MINISTRY OF INFRASTRUCTURE

SLOVENIA SAFETY INVESTIGATION AUTHORITY

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Case Number: 37201-2/2020/25
Date: 27. 1. 2022

SUMMARY OF THE FINAL REPORT ON THE INCIDENT INVESTIGATION OF ATR 72 SP-SPE 31st July 2020

Republic of Slovenia

» 2020 «

CONTENT

INTRODUCTION

The final report on aircraft incident investigation contains facts, analyses, causes and safety recommendations of the Committee for investigation of aircraft incident, taking into account the circumstances in which the accident took place.

This investigation has been conducted in accordance with Annex 13 to the Convention on International Civil Aviation, EU Regulation No 996/2010 of the European Parliament and of the Council concerning investigations and the prevention of accidents and incidents in civil aviation, the Aviation Act (Official Gazette of the Republic of Slovenia No 81/10 and official consolidated text 46/16 and 47/19) and the Decree on the investigation of aircraft accidents, serious incidents and incidents (Official Gazette of the Republic of Slovenia No 72/03, 110/05 and 53/19).

The sole objective of the investigation is to prevent future accidents and incidents. It is not the purpose of the final report to apportion blame or liability. Using this report for any other intent may lead to wrong interpretation.

The summary of the final report should undoubtedly contribute to flight safety.

This document is the translation of the Slovenian version of the Summary of the Final Report. Although efforts have been made to translate it as accurately as possible, discrepancies may occur. In this case, the Slovenian is the authentic, official version.

SUMMARY

- Date and time of the incident: 31st july 2020 at 19:30 UTC
- Aircraft: ATR 72 - 202, reg. mark SP-SPE
- Manufacturer: ATR, Toulouse, France
- Serial number and flight number: 441, SRN 1905
- Place of incident: Ljubljana airport (LJLJ) – Slovenia
- Type of flight: Commercial-transport flight, under IFR rules
- Owner/User: SprintAir S.A., Poland
- Consequences: /
- Injury to persons:

Injuries	*Crew*	*Passengers*	*Other*
Fatal	/	/	/
Serious	/	/	/
Minor / None	0/2	/	

- Damage to the aircraft: /
- Damage to Equipment: /

1 GENERAL

1.1 Flight information

The crew of the aircraft was warned about the presence of smoke in the cockpit via a warning panel during the instrumental flight from Brnik Airport (Departure from runway 12). As the crew detected smoke and an unpleasant odor in the cockpit, they decided to immediately cancel the flight and return to the departure airport. They successfully landed in the direction of runway 30 after making a 180-degree right turn (in the opposite direction from the take-off direction). The landing was performed under visual meteorological conditions. According to the crew's testimony, the flight cancellation and return to the departure airport were carried out in accordance with the prescribed procedures within the operational manual of the operator and in accordance with the aircraft manufacturer's instructions.

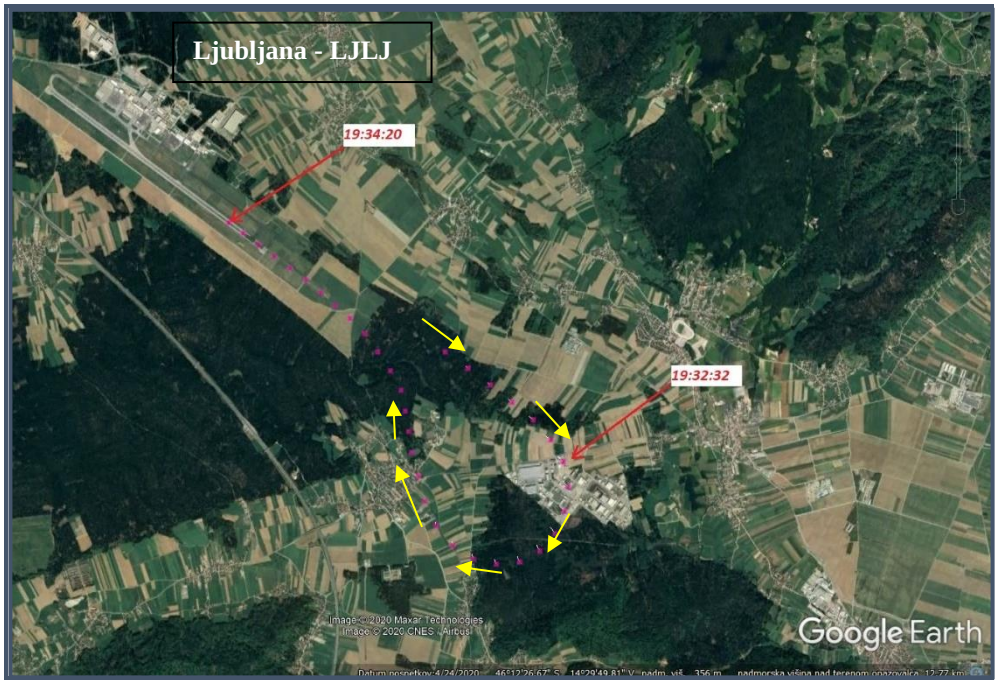


Figure 1: Trajectory from and back to Brnik airport

The fire and rescue team, which had been notified of the incident by the air traffic controller, monitored the aircraft's return and, after stopping and turning off the engines, assisted the crew and inspected the cockpit with a thermal camera.

1.2 Damage to the aircraft

After landing, there was no damage to the aircraft. The source of the smoke in the cockpit, as well as the faulty part, were identified.

