

# 2018 Toyota 2.5L A25A-FKS Tier 3 Fuel - Test Data Plots

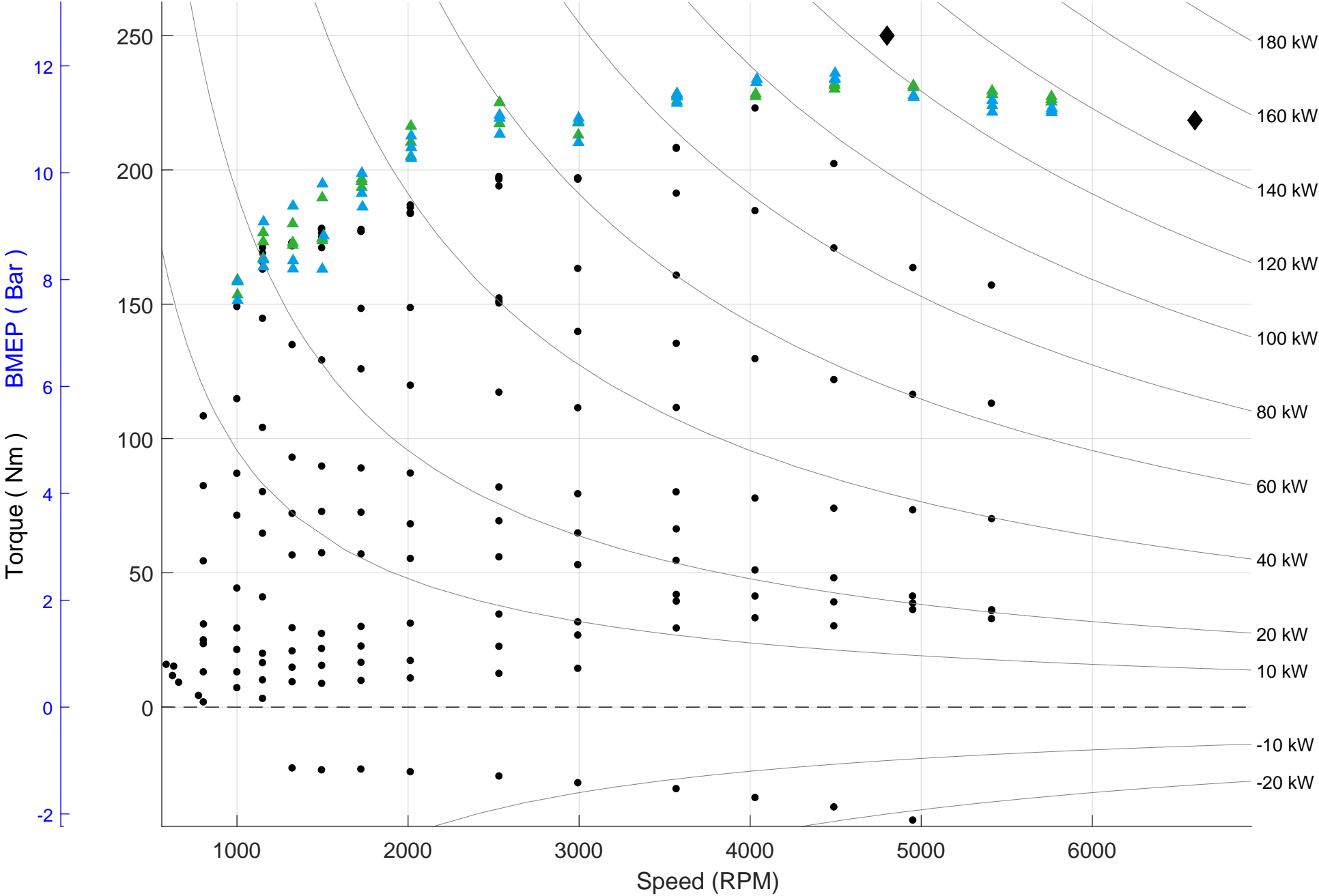
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**SUGGESTED CITATION:** *2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Package*. Version 2020-07. Ann Arbor, MI: US EPA, National Vehicle and Fuel Emissions Laboratory, National Center for Advanced Technology, 2020.

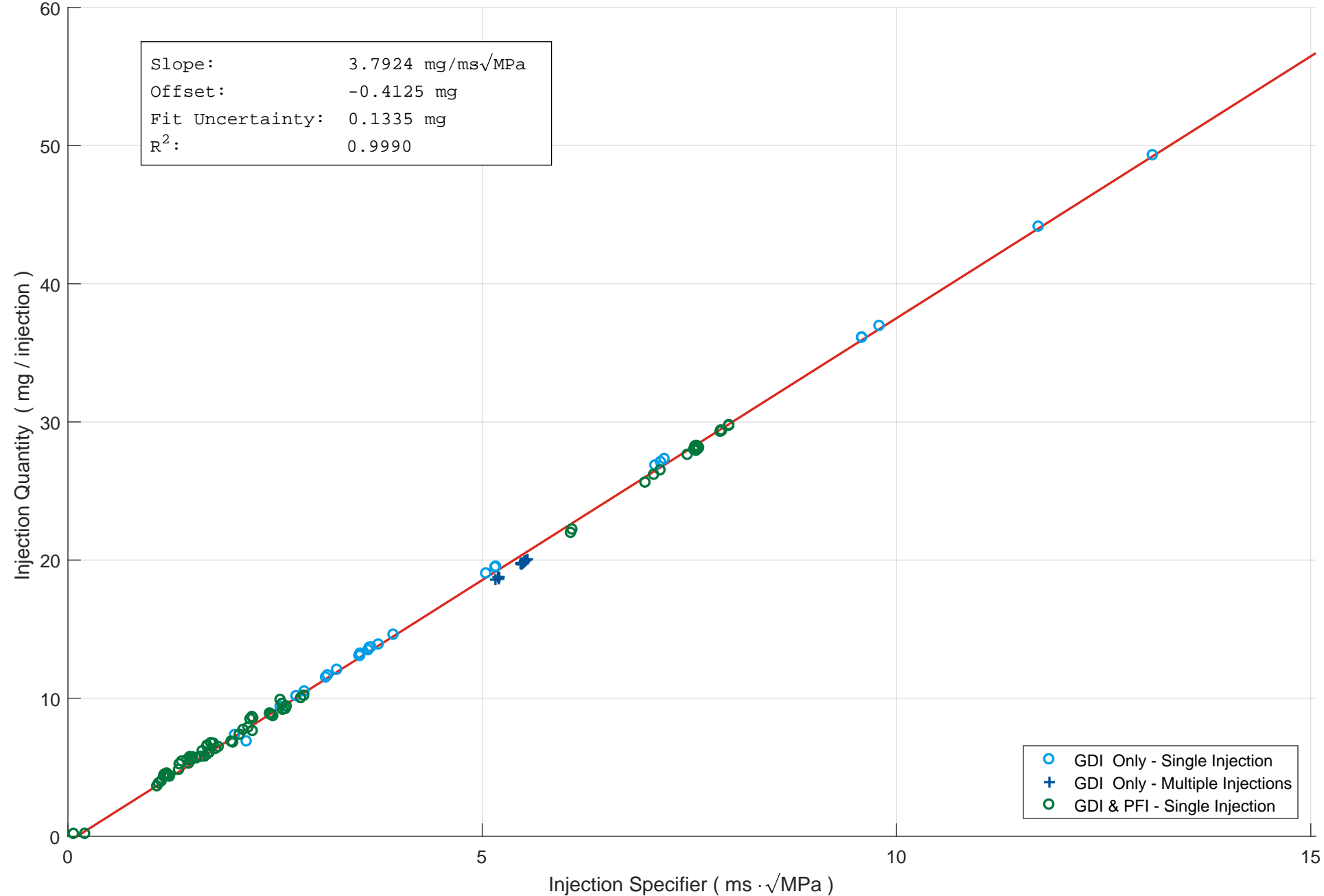
- ◆ Black diamonds indicate rated torque & power points advertised by the manufacturer
- Black dots indicate speed/load points at which steady state data was acquired
- △ Blue triangles indicate speed/load points at which initial data from the transient high load method was acquired
- ▲ Green triangles indicate speed/load points at which final data from the transient high load method was acquired
- ✗ Red Xs indicate speed/load points where data was not collected or did not meet quality standards

Note: In these contour plots, individual data points may be ignored or removed, using our best engineering judgment, to correct irregularities in the visual presentation of the contour lines; additional details are contained in the test report.

2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Test Data Points

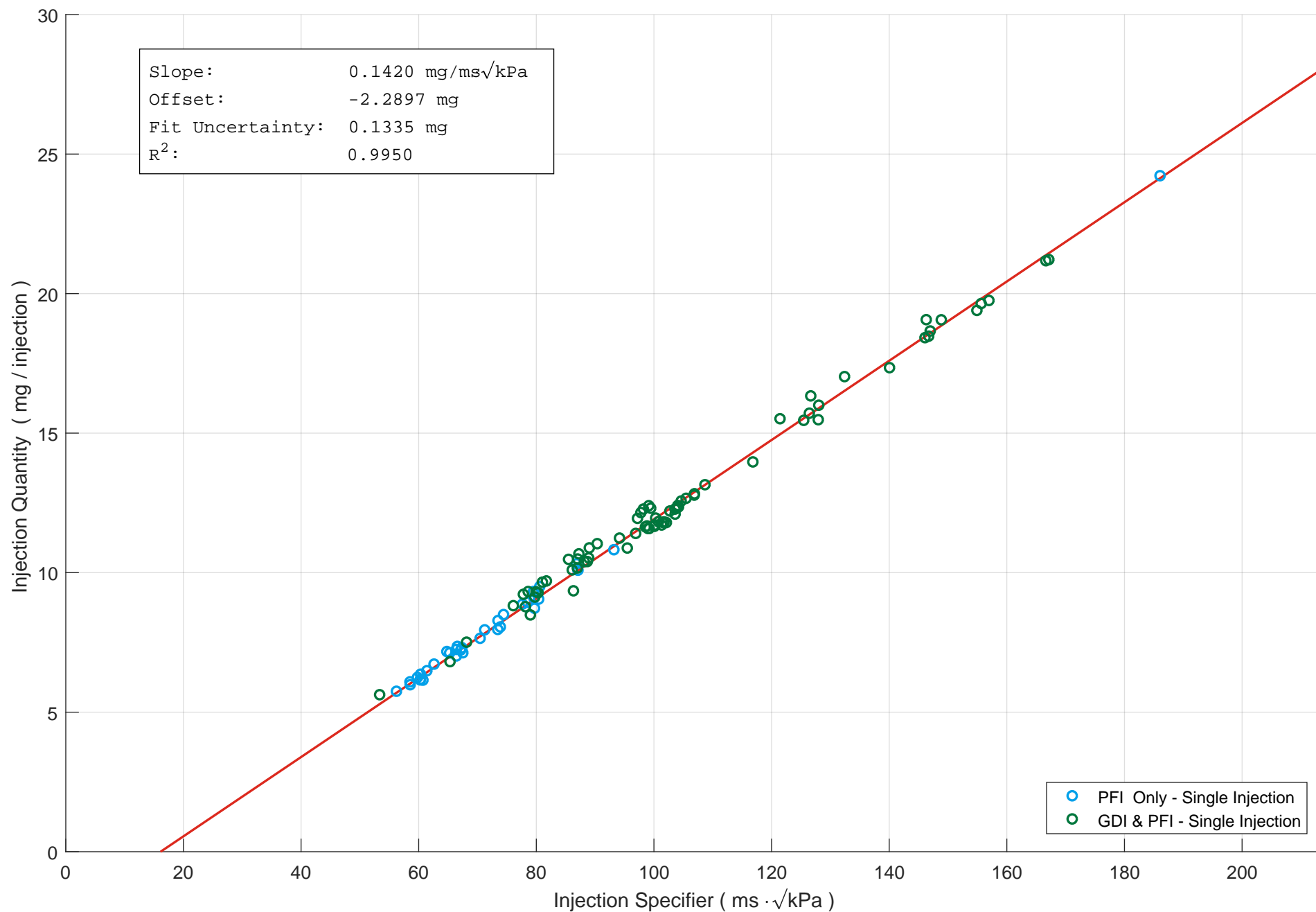


2018 Toyota 2.5L A25A-FKS Tier 3 Fuel - Test Data Plots  
GDI Injector Calibration

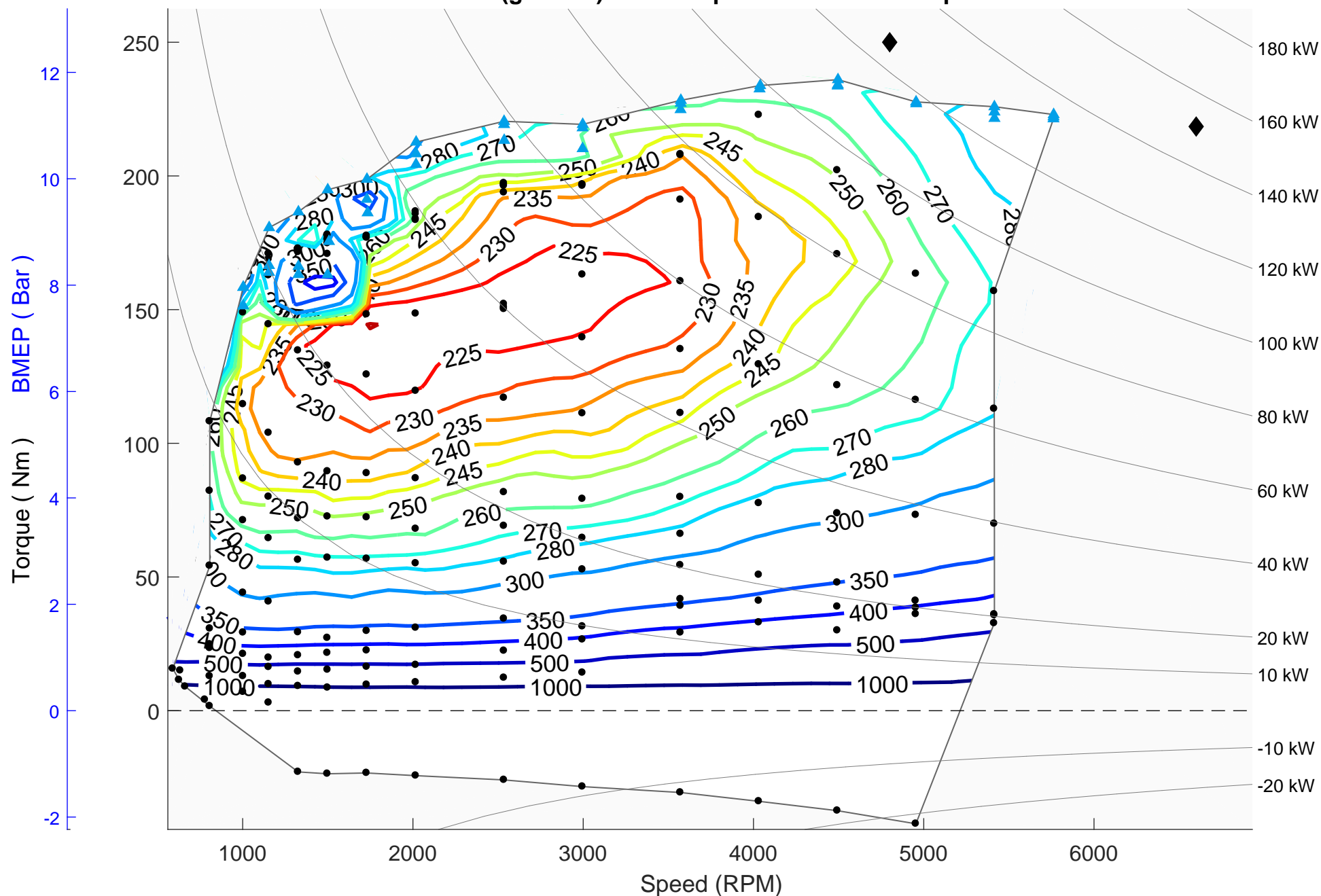


# 2018 Toyota 2.5L A25A-FKS Tier 3 Fuel - Test Data Plots

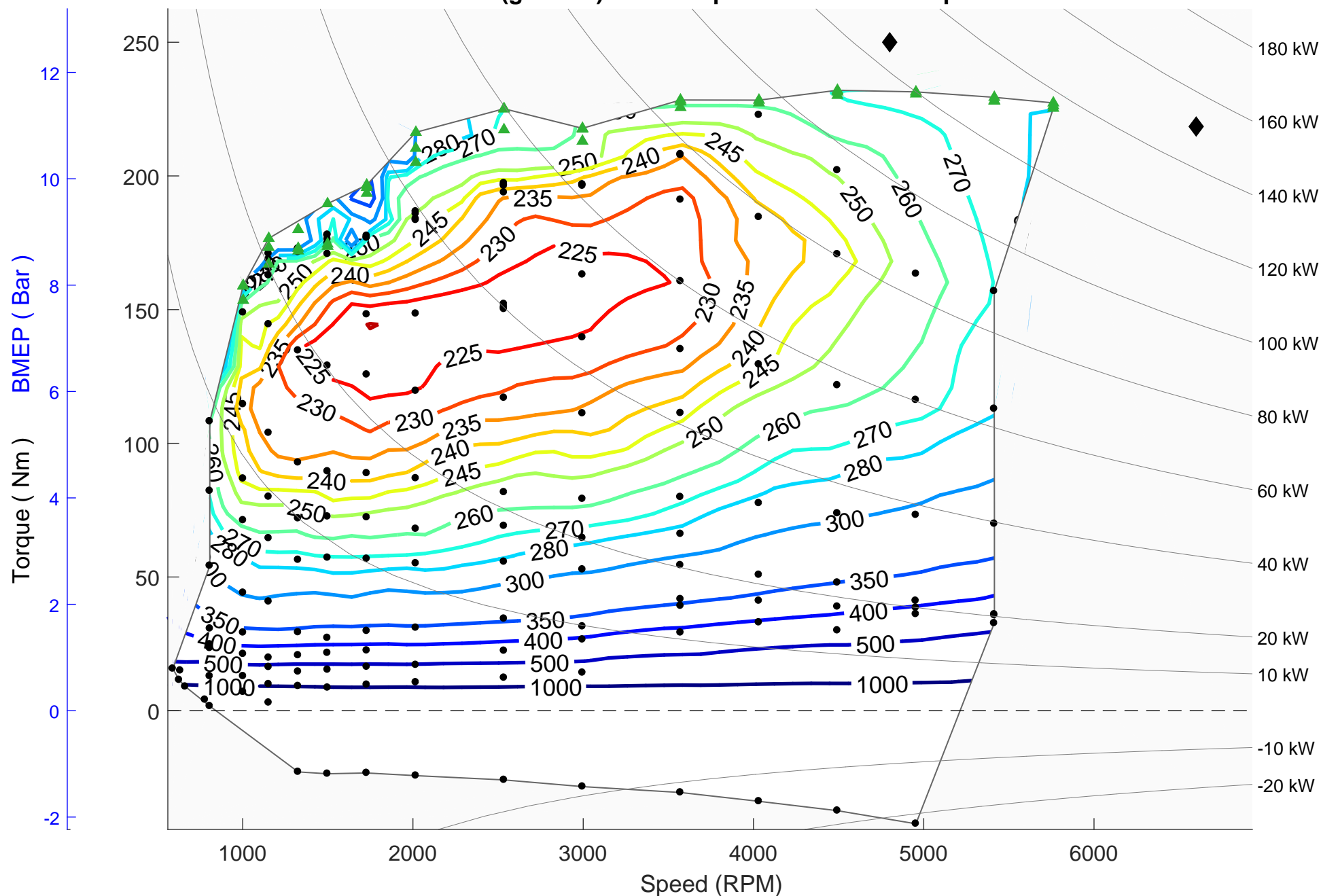
## PFI Injector Calibration



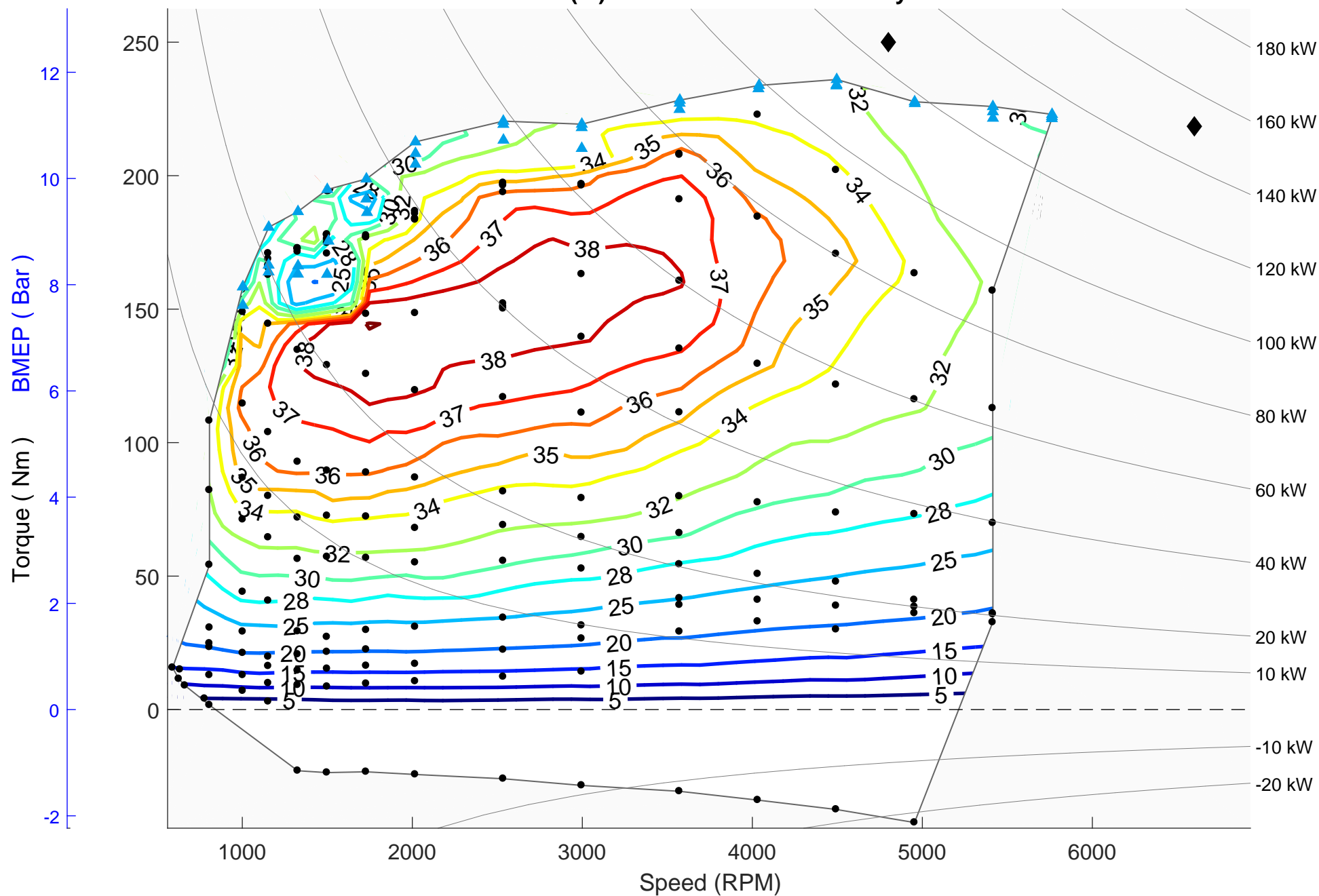
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**BSFC (g/kW-hr) - Brake Specific Fuel Consumption**



