Delicious Tuning's

Guide to Datalogging and Review
Dated: April 9, 2025

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What is a Datalog, and why you should review it?

A datalog is a snapshot of your engine's vitals over time. As tuners, we use data logs as a reference point to review the vehicle health and you can too. Capturing a proper datalog is a critical step in reviewing/diagnosing the data logs the vehicle, as a log has the potential to show you exactly what the engine is doing, whether healthy or not. Conversely, a poorly done log can be useless or counterproductive.

For most applications that can be purchased through our website, the provided file is a simple Flash & Go, ready to run, with no additional reviews by the tuner. We do suggest you review the logs yourself so you have a basic understanding of what your engine is doing and know how to further diagnose issues with the vehicle, if something is not quite correct. If you do see something out of spec you are more than welcome to call or email.

If you would prefer to have a professional tuner review / customize your tune based on the logs provided please contact Delicious Tuning's sales department for more details and to schedule a day / time to do so. This is an additional charge that can be purchased through additional service works or as a custom e-tune.

Notes for certain tunes:

- **All Vehicles** - AC and Defrost should both be switched off and that you are running on pump gas (ex. 91 or 93 octane; 95 or 98 RON), not E85 (if you have a Flex Fuel tune).

- **FA20 (BRZ/FRS/86)** - The FA20 engine does a diagnostic sweep of the VVT system each time the car is started before it will allow the VVT system to activate and properly advance or retard valve timing. If your car's VVT (Variable Valve Timing) system does not activate within this two minute period, a "Triple Blink" check engine light with no readable code will illuminate. This light is to let you know that the VVT system is not yet active, and to drive the vehicle moderately until the VVT is enabled (When the light goes off).

Setting up a Datalog via Dongle (Laptop)

To create a data log, we must first load our tune into EcuTekProECU. As shown below in **Figure A**, click "**File**", followed by "**Open ROM File**", then select the tune file that is loaded into your ECU. **Note**: It is *vital* that you choose the exact file currently loaded into your ECU, and not a prior revision or substitute. In the example below, I am using a ROM for a 2013 - 2014 Manual Transmission BRZ.

