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*Damage and Failure Initiation in Lap Shear Tests*

# Failure Initiation in Lap Shears

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## Objectives

Perform repeated tests on four different single lap shear specimens to identify damage initiation and limit loads using different testing methods.

The overall goal is to try if the proposed testing methods can identify the earliest measurable event associated with failure in single lap shear specimens.

### Test matrix for GA Tech lap shear testing

Bond Length	Layup	RTA
Long (~5")	Fabric	5
	Tape	5
Standard (~1")	Fabric	5
	Tape	5

Total 20 Samples – 5 samples with 4 different cases. Fabric – woven, Tape is Quasi Isotropic laminate. Long and Standard (short) length bond.

Notation:

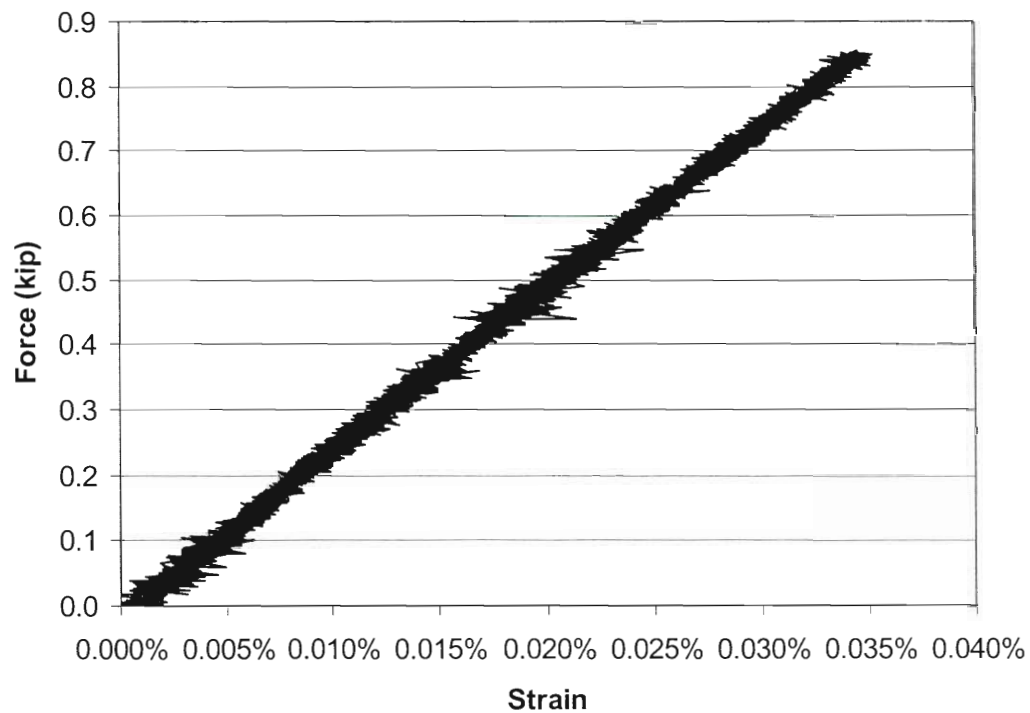
The four different samples are referred to as: UL#, US#, WL#, and WS#

Where: U – Unitape; W – Woven; L – Long bond; S – Standard (short) bond;

and # is a number between 1 to 5.

