



Federal Public Service  
Mobility and Transport  
Air Accident Investigation Unit

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## Safety Investigation Report

# ACCIDENT TO THE BEECHCRAFT C24R REGISTERED OO-E\*\* IN EBZW ON 21 APRIL 2011

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## FOREWORD

This report is a technical document that reflects the views of the investigation team on the circumstances that led to the accident.

In accordance with Annex 13 of the Convention on International Civil Aviation, it is not the purpose of aircraft accident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the determination of the causes, and define recommendations in order to prevent future accidents and incidents.

In particular, Art. 17.3 of EU Regulation 996/2010 stipulates that a safety recommendation shall in no case create a presumption of blame or liability for an accident, serious incident or incident.

### **Safety recommendations and Safety messages**

When AAIU(Be) issues a **safety recommendation** to a person, organization, agency or Regulatory Authority, they must provide a written response within 90 days.

That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

AAIU(Be) can also issue a **safety message** to a community (of pilots, instructors, examiners, ATC controllers), an organization or an industry sector for it to consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to a safety message, although AAIU(Be) will publish any response it receives.

The investigation was conducted by L. Blendeman, H. Metillon and S. Laureys.  
The report was compiled by L. Blendeman

### NOTE:

1. For the purpose of this report, time will be indicated in UTC, unless otherwise specified.
2. ICAO doc. 9859 was used for the identification of the hazard and the consequence.

## **Synopsis.**

### **Date and hour of the accident**

21 April 2011 at 08:30 UTC

### **Aircraft**

Beechcraft C24R, msn MC-745, registered OO-E\*\*

### **Accident location**

On EBZW, Zwartberg airfield

### **Aircraft operator**

Private

### **Type of flight**

General Aviation

### **Persons on board**

1

### **Abstract.**

The airplane was landing on EBZW airfield, when the pilot decided to abort the landing at low height. When increasing the engine power, the airplane banked to the left, the left wing contacted the ground, and the airplane crashed.

### **Cause(s)**

The accident was caused by a loss of control during the rejection of the landing, caused by an inadequate (too high) approach, a late decision to go-around and an inadequate reaction the pilot.

### **Hazards<sup>1</sup> identified during the investigation.**

Limited scope of flight experience.

### **Consequences<sup>2</sup>**

Loss of control.

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<sup>1</sup> Hazard – Condition or object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

<sup>2</sup> Consequence – Potential outcome(s) of the hazard

## 1. Factual Information

### 1.1. History of flight.

The airplane was based in Charleroi airport (EBCI).

The airplane had to go to EBZW airfield for the annual check of the avionics and some corrections to the auto-pilot.

The pilot-owner prepared the flight, and took off from EBCI. When reaching the city of Hasselt, he tried to call the EBZW airfield on the radio, without response.

He flew over the airfield, and first assumed Runway 03 was in use, so he followed the circuit. He was reaching the end of the downwind, when he got contact with EBZW. He got the information that R21 was in use. Subsequently, he went for the circuit of R21.

The checks for the landing were done, without problem.

The pilot recalled he was too high above the threshold. This was confirmed by witnesses located in the first hangar bordering the runway. The pilot reported he felt the airplane was drifting, which he tried to compensate.

The pilot decided to abort the landing, and gave full throttle.

The airplane was then seen banking to the left, its left wing touching the ground. The airplane crashed and stopped at 50 m from the runway edge.

People standing in the club house rushed to the help of the pilot. One of the persons was a fireman, and he pulled the unconscious pilot out of the airplane. The airplane was switched off. The fire brigade responded quickly, and used foam to remove any danger of fire, and the fuel tanks were drained.

The pilot lost consciousness. He was dragged out of the airplane and was evacuated by ambulance to the nearest hospital

### 1.2. Injuries to persons.

Injuries	Pilot	Passenger	Others	Total
Fatal	0	0	0	0
Serious	1	0	0	1
Minor	0	0	0	0
None	0	0	0	0
Total	1	0	0	1

The pilot suffered from a broken hip and a broken nose.