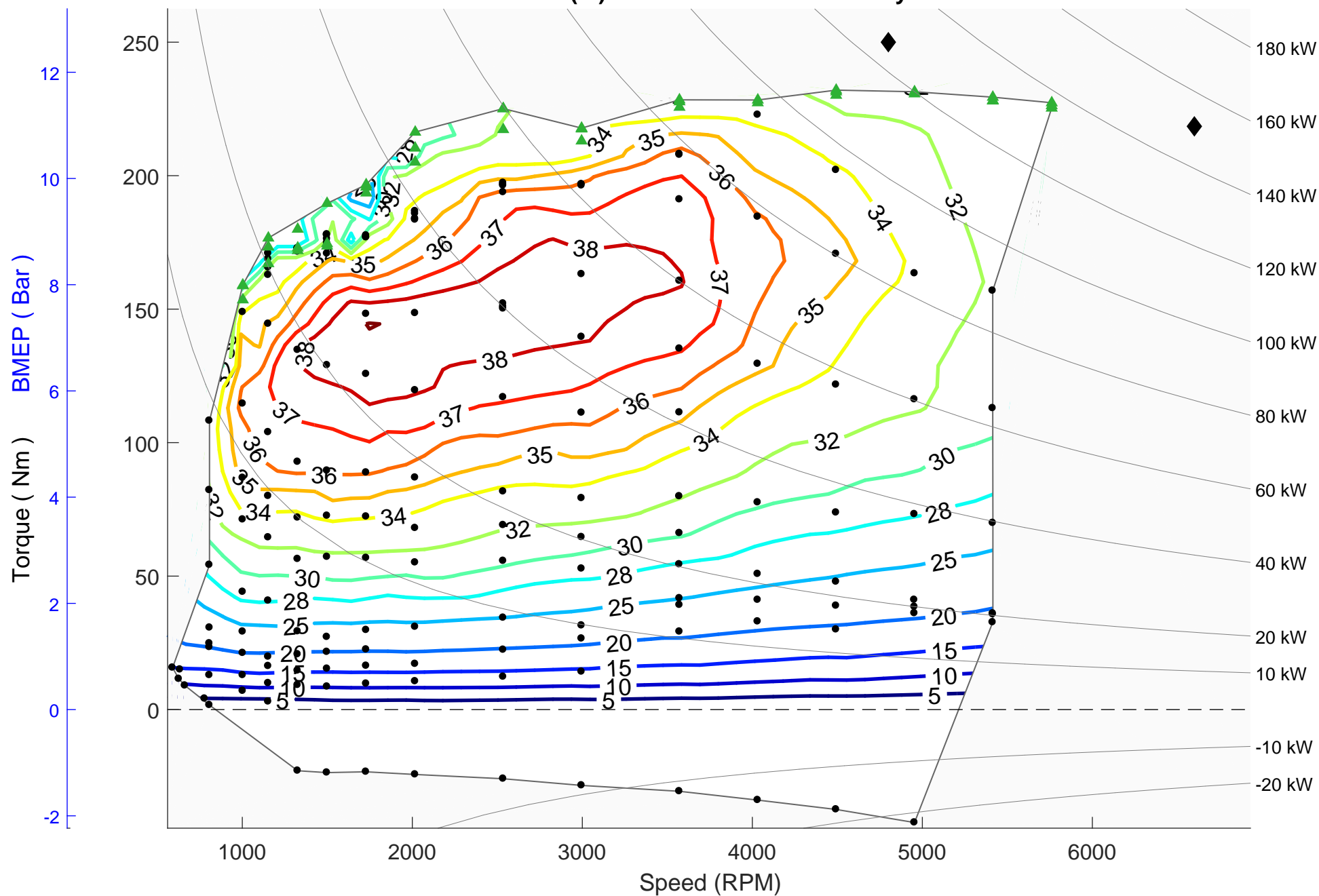
2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Steady State and High Load Final  
BSFC (g/kW-hr) - Brake Specific Fuel Consumption



**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**BTE (%) - Brake Thermal Efficiency**

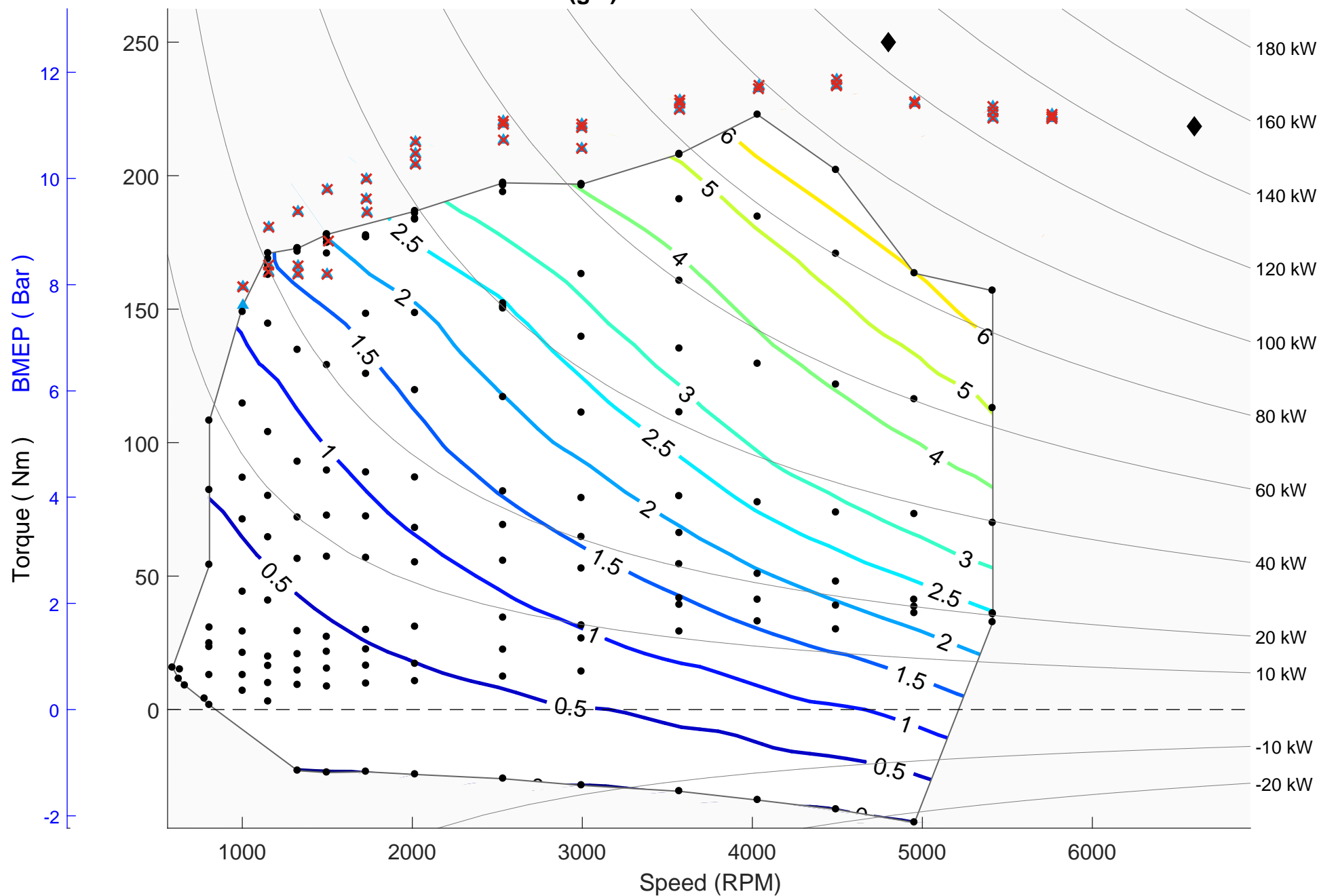


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**BTE (%) - Brake Thermal Efficiency**

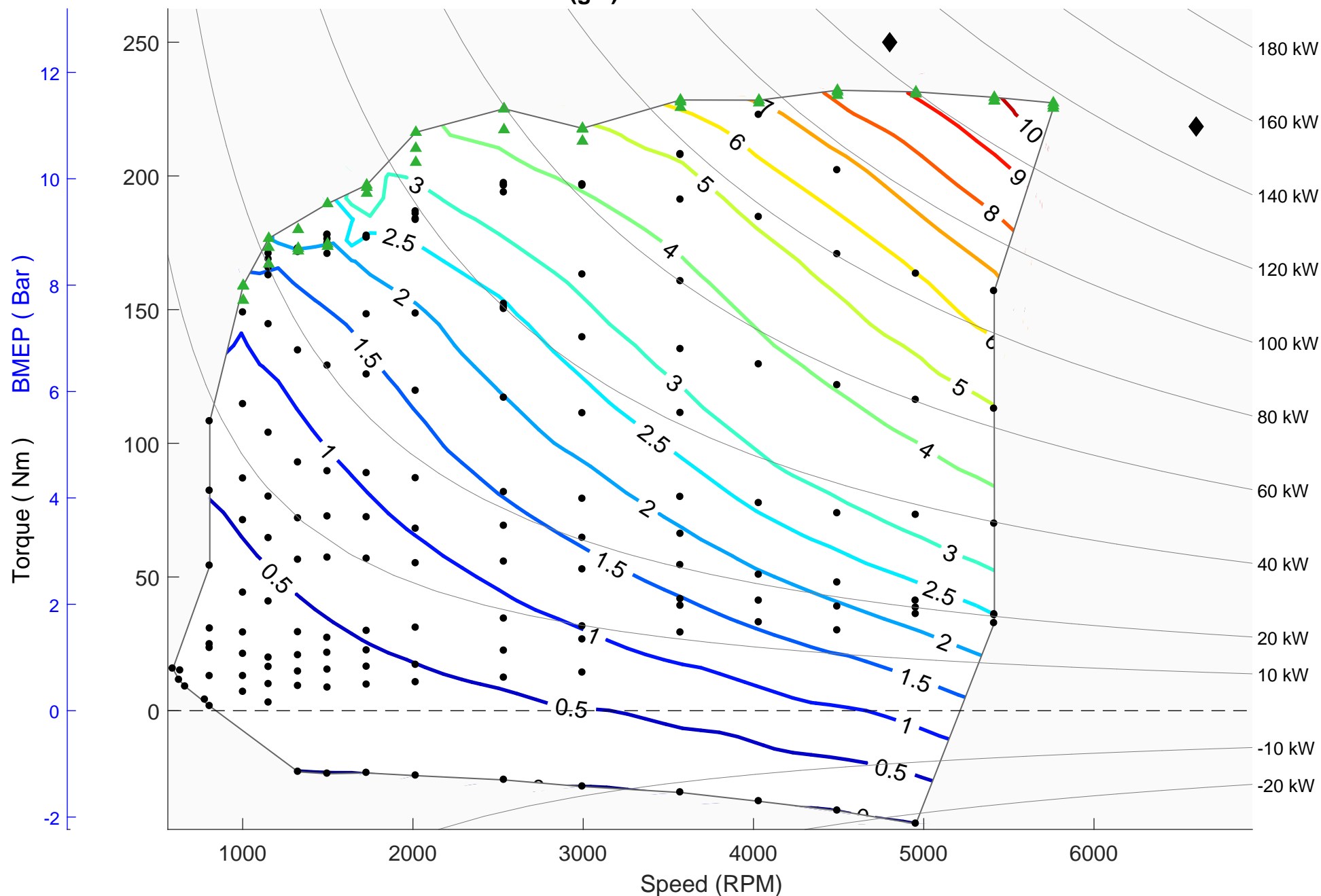




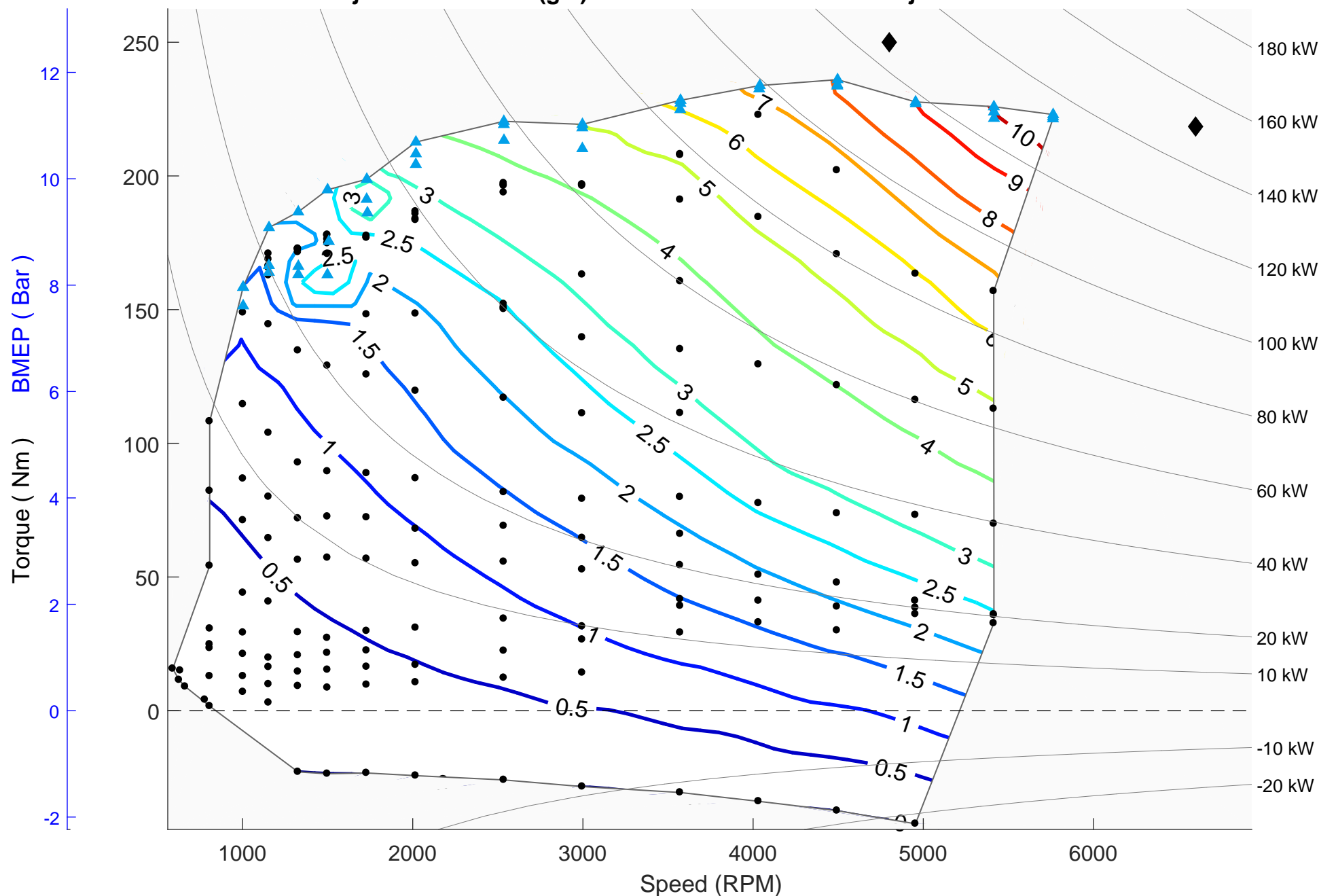
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Fuel Meter Flow (g/s) - Fuel Flow Measured with Flow Meter**



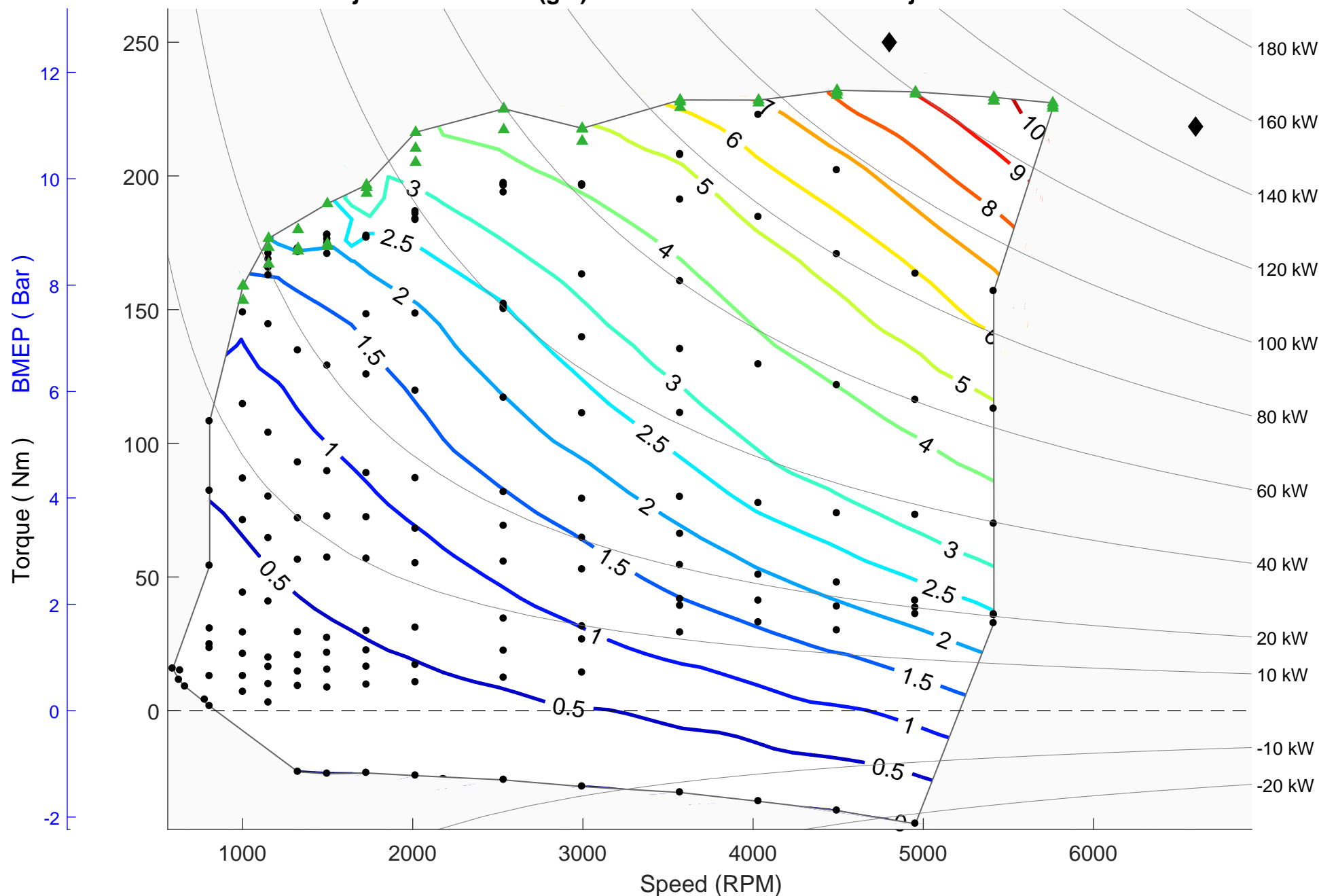
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Fuel Meter Flow (g/s) - Fuel Flow Measured with Flow Meter**



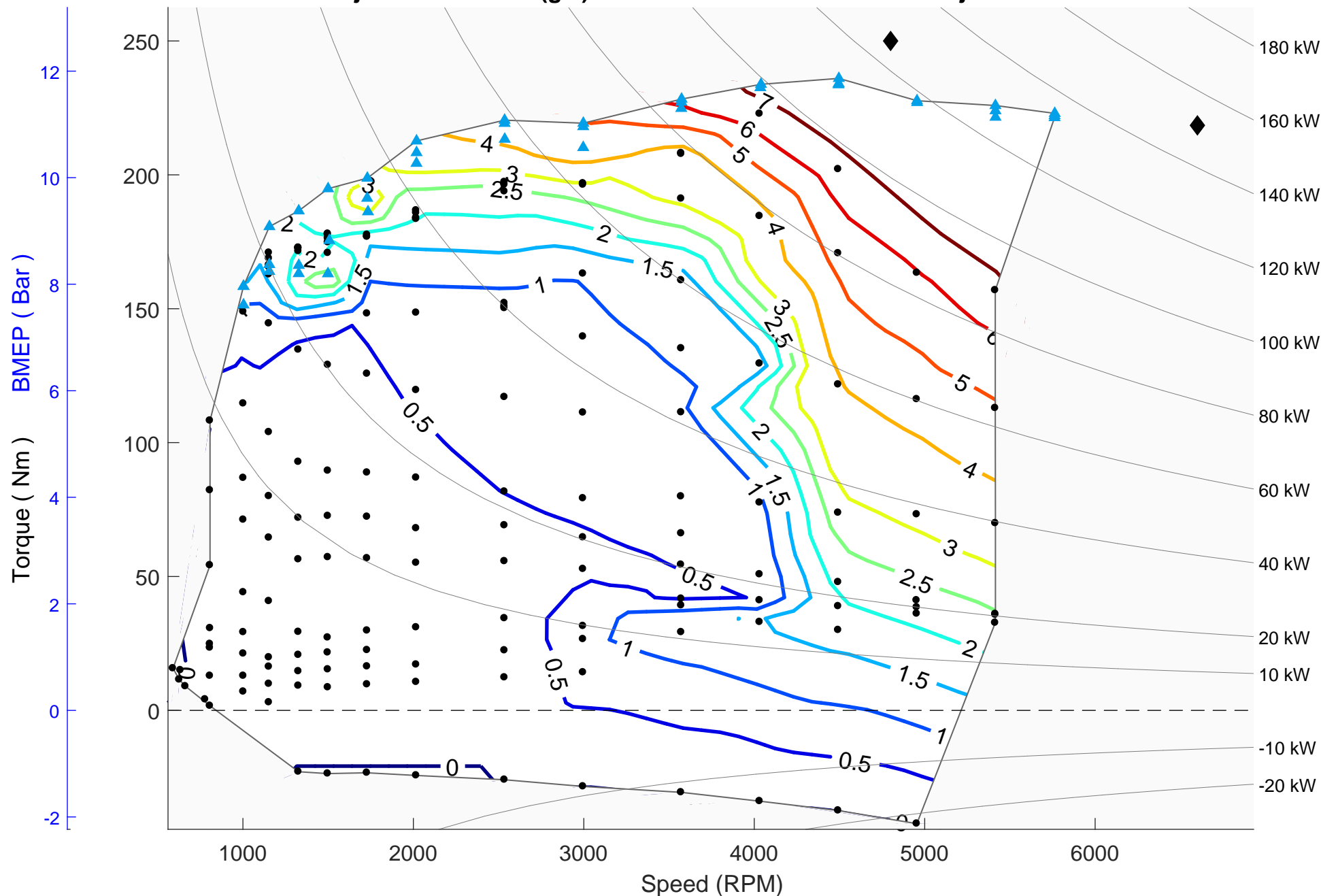
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Injector Fuel Flow (g/s) - Fuel Flow Estimate from Injector Calibration**



