

|           |                                  |
|-----------|----------------------------------|
| TO        | HATTERAS LEISURE CRUISES         |
| ATTENTION | Mr KANELLOPOULOS, Mr AXIOTIS     |
| FROM      | J. Zervos                        |
| SUBJECT   | SEA TRIAL RESULTS FOR M/Y "BEBE" |
| DATE      | 6/06/2013                        |

|               |                         |               |
|---------------|-------------------------|---------------|
| ENGINE MODEL: | 3406E                   | DELIVERY DATE |
| S/N:          | 9WR01011 (STBD)_1447hrs | 6/1/2000      |
|               | 9WR01012 (PORT)_1446hrs |               |

Following repair actions took place on both main engines of M/Y BEBE this month:

- **Annual Service** (replacement of engine & marine gear oil, replacement of oil/fuel/primary fuel filters & marine gear oil filters, clean of air filters, inspect of v belts, replacement of impellers, replacement of zinc rods).
- **Replacement of fuel filter base on stbd main engine due to crack.**
- **Chemical Clean of Aftercoolers on both main engines.**
- **Replacement of air inlet temperature sensor on stbd main engine.**
- **Repair of starting motors**
- **Sea Trial before & upon cleaning of aftercoolers**

**SEA TRIAL RESULTS (1<sup>st</sup> sea trial)**

Sea Trial performed on both main engines & all parameters (such as boost pressure, fuel consumption, coolant temp., etc) found to be within CAT specs, apart from intake manifold air temperature on stbd main engine that found to be high & out of CAT specs. Below we provide you captured parameters from the 1<sup>st</sup> sea trial.

Below we provide you all captured parameters & graphics, as also data from both ECMs (electronic control modules)

**Stbd Main Engine**

**Caterpillar Electronic Technician 2012C v1.0  
Product Status Report**

20/05/2013 11:26

**Product Status Report**

| Parameter            | Value    |
|----------------------|----------|
| Engine Serial Number | 9WR01011 |
| Equipment ID         | 50C372   |
| Comments             |          |

**3406E MAR (9WR01011)**

| Parameter                       | Value      |
|---------------------------------|------------|
| Equipment ID                    | 50C372     |
| Engine Serial Number            | 9WR01011   |
| ECM Serial Number               | 12590043CG |
| Personality Module Part Number  | 1508466-00 |
| Personality Module Release Date | MAY97      |
| Personality Module Code         | 40         |

**Logged Diagnostic Codes [Diagnostic Clock = 1447 hours] - 3406E MAR (9WR01011)**

| Code  | Description                    | Occ. | First | Last |
|-------|--------------------------------|------|-------|------|
| 91- 8 | Throttle Position Invalid (32) | 16   | 1149  | 1446 |

**Logged Event Codes [Diagnostic Clock = 1447 hours] - 3406E MAR (9WR01011)**

| Code             | Description | Occ. | First | Last |
|------------------|-------------|------|-------|------|
| No Logged Events |             |      |       |      |

**Active Diagnostic Codes - 3406E MAR (9WR01011)**

| Code            | Description |
|-----------------|-------------|
| No Active Codes |             |

**Current Totals - 3406E MAR (9WR01011)**

| Description         | Value   | Unit  |
|---------------------|---------|-------|
| Total Time          | 1447:00 | hours |
| Total Idle Time     | 532:12  | hours |
| Average Load Factor | 39      | %     |
| Total Fuel          | 88367   | L     |
| Total Idle Fuel     | 3971    | L     |
| Total Max Fuel      | 220266  | L     |

**Configuration - 3406E MAR (9WR01011)**

| Description                     | Value                        | Unit |
|---------------------------------|------------------------------|------|
| Rating Number                   | 1                            |      |
| Rated Power                     | *** Engine Speed Present *** |      |
| Rated Peak Torque               | *** Engine Speed Present *** |      |
| Top Engine Speed Range          | *** Engine Speed Present *** |      |
| Test Spec                       | *** Engine Speed Present *** |      |
| Equipment ID                    | 50C372                       |      |
| Engine Serial Number            | 9WR01011                     |      |
| ECM Serial Number               | 12590043CG                   |      |
| Personality Module Part Number  | 1508466-00                   |      |
| Personality Module Release Date | MAY97                        |      |

|   |             |       |
|---|-------------|-------|
| Last Tool to change Customer Parameters | ITEC8428    |       |
| Last Tool to change System Parameters   | 00000000    |       |
| Total Tattletale                        | 15          |       |
| Fuel To Air Ratio Mode                  | Level 2     |       |
| Tachometer Calibration                  | 113.0       | PPR   |
| Engine Location                         | Starboard   |       |
| Top Engine Limit                        | 2410        | rpm   |
| Low Idle Engine RPM                     | 700         | rpm   |
| Maximum Trolling Engine Speed           | 900         | rpm   |
| Trans Oil Temperature High Set Point    | 93          | Deg C |
| Trans Oil Pres High Set Point           | 2758        | kPa   |
| Trans Oil Temperature and Pres Sensor   | Enabled     |       |
| Engine Monitoring Mode                  | Warning     |       |
| Coolant Level Sensor                    | Yes         |       |
| Maintenance Indicator Mode              | Off         |       |
| PM1 Interval                            | Unavailable | km    |
| Engine Oil Capacity                     | 49          | L     |
| Fuel Correction Factor                  | 0           | %     |
| Customer Password #1                    | *****       |       |
| Customer Password #2                    | *****       |       |
| Personality Module Code                 | 40          |       |
| FLS                                     | -65         |       |
| FTS                                     | 65          |       |

