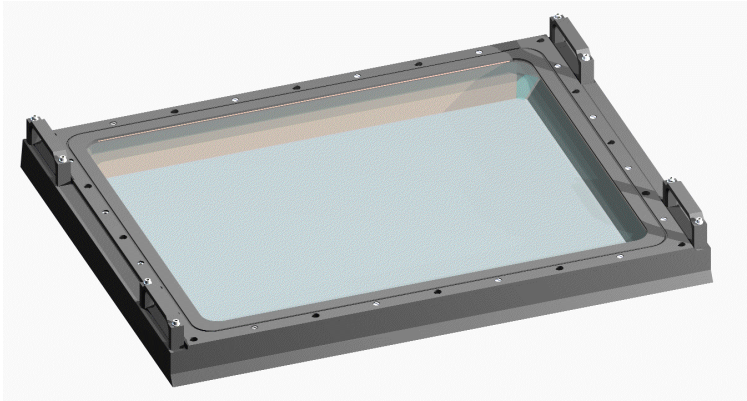


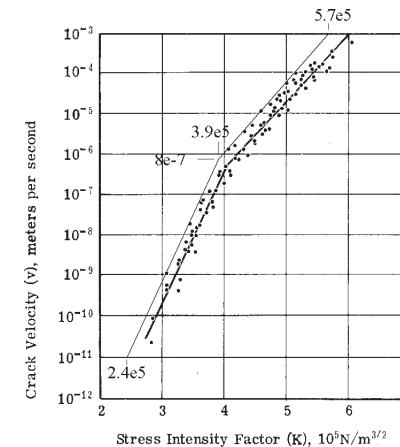
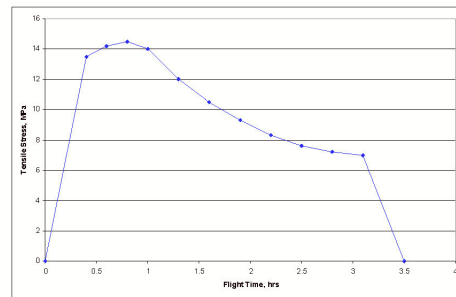
Jade for a Meter-class



High Altitude Window

$$T = (2/\pi) \int_{K_{li}}^{K_{IC}} (K_I / v \sigma^2) dK_I$$

Convolve the pressure and temperature stress transient into the crack propagation curve (ie., move the stress into the integral) and integrate to determine the time, T , to fracture for the assumed initial crack size. Adjust the initial crack size until the desired time to fracture is achieved.



Calculate the proof test stress level for the initial crack size.

Multiply the proof test stress by the safety factor (1.5 in this case) to determine the proof pressure necessary to demonstrate the desired factor of safety (see next page).

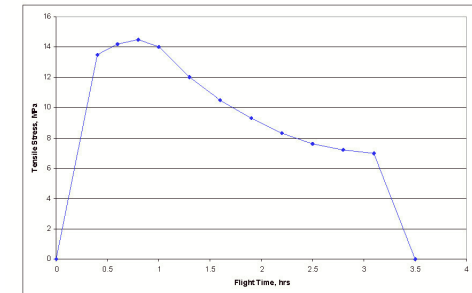
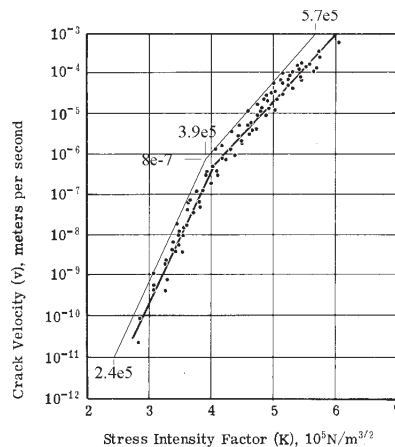
AEH.

Optomechanical Engineering

Jade Input for a Meter-class

High Altitude Window

WINDOW.FRA
 .000070 Material file name
 8.5E5 Initial crack size (meters)
 2.4E5,1E-11 K_{Ic}
 3.9E5,8E-7 Crack velocity data
 5.7E5,1E-3 (K_I vs v)



WINDOW.MIS
 40000,1200 Stress transient file name
 0,0 Transients limit, Time increments/transient
 1440,13.5E6 Stress transient data
 2160,14.2E6 (seconds vs. Pascals)
 2880,14.5E6
 3600,14.0E6
 4680,12.0E6
 5760,10.5E6
 6840,9.3E6
 7920,8.3E6
 9000,7.6E6
 10080,7.2E6
 11160,7.0E6
 12600,0

Jade Output for a Meter-class High Altitude Window

Output from -

JADE - Brittle Fracture Analysis Tool
Version 2a
Copyright 2017 Alson E. Hatheway Inc.

