Roger Caddell names the telemetry analysis area the “Data Acquisition Triangle” since there are 3 major usages of telemetry output. 1 Driver Performance, 2 Vehicle Performance and 3 Vehicle health. He recommends a book called “Practical Guide to race car Data Analysis” by Bob Knox 2011 if you want to dig into this deeper.

The goal of driver performance analysis is to try to find the when and where issue are happening and come up with a solution or at least the cause. You always ask the question, is the driver reacting or creating the car reaction?

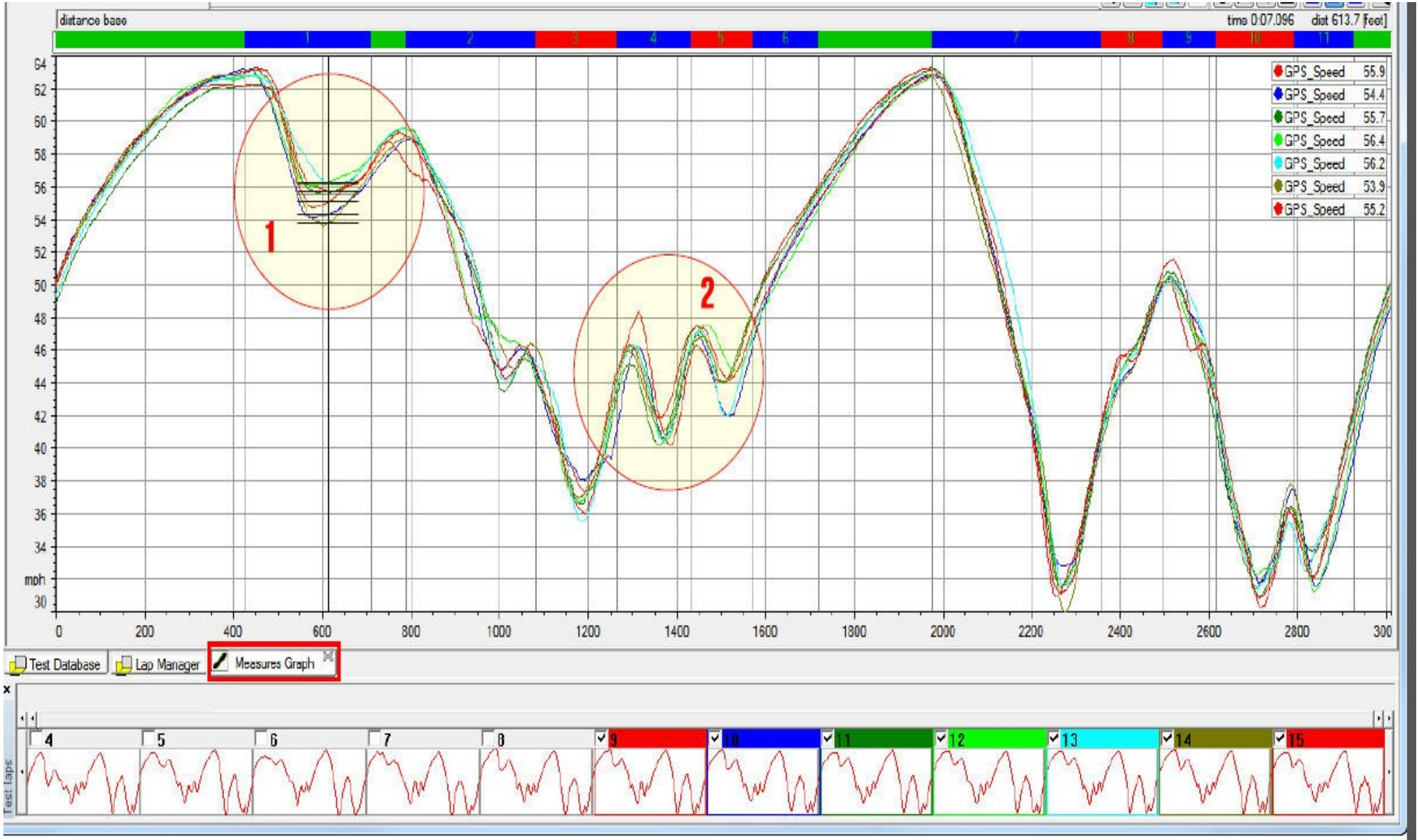
For Caddell's 1st example of driver performance analysis, he recommends one start with something simple like car speed plots vs distance. He uses 7 laps of data and looks for areas of non overlap of the speed curves vs distance during during those laps. He calls this non overlay “noise.” These are inconsistent values from lap to lap. These sub areas on the plots can point the driver to areas for improvement. The errors often effect the exit speed. One looks for global trends.