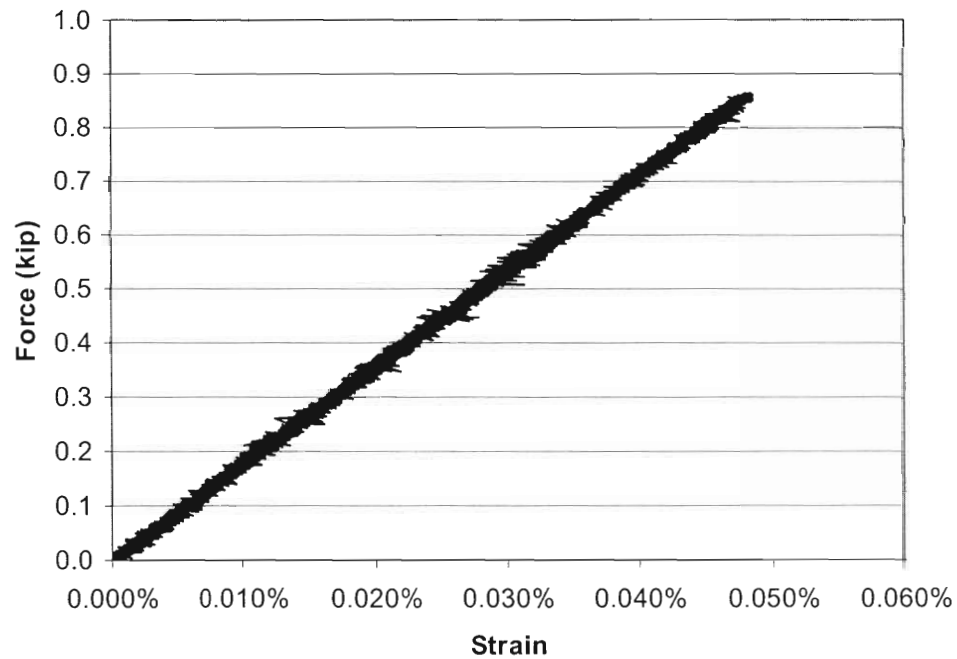
### 3) Strain gage test results (1/4)

Unitape Long specimen UL4



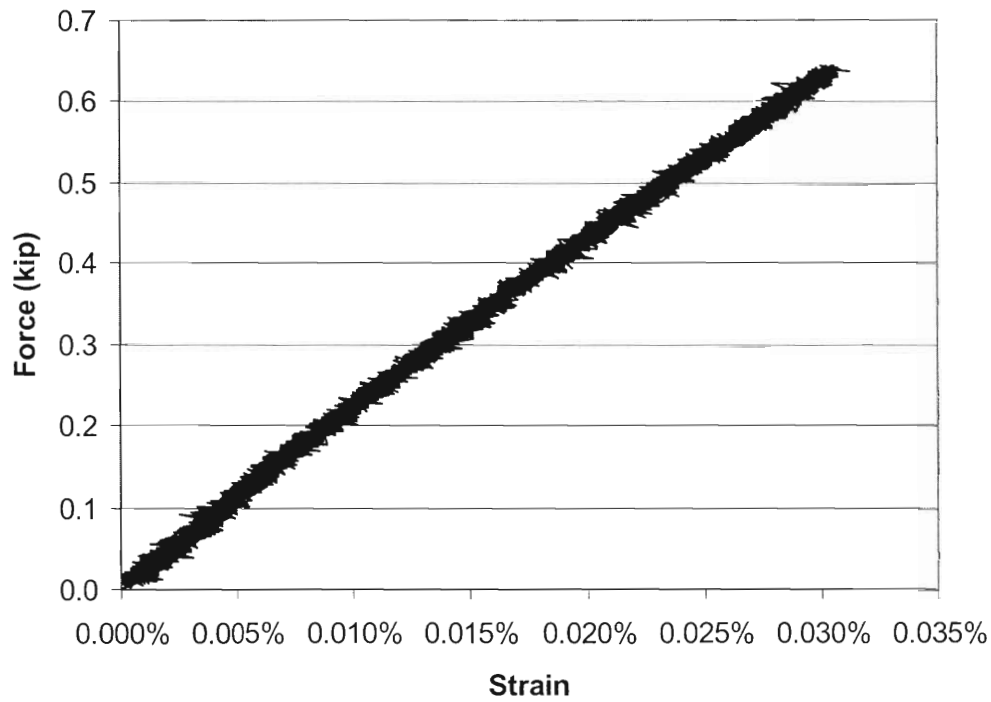
### 3) Strain gage test results (2/4)

