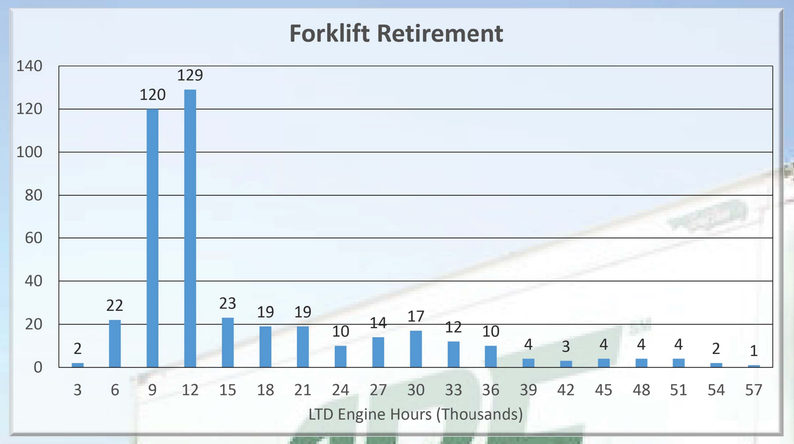
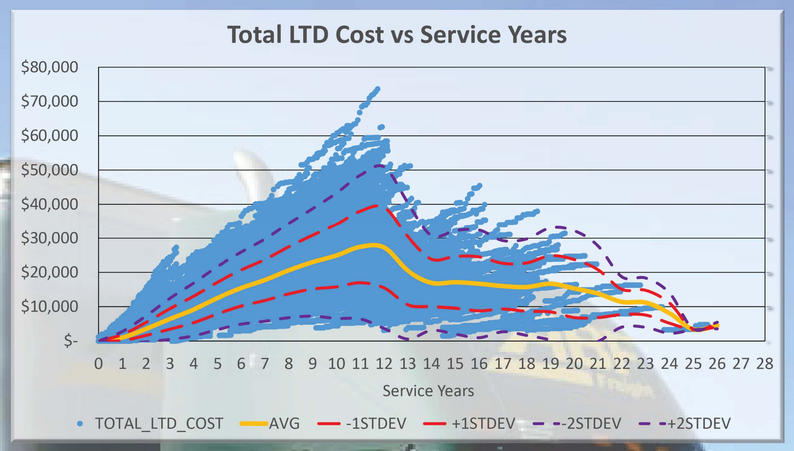
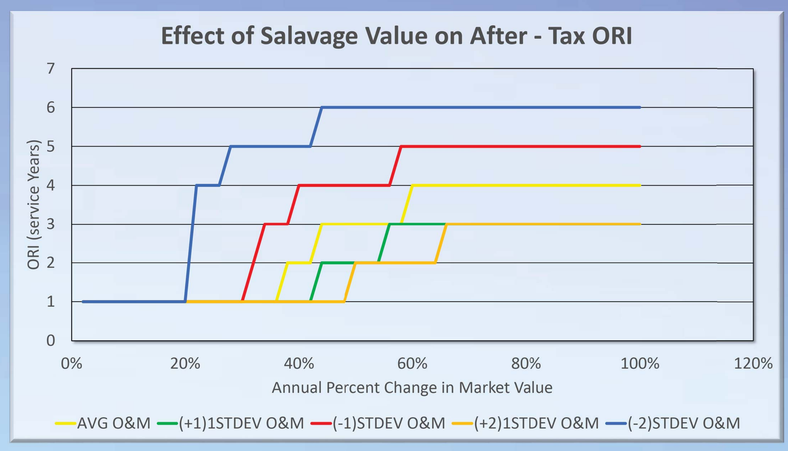
Analysis of Forklift Retirement and Optimal Replacement Interval Calculations



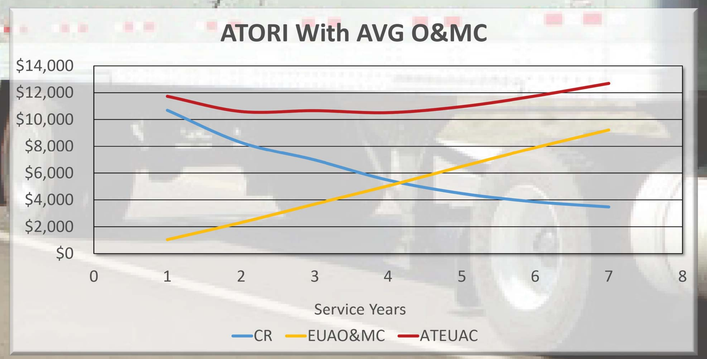
The group required data on when forklifts were being retired. A macro in excel was created to calculate the retirement of forklifts by identifying the last station number a forklift had maintenance performed at. The macro then calculated the life – to – date (LTD) engine hours and service years upon retirement. The histogram displays the LTD engine hours accrued upon retirement and the count of forklifts for each interval.