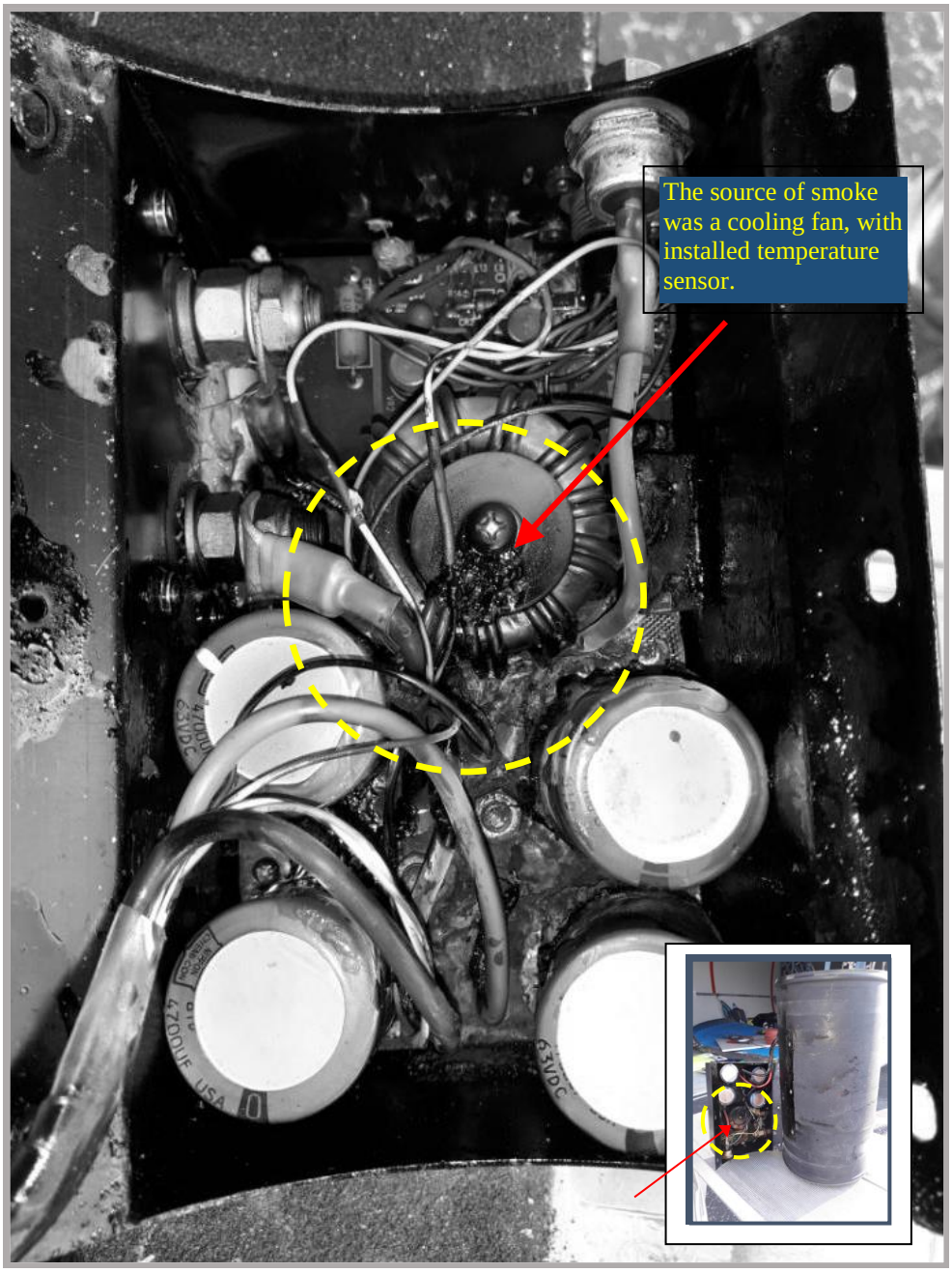


Figure 2: Avionics compartment - avionics cooling fan with temperature sensor

The aircraft was no longer airworthy as a result of the incident. The cause of smoke and odor was later determined to be an avionics cooling fan located under the cockpit floor panel.

1.3 Other damage

There was no other damage.

1.4 Crew information

The pilots were duly licensed and had a valid registered aircraft type. The aircraft was operated within the time limits set for flight crew members and in accordance with regulations. Both pilots had sufficient flight experience as well as aircraft type experience. They confirmed the validity of the license and ratings with a valid medical certificate for the commercial flight category.

1.5 Aircraft information

- Aircraft type: twin-engine turboprop cargo aircraft
- Tip: ATR 72-202
- Country of registration: Poland
- Operator/Owner: Sprint Air
- Registration mark: SP-SPE
- Certificate of airworthiness: At the time of the event, the aircraft was airworthy and did not have any entries from the Minimum equipment list (MEL).
- Maximum takeoff weight: 22 000 kg

1.6 Aircraft maintenance

There were no significant deviations or errors recorded in the aircraft documentation that would affect the aircraft's airworthiness. The owner had maintained the aircraft in an authorized aircraft maintenance organization according to the aircraft book. It has been maintained in accordance with the manufacturer's instructions and the maintenance manual.

1.7 Meteorological information

Weather forecast on: 31. 7. 2020

The following were the weather conditions at Brnik Airport (LJLJ) at the time of the event:

- Visibility 10km or more
- Clouds no clouds below 5000 feet (CAVOK)
- Wind wind from different directions - strength 2kts
- Temperature 25°C
- Pressure 1016 hPa (QNH)
- Note: there were no other meteorological phenomena that would have an impact on aircraft operations.

1.8 Communication data

The radio communication with the competent air traffic control was established and operational at all times during the event, in accordance with established communication procedures. Transcripts of voice communications with the aircraft crew and between Slovenian Air Navigation Services (KZPS) and the airport service were obtained and analyzed.

1.9 The course of the investigation

The incident was reported to the investigators the following day, August 1, 2020. The pilot in command was contacted, and he later provided a completed emergency report. In the course of the investigation, it was discovered that the report contained an incorrect aircraft registration mark.

The correct registration mark is **SP-SPE**

The mentioned error was later also confirmed by the company's operations office. The air carrier provided investigators with all the necessary documentation, including the pilot's work

obligations, the airplane handbook, the work order for the malfunction's elimination, the maintenance instruction for performed work, etc.

During the investigation, an analysis of the operation of the airport's competent services and an analysis of the Slovenian Air Navigation Services (KZPS) response in the event of an emergency were carried out.

2 ANALYSIS

2.1 General

Based on the information obtained from the pilot in command and the competent air traffic control it was deducted, that the crew followed the air carrier's Operations manual prescribed procedures. The investigation found no evidence of malfunctioning of other aircraft systems as a result of the smoke and odor caused by the Rotron fan failure, located in the avionics compartment on the flight deck.

2.2 Flight analysis

The analysis of the aircraft's trajectory and the voice communication transcript demonstrate that the flight suffered an emergency immediately after takeoff, at time of configuration change. Remaining part of flight was carried out in accordance with the regulations and flight control instructions, to facilitate quick return to the airport of departure.

At 19:29:34 UTC the plane was airborne. Immediately after takeoff, the crew announced that they would have to return due to smoke in the cockpit:

»Stand by we need back to airfield some problem we have to go back for landing but we have smoke in the cockpit (rather unclearly…)«.

After that the crew was offered a visual approach for runway 30 and received a clearance from ATC for such action:

19:32:30	SRN1905	Request straight landing RWY 30
	TWR	There is no traffic on the airport and do you accept visual approach
	SRN1905	Yes visual, SRN1905

	TWR	Cleared visual approach RWY30 and RWY 30 cleared to land wind 150 2kts and report if you need any other assistance, fire fighters are on the way
	SRN1905	Copied, we need assistance… cleared to land 30
19:35:04	TWR	SRN1905 continue via “G” and please advise of your intentions

After landing, the aircraft proceeded to parking spot no. 37 along the driving exit route from runway »G«. The fire service constantly monitored the aircraft's movements on the airport's maneuvering surface and received information from the controller.

