



GAMA Manufacturers Perspective On Airplane Structural Fatigue And Continued Operational Safety

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GAMA Manufacturers Perspective On Airplane Structural Fatigue And Continued Operational Safety

- GAMA Member Companies
- Brief History Predating the Fatigue Rule
- Fatigue Rule Adoption
- GAMA Company Performed Extensive Field Inspections in Mid 1980's
- GAMA Companies Support Many Fatigue Safety Efforts
- Important Fundamentals (The Bottom Line)

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Brief History Predating the Fatigue Rule Introduction

- Prior to the Fatigue Rule airplane structures were designed using industry best practices for ultimate strength and the requirements of other FAR 23 regulations including:
- *23.627 Fatigue Strength - the structure must be designed, as far as practical, to avoid points of stress concentration where variable stresses above the fatigue limit are likely to occur in normal service*

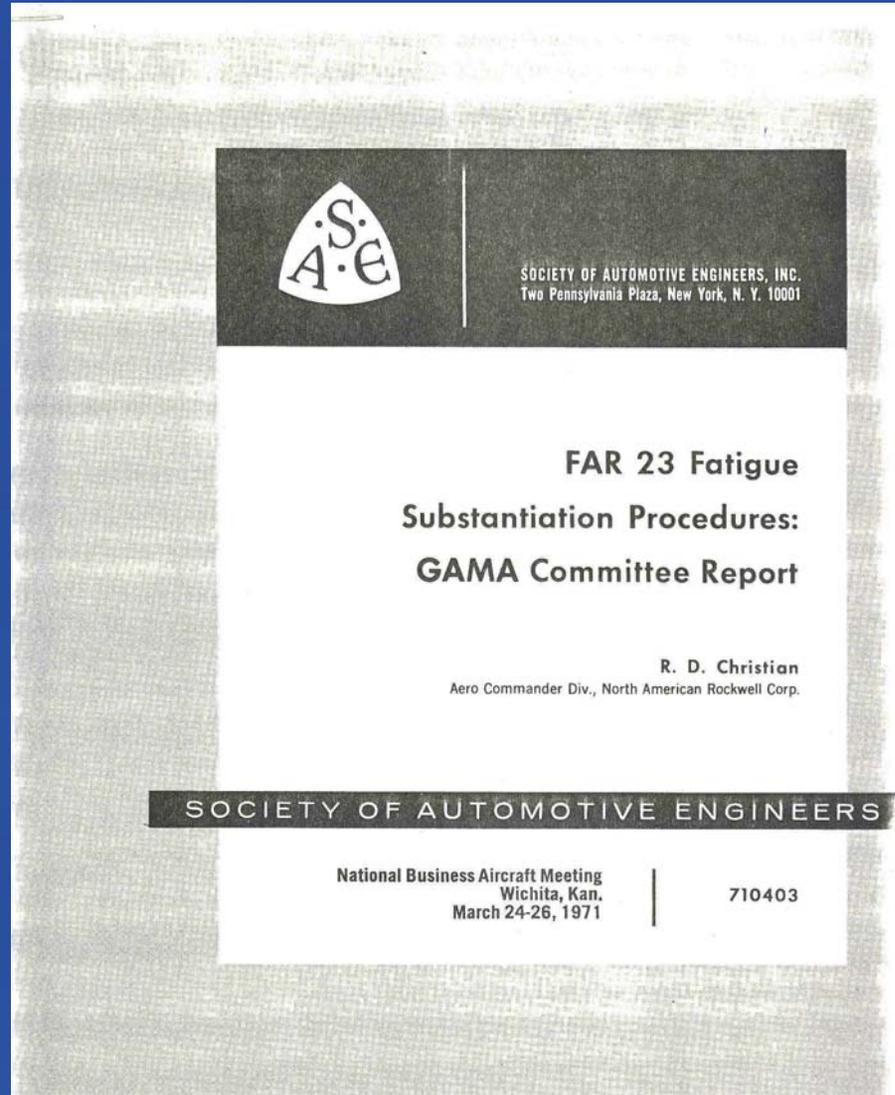
Brief History Predating the Fatigue Rule Introduction

- Many airplanes operate today with designs predating the Fatigue Rule
- Beginning as far back as 1955, United Kingdom, Australia, Canada and United States anticipated the need for a GA airplane Fatigue Rule

Fatigue Rule Adoption

- 1967 - Rulemaking Notice 67-14 proposed structural fatigue requirements
- 1969 - Fatigue Rule adopted into FAR 23
- 1970 - GAMA Committee recommended how to comply with the new Fatigue Rule (contributed to FAA Report AFS-120-73-2 issued in 1973)