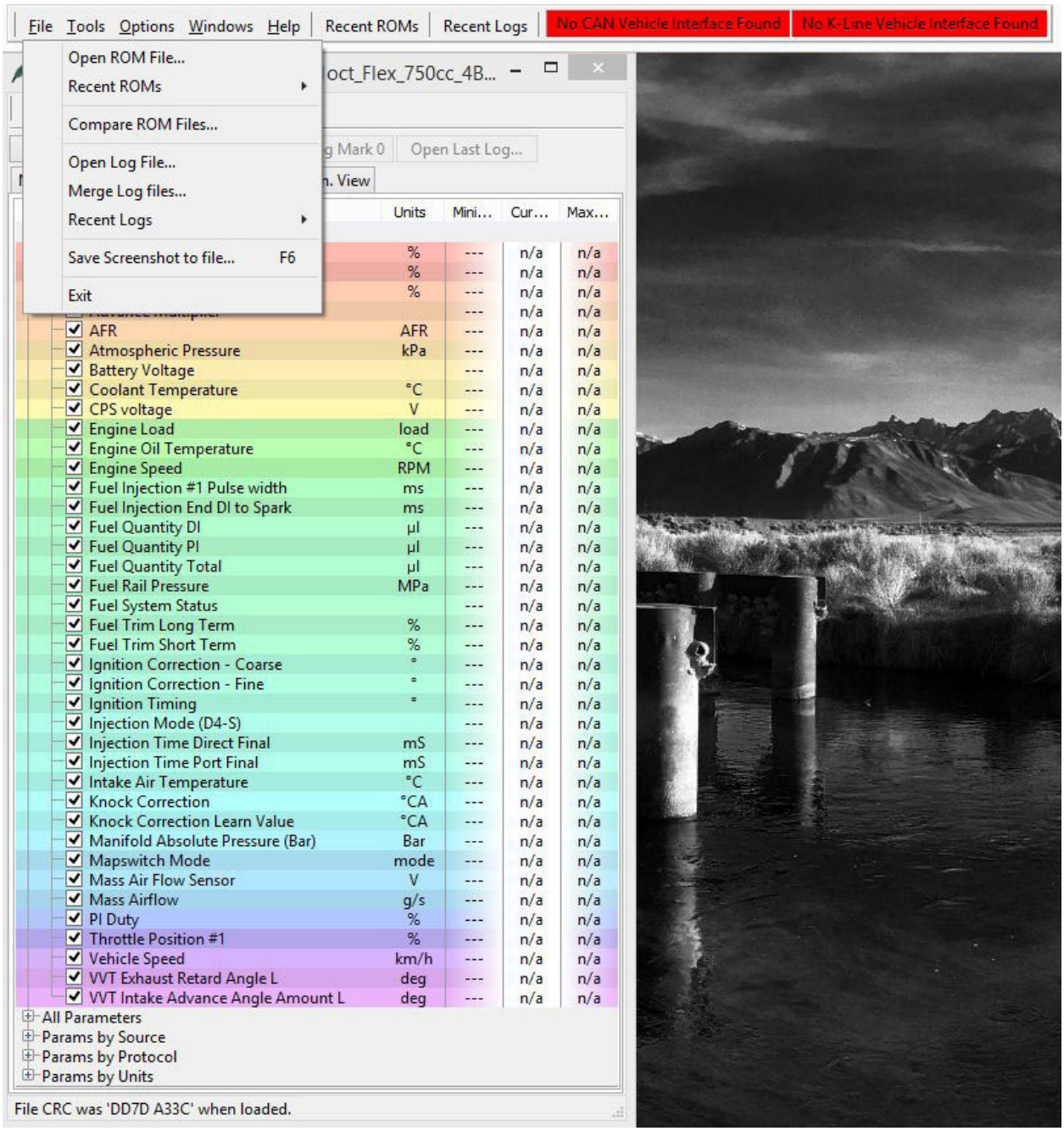

Figure A

Setting up a Datalog via Dongle (continued…)

At this stage, we have our ROM file open in EcuTek. Now, the base set of parameters will be selected by EcuTek for you to capture and record data. When we do add parameters, we do so through the "**All Parameters**" drop-down, displayed below in