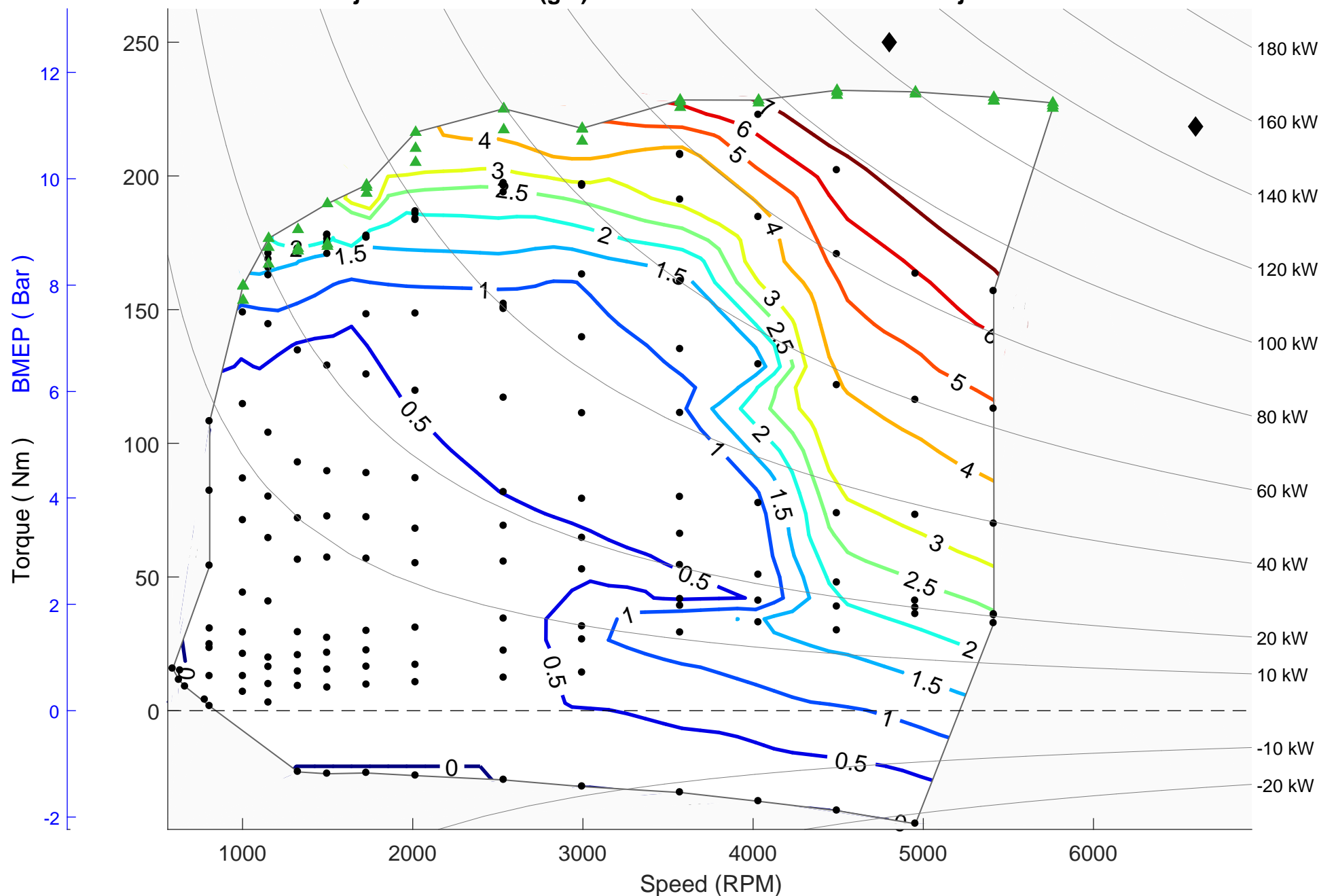
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Injector Fuel Flow (g/s) - Fuel Flow Estimate from Injector Calibration**



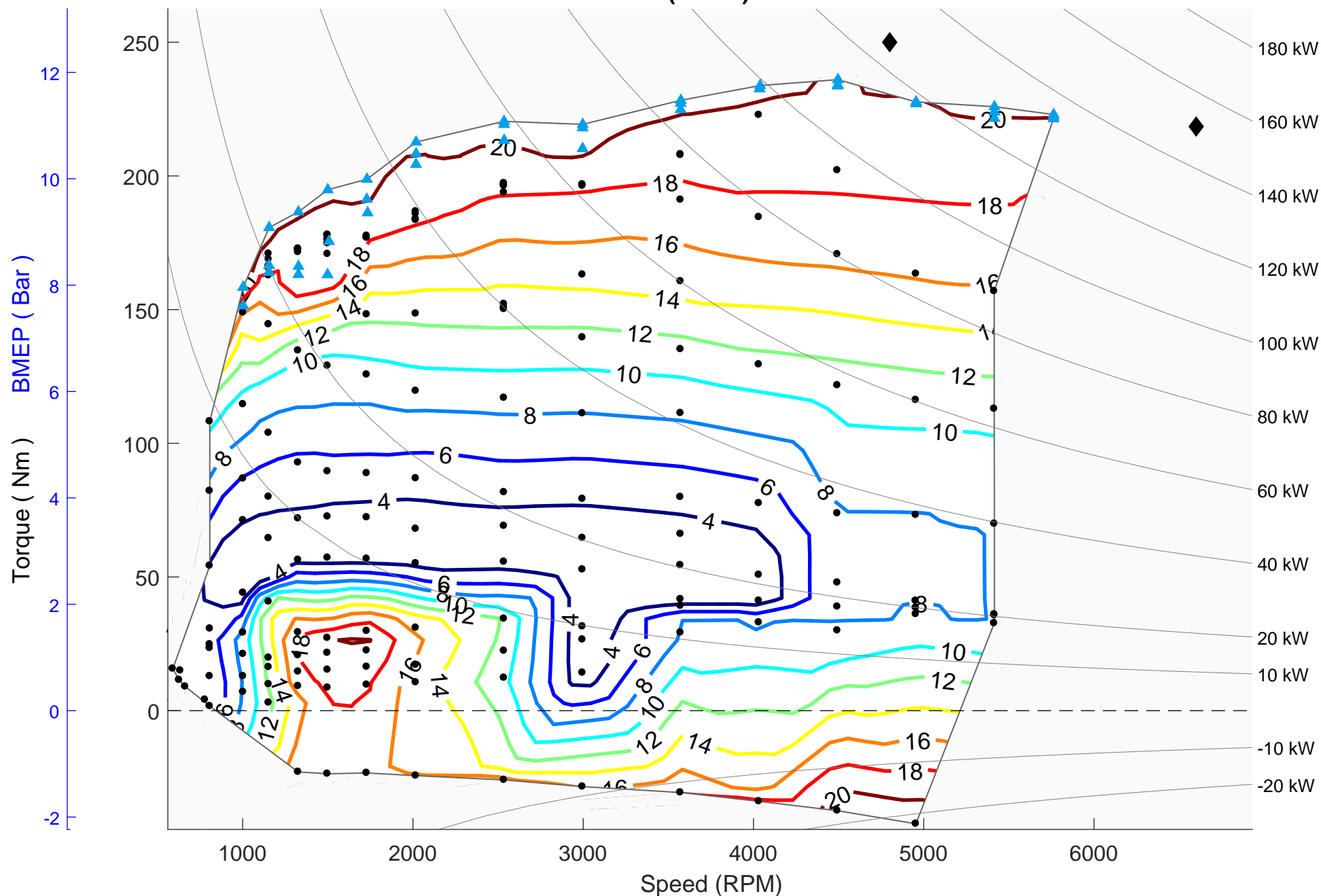
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**GDI Injector Fuel Flow (g/s) - Fuel Flow Estimate from GDI Injector Calibration**



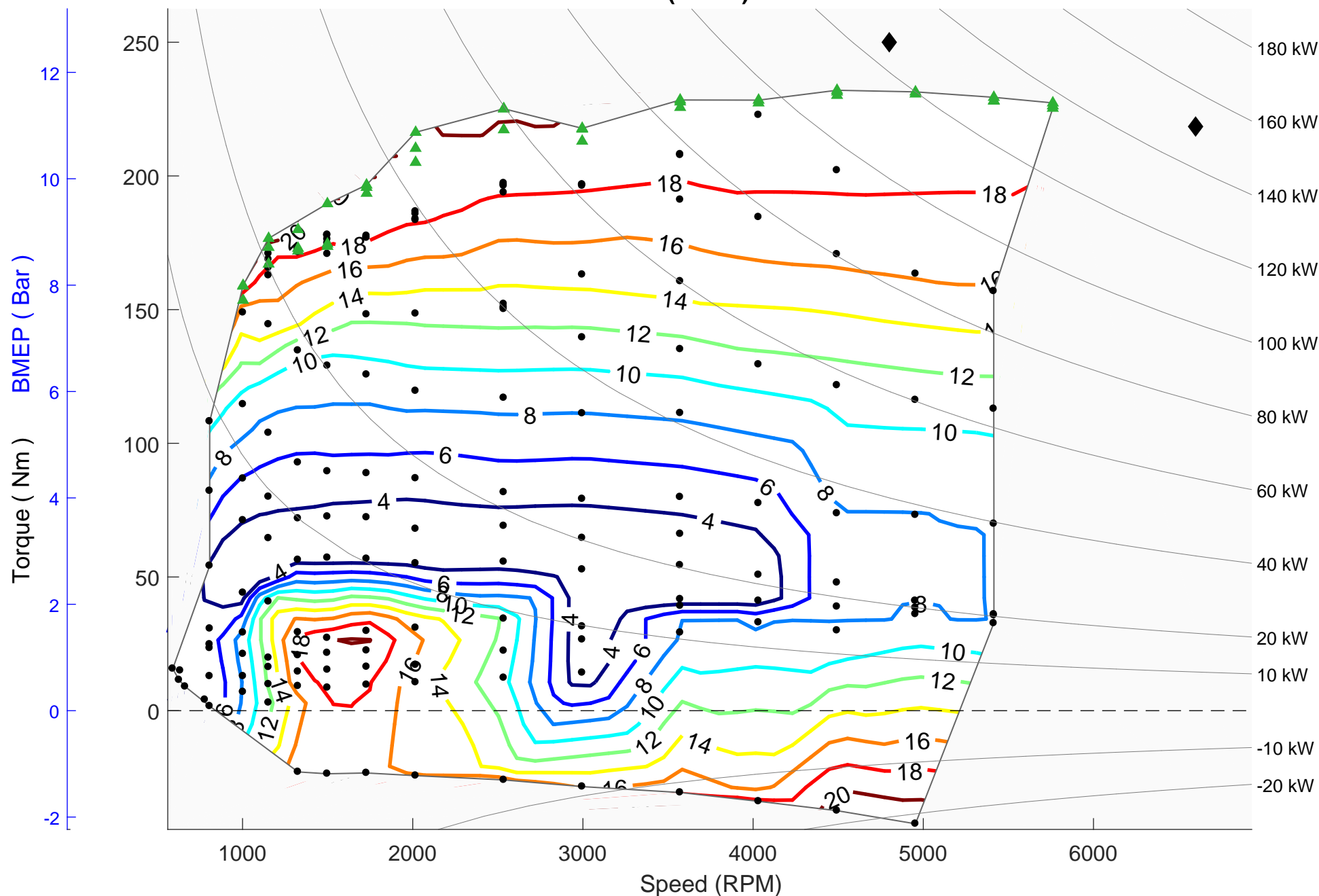
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**GDI Injector Fuel Flow (g/s) - Fuel Flow Estimate from GDI Injector Calibration**



2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Steady State and High Load Initial  
GDI Fuel Rail Press (MPaG) - Fuel Rail Pressure\*



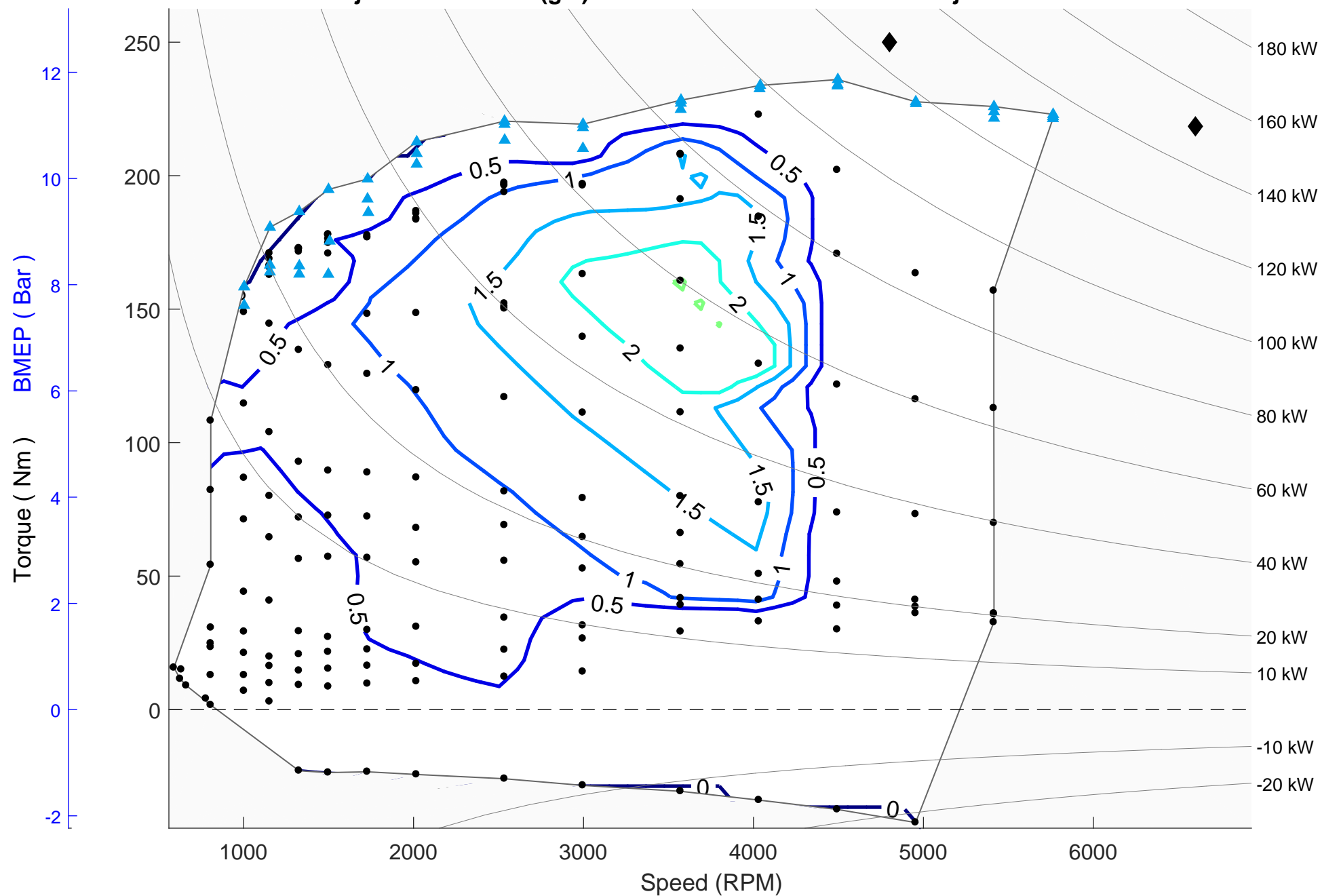
2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Steady State and High Load Final  
GDI Fuel Rail Press (MPaG) - Fuel Rail Pressure\*



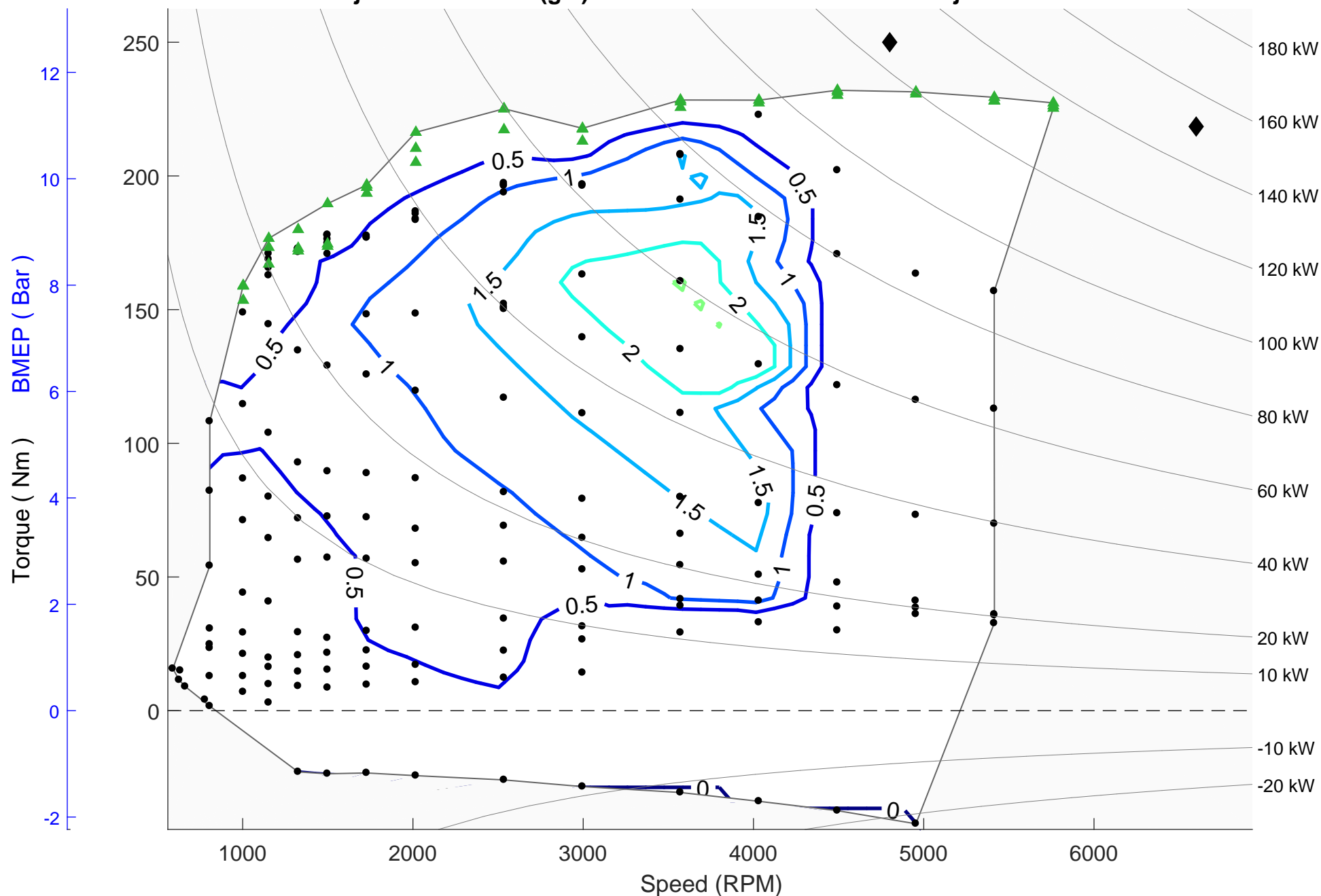
\* Reference Only - Voltage Measurement



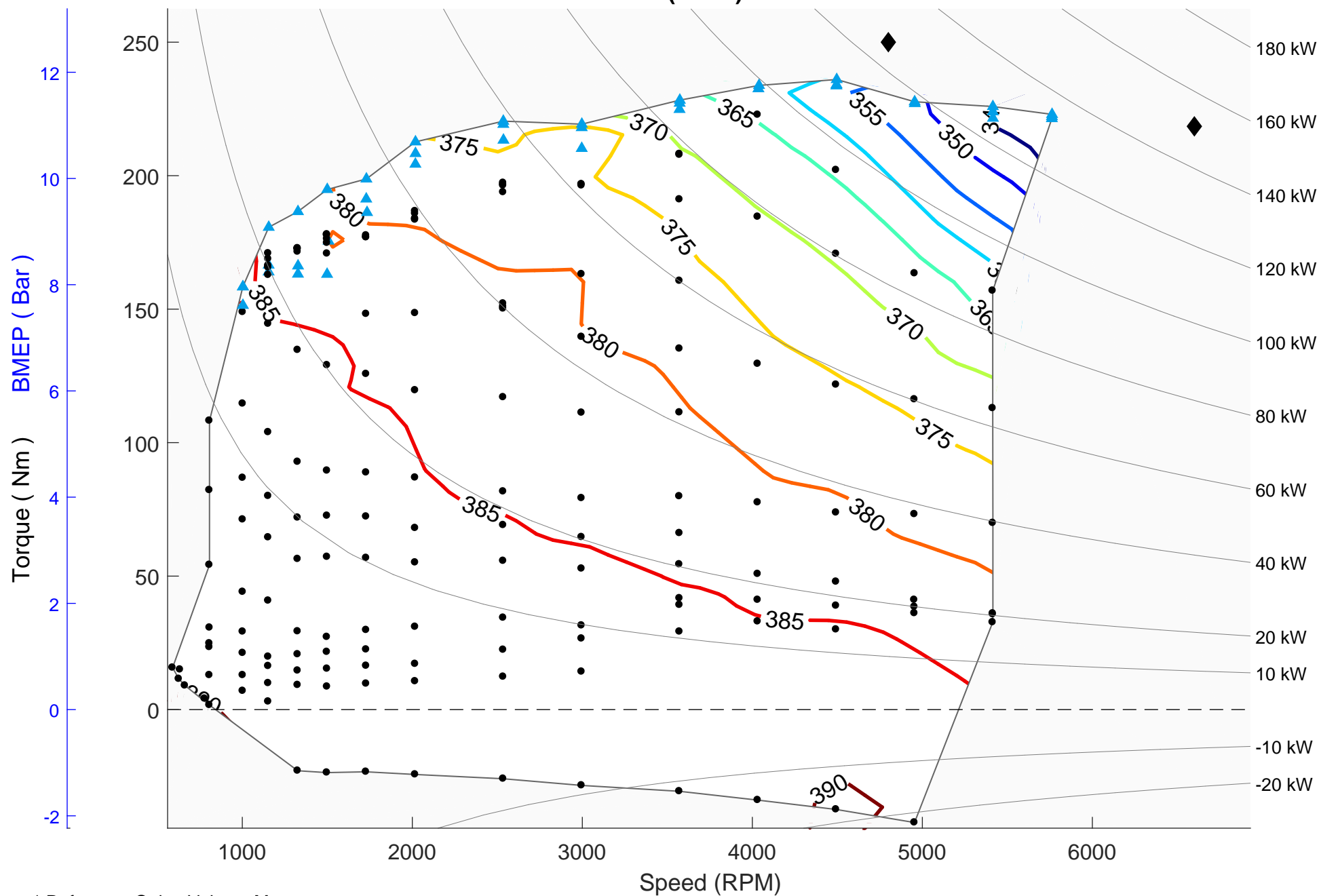
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**PFI Injector Fuel Flow (g/s) - Fuel Flow Estimate from PFI Injector Calibration**