#### Total Time vs Life Time Percent Load - 3406E MAR (9WR01011)

| Life Time Percent Load( % ) | hours  | %     |
|-----------------------------|--------|-------|
| 0-9                         | 393.55 | 27.20 |
| 10-19                       | 121.85 | 8.42  |
| 20-29                       | 84.60  | 5.85  |
| 30-39                       | 106.40 | 7.35  |
| 40-49                       | 38.05  | 2.63  |
| 50-59                       | 54.85  | 3.79  |
| 60-69                       | 74.20  | 5.13  |
| 70-79                       | 291.50 | 20.15 |
| 80-89                       | 251.00 | 17.35 |
| 90-99                       | 21.30  | 1.47  |
| 100-109                     | 9.55   | 0.66  |

#### Total Time vs Life Time Engine Speed - 3406E MAR (9WR01011)

| Life Time Engine Speed( rpm ) | hours  | %     |
|-------------------------------|--------|-------|
| 0-599                         | 156.45 | 10.84 |
| 600-699                       | 192.60 | 13.35 |
| 700-799                       | 187.65 | 13.00 |
| 800-899                       | 106.40 | 7.37  |
| 900-999                       | 58.55  | 4.06  |
| 1000-1099                     | 10.90  | 0.76  |
| 1100-1199                     | 7.70   | 0.53  |
| 1200-1299                     | 11.20  | 0.78  |
| 1300-1399                     | 10.95  | 0.76  |
| 1400-1499                     | 18.60  | 1.29  |
| 1500-1599                     | 13.10  | 0.91  |
| 1600-1699                     | 19.65  | 1.36  |
| 1700-1799                     | 48.80  | 3.38  |
| 1800-1899                     | 135.40 | 9.38  |
| 1900-1999                     | 230.15 | 15.95 |
| 2000-2099                     | 153.30 | 10.62 |
| 2100-2199                     | 73.85  | 5.12  |
| 2200-2299                     | 5.25   | 0.36  |
| 2300-2399                     | 2.55   | 0.18  |

|           |      |      |
|-----------|------|------|
| 2400-2499 | 0.00 | 0.00 |
| 2500-2599 | 0.00 | 0.00 |
| 2600-2699 | 0.00 | 0.00 |

#### Total Time vs Engine Load Factor - 3406E MAR (9WR01011)

| Engine Load Factor( % ) | hours  | %     |
|-------------------------|--------|-------|
| 0-9                     | 235.85 | 35.33 |
| 10-19                   | 60.65  | 9.08  |
| 20-29                   | 13.30  | 1.99  |
| 30-39                   | 10.30  | 1.54  |
| 40-49                   | 7.75   | 1.16  |
| 50-59                   | 16.00  | 2.40  |
| 60-69                   | 49.95  | 7.48  |
| 70-79                   | 137.20 | 20.55 |
| 80-89                   | 124.00 | 18.57 |
| 90-99                   | 8.15   | 1.22  |
| 100-109                 | 4.45   | 0.67  |

#### Total Time vs Engine Speed - 3406E MAR (9WR01011)

| Engine Speed( rpm ) | hours  | %     |
|---------------------|--------|-------|
| 0-599               | 136.45 | 20.44 |
| 600-699             | 92.35  | 13.83 |
| 700-799             | 76.90  | 11.52 |
| 800-899             | 7.25   | 1.09  |
| 900-999             | 8.00   | 1.20  |
| 1000-1099           | 5.40   | 0.81  |
| 1100-1199           | 3.30   | 0.49  |
| 1200-1299           | 3.55   | 0.53  |
| 1300-1399           | 3.20   | 0.48  |
| 1400-1499           | 2.15   | 0.32  |
| 1500-1599           | 3.65   | 0.55  |
| 1600-1699           | 7.40   | 1.11  |
| 1700-1799           | 29.50  | 4.42  |
| 1800-1899           | 114.75 | 17.19 |
| 1900-1999           | 101.10 | 15.14 |
| 2000-2099           | 61.95  | 9.28  |
| 2100-2199           | 9.20   | 1.38  |
| 2200-2299           | 1.40   | 0.21  |
| 2300-2399           | 0.10   | 0.01  |
| 2400-2499           | 0.00   | 0.00  |
| 2500-2599           | 0.00   | 0.00  |
| 2600-2699           | 0.00   | 0.00  |

### 4 Cylinder Cutout Test Results

20/05/2013 12:25

3406E MAR (9WR01011)

| Parameter                      | Value      |
|--------------------------------|------------|
| Equipment ID                   | 50C372     |
| Engine Serial Number           | 9WR01011   |
| ECM Serial Number              | 12590043CG |
| Personality Module Part Number | 1508466-00 |

|                                 |               |
|---------------------------------|---------------|
| Personality Module Release Date | MAY97         |
| Personality Module Code         | 40            |
| Total Time                      | 1447:54 hours |
| Total Distance                  | Unavailable   |
| Total Fuel                      | 88418 L       |

