APPROVED BY
Acting Director of the National Bureau for Air Accidents and Incidents Investigation of Civil Aircraft

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May 5, 2021

FINAL REPORT

of Investigation into Serious Incident, Which Took Place With Piper PA30 Twin Comanche, Reg. N918Y, Aircraft (Operator - INTERNATIONAL AIR SERVICES INC TRUSTEE 701 S CATRSON ST STE 200 Carson City NV 89701 Corporation) on October 12, 2020, During Landing Roll at Lviv Airport.

The report is published with the sole purpose to prevent air accidents in the future.

The Investigation Team of the National Bureau for Air Accidents and Incidents Investigation with Civil Aircraft (hereinafter referred to as the NBAAI) appointed by the Order of NBAAI dated 12.10.2020 No.88, has completed the investigation into the serious incident with Piper PA30 Twin Comanche, Reg. N918Y Aircraft, INTERNATIONAL AIR SERVICES INC TRUSTEE 701 S CATRSON ST STE 200 Carson City NV 89701 Corporation, which occurred on 12.10.2020 during landing roll at the Lviv Danylo Halytskyi International Airport.

According to the first part of Article 119 of the Air Code of Ukraine, clause 6 of the Regulation on the National Bureau for Air Accidents and Incidents Investigation with Civil Aircraft, approved by the Resolution of the Cabinet of Ministers of Ukraine dated March 21, 2012, No. 228, and paragraph 3.1 of ICAO Annex 13, the sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

According to the requirements of part 5 of Art. 119 of the Air Code of Ukraine, the present report and materials of the technical investigation cannot be used by administrative, official, public prosecutors, judicial authorities, insurers to apportion blame or liability.

In accordance with the Order of the NBAAI dated May 19, 2015, No. 45/1, the investigation shall be conducted according to the provisions of the Annex 13 to the Convention on International Civil Aviation and the NBAAI Accident and Incident Investigation Manual.

The Final Report shall be sent to the following addresses:

NTSB (USA) (copy).

Investigation was opened on 12.10.2020
Investigation was completed on 05.05.2021

Note: This report is a translation of the Ukrainian original investigation report. The text in Ukrainian shall prevail in the interpretation of the report.

Synopsis. Brief Description of Serious Incident.

On October 12, 2020, at 13:42 UTC, (hereinafter referred to as Universal Time Coordinated (UTC), in the daytime, during the landing roll on the runway of Lviv Danylo Halytskyi International Airport, the landing gear retraction of the Piper PA30 Twin Comanche N918Y took place.

Note. The difference between the local time and UTC is 3 hours. The usage of UTC time in the report is caused by the fact that the Universal Time Coordinated is used in the notifications, transcripts of the "Crew - Controller" communication, information from UkSATSE, Hydrometeorological Center and other sources.

As a result of the landing gear retraction, the aircraft Piper PA30 Twin Comanche N918Y suffered damage. Three people on board were not injured.

The Occurrence Notification of Serious Incident with the Piper PA30 Twin Comanche N918Y Aircraft was received by NBAAI on October 12, 2020, from the from the Flight Coordination Division of the Central Dispatch Service of the State Aviation Administration of Ukraine.

1. Factual Information

1.1 Flight History

On October 12, 2020, a serious incident occurred with the Piper PA30 Twin Comanche N918Y, the operator of the aircraft was INTERNATIONAL AIR SERVICES INC TRUSTEE 701 S CATRSON ST STE 200 CARSON CITY NV 89701 Corporation.

The PIC performed a private flight en-route Tsuniv Airfield - Lviv Danylo Halytskyi International Airport according to "Decision on Departure: DAT/12-296".

From the PIC's explanatory note, on October 12, 2020, at 7:20, he arrived at the “Tsuniv Airfield” for performing a flight en-route: Tsuniv - Lviv - Rzeszow - Chernivtsi - Tsuniv on the Piper PA30 Twin Comanche N918Y aircraft.

From 07:30 till 08:00, the PIC performed a pre-flight inspection of the aircraft in accordance with the Flight Manual of the Piper PA30 Twin Comanche N918Y aircraft, Section 4, Clauses 4-3; 4-4 subparagraphs 1, 2, 3, 4, 5.

From 08:00 till 10:00, the PIC performed personal training in the cockpit, review of the Flight Manual, and preparation for the flight on the specified route.

From 10:15 till 10:45, the PIC checked the operation of engines, propellers, fuel supply systems, radio navigation aids and on-board radio stations, high lift devices (flaps) and aircraft control systems, according to the Aircraft Flight Manual, Section 4, Clause 4-5; 4 - 6; 4 - 7. The parameters of operation of engines and propellers met the requirements of the Aircraft Flight Manual, control systems for engines, propellers, flaps, aircraft, fuel system, oil system, electrical system, airborne radio stations, radio navigation aids, airborne navigation lights, anti-collision light, landing lights and headlights for taxiing operated with no abnormalities. The aircraft was technically serviceable, without damage.

