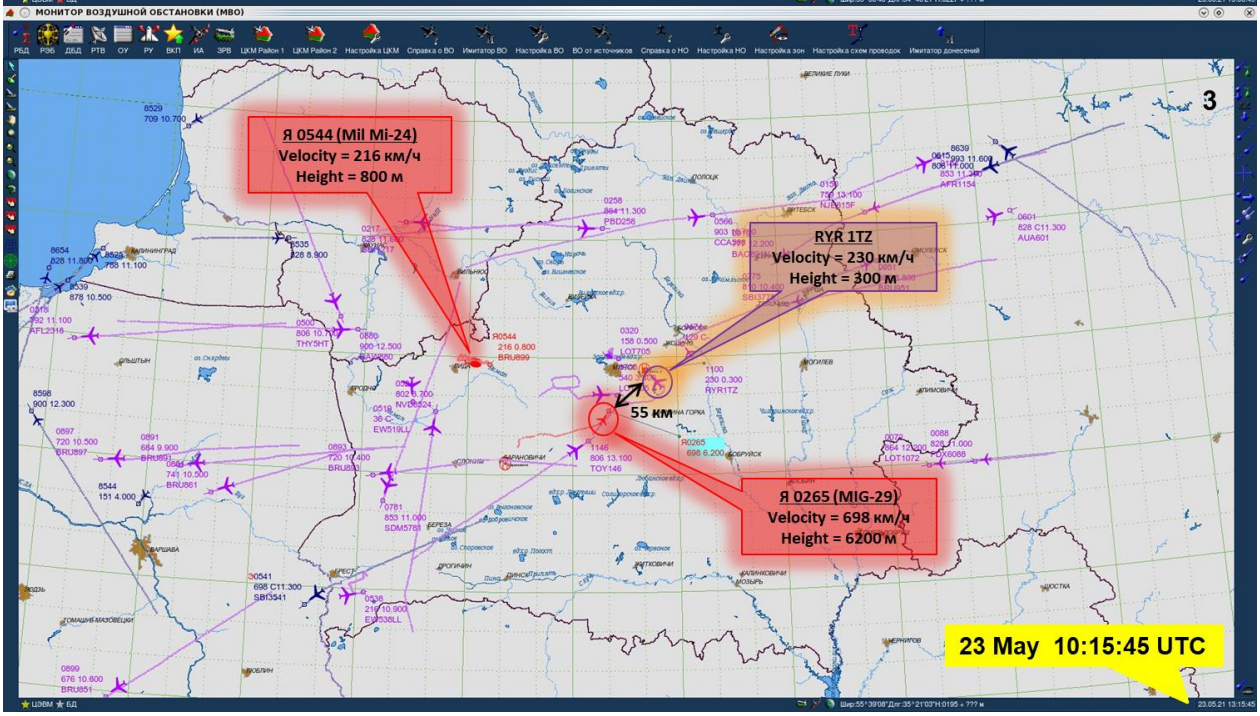
— — — — — — — —

Appendix G
English and Russian only

APPENDIX G

RELATIVE MILITARY AIRCRAFT POSITIONS VIS-À-VIS RYANAIR FLIGHT FR4978

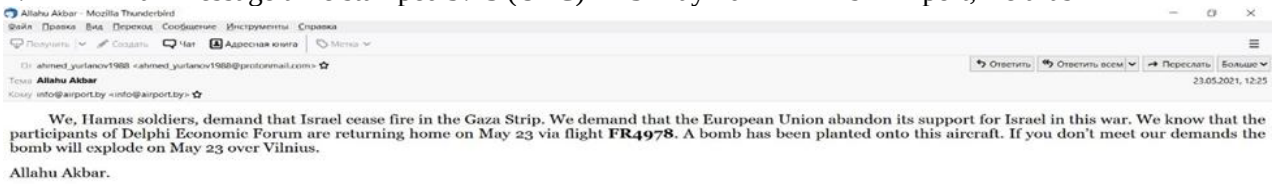




— — — — — — — — —

APPENDIX H
EMAIL MESSAGES RELEVANT TO FACT-FINDING INVESTIGATION
23 MAY 2021

1. Email message time stamped 9:25 (UTC) – 23 May 2021 – Minsk Airport, Belarus


Allahu Akbar - Mozilla Thunderbird

Файл Правка Вид Переход Сообщение Инструменты Справка

Получить Создать Чат Адресная книга Метка

От: ahmed_yurlanov1988 <ahmed_yurlanov1988@protonmail.com>

Тема: **Allahu Akbar**

Кому: info@airport.by <info@airport.by>

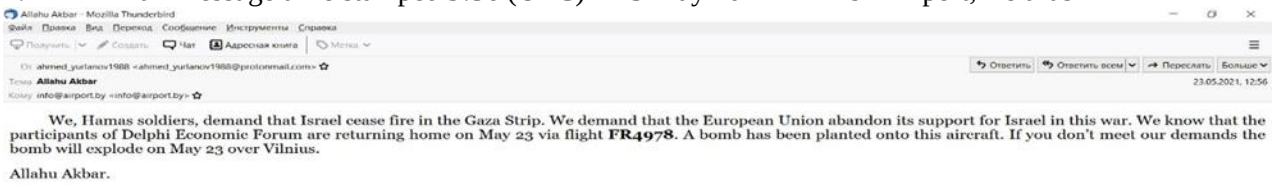
Ответить Ответить всем Переслать Больше

23.05.2021, 12:25

We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight **FR4978**. A bomb has been planted onto this aircraft. If you don't meet our demands the bomb will explode on May 23 over Vilnius.

Allahu Akbar.

2. Email message time stamped 9:56 (UTC) – 23 May 2021 – Minsk Airport, Belarus


Allahu Akbar - Mozilla Thunderbird

Файл Правка Вид Переход Сообщение Инструменты Справка

Получить Создать Чат Адресная книга Метка

От: ahmed_yurlanov1988 <ahmed_yurlanov1988@protonmail.com>

Тема: **Allahu Akbar**

Кому: info@airport.by <info@airport.by>

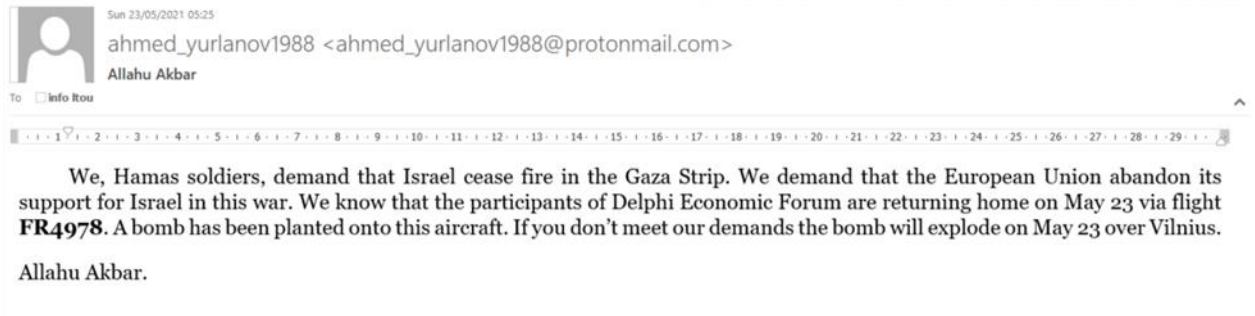
Ответить Ответить всем Переслать Больше

23.05.2021, 12:56

We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight **FR4978**. A bomb has been planted onto this aircraft. If you don't meet our demands the bomb will explode on May 23 over Vilnius.

