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MONITORING AND CONTROL IN EMERGENCY SITUATIONS OF HEAT ENERGY SYSTEMS

Monitoring and control in emergency situations is a necessary part of the energetic complex systems quality management. For information provision of monitoring procedures it is necessary to provide appropriate formatting of monitoring data. All data should be unified in terms of the dimension and degree of presentation of the data, as well as the order in which they are provided to the monitoring system.

In case of necessity, carrying out operational control over the development of the state of the environment in abnormal and emergency situations of the heat energy systems in order to assess the extent of emissions or discharges of pollution and predict their consequences for the environment (taking into account hydrometeorological and other factors that influence the processes of distribution and metabolism of pollution), as well to work out recommendations for the further functioning of certain objects and development of protective structures and the use of other means of environmental protection, in are used as standard monitoring procedures, the frequency of which significantly increases depending on the dynamics of situation, and special procedures, designed for a wide range of changes in both quantitative and qualitative composition of pollution. In the post-

accident period, control with the aim of clarifying the patterns of pollution distribution, identifying the effectiveness of measures for the protection of the area or minimizing the impact of pollution on the reservoir and forecasting the boundaries and terms of normalization of the water body is performed as standard staffing through standard procedures and special means (including mobile and equipment with high sensitivity and precision, which determines trace amounts of pollution of any nature), which allow to detect unexpected components under clarify the limits and dynamic reallocation of pollution in the region and so on.

For information provision of monitoring procedures it is necessary to provide appropriate formatting of monitoring data. It is a matter of ensuring that all data is unified in terms of the dimension and degree of presentation of the data, as well as the order in which they are provided to the monitoring system. In order to simplify the template, all data must be presented in an exponential form, where the mantises of the number represented as an integer or as the correct decimal fraction is followed by symbols of the exponential representation of the number, the sign and the degree indicator. In order that all the information could be successfully searched, stored, corrected and displayed, it is necessary to adopt an appropriate format, that is, the order of their placement in the message from the source of information.

The automated monitoring system (AMC) for the effective analysis of the state of the environment provides justification for the purpose of collecting information, sampling sites, the frequency of updating data, their nomenclature, and alternatives to information provision. All of this can be achieved only by creating of AMC, which should be based on principles of adaptation, optimization and artificial intelligence.

The functioning of AMC involves the consistent implementation of:

- observation of objects of control, that is, collection of all necessary information for an exhaustive assessment of the source of pollution;
- identification of the situation that arose as a result of the activity of the source of pollution, that is, a comparison of the actual situation with a number of possible reference (depending on the chosen scenarios for the development of the situation) for which the rules of normalization or stabilization of the environment have been developed in advance and the choice of the nearest standard as a working hypothesis;
- management, that is, the use of managerial decisions that correspond to the chosen working hypothesis of the situation development, in order to minimize the impact of pollution on the state of the environment.

Observance is a function of the following three information criteria:

- the availability of information (physical, which should be understood as the ability to measure a variable or parameter that is of interest to us, both

in principle and in a particular point of space; logical and mathematical, which should be understood as the ability to evaluate those quantities that cannot be measured directly, by the results of measuring some other values associated with the first logic-mathematical dependencies, in time, which should be understood as the possibility of timely obtaining information of interest, for the operative assessment of the state of the environment and the adoption of hell equivalent managerial decisions);

- the sufficiency of information, that is, the completeness and accuracy of the data, the possibility of using alternative information sets and methods for assessing the development of the situation for slow-moving processes in order to obtain data that are sufficient for timely analysis and evaluation;

- the reliability of the information, that is, the relevance of the data and its dynamics to the actual processes, the conformance of the actual distributions of data obtained during the measurements, the ideal, the identity of the real and ideal characteristics of the information.

Identification involves the realization of procedures for recognizing the real situation of the heat energy systems, which can be reduced to comparing the real situation with a set of standards, each of which corresponds to a certain "ideal" model of a possible situation, and the selection of one of the models (standards) that most closely reflects the real state.