European Conservatives and Reformists Group

EUROPEAN PARLIAMENT

Vladimir Putin's Russian Government Inquiry into the Crash of The Polish Air Force One in Smolensk, Russia, April 10, 2010

Polish Parliamentary Committee for the investigation of the Tu-154M crash in Smolensk, Russia on April 10th, 2010 under the chairmanship of Antoni Macierewicz

Study prepared by Kazimierz Nowaczyk, Ph.D.

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Title Page**:** Tu-154M 3D model
Back Page**:** Tu-154M reconstruction based on scene photographs collection from Polish Parliamentary Committee for the investigation of the Tu-154M crash in Smolensk, Russia on April 10th, 2010

Text correction: Mateusz Kochanowski

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Executive Summary

On April 10, 2010, the Polish governmental flight performed by Tupolev Tu-154M airplane ("Polish Air Force One") departed from Warsaw, Poland, to Smolensk, Russia. The plane carried a highest level delegation from the Republic of Poland travelling to commemorate the 70th anniversary of the Katyn Forest Massacre[1]. Polish Air Force One crashed near the 'Severny' airport in Smolensk, Russia at 10:41:06 local time on the same day. There were no survivors; all 96 people on board were killed in the incident ("Smolensk Crash"). The official delegation consisted of the President of Poland, the First Lady, the entire General Army Command of the Armed Forces of the Republic of Poland, the President of the National Bank of Poland, members of parliamentary and government officials as well as family members of the Katyn victims, including a U.S. citizen. Among the ten generals of the Polish Armed Forces who perished in the Smolensk Crash, five had served as top NATO commanders, including Gen. Franciszek Gągor, the next in line to have had assumed central command of NATO forces in Europe. Furthermore, the following Polish generals, supporters of the US military missions in Iraq and Afghanistan, were killed in this tragedy: Gen. Andrzej Błasik, Gen. Tadeusz Buk, Gen. Bronisław Kwiatkowski, Gen. Włodzimierz Potasinski, Gen. Tadeusz Płoski.

The present report was developed and is based on study results prepared by experts, academics, scientists and researchers from the United States, Canada, Australia, Great Britain, Denmark, Germany, Poland and Russia, who have collaborated together for the past three years with the Parliamentary Committee for investigation of the Polish Air Force One crash in Smolensk, Russia on April 10, 2010[2]. The report focuses on the official Russian report of the Russian Interstate Aviation Committee (Miezgosudarstwiennyj Aviacyonnyj Komitet - IAC) ('Final Russian report') which assumed responsibility for the investigation of this crash upon an executive order by the National Investigation Committee headed by Prime Minister Vladimir Putin[3]. Putin directly oversaw the initial investigation during its first 72 hours and maintained control of the investigative process until January 2011, nine months after the crash. On April 13, 2010, the Russian National Investigation Committee rejected an assistance offer from the European Union experts[4]. Vladimir Putin has failed to sign the IAC report to this day.

Most significant technical findings referred to in this document have been presented and approved by experts during three annual scientific conferences dedicated to the Smolensk Crash, which took place in Warsaw, Poland in 2012, 2013 and 2014[5], as well as at a public hearing in the European Parliament on March 2012[6], in articles in peer-reviewed scientific journals[7] and in Polish Parliamentary Committee Reports[8].

Each section of the present report contains examples of the most significant errors and violations of investigation standards described in the International Civil Aviation

[1] http://www.archives.gov/research/foreign-policy/katyn-massacre/
[2] http://www.smolenskzespol.sejm.gov.pl/
[3] Order № 225 of the President of the Russian Federation dated April 10, 2010 (Appendix I)
[4] *Ibid.*
[5] http://smolenskcrash.com/index.php/Main/index/schedConfs/archive
[6] http://ecrgroup.eu/news/public-hearing-the-rejected-truth/
[7] Appendix XII
[8] *Ibid.*

Organization (ICAO) "Manual of Aircraft Accident and Incident Investigation"[9,10], cases of evidence destruction or alteration as well as manipulation of conclusions contained in the Russian (IAC) Final report. All findings cited herein have been published by the Polish Parliamentary Committee for the Investigation of the Smolensk Crash

Critical flaws, material falsifications and outstanding questions concerning the Russian investigation include the following:

● **Air navigation**

The Final Russian report includes intentionally falsified original pre-crash glide path data from CVR (cockpit voice recorder); the original data indicated that the aircraft was directed away from the correct landing zone, setting stage for the crash; subsequent erroneous 'confirmation' of pre-crash aircraft course and glide path provided by Russian air traffic control - Severny to Poland's Air Force One - was covered up by changing the CVR transcription record.

● **Rescue operation and medical examination**

A 17-minute delay in arrival of Russian fire/crash response teams at the scene of the crash located 400 meters away from the runway towards south-east was recorded; medical rescue personnel were delayed by an additional 12 minutes. A summary declaration of 'no survivors' was made by Russian authorities before all bodies were located at the crash scene. Data in subsequent autopsy reports reflected noteworthy departure from medical reporting standards, including, inter alia, a uniform summary statement for the cause of death which was recorded for all the victims without individual details.

● **Investigation**

• ***Crash site***

The locations of major crash debris 'changed' during the night of April 11-12 2010 in order to 'consolidate' the wreckage. The Final Russian Report noted the locations of the relocated debris to support the claim that the aircraft was basically intact upon impact with the ground. Evidence indicates otherwise that an in-flight explosion is likely to have had occurred.

Unauthorised persons (e.g. local civilians and media) had almost immediate access to the crash site resulting in the removal of numerous objects

Mobilization of heavy equipment directly on the site occurred one day after the crash, when construction began of a concrete access roadway to be used by transport vehicles that subsequently removed the wreckage.

Within 45 days following the crash, certain trees were removed and the main crash site was ploughed to a depth of two feet, further destroying critical material evidence

• ***Airplane wreckage***

[9] B. Gajewski Ph.D., II Smolensk Conference, Warsaw 23 October 2013. Canadian Senior Corrective Action Engineer, Aircraft Certification. Assists Transportation Safety Boards in the investigation of aircraft accidents and incidents; reviews accident investigation reports and safety recommendations to confirm technical accuracy and to assess the need for further corrective actions Affiliation: International Society of Air Safety Investigators – Individual Member.

[10] Greg Makowski - FAA (Federal Aviation Administration) inspector interview http://blogpublika.com/2014/05/02/nasz-wywiad-grzegorz-majowski-ekspert-federalnej-agencji-lotnictwa-usa-faa-to-co-zp-antoniego-macierewicza-osiagnal-to-cos-absolutnie-niesamowitego

Destruction of the wreckage occurred prior to the debris being transported from the site on April 13th,.2010, and continued during the transport process

The relocated aircraft wreckage remained exposed, in the open air, to natural weather conditions for at least several following months.

- **Russian (IAC) Final report**
  - ***Flight data recorders***

The Final Russian Report contained a CVR (cockpit voice recorder) transcript which was inconsistent with both the 'original' CVR transcript provided to the Polish Government and another copy used by the Russian investigators. A total of five copies of CVR transcripts (provided by Russians) with different recording time(s) are publicly known to exist.

Out of the five flight recorders installed in the aircraft, one remains missing while data from two others (connected in parallel) is inconsistent; the original units remain under control of Russian investigators. All copies provided to the Polish side showed signs of tampering or were of such poor quality that it rendered them useless for the investigation and future analysis.

  - ***Data manipulation***

Analysis of encoded data performed by Universal Avionics, manufacturer of the TAWS (Terrain Awareness Warning System), was omitted entirely in the Final Russian Report. The omission included, in particular, the last data sequence (TAWS #38), containing the last reading of the aircraft location, altitude, status and other key parameters. The Final Russian Report included inconsistent data of the mentioned TAWS #38 reading.

Data manipulation associated with the TAWS #38 data sequence resulted in removal of about 1 second of data recorded by all the flight recorders.

The Final Russian Report failed to analyse important vertical acceleration and rotation data clearly stored by the flight recorders, showing abrupt violent movement of the aircraft seconds before crash.

This document has been arranged into seven sections:

1. Background (Appendix I, II)
2. Air Navigation near Severny airport (Appendix II, III, IV)
3. Rescue Operation and Medical Examination (Appendix V, XII)
4. Russian Investigation (Appendix V, VI, VIII, IX, XI)
5. Final Russian IAC report (Appendix VII, VIII, IX, X, XI, XII)
6. Independent Investigation
7. Conclusions

1. BACKGROUND

09.04.2010. Warsaw (PAP) - Polish President Lech Kaczynski is to travel to Katyn on Saturday. There, accompanied by with representatives of the Katyn Families, members of parliament and clergy, he will pay homage to Poles murdered by the Soviet communist secret police [11]. Around 800 people are expected to participate in the ceremony.[12]

The memorial service held in Katyn on the 70th anniversary of the Soviet genocide was initially to be attended by both Polish President Lech Kaczynski and Prime Minister Donald Tusk. Upon a personal invitation by Russian Prime Minister Vladimir Putin, however, Prime Minister Tusk altered his plans to participate in a separate ceremony on April 7th. On April 10th 2010, the President, his wife and a group of 94 other officials were to arrive at a military airport in Smolensk near Katyn. The participants included, among others, commanders of all Polish Armed Forces, the President of the National Bank of Poland, the Head of the National Security Bureau, government ministers, Members of Parliament, family members of officers murdered in Katyn as well as legendary "Solidarity", co-founder Anna Walentynowicz . Weather conditions (dense fog[13]) coupled with deficient information provided by air traffic controllers prevented the aircraft from landing at the Severny aerodrome. The Polish Air Force One crew was not provided with an alternative airport and have therefore decided to circle the airport around and attempt an approach. During the maneuver the aircraft was suddenly torn into tens of thousands of pieces, killing all passengers and crew as a result, with the causes still unexplained.

A special commission was appointed by order [14] of the then Russian President D. Medvedev to investigate the disaster. It was chaired by the then Prime Minister V. Putin, with the then Deputy Prime Minister Ivanov, currently Chief of Staff Presidential Administration of Russia, acting as one of the deputies, General S.

Figure 1. From left: S. Shoigu, V. Putin, S. Ivanov in Smolensk 04.10.2014.

[11] Katyn Massacre - a massacre prompted by NKVD chief Lavrenty Beria's proposal to execute all captive members of the Polish Officer Corps, dated 5 March 1940, approved by the Soviet Politburo, including its leader, Joseph Stalin. The number of victims is estimated at about 22,000.

[12] Press Release (PAP Polish Press Agency) 9.04.2010 r. http://dzieje.pl/aktualnosci/prezydent-udaje-sie-do-katynia-na-obchody-70-rocznicy-zbrodni

[13] 04.10.2010 weather conditions in Smolensk.

[14] Order № 225 of the President of the Russian Federation dated April 10, 2010 (Appendix I).

Shoigu, Minister of the Russian Federation for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters, currently the Minister of Defence, becoming deputy responsible for securing the crash site and wreckage, and Gen. T. Anodina, President of IAC, indicated as deputy responsible for investigating the causes of the crash. Deputy Prime Minister Ivanov, an FSB[15] colonel- general in reserve, took the position of the first deputy chair of the Commission, taking all key decisions regarding the. conduct of the investigation. Starting right after the disaster, the Russians have insisted[16] to operate under Annex 13[17] of the Chicago Convention for International Civil Aviation, thus taking over the investigation as a domestic event. Initially, however, the proceedings were conducted by a joint committee[18] in accordance with an agreement from 1993[19], on the principles of mutual military air traffic between Poland and the Russian Federation, regulating, among other things, procedures relevant to military plane crashes. Merely three days after the disaster, on 13 April 2010, V. Putin officially indicated IAC under the leadership of General Anodina as the entity to study the technical causes of the disaster while dismissing assistance offered by the European Union experts[20]. The same day, Polish Prime Minister accepted the conditions of conducting the investigation under Annex 13. Nine months later, on 12 January 2011, General Anodina presented the final IAC Committee report during an international press conference [21]. To this day, no report by the state commission presided by Vladimir Putin has been published.

1.1 Final IAC report findings

IAC ascribed full responsibility for the disaster to the Polish pilots. According to IAC, the crew did not abort descent at the minimum descent altitude established at 100 m, but rather continued descent

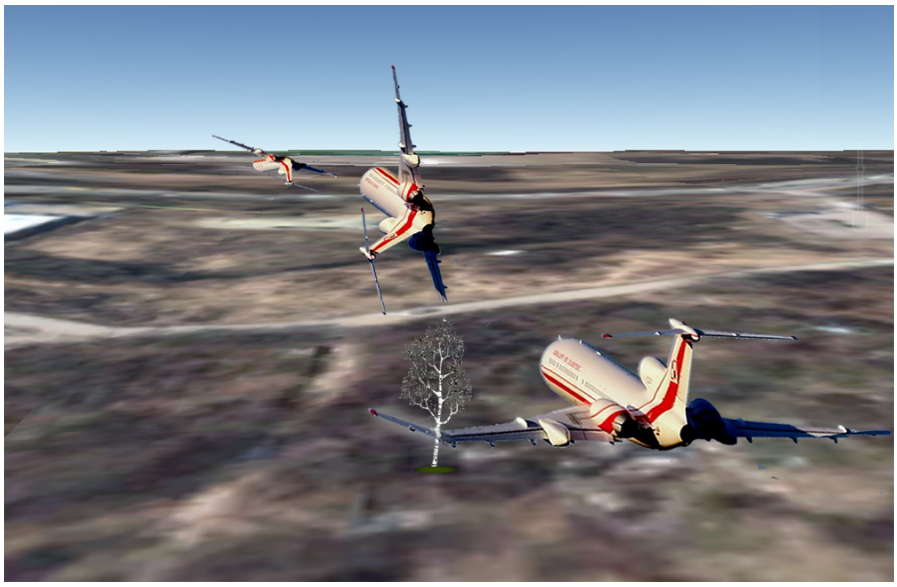

Figure 2. Visualisation of the last seconds prior to ground impact according to the IAC report (K. Nowaczyk)

[15] Federal Security Service of the Russian Federation.

