

1.12.22. MONITORING OF NUCLEAR POWER INDUSTRY FACILITIES

Nashchekin A.S., Shaternikov V.E., Moscow State University of Instrument Engineering and Informatics, Moscow, Russia

Creation of monitoring systems is preconditioned by the necessity to improve organization of works in the field of timely detection and prevention of threats of natural, technogenic, anthropogenic (including manifestations of terrorism) nature in respect of nuclear and radiation hazardous facilities and cargoes, to reduce the danger of occurrence of crisis situations up to the acceptable level and to minimize negative consequences of such situations.

Monitoring system is based on the continuous development of scientific and methodological framework and software for analyzing the current technical state and organizational support of security of nuclear and radiation hazardous facilities and materials, on the implementation of modern methods and means of continuous testing, analysis and forecasting of the nuclear and radiation security state, as well as on the control of this state using generalized indices.

Purposes of the monitoring system creation are: progressive reduction of risk of exposure of facilities and cargoes from anthropogenic (including terrorism), technogenic and natural factors; minimization of damages from crisis situations for personnel, population and environment; operative monitoring of the security state of the Rosatom facilities; informational-analytical support of the branch management in the decision-taking process.

Informational support of elaboration and implementation of measures on timely forecasting, detection and prevention of threats and crisis situations in respect of facilities and cargoes is the main task of the monitoring system.

The state of technical and organizational support of the facilities and cargoes security is an object of monitoring.

Monitoring system must provide performance of the following functions:

- a) acquisition, processing, analysis, storing and transmission of data on parameters of nuclear, radiation, chemical, ecological and fire security, locations of facilities and cargoes, cargo transportation routes and other required data;
- b) informational support of works performed in order to arrange and implement measures on provision of safety functioning of facilities (safety cargo transportation), prevention and localization of crisis situations, as well as liquidation of their consequences;
- c) simulation of crisis situation in respect of facilities and cargoes, forecast of their possible consequences and evaluation of efficiency of response measures;
- d) forecasting of threats to facilities and cargoes, as well as dynamic of their security variation under influence of natural, technogenic and other factors;
- e) maintenance of informational databases in order to provide support for adoption and implementation of managerial decision on protection of facilities and cargoes;
- f) presentation in established manner of the monitoring system informational resources, provision of these resources protection against unauthorized impact;
- g) formation of the integrated informational space of the monitoring system based on the unification and comparability of informational, software and hardware means;
- h) informational support of the All-Russia system for monitoring, testing and forecasting of extraordinary situations of natural and technogenic nature;

i) informational support of implementation of international treaties and agreements in the field of monitoring of facilities and cargoes with the Russian Federation being the member of.