GENERAL MOTORS
SHIFT ADAPTS

COMPLAINT: A 1998 Buick Lesabre comes into the shop with a complaint of an intermittent harsh 1-2 shift. A code P1811 is stored indicating "Maximum Shift Adapt" has been reached.

CAUSE:

TAP CELL ADAPTS:

With the scan tool in the Transmission Data Mode, (Refer to Figure 1), the shift time for the 1-2 shift is indicating that the shift took 0.70 seconds to complete. This shift time exceeds the normal time the shift should have taken. No conventional GM automatic transmission should exceed 0.65 seconds shift time.

The P1811 indicates that the PCM has attempted to compensate for the intermittent shift timing error by raising line pressure during the 1-2 shift as seen in the shift adapt report in Figure 2.The numbers without minus signs indicate how much line rise will be added to the next 1-2 shift for that particular Tap Cell.

The Tap Cells are numbered from 4 to 16, four being light throttle, eight being about medium throttle and 12 and higher being heavy throttle. The amount of line pressure the PCM can remove or provide will range from -30.00 to 30.00 positive pressure. By viewing these tap cells not only can you tell which shift is causing the harsh complaint, but also at what throttle the problem is occurring.

Within specs, the closer each Tap Cell is to one another the healthier that transmission is and the better it will perform.

STEADY STATE ADAPTS:

The Steady State Adapts are an extremely useful tool because they can pin point which component is causing the complaint, this is especially helpful on intermittent complaints. The Steady State Adapts represent the "in gear" status of a components ability to prevent slippage.

Should a component slip, this would be seen on the scan tools adaptive data list, (Refer to Figure 2), and would indicate a number which shows how much line pressure is going to be increased to keep that component from slipping. The worse it's slipping the higher that number will be, when there is no problem the steady state will be zero.

As can be seen in Figure 2, there is a problem with second gear, that steady state is elevated while the rest are zero. This would explain the above complaint.

CORRECTION: Using a 4T65E as an example, to correct slightly elevated Tap Cells usually requires replacement of the pressure control solenoid.

Another reason is, after repairs are completed, the PCM still believes it must slam that component on, in other words, it does not know the problem has been fixed. You must reset the shift adapts for the transmission to return to normal operating conditions.

If steady states are out of spec, that usually indicates internal problems.

Sometimes, if the problem is occurring frequently, the shift times will be higher than normal.

SERVICE INFORMATION:

If it becomes necessary to disconnect the battery to reset the shift adapts, and the radio no longer plays because the anti-theft code was wiped out, go to www.radio-code.com for that vehicles radio code.
Screen shots provided in Figures 2 and 3, courtesy of Ease Diagnostics