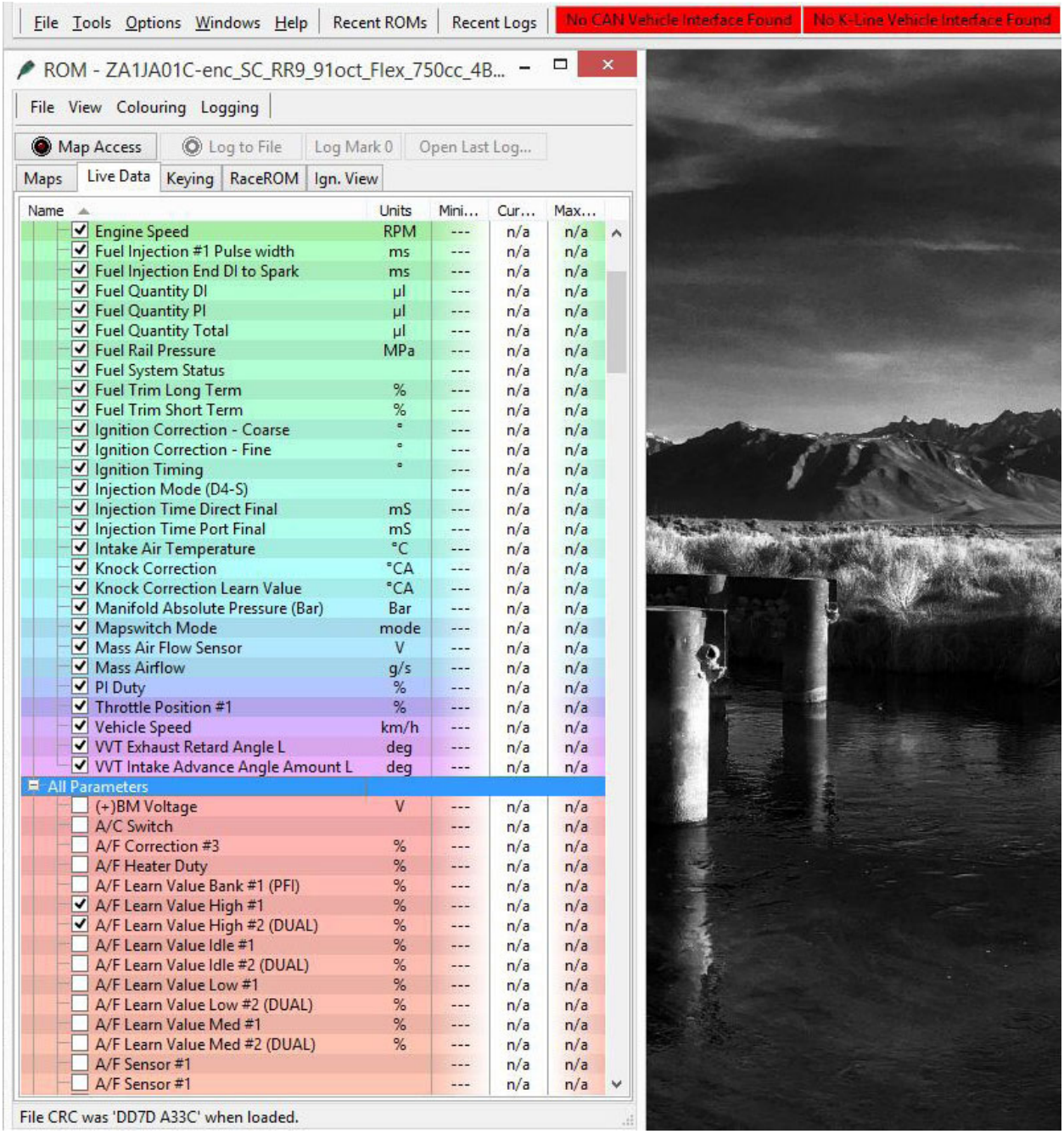

Figure B

Capturing the Datalog via Dongle

Now that we have our base set of parameters checked, we can continue onto creating the datalogs. Ensure that the green EcuTek cable is plugged in from the OBDII port on the vehicle to the USB port on your logging device. The previously *red* boxes labeled “**CAN Vehicle Interface**”and “**K-lineVehicle Interface**” should now be *green*. First, we need to click “Map Access”shown below in **Figure C**. A **green** bar *outlined* in **red** will start moving across the EcuTekProECU window, indicating the live data is being streamed, but not recorded.

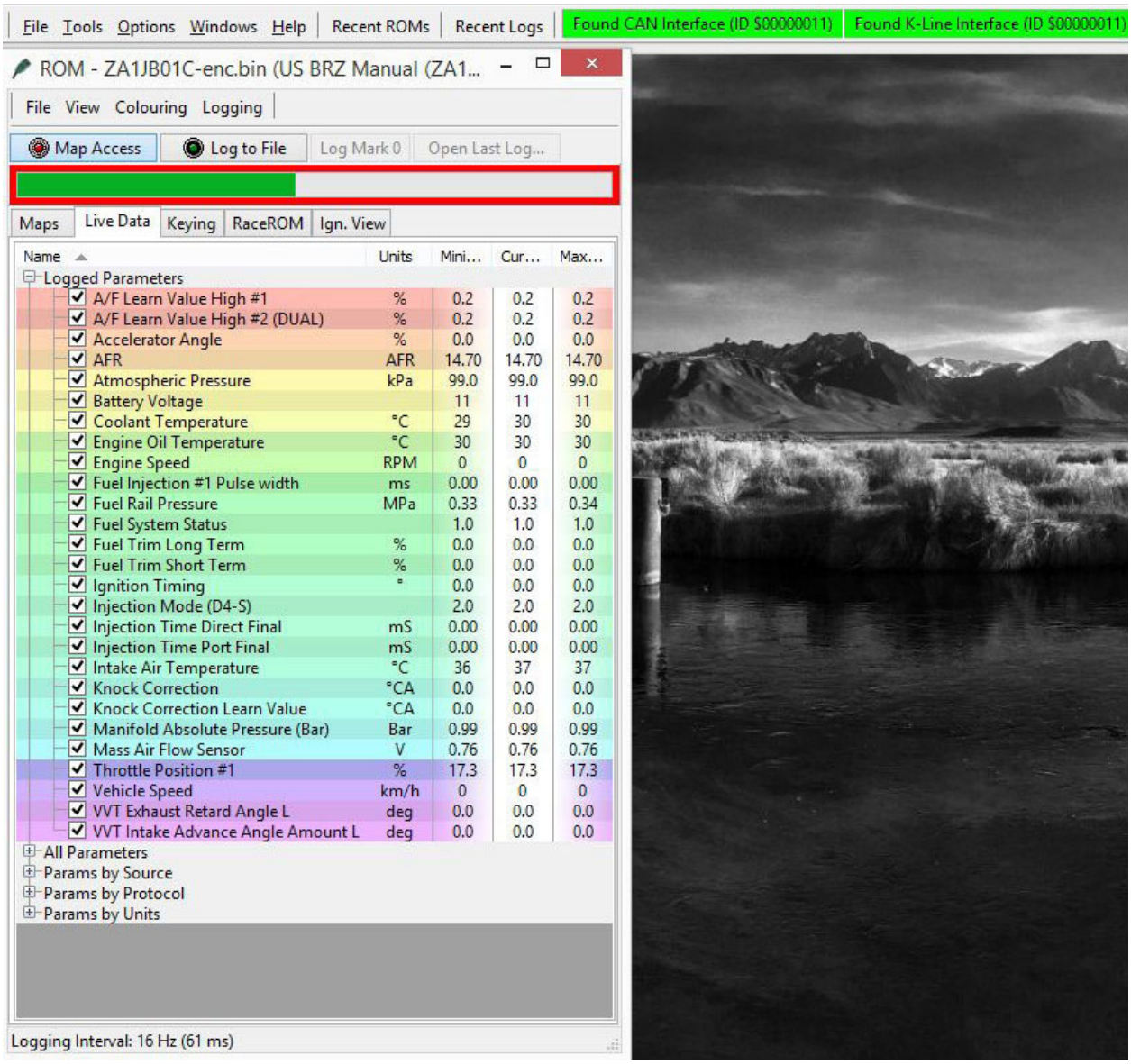

Figure C

Capturing the Datalog via Dongle (continued…)