[16] 04.10.2010 telephone conversation between: E. Klich (the head of Polish Committee for Investigation of National Aviation Accidents and A. Morozov (the head of the technical commission of Russia's Interstate Aviation Committee).

[17] Annex 13 to Chicago Convention for International Civil Aviation (Appendix II)

[18] Chairman of the committee was a Russian aviation general Bajnietov, Col. M. Grochowski from Poland was his deputy

[19] Agreement between the Ministry of Defense of the Republic of Poland and the Ministry of Defense of the Russian Federation on principles governing mutual military air traffic performed by Republic of Poland and Russian Federation military aircraft operating in respective airspaces of the two countries of 14 December 1993,

[20] State Commission under the leadership of Vladimir Putin protocol from 04.13.2010 (Appendix I).

[21] Interstate Aviation Committee Air Accident Investigation Commission Final Report Tu-154M tail number 101, Republic of Poland (Appendix VIII).

with a vertical speed twice as high as the estimated value. Their attempt to do so without visual contact with the ground resulted in the aircraft colliding with a birch tree at an altitude of around 5 m, in the loss of 6.5m of its left wing, then in rolling to left side due to the unbalanced lift force on the wings, and hitting the ground at an almost upside-down position (rotation of 150°).

According to the Final Russian Report, the immediate causes of the accident were:

- Failure of the crew to take a timely decision to proceed to an alternative airdrome;
- Descent without visual contact with ground continuing to an altitude much lower than the minimum altitude required for go around (100 m), attempted in order to establish visual flight;
- Presence of Commander-in-Chief of the Polish Air Forces in the cockpit that continued until the very collision; the said General being under influence of alcohol. Such presence had allegedly pressure on the pilot in command, encouraging him to continue descent while accepting unjustified risk and assume landing at all cost as an ultimate goal. According to IAC, Polish President Lech Kaczynski was also responsible for pressuring the crew on landing promptly.

1.2 Independent investigation status

Most significant technical findings presented in the Final Russian Report have been since proven false by international experts from countries such as the USA, Canada, Australia, Great Britain, Denmark, Germany, Poland and Russia, who have collaborated with the Polish Parliamentary Committee for the Investigation of the Smolensk Crash[22] for the past three years. Furthermore, researchers from all over the world presented their findings during three scientific conferences related to the Smolensk Crash that took place in Warsaw, Poland in 2012, 2013 and 2014[23]. Their findings invalidate the Russian scenario.[24]

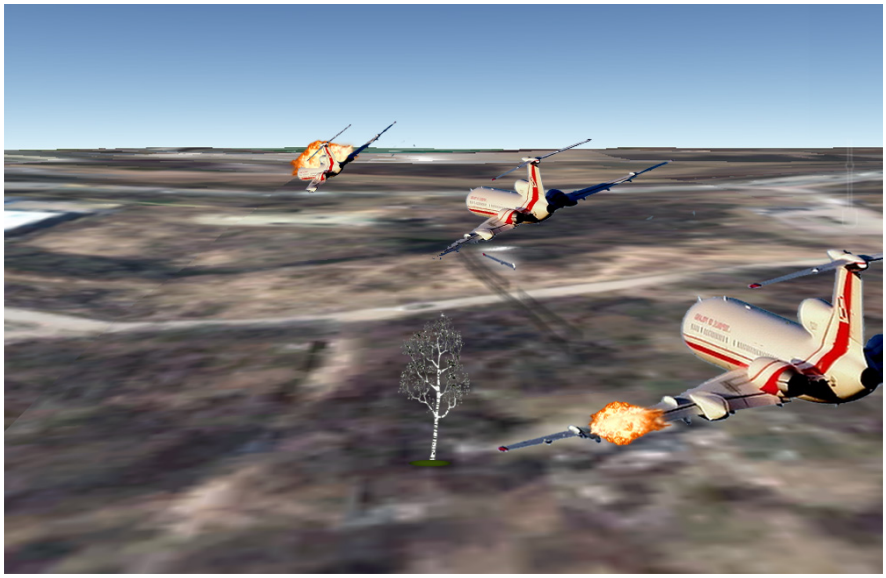

Figure 3. Last seconds scenario according to experts and researchers cooperating with the Parliamentary Committee. Accurate tilt to the left side of the aircraft still unknown. (K. Nowaczyk)

[22] A parliamentary group established on 8 July 2010 - The Parliamentary Committee for the Investigation of the Causes of the TU-154 M Disaster of April 10, 2010, chaired by A. Macierewicz, with over 160 members.
[23] Science conferences - Konferencja smoleńska, I 2012, II 2013, III 2014 in Warsaw.
[24] Appendix VIII.

Expert studies proved that:

- Russian air traffic control at Severny was directly supervised by the Moscow-based military aviation control center codenamed “Logika”. The controllers misdirected the aircraft by providing crew with false information as to the distance from the runway, course and glide path;
- According to flight recorder data combined with crash site images, the left wing of the aircraft started to disintegrate approximately 50-70 meters before the birch tree location;
- Total destruction of the aircraft was a result of a series of explosions, with the first occurring midair inside the wing, following the TAWS #38[25] recording, at roughly few second prior to first impact with the ground.

Chapters 2 to 5 provide substantiation of claims concerning deliberate manipulation and destruction of evidence in the course of investigation conducted by IAC. Chapter 6 describes the results obtained by independent experts confirming the real crash trajectory hypothesis as presented by the Parliamentary Team.

[25] Terrain Awareness and Warning System (TAWS). The Universal Avionics system including Flight Management System (FMS) installed on board the Polish Air Force One. Readings of this system have been made in the United States. Meaning alarm TAWS #38 will be explained in detail in Chapter 5

2. AIR NAVIGATION NEAR THE SEVERNY AIRPORT

During its final approach towards the Smolensk 'Severny' airdrome, Polish Air Force One, was neither on course nor on a correct glide path. The instructions provided by the Air Traffic Controller were clearly misleading and incorrect in terms of a normal approach aimed at safe landing. The Final Russian Report, however, contains a different version of events leading to the crash relative to the abovementioned facts and circumstances. A serious question can be raised, in light of the reported statements and other evidence, as to the way in which the airplane was guided by air traffic control, particularly with respect to the descent path prescribed by the air traffic controllers.

According to the transcript from the Tu-154M Cockpit Voice Recorder ("CVR")[26], nine minutes before the "Air Force One" crash, Polish Major Arkadiusz Protasiuk (first pilot) announced his intention not to land in a situation of bad visibility[27]. Hence, the Polish airplane crew were going to perform a "go around" maneuver and possibly land at an alternative airport. Smolensk airport air traffic controllers requested the commanding officer in Moscow to permit them to close the Severny airport, but Moscow refused the request and failed to provide an alternative airport (potential civilian airports included Minsk or Vitebsk in Belarus), instead ordered the Tu-154M, via the Smolensk controllers, to initiate descent to the a decision altitude of 100m[28].

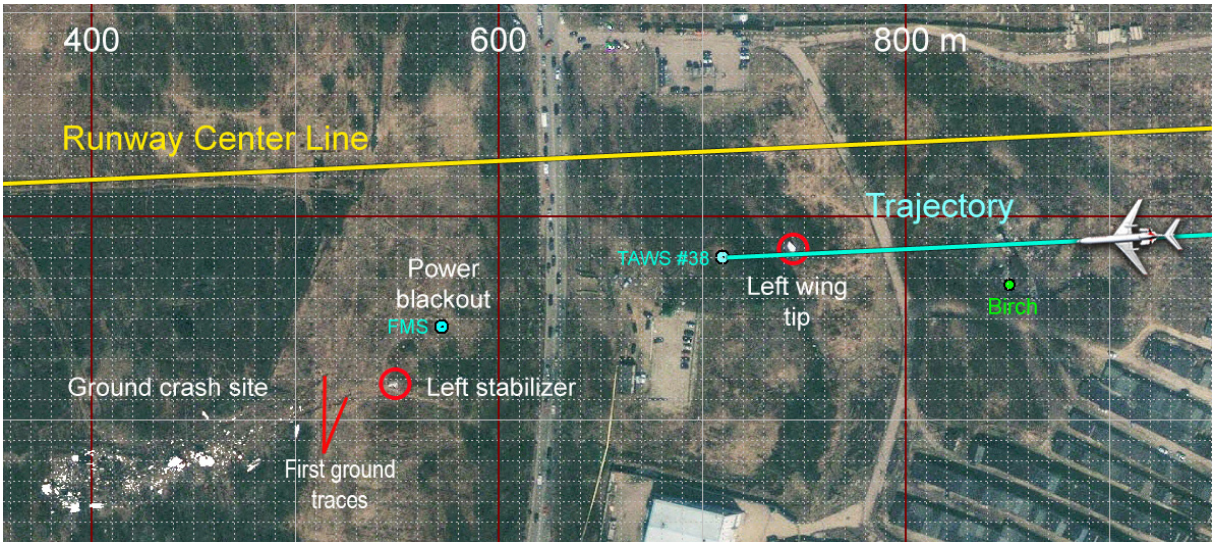

Figure 2. Airplane trajectory (cyan line) compared to the runway center line (yellow line). Map prepared based on IAC report (Appendix VIII), satellite picture (Appendix VI) and NTSB report (Appendix VII). FMS and TAWS #38 positions from Universal Avionics NTSB Expertise (Appendix X). Power blackout at altitude 15 m, 70 m in front of the first traces of hitting the ground.

2.1 Orders from the Moscow Operations Center (code name "Logika") and erroneous instructions provided by air traffic control

The two Severny military air traffic controllers received direct orders from a third person present in the control tower, Colonel Nikolaj Krasnokucki, whose presence was not officially authorised[29]. The CVR transcript confirms that orders from Moscow were passed on to the control tower personnel. The lead controller's statement asked pilots to continue descent to an

[26] Appendix III
[27] Weather conditions in Smolensk, Appendix III
[28] Appendix III
[29] Appendix III

altitude of 50 meters, as reported by the crew of another Polish airplane, JAK-40, at that time monitoring transmissions of the Polish Air Force One[30]. That second aircraft, with a team of journalists on board, landed without problems not long before the crash. Finally, the controllers issued the "runway clear" command, basically directing to land. As a result of the incorrect information provided by the controllers regarding the altitude and distance to the runway, for most of the descent the "Polish Air Force One" was outside of the permissible margin of error range with regard to the glide path. In other words, starting from a distance of some 8-10 kilometers away from Severny, the aircraft would not have reached the landing runway taking into account both its horizontal and vertical trajectories. Responsibility for correcting this dangerous situation was with the Seveny control tower. Figure 4. shows airplane trajectory compared to the runway center line on a satellite photo from 04.11.2010.

In accordance with the Russian regulations, air traffic controllers should have either closed the airport, or directed the flight crew to "go-around" as early as eight kilometers from the airport. Instead, they relayed the commands that Colonel Krasnokutski received by telephone from Moscow and fed the crew incorrect information with regard to the plane being "on course and on landing path"[31]. The flight path data, as per 3 reference sources[32], shows that Tu-154M was hardly ever on course and on landing path in spite of air traffic controllers' reassurances provided to the pilots.

10:23:00	РП	Алло, добрый день, с «Северного» беспокоят. Под чьим управлением сейчас идет польский борт?
10:23:08	Южный	Москва руководит.
10:23:09	РП	А?
10:23:10	Южный	Москва руководит.

10:23:00	RP[33]	Hello, good morning, I'm calling from the northern airdrome. Who's controlling the Polish flight right now?
10:23:08	Yuzhny[34]	Moscow's in control.
10:23:09	RP	Excuse me?
10:23:10	Yuzhny	Moscow's in control.

Figure 3. Conversation between Air Traffic Controllers at Severny and Yuzhny airports in Smolensk. Russian sources show that flight PL 101's navigation instructions were not controlled by the local military base at which the aircraft was to land, but rather directly from Moscow. Telephone calls transcript from Severny (Appendix III)

09:39:33	Красн.	«Логика», добрый день, оперативного КП.	
09:39:43	ОД	Майор Куртинец.	
09:39:45	Красн.	Полковник Краснокутский, оперативному дайте трубочку.	
09:39:47	ОД	Сейчас.	

09:39:33	Krasn.	"Logika", good morning, I'd like to talk to the operating centre commander
09:39:43	OD	Major Kutiniets
09:39:45	Kras.	Colonel Krasnokutski, pass the handset to the operational *(officer).*
09:39:47	OD	Done.

Figure 6.1. Conversation between 'Colonel Krasnokutski' and Moscow Operations Center (code name "Logika") (via DO - Duty Officer). Krasnokutski served as the 'Logika' contact point in the control tower. His presence at the tower was not authorized and not acknowledged in the Final Russian report. He was based at a military base in Tver . See telephone call transcript from Severny (Appendix III).

