TDW MARINE

SURVEY REPORT

VESSEL: YT. M	**DATE:**01/09/2025
TECHNICIAN:	Tyler Jakubas

STARBOARD MAIN ENGINE		
MODEL: 16V2000	SERIAL #: 536106032	RUNNING HOURS:
Rated KW: 1492	Rated RPM: 2350	Max observed RPM:

OBSERVATIONS:	RECOMMENDATIONS:
• Raw water hoses and clamps old and corroded	Replace and clean
• Heat exchanger inlet pipe corroded and leaking	Replace and clean
• A7 hp line fuel leak	Torque and monitor
• Oil pan leaking oil	Reseal and clean
• Exhaust manifold corrosion	Clean and paint
• Engine mount corrosion	Clean and paint
• Cross over pipe corrosion and leak	Reseal and paint
• Both turbos unpainted and starting coolant leak	Reseal and paint
• Gear cooler inlet/outlet corroded	Reseal and clean
• Flywheel housing cover leaking oil	Reseal and clean
• Charge air cooler base and supply leaking	Reseal and clean
• Coolant pump leaking and corroded	Replace and clean
• Raw water pump actively leaking	Replace and clean
• Front main seal leaking	Replace and clean

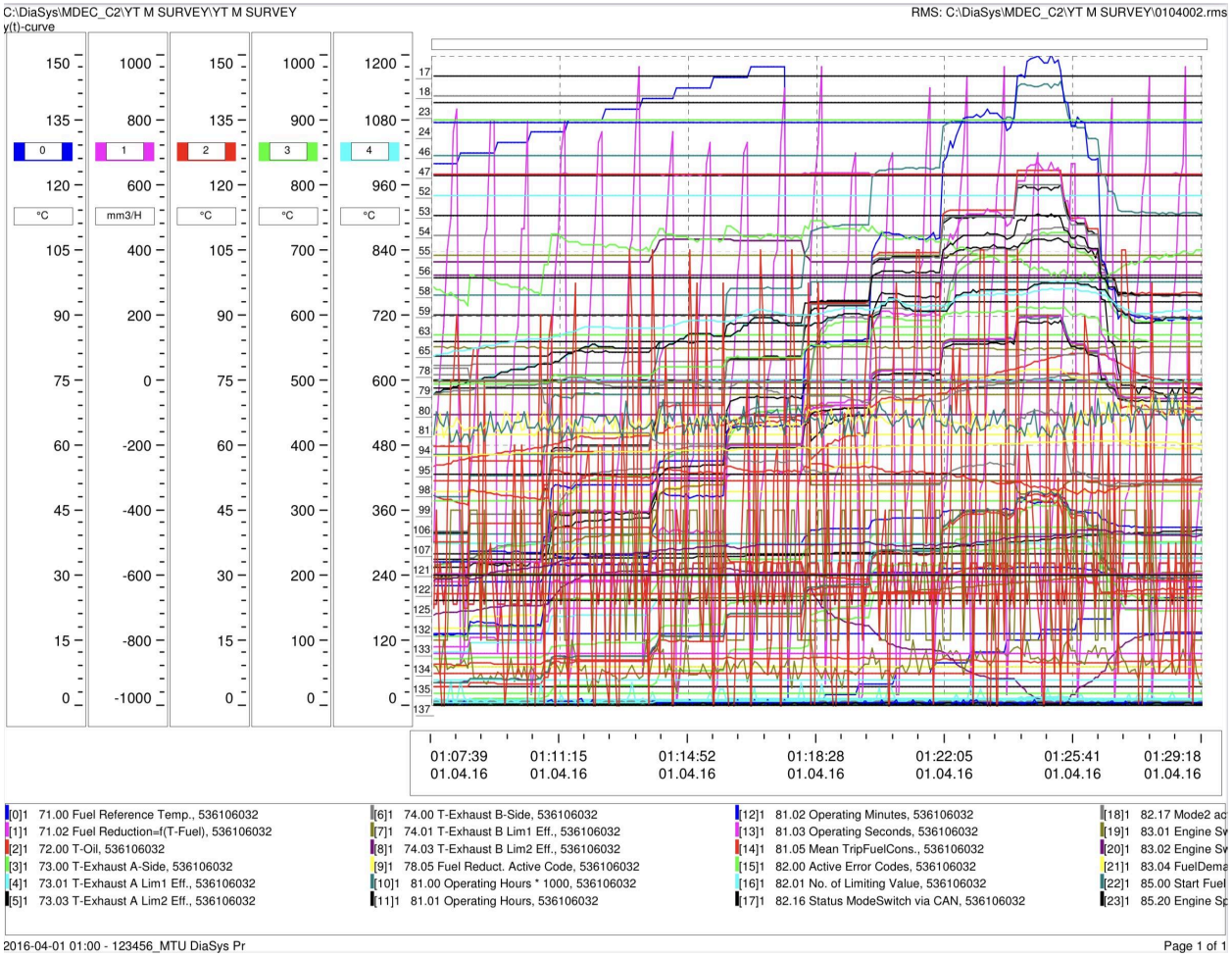
ADDITIONAL NOTES:

- Performance sea trial performed
- visual inspection performed
- Fluid samples performed

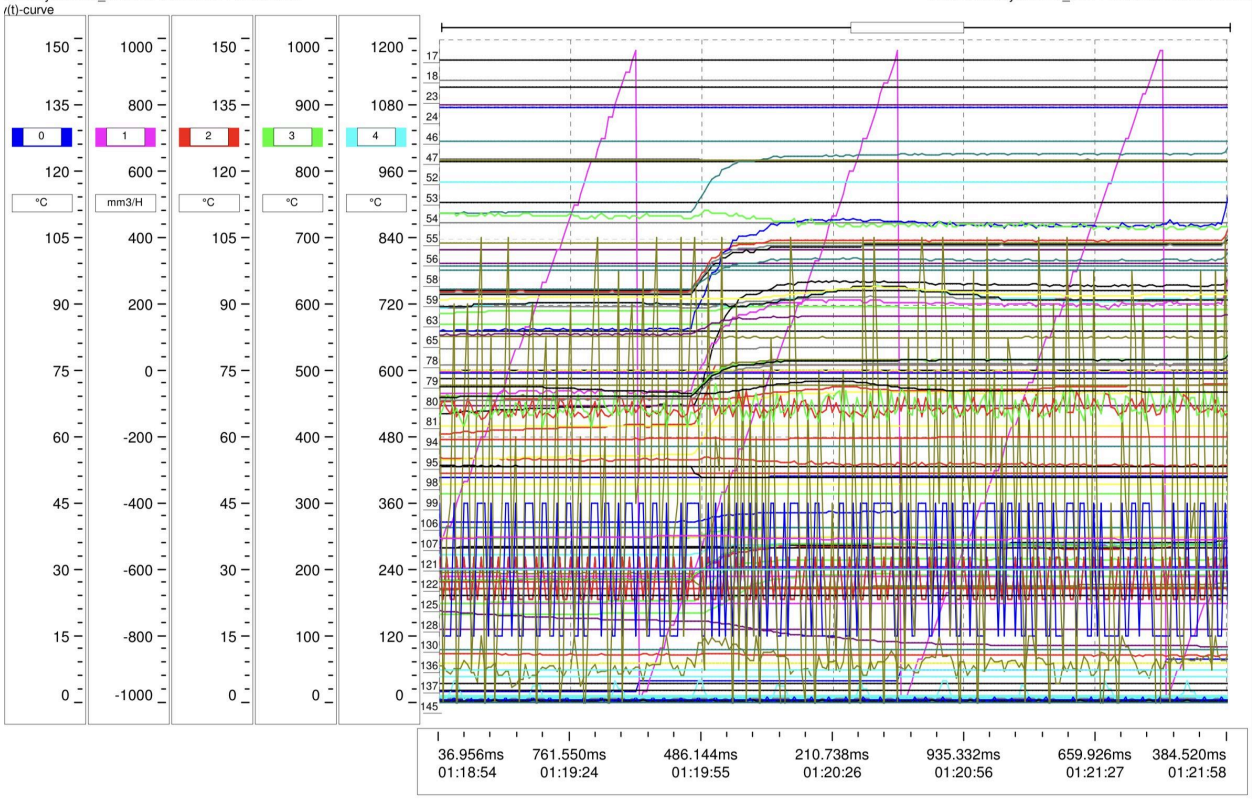
ATTACHMENTS:

- Photos below
- Sea trial data chart below
- Technician survey checklist

1000 RPM



1200 RPM



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[3]1 73.00 T-Exhaust A-Side, 536106032
[4]1 73.01 T-Exhaust A Lim1 Eff., 536106032
[5]1 73.03 T-Exhaust A Lim2 Eff., 536106032
[6]1 74.00 T-Exhaust B-Side, 536106032
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[21]1 83.04 FuelDema
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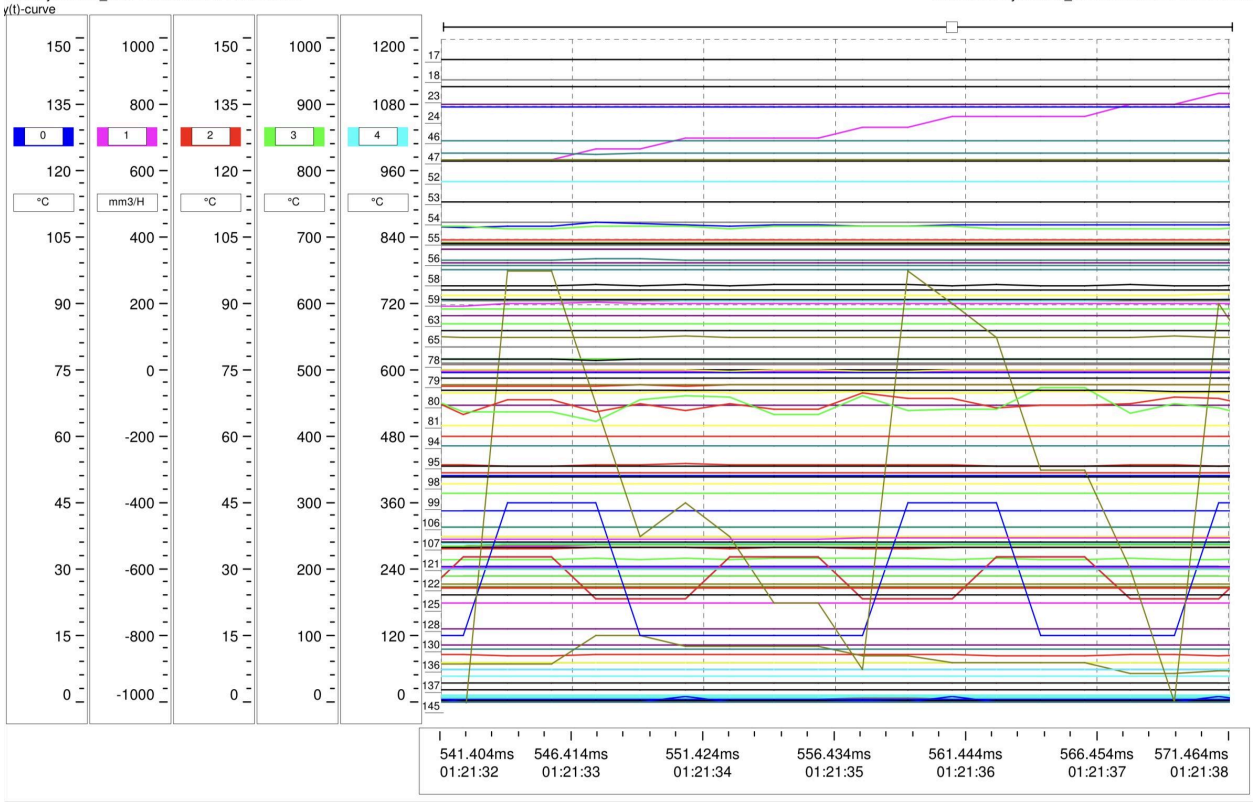
[23]1 85.20 Engine Sp