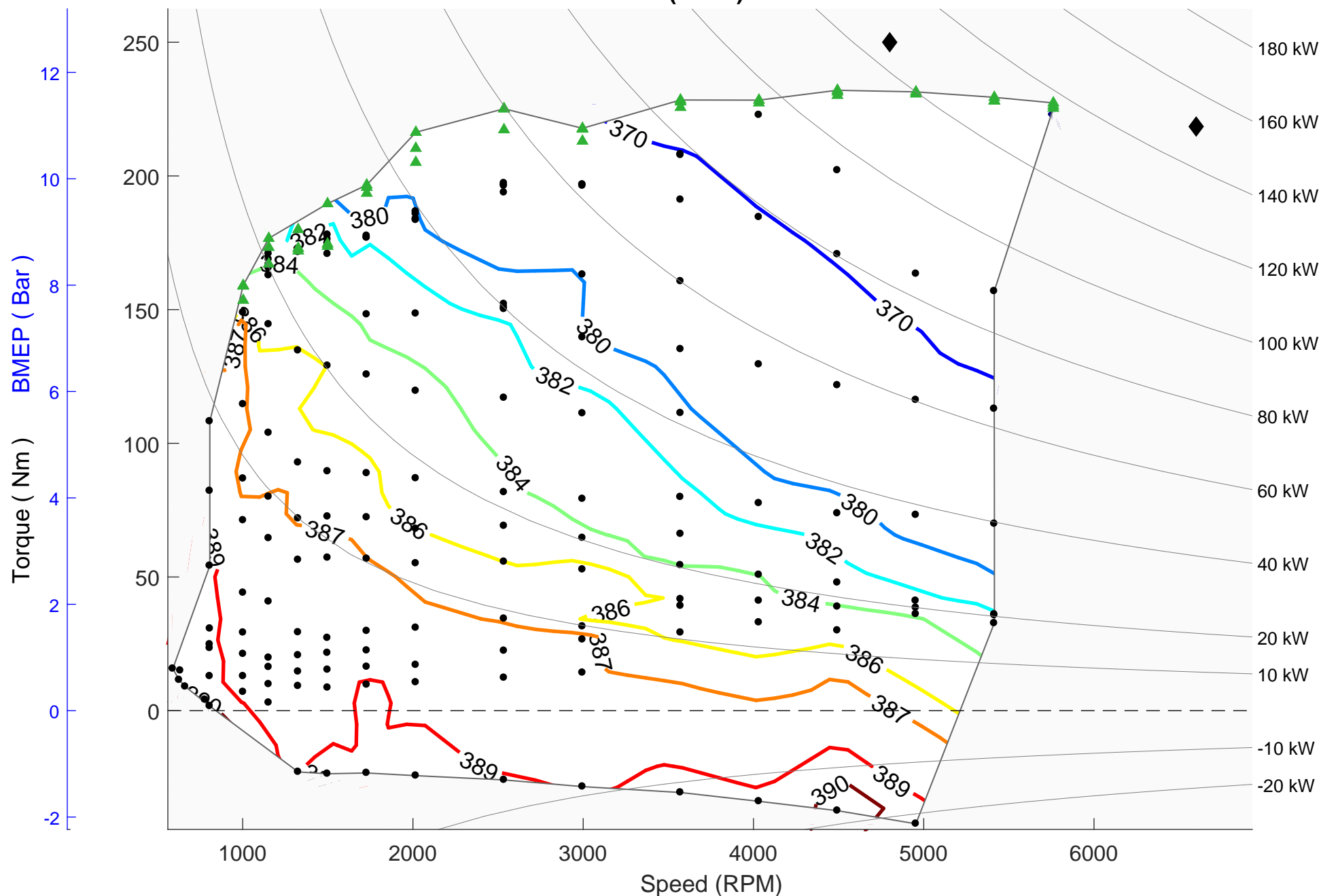
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**PFI Injector Fuel Flow (g/s) - Fuel Flow Estimate from PFI Injector Calibration**



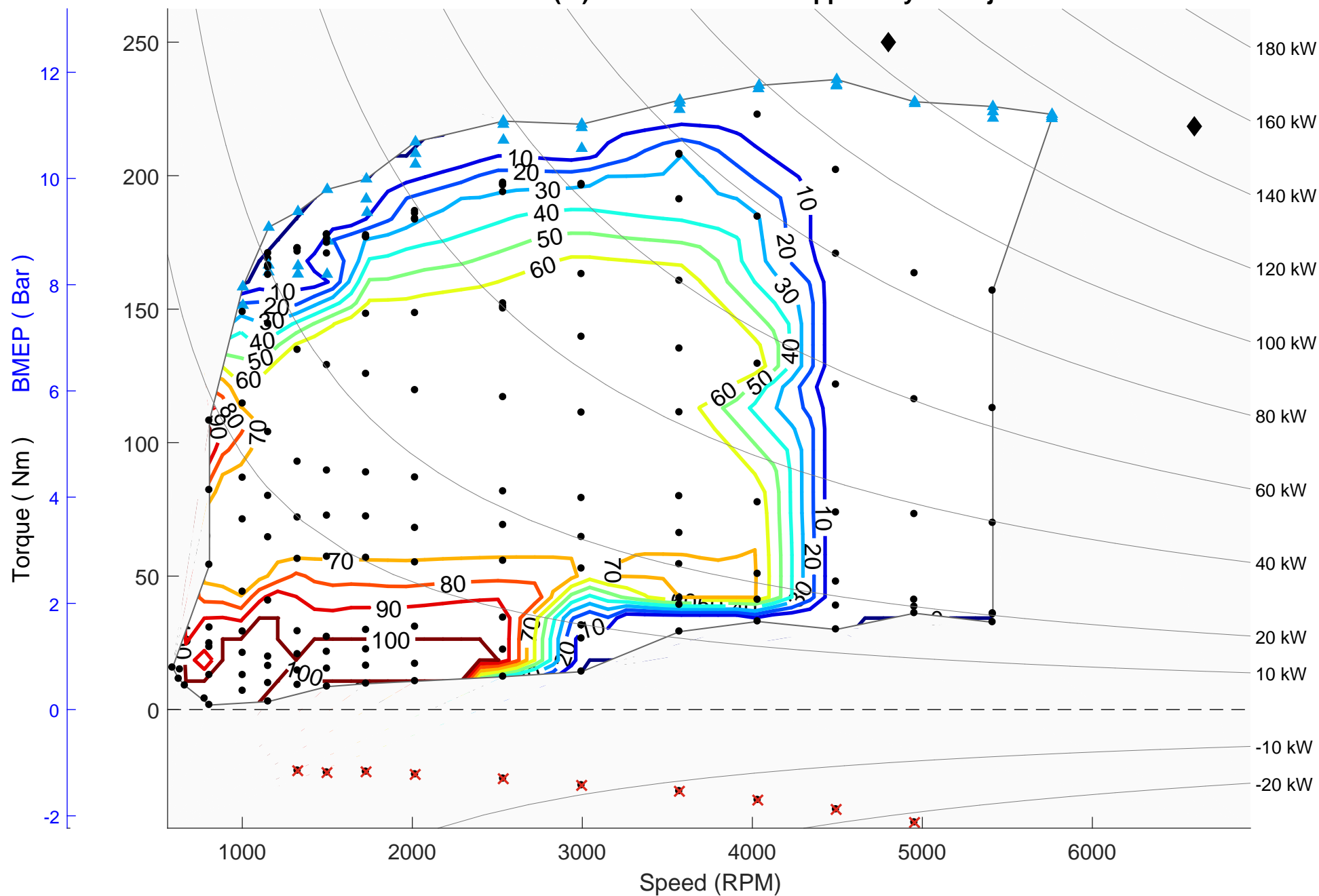
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**PFI Fuel Rail Press (kPaG) - Fuel Rail Pressure\***



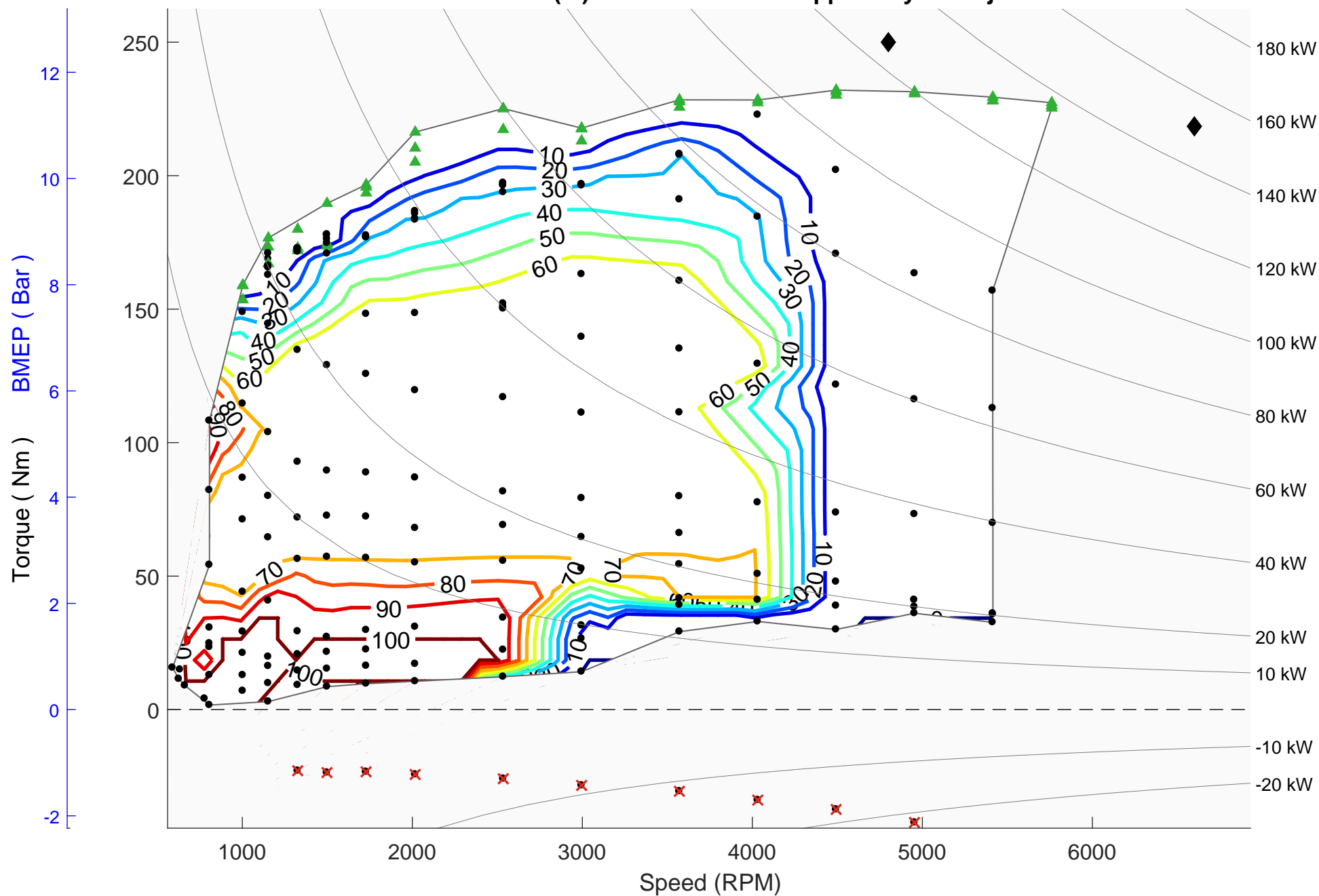
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**PFI Fuel Rail Press (kPaG) - Fuel Rail Pressure\***



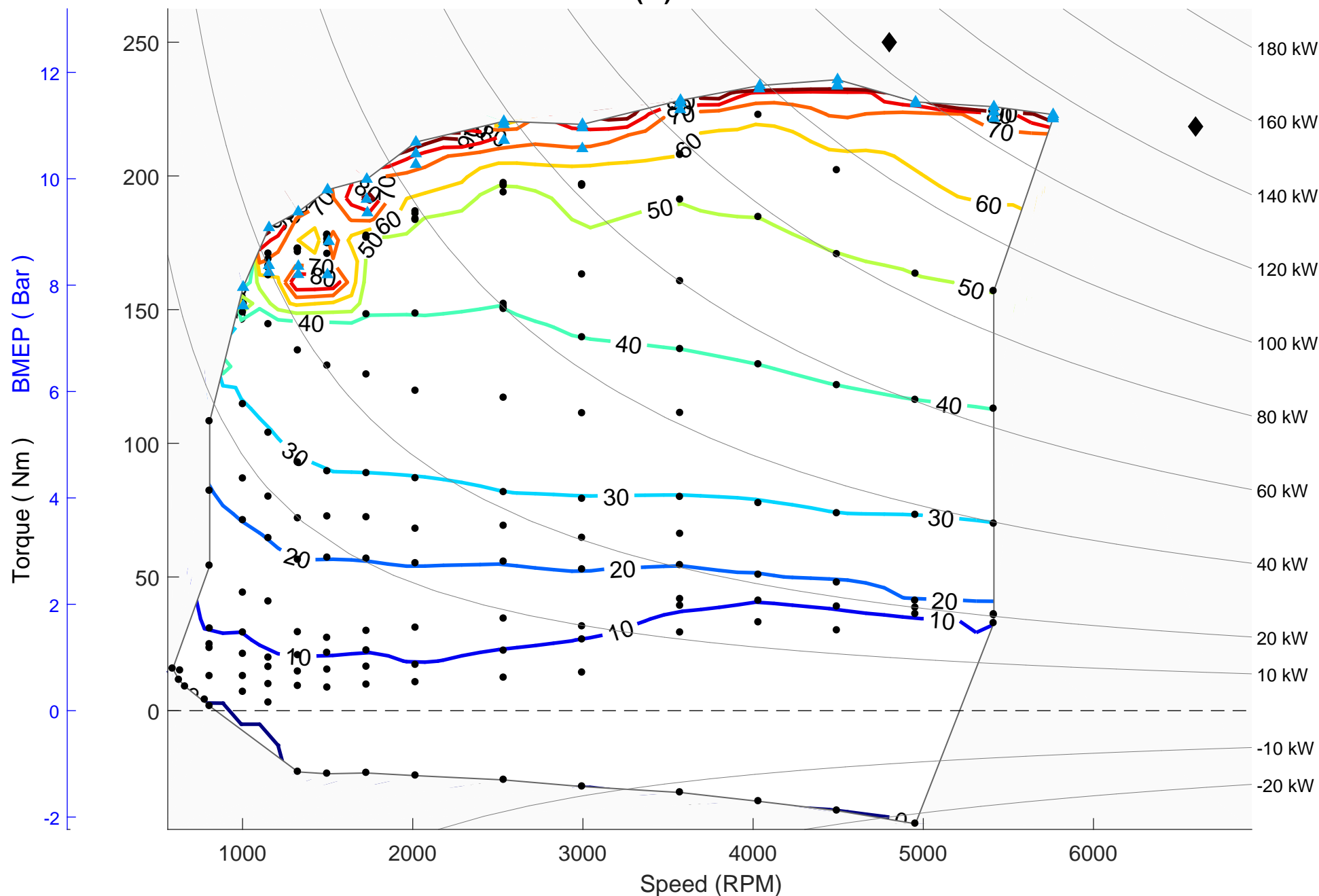
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**PFI Fuel Portion (%) - Portion of Fuel Supplied by PFI Injectors**



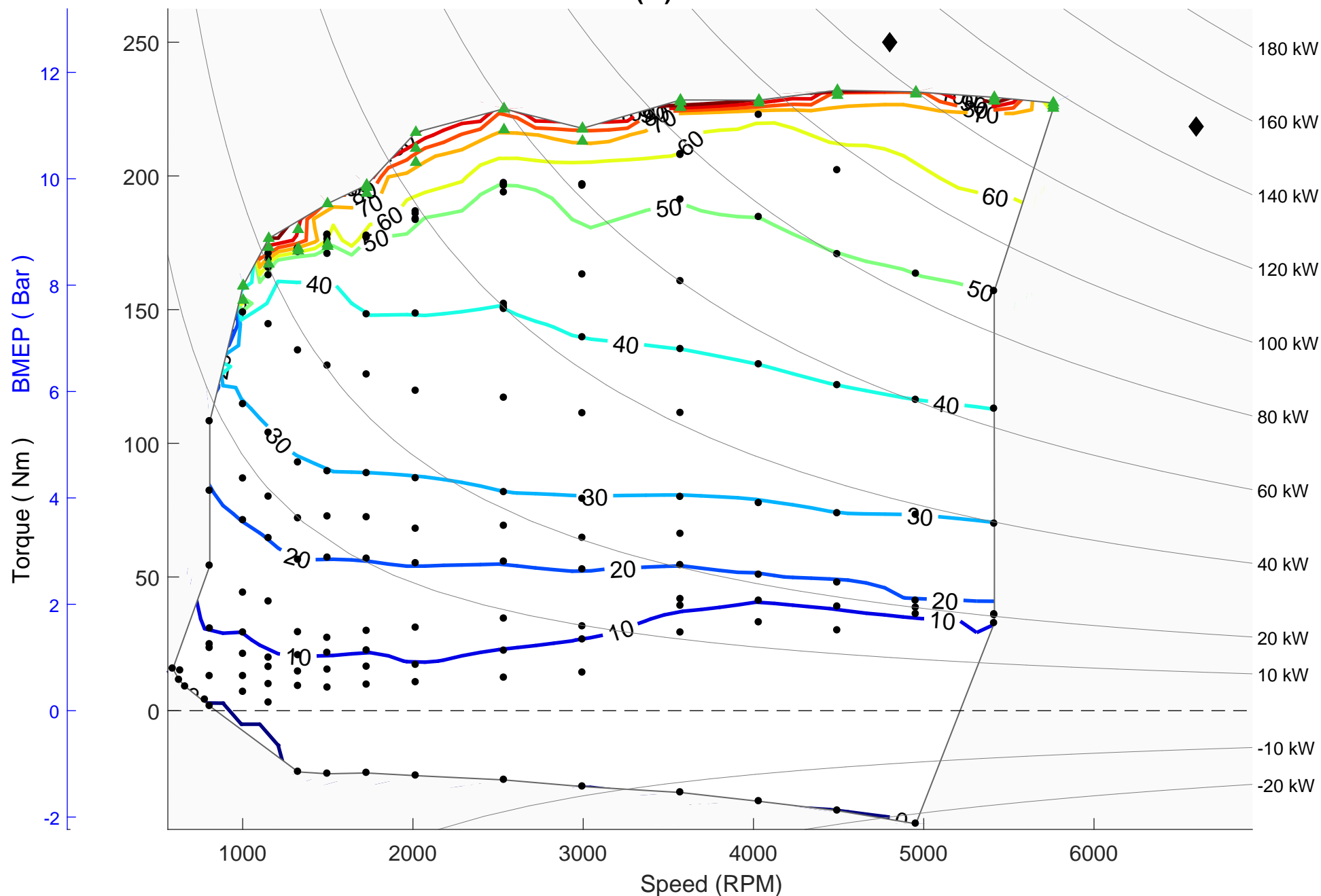
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**PFI Fuel Portion (%) - Portion of Fuel Supplied by PFI Injectors**



**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Accelerator Pedal (%) - Accelerator Pedal Position\***

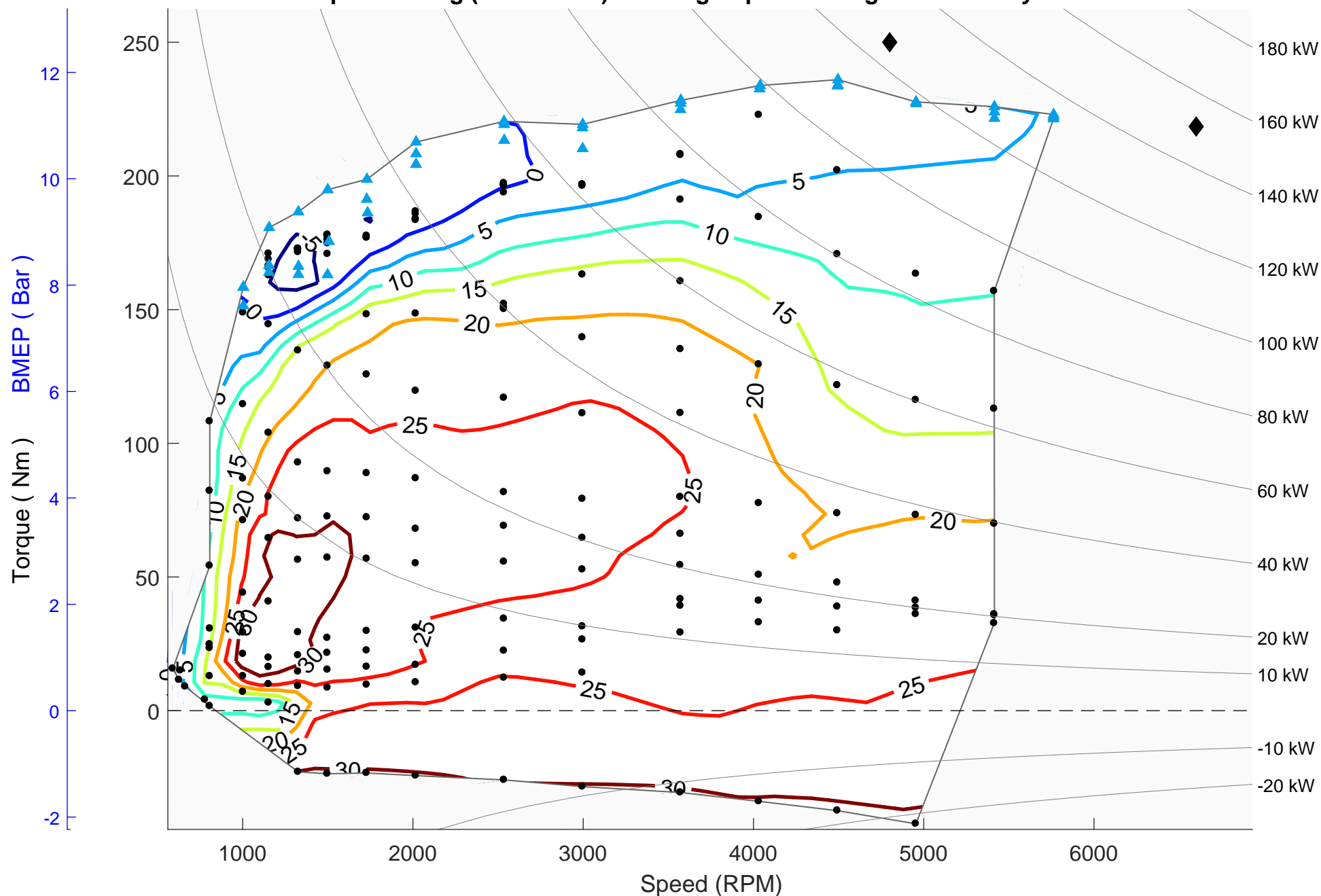


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Accelerator Pedal (%) - Accelerator Pedal Position\***