### Test Results

| Cylinder   | Status |
|------------|--------|
| Cylinder 1 | OK     |
| Cylinder 2 | OK     |
| Cylinder 3 | OK     |
| Cylinder 4 | OK     |
| Cylinder 5 | OK     |
| Cylinder 6 | OK     |

| Cylinder   | Cycle #1 | Cycle #2 | Average |
|------------|----------|----------|---------|
| Cylinder 1 | 2.62     | 2.61     | 2.61    |
| Cylinder 2 | 2.61     | 2.58     | 2.59    |
| Cylinder 3 | 2.54     | 2.59     | 2.57    |
| Cylinder 4 | 2.61     | 2.64     | 2.63    |
| Cylinder 5 | 2.68     | 2.69     | 2.68    |
| Cylinder 6 | 2.57     | 2.57     | 2.57    |

Run this test before and after repairing a cylinder to confirm a successful repair. Include printed or electronic copies of the test results with any injectors that are returned to the factory. Mark injectors with the cylinder number from which they were removed.

### Status Parameters (at completion of test)

| Description                | Value    |
|----------------------------|----------|
| Engine Speed               | 1005 rpm |
| Fuel Position              | 1.95 mm  |
| Engine Coolant Temperature | 83 Deg C |

### Caterpillar Electronic Technician 2012C v1.0 Status

20/05/2013 11:42

### 3406E MAR (9WR01011)

| Parameter                       | Value      |
|---------------------------------|------------|
| Equipment ID                    | 50C372     |
| Engine Serial Number            | 9WR01011   |
| ECM Serial Number               | 12590043CG |
| Personality Module Part Number  | 1508466-00 |
| Personality Module Release Date | MAY97      |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Throttle Position               | 48    | %     | 0       | 48      | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 1526  | rpm   | 700     | 1527    | 3406E MAR (9WR01011) |
| Engine Speed                    | 1542  | rpm   | 712     | 1545    | 3406E MAR (9WR01011) |
| Engine Load Factor              | 49    | %     | 17      | 68      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 65    | kPa   | 0       | 65      | 3406E MAR (9WR01011) |
| Fuel Position                   | 5.98  | mm    | 2.18    | 6.24    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 578   | kPa   | 533     | 610     | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 455   | kPa   | 370     | 468     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 76    | Deg C | 67      | 76      | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 32    | Deg C | 31      | 32      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2445  | kPa   | 2413    | 2445    | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1447  | hours | 1447    | 1447    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 78    | Deg C | 78      | 78      | 3406E MAR (9WR01011) |
| Estimated Fuel Rate             | 71.15 | L/h   | 8.99    | 74.99   | 3406E MAR (9WR01011) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 66     | %     | 0       | 66      | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 1827   | rpm   | 700     | 1827    | 3406E MAR (9WR01011) |
| Engine Speed                    | 1836   | rpm   | 712     | 1838    | 3406E MAR (9WR01011) |
| Engine Load Factor              | 66     | %     | 17      | 73      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 140    | kPa   | 0       | 160     | 3406E MAR (9WR01011) |
| Fuel Position                   | 7.11   | mm    | 2.18    | 7.96    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 593    | kPa   | 533     | 613     | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 455    | kPa   | 370     | 468     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 82     | Deg C | 67      | 82      | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 32     | Deg C | 31      | 32      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2445   | kPa   | 2413    | 2480    | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1447   | hours | 1447    | 1447    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 78     | Deg C | 78      | 78      | 3406E MAR (9WR01011) |
| Estimated Fuel Rate             | 101.08 | L/h   | 8.99    | 116.93  | 3406E MAR (9WR01011) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 72     | %     | 0       | 72      | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 1939   | rpm   | 700     | 1939    | 3406E MAR (9WR01011) |
| Engine Speed                    | 1950   | rpm   | 712     | 1958    | 3406E MAR (9WR01011) |
| Engine Load Factor              | 75     | %     | 17      | 79      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 173    | kPa   | 0       | 190     | 3406E MAR (9WR01011) |
| Fuel Position                   | 7.60   | mm    | 2.18    | 7.98    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 580    | kPa   | 533     | 613     | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 453    | kPa   | 370     | 468     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 82     | Deg C | 67      | 82      | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 32     | Deg C | 31      | 32      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2480   | kPa   | 2413    | 2480    | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1447   | hours | 1447    | 1447    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 78     | Deg C | 78      | 78      | 3406E MAR (9WR01011) |
| Estimated Fuel Rate             | 111.19 | L/h   | 8.99    | 120.71  | 3406E MAR (9WR01011) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 79     | %     | 0       | 79      | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 2052   | rpm   | 700     | 2053    | 3406E MAR (9WR01011) |
| Engine Speed                    | 2063   | rpm   | 712     | 2070    | 3406E MAR (9WR01011) |
| Engine Load Factor              | 82     | %     | 17      | 86      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 205    | kPa   | 0       | 218     | 3406E MAR (9WR01011) |
| Fuel Position                   | 8.17   | mm    | 2.18    | 8.50    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 580    | kPa   | 533     | 613     | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 435    | kPa   | 370     | 468     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 83     | Deg C | 67      | 83      | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 33     | Deg C | 31      | 33      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2480   | kPa   | 2413    | 2515    | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1447   | hours | 1447    | 1447    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 78     | Deg C | 78      | 78      | 3406E MAR (9WR01011) |
| Estimated Fuel Rate             | 126.51 | L/h   | 8.99    | 134.43  | 3406E MAR (9WR01011) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 100    | %     | 0       | 100     | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 2410   | rpm   | 700     | 2410    | 3406E MAR (9WR01011) |
| Engine Speed                    | 2234   | rpm   | 712     | 2275    | 3406E MAR (9WR01011) |
| Engine Load Factor              | 100    | %     | 17      | 100     | 3406E MAR (9WR01011) |
| Boost Pressure                  | 245    | kPa   | 0       | 253     | 3406E MAR (9WR01011) |
| Fuel Position                   | 9.33   | mm    | 2.18    | 9.43    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 578    | kPa   | 533     | 613     | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 408    | kPa   | 370     | 468     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 88     | Deg C | 67      | 88      | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 39     | Deg C | 31      | 39      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2480   | kPa   | 2413    | 2515    | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1447   | hours | 1447    | 1447    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 78     | Deg C | 78      | 78      | 3406E MAR (9WR01011) |
| Estimated Fuel Rate             | 148.09 | L/h   | 8.99    | 152.83  | 3406E MAR (9WR01011) |