[30] JAK-40 pilots testimony Appendix IV
[31] Appendix III
[32] NTSB report (Appendix VII), Voice Recorders Transcription (Appendix III), Polish Response to IAC draft report in English (Appendix V)
[33] RP, Disp.: R. Plusnin, Air Traffic Controller
[34] Yuzhny: Airport south from Smolensk

10:25:59	Красн.	Краснокутский, значит, делает контрольный заход, решение командира, делает контрольный заход до высоты принятия решения 100 метров, уход, готовность Минска, Витебска на запасной пусть запросят.
10:26:11	Дисп.	Принял.
10:26:13	Красн.	Приняли?
10:26:14	Дисп.	Так точно.
10:25:59	Krasn.	Krasnokutski, you know, makes the controlled approach, commander's decision. He prepares controlled approach until they reach the 100 meters (300 ft.) altitude, later ask Minsk, Vitebsk if are ready as the spare *(alternate airport).*
10:26:11	Disp.	Received.
10:26:13	Kras.	Have you received? (Understood?)
10:26:14	Disp.	Yes, sir!

Figure 6.2. Conversation between Colonel Krasnokutski and one of the air traffic controllers present at the tower. From Transcript from microphones installed at the Severny Airport Traffic Tower (Appendix III).

10:39:59	А	*(нрзб).*
10:40:14	РЗП	4, на курсе, глиссаде.
10:40:17	101	На курсе, глиссаде.
10:40:27	РЗП	3, на курсе, глиссаде.
10:40:31	РП	Фары включите.
10:40:33	101	Включёны.
10:40:39	РЗП	2, на курсе, глиссаде.
10:39:59	A	*(illegible).*
10:40:14	RZP[35]	4, on the course, glide path.
10:40:17	101[36]	On the course, glide path.
10;40:27	RZP	3, on the course, glide path.
10:40:31	RP	Turn on head lights
10:40:33	101	Turned on.
10:40:39	RZP	2, on the course, glide path.

Figure 7. Transcript from communication between Air Traffic Controller and Polish first pilot Protasiuk confirming course based on previously transmitted inaccurate instructions (Appendix III)

To summarise, there is no doubt that the Severny air traffic controllers conveyed incorrect information to the Tu-154M flight crew. The controllers breached several Russian regulations; among them one stating that decisions of an air traffic controller on duty may not be overridden by any third party. Any pressure from outside of the control tower, such as from the Moscow Operations Center (code name "Logika"), is illegal. Since military pilots have to obey orders from the control tower, air traffic controllers thus take full responsibility for the safe guidance of an airplane during descent and landing. Hence, due to the errors committed by the air traffic control, for the most part the Tu-154M was well outside of the safe descent path, and about 50 meters outside of the proper course towards the landing runway.

The Russian Interstate Aviation Committee ("IAC") official report was inaccurate as to 'factual' statements regarding the way that the airplane was guided by the air traffic control, particularly with respect to the descent path prescribed by the controllers.

The report also failed to explain or even acknowledge the role played in the whole process by Col. Krasnokutski, the Moscow Operations Center (code name "Logika") or the sheer presence of any unauthorised personnel. The Comments of the Republic of Poland to the

[35] RZP: V. Ryzenko, Air Traffic Controller
[36] 101: Polish Air Force One

Draft Final Report of the Russian Federation (the "Polish Response") pointed to these among 222 other errors, omissions, misrepresentations and false premises (Appendix VII). Russians concluded that the Polish pilots lacked the knowledge of the terrain topography. Such conclusion also disregards the information that the first pilot landed at the Smolensk 'Severny' airport as co-pilot three days before the crash with Polish government delegation[37]. Finally, Russians authorities invalidated testimony of flight controllers' (P.Plusnin and V. Ryzenko) given on the day of disaster, 10 April 2010, and determined the testimony given two days later as true.

2.2 'Missing' evidence revealed to exist elsewhere in the same Russian report

According to the Final Russian (IAC) Report, the radar video recording related to the landing of the Polish Air Force One on April 10, 2010 was missing. The Russian report addressed this issue as follows: "During the pre-flight preparation on that day only the operability of the recorder was checked with no assessment of the record quality. The analysis revealed that the record was not made due to twisting (bridging) of wires between the video camera and the video recorder. After the wires were insulated, the video recording was resumed."[38] However, the Russian report does in fact include information on the location of the aircraft blips showing the glide path, which could have only come from the radar video-recording. Thus the Polish side inquired regarding this glaring inconsistency: "In light of the information about the missing video-recording of the process of approach to landing on the PRL indicator, the quotation of data related to the location of the blips of the aircraft on the glide path on the PRL indicator raises serious doubts."[39] Accordingly, the Polish side requested explanation as to why a number of statements were made by the Russian side based on the reading from the radar video- recording if, allegedly, such a recording was not made due to a malfunction.

[37] http://wiadomosci.gazeta.pl/wiadomosci/1,114873,7764434,Kpt__Protasiuk__doskonale_znal_jez__rosyjski_i_lotnisko.html

[38] Russian IAC Report, English translation, p. 73. Appendix VIII.

[39] Polish Response to IAC draft report in English, pp. 57-60. Appendix V.

3. Rescue Operation and Medical Examination

According to the Polish Remarks[40], Airport Traffic Control Tower did not immediately notify the 'Severny' airport emergency rescue units about the crash and did not convey the information of the crash to the Smolensk district rescue units.

3.1 Delay of the medical and emergency rescue units

Ten minutes after the crash, airport rescue units were notified, with the first fire engines arriving on the crash scene fourteen minutes after the crash. The first medical unit arrived seventeen minutes after the crash (detailed timeline in Table 1 from the Russian report). Within minutes of the crash, Russians authorities in charge of rescue and recovery operations announced that nobody had survived. This information was immediately forwarded to Poland, even though the corpse of the President of Poland was only found four hours later. As a result of such hasty announcement, medical emergency vehicles were sent back without letting paramedics to see any victims. The rescue crew did not conduct any rescue operations and was ordered by the military officials to withdraw as all passengers died. Photo in Figure 8. shows the central part of the crash scene 57 minutes after crash.

Figure 8. Rescue operations at the crash site. 11:38 local time (57 minutes after the crash), April 10, 2010

Table 1. Rescue operation timeline from the IAC report

10:41	**Official crash time**
10:42	Information on lost radio communication with the aircraft received by the officer on duty of the Regional Search and Rescue Service (RSRS) via the chief of Military Unit 06755;
10:43	Emergency declared by the head of the RSRS and order for the shift on duty to depart issued;
10:46	Fire truck Kamaz-43108 from the fire fighting service of Military Unit 06755 departed to the accident site;
10:48	GAZ-4795 NPSG car (3 persons) of the RSRS departed from Smolensk "Yuzhny" Airdrome to Smolensk "Severny" Airdrome;
10:50	Information on the accident received by the officer on duty of the local emergency service for Smolensk Region from the head of the RSRS;
10:51	Departure of the emergency service shifts on duty to the accident site (Fire Service-3 duty on Smolensk "Severny" Airdrome from 8:00 for supporting VIP flights, Fire Service-5, Sanitary Service-2) total of 40 persons and 11 cars;
10:53	Head of the Chief Emergency Office of the Russian Federation orders all emergency services to arrive at the accident site;
10:54	The police and local security service for the Smolensk Region cordoned off the accident site in the diameter of 500 m, using 180 persons and 16 cars.
10:55	First fire fighting brigade from Fire Service-3 arrived;
10:57	Information received by the Regional Center for Crisis situations from local emergency services for

[40] *Polish Response to IAC draft report in English.* Appendix V.

	Smolensk;
10:58	Notice received at the Regional Center for Crisis situations from the Russian Air Navigation Agency;
10:58	First emergency sanitary brigade arrived at the accident site;
10:59	Open fire extinguished at the accident site;
11:00	Rescue brigade on duty for the Smolensk Region (4 persons., 1 car), rescue brigade on duty for Smolensk, (4 persons, 1 car), rescue brigade for water areas for the Smolensk Region (4 persons, 1 car), go team of the Federal Security Service (7 persons, 7 cars), go team of the local police (40 persons, 12 cars) departed for the accident site.
11:00	READINESS 1 for the complete Emergency Service for the Smolensk Region;
11:00	Head of Chief Emergency Office for Smolensk Region ordered all the officers to gather;
11:00	Accident site cordoned off;
11:03	All fire extinguished;
11:03	Go team of the federal emergency service for the Smolensk Region (head of Chief Emergency Office for the Smolensk Region plus 3 persons, 1 car) with mobile video communication equipment (5 persons, 1 car);
11:05	Emergency service headquarters arranged at the accident site;
11:10	7 ambulances arrived at the accident site;
11:40	Determination of the absence of survivors at the accident site, 7 ambulances departed from the accident site;

3.2 Breach of medical standards in autopsy reports

There were 96 people on board, including 4 flight crew and 3 cabin crew members. The medical tracing examination revealed that as the aircraft was destroyed on impact in an inverted position, people on board were exposed to acceleration of over 100g. Medical expertise suggest that the death of everyone on board occurred instantaneously at the moment of the collision due to numerous mechanical injuries incompatible with life sustained due to traumatic effect of the outrageous impact deceleration forces and aircraft destruction. Recovered bodies were transported to Moscow; however no detailed autopsies were conducted. Many bodies were misidentified and desecrated. Until today, the families of some victims cannot be sure as to the location of the bodies of their loved ones and where they are buried. For example, to this day it is unknown where Anna Walentynowicz (awarded the Presidential Medal of Freedom by George W. Bush) was buried. The autopsies were conducted in Moscow. Polish pathologists were not allowed to participate in the proceedings. There is no evidence that x-rays or proper toxicology tests were performed and neither were microscopic slides for further examination prepared; all of which would have helped to determine whether an explosion had occurred on board because as that would have resulted in trauma to victims' lungs.

According to Dr. Michael Baden, a renowned American pathologist[41] , fire produces certain chemicals that can be later found in victims' lungs, with such traces restricted to events involving fire. Photographs and the microscopic slides should have been taken during autopsies to check whether any damage to the lungs had occurred. There is no indication that such tests were conducted. According to Dr. Baden, Russians authorities should have examined lungs and airways both with the naked eye and under the microscope. If an explosion had occurred onboard the airplane, it might have had resulted in tearing in the lungs visible during the autopsy and particularly characteristic under the microscope. Similarly, if there was a fire on the airplane prior to the crash, the passengers

[41] A Exclusive Interview with Dr. Michael Baden, Gazeta Polska, March 29, 2012. Appendix XII . Michael M. Baden is a physician and board-certified forensic pathologist known for his work investigating high-profile deaths and as a host of HBO show Autopsy. He is also a Forensic Science Contributor for Fox News Channel.. He has been a consulting/lead pathologist and an expert witness on a number of high-profile cases and investigations including: Chairman of the Forensic Pathology Panel of the House Select Committee on Assassinations that reinvestigated the John F. Kennedy assassination; investigating the remains of Czar Nicholas II and family members.

would have inhaled carbon monoxide. Thus toxicology tests and microscopic slides of the air passages can tell whether a person was breathing after explosion or a fire. If there were pieces of a bomb device that were blown into one or more of the victims' bodies, such parts could have been identified by X-rays taken after the crash. Normally, X-Rays are performed on all airplane crash victims. There is no record of performance of any of the abovementioned steps by Russians authorities. The description of external clothing and the conditions of victims' bodies included in medical protocols prepared in Moscow frequently does not correspond with the description of the bodies and their clothing from the crash site.

Furthermore, according to the reports by victims' families, the bodies were not cleaned in Moscow, and some bodies did not bear any marks of autopsies or tests. Furthermore, it is a well-established principle that the post mortem report should provide an individual cause of death, defined precisely and separately for each victim as contrasted with a generic cause of death determined merely for a group of victims. The cause of death should be determined based on a dominant factor that led to the death of the particular person. However, with respect to all the victims of the Smolensk crash, the cause of death was determined as "multiple injuries." Such approach proves that the medical examination was superficial, did not include a detailed analysis of the injuries, and there was no effort to categorise the contributions of various injuries to the deaths of individual victims. Due to unprecedented destruction of the bodies, it was not possible to collect blood and urine samples for testing of all the victims. But even in the instances when such material was collected, full range of testing was not conducted in a timely manner. Additionally, the process of collecting and protecting samples for testing was inappropriate. Some of the samples were sent for chemical and toxicology testing more than two years later. No testing was done on the clothing of the victims described as burnt or charred. Autopsy reports reflected a noteworthy departure from the medical reporting standards, including, inter alia, a uniform summary statement of the cause of death recorded with no individual details for any of the victims, as well as a uniform time of death, different from the official crash time (see example in Figure 9.)


10 04 2010 10:50
Авиационная катастрофа
Шишов Сергей Владимирович
зав танатологическим отделом
Сочетанная травма
Авиационная катастрофа
T068
V95.2

Figure 9. Autopsy example. Time of death 10:50 (official crash time 10:41:06). Cause of death: Aircraft catastrophe. Appendix V.

It can be expected that human bodies would have sustained some negative acceleration during the crash. Stating that all passengers have experienced more than 100g of negative acceleration from a low level crash (normally up to 30g) cannot be correlated with the crash scenario as suggested. As per the statement above, considering the peculiarities of the aircraft collision with the ground and destruction characteristics, it can be assumed that the most significant injuries must have impacted persons in the front part of the passenger cabin, while passengers seated near the tail must have sustained less significant injuries. Consequently, the broad statement referring to the same negative acceleration of at least 100g sustained by all passengers is unrealistic[42].

