Learning from accidents and rule based safety

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Content

1. What is „rule-based“?
2. Learning from accidents
3. Conclusion
„Rule based“ vs. „risk-based“?

Complementary, not either-or!

- Rules are developed to cover known risks
- Rules are based on experience (sources like accidents, incidents, monitoring, supervision, …)
- Rules should be known and followed by everyone – link to human factor, training of staff, practicability of rules
- Deviations possible, if risks are managed

Rules are an important part of an effective management of safety / risks!
Development of rules

- Improvement
- Safety rule
  - Implementation in the SMS
    - Development of necessary safety procedures
    - Training of staff
    - Safety culture
- Lessons learned

Conclusion:
Efficient safety management is a combination of rules and a risk based approach!
Advantages / disadvantages of rules (example: operational rules)

- Limit freedom for the operators (those who have to apply)
- Less flexibility

+ Transparency
+ Help SME, newcomers, cross-border operators
+ Clear requirements for railways and their staff
+ Manage interfaces between RU and infrastructure manager
+ Ensure a sufficient level of safety
  - Define and manage national safety level by determining relevant national safety rules
  - Secure existing (national) level of harmonisation with > 400 Rus in Germany
  - Basis for NSA to supervise the railways
+ Control of NSA / MS in case of amendments of safety rules
Content

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Rules based on experience / lessons learned

New rule or amendment of existing rule usually if

• Accident investigation body recommends it
• Incidents show necessity
• Due to operators‘ experience

➢ Very often „sector rules“, developed by sector organisations / in cross-sector committees
➢ Regularly updated on the basis of experience from operation, learning from accidents and incidents, technical progress, expert discussion and judgement.
➢ Cases where NSA (by written order) or Ministry (by law) issue new rule are the exception
**Example**

**[Brake checks]**

**Input:**
Several incidents/accidents due to:
- Low braking performance
- Part of train not connected to brake pipe

**Sector organisation/committee:**
Analyses, Evaluation

**Output:**
Operational rule developed for brake checks during operation)
- Detailed rules
- Types
- Triggers
- Practical doing

**Ministry/ NSA:**
Classification as national safety rule due to its significance for the railway safety level in Germany
Example

[Brake checks]

Triggers - full brake checks necessary when:
• Train is composed or recomposed,
• Train was stabled for longer than 24 hours,
• Train composition does not change: at least once a day,
• Lack of braking power occurs,
• Overloaded brakes had to be resolved,
• Train starts directly ahead of a steep hill section.

⇒ **Necessary for all RUs to follow**
⇒ **Noncompliance may lead to dangerous occurrences that already occurred in the past and are targeted by the rule**
⇒ **Not appropriate to leave to individual risk assessment of each RU**
Example

[Brake checks]

But:

• Rule is code of practice: Deviation possible!
• Up to each RU to evaluate the rule and decide how it is to be applied inside the company

Procedures for brake checks in RU’s SMS

(RU might do more – or decide that parts of rule are not applicable given the RU’s individual background – e.g. RU with fixed train compositions only)
National operational safety rules in Germany

- Signals
- Tunnel safety
- Route knowledge
- Competence requirements for operational staff
- Safety of loading
- Checking of vehicles before and during operation
- Basic operational principles
  - Train braking
  - Train composition, length, equipment, maximum speed
  - Driving a train, shunting
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Conclusion

✓ Operational rules are an important part of an effective management of safety / risks!

✓ Mandating rules on national level does not conflict with a risk based approach!

Rule based safety + Risk based approach

Good safety performance
Thank you!