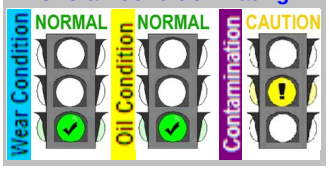
CUSTOMER
Code : **16009**
Name :
Address : Plant : Eastern Industrial Estate
No 10 Soi G2, Pakornsongkrawhrat Rd.
Huaypong, Muang, Rayong 21150
Site :
Location : Return Line EHC
Test code : 894

EQUIPMENT
Unit ID : **11 21 28MAX10BB001 RETURN LINE**
Unit Type : Hyd Syst Power Turbine
Unit Make : ALSTOM
Unit Model : GT8C

OIL
Oil type / Viscosity : CASTROL HYSPIN VG 32
Oil System Capacity :

**Overall Condition Rating**




## Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)

Components of dirt (silicon and/or aluminum) slightly above normal, however, no abrasive wear noted.
All other wear tests and oil condition tests appear satisfactory, and the oil was still serviceable at the time of sampling.
Continue routine sampling interval.

AS / Andy Sitton

| Condition History | Test Method | Result | Current Sample Wear | Current Sample Oil | Current Sample Cont. | Previous Sample Wear | Previous Sample Oil | Previous Sample Cont. | Wear | Oil | Cont. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | N | C | N | N | N | N | N | N |
| **Lab ID** | | | 149929 | | | 148108 | | | 146305 | | |
| **Bottle ID** | | | 923218 | | | 922497 | | | 919600 | | |
| **Date Sampled** | | | 15-Dec-10 | | | 15-Nov-10 | | | 15-Oct-10 | | |
| **Oil Hours (Kms)** | | | 13684 | | | 12966 | | | 12246 | | |
| **Unit Hours (Kms)** | | | 98501 | | | 97783 | | | 97063 | | |
| **Oil Added (Liters)** | | | | | | | | | | | |
| **Filters Hours (Kms)** | | | | | | | | | | | |
| **Wear Condition** | | | | | | | | | | | |
| **Wear Element** | **Method** | **Unit** | **RDE fine** | **RFS coarse** | | **RDE fine** | **RFS coarse** | | **RDE fine** | **RFS coarse** | |
| Iron | D-6595 | PPM | 0.3 | 1.2 | | 0.0 | 0.0 | | 0.0 | 0.4 | |
| Chromium | D-6595 | PPM | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Lead | D-6595 | PPM | 0.0 | 1.9 | | 0.1 | 0.1 | | 0.0 | 0.0 | |
| Copper | D-6595 | PPM | 1.3 | 0.1 | | 1.2 | 1.0 | | 1.0 | 0.0 | |
| Tin | D-6595 | PPM | 0.0 | 0.4 | | 0.0 | 1.6 | | 0.0 | 0.0 | |
| Aluminum | D-6595 | PPM | 0.1 | 0.5 | | 0.0 | 0.9 | | 0.0 | 0.3 | |
| Nickel | D-6595 | PPM | 0.0 | 0.0 | | 0.0 | 0.4 | | 0.0 | 0.0 | |
| Silver | D-6595 | PPM | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Molybdenum | D-6595 | PPM | 0.0 | 0.4 | | 0.0 | 0.5 | | 0.0 | 0.0 | |
| Titanium | D-6595 | PPM | 0.0 | 0.0 | | 0.0 | 0.1 | | 0.0 | 0.0 | |
| **Oil Condition** | | | | | | | | | | | |
| Viscosity @ 40 °C | D-445 | cSt | 32.2 | | | 31.7 | | | 32.2 | | |
| Viscosity @ 100 °C | D-445 | cSt | | | | | | | | | |
| Oxidation | FTIR | Abs | 3.3 | | | 3.3 | | | 4.1 | | |
| Nitration | FTIR | Abs | 3.8 | | | 3.6 | | | 3.8 | | |
| TAN | D-974 | mg KOH/g. | 0.44 | | | 0.48 | | | 0.48 | | |
| TBN | D-4739 | mg KOH/g. | | | | | | | | | |
| **Contamination** | | | | | | | | | | | |
| Water | T-H2O Check™ | % (Wt.) | 0.014 | | | 0.011 | | | 0.017 | | |
| Sodium | D-6595 | PPM | 0 | | | 0 | | | 0 | | |
| Silicon | D-6595 | PPM | 3.1 C | 17.0 W | | 1.9 | 1.1 | | 0.4 | 1.1 | |
| **Additive Element** | | | | | | | | | | | |
| Boron | D-6595 | PPM | 0 | | | 0 | | | 0 | | |
| Magnesium | D-6595 | PPM | 0 | | | 0 | | | 0 | | |
| Calcium | D-6595 | PPM | 11 | | | 14 | | | 13 | | |
| Barium | D-6595 | PPM | 0 | | | 0 | | | 0 | | |
| Phosphorus | D-6595 | PPM | 235 | | | 253 | | | 247 | | |
| Zinc | D-6595 | PPM | 377 | 48 | | 421 | 36 | | 385 | 29 | |
| **Additional Test** | | | | | | | | | | | |
| Flash Point | D-3828 | °C | | | | | | | | | |
| Viscosity Index | D-2270 | | | | | | | | | | |