[42] Prof. John Hansman interview: http://nowypolskishow.co.uk/?p=1154 Dr. R. John Hansman - professor in the Department of Aeronautics and Astronautics at MIT, where he is head of the Humans and Automation

Division . He also is director of the International Center for Air Transportation. Prof. Hansman consults and serves as a member of numerous advisory and technical committees including the Congressional Aeronautics Advisory Committee, the FAA Research and Development Advisory Committee, the FAA WAAS Independent Review Board, and the NASA Advanced Air Transportation Technologies Executive Steering Committee.

4. THE RUSSIAN INVESTIGATION

Accidents do happen. But Russia's actions immediately after the crash - unusually swift and unprecedented - reflected actions akin to a criminal cleaning up the crime scene, not a concerned nation seeking answers [43]

A Polish diplomatic note sent to the Russian Federation Foreign Ministry by the Deputy Polish Ambassador in Moscow P. Marciniak requesting for the disaster area to be treated as extraterritorial was not taken into account. Within the first hours after the disaster it became apparent that not only key evidence was not properly secured, identified, documented and preserved; furthermore, the plane wreckage was a target of direct destructive activities on the day following the crash. The evidence identification methodology was not defined and the chain of custody for key evidence was not observed. Additionally, the crash scene was contaminated, left unprotected and unsecured. Thus, personal belongings of the victims were stolen and many parts of the aircraft went missing. Some examples of tampering and evidence destruction in the area of the crash site are presented below.

4.1 Crash site manipulation

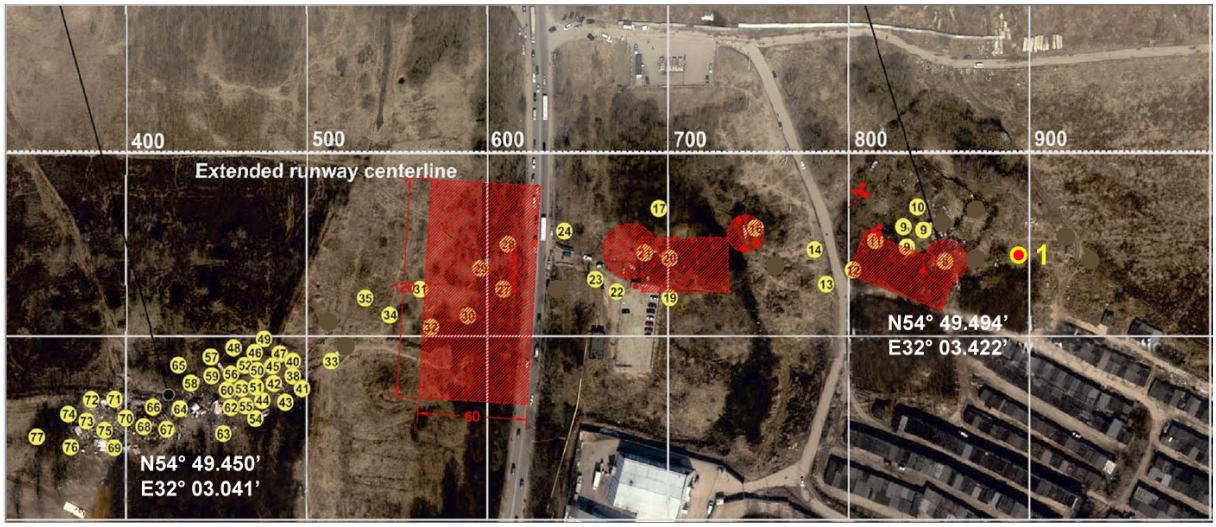

Figure 10. Russian prosecutors' debris localization (red boxes) from 10 and 11 April 2010 over air photo from the IAC report (M. Dabrowski, K. Nowaczyk).

In the final report, IAC stated:

- *3.1.5 No evidence of aircraft, engine or system failures before the collision with obstacles was revealed. There was no fire, explosion or in-flight destruction before the collision with obstacles.*
- *3.1.6 All destructions were caused by the impact forces during the obstacle and ground collisions.*

Meanwhile, independent researchers gathered dozens of testimonies from people who saw or heard the crash, these testimonies include Polish military pilots of the Yak-40, which landed at Severny airport an hour earlier. They have all heard for several seconds before the crash interrupted, shooting and whistling sounds of the Tupolev engines and then after a series of explosions sound from only one engine. Many witnesses saw and heard an

[43] Misplaced Trust Leads To Crime Without Punishment, Charleston Mercury, March 2012, Eugene Poteat, President Association of Former Intelligence Officers. Poteat is a retired senior CIA Scientific Intelligence Officer

explosion, a ball of fire and the plane disintegrating into pieces in the air and especially the tail of the plane specially immediately after flying over Kutuzov Street.
An illustrative example of such a course of the disaster was an aerial view photo of the crash scene taken on 12/04/2010 marking only selected fragments of found pieces of the wreckage debris. Three years after the disaster, journalists published the hidden protocols prosecutors of the Russian Federation dated 10 and 11 April describing the airplane pieces found few hundred meters before main crash scene, where the plane was still in the air. Their quantity and origin not only of the damaged wing (IAC report), but also of the fuselage, deny theses posed in sections 3.1.5 and 3.1.6. Differences between IAC report (yellow dots) and description prosecutors (red boxes) are shown in the Figure 10.
Tampering with the sequence of events took place to obscure evidence of the plane disintegration before the birch location occurred. This is true in particular as the pieces found did not originate from the wings. Their distortion is another factor point suggesting to an explosion. Satellite pictures of the crash site in Fig 11, taken by a GeoEye satellite, demonstrated how the ground position of the aircraft left horizontal stabilizer was moved - over 20 meters between April 11 and April 12 - closer to the first marks on the ground at the wreckage site. The new location, from April 12, was treated as the original one in the Final Russian Report. Already before April 10, both sides of the fuselage were cut off and pulled away. The intention was to destroy the characteristic shape of the fuselage consistent with the aftermath of an internal explosion (Figure 14). Despite immediate large scale cleaning efforts with the use of bulldozers and heavy earth moving machinery, the crash site was left unprotected and widely opens to visitors and unauthorized persons. Onlookers were able to pick up parts of the airplane, fragments of victims clothing or their belongings. Even human body parts and bone fragments were collected by random persons many months after the crash. As a result, some personal belongings of the victims were stolen and money was withdrawn from their bank accounts with the use of credit cards. According to the Final Russian Report, at the time of the accident the airport lighting system was working properly at the Smolensk Severny airfield. Such conclusion stands in direct contradiction to statements contained in the Russian Report indicating that four out of eight rows of lights were turned off. The information above was revealed following a Belarussian journalist publicising photos showing Russian soldiers replacing bulbs and fixing power supply cables only a few hours after

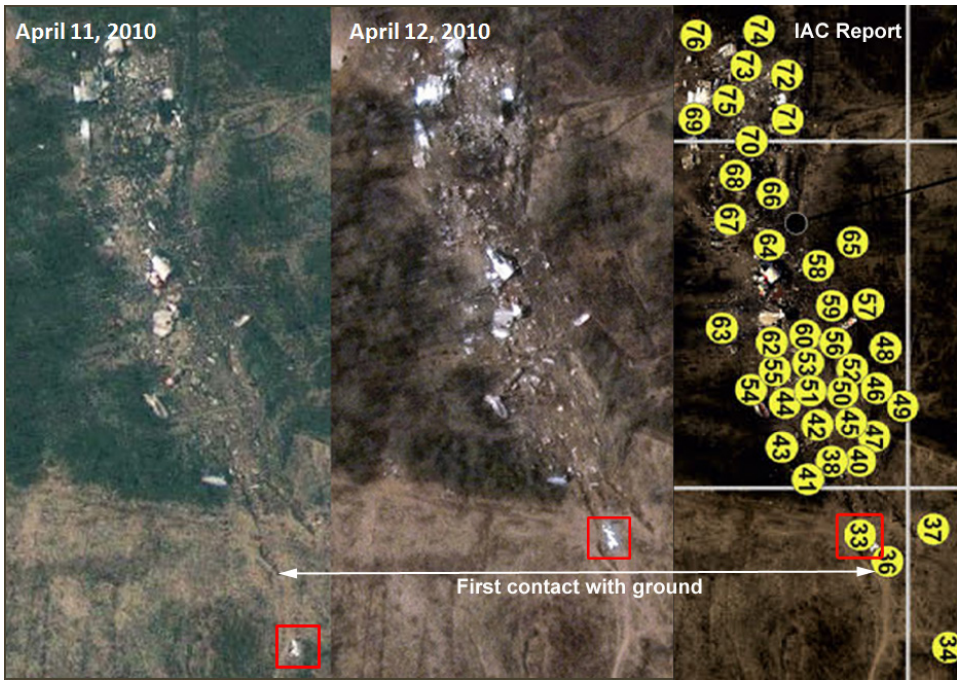

Figure 11. Satellite photos from 11 and 12 April demonstrate left stabilizer position changes (red boxes) and position (33) in ICA final report. (K. Nowaczyk) Appendix VI.

the crash (Appendix VI).

Figure 12. Examples from crash site from first three days, April 10-13. Appendix VI.

Many trees and shrubs were cut down in the vicinity of the crash site, grass was burnt and top soil was removed, especially near the location of Terrain Awareness and Warning System (TAWS) number 38 (Appendix VI), all of these activities were omitted in the Russian Report.

4.2 Airplane debris destruction

In October 2010, the Polish press published photos showing the demolition of the Polish Air Force One wreckage on the day following the crash. Video footage of Russian workers destroying the aircraft and in particular breaking some windows[44] as well as bulldozering the crash site was shown in a documentary "Misja specjalna" by A. Gargas . Examples in Fig. 12 include just a few photos from a large collection in Appendix VI. Prior to the recovery of all victims' body parts and airplane fragments, a concrete pavement was poured over some parts of the crash site and a concrete road was constructed over it on April 11, 2010.

The destruction of airplane wreckage took place immediately on the day of the crash without assuring adequate documentation regarding debris positioning, photographing original debris shapes or marking fragments properly for future reconstruction. Instead, all windows in the fuselage were broken immediately, large sections of the airplane were cut into smaller parts, cables were cut and pulled out, heavy sections were deformed and damaged further by being dragged by an excavator and other heavy machinery, large areas of the crash site with smaller debris were bulldozed and finally some parts of the crash scene were quickly covered up with fresh soil or concrete. Crash deformation of aircraft tail has been 'repaired'[45] even before it was moved to its final storage site. In the end, larger airplane parts were transported to a nearby airport concrete pavement and left for many months without any protection from weather conditions and onlookers (Fig. 13). Several tons of small parts were piled up like trash in a nearby barn, without any order or protection. After many requests from the Polish side, the larger wreckage parts were eventually fenced off and covered by a tarp. Later, a plywood structure was built over the

[44] Breaking windows is of added significance because of potential presence of explosive material residue on glass that would be consistent with explosion as well as possibility to assess pressures the glass was subjected to during the crash.
[45] Appendix VI.

airplane wreckage[46]. To commemorate the second anniversary of the Smolensk crash, Russia distributed photographs of the fuselage, freshly washed, with new a fresh paint coat and new windows installed[47]. There was no attempt to reconstruct the aircraft.

Figure 13. Largest airplane parts on the concrete pavement after transportation from crash site.

Figure 14. A part of the fuselage inverted and opened up (yellow line and arrow). Appendix VIII.

[46] Appendix VI
[47] *Ibid.*

Finally, a self- evident photograph (Fig. 14) showing a large part of the fuselage at the crash site proves beyond any reasonable doubt that the fuselage must have opened midair and fallen to the ground inverted, with both side walls of the fuselage bent outwards. Consequently, the next day after the crash, both walls of the fuselage were cut off and moved away. This is clearly visible in the aerial view picture of the crash site presented in the IAC report (Fig. 15).

Figure 15. Left and right walls cut off from fuselage on 04.11.2010. Separated walls (white arrows) on air photo in IAC report.

4.3 Hidden facts and documents

Shortly after the Tu-154M carrying the Polish president crashed in Smolensk, Spetsnaz troops (special forces) appeared on the site; soldiers from 25 branch Military Unit No. 7459 Spetsnaz MVD in Smolensk are known to have participated in bloody special operations in the North Caucasus (Fig. 16, 17). The official Russian IAC report concealed the presence of these units at the site of the tragedy.

Electronics & Sensitive NATO instruments and documents recovered and accessed by the Russians (erased photos, text messages etc. from internal memories):

1. Satellite telephone.
2. Cell phone of the President of Poland.
3. Cell phone of Air Force Commander General Andrzej Błasik.
4. Cell phone of Army Commander General Bronisław Kwiatkowski.
5. Cell phone of the Secret Service Ministry coordinator Zbigniew Wassermann.
6. Three Motorola Radio telephones.
7. Ten Blackberry smartphones.
8. 60 cell phones.
9. Twenty photograph cameras with memory cards.
10. Video camera with memory card and tape.
11. Industrial camera and two computers.
12. Documentation including top secret NATO documents.

Figure 16-17. From the very beginning, Spetsnaz special military unit was present at the crash site. Arrival of additional Spetsnaz (special purpose forces) personnel two days after crash (4-12-10).

