



## BELOW THE RADAR

Factors that Steal Tons, Increase Costs and Prevent Change

### Equipment Availability and Maintenance's Controllable Factor

Availability and utilization ratios have been on the short list of key measures used to evaluate equipment performance for decades. For just as long, superintendents, mines, divisions, companies and continents have disagreed on the exact formulae for each measure. Sometimes the tension involved in adopting the "right" formulae causes companies to ignore them because they "don't mean anything". If agreement IS reached, other factors may 1) cause an adversarial relationship to develop between maintenance and operations or 2) hide real opportunities to proactively manage the controllable components of these ratios. The intent of this month's article is to raise awareness about issues that revolve around the use of the availability ratio and components of the calculation that maintenance impact daily.

Maintenance departments are accountable for making equipment available to operations a high percent of the time, and management has historically pushed for higher and higher availabilities over the years. If the components of the availability calculation are misunderstood and if fleet-specific maintenance requirements are not considered, unachievable maintenance targets can be unintentionally set. Here is a hypothetical example that illustrates what this means to both maintenance and operations:

- 94% availability was placed in the budget, a high goal for the maintenance department to achieve. To achieve this goal, maintenance must complete all planned repairs AND breakdown work in 526 hours (6% of the year). This also means that operations will have the opportunity to use the equipment 94% of the time (8,234 hours per year).
- Maintenance must split 526 hours between planned and unplanned work. There are several issues that can arise from this split:
  - The number of hours required for planned work may exceed 526, resulting in some planned work being postponed and no hours being allotted to breakdown work.
  - If an operation does not run 24/7, there may be less emphasis on excellent execution of planned maintenance work because there are more hours available for maintenance overruns that do not impact production. If targets or historical actuals for planned component replacement do not exist, then determining a reasonable number of hours for planned maintenance work is difficult.
  - Sometimes there are no hours allotted for breakdown work because this would lower the availability target. It is important to recognize that "numbers drive behavior" at all organizational levels, and maintenance and operations are no exceptions. If no hours are built into the budget for breakdown work, one of two bad things happen:
    - 1) Maintenance personnel develop low morale because they know they will fail to achieve budget as soon as the first breakdown occurs OR
    - 2) Maintenance cancels or postpones planned work to offset the hours taken by unplanned breakdowns in order to achieve the budgeted target.
- Fleet-specific maintenance requirements may require more or less hours than the 526 hours placed in the budget, which means that the 94% availability target will not work for all fleets. In this case, management should budget availability by fleet to avoid unreachable targets or "sand-bagging" for fleets that require less planned downtime.
- The controllable day-to-day opportunity to improve availability is equal to the difference between planned and actual hours for planned work. Ironically, the value of this opportunity is buried in a subset of the 6% unavailable time, not in the 94% availability target assigned as maintenance's measure of performance. Maintenance improvement opportunities are seldom identified using this approach, even though it is directly tied to daily maintenance tasks that maintenance personnel can control and affect.
  - Targets for component replacement and PMs help maintenance departments measure their own performance and isolate opportunities to improve the preparation and execution of planned work.
  - If the improvement goal for availability exceeds the difference between target and actual for planned work, the goal may be unachievable unless younger equipment is purchased to replace older equipment with significant downtime.

Here's the thought for February:

To maximize the maintenance function, maintenance departments should be measured on the window of time for planned work that they control.

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