**Baseline and Alarm Limit**

BASELINE

**Alarm Limit**

Alarm Limit Matrix -Set Name (Equipment type / oil type)

Hyd Syst Turbine Vickers Hyspin 32 (Glow)

| The New Oil (TNO) | RDE fine U-Caution | RDE fine U-Warning | RFS coarse U-Caution | RFS coarse U-Warning |
|---|---|---|---|---|
| 0 | >1 | >3 | >5 | >8 |
| 0 | >1 | >2 | >1 | >2 |
| 0 | >2 | >3 | >5 | >8 |
| 0 | >6 | >9 | >1 | >2 |
| 0 | >1 | >2 | >4 | >7 |
| 0 | >1 | >2 | >1 | >2 |
| 0 | >1 | >2 | >1 | >2 |
| 0 | | | | |
| 0 | | | | |
| 0 | | | | |

| TNO | L-Warning | L-Caution | U-Caution | U-Warning |
|---|---|---|---|---|
| 32.0 | <28.8 | <30.4 | >33.6 | >35.2 |
| | | | | |
| 4.6 | | | >5.6 | >6.6 |
| 3.3 | | | >4.3 | >5.3 |
| 0.46 | | | >0.66 | >0.76 |
| | | | | |

| TNO | U-Caution | U-Warning |
|---|---|---|
| 0.010 | >0.05 | >0.08 |

| | RDE fine U-Caution | RDE fine U-Warning | RFS coarse U-Caution | RFS coarse U-Warning |
|---|---|---|---|---|
| 0 | | | | |
| 1 | >3 | >5 | >3 | >5 |

| TNO |
|---|
| 0 |
| 0 |
| 31 |
| 0 |
| 332 |
| 439 |

| TNO | U-Caution | U-Warning | U-Caution | U-Warning |
|---|---|---|---|---|

Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.
No Sign or N : NORMAL , C or C : CAUTION ( first level warning limit ) , W or W : Warning ( second level warning limit )
U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level
U-Warning : Upper WARNING Level L-Warning : Lower WARNING required Level
Baseline will be data of either "The new oil" or "Reference oil" or "Oil specification".
Accuracy of interpretation and recommendation are based on representatives sample and information supplied.

First Level Alarm ..Alert Limit in Upper Level and/or Lower Level
Second Level Alarm Alert Limit in Upper Level and/or Lower Level
TNO = The new oil , RO = Reference oil , OS = Oil Specification
No warranty is expressed or implied for this report.