On top of the hidden Russian Federation prosecutors' protocols dated 10 and 11 April described above in part 4.1, six months after the crash a team of Polish archeologists was finally allowed to examine the crash site. The Polish experts found 10,000 small fragments on the surface and identified another 20,000 fragments of metal hidden in the soil up to 20 cm deep using metal detectors operating within the 20cm range. Using several drills, they confirmed that the location of every small metal fragment was accompanied on average by another six non-metal fragments (total estimated number 60,000). Some metal fragments had been exposed to high temperatures (example in Fig. 18).

Figure18. Example of a burned metal piece of debris found in front of main crash site. Appendix XI.

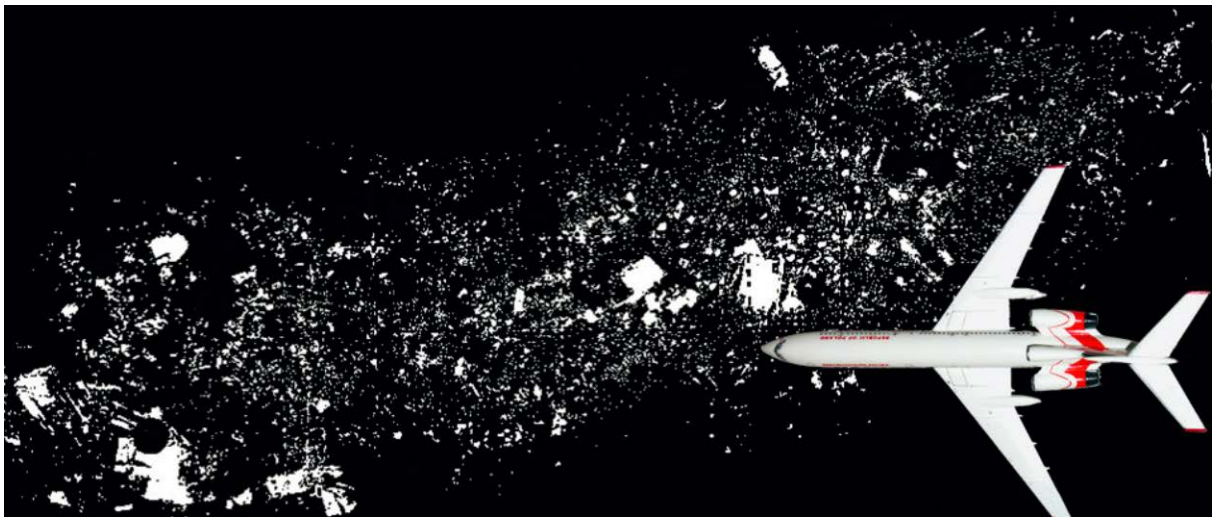

Figure19. Map of debris found at the main crash site, prepared for the Polish Archeologists' Report (Appendix XI). The airplane profile is in scale 1:1 to the ground area. (K. Nowaczyk)

The Polish team was limited in its search only to the area of aircraft contact with the ground, but the number of visible debris on map prepared for the Polish Archeologists' Report (Fig. 19) and listed in Table 2 is incomparable to famous air catastrophes caused by explosions.

Table 2. Aircraft catastrophes – comparison of debris quantities

AIRCRAFT	EXPLOSION	IMPACT	ITEMS OF DEBRIS
PanAm 103[48] Lockerbie	Yes (bomb and fuel)	High Energy (altitude 19 000 feet)	Over 11 000 (including fragments of personal property) Reconstructed 95% of airplane
TWA 800[49] New York	Yes (fuel)	High Energy (altitude 31 000 feet)	3168 (aircraft fragments) Reconstructed 95% of airplane
Tu-154M Smolensk	No?	Low Energy (altitude 50 feet)	35 000 recovered by archeologist 60 000 estimated, including aircraft equipment). No attempt to reconstruction

[48] Air Accidents Investigation Branch, Report on the accident to Boeing 747-121, N739PA at Lockerbie, Dumfriesshire, Scotland on 21 December 1988. Aircraft Accident Report No 2/90 (EW/C1094).

[49] National Transportation Safety Board. (2000) In-flight Breakup Over The Atlantic Ocean, Trans World Airlines Flight 800, Boeing 747-131, N93119, Near East Moriches, New York, July 17, 1996. Aircraft Accident Report NTSB/AAR-00/03. Washington, DC.

A Russian prosecutor team that prepared a crash scene report based on the inspection conducted on the day of the crash covered the entire area of debris, starting several hundred meters before the location where contact with the ground occurred. The said report describes many fragments located at the exact impact site, including fragments detected even further than the birch tree which supposedly had caused the crash. The evident disintegration of the airplane before contact with the birch tree and several hundred meters before the first ground impact has never been addressed or explained. Only the larger parts of debris were recovered by the Russian team. The rest was either covered up or picked up by the public.

Among the hidden documents that require mentioning are prosecutor protocols from the first days after the disaster, prosecution visual inspection of the wreckage of September 17, 2010 as well as the original data from the flight recorders, which have never been disclosed[50].

[50] Black Boxes detailed description in chapter 5.

5. RUSSIAN IAC REPORT

The Final Russian Report was released on January 12, 2011. The report includes numerous contradictions, omissions, fabricated statements and illegible data, just to name the most obvious shortcomings. The key section of the report that describes the final moments of the flight is inadequate and misleading. The description of the final stage of the flight is based on speculations not properly verified by scientific methods.

IAC Report openly disregards the Polish objections submitted to the Russian side on December 19, 2010 contained in the Remarks of the Republic of Poland to a draft of the Russian Report[51]. The Russian Report also disregarded as much as 80% of comments submitted by the Polish side pursuant to Art. 6.3 of Annex 13.

Furthermore, the IAC Report bypasses many important issues including the role of the air navigation services and facilities, and the performance of air traffic controllers. Inadequate information is provided in particular with respect to aeronautical maps and charts, the course and glide path of the airplane, and the job performed by the Landing Zone Controller.

Similarly, no explanation as to the cause of the unusually extensive damage to the airplane was provided and the lack of survivors was not examined. No in-depth analysis of the crash site was presented and no discussion on the condition of the bodies has been provided. Furthermore, a mechanical failure of the aircraft was ruled out from the outset of the investigation and the possibility of technical malfunction was not examined adequately. Most importantly, a major malfunction of the airplane during the Atlantic Ocean flight from Haiti to Poland on January 23, 2010 was not even mentioned in the Russian Report. During that flight the airplane experienced serious problems with the autopilot and the steering systems. Later, the aircraft returned from a general overhaul performed in Samara, Russia, in December 2009, and until the time of the crash three months later, eleven serious mechanical failures were recorded during the first 3 months of 2010[52].

Findings from the first inspection of the crash scene (10th and 11th April 2010), conducted by Russian prosecutors[53], were not incorporated into the Russian Report. The document was hidden for several years and when leaked to the public it revealed many discrepancies with the Russian Report.

The Russian Report ignores evidence from the CVR[54], which proves that the Polish crew had known the topography of the terrain in the vicinity of the Smolensk Severny airport very well, and first pilot decided “go-around” at an altitude of 100 m, thus fulfilling given nine minutes earlier an announcement that in case of bad weather "we go-around in automaton". The IAC completely disregarded clear statements made by the Polish pilots regarding the lowering of the terrain before the airport runway clearly recorded in the CVR transcript. According to the transcript prepared by the Russians themselves, one minute before the crash and 5 km before the airport runway (that is 3 km from the lowering of the terrain), the Co-Pilot reminded the First Pilot about the lowering of the terrain to which the first pilot responded: “I know.”[55] In direct contradiction to this evidence, the Russians concluded that the Polish pilots lacked the knowledge of the terrain topography. Such conclusion also disregards the information that the first pilot had landed at the Smolensk 'Severny' airport as a co-pilot three days before the crash, in a flight carrying a Polish government delegation.

[51] Polish Response in English. Appendix V
[52] *Ibid.*
[53] Appendix XI
[54] Appendix III
[55] *Ibid.*

5.1 Flight recorders

Until today, the Russians failed to return flight recorders to Poland, although the IAC had finalised its investigation more than three years ago. At the first meeting (04.10.2010)[56] of the National Investigation Committee chaired by Putin, the Russian Minister of Transport (I. Levitin) assured that: *We have found two flight recorders - one recording instrument readouts and the other recording audio. But we did not touch anything before our colleagues [from Poland] arrived at the site.* However, at the same meeting the First Deputy Prosecutor General of Russia (A. Bastrykin) confirmed that the recorders have already been read: *We have **retrieved the flight recorders** which confirm the nature of the exchanges between ground control and the crew*. Finally the IAC report stated: *On 11.04.2010 the CVR was brought to the laboratory of the Interstate Aviation Committee for opening, readout and information processing. The casing opening and the information copying were conducted in the presence of aviation experts from the Republic of Poland.*

Many facts reported allegedly based on data from the Flight Data Recorders, Cockpit Voice Recorder, etc. were manipulated or misinterpreted. The analog flight data recorder K3-63 was never found, and data from the digital flight recorders were presented in an illegible form. Time scales on charts presented in the Russian Report were changed arbitrarily - *Considering the difference in time zones three extra seconds were added to TAWS time to be synchronized with the FDR*[57]. Furthermore, four copies of the "same" CVR tape (MARS-BM) were made upon the request of the Polish side. Each copy provided to the Polish side had a different total duration.

Table 3[58] Polish Air Force One Flight Data Recorders and navigation instruments

Recorder symbol: Recorder type and function:	
KBN-1-1	Digital maintenance data recorder made in Russia and installed near the cockpit.
MARS-BM	Digital sound data recorder, installed in the tail of the airplane near MŁP-14-5. (It was found near the marks of the first contact with ground).
MLP-14-5	Digital crash protected data recorder installed in the tail of the airplane (exposed to high temperature). It was found near the marks of the first contact with ground.
K3-63	Armoured electromechanical film- based quick access recorder **(not found)**
ATM QAR	Quick access digital data recorder collecting the same data as KBN-1-1. ATM-QAR was made in Poland
FMS UNS-1D	The Universal Avionics Systems Corporation Flight Management System
TAWS SN 237	The UASC Terrain Awareness and Warning System

[56] 04.10.2010 National Investigation Committee Meeting report
[57] IAC final report page 106. Appendix VIII
[58] Table prepared based on Russian IAC report (Appendix VIII) and Polish ATM PP expert opinion (Appendix IX)

Although there were five recorders installed in the airplane (listed in Table 3), there is no reliable data from the last phase of the fatal flight. As shown in the table, the plane was equipped with four digital recorders and one analog recorder. Out of these five, the analog recorder **K3-63** was never found. The Russian Report is based exclusively on the data obtained from the operational data recorder **KBN-1-1** made in Russia. A Polish copy of this recording ends several seconds short of 41st minute (before birch tree), thus becomes useless in the analysis of the last phase of the flight. The most important last half second of the data obtained from a quick access digital data recorder **ATM-QAR** made in Poland was deleted and replaced with an additional 2 seconds of poor quality data from the disaster data recorder **MLP-14-5**. As a result, the only data available to the Polish side pertaining to the last seconds of the flight is from the disaster data recorder MLP, burdened with significant errors. Recorder **MLP-14-5** contained flight data from April 7, 8 and 10, but the critical data of April 10 was of poor quality, so no useful data could be extracted, hence this file was not used for any analysis.

Another issue concerns copies of the CVR **MARS-BM** recordings. To date, we know of at least six such copies (Table 4), five documented officially, and a single clandestine copy, were to be analysed by the FSB. They all vary in terms of recording duration, with the difference reaching almost two minutes, equivalent to nine kilometers covered in that time by the aircraft travelling at average speed of 80 m/s. The difference cannot be explained by variable tape speeds during recording; furthermore, the largest discrepancies occur during the final part of the tapes. Such differences between recordings may undermine the credibility of the copies. This is also confirmed by a passage from the FSB opinion: *Therefore, provided that they are not original records, have a digital form, and are presented bearing signs of continuity of the recording process, recording changes introduced in a digital (computer) process cannot be excluded* (Appendix I).

Table 4[59]. Total duration of the CVR MARS-BM recording copies

Copy recipient	Date of recording	Length of recording
IAC	05.2010	38 min. 16.8 sec.
KBWL LP [60] (1)	05.2010	37 min. 57.0 sec.
FSB[61]	06.2010	36 min. 58.6 sec.
Foreneks[62]	06.2010	36 min. 24.0 sec.
KBWL LP (2)	07.2011	38 min. 14.5 sec.
IES [63]	01.2012	38 min. 13.6 sec.

5.2 Data omitted entirely

The Russian Report omits TAWS #38 event landing completely (see Figure 19). The blue line (TAWS baro-altitude) does not contain any explicit information from TAWS #38 or any of the FMS logs. The last mark on the blue line indicates TAWS #37. Data from the aircraft FMS and TAWS have been recovered by a team of experts working for the US instruments' manufacturer – Universal Avionics Systems Corporation based in Tucson, Arizona. The decoded logs from these devices were made publicly available by the Polish Investigation Committee as late as September 5, 2011. The Russian Report does not even mention the TAWS log no. 38 or any of the Fault Logs. But TAWS #38, found 140 meters in a straight

[59] Polish Parliamentary Committee Report "Cztery lata Po Smolensku", 04.01.2014
[60] Polish Committee for Investigation of National Aviation Accidents (KBWL LP)
[61] Federal Security Service of the Russian Federation (FSB)
[62] FORENEKS, LLC, Russia, St. Petersburg
[63] Forensic Institute in Krakow (IES)

line from the birch tree, proves that the aircraft could not have collided with the said tree. Thus, the omission of this indicator was necessary to make the official IAC scenario of a collision with the birch tree possible. Furthermore, according to FMS data recovered, the moment when the central memory system ceased recording any further data because of power blackout occurred when the aircraft's was at an altitude 15 meters and its geographical position was about 50 meters from the area of initial impact with the ground[64].

