

# CULTURE OF ERROR AND RISK MANAGEMENT IN RAILWAY COMPANIES - LEARNING FROM THE AVIATION INDUSTRIES

By Dr. F.A. Wingler, August 2018

This paper is based on the publication of Dipl. Ing Karoly Obrecht and Dr. Bernhard Rüger: **FEHLERKULTUR BEI EISENBAHNEN – NOTWENDIGKEIT UND CHANCE ZUR ERHÖHUNG DER SICHERHEIT** in Eisenbahn Technische Rundschau, ETR, Juni 2018, p. 42, eurailpress, DVV Media Group, Hamburg, Germany, ISSN 0013-2845; see also Obrecht, Karoly: „**FEHLERKULTUR UND ANONYME MELDESYSTEME IN EISENBAHNUNTERNEHMEN** - Das Wesen der Fehlerkultur und ihre Einführung im betriebsdienstlichen Umfeld mit Beispielen“; Diplomarbeit FH-St.Pölten; 2015; Austria.



At the centre of the modern proactive, precautionary and generative culture of error, risk and safety management culture in transport corporations stands the thought that errors, mishaps and accidents (unwanted bad events) are components and an integral part of any actions and learning's. The vision of **“Zero Accidents”** in transport environment cannot be reached and therefore, it has to be regarded as an illusion.

In the corporate culture the focus is on the latent prevailing unsafe conditions, the accompanying circumstances along a chain of errors and not on the question of guilt. To pin culprits to be punished, has only a marginal effect. This punitive method is nowadays regarded amongst safety experts as outdated and ineffective. Unlike before, it is no longer so important who committed the error or mistake. What matters is why it happened and how it can be avoided in future.

It no longer seems appropriate to occupy the term "error" with "negative"; because every error committed can also lead to an increase in performance. Reported and notified errors have to be regarded as a chance to learn. Preventive measures shall be taken to avoid these errors and to minimize the safety risk.

The handling of errors is specified by the management level. Managers play an important key role in dealing with mistakes due to their exemplary effect. They must enable the necessary change of awareness in the company by openly and sincerely starting to talk about their own mistakes thus motivating employees to do the same. They have to establish in their system a positive and generative error culture.

#### A positive and generative error culture

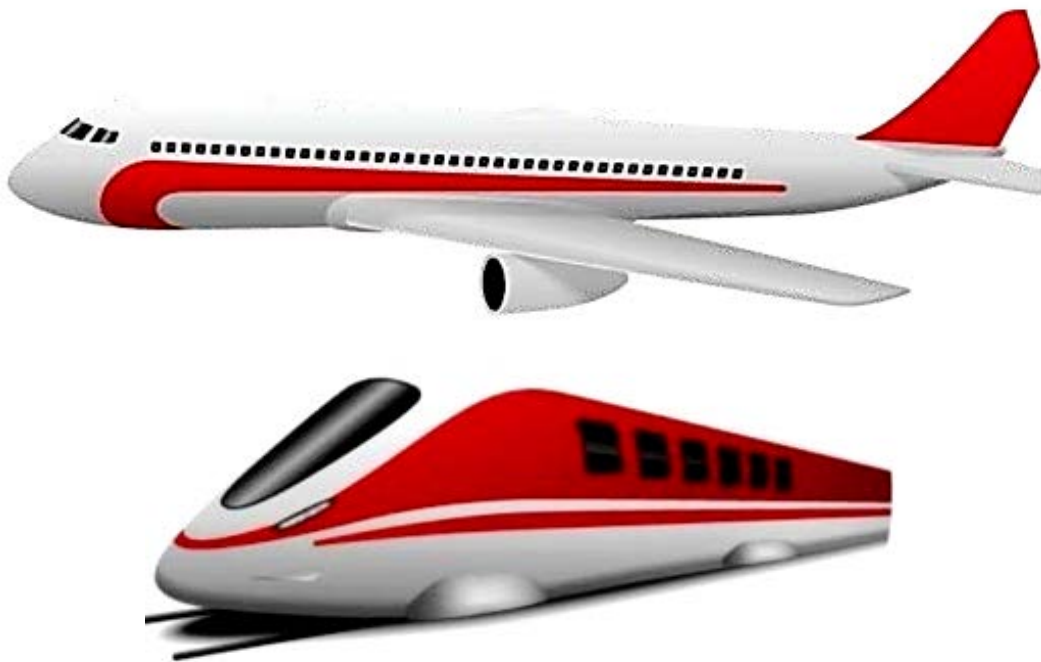
- ◆ accepts errors and near errors,
- ◆ creates the conditions that errors can be reported without reservations and sanctions,
- ◆ questions and analyses the causal factors of development, preferably with those affected personally,
- ◆ provides an incentive and creates a recognition system for voluntary reporting of errors and near errors (near missed unwanted bad events),
- ◆ and does not aim for a zero fault tolerance.