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Tel : +66 2 361 8600 Fax : + 66 2 3618567
Email : focuslab@focuslab.co.th

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Unit Model : GT8C

OIL
Oil type / Viscosity : CASTROL HYSPIN VG 32
Oil System Capacity :

## Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)

Particle count indicates oil cleanliness level is clean.

| | Current Sample | Previous Sample | |
|---|---|---|---|
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| **Bottle ID** | 923218 | 922497 | 919600 |
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| **Unit Hours (Kms)** | 98501 | 97783 | 97063 |
| **Oil Added (Liters)** | | | |
| **Filters Hours (Kms)** | | | |

**Particle Count** NAS 1638 / ISO 4406

BASELINE — **Alarm Limit**: Hyd Syst Turbine Vickers Hyspin 32 (Glow)

## Contamination

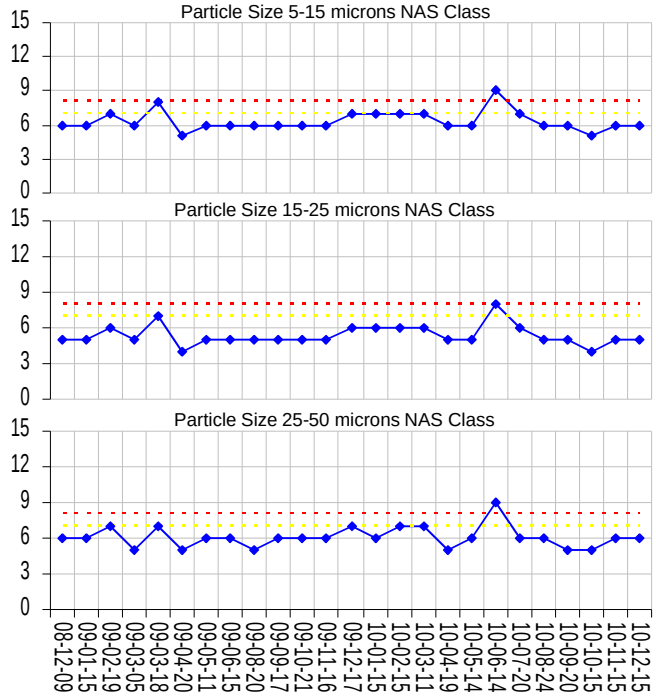
**Particle Count NAS 1638 System Standard**

| Particle Size Range | No. of Particles / 100ml. | Class | No. of Particles / 100ml. | Class | No. of Particles / 100ml. | Class | Class | U-Caution: No. of Particles / 100ml. | U-Caution: Class | U-Warning: No. of Particles / 100ml. | U-Warning: Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Particle Size 5-15 microns | 15,400 | 6 | 10,200 | 6 | 6,400 | 5 | | >16000 | 7 | >32000 | 8 |
| Particle Size 15-25 microns | 1,400 | 5 | 1,000 | 5 | 600 | 4 | 6 | >2850 | 7 | >5700 | 8 |
| Particle Size 25-50 microns | 400 | 6 | 200 | 6 | 100 | 5 | | >506 | 7 | >1012 | 8 |
| Particle Size 50-100 microns | <100 | 5 | <100 | 5 | <100 | 4 | | | | | |
| Particle Size >100 microns | <100 | 3 | <100 | 2 | <100 | 2 | | | | | |

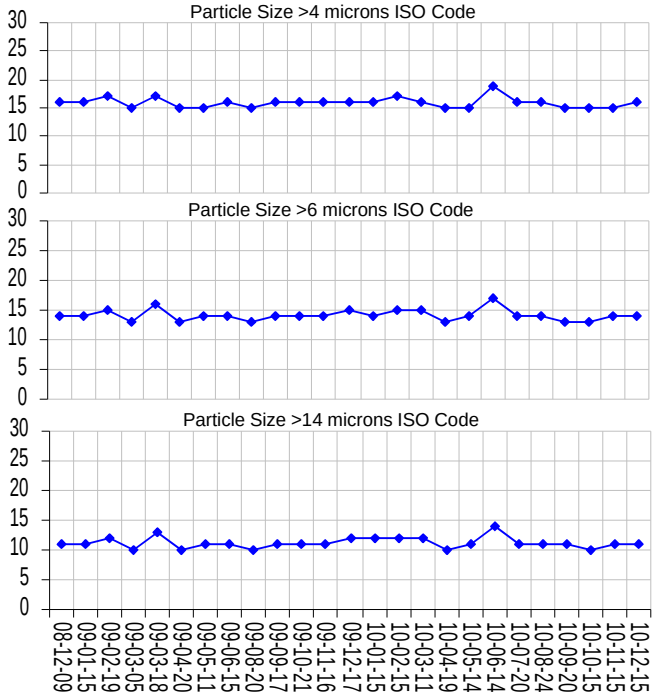
**Particle Count ISO 4406:1999 System Standard**