1400 RPM



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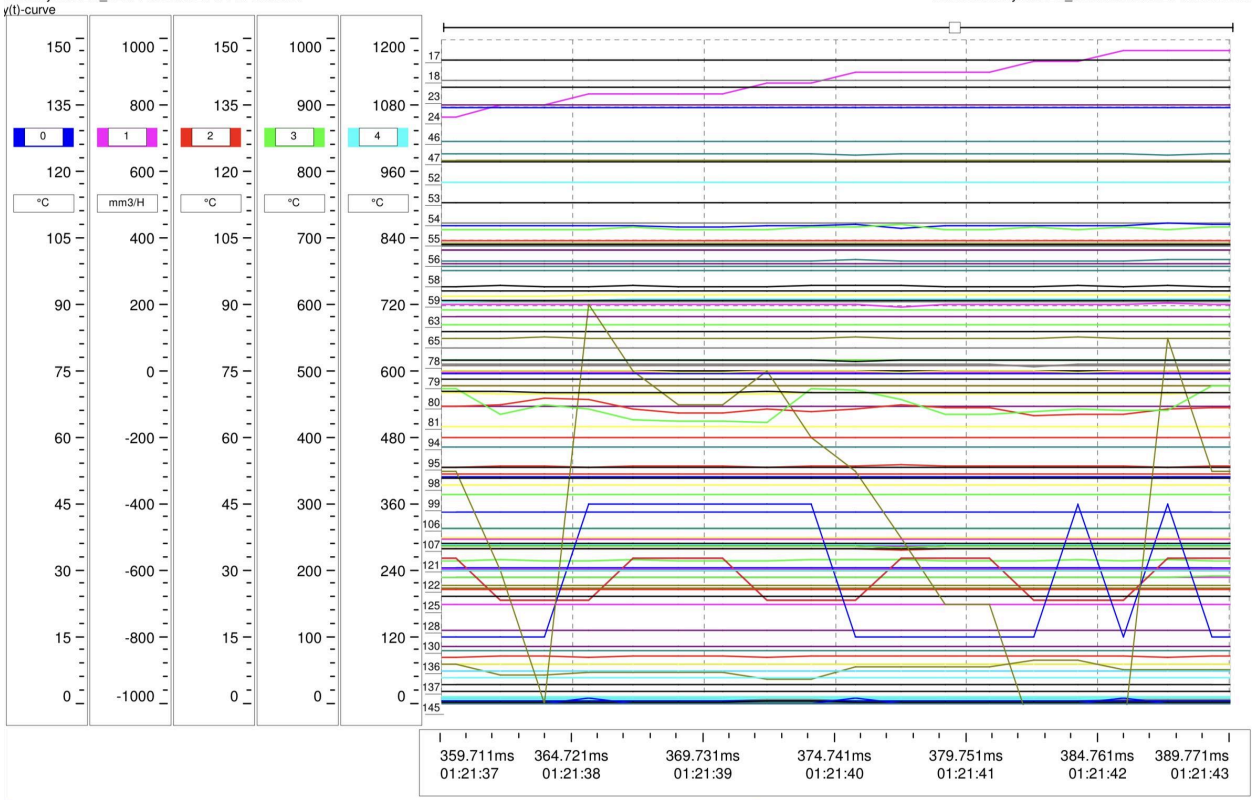
1600 RPM



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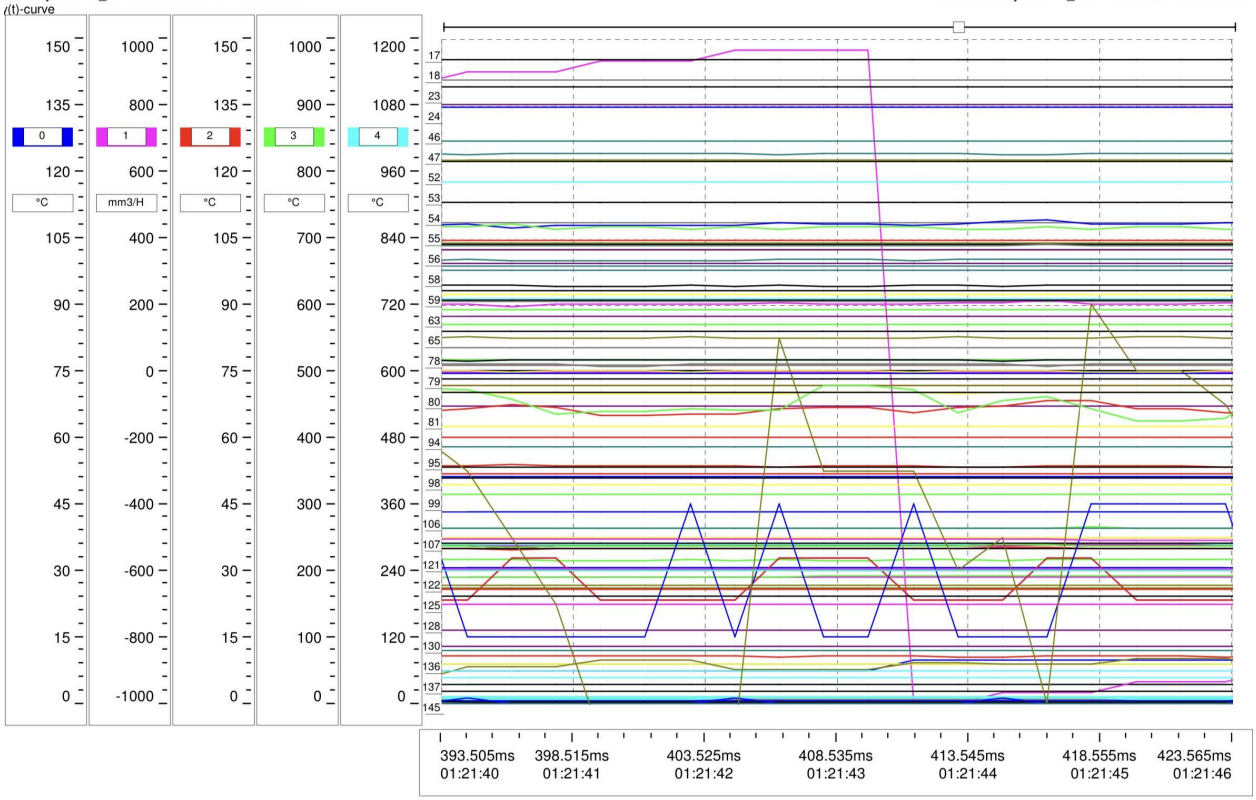
1800 RPM



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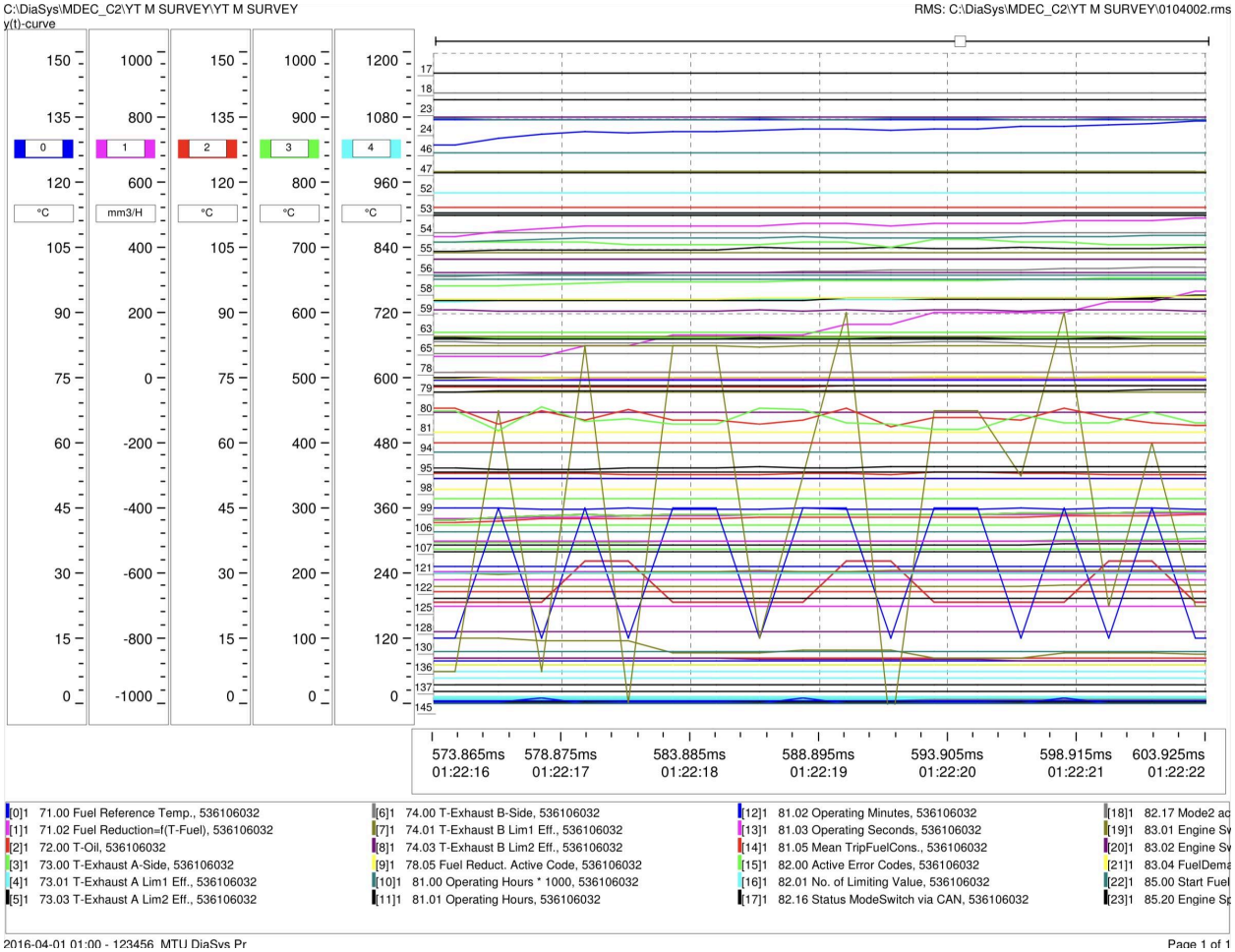
2000 RPM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y(t)-curve
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°C
mm3/H
573.865ms 01:22:16
578.875ms 01:22:17
583.885ms 01:22:18
588.895ms 01:22:19
593.905ms 01:22:20
598.915ms 01:22:21
603.925ms 01:22:22
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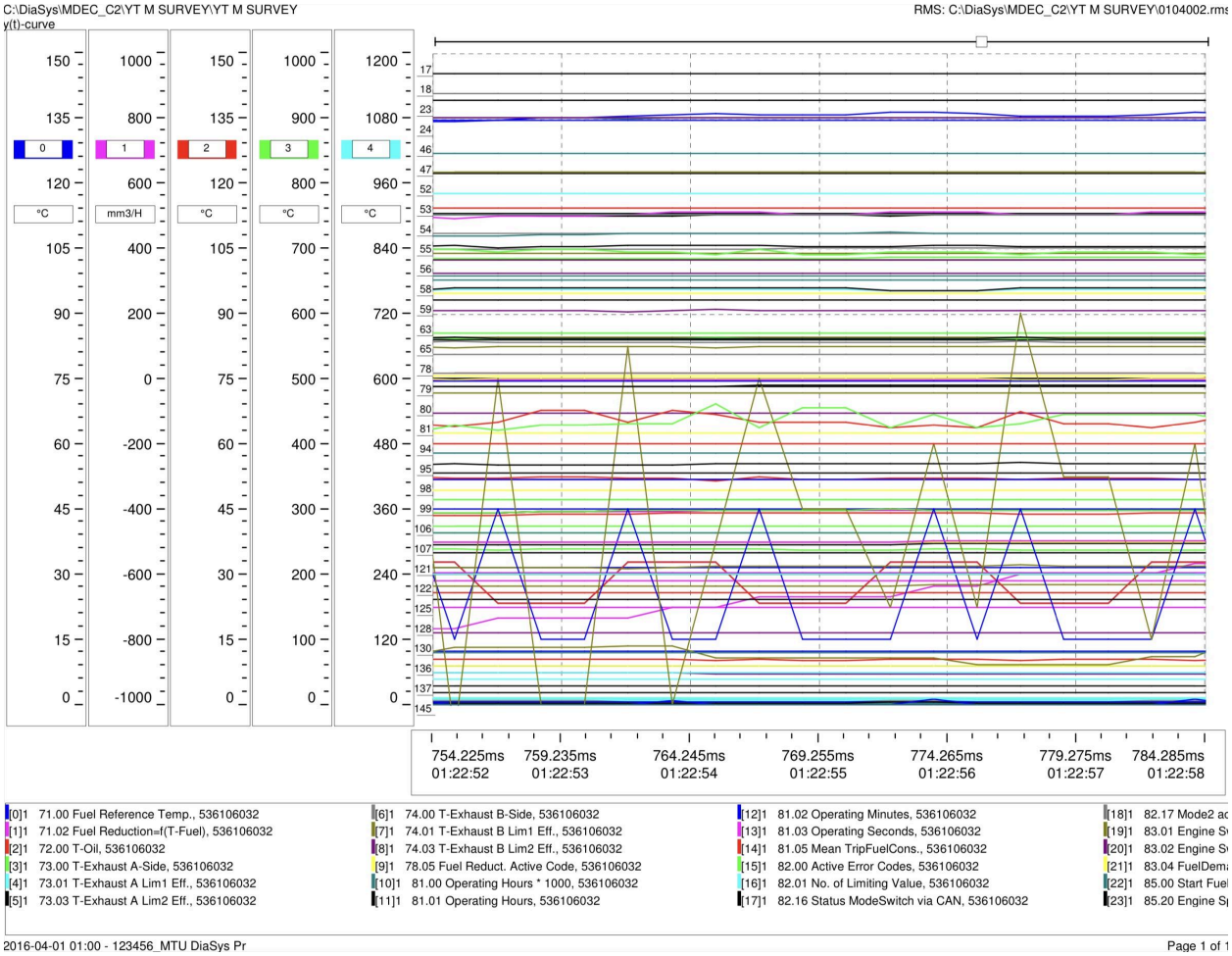
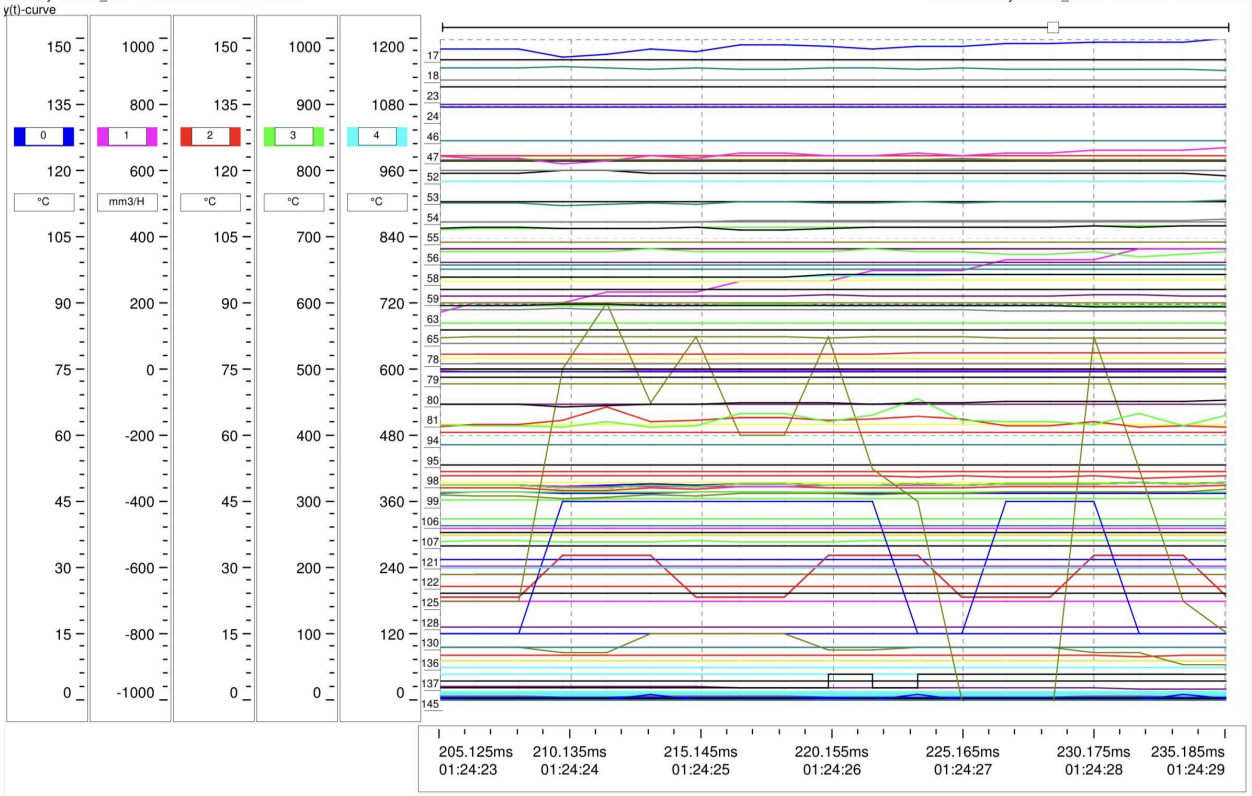
Page 1 of 1