From 10:45 till 11:00, the PIC once again performed a pre-flight inspection of the aircraft in accordance with the Aircraft Flight Manual, Section 4, Clause 4-3; 4-4 subparagraphs 1, 2, 3, 4. 5. The airplane was fully operational. From 11:00 till 11:45, the aircraft was refueled and prepared for the flight en-route: Tsuniv - Lviv - Rzeszow - Chernivtsi - Tsuniv according to Section 4 paragraph 4-3; 4-4 1, 2, 3, 4, 5 of the Aircraft Flight Manual

The calculation of the aircraft take-off weight and CG was carried out in accordance with the sections of paragraphs 6-3; 6-4; 6-5 of the Aircraft Flight Manual. Namely:

- the weight of the empty aircraft = 1002 kg according to the Aircraft Flight Manual paragraph 6-3;
- engine oil weight 8 l x 2 = 16 l x 0.8 = 13kg;
- Full weight: 340 l x 0.77 = 262 kg;
- pilot weight = 80kg;
- weight of people on board 80kg x 2 = 160kg;
- luggage weight = 10kg.

The takeoff weight was 1527kg, not exceeding the takeoff weight of the aircraft, which, according to Section 6, paragraph 6-5 of the Aircraft Flight Manual of PA-30 aircraft, is 3600 pounds or x 0.454 = 1634 kg.

The seating of people on board was as follows: the PIC was in the front left seat, and the people on board were located in the front right and rear right seats.

The aircraft CG complied with Section 6 paragraph 6-4 and paragraph 6-12 of the Aircraft Flight Manual and did not exceed their limits.

The aircraft took-off at 12:07 from the Tsuniv Airfield. The flight was performed in accordance with the flight plan. At a distance of 20 km from the Lviv aerodrome, a clearance for approach and landing was obtained from the tower controller at a frequency of 128.0. At a distance of 15 km, the PIC began to perform the approach procedures in accordance with the Aircraft Flight Manual, Section 4, Paragraph 4-10 “Approach and Landing”. Namely:

PIC seat – checked locking of the seat and backrest;

Seatbelts and shoulder belts – checked, fastened and tensioned by everyone on board;

Electric fuel pump – switched on;

Fuel valves are installed on the main tanks (internal fuel tanks);

Speed – 100 knots;

Landing gear control lever – down (gear extension) (landing gear extension felt by change in the aircraft flight dynamics), landing gear position indicator – green

(lower) light is on; the spherical landing gear control mirror on the left engine hood reflected the landing gear in the extended position.

At the distance of 6 km to the airdrome, the PIC set a speed of 80 knots, the flaps were extended; engine cowl flaps – opened; the plane was trimmed to the nose-up moment – for the landing. The propellers were adjusted to 2400 rpm. The fuel-air mixture quality control lever was “rich” (fully forward). After completing all procedures in accordance with the Aircraft Flight Manual, Section 4, Paragraph 4-10 “Approach and Landing”, at a distance of 4 km from the airdrome and at an altitude of 2000 feet, the glide path was entered according to the PAPI glide path indicator (two left lights were white, two right ones were red). The descent along the glide path took place with no abnormalities at a speed of 80 knots according to the Aircraft Flight Manual Section 4, Paragraph 4-10, speed 83 - 80 knots. The PIC once again checked the position of the landing gear, flaps, fuel valves, powerplant controls, the fuel mixture controls, operation of the electric fuel pump, and switching-on of landing lights. After completing the above, the PIC reported on the radio “Lviv – Tower, N918Y on final, Runway 13, ready for landing”. And he received clearance “N918Y, wind 1500 6m/s, Runway 13, cleared to land.” To which the PIC readback, “Runway 13 cleared for landing, N918Y”. There were no critical comments on the operation of the aircraft and its systems.

Crossing the approach end of the runway was at an altitude of 100 m and speed of 85 knots. Crossing the displaced runway threshold was at an altitude of 20 m and speed of 85 knots. After passing PAPI lights at an altitude of 7 - 5 meters – a smooth decrease in the engine power, smooth leveling of the aircraft, smooth decrease in speed to 65 - 60 knots with a simultaneous increase in the angle of attack; touchdown on the two main landing gears was performed according to the Aircraft Flight Manual, section 4, paragraphs 4-2; 4-10.

In 3 - 4 seconds after the runway touchdown, the aircraft banked to the left and began to deviate to the left. The PIC pressed the right pedal to maintain the direction of movement. In 1 - 2 seconds, the aircraft began banking to the right. After that the aircraft sank and began to move "with the left wing skid forward". The PIC turned off the magneto of both engines and the main electrical switch. Further, the PIC performed actions in accordance with section 3, paragraph 3-6, subparagraph 2 (Emergency landing with retracted landing gear). In 1 - 2 seconds, the aircraft lowered its nose and stopped. Immediately after stopping the airplane, the PIC gave the command "Unfasten the seat belts, open the doors, leave the airplane." People left the airplane and at the command of the PIC they ran aside to a distance of 25 –

30 m. The aircraft did not catch fire. The PIC called the air traffic manager of Lviv-Tower and reported that the airplane could not vacate the runway without assistance.

One and a half to two minutes later, three fire trucks arrived with a rescue team, a minute later – a bus with the personnel arrived: the representatives of airport services, doctors. People from the airplane were immediately invited to the bus, examined, questioned about their health, measured for their pulse and blood pressure, and offered to rest. Further, the procedures for evacuating the aircraft from the runway took place: lifting it with a hoist onto the transport platform; transportation to the parking apron for protection; removal by a hoist from the platform. During the evacuation, the airplane was not damaged. After the aircraft was parked at the parking apron, the PIC checked again that the fuel tank selector valves were in the off/closed position, the aircraft was de-energized - the main electrical switch was off. The PIC closed the cockpit and baggage compartment with a key, covered the pitot tubes and cockpit with a cover. Then all three people were taken to the first-aid post, passed the procedure on alcohol test. The result of alcohol test was negative.

