

Integrated Personnel Checkpoint

The Need

High-security facilities have the responsibility to allow the entrance of authorized personnel while preventing the entry or exit of contraband such as explosives, weapons, and nuclear materials. Currently available tools provide one function: identity verification and entry control, or screening for only one type of contraband, thus requiring facilities to acquire multiple tools and screening systems. Each requires its own platform and each tool must be separately procured and maintained. There is a need for an integrated solution that combines all of these functions into a single system.

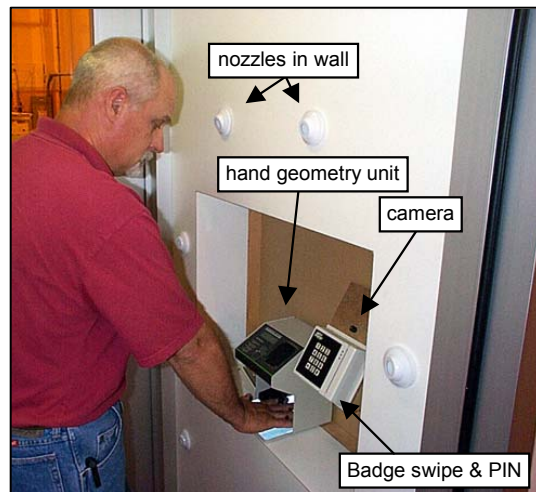


External badge swipe required to enter booth

Integrated Personnel Checkpoint combines entry control measures and explosives and radiation detection



Entry control inside booth includes badge swipe, PIN, and hand geometry



Capabilities

Sandia National Laboratories has developed a prototype Integrated Personnel Checkpoint (IPC), which integrates a variety of physical security technologies into one apparatus, combining formerly separate functions. The access control measures ensure that only authorized personnel may enter, based on a badge swipe to enter the booth and personal identification number and a biometric identifier to confirm the identity of entrant. The contraband detection portion can help prevent theft or sabotage by screening for explosives and radioactive materials. (Conversely, the booth can detect the exit of radioactive materials, checking for accidental or intentional radiological contamination or removal of special nuclear materials.) The booth is completely automated, unlocking the doors only when all security checks have been cleared. The checkpoint gives the protective force some standoff from the screening process, which can improve their survivability. Additionally, the checkpoint can track whether personnel are present at a facility. Sandia has also explored the addition of metal detection capabilities to detect other contraband, such as weapons.

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Operation

The Integrated Personnel Checkpoint (IPC) combines contraband detection devices and commercially available entry control equipment:

- **Contraband detection:** For explosives detection, the IPC uses Sandia's patented sample collection and preconcentration technology, originally employed in the Explosives Personnel Portal, to dislodge particles and collect vapor. The particles are entrained, collected, and delivered to a two-stage preconcentrator. Next, the sample is delivered to a commercial ion mobility spectrometer (IMS) for identification. For radioactive materials, the IPC uses a plastic scintillator detector.
- **Access control:** Badge swipe to unlock the door and enter the booth, plus badge swipe, personal identification number, and hand-geometry biometrics to verify the individual's identity.

Features

- Excludes unauthorized personnel through the used of access control measures including badge swipe, personal identification number, and hand geometry biometrics
- Performs trace explosives detection for common high explosives—detects sub-fingerprint quantities of explosive residue
- Performs radiation detection for prevention of theft or sabotage
- Detects radiation from accidental contamination or removal
- Provides standoff for protective personnel
- Provides throughput time under 30 seconds
- Provides non-invasive, contactless contraband detection



Puffs of air from nozzles dislodge explosives particles from a person's hair, skin, and clothing

Sponsors and Availability

This work was funded originally by the Department of Energy Office of Safeguards and Security. Sandia is exploring commercialization opportunities.

Sandia National Laboratories

Chuck Rhykerd, (505) 284-2602
Contraband Detection
P.O. Box 5800, MS 0782
Albuquerque, NM 87185-0782
Email: clrhyke@sandia.gov

U.S. Department of Energy

Bruce Campbell, (301) 903-3776
SO-13/U.S. Department of Energy
19901 Germantown Road
Germantown, Maryland 10874
Email: bruce.campbell@hq.doe.gov

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