2200 RPM



24OO RPM WOT 100% LOAD



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STARBOARD ENGINE TAG

STARBOARD ALARM LIST

STARBOARD RAW WATER PUMP HOSE AND CLAMPS

STARBOARD HEAT EXCHANGER RAW WATER PIPE

STARBOARD A7 HP FUEL LINE LEAK

STARBOARD OIL PAN LEAK

STARBOARD EXHAUST MANIFOLD CORROSION

STARBOARD ENGINE MOUNT CORROSION

STARBOARD CROSSOVER PIPE COROSSION/ POSSIBLE LEAK

STARBOARD BOTH TURBOS CORROSION AND START OF COOLANT LEAK

STARBOARD FLY WHEEL COVER SEEPING OIL

STARBOARD GEAR COOLER INLET AND OUTLET

STARBOARD OIL PAN LEAK

STARBOARD CHARGE AIR COOLER BASE AND SUPPLY LEAK

STARBOARD TURBOS UNPAINTED

STARBOARD TURBO CORROSION AND START OF COOLANT LEAK

STARBOARD COOLANT PUMP CORROSION

STARBOARD COOLANT PUMP LEAKS

STARBOARD RAW WATER PUMP LEAK AND FRONT MAIN SEAL LEAK

Survey checklist-Starboard Generator					
	GREEN	YELLOW	ORANGE	RED	Notes
SEA WATER					
Through Hull					
Valve					
Strainer					
Supply plumbing					
R/W Pump inlet					
R/W Pump weephole					Corrosion and weeping
R/W Pump-to-H/E					
H/E--cooler					
H/E--sea water outlet					
COOLANT					
Appearance					incorrect coolant
Concentration					
Level					
F/W Pump weep hole					
F/W Pump seals/plumbing					
H/E					
Thermostat housing					
Distribution housing					weeping
Pre-heater--element, wiring, control box					
Pre-heater--pump & plumbing (if applicable)					
Oil cooler					
OIL					
Appearance					
Level					
Sump gasket					
Front main seal					
Rear main seal					
Oil filter housing					
Turbo oil drain					

Turbo oil supply					
Valve covers--A-bank					
Pto--forward (if applicable)					
Sump drain					
AIR					
Air filter					
Air inlet housing clamps & hoses					
Breather filter assembly					
Breather pipes, hoses, clamps					
intake--check gaskets/seals					
EXHAUST					
Exhaust outlet					
Exhaust stancions					
ELECTRICAL					
ECU--Appearance, connections, grounding strap, harnesses					
Starter--appearance, connections, cables					
FUEL					Needs service
Primary fuel filter assembly--appearance					
Primary fuel filter assembly--valve operation					
Primary fuel filter assembly--hoses, connections, etc					
Fuel supply lines/pipes/hoses					
Fuel lift pump					
Fuel lines to/from fuel secondary filters					
Secondary fuel filter assembly--appearance, valve operation					
Secondary fuel filters					
Hand priming pump assembly					

Mounts					
ACTIVE ALARMS?					
ALARM HISTORY					

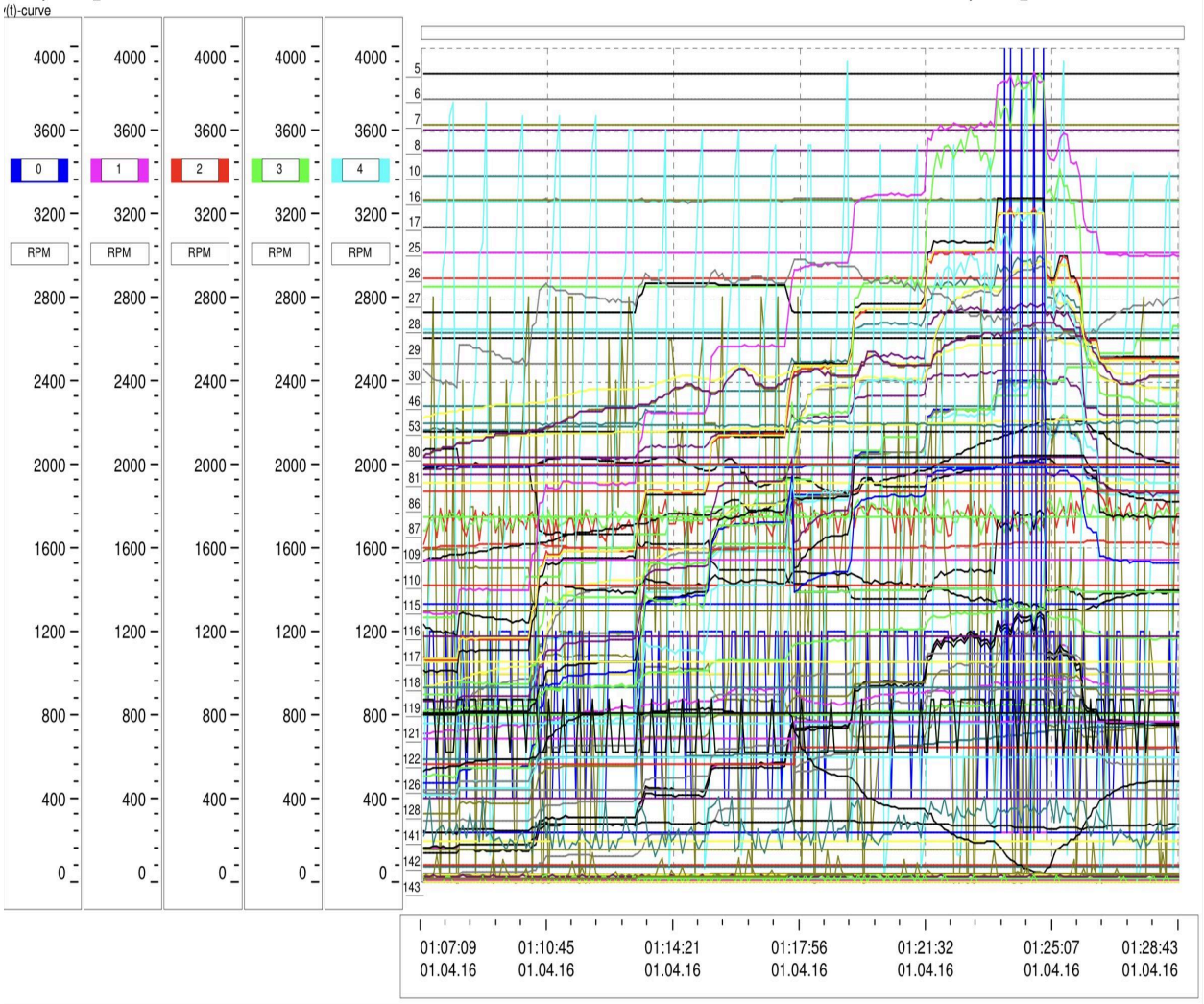
PORT MAIN ENGINE		
MODEL: 12V2000M96L	SERIAL #: 536106031	RUNNING HOURS:
Rated KW: 1492	Rated RPM: 2350	Max observed RPM:

OBSERVATIONS:	RECOMMENDATIONS:
• Raw water hoses and clamps old and corroded	Replace and clean
• Oil pan leaking oil	Reseal and clean
• Exhaust manifold corrosion	Clean and paint
• Engine mount corrosion	Clean and paint
• Both turbos unpainted and starting coolant leak	Reseal and paint
• Gear cooler inlet/outlet corroded	Reseal and clean
• Charge air cooler base and supply leaking	Reseal and clean
• Coolant pump leaking and corroded	Replace and clean
• Raw water pump actively leaking	Replace and clean
• Flap actuators leaking oil	Replace and clean
ADDITIONAL NOTES: • Performance sea trial performed • visual inspection performed • Fluid samples performed	
ATTACHMENTS: • Photos below • Sea trial data chart below • Technician survey checklist	

