**CONCEPT OF ENSURING INTEGRITY, RELIABILITY AND SAFETY OF COMPLEX ENERGY AND TRANSPORT SYSTEMS FOR REGIONS OF COLD CLIMATE**

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Until now, in modern regulatory documents, the probability of an accident or equipment failure is expressed as a classical probabilistic value, assessed by an acceptable, or admissible, statistical risk. The calculation of the probability is carried out without taking into account a priori knowledge, clarification of values as a result of the history of observations and modeling. From the point of view of safety, setting the value of an acceptable risk allows us to get away from the general problem of protection against accidents and disasters, and reduce it to an economic problem [1]. A number of key probabilistic factors affecting safety and their interaction are not adequately taken into account, for example, the spread of properties and the accumulation of damage in the material, defectiveness of welds, external influences, as well as unskilled personnel actions, which leads to the inevitability of failures and catastrophes, not to prevent them. The application of approaches based on the non-Markov paradigm, in particular, on the Bayesian interpretation of probability, to assess the safety and resource of technology, will make it possible to make clearer forecasts and prevent casualties caused by man-made factors [2].

The complexity of describing non-Markov processes is their nonlocality in time, mathematically expressed in the form of integro-differential equations, which determine the evolution of the system. One of the consequences of taking into account the history of ongoing events is a change in the probabilistic picture. From the classical frequency one is moving to the Bayesian interpretation of probability, when it can be defined not as an objective accident, but as a measure of ignorance, decreasing with additional information about the event. From this point of view, the Bayesian approach is a generalization of Boolean logic, is more reasonable and mathematically correct.

**References**

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