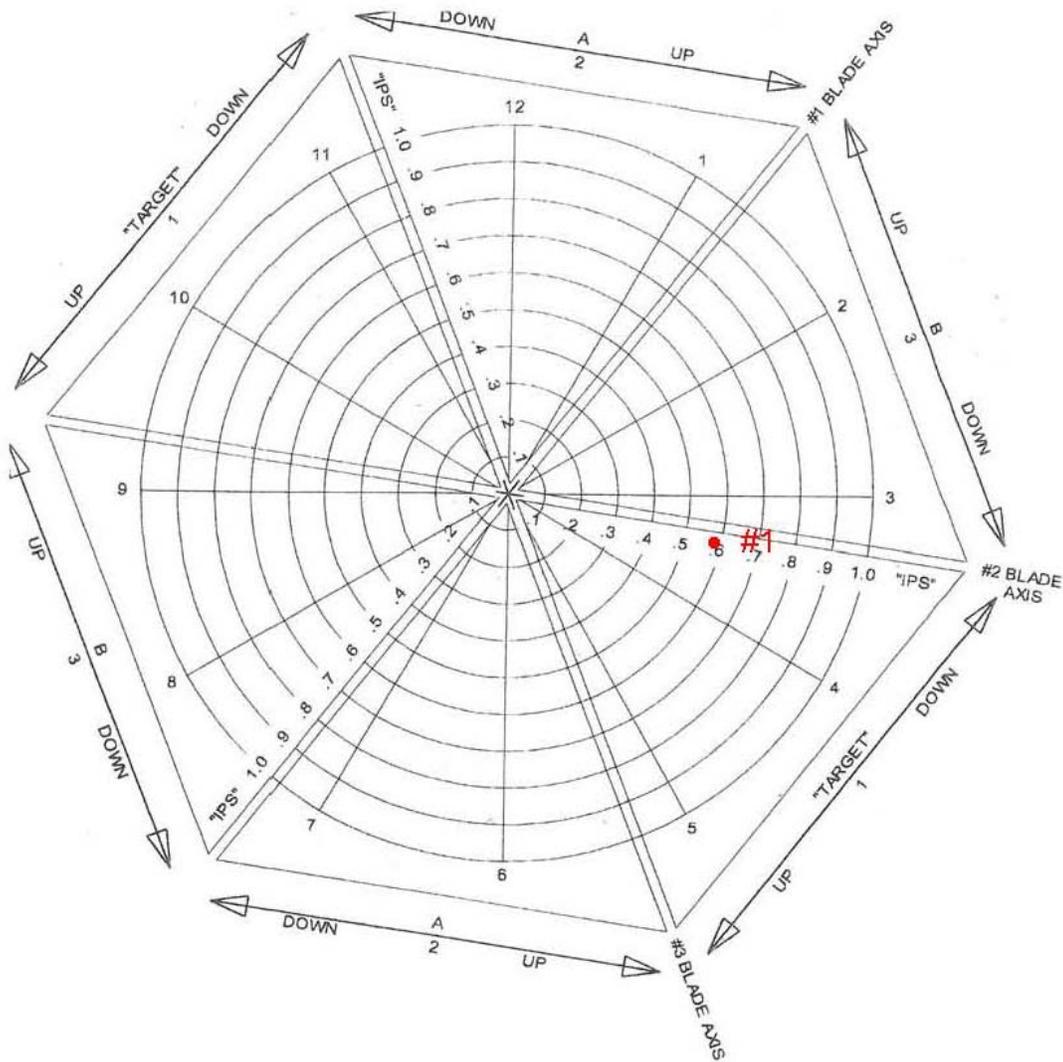




The following is an example of a typical situation where a clock correction can be used to adjust the polar chart to match the helicopter being tracked when using a Chadwick Vibrex 2000 balance system.