### Port Main Engine

## Caterpillar Electronic Technician 2012C v1.0 Status

20/05/2013 11:54

### 3406E MAR (9WR01012)

| Parameter                       | Value      |
|---------------------------------|------------|
| Equipment ID                    | 50C372     |
| Engine Serial Number            | 9WR01012   |
| ECM Serial Number               | 12590079CG |
| Personality Module Part Number  | 1508466-00 |
| Personality Module Release Date | MAY97      |
| Personality Module Code         | 40         |

| Description       | Value | Unit | Minimum | Maximum | ECM                  |
|-------------------|-------|------|---------|---------|----------------------|
| Throttle Position | 66    | %    | 66      | 66      | 3406E MAR (9WR01012) |

|                                 |        |       |        |        |                      |
|---------------------------------|--------|-------|--------|--------|----------------------|
| Desired Engine Speed            | 1824   | rpm   | 1824   | 1825   | 3406E MAR (9WR01012) |
| Engine Speed                    | 1830   | rpm   | 1817   | 1830   | 3406E MAR (9WR01012) |
| Engine Load Factor              | 68     | %     | 68     | 68     | 3406E MAR (9WR01012) |
| Boost Pressure                  | 123    | kPa   | 118    | 123    | 3406E MAR (9WR01012) |
| Fuel Position                   | 7.25   | mm    | 7.25   | 7.29   | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 575    | kPa   | 575    | 575    | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 510    | kPa   | 510    | 528    | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 83     | Deg C | 83     | 83     | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 52     | Deg C | 52     | 52     | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343   | kPa   | 2343   | 2343   | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1446   | hours | 1446   | 1446   | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 27     | Deg C | 27     | 27     | 3406E MAR (9WR01012) |
| Estimated Fuel Rate             | 103.32 | L/h   | 103.32 | 104.09 | 3406E MAR (9WR01012) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 77     | %     | 66      | 79      | 3406E MAR (9WR01012) |
| Desired Engine Speed            | 2026   | rpm   | 1824    | 2049    | 3406E MAR (9WR01012) |
| Engine Speed                    | 2028   | rpm   | 1813    | 2063    | 3406E MAR (9WR01012) |
| Engine Load Factor              | 84     | %     | 68      | 89      | 3406E MAR (9WR01012) |
| Boost Pressure                  | 185    | kPa   | 118     | 200     | 3406E MAR (9WR01012) |
| Fuel Position                   | 8.32   | mm    | 7.25    | 8.73    | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 580    | kPa   | 555     | 588     | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 528    | kPa   | 508     | 538     | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 85     | Deg C | 83      | 85      | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 54     | Deg C | 52      | 54      | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343   | kPa   | 2343    | 2343    | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1446   | hours | 1446    | 1446    | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 30     | Deg C | 27      | 30      | 3406E MAR (9WR01012) |
| Estimated Fuel Rate             | 129.17 | L/h   | 102.67  | 139.70  | 3406E MAR (9WR01012) |

| Description                     | Value  | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|--------|-------|---------|---------|----------------------|
| Throttle Position               | 90     | %     | 66      | 92      | 3406E MAR (9WR01012) |
| Desired Engine Speed            | 2230   | rpm   | 1824    | 2280    | 3406E MAR (9WR01012) |
| Engine Speed                    | 2234   | rpm   | 1813    | 2255    | 3406E MAR (9WR01012) |
| Engine Load Factor              | 99     | %     | 68      | 100     | 3406E MAR (9WR01012) |
| Boost Pressure                  | 223    | kPa   | 118     | 230     | 3406E MAR (9WR01012) |
| Fuel Position                   | 9.25   | mm    | 7.25    | 9.48    | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 570    | kPa   | 548     | 588     | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 523    | kPa   | 505     | 540     | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 89     | Deg C | 83      | 89      | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 56     | Deg C | 52      | 56      | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343   | kPa   | 2343    | 2343    | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1446   | hours | 1446    | 1446    | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 34     | Deg C | 27      | 34      | 3406E MAR (9WR01012) |
| Estimated Fuel Rate             | 144.55 | L/h   | 102.67  | 152.29  | 3406E MAR (9WR01012) |

