EUROPEAN DIRECTIVE: GUIDELINES FOR TUNNEL SAFETY OFFICERS IN THE FRENCH CONTEXT

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ABSTRACT

European Directive: Guidelines for Tunnel Safety Officers in the French context:

The European directive 2004/54/EC on tunnel safety (and its transposition in member states) defines the activities, responsibilities of four entities: the administrative authority, the tunnel manager, the inspection entity, the tunnel safety officer, and their relations between them and with the emergency services.

The paper is an attempt from a tunnel safety officer working in the French context to show, from his standpoint, how to perform his duty. After giving a few statements derived from the Directive itself (in its French transposition) and from experience, the “tasks and functions” of the directive are reviewed and commented.

1. PREAMBLE

In the process of transposition of European directives within each member state laws and regulations, some (normally minor) discrepancies may appear. It is also in the Tunnel Safety Officer (TSO) attribution to speak his mind. Therefore, the content of this paper engages only its author and may anyway differ on some aspects, which will be duly mentioned when appropriate, from what it would be in other member states.

2. INTRODUCTION

Following the publication of the European directive 2004/54/EC on tunnel safety and its transposition in member states by 2006, people in charge of the newly position of Tunnel Safety Officer had to invent a new job, at least new in the area of road tunnel: New, but based on a list of 7 “tasks and functions” described in the directive, based on the description of the various “safety actors”, and based on the principle of independence of the TSO in his (her) statements.

Based on the experience gained in the meantime, it appeared interesting to somehow complete the base of the TSO activity above mentioned by a subjective view in the French context, as mentioned in the preamble, with the ambition of providing a base for some general guidelines to help TSO’s in the application of the directive.

This paper starts with a few “general statements” that will then be detailed within each of the 7 assignments.

3. STATEMENTS (BASED ON THE EUROPEAN DIRECTIVE)

3.1. Statement 1

The fundamental reason behind the creation of the position of Tunnel Safety Officer (TSO) is to create as much awareness as possible of all “safety actors”. The Tunnel Safety Officer makes sure, as much as his position permits, that all available information is reasonably used by responsible actors using their respective expertise and that, when deemed necessary,
additional expertise is sought. This cannot be better exemplified than by quoting an expert in risk analysis in nuclear power plants (Ralf Mock, FHZ, Switzerland, during ITA-COSUF workshop Frankfurt 8th June 2010):

*To achieve a high level of safety, the key is creating multiple, independent and redundant “layers of defense…”*

The TSO should always make himself available for discussion with the “safety actors” especially with the tunnel manager, and take any occasion to state his availability. Output of these discussions should always be put in writing. The same actually goes, whatever the result, with his overall activity.

3.2. Statement 2

The tunnel manager is the decision-maker, under the supervision of the authorities. The tunnel manager is also the provider of information and as such, he is central in making sure, as mentioned in statement 1, that the experts, emergency services… and the TSO will perform well and will be able to give their feedback (to be shared with the authorities).

In case of information obtained from another source, clarification should be requested from the tunnel manager.

4. STATEMENTS (BASED ON EXPERIENCE)

4.1. Statement 3

The author’s experience shows that, once tunnels have been upgraded to reach European requirements as defined by Directive 2004/54/EC, further improvements are mostly achieved with regards to organisation, coordination, training and maintenance. It might be worth mentioning to tunnel managers that this is often done with little financial consequences other than the time spent thinking, discussing and making decisions on these topics *(that would come as no surprise to companies or organisations having experienced more than once that, by improving the quality of their products or services, they had also, at the same time, reduced their costs)*.

4.2. Statement 4

Generally, and more specifically on the 4 items mentioned just above, the importance of lessons learnt from experience must be stressed. In that regard, debriefs made collectively by the tunnel manager and emergency services, plus the TSO on “significant events” are of paramount importance (being informed, the authority could decide to participate, or at the very least, will be informed with the Safety documentation yearly update).

Beside the definition given by EU member states of what is a significant event, some events minor in their consequences could prove major by their significance and any opportunity to learn from them should also be taken. This lies mostly in the hands of the tunnel manager (and services involved if any).

Agreements on what went wrong and what should be done are generally not very difficult to obtain, though it is sometimes obtain at the cost of a somehow vague description. If otherwise, the TSO should nevertheless request his position to be mentioned, and, if not possible, give in writing his position to the tunnel manager.

These lessons might be of interest for other tunnels, operators, etc.
5. TASKS AND FUNCTIONS OF THE TSO

a) Ensure coordination with emergency services and take part in the preparation of operational schemes

The French transposition states that coordination is mostly done by taking part in the preparation of operational schemes. This was done, it seems, to be more coherent with the fact the TSO has no other credit than the possibility of independently giving his view on any safety related matter.

The bases for discussion with the tunnel manager, services and the authority are:
- The safety documentation;
- Emergency plans (plus operational schemes provided by the emergency services if not included);
- Regulations;
- Lessons learnt from experience (emergency operations, exercises, tunnel or equipment failures);
- Any information the tunnel manager transmitted to the Tunnel Safety Officer.

b) Take part in the planning, implementation and evaluation of emergency operations

Taking part in planning and implementation is mostly done through tasks: a, c and e. As for evaluation, it is suggested to debrief emergency operations just like exercises (see item g below).

