

# 2015 Ford 2.7L EcoBoost V6 Tier 3 Fuel HD1 - Test Data Plots

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**SUGGESTED CITATION:** *2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Package*. Version 2019-11. Ann Arbor, MI: US EPA, National Vehicle and Fuel Emissions Laboratory, National Center for Advanced Technology, 2019.

- ◆ 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.

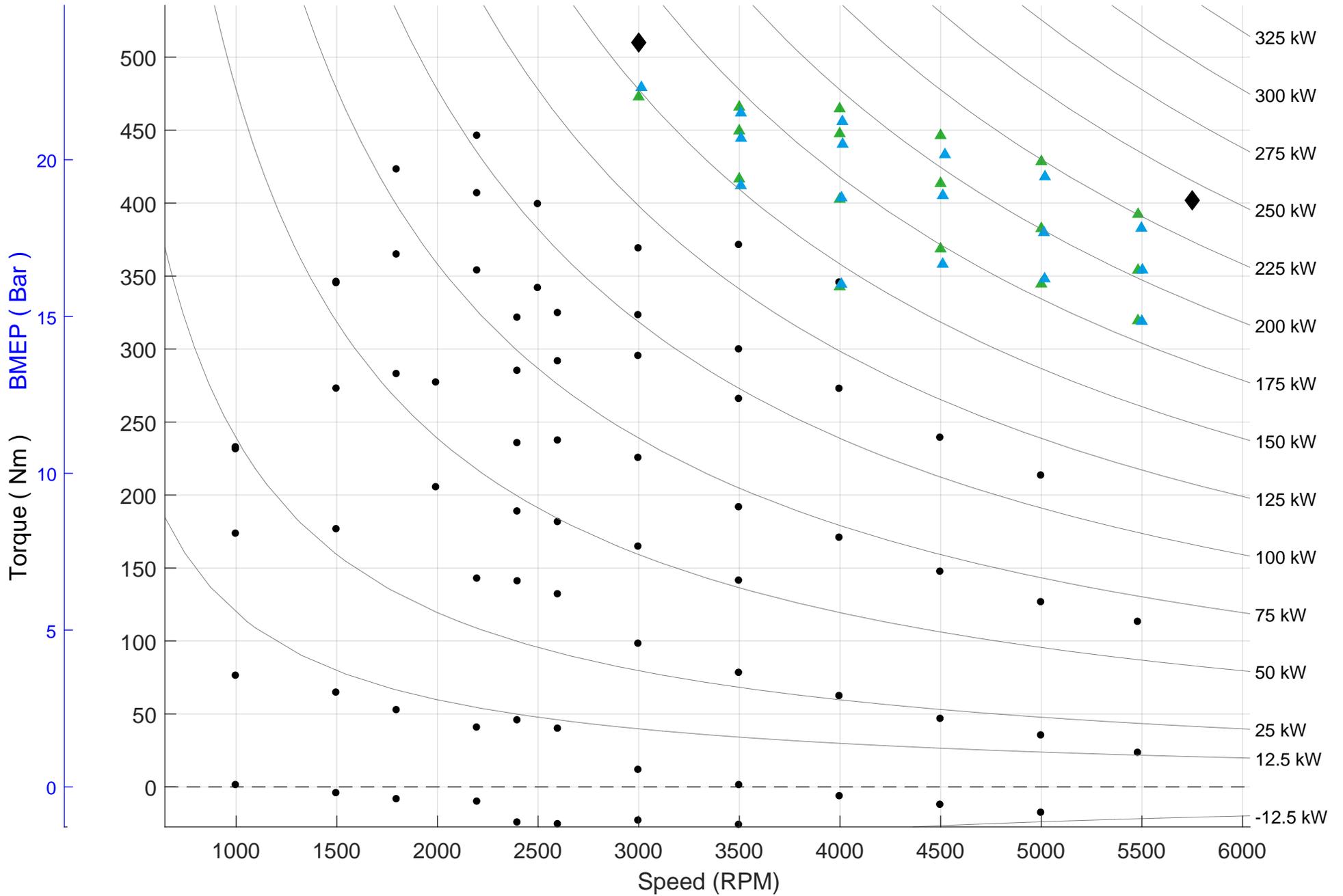
Published maximum torque data from:

2015 FORD F-150 TECHNICAL SPECIFICATIONS. (n.d.). Retrieved from

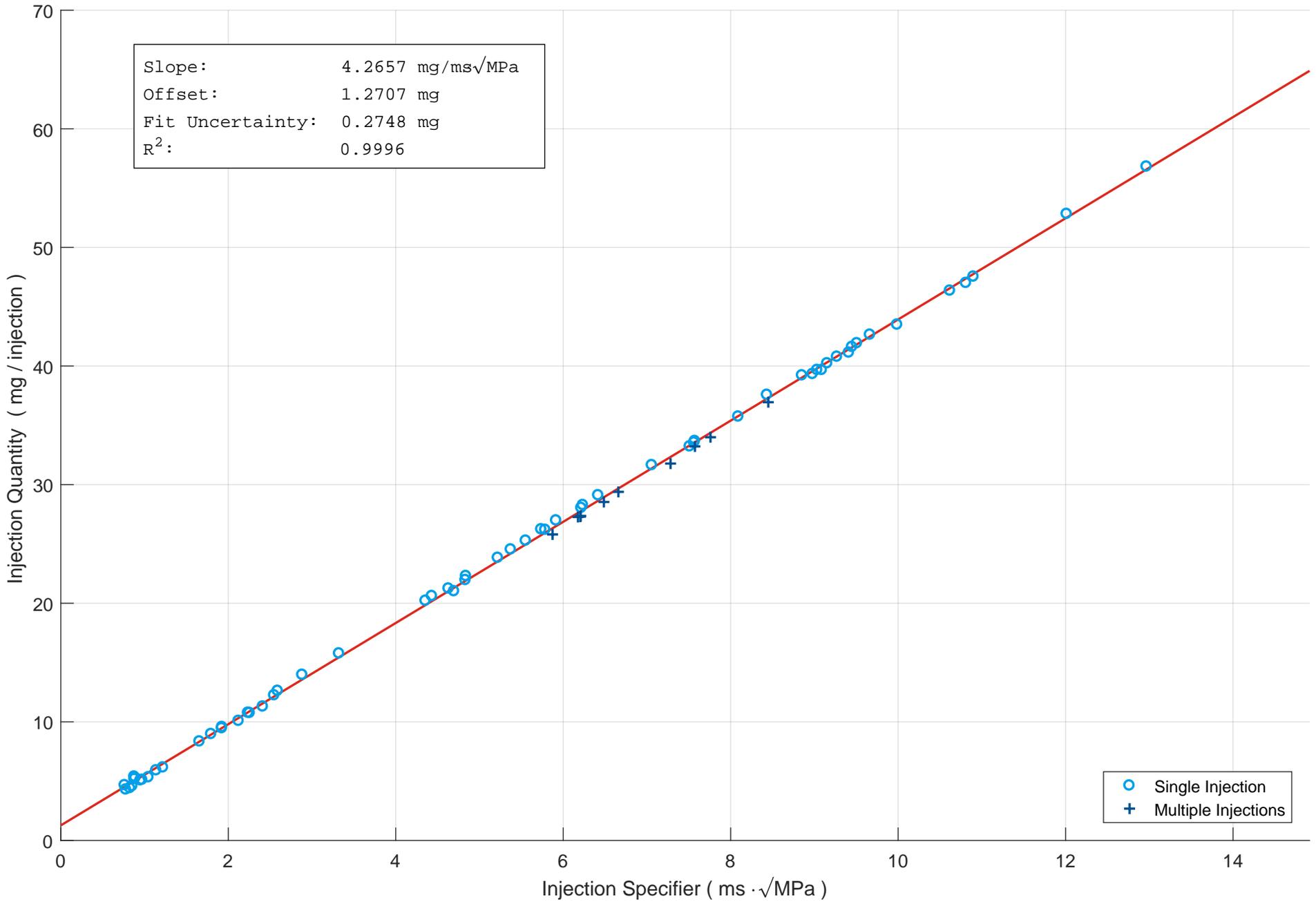
[https://media.ford.com/content/dam/fordmedia/North%20America/US/2015\\_Specs/2015\\_F150\\_Specs.pdf](https://media.ford.com/content/dam/fordmedia/North%20America/US/2015_Specs/2015_F150_Specs.pdf)

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Test Data Points



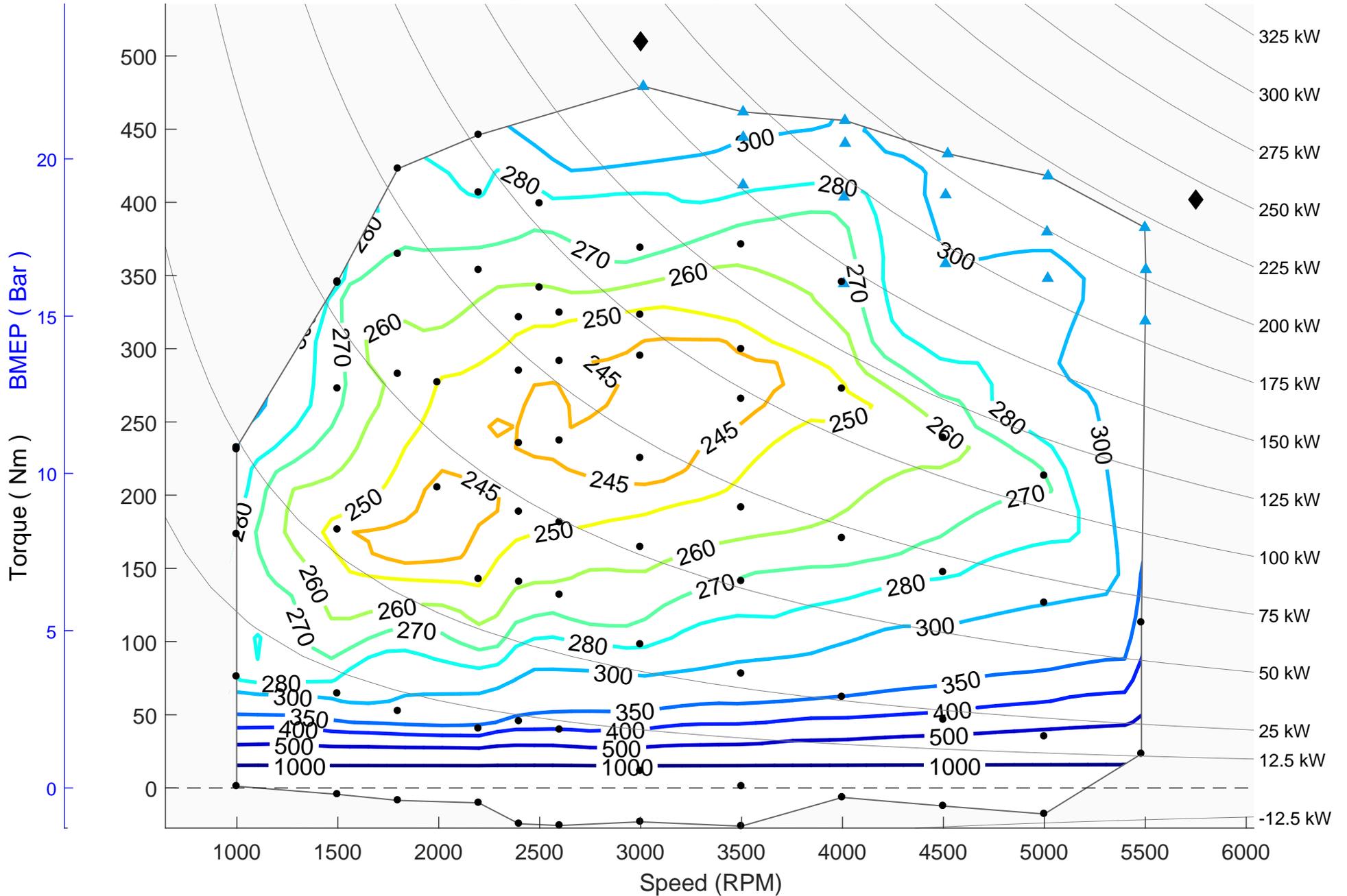
### 2015 Ford 2.7L EcoBoost V6 Tier 3 Fuel HD1 - Test Data Plots Injector Calibration



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

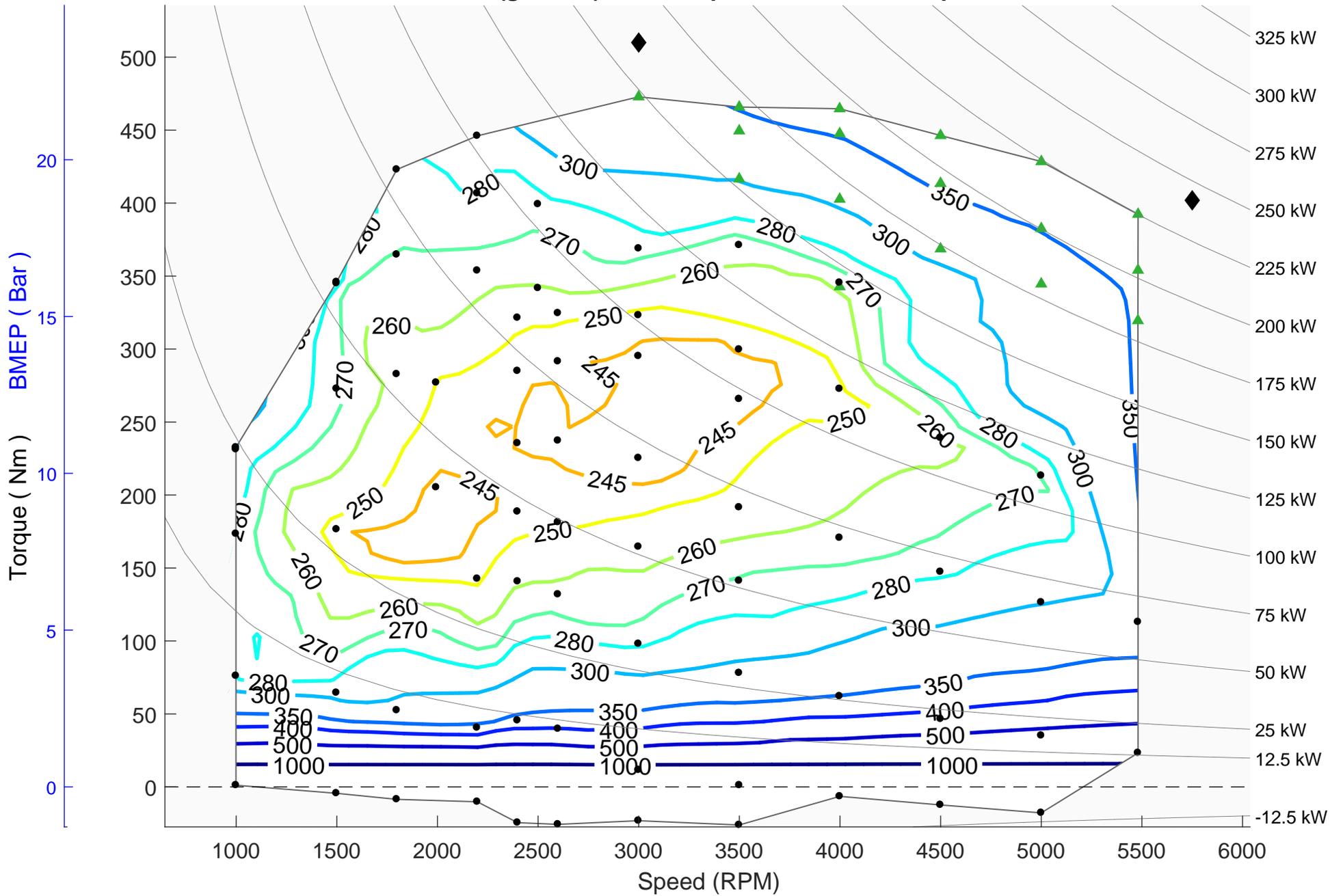
#### BSFC (g/kW-hr) - Brake Specific Fuel Consumption