| Description          | Value | Unit | Minimum | Maximum | ECM                  |
|----------------------|-------|------|---------|---------|----------------------|
| Throttle Position    | 100   | %    | 66      | 100     | 3406E MAR (9WR01012) |
| Desired Engine Speed | 2410  | rpm  | 1824    | 2410    | 3406E MAR (9WR01012) |
| Engine Speed         | 2234  | rpm  | 1813    | 2255    | 3406E MAR (9WR01012) |
| Engine Load Factor   | 100   | %    | 68      | 100     | 3406E MAR (9WR01012) |
| Boost Pressure       | 223   | kPa  | 118     | 230     | 3406E MAR (9WR01012) |



|                                 |        |       |        |        |                      |
|---------------------------------|--------|-------|--------|--------|----------------------|
| Fuel Position                   | 9.34   | mm    | 7.25   | 9.48   | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 558    | kPa   | 548    | 588    | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 510    | kPa   | 505    | 540    | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 89     | Deg C | 83     | 89     | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 58     | Deg C | 52     | 58     | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343   | kPa   | 2308   | 2343   | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1447   | hours | 1446   | 1447   | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 34     | Deg C | 27     | 34     | 3406E MAR (9WR01012) |
| Estimated Fuel Rate             | 148.51 | L/h   | 102.67 | 152.29 | 3406E MAR (9WR01012) |

**SEA TRIAL RESULTS (2nd sea trial)**

Upon cleaning of aftercoolers, intake manifold air temperature improved & reduced within CAT specs on stbd main engine. Results provided below

**Stbd Main Engine**

**Caterpillar Electronic Technician 2012C v1.0  
Logged Diagnostic Codes**

**29-May-2013 3:07 PM**

**3406E MAR (9WR01011)**

| Parameter                       | Value      |
|---------------------------------|------------|
| Equipment ID                    | 50C372     |
| Engine Serial Number            | 9WR01011   |
| ECM Serial Number               | 12590043CG |
| Personality Module Part Number  | 1508466-00 |
| Personality Module Release Date | MAY97      |
| Personality Module Code         | 40         |

| Code   | Description                                       | Occur | First | Last |
|--|---|-------|-------|------|
| 3406E MAR (9WR01011) - Diagnostic Clock = 1448 hours |   |       |       |      |
| 105- 3   | Intake Manifold Air Temperature voltage high (38) | 4     | 1448  | 1448 |
| 190- 2   | Primary Engine Speed loss of signal (34)          | 1     | 1448  | 1448 |
| 91- 8  | Throttle Position Invalid (32)                    | 16    | 1149  | 1446 |

**Caterpillar Electronic Technician 2012C v1.0  
Status**

**29-May-2013 3:57 PM**

**3406E MAR (9WR01011)**

| Parameter                      | Value      |
|--------------------------------|------------|
| Equipment ID                   | 50C372     |
| Engine Serial Number           | 9WR01011   |
| ECM Serial Number              | 12590043CG |
| Personality Module Part Number | 1508466-00 |

|                                 |       |
|---------------------------------|-------|
| Personality Module Release Date | MAY97 |
| Personality Module Code         | 40    |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 860   | rpm   | 442     | 873     | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 860   | rpm   | 550     | 920     | 3406E MAR (9WR01011) |
| Throttle Position               | 9     | %     | 0       | 20      | 3406E MAR (9WR01011) |
| Engine Load Factor              | 27    | %     | 0       | 32      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 3     | kPa   | 0       | 3       | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 58    | Deg C | 36      | 58      | 3406E MAR (9WR01011) |
| Fuel Position                   | 2.60  | mm    | 1.41    | 2.79    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 565   | kPa   | 493     | 588     | 3406E MAR (9WR01011) |
| Fuel Temperature                | 24    | Deg C | 24      | 25      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2445  | kPa   | 0       | 2445    | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 28    | Deg C | 27      | 28      | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 455   | kPa   | 420     | 463     | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1448  | hours | 1448    | 1448    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 23    | Deg C | 23      | 23      | 3406E MAR (9WR01011) |
| ECM Battery Voltage             | 28.5  | Volts | 24.3    | 28.7    | 3406E MAR (9WR01011) |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 1568  | rpm   | 442     | 1603    | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 1558  | rpm   | 550     | 1583    | 3406E MAR (9WR01011) |
| Throttle Position               | 50    | %     | 0       | 52      | 3406E MAR (9WR01011) |
| Engine Load Factor              | 49    | %     | 0       | 73      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 68    | kPa   | 0       | 83      | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 81    | Deg C | 36      | 85      | 3406E MAR (9WR01011) |
| Fuel Position                   | 5.97  | mm    | 1.41    | 6.44    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 580   | kPa   | 493     | 610     | 3406E MAR (9WR01011) |
| Fuel Temperature                | 25    | Deg C | 24      | 25      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2445  | kPa   | 0       | 2480    | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 29    | Deg C | 27      | 30      | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 473   | kPa   | 420     | 483     | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1448  | hours | 1448    | 1448    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 24    | Deg C | 23      | 24      | 3406E MAR (9WR01011) |
| ECM Battery Voltage             | 28.5  | Volts | 24.3    | 28.7    | 3406E MAR (9WR01011) |

