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PREPARATION FOR SOLUTION OF CRISIS SITUATIONS IN RAILWAY TRANSPORT IN CZECH REPUBLIC

1. INTRODUCTION

Solving of every crisis situation is closely connected to transport. Even though transport is not directly influenced by crisis situation, it is widely used to eliminate consequences such as evacuation or transport of specialized machinery and material. It requires making many technological arrangements connected to demand for transport network such as density, intensity or speed.

Many times the situation is more complicated, when the transport network is damaged or destroyed by accident. In this case we have to follow previous procedure and in addition to that also provide renewal of destroyed or damaged infrastructure. Because of that it is very important to provide and follow prepared plan how to renew transport infrastructure in case of crisis situations with wide range of influence such as war or floods. In the new part we will focus on current problems of present methods and perspectives of successful and fast renewal of railway.

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2. CURRENT SITUATION

In present time there are plans for technical protection of railway which are able to provide temporary renewal of railway using short-term renewal of traffic on chosen railway network and also on military trains in time of threat state or military state in country. These plans are made by České dráhy a.s. and Stavební obnova železnic a.s. according to demand of Ministry of defense.

Unfortunately, there is no plan for crisis situations which influence civil and commercial transport. Methods how to cope with such situations are not provided at all. As far as we have seen in year 2002 when terrible floods stroke Czech Republic plans for military crisis situation were not very efficient when they were applied to civil and commercial areas.

For solving crisis situation in railway transport we can follow just order 03 issued by České dráhy a.s. known as "Instructions for renewal damaged railway network in warlike time". In connection with that order we have to state that basic type of renewal is temporary renewal, which solve providing of transport for time of 5 up to 7 years. In case of short-term renewal, this method is used only in case of large damage and it is able to provide solution for maximally 1 month and than temporary renewal or reconstruction has to take place. It is also very important to state that renewal of bridges, which is considered as the most complicated is made only by methods which fulfill requirements of temporary renewal.

These methods and orders were sufficient enough until 1993, when for immediate renewal of railway network there were Railway corps fully qualified and able to provide renewal. Railway corps was able to intervene in few hours after crisis situation happened in whole country and respond to needs also non military crisis situation. In this system were then used units of civil protection to provide temporary renewal or reconstruction.

Above mentioned principle was changed when railway corps was dissolved and mainly in case of non-military crisis situation there is tendency to provide reconstruction than temporary renewal. This method is quite sufficient but it is not able to provide renewal of traffic as quickly in all cases. For instance in case of railway renewal after floods in 1997 the regional railways decided to make reconstruction but after pressure from local authorities took place they decided to make temporary renewal which response much faster to needs of society.

3. PERSPECTIVES OF DEVELOPMENT

According to recommendation of ministry of transport was in recent months introduced plan how to create complex crisis situation solving system where the responsibility to renew damaged railway would be given to private companies. Despite this fact, the advantages of the present system will be stored. In fact it means that the government would take care of special material which is not normally owned by private companies. On the other hand special courses will be given to management of these companies to make them able to work with plans of renewal and also to show them consequences of fast renewal when they use temporary materials.

Preparation and introduction of new system of Technical protection of railway is task which should be done by organizations which are interested into this area. They are České dráhy a.s., Stavební obnova železnic a.s. and also scientific organization such as Jan Perner Faculty of Transport of University in Pardubice and Faculty of Military Technology University of Defense in Brno.

If we consider the work of new system there is a question whether specialized and practical courses should remain and if yes which organization should organize them. This task was solved by railway corps until now. Their possibilities are limited mainly because of average age of their members. Therefore their knowledge and skills should be given to younger scientists who would gain new views to this area and new perspectives of solutions.

There are few questions and areas which should not be forgiven in case of solving the basic problem. They are:

1. Arrangement of basic knowledge and their application in case of renewal.
2. Ability to organize renewal of railway nonstop and with maximum possible applying of sources.
3. Understanding of specialized materials and technological methods.
4. Applying of decision process in crisis situations and usage of IT.
5. Practical experience with building of temporary railway bridges, and ability of operators to operate the renewal process according to present legislation.