EASE Diagnostics.....http://obd2.com

LIVE DATA

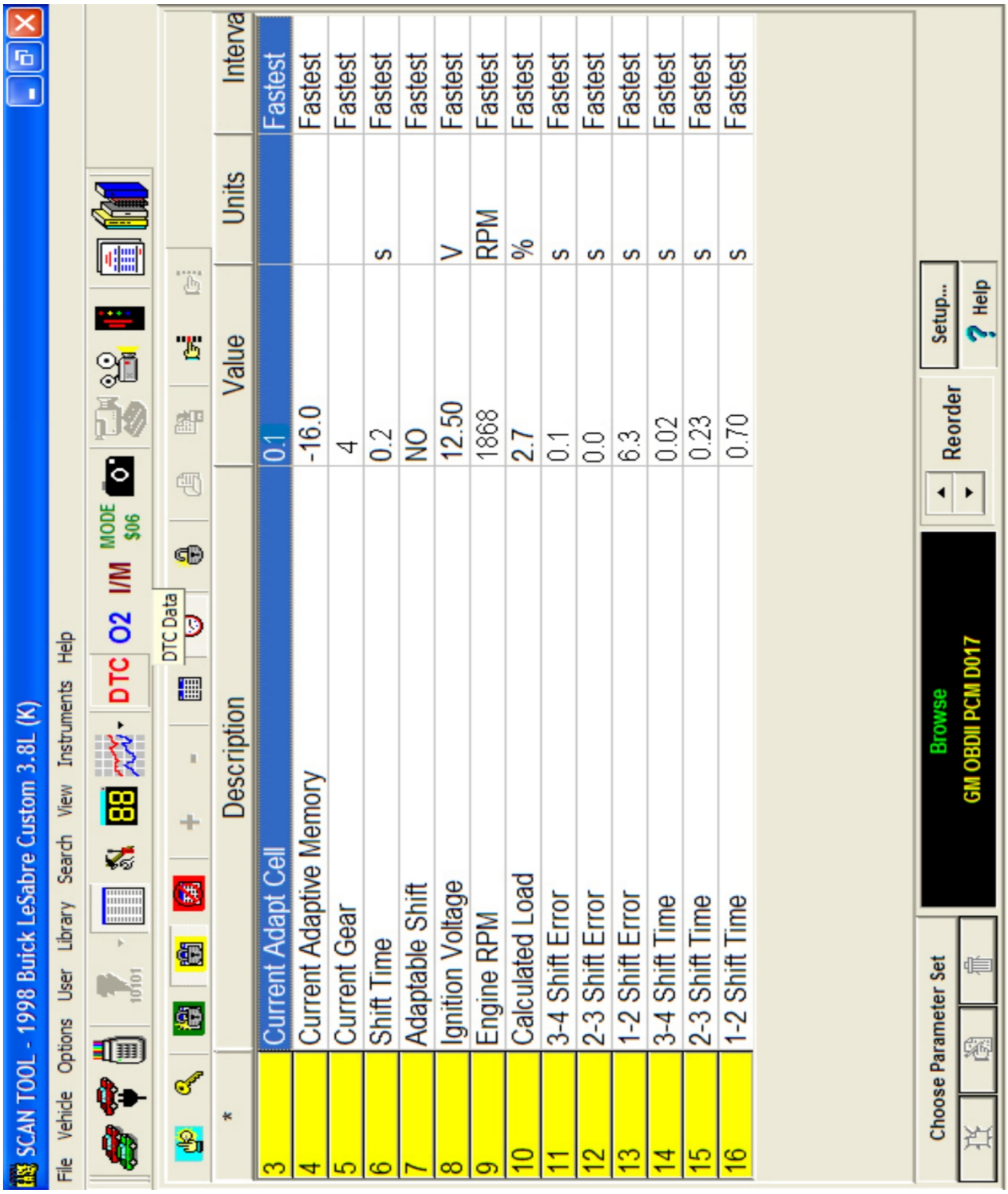
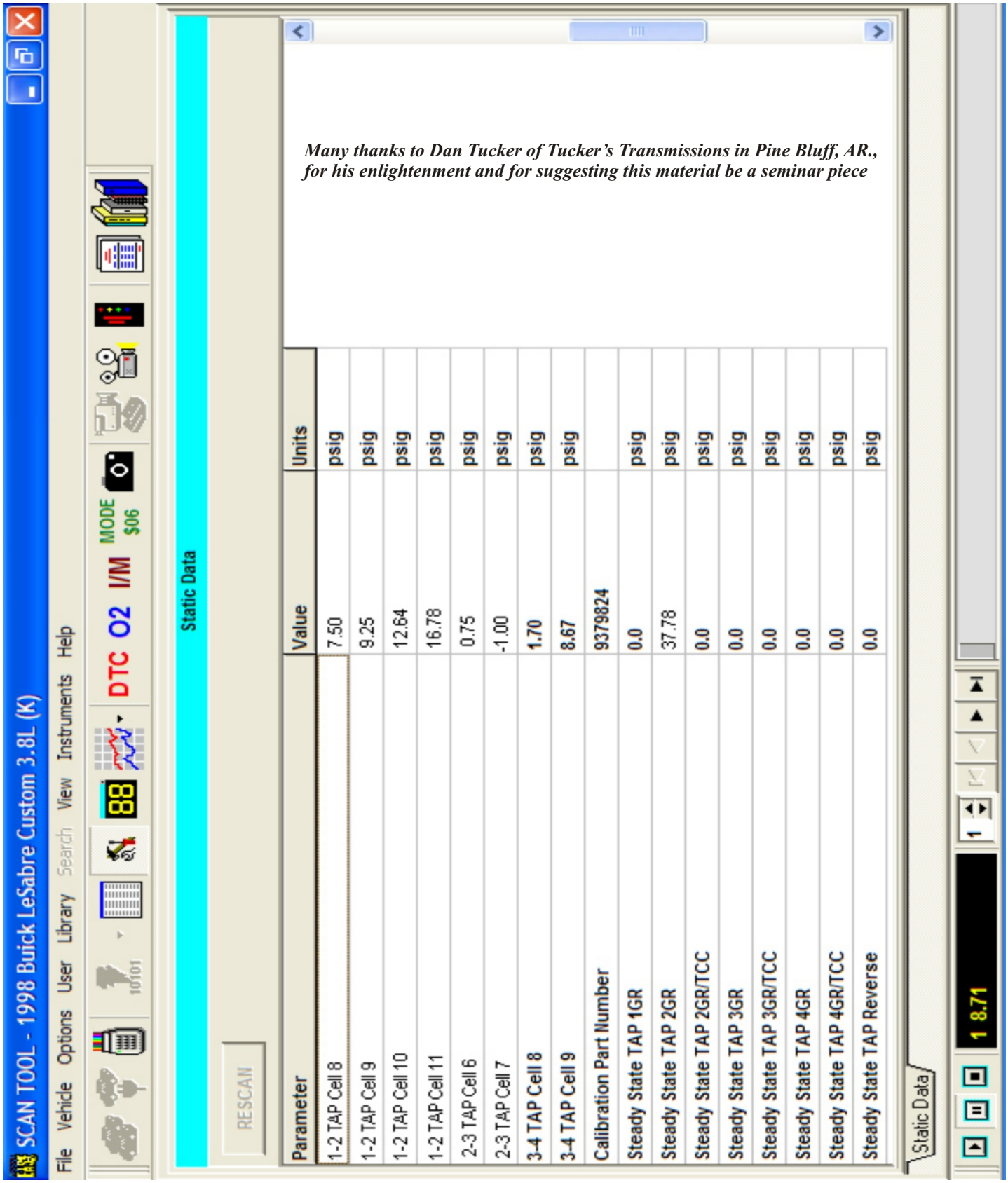


Figure 1

ADAPTIVE STATE DATA



Parameter	Value	Units
1-2 TAP Cell 8	7.50	psig
1-2 TAP Cell 9	9.25	psig
1-2 TAP Cell 10	12.64	psig
1-2 TAP Cell 11	16.78	psig
2-3 TAP Cell 6	0.75	psig
2-3 TAP Cell 7	-1.00	psig
3-4 TAP Cell 8	1.70	psig
3-4 TAP Cell 9	8.67	psig
Calibration Part Number	9379824	
Steady State TAP 1GR	0.0	psig
Steady State TAP 2GR	37.78	psig
Steady State TAP 2GR/TCC	0.0	psig
Steady State TAP 3GR	0.0	psig
Steady State TAP 3GR/TCC	0.0	psig
Steady State TAP 4GR	0.0	psig
Steady State TAP 4GR/TCC	0.0	psig
Steady State TAP Reverse	0.0	psig

Many thanks to Dan Tucker of Tucker's Transmissions in Pine Bluff, AR., for his enlightenment and for suggesting this material be a seminar piece

Figure 2