

- When a Risk Analysis Becomes a Risk -

*Berquó, Jolan Eduardo – Electronic Eng. (ITA)
Aerospace Product Certifier (DCTA/IFI)
Government Representative for Quality Assurance – RGQ (DCTA/IFI)
jberquo@dcabr.org.br*

IYK 26 – DEC 19, 2012

To some extent, this flash is a complement of some aspects of the MSC 25. Let's delve a little more in this issue of risk analysts (safety) that make their analysis according to the convenience dictated by other interests and not based on actual data.

We rely on Chapter 3 of the book *Os Números (Não) Mentem* (REF.), a translation of the work "Proofiness: the dark arts of mathematical deception", that, as far as we know, it is a best seller. At least it has transcended its sales to other stops, including Brazil

It is very important to mention at least the contents of this chapter, so we can see how easy it is to work with numbers and falsify them. When we do it on election predictions, patience. But when we do it in a system risk analysis, it is criminal.

Well, in July 18, 1969, two days before Neil Armstrong and Edwin Aldrin set foot on the Moon for the first time, a team of writer President Nixon wrote a speech for a very likely situation, where the two astronauts could not return to Earth. This speech thanked the two astronauts for bravery. He said that the soil of the moon would be indelibly marked with the presence of the bodies of two earthlings. Anyway, he was preparing to relieve the pain of the relatives to a situation of risk considered most likely.

Fortunately, there was success. But missions to the Moon were actually very hazardous. Before sending the two astronauts to the moon, NASA had commissioned a study to General Electric on the likelihood of the two astronauts returned to Earth safely. The study indicated that the chance of returning was about five percent (5%). NASA would have hidden it, because if this information came to the attention of Congress, the mission

In 1983, the United States Air Force (USAF) commissioned a study to calculate the risk that

a new system for the space shuttle launch could explode during launch.

Those responsible for the study concluded that the probability of a disaster was dangerously high. Quote: "The probability of a failure in an engine with solid fuel was about 1/35, based on previous experience with this technology". Such a likelihood was indeed enormous.

Then NASA would have done what used to do in such circumstances: kneaded the study and threw it in the trash. The congressmen could not know about that.

The Agency then utilized their own engineers to make the risk analysis, but from back to front, that is, established that the chance of catastrophic failure had to be 1/100,000. The engineers then adapted the data to obtain the defined failure probability.

It is hard to know that

On January 28, 1986, shortly after leaving the base, a cloud of gray smoke coming from the solid-fuel of the right engine of the Challenger, announced a disaster. Nobody knew at that time, but a small rubber seal in the engine had failed. First there was a small flame at 59 seconds of flight. Then at 73 seconds and 14 thousand meters of altitude, the spacecraft exploded in a huge fireball. It took only 25 shuttle launches for NASA be reached by the risks.

The direction of the Agency had deliberately underestimated the risks of a flight on the space shuttle. Instead of facing the reality that the solid-fuel engines were dangerous, the Agency preferred to build a lie more acceptable.

It is hard to know that.

One of the members of the Investigation Commission of the accident, the physicist Richard Feynman, declared: "to my knowledge, an assessment of the Agency's engineering team means that they will simply invent numbers".

These examples are the strongest in this never-ending story of adulteration of probabilities in risk management. It is much irresponsibility.

But NASA is not the only one that takes people to the space at the expense of mismanaged risk. The american tycoon Richard Branson works hard in an attempt to deceive private investors to believe that his company, Virgin Galactic, that in the first five years plans to take about 3 thousand passengers into space, says that will operate with the same safety of its commercial aircraft (Virgin Atlantic Airlines).

In other words, he has the arrogance to compare the risks of transporting passengers on airplanes with the risks of a trip to space. It is another example of poor risk management.

It is hard to know that

The worst is that he has managed to convince more than 250 candidates for astronauts to invest US\$ 30 million in advance deposits, to make trips in space.

Throughout the history of space flight, amazingly, about one in every hundred manned rocket killed its occupants and there is no evidence that this situation will change in the near future.

A chance of failure in every 100, for example, may not seem like much, but if it was this the chance for commercial planes, we would have around 275 aircraft disaster with 20 thousand fatalities per day in the United States.

Sincerely, we do not get understand how an NASA analyst can sleep after making an risk analysis like those we have mentioned.

And the worse, to finalize, is that there are analysts who distort the data in the opposite direction to that described above, i.e. artificially increase the risks of their analyses.

It is hard to know that.

See you

Reference:

SEIFE, Charles. **Os Números (Não) Mentem: Como a Matemática Pode Ser Usada Para Enganar Você**. Tradução de Ivan Weisz Kuck. Rio de Janeiro (Brazil): Zahar, 2012.