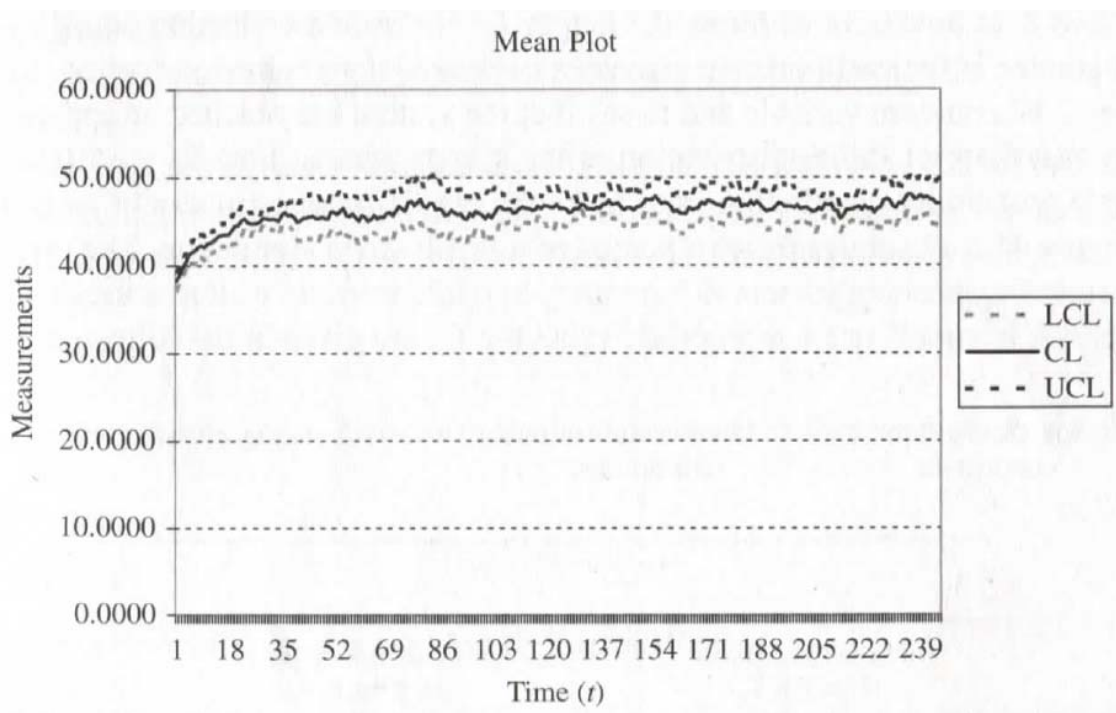
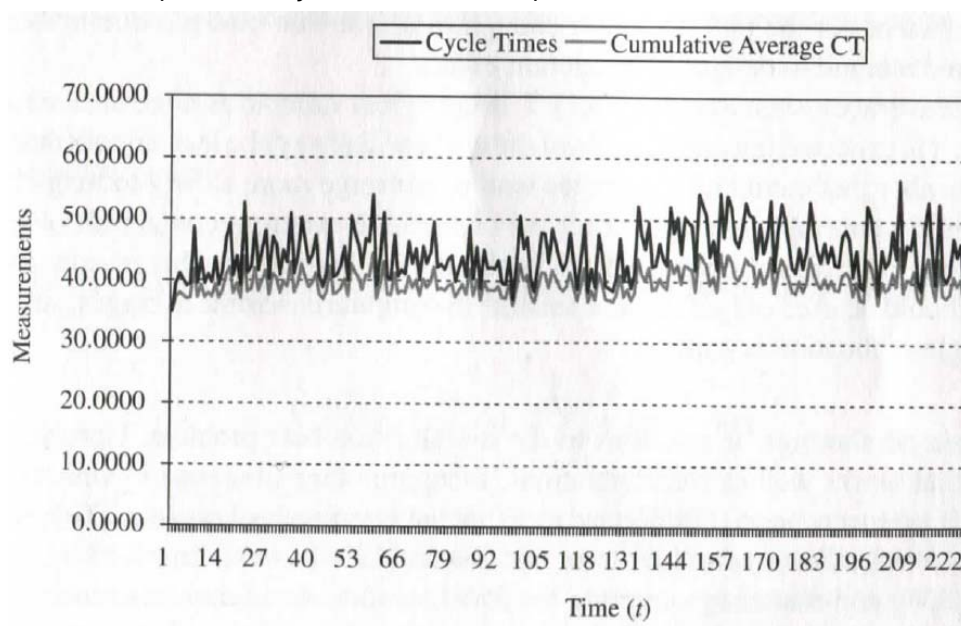


- FastChip, INC. wants to use a wafer fabrication process and you need to analyze the **steady-state mean cycle time** based on a simulation model.
- Suppose that 10 cross replications were made and each run is long enough so that 250 cycle times were collected.
- Find  $T_0$ :
  - Mean plot across 10 replications of 250 product cycle times



- Plot of 250 products cycle times from replication 1, raw and cumulative average



- Suppose that you decides to make  $R=10$  (cross) replication, each of length  $T_0+T_E=2200$  hours, deleting the first  $T_0 = 200$  hours before data collection.
- The (within) replication averages  $(\bar{Y}_r(T_0 + T_E, T_0), r = 1, 2, \dots, 10)$  are shown in the following table.
- Estimate the long run average cycle time and measure the error of the estimate by a 95% confidence interval.

Replication $r$	Sample Mean for Replication $r$
1	46.86
2	46.09
3	47.64
4	47.43
5	46.94
6	46.43
7	47.11
8	46.56
9	46.73
10	46.80
$\bar{Y}_{..}$	46.86
$S$	0.46

- Now, we consider an initial sample size (# of cross-replications)  $n_0 = 10$  and its standard deviation  $S_0 = 0.46$ . Suppose that it is desired to estimate long-run mean cycle time within  $\epsilon=0.1$  hours.
- Find the minimum number of (cross) replications to achieve it.