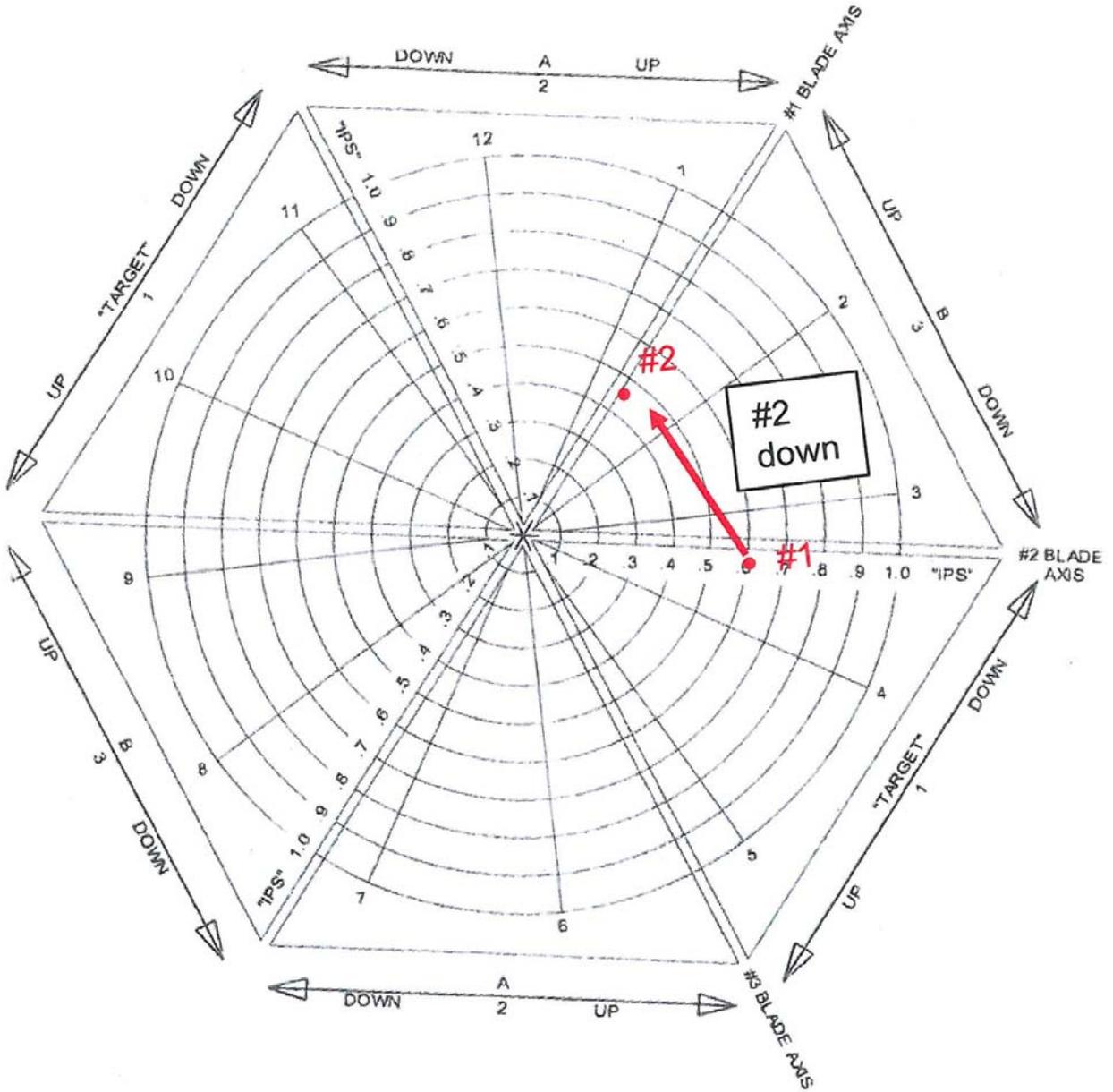
The procedure can be adapted for use with any of the modern digital balance boxes when the internal learning program isn't being used.

On the first hover run, the Chadwick records a plot of .6 ips at a clock angle of 3:30. The plot on the vertical accelerometer B chart would look like this.