1000 RPM

C:\DiaSys\MDEC_C2\YT M SURVEY\YT M SURVEY
r(t)-curve

RMS: C:\DiaSys\MDEC_C2\YT M SURVEY\0104002.rms



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[3]2 0.04 Actual Eng. Speed Crank., 536106031
[4]2 0.05 Actual Eng. Speed Cam., 536106031
[5]2 0.18 Engine is starting, 536106031
[6]2 0.19 Engine is stopped, 536106031
[7]2 0.20 Engine is stopped Crank., 536106031
[8]2 0.21 Engine is stopped Cam., 536106031
[9]2 1.03 Engine Speed Deviation, 536106031
[10]2 1.21 Speed BU-Mode Active, 536106031
[11]2 3.00 Requested Fuel Quantity, 536106031
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[18]2 4.04 Test F
[19]2 20.00 Begin
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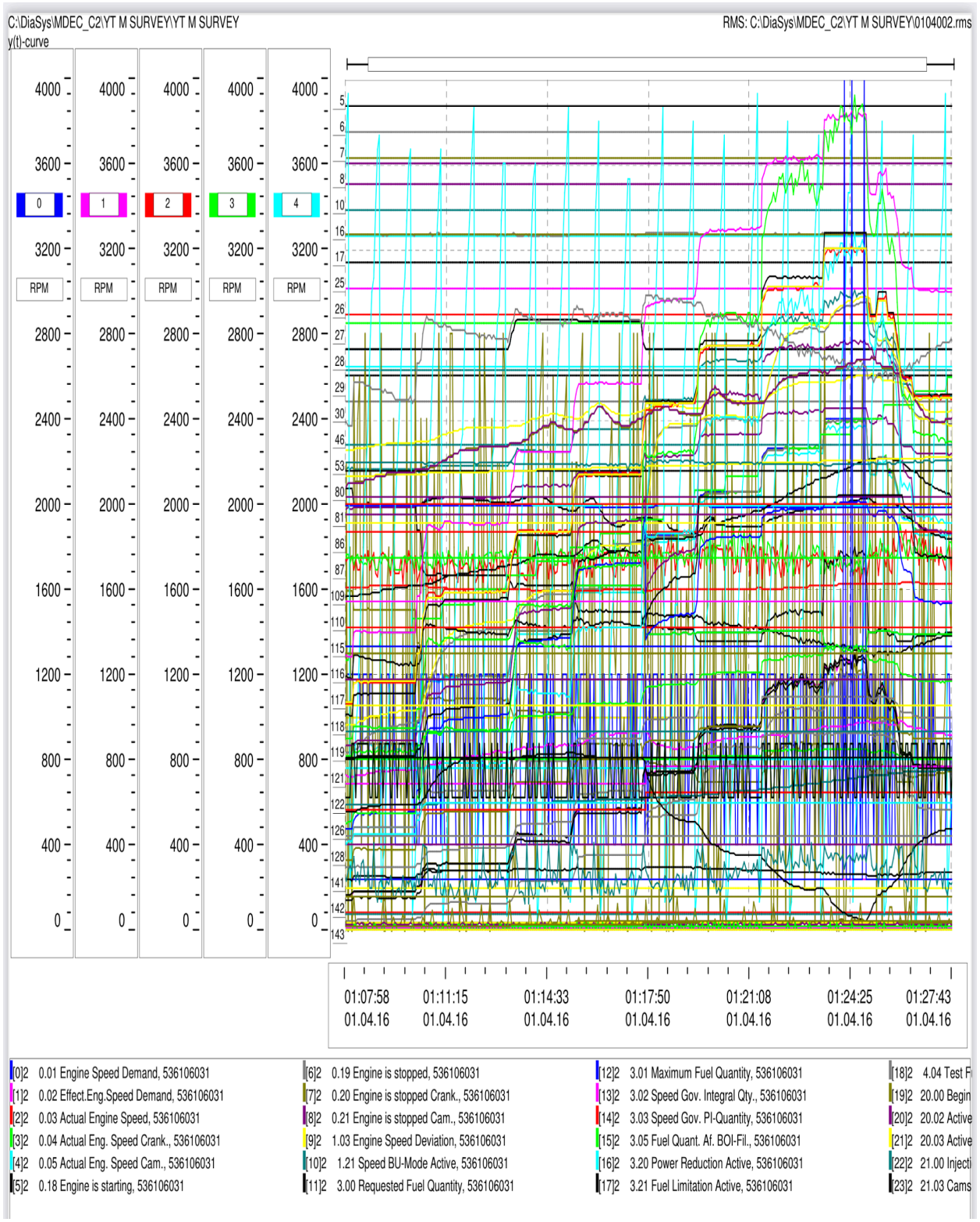
[22]2 21.00 Injecti
[23]2 21.03 Cams

1200 RPM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RPM
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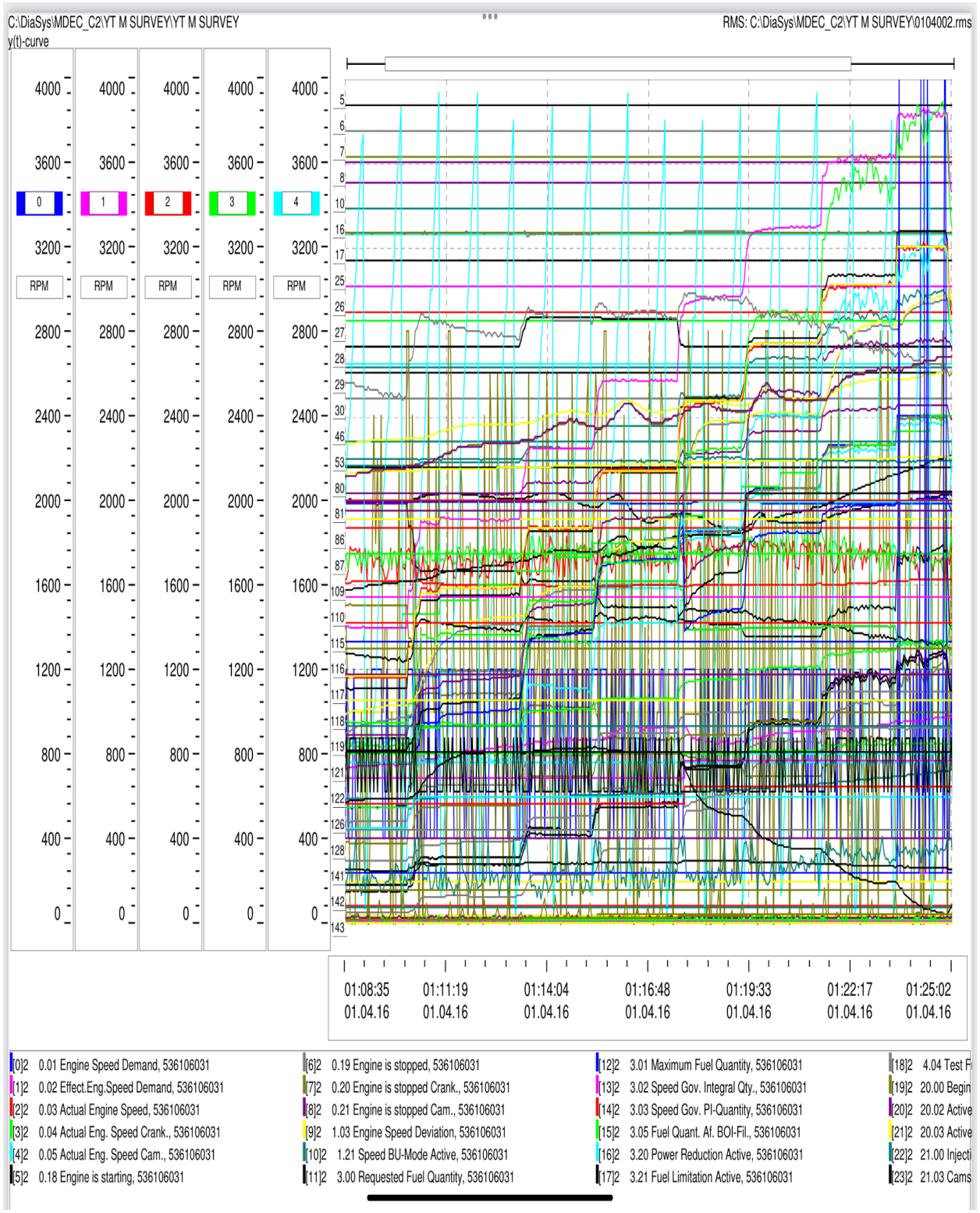
1400 RPM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RPM
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01:11:19 01.04.16
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01:16:48 01.04.16
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01:22:17 01.04.16
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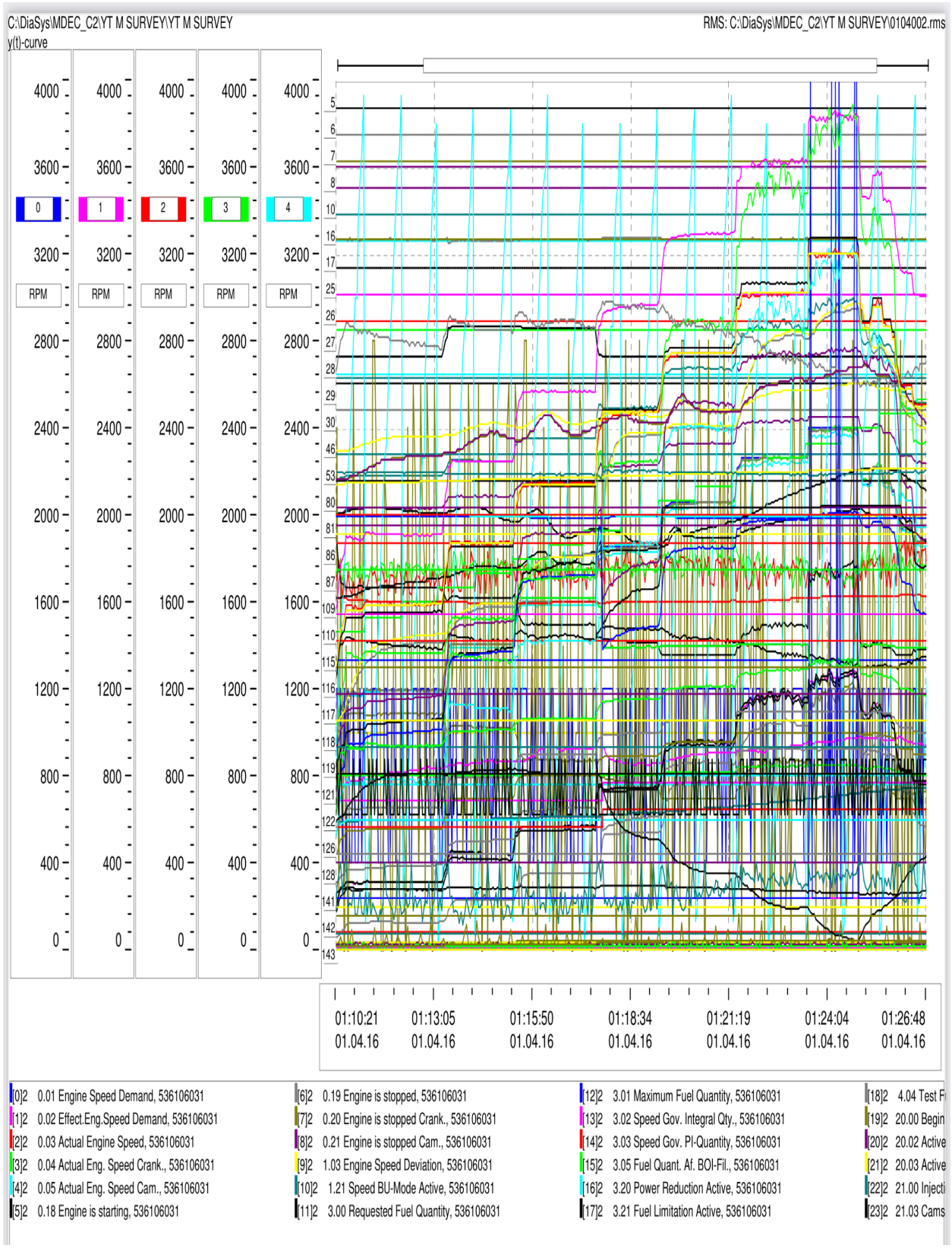
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y(t)-curve
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4000
3600
3200
2800
2400
2000
1600
1200
800
400
0
RPM
0
1
2
3
4
01:10:21 01.04.16
01:13:05 01.04.16
01:15:50 01.04.16
01:18:34 01.04.16
01:21:19 01.04.16
01:24:04 01.04.16
01:26:48 01.04.16
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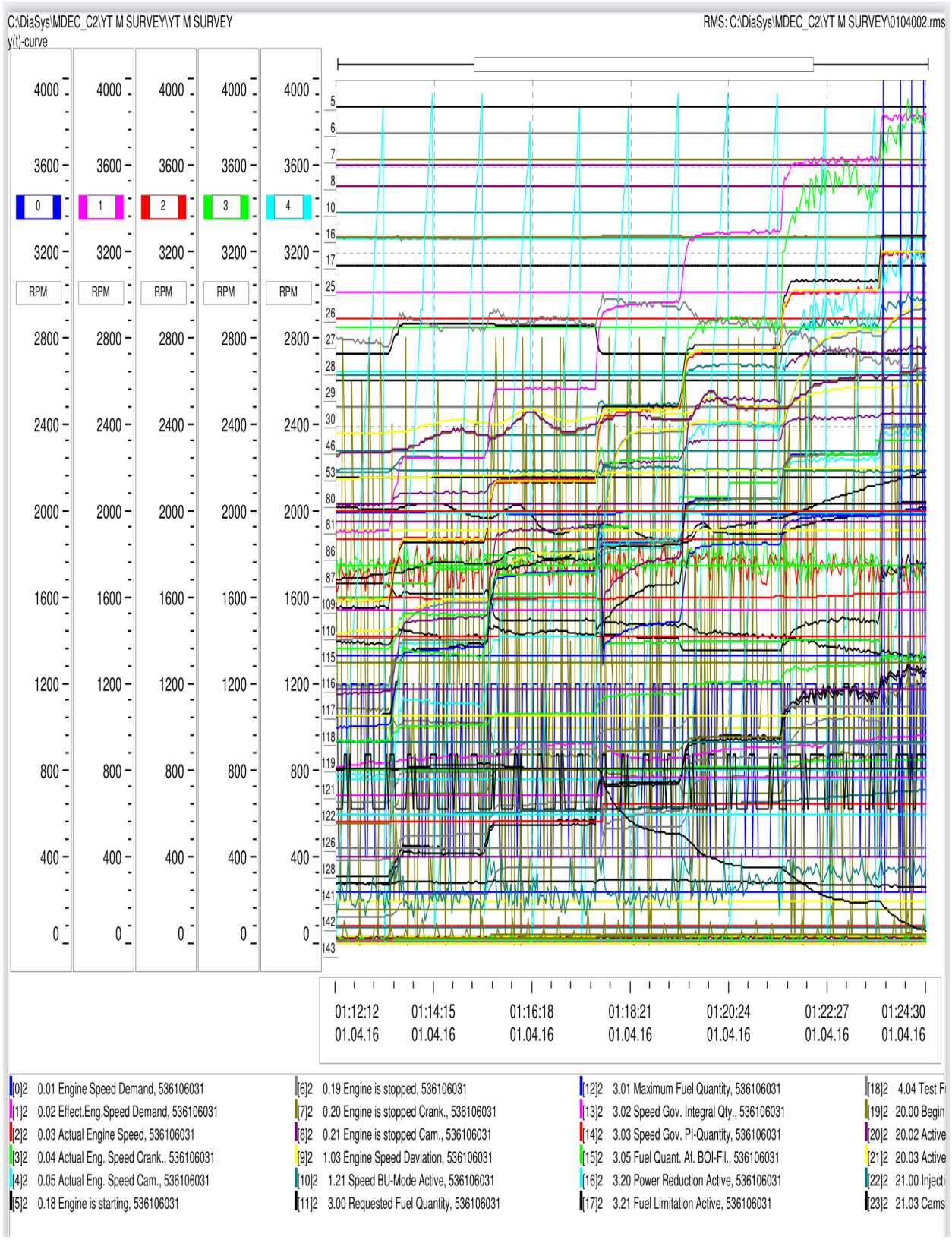
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y(t)-curve
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3
4
01:12:12 01.04.16
01:14:15 01.04.16
01:16:18 01.04.16
01:18:21 01.04.16
01:20:24 01.04.16
01:22:27 01.04.16
01:24:30 01.04.16
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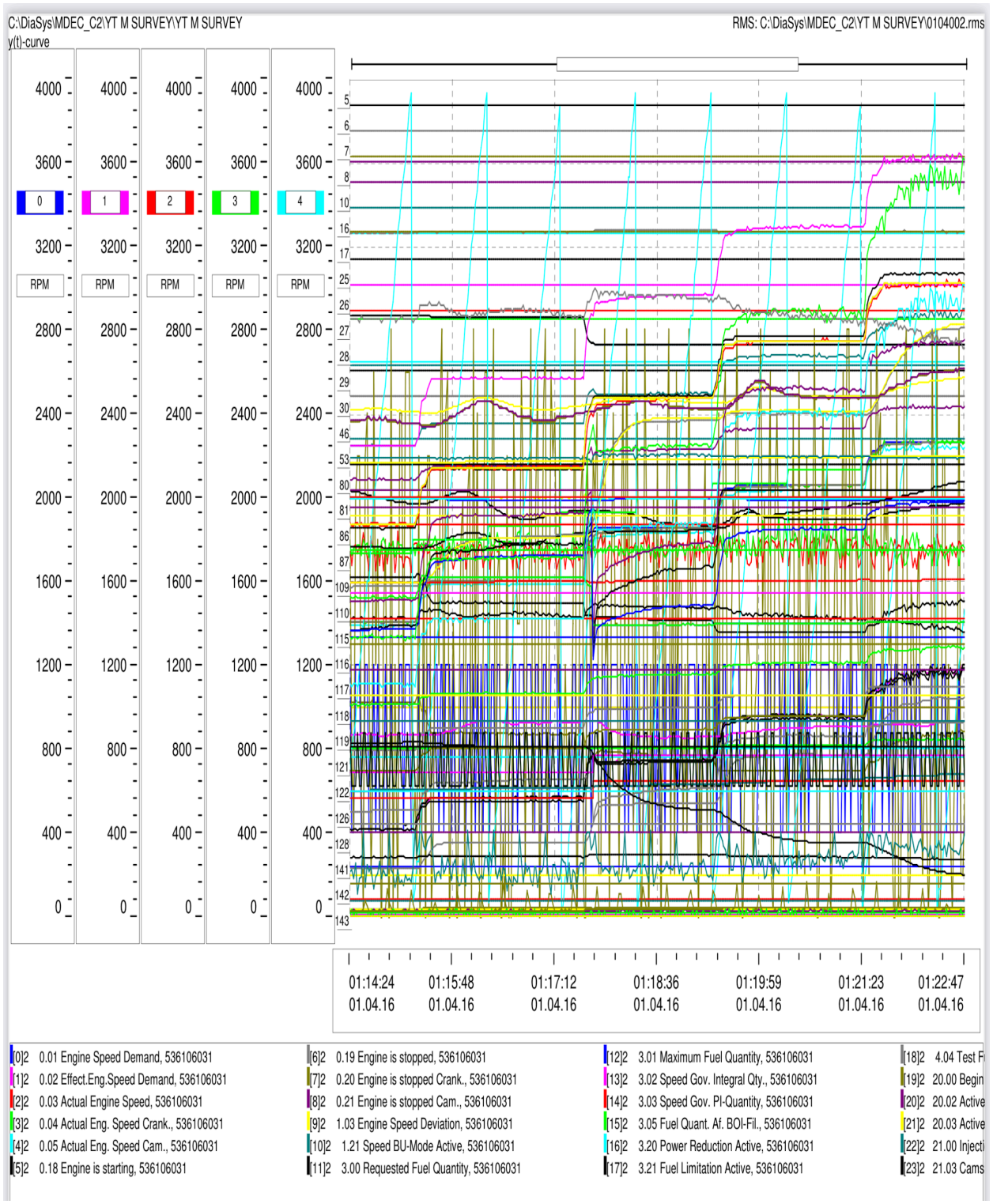
[1]2 0.02 Effect.Eng.Speed Demand, 536106031
[2]2 0.03 Actual Engine Speed, 536106031
[3]2 0.04 Actual Eng. Speed Crank., 536106031
[4]2 0.05 Actual Eng. Speed Cam., 536106031
[5]2 0.18 Engine is starting, 536106031
[6]2 0.19 Engine is stopped, 536106031
[7]2 0.20 Engine is stopped Crank., 536106031
[8]2 0.21 Engine is stopped Cam., 536106031
[9]2 1.03 Engine Speed Deviation, 536106031
[10]2 1.21 Speed BU-Mode Active, 536106031
[11]2 3.00 Requested Fuel Quantity, 536106031
[12]2 3.01 Maximum Fuel Quantity, 536106031
[13]2 3.02 Speed Gov. Integral Qty., 536106031
[14]2 3.03 Speed Gov. PI-Quantity, 536106031
[15]2 3.05 Fuel Quant. Af. BOI-Fil., 536106031
[16]2 3.20 Power Reduction Active, 536106031
[17]2 3.21 Fuel Limitation Active, 536106031
[18]2 4.04 Test F
[19]2 20.00 Begin
[20]2 20.02 Active
[21]2 20.03 Active
[22]2 21.00 Injecti
[23]2 21.03 Cams

