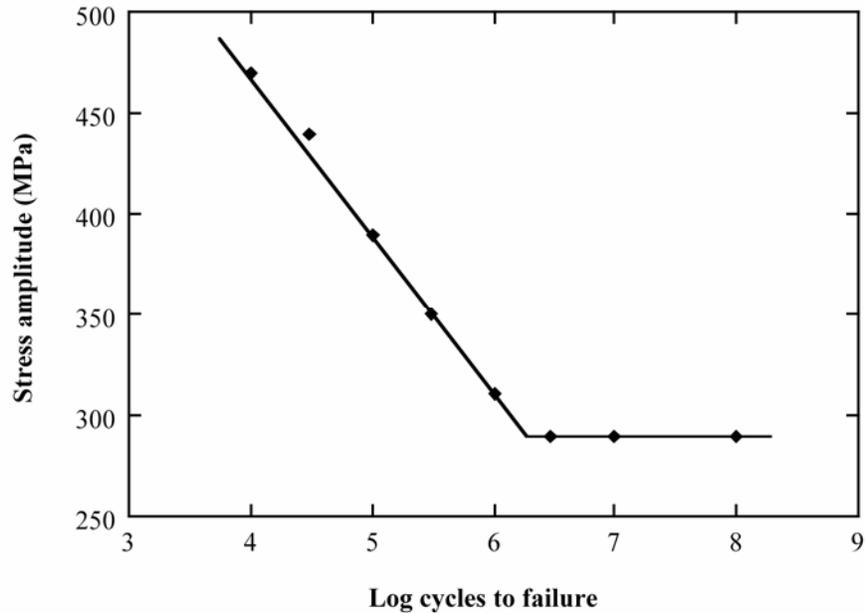


8.20 (a) The fatigue data for this alloy are plotted below.



(b) The fatigue limit is the stress level at which the curve becomes horizontal, which is 290 MPa (42,200 psi).

(c) From the plot, the fatigue lifetimes at a stress amplitude of 415 MPa (60,000 psi) is about 50,000 cycles ( $\log N = 4.7$ ). At 275 MPa (40,000 psi) the fatigue lifetime is essentially an infinite number of cycles since this stress amplitude is below the fatigue limit.

(d) Also from the plot, the fatigue strengths at  $2 \times 10^4$  cycles ( $\log N = 4.30$ ) and  $6 \times 10^5$  cycles ( $\log N = 5.78$ ) are 440 MPa (64,000 psi) and 325 MPa (47,500 psi), respectively.