On October 12, 2020, the PIC's working day began at 07:00 – the usual morning procedures, breakfast and arrival at the Tsuniv Airfield by car. Before that, the PIC had a day off on 10-11.10.2020.

The PIC’s previous flight time was:

For the previous 3 days - 4:02;

For the previous 7 days – 12:10;

For the previous month – 51:46;

For the previous 3 months - 160:23.

1.2. Injuries.

In accordance with Chapter 1 of Annex 13 to the Convention on International Civil Aviation "Aircraft Accident and Incident Investigation"

Injuries	Crew	Passengers	Other persons
Fatal	0	0	0
Serious	0	0	0
Minor/none	1	2	0

1.3. Aircraft Damage

Sketch

1)Touchdown point from runway threshold 13 - 595m; 2) Distance of moving down runway - 180m; 3) Place of aircraft stand from Runway threshold 13 - 775m on-course 175 o

2

The aircraft inspection revealed:
Deformed propeller blades of both engines;

Damaged brake calipers of both wheels;

Broken transponder antenna;
Broken ILS antenna;
Broken ADF antenna;
Broken DME antenna;
The lower part of the fuselage is deformed between the 4 and 5 frames;

The cover of the inspection hatch of the fuel valves is deformed;

The drain pipes of the fuel tanks are broken;

The mechanism of opening-closing the nose landing gear doors is damaged;

The lower skin of both flaps in the root part is worn out;

Visual inspection of the landing gear and its components.

PIPER TWIN COMANCHE SERVICE MANUAL

1893

1. BUNGEE CORD, RIGHT
2. MAIN GEAR STRUT ASSEMBLY
3. CABLE SUPPORT, RIGHT
4. PUSH PULL CABLE, RIGHT
5. PUSH PULL CABLE, LEFT
6. CABLE SUPPORT, LEFT
7. MAIN GEAR STRUT ASSEMBLY
8. BUNGEE CORD, LEFT
9. MAIN GEAR STRUT ASSEMBLY
10. RETRACTION TRANSMISSION ASSEMBLY
11. EMERGENCY EXTENSION HANDLE
12. RETRACTION TORQUE TUBE
13. PUSH PULL ROD SEAL
14. PUSH PULL ROD
15. DRAG LINK CLEVIS
16. NOSE GEAR DRAG LINK ASSEMBLY
17. NOSE GEAR STRUT ASSEMBLY
18. RETRACTION TRANSMISSION MOTOR
19. MAIN GEAR DRAG LINK ASSEMBLY
20. PUSH-PULL HOUSING ATTACHMENTS NUTS

