Supplementary Data

TABLE 1

Gas oil Proprieties before and after MESD Treatment

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| **Properties of gas oil** | **Method** | **Before MEDS treatment** | **After MEDS treatment** |
| Density at 15 °C | ASTM D1298 | 0.8226 | 0.8207 |
| Flash point, °C | ASTM D93 | 68 | 69 |
| Pour point, °C | ASTM D97 | -15 | -15 |
| Colour test | ASTM D1500 | < 1 | < 1 |
| Total sulphur content, wt. ppm | ASTM D2622 | 548 | 5 |
| Viscosity at 50 °C, cSt | ASTM D445 | 2.7 | 2.6 |
| Cetane index | ASTM D976 | 54 | 54.9 |
| Refractive index, *n*D20 | ASTM D1218 | 1.4655 | 1.4601 |
| Distillation, |  |  |  |
| Initial boiling point, °C | ASTM D86 | 180 | 184 |
| 10 % Distillation, °C | ASTM D86 | 207 | 210 |
| 20 % Distillation, °C | ASTM D86 | 220 | 223 |
| 50 % Distillation, °C | ASTM D86 | 265 | 267 |
| 90 % Distillation, °C | ASTM D86 | 329 | 328 |
| 95 % Distillation, °C | ASTM D86 | 353 | 355 |
| Final boiling point, °C | ASTM D86 | 360 | 364 |
| Residue, vol. % | ASTM D86 | 1 | 1 |
| Loss, vol. % | ASTM D86 | 1 | 1 |
| Recovery, vol. % | ASTM D86 | 98 | 99 |

Conditions: Vgasoil= 20 mL, T= 30 °C, NMP/DMF/EG= 2:1:1, Extraction Stage Number= 3, Stirring Speed = 200 rpm for 5 min at 500 W.

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| 1. Before MEDS treatment (138 ppm) |
| **(B)** After MEDS treatment (1 ppm) |
| FIGURE 1 CG-MS Chromatogram of Gas Oil Fraction Boiling in the Temperature Range of 190–250 °C (conditions: Vgasoil= 20 mL, T= 30 °C, NMP/DMF/EG= 2:1:1, Extraction Stage Number= 3, Stirring Speed = 200 rpm for 5 min at 500 W) |

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| **(A)** Before MEDS treatment (607 ppm) |
| **(B)** After MEDS treatment (5 ppm) |

FIGURE 2 CG-MS Chromatogram of Gas Oil Fraction Boiling in the Temperature Range of 250-300 °C (Conditions: Vgasoil= 20 mL, T= 30 °C, NMP/DMF/EG= 2:1:1, Extraction Stage Number= 3, Stirring Speed = 200 rpm for 5 min at 500 W)

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| **(A)** Before MEDS treatment (1409 ppm) |
| **(B)** After MEDS treatment (9 ppm) |

FIGURE 3 CG-MS Chromatogram of Gas Oil Fraction Boiling in the Temperature Range of 300- 360 °C (Conditions: Vgasoil= 20 mL, T= 30 °C, NMP/DMF/EG= 2:1:1, Extraction Stage Number= 3, Stirring Speed = 200 rpm for 5 min at 500 W)