| Description                  | Value | Unit  | Minimum | Maximum | ECM                  |
|------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                 | 1920  | rpm   | 442     | 1943    | 3406E MAR (9WR01011) |
| Desired Engine Speed         | 1924  | rpm   | 550     | 1925    | 3406E MAR (9WR01011) |
| Throttle Position            | 72    | %     | 0       | 72      | 3406E MAR (9WR01011) |
| Engine Load Factor           | 72    | %     | 0       | 73      | 3406E MAR (9WR01011) |
| Boost Pressure               | 173   | kPa   | 0       | 173     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature   | 82    | Deg C | 36      | 85      | 3406E MAR (9WR01011) |
| Fuel Position                | 7.41  | mm    | 1.41    | 7.50    | 3406E MAR (9WR01011) |
| Fuel Pressure                | 568   | kPa   | 493     | 610     | 3406E MAR (9WR01011) |
| Fuel Temperature             | 25    | Deg C | 24      | 25      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure    | 2480  | kPa   | 0       | 2480    | 3406E MAR (9WR01011) |
| Transmission Oil Temperature | 30    | Deg C | 27      | 30      | 3406E MAR (9WR01011) |

|                                 |      |       |      |      |                      |
|---------------------------------|------|-------|------|------|----------------------|
| Engine Oil Pressure             | 453  | kPa   | 420  | 483  | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1448 | hours | 1448 | 1448 | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 29   | Deg C | 23   | 29   | 3406E MAR (9WR01011) |
| ECM Battery Voltage             | 28.5 | Volts | 24.3 | 28.7 | 3406E MAR (9WR01011) |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 2015  | rpm   | 442     | 2018    | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 2015  | rpm   | 550     | 2016    | 3406E MAR (9WR01011) |
| Throttle Position               | 76    | %     | 0       | 77      | 3406E MAR (9WR01011) |
| Engine Load Factor              | 77    | %     | 0       | 78      | 3406E MAR (9WR01011) |
| Boost Pressure                  | 190   | kPa   | 0       | 198     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 82    | Deg C | 36      | 85      | 3406E MAR (9WR01011) |
| Fuel Position                   | 7.79  | mm    | 1.41    | 7.84    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 568   | kPa   | 493     | 610     | 3406E MAR (9WR01011) |
| Fuel Temperature                | 25    | Deg C | 24      | 25      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2480  | kPa   | 0       | 2480    | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 32    | Deg C | 27      | 32      | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 445   | kPa   | 420     | 483     | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1448  | hours | 1448    | 1448    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 32    | Deg C | 23      | 32      | 3406E MAR (9WR01011) |
| ECM Battery Voltage             | 28.3  | Volts | 24.3    | 28.7    | 3406E MAR (9WR01011) |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 2248  | rpm   | 442     | 2302    | 3406E MAR (9WR01011) |
| Desired Engine Speed            | 2410  | rpm   | 550     | 2410    | 3406E MAR (9WR01011) |
| Throttle Position               | 100   | %     | 0       | 100     | 3406E MAR (9WR01011) |
| Engine Load Factor              | 100   | %     | 0       | 100     | 3406E MAR (9WR01011) |
| Boost Pressure                  | 250   | kPa   | 0       | 255     | 3406E MAR (9WR01011) |
| Engine Coolant Temperature      | 87    | Deg C | 36      | 87      | 3406E MAR (9WR01011) |
| Fuel Position                   | 9.33  | mm    | 1.41    | 9.40    | 3406E MAR (9WR01011) |
| Fuel Pressure                   | 550   | kPa   | 493     | 610     | 3406E MAR (9WR01011) |
| Fuel Temperature                | 27    | Deg C | 24      | 27      | 3406E MAR (9WR01011) |
| Transmission Oil Pressure       | 2445  | kPa   | 0       | 2515    | 3406E MAR (9WR01011) |
| Transmission Oil Temperature    | 41    | Deg C | 27      | 41      | 3406E MAR (9WR01011) |
| Engine Oil Pressure             | 408   | kPa   | 403     | 483     | 3406E MAR (9WR01011) |
| Diagnostic Clock                | 1448  | hours | 1448    | 1448    | 3406E MAR (9WR01011) |
| Intake Manifold Air Temperature | 39    | Deg C | 23      | 39      | 3406E MAR (9WR01011) |
| ECM Battery Voltage             | 28.3  | Volts | 24.3    | 28.7    | 3406E MAR (9WR01011) |

