

UDC 648.15.495

APPROACHES TO THE DESCRIPTION OF PROCESSES IN THE MAIN PIPELINE TRANSPORT**ALIAKSEI LUKASHONAK, ALIAKSEI VARONIN****Polotsk State University, Belarus**

It was suggested to use technical regulatory legal acts as the basis for constructing process diagrams for safety evaluation of processes in the main pipeline transport.

At the stage of identification of hazardous factors that may affect the risk evaluation at the sites of the main pipeline transport for clarity and convenience of the procedure it was suggested to describe a model of network of operating processes at an enterprise [1].

Processes can be described by a variety of methods and approaches. As a result of process modeling languages review for quality management it was found that IDEF0 language was the best for describing business processes at the enterprise. Therefore this language was used during the risk evaluation at the sites of the main pipeline transport. IDEF0 notation was developed and based on the methodology of structural analysis. It was successfully used in a variety of industries and proved to be as an effective means of formalized description, design, analysis and improvement of business processes and complex systems.

One of the main advantages of IDEF0 methodology is correspondence to the approach to the international standard ISO 9001: 2000 concerning the description of the quality management systems and thus the system safety assessment [2]. Considering that security is one of the indicators of quality, it is advisable to use these methods and adapt them to the description of the network of processes during their safety evaluation. The main feature of the proposed approach is the selection and description of processes in which the emergence of security "loss" as well as the processes of transmission of these "losses" to other processes by means of information and material relations take place.

Processes directly or indirectly influence safety and dangerous situations. Such processes according to the ideology of documents ISO 9000 [3] as part of the main pipeline transport are the processes of the life cycle services which directly influence safety. In addition, such processes must include management processes, supply processes, measurement processes. These processes in case of abnormal functioning indirectly influence the occurrence of dangerous situations through making incompetent decisions and orders, inaccurate measurements, the supply of substandard materials, etc. In this case incompetent orders are transferred through the chain of processes at the enterprise that result in the emergence of accidental situations in the lifecycle processes.

The purpose of constructing a functional model is necessary and sufficient formalized description of all sub processes as well as the nature of relationships between them. This model is able to provide a broad picture of processes and flows of information and materials.

The description of network of processes was carried out through operation of the linear part of the main pipeline. Selecting the operation of the linear part of the main pipeline as the life cycle stage was conditioned by the fact that operation illustrates the maximum number of hazards. A pipeline is a linearly extended object with a random spatial distribution of defects which are more difficult to detect than in platform objects.

The process of operation of the linear part of the main pipeline in graphical form can be written on the bases of two sources of information.

According to the first one the description of the main pipelines operating by mean of diagrams of interrelated processes with inputs and outputs can be based on real enterprise operating of the main pipeline transport. According to this method it is necessary to talk to and obtain information from employees at all levels of the enterprise which makes it possible to see systemic processes and operating mechanism of the enterprise, existing information flows at the enterprise, professional relationships between the staff in the team.

According to the second method a source of information in the description of the company is presented by technical regulatory legal acts. Enterprise operating is organized on the bases of technical regulatory legal acts. All requirements for the content, quality of raw materials and staff, types of work, the sequence of actions in the organization and execution of works which can be found in technical regulatory legal acts define enterprise operating. In other words, the technical regulatory legal acts represent a verbal model of the enterprise.

Technical regulatory legal acts are developed by consensus of scientific institutes, leading specialists of enterprises, ministries and specialized agencies based on the latest achievements of science and technology, new developments in production organization, modern safety requirements. For this reason the adequacy of the model of enterprise operating as reflected in the technical regulatory legal acts is in no doubt.

The advantage of using technical regulatory legal acts as the basis for constructing process diagrams lies in the fact that these acts constitute formal documents with a concise precise objective content and are set out in

the form of the system. Using the results of interviews with the enterprise staff as a source of information for networking processes may be accompanied by subjectivism, non-systematic presentation of information, may be time-consuming. Against this background the first method of using technical regulatory legal acts was chosen as a source of information for constructing process diagrams of operation of the linear part of the main pipeline.

At the same time processes construction language (IDEF0) lacks such an element as an opportunity to define objects' attributes. Thus the constructed model of operation of the linear part of the main pipeline serves as an information basis for further analysis and evaluation of the integral risk of the whole process.

REFERENCES

1. Repin, V.V. Process approach to management. Modeling of business-processes / V.V. Repin, V.G. Eliferov. – M. : RIA "Standards and quality", 2008.
2. Systems of quality management. Requirements: STB ISO 9001-2006. – Minsk : BelGISS, 2006.
3. Systems of quality management. Main basics and vocabulary: STB ISO 9000-2006. – Minsk : BelGISS, 2006.

UDC 648.12.452

SAFETY MANAGEMENT OF PROCESSES IN THE MAIN PIPELINE TRANSPORT

ALIAKSEI LUKASHONAK, ALIAKSEI VARONIN
Polotsk State University, Belarus

It was suggested to create a fund of technical regulatory legal acts that would allow to increase the safety of processes in the main pipeline transport.

It is necessary to carry out quantitative risk evaluation in the main pipeline transport to identify hazardous processes and to draft arrangements that will help to prevent hazards. This approach should be implemented in the safety management system of processes in the main pipeline transport.

Different control and safety systems can be distinguished. In the technical regulatory legal acts of the Republic of Belarus such concepts as total safety system, products safety management, flights safety management system, information safety system, fire safety system.

One of the most urgent tasks in the main pipeline transport is the management of industrial safety due to the fact that industrial hazard is the characteristic of this means of transport. The requirement to establish safety management systems are stated in Russian technical regulatory legal acts.

Safety work [1], environment [2] and quality control [3] management systems are the closest to each other in relation to content and requirements adequacy. They are part of the overall management system which includes planning, responsibilities, methods, procedures, processes, resources.

Due to the fact that security is one of the quality indicators and service hazard arises in processes, safety management system of processes must be considered in the framework of service quality management system which uses a process approach. Management responsibility, resource management, life cycle processes, measurement, analysis and improvement are the basic elements in the model of the quality management system. This model is based on the methodology known as the Deming Cycle PDCA [4] which represents an iterative sequence of operations such as planning, implementation, verification, i.e. actions that will lead to continuous improvement.

As shown in the model of quality management system and in Deming Cycle the most important processes are those which are carried out by senior management. Therefore from the entire list of processes responsible management and planning are in the first place. Within these processes senior management sets policies and objectives, ensures the implementation of the required processes, provides resources, analyzes and makes decisions on improvement measures.

Executing senior management decisions passes through information channels by means of documented control actions. Documentation conveys the idea of the decision and the sequence of actions that must be done in the implementation of decisions of the senior management.

Controlling actions by means of documentation may be transmitted through external and internal information channels. The external information channel contains documentation which is worked out by the government. The internal channel includes documentation which is worked out within the company on behalf of senior management.

Attaining quality and value to products or service value takes place in the processes of a lifecycle. At the same time in the processes of lifecycle the loss of quality in the form of hazard formation which arises from the