### 1.3. Damage to aircraft.

The airplane sustained heavy damage to both wings and the fuselage.

### 1.4. Other damage.

There were no other damage.

### 1.5. Personnel information.

#### **Pilot**

Age: 63 years old

Private Pilot Licence, first issued 31 October 2001, valid until 27 August 2013.

Rating: SEP (land), valid until 31 October 2012  
English, valid until 27 August 2013

Medical Certificate: Class 2, valid until 24 August 2011.

#### **Total Flight Experience:**

The pilot had accumulated a total of 260FH in the period 2002-2011. Most of the flights were performed on the same airplane (OO-E\*\*), usually from and to the EBCI airport.

The pilot flew 5:48FH in 2011, and flew 22 FH per year on average in 2009-2010.

### 1.6. Aircraft information.

The Raytheon Aircraft Company C24R is a four/six seat low wing, single engine aircraft, developed from the family of Beechcraft Musketeers.

The C24R features a retractable landing gear and a 200hp piston engine.

It was first certificated on 1<sup>st</sup> October 1976 in the normal category.

#### **General characteristics**

- **Crew:** one
- **Capacity:** three to six passengers
- **Length:** 25 ft 8 1/2 in (7.836 m)
- **Wingspan:** 32 ft 9 in (9.98 m)
- **Height:** 8 ft 5 in (2.57 m)
- **Wing area:** 146 sq ft (13.6 m<sup>2</sup>)
- **Empty weight:** 776 kg (1711lb)
- **Max TO weight:** 2,750 lb (1,247 kg)

## Performance

- **Maximum cruising speed:** 131 kts
- **Stall speed:** 55kias
- **Landing distance (from 15m):** 254m (804ft)