Now that we are streaming the data in real time, all that's left to do is physically capture the data log. To begin the log, click "**Log to File**". The red line surrounding the green bar will switch to green, indicating that a log is being recorded. This is demonstrated below in **Figure D**. To end the data log, click "**Log to File**" once more.

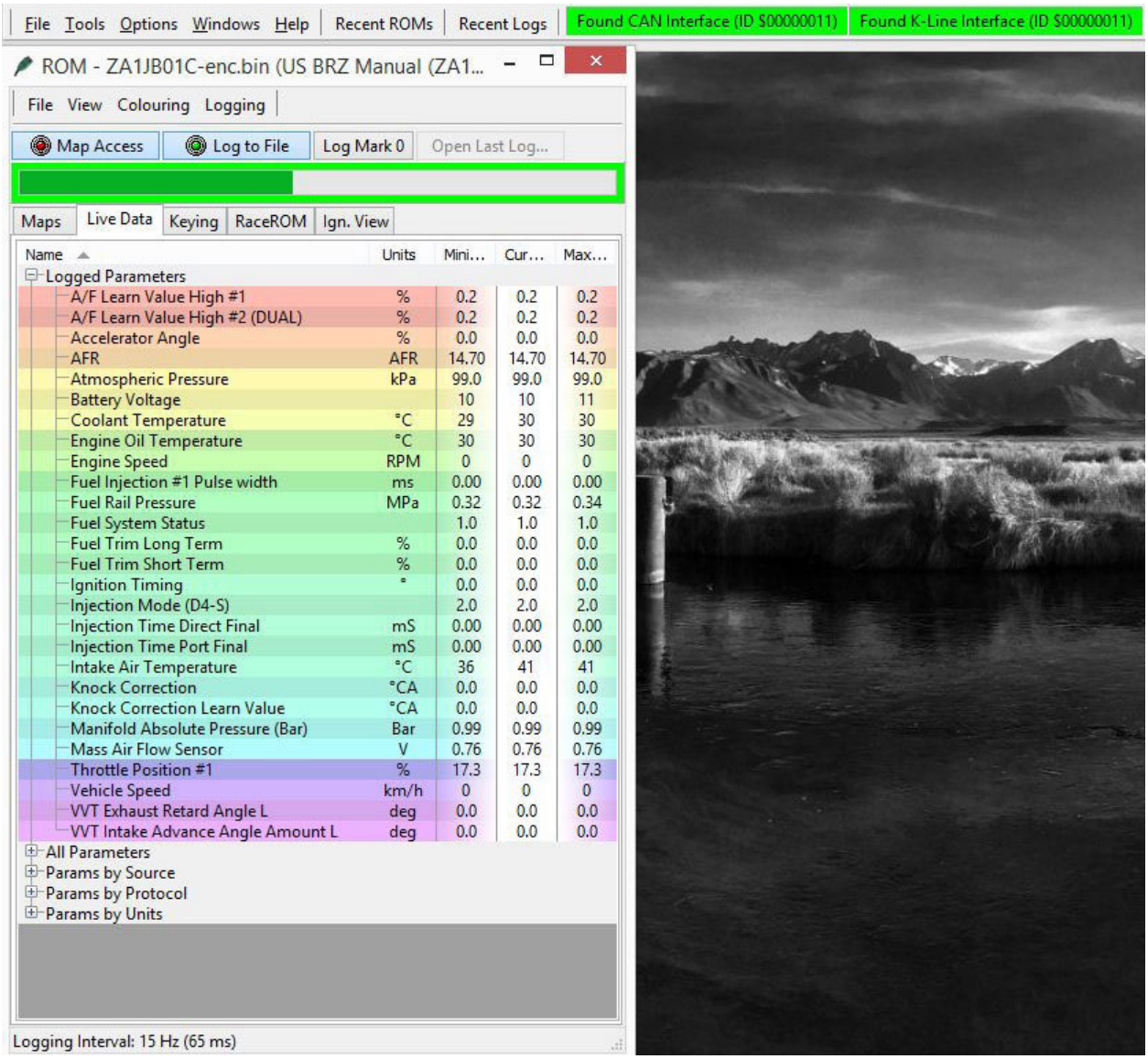

Figure D

Driving Conditions for Datalog via Phoneflash or Dongle

Now that we know the steps involved in creating a log, let's take a look at what kind of datalogs will be needed for a good review. (***Phoneflash Customers***; the datalog parameters have already been configured for you during installation).