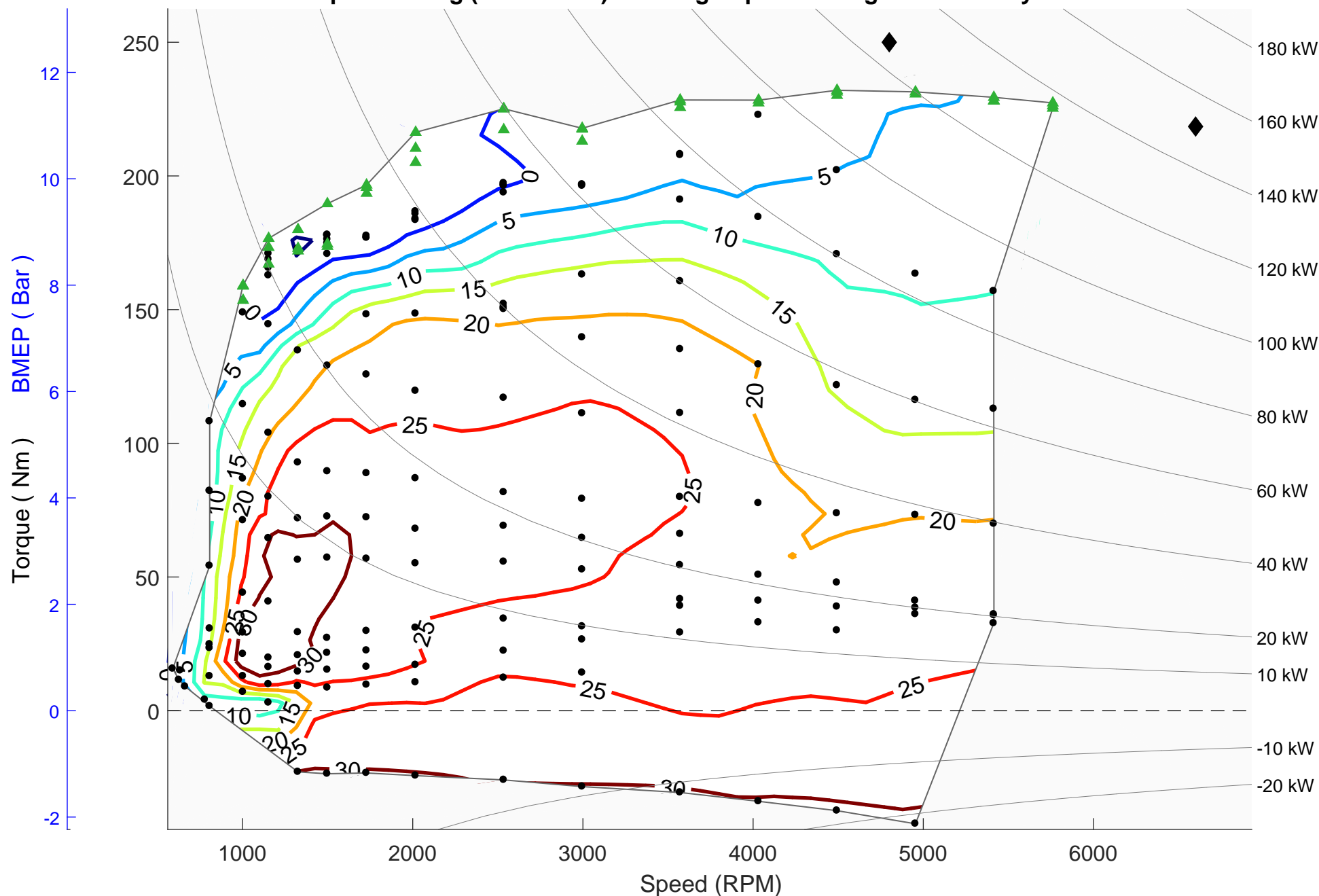




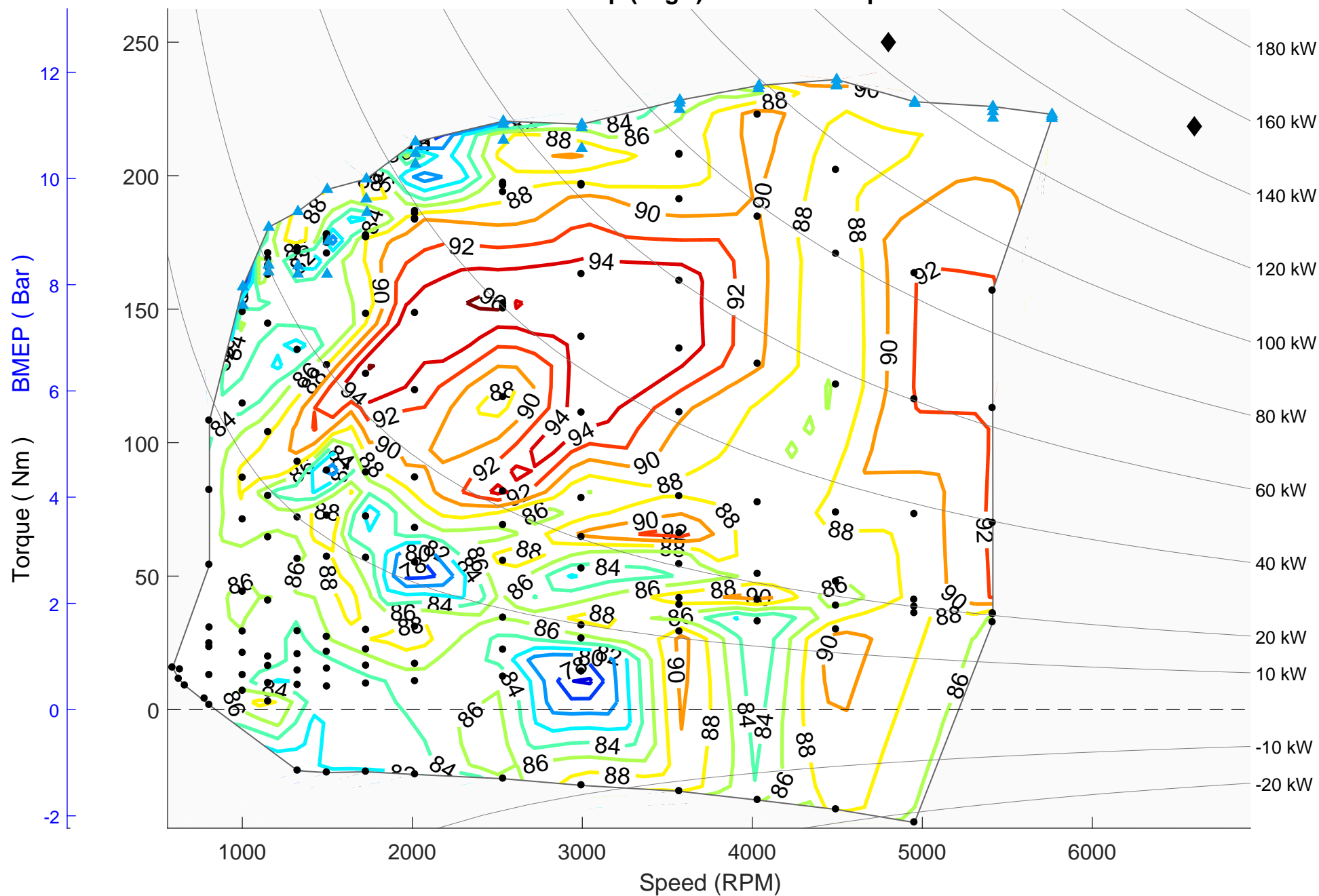
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Spark Timing (CAD BTDC) - Average Spark Timing Across all Cylinders\***



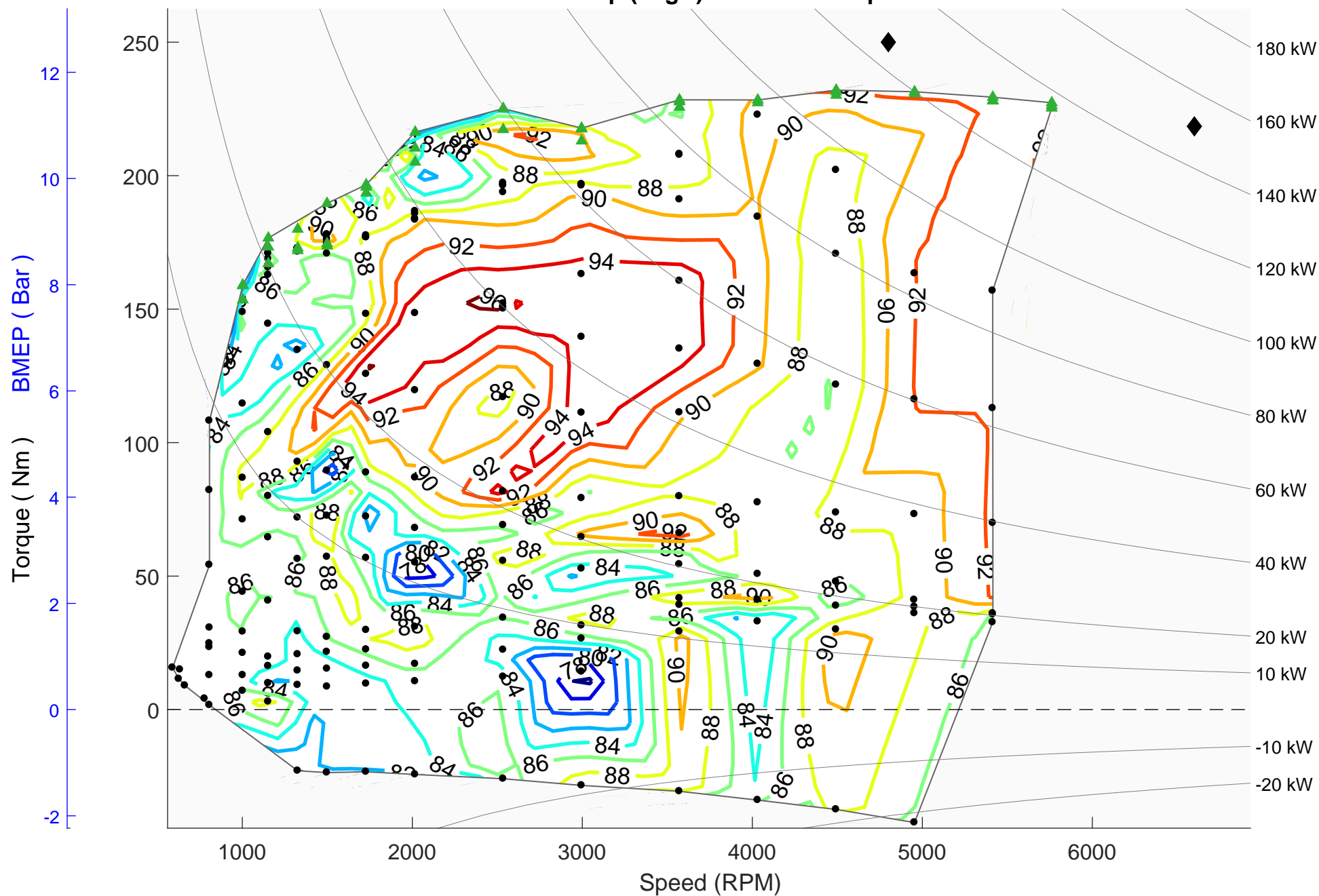
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Spark Timing (CAD BTDC) - Average Spark Timing Across all Cylinders\***



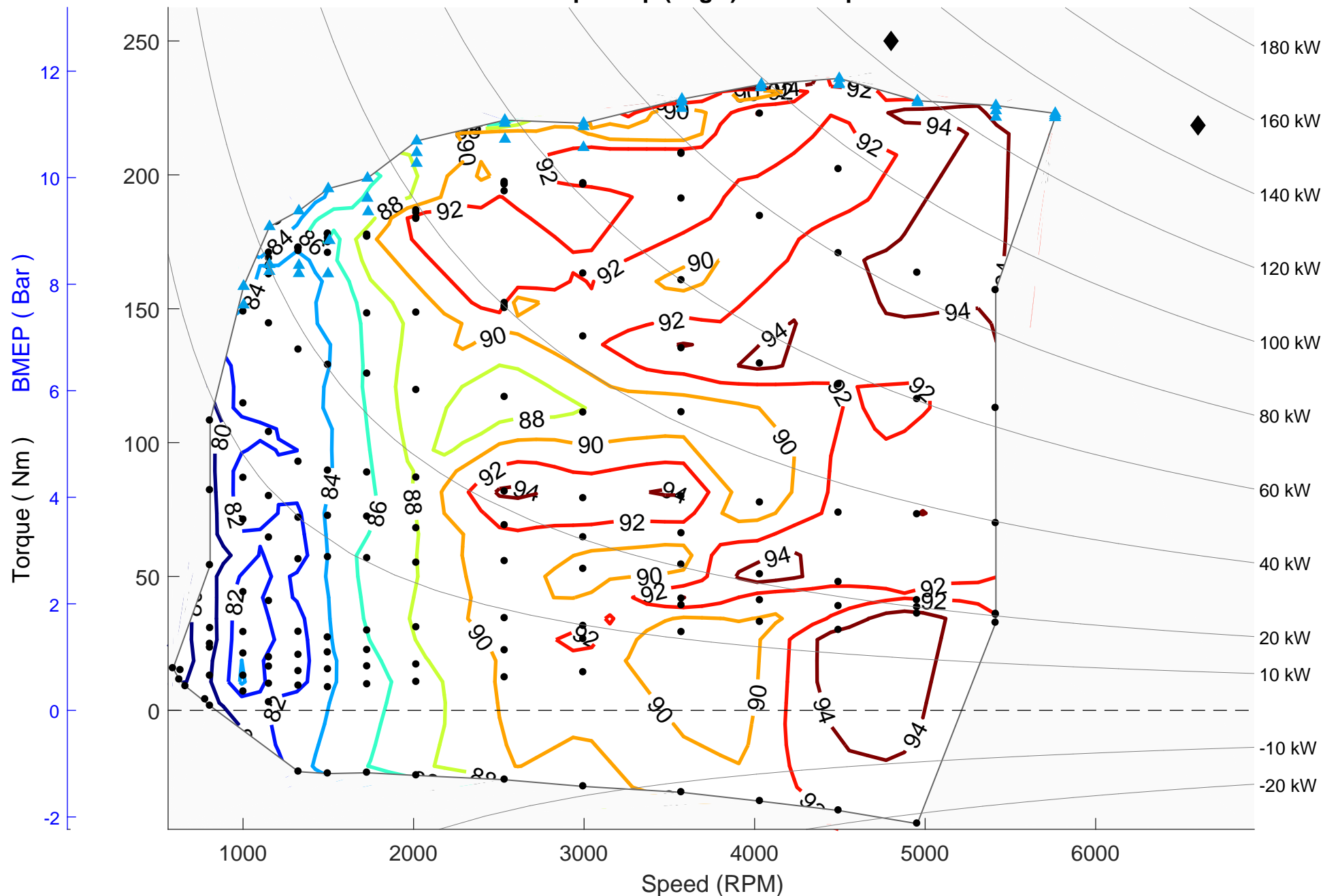
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Coolant Temp (degC) - Coolant Temperature**



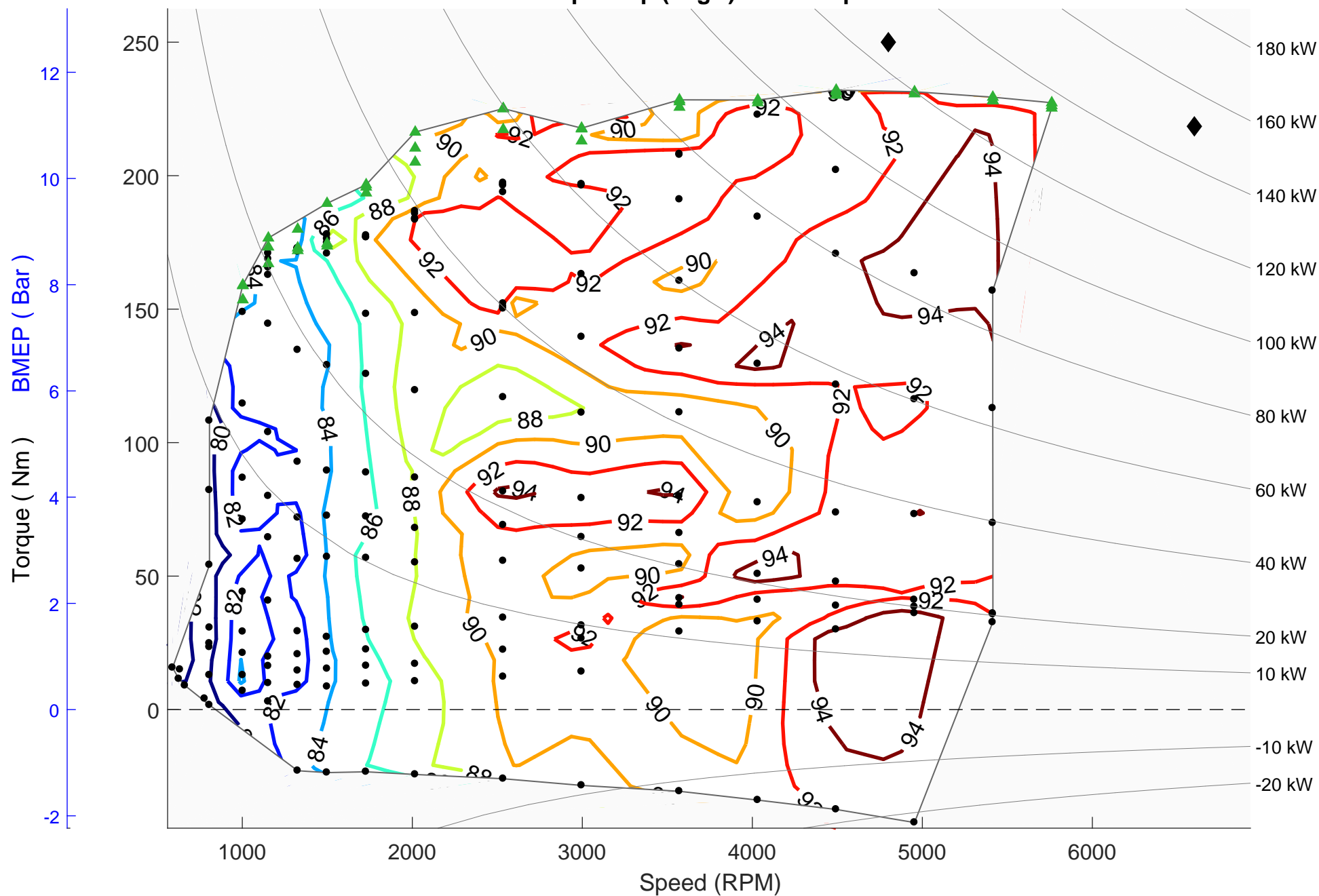
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Coolant Temp (degC) - Coolant Temperature**



2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Steady State and High Load Initial  
Oil Sump Temp (degC) - Oil Temperature

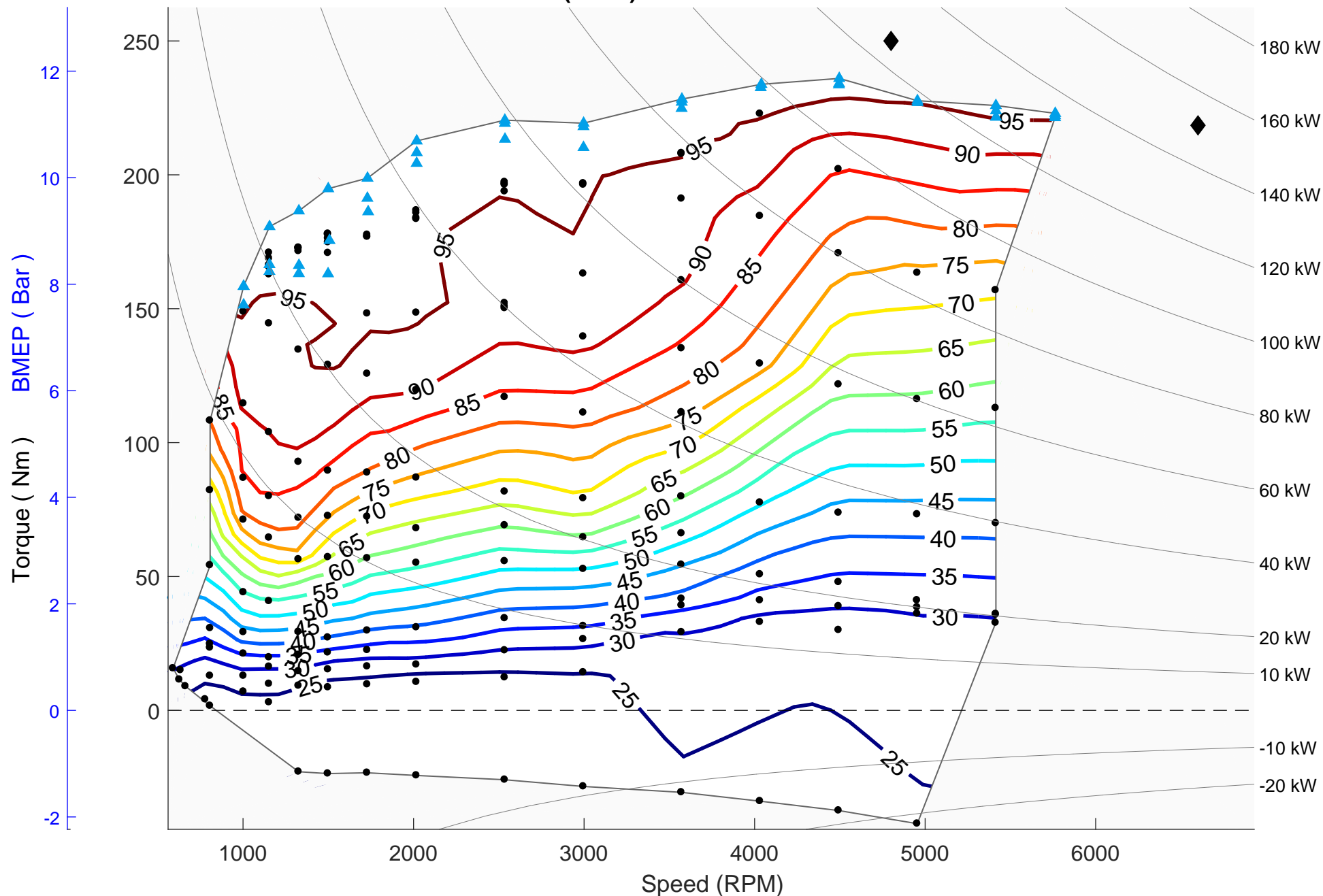


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Oil Sump Temp (degC) - Oil Temperature**