2000 RPM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y(t)-curve
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RPM
01:14:24 01.04.16
01:15:48 01.04.16
01:17:12 01.04.16
01:18:36 01.04.16
01:19:59 01.04.16
01:21:23 01.04.16
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[3]2 0.04 Actual Eng. Speed Crank., 536106031
[4]2 0.05 Actual Eng. Speed Cam., 536106031
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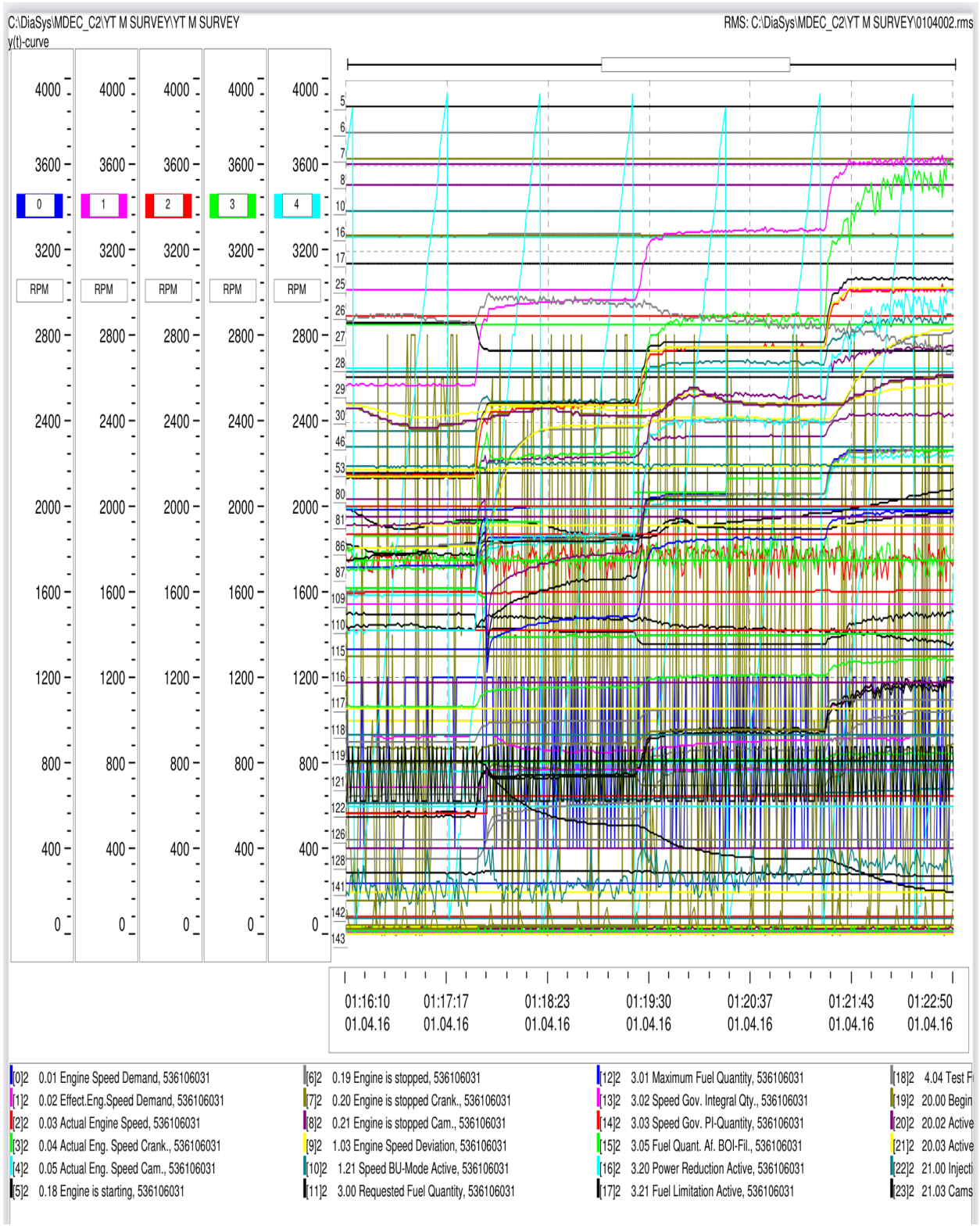
[6]2 0.19 Engine is stopped, 536106031
[7]2 0.20 Engine is stopped Crank., 536106031
[8]2 0.21 Engine is stopped Cam., 536106031
[9]2 1.03 Engine Speed Deviation, 536106031
[10]2 1.21 Speed BU-Mode Active, 536106031
[11]2 3.00 Requested Fuel Quantity, 536106031
[12]2 3.01 Maximum Fuel Quantity, 536106031
[13]2 3.02 Speed Gov. Integral Qty., 536106031
[14]2 3.03 Speed Gov. PI-Quantity, 536106031
[15]2 3.05 Fuel Quant. Af. BOI-Fil., 536106031
[16]2 3.20 Power Reduction Active, 536106031
[17]2 3.21 Fuel Limitation Active, 536106031
[18]2 4.04 Test F
[19]2 20.00 Begin
[20]2 20.02 Active
[21]2 20.03 Active
[22]2 21.00 Injecti
[23]2 21.03 Cams