Logging Driving Conditions – Review With Supplied Guides

1. First Log Set

- Log, idle when warm for about 1 minute.
- Log, cruising around at steady states for about 1 minute. (Set the cruise control if possible)
- Log, partial throttle, into say 5 pounds of boost
- Review logs, if everything looks good proceed to step 2

2. Second Log Set

- Log, partial throttle, into about 15-20 pounds of boost
- Review logs, if everything looks good proceed to step 3

3. **Third** Log Set

- Log, full throttle pulls from 2500k-Redline
- Review logs, if everything looks good you are all set

What is a:

1. **Idle Log** – This log is just as simple as it sounds. An ideal idle log will consist of 1 full minute of nothing but idle. The vehicle should be at full operating temperature for the *entire* duration of the log. Full operating temperature occurs with the coolant temperature needle in the middle, or slightly below the middle point of the gauge. Please resist the temptation to make the log any shorter or longer than necessary, and especially avoid adding any kind of throttle blipping into the logs under *any* circumstances..

2. **Cruising Log** – What we want to see here is very similar to the conditions in the idle log. Once the vehicle is at full operating temperature, bring the vehicle up to highway speed and set cruise control. Ideally, this log will be performed on flat ground. Let cruise control stay active for the duration of the data log; about 1 minute in duration. Do not deviate from cruising condition, extend, or shorten the log beyond what is described here.

3. **Partial Throttle Log** – In this log, we'd like to see a partial throttle pull from 2500rpm up to 5000rpm in 3rd gear. Partial throttle, by our standards, is 30-40%in a naturally aspirated or supercharged vehicle. In a turbocharged vehicle, you should aim to hit about 5 psi of boost and carry that up to 5000rpm, rather than rely on throttle input alone to complete the log.

4. **WOT (Wide Open Throttle) Log** – **Caution do not perform this log until you have completed the previous logs and the logs are in good standing. Doing so before reviewing the logs properly can put your engine at risk for failure.** Once comfortable with the previous data logs, proceed forward, record this log from 2500-3000 rpm to redline in 3rd gear. Throttle input should not deviate from 100% at any point from 2500-3000 rpm to redline.

Where are the Datalogs located via Dongle?

We have captured the logs we need to review but we are they located? These logs will be inside the EcuTek folder of your hard drive, in their own sub folder labeled "**MapAccessLogs**". I have found that organizing the logs by date helps me sort between them far easier than any other method. Refer to **Figure E** below to see the appropriate folder of log files. **Note** My hard drive is labeled "**Bootcamp**" because I am running Windows via aMacBook Air. If on a computer running Windows natively, your hard drive will likely be labeled simply as "**(C:)**".