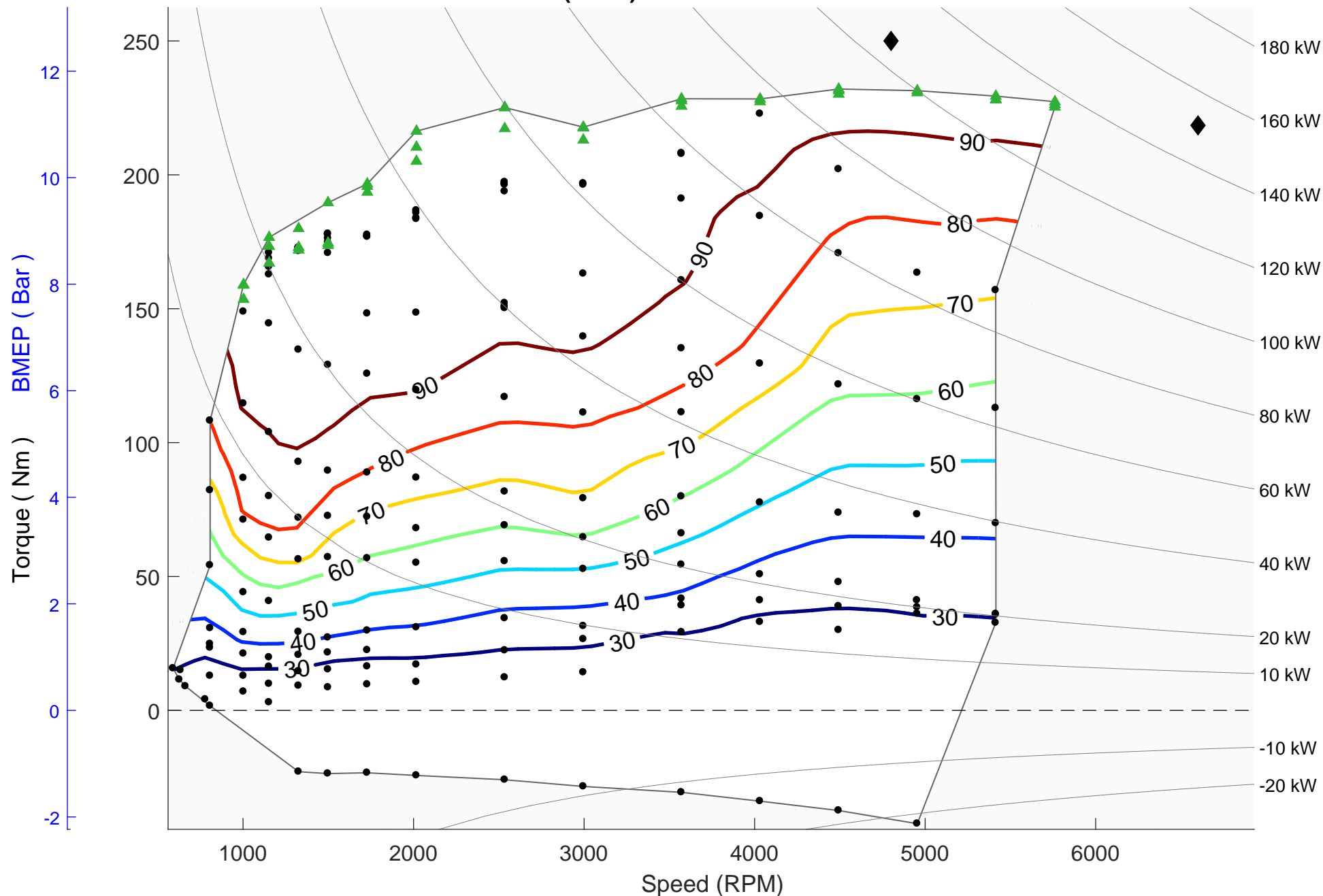




**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Intake Manifold Press (kPaA) - Pressure Measured in the Intake Manifold**

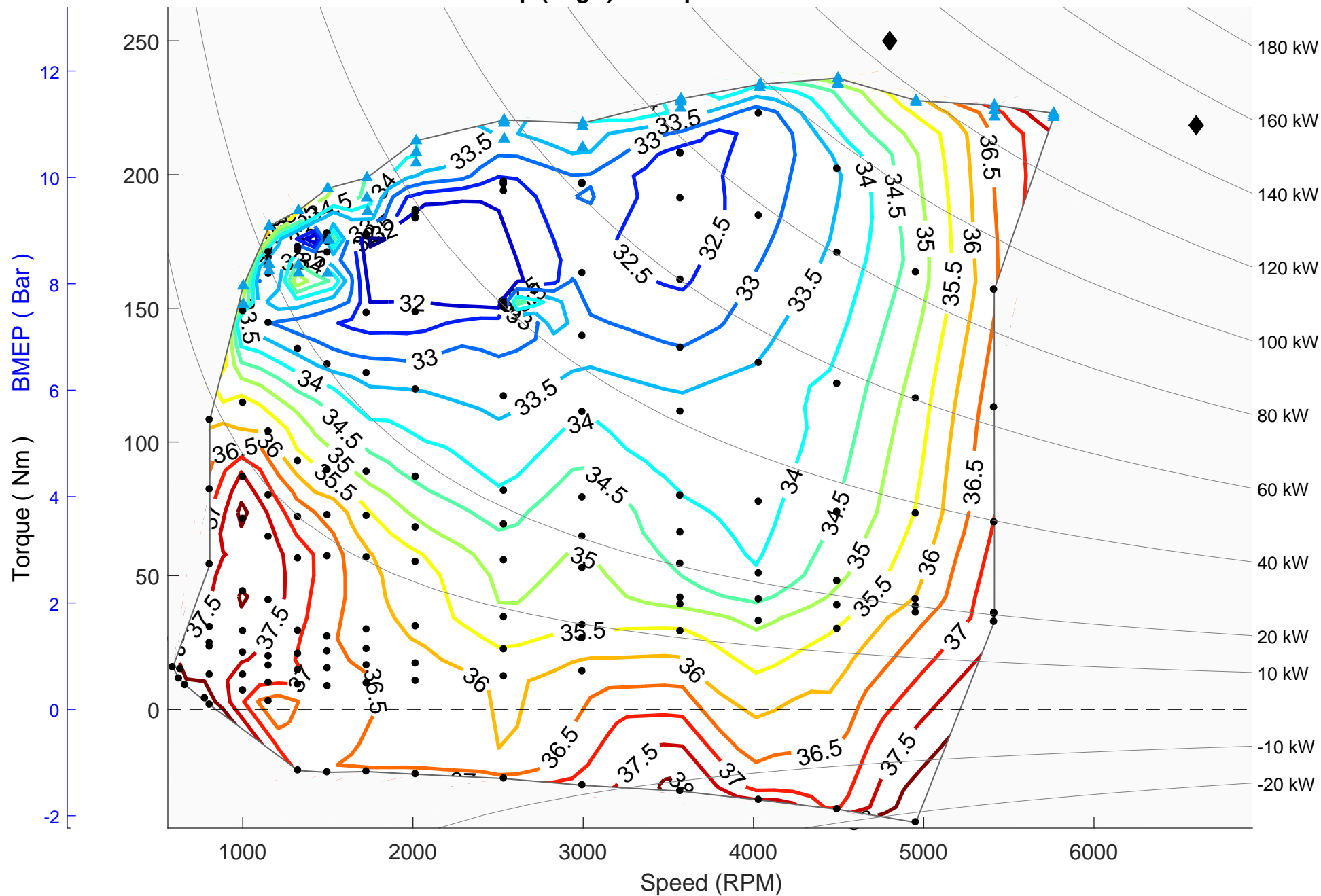


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Intake Manifold Press (kPaA) - Pressure Measured in the Intake Manifold**

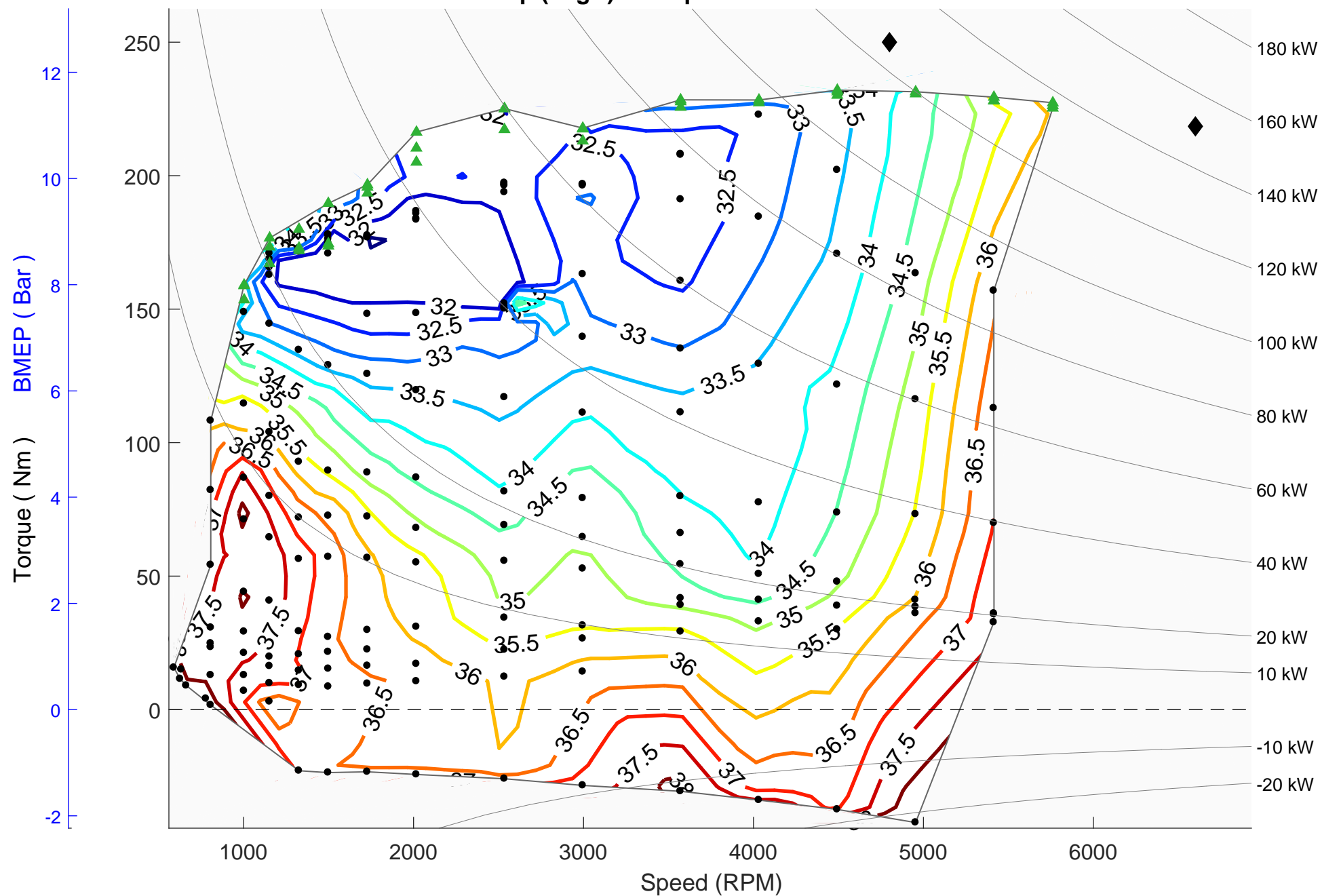




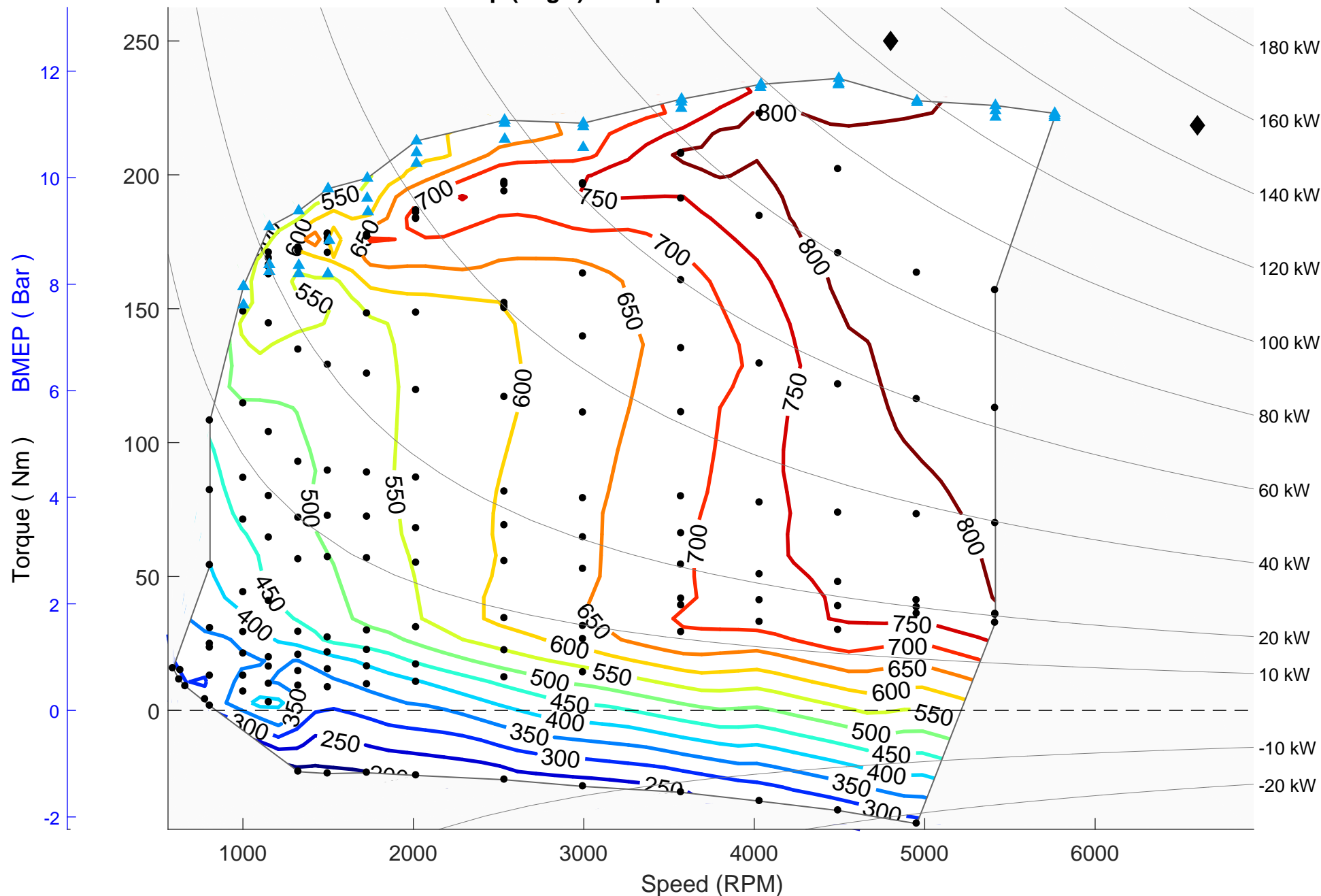
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Intake Manifold Temp (degC) - Temperature Measured in the Intake Manifold**



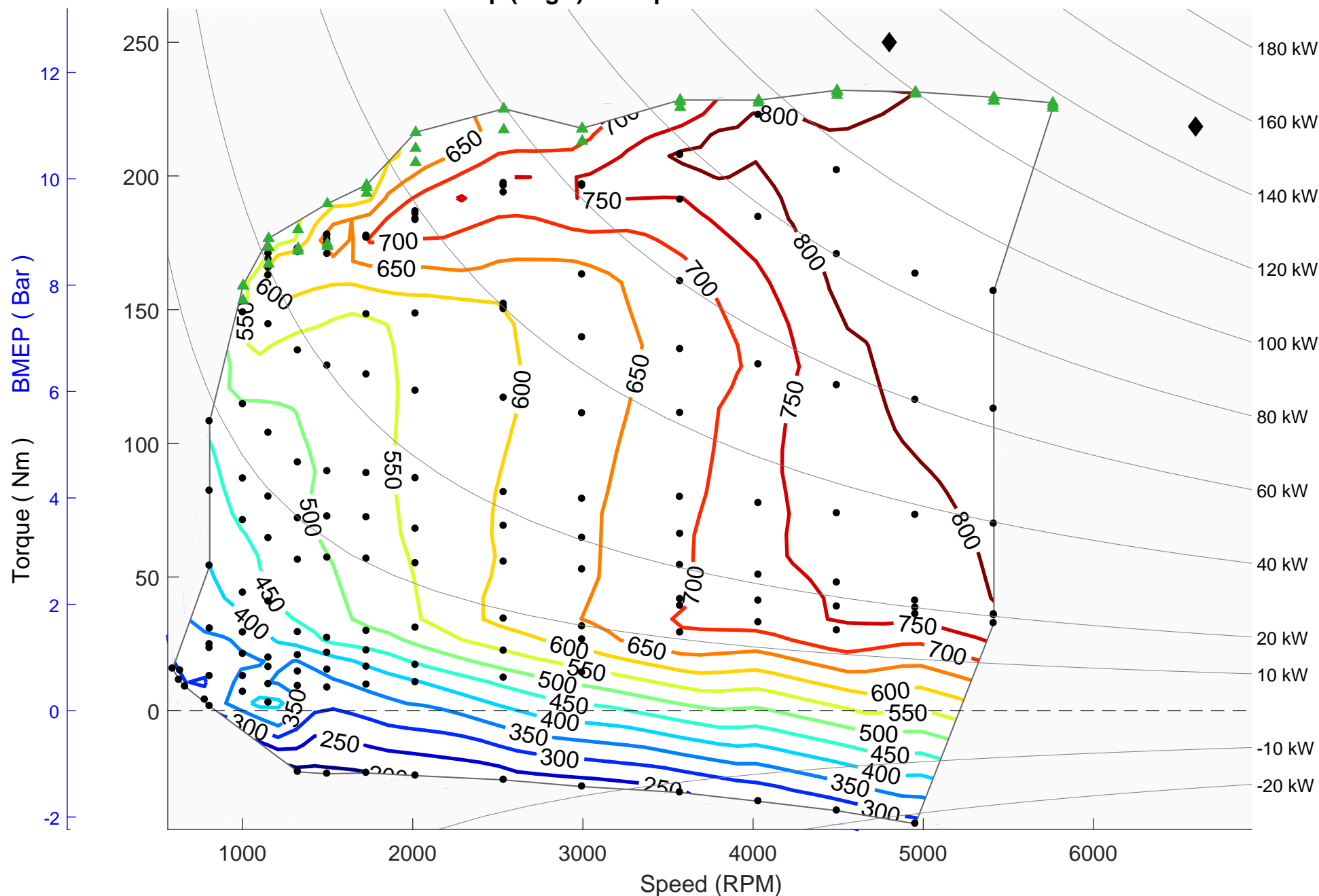
2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots  
Steady State and High Load Final  
Intake Manifold Temp (degC) - Temperature Measured in the Intake Manifold



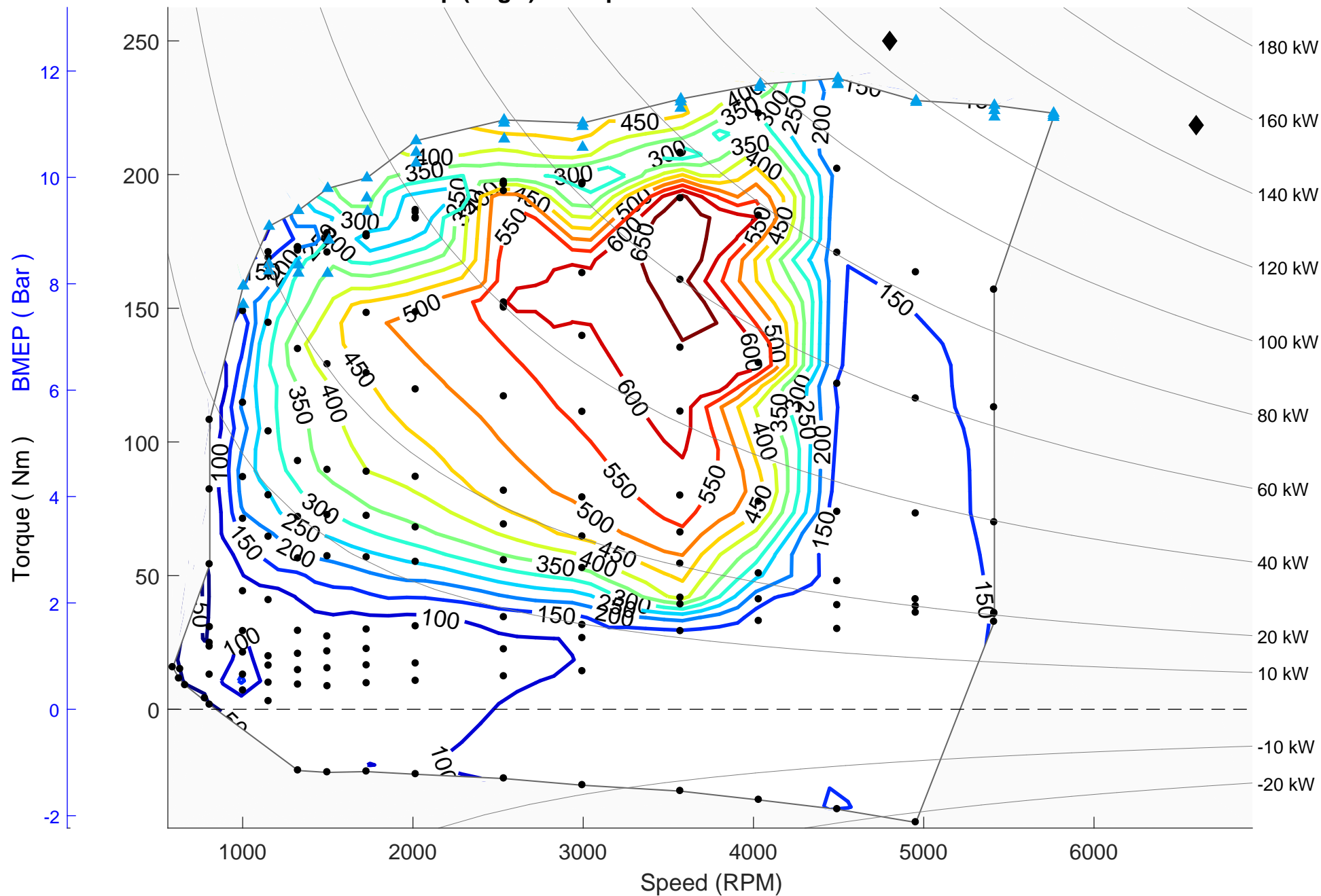
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Exhaust Port Temp (degC) - Temperature Measured in Exhaust Manifold Port**