Allahu Akbar.

3. Email message time stamped 9:25 (UTC) – 23 May 2021 – State Enterprise Lithuanian Airports, Lithuania


Sun 23/05/2021 05:25

ahmed_yurlanov1988 <ahmed_yurlanov1988@protonmail.com>

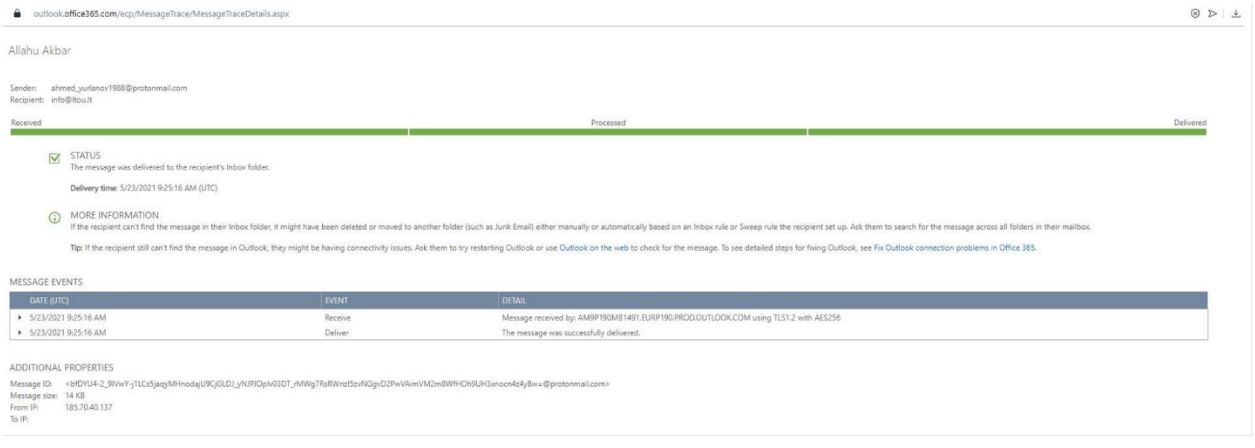
Allahu Akbar

To info ltou

We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight **FR4978**. A bomb has been planted onto this aircraft. If you don't meet our demands the bomb will explode on May 23 over Vilnius.

Allahu Akbar.

Metadata associated to email received in Vilnius, Lithuania


outlook.office365.com/ecp/MessageTrace/MessageTraceDetails.aspx

Allahu Akbar

Sender: ahmed_yurlanov1988@protonmail.com
Recipient: info@ltou.lt

Received | Processed | Delivered

STATUS
The message was delivered to the recipient's Inbox folder.

Delivery time: 5/23/2021 9:25:16 AM (UTC)

MORE INFORMATION
If the recipient can't find the message in their Inbox folder, it might have been deleted or moved to another folder (such as Junk Email) either manually or automatically based on an Inbox rule or Sweep rule the recipient set up. Ask them to search for the message across all folders in their mailbox.

Tip: If the recipient still can't find the message in Outlook, they might be having connectivity issues. Ask them to try restarting Outlook or use Outlook on the web to check for the message. To see detailed steps for fixing Outlook, see Fix Outlook connection problems in Office 365.

MESSAGE EVENTS

DATE (UTC)	EVENT	DETAIL
5/23/2021 9:25:16 AM	Receive	Message received by: AM9P190MB1491.EURP190.PROD.OUTLOOK.COM using TLS1.2 with AES256
5/23/2021 9:25:16 AM	Deliver	The message was successfully delivered.

ADDITIONAL PROPERTIES

Message ID: <bfDYU4-2_9IVwY-j1LCc5jaqyMHnodajU9CjGLDJ_yNJPJOplv03DT_rMWg7RsRWnd5zvNGgvD2PwVAimVM2m8WfHON9UH3xnocn4z4yBw=@protonmail.com>
Message size: 14 KB
From IP: 185.70.40.137
To IP:

4. Email message time stamped 9:27 (UTC) – 23 May 2021 – Sofia International Airport, Bulgaria

From: Comments User mailbox
Sent: Tuesday, May 25, 2021 9:30 AM
To: operation centre; Dragomir Modev
Subject: FW: Allahu Akbar

Колеги, изпращам по компетентност.

Comments
Sofia Airport
www.sof-connect.com
SOF Connect
SOFIA INTERNATIONAL AIRPORT
Please consider the environment before printing this e-mail

From: ahmed_yurlanov1988 [mailto:ahmed_yurlanov1988@protonmail.com]
Sent: Sunday, May 23, 2021 12:27 PM
To: Comments User mailbox
Subject: Allahu Akbar

We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight **FR4978**. A bomb has been planted onto this aircraft. If you don't meet our demands the bomb will explode on May 23 over Vilnius.

Allahu Akbar.

5. Email message time stamped 9:28 (UTC) – 23 May 2021 – Bucharest Airports National Company, Romania

Contact CNAB

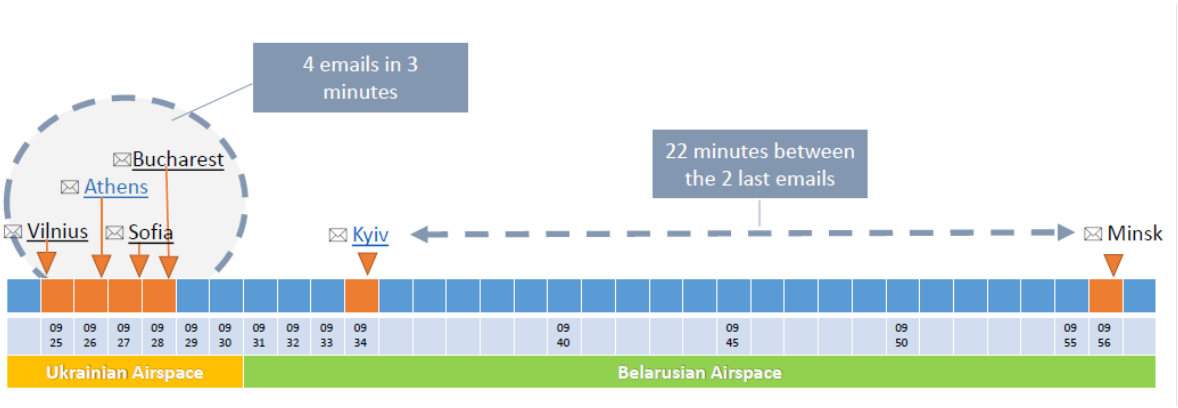
From: ahmed_yurlanov1988 <ahmed_yurlanov1988@protonmail.com>
Sent: Sunday, May 23, 2021 12:28 PM
To: contact@bucharestairports.ro
Subject: Allahu Akbar

We, Hamas soldiers, demand that Israel cease fire in the Gaza Strip. We demand that the European Union abandon its support for Israel in this war. We know that the participants of Delphi Economic Forum are returning home on May 23 via flight **FR4978**. A bomb has been planted onto this aircraft. If you don't meet our demands the bomb will explode on May 23 over Vilnius.

Allahu Akbar.