5.3 Data manipulations

Data recovered from some of the aircraft's recording devices have been subject to arbitrary alterations and some of the data from FMS[65] and TAWS logs have not been included in the Russian analysis. Figure 21 shows a vertical acceleration chart from the Polish QAR recorder and IAC report. QAR indicates three peaks (points 1, 2, 3) occurring in a very fast succession, in the order of one tenth of a second, before TAWS #38 and around 200 m before the crash site. It should be noted that the first of these strong shocks occurred about 50-70 meters before the birch tree location. These strong acceleration changes were caused by a downward-acting force, but they were neither explained nor accounted for in the Russian Report. The **grey area** on graphs in Figures 21 and 22, indicates a location where the Russian analytic program WinArm32 used by IAC removed "problematic" data points. Such locations are automatically selected and marked in gray by WinArm32.

Figure 22 shows an example of significant differences between values registered by the Russian KBN recorder and the Polish QAR recorder. Both recorders

1.16.5. Findings of TAWS and FMS Examination

The examinations were conducted at the manufacturer's facilities, Universal Avionics Systems Corporation (UASC) at Redmond USA with participation of representatives of the IAC, Republic of Poland, NTSB and FAA. Despite significant mechanical damage of the units, most of the data were successfully read out and processed. This section contains only those findings that were used for this Report. The complete examination findings are in the investigation file.

TAWS

At the time alert recording starts TAWS logs some aircraft movement parameters (aircraft position, altitude, speed, etc.) and aircraft systems configuration (flaps, landing gears).

The alert events were logged at 10:40:06, 10:40:32, 10:40:39, 10:40:46[24] and coincides with the records of the same events on the FDR and CVR.

FMS UNS-1D

The aircraft was equipped with two identical FMS consisting of a Control Display Unit (CDU) mounted in the cockpit, a Navigation Computer Unit (NCU) and application units. The NCU contains several computer boards including the Central Processing Unit (CPU) board. The random access memory (RAM) on the CPU board is battery-backed and if the external power to the FMS is removed the CPU board memory is frozen. Thus a number of parameters are logged in case there is external power loss and can be further recovered if internal battery is intact.

The FMS power was lost (memory frozen) at 10:41:05 at a barocorrected altitude of about 15 m, with IAS 145 knots (about 270 km/h) at N54°49.483' E032°03.161'.

Figure 20. Copy from the IAC report. Time listed only for TAWS #34, 35, 36, 37, not for #38. Power blackout midair at altitude of 15 m. Appendix X

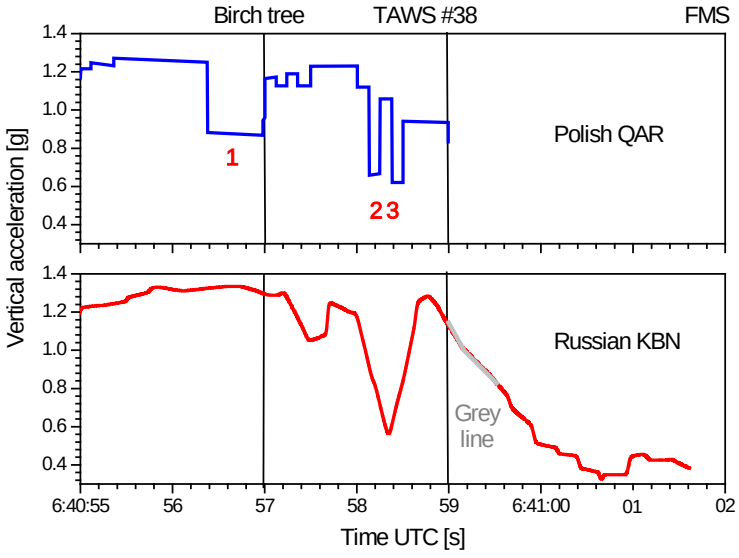

Figure 21. Vertical acceleration from the Polish QAR recorder and Russian report. Three peaks (points 1, 2, 3) occurring in very fast succession, in the order of one tenth of a second, not explained in IAC report. (Appendix X)

[64] Appendix VII.
[65] Universal Avionics Flight Management System (FMS).

collected data from the same sensors, therefore differences clearly visible in areas marked with numbers 1 and 2 in Fig. 22 are completely inexplicable.

Comparisons of Figures 21 and 22 shows that, in the graphs in the report IAC is hidden event that occurred before the birch (point 1 in Figure 21). In contrast, the next two shocks on the Figure 21 (point 2 and 3 visible also in Russian report) have no effect on the rotation of the plane, contrary to what one would expect (Figure 22 Russian KBN). Reading from the Polish QAR in Figure 22 contradicts this course of events. We must once again recall that the IAC has never provided the full records of Russian black boxes to the Polish side.

In the Russian scenario of events after the loss of a fragment of the wing the airplane rotates to the left and should also change the direction of flight to the left. Figure 23 shows a clear difference between the graph presented in the IAC report, and readings from the NTSB expertise.

According to FMS data, the last magnetic heading value recorded was 260 degrees (taking into account the magnetic declination, Figure 23). The fact that this is the last available data point is confirmed by the information recorded in the FMS memory[66]. But in the Russian report, in the same point the value is 250 degrees. What is then the source of data as to the aircraft's magnetic heading after the point of 260, considering that both FMS and FDR receive their inputs from the same instrument?

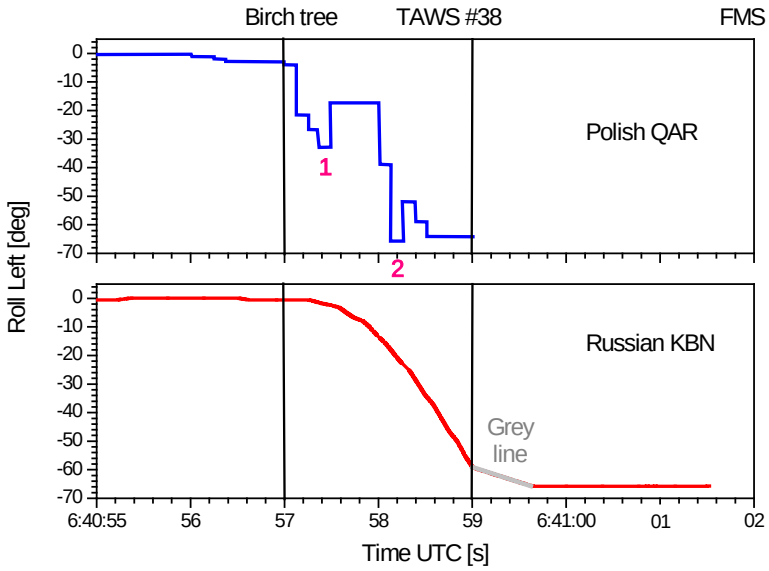

Figure 22. Recorded Roll Left angle from parallel recorders connected to the some sensors. Graph prepared based on data from the Russian IAC report and ATM PP expert opinion. Appendix X.

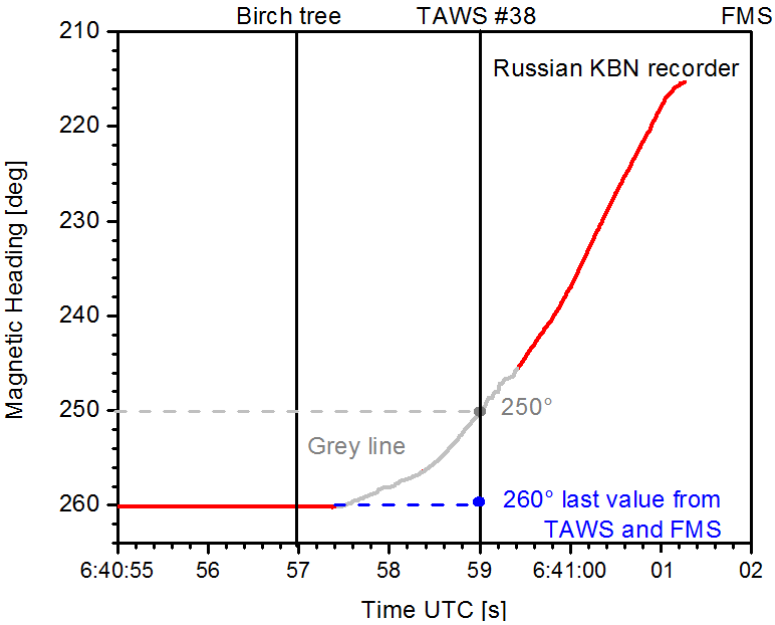

Figure 23. Magnetic Heading recorded by TAWS #38, FMS (blue point) and presented in the IAC report (red line). Appendix X

[66] Universal Avionics NTSB Expertise (Appendix X): "*Magnetic Heading - Not valid last known heading value was 267.1° Wind - not valid (Note this is expected because a loss of heading is necessary for the computation of winds)*"

5.4 Final IAC report statement falsification

The basic thesis of the IAC report already commented in the background chapter has been challenged by means of research performed at the behest of the Polish Military Prosecutor Office. On the basis of the CVR recording provided by the Russians, it turned out that the words spoken by the aircraft navigator were assigned to Gen. Błasik, which was not in the cockpit. Further testing of samples collected from the body of Gen. Błasik showed absence of alcohol in his blood. This undermines completely one of the most important causes of the disaster as provided by IAC: *The presence of the Commander-in-Chief of the Polish Air Forces, who was under the influence of alcohol, in the cockpit until the collision, and psychological pressure on the pilot in command to continue descent in the conditions of unjustified risk with a dominating aim of landing at any means.*

Readings from the same CVR record also contrast with another crash reason provided in the IAC report: *Descent without visual contact with ground references to an altitude much lower than minimum descent altitude for go-around (100 m) in order to establish visual flight.* Analysis of conversations held by the aircraft crew showed that at the height of 100 m the first pilot gave the order "go-around". The results of a study commissioned by Polish prosecutors undermine the thesis presented in the IAC report; they do not, however, explain the real causes of the disaster.

5.5 Polish CINAA[67] Report

Not coincidentally, comments to the final report of the Commission for Investigation of National Aircraft Accidents (CINAA) were placed in the V chapter of the IAC report. The Polish commission did not conduct its own investigation: its representatives did not participate in the crash site examination, did not participate in autopsies and did not investigate the wreckage, the black boxes. The Commission has based his research solely on copies of black boxes provided by the Russian authorities. Table 4 provides information concerning the cockpit voice transcripts which undermine the reliability of the recordings. Similarly, with the remaining copies[68] :

The copy of the **KBN-1-1** recorder was described by both the Russian and Polish commissions as being of the best quality. Therefore, the Russian Report was prepared on the basis of data retrieved from this recorder. It would seem that the Polish commission would do likewise. Unfortunately, the Polish copy of this recording, made in Moscow in the presence of a representative of the Polish prosecutor's office, ends just before the 41st minute (meaning seconds before the location of the birch tree) and therefore provides to be useless in the analysis of the final flight stage. The full record (including data up to power blackout) of the KBN-1-1 is presented in the graphs of the IAC report.

Two Russian copies of the **MLP-14-5** recorder arrived in Poland. The first one, included flight data from the 7th, 8th and 10th April, however, the key recording from April 10 was of such poor quality that it was impossible to retrieve any useful information and therefore was not used for any data analysis. The second copy was again of such poor quality that it should have been disregarded as evidence. Furthermore, Polish representatives failed to participate during the process of date recovery.

Copies of **ATM QAR** – Polish Quick Access Recorder ATM-QAR was coupled in parallel with the Russian KBN-1-1. Both, in theory, should have contained exactly the same data (regardless of the aircraft engine parameters). There are two known copies of the

[67] Committee for Investigation of National Aviation Accidents (Komisja Badania Wypadków Lotniczych Lotnictwa Państwowego; KBWLLP)
[68] CINAA Report: Appendix IX, X

recorder. The first copy was made in Warsaw and the original recorder was subsequently returned to Russian authorities. The second copy was made in Moscow. The most important piece of information in the form of the final half second was digitally deleted from this recoding and replaced by two seconds from the MLP-14-5 recorder of very poor quality.

Using the digital ATM QAR copy from Moscow, it was possible to establish the actual position of the plane at 6:40:57,375 UTC time, around 30 m after the birch tree location (Fig. 24).

As seen in the figure, the left wing of the aircraft even after having supposedly lost its left tip would have been two meters underground.

This is further evidence of data inconsistencies. It is obvious, that the aim of the Polish commission by relying solely on materials provided for by the Russian authorities merely aimed to duplicate the main points stipulated in the IAC report.