Woven Long specimen WL5



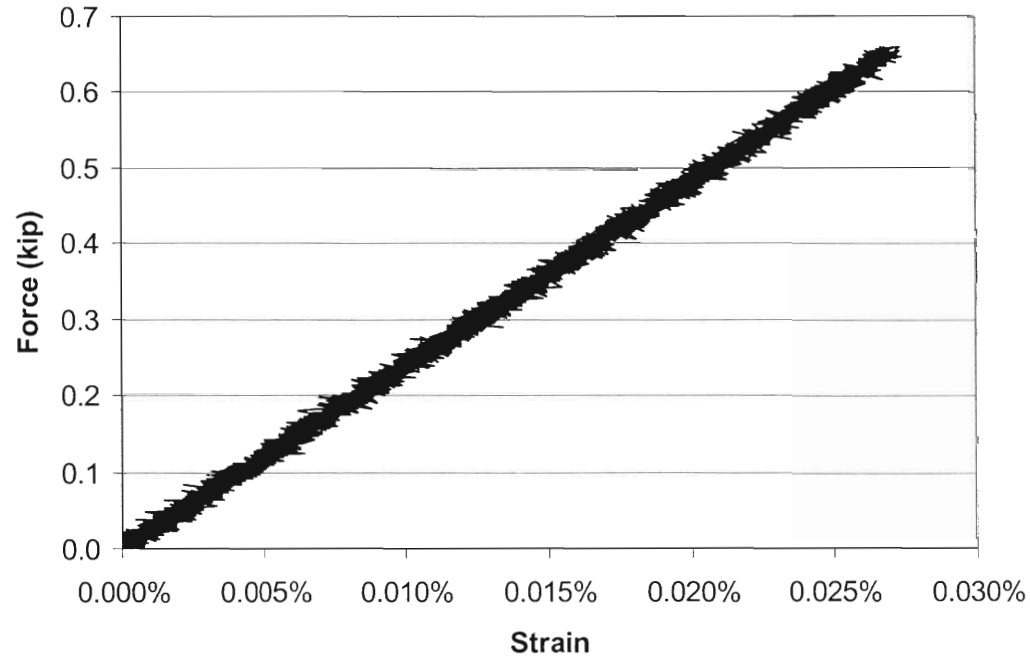
### 3) Strain gage test results (3/4)

Woven Short specimen WS1



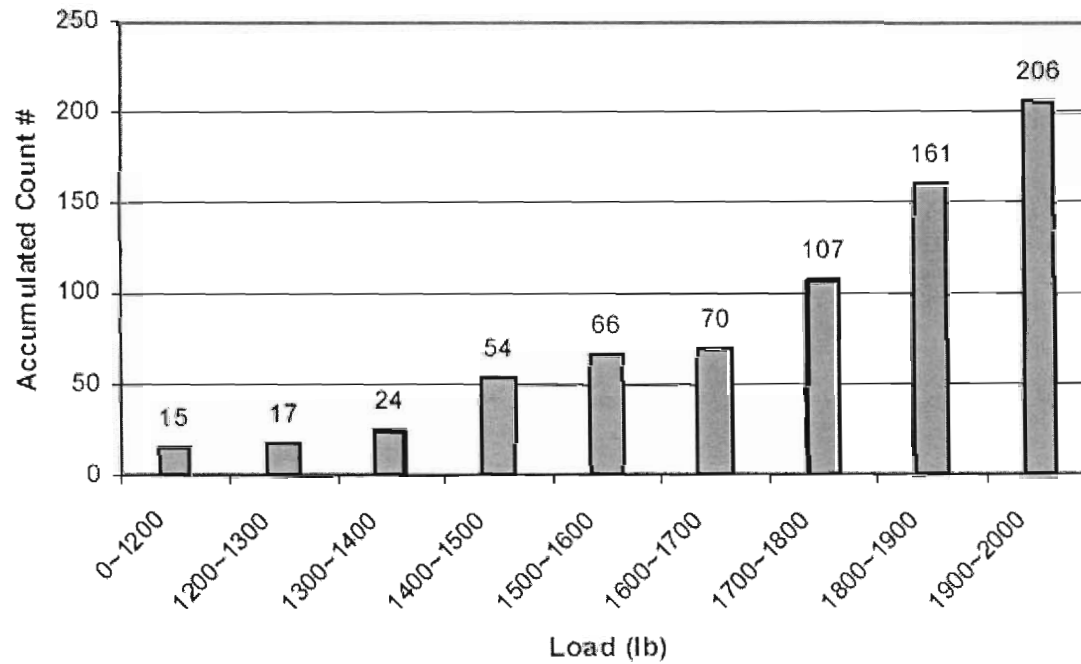
### 3) Strain gage test results (4/4)