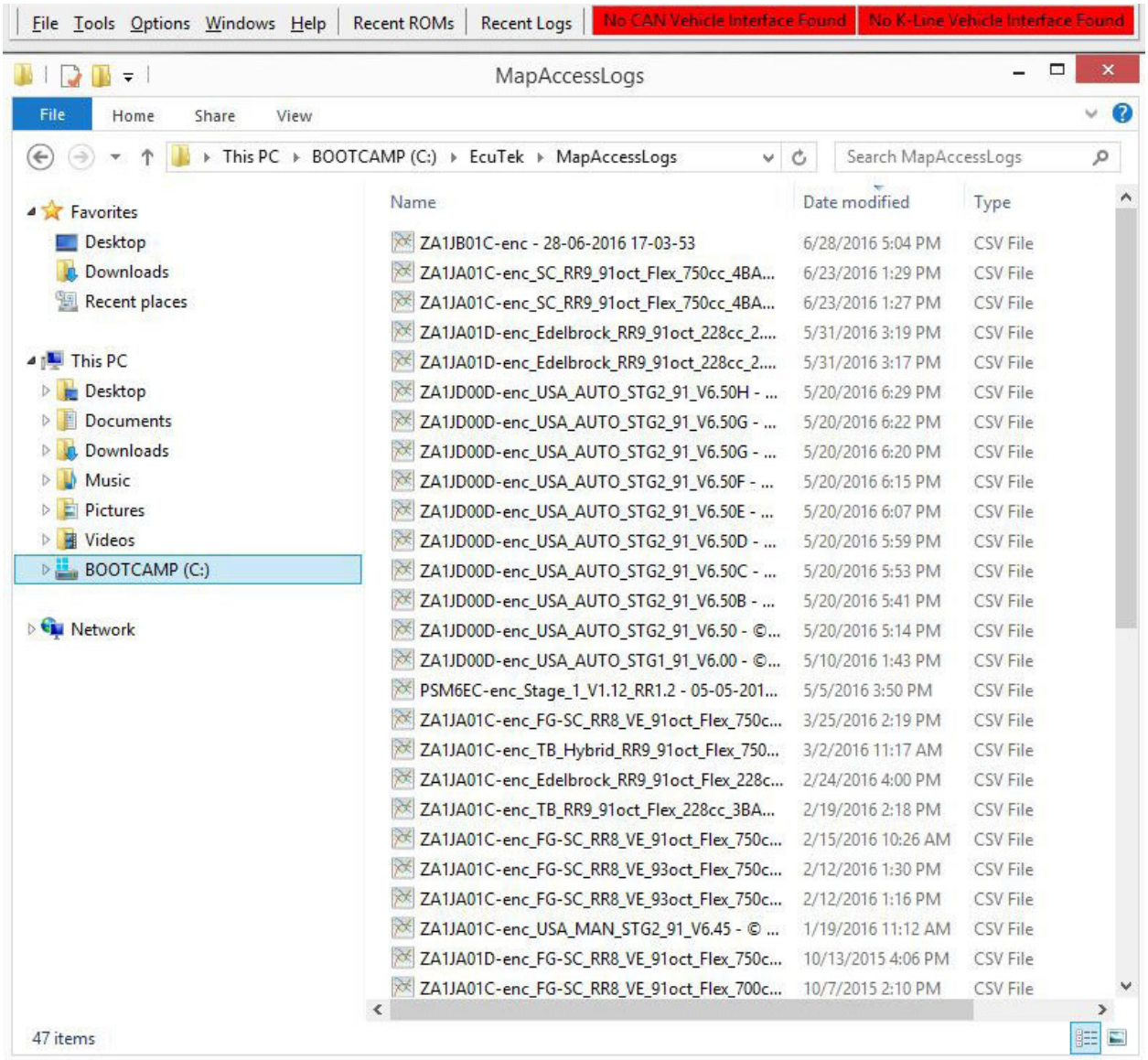

Figure E

Reviewing the Datalogs via Phoneflash or Dongle

This may seem like a daunting task but with some patience and a little education you can review the logs quickly and know what to look for; we will review some of the key items to look over for each vehicle platform. This is by no means all you need to know but this is more of a glimpse of the key points to review and as a way of diagnosing any potential faults with the vehicle's past, present or future.

Fail Safe(s) Reference Tables for Gen 1 & Gen 2 BRZ/FRS/GR86 (As of April 2025)

Failsafe	Hex Value	Decimal Value
Knock	**0001**	**1**
Oil Temperature	**0004**	**4**
AFR Lean	**0010**	**16**
Fuel Pressure	**0020**	**64**
Custom Maps	**0080**	**128**
Ethanol	**0100**	**256**
CAN Rx Status	**0200**	**512**
CAN Error Received	**0400**	**1024**
Can Tx Status	**1000**	**4096**
Tuner Specified	**2000**	**8192**

- Values can be added together within the datalog in order to display multiple fail safes.
    - Knock + Oil Temperature + AFR Lean = 1 + 4 + 16= 21
    - CAN Rx Status + Ethanol = 512 + 256 = 768

Quick Notes ("To Be Expected")

- A car after starting will potentially have a higher MAP value (closer to 0.5), due to how the ECU performs its cold start routine. This is to be expected.
- Fuel trims on the BRZ/FRS/86 platform may deviate quite a bit during the first 15 minute cold start log. This is to be expected while in cold start mode.
- The fuel trims will not activate immediately after starting a car because the ECU is waiting for the sensor to fully warm up. This is to be expected.
- A car off throttle and above 1500 RPM's will deactivate the injectors and cause the car to run lean (above 1.0 lambda). This is to be expected.

Reference Tables

Lambda	AFR	Condition	BAR	PSI (abs.)	PSI (rel.)
1.36	20.0	Lean	4.0	58.68	44.01
1.29	19.0		3.5	51.35	36.68
1.22	18.0		3.0	44.01	29.34
1.16	17.0		2.5	36.68	22.01
1.09	16.0		2.0	29.34	14.67
1.02	15.0		1.9	27.87	13.20
1.00	14.7	Stoich	1.8	26.41	11.74
0.99	14.5		1.7	24.94	10.27
0.95	14.0		1.6	23.47	8.80
0.92	13.5		1.5	22.01	7.34
0.88	13.0		1.4	20.54	5.87
0.85	12.5		1.3	19.07	4.40
0.82	12.0		1.2	17.60	2.93
0.80	11.8		1.1	16.14	1.47
0.79	11.6		1.0	14.67	0.00
0.78	11.4		0.9	13.20	-1.47
0.76	11.2		0.8	11.74	-2.93
0.75	11.0		0.7	10.27	-4.40
0.73	10.8		0.6	8.80	-5.87
0.72	10.6		0.5	7.34	-7.34
0.71	10.4		0.4	5.87	-8.80
0.69	10.2		0.3	4.40	-10.27
0.68	10.0		0.2	2.93	-11.74
0.65	9.5	Rich	0.1	1.47	-13.20