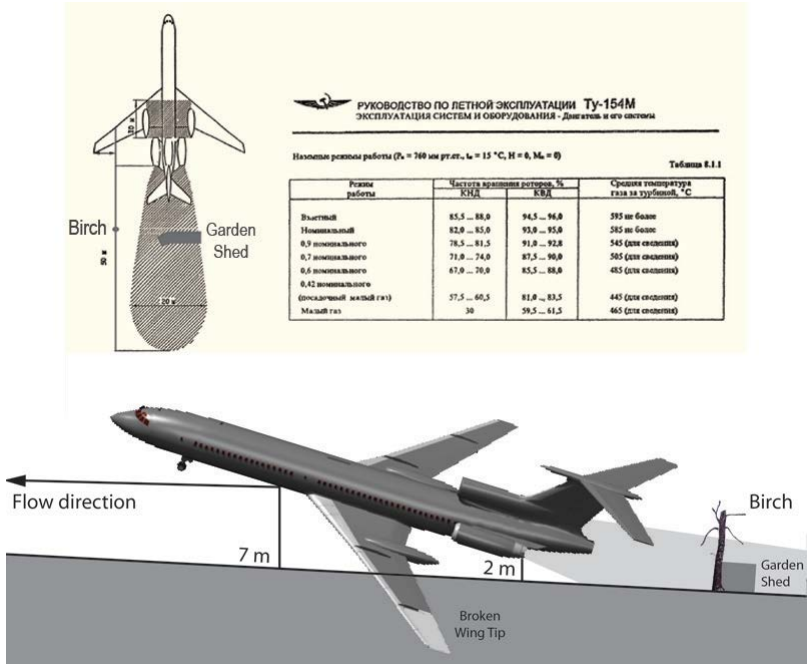

Figure 24. Tu-154M position at 6:40:57.375 from ATM QAR digital data (Moscow, June 2011)

6. INDEPENDENT INVESTIGATION

Scientists and experts working with the Parliamentary Committee have begun their research of the causes of the crash over four years ago. Due to obstructed access to evidence and documents related to the disaster sometimes bordering impossibility, the tests are very time consuming and still incomplete. However, due to the vast experience of the researchers operating in a variety of scientific disciplines and advanced applied scientific methods, the team has presented the most probable crash hypothesis, mentioned in Chapter 1.
Recent studies have shown that:

Navigation was intentionally faulty. (W. Chrzanowski[69], G. Burov[70]), *According to analysis, when using the gliding angle of 2°40' [according to the approach chart[71]] the airplane was on gliding path only at a distance of 10 km from the landing runway and at a distance of 2.78 km while crossing the gliding path.*

Vertical and horizontal trajectory presented by the Russians was wrong (K. Nowaczyk[72], G. Jorgensen[73]), *Reconstructed horizontal trajectory show that the aircraft could not have made a complete roll to the left after impacting the birch tree, because a complete roll would have to result in the change of its heading prior to TAWS #38 [hidden by IAC report] - Chapter 2, Figure 4.*

The loss of the first fragment of the left wing should not have caused the roll-over (G. Jorgensen, K. Nowaczyk). *A good correlation between the calculated roll angle and the recorded roll angle data from the aircraft's flight data recorder is only present when assuming a wing loss of about 8.5 m to 10.5 m [instead 6.5 m in IAC report].*

A birch tree blamed for damaging the wing could not have cut the wing (W. Binienda[74], G. Szuladzinski[75]), *Finite Element Method (LS-Dyna) parametric calculations show that if the*

[69] Wiesław Chrzanowski, Captain, retired flight controller, flight navigator and instructor in Polish Air Force Academy in Deblin
[70] G. Burov, Colonel, Russian pilot
[71] Smolensk Severny Approach Chart, Appendix VIII
[72] Kazimierz Nowwaczyk Ph.D., physicist. In the early 1990s he began working for the Center for Fluorescence Spectroscopy, University of Maryland at Baltimore. His scientific research has been focused on fluorescence and phosphorescence of biological systems, image processing, and statistical data analysis. In 2011 he began cooperating with the Polish Parliamentary Committee for the Investigation of the 2010 Smolensk Air Disaster. He coordinates the research of a group of experts from many countries who investigate the causes of the Smolensk crash.
[73] Glenn Jorgensen, MSME, Denmark, - former lecturer at the Technical University of Denmark, he is an engineer and a pilot; holds a master's degree in fluid dynamics and structural analysis, with specialized training in fluid dynamics related to aviation and building of aircrafts; spent 15 years working as a consultant in performing various simulations and analysis, including structural FEM analysis; spent many hours flying as a civilian pilot.
[74] Wieslaw Binienda Ph.D. Expert on high energy impact virtual experiments, member of the aerospace consortium supporting the investigation of the Space Shuttle Columbia disaster; editor-in-chief of the Journal of Aerospace Engineering of the American Society of Civil Engineers (ASCE); an expert of the Polish Parliamentary Committee for the Investigation of the Crash of the Polish Air Force One, Prof. Binienda serves as the Dean of College of Engineering, The University of Akron, Akron, OH.
[75] Gregory Szuladzinski PhD,- Australia, expert in stress analysis, vibrations and nonlinear dynamics, structural and mechanical shock and impact analysis, computer simulations in the action of explosives, structural dynamics in aerospace structures, 1966 to 1980: In the United States he worked for Northrop Corp. (structural

plane had hit the birch tree at the velocity 75 m/s, the wing would have cut the tree. There would only be a minor damage to the wing edge (Figure 25).

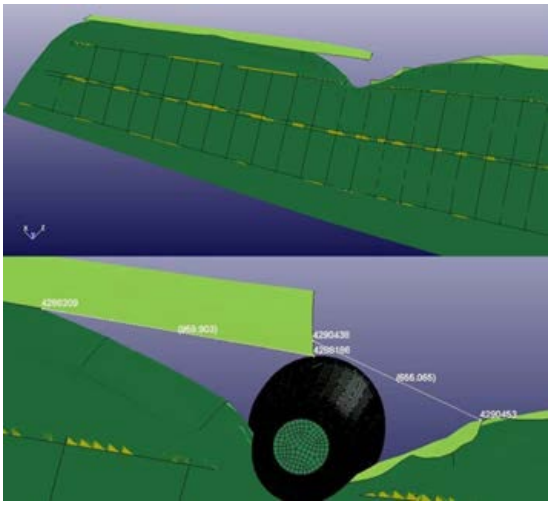

Figure 25. Prof Binienda LS-Dyna wing-birch collision simulation.

The Independent Investigation found ground evidence of this event. Fig. 26 shows aircraft wing debris found about 25m 'up range', or before, the birch tree. The Russian Report had claimed the birch tree to be the point the aircraft first sustained impact damage (by hitting the tree). Earlier, the official Polish crash investigation documented other debris a little further away at ground coordinates N54 ° 49.503/E 32.03.463, or about 40 m up range from the birch tree [Polish prosecutors report E-che-90/12]. Still other wing debris, found 'down range' at a distances of between 40-150m from the point of the in-flight explosion, evidenced the subsequent break-up of the wing (see Part C Fig-26).

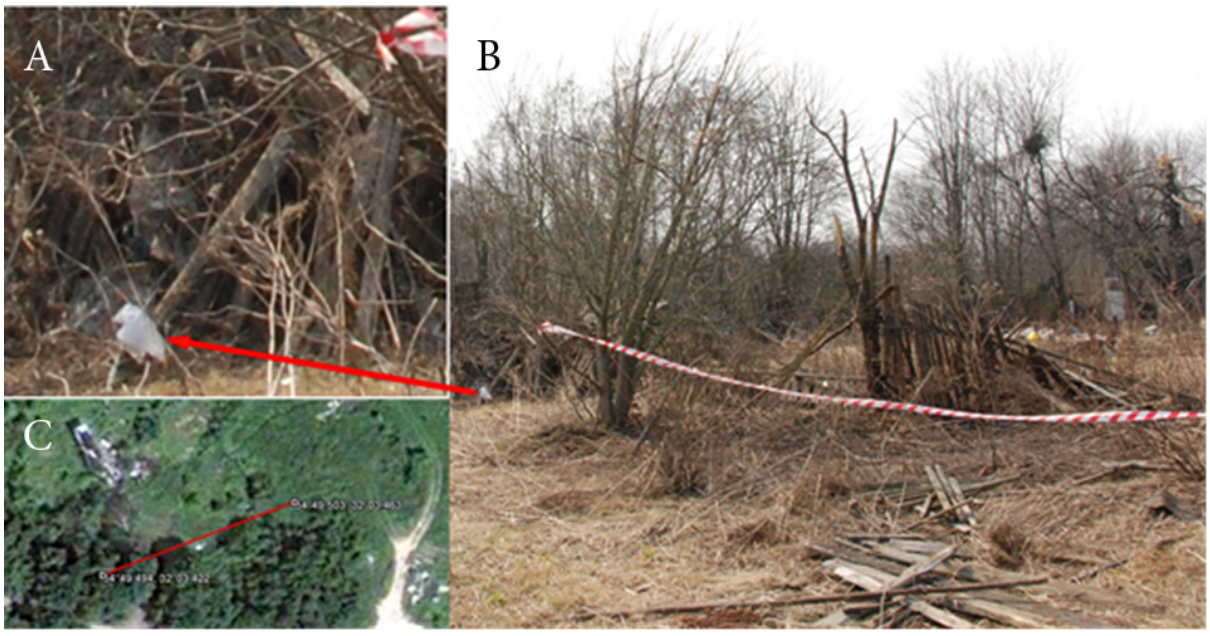

Figure 26. Aircraft wing debris found before, the birch tree.

In terms of the 'target birch tree' itself, the Independent Investigation closely examined a photo of Russian origin which shows flotsam (wing) debris which had landed, and was caught, on the tree. It concludes that this *evidences a mid-air wing explosion event before the aircraft reached the tree's position and that this debris fell onto the tree as a result.* [see Fig.27 flotsam] Under the Russian scenario, the collision with the tree would have occurred at an aircraft speed of 75 meters-per-second and left this debris hanging on it, something the Independent Investigation rejects as 'physically impossible'.

design/analysis of Boeing 747 fuselage) Jet Propulsion Lab, Pasadena (Viking spaceship) Parker Hannifin (helicopter control mechanisms) and others .

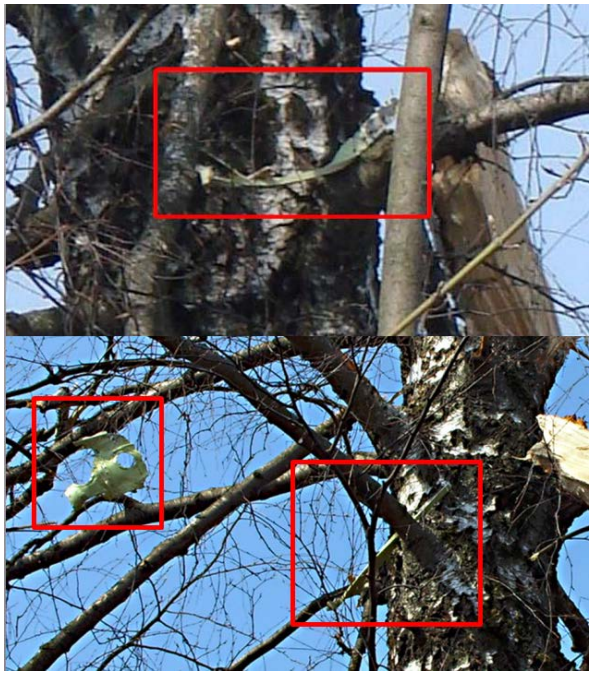

Figure 27 Fragments of left wing hanging on birch tree after collision at 270 km/h

Figure 28. The aircraft's center wing box around 80 m in front of main center wing position on the crash site. On the surface visible signs of the fire.

Another document, suppressed in the official investigation but later obtained from Russian sources, points to the nature of the wing explosion (Russian Prosecutor's Report - RPP 9-20-10). Among the contents is a debris inventory list which includes the description of item 12: 00023 (translation): 'Right pylon part of the wing – On the left front part of the wing, covering [is] torn out (dug out) which was caused by hydraulic impact of fuel [or caused by the wing being impacted by fuel with hydraulic force.' The Independent Investigation points out that the language was carefully chosen to avoid the term 'explosion' while still recording evidence of a strong force, in this case involving fluid, which purportedly was the catalyst for the resulting damage. The only source of fuel was an internal tank located inside the structure of the left wing and that tank was virtually empty by the end of the flight. The key significance of this record is that the description remained true to the point of origin of the event (from inside the wing), although not its actual cause. Figure 28. shows visible signs of fire on the aircraft's center wing box, around 80 m in front of the main center wing position on the crash site.

The Independent Investigation points out that 3 large sections of the fuselage landed (or dropped) in different positions in sodden terrain: the front portion landed upright while the center and rear were inverted (upside-down). This pattern evidences a prior mid-air explosion.

The plane wreckage, debris shape and state of the bodies point to explosion (G. Szuladzinski, W. Binienda). The photograph and frame from simulation in Fig. 29 shows a portion of the mid-rear of the aircraft at the main crash site. This section of the fuselage is inverted (upside-down), the position in which the Russian report states it crashed. The figure, also showing the section in the same inverted position, shows the intact curved bottom of the fuselage with the floor also intact. The upper part of the fuselage, including the walls and roof, are ripped open and bent outward. The Independent investigation concludes this evidence squarely indicates the mid-air explosion in the fuselage was the primary event that brought the aircraft down:

Figure 29. Left - Internal explosion in fuselage - dr. Szuladzinski LS-Dyna simulation. Right - A part of the fuselage inverted and opened up (yellow line and arrow).