The crew stated: »*We have lot of smoke in the cockpit and we have information electric smoke on our display«*

The flight crew was informed of the firefighters' activity after the engines were turned off.

19:37:08	TWR	SRN1905 what intention do you have… to evacuate immediately or do you want the firefighters to enter the cabin?
	SRN1905	OK please firefighter open cargo door and enter
	TWR	Roger
19:38:12	TWR	SRN1905 the firefighting crew has all the information you passed. If you need any other assistance just let us know
	SRN1905	Okay thank you very much for this assistance SRN1905
	TWR	They will enter via cargo door and they were advised about electric fire alarm
	SRN1905	Okay thank you very much

The analysis concluded that:

— There was no other traffic in the airport airspace at the time of the incident, which highly influenced the crew's decision for immediate return in VMC conditions.
— The flight was canceled during the climb phase at a distance of approximately 5km from the runway threshold 30.
— The crew did not declare an emergency, but ATC indicated an event as an emergency, based on communication exchange with crew.
— Flight crew did use oxygen masks during the return.
— Functionality of the oxygen masks is unknown to the investigators.
— Meteorological conditions were suitable and had no effect on the course of events.
— The controller's response and instructions were timely and appropriate.
— The airport's fire service responded promptly.

2.3 Maintenance analysis

A review of the aircraft documentation reveals that all prescribed procedures for maintenance/replacement of the defective part were carried out in accordance with the manufacturer's recommendations[1] specifying the replacement of the fan, including the replacement of the temperature sensor in accordance with service bulletin number ATR72-21-1033 (Modification No. 04196 N2235). This modification is optional for operators, according to the manufacturer's instructions (Appendix 3).

2.4 The manufacturer's response to the Investigation Commission's questions

During the investigation, the Commission, through an accredited representative of the producer country, requested answers to questions directed at the producer's and designer's representatives (subject to Regulation (EC) No 748/2012 – paragraph 21.A.3A). Questions related to the reliability of the ROTRON extraction fans and the associated temperature sensor. The manufacturer's representative's responses are listed in the table below.

[1] Service Bulletin. ATR72-21-1033

Question	The answer
Do you have any data on »ROTRON electronics racks extraction fan and associated temperature sensor« reliability?	*The MTBUR »Mean Time Between Unscheduled Removal« is 3000 flight hours (the exact value is 2962) for the fleet in service. ATR doesn't have any values for the P/N 011260 (Rotron).*
Did you noticed or investigate any similar event with the same installed equipment?	*The incidents associated with the extraction fan are:* - *5 incidents associated with smoke/smell with the P/N Rotron (2003/2008/2014/2018/2020)* - *1 incident associated with smoke/smell with the P/N Technofan (2018).*
Do you think that based on the number of such events, the existing service bulletin no. ATR72-21-1033 provides and meets all safety criteria?	*Yes, the SB is compliant with the airworthiness requirement. Since the SB is dated from 2007, there are few reference given in the document should be updated but the main information to replace the Rotron by the Technofan remains compliant..*

2.5 Analysis of ATR manufacturer responses

The aircraft manufacturer's (ATR) responses regarding the reliability of the Rotron fan and the associated temperature sensor and the number of registered events related to the smoke/odour connected to the Rotron fans are perfectly clear. From these, it can be inferred that the existing SB provides the expected level of safety with regard to the use of Rotron / Technofan fans. The number of registered fan failure events for the Rotron fan and the associated temperature sensor, combined with the issued SB (service bulletin) No. ATR72-21-1033 is in accordance with the existing airworthiness requirement.

2.6 Risk assessment

Risk assessment means an evaluation based on an engineering and operational assessment and/or methods of analysis to determine, whether the risk achieved or perceived is acceptable or permissible. Risk means a combination of the overall likelihood or frequency of occurrence of a hazard-caused adverse effect and the severity of that effect. (Regulation (EU) 2017/373).

The Commission concludes that the level of risk of such fan failures (for the Rotron fan) on the airplane type, including the smoke emission in the cockpit and its consequences, the additional workload for the flight crew, is proportionate to the safety objective. The investigation does not provide information to enable EASA - the European Aviation Safety Agency to make requests or definitions of a conformity assessment procedure in relation to the event. [2]

Comparison this event with other events falling within the incident category and associated with the operation of the fire protection system on the ATR72 type and the subsequent response of the crew to the detection of smoke and odor in the cockpit when the ELEC SMK warning to the EWD was posted, indicates that the degree of risk due to technical failure of the Rotron / Tecnofan fans is not comparable to the level of risk of other defects in electrical parts and appliances within the avionic compartment (case a failure of the C602 capacitor (1-001-0306-0136) within the static transducer). [3]

The common denominator of such events is the issue of human factor and the awareness that the manufacturer and the operator should ensure, that such as high workload and complexity of the checklist are taken into account, and the technical aspects of procedures and checklists are assessed accordingly.

The analysis of similar events subject to an in-flight fire or smoke control investigation and analysis, has repeatedly highlighted, that operational procedures (OMs) and emergency

[2] *Definition of a hazardous condition:*
AMC 21.A.3B (b) 15, which defines when a hazardous condition may exist, notes that: although they have less serious direct consequences, those events may reduce the ability of the aircraft or crew to cope with adverse operating conditions to such an extent, for example, to significantly reduce safety margins or functional capacity, significantly increase the crew's workload, ".
[3] *For example, the failure of the C602 capacitor (1-001-0306-0136) within the static transducer, as found in the serious incident investigation "Avions de Transport Régional, ATR 72-212A, EI-FCY Cork Airport, 24 August 2016" - https://skybrary.aero/sites/default/files/bookshelf/4685.pdf*

checklists are key tools for successful fire or smoke management in the cockpit. The Quick Reference Handbook (QRH) checklist is a manual that contains lists of measures that are the first element of emergency response. Some emergency checklists contain so called Memory items to ensure immediate correct response of the crew, depending on the circumstances of the event and the time availability.[4]

3 CONCLUSIONS

In line with the objectives of the civil aviation safety investigation and the prevention of a reoccurrence of future accidents and incidents, the findings made in this report do not represent a determination of guilt or liability. The use of this report for purposes other than the purpose of improving aviation safety, may lead to a misinterpretation.