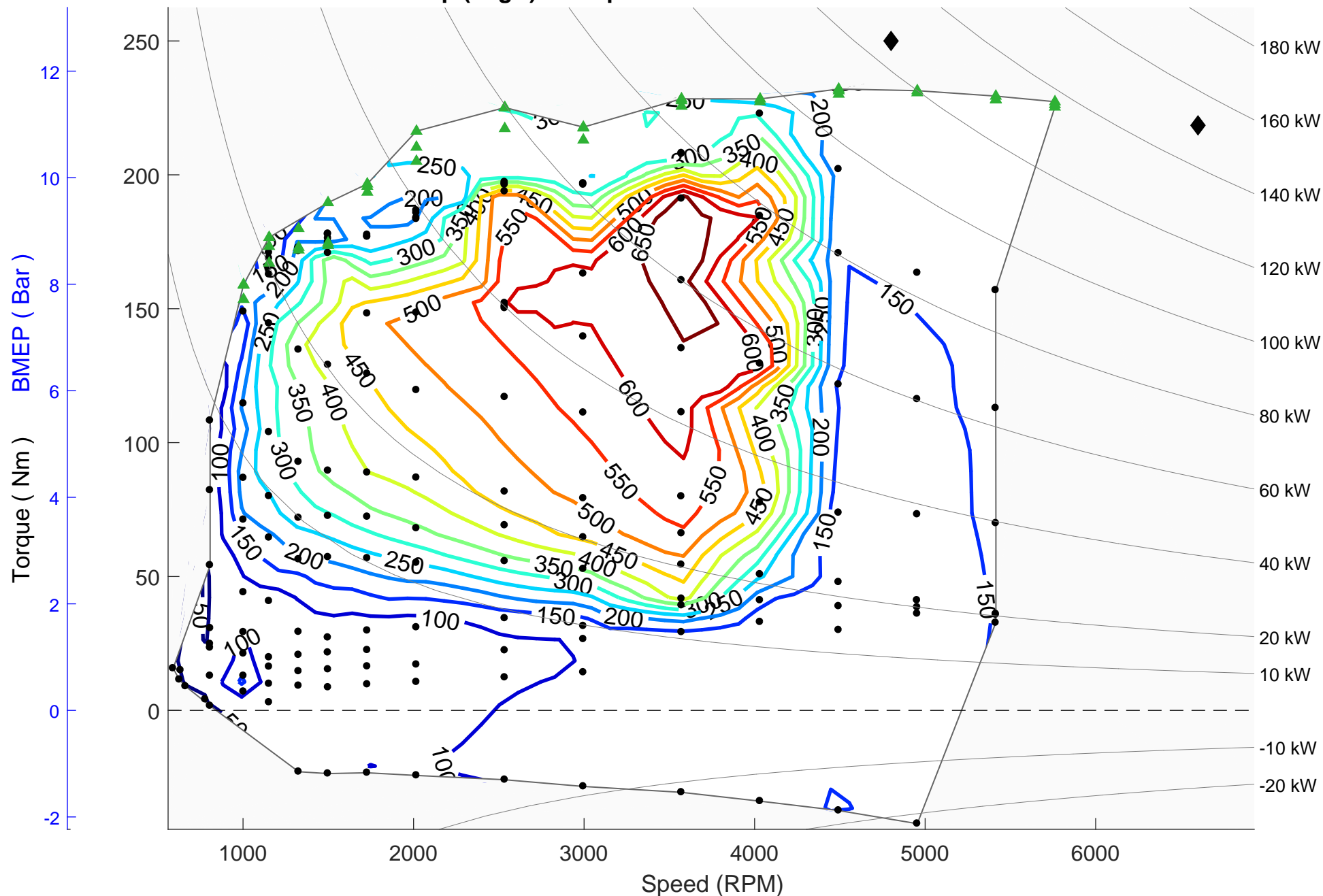
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Exhaust Port Temp (degC) - Temperature Measured in Exhaust Manifold Port**



**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**EGR Inlet Temp (degC) - Temperature Measured in Exhaust Manifold EGR Port**

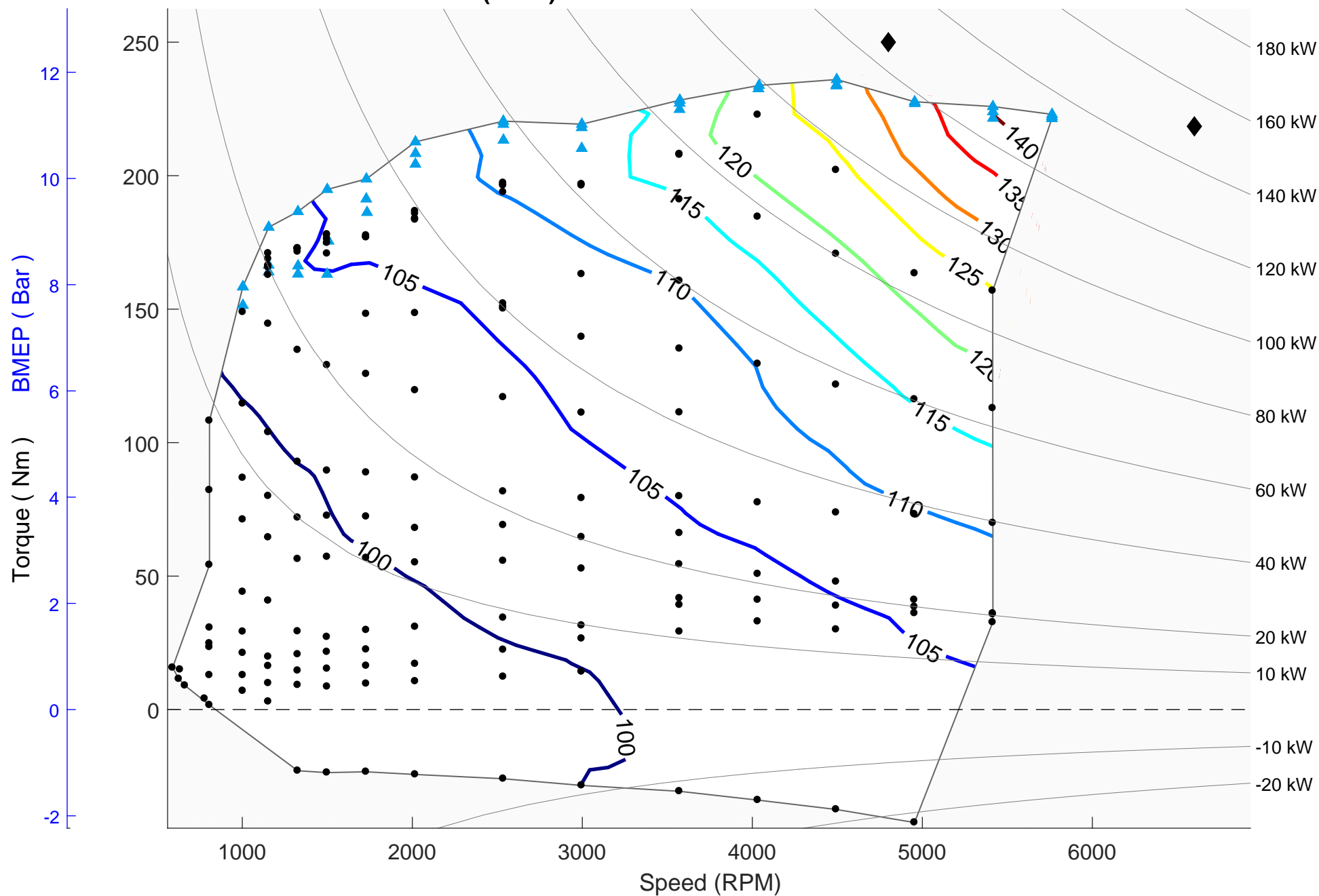


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**EGR Inlet Temp (degC) - Temperature Measured in Exhaust Manifold EGR Port**

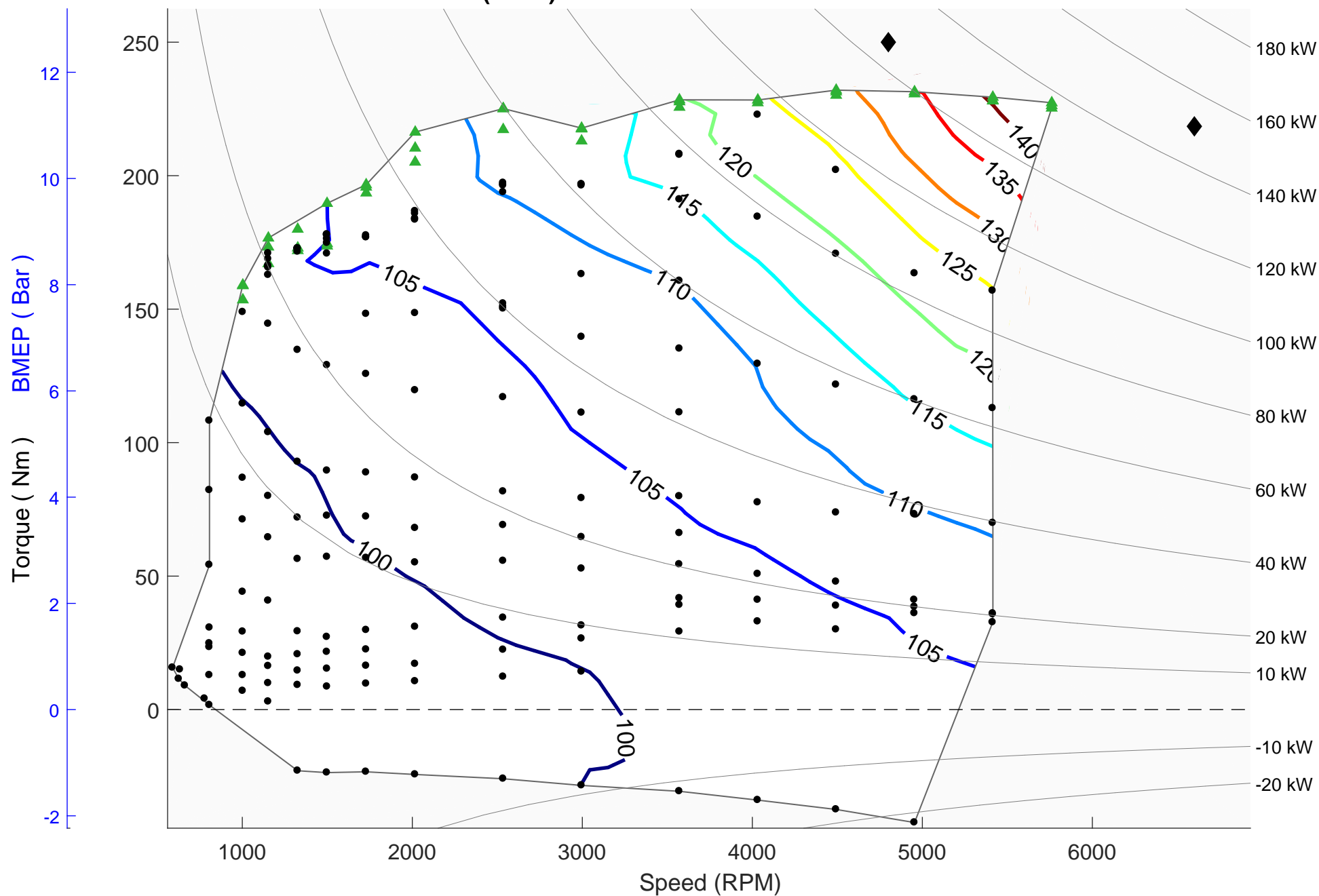




**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**EGR Inlet Press (kPaA) - Pressure Measured in Exhaust Manifold EGR Port**

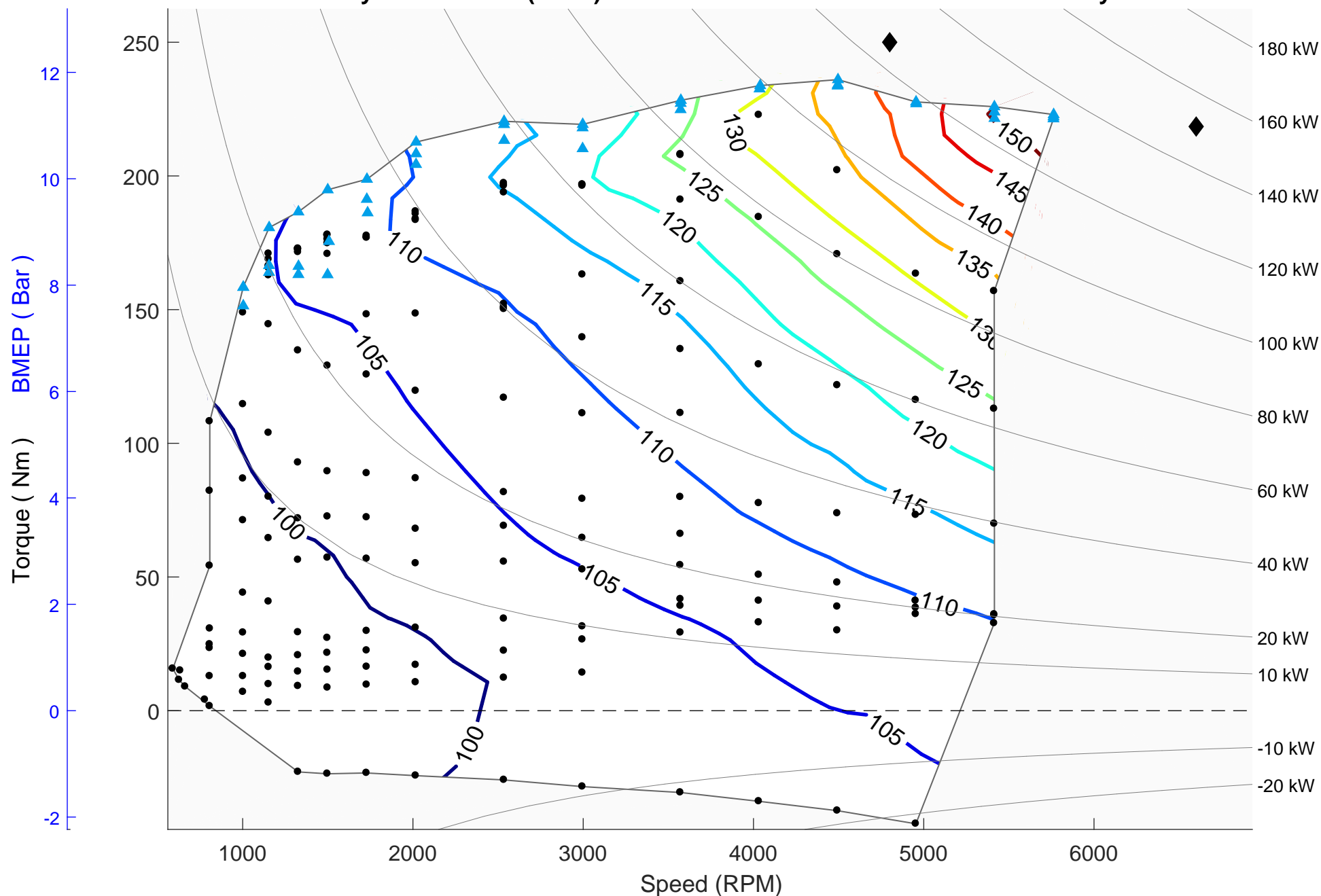


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**EGR Inlet Press (kPaA) - Pressure Measured in Exhaust Manifold EGR Port**

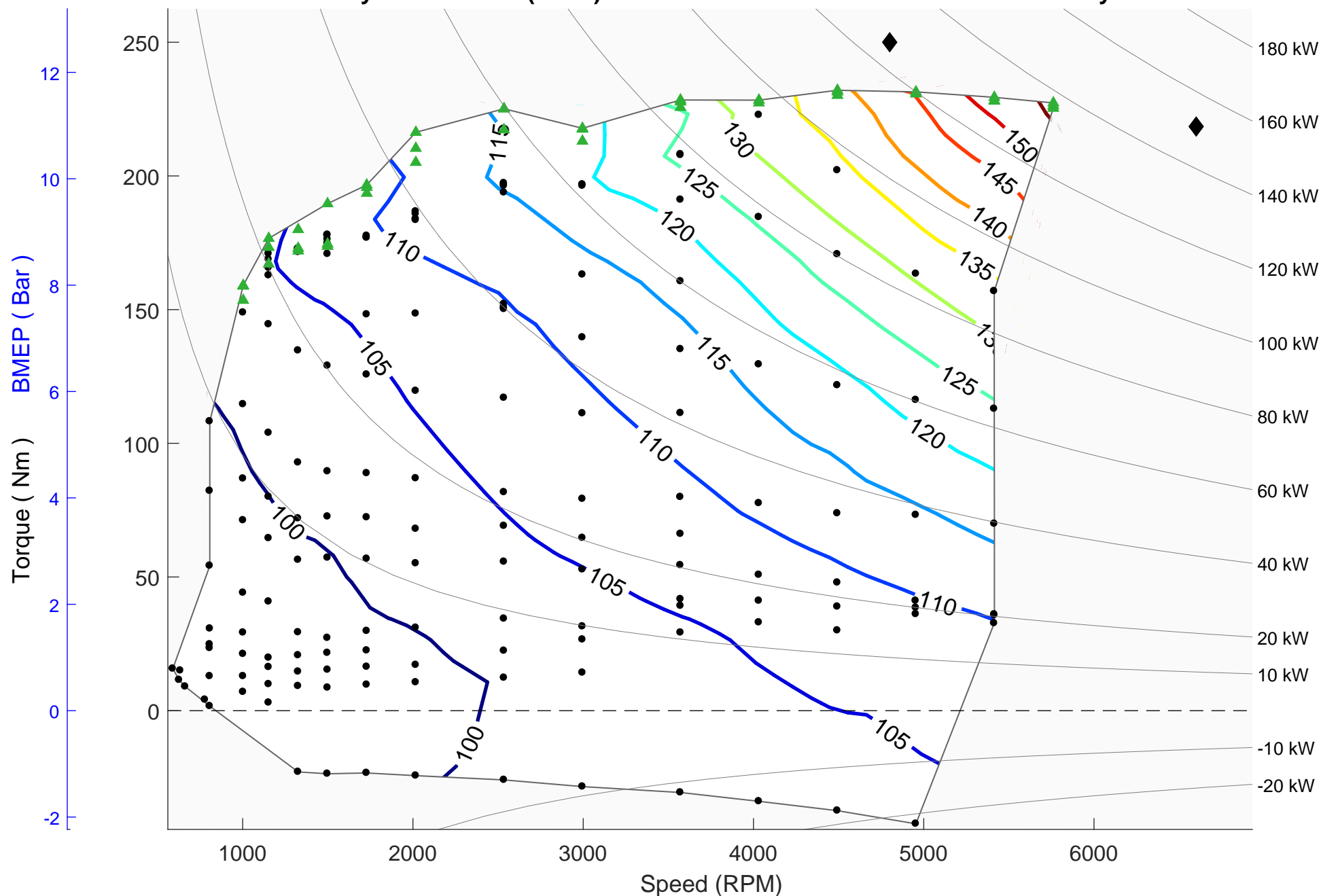




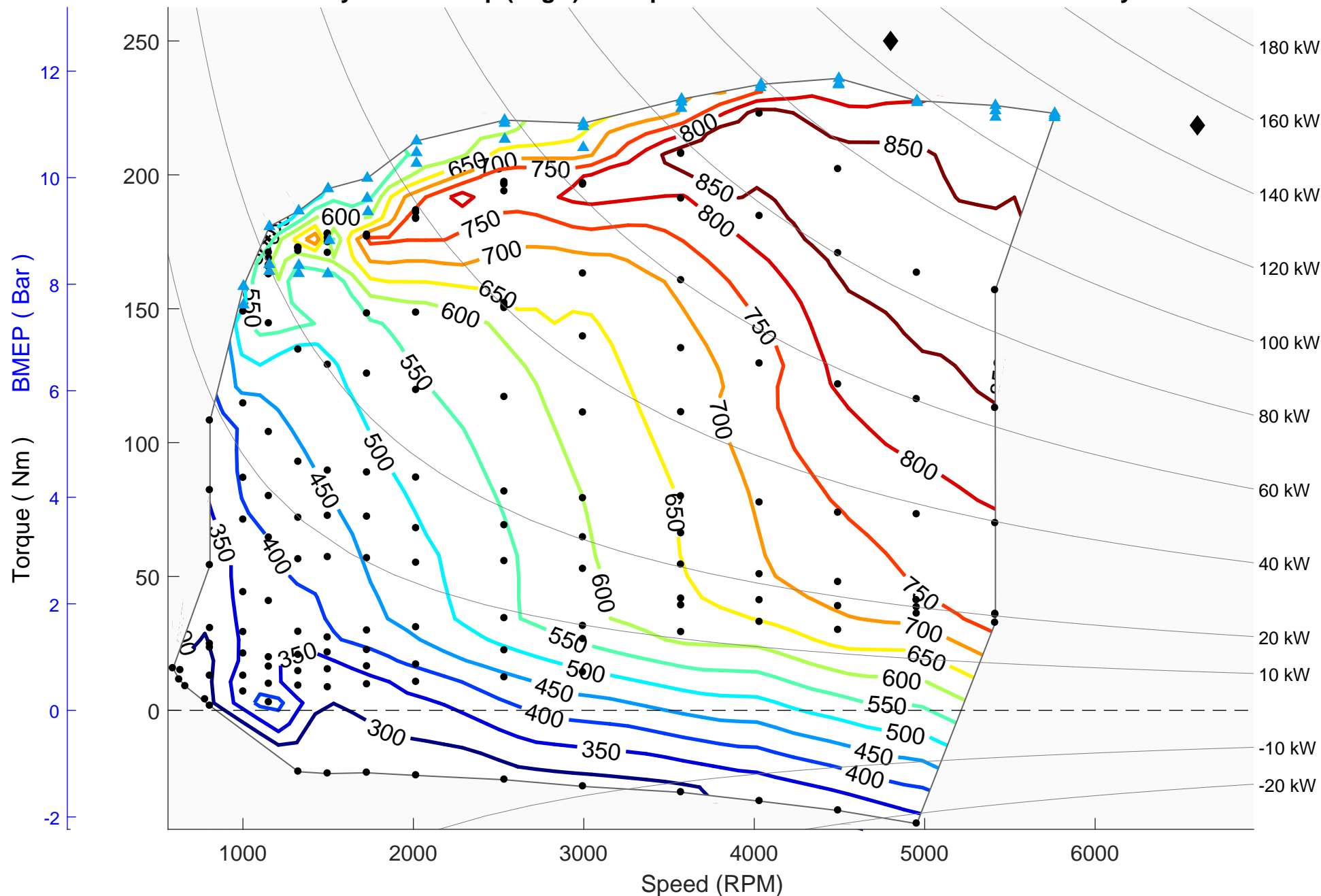
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Catalyst Inlet Press (kPaA) - Pressure Measured at the Inlet to the Catalyst**



