

Expertise in assistance to operational staff

V. I. VORONTSOV, Deputy head of technical analysis Department of the office of the chief auditor of the Krasnoyarsk railway

Operational staff of a railway transportation (train dispatcher, on duty at the station, train compilers) constantly have to make decisions, and in most cases - in standard situations. The largest number of erroneous decisions taken in emergency situations. According to experts on the analysis of accidents and disasters, it is human error in the operation of systems is responsible for about 45% of accidents at nuclear power plants, 60% of air crashes and 80% of accidents at sea. Statistics facts confirming the paramount importance of the human factor, it is possible to continue.

Is it possible to completely avoid errors in the work of the operational staff of a railway transportation, especially for violations of the normal course of the manufacturing process? Consider for example the case to assist the train stopped on the stretch. Similar situations in the train dispatcher, on duty at the station do not occur very often, but the whole process of their resolution (the organization of the administration of the auxiliary locomotive securing stopped on the stretch of the train, trains pass the available paths, etc.) is regulated, and having the necessary volume knowledge and skills, leader of the movement can ensure traffic safety on the assigned area.

But in order to prevent violations of traffic safety is carried out numerous activities, meetings, each case helping to stop the train in detail understood the stationmaster, auditors movement leaders at various levels. What's the matter?

In our opinion, one of the reasons is that the process is regulated by a large number of documents: the Instruction on train movement and shunting operations on the railway transport of the Russian Federation, the Order of JSC "Russian Railways", Rules of Procedure of action of workers in a forced stop the train on the stretch and assistance to auxiliary locomotive, orders, directives and instructions of OAO "Russian Railways" and railway management.

Having dozens of examinations at the station duty officer, dispatchers and asking the question, what documents regulated the process of helping, I was convinced that the applicants for the post may be called only one of them - Instructions for train movement. Other documents did not know any of the newly appointed attendants, air traffic controllers. As a result, the leading specialists of traffic management came to the unanimous conclusion that the operational staff in the event of unusual situations are not treated to the regulations, and call colleagues, head of the station, the auditors of movement. The fact that all the necessary knowledge to learn only by trained workers - experts.

The process of becoming an expert long enough. It was found that requires at least 10 years, under favorable conditions to become an expert in any area of professional activity. At the same time a big role in the formation of expert play constant exercise.

One of the important conclusions reached by the designers of human-machine systems, is that the amount of information that can be well digested and processed by the operator should not be specified in the information model is arbitrary and determined or for specific working conditions, or on the basis of the available quantitative estimates, or by conducting special experiments.

One of the features of activity of operators is that the operator is usually a long period of time, operates as a trouble-free operation, performing a well rehearsed actions, or even idle in anticipation of the emergence of extreme situation which may not occur for the entire period of his career. These modes are dangerous because they can cause loss of operator skills to manage the system, reduce operating alertness. So, to prevent the loss of pilots necessary skills during landing was not considered appropriate to use the automatic and semi-automatic control on the landing line. As a result of the willingness of the pilot operated manually in case of sudden failure of automation was maintained by preserving close ties with the object of control.

Along with the training of workers in the simulation simulator developed special expert systems that help operators to analyze the behavior of an object

other than the staff. It was found that the perception, learning, information processing affect tens of factors including temperament. Due to the fact that the composition of any organization consists of people with different types of temperament, the administrative decision should be presented in a form understandable to all participants of the development and implementation of administrative decisions.

One way to make the solution accessible to people with different types of personality consists in drawing up different solutions corresponding to different temperaments. Another method involves design solutions in the form of structured communication (oral or written). Looking for approaches to each worker, it is necessary to use different tools. For example, the program of assistance to decision-making built on the basis of database expertise. Base expertise needed because of the large amount of information that can be seen in the example of the process of helping to stop the train.

Active development of information technology allows you to create a variety of knowledge. It is important, in our opinion, create a computer database expertise to the operational railway workers. In developing the program of assistance to decision-making based database of expertise, you can describe in detail the sequence of actions mover in unusual situations. We have attempted to create a virtual organization. The program in real-time to control the process of care, and promptly intervene in case of wrong actions.

Activate the program, train dispatcher and station duty officer sees a list of non-standard situations in which it needs support. After selecting a mouse click, for example, "Helping the train stopped on the stretch", the controller enters the menu that appears input the data: the name of the driver, train number, stage, kilometer stop the cause of the fault. These data will help him correctly identify the location of the auxiliary stop the locomotive without hesitation say all the orders, and other pulsatile

After entering the data on the screen appears a specific sequence of actions in this situation developed on the basis of expertise. In the upper right corner of a

window "List of documents", which may be involved in the dispatcher heavy, controversial cases for detailed study of the situation. By activating this list, the dispatcher sees all documents that can help him. By clicking on the blue line with the name of the document is opened the text is necessary in this situation points.

On the screen controller can receive the prepared text, he should read the driver. After activation points "Filling the form DU-64" program provides information on the length of the train in meters, and the completed form DM-64.

The deepest level of the program allows you to record all actions of operating personnel in time. Activation of the program, and each subsequent window in it will be reduced in the final report (protocol), which is available at the touch of a button as soon as the output from the driving of the train. After all, according to the existing provisions should be evaluated right action in each mover precarious situation. Such expert program will improve traffic safety in difficult cases.

Such expert program will improve traffic safety in complicated cases.