Unitape Short specimen US1

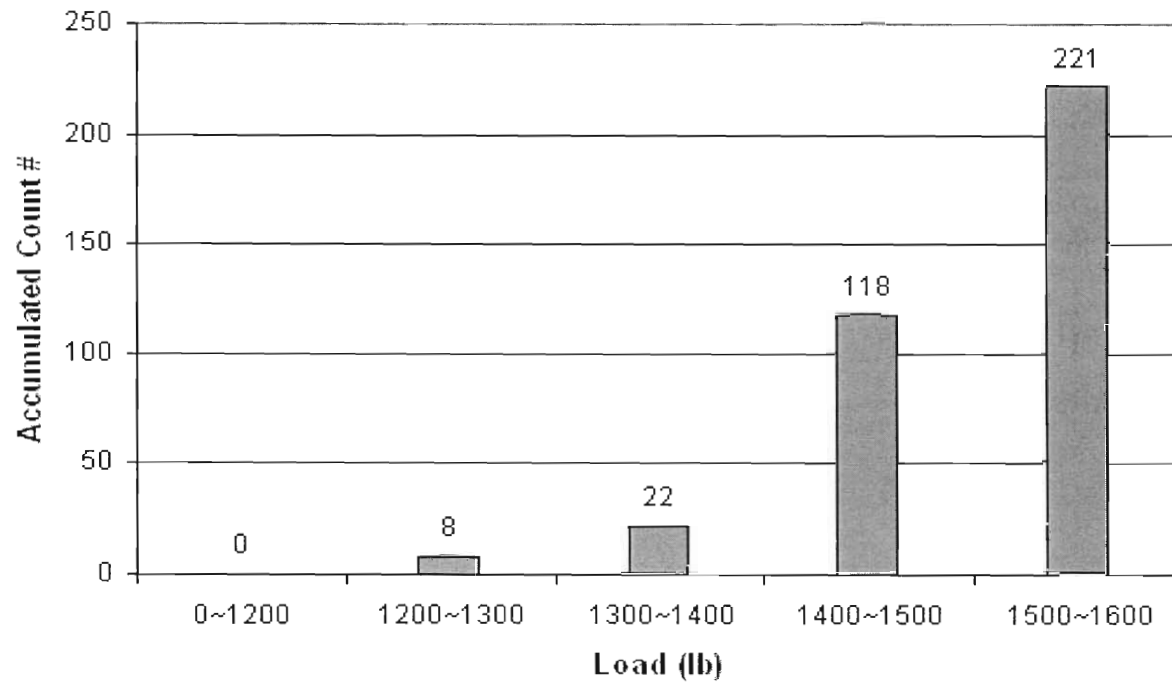




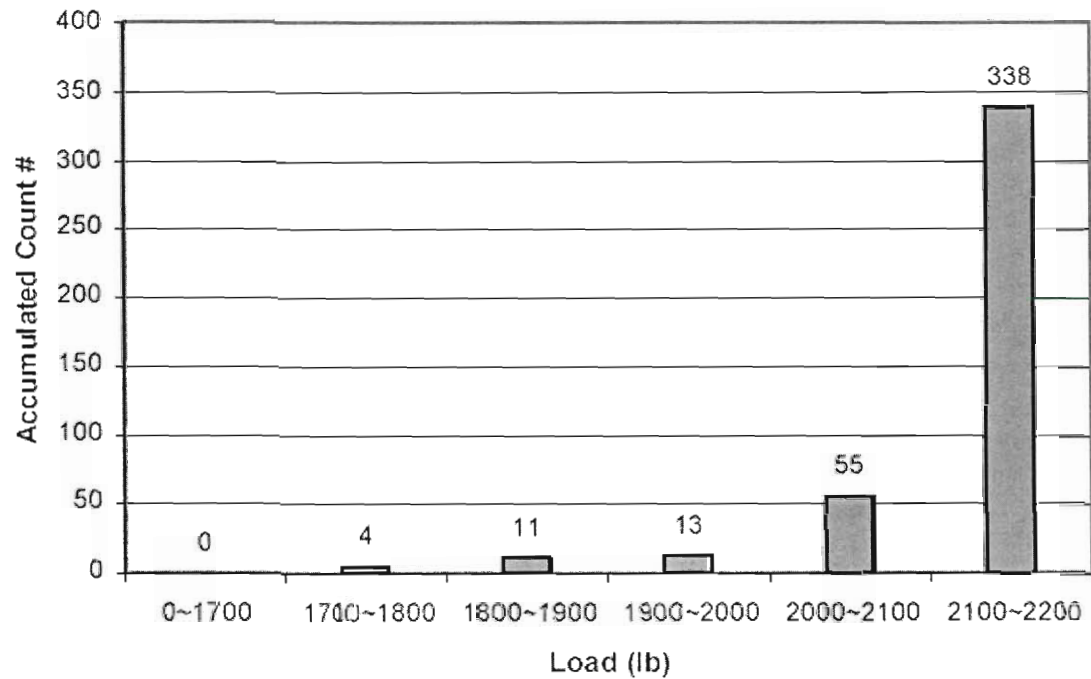
#### 4) AE test results for