Appendix H
English only

6. Timeline of the emails sent on 23 May 2021



APPENDIX I

DEDICATED AREA SURVEILLANCE POSITION – MINSK AREA CONTROL CENTRE (ACC)

Voice Transcript of area surveillance controller's cellular telephone audio recording provide to the FFIT

Note 1.– With the exception of additional communications picked up via the cellular phone recording, indicated by shaded text, this transcript is identical to Appendix E. Given the complexity of controller-controller coordination, this transcript omits recordings of communications immaterial to the sequence of events involving Ryanair Flight FR4978 (RYR 1TZ). While the increased complexity and resultant workload of the establishment of a dedicated workstation and the need to manage an aircraft in an emergency is, in itself a potential hazard, the documentation of additional communications would detract from the purpose of this appendix, which is to record the role played by the controller, the unidentified individual and the Duty Supervisor, vis-à-vis RYR 1TZ.

Note 2.– For ease of reading the nomenclature "Minsk ACC" is used to describe when the area surveillance controller is speaking to RYR 1TZ. The term "Controller", referring to the same person, is used when he is speaking to persons in close vicinity around his air traffic control work station.

23 May 2021

	Time *(UTC)*	Speaker	Transcript	
Position opened 09:28:39				
	09:28:58	RYR 1TZ	(unreadable) Good day, Ryanair one-tango-zulu, Flight level three-niner-zero, approaching SOMAT	
	09:29:04	Minsk ACC	Ryanair one-tango-zulu, Minsk Control, good afternoon, radar contact	
	09:29:23 (approx.)	Controller	…потому, что он у меня не это… Понимаешь, тем более я ещё…и надо мне остальные борты наблюдать. Конечно было бы удобнее вот там работать. Because, I don't have it... Do you understand, moreover I haven't yet...and I have to observe other aircraft. Of course, it would be more convenient to work from over there.	Controller explains to Supervisor that he cannot see correlated labels from his designated work station
		Unidentified individual	Нет тут ниного…,вернее ниного, вот и все. No, here there is nobody to…, namely nobody. That's it.	
		Controller	[Имя не разглашается], может мне всё таки на тот вернуться, там хотя бы видно обстановку, тут вообще…	Controller asks Supervisor to change his position to

	Time *(UTC)*	Speaker	Transcript	
			[Name withheld], maybe I should still go back to that one, at least I can see the situation there, here at all ...	have the aircraft labels correlated.
		Supervisor	Говори! Speak!	
			Вот это контролируется, что подскажет (unreadable). All is controlled, whatever will prompt (unreadable).	
		Controller	Всё, хорошо, ладно. That's it, good, ok.	
		Supervisor	Всё, можешь говорить. That's it, you can speak.	
		Controller	Так, я начинаю с "special services", то что нам сообщили…то, что у нас… So, I start with "special services", that we were informed…that we have…	
		Supervisor	Сначала скажи "for your information"…да. First, say "for your information"…yes.	
		Controller	Да. Yes.	
			We have information from special services. You have bomb on board.	Controller repeats to himself instructions he received from the Supervisor
		Supervisor	..которая может сработать над Вильнюсом, поэтому "security reason we recommend (unreadable) landing airport…Minsk..." ..which can trigger over Vilnius, therefore "security reason we recommend (unreadable) landing airport…Minsk..."	The Supervisor continues instructing controller
		Controller	Ага. Хорошо. Aha. Ok	
		Supervisor	Uniform Mike Mike Sierra.	
		Controller	Так. Mike Mike Sierra. So, Mike Mike Sierra.	
	09:30:49		Ryanair one-tango-zulu, Minsk	
		RYR 1TZ	Yes Ryanair one-tango-zulu, go ahead	
		Minsk ACC	Ryanair one-tango-zulu for your information, we have information from	

	Time *(UTC)*	Speaker	Transcript	
			special services that you have bomb on board and that can be activated over Vilnius	
		RYR 1TZ	One-tango-zulu, standby	
	09:31:17		Okay, Ryanair one-tango-zulu, could you repeat the message?	
		Minsk ACC	Ryanair one-tango-zulu, I say again, we have information from special services that you have bomb on board. That bomb can be activated over Vilnius	
		RYR 1TZ	Roger that, standby	
		Supervisor	Скажи “for security reason”. Say “for security reason”.	
		Controller	Сейчас, Stand by, пускай он скажет и… Wait a sec, Stand by, let him reply and…	
		Supervisor	Ну… продолжай, продолжай, продолжай, чтоб быстрее. Well… continue, continue, continue, to get faster.	
	09:31:42	Minsk ACC	Ryanair one-tango-zulu, and for emer… security reasons we recommend you to land at Uniform Mike Mike Sierra	
		RYR 1TZ	Okay...that’s… understood… give us a minute please	
		Controller	Так, там по низу. Просто он…он может сейчас начать процедуру снижения. Там австрияк. So, down there. It just…it can begin descent procedure right now. There’s Austrian there.	Controller warns Supervisor about conflicting traffic
		Supervisor	Я сказал. Я сейчас сказал [Имя не разглашается] чтобы это, ну… всё равно отворачивать будут. I’ve told. I just told [other controller] to, well… anyway they will turn it away.	
		Controller	[Имя не разглашается] уже надо отворачивать. They already have to turn.	
		Supervisor	Если он примет решение будем поворачивать, а Австрийца отвернём в право потом.	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
			If he makes a decision, we will turn it, and we will turn the Austrian to the right later.	
		Other controller	Если он примет решение, я тогда ему в право пущу Австрияка. If he makes a decision, then I will turn Austrian to the right.	Other controller expects to turn the Austrian aircraft away if Ryanair makes a decision to change course
		Controller	Да да Lufthansa Cargo она повыше идет. Наша Белваия никому не мешает. German Cargo тоже там проходит. Yes, yes, Lufthansa Cargo is flying higher. Our Belavia is not bothering anybody. German Cargo also goes through there.	
	09:32:59	RYR 1TZ	Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	The bomb... threat message, where did it come from? Where did you find the information about it from?	
		Supervisor	Standby (unreadable)	The supervisor instructs controller to inform RYR 1TZ to standby and then refers the question to the unidentified individual
		Minsk ACC	Ryanair one-tango-zulu standby please	
		Unidentified individual	E-mail, email.	The unidentified individual replies to the supervisor's question
		Supervisor	E-mail…а на какой адрес? E-mail…to what address?	The supervisor asks the unidentified individual