When dealing with errors, the tolerance limits must be clearly defined. If the tolerance is exceeded, sanctions shall be imposed in an appropriate manner, and disciplinary measures shall be taken where appropriate. The new generative error culture does not release the staff from their own responsibility.

There must be also actions to be taken at the level, where there had been no error/accidents or near-errors/accidents, but where a large number of unsafe actions occur or conditions prevail. It should be prevented that error/accidents happen in the further process. For this it is also necessary to receive sufficient information of near errors, unsafe conditions and as well of near missed errors/accidents.

A positive working atmosphere and trust in the management of the company are essential for employees to be willing to voluntarily report in order to support the new error culture. A pronounced hierarchical structure in a company is usually a big obstacle in establishing a new trust-based generative error culture.

Unfortunately, railway companies with their rigid structures and established cultures are often 10 years behind aviation industries when it comes to introducing modern human error, risk and accident management methods and a new modern proactive, precautionary and generative culture of error, risk and accident management. The good experience and successes in safety management of aviation industries and operators with an open and proactive safety culture can be used to the advantage of railway operators.



Railway Operators can learn from Aviation Industries

The knowledge about own and others near missed errors, mishaps and accidents (near missed bad and unwanted events) is a valuable source for learning. Near missed errors, mishaps and accidents have to be treated and investigated in depth with the same seriousness as errors, mishaps and accidents, which have outburst into a calamity. The upper echelons of a railway system must keep in their minds awareness for hazards and should know what might go wrong and what the risks are.

Risk is the product of probability that an incident will occur and the impact that it will have. It is impossible to have a zero probability. Effective and efficient risk management must also include not only the mitigation of the probability of bad incidents but also the proactive mitigation of the impact that bad incidents will have. An all encompassing information systems must be at disposal.

The data as a basis for safety management are generated through a voluntary and anonymous reporting, notification and information system. The reporting procedures

- ◆ must ensure the anonymity and confidentiality of the report,
- ◆ must provide an incentive to inform voluntarily,
- ◆ must encompass all internal and external interfaces of the company,
- ◆ must consider the psychology of human behaviour,
- ◆ must be based on promoting team spirit between all levels,
- ◆ must enable feedback,
- ◆ the reporting must be possible both on paper and in electronic form,
- ◆ must enable errors and mishaps to be communicated without reservation
- ◆ and should support an atmosphere of trust.

For voluntary reporting, a separate reporting form must be at disposal, which differs from the form to report operational malfunctions. The report must be anonymous and independent from the management level. This helps the informant to overcome his inhibition threshold.

An independent central department of contact evaluates the reports and notifications, prepares an audit on the detected unsafe and risky characteristics and prepares proposals for solutions and measures to be taken in order to increase safety in the company.

See also: F.A. Wingle ***RISK-BALANCE MODEL – a STRATEGY TO MANAGE SAFETY AND RISKS IN RAILWAYS, PDF*** free for download from <http://www.drwingler.com>, published April 02, 2017,

and James Reason ***MANAGING THE RISKS OF ORGANIZATIONAL ACCIDENTS***, Chapter 7 “A practical Guide to Error Management”, p.125ff, Ashgate Publishing Limited, Farnham, England, ISBN 1 84014 104 7.