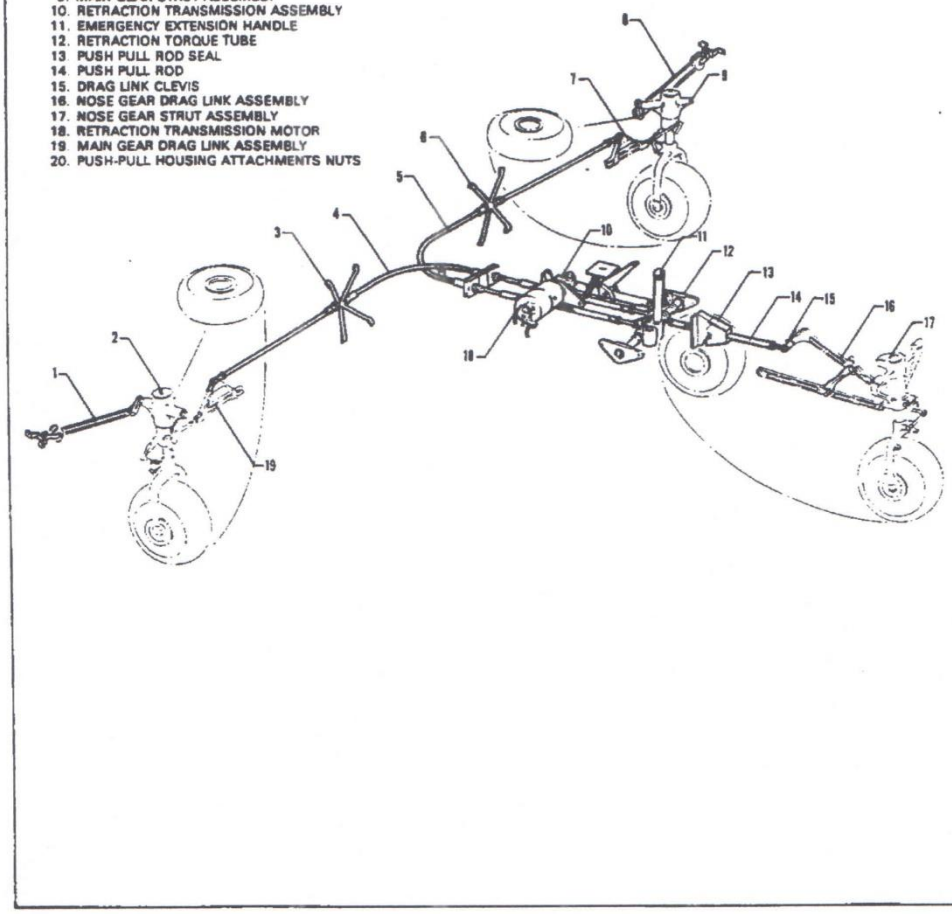
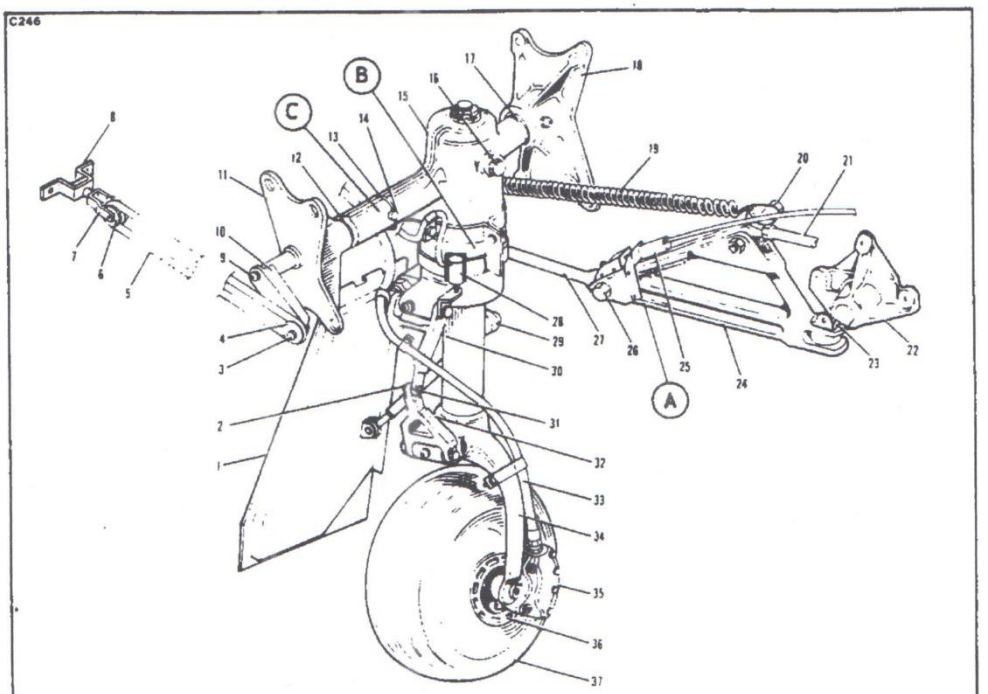


Figure 7-12. Landing Gear Retraction System

Issued: 12/29/72

2C1

LANDING GEAR AND BRAKE SYSTEM



1. MAIN GEAR DOOR
2. BOLT ASSEMBLY
3. ATTACHMENT BOLT
4. BUNGEE PULLEY
5. BUNGEE CORD
6. BUNGEE PULLEY
7. BRACKET
8. FITTING
9. ATTACHMENT BOLT
10. BUNGEE ARM
11. STRUT SUPPORT FITTING, REAR
12. SHIMS
13. SAFETY WIRE
14. STUD
15. STRUT HOUSING
16. STRUT FILLER VALVE
17. SHIMS
18. STRUT SUPPORT FITTING, FRONT
19. ASSIST SPRING
20. BOLT ASSEMBLY
21. PUSH-PULL CABLE
22. SIDE BRACE SUPPORT BRACKET
23. PIVOT BOLT
24. UPPER DRAG LINK
25. DOWN LIMIT SWITCH, LATE
26. PIVOT BOLT
27. LOWER DRAG LINK
28. SAFETY SWITCH, LATE
29. DOOR RETRACTION ROD
30. UPPER TORQUE LINK
31. SHIM WASHERS
32. LOWER TORQUE LINK
33. BRAKE LINE
34. FORK ASSEMBLY
35. BRAKE CYLINDER ASSEMBLY
36. WHEEL
37. TIRE
38. SWITCH ACTUATOR ROD
39. SAFETY SWITCH, EARLY
40. JAM NUT
41. ACTUATOR ARM
42. DOWN LOCK SWITCH, EARLY
43. SUPPORT BEARING, REAR
44. SHIM
45. SNAP RINGS
46. BARREL NUT
47. BARREL NUT
48. SUPPORT BEARING, FRONT
49. ATTACHMENT BOLT

Figure 7-9. Main Landing Gear Installation (Left)

In the gear actuation system there was found a 8 mm backlash (travel) of the down lock of the right landing gear (Main Gear Side Brace Link Travel, Piper Twin Comanche Service Manual, par. 7-23a) and 2mm (travel) backlash of the down lock of the right landing gear (Main Gear Side Brace Link Travel, Piper Twin Comanche Service Manual, par. 7-23a).

There is no backlash in the down lock of the front landing gear.

Also there was found destruction of the frame, part No. 22631-02, with support, part No. 20954-00, and spar caps, part No. 20557-06, due to fatigue at the atachment point of the gear motor.