Fatigue Rule Adoption



GAMA Company Performed Extensive Field Inspections in Mid 1980's

- 1984 thru 1987 - Over 700 airplanes inspected (statistically significant group)
- Found that maintenance practices allowed advanced structural deterioration
- Overall results indicated a potentially widespread problem among many field airplanes
- Oct 1987 – final report to FAA
- April 1988 - Aloha

GAMA Companies Support Many Safety Efforts

- 1988 - Aging Airplane Task Force (AATF) activated
- 1988 - Technical Oversight Group for Aging Airplanes (TOGAA) activated
- 1989 Aging Regional Airplane Conference held
- AD/SB reviewed and terminating actions taken
- [1991 - Congress Signs The Aging Aircraft Safety Act]
- 1996 damage tolerance methods adopted

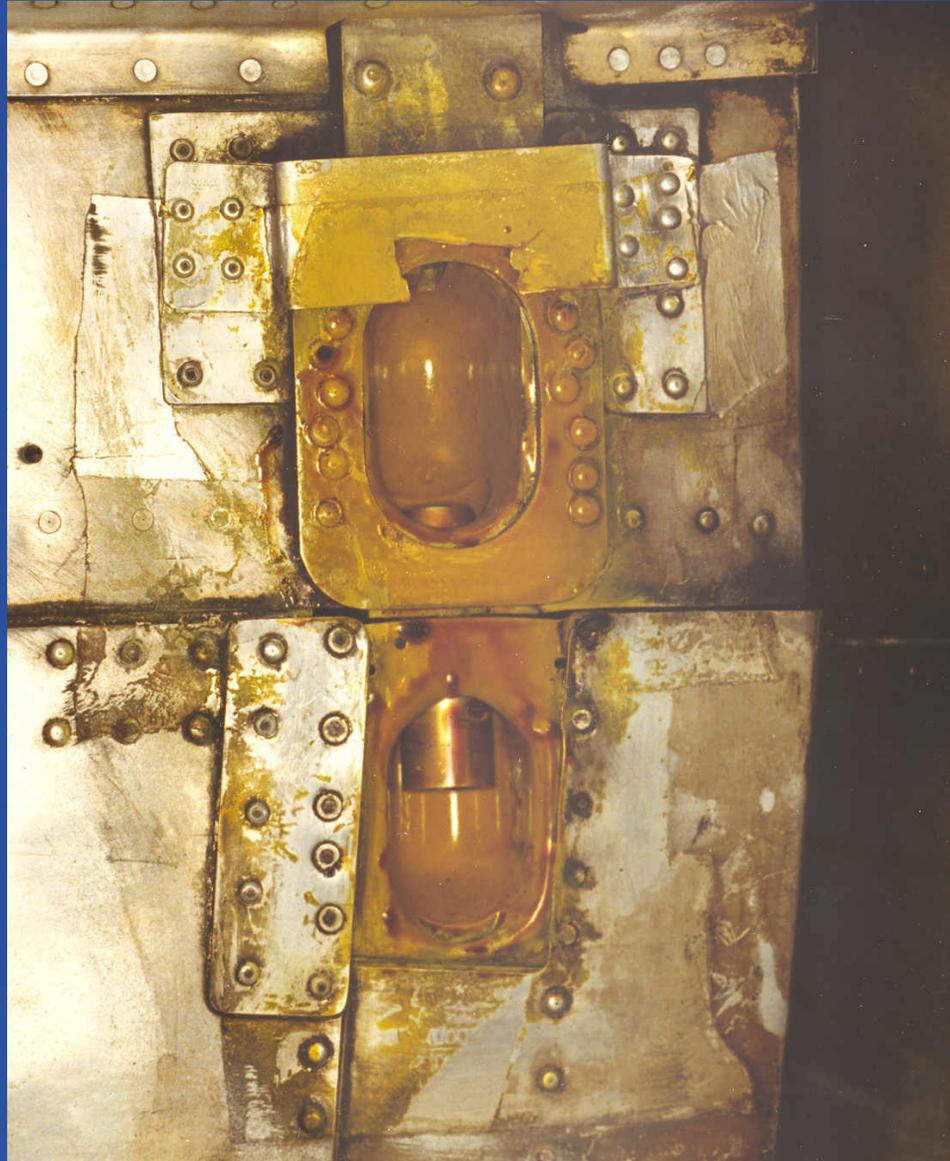
GAMA Companies Support Many Safety Efforts