| Particle Size Range | No. of Particles / ml. | Class | No. of Particles / ml. | Class | No. of Particles / ml. | Class | Class | No. of Particles / ml. | Class | No. of Particles / ml. | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Particle Size > 4 microns | 461 | 16 | 307 | 15 | 192 | 15 | | | | | |
| Particle Size > 6 microns | 129 | 14 | 86 | 14 | 53 | 13 | | | | | |
| Particle Size > 14 microns | 18 | 11 | 12 | 11 | 7 | 10 | | | | | |
| ISO 4406 Class Rating | 16/14/11 | | 15/14/11 | | 15/13/10 | | | | | | |

### NAS 1638




### ISO 4406



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Unit Model : GT8C

OIL
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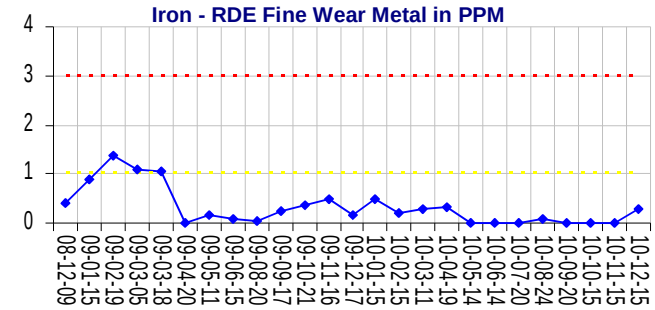
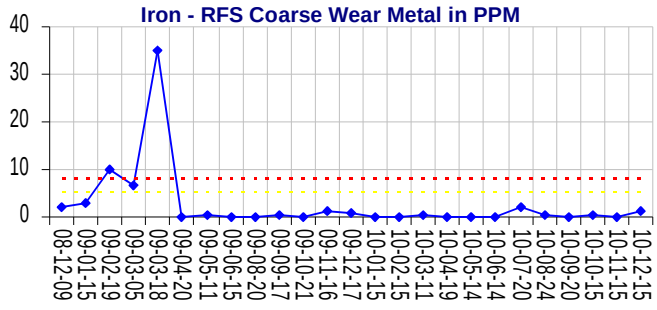
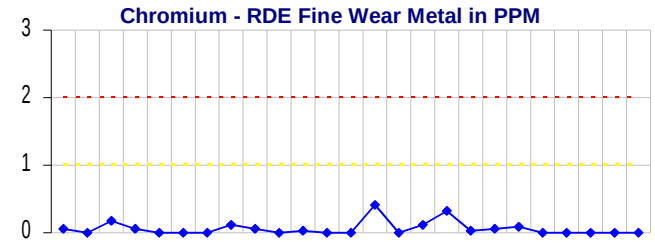
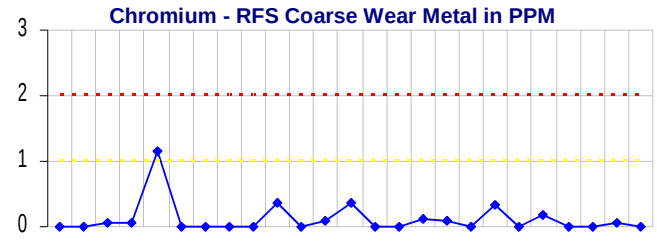
Oil System Capacity :