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
				about the e-mail address
		Controller	Он…он сказал: “От кого вы получили эту информацию?” He…he said: “From whom did you get this information?”	Controller translates the pilot’s message to the unidentified individual
		Unidentified individual	К вам пришло на электронную почту. It came to you by e-mail.	
		Supervisor	К нам? To us?	
		Unidentified individual	Да. Yes.	
		Supervisor	Эээ…? Errr…?	
		Unidentified individual	Аэропорт… аэропорт вам передал. На почту аэропорта пришло (unreadable). Вам аэропорт передал. The airport…the airport transferred it to you. It came to the airport’s e-mail (unreadable). The airport transferred it to you.	
		Supervisor	Эээ…скажи “From airport” наверно. Errr…say “From airport”, I expect.	
		Unidentified individual	На e-mail пришло сообщение. The message came by e-mail.	
		Supervisor	Errr…airport security staff got e-mail.	
	09:33:42		Ryanair one-tango-zulu	
		RYR 1TZ	Go ahead	
		Minsk ACC	Ryanair one-tango-zulu airport security staff …informed they received e-mail	
		RYR 1TZ	… Roger, …was it Vilnius airport security staff or from Greece?	
		Supervisor	С Вильнюса аэропорта или с Греции? From Vilnius airport or from Greece?	The Supervisor asks the unidentified individual
		Unidentified individual	Ну типа это массовая рассылка во все аэропорты была. Well, it was kind of a mass mailing to all airports.	
		Supervisor	Ага. Aha.	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
		Unidentified individual	Во все аэропорты рассылка. Mailing to all airports.	
		Minsk ACC	Ryanair one-tango-zulu this e-mail was shared to …several airports	
		Unidentified individual	(unreadable)	
		RYR 1TZ	…Roger, standby	
		Unidentified individual	(unreadable) массовая рассылка. (unreadable) mass mailing.	
	09:34:49		Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	Could you give us frequency …for …of the company so that we would be able to talk to	
		Minsk ACC	Ryanair one-tango-zulu say again what frequency do you need	
		RYR 1TZ	We just need to talk with the operations of the company, is there any frequency for that from this range	
		Minsk ACC	Do you mean Ryanair operations frequency?	
		RYR 1TZ	That's the one, Ryanair one-tango-zulu	
		Minsk ACC	Standby please	
		Controller	Так, Ран…operation Ранэйра ему нужно по процедуре связаться. С этим эээ… с ПДО, в Виль…Выль…Вильнюсе они находятся. Частота ему нужна. So, Ryan…he needs to contact the Ryanair operation according to the procedure. With errr…with OCC, they are located in Vil…Vil…Vilnius. He needs the frequency.	
		Unidentified individual	(unreadable)	
		Minsk ACC	Ryanair one-tango-zulu, standby please	
		RYR 1TZ	Standing-by	
		Controller	Так, по идее он должен запросить нижний эшелон. So, in theory, he should request a lower level.	Controller estimates a top of descent point to land in Vilnius
		Unidentified individual	Он (unreadable) тогда, когда снижает? Ничего?	The unidentified

	Time *(UTC)*	Speaker	Transcript	
			Does it (unreadable) when descends? Nothing?	individual is interested in whether the information was coming from the pilot about his readiness to start descent into Vilnius
		Controller	Нет, нет, нет. Ну у них стандартная процедура, checklist по которому они всё это выполняют. У них… No, no, no. Well, they have standard procedure, checklist according to which they do all this. They have…	Controller replies to unidentified individual
		Unidentified individual	(unreadable)	
		Controller	Да, да, да. Yes, yes, yes.	
		Supervisor	А они сами не знают? У них нету этой частоты? Don't they know themselves? Don't they have this frequency?	
		Controller	Нет, просит…просит частоту Operations. No, he's requesting…requesting the Operations frequency.	
		Supervisor	Дать вам сейчас Вильнюса (unreadable), чтобы… To give you Vilnius now (unreadable) to…	
		Controller	Угу. Yeah.	
		Senior air traffic control officer (SATCO)	[Имя не разглашается] (unreadable) схему посадки захода KOLOS 2H. [Name withheld] (unreadable) standard arrival KOLOS 2 Hotel.	SATCO gives a standard arrival route for RYR 1TZ
		Controller	KOLOS 2 Hotel	
			Блин, скорее всего векторением, у него…ну, я конечно скажу…ему надо…нужно будет векторение.	Controller considers radar vectors for RYR 1TZ

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
			Damn, most likely by vectoring, it has…well, I'll inform it for sure…it needs…vectoring is required.	
			Ну первоначально на KOLOS там. Well, initially to KOLOS.	
		Unidentified individual	(unreadable) диспетчер сообщил ну, что там бомба….он говорит (unreadable) с аэропорта (unreadable), с какого аэропорта?...(unreadable) другие аэропорты, то есть, ну типа того (unreadable)…Ну может (unreadable). (unreadable) well, the air traffic controller informed, that there was a bomb...he said (unreadable) from the airport (unreadable), from what airport?... (unreadable) other airports, that is to say, well, something like that (unreadable)… Well, maybe (unreadable).	Unidentified individual informs someone, via cellular telephone, details of controller-pilot communication
		Voice unidentified	(unreadable)	
	09:39:30		Ryanair one-tango-zulu, any updates?	
		Minsk ACC	Ryanair one-tango-zulu standby, waiting for the information	
		RYR 1TZ	Could you say again the IATA code for the …airport that authorities were recommending for us to …to divert to	
		Minsk ACC	Ryanair one-tango-zulu . . .read you THREE, say again please	
	09:39:57	RYR 1TZ	Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu, go	
		RYR 1TZ	Can you say again the IATA code of the airport that authorities have recommended us to divert to?	
		Minsk ACC	Ryanair one-tango-zulu, roger, standby please	
		RYR 1TZ	Okay, I hear you TWO out of FIVE, can you say again the IATA code of the airport that authorities have recommended us to divert to?	
		Minsk ACC	Ryanair one-tango-zulu, standby	
		Controller	Да блин…да мне РП нужен ёлки. Damn…I need the supervisor.	
		RYR 1TZ	Standby, roger	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
		Senior air traffic control officer (SATCO)	Что, (unreadable). What, (unreadable).	
		Controller	Он спрашивает код ИАТАвский аэропорта, который дал указание ему идти на этот… на запасной… He is asking for the IATA code of the airport that has instructed him to go to…to the alternate.	
			[Имя не разглашается] Ryanair борт спрашивает: «Дайте ИАТАвский код аэропорта, который дал указание нам идти на…на Минск». [name withheld] Ryanair is asking: "Give us the IATA code of the airport that instructed us to go to… to Minsk".	Controller putting question to Supervisor
		Supervisor	ИАТАвский код? The IATA code?	
		Controller	Да, ИАТАвский. Uniform Mike Mike Sierra? Или что? Yes, The IATA. Uniform Mike Mike Sierra? Or what?	
		Supervisor	Mike Sierra Quebec	
		SATCO	Там три буквы. There are three characters.	
		Controller	Давай, какой? Mike… Ok, what's the code? Mike…	
		Supervisor	Mike Sierra Quebec	
		Controller	Sierra Quebec, хорошо. Sierra Quebec, ok.	
	09:41:00	Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	Go ahead	
		Minsk ACC	IATA code is Mike Sierra Quebec.	
		RYR 1TZ	Can you say again please?	
		Minsk ACC	IATA code Mike Sierra Quebec	
		RYR 1TZ	Mike Sierra Quebec, thanks.	
		Supervisor	Есть частота сто тридцать один запятая семьсот пятьдесят, но (unreadable). There is a frequency of one hundred thirty-one decimal seven hundred fifty, but (unreadable).	The supervisor informs controller about the frequency for RYR1TZ

