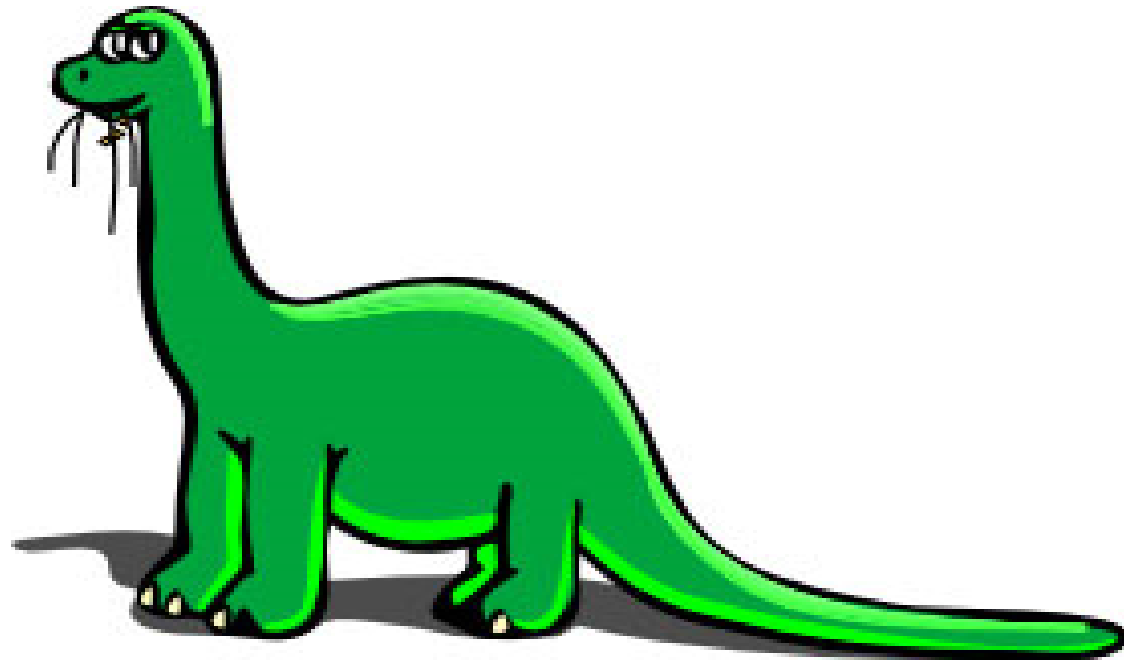


# Evolution of Certification Criteria

**Fred Roder**  
**Certified Dinosaur**  
**May 11, 2016**



# Scope

- Historical perspective
- Covers aviation security requirements from its beginning (1972) to issuance of EDS Certification Criteria (1993)
- Discusses forces and players behind Certification
- Today there are different forces and players, but many of the same considerations apply

# The Basics

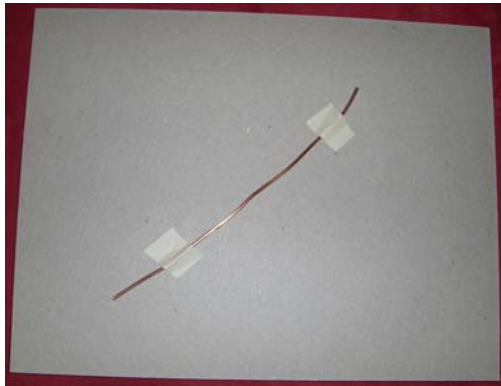
- Aviation security prior to 9/11:
  - Regulated by FAA
  - Executed by air carriers
- Aviation security after 9/11:
  - Direct governmental function

Ideally security requirements would have been determined by the threat. In practice, other factors held at least equal weight.

# AVSEC History in a Nutshell

| <b>Event</b>                | <b>Response</b>   |
|-----------------------------|---|
| Hijackings to Cuba (1960's) | Checkpoints mandated (1972)                                     |
| LaGuardia bombing (1975)    | Expl. det. R&D initiated  |
| Air India bombing (1985)    | Wile E. Coyote bomb detection mandated                          |
| Pan Am 103 bombing (1988)   | Certification required for EDS<br>[ASIA Pub. L. 101-604 (1990)] |
| Mounting political pressure | Cert. criteria published (1993)                                 |
| September 11, 2001          | TSA established<br>Government assumes AVSEC                     |