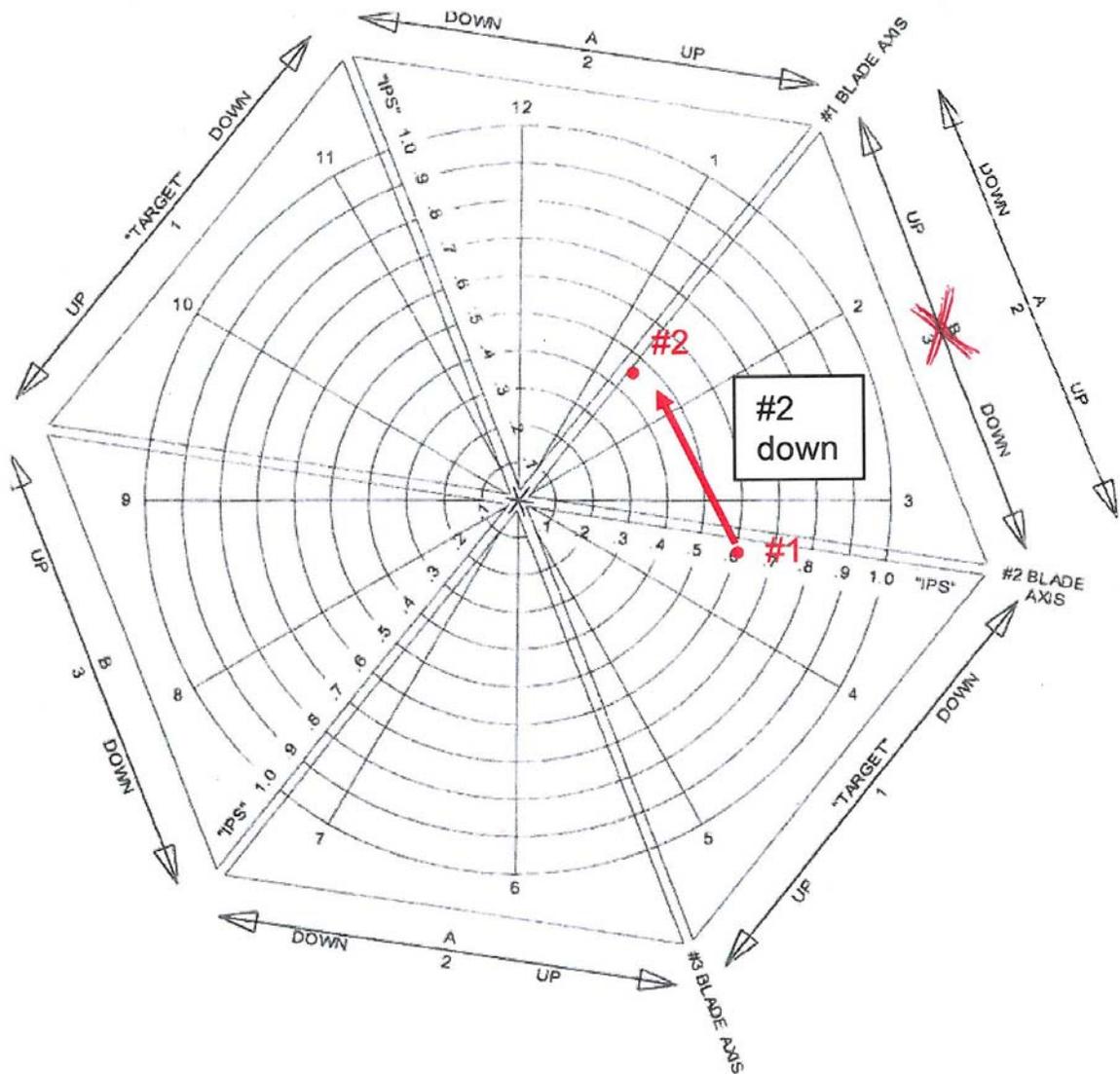
The blade track correction line shows that the #2 blade should be pitchlinked down approximately 1/3 flat.

The helicopter is hovered again and a second plot is taken, .5 ips @ 1:30. The plot follows.



Clearly the helicopter did not respond as expected to the pitch link move indicating that the polar chart is not correctly aligned to the helicopter.

