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Acceptance Tests for the LEU IVG.1M Reactor Fuel

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ABSTRACT

The paper presents the results of certification of non-irradiated fuel elements (fuel pin) of Water-Cooled Technological Channels with low-enriched uranium (WCTC-LEU) of the IVG.1M reactor belonging to the National Nuclear Center of the Republic of Kazakhstan.

During the certification of fuel pins structural and morphological features of fuel compositions were investigated, X-ray phase analysis and energy dispersive X-ray microanalysis were made; the values of microhardness materials of fuel pins structure were identified and resistivity value through the length of fuel pins was measured.

As a result of certification the technical requirements for fuel pins were revised in terms of changes of manufacturing tolerances boundaries and expansion of the list of regulated characteristics. The main purpose of those modifications is to improve the producing quality of fuel pins and upgrading their performance characteristics.

On the basis of changes made the certification of two experimental technological channels WCTC-LEU was performed. The fuel pins as part of FA WCTC-LEU were identified and must be replaced in accordance with results of certifications.

The initial obtained data on the parameters and properties of IVG.1M fuel pins WCTC-LEU will be compared with ultimate test data that makes it possible to evaluate the efficiency of LEU fuel.