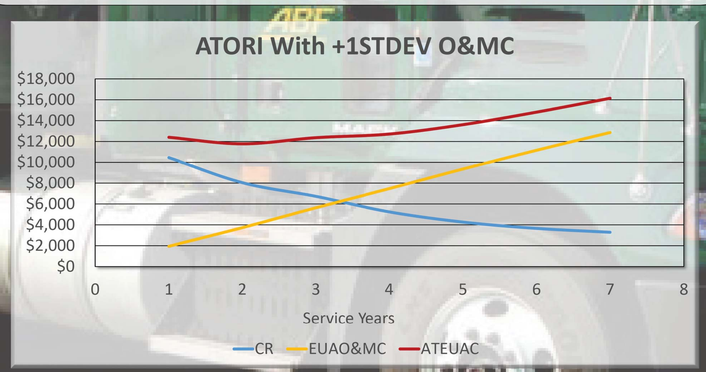


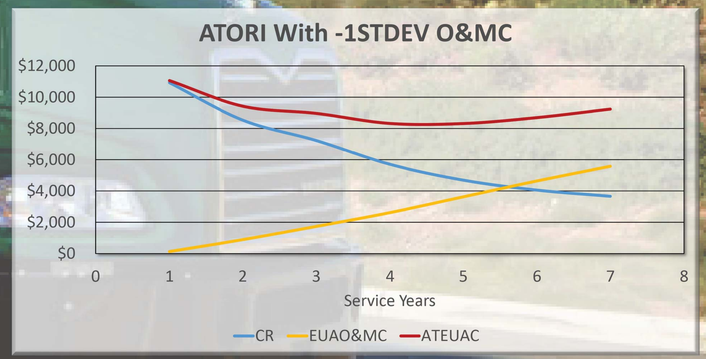
In order to calculate the optimal replacement interval for ABF Freight's forklifts, the operation and maintenance cost (O&MC) for each year of service had to be calculated. As the graph shows, there is a wide variability in the O&MC. To account for this variability, a range of two standard deviations must be made. Multiple optimal replacement intervals will be calculated using the range of O&MC.

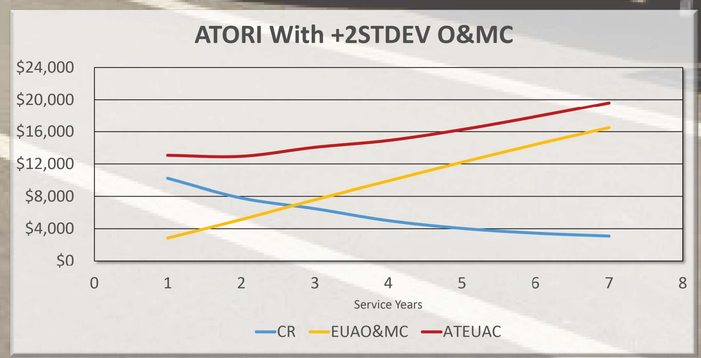


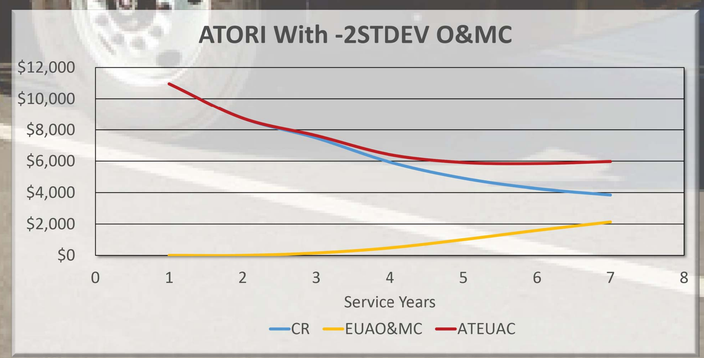
The group found when calculating the optimal replacement intervals that the annual percent change in market value directly effects when the optimal replacement interval is across the range of O&MCs. The graph shows that as the annual percent change in market value increases, the optimal replacement interval for each O&MC range increases as well.











$$\text{EUAO\&M} = \sum_{j=1}^{n} \frac{P_j}{(1+i\%)^j}(A|P, i\%, n) \quad CR = P(A|P, i\%, n) + T(P|F, i\%, n) + TOG(P|F, i\%, n) - F(A|F, i\%, n) \quad ATEUAC = CR + EUAO\&MC$$