Overview of POD Data, Uses, and Tools at Delta

David Piotrowski

ATA NDT Forum

Ft. Worth, TX
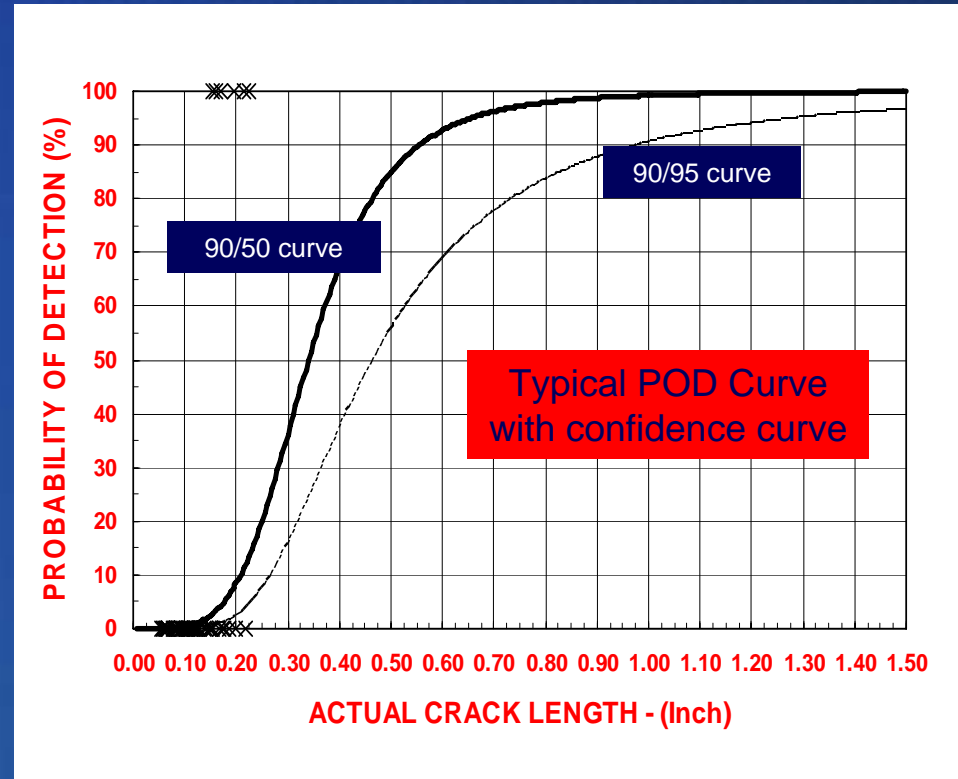
October 19, 2006

Delta TechOps

Internal POD studies

- Delta currently conducts internal POD studies on LFEC, MPI, and FPI

  - Future plans for more studies, additional technologies
  - Currently on a 3-5 year repetitive cycle
    - Adjusted for significant changes in personnel, workplace (i.e., bankruptcy, layoffs, paycuts, shift changes, "bumping back")

- Specimens:

  - FPI: Flat panels, made for Delta, crack lengths from 0.008" to 0.250"

  - MPI: Bolts from in-service, crack lengths (in threads) from 0.050" to 0.406" Borrowed 4 x 6 " flat plates from NASA, crack lengths from 0.048" to 0.750"

  - LFEC: Lap splice 2nd layer configuration, remanufactured from in-service findings, crack lengths from 0.010" to 0.418"

- Tools:

  - POD Software (Rummel) and USAF (Behrens) versions

  - NTIAC NDE Capabilities Data Book

Must have knowledge of processes for confidence in continued airworthiness

△ Delta
TechOps

POD usage

- Engineering Analyses
    - Inspection Threshold
    - Inspection Interval

- Increasingly important in Aging Aircraft, Multi-site damage, Damage Tolerance and widespread fatigue analyses

- Rulemaking activities (WFD)

- Delta views POD as critical to continued airworthiness safety (otherwise assumptions are made)
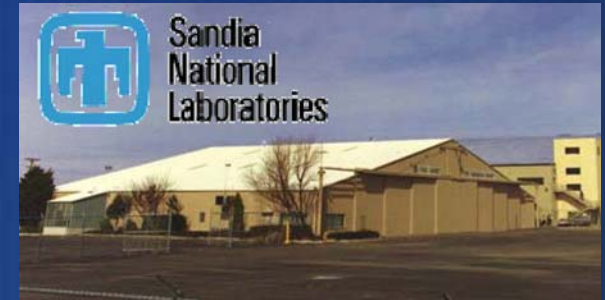
- New techniques must be quantified

POD is increasingly critical for engineering analyses, new rulemaking
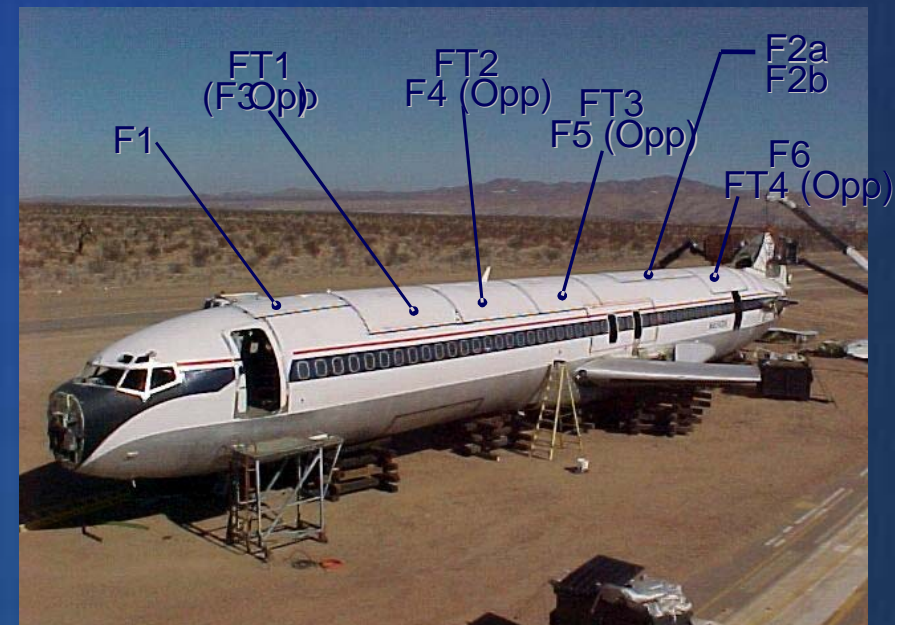
Delta
TechOps

POD – Industry Collaboration

- FAA R&D Contract No. DTFA03-02-C-00044, "DESTRUCTIVE EVALUATION AND EXTENDED FATIGUE TESTING OF A RETIRED PASSENGER AIRCRAFT (B727)".

    - Goldmine of NDT data – suggested for use in MAPOD
    - POD work with AANC (Sandia)
    - Data sharing, specimen sharing, brainstorming

- Other work with industry:
    - Delta participation in round robin studies (AANC, ISU)
    - Delta LFEC panels used in 2002-3
    - Penetrant studies
    - Assistance in obtaining cracked, specimens (in-service)

Delta has been active, supportive of industry POD efforts

THANK YOU