## PORT MAIN ENGINE

### Caterpillar Electronic Technician 2012C v1.0 Status

29-May-2013 4:12 PM

#### **3406E MAR (9WR01012)**

| Parameter            | Value      |
|----------------------|------------|
| Equipment ID         | 50C372     |
| Engine Serial Number | 9WR01012   |
| ECM Serial Number    | 12590079CG |

|                                 |            |
|---------------------------------|------------|
| Personality Module Part Number  | 1508466-00 |
| Personality Module Release Date | MAY97      |
| Personality Module Code         | 40         |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 2015  | rpm   | 706     | 2021    | 3406E MAR (9WR01012) |
| Desired Engine Speed            | 2018  | rpm   | 700     | 2018    | 3406E MAR (9WR01012) |
| Throttle Position               | 77    | %     | 0       | 77      | 3406E MAR (9WR01012) |
| Engine Load Factor              | 79    | %     | 15      | 80      | 3406E MAR (9WR01012) |
| Boost Pressure                  | 178   | kPa   | 3       | 180     | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 83    | Deg C | 82      | 84      | 3406E MAR (9WR01012) |
| Fuel Position                   | 7.91  | mm    | 2.11    | 8.00    | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 565   | kPa   | 535     | 605     | 3406E MAR (9WR01012) |
| Fuel Temperature                | 28    | Deg C | 27      | 28      | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343  | kPa   | 2308    | 2343    | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 54    | Deg C | 53      | 54      | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 533   | kPa   | 265     | 550     | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1447  | hours | 1447    | 1447    | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 28    | Deg C | 26      | 28      | 3406E MAR (9WR01012) |
| ECM Battery Voltage             | 27.9  | Volts | 27.9    | 28.3    | 3406E MAR (9WR01012) |

| Description                     | Value | Unit  | Minimum | Maximum | ECM                  |
|---------------------------------|-------|-------|---------|---------|----------------------|
| Engine Speed                    | 2277  | rpm   | 706     | 2302    | 3406E MAR (9WR01012) |
| Desired Engine Speed            | 2410  | rpm   | 700     | 2410    | 3406E MAR (9WR01012) |
| Throttle Position               | 100   | %     | 0       | 100     | 3406E MAR (9WR01012) |
| Engine Load Factor              | 100   | %     | 15      | 100     | 3406E MAR (9WR01012) |
| Boost Pressure                  | 228   | kPa   | 3       | 235     | 3406E MAR (9WR01012) |
| Engine Coolant Temperature      | 87    | Deg C | 82      | 87      | 3406E MAR (9WR01012) |
| Fuel Position                   | 9.28  | mm    | 2.11    | 9.40    | 3406E MAR (9WR01012) |
| Fuel Pressure                   | 550   | kPa   | 535     | 605     | 3406E MAR (9WR01012) |
| Fuel Temperature                | 28    | Deg C | 27      | 28      | 3406E MAR (9WR01012) |
| Transmission Oil Pressure       | 2343  | kPa   | 2308    | 2343    | 3406E MAR (9WR01012) |
| Transmission Oil Temperature    | 53    | Deg C | 53      | 54      | 3406E MAR (9WR01012) |
| Engine Oil Pressure             | 540   | kPa   | 265     | 555     | 3406E MAR (9WR01012) |
| Diagnostic Clock                | 1447  | hours | 1447    | 1447    | 3406E MAR (9WR01012) |
| Intake Manifold Air Temperature | 32    | Deg C | 26      | 32      | 3406E MAR (9WR01012) |
| ECM Battery Voltage             | 27.9  | Volts | 27.7    | 28.3    | 3406E MAR (9WR01012) |

**Sea Trial Comments:**

- Analyzing the recorded data of both engine parameters, engines operate without any problem, being able to achieve full load (2300RPM).
- Fuel rate and boost pressure measured according to CAT specs.
- Coolant temp, oil pressure & fuel pressure measured to be within CAT specs.
- Below you will find PERFORMANCE CURVE. Both engines are properly loaded to achieve rated speed or higher & consuming the amount of fuel that equals the rated fuel consumption. Taking also into consideration the boost pressure graph, engines are able to produce acceptable boost pressure, which is an indication that engines are able to produce specified power.

## STBD MAIN ENGINE

Graphed Parameter(s)

