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Explosives
Firearms
Drugs
Tobacco
Illegal immigrants

STANDARD TEST CONTAINER (STC)

Training for cargo scanner images analysis and threat objects recognition

Nowadays customs agencies are looking for ways in which they can meet their objectives by using technical scanning equipment to increase the efficiency of examinations. However, the equipment by itself is not enough to gain substantial results because the core activity in the scanner project is x-ray image analysis. 'The most sophisticated machines become worthless if the people who operate them and who visually inspect the X-ray images are not qualified to do so' (International Journal of Industrial Ergonomics, 2014).

In order to increase efficiency without sacrificing security we've formulated training for the analysis of cargo scanner images and for threat object recognition.

All of the tests and exercises are based on a forty-feet-tall 'Standard Test Container' (in short an STC). The STC incorporates more than 150 different, realistic smuggling situations.

The STC is divided into four different sections: cargo and threat targets, private vehicles and threat targets, individual objects and threat targets, and also a scanner performance test section.

After carrying out over one hundred STC scans, we present various methodologies when it comes to interpreting x-ray images and demonstrating how to recognise smuggled threats: tobacco, explosives, firearms, drugs, illegal immigrants, etc.

After training has taken place, the customs personnel are ready to conduct image analysis effectively and precisely, as well as being able to detect threats and carry out screenings more efficiently.

Cargo Scanners Images Analysis and Threat Objects Recognition Training

STANDARD TEST CONTAINER (STC)

Key features, advantages, and benefits

The STC describes the method for evaluating commercially available x-ray systems, which can be used for screening different types of vehicles, as well as evaluating the skills level of x-ray systems operators.

Manufactured unique training tool – the Standard Test Container (STC). The STC is the first such type of image analysis training tool in the world for x-ray cargo scanners. The STC is dedicated to test scanner performance parameters (penetration, contrast sensitivity, and resolution), and demonstrates many different smuggling situations.

More than a hundred scans have been carried out using the STC on four different types of cargo scanner and the STC library has been created with 150 different situations regarding the various threats. The STC was scanned by fixed dual view, mobile, and relocatable cargo scanners which provide the opportunity to compare x-ray images with the same threat situations from different scanners.

Hundreds of real cases have been analysed where real x-ray images have been used. Based on this information not only could the most common smuggling situations be designed to be detected within the STC, but also the most difficult.

The image analysis methodology is a very important part of STC training. The principles of object recognition, spatial perception, attention to anomalies, colour identification, and so on are all part of the methodology that will be demonstrated during training.

It has been tested and proven that in cases in which the operator faces a new threat situation in terms of x-ray images, for the first time a positive evaluation rate (one which can correctly identify an object which may pose a threat) is much lower when compared to an operator who has previously worked with the same threat situation or a similar one.

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