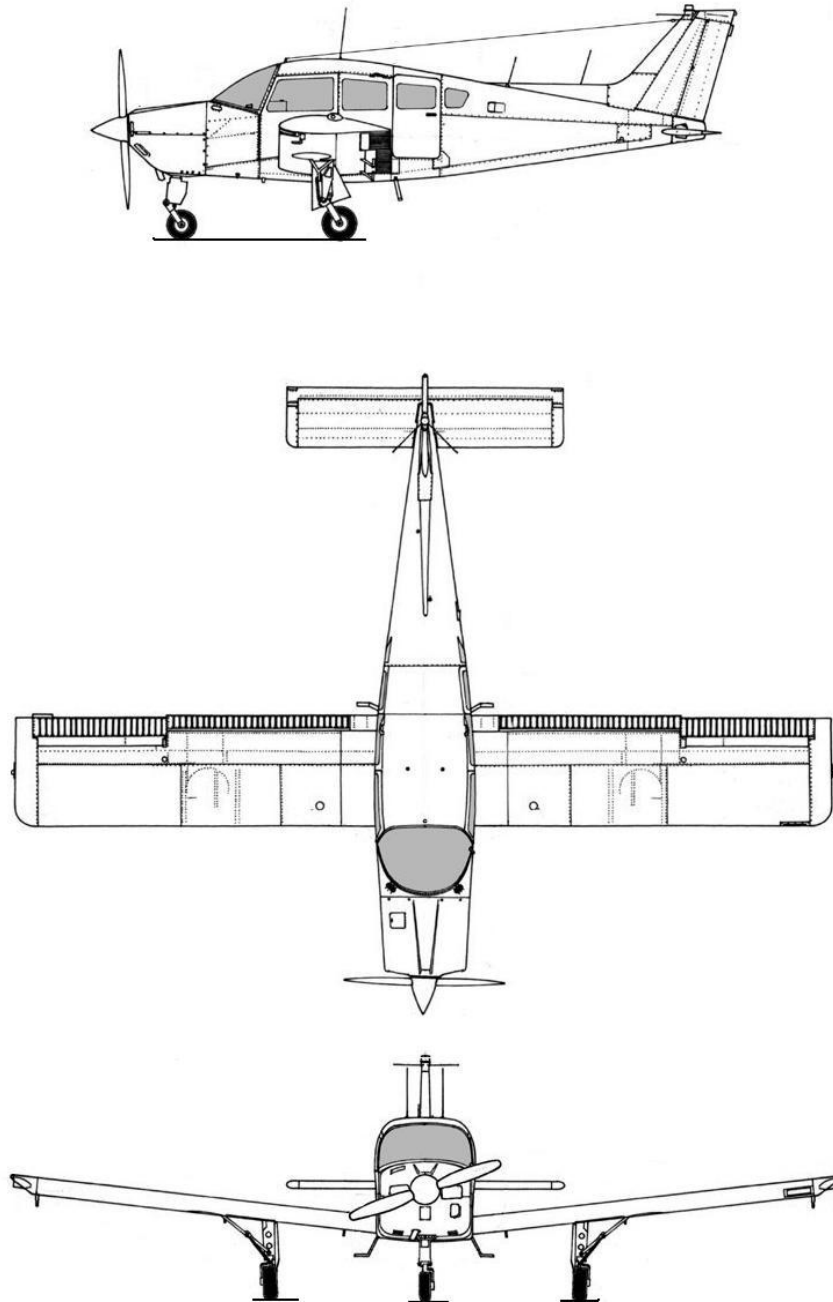


Fig. 1: 3-view drawing

**Airframe:**

- Manufacturer: Raytheon Aircraft Company.
- Type: C24R
- Serial number: MC-745
- Built date: 1980
- Airworthiness Review Certificate: last issued on 25 May 2010, valid until 27 May 2011.
- Registration: OO-E\*\*
- Time since new: 3788:11 FH

**Engine:**

- Manufacturer: Lycoming.
- Model: IO-360-A1B6
- Serial: L-22122-51A
- Time since new: 3788:11 FH
- Time since overhaul: 1940: 16 FH

**Propeller**

- Manufacturer: Hartzell.
- Model: HC-M2YR-1BF
- Serial: EN1168B
- Time since new: 88:39 FH

**1.7. Meteorological conditions**

Wind  
Direction: 190 degrees  
Speed: 4 kts

Visibility: more than 10 km

Temperature: 20°C

QNH: 1015 hPa

Clouds: CAVOK



### **1.8. Aids to navigation.**

Not applicable.

### **1.9. Communication.**

The pilot could establish contact with Genk radio on 120.40.

### **1.10. Aerodrome information**

The Zwartberg airfield (EBZW) is located 5km North of the city of Genk. It features a 799m long asphalt runway. Its orientation is 034°/214°.

The location is N51 00.9 E005 31.6

The use of the airfield is subject to prior permission from the airfield operator.

The pattern of the airfield is as depicted in Fig.2, and features limitations due to the proximity of a military zone to the North, and noise abatement rules.

The rules of the airfield are defined on the website, and are as follows:

#### **Noise abatement:**

Due to noise sensitive areas around the aerodrome, and to maintain a good understanding with the people living around the aerodrome we expect all pilots to adhere to the following rules:

- Adhere strictly to the pattern depicted on the Bottlang chart.
- Minimum pattern altitude 1300 feet AMSL.

#### **Geography around the airfield**

Genk is a former coal mining region, and there is a coal mine spoil tip remaining from these times, located East of the airfield at 1.15km from the runway, close to the pattern. The spoil tip culminates at 666 ft AGL.

The runway is bordered by trees, and there is a thin line of trees in the axis of Runway 21, at 300 m from the threshold (see fig. 3).

The elevation of the airfield is 278ft.

