METROLOGY ASSURANCE OF THE TEMPERATURE MEASURING CHANNELS

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The contact methods of the temperature measurements, realized by the thermoelectrical and resistance transducers, are applied at the NPP «Kozloduy».

The main metrological characteristic of the thermoelectrical transducers is the function of the conversation, called nominal static characteristic [1]. During the long time of the exploitation on the object the thermoelectrical transducers vary their nominal static characteristics due to the non-reverse physical and chemical processes in their thermoelectrods. This feature causes to appearance the error of the temperature measurement. From the other side, the efficiency and safety of the work at the nuclear power plan depend on from the accuracy and reliability of the measuring information about measured parameters. To confirm, that the item fulfils specified requirements the verification must be performed [2].

The resistance and thermoelectrical transducers are verificated separately from measuring channels at the «Kozloduy» NPP according to the verification's schedule.

The periodical verification of the temperature measuring channels are performed according to [3]. The procedure suggests the determination for each measuring channel the maximum error for checked points and compare this error with the maximum permissible error.

In the same time, standard [4] obliges the calibration laboratories to perform the evaluation of the measurement uncertainty for each measured parameter.

The purpose of this paper is developing the approach to the measurement uncertainty evaluation of the temperature by measuring channels with the thermoelectrical transducers as the primary measuring transducers.

The metrological characteristics of the standard measuring instruments were used to calculate the type B standard measurement uncertainty, the results of the replicate measurements (number of the measurements is equal 10) allowed to define the type A standard measurement uncertainty of the temperature.

The combined standard measurement uncertainty and the expanded measurement uncertainty of the temperature by measuring channels were calculated.

References:

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