Workshop 3

Analysis of Fatigue Data

Fatigue Problems

- •1. Fatigue crack growth data were measured for a compact specimen with
- W = 2 in., B = 0.25 in. and $a_o = 0.6$ in. and a load range of 100 to 1000 lbs.
- Generate the da/dN vs ΔK result from this data. from the failure. Try to fit a Paris type power law.
- 2. If ΔK_{TH} is 5.0 ksi $\sqrt{}$ in find the load range that will not cause crack propagation in the above. ($\Delta P = 100$ to ?)

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1 in. = 25 mm, 1 lb = 4.448 N

Fatigue Data

- Crack Length, a, in. Elapsed Cycles, N
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- 0.60 0
- 0.625 21,500
- 0.65 40,000
- 0.69 70,000
- 0.73 95,000
- 0.79 125,000
- 0.86 155,000
- 0.95 185,000
- 1.06 210,000
- 1.18 225,000
- 1.34 235,000
- 1.54 240,000
- 1.60 failure