Sometimes only looking at one lap a problem will not show up. He also says you must double check that actual track layout to see if there is something that might be causing a unexpected pattern (like up hill or downhill into a corner that change braking style).

Look at example 1 below where Caddell has circled the areas of focus for improvement. Notice t areas where there are the largest speed differences (vertical spacing between curves). With GSC2013 plugin's output and the older versions of MoTeC you can not overlap laps from a single session but you can overlay several sessions or just stop and restart data logging on each lap and overlay the recorded logs.

In GSC2013 I am using
Data Acquisition Plugin 1.32 by DanZ
and also using the MoTeC install that is recommended on the above download page.

Overlapping multi lap sessions:

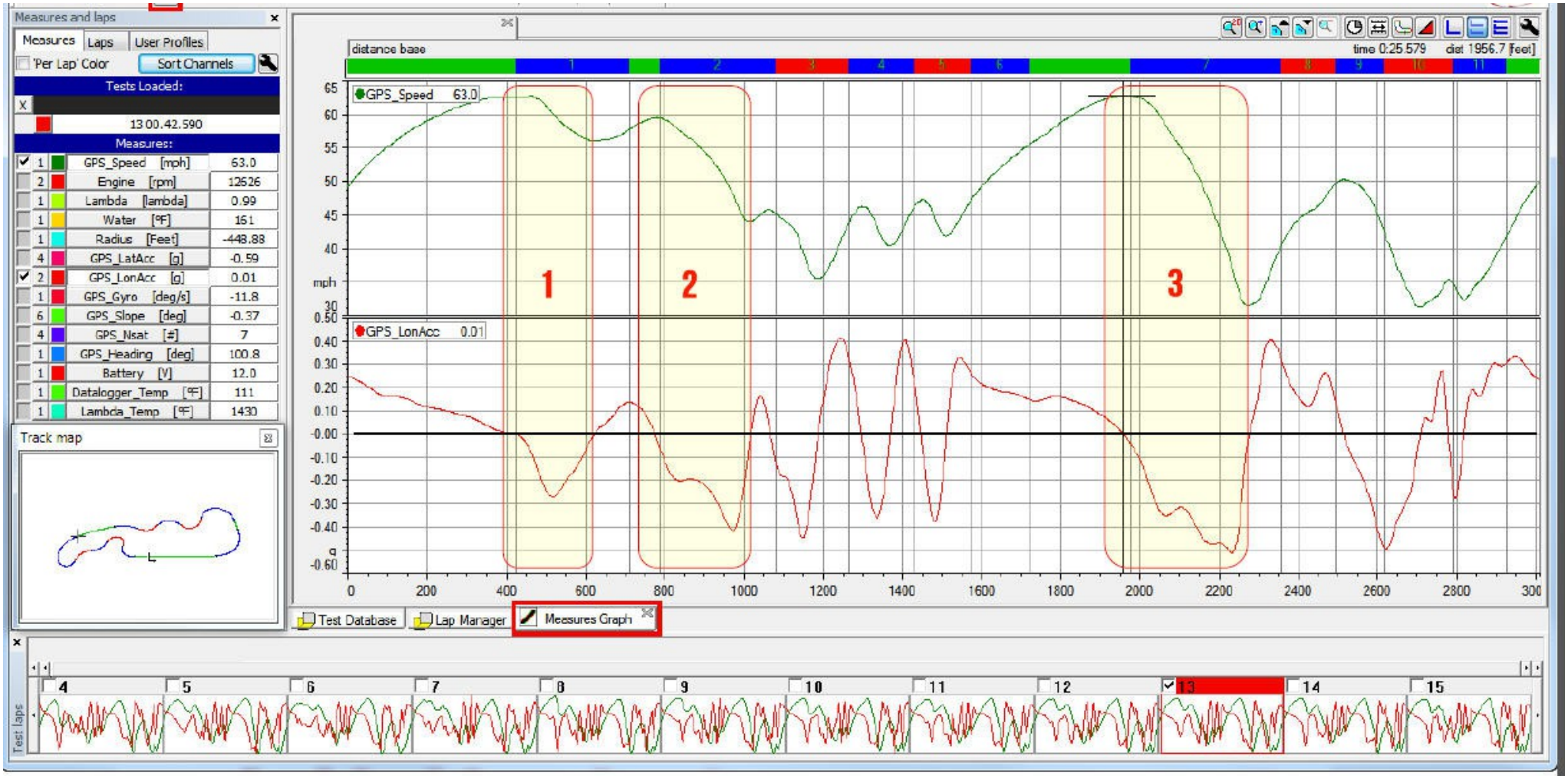


MULTIPLE SPEED TRACES CAN BE USED TO POINT OUT INCONSISTENCY AND POINT TO AREAS FOR IMPROVEMENT. IN THIS SAMPLE, TWO AREAS STAND OUT.
IN AREA #1, THE INCONSISTENCY BEGINS ON CORNER ENTRY AND CLEARLY AFFECTS EXIT SPEED UNTIL THE NEXT BRAKING ZONE.
IN AREA #2, THE INCONSISTENCY IS THROUGH A SECTION OF SHORT ACCELERATION AND BRAKING ZONES AND NO DOUBT A SERIES OF CORNERS.

In example 2 he shows how one can look at the technique in each braking period. He draws a straight line on the speed curve during the main brake period on each corner. Each line intersects the speed curve at the start and stop of the braking period. One then compares this line with the speed curve. You look to see if the speed curve has a droop or bulge that is below or above the straight line that you have drawn. If the speed curve is below the line in the middle, this indicates breaking was strong at 1st and maybe too early and then the driver was easing off the brake pressure towards the end of the braking area. More common case is the 2nd and 3rd area where one sees the speed curve is above the straight line