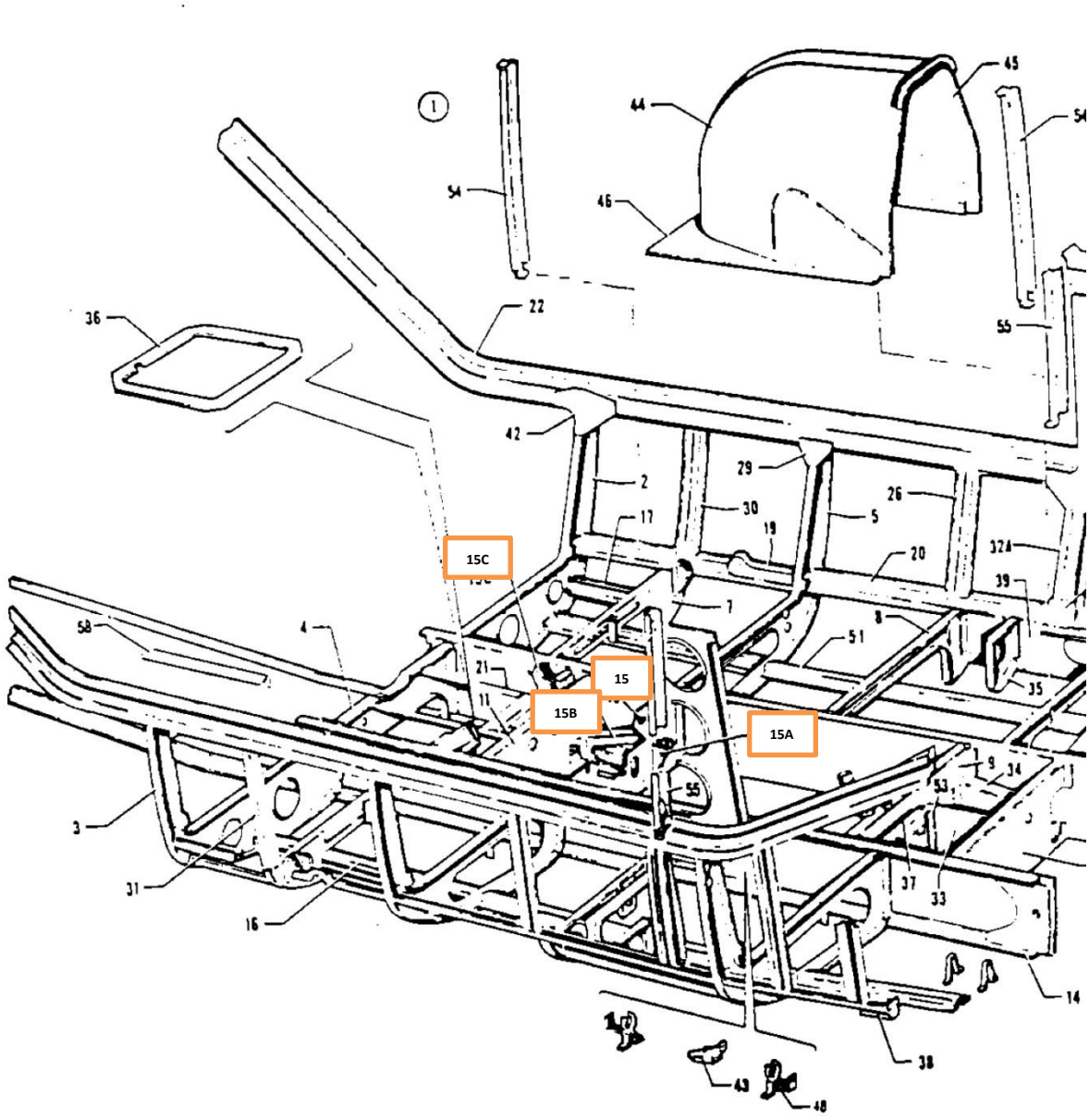


Figure 10. Fuselage Front Frame Assembly

REVISED: MAY 1980

1C2

FUSELAGE FRONT FRAME ASSEMBLY

SECTION II
Fuselage Group

Figure and Index Number	Part Number	Code	NOMENCLATURE	No. Req.	SERIAL NUMBERS AFFECTED
10-	23703		DRAWING - Frame Assembly, Fuselage, Front		
-1	23703-00	B	FRAME ASSEMBLY - Fuselage, front	1	
	23703-03	A	FRAME ASSEMBLY - Fuselage, front	1	
-2	23675-13		BULKHEAD ASSEMBLY - Fuselage, Sta. 105, LH	1	
-3	23675-04		BULKHEAD ASSEMBLY - Fuselage, Sta. 105, RH	1	
-4	23675-05	B	BULKHEAD ASSEMBLY - Fuselage, Sta. 105, bottom	1	
	25977-03	A	BULKHEAD ASSEMBLY - Fuselage, Sta. 105, bottom	1	
-5	23656-02		BULKHEAD ASSEMBLY - Sta. 87, LH	1	
	23656-03		BULKHEAD ASSEMBLY - Sta. 87, RH	1	
-6	23691-06		BULKHEAD ASSEMBLY - Sta. 66, LH	1	
	23691-05		BULKHEAD ASSEMBLY - Sta. 66, RH	1	
-7	23660-06		BULKHEAD ASSEMBLY - Fuselage, Sta. 96, LH	1	
	23660-07		BULKHEAD ASSEMBLY - Fuselage, Sta. 96, RH	1	
-8	20570-08		BULKHEAD ASSEMBLY - Fuselage, Sta. 77, bottom, left	1	
	20570-07		BULKHEAD ASSEMBLY - Fuselage, Sta. 77, bottom, right	1	
-9	23617-00		BULKHEAD ASSEMBLY - Fuselage, Sta. 68	1	
-10	23617-02		BULKHEAD ASSEMBLY - Fuselage, Sta. 59	1	
-11	23645-00		BULKHEAD ASSEMBLY - Fuselage, Sta. 92	1	
-12	23628-00	B	BEAM ASSEMBLY - Longitudinal fuselage, Sta. 49 to Sta. 105, LH	1	
	26355-00	A	BEAM ASSEMBLY - Longitudinal fuselage, Sta. 49 to Sta. 105, LH	1	
	23628-01	B	BEAM ASSEMBLY - Longitudinal fuselage, Sta. 49 to Sta. 105, RH	1	
	26355-01	A	BEAM ASSEMBLY - Longitudinal fuselage, Sta. 49 to Sta. 105, RH	1	
-13	20557-06		ANGLE - Beam, upper, LH	1	
	20557-05		ANGLE - Beam, upper, RH	1	
-14	20557-08		ANGLE - Beam, bottom, LH	1	
	20557-09		ANGLE - Beam, bottom, RH	1	
-15	22631-02		CHANNEL ASSEMBLY - Fuselage, Sta. 87	1	
-15a	21760-00		LUG - Transmission attachment	1	
-15b	20954-00		CHANNEL ASSEMBLY - Gear motor support	1	
-15c	25576-00		FITTING ASSEMBLY - Front seat belt attachment, left	1	
	25576-01		FITTING ASSEMBLY - Front seat belt attachment, right	1	
-16	22629-02		CHANNEL - Fuselage front	2	
-17	20600-02		CHANNEL - Fuselage front, LH	1	
	20600-03		CHANNEL - Fuselage front, RH	1	
-18	22272-10		STRINGER ASSEMBLY - Fuselage, Sta. 49 to Sta. 66, LH	1	
	22272-09		STRINGER ASSEMBLY - Fuselage, Sta. 49 to Sta. 66, RH	1	

A - Used on PA-30 with serial numbers 30-1717, 30-1745 and up, and PA-39 with serial numbers 39-1 and up.
B - Used on PA-30 with serial numbers 30-2 to 30-1716 inclusive, 30-1718 to 30-1744 inclusive.

When ordering, always specify Part Number, Description and Serial Number of Aircraft

ISSUED: FEBRUARY 1973