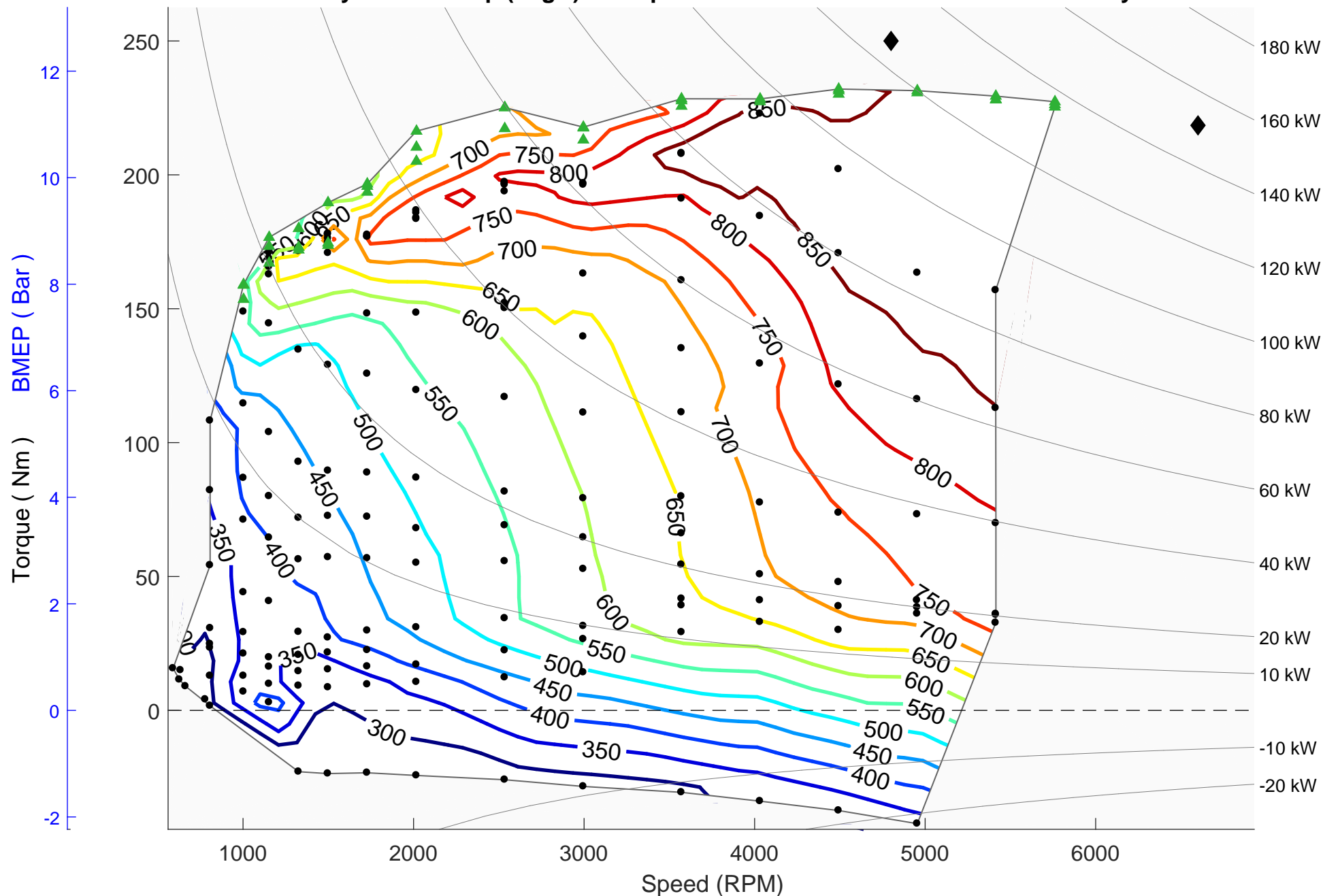
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Catalyst Inlet Press (kPaA) - Pressure Measured at the Inlet to the Catalyst**



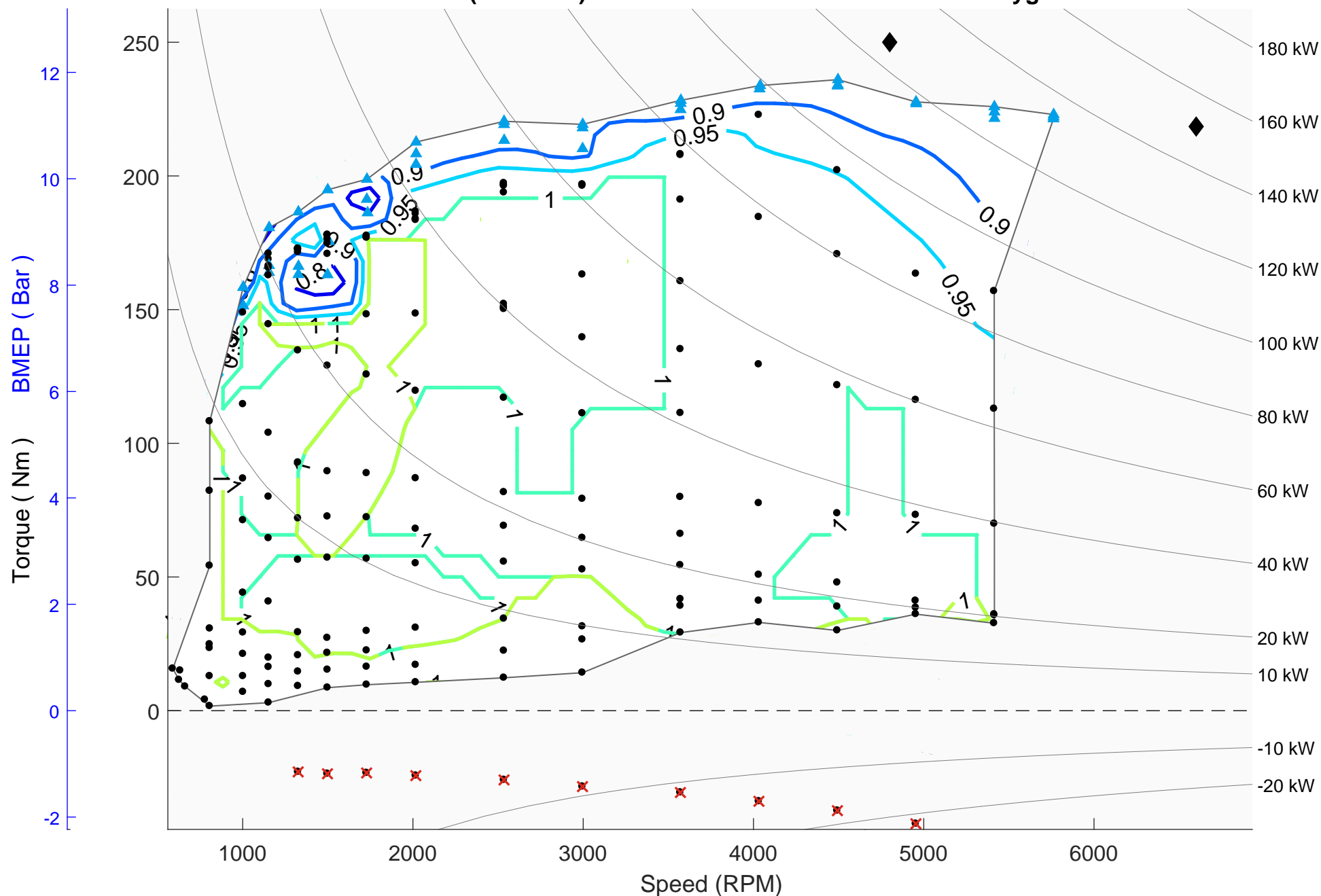
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Catalyst Inlet Temp (degC) - Temperature Measured at the Inlet to the Catalyst**



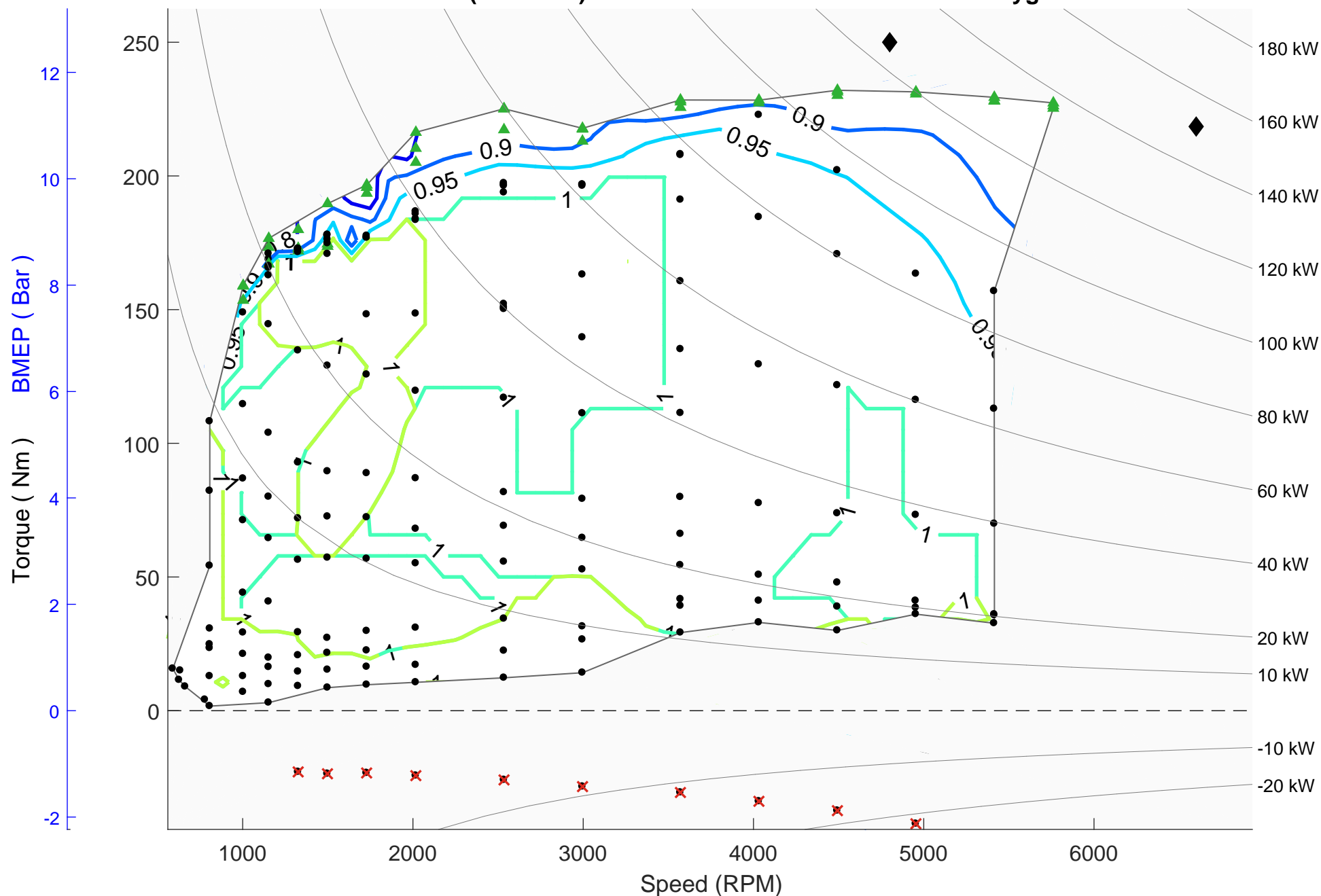
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Catalyst Inlet Temp (degC) - Temperature Measured at the Inlet to the Catalyst**



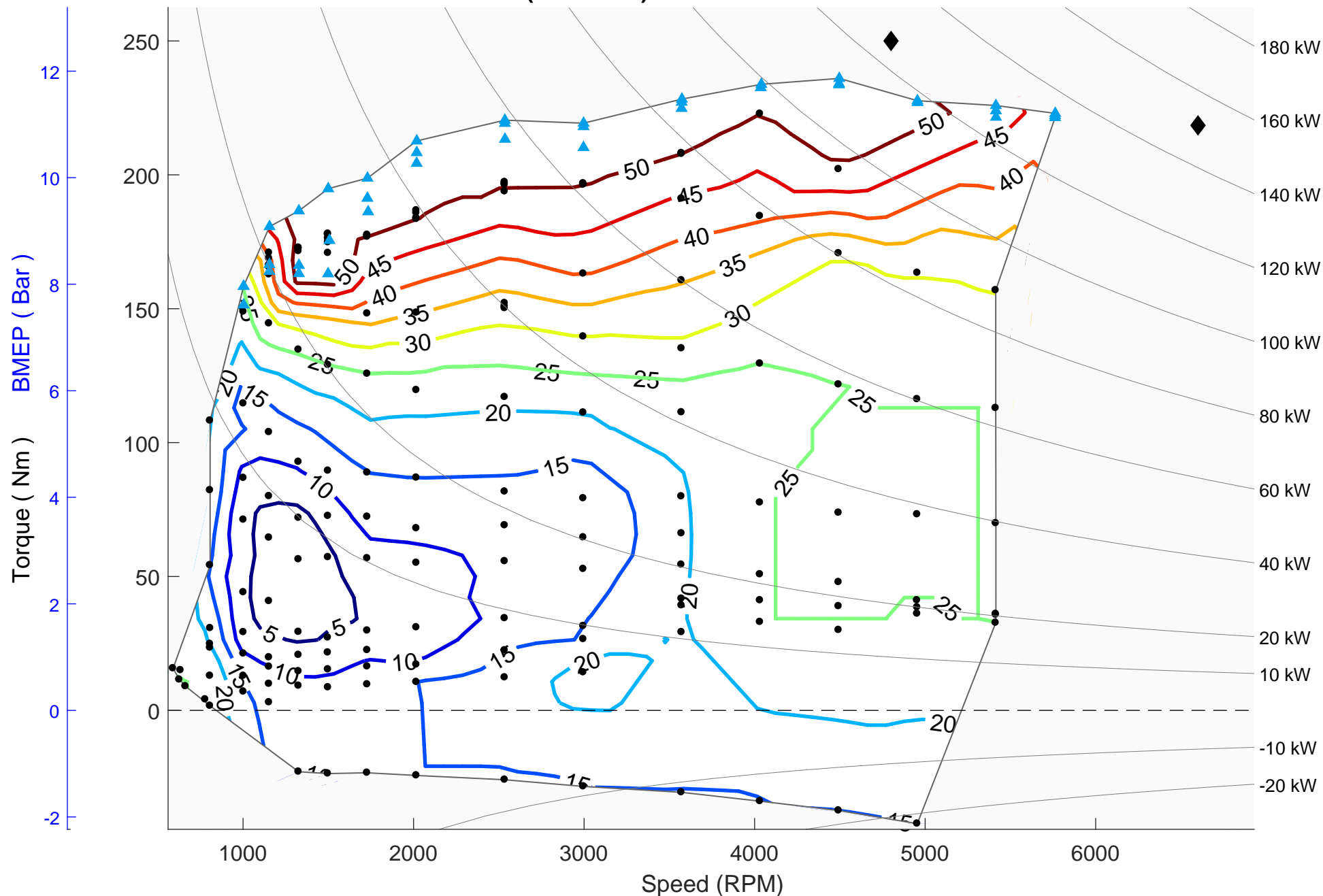
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Exhaust Lambda (LAMBDA) - Measured via Wideband Exhaust Oxygen Sensor\***



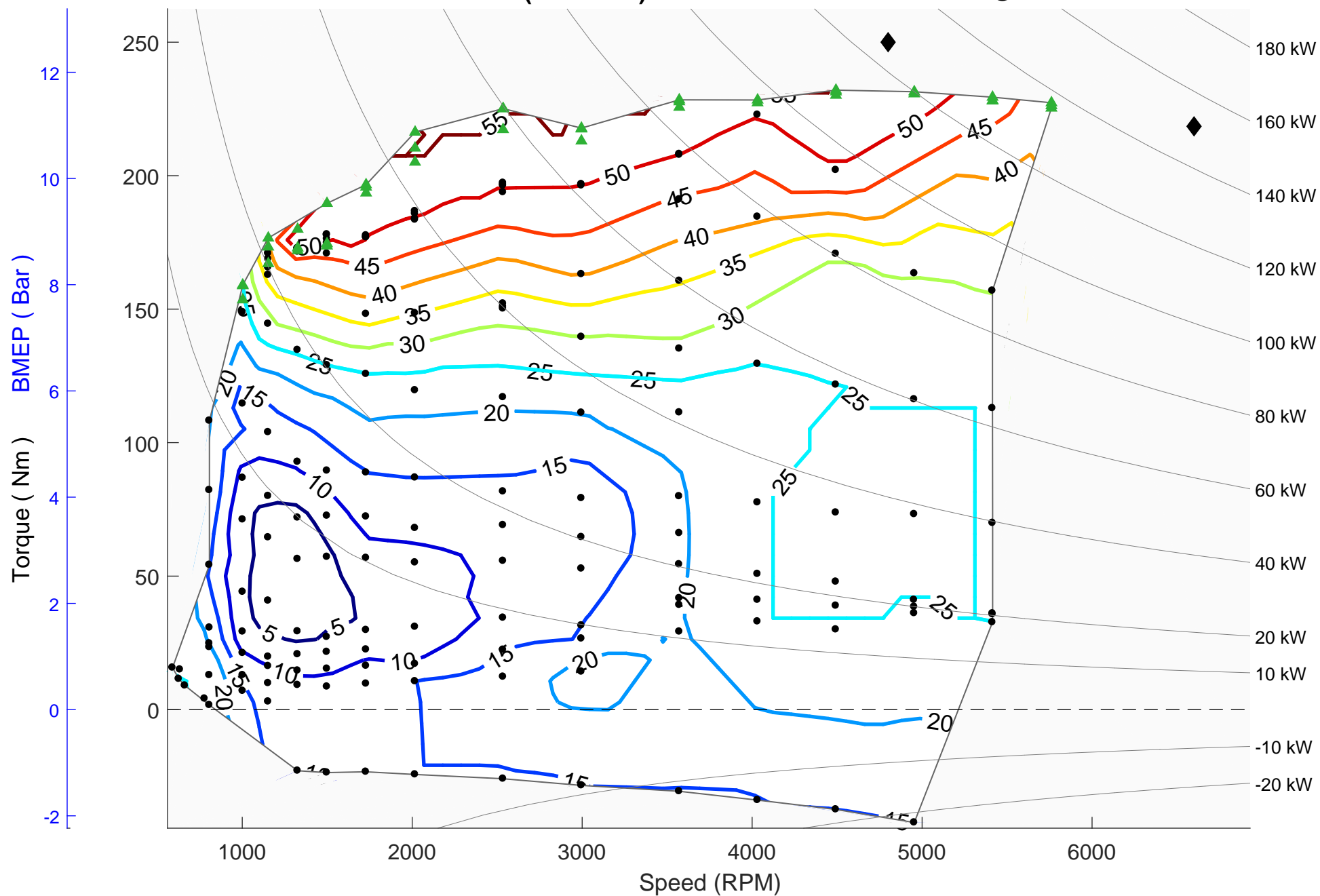
**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Exhaust Lambda (LAMBDA) - Measured via Wideband Exhaust Oxygen Sensor\***



**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Intake Cam Phase (CAD ADV) - Intake Cam Phaser Advance @ 1mm Lift**

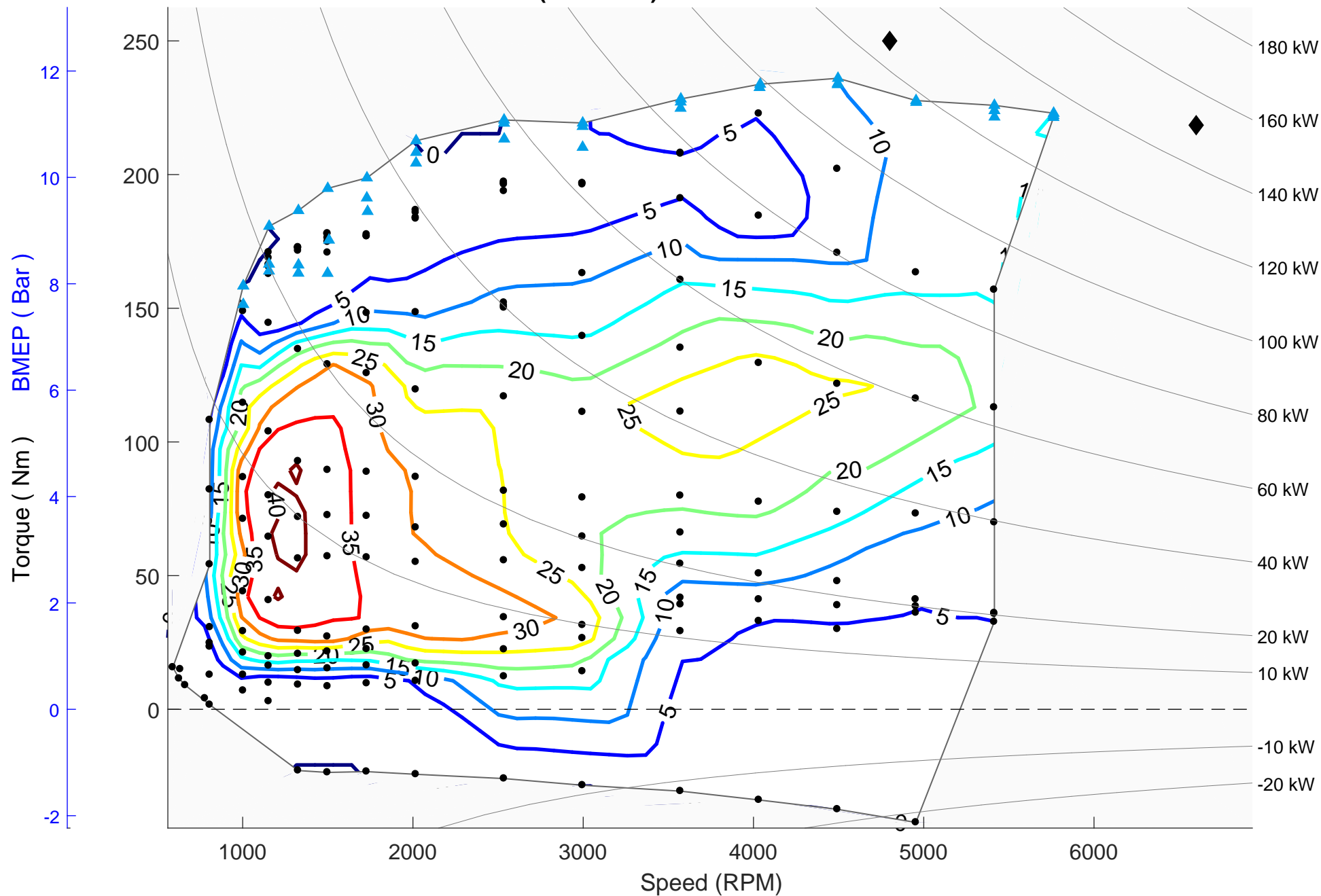


**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Intake Cam Phase (CAD ADV) - Intake Cam Phaser Advance @ 1mm Lift**





**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Initial**  
**Exhaust Cam Phase (CAD RET) - Exhaust Cam Phaser Retard @ 1mm Lift**



**2018 Toyota 2.5L A25A-FKS Engine Tier 3 Fuel - Test Data Plots**  
**Steady State and High Load Final**  
**Exhaust Cam Phase (CAD RET) - Exhaust Cam Phaser Retard @ 1mm Lift**