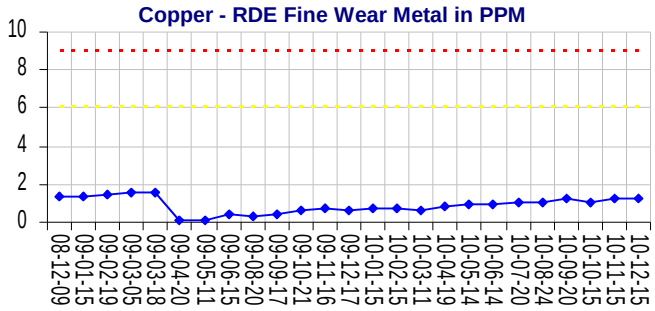
## Wear Condition

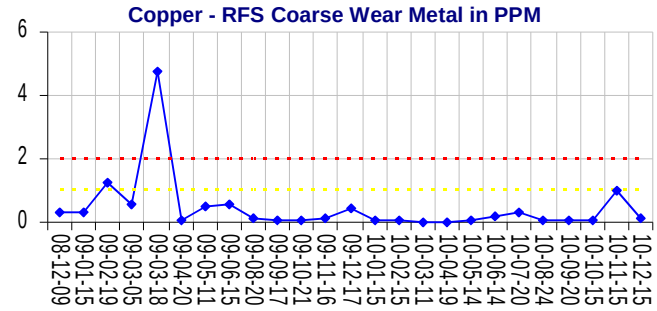


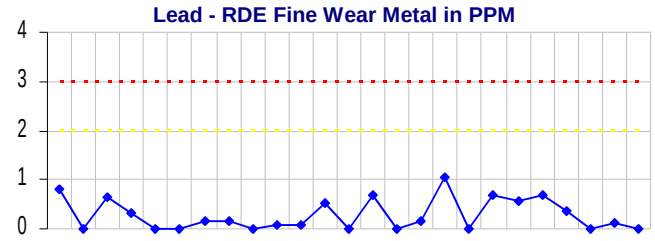



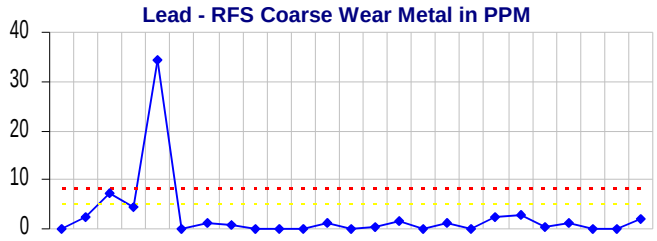



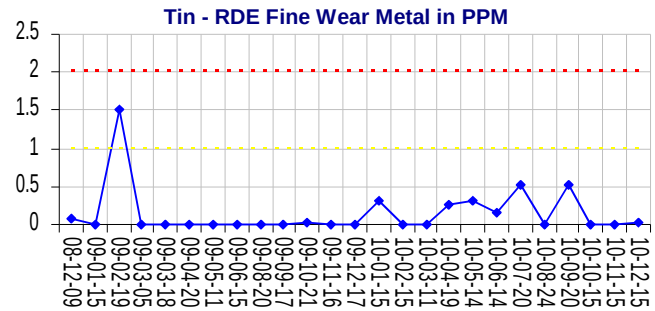



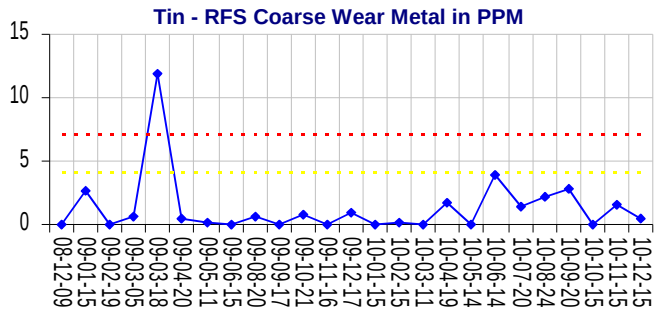



