

# Aeroflot flight 8641 crash analysis



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Most people think of planes as a fast and efficient way to get to a place farther away than what a car can take them. But, what most people don't know is that there are engineering design problems. One of which happened to Aeroflot Flight 8641.

In June 28, 1981, AeroFlot Flight 8641 encountered an engineering design problem. Unfortunately, it ended horribly and the crash killed everyone on board which was a total of 132 people. The plane crashed near Mozyr, Belarus. This opened the people's eyes about the Yak-42s. All Yak-42s were suspended from service until the design defect was solved and tested.

Yakovlev is a plane company out of Russia. In 1965, Yakovlev built the Yak-40. Then in the early 1970s the Yak-42 was designed and built. The designers are working on a new plane design called the Yak-44. The Yak-42 is a medium size jet airliner. AeroFlot Flight 8641 was the first crash with this plane because of the design failure. This crash was the first and deadliest crash including the Yak-42. No one knew about the design defect until the investigation on why the plane lost control and crashed.[1]

During the investigation, it was found that the whole tail of the plane detached due to metal fatigue on the jackscrew.[3] The metal on the jackscrew was melted, which made it deform and cause a weak spot in the tail. The pressure of the air and speed of the plane started cracking and breaking the tail off, which cause the plane to dive down to the ground and crashed killing everyone on board.

The designers were a group from the company, Yakovlev. They were blamed for the crash because they didn't take precautions on metal fatigue issue in

the prototypes[4]. After the crash, the designers had to fix the problem before sending any more planes up into the air. So, the designers had to find a way to stop metal fatigue.

New precautions were put into place on how to keep the jack screw from melting.[6]The designers needed to know parts of structural engineering, mechanical engineering, and material science.[7]They needed to know how to keep the stress below the fatigue level and also, needed to know how to make the plane efficient when one part fails the whole plane does not fail. [8]They also had a part life[9]. This is when a part got used to a certain amount of time it got replaced with a new one. And lastly, the plane was checked for cracks and when a crack gets to a certain length the part is replaced.

The jackscrew is made out of cast iron. This cast iron's melting point is 2060-2200 degrees Fahrenheit or 1127-1204 degrees Celsius. The solution of the new design is how to divert the heat from the jackscrew or change the material of the jackscrew or the materials around it to keep the jackscrew cooled off[10]f.

The design of the Yakovlev Yak-42 was the cause of the crash. The designers had to make a new design to solve the problem that happened to AeroFlot Flight 8641. There were also new precautions put into place to prevent crashes or issues with the plane. New part lives were also introduced to keep the planes running for longer and to keep old parts off the plane to cut off the chance of it failing and causing a crash.

<https://en.wikipedia.org/wiki/Jackscrew>

<https://assignbuster.com/aeroflot-flight-8641-crash-analysis/>

[https://en.wikipedia.org/wiki/Fatigue\\_\(material\)](https://en.wikipedia.org/wiki/Fatigue_(material))

<https://www.revolvy.com/main/index.php?s=Aeroflot%20Flight%208641>

[https://en.wikipedia.org/wiki/Aeroflot\\_Flight\\_8641](https://en.wikipedia.org/wiki/Aeroflot_Flight_8641)

<http://www.theinfolist.com/php/SummaryGet.php?FindGo=Yakovlev%20Yak-42>

<http://www.airvectors.net/avyak40.html>

Aeroflot flight 8641

Jackscrew

<https://en.wikipedia.org/wiki/Jackscrew>

Metal fatigue

[https://en.wikipedia.org/wiki/Fatigue\\_\(material\)](https://en.wikipedia.org/wiki/Fatigue_(material))

<https://www.revolvy.com/main/index.php?s=Aeroflot%20Flight%208641>

Jackscrew mechanism in the aircraft's tail

The aircraft lost control and dove into the ground

[https://en.wikipedia.org/wiki/Aeroflot\\_Flight\\_8641](https://en.wikipedia.org/wiki/Aeroflot_Flight_8641)

Killed all 132 people on board

When

June 28, 1982

Where

Near Mozyr, Belarus

<https://assignbuster.com/aeroflot-flight-8641-crash-analysis/>

How

Jackscrew mechanism in the aircraft's tail

What happened after

All yak-42s were shut down until the problem as fixed

Yakovlev Yak-42

The tailplane detached from the plane

<http://www.theinfoalist.com/php/SummaryGet.php?FindGo=Yakovlev%20Yak-42>

Rubric rating submitted on: 12/21/2016, 11: 56: 36 AM by stephanie.  
russell@bryanisd.org

10

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Title Page

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Present

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Abstract

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Introduction

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<https://assignbuster.com/aeroflot-flight-8641-crash-analysis/>

Your score: 5

Background

Present not done

Your score: 5

Investigation

Present not done

Your score: 6

Findings

Present not done

Your score: 7

Impact

Present not done

Your score: 0

Conclusion

x not done

Your score: 5

**References**

References no

Your score: 10

included references

Notes

Notes recorded no notes

Your score: 10

6 Content

filled 6 pages

3 content

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Pages

pages

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Comments:

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Abstract

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Introduction

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Background

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Your score: 5

Investigation

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Your score: 7

## Findings

	Present	not done
Your score: 8		

## Impact

	Present	not done
Your score: 5		

## Conclusion

	x	not done
Your score: 5		

**References**

	References	no
Your score: 10	included	references

## Notes

	Notes recorded	no notes
Your score: 10		

## 6 Content

		3 content	no contents
Pages	filled 6 pages	pages	pages
Your score: 3			

## Comments:

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[1]how long did they make these planes? were there any other problems before this incident? where were they made? Did the company make any other planes?



[2]describe HOW the accident was investigated – how did they figure that out?

[3]What is a jack screw and what does it do? Why does a plane need it?

[4]Were there problems during testing, that were ignored? what is metal fatigue? what happens to metal as it is failing?

[5]Findings?

Who was at fault, what caused the accident, what future precautions were recommended?

[6]is melting the same as metal fatigue?

[7]why do they need to know these things and what do they need to know about these things?

[8]Were they able to do this? is that the way they are design currently – that if something fails, like a tail breaking, that they can still fly/land the plane?

[9]is this a precaution or a new practice?

[10]which one of these did they do? did they try both and decide on one? what are the advantages and disadvantages of one method or the other?

[11]missing a section?