2200 RPM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y(t)-curve
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RPM
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01:17:17 01.04.16
01:18:23 01.04.16
01:19:30 01.04.16
01:20:37 01.04.16
01:21:43 01.04.16
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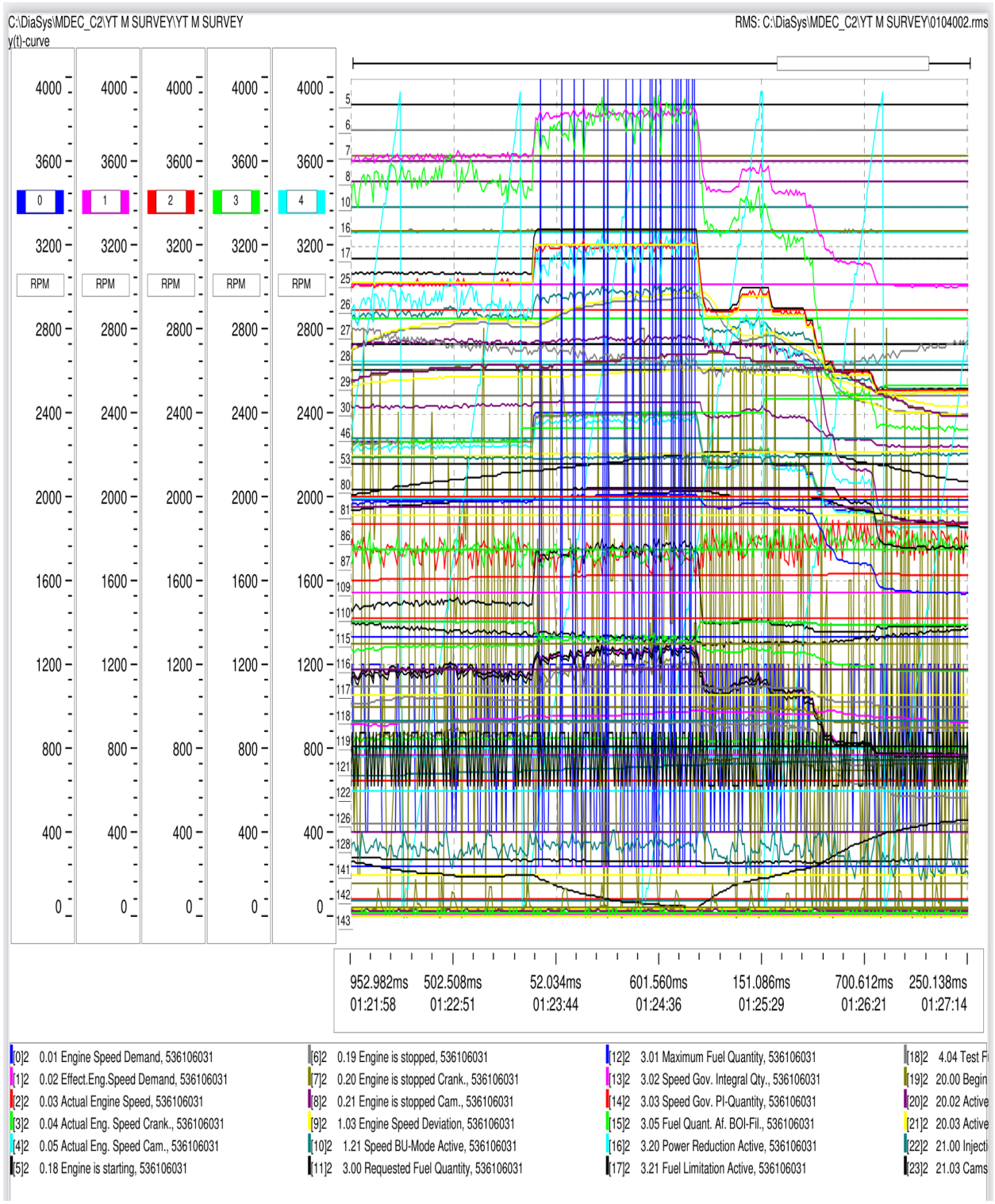
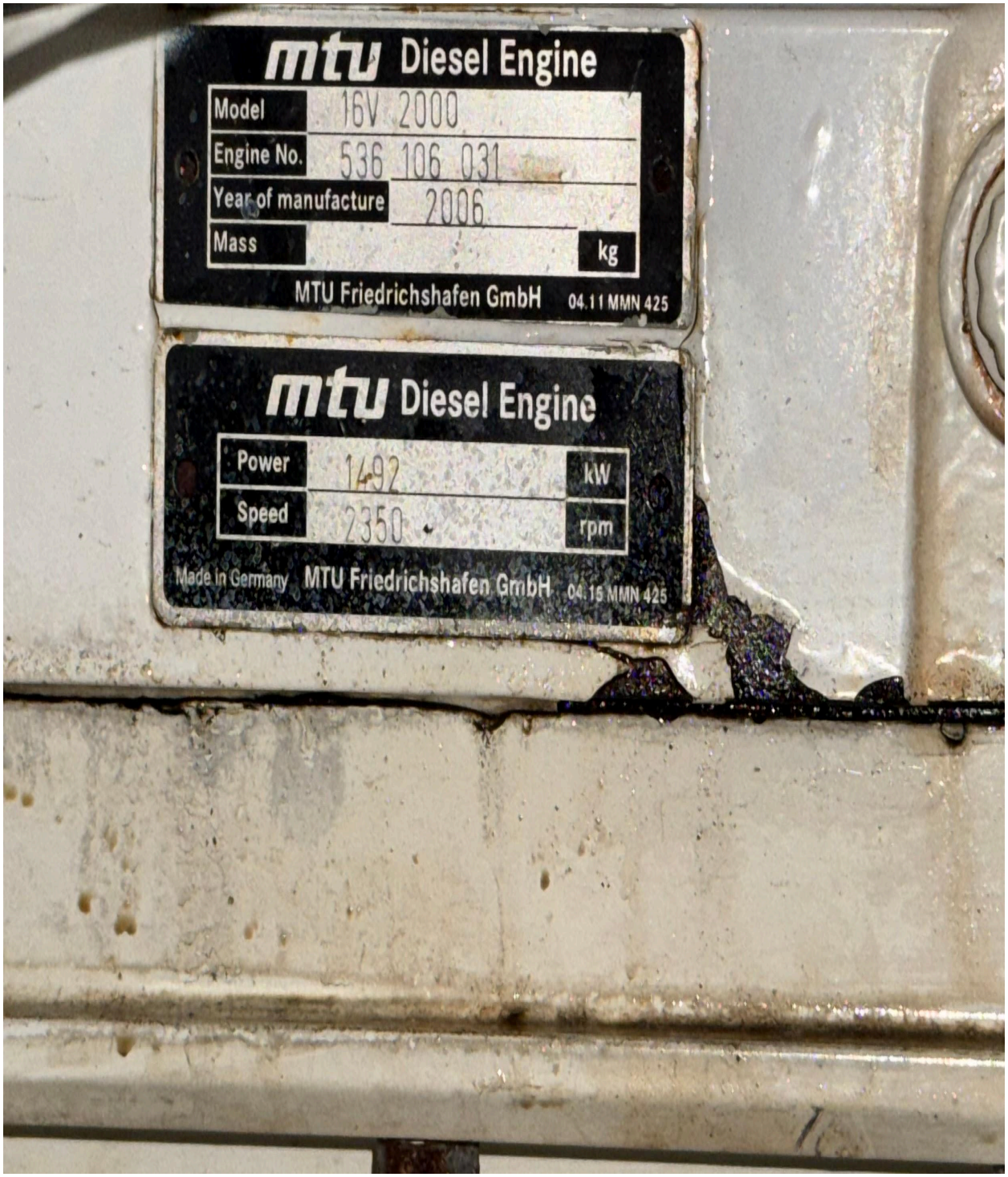
[3]2 0.04 Actual Eng. Speed Crank., 536106031
[4]2 0.05 Actual Eng. Speed Cam., 536106031
[5]2 0.18 Engine is starting, 536106031
[6]2 0.19 Engine is stopped, 536106031
[7]2 0.20 Engine is stopped Crank., 536106031
[8]2 0.21 Engine is stopped Cam., 536106031
[9]2 1.03 Engine Speed Deviation, 536106031
[10]2 1.21 Speed BU-Mode Active, 536106031
[11]2 3.00 Requested Fuel Quantity, 536106031
[12]2 3.01 Maximum Fuel Quantity, 536106031
[13]2 3.02 Speed Gov. Integral Qty., 536106031
[14]2 3.03 Speed Gov. PI-Quantity, 536106031
[15]2 3.05 Fuel Quant. Af. BOI-Fil., 536106031
[16]2 3.20 Power Reduction Active, 536106031
[17]2 3.21 Fuel Limitation Active, 536106031
[18]2 4.04 Test F
[19]2 20.00 Begin
[20]2 20.02 Active
[21]2 20.03 Active
[22]2 21.00 Injecti
[23]2 21.03 Cams

2400 WOT 100% LOAD



PORT ENGINE TAG



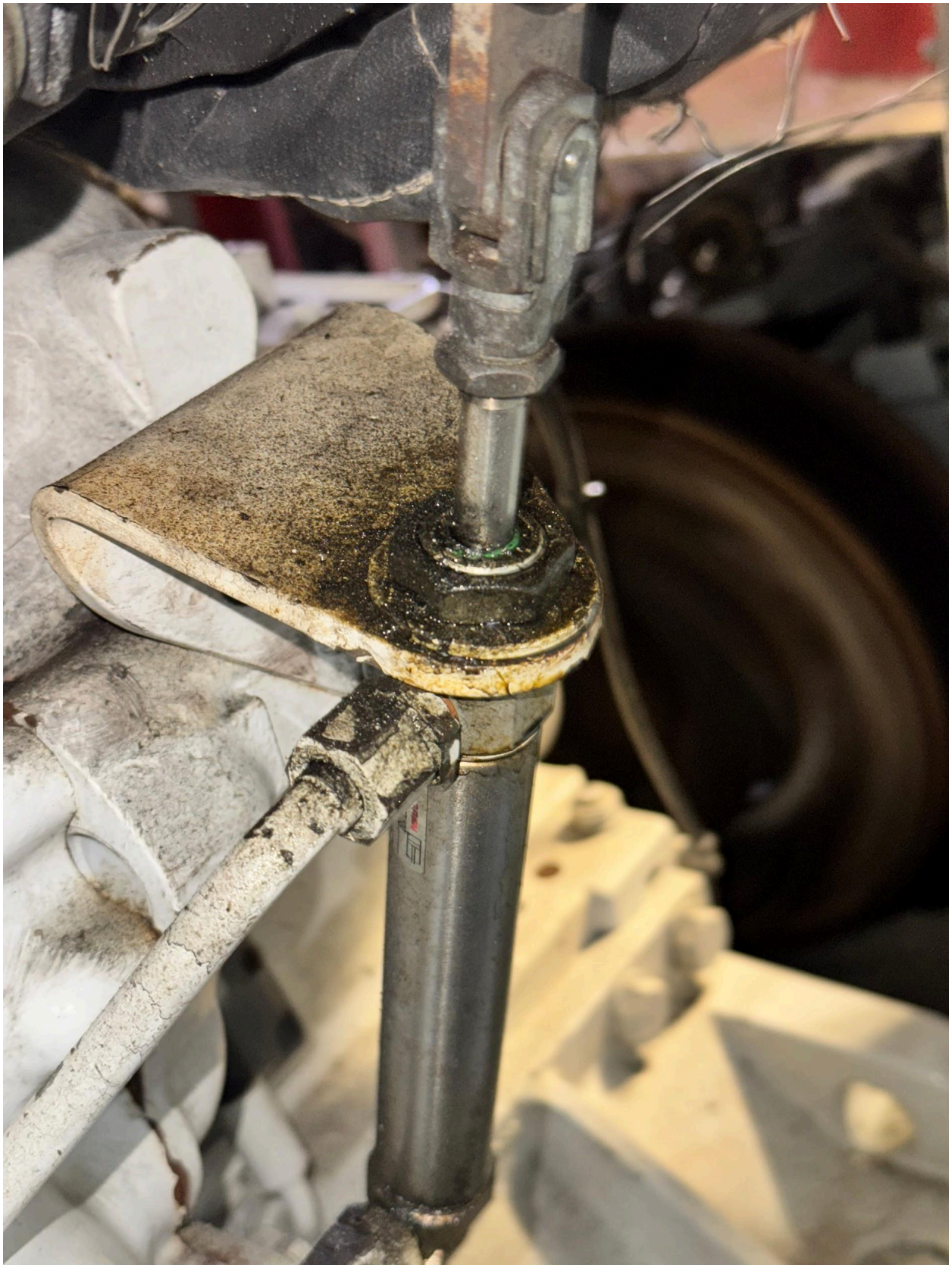
PORT OIL PAN LEAK

PORT UNPAINTED TURBOS

PORT SIGNS OF FUEL IN CENTER OF ENGINE AND CORRROSION

PORT EXHAUST MANIFOLD CORROSION

PORT A BANK ACTUATOR LEAKING



PORT CHARGE AIR COOLER BASE LEAKING

PORT RAW WATER PIMP LEAKING

PORT RAW WATER PLUMBING CORROSION

PORT COOLANT PUMP CORROSION

Survey checklist--mtu16V2000M91 starboard					
	GREEN	YELLOW	ORANGE	RED	Notes
SEA WATER					
Through Hull					Visually coroded and green signs of seeping
Valve					Visually coroded and green signs of seeping
Strainer					Visually coroded and green signs of seeping
Supply plumbing					Visually coroded and green signs of seeping
R/W Pump inlet					Visually coroded and green signs of seeping
R/W Pump weephole					Visually coroded and green signs of seeping
R/W Pump-to-H/E					Visually coroded and green signs of seeping
H/E--plates					Visually coroded and green signs of seeping
H/E--sea water outlet					Visually coroded and green signs of seeping
H/E-to-G/C					Visually coroded and green signs of seeping
G/C inlet/outlet/appearance					Visually coroded and green signs of seeping
COOLANT					
Appearance					Color is light and cloudy
Concentration					low
Level					
F/W Pump weep hole					Heavy corrosion and leaking
F/W Pump seals/plumbing					Weeping coolant
H/E					
Thermostat housing					
Vent lines					
Distribution housing					
Exhaust manifold--A-bank					Signs of of coolant weeping from seals