	Time *(UTC)*	Speaker	Transcript	
		Controller	Сто тридцать один запятая семьсот пятьдесят. One hundred thirty-one decimal seven hundred fifty.	
		Supervisor	Да, но это…эээ. Yes, but this…errr.	
		Controller	Это что? What's this?	
		Supervisor	Это нашего ground сервиса (unreadable) типа транзита (unreadable) это не представитель, скажи, что частоты представительства нету. This is our ground service (unreadable) kind of transit service (unreadable) it's not a representative, tell him, that there is no frequency for the representative.	
		Controller	Не, он…нет, нет, он говорит этот..в Вильнюсе, ему нужен этот Operations, ой не в Вильнюсе, а Райнэйра Operations. No, he…no, no, he is saying…in Vilnius, he needs Operations, oh not in Vilnius but Ryanair Operations.	
		Supervisor	(unreadable) у них нету в Вильнюсе. (unreadable) they don't have it in Vilnius.	
		Controller	Так, что говорить скажи. So tell me, what to say?	
		Supervisor	Скажи, что в Вильнюсе нету информации о…частоты вашего представительства… Представителя. Только есть ground staff (unreadable). Say, that there is no information in Vilnius about….frequency of your representative… representative. There is for ground staff only (unreadable).	
		Controller	А, ground staff, хорошо. Это в Вильнюсе да? Сто тридцать один и семь… Ah, ground staff, good. It's in Vilnius, right? One hundred thirty-one and seven…	
	09:41:58		Ryanair one-tango-zulu, again, this recommendation to divert to Minsk	

	Time *(UTC)*	Speaker	Transcript	
			where did it come from? Where did it come from? Company? Did it come from. . . departure airport authorities or arrival airport authorities?	
		Supervisor	Just for our… только наша рекомендация. Just for our… only our recommendation.	The supervisor instructs controller how to reply.
		Minsk ACC	Ryanair one-tango-zulu, this is our recommendation~~s~~.	
		RYR 1TZ	Can you say again?	
		Minsk ACC	Ryanair one-tango-zulu, this is our recommendation~~s~~.	
		RYR 1TZ	Okay, I read you TWO out of FIVE	
			Did you say this was your recommendation?	
		Minsk ACC	Ryanair one-tango-zulu, Charlie-Charlie.	
		Controller	Передать ему эту да частоту? Могу… [Имя не разглашается]? Can I give him this frequency, right? Can I …[name withheld]?	
			[Имя не разглашается], эту частоту могу да передать? [Name withheld], I can give this frequency, right?	Controller tries to convey the frequency as soon as possible
		Supervisor	Ну, можешь передать да и скажи, что (unreadable). Well, yes, you can give it, and say that (unreadable).	
	09.42.49		Ryanair one-tango-zulu, we have ground staff frequency for Vilnius one-three-one decimal seven-five-zero	
		RYR 1TZ	One-three-one-seven-five, (unreadable) we got that down, not answering	
		SATCO	Do you have information from the supervisor about this (unreadable).	SATCO talking to someone by phone; likely a Vilnius controller
		Controller	[Имя не разглашается], четыре минуты до пересечения границы, либо снижение…	Controller speaking to Supervisor

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
			[Name withheld], there are four minutes before the border crossing or descent…	
		Another controller	(unreadable)	
	09:44:38	Minsk ACC	Ryanair one-tango-zulu, advise your decision please	
		RYR 1TZ	Radar, Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu, advise your decision please	
	09:44:52	RYR 1TZ	…I need to ask you a question, what is the code of the threat, ..is it green, yellow or amber or red	
		Minsk ACC	Standby	
		Controller	Он говорит код сообщения жёлтый или красный? He's asking, the code of the message is yellow or red?	Controller translates the pilot's question to the unidentified individual
		Unidentified individual	Ну это наше (unreadable). Ну, красный пускай будет, красный. Well, this is our (unreadable). Well, let it be red, the red one.	Unidentified individual decides what is the color of the threat code
	09:45:09		Ryanair one-tango-zulu, they say code is red	With the phrase "they say", controller attempts to inform the pilot that someone prompted the controller
		RYR 1TZ	Roger that, in that case we request holding at present position	
		Minsk ACC	Ryanair one-tango-zulu, roger, hold over your position, maintain Flight level three-niner-zero, turns at own discretion	
				Cellular phone ringing
		RYR 1TZ	Okay holding at our discretion at present position maintaining Level three-nine-zero, Ryanair one-tango-zulu	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
		Unidentified person	Пока принимает решение. While making a decision.	Unidentified individual talking on cellular telephone
			Да (unreadable), ну пока да. Пока посылают только. Сейчас [Имя не разглашается] набирает (unreadable). Yes (unreadable), well, so far, yes. They are only sending so far. [Name withheld] is calling me now (unreadable).	Unidentified individual talking on cellular telephone
			Да [Имя не разглашается]. Ну пок.. пока не принял (unreadable), пару минут до выхода из зоны нашей…около госграницы. Ну да, он спрашивает какой цвет там жёлтый или красный, ну, опасности. Он говорит красный. Ну он пока принимает решение….ну…ну…ну они может специально тянут время, кто его знает. Да, (unreadable) понял. Не, не, не (unreadable). Ну да… он. Yes, [name withheld]. He hasn't made a (decision) yet, there is a couple of minutes before exiting our zone…near the state border. Well yes, the pilot is asking what is the color yellow or red, well (the color), of the danger. The controller is saying red. Pilot is making a decision so far…well….well…well possibly they (the Ryanair crew) is playing for time deliberately, who knows. Yes…I understood. No, no, not (unclear). Well, yes…he.	Unidentified individual informs [name withheld] about RYR 1TZ
	09:47:12		Ryanair one-tango-zulu, we are declaring an emergency MAYDAY, MAYDAY, MAYDAY, Ryanair one-tango-zulu, our intentions would be to divert to Minsk airport	
		Minsk ACC	Ryanair one-tango-zulu, MAYDAY, roger. . .standby for vectors	
		RYR 1TZ	Standing-by Ryanair one-tango-zulu	
		Unidentified individual	На аэропорт идёт? Is it going to the airport?	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
		Controller	Так…давай всех отварачиваетем идёт на Минск. So…turn everyone away, it's going to Minsk.	
		Unidentified individual	Ну… то есть согласился садиться, да? Well…that is to say he agreed to land, right?	
		Controller	Да…да. Yes…yes.	
	09:47:53	unidentified	(unreadable)	Ground-ground coordination
	09:48:10		Ryanair one-tango-zulu, request descent to ten thousand feet.	
		Minsk ACC	Ryanair one-tango-zulu, descend Flight level one-zero-zero	
		RYR 1TZ	Flight level (unreadable) Ryanair one-tango-zulu	
		Minsk ACC	Ryanair one-tango-zulu from present position cleared direct point KOLOS, Kilo Oscar Lima Oscar Sierra	
		RYR 1TZ	Direct to KOLOS, Ryanair one-tango-zulu	
		Unidentified individual	Всё, разворачивает (unreadable) да? That's it, it's turning away (unreadable) right?	
		SATCO	Да, он (unreadable). Yes, it (unreadable).	SATCO replies to unidentified individual
		Controller	Да, разворачивается, он сейчас снижается. Yes, it's turning away, it's descending now.	Controller replies to unidentified individual
	09:50:15	Minsk ACC	Ryanair one-tango-zulu, how do you read me?	
		RYR 1TZ	I read you FIVE, Ryanair one-tango-zulu	
		Minsk ACC	Roger	
	09:50:24		Ryanair one-tango-zulu do you need any aerodrome details and weather information?	
		RYR 1TZ	We can pick up the ATIS from Minsk ...(unreadable) enough.	
		Minsk ACC	Ryanair one-tango-zulu do you need ATIS frequency?	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
		RYR 1TZ	We got it. Is it one-two-eight-eight-five-zero, One-tango-zulu.	
	09:50:56	ATIS	Information Delta, 0936, Eye Ell…	
Translated from Russian	09:51:14	Unidentified	Yes? …Yes?	Ground-ground coordination
		Minsk ACC	Do you hear?	
		Unidentified	Yes	
		Minsk ACC	Listen, Ryanair is now heading to KOLOS. Will you bring it via (unreadable)?… I need a runway, three-one Right?	
		Unidentified	Three-one Right, KOLOS Two Hotel Arrival	
		Minsk ACC	Two Hotel. Runway?	
		Unidentified	Three-one Right	
		Minsk ACC	Okay	
		Unidentified	ATIS one-two-eight eight-five-zero	
		Minsk ACC	Okay.	
	09:51:50	Minsk ACC	Ryanair one-tango-zulu	
		RYR 1TZ	One-tango-zulu, go ahead	
		Minsk ACC	Ryanair one-tango-zulu, KOLOS Two Hotel Arrival, Runway-in-use Three-one Right and if you need vectors advise.	
		RYR 1TZ	Okay, KOLOS, could you say the (unreadable).	
		Minsk ACC	KOLOS Two Hotel Arrival.	
		RYR 1TZ	KOLOS Two Hotel Arrival, Runway Three-one Right, Ryanair one-tango-zulu	
		Minsk ACC	And ATIS frequency is one-two-eight decimal eight-five-zero	
		RYR 1TZ	Two-eight-eight-five	
	09:52:29	Minsk ACC	Ryanair one-tango-zulu and advise passengers on board and if any dangerous goods on board	
		RYR 1TZ	No dangerous goods, standby...and we need one-three-zero to avoid	
	09:53:00		Ryanair one-tango-zulu, turning heading one-three-zero to avoid	
		Minsk ACC	Ryanair one-tango-zulu roger heading one-three-zero. Report clear of weather.	
		RYR 1TZ	Wilco.	