Realization of point n.5 was already done according to resolution of Ministry of Transport in 2005 provided by Stavební obnova železnic a.s. in Kojetín. Courses were attended by employees from České dráhy a.s., military unit of sappers, students of technically oriented universities and employees of different building companies. The main purpose of this course is to recover the forbidden ability and knowledge connected to renewal bridge system called PIŽMO and bridge constructions ŽM 16 and ŽM 16 M.

Other possibilities and forms of courses are being searched according to demand of Ministry of Transport. One of them is to introduce study programme of such orientation in case of transport and civil engineering universities. This would prepare specialist for operation of railway transport as well as specialists for renewal of railway tracks and bridges and also specialists for solving crisis situation. The task of practical course centre of the Ministry of Transport in Kojetín would be to give students the practical experience in form of the compulsory subjects.

4. CONCLUSION

It is very difficult to prepare to reduce the consequences of damaged railway caused by either environmental disaster or different cause. If we would like to be successful and prepared to solve such problems, we definitely have to educate new specialists who will be able to solve crisis situations in transport.

The lack of knowledge and practical experience with using special materials and technological methods for renewal of railway is something what shows its negative consequences in solving of crisis situation and also has very obvious and serious economical consequence. It is also very important to develop new methods and work on new materials which would match the technological changes which took place in railway transport.

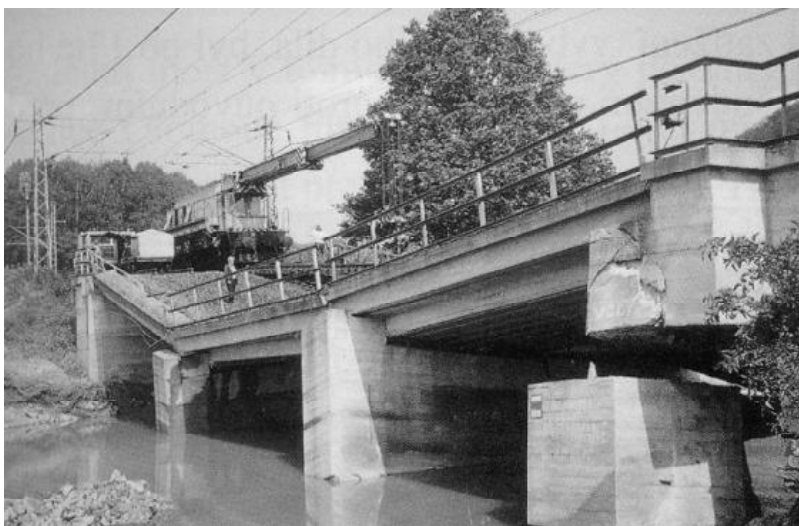
In recent history we were one of the most well-known countries in field of renewal of railway. It is thanks to technological methods and also different technological inventions such as PIŽMO, ŽM 16M, ŽM 60 and also truck n.53. All of these technological inventions were not conquer up to now.

It is very important to introduce special courses and study programmes for young students and make this topic interesting for them, so that the knowledge and our position in world will not be forgiven. Unfortunately if we would not change the current situation we expect this area to be seriously weakened in next five years.

As far as we concern it is also very important to provide support for scientific research tasks, which would focus on new trends in this area. For instance modernization of bridge structure PIŽMO, development of information systems for support of solving crisis situations and also to make inventories of renewal materials more efficient.

It is very important to realize that scientific approach can provide fast methods of renewal of railways and also modern way of renewal of damaged railway object such as bridges. Otherwise we would have serious problem to cope with these crisis situations.

Picture 1. Bridge in km 56,889 across the river Morava (July 1997)



Resource: Čermák, et. al., 1999

Picture 2. Bridge across the river Dyje at Znojmo - bridge construction ŽM 16 and pillar construction PIŽMO



Resource: Čermák, et. al., 1999

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SUMMARY

Preparation for solution of crisis situations in railway transport. The paper points at the most important problems in solving the crisis situations in railway transport, mainly the fast renewal of railway infrastructure.

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