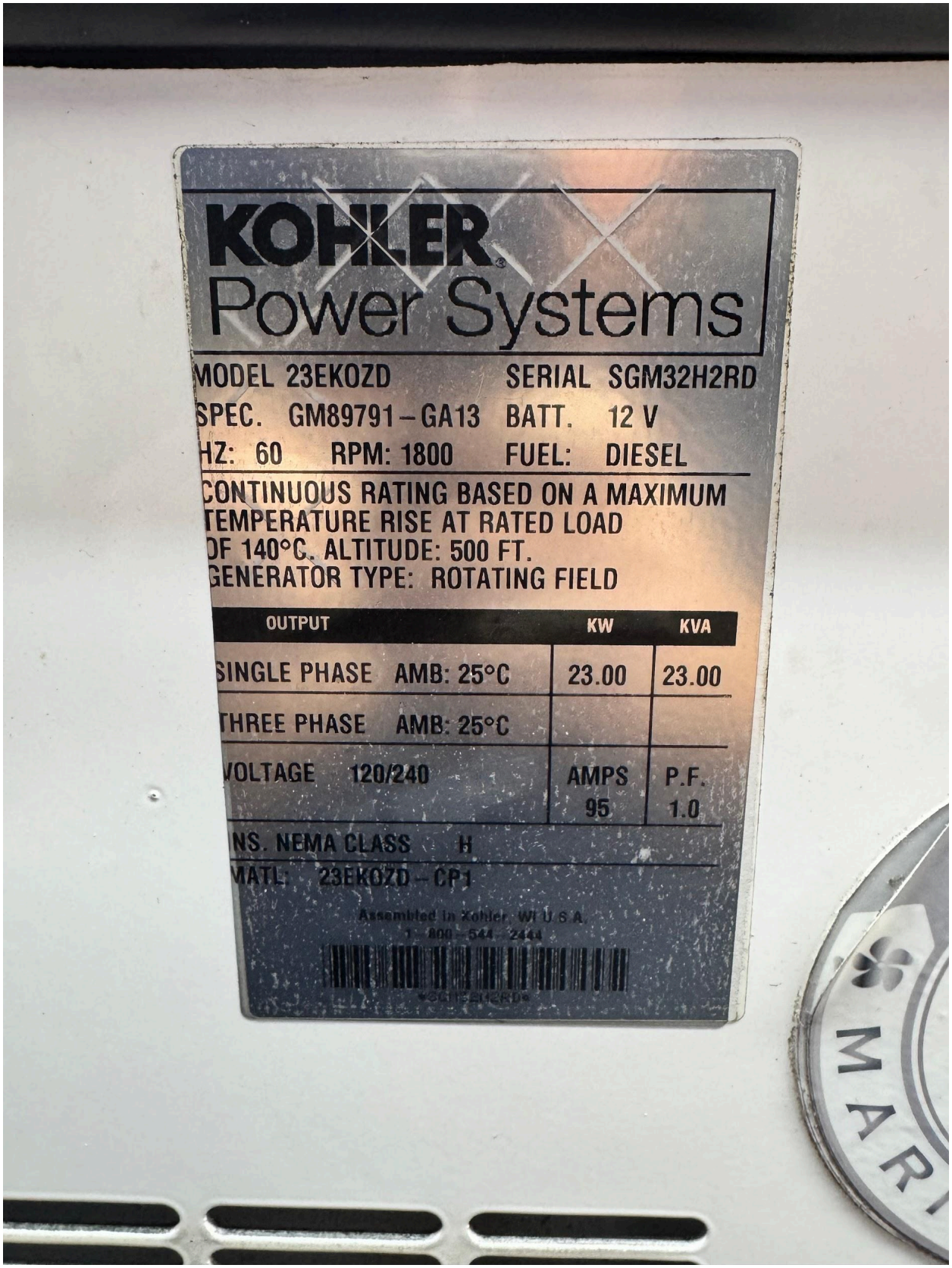
Exhaust manifold--B-bank					Signs of of coolant weeping from seals
Charge air cooler					Base weeping oil
Pre-heater--element, wiring, control box					
Fuel cooler					
Oil cooler					
OIL					
Appearance					
Level					
Sump gasket					Leaking from gasket at multiple points
Front main seal					
Rear main seal					
Oil filter housing					
Actuator--A-bank--inlet					Seal weeping oil
Actuator--A-bank--exhaust					Seal weeping oil
4/2-way valve--A-bank					Leaking oil
Turbo oil supply					
Valve covers--A-bank					
Valve covers--B-bank					
Pto--forward (if applicable)					
AIR					
Air filter					
Air inlet housing linkages--A-bank					
air inlet housing return spings--A-bank					
Air inlet housing clamps & hoses					Hoses drycracking
Breather filter assembly					
Breather pipes, hoses, clamps					Hoses drycracking
Boost pipes between turbos and CAC					
EXHAUST					
Umblossem valve					
Exhaust manifold--A-bank--mounting					
Exhaust manifold--B-bank--mounting					

Exhaust outlet					
Exhaust blankets					
Exhaust stancions					
Exhaust riser					
Exhaust spray ring					
Exhaust flap actuators, levers, linkage--A-bank					Seal weeping oil
ELECTRICAL					
ECU--Appearance, connections, grounding strap, harnesses					
Starter--appearance, connections, cables					
Alternator--appearance, connections, cables					
Alternator drive belt					
FUEL					
Primary fuel filter assembly--appearance					
Primary fuel filter assembly--hoses, connections, etc					
Fuel supply lines/pipes/hoses					
Fuel lift pump					
Hp fuel pump					Corrosion and signs of leaking
Fuel lines to/from fuel secondary filters					
Secondary fuel filter assembly--appearance, valve operation					
Secondary fuel filters					
Mounts					
ACTIVE ALARMS?					
ALARM HISTORY					
RATED KW	1492				
MAX RPM	2350				
MAX RPM ACHIEVED ON SEA TRIAL	2000				

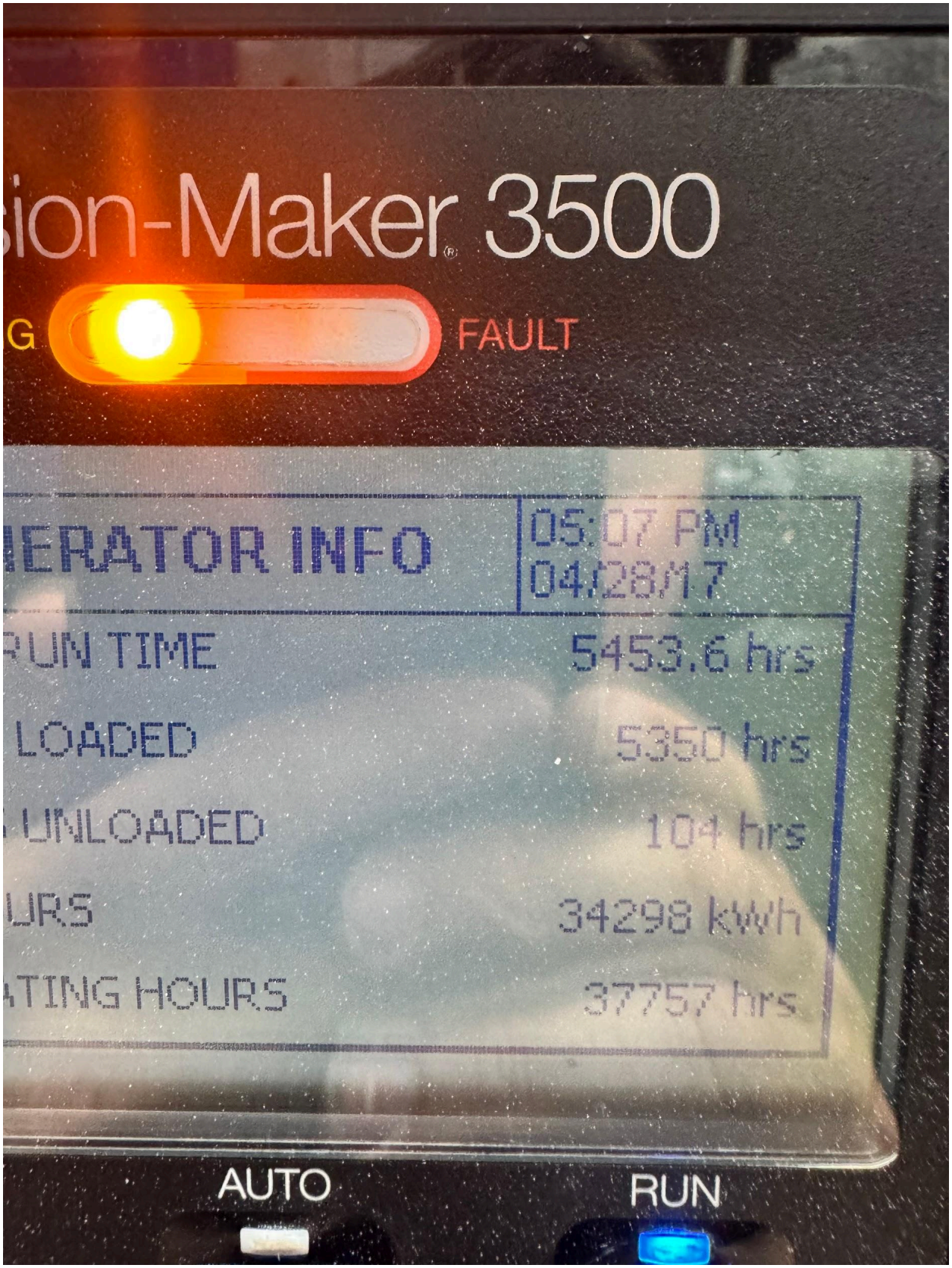
STARBOARD GENERATOR	KOHLER	
MODEL: 23EKOZD	**SERIAL #**: SGM32H2RD	**RUNNING HOURS:** 5453

OBSERVATIONS:	
• Block stained with fuel and oil	Clean and monitor
• Sound shield pan has oil and debris	Clean and monitor
ADDITIONAL NOTES: • Operation & performance tested • Fluid samples performed	
ATTACHMENTS: • Photos below • Technician survey checklist	

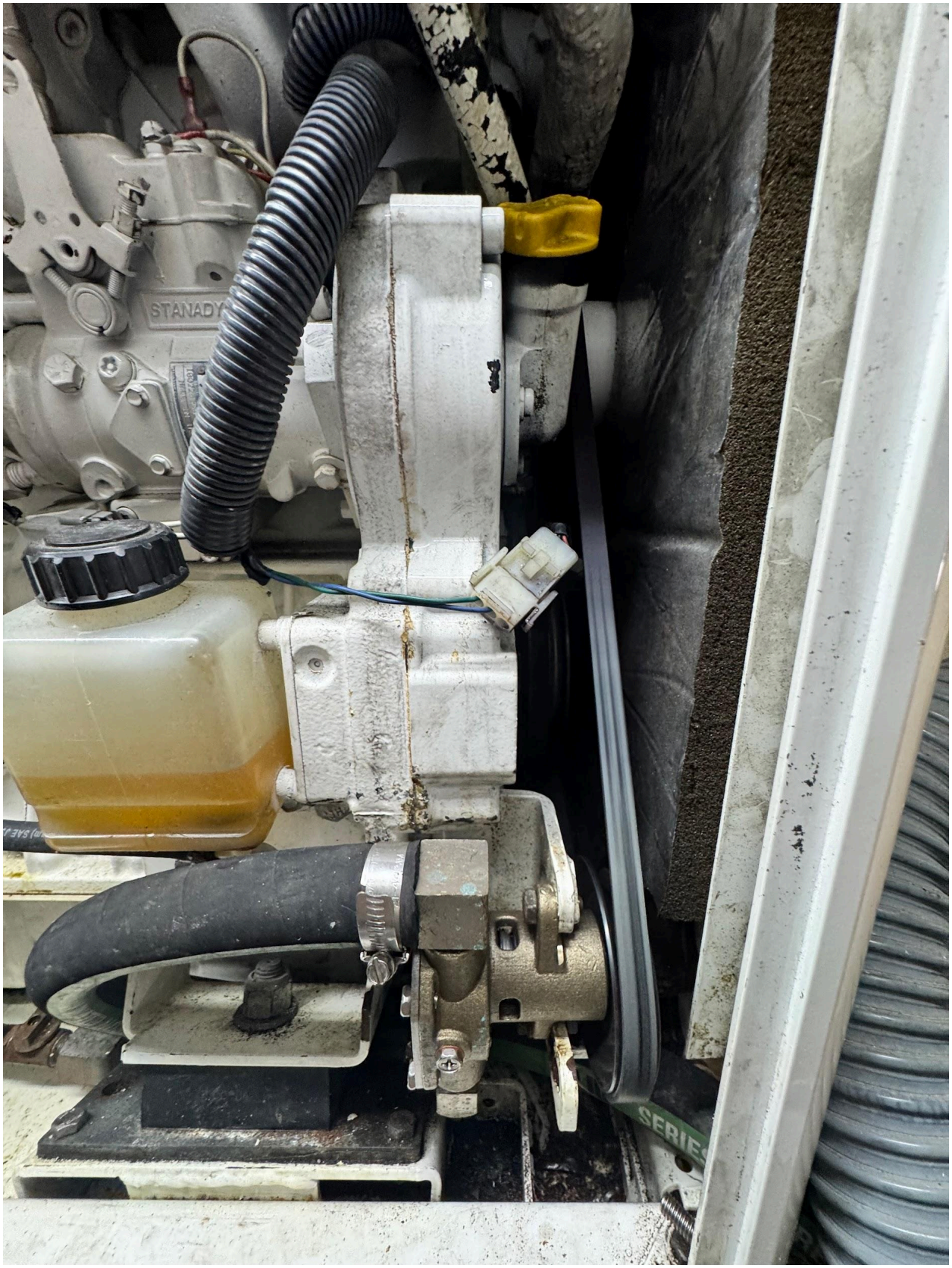
STARBOARD


KOHLER
Power Systems
MODEL 23EKOZD
SERIAL SGM32H2RD
SPEC. GM89791–GA13
BATT. 12 V
HZ: 60
RPM: 1800
FUEL: DIESEL
CONTINUOUS RATING BASED ON A MAXIMUM
TEMPERATURE RISE AT RATED LOAD
OF 140°C. ALTITUDE: 500 FT.
GENERATOR TYPE: ROTATING FIELD
OUTPUT
KW
KVA
SINGLE PHASE AMB: 25°C
23.00
23.00
THREE PHASE AMB: 25°C
VOLTAGE 120/240
AMPS
95
P.F.
1.0
NS. NEMA CLASS H
MATL 23EKOZD – CP1
Assembled in Kohler, WI U.S.A.
1-800-544-2444