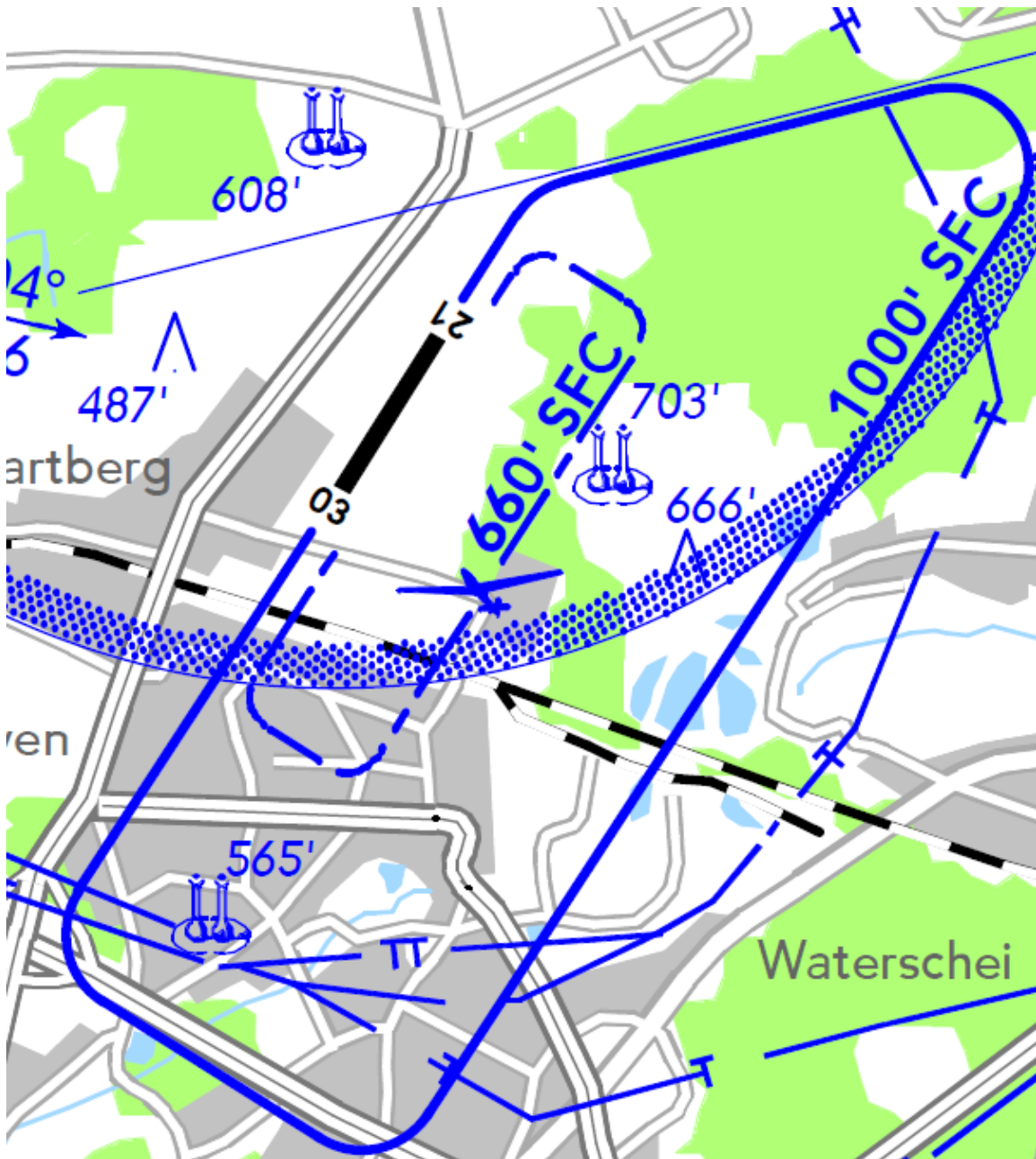


Fig.2: EBZW airfield pattern



Fig.3 Geography around EBZW Airfield



Fig. 4 The old coal mine spoil tip viewed from the airfield

### **1.11. Flight Recorder**

There was no flight recorder installed on aircraft, nor was it supposed to.

There was a GPS Bendix/King Skymap IIIIC on-board, but it did not contained data pertinent to the flight.

### **1.12. Wreckage and impact information:**

When realizing he could not land the airplane as intended, the pilot applied full power for a go-around. He did not recall whether the airplane touched down before or after that moment. Witnesses saw the airplane touching down, at a point estimated at half of the runway length.