3.1 Findings

- The flight SRN 1905 was intended to transport cargo from Ljubljana – LJLJ to Cologne – EDDK. There were two crew members and no passengers on board.
- The flight crew had all of the necessary permits and ratings.
- All air traffic controllers and airport personnel possessed valid permits and required ratings.
- Immediately after takeoff from runway 12, there was an indication of smoke and odor in the cockpit, to which the crew responded appropriately and made a timely return to the airport.
- There is no evidence of any issues with the smoke/burning odor checklist's implementation.
- There is no evidence of any problems caused by the crew's use of oxygen masks during the emergency.
- Due to the malfunction of the P/N 011260 Rotron fan and the associated temperature sensor, the flight returned to the airport. Failed fan induced high smoke concentration, odor and subsequent triggering of ELEC SMK warning message.
- The crew did not declare an emergency or urgency using standard phraseology.

[4] Content source: SKYbrary https://skybrary.aero/articles/emergency-and-abnormal-checklist

- Throughout the flight, all other systems and equipment (except effected fan) on the aircraft performed normaly.
- Meteorological conditions at the time of the event were suitable and had no effect on the event.
- The crew responded to the event in a timely and correct manner, following the instructions of the aircraft manufacturer and the operator's operating manual.
- Air traffic control provided air traffic management services throughout the flight in accordance with regulations and established practice; Air traffic control also notified the airport's fire and rescue service.
- The fire and rescue service responded appropriately, monitored the event at all times and provided emergency assistance to the aircraft after it was grounded.
- The SIA Slovenia was informed about the event by the Republic Information Center – ReCO the day after the event.

Based on the analysis of the event, the Commission considers that the crew's conduct was in time and coordinated with the air traffic controller. The return of the aircraft to the departure airport was made immediately after takeoff and in VMC conditions, appropriate at the time of the event. Any continuation of the flight could have a negative impact on the safety of the aircraft and thus the crew and cargo.

The Commission assesses that, depending on the circumstances of the event, the awareness of the airplane’s position, the traffic conditions at the airport of departure and other flight elements data such as altitude, speed, engine performance parameters, external and internal visibility, radio communication with the controller, the crew has carried out in brief but sufficient time, all procedures specified by the ATR as manufacturer, for such cases of odor and smoke in the cabin of the airplane according to the CRM & TEM principles.

The operator's obligation is to ensure that the QRH procedures in the Operations Manual are adequately aligned with the aircraft manufacturer's AFM. The operator should also specify flight crew training in its Operations Manuals and refer them periodically to training, to ensure the maintenance of aeronautical qualifications and the correct handling of incidents, including events related to the warning messages and identification of electric smoke and cockpit odor.

It is important that such training is carried out in the objective of continuous maintenance of knowledge and experience acquired in the flight simulator, taking into account compulsory CRM training & TEM[5].

3.2 Summary of comments on the draft final report

— SprintAir S.A. – No comment
— CAA Slovenia – No comment
— ATC Slovenia (KZPS d. o. o.) – No comment
— PKBWL – No comment
— European Aviation Safety Agency (EASA) – Other than checking of the correct airplane registration mark, there were no other comments.
— French Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA):

In response to the draft final report, the BEA replied with an attached letter from the ATR manufacturer and a brief comment aimed at the link between the flight crew's decision to return to the departure airport to the existing ATR emergency procedures.
The BEA comment is originally attached to Annex 5 of this report.

ATR:
In response to the draft report, ATR commented that the smoke in the cockpit was an emergency event in which it is necessary to respond according to the manufacturer's prescribed procedures. According to ATR, during the time period between the event and the landing, the manufacturer's operations could not be carried out in full. The incident occurred between 19:29:34 UTC (takeoff) and 19:32:32 UTC return. The plane landed at 19:34 UTC. According to the ATR, it is not possible for all ATR manufacturer procedures to be carried out in this short period of time when there is odor and smoke in the cabin of the airplane. By illustration, there are high workloads for a pilot PF (Pilot Flying) carrying out low-altitude turns, while the PILOT (Pilot Monitoring) controls radio communication. The manufacturer's process shall be designed to cover the elements to be checked/assessed before the decision and to enable the crew to assess the condition

[5] - https://www.atr-aircraft.com/wp-content/uploads/2020/07/brochure_flight_crew_training_solutions_march_2017_137.pdf
- https://skybrary.aero/articles/threat-and-error-management-tem
- https://skybrary.aero/articles/crew-resource-management-crm

of the aircraft. With the manufacturer's procedures, the pilot can make the correct decision on the basis of the CRM & TEM principle.[6]

4 SAFETY RECOMMENDATIONS

None.

Whether or not safety issues are identified during the investigation, relevant aviation organizations and entities may proactively initiate safety measures with the aim of reducing their own safety risks.

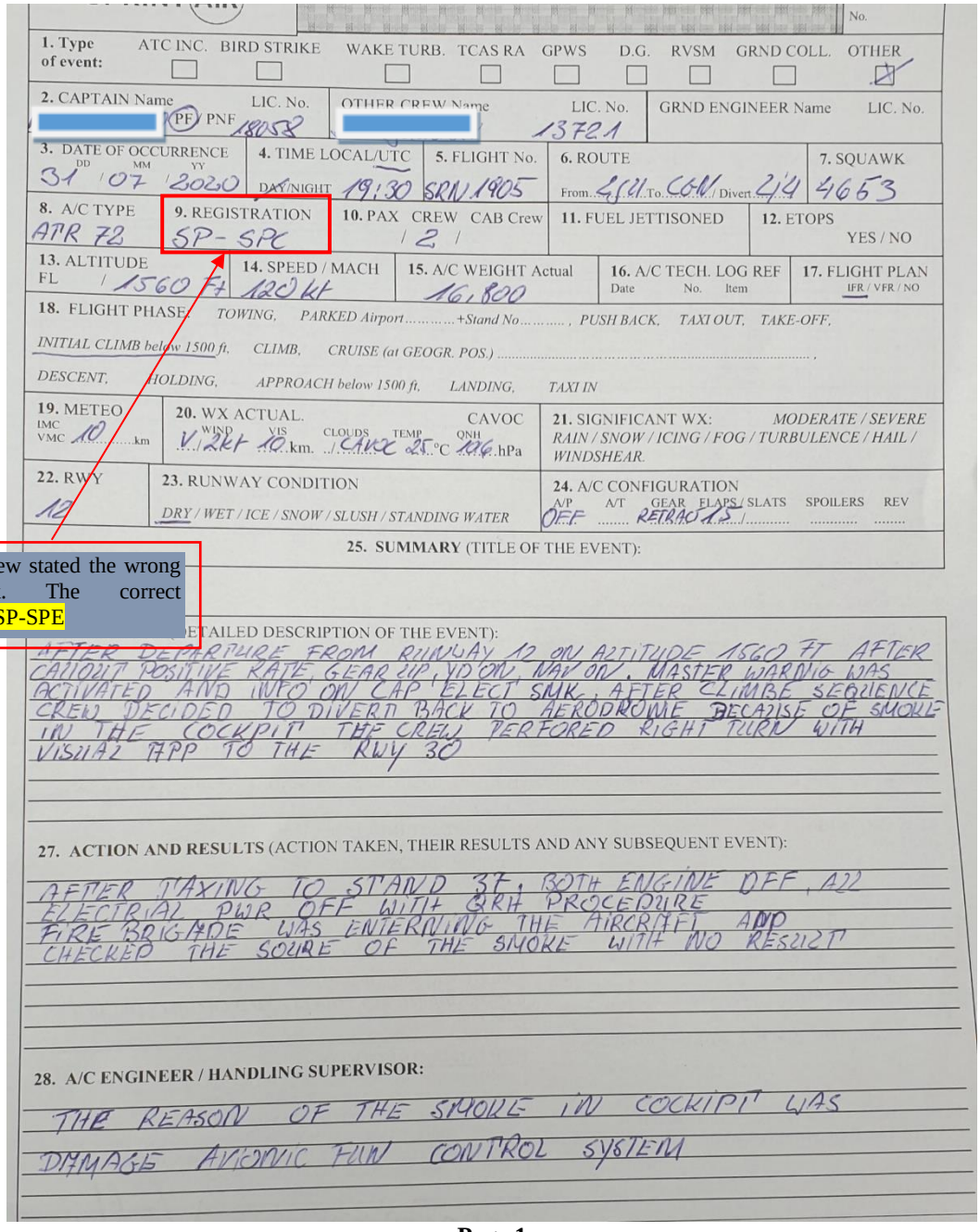
[6] The full wording of the comments and proposals together with the Annex is given in Annex 4