- 1999 - Aging Transport Systems Rulemaking Advisory Committee Formed. This Committee continues today and also applies to GA
- 2000 - FAA begins Legacy Airplane Program
- 2003 – FAA adopts Aging Airplane Rule
- NDI methods / techniques research continues

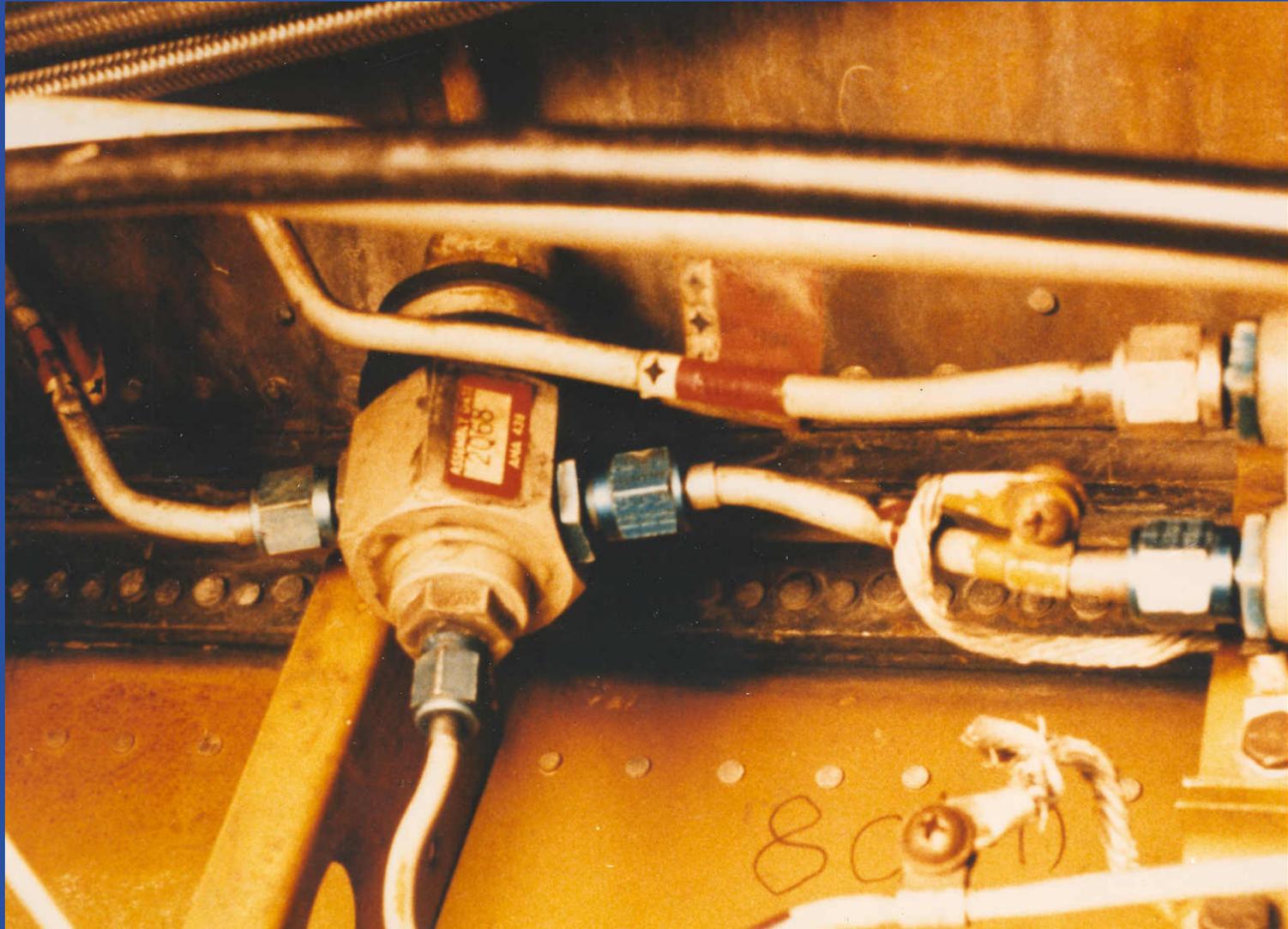
Important Fundamentals (The Bottom Line)

- Individual airplane operational service history is largely unknown
- Airplane structural elements remember all accumulated stress induced damage and this continues with every operation
- Current life prediction and inspection tools are the best available and are essential to Continued Operational Safety
- Technology improvements increase safety
- COS is a shared responsibility

Field Inspection Example



Field Inspection Example





Questions?

General Aviation Manufacturers Association