Subaru BRZ / Scion FR-S / Toyota 86 (2013+)

1. *Fuel Trims (Short Term, Long Term)*
    a. These are the fuel trims to correct for a stoic metric ratio. While at idle, during a cold start they will swing up and down a bit but overall they should hover between +/- 10% from zero.
        i. Correction +30% / -30%:This means the ECU cannot correct the trims any further and the car is running a bit lean / rich respectively. This can be caused by the following.
            1. There is a vacuum leak in your system, check all vacuum lines in the system and anywhere that a vacuum leak may occur.
            2. It may also be caused by a poorly functioning MAF (mass air flow) or MAP (manifold air pressure) sensor.
                a. The MAF sensor may be dirty or the O-Ring for the MAF sensor may not be sealing correctly.
                b. The MAP sensor may not be working correctly and may need to be replaced.

2. *CL (closed loop) Final Correction or Custom Map N (older RaceROM patches)*
    a. This is a custom fuel trim that is used under WOT and higher loads. You will see this range between -20 and +20. The more power a car makes the more this will change.
        i. FI (forced induction) applications
            1. If the values seem to cap out positive, there may be a fuel delivery issue and you should check your fuel pressure.
            2. If the values seem to cap out negative, there may be a vacuum leak and the engine may not be drawing all the air in it expects
        ii. NA (naturally aspirated) applications
            1. If the values seem to cap out positive/negative, there may be a vacuum leak and all the air is not being calculated correctly.

3. *MAP Sensor (quick check)*
    a. MAP values should be close to the atmospheric pressure rated in BAR while the car is in the ON position and not running.
        i. A value outside of this range could note an incorrect MAP sensor has been installed or the MAP sensor itself has failed.
            1. We usually only see the larger 3 and 4 BAR MAP sensors fail, whereas the smaller ones seem to be pretty robust.
    b. While at idle the value should be reading about ~0.3 to ~0.4 depending on coolant temperature, altitude or if there is an extra load on the engine, such as A/C, head lights, defroster, etc….
        i. A reading closer to 1.0 could note a small vacuum leak or possibly a weak engine with low compression.

4. *Advance Multiplier (quick check)*
    a. This single number offers a pretty good glimpse into how the engine is performing and if some adjustments need to be done to help mitigate knock correction.
        i. Ideally you want to see a value of 1.0 all the time, but the ECU makes adjustments and a value of 0.9 or higher is completely reasonable and acceptable for this platform
        ii. A value below 0.9 and we would suggest checking the following.
            1. Fuel, brand and octane/RON value being used.
            2. Make sure the spark plugs and coil packs are fairly new (fewer than 60K miles) especially for FI applications.

5. *Ignition Correction (Knock or any Ignition Correction)*
    a. These are the real time and learned ignition correction values used by the ECU to adjust the timing to protect the engine from serious knock events that can lead to engine failure.

i. As recommended by multiple professional tuning companies, such as Cobb and EcuTeK, a value of -2.81 or lower (closer to 0.00) is to be considered OK and expected across nearly all Subaru platforms throughout a log (but not continuous).
ii. Large events above -4 are to be considered high and we recommend you contact your tuner immediately to help diagnose the issue your vehicle may be having. Such causes could be from:
    1. Faulty coil packs (they wear out with age and miles).
    2. Old or incorrectly gapped spark plugs
    3. Incorrect or bad fuel octane/RON
    4. Failing or leaking injectors
    5. Poor ground in the engine bay
    6. Over boosting, etc…

6. *VVT Enabled (quick test)*
    a. This will need to read "1" for the variable valve timing to be enabled and for the car to actually make good power. If this is not enabled then the cams will not operate and the car will be down on power.
    b. Usually letting the car idle for a minute or two will enable the cams but if they do not a quick way to force the cams to enable is to do the following.
        i. Drive up to about 60mph in 5th gear and then let off the accelerator and allow the car to coast down in gear to about 1500 RPM's. This will almost always enable the cams.

