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## Heat transfer and temperature non-uniformities in pin bundles with heavy liquid metal coolant at various spacing ways

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In the report heat transfer and temperature non-uniformities over the perimeter of the pins in the free-packed pin bundles ( $s/d=1,33$ ,  $s/d=1,28$ ) with heavy liquid-metal coolant are considered at various spacing ways. Experimental data for three pin bundles are analyzed: a bundle of smooth fuel pins, a bundle of fuel pins spaced by bilifar-helix wire wrapper of «wire to wire» type and a bundle with spacer grids. Data were obtained for model fuel subassemblies of a reactor with liquid-metal coolant. In the free-packed bundles of smooth fuel pins temperature non-uniformities are absent over the perimeter of fuel pins as opposed to high general temperature non-uniformities over the perimeter of fuel pins in the bundles with wire wrapping. Such high non-uniformities results in considerable decrease of heat transfer coefficients. In the bundles with transverse spacer grids heat transfer increases only in the region of grids, but between them it is approximately equal to heat transfer coefficients in bundles of smooth fuel pins. The correlations recommended for calculations of Nusselt numbers and temperature non-uniformities over the perimeter of fuel pins are given for the above described ways of spacing of fuel pins.

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