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

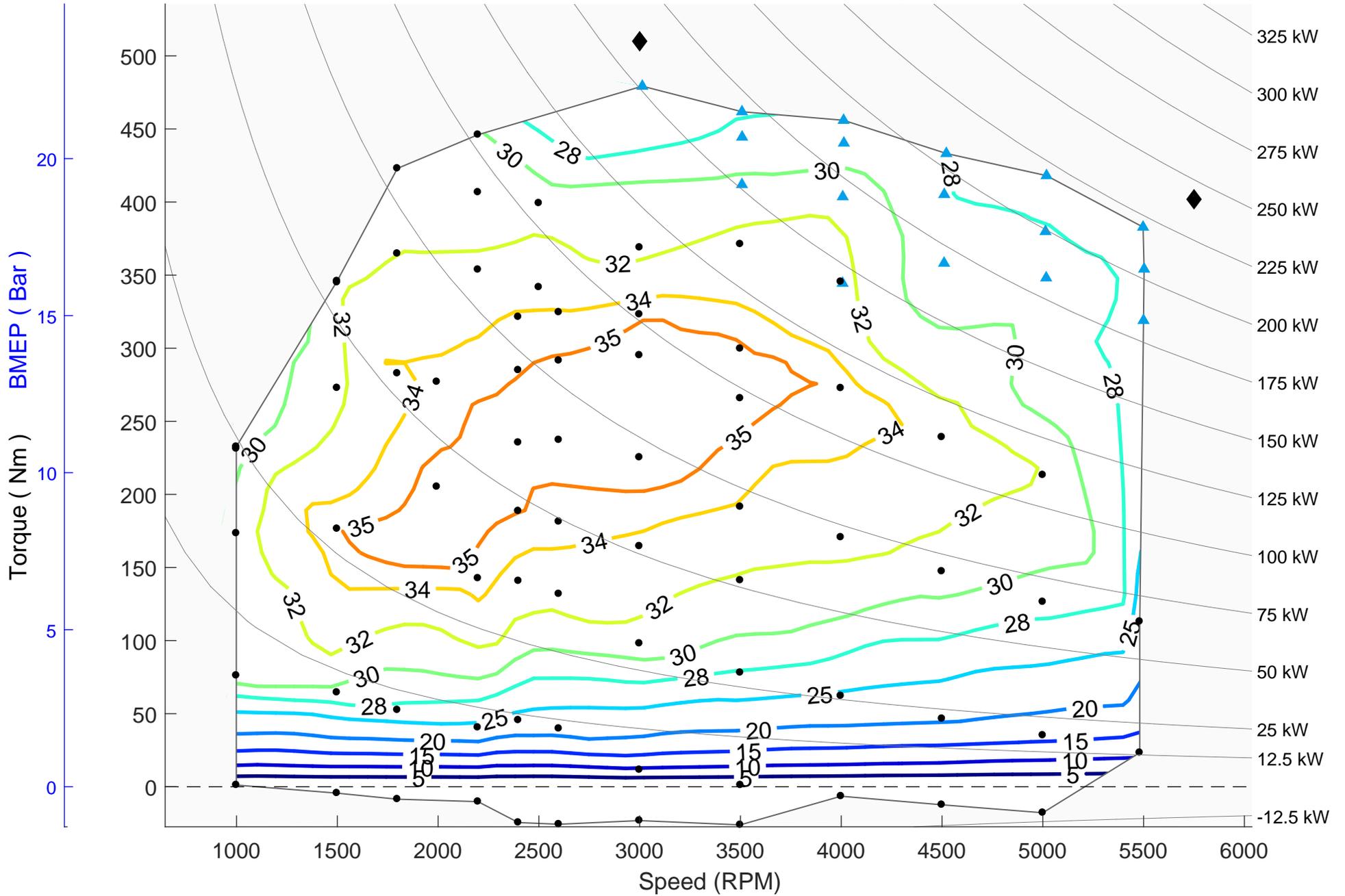
#### Steady State and High Load Final

#### BSFC (g/kW-hr) - Brake Specific Fuel Consumption



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

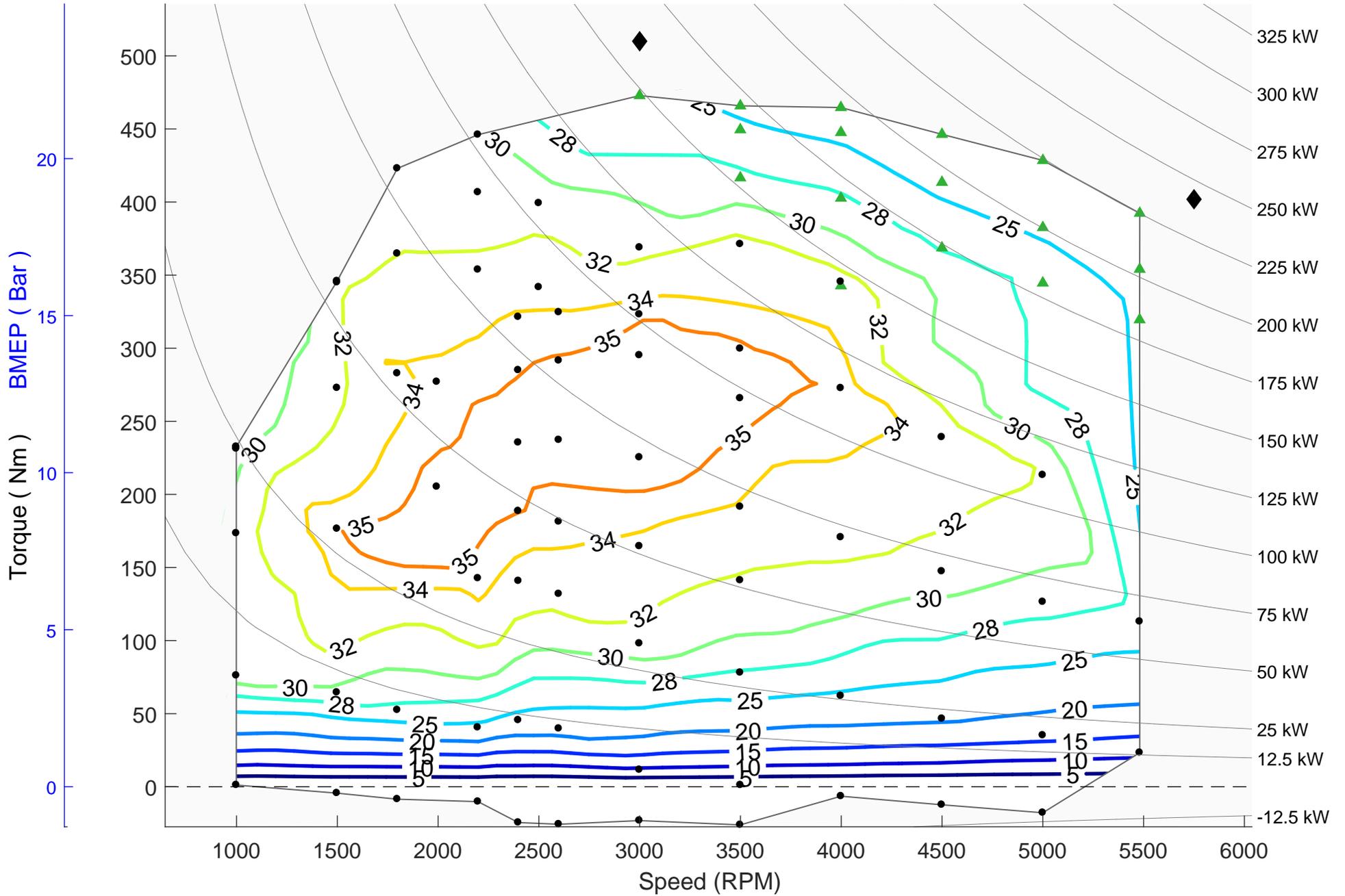
#### Steady State and High Load Initial BTE (%) - Brake Thermal Efficiency



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

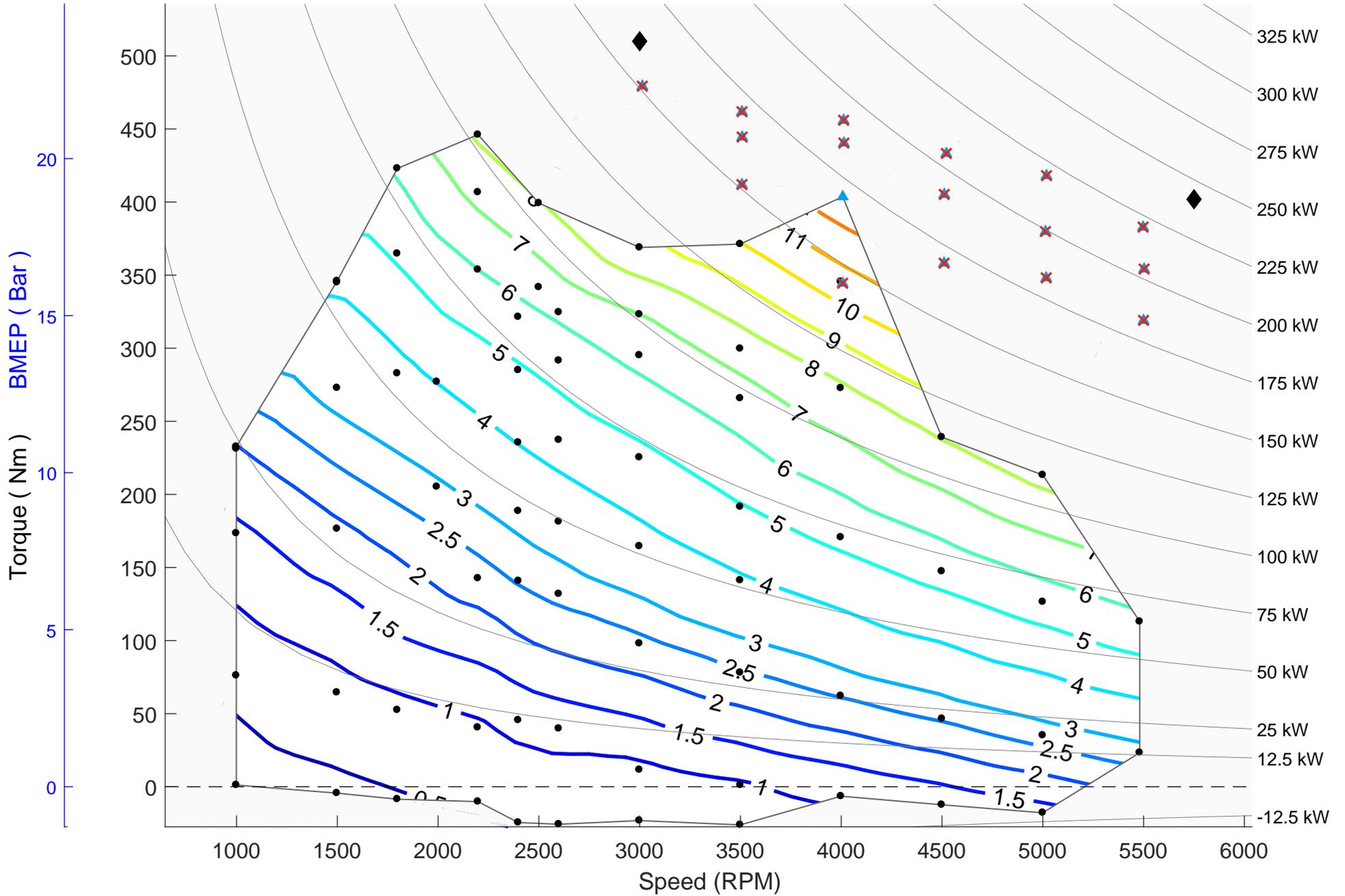
#### BTE (%) - Brake Thermal Efficiency



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

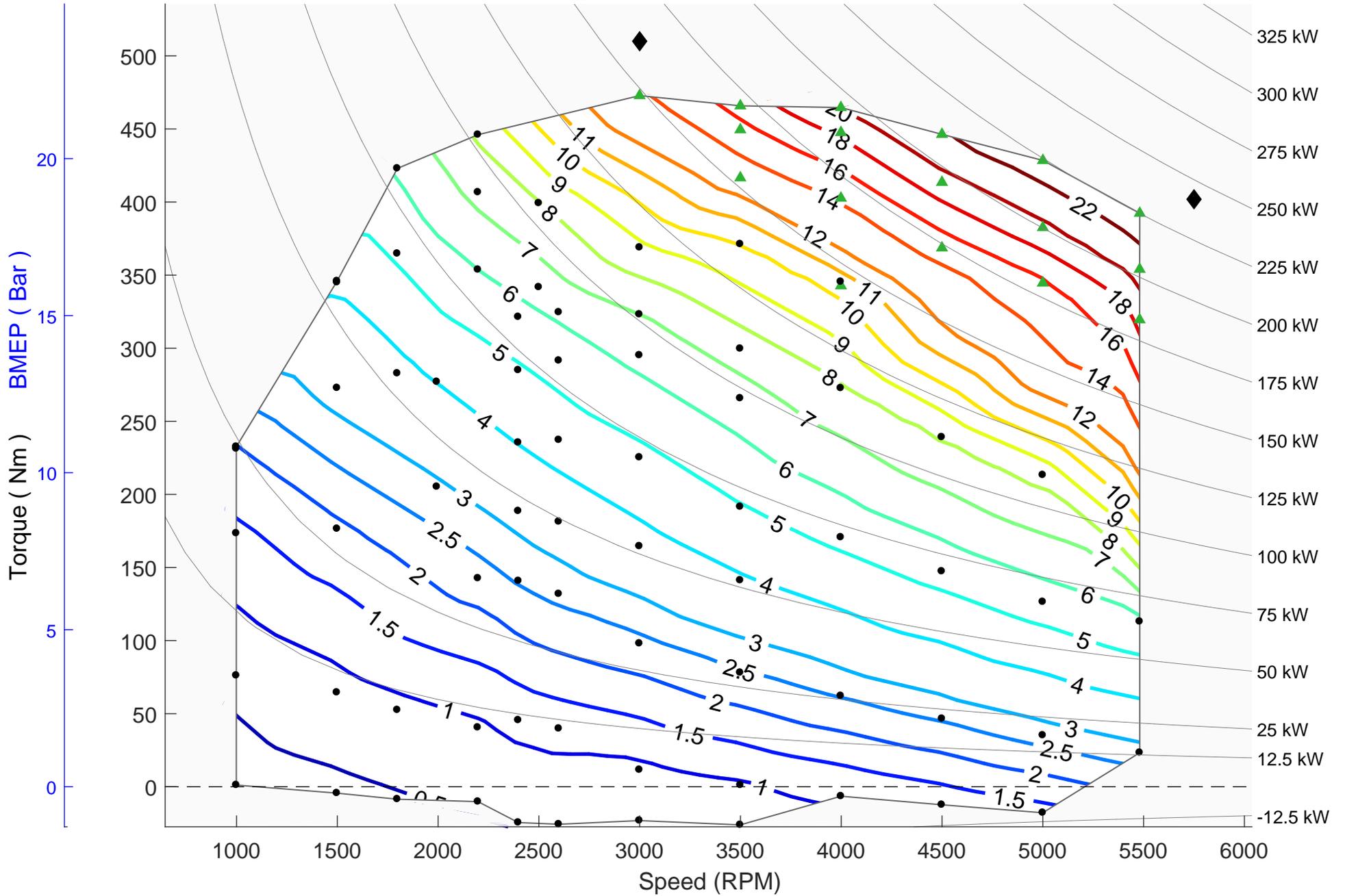
#### Fuel Meter Flow (g/s) - Fuel Flow Measured with Flow Meter