# X-Ray Screening IQ Test Objects



circa 1972



circa 1980



2001 & current  
soon to be replaced

# IED Detection Test Objects

**Wile E. Coyote bomb  
(detection mandatory)**



**Modular Bomb Set  
(detection not required)**



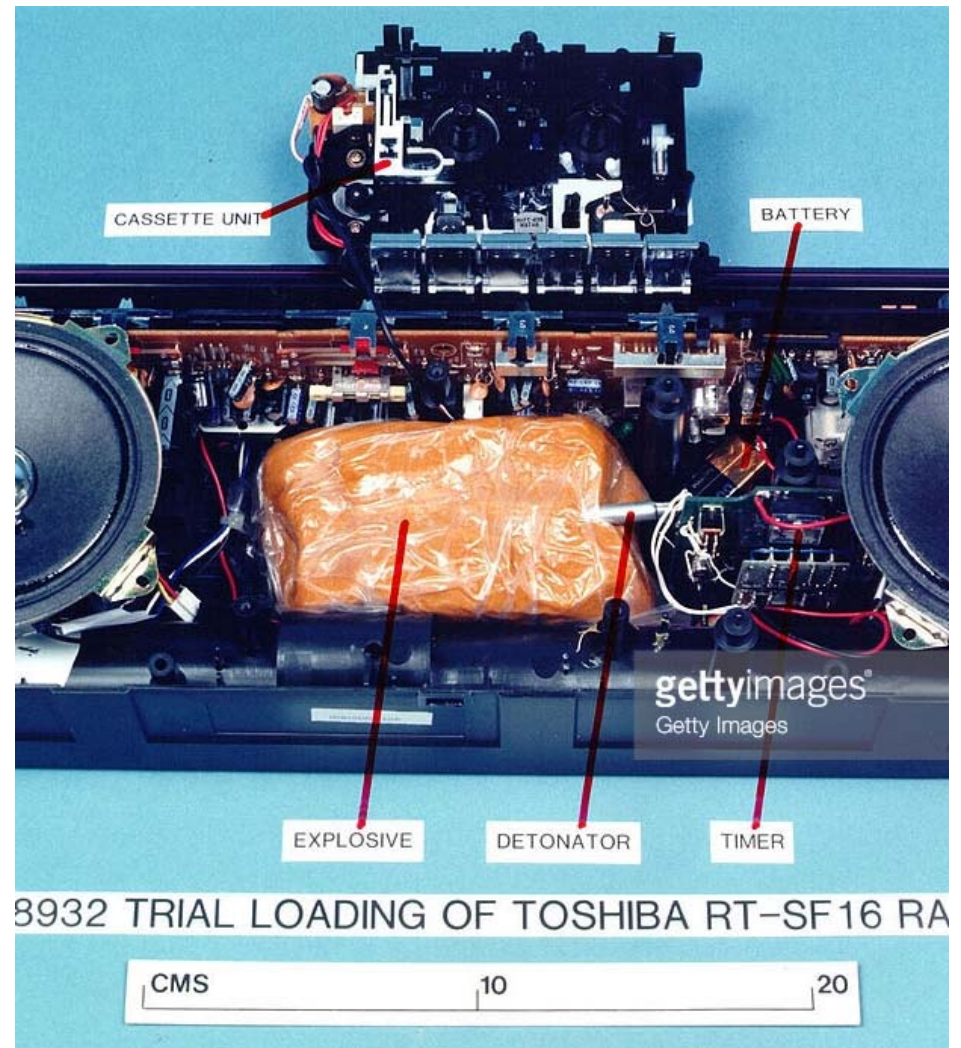
# Lockerbie (Pan Am 103)

- 21 December 1988
- The human cost:
  - 243 passengers
  - 16 crew
  - 11 on the ground
- Third leg of flight from Malta to JFK



# Lockerbie IED

- Approx. threat mass of Semtex
- Replaced batteries in Toshiba radio cassette player
- In unaccompanied checked bag
- Screened by x ray at LHR, but dual-energy system unavailable





# FAA Response to Lockerbie

- By December 1988 hundreds of explosives detection R&D projects had been completed.
- Most promising was SAIC's Thermal Neutron Analysis (TNA) system, with prototypes then in airport data acquisition mode.
- Airport data acquisition became initial deployment.
- Pub. L. 101-45 signed June 30, 1989 requiring "use of explosives detection equipment . . . equivalent to or better than (TNA)."
- NPRM (Notice of Proposed Rulemaking) issued July 10, 1989 mandating TNA use on international flights.

# R&D Target IED



# The Pushback

- The Air Transport Association (ATA) formally raised multiple objections:
  - FAA had vastly underestimated cost
  - Efficacy of TNA had not been established
  - No provision had been made for further testing and development
- An ATA-sponsored Berkeley study began investigating the practicality of checked baggage screening (not efficacy)
- Nevertheless, the FAA issued the rule specified in the NPRM as written.

# As a Result

- President's Commission on Aviation Security and Terrorism established.
- After extensive hearings, concluded that "the requirement for wide-spread use of present TNA equipment should be deferred while the technology is developed further."
- Per Commission recommendations, the Aviation Security Improvement Act (ASIA), Pub. L. 101-604, was signed November 16, 1990.

# ASIA

- Deployment of EDS can only be *mandated* if it is Certified.
- NOT “*best available technology.*”
- “Detect under realistic air carrier operating conditions the amounts, configurations, and types of explosive materials likely to be used to cause catastrophic damage to commercial aircraft.”

# Response to ASIA

- FAA retained responsibility for EDS certification because nobody else wanted it.
- The intel community was consulted in determining the “amount, configurations and types.”
- The National Material Advisory Board/National Academy of Sciences was tasked to develop certification testing protocols.
- A new NPRM defining certification criteria was issued November 4, 1992 and finalized September 10, 1993.
- The Management Plan for EDS Certification Testing was issued in October 1993.