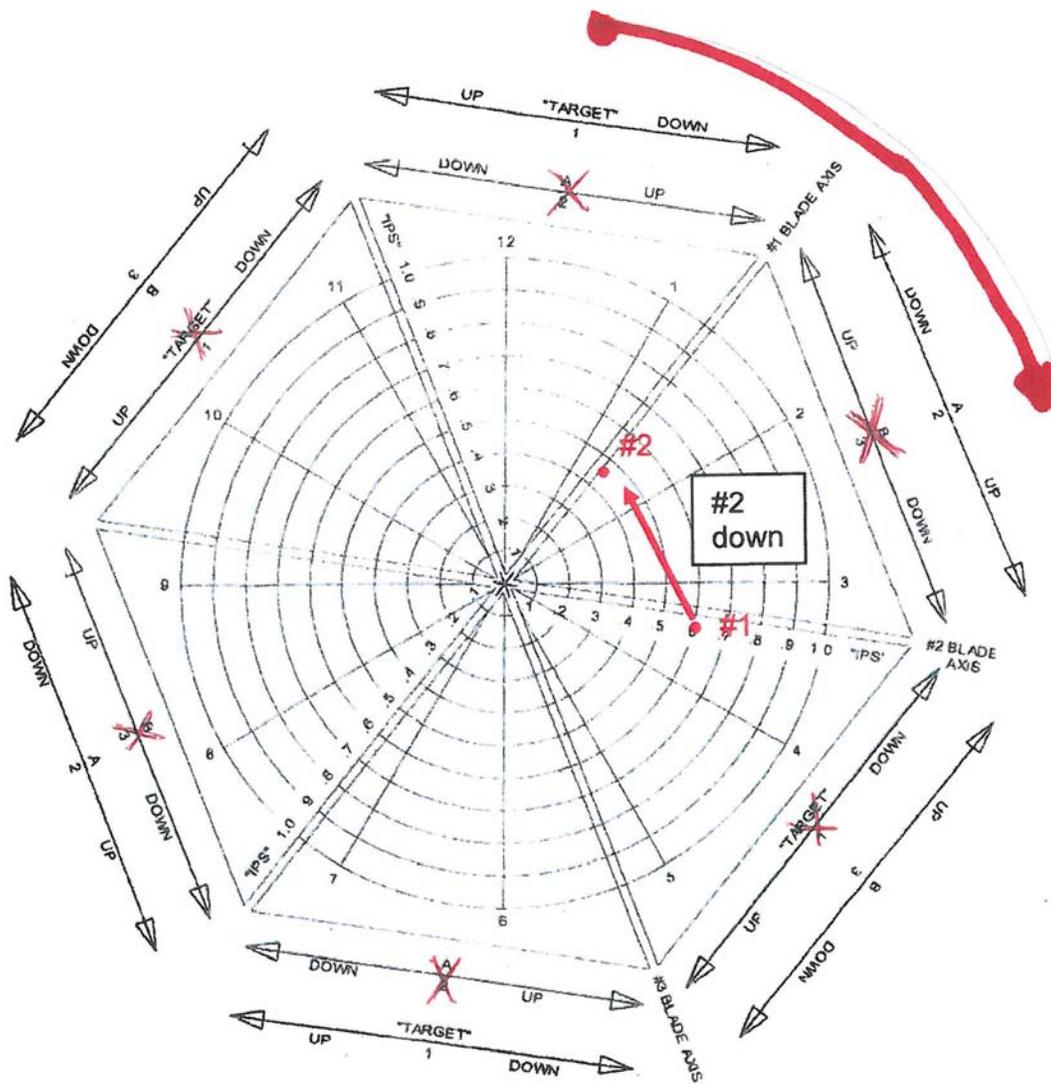
The solution is to alter the chart to match the helicopter. If we look at the move line from the #1 plot to the #2 plot, we can see that instead of following the #2 blade axis line as expected, the move actually followed the #3 blade axis line. If we remark the outside of the chart, we can make the chart reflect what actually happened.



Here we have switched the blade correction move line from the #3 blade to the #2 blade which reflects what really happened when we pitch linked # 2 blade down.