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

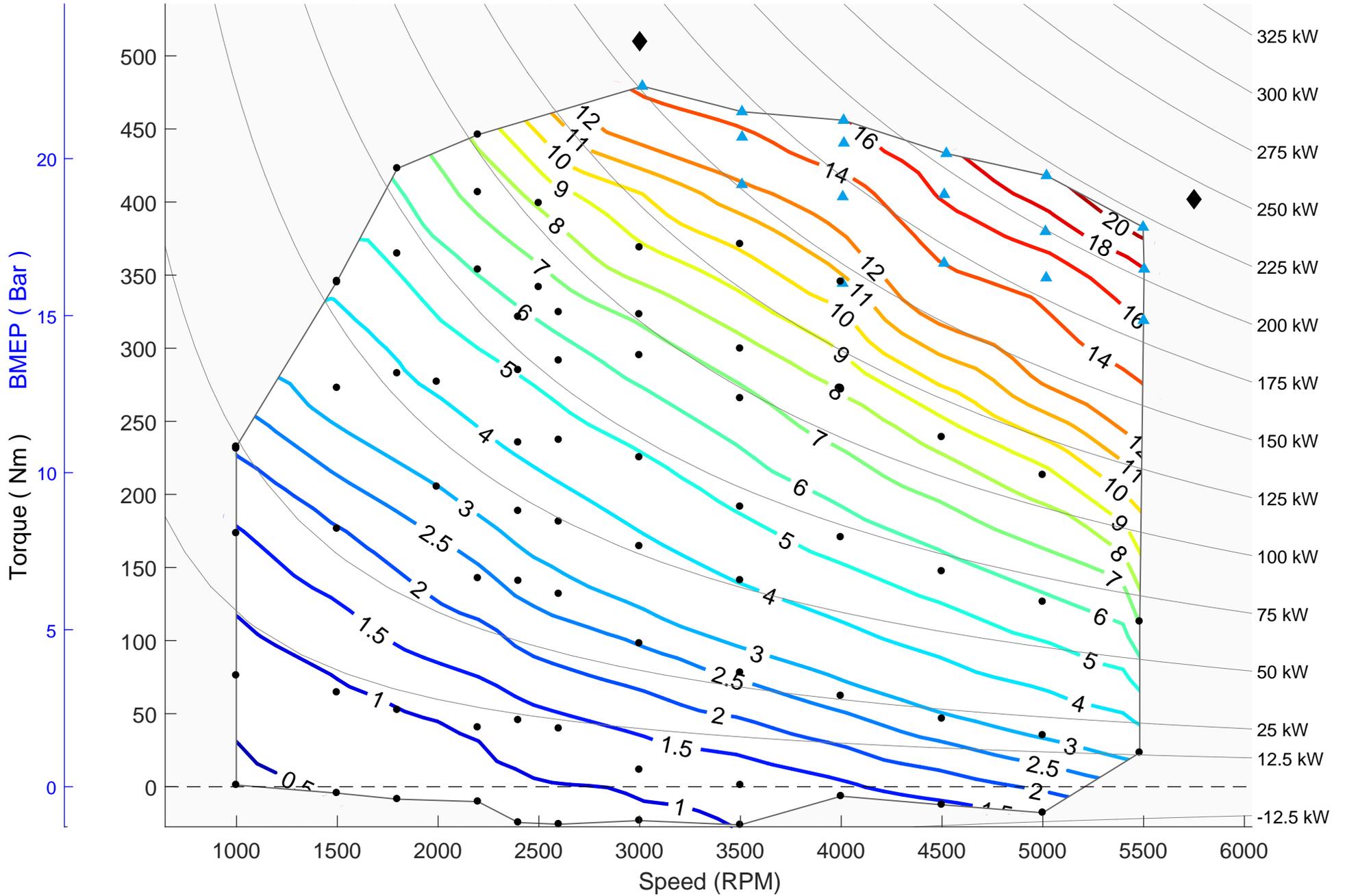
#### Fuel Meter Flow (g/s) - Fuel Flow Measured with Flow Meter



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#### Steady State and High Load Initial

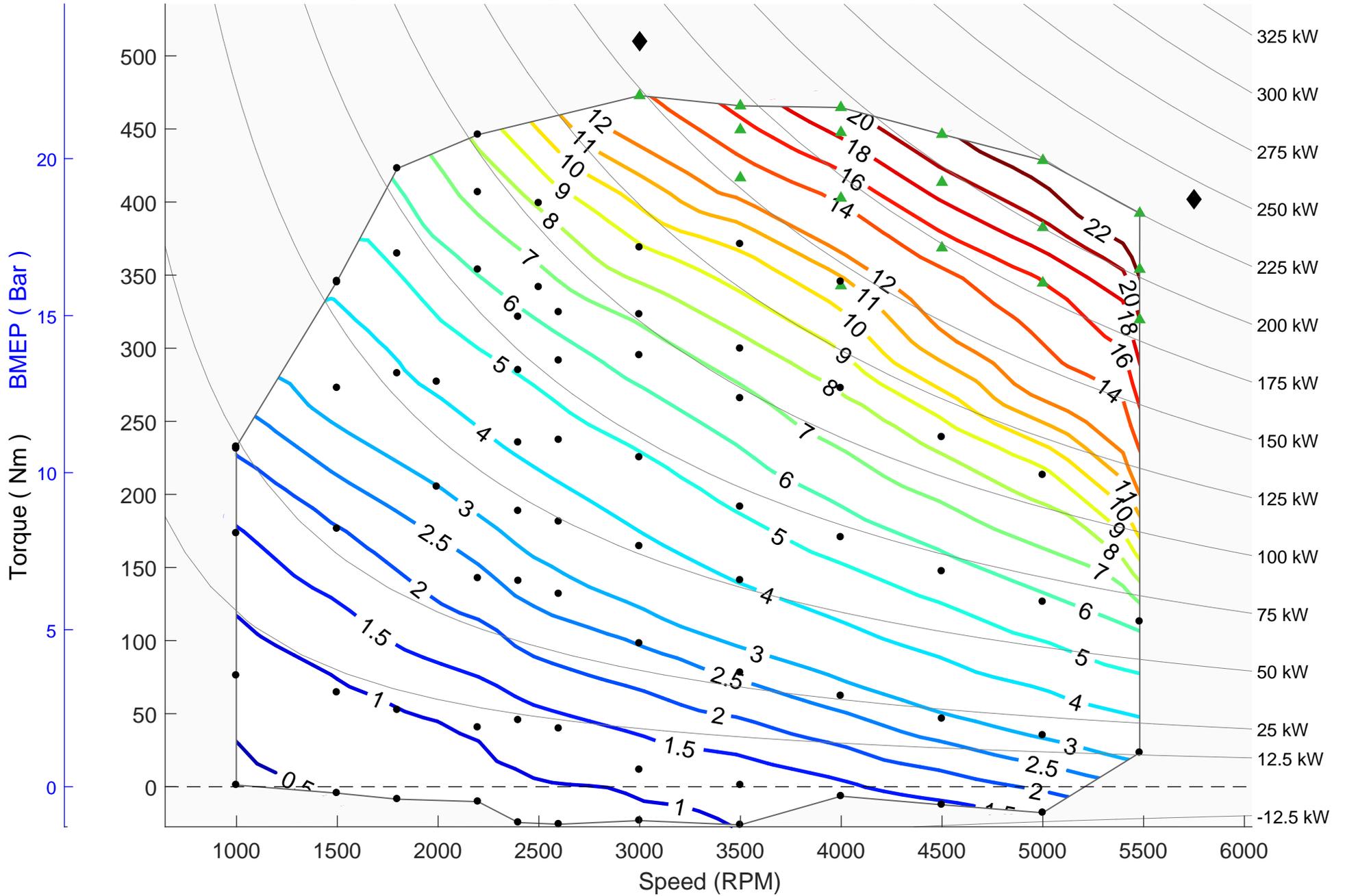
#### Injector Fuel Flow (g/s) - Fuel Flow Estimate from Injector Calibration



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

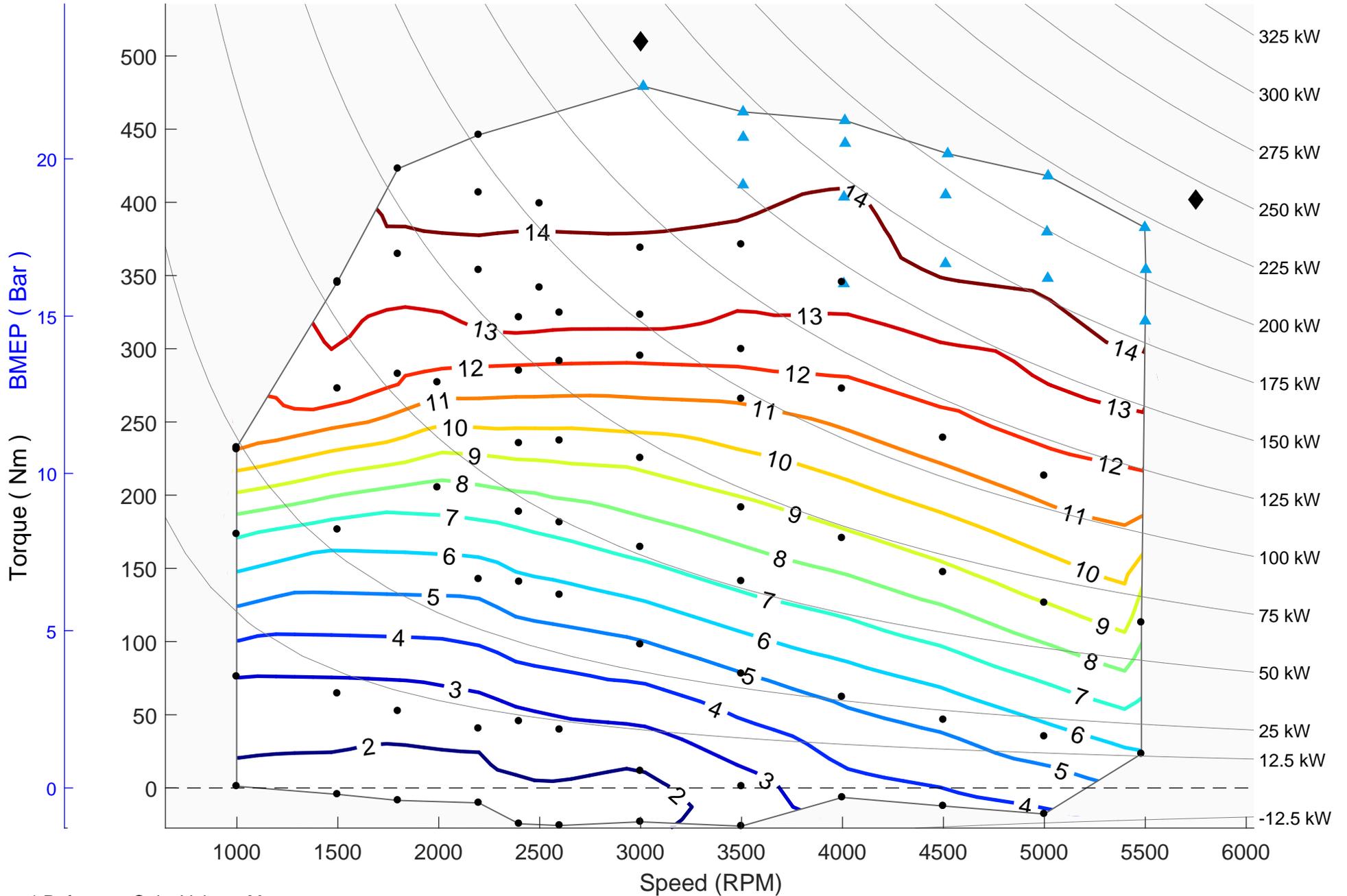
#### Injector Fuel Flow (g/s) - Fuel Flow Estimate from Injector Calibration



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

#### Fuel Rail Press (MPaG) - Fuel Rail Pressure\*

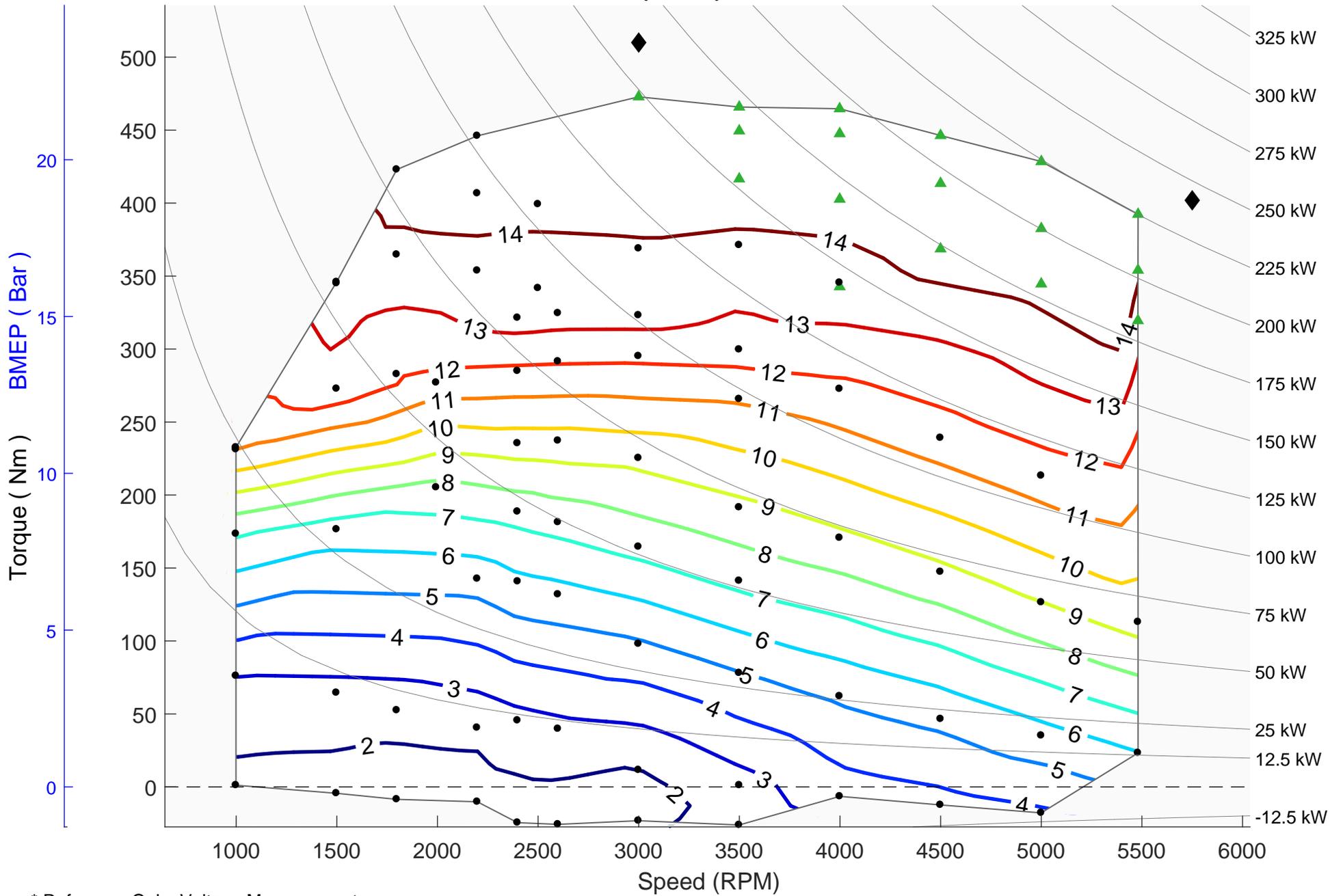


\* Reference Only- Voltage Measurement

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

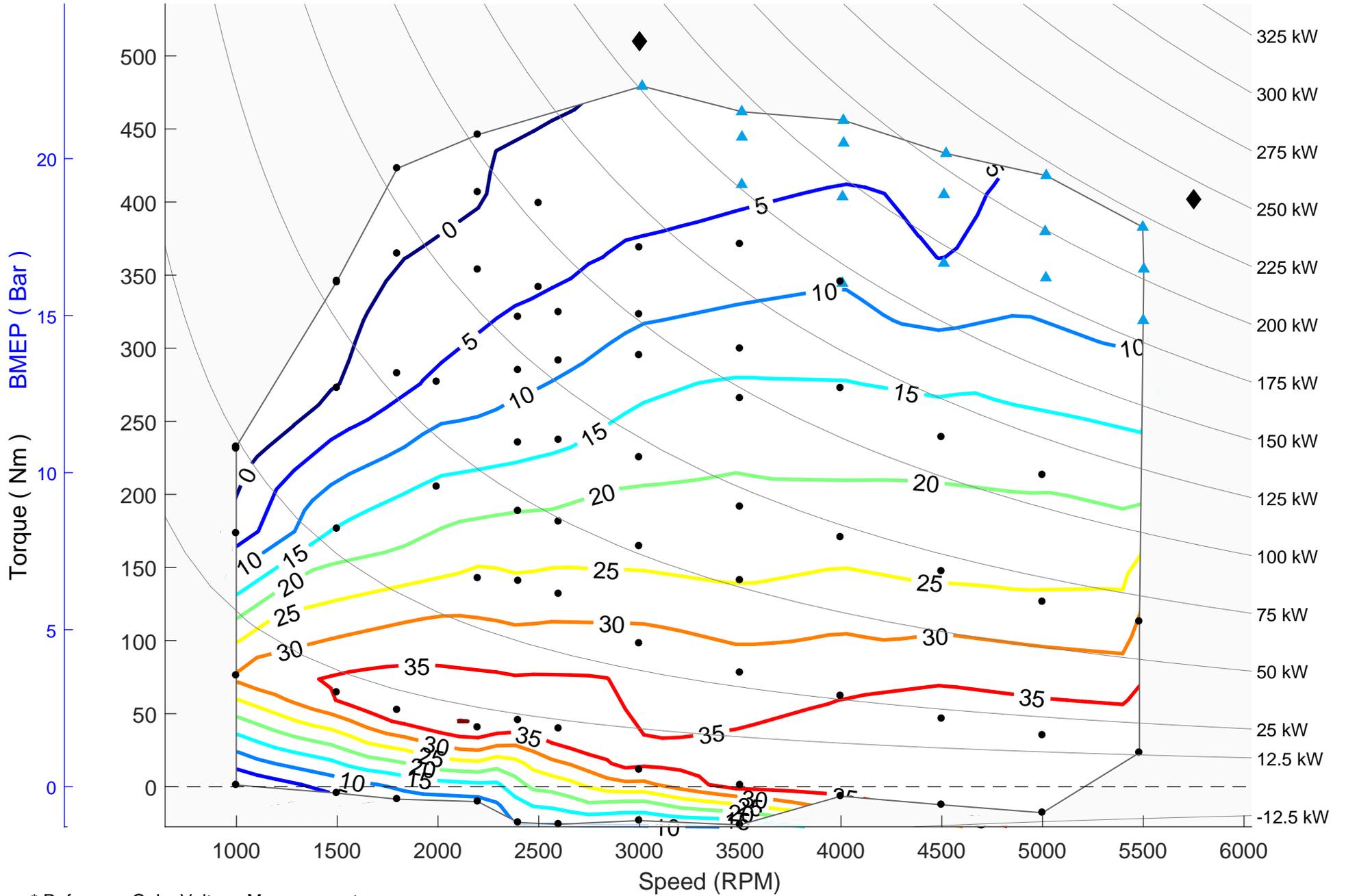
#### Fuel Rail Press (MPaG) - Fuel Rail Pressure\*



