

1.4.28. PRACTICAL RESULTS OF “SKAT” X-RAY TESTING COMPLEX WITH UNILATERAL ACCESS

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For examination of transport means and premises during operational procedures, portable X-Ray transmission complexes are applied widely. Their application is possible only with availability of bilateral access to the test object and with thickness of examined object of more than 2 meters.

Paper is devoted to technical possibilities of “SKAT” small-size X-Ray complex created by authors. Operation principle of complex is based on recording of the back scattered radiation allowing testing to be carried out with unilateral access. As a source of radiation, X-Ray apparatus with anodic voltage of 160 kV and 2 mA current is applied. As a detector of scattered radiation, plastic scintillator of large area is used. Main characteristics of complex are:

- image generation time: 60 s;
- dimensions of testing zone: $400 \times (300 - 800)$ mm (adjustable);
- resolution: 0.5 mm;
- limit testing depth;
- plastic, timber, chipboard: 55 mm;
- plasterboard: 40 mm;
- brick: 20 mm;
- steel 2 mm;
- scanning device weight: 35 kg;
- calculated annual external radiation dose of operator at the distance of 1 m from scanning device: not more than 5 mSv.

Paper presents examples of inspection results, discusses possibilities of complex to detect and identify various items, limits of complex applicability and matters of radiation security. Obtained results demonstrate that this complex can be used for examination of premises and inspection of transport means, including situations when application of transmission complexes is restricted.