The pilot recalled feeling the airplane hard banking to the left.

The left wing touched the ground first, then the nose in a cartwheel movement. The airplane came to a stop 41 m from the border of the runway. The wreckage general direction was 240°.

The configuration of the airplane, found during the initial assessment of the wreckage was:

- Throttle: full forward
- Mixture: rich
- Propeller: High pitch
- Flaps: fully extended (landing position)
- Landing Gear: extended

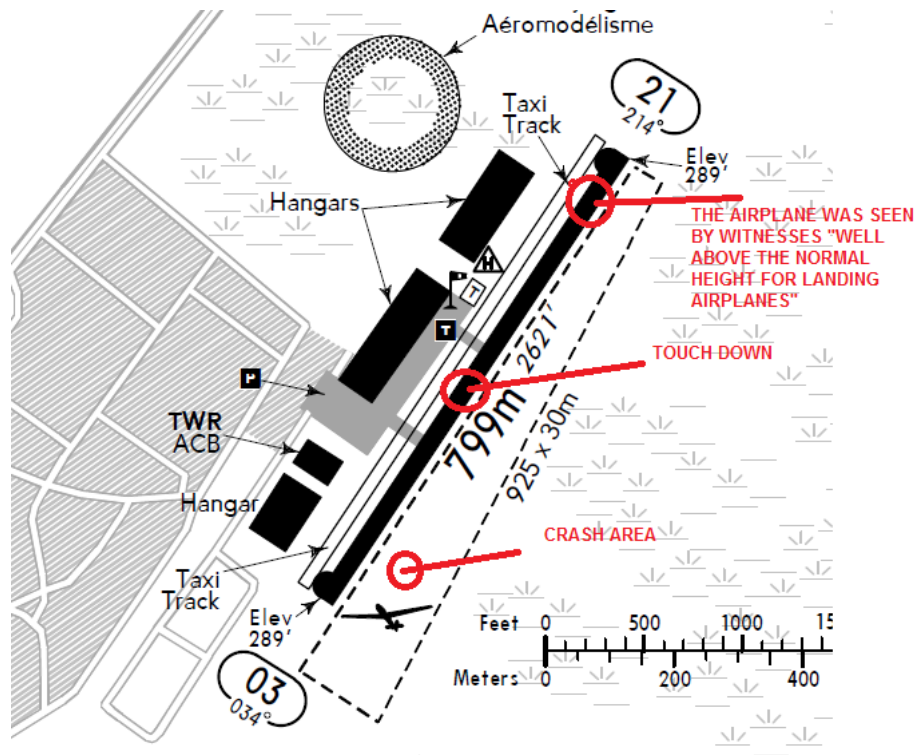


Fig.5 Crash area



Fig.6 : The wreckage



Fig. 7: RH Side view



Fig. 8: Controls

**1.13. Medical and pathological information.**

Not relevant

**1.14. Fire.**

There was no fire.

**1.15. Survival aspects**

Not Relevant.

**1.16. Test and Research**

Not Applicable

## 1.17. Regulation

The requirements for aircraft pilot licencing are defined in the Royal Decree of 4 March 2008.

In particular the revalidation of single-pilot single-engine class ratings:

### Article 58

#### §1. Validity (...)

§2. Revalidation: SEP(L) and/or TMG. For revalidation of single-pilot single-engine piston aeroplane class ratings or TMG class ratings the applicant shall:

- (i) within the 3 months preceding the expiry date of the rating, pass a proficiency check in the relevant class in accordance with Appendix 9 to this Part with an examiner; or
- (ii) within the 12 months preceding the expiry date of the rating, complete 12 hours of flight time in the relevant class, including:
  - 6 hours as PIC,
  - 12 take-offs and 12 landings, and
  - a training flight of at least 1 hour with a flight instructor (FI) or a class rating instructor (CRI). Applicants shall be exempted from this flight if they have passed a class or type rating proficiency check or skill test in any other class or type of aeroplane.