Appendix I
English only

	Time *(UTC)*	Speaker	Transcript	
	09:54:45		Ryanair one-tango-zulu, souls on board is one-three-three.	
		Minsk ACC	Persons on board one-three-three, copied, thank you.	
	09:55:33		Ryanair one-tango-zulu, when ready report estimated time of arrival.	
	09:56:48	RYR 1TZ	Ryanair one-tango-zulu, request descent to nine thousand feet.	
		Minsk ACC	Ryanair one-tango-zulu, descend Flight level niner zero	
		RYR 1TZ	Descend Flight level nine zero, Ryanair one-tango-zulu.	
Translated from Russian	09:57:01	Minsk Approach	Yes? ...Hello?	Ground-ground coordination
		Minsk ACC	Are you ready to accept?	
		Minsk Approach	Yes	
		Minsk ACC	Is descending to Flight level nine zero, with heading one-three-zero	
		Minsk Approach	Okay	
	09:57:12	Minsk ACC	Ryanair one-tango-zulu, now contact Minsk approach on one-two-five decimal niner.	
		RYR 1TZ	One-two-five-niner, Ryanair one-tango-zulu	
Position closed 10:04:30				

APPENDIX J

TRANSCRIPT OF AUDIO RECORDING OF MEETING BETWEEN DEPUTY GENERAL DIRECTOR, BELAERONAVIGATSIA, DUTY SUPERVISOR AND AREA SURVEILANCE CONTROLLER HELD 1 JUNE 2021 WITHIN THE HEADQUARTERS OF THE BELARUS ATS PROVIDER, MINSK

The following voice transcript was developed from the audio recording obtained from the area surveillance controller's smartphone.

Time (from start of recording)	Speaker	Transcript	Remarks
00:10			Controller and Duty Supervisor enter Belaeronavigatsia Head Office
00:15	Unknown	(Unreadable), чайку может? (Unreadable), some tea?	
00:17			Controller and Duty Supervisor climb stairs to the third floor where Deputy General Director's office is located.
00:58	Duty Supervisor	(Unreadable) ..про него спрашивал. Список тот в зале находился? (Unreadable). (Unreadable) ..asked about him. Was that list in the ops room? (Unreadable)	
01:06	Controller	Угу. Yeah	
01:27			Duty Supervisor knocks on the office door of Deputy General Director.
01:29	Duty Supervisor	Нет никого. Nobody here	
01:59	Deputy General Director	О…здравствуйте. Oh…hello	
02:01	Duty Supervisor	Здравствуйте. Hello	
02:01	Controller	Здравствуйте. Hello.	

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
02:02	Deputy General Director	Как раз успел борщ покушать. Just had time to eat borscht.	
02:04	Controller	Ну, хорошо. Well, good.	
02:05	Deputy General Director	Заходите. Come in.	
02:07	Controller	Угу. Ok.	
02:08	Deputy General Director	Так. So.	
02:12	Duty Supervisor	Начальник Минского РЦ передал. [Head, Minsk ACC] gave you this.	
02:15	Deputy General Director	(Unreadable) передаёт, какие тот конверты. (Unreadable) passes, some kind of envelopes.	
02:18	Duty Supervisor	Наверное записи какие нибудь? Perhaps some records?	
02:19	Deputy General Director	Передал бы денег каких, конверты какие то передаёт. He would have given some money, is giving some kind of envelopes.	
02:20	Duty Supervisor	Laughs.	
02:23	Deputy General Director	Присаживайтесь. Have a seat.	
02:50	Deputy General Director	Может чаю, кофе хотите? Would you like some tea or coffee?	
02:51	Duty Supervisor	Не, спасибо. No, thanks.	
02:52	Controller	Нет, спасибо. No, thanks.	
02:53	Deputy General Director	Так… So…	
03:02	Duty Supervisor	(Unreadable).	
03:09	Controller	Угу. Yeah.	

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English only

Time (from start of recording)	Speaker	Transcript	Remarks
03:13	Deputy General Director	Значит смотрите, сейчас я вам дам листочки, надо будет корректировки кое какие внести, они незначительные, но…почему, потому, что эээ в радиообмене немножко другие фигурируют…немножко другое время фигурирует. Поэтому надо ближе к радиообмену написать, чтоб вы…эээ, ну меньше фантазий, правильно? So, look, now I will give you the sheets, you will need to make some adjustments, they are insignificant, but ... why, because, uh, little different times appear in the radio exchange ... a little different time appears. Therefore, it is necessary to write closer to the radio exchange, so that you ... uh, well, less fantasies, right?	
03:29	Duty Supervisor	Угу. Ok.	
03:32	Duty Supervisor	(Unreadable).	
03:45	Deputy General Director	Ручки есть или дать? Do you have pens or should I give you?	
03:46	Controller	Да, есть. Yes, we have.	
03:47	Deputy General Director	Так, смотрите… So, look…	
03:49	Controller	Извините, мы можем прямо тут исправлять? Excuse me, can we amend it right here?	