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Unit Model : GT8C

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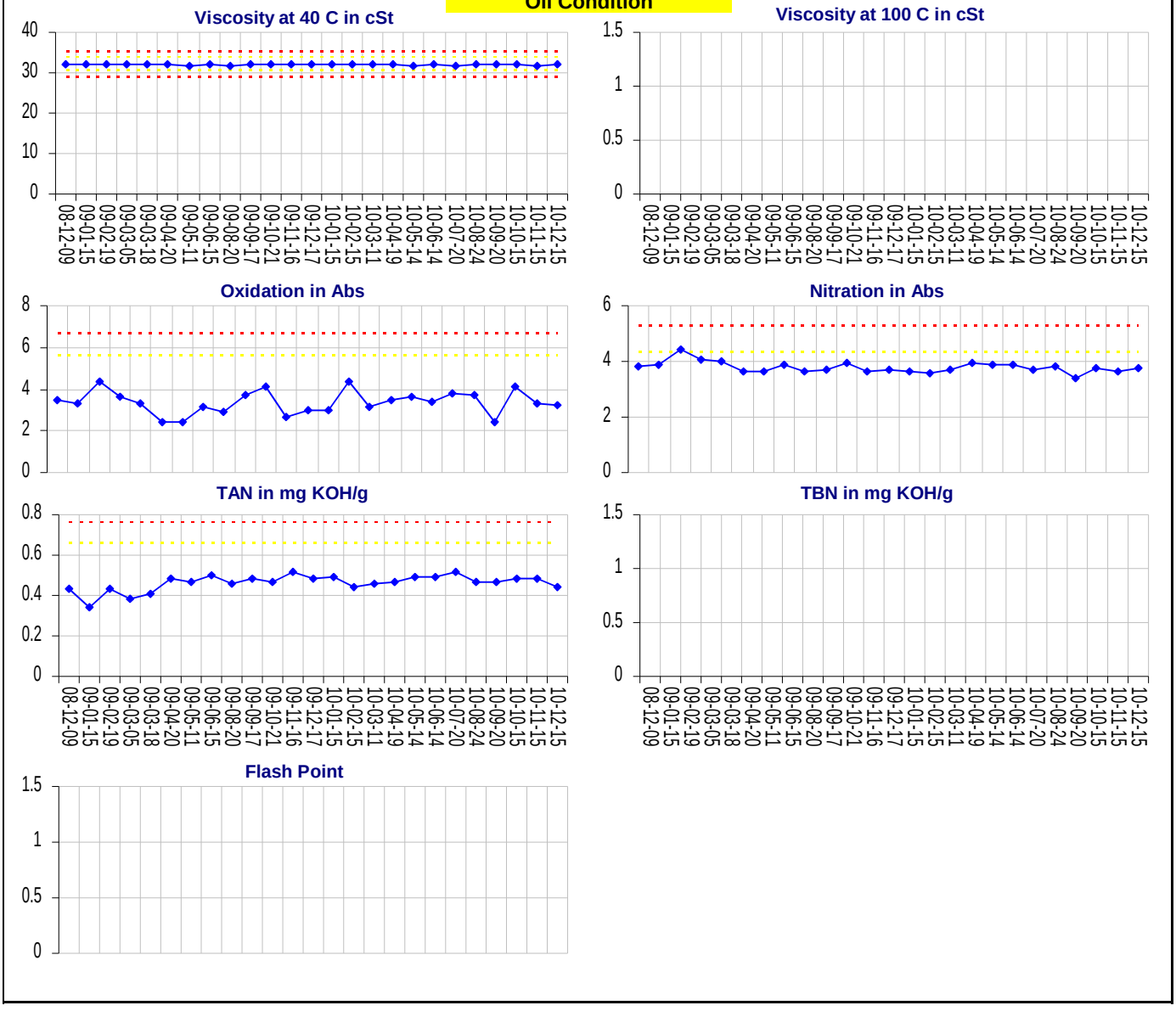
Oil type / Viscosity : CASTROL HYSPIN VG 32
Oil System Capacity :

## Oil Condition



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## Contamination Condition