Mobile Change Detection System

- Monitoring use
  - Inspection activities of tags, seals and tamper-indicating enclosures (TIE)
  - Chain-of-custody verification for warheads, materials, equipment, devices, locked doors, secure areas
- Hand-held mobile device, small and light-weight
  - Uses device camera for image capture
  - Currently tested on smartphones, phablets, tablets, and digital cameras that use the Android OS

- Performs *in-situ* image authentication
- Mobile image software platform does NOT require additional infrastructure

Mobile Change Detection System

- Physical principle of method
  - Image analysis based upon computer algorithms to align images that are acquired with hand-held cameras
  - Human image analysis elicited by flicker technique ("animation effect")
  - Change Detection System (CDS) provides integrated method of capturing, categorizing, aligning and storing large datasets of images of seals

Before Image

After Image

Image after CDS process

Mobile Change Detection System

- Technology limits
    - Being expanded from PC version to Android interface
    - Proposed image processing for other technologies

- Time required to use and install
    - Less than 5 mins to align multiple images simultaneously - typically completes the Classify and Align process of a project file containing 30 images
    - 1-2 mins for image analysis using flickering
    - Minimal time to install software

- Complexity of hardware, software, use
    - Hardware: complex electronics for mobile devices
    - Software: complex imaging algorithms
    - Use: simple user interface with intuitive
    layout and requires minimal training to master

- Other functionality
    - Wide range of functionality available on
    devices including wireless capabilities

- Commercially availability
    - Wide range of commercially-available devices

- Cost
    - $200-1000 for digital platform