

3. DIAGNOSTICS OF OBJECT STATE AND MONITORING OF RISKS DURING IMPLEMENTATION OF LARGE-SCALE PROJECTS

Makhutov N.A., RAS corresponding member

Elaboration and implementation of large-scale projects, including creation and operation of critically important facilities and their infrastructures, requires principally new setting up of problems of complex safety and security against severe accidents and catastrophes. This concerns such projects as “Sakhalin-1” – “Sakhalin-10”, “Shtockman”, “Northern Flow”, “Southern Flow”, high-speed transport means, nuclear reactors, aviation and space equipment of new generations, nano- and biotechnological complexes.

Requirement to ensure safety under criteria of acceptable risks becomes the basic one for such projects and objects. Fundamental and application researches on the problems of safety and risks performed in institutes of the Russian Academy of Science and leading scientific organizations of respective industry branches create the basis for transition from traditional methods and systems for provision of strength, service life and reliability to risk evaluation and control methods.

Mutually coordinated development and usage of complex system, including diagnostics of the state of the most responsible components of critically important objects in regular and emergency situations, monitoring over forming and realized risks at all stages of the object life cycle and automated activation of combined system for object protection against accidents and catastrophes as far as risks go beyond acceptable ones and approach to limit ones is one of the most important elements to resolve problems of safety and risks.

Currently, considerable experience is accumulated in domestic and foreign practice in analysis of every one of above indicated three components in the field of safety provision under risk criteria.

Paper presents main results of such developments obtained in the RAS working group “Risk and safety”, RAS Institute of Machine Science, MNPO “Spektr”, NPS “Riskom”, Russian scientific society of risk analysis.