(c) Take part in the definition of safety schemes and the specification of the structure, equipment and operation in respect of both new tunnels and modifications to existing tunnels

For new tunnels and modification to existing tunnels, in order to perform that task, the tunnel manager should involve the TSO in the process as early as possible (1 or 2 years for a new tunnel, several months for a modification).

The Safety Documentation describing the tunnel as being built, then as built, should provide most of the information necessary for the TSO. This may be complemented by seeking clarification from the experts who provided this documentation.

While highly recommended, the participation at project and construction stage does not imply the TSO agreement on decisions made (some possibly against his view) and the documentation, once finalized, will be independently reviewed before being submitted to the authorities.

(d) Verify that operational staff and emergency services are trained, and he/she shall take part in the organization of exercises held at regular intervals

French transposition: Verify the existence of training programs for operational staff and emergency services and their implementation.

The documents showing the reality of the training of the operational staff should be provided on a regular (yearly) basis by the tunnel manager. As for the emergency services, the verification can hardly include the very core of the job of a fireman or a policeman and should focus on training regarding the tunnel specificities. It is suggested that a training program for and with emergency services be built with the tunnel manager including a tunnel visit (tunnel itself, access, installations). The safety documentation should provide most of the necessary information. Training sessions should be organized by the tunnel manager at the emergency services request.
Exercises can be included in the training program for all staff. Active or passive (observer) participation should be encouraged.

Planning and evaluation of exercises provide two occasions for debate with the “safety actors”. For planning, the main focus is on choosing a theme that seems relevant and organizing it; as for evaluation, it is on the lessons drawn from the exercise.

Besides, these two meetings provide an opportunity to discuss on any matter pertaining to the other TSO tasks and functions, would it be difficult to organize specific gatherings. At the minimum, the need for such gatherings, for documents and one's availability should be stated.

(e) Give advice on the commissioning of the structure, equipment and operation of tunnels

Under French regulations:

TSO advice is given to the tunnel manager;

The tunnel manager is in charge of transmitting the Safety Documentation to the administrative authority every 6th year (or less in case of substantial modification or at the administrative authority’s request) and a yearly update in between, together with the TSO advice regarding these documents;

The tunnel manager is in charge of transmitting to the administrative authority and emergency services all other pieces of advice given by the TSO.

Beside the one or two fields of expertise the TSO may have, he should not refrain from asking further analysis or expertise if deemed by him necessary.

States regulations would normally request mandatory structure and equipment commissioning, then regular inspections. These should provide enough information in their conclusions for the TSO whose main tasks in that respect would be to:

Make sure these regulations are applied (content, frequency);
Follow the implementation of conclusions made

Minimum operation parameters (when a given parameter is below the threshold mentioned in the Safety Documentation, the tunnel should be closed):

These parameters should be derived as much as possible from the risk analysis included in the safety documentation.

A typical example for a tunnel equipped with longitudinal ventilation is the number of fans out of order:

Acceptable before operating the tunnel in a degraded mode
Acceptable in a degraded mode before closing the tunnel

Some parameters would be based on a qualitative assessment.
All of them should anyway be adjusted based on experience.

(f) Verify that the tunnel structure and equipment are maintained and repaired

French transposition: Verify the existence of tunnel structure and equipment maintenance programs and their implementation

Due to the very large variety of equipment in tunnel, it seems reasonable to pick, on a yearly basis for example, and based on experience, a type of equipment to be thoroughly verified, such as:
Structure commissioning;
AID system rate of availability, performance;
Ventilation (sometime highly demanding) mechanical and electronic systems
Water supply
Etc.

For each item, the documentation provided should show that:
The maintenance program exists
The frequency of tests, cleaning, settings given in the program are followed
If a test failed, action is promptly engaged

(This is based on the assumption that the maintenance is reasonably well done, as should be the case on the TERN. Otherwise, a stronger action should have to be taken. For new or refurbished tunnels, how demanding are the minimum operation parameters can give a clue on how the tunnel manager is confident on the tunnel and its equipment).

Additionally, equipment (or structure) failure pushing the tunnel in a degraded mode or to be closed should be debriefed thoroughly.

(g) Take part in the evaluation of any significant incident or accident as referred to in Article 5(3) and (4)

Exercises should be treated more or less the same way as incident-accident in the evaluation process.

Lessons learnt from experience should normally be based on the following sequence:
Facts>Remedies>Implementation>Evaluation;
And back to remedies if not satisfactory (following the classical method of Quality Improvement).

A table of all pending or being processed remedies decided based on the evaluation should be established, updated and discussed on a regular basis during meetings between the tunnel manager and the TSO.

6. CONCLUSIONS

7.

While being always ready to discuss any tunnel safety matter, the author, as a tunnel safety officer himself, is unlikely to change his view regarding the four statements heading that paper, specially the two first on the European Directive understanding. This owes a lot on the discussions that took place within the ITA-COSUF working groups and more specifically on the first European TSO Forum that took place in Lyon in 2009.

If the rest of what is written above can help each TSO find his own way, following or not the tracks suggested, the objective of that paper will have been reached. That being said, I wish to close this paper with another quotation, from M. Arnold Dix, scientist and lawyer, during the already mentioned European Forum in 2009:

“Independence: Ability to write unpopular opinions without recrimination”