IMPROVEMENT OF METHODS FOR MODELLING REPAIR CYCLES OF NPP POWER UNITS ON THE BASIS OF THE EQUIPMENT FUNCTIONAL STATE OPERATIONAL CHARACTERISTICS

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Repair programs for power equipment require constant improvement to promptly identify defective nodes at an early stage, leading to "scalpel" repairs that can be carried out without a global shutdown of the power unit and conducting local equipment repairs.

For analysis, one of the latest methods for modeling maintenance cycles based on the RCM (Reliability Centered Maintenance) methodology has been chosen. This methodology allows determining the requirements for maintenance and repair of each production object in a specific operational situation to meet the growing organizational and social expectations. It combines the most effective methodologies into a single management mechanism, which helps determine the optimal, flexible maintenance and repair strategy.

The importance of RCM lies in recognizing the higher importance of failure consequences compared to technical characteristics. The impetus for active technical maintenance is not so much the prevention of failures themselves, but the prevention or at least "softening" of their consequences. Therefore, repairs are practically carried out "after the failure," but they are carried out not "on ruins," but at the very last moment, on the still "alive" equipment.

RCM considers the following main questions:

The functions of the object and its standard technical characteristics in the existing operational context;

The likelihood of failure, cessation of performing its functions;

The reasons for each functional failure;

Forecasting the situation in case of failure;

Forecasting the likelihood of failure occurrence;

Forecasting actions if failure cannot be predicted.

Measures are proposed for the use of the maintenance cycle modeling system based on the RCM methodology, with adaptation to each individual case of nuclear power plant unit repair, to ensure their uninterrupted operation, as well as to reduce costs for repair programs and extend the operating period.

References:

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