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An improvement of maintainability and reliability for Safeguards equipment in RRP

At the Rokkasho Reprocessing Plant, MOX powder is converted from Plutonium-Uranyl nitrate solution by microwave heating. In this conversion process, large amounts of bulk plutonium material are treated. Therefore, Neutron measurement system with highly accurate, called Plutonium Inventory Measurement System (PIMS) have been introduced for material accountancy purpose and inspection use by inspectorates. PIMS consist of He3 neutron detector, metal/optical fiber cable, HUB and evaluation system. HUB is designed to HV/LV power supply, data acquisition and signal convert which is most important device on PIMS. In order to maintain the uninterrupted material accounting, verification activities and measurement accuracy, it is necessary to keep spare electronics components for HUB in a healthy state at all time and it is vital that immediate repair should be conducted when a problem occurs.

However, this equipment was imported in 2000, and now, it is impossible to procure spare components due to the end of production and thus there is concern that the malfunction of the equipment may seriously affect the material accounting and verification activities in future. In addition, long term maintenance period is necessary to find out malfunction point on electronics components and diagnose a cause of problem, when PIMS fails. For this reason, in order to make an improvement of maintainability and reliability of PIMS, we are now planning to conduct new HUB design, including the self-diagnostic function and new signal protocol.

JNFL will continue to provide enough design information in a timely manner and conduct coordination of improvement of SG equipment for completion of system installation in 2020 with the cooperation of IAEA and Japan safeguards office.

Which "Key Question" does your Abstract address?

NEW2.3

Topics

NEW2

Which alternative "Key Question" does your Abstract address? (if any)

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