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СИСТЕМА КОНТРОЛЮ ЯДЕРНОЇ БЕЗПЕКИ ПАЛИВОВМІСНИХ МАТЕРІАЛІВ НА ЗРУЙНОВАНОМУ ЕНЕРГОБЛОЦІ № 4 ЧАЕС ТА ПРОПОЗИЦІЇ ЩОДО ЇЇ МОДЕРНІЗАЦІЇ

Наведено короткий опис системи контролю ядерної безпеки (СКЯБ), що входить до складу інтегрованої автоматизованої системи контролю об'єкта «Укриття» (об'єкта, що накриває зруйнований енергоблок № 4 Чорнобильської АЕС). Пропонується подальший розвиток СКЯБ через впровадження алгоритмів автоматичної ідентифікації нейтронних аномалій за допомогою нечіткої логіки та статистичних методів; цифрова фільтрація специфічних нерегулярних імпульсних перешкод, що призводять до збоїв у метрологічній системі; алгоритми прогнозування змін щільності потоку нейтронів та оцінки змін в ядерно-небезпечних скупченнях паливовмісних матеріалів.

Ключові слова: Чорнобильська АЕС, ядерна безпека, системи моніторингу, алгоритм нейтронних аномалій.

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THE NUCLEAR SAFETY MONITORING SYSTEM FOR FUEL-CONTAINING MATERIALS LOCATED IN DESTROYED UNIT No. 4 OF THE CHORNOBYL NPP AND PROPOSALS FOR ITS MODERNIZATION

The paper presents a brief description of the Nuclear Safety Monitoring System (NSMS), which is a part of the Integrated Automated Monitoring System of the "Shelter" object (a facility that covers the destroyed Unit No. 4 of the Chornobyl NPP). Further development of the NSMS is proposed by introducing algorithms for automatic identification of neutron anomalies with a help of fuzzy logic and statistical methods; digital filtering of specific irregular impulse interferences leading to metrological system failures; algorithms for predicting changes in neutron flux density and assessing changes in the nuclear hazard of fuel containing materials accumulations.

Keywords: Chornobyl NPP, nuclear safety, monitoring systems, fuel-containing materials, algorithm for neutron anomalies.

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