APPENDICES

APPENDIX 1: Completed emergency report

NOTE: While filling out the emergency report, the crew entered SP-SPC (letter C – Charlie instead of letter E – Echo) as the registration mark of the aircraft involved in the incident.

The correct aircraft registration mark is: SP-SPE



No.

1. Type of event: ATC INC. ☐ BIRD STRIKE ☐ WAKE TURB. ☐ TCAS RA ☐ GPWS ☐ D.G. ☐ RVSM ☐ GRND COLL. ☐ OTHER ☒

2. CAPTAIN Name [redacted] LIC. No. (PF) PNF 18058 | OTHER CREW Name [redacted] LIC. No. 13721 | GRND ENGINEER Name LIC. No.

3. DATE OF OCCURRENCE DD 31 / MM 07 / YY 2020 | 4. TIME LOCAL/UTC DAY/NIGHT 19:30 | 5. FLIGHT No. SRN 1905 | 6. ROUTE From LCA To CON / Divert LJU | 7. SQUAWK 4653

8. A/C TYPE ATR 72 | 9. REGISTRATION SP-SPC | 10. PAX / CREW / CAB Crew 2 | 11. FUEL JETTISONED | 12. ETOPS YES / NO

13. ALTITUDE FL / 1560 Ft | 14. SPEED / MACH 120 kt | 15. A/C WEIGHT Actual 16,800 | 16. A/C TECH. LOG REF Date No. Item | 17. FLIGHT PLAN IFR / VFR / NO

18. FLIGHT PHASE: TOWING, PARKED Airport .....+Stand No....., PUSH BACK, TAXI OUT, TAKE-OFF, INITIAL CLIMB below 1500 ft, CLIMB, CRUISE (at GEOGR. POS.) ....., DESCENT, HOLDING, APPROACH below 1500 ft, LANDING, TAXI IN

19. METEO IMC / VMC 10 km | 20. WX ACTUAL. WIND V / 2kt VIS 10 km. CLOUDS CAVOC TEMP 25 °C QNH 996 hPa | 21. SIGNIFICANT WX: MODERATE / SEVERE RAIN / SNOW / ICING / FOG / TURBULENCE / HAIL / WINDSHEAR.

22. RWY 12 | 23. RUNWAY CONDITION DRY / WET / ICE / SNOW / SLUSH / STANDING WATER | 24. A/C CONFIGURATION A/P OFF A/T ..... GEAR RETRACT FLAPS 15 SLATS ..... SPOILERS ..... REV .....

25. SUMMARY (TITLE OF THE EVENT):

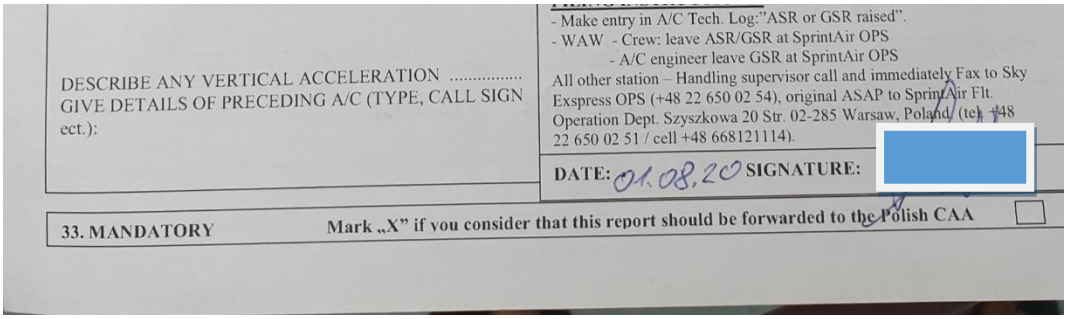
ETAILED DESCRIPTION OF THE EVENT):
AFTER DEPARTURE FROM RUNWAY 12 ON ALTITUDE 1560 FT AFTER CALLOUT POSITIVE RATE, GEAR UP, YD ON, NAV ON, MASTER WARNIG WAS ACTIVATED AND INFO ON CAP ELECT SMK. AFTER CLIMBE SEQUENCE CREW DECIDED TO DIVERT BACK TO AERODROME BECAUSE OF SMOKE IN THE COCKPIT. THE CREW PERFORED RIGHT TURN WITH VISUAL APP TO THE RWY 30

27. ACTION AND RESULTS (ACTION TAKEN, THEIR RESULTS AND ANY SUBSEQUENT EVENT):
AFTER TAXING TO STAND 37, BOTH ENGINE OFF, A22 ELECTRIAL PWR OFF WITH QRH PROCEDURE FIRE BRIGADE WAS ENTERING THE AIRCRAFT AND CHECKED THE SOURE OF THE SMOKE WITH NO RESULT

28. A/C ENGINEER / HANDLING SUPERVISOR:
THE REASON OF THE SMOKE IN COCKPIT WAS DAMAGE AVIONIC FLIW CONTROL SYSTEM

In the report, the crew stated the wrong registration mark. The correct registration mark is SP-SPE

Page 1



DESCRIBE ANY VERTICAL ACCELERATION .....
GIVE DETAILS OF PRECEDING A/C (TYPE, CALL SIGN ect.):

- Make entry in A/C Tech. Log:"ASR or GSR raised".
- WAW - Crew: leave ASR/GSR at SprintAir OPS
- A/C engineer leave GSR at SprintAir OPS

All other station – Handling supervisor call and immediately Fax to Sky Exspress OPS (+48 22 650 02 54), original ASAP to SprintAir Flt. Operation Dept. Szyszkowa 20 Str. 02-285 Warsaw, Poland/ (tel. +48 22 650 02 51 / cell +48 668121114).