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PROJECT NAME: 'WINDOW' TIME AND DATE: 13:54:30 01-16-2017

INITIAL CRACK SIZE = .000068
FULL STRESS CYCLES AT FRACTURE= 4180
TIME TO FRACTURE= 52670677.5 SECONDS= 14630.74375 HOURS
MINIMUM PROOF TEST STRESS= 58155331.146016
RERUN? Y OR N; Y

Output from -

JADE - Brittle Fracture Analysis Tool
Version 2a
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PROJECT NAME: 'WINDOW' TIME AND DATE: 13:55:20 01-16-2017

INITIAL CRACK SIZE = .000069
FULL STRESS CYCLES AT FRACTURE= 3759
TIME TO FRACTURE= 47365972.5 SECONDS= 13157.2145833333 HOURS
MINIMUM PROOF TEST STRESS= 57732377.6698763
RERUN? Y OR N; Y

Product Proof Test:
57.7 MPa x 1.5 = 86.6 MPa (12,600 psi)

Output from -

JADE - Brittle Fracture Analysis Tool
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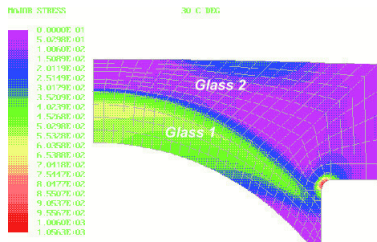
PROJECT NAME: 'WINDOW' TIME AND DATE: 13:55:59 01-16-2017

INITIAL CRACK SIZE = .000070
FULL STRESS CYCLES AT FRACTURE= 3383
TIME TO FRACTURE= 42627637.5 SECONDS= 11841.0104166667 HOURS
MINIMUM PROOF TEST STRESS= 57318520.1643025
RERUN? Y OR N; N

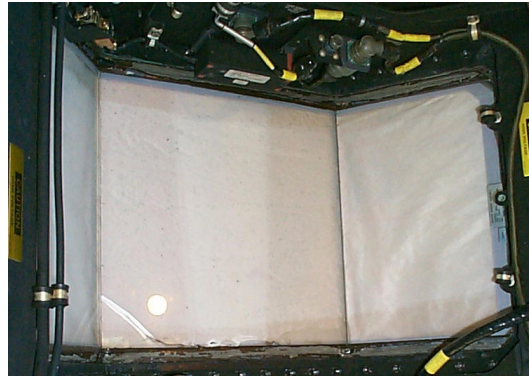
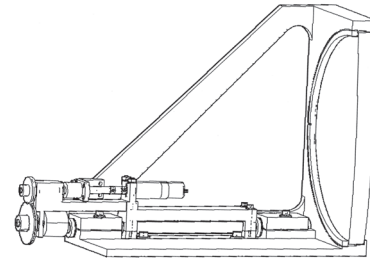
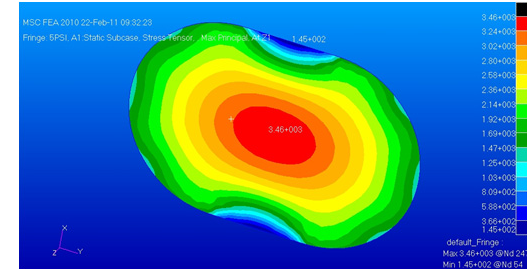
AEH.

Optomechanical Engineering

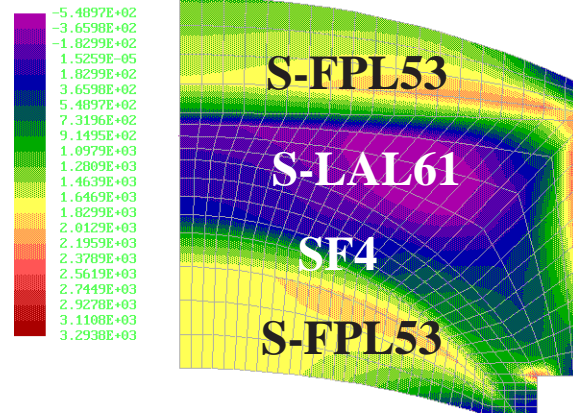
Analyzing the Fracture of Glass



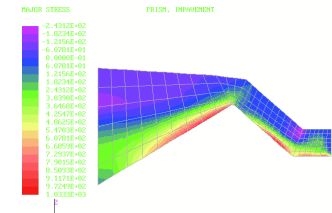
PRESS ANY KEY TO CONTINUE



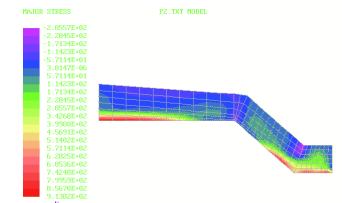
MAJOR STRESS -30 DEG C, ACTUAL YOUNG'S MODULI



PRESS ANY KEY TO CONTINUE



PRESS ANY KEY TO CONTINUE



PRESS ANY KEY TO CONTINUE