STARBOARD


ion-Maker 3500
G
FAULT
ERATOR INFO
05:07 PM
04/28/17
RUN TIME
5453.6 hrs
LOADED
5350 hrs
UNLOADED
104 hrs
URS
34298 kWh
ATING HOURS
37757 hrs
AUTO
RUN

STARBOARD



STARBOARD

Survey checklist-Starboard Generator					
	GREEN	YELLOW	ORANGE	RED	Notes
SEA WATER					
Through Hull					
Valve					
Strainer					
Supply plumbing					
R/W Pump inlet					
R/W Pump weephole					Corrosion and weeping
R/W Pump-to-H/E					
H/E--cooler					
H/E--sea water outlet					
COOLANT					
Appearance					incorrect coolant
Concentration					
Level					
F/W Pump weep hole					
F/W Pump seals/plumbing					
H/E					
Thermostat housing					
Distribution housing					weeping
Pre-heater--element, wiring, control box					
Pre-heater--pump & plumbing (if applicable)					
Oil cooler					
OIL					
Appearance					
Level					
Sump gasket					
Front main seal					
Rear main seal					
Oil filter housing					
Turbo oil drain					

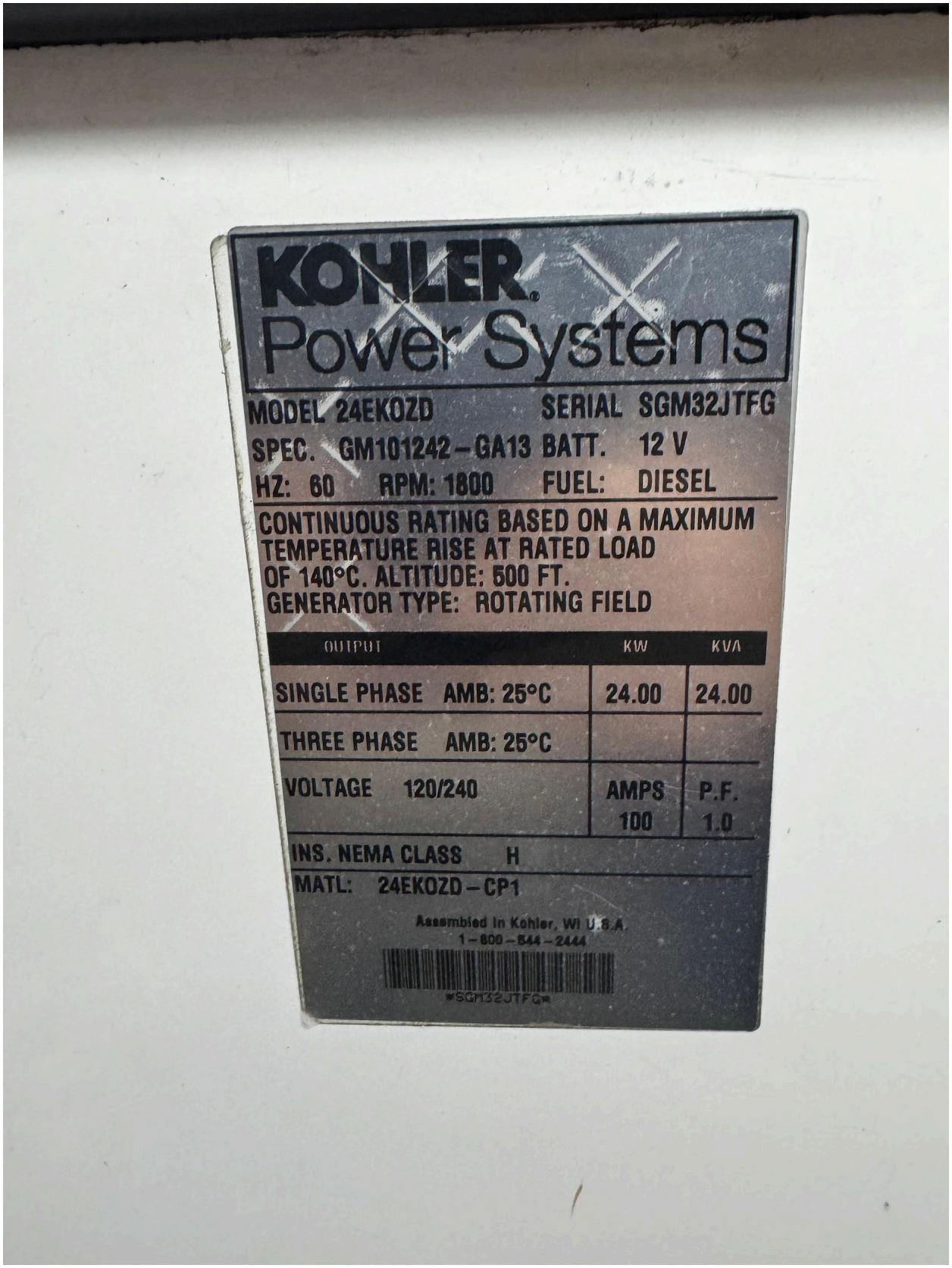
Turbo oil supply					
Valve covers--A-bank					
Pto--forward (if applicable)					
Sump drain					
AIR					
Air filter					
Air inlet housing clamps & hoses					
Breather filter assembly					
Breather pipes, hoses, clamps					
intake--check gaskets/seals					
EXHAUST					
Exhaust outlet					
Exhaust stancions					
ELECTRICAL					
ECU--Appearance, connections, grounding strap, harnesses					
Starter--appearance, connections, cables					
FUEL					Needs service
Primary fuel filter assembly--appearance					
Primary fuel filter assembly--valve operation					
Primary fuel filter assembly--hoses, connections, etc					
Fuel supply lines/pipes/hoses					
Fuel lift pump					
Fuel lines to/from fuel secondary filters					
Secondary fuel filter assembly--appearance, valve operation					
Secondary fuel filters					
Hand priming pump assembly					

Mounts					
ACTIVE ALARMS?					
ALARM HISTORY					
Additional notes					
sound shield material falling and not fixed to panels					

PORT GENERATOR	KOHLER	
MODEL: 24EKOZD	**SERIAL #**:SGM32JTFG	**RUNNING HOURS:1413**

OBSERVATIONS:	
• Raw water pump weep hole signs of leaking	Pump replacement
• Block stained with fuel and oil	Clean and monitor
• Shuts down on exhaust overheat	Repair
• Incorrect coolant	Flush and replace
ADDITIONAL NOTES: • Operation & performance tested • Fluid samples performed • Asked not to operate due to exhaust shut downs	
ATTACHMENTS: • Photos below • Technician survey checklist	

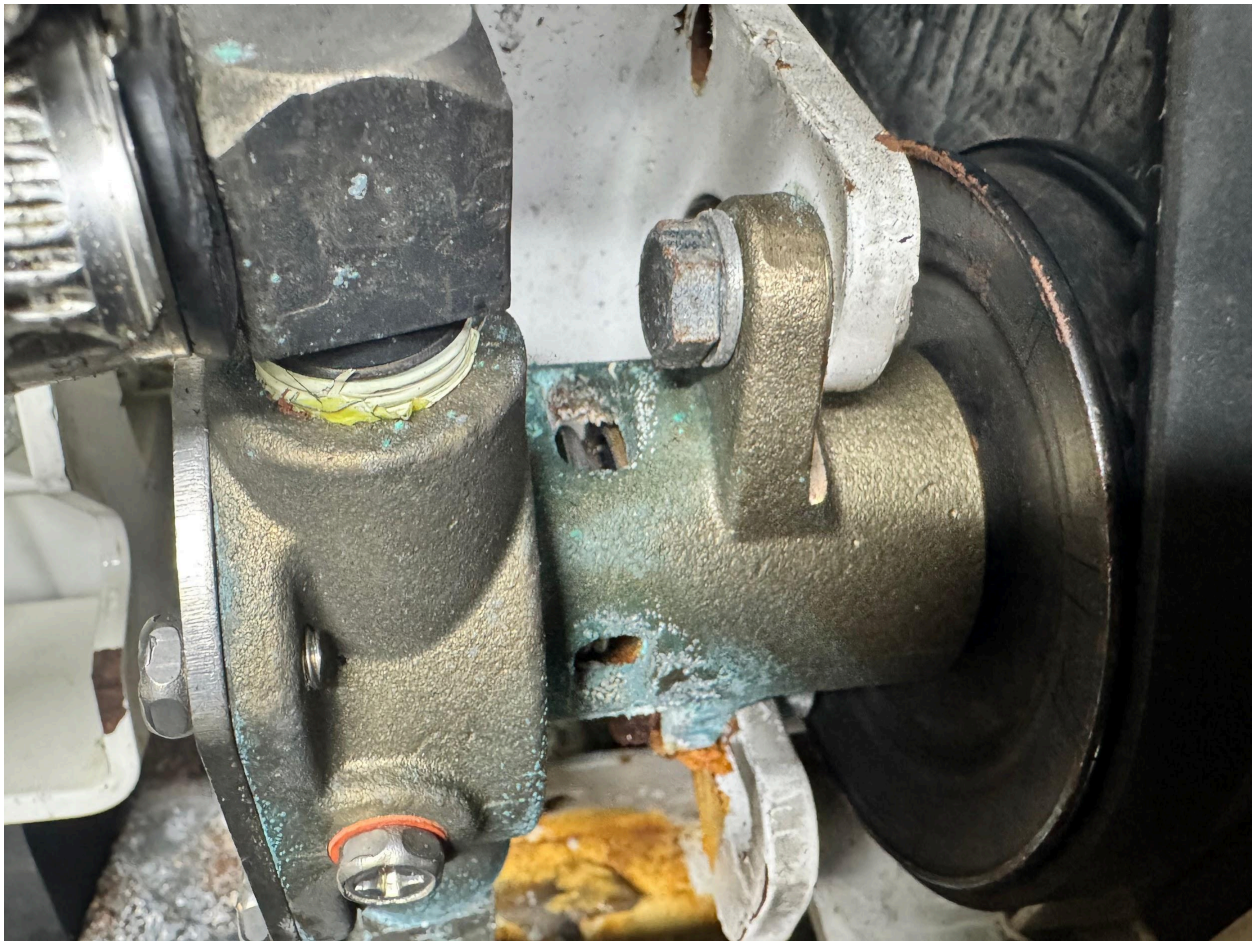
PORT GENERATOR TAG



PORT INCORRECT COOLANT

PORT BLOCK STAINS

PORT RAW WATER PUMP LEAKING



Survey checklist - Port Generator					
	GREEN	YELLOW	ORANGE	RED	Notes
SEA WATER					
Through Hull					
Valve					
Strainer					
Supply plumbing					
R/W Pump inlet					
R/W Pump weephole					Corrosion and weeping
R/W Pump-to-H/E					
H/E--cooler					
H/E--sea water outlet					

COOLANT					
Appearance					
Concentration					
Level					
F/W Pump weep hole					
F/W Pump seals/plumbing					
H/E					
Thermostat housing					
Distribution housing					
Pre-heater--element, wiring, control box					
Pre-heater--pump & plumbing (if applicable)					
Oil cooler					
OIL					
Appearance					
Level					
Sump gasket					
Front main seal					
Rear main seal					
Oil filter housing					
Turbo oil drain					
Turbo oil supply					
Valve covers--A-bank					
Pto--forward (if applicable)					
AIR					
Air filter					
Air inlet housing clamps & hoses					
Breather filter assembly					
Breather pipes, hoses, clamps					
intake--check gaskets/seals					
EXHAUST					
Exhaust outlet					

Exhaust stancions					
ELECTRICAL					
ECU--Appearance, connections, grounding strap, harnesses					
Starter--appearance, connections, cables					
FUEL					
Primary fuel filter assembly--appearance					**Needs service**
Primary fuel filter assembly--valve operation					
Primary fuel filter assembly--hoses, connections, etc					
Fuel supply lines/pipes/hoses					
Fuel lift pump					
Fuel lines to/from fuel secondary filters					
Secondary fuel filter assembly--appearance, valve operation					
Secondary fuel filters					
Hand priming pump assembly					
Mounts					
ACTIVE ALARMS?					**exhaust over heat alarms**
ALARM HISTORY					