\* Reference Only- Voltage Measurement

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial Spark Timing (CAD BTDC) - Average Spark Timing Across all Cylinders\*

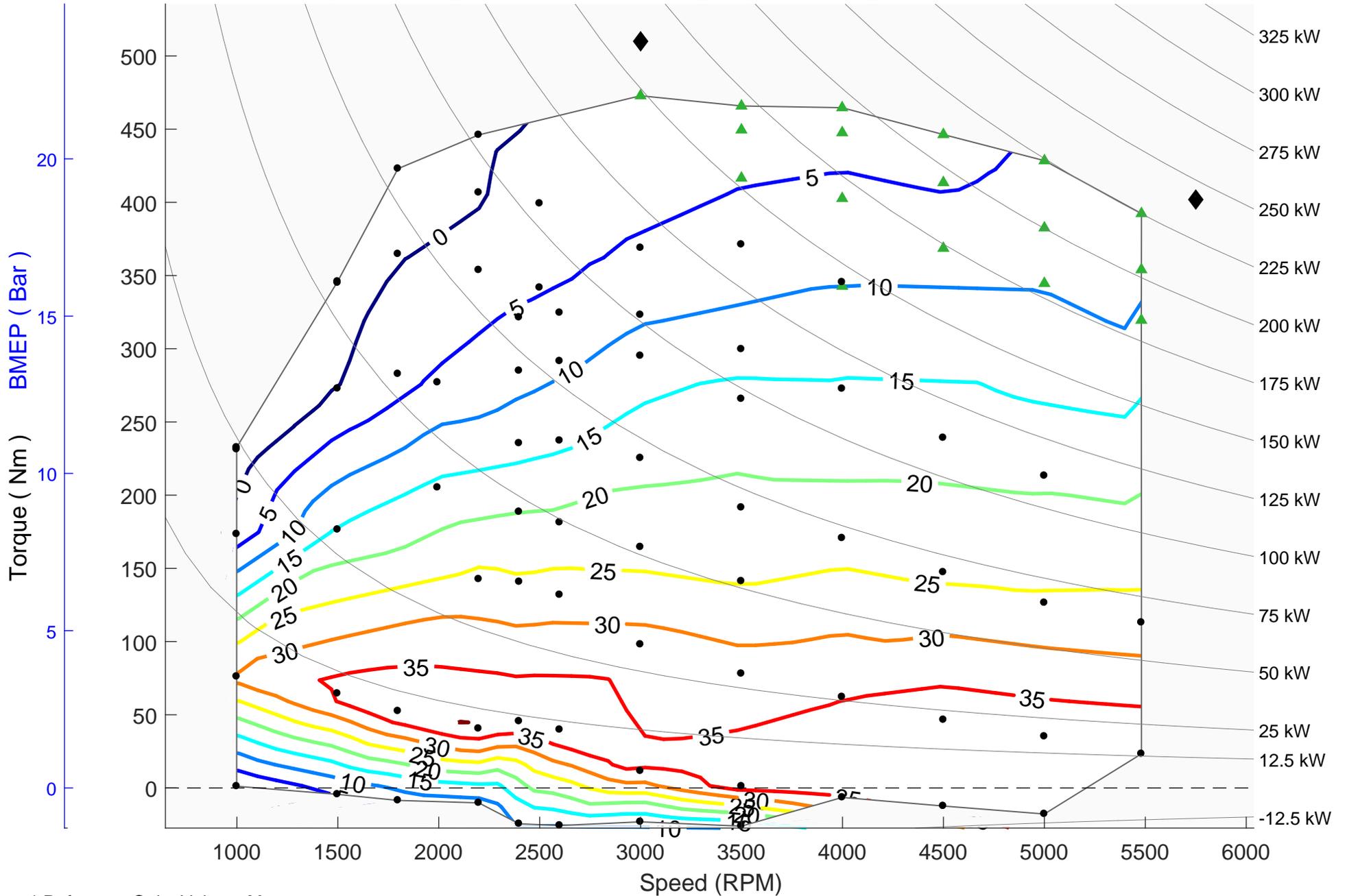


\* Reference Only- Voltage Measurement

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

#### Spark Timing (CAD BTDC) - Average Spark Timing Across all Cylinders\*

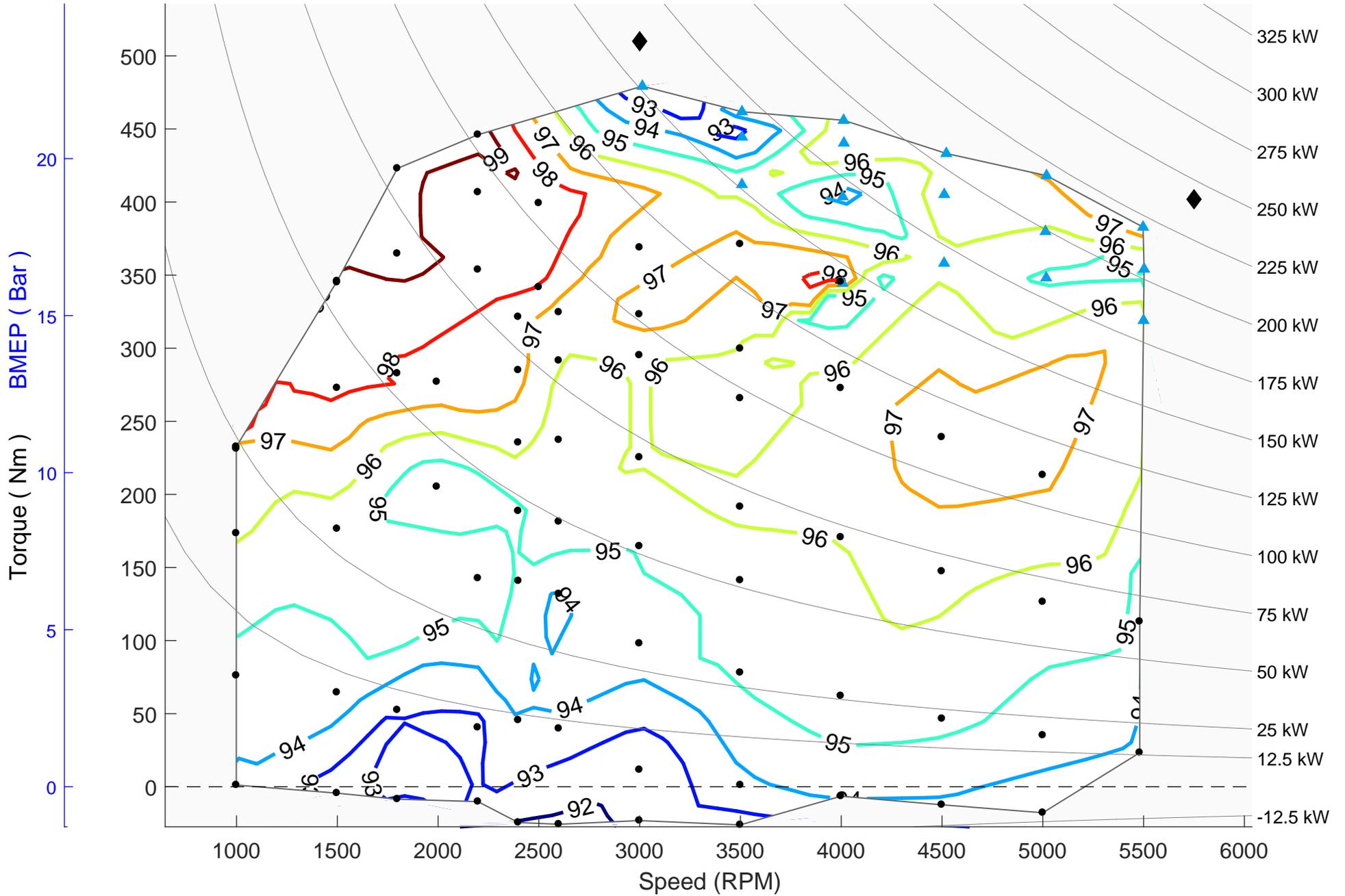


\* Reference Only- Voltage Measurement

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

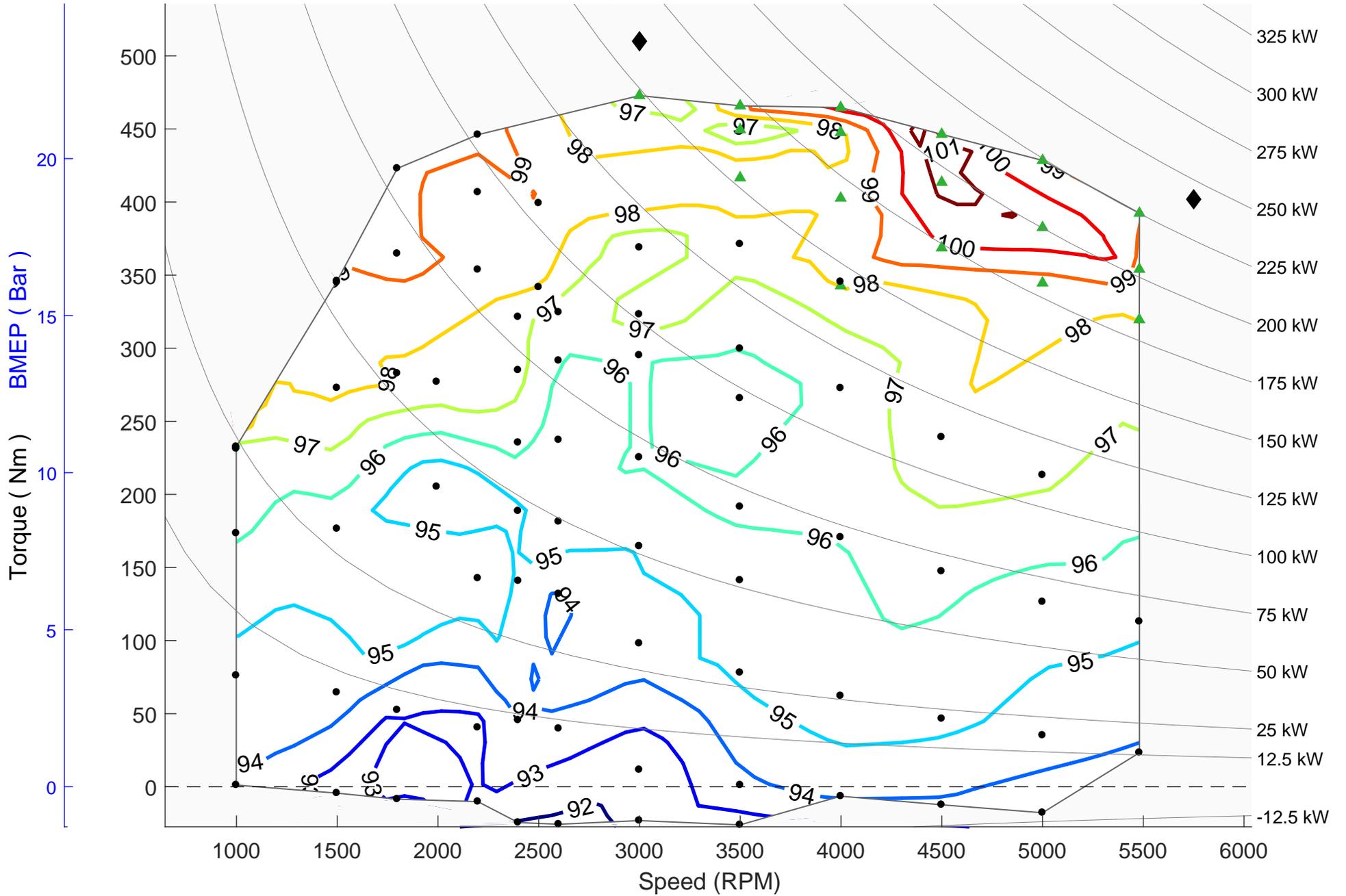
#### Coolant Temp (degC) - Coolant Temperature



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

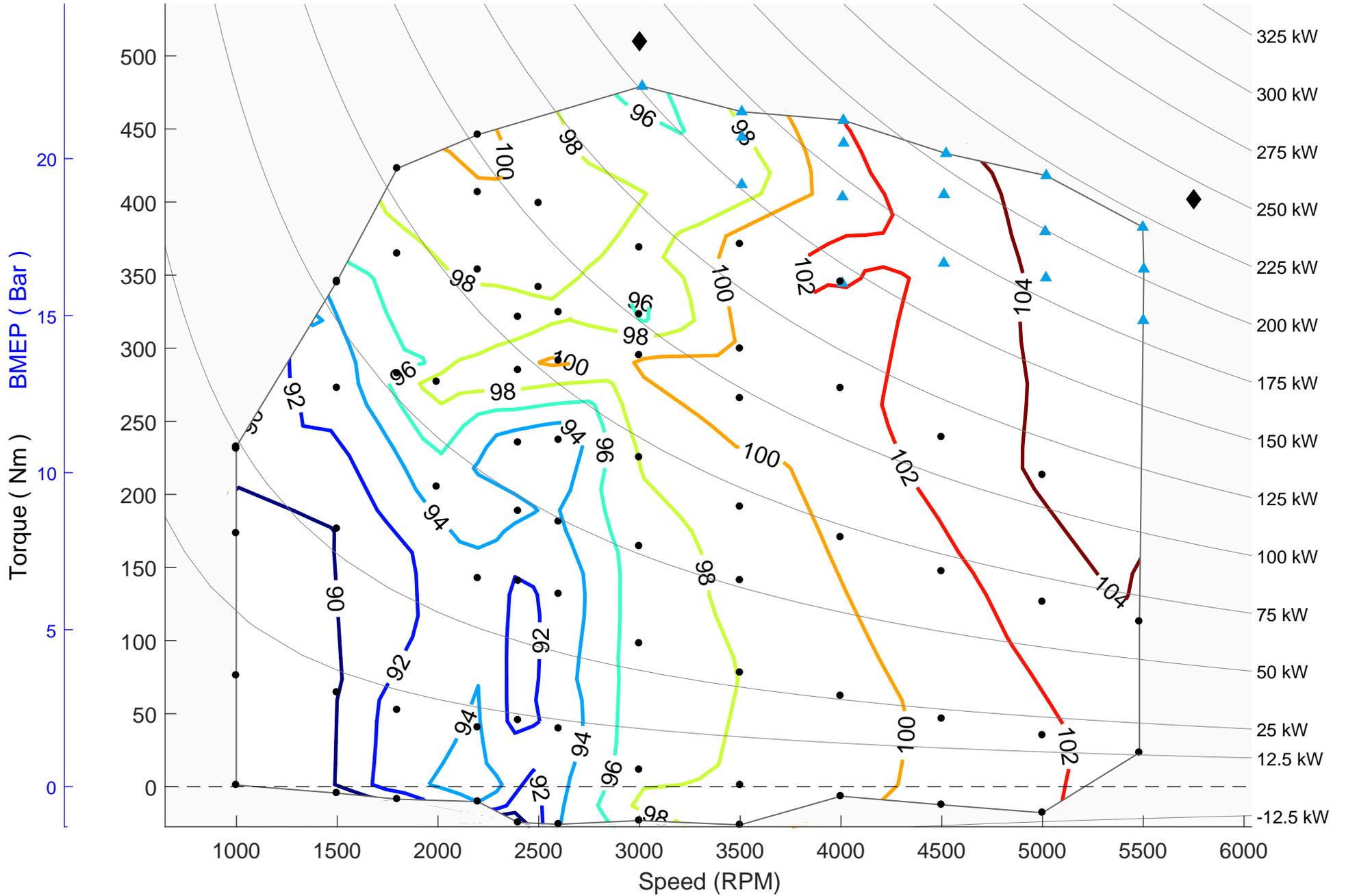
#### Coolant Temp (degC) - Coolant Temperature