7. *Flex Fuel Ethanol Content (quick check) or Custom Map P Result (older RaceROM patches)*
    a. Pump gas (not E85, E98, E100) mixtures from most gas stations around the world will usually always show some sort of ethanol content reading when plugged in and working correctly.
        i. North America, South America (except Brazil), Europe, Middle East, Australia, China, Japan usually sees about 5-15% on pump gas.
        ii. High altitude locations can see 0% during certain times of the year, such as in Colorado, USA.
        iii. Brazil on average will be about 27% ethanol from the local pumps.
        iv. South Africa will be usually 0% from the local pumps but there is a good supply of ethanol options for making more power.
    b. Ethanol gas (E85), can legally range between 51% and well into the 80% mark as mandated by the US Federal government at any pump in the US, any time of year.
        i. Do not be surprised if you see E51% at one pump and E85% at another. It is completely possible and we have seen it.

Subaru STI and WRX (2004+ STI, 2006+ WRX, 2008-2011 FXT, 2005-2009 LGT)

1. *A/F Correction #1 and A/F Learning #1 (Short Term, Long Term)*
    a. These are the fuel trims to correct for a stoic metric ratio. While at idle, during a cold start they will swing up and down a bit but overall they should hover between +/- 10% from zero.
        i. Correction +25% / -25%:This means the ECU cannot correct the trims any further and the car is running a bit lean / rich respectively. This can be caused by the following.
            1. There is a vacuum leak in your system, check all vacuum lines in the system and anywhere that a vacuum leak may occur.
            2. It may also be caused by a poorly functioning MAF (mass air flow) or MAP (manifold air pressure) sensor.
                a. The MAF sensor may be dirty or the O-Ring for the MAF sensor may not be sealing correctly.
                b. The MAP sensor may not be working correctly and may need to be replaced.

2. *MAP Sensor (quick check)*
    a. MAP values should be close to the atmospheric pressure rated in BAR while the car is in the ON position and not running.
        i. A value outside of this range could note an incorrect MAP sensor has been installed or the MAP sensor itself has failed.
            1. We usually only see the larger 3 and 4 BAR MAP sensors fail, whereas the smaller ones seem to be pretty robust.
    b. While at idle the value should be reading about ~0.3 to ~0.4 depending on coolant temperature, altitude or if there is an extra load on the engine, such as A/C, head lights, defroster, etc….
        i. A reading closer to 1.0 could note a small vacuum leak or possibly a weak engine with low compression.

3. *Advance Multiplier (quick check)*
    a. This single number offers a pretty good glimpse into how the engine is performing and if some adjustments need to be done to help mitigate knock correction.
        i. Ideally you want to see a value of 1.0 all the time, but the ECU makes adjustments from time to time and you could see it drop and come back to 1.0. This is OK, but not totally expected.
        ii. A value continuously below 1.0 and we would suggest checking the following.
            1. Fuel, brand and octane/RON value being used.
            2. Make sure the spark plugs and coil packs are fairly new (fewer than 60K miles) especially for FI applications.

4. *Ignition Correction (Knock or any Ignition Correction)*
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            1. Faulty coil packs (they wear out with age and miles).
            2. Old or incorrectly gapped spark plugs
            3. Incorrect or bad fuel octane/RON
            4. Failing or leaking injectors
            5. Poor ground in the engine bay
            6. Over boosting, etc…

5. *Flex Fuel Ethanol Content (quick check)*
    a. Pump gas (not E85, E98, E100) mixtures from most gas stations around the world will usually always show some sort of ethanol content reading when plugged in and working correctly.
        i. North America, South America (except Brazil), Europe, Middle East, Australia, China, Japan usually sees about 5-15% on pump gas.
        ii. High altitude locations can see 0% during certain times of the year, such as in Colorado, USA.
        iii. Brazil on average will be about 27% ethanol from the local pumps.
        iv. South Africa will be usually 0% from the local pumps but there is a good supply of ethanol options for making more power.
    b. Ethanol gas (E85), can legally range between 51% and well into the 80% mark as mandated by the US Federal government at any pump in the US, any time of year.
        i. Do not be surprised if you see E51% at one pump and E85% at another. It is completely possible and we have seen it.

Subaru WRX DIT (2015+) and Subaru FXT DIT (2014+)

1. *Fuel Trims (Short Term, Long Term)*
    a. These are the fuel trims to correct for a stoic metric ratio. While at idle, during a cold start they will swing up and down a bit but overall they should hover between +/- 10% from zero.
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            1. We usually only see the larger 3 and 4 BAR MAP sensors fail, whereas the smaller ones seem to be pretty robust.
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            2. Make sure the spark plugs and coil packs are fairly new (fewer than 60K miles) especially for FI applications.

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    a. This will need to read “1” for the variable valve timing to be enabled and for the car to actually make good power. If this is not enabled then the cams will not operate and the car will be down on power.
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        i. Drive up to about 60mph in 5th gear and then let off the accelerator and allow the car to coast down in gear to about 1500 RPM’s. This will almost always enable the cams.

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