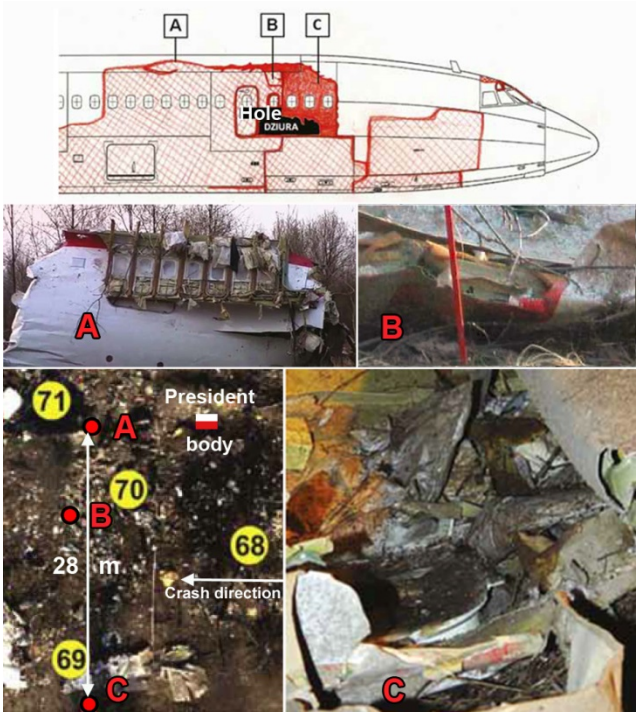

Figure 30. Location of parts from presidential suite at the main crash site, at distance 28 m transverse to the direction of impact (points A and C). Signs of high temperature and high pressure inside the presidential suite (part C).

The crash of PL-101 occurred at 10:41:06 (local time). The Russian report, while avoiding explicitly labelling the crash a high energy impact, basically characterized it as such by claiming that 100 g force was evident. The report also noted, among other things, there was no general conflagration and that only smaller fires were evident on the scene.

In the fourth report of the Parliamentary Committee[76], evidence was presented substantiating an explosion in the fuselage. The analysis pertains to the distribution of debris originating from the presidential suite. Portions of this part of the fuselage are scattered in a distance of nearly 30 m transverse to the direction of the aircraft impact. They also bear clear signs of high temperature and high pressure inside the presidential suite (Fig. 30). The location of the body of Poland's President is also indicated.

The Independent Investigation points out that these conclusions, particularly concerning the 'g-Force (measurement of acceleration felt as weight), is not supported based on 'crash experience' in other similar incidents. MIT Professor R. John Hansman Jr. [Department of Aeronautics and Astronautics at Massachusetts Institute of Technology where he is head of the Humans and Automation Division] concurred with this analysis when, in an interview, he was asked about the April 2010 Smolensk crash. Dr. Hansman also is the director of the International Center for Air Transportation. He said that is *a little hard to reach 100 g in this type of crash, but that it depends on how it was measured*. In his opinion, the forces of 100 g and more are not normal in this type of crash. Dr. Hansman participated in a crash test of a Boeing 727 in the Sonoran Desert of Baja California, Mexico. The test aircraft, traveling at a speed of 250-270 k/hr, descended at a rate of 5-7m/sec, similar to PL-101. The test showed

[76] Polish Parliamentary Commitee Reports 2011, 2012, 2013, 2014. Appendix XII

that the first passenger's rows sustained the greatest g-force, at about 12 g, coinciding with fatalities. "But people in the back of the plane could have walked away. Travelers in the middle of the cabin might have suffered concussions and broken bones." In other words, a significant rate of survivability could be expected based on this test.

15/09/2012 – 13/10/2012 – a team of prosecutor and experts from the Military Prosecutor's Office in Warsaw participated in additional visual inspection of the Smolensk-based wreckage, aircraft parts as well as the disaster site and general area. Wreckage parts were tested using portable explosive detectors (with hundreds of positive results recorded) and samples were taken for further testing. Again, over three years after the disaster, on 11-22/07/2013 – 8/08/2013 a team of military prosecutor and Polish experts participated in the examination of the Tu-154M 101 aircraft seat parts using portable IMS (ion mobility spectroscopy) detectors as well as in the collection of samples in the form of clippings and extracts for further detailed physicochemical laboratory testing to be performed in Poland. The said testing has been carried out by the Central Forensic Laboratory of the Police (CLKP). The results accompanied by a further opinion issued by CLKP (no. E-che 90/12) were analysed by experts appointed by attorney P. Pszczółkowski representing a selection of the victims' families. Professor Krystyna Kamieńska-Trela[77] and Professor Sławomir Szymański[78] have proven that in spite of multiple errors present in the results presented by CLKP, presence of traces of an extremely potent explosive hexogen RDX can be proven with a high likelihood[79].

Many findings gathered during 4.5 years of investigation and presented in this report suggest that the aircraft most probably was destroyed by a series of explosions during the go-around maneuver. The following evidence supports the case[80]:

1. Sudden loss of electrical power when the airplane was still flying 49 feet (15 m) over the ground and 230 feet (70 m) before the first marks of impact with the ground. This loss of power lead to an instantaneous cut off of the black box recordings and "froze" the memory of the flight management system (FMS) computer.
2. Total fragmentation of the airplane structure on small and numerous fragments along the flight trajectory in last few hundred yards and the crash site. Fragmentation of the Polish Air Force Tu-154M airplane structure exceeds fragmentation known from high velocity impacts and caused by explosive destruction.
3. Numerous and small airplane fragments found around 656-984 feet (200-300 m) before the beginning of the crash site, some of them with evidence of heat.
4. Groups of small airplane fragments (including fuselage parts) were found embedded in the ground under an acute angle just before the crash site suggesting that high velocity fragments separated from the airplane before hitting the ground.
5. Groups of small airplane fragments with the evidence of heat found dozens of yards before the crash site.
6. Evidence of heat on several parts of the airplane structure on the crash site.
7. Outwardly rolled ("opened") edges of the large parts of the fuselage suggesting internal

[77] Professor Krystyna Kamieńska-Trela, Institute of Organic Chemistry, Polish Academy of Sciences, Group XVI – Application of nuclear magnetic resonance spectroscopy in organic chemistry.
[78] Professor Sławomir Szymański, Institute of Organic Chemistry, Polish Academy of Sciences, Group V - Molecular dynamics in NMR spectroscopy. Molecular interactions.
[79] Uwagi o opinii Centralnego Laboratorium Kryminalistycznego Policji w sprawie badań fizykochemicznych materiału dowodowego z katastrofy smoleńskiej, Krystyna Kamieńska-Trela, Sławomir Szymański. Paper presented at the Third Smolensk Conference, 20/10/ 2014
[80] Appendix XII - "Smolensk Crash: Evidence for Explosion"

pressure as contrast to expecting crushing forces due to impact with the ground

8. Rolled edges of several smaller parts of the aircraft structure section in the direction from inside out, e.g. on the left wing.
9. Instantaneous death of all crew members and passengers due to massive G-force acting on their bodies. Pathological evidence shows that all victims (regardless of the seat localization in the airplane) were subjected to the G-force over 100 g. Measured and calculated G-force during test crashes and similar incidents involving airplanes suggest often survivable 5-10 times weaker accelerations. Also, some bodies were found on the crash site without clothes what suggests blast and/or in-flight breakup.
10. Detection by field asymmetric ion mobility (FAIMS) spectrometers and ion mobility spectrometers (IMS) around 700 positive explosives signals during screening tests taken 2.5 years after the crash.
11. Analytical signals of explosives (mainly RDX, PETN and TNT) found during laboratory tests in around 150 chromatograms from samples taken from the airplane and its equipment 2.5 years after the crash.

7. CONCLUSIONS

This report contains an account of errors, omissions performed during the investigation and points to incorrect information and intentional falsification provided in the IAC report. The list presented here may be incomplete as new information systematically comes to light regarding IAC credibility.

1. Until the final seconds, the flight control tower provided the TU-154M crew with false information regarding their glide and flight path. Colonel Krasnokutski from the Smolensk Severny control tower received direct orders from Moscow, inconsistent with aviation safety. Furthermore, the Smolensk Severny control tower received orders from within the Russian military command codenamed "*Logika*" and an order was given not to close down the airport despite weather conditions and no alternative airport was designated. "*Logika*" instructed to bring the aircraft down to a decision altitude of 100m.

2. Despite the erroneous data received from the Smolensk Control Tower regarding the glide and decent path, the Tu-154M crew did not attempt a landing approach and decided to stop decent and initiated a go-around manoeuver. The plane in fact was gaining altitude and flew over the birch tree which was deemed as the cause of the disaster by the Russian IAC report. The black boxes recorded strong roll left and vertical acceleration changes a few seconds before the crash.

3. As a result of the crash, the plane disintegrated into over 60,000 fragments, which were later identified and catalogued by archaeologist from Poland. The overall aircraft debris was scattered over an area of over 1.5 sq km.

4. Rescue operations were significantly delayed and a premature and unjustified statement was issued concerning the lack of survivors before the actual location of the bodies. Consecutive autopsy reports showed an enormous amount of inconsistencies and unacceptable departures from medical standards, inter alia, quoting the same „joint” cause of death for all victims, instead of providing details into individual causes of death.

5. The Russian authorities adopted Annex 13 of the Chicago Convention as the basis for the investigation under the consent of and in agreement with the Polish government, despite an existing Polish-Russian concerning the rules for investigating military aircraft ultimately leaving the entire investigation and all the evidence in the hands of Russian authorities, enabling data retention and manipulation of evidence.

6. The Russian IAC Committee established its own version of the events, according to which the Polish crew was influenced by an intoxicated Polish Air Force Commander and according to which the crew was forced to land despite deteriorating weather conditions. According to the IAC version of events, the crew descended too low and collided with a tree at an altitude of around 5m, causing the plane to lose part of its left wing causing the plane to rotate to the left which in turn, according to the IAC report, resulted in the aircraft colliding with the ground in an inverted position, instantly killing all passengers on board.

7. In order to render their version of events more probable and to obscure the actual cause of the crash, the Russian authorities, among other things:

    - manipulated material evidence moments following the crash by destroying the wreckage, replacing its parts, obstructing access to and contaminating the site of the disaster;
    - concealed significant documentation (TAWS #38, Russian prosecutors' reports dated April and September 2010, Polish archaeologist's report, KBN event recorder data);
    - interfered with the black box data (six different CVR copies, grey lines on the graphs, obvious discrepancies between devices connected in parallel).
    - ignored completely records contradicting the scenario assumed while analysing the disaster progression (sudden vertical acceleration, simultaneously rapid roll left changes);
    - ignored information from the Universal Avionics opinion referenced in their own report regarding the complete power failure and the FMS power failure at an altitude of 15m.

8. As the Russian authorities have failed to return the wreckage and the black boxes to Poland, investigating the causes of the crash is difficult and time consuming. Despite, this deliberate obstruction of evidence, independent researchers, academics, scientists and experts have produced their own research, analysis and simulation portraying the most likely consistent course of events based on documentation (often undisclosed). The results are presented in Chapter 1.2 of this research paper and documented in Chapter 6 with Annex XII.

    - The plane made one approach; the crew descended the plane to a decisive height of 100m and decided to "go-around" (official term used for pulling-up and circling around the airport). The crew began this manoeuvre. This process is reflected in the cabin voice recordings, where the command to circle the airport around was given by the Captain to stop descent - i.e. not to attempt a landing approach - all in the manner generally accepted, appropriately and according to regulations. The Captain's command to "go-around" was repeated by the second pilot.
    - As the aircraft was beginning to gain altitude two explosions occurred - one on the left wing (in close proximity to the birch tree; 900 – 1000 meters from the closer end of the runway) and another in the passenger section.
    - Another explosion occurred in the presidential compartment after the aircraft hit the ground. It scattered parts of the compartment bearing obvious traces of high temperature and pressure (doors, seats, part of the fuselage) over a radius of 30m, perpendicular to the direction of impact.

9. The hypothesis describing aircraft destruction through consecutive explosions is further backed by the following facts:

    - aircraft disintegration into large number of fragments found at the site of the crash as well as before the site itself and before the location of the birch tree;
    - FMS system experienced complete power failure at an altitude of 15 meters;

- black box records of rapid changes to vertical acceleration and roll left values;
- traces of explosives found on the aircraft debris.
- high fragmentation levels of victims' bodies that suffered gravity loads of over 100 g, in particular at the rear of the aircraft

The death of President Lech Kaczynski - the Chief of the Armed Forces and the entire General Army Command of the Armed Forces of the Republic of Poland have substantially weakened Polish defence capabilities and its potential as a NATO member. The lack of response and the lack of reaction on the part of democratic states and the international public opinion subsequently facilitated the preparation of Putin's military aggression against Ukraine.

Lech Kaczynski stands with Georgian President Mikheil Saakashvili, Ukrainian President Viktor Yushchenko, and the presidents of the three Baltic states in Tbilisi during the 2008 South Ossetia war. (AFP)

We are here to take up the fight. It is the first time in years that our eastern neighbors show their true face, a face we have known for hundreds of years. They believe other nations should be subjugated to them. To that – we oppose! The neighbors in question are Russians; Russians hoping for a comeback of their long-fallen empire.

And we can understand them very well, thinking about Georgia today, knowing that Ukraine may come tomorrow, Baltic States the day after... and then time may come for my country, for Poland!

Lech Kaczyński

Tbilisi, Georgia, August 12, 2008

European Parliament, Brussels, March 2015