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#### Steady State and High Load Initial

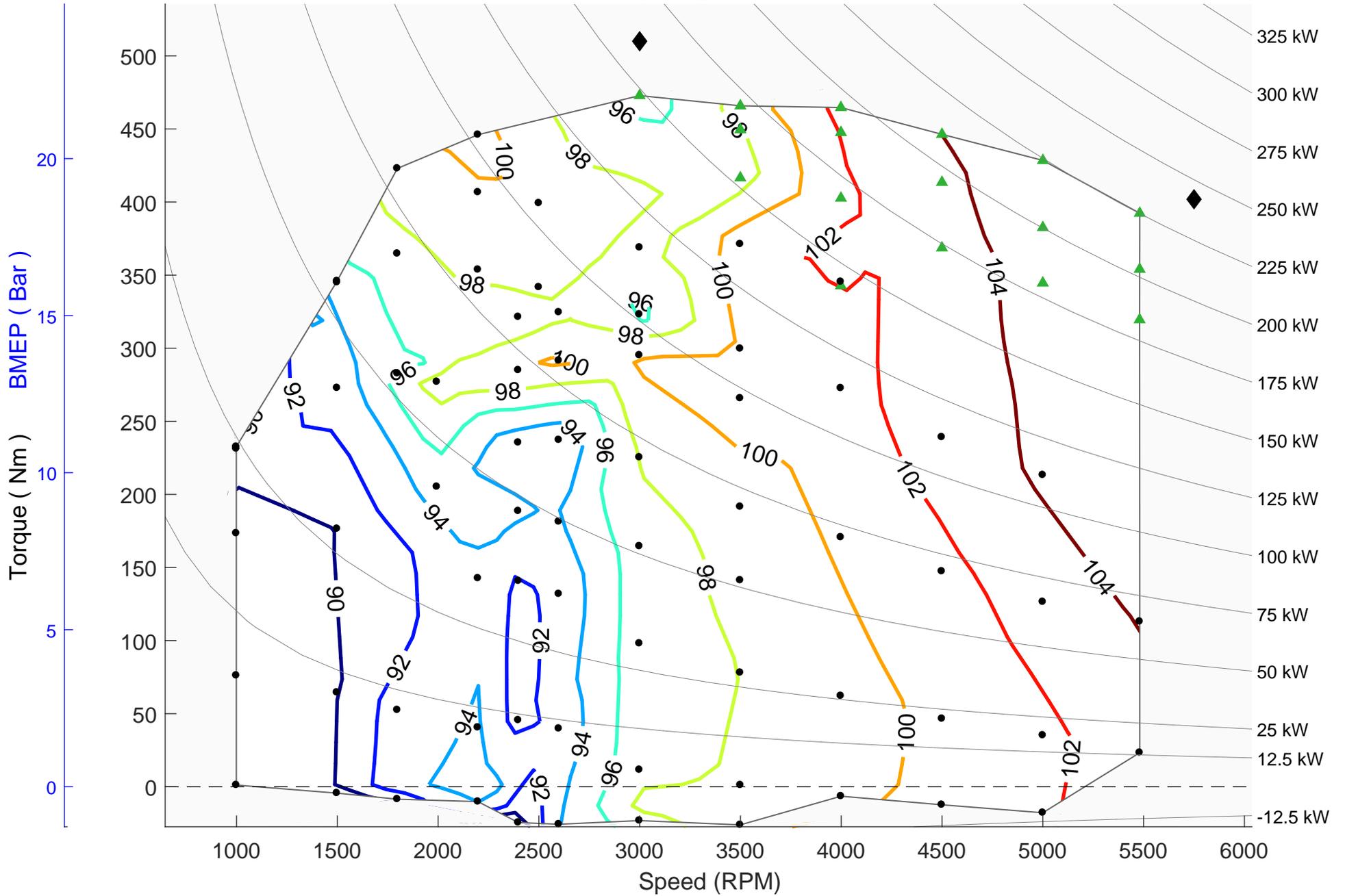
#### Oil Sump Temp (degC) - Oil Temperature



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

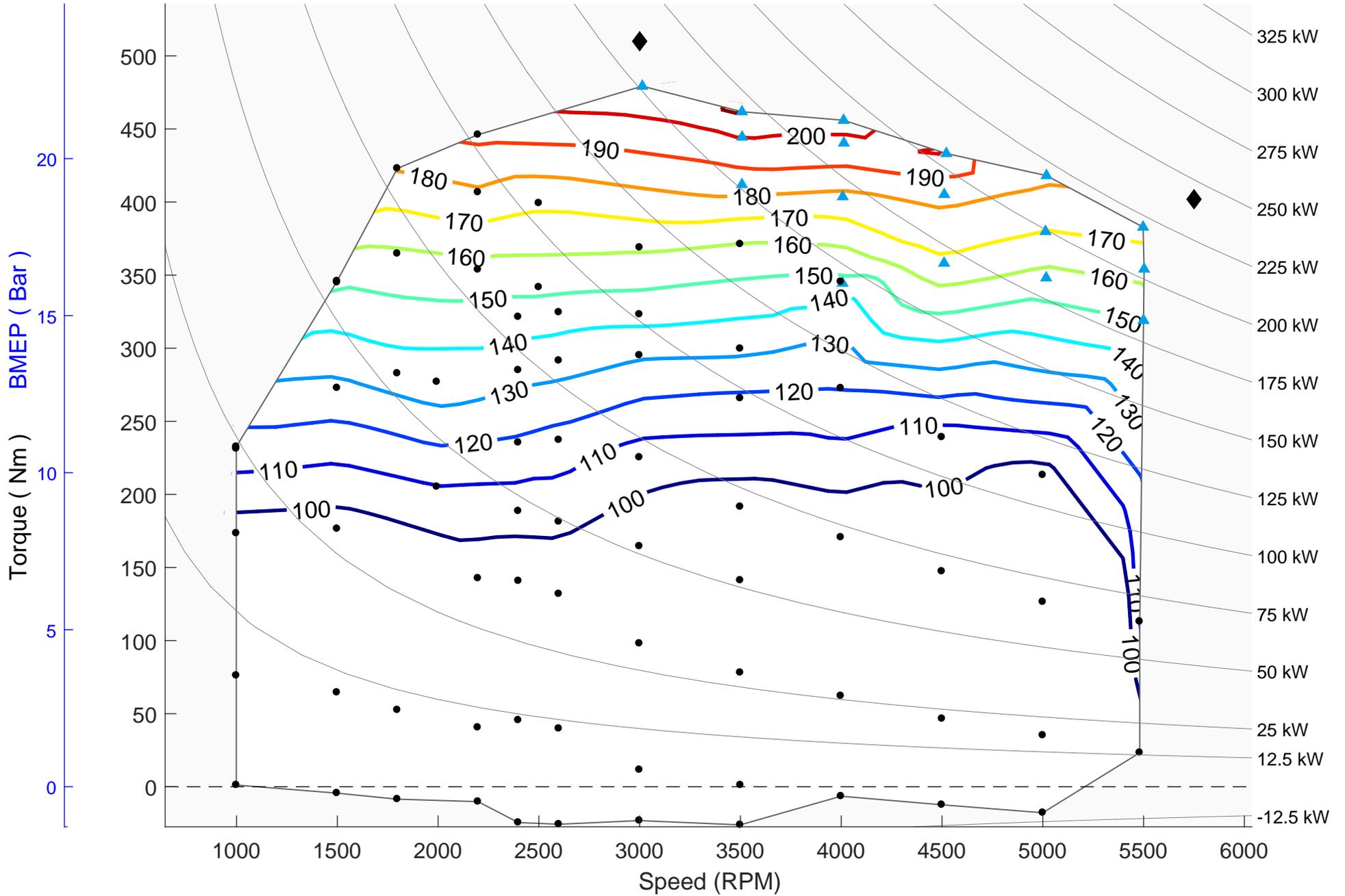
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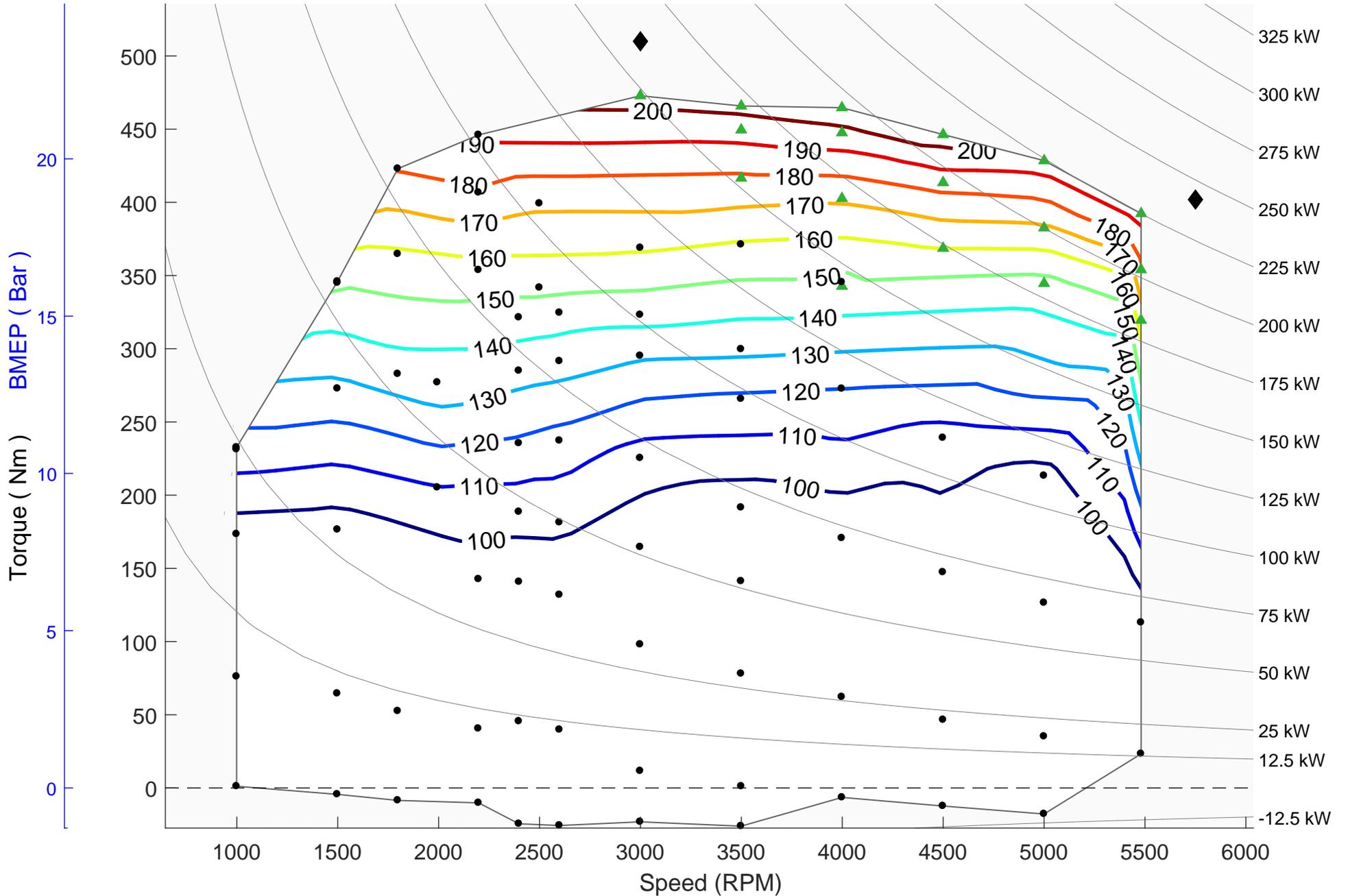
#### Intake Manifold Press (kPaA) - Pressure Measured in the Intake Manifold



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

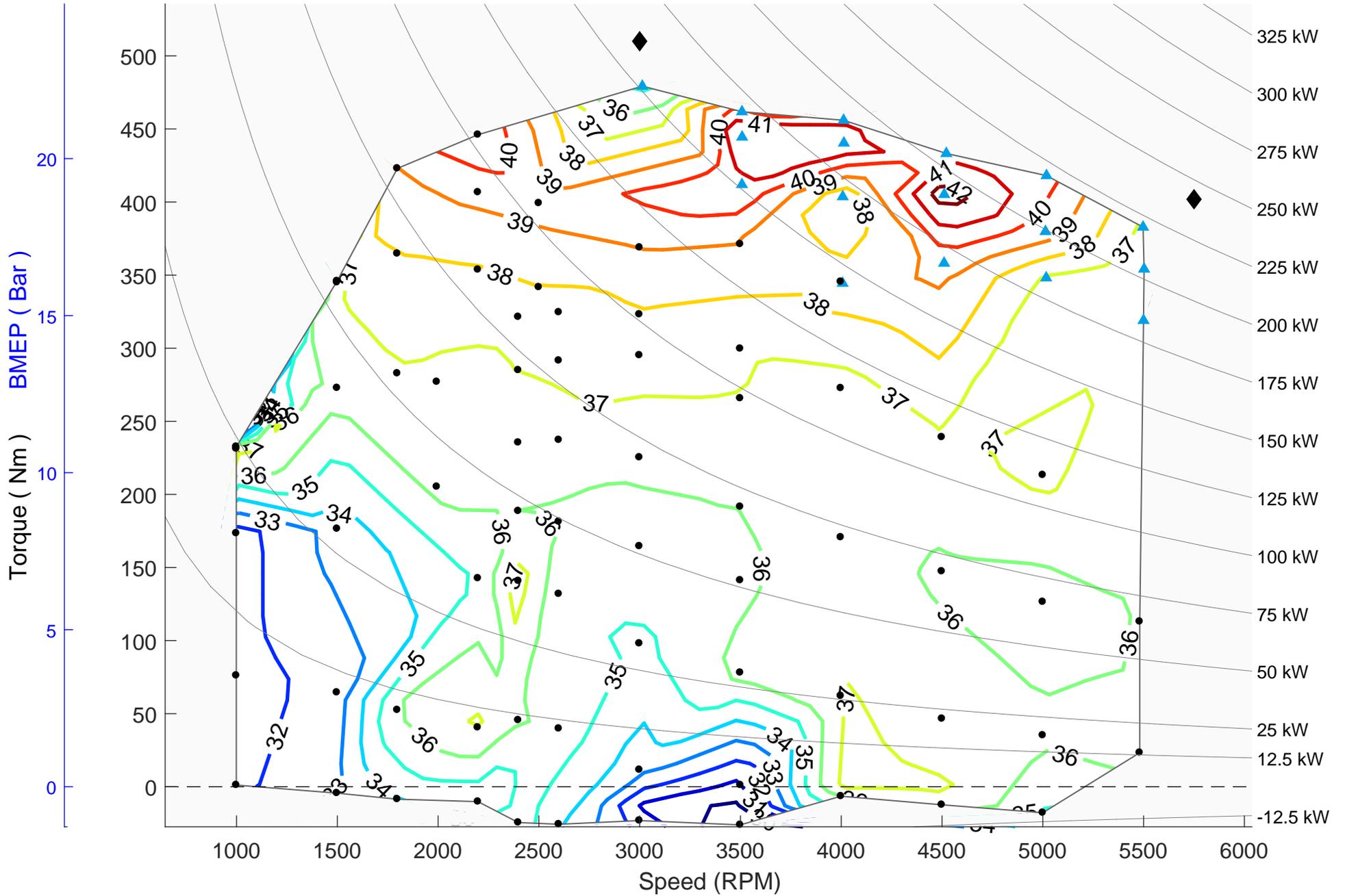
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#### Steady State and High Load Initial