Boost Pressure

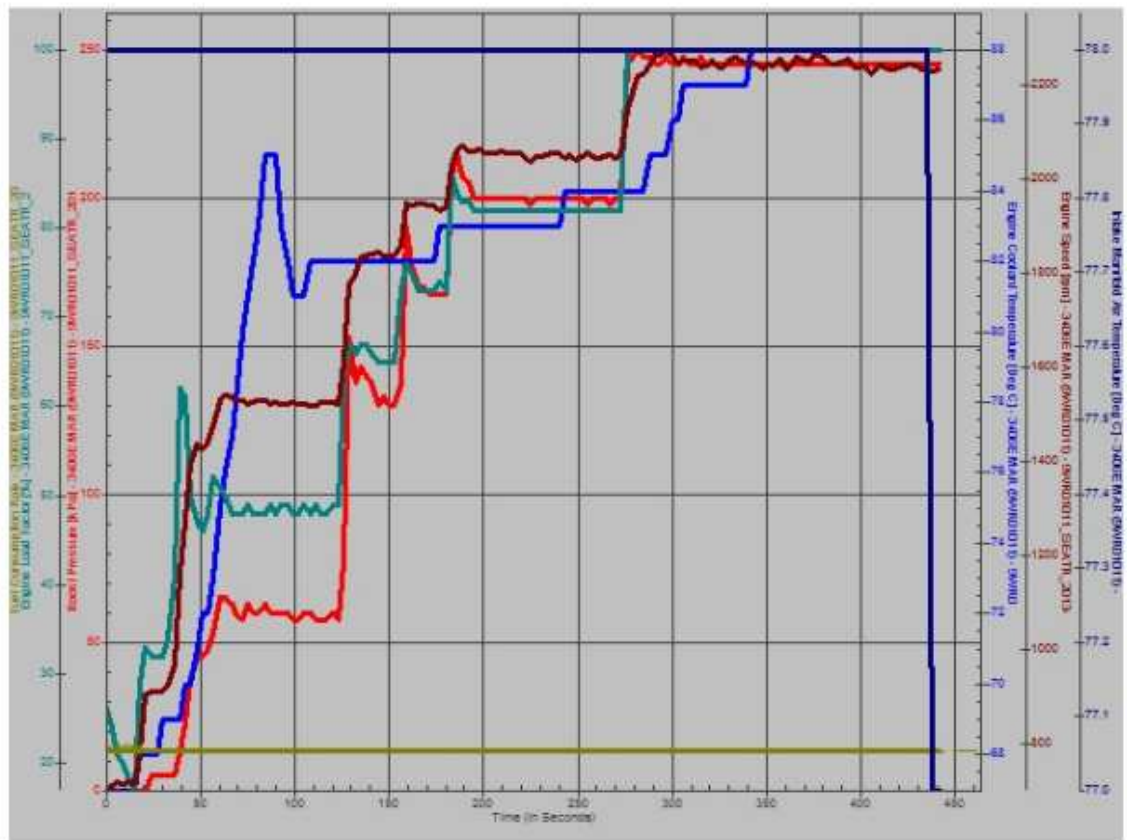
Engine Coolant Temperature

Engine Load Factor

Engine Speed

Fuel Consumption Rate

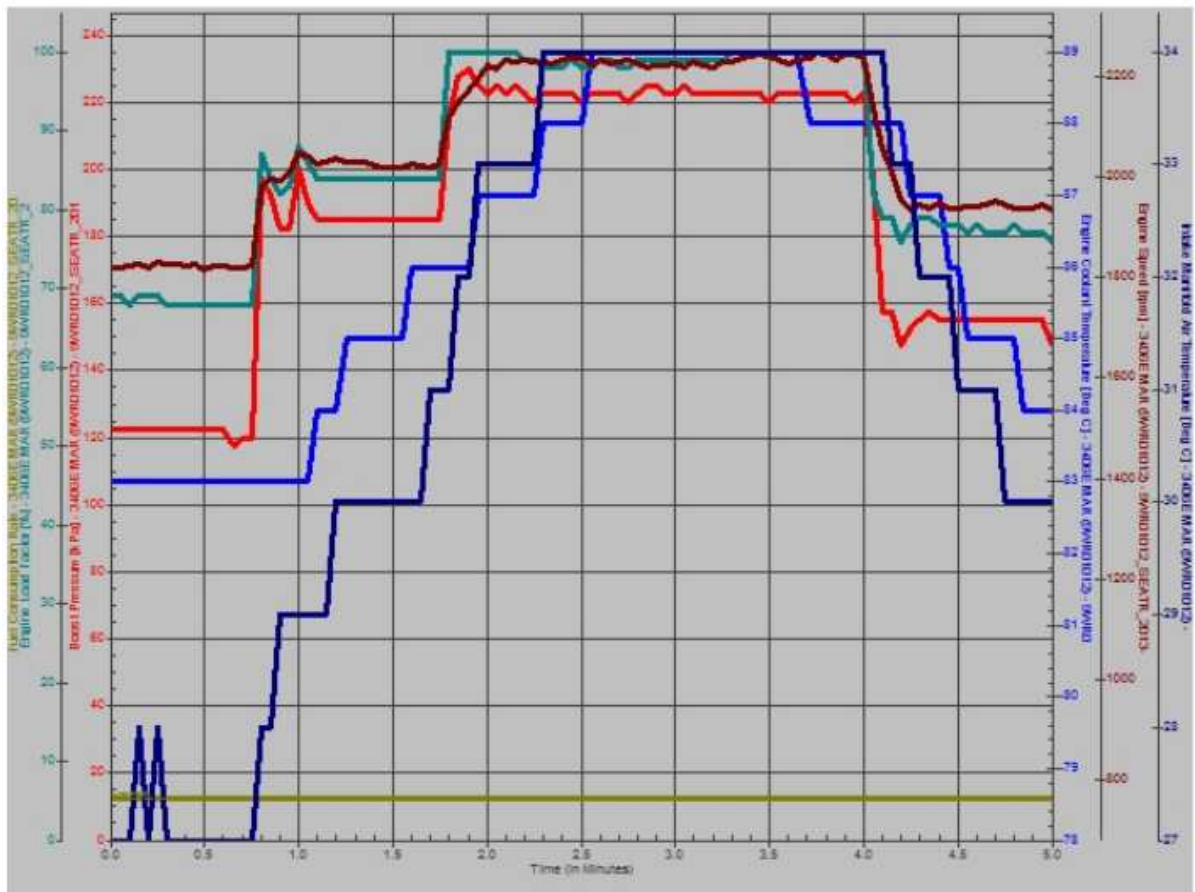
Intake Manifold Air Temperature



**PORT MAIN ENGINE**

Graphed Parameter(s)

- Boost Pressure
- Engine Coolant Temperature
- Engine Load Factor
- Engine Speed
- Fuel Consumption Rate
- Intake Manifold Air Temperature



Best Regards,  
John Zervos

Service Manager Power Systems  
Eltrak SA