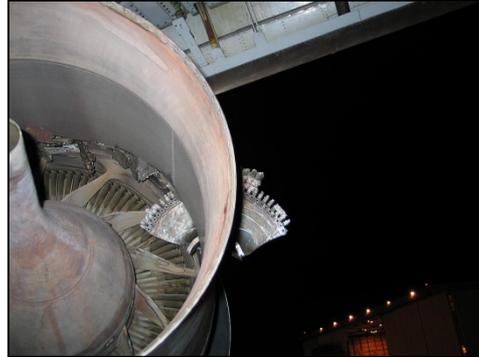


The Need For Aerospace Specific NDT Training



Aerospace Specific NDT Training



**Aviation NDT is not
like industrial NDT**





The In-Service Environment

- ✓ **Much more flexible environment than manufacturing**
- ✓ **They often see a wide variety of aircraft, old and new**
- ✓ **Inspectors are certified in a method, but often use only a few select techniques on a regular basis**
- ✓ **Maintenance manual techniques may be confusing and require interpretation**
- ✓ **No formalized refresher training**

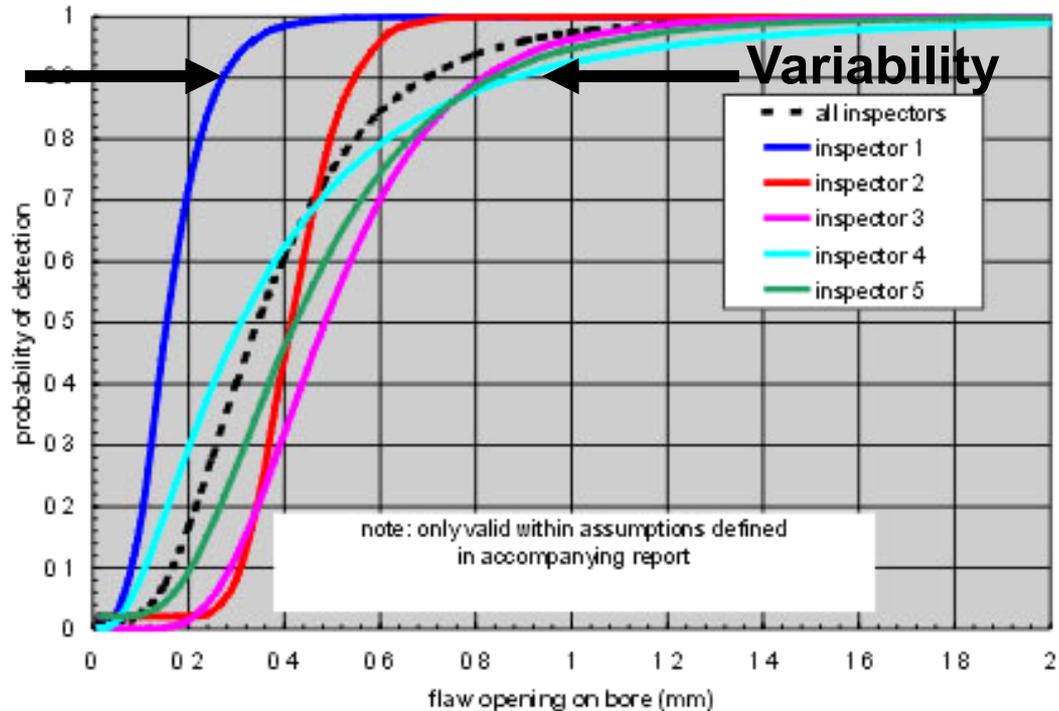


Performance

- ✓ 420 sites that contained 68 defects
- ✓ No technician found all the defects
- ✓ Defects detected ranged from 29% to 71%
- ✓ Missed cracks ranged in size from 0.058” to 0.286” (3 were over 0.100”) - safety
- ✓ The false call rate (defect-free areas rejected) was as high as 19.4% - unnecessary maintenance



Technician Variability



**Average POD is 0.7 mm,
but technicians varied from 0.3 to 0.9 mm**



Reliability Studies

- ✓ Sandia PODs – demonstrated the wide variation in technician performance of
- ✓ Reliability study –
 - ✓ best technician found 71% of flaws, lowest performance was 29%
 - ✓ missed cracks were in the range of 0.058” to 0.0286” (3 were over 0.100”)
 - ✓ False call rate was 19.4%
- ✓ Exam results – only one or two in each class passed, most score in the 40s and 50s.
- ✓ **These results are not meant to imply that they don't know what they are doing. But they do emphasize the need for refresher training.**



Training & Certification

- ✓ There are several specifications that govern the training and certification of NDT technicians. NAS-410 is the one that is required by most GA OEMs.
- ✓ This covers a vast range of vehicles and environments and as a result, these minimums, while legal, are not intended to be sufficient for a particular vehicle type and environment.
- ✓ NDT training providers understandably focus on industrial NDT because that's where the money is. Commercially available NDT schools do not deal with aerospace and don't have sufficient specimens for practical exams



The Need

Relevant Training

- ✓ Aircraft Design
- ✓ Static and Dynamic Stresses
- ✓ Fail Safe / Damage Tolerant Concepts
- ✓ In-Service Materials Issues (fatigue, corrosion, etc.)

Relevant Practical Exams

- ✓ Test samples representative of products encountered on the job

Refresher Training



In response to these issues (and to meet requirements of NAS-410) Dassault Falcon developed a refresher training program to include:

- ✓ **Aerodynamics, design, stress, fatigue, and corrosion**
- ✓ **Emphasis on hands-on work with a wide variety of actual aircraft components**
- ✓ **Composite M&P familiarization including specimen fabrication and actual damaged specimens**

Aerospace Specific NDT Training



- **ET/PT Refresher course, 4 days, once a year**
- **UT/MT refresher course, 4 days, once a year**
- **NDT of Composites course, 5 days, twice a year**
- **Coordination with Structures Engineering**
- **Establishment of an Aerospace Specimen Library**



- **Required of all DFJ shops, independent Authorized Service Centers, and independent NDT providers servicing Falcons**
- **Must attend every three (3) years in each method certified**
- **Since starting program have held 36 classes for approximately 290 students including USAF, RCAF, and RNLAFA technicians**
- **Intended to address an engineering issue, not create a training business**

The Need For Aerospace Specific NDT Training

Questions?