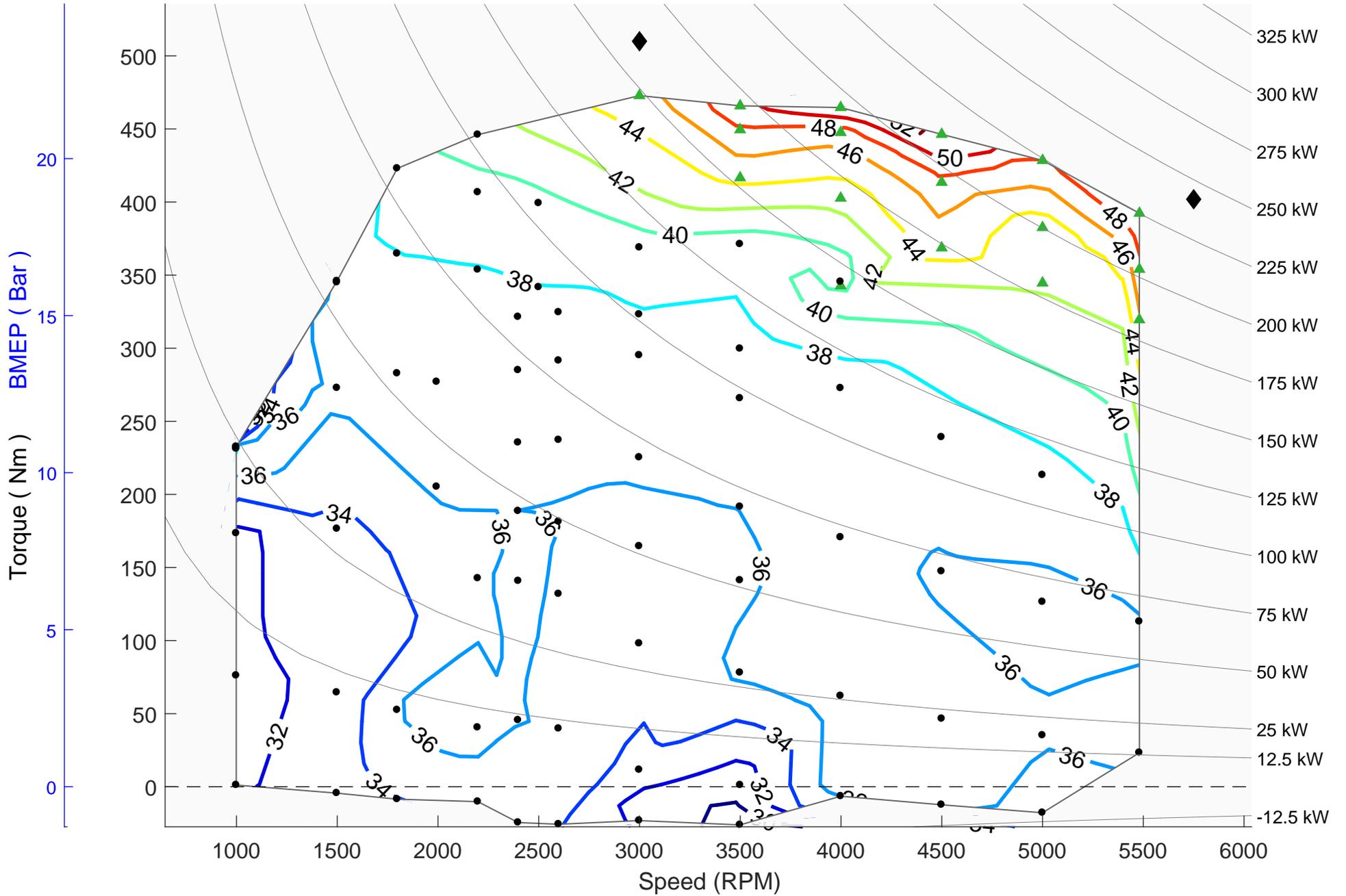
#### Intake Manifold Temp (degC) - Temperature Measured in the Intake Manifold



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

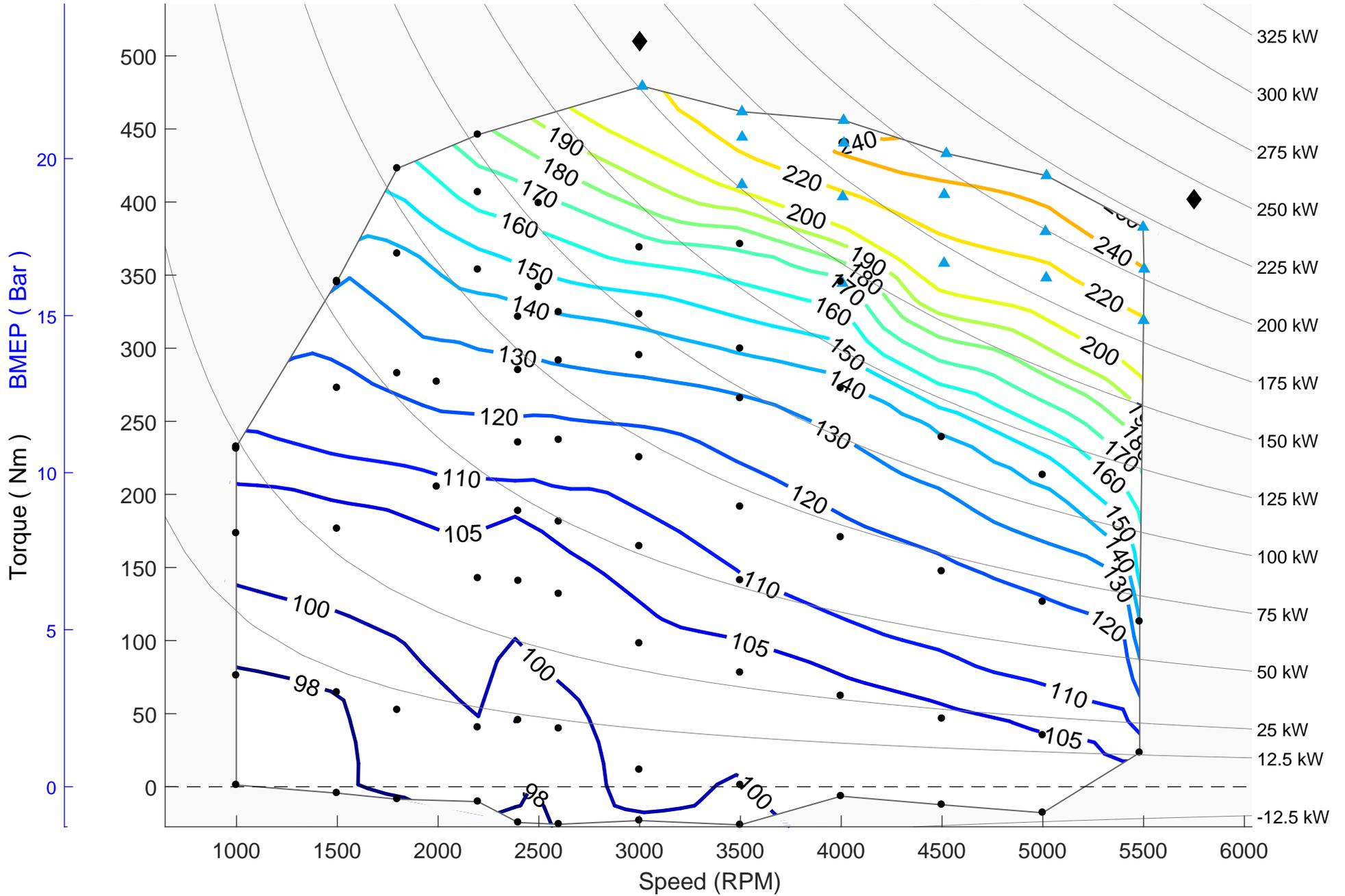
#### Intake Manifold Temp (degC) - Temperature Measured in the Intake Manifold



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

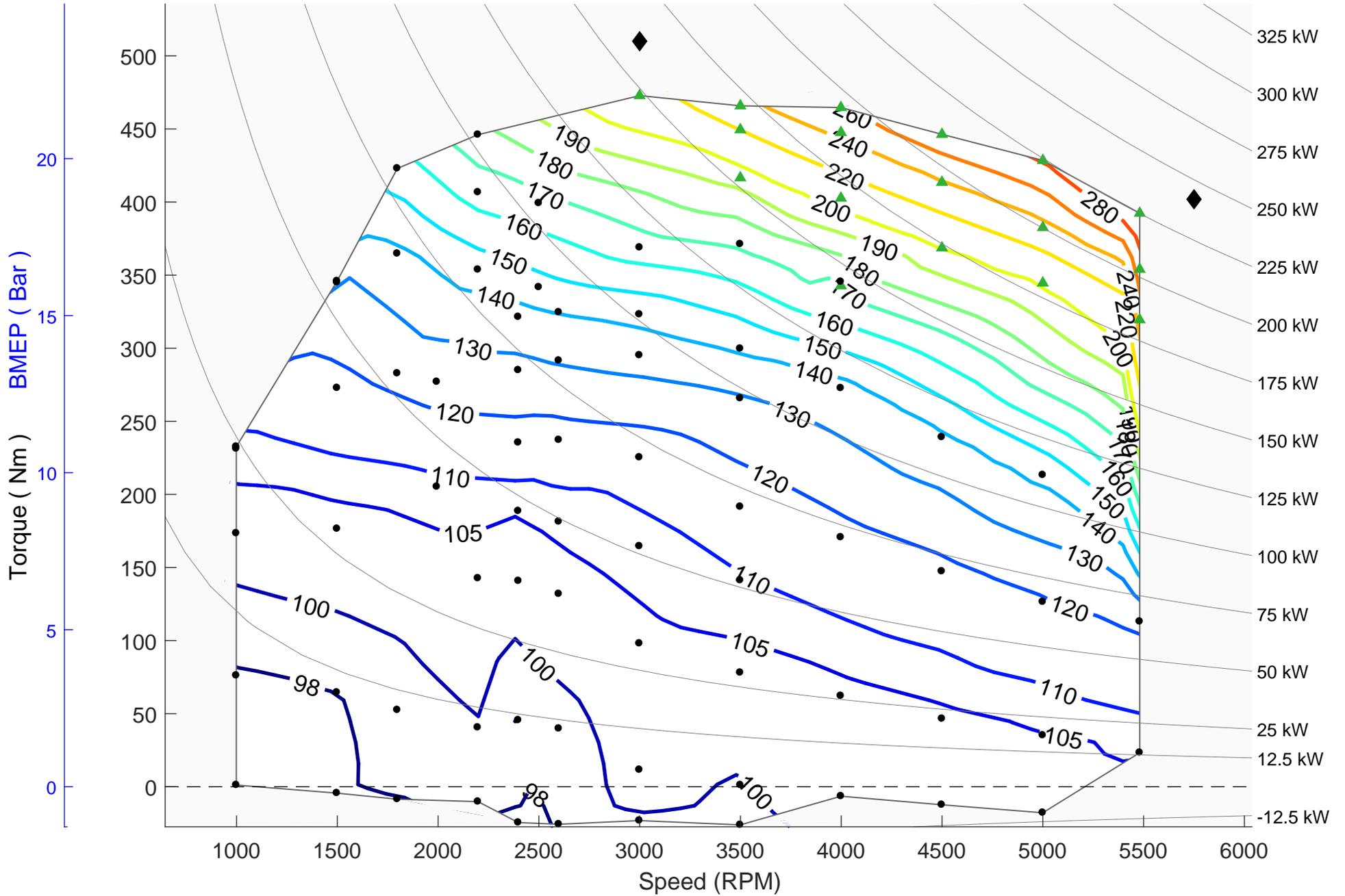
#### Turbine Inlet Press (kPaA) - Pressure Measured at Turbocharger Turbine Inlet



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

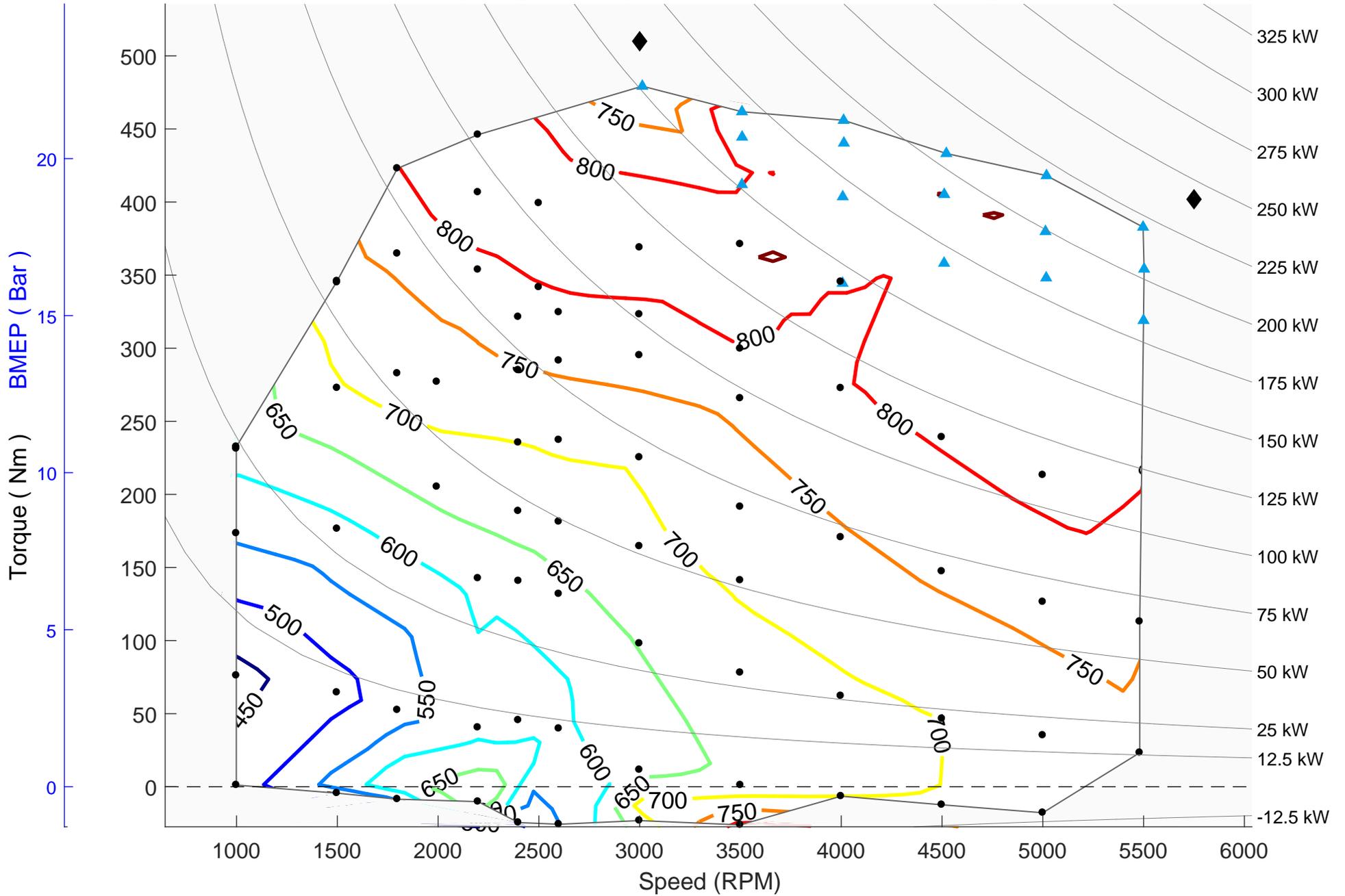
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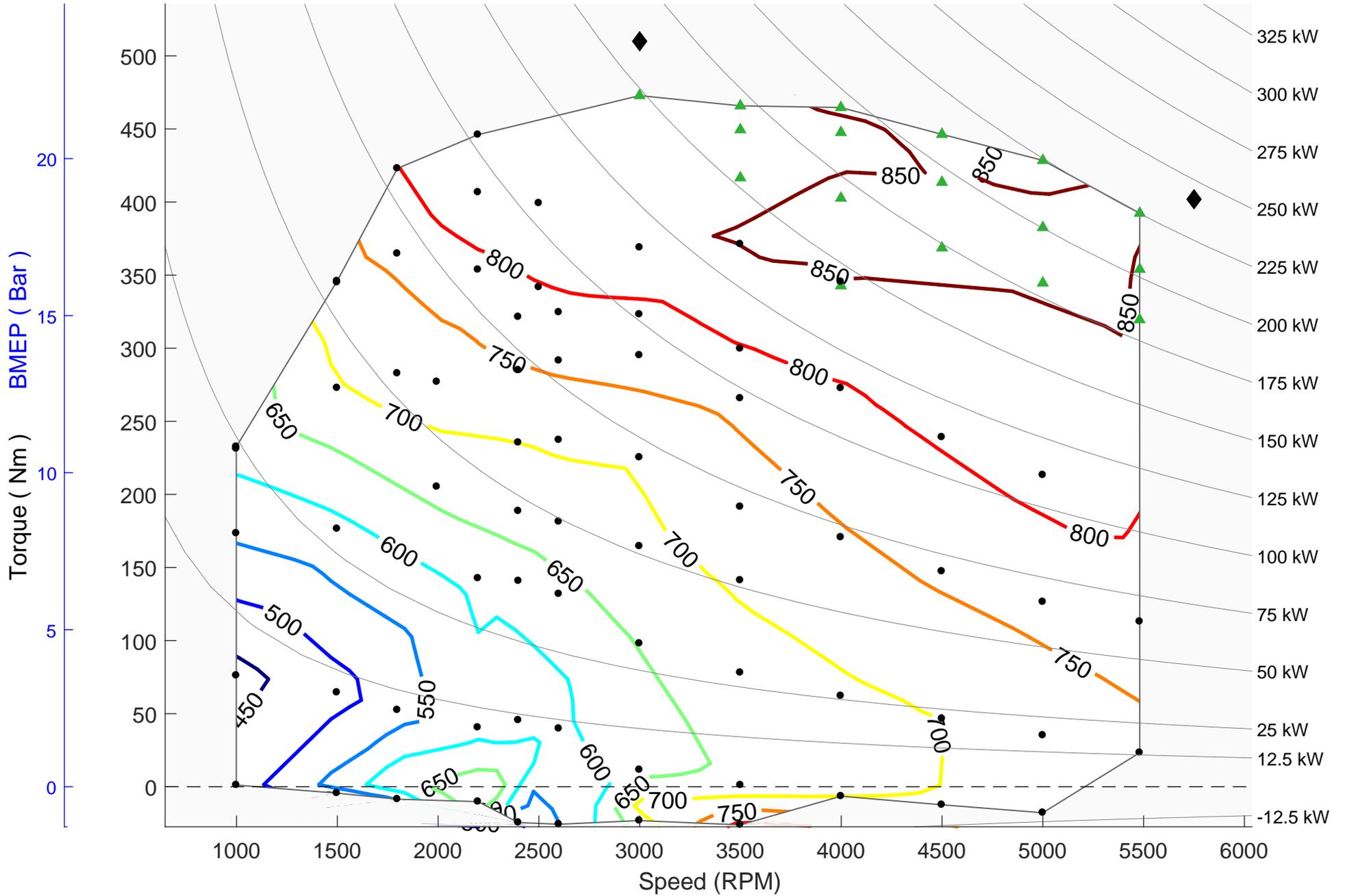
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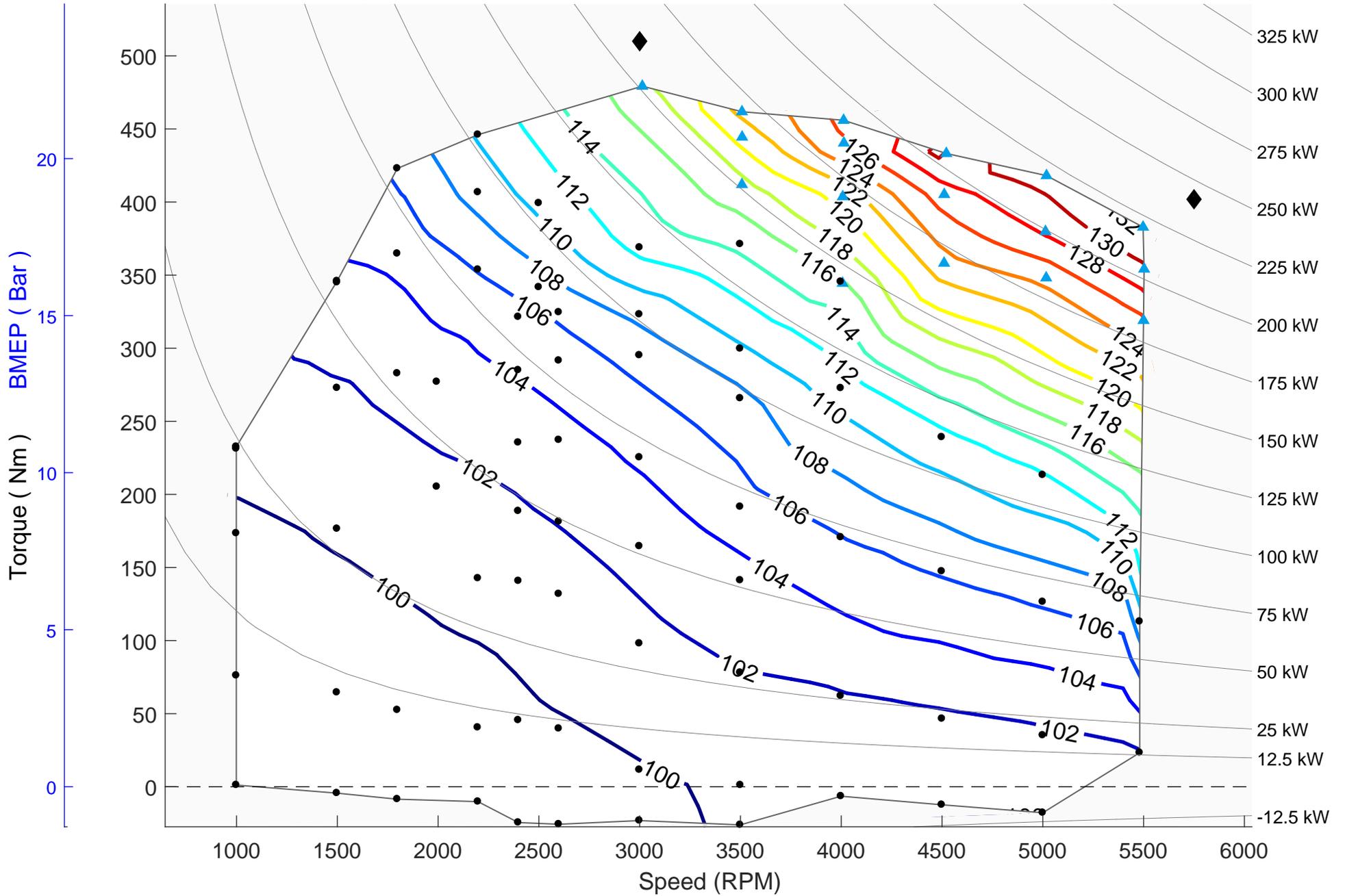
#### Turbine Inlet Temp (degC) - Temperature Measured at Turbocharger Turbine Inlet