US1



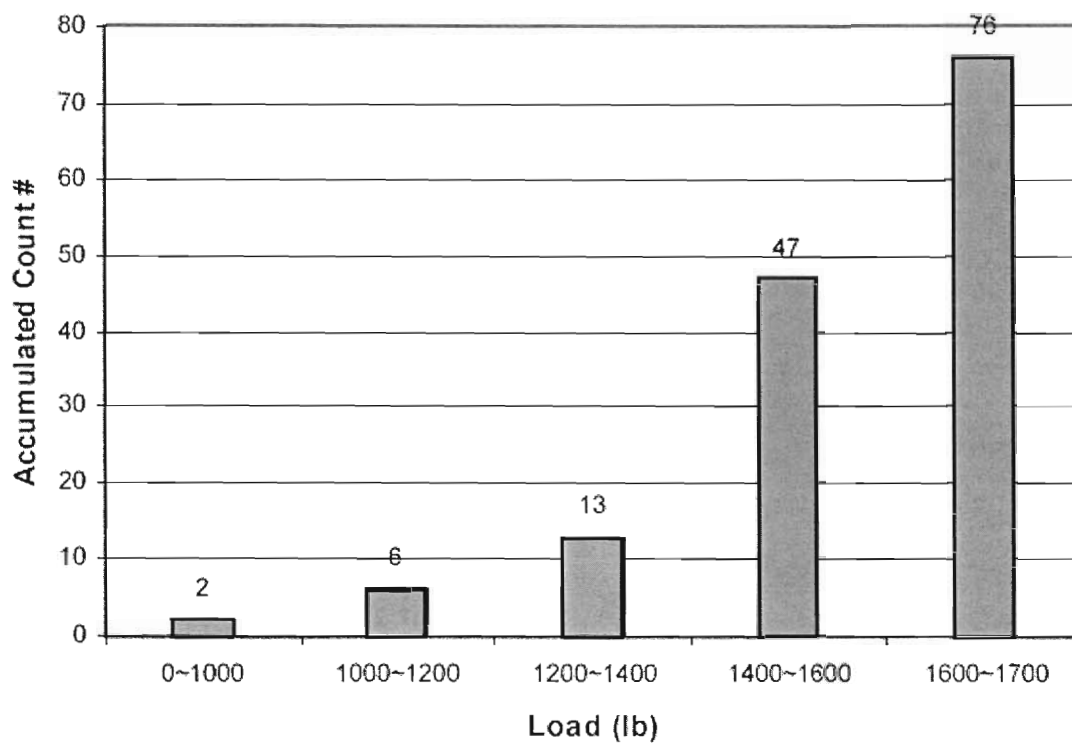
4) AE test results for US4



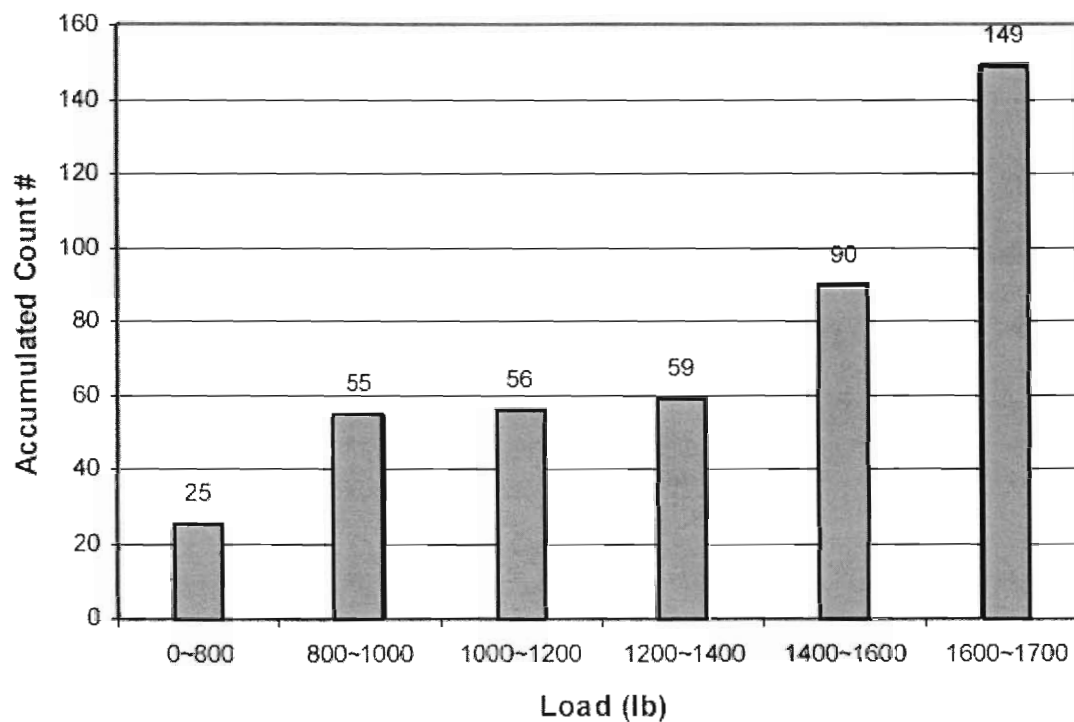