DATE: 01.08.20 SIGNATURE: [redacted]

33. MANDATORY Mark „X" if you consider that this report should be forwarded to the Polish CAA ☐

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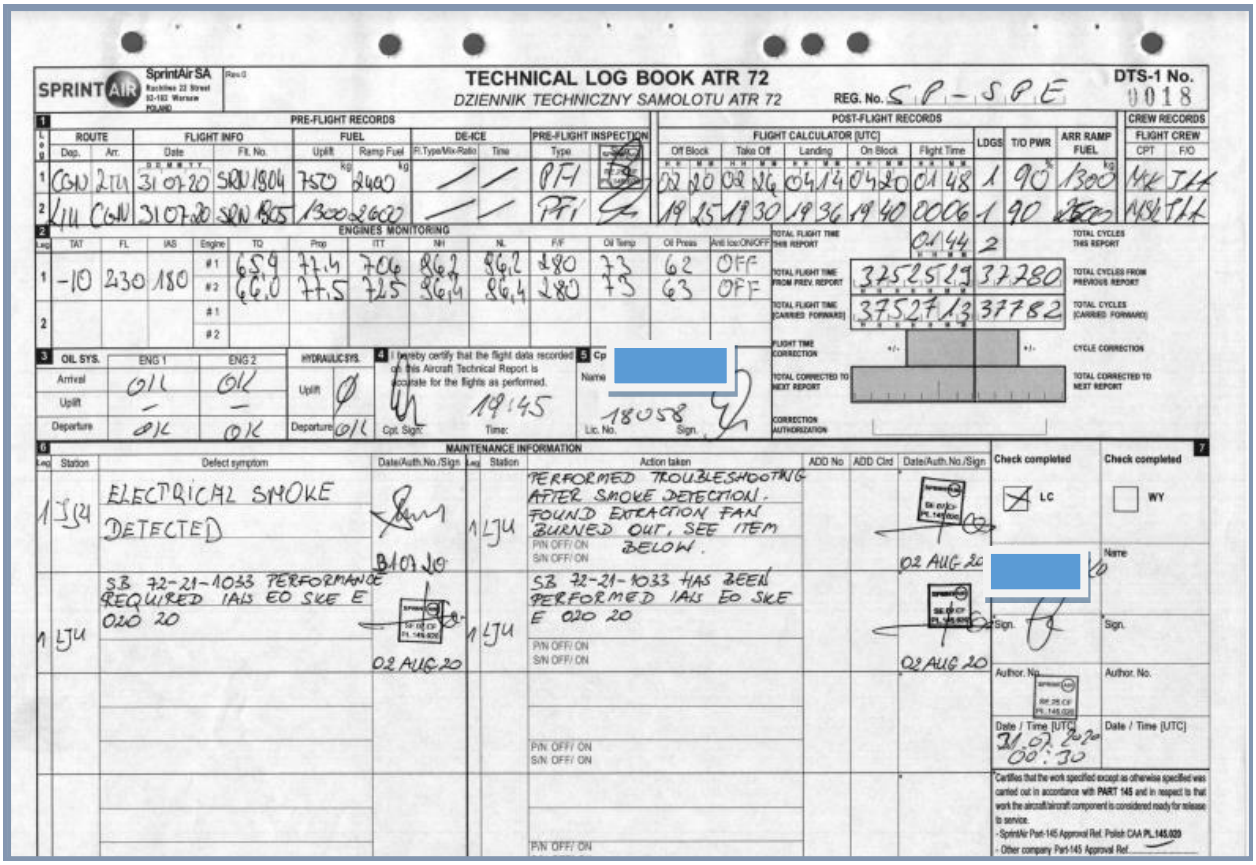
APPENDIX 2: Aircraft technical book SP-SPE



SprintAir SA

TECHNICAL LOG BOOK ATR 72
DZIENNIK TECHNICZNY SAMOLOTU ATR 72

REG. No. SP-SPE DTS-1 No. 0018

PRE-FLIGHT RECORDS

Leg	Route Dep.	Route Arr.	Flight Info Date	Flt. No.	Fuel Uplift kg	Fuel Ramp Fuel kg	De-Ice Fl.Type/Mix-Ratio	De-Ice Time	Pre-Flight Inspection Type	Pre-Flight Inspection
1	CGN	ZRH	31 07 20	SRN 1804	7500	8400	/	/	PFI	
2	ZRH	CGN	31 07 20	SRN 1805	13000	26000	/	/	PFI	

POST-FLIGHT RECORDS

Leg	Flight Calculator [UTC] Off Block	Take Off	Landing	On Block	Flight Time	LDGS	T/O PWR %	ARR RAMP FUEL kg
1	02 20	02 36	04 14	04 20	01 48	1	90	1300
2	19 25	19 30	19 36	19 40	00 06	1	90	1500

CREW RECORDS

Flight Crew CPT	Flight Crew F/O
MK	TLK
MK	TLK

ENGINES MONITORING

Leg	TAT	FL	IAS	Engine	TQ	Prop	ITT	NH	NL	FF	Oil Temp	Oil Press	Anti Ice ON/OFF
1	-10	230	180	#1	65.9	77.4	706	86.2	96.2	780	73	62	OFF
				#2	66.0	77.5	725	86.4	96.4	780	75	63	OFF
2				#1									
				#2									

TOTAL FLIGHT TIME THIS REPORT: 01 44 2
TOTAL FLIGHT TIME FROM PREV. REPORT: 375 25 19 37280
TOTAL FLIGHT TIME [CARRIED FORWARD]: 375 27 03 37782
FLIGHT TIME CORRECTION +/-
TOTAL CORRECTED TO NEXT REPORT
CORRECTION AUTHORIZATION
TOTAL CYCLES THIS REPORT
TOTAL CYCLES FROM PREVIOUS REPORT
TOTAL CYCLES [CARRIED FORWARD]
CYCLE CORRECTION +/-
TOTAL CORRECTED TO NEXT REPORT

OIL SYS.	ENG 1	ENG 2
Arrival	OIL	OIL
Uplift	–	–
Departure	OIL	OIL

HYDRAULIC SYS. Uplift Ø Departure OIL

I hereby certify that the flight data recorded on this Aircraft Technical Report is accurate for the flights as performed.
Cpt. Sign. Time: 19:45

Cp Name [redacted] Lic. No. 18058 Sign.