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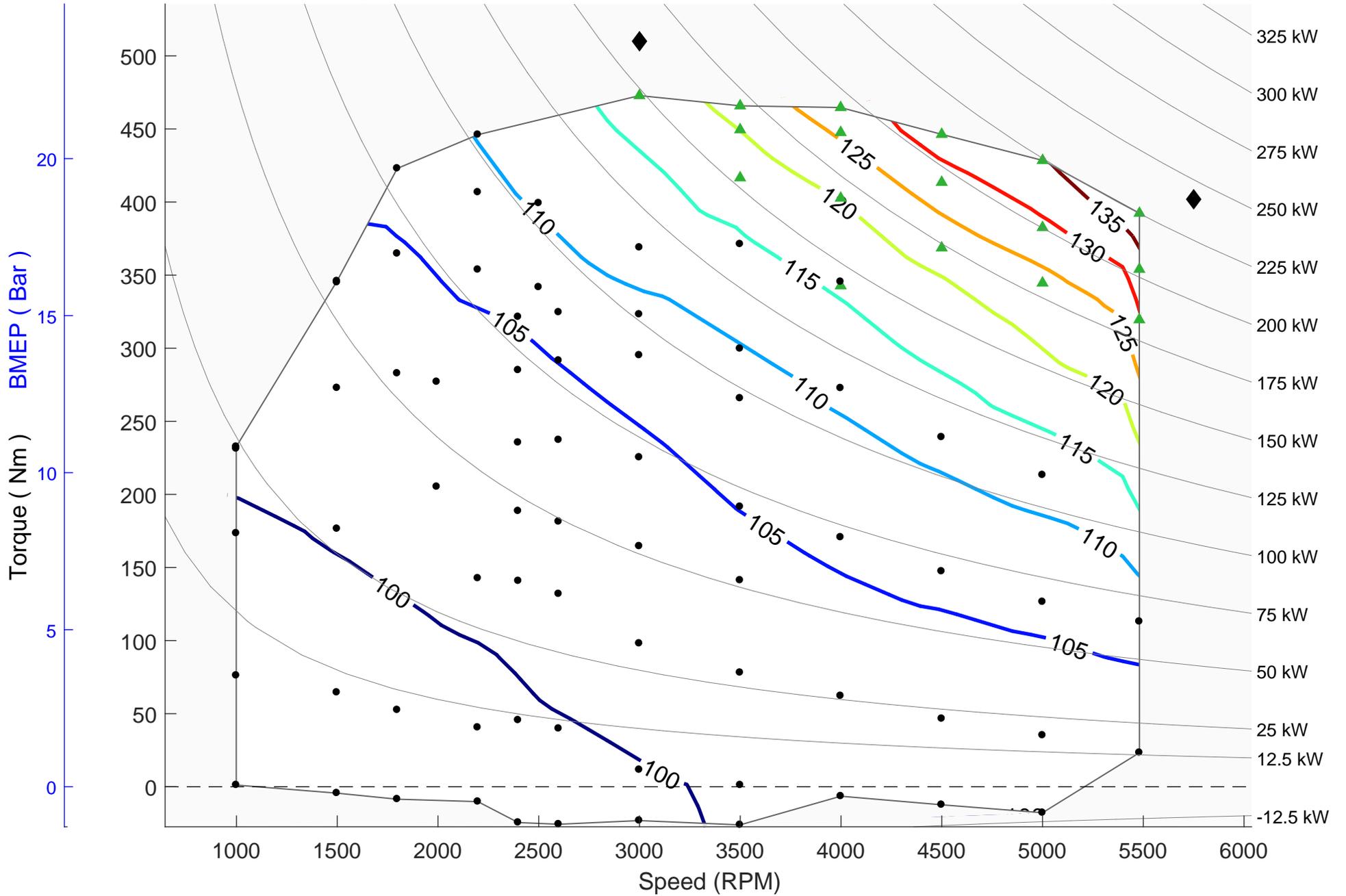
#### Catalyst Inlet Press (kPaA) - Pressure Measured at the Inlet to the Catalyst



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

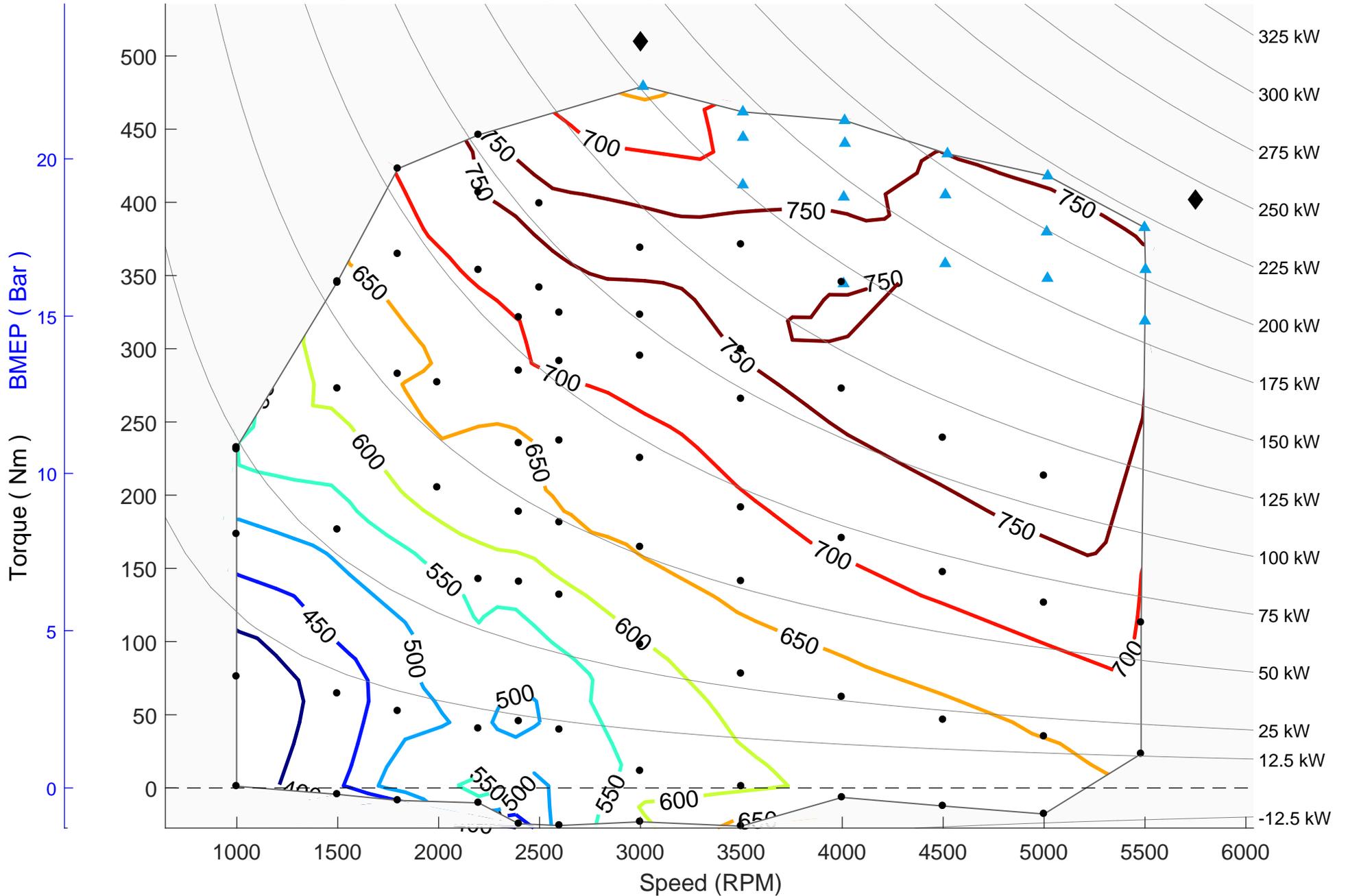
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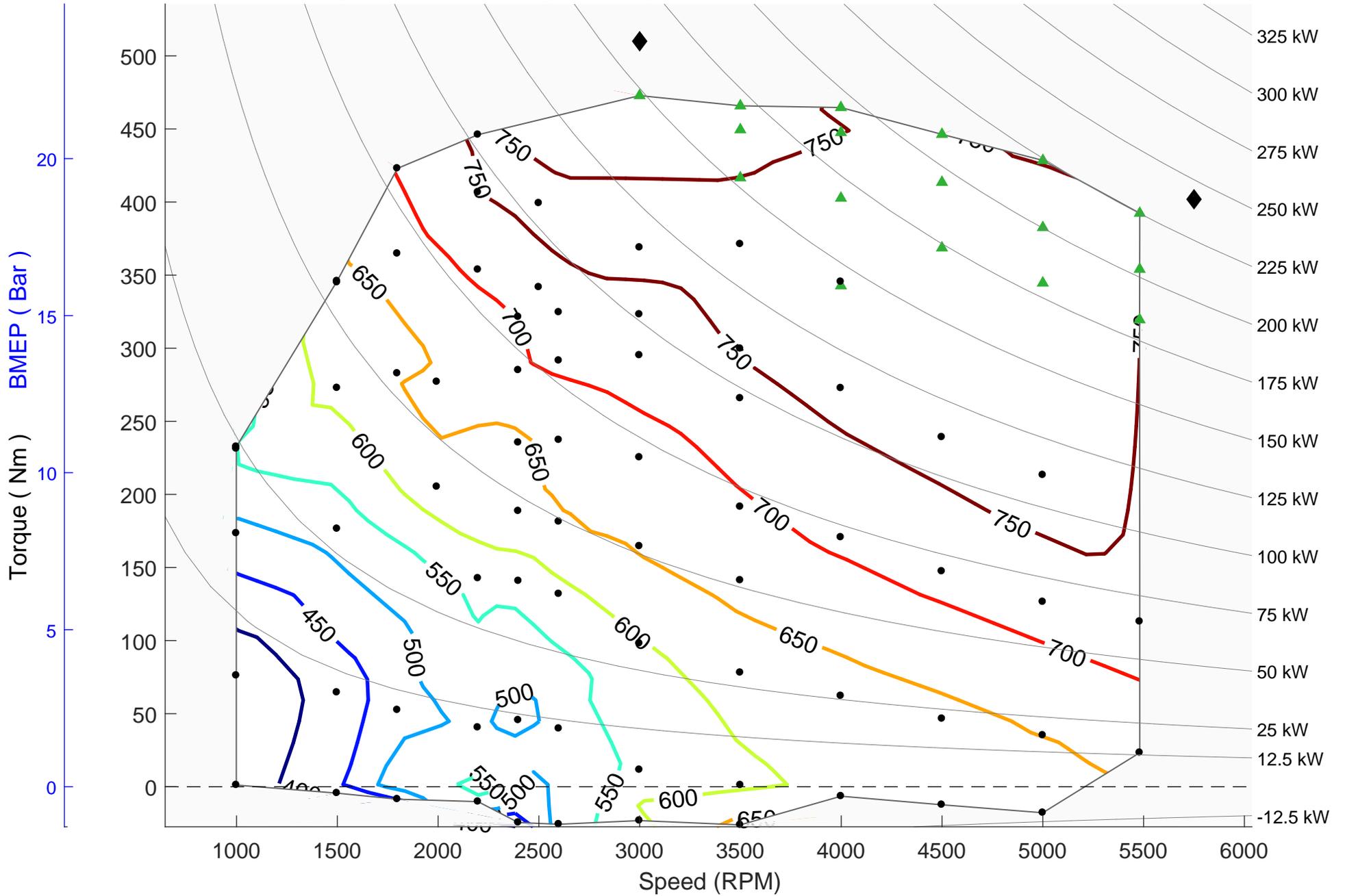
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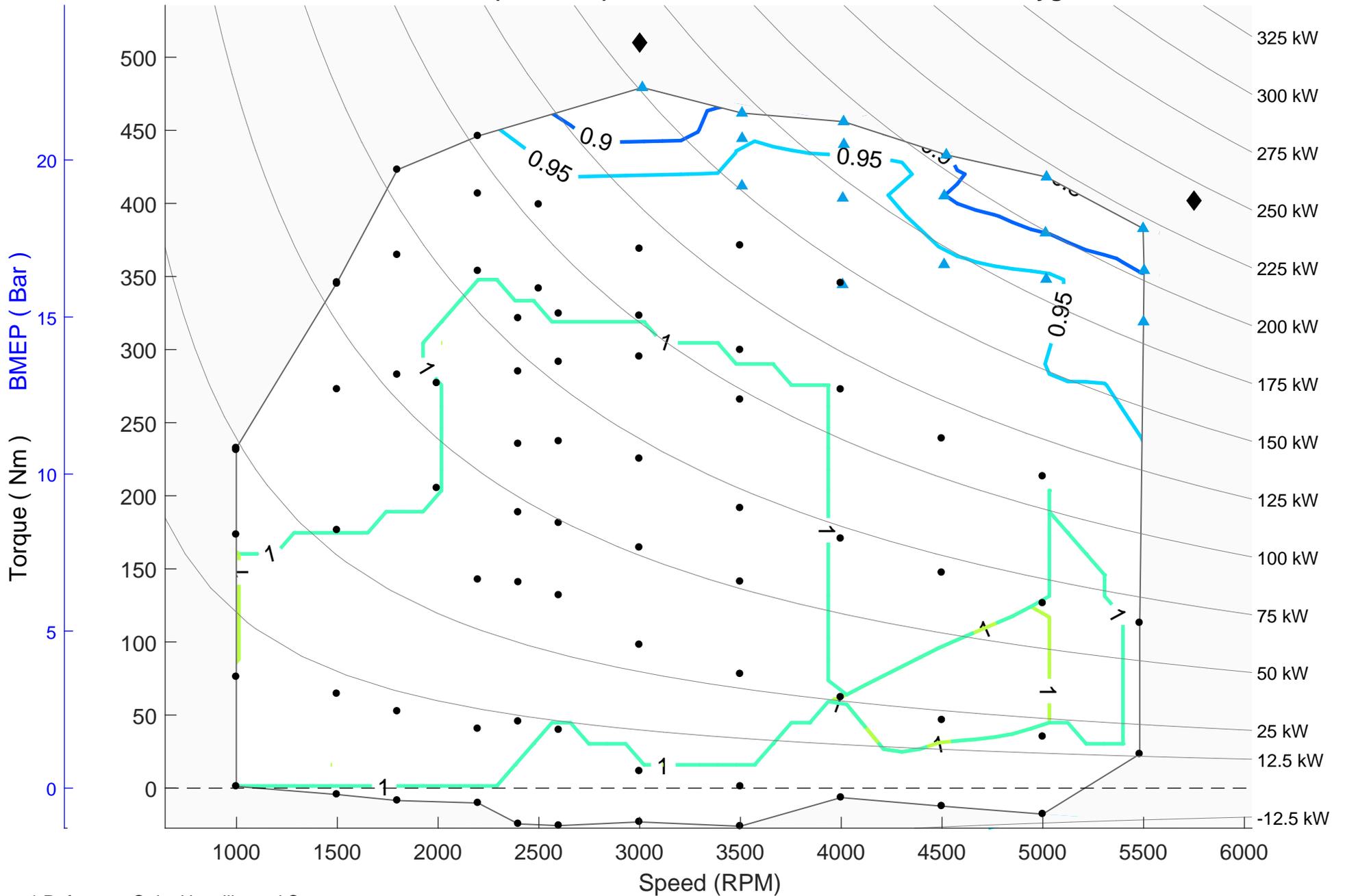
#### Catalyst Inlet Temp (degC) - Temperature Measured at the Inlet to the Catalyst



### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Initial

#### Exhaust Lambda Left (LAMBDA) - Measured via Wideband Exhaust Oxygen Sensor\*

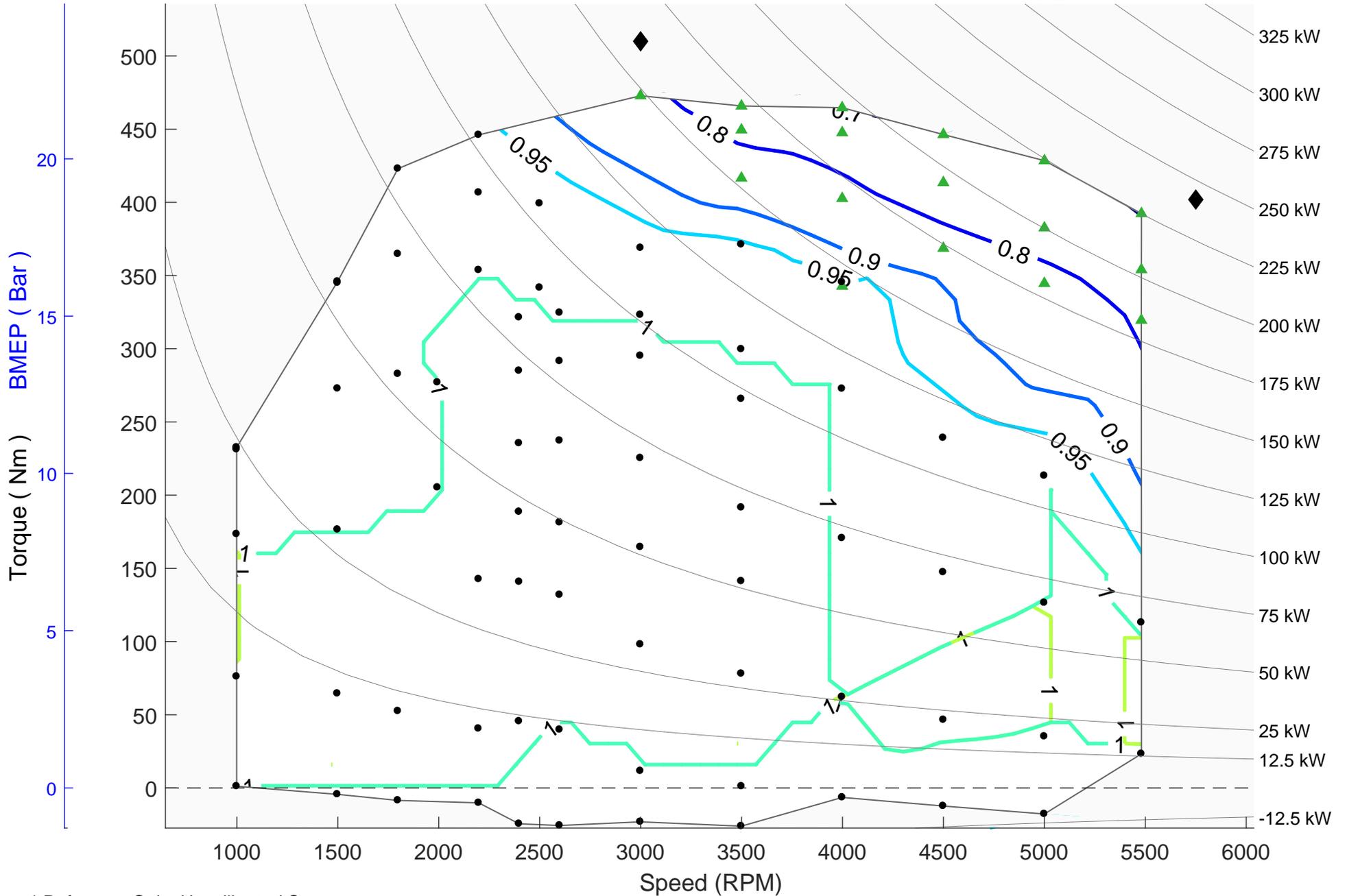


\* Reference Only- Uncalibrated Sensor

### 2015 Ford 2.7L EcoBoost V6 Engine Tier 3 Fuel HD1 - Test Data Plots

#### Steady State and High Load Final

#### Exhaust Lambda Left (LAMBDA) - Measured via Wideband Exhaust Oxygen Sensor\*

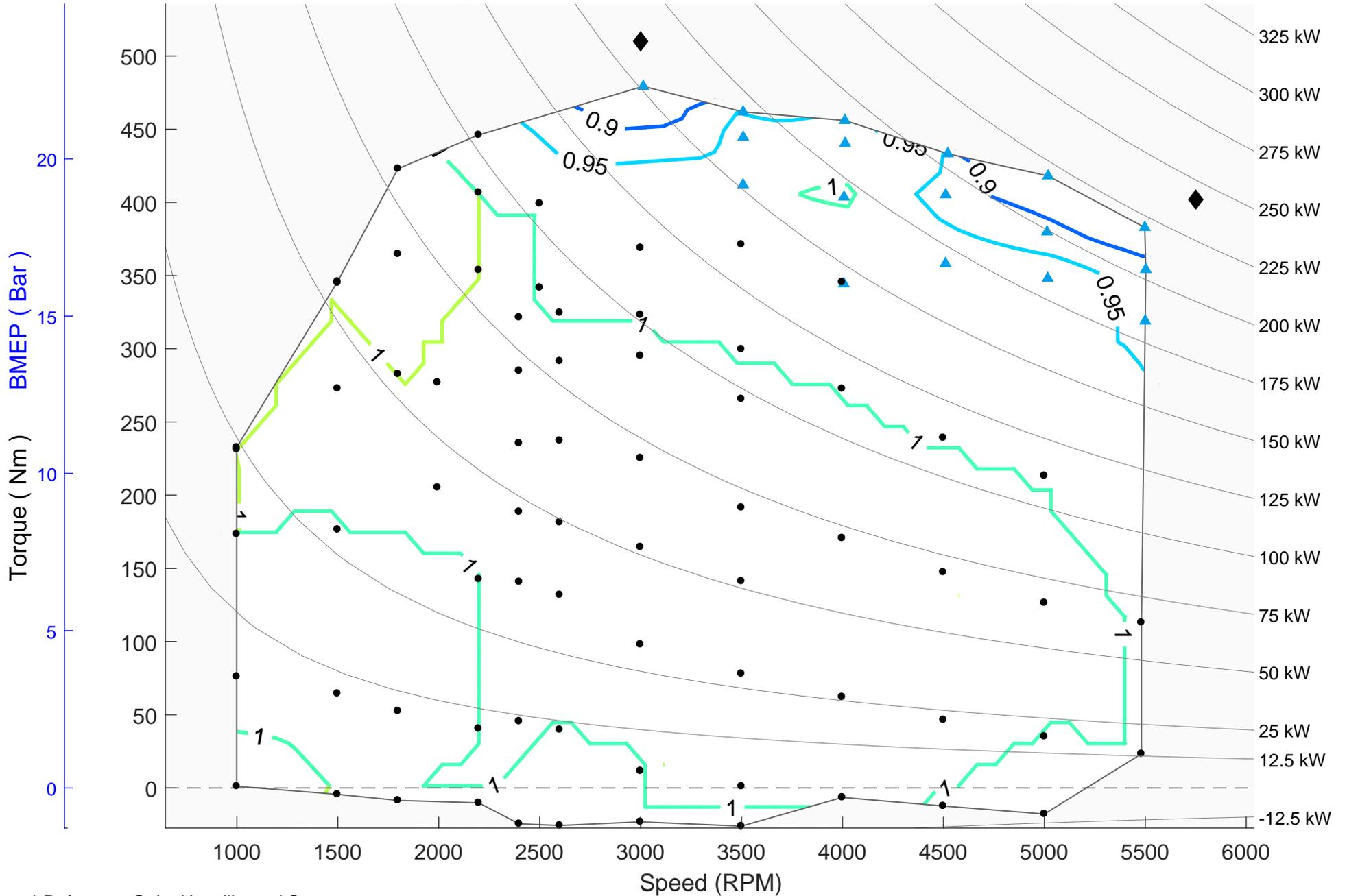


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#### Exhaust Lambda Right (LAMBDA) - Measured via Wideband Exhaust Oxygen Sensor\*

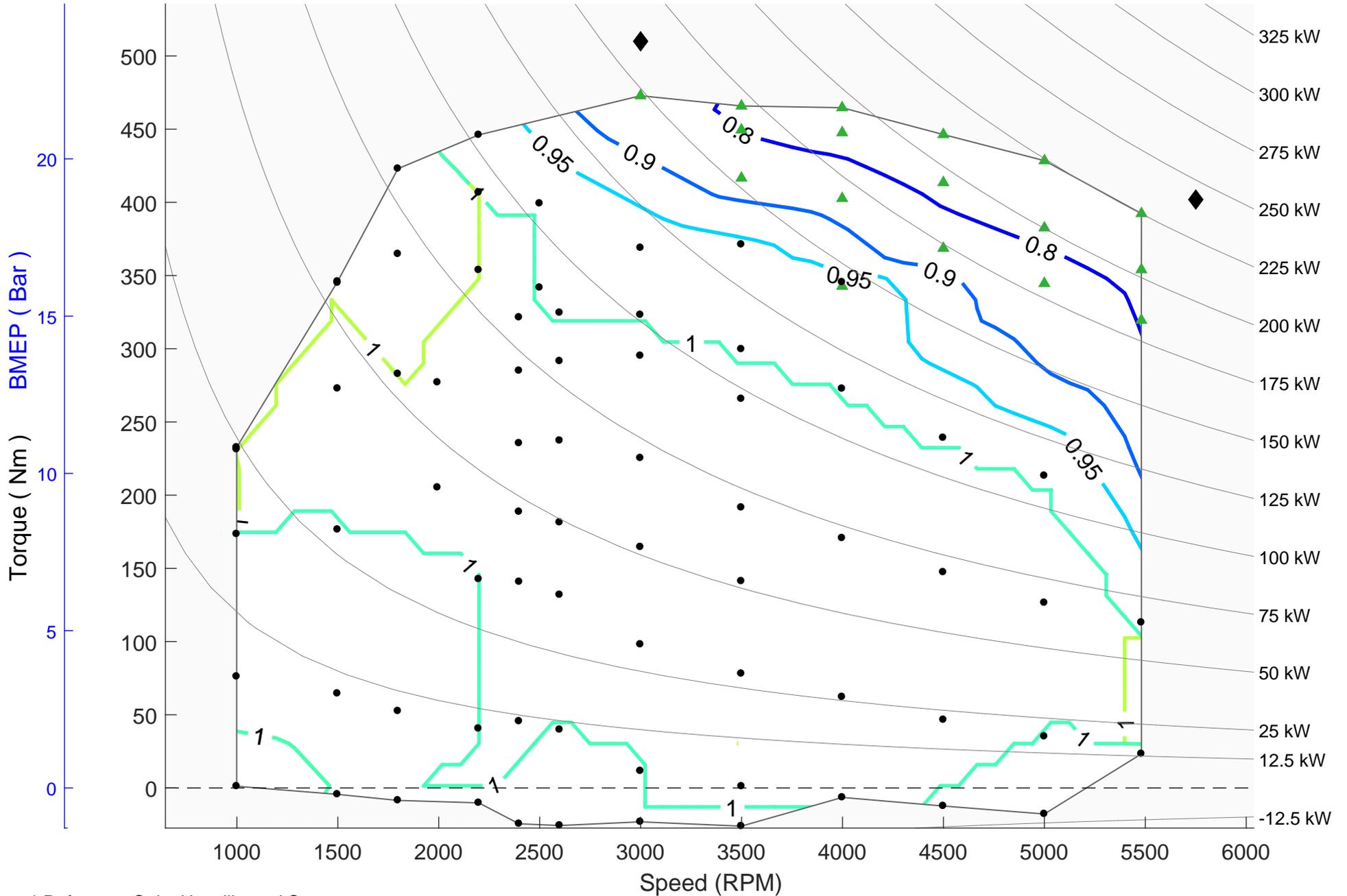


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#### Steady State and High Load Final

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