1C3

PA-30
PA-39

Marking of rubber auxiliary retraction and extension amplifiers for left and right landing gears (rubber main gear bungee shock cord) of part. No. 31322-07 in accordance with paragraph 3.7.1. MIL-C-5651D indicates that the components were produced in the fourth quarter of 2010, 2015 or 2020. According to the aircraft

logbook, the last replacement of these parts was performed on August 10, 2015. Therefore, the closest date for the production of parts was the fourth quarter of 2010. The service life of the specified parts is 3 years or 500 flight hours in accordance with paragraph 13 of Section J of the Piper Twin Comanche Service Manual of PA-30 – Description of Aircraft Systems Operation. Thus, the loss of elasticity exists as a consequence of their physical aging for ten years from the date of manufacture.

1.4. Other Damage.

No other damage was found.

1.5. Personnel Information

Pilot-in-Command

Licence USA PRIVATE PILOT

AIRPLANE SINGLE & MULTIENGINE LAND

VALID ONLY WHEN ACCOMPANIED BY UKRAINE PILOT LICENSE NUMBER(S) TA 007536.

Airline Transport Pilot LICENCE TA No.007536, date of issue 10.04.2015, LICENCE VALIDITY 17.03.2021.

Citizenship – Ukraine.

Education: higher, Kirovograd Flight Academy, graduated in 2004.

Place of work: State Enterprise «Antonov»

Information from the Licence:

RATINGS:

Multi-engine land /MEL

An-124-100

Multi-engine piston (land)/ MEP(L)

PIC, FI, IRI

Minimums: DH=200ft, RVR=550, LVTO 300m

Permission CAT I ICAO

Special notes:

- Qualified to conduct radio communications in English, Certificate No.1644, 27.12.2007.
- Demonstrated ICAO English level IV. Protocol No. 57, date 12.07.2017, valid till 12.07.2021.
- Qualified for international flights performance.
- VFR flights with a minimum of 200x2000.
- Qualified to perform (Be76):
- Aero Visual Flights

- Qualified for pre-flight inspection of Aircraft Be76.
- Qualified for flights with SNS on area navigation routes.

1.6. Aircraft Data

1.6.1 Aircraft Piper PA-30 Twin Comanche

Nationality and registration mark – N918Y

Serial number – 30-736

1.6.2 Ownership – International Air Services Inc Trustee, 701 S CATRSON ST STE 200, CARSON CITY, NV 89701.

1.6.3 Manufacturer: PIPER. Date produced: 1965.

1.6.4 Time Since New: 5460 hours.

1.6.5 "ANNUAL INSPECTION" was conducted on January 20, 2020 at an operating time of 5454.1 hours.

1.6.6 Periodic inspections (scheduled inspection). 100-hour inspection on 29.06.2017

1.6.7 Before departure, on October 12, 2020, on "Tsuniv Airfield" preflight preparation of the aircraft by PIC was completed.