#### 4) AE test results for US5



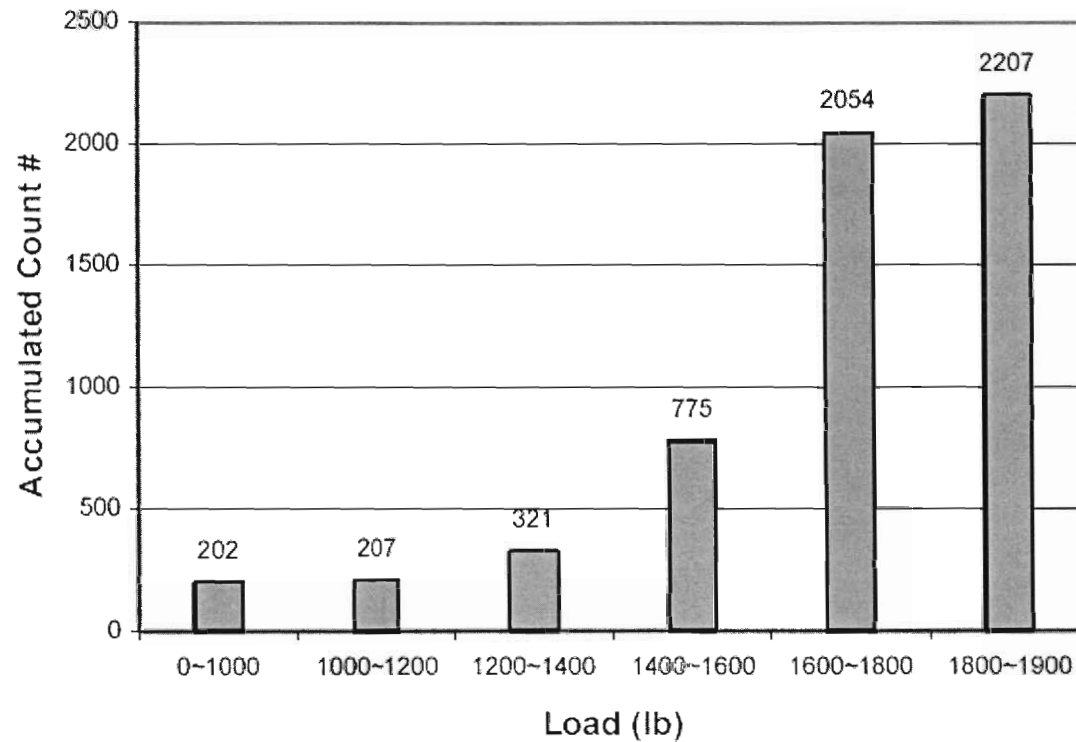
#### 4) AE test results for WS1



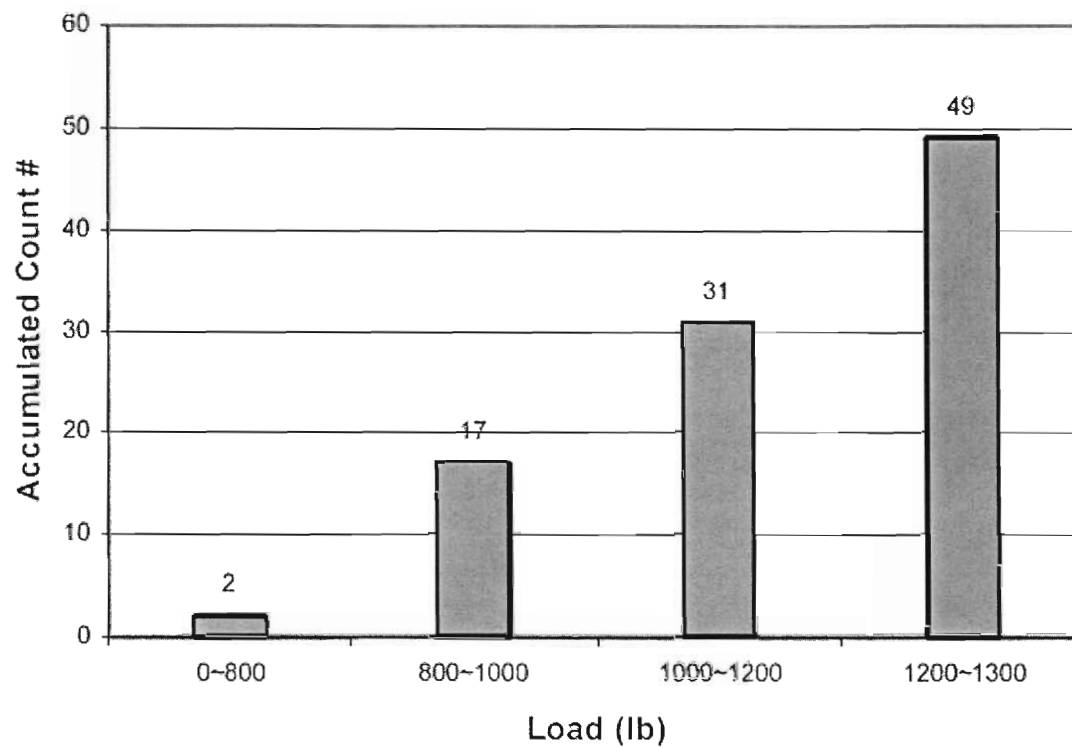
#### 4) AE test results for WS4



#### 4) IR-Thermography (b) test results for UL4



4) AE test results for WL4



#### 4) AE test results for WL5