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English only

Time (from start of recording)	Speaker	Transcript	Remarks
03:51	Deputy General Director	Конечно, не, не, не, ну вы здесь можете поправить, но там, у вас незначительно, у вас чуть больше. Значит, вот смотрите, по тексту…Значит, время, вот здесь "по служебному" исключаем, по мобильному телефону или сотовому телефону, это исключаем. Значит, вы получили информацию, пишите - "приблизительно, в девять двадцать восемь". Of course, no, no, no, well, you can amend it here, but there, you have insignificant…, and you have a little bit more. So, look, according to the text ... So, time, here we exclude "by the service phone", by mobile phone or cell phone, this we exclude. So you received the information, write – "approximately, at nine twenty-eight."	Deputy General Director addresses, firstly the controller, then the Duty Supervisor on the extent of changes to their statements and then instructs them what exactly should be changed in their incident reports.
03:51	Controller	Потом… Then…	
03:55	Controller	Угу. Ok.	
04:08	Duty Supervisor	Да. Yes.	
04:14	Duty Supervisor	Так… So…	
04:15	Controller	Я уже подправил, здесь девять двадцать девять. I've already amended it, it is nine twenty-nine here.	
04:19	Deputy General Director	У вас девять двадцать девять, правильно. You have nine twenty-nine, correct.	
04:20	Duty Supervisor	У меня девять двадцать восемь. I have nine twenty-eight.	
04:21	Deputy General Director	Девять двадцать восемь, пишите - "приблизительно, в девять двадцать восемь, получил посредством мобильной связи"…."посредством мобильной связи". Nine twenty-eight, write - "approximately, at nine twenty-eight, I received via mobile communication"... "by means of mobile communication".	Deputy General Director instructs the Duty Supervisor on what exactly he should amend in his incident report.

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
04:36	Deputy General Director	У вас девять двадцать девять, так, девять двадцать девять, там я (unreadable) поправлял (unreadable)…Девять двадцать девять, получил от (unreadable) так, есть (unreadable) всё. Всё, можно (unreadable). You have nine twenty-nine, so, nine twenty-nine, there I (unreadable) corrected (unreadable) ...Nine twenty-nine received from (unreadable) so, there is (unreadable), that's it. That's it, you can (unreadable).	
04:38	Controller	Угу. Ok.	
04:51	Controller	Угу, я понял. Ok, I got it.	
04:58	Duty Supervisor	"От дежурного по аэропорту" здесь всё так и остаётся? "From the duty officer of the airport" does it still remain the same here?	
05:02	Deputy General Director	Да, да, да, дежурного…Значит эээ, значит, значит…ну пока пишите по…пе… "Приблизительно в девять двадцать восемь получил посредством мобильной связи". Yes, yes, yes, from duty officer… So, uh, so, so… well, for now, write - "About nine twenty-eight I received via mobile communications."	
05:14	Duty Supervisor	Угу. Ok.	
05:18	Deputy General Director	А с Вильнюсом, как вы связь осуществляли? And how did you communicate with Vilnius?	
05:21	Duty Supervisor	С Вильнюсом у нас панелька "SITTI" то есть, вот эти вот, про которые рабочие наши (unreadable). We have a "SITTI" panel for Vilnius, that is to say, these here, about which our workers are (unreadable).	
05:24	Deputy General Director	Это радиоканал? Is this a radio channel?	

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English only

Time (from start of recording)	Speaker	Transcript	Remarks
05:25	Duty Supervisor	Нет, наземный. No, it's a landline.	
05:26	Deputy General Director	Телефон? Telephone?	
05:40	Deputy General Director	А этот телефон, он где? У нас же тоже пишется он, да? And this phone, where is it? We also record it, right?	
05:43	Duty Supervisor	Угу. Yes.	
05:44	Deputy General Director	Ну я потом тогда технарям, попрошу, чтобы они всё это поснимали. Well, then I'll ask the technicians to remove it all.	
06:10	Deputy General Director	То есть это был не тот телефон по которому вы связывались с [Имя не разглашается], да? Это была… это другой канал был, да? That is, it was not the same phone that you used to contact [Name withheld], right? It was… it was a different channel, right?	Deputy General Director referring to contact with Minsk Tower Supervisor.
06:17	Duty Supervisor	Эээ, ну, панелька (unreadable) одна и та же и они заведены туда, то есть разные кнопочки просто и…там да, конечно. Uh, well, the panel (unreadable) is the same and they are connected there, there are just different buttons, that is, and… there yes, of course.	
06:23	Deputy General Director	Разные кнопки. То есть с [Имя не разглашается]вы, грубо говоря по одному говорили проводу а с Вильнюсом по другому. Different buttons. That is, roughly speaking, you spoke with [Name withheld] on one wire and with Vilnius on another.	Deputy General Director referring to contact with Minsk Tower Supervisor.

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English only

Time (from start of recording)	Speaker	Transcript	Remarks
06:30	Duty Supervisor	(Unreadable) то есть, ну, как оно организовоно там я не знаю, то есть с Вильнюсом у нас по MFC получается канал связи, но сама панелька и всё, через коммутаторы я понимаю SITTI-вские идёт. (Unreadable) that is, well, I don't know how it is organized there, that is, with Vilnius, we get a communication channel via MFC, but the panel itself and everything, I understand goes through the SITTI switches.	MFC: telephony signalling protocol.
06:34	Deputy General Director	Угу. Ok.	
06:37	Deputy General Director	Ну ясно. Я понял. Well, it's clear. I got it.	
08:54	Deputy General Director	Подпиши синим (unreadable). Sign in blue (unreadable).	
09:13			Deputy General Director leaves the office.
11:02			Deputy General Director re-enters the office.
14:00			A knock on the office door; an employee (#1) of Belaeronavigatsiya enters.
14:02	Deputy General Director	[Имя не разглашается], заходите. [Name withheld], come in.	
14:07	Deputy General Director	Так, оставить могу. Вот это я вам назад сразу возвращу. (Unreadable) до Витебска. Да,оставте. So, I can keep it. This is what I will return to you right away. (Unreadable) to Vitebsk. Yes, leave it.	
14:16	Belaeronavigatsiya employee #1	Потом определимся. Так, единственное, что здесь… а там акт по идее там должен принят, а нет, акт у меня здесь. Then we'll decide. So, the only thing that is here ... and there the act, in theory, should be adopted there, but no, I have the act here.	
14:26	Deputy General Director	В доп соглашении (unreadable). In an additional agreement (unreadable).	

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
14:27	Belaeronavigatsiya employee #1	Угу. (Unreadable) такие сроки они всё сдали. Yeah. (Unreadable) in that time frame, they delivered everything.	
14:28	Deputy General Director	(Unreadable) хорошо. (Unreadable) good.	
14:37	Deputy General Director	Всё. А здесь? That's all. And here?	
14:38	Belaeronavigatsiya employee #1	А ну да, второй экземпляр. Well, yes, the second copy.	
14:46	Deputy General Director	Вот теперь всё. Now that's all.	
14:49	Belaeronavigatsiya employee #1	Так (unreadable). So (unreadable).	
14:55	Belaeronavigatsiya employee #1	Так, всё. Well, that's all.	
14:56	Deputy General Director	Угу. Ok.	
14:58	Belaeronavigatsiya employee #1	Так там тоже (unreadable) декларация регистрация, декларация "Гипросвязь". So there is also an (unreadable) registration declaration, a "Giprosvyaz" declaration.	"Giprosvyaz" – Research, design and survey organization in the system of the Ministry of Communications and Informatization of the Republic of Belarus.
15:02	Deputy General Director	Угу, (unreadable)? Ok, (unreadable)?	
15:05	Belaeronavigatsiya employee #1	Эээ, так, сегодняшним, сегодняшним. Uh, so, today, today.	
15:14	Deputy General Director	По этому пусть немножко сместимся, по кровле в Витебске сместимся немножко. Let's shift a little on this issue, let's shift a little bit concerning the roof in Vitebsk.	
15:17	Belaeronavigatsiya employee #1	Эээ (unreadable). Uh (unreadable).	
15:19	Deputy General Director	Здание механизации. Mechanization building.	
15:20	Belaeronavigatsiya employee #1	(Unreadable) чего? (Unreadable) what?	
15:21	Deputy General Director	Ну, денег нет. Well, there is no money.	
15:23	Belaeronavigatsiya employee #1	Я сейчас был у (unreadable). I've been to (unreadable).	