1.6.8 Airworthiness information:

The aircraft registration certificate was issued on January 8, 2016 by U.S. Department of Transportation, Federal Aviation Administration; valid till 31.01.2022

Airworthiness certificate, STANDARD AIRWORTHINESS CETIFICATE, was issued on June 28, 2002 by U.S. Department of Transportation, Federal Aviation Administration.

Annual Airworthiness Inspections were completed after 29.06.2017 on 01.07.2018 at 5418.1 flight-hours and on 20.01.2020 at 5454.1 flight-hours. There were 6 flight-hours after (since) the inspection on 20.01.2020.

The flight-hours since June 29, 2017 till the moment of the occurrence were 67.89 hours.

Since performance of the 100-hour scheduled maintenance, which was carried out on June 29, 2017, until the serious incident, there are no marks on performing of the annual and special maintenance for the aircraft release to service in the technical documentation.

1.6.9. Engine (left)

1. Type is Lycoming IO-320-B1A, the serial number L1597-55A, the manufacturer is Lycoming.

2. ETT operating hours: 5653 hours since the beginning of operation, operating time after overhaul ETSOH - 2345 hours.

3. The Annual Airworthiness Inspection was completed on 20.01.2020 with 5647.9 hours ETT.

4. Overhaul was completed on 11.05.76 at ETT 3308 hours. Top Overhaul was on 12.02.1997 at 4958 hours of ETT. Operating time after the Top Overhaul was 695 hours.

1.6.10. Engine (right)

1. Type is Lycoming IO-320-B1A, the serial number L1570-55A, the manufacturer is Lycoming.

2. It has an ETT operating time of 5556 hours since the start of operation, an operating time since ETSOH overhaul is 2335.15 hours. Tach 437.59.

3. Annual Airworthiness Inspection was completed on January 20, 2020, at Tach 437.59.

4. The overhaul was completed on May 11, 1976, at ETT 3220.85 hours. Additional repairs with replacement of parts were completed in November-December 2001.

1.6.11 Propeller (left)

1. Type – Hartzell HC-E2YL-2BSF, the serial number BG 936.

2. It has operating time 343.1 hours after major overhaul as of January 20, 2020.

3. Annual Airworthiness Inspection was completed on January 20, 2020.

4. The overhaul was completed on July 26, 1999.

1.6.12 Propeller (right)

1. Type – Hartzell HC-E2YL-2BSF, the serial number BG 4423.

2. It has operating time 429.04 hours after major overhaul as of January 20, 2020.

3. Annual Airworthiness Inspection was completed on January 20, 2020.

4. The overhaul was completed on July 26, 1999.

1.6.13 Maintenance

1. 100-hour scheduled maintenance was completed on June 29, 2017. The flight time after a 100-hour check was 68 hours.

2. Line maintenance was performed on October 12, 2020 at "Tsuniv Airfield".

3. The airplane was fueled in volume of 300 l (LL100).

1.7. Meteorological Information.

According to the letter of the Ukrainian State Air Traffic Services Enterprise No. 1-14.1/9888/20 dated October 26, 2020, Reports on actual and forecasted weather conditions in the Lviv flight information region for the period from 09:00 to 14:00 UTC on 12.10.2020:

METAR UKLL 121200Z 13006MPS 100V160 9999 OVC016 15/12 Q1012 R13/CLD// NOSIG=

Weather in Lviv on October 12 at 12:00 UTC wind 130^0 06 meters per second changes from 100 to 160^0 visibility over 10 kilometers cloudiness continuous lower boundary 480 meters temperature +15 dew point temperature +12 pressure QNH1012 hectopascals RW 13 in use, forecast for 2 hours without changes.

METAR UKLL 121230Z 14006MPS 9999 OVCO16 15/12 Q1012 R13/CLD//NOSIG=

Weather in Lviv on October 12 at 12:30 UTC wind 140^0 06 meters per second visibility over 10 kilometers cloudiness continuous lower boundary 480 meters temperature +15 dew point temperature +12 pressure QNH1012 hectopascals RW 13 in use, forecast for 2 hours without changes.

1.8 Navigation Aids

Navigation aids are not related to the serious incident.

1.9. Means of Communication

The aircraft and Lviv ATS service - 120.7 MHz Tower, are equipped with VHF radio stations for two-way communication and coordination between the crew and ATS controller. Communication is performed at the above mentioned frequency of 120.7 MHz.

1.10. Aerodrome Data

Aerodrome "Lviv" is a certificated aerodrome for civil aircraft listed in the state register of civil airports of Ukraine. The owner and operator of the aerodrome is the State Enterprise Lviv Danylo Halytskyi International Airport.

The aerodrome has one paved runway with landing Mag Heading 130º/310º.

The paved runway has dimensions 3305 x 45 m, type of pavement - concrete, PCN 70/R/C/X/T, equipped for precision approach according to the ICAO Category II. Landing Mag Heading 310° runway threshold is 120m-displaced, the end of RW for take-off is 140m- displaced from threshold of RW13. Landing Mag Heading 130° runway threshold is 410 m-displaced.

Runway dimensions – 3425 x 180 m.

Aerodrome class – B (4D).

The aerodrome is suitable for day-and-night operation.

The aerodrome is suitable for receiving aircraft of index 6 (code 4D).

The aerodrome is equipped with landing systems - DVOR/DME, Radio-beacon system Type SP-200, and lighting with High Intensity Lights (HIL lighting).