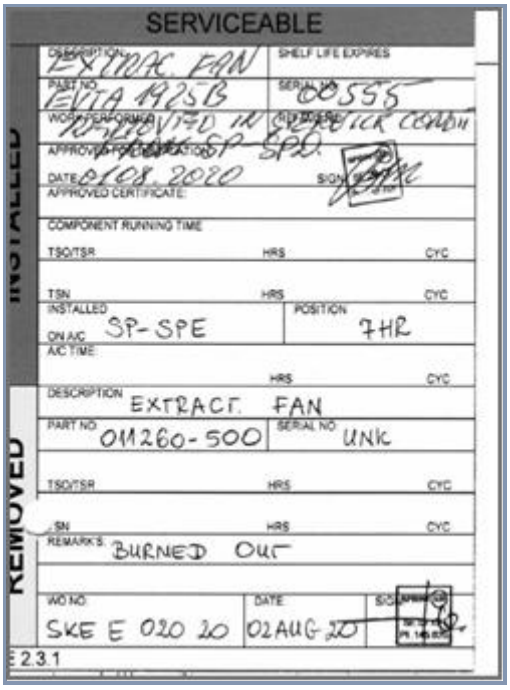
MAINTENANCE INFORMATION

Leg	Station	Defect symptom	Date/Auth.No./Sign	Leg	Station	Action taken	ADD No	ADD Cld	Date/Auth.No./Sign
1	LJU	ELECTRICAL SMOKE DETECTED	B1 07 20	1	LJU	PERFORMED TROUBLESHOOTING AFTER SMOKE DETECTION. FOUND EXTRACTION FAN BURNED OUT, SEE ITEM BELOW. P/N OFF/ ON S/N OFF/ ON			02 AUG 20
1	LJU	SB 72-21-1033 PERFORMANCE REQUIRED IAW EO SKE E 020 20	02 AUG 20	1	LJU	SB 72-21-1033 HAS BEEN PERFORMED IAW EO SKE E 020 20 P/N OFF/ ON S/N OFF/ ON			02 AUG 20
						P/N OFF/ ON S/N OFF/ ON			
						P/N OFF/ ON			

Check completed LC ☒ Check completed WY ☐

Name [redacted]
Sign.
Author. No.
Date / Time [UTC] 31.07.2020 00:30

Certifies that the work specified except as otherwise specified was carried out in accordance with PART 145 and in respect to that work the aircraft/aircraft component is considered ready for release to service.
- SprintAir Part-145 Approval Ref. Polish CAA PL.145.029
- Other company Part-145 Approval Ref.


SERVICEABLE

DESCRIPTION: EXTRAC. FAN
SHELF LIFE EXPIRES
PART NO: EVTA 1925B
SERIAL NO: 00555
WORK PERFORMED: REMOVED IN SERVICE CONDITION
APPROVED FOR RETURN TO SERVICE: SP-SPE
DATE: 01 08 2020
SIGN:
APPROVED CERTIFICATE:
COMPONENT RUNNING TIME
TSO/TSR HRS CYC
TSN HRS CYC
INSTALLED ON A/C: SP-SPE
POSITION: 7HR
A/C TIME HRS CYC

REMOVED
DESCRIPTION: EXTRACT. FAN
PART NO: 011260-500
SERIAL NO: UNK
TSO/TSR HRS CYC
SN HRS CYC
REMARKS: BURNED OUT
WO NO: SKE E 020 20
DATE: 02 AUG 20
SIGN:

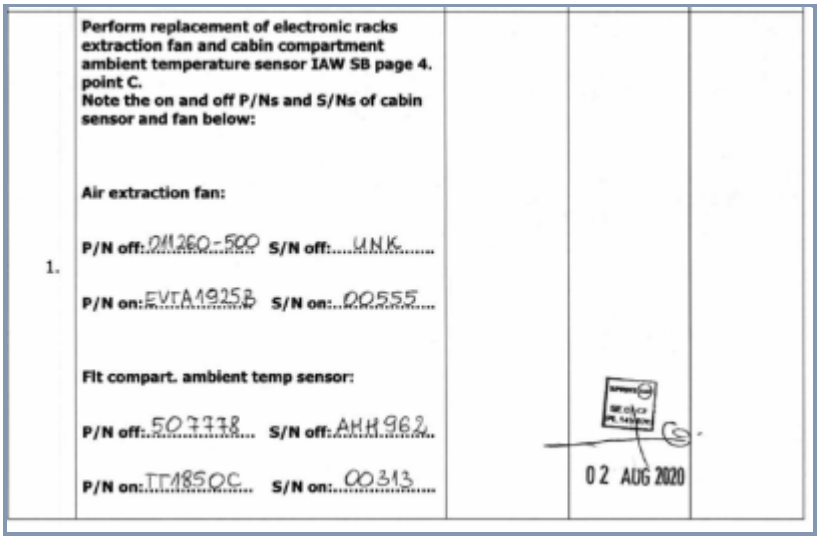
E 2.3.1


SPRAWNY
SERVICEABLE

DESCRIPTION: TEMP. SENSOR
SHELF LIFE EXPIRES
PART NO: TT185OC
SERIAL NO: 00313
WORK PERFORMED: REMOVED IN SERVICE CONDITION
APPROVED FOR RETURN TO SERVICE: SP-SPE
DATE: 01.08.2020
SIGN:
APPROVED CERTIFICATE:
COMPONENT RUNNING TIME
TSO/TSR HRS CYC
TSN HRS CYC
INSTALLED ON A/C: SP-SPE
POSITION: 36 HR
A/C TIME HRS CYC

REMOVED
DESCRIPTION: TEMP. SENSOR
PART NO: 507778
SERIAL NO: AH H962
TSO/TSR HRS CYC
SN HRS CYC
REMARKS: SB ATR72-21-1033
WO NO: SKE E 020 20
DATE: 02 AUG 20
SIGN:

E 2.3.1



1.	**Perform replacement of electronic racks extraction fan and cabin compartment ambient temperature sensor IAW SB page 4. point C.** **Note the on and off P/Ns and S/Ns of cabin sensor and fan below:** **Air extraction fan:** **P/N off:** 011260-500 **S/N off:** UNK **P/N on:** EVTA1925B **S/N on:** 00555 **Fit compart. ambient temp sensor:** **P/N off:** 507778 **S/N off:** AHH962 **P/N on:** TT185OC **S/N on:** 00313		02 AUG 2020

APPENDIX 3: Extract from the service bulletin – ATR modification 04196 N2235 and data from the documentation on the replacement of the fan and sensor in the maintenance organization

Description	OLD Part Number	Interchangeability Code	New Part Number
Temperature sensor	507778A	02	TT1850C
Extraction fan	011260 or 011260-100 or 011260-500	02	EVTA 1925B

Interchangeability code according to ATA 200 specification.