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
15:25	Deputy General Director	Я только что от него. I just got back from him.	
15:27	Belaeronavigatsiya employee #1	Стоянку сказал сделают, говорит там (unreadable) триста пятьдесят тыщь (unreadable). He said they would make a parking lot, he says there (unreadable) three hundred and fifty thousand (unreadable).	
15:28	Deputy General Director	Стоянку…сколько? A parking lot…how much?	
15:30	Belaeronavigatsiya employee #1	Триста пятьдесят. Three hundred and fifty	
15:31	Deputy General Director	А тут семьсот. And then there are seven hundred.	
15:32	Belaeronavigatsiya employee #1	Какой? Это чтож написали за бред, семьдесят! Семьсот. What? This is well-written for nonsense, seventy! Seven hundred.	
15:35	Deputy General Director	Ну так а чёго он тогда дурака валяет? Ну покажите ему, покажите ему ещё раз, да. Если, что…да…потолкуйте с ним, я тогда согласую. Well, why is he playing the fool then? Well, show him, show him again, yeah. If that...yes...talk to him, I'll agree then.	
15:39	Belaeronavigatsiya employee #1	(Unreadable).	
15:44	Belaeronavigatsiya employee #1	Текущее, сегодня. The current, today.	
15:45	Deputy General Director	Угу. Ok.	
15:46	Belaeronavigatsiya employee #1	(Unreadable)	
15:47	Deputy General Director	Чего он как это самое…как… Why is he like this... like ...	
15:50	Belaeronavigatsiya employee #1	(Unreadable) глаза велики. (Unreadable) eyes are big	
15:51	Deputy General Director	Пусть определится, да. Да, да, нет, нет. Let him decide, right. Yes means yes, no means no.	
15:53	Belaeronavigatsiya employee #1	Хорошо. Ok.	

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
15:54	Deputy General Director	Спасибо. Thank you.	
15:55	Duty Supervisor	(Unreadable).	
15:57	Deputy General Director	Нет, ничего (unreadable). No, nothing (unreadable).	
15:59			Belaeronavigatsiya employee #1 leaves office
16:04	Deputy General Director	(Unreadable) ничего не меняется. Там единственное, что имеет…я говорю, сделали просто более детальную привязку к радиообмену. (Unreadable) Nothing changes. There, the only thing that has ... I say, they just made a more detailed link to the radio communication.	
16:11	Duty Supervisor	Угу. Ok.	
16:13	Deputy General Director	Потому, что там ну реально так. Because there, well, it's really, so.	
16:16	Duty Supervisor	Ну в двадцать девять минут просто он вышел на связь, он был за там одну минуту до входа, а в тридцать минут он пересёк границу. Well, at twenty-nine minutes he just established communication, he was one minute before the entrance, and at thirty minutes he crossed the border.	
16:21	Deputy General Director	Ну. Yeah.	
18:53			Sound of text message alert.
21:17			Cough.
22:00			Knock on the door. An employee of Belaeronavigatsia (#2) enters with documents for signature.
22:03	Deputy General Director	Заходите. Come in.	
22:07			Office phone rings.

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
22:08	Deputy General Director	Алло, да, добрый. (Unreadable) немножко позже, спасибо. Hello, yes, good. (Unreadable) a little later, thanks.	
22:15			Deputy General Director hung up the office phone.
22:28			Deputy General Director takes out a seal from his desk.
22:30			Deputy General Director stamps document
22:46			Deputy General Director stamps document
22:57	Voices behind door	(Unreadable).	
23:03	Belaeronavigatsiya employee #2	(Unreadable).	
23:04	Deputy General Director	(Unreadable).	
23:06			Office phone rings.
23:07			Deputy General Director stamps document
23:12	Deputy General Director	Алло, да, здравствуйте…ну, немножко есть, я наберу как освобожусь. Hello, yes, hello ... well, there is a little, I'll call you back when I'm free.	
23:22			Deputy General Director hangs up the phone.
23:27			Deputy General Director stamps document
23:38			Deputy General Director stamps document
23:46			Deputy General Director stamps document
23:52	Belaeronavigatsiya employee #2	Спасибо. Thank you.	
23:52		Сотрудница вышла из кабинета. The employee left the office.	Belaeronavigatsiya employee #2 leaves the office.
25:52	Controller	Скажите, каким числом подписывать? Tell me what date to sign?	

Appendix I
English only

Time (from start of recording)	Speaker	Transcript	Remarks
25:55	Deputy General Director	Ааа тем же, наверное. Ааа двадцать восемь вы поставили, да? Ahh the same, I guess. Ahh, twenty-eight you signed, right?	
25:59	Controller	Да. Yes.	
26:00	Deputy General Director	Ставьте двадцать восемь (unreadable). Sign twenty-eight (unreadable)	
26:01	Controller	Угу. Ok.	
26:14			Office phone rings.
26:18	Deputy General Director	Алло…алло, да…угу…угу…угу. Ну я думаю да, согласовать же надо. Это же по вашей части. Да, да, да, да, да, да, угу, спасибо, спасибо. Hello...hello, yes...yeah...yeah...yeah. Well, I think yes, it is necessary to coordinate. It's up to you. Yes, yes, yes, yes, yes, yes, uh-huh, thank you, thank you.	
26:42			Sound of a zipper.
26:45			Sound of a zipper.
26:46			Sound of text message alert.
26:57			Knock at the door.
27:10			Deputy General Director hangs up the phone.
27:11	Deputy General Director	Так, (unreadable). So, (unreadable).	
27:18			Office phone rings.
27:20	Deputy General Director	Целый день вот так. У вас тоже самое? Daylong like this. Do you have the same?	
27:23	Controller	Ещё чаще звонят. They call more often.	
27:29	Deputy General Director	Алло, да, да [Имя не разглашается], ну если можно, чуть чуть позже. Ну…ну так, что там? Движение есть какое то? Всё правильно, всё правильно. Абсолютно правильно, хорошо, спасибо. Hello, yes, yes, [Name withheld], well, if possible, a little later. Well ... well, what is there? Is there any movement? Everything is right, everything is right. Absolutely right, okay, thanks.	

Time (from start of recording)	Speaker	Transcript	Remarks
27:30	Voices behind the door.	(Unreadible)	
27:53			Deputy General Director hangs up the phone.
28:14	Deputy General Director	Всё, отлично. Всё, у меня к вам вопросов, предложений нет. Everything is great. That's all. I have no questions or suggestions for you.	
28:19	Controller	Хорошо. Good.	
28:20	Deputy General Director	Если вместе, тогда вы подождите, просто мы сейчас с [Руководитель смены] на пару слов. If you're together, then you wait, I just need [Duty Supervisor] for a few words.	
28:25	Controller	Угу. Ok.	
28:28	Controller	[Руководитель смены], ну я тогда не буду тебя уже отвлекать (unreadable) в другом месте живу, так… [Duty Supervisor], well, then I won't distract you (unreadable) I live in another place, so...	
28:31	Duty Supervisor	Ну смотри, если что там это… Well, look, if you need ...	
28:33	Controller	Не, ты туда а мне в центр. Всё, счастливо. No, you go there and I go to the Center. OK, good luck.	
28:38			Controller leaves Deputy General Director's office.

— END —