tant for massive hydraulic structures, especially in regions with a harsh climate. The solution of the problem of mass plant production of adiabatic devices of a standard design meeting the requirements of the standard is stipulated for accelerating the wide introduction of the standard into construction practice.

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USE OF A COMPACT CAMERA FOR OBSERVING DEFORMABLE CRACKS

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For a number of years the following methods of observing deformable cracks have been tested under field conditions at the Irkutsk hydrostation: direct measurements by means of a probe, with the use of an MPB-2 microscope, and with the use of a compact camera.

Practice of such measurements showed that observations by means of the probe or MPB-2 microscope can have only a one-time character.

This is due to the impossibility of an exact reinstallment of these instruments on the crack in a position strictly coinciding with the original cycle of measurements. An important factor substantially limiting the area of use of these methods is that the majority of cracks...

located in the roof of galleries do not have distinct contours owing to leaching, which entails a loss of measurement accuracy.

The observed cracks are located mainly at a height from 2.5 to 3.5 m in the roof of galleries. The installation of gap gauges when there are a large number of cracks to be observed involves considerable labor expenditures and in a number of cases is impossible owing to the inaccessibility of the cracks. Periodic observations by these methods are associated with great inconveniences and hazardousness of performing them, which has an adverse effect on the accuracy and objectivity of the results obtained.

The uniqueness of the conditions of the location of deformable cracks in the roof of galleries predetermine the choice of the photogrammetric method of observations, which made it possible to determine deformations of cracks, including those not accessible for direct measurements.

A "Zenith" reflex camera with 24 × 36 mm frames, flash lamp, and stand was used for taking photographs. The camera is additionally equipped with a prism changing the path of the rays by 90° (Fig. 1), which made it possible to photograph cracks in the gallery roof. The photographs are taken from the stand of a surveyor's level which is additionally equipped with a platform for attaching the camera, a circular level with a 5' scale interval, and a telescopic rod with a scale (Fig. 2).

The camera was placed over the preliminarily embedded center under the crack, along both sides of which were glued heavy paper markers. On the markers was applied a sign in the form of a cross with an arm 0.1 mm long and 0.04 mm wide (in the scale of the photograph), which makes it possible to greatly increase the measurement accuracy of the negatives.

The tapered end of the telescopic rod is placed in the hole of the embedded center, and the reference frame of the camera is brought into a horizontal position by means of the circular level. Focusing, determination of exposure time, and exposure are accomplished by the usual methods. The time spent on the entire cycle of works at the station does not exceed 2-3 min.

Measurement of deformations by the photogrammetric method consists in determining the coordinates of the premarked points on the crack from the photographs and comparing them.