NOTE : - ROTRON cooling fan can not be installed with TECHNOFAN temperature sensor.
- TECHNOFAN cooling fan can not be installed with ROTRON temperature sensor.

COMPLIANCE : Accomplishment of this Service Bulletin is optional.

APPENDIX 4: ATR comments and suggestions

(Text in full)

The smoke in the cockpit is an emergency procedure including a MEMO items. In the time lengths recorded between the event and the landing (around 3 and 4 mn), the manufacturer's procedures was not be possible to be fully completed based on manufacturer's experiences. The manufacturer's procedure has been built to cover elements that allow the crew to assess the aircraft state. Through the manufacturer's procedures, the pilot can make the correct decision based on the principle of CRM & TEM. The event occurred between 19:29:34 UTC (takeoff) and the turn 19:32:32. The aircraft landed at 19:34:20. Based on ATR experience, it is not possible that during this lapse of time all the ATR manufacturer's procedures has been actioned. To illustrate the high workload, the PF performs the U-turns at low altitude and the PM manages the radio communication. The ATR manufacturer's procedure is, in such situation, as follows: The smoke in the cockpit is an emergency procedure with a memo item. The following actions are expected:

- *MEMO(*) items from Smoke procedure*
- *Smoke procedure checklist*
- *After takeoff checklist.*

Then the crew can take the decision to return to the airport.

- *Arrival briefing*
- *Descent / approach checklist*
- *Before landing checklist.*

(See below the Annex)

It will require slightly more than 1mn 48s to apply all the procedures. The manufacturer's procedure has been built to cover elements that must be verified/assessed before decision making.

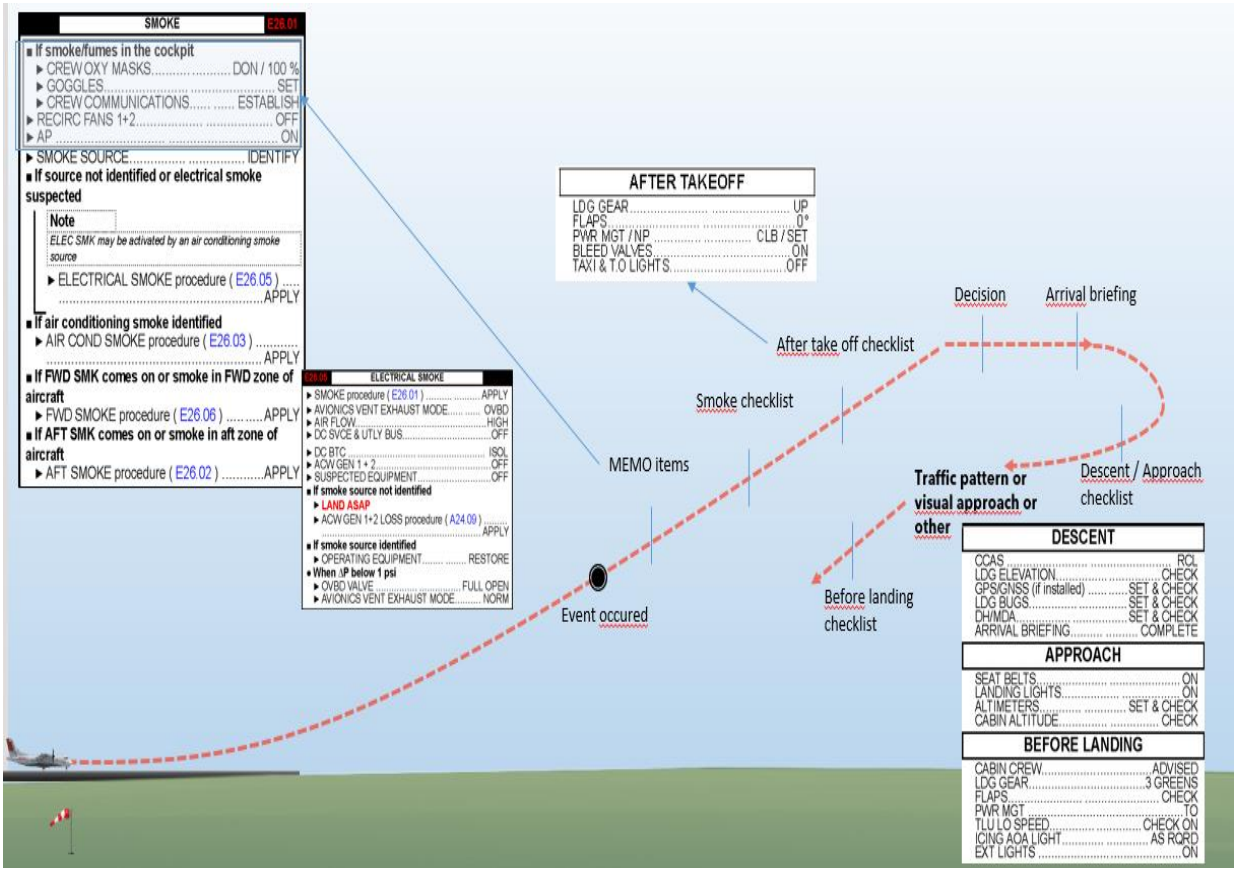
(*) FCOM PRO.GEN: Memory Item

- Memory item are BOXED.

- Boxed actions are considered time-critical and should be memorized and executed from memory.

SAFETY RECOMMENDATIONS

The decision to fly back to the departure airport on a visual approach should be taken only after applying the manufacturer's procedure. The assessment of the aircraft allows to take the decision through the principle of CRM & TEM.



APPENDIX 5: BEA

(Text in full)

»We focus our feedback on the flight crew decision to return to the departure airfield in relation to the ATR published procedures. In pCarticular human factors aspects could be studied to further reinforce application of the published procedures versus the perceived benefit of returning the aircraft to the ground without completing all actions (eg arrival briefing…)«