The level of required fire protection is Category 8.

ARP position: 494835N; 0235730E.

Magnetic dip – 6ºE.

Aerodrome elevation – 328.4 m.

RW threshold elevation:

RW 31 – 328.25 m; RW 13 – 326.32 m.

Elevation of displaced runway thresholds:

RW 31 – 327.3 m; RW 13 – 325.7 m.

1.11 Flight Recorder

The flight recorder is not provided by the aircraft design.

1.12 Information on Condition of Aircraft Components and Their Location at Occurrence Site.

There was no scattering of aircraft elements at the place of the serious incident.

1.13 Medical Information and Brief Results of Postmortem Examinations of Crew.

According to the "Extract from the register of test control results of consumption of alcoholic beverages conducted by the medical station of the terminal of the SE "Lviv Danylo Halytskyi International Airport" on October 12, 2020, the PIC had 0 promille.

1.14 Fire.

There was no fire.

1.15 Actions of Emergency Rescue and Fire Teams.

The rescue operations were carried out by subdivisions of SE Lviv Danylo Halytskyi International Airport. According to the conclusions of the "Report on rescue operations on Piper PA-30, Reg. number N918Y aircraft, en-route Tsuniv-Lviv-Rzeszow at the SE Lviv Danylo Halytskyi International Airport dated October 15, 2020: the main goal, namely - the removal of the aircraft from the runway for the rapid resumption of take-off, landing and taxiing capabilities for other aircrafts was achieved due to well-defined and coordinated actions of the airport rescue team with the representatives of the aircraft operator. Also, a defining moment for ensuring a positive result was the availability at the Airport of the necessary equipment for removing the aircraft, which had lost the ability to move independently.

1.16 Tests and Examinations.

There was no need to perform the test operations and examinations.

1.17 Information on Organizations and Administrative Activities Relevant to Occurrence.

It was a private flight, the organizations were not involved.

1.18. New Methods Used In Investigation.

No new methods were used in the investigation.

2. Analysis.

On October 12, 2020, a serious incident took place with the Piper PA30 Twin Comanche N918Y aircraft, the aircraft operator is INTERNATIONAL AIR SERVICES INC TRUSTEE, CARSON CITY, NV, US (Corporation). Pilot-in-Command performed a private flight en-route "Tsuniv Airfield – Lviv Airport" according to the "Departure Approval: DAT/12-296".

The Investigation Team, having analyzed:

- Pilot-in-Command’s Statement;
- Pilot-in-Command’s documents;
- Preparation of the Pilot-in-Command for the flight;
- Aircraft documents;
- Aircraft maintenance documents,

has come to the conclusion that:

The aircraft has a valid airworthiness certificate;

Pilot-in-Command has valid flight certificates:

USA PRIVATE PILOT Certificate

AIRPLANE SINGLE & MULTIENGINE LAND

VALID ONLY WHEN ACCOMPANIED BY UKRAINE PILOT LICENSE NUMBER(S) TA 007536

and Transport Pilot LICENCE TA No. 007536.

Pilot-in-Command was ready for the flight operation.

The aircraft preparation for the flight by the crew and performance of the flight was carried out according to the Aircraft Flight Manual.

The aircraft touchdown occurred on two wheels of the main landing gear with sliding to the left caused by right side wind.

Loss of elasticity of rubber auxiliary left and right landing gear retraction and extension amplifiers (bungee shock cords), part No. 31322-07, which led to an increase in alternating pressure forces acting on the gear motor for landing gear retraction and extension, which in turn contributed to the development of the destruction of the bulkhead, part No.22631-02, with caliper, part No.20954-00, and spar cap, part No.20557-06, as a result of material fatigue at the point of attachment of the gear motor.

Upon the runway touchdown, under the influence of the aircraft weight and skid dribbling of the left wheel of the main landing gear (side wind from the right) with the left wing forward, as well as due to 8 mm left landing gear downlock travel, the left landing gear got out off the downlock position and began to move in the retraction direction. At that, the landing gear retraction and extension system mechanism with the destroyed bulkhead, part No.22631-02, with caliper, part No.20954-00, and spar cap, part No. 20557-06, at the point of attachment of the gear motor, failed to hold the left landing gear and began to move, acting gradually on the right landing gear and due to 2 mm right landing gear downlock travel, then, on the nose landing gear in the retraction direction.

3. Conclusions.

The cause of the serious incident with the Piper PA30 Twin Comanche N918Y aircraft was the landing gear retraction during the aircraft landing roll as a result of the loss of elasticity of the rubber auxiliary retraction and extension amplifiers of the left and right landing gear (bungee shock cords), part No. 31322-07, which led to an increase in alternating pressure forces acting on the gear motor for landing gear retraction and extension, which in turn contributed to the development of the destruction of the bulkhead part No.22631-02 with caliper, part No.20954-00, and spar cap, part No. 20557-06, as a result of material fatigue at the point of attachment of the gear motor, as well as the left and right landing gear down lock backlash (travel) caused by a poor quality maintenance of the aircraft by the operator.

4. Safety Recommendations.

To: Aircraft operators, crews, who are permitted to maintain the aircraft, and engineering-and-technical personnel:

- Adhere to the proper control over the aircraft maintenance works with more strict control during maintenance of the life-limited units and components.

Factor: Human (Operator).

Category: SCF-NP.