An identical requirement is found in Commission Regulation (EU) N°1178/2011, of 3 November 2011, under paragraph FCL.740.A



## 2. Analysis.

### The Flight

The pilot was interviewed.

He stated that most of his experience was gained flying from and to the Charleroi airport. This made that he had only limited experience with shorter airfields, like Zwartberg.

He was in no particular hurry, but the first approach was made on Runway 03, then was interrupted upon the call from the airfield, and he went for an approach on Runway 21.

The approach to Runway 21 was too high, as confirmed by witnesses and the pilot. The elements that could have influenced the pilot were:

- The presence of the coal mine spoil tip in the pattern path,
- The presence of a tree line crossing the final approach path (though clear of the approach path),
- The lay-out of the pattern itself,
- The inexperience of the pilot in landing on short(er) airfield (than those he was used to).

Realizing he was landing too far down the runway, the pilot eventually decided to reject the landing by advancing the throttle forward (probably much quicker than required for touch and goes on a long runway such as Charleroi). The airplane reaction surprised him, and he lost control of the airplane.

The left wing stalled and impacted the ground.

The wreckage was found with the flaps in landing configuration (flaps fully extended); the engine controls were fully forward. In this configuration, with a low airspeed, the airplane is indeed very sensitive to the torque of the engine, that would made the aircraft to roll counterclockwise, pushing the left wing down and subject to the important drag generated by the flaps.

The pilot could not recall how he actually reacted to the roll effect.

In this case, it would require increasing the engine power, applying right rudder to counteract the engine torque and progressively retract the flaps to the Take-off position.

Applying only right aileron, for example, would, at low height, low speed and high bank angle, lead to the stall of the left wing.

This phenomenon could be worsened by the P-factor, if the airplane is being put in a nose up pitch attitude, resulting in a yaw movement to the left.

To illustrate the above, an interesting article on the performance of go-around is to be found on the AOPA's website:

[www.flighttraining.aopa.org/students/presolo/skills/goaround.html](http://www.flighttraining.aopa.org/students/presolo/skills/goaround.html)

### **Pilot's flight experience**

The pilot further stated that, besides during initial training, he never actually performed a go-around with that particular airplane. He performed a number of training flight for the purpose of renewing the SEP(L) class rating, as per art. 58 para.2 (ii) of Royal Decree of 4 March 2008, but he stated these flights did not include a go-around exercise.

The requirement for a training flight is not further defined by the Regulator, and the content of the instructional flight is left to the decision of the concerned pilot and instructor.

### **3. Causes**

#### **Findings:**

- The airplane was airworthy
- The pilot was duly qualified
- The pilot was mostly familiar with significantly longer runways than the one of EBZW.
- The pilot stated he was not familiar with the procedure of go-around.

#### **Cause**

The accident was caused by a loss of control during the rejection of the landing, caused by an inadequate (too high) approach, a late decision to go-around and an inadequate reaction the pilot.

#### 4. Recommendations

This report does not sustain any specific recommendation, but contains a safety message.

##### **Safety Message (2012-1) to the Community of General Aviation Pilots and Instructors.**

This accident highlights the importance for a pilot to cope with abnormal situation, and be able to react adequately, anticipating the possible adverse reaction of the aircraft.

A pilot should try to increase the scope of his experience, such as (in this example) landing regularly on short and long runways, with complex and easy pattern.

The training on the performance of abnormal procedures should normally be done with the support of an instructor.

The purpose of the training flight of at least 1 hour required by art. 58 para.2 (ii) of Royal Decree of 4 March 2008 is precisely to give the opportunity to the pilot to work out possible weaknesses in airmanship.

AAIU(Be) therefore advises General Aviation pilots to identify any possible personal weakness in airmanship and determine, with the support of an instructor, the scope of the training flight required for the renewal of the aircraft class rating.

The training program for class/type rating/training/skill test and proficiency check on single-engine found in CIR /FCL-21 (app.9 to Part-FCL) can serve as a basis for this determination.



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