at 1st. The driver might have miss judged the braking or amount and brakes too little at 1st and then the driver needed to add more pressure later in the braking area. In both cases, with more optimum braking, the start time could be later and the pressure could be controlled to be more consistent. The slope thought the main brake period would follow the straight line. The slope of the speed curve during braking should be fairly flat and not so curved as seen in the example. Remember trail braking is not included is the main braking period example.
In the video Mr Caddell talks about each of these example areas in detail.

SPEED TRACES CAN BE USED TO POINT OUT AREAS FOR IMPROVEMENT IN BRAKING. IN THIS SAMPLE, THREE AREAS STAND OUT.
IN AREA #1, THE ISSUE IS THAT THE DRIVER IS RELEASING BRAKE FOR THE LAST 25% OR SO OF THE BRAKING ZONE. TYPICALLY THIS IS FROM BRAKING TOO EARLY AND THEN REALIZING IT.
IN AREA #2 AND 3, THE ISSUE IS UNDER BRAKING EARLY AND THEN USING MAXIMUM BRAKING LATE IN THE BRAKING ZONE.

The 3rd example image adds a G force curve. A different way to look at the same issue but you get details from Longitudinal G force. Notice in zone 1 that the Gs are reducing as he releases the brakes in the center of the braking area 1. In the 2nd area you can see the braking Gs flatten out in the middle of the braking period. In the 3rd area the brake gets released in the center even more than area 2. Notice the deep (more Gs at the end of the 3rd braking area). So looking at Gs might tell you more than just the speed if you dont see the error in the speed curve.



THIS IS THE SAME LAP AS THE PRIOR SLIDE BUT WE HAVE ADDED LONGITUDINAL G'S. THIS IS ANOTHER WAY TO SEE THE SAME ISSUE.
IN AREA #1, THE ISSUE IS THAT THE DRIVER IS RELEASING BRAKE FOR THE LAST 25% OR SO OF THE BRAKING ZONE. TYPICALLY THIS IS FROM BRAKING TOO EARLY AND THEN REALIZING IT.
IN AREA #2 AND 3, THE ISSUE IS UNDER BRAKING EARLY AND THEN USING MAXIMUM BRAKING LATE IN THE BRAKING ZONE.