To alter the polar chart so that it matches the helicopter, we have to move all of the blade correction lines around the chart in the same direction, and the same amount as in the previous adjustment.

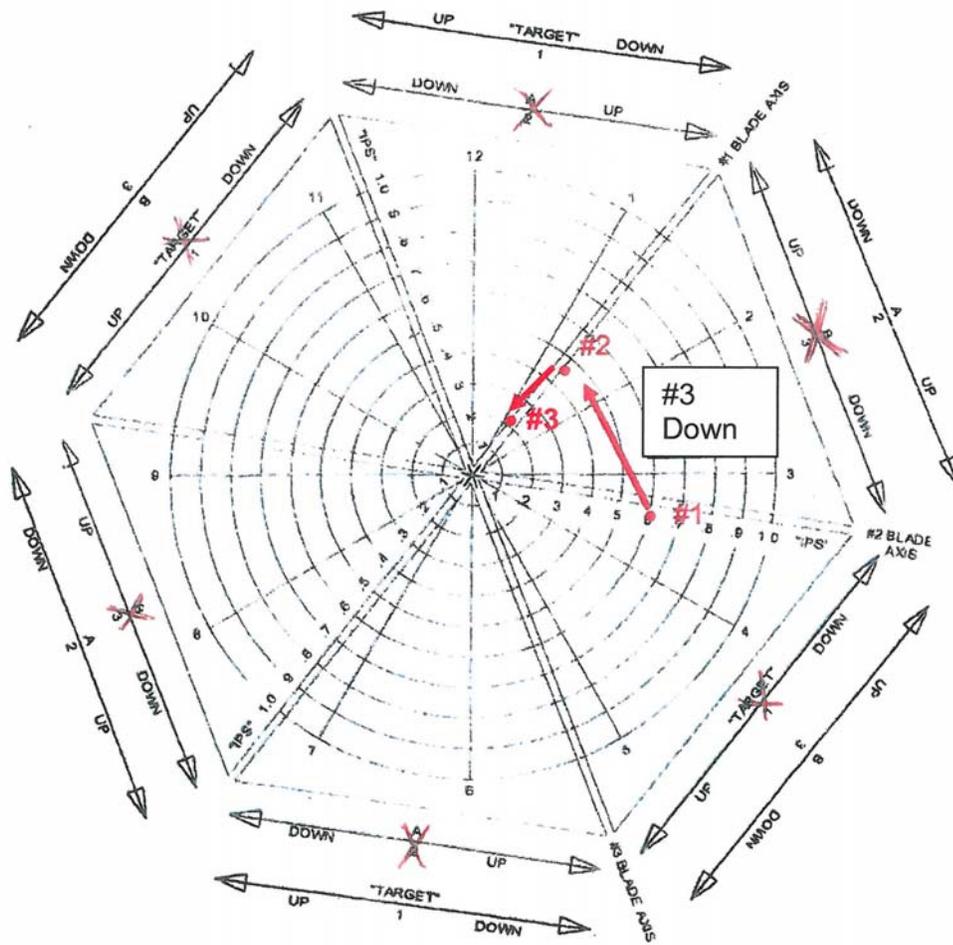
This is called the Clock angle Correction. The chart now looks like this.



If you look at the inside ring of blade correction moves, and turn them all around clockwise one flat (60°) you end up with the outside ring of blade correction moves.

According to the corrected chart, (the outside ring of blade correction move lines) the next move (#3) should be to adjust the #3 pitch link 1/3 flat down.

The helicopter is hovered again and if every thing works as planned the plot looks like this.



Life is good!

There are some important things to know about clock angle corrections:

Clock angle corrections are related to how well the balance equipment matches the helicopter so most helicopters will use the same clock angle correction when they are balanced using the same balance equipment.

The clock angle correction is almost never the same in hover as it is in forward flight so when the tracking progresses to the forward flight phase, a new chart should be used, and the correction will have to be figured again.

In some cases, particularly when the ips readings progress from a large number to a small number, the clock angle correction may change or go away entirely. The technician needs to plot all of the moves and to be ready to recalculate or abandon the clock angle correction if needed.

Life is good!