

OIL CONDITION MONITORING REPORT SLNS GAJABAHU

ENGINE PARTICULARS (Information provided by the customer)	
	No 02 Generator (Port)
Make :	GENERAL MOTORS
Model :	EMD 645-E6
Sr. No:	6T-J1-1113
Date sampling :	25 Jun 25
Sampling point :	Near lub oil strainer
Sampling Method :	Extraction
Type of Lubricant :	Shell Gardinia S3 SAE 40
System Capacity :	300 USG

RUNNING HRS DETAILS (Information provided by the customer)	
	No 02 Generator (Port)
Sample ID	M010379
Oil Running Hours	4954.15
After MOH running hrs	13,250.00
Total Running Hours of the Machinery	113,549.45

ANALYSIS RESULTS

Basic Properties

Description	Method	Fresh Oil (As per OEM data sheet)	Uncertainty	No 02 Generator (Port)	
				S/I-M010379	
Viscosity @ 40°C (cSt)	ASTM D 445	128.00	0.006	130.60	
Viscosity @ 100°C (cSt)		13.7	0.005	14.32	
Viscosity Index	ASTMD 2270	103	N/A	108.55	

Elemental Concentration as per ASTM D5185 (ppm)

Element	Maximum Permissible Limit	Fresh Oil Sample	Uncertainty	No 02 Generator (Port)	
				S/I-M010379	
Fe	80	<1.000	0.15	6.248	
Cr	10	<1.000	0.18	<1.000	
Si	15	<1.000	0.17	<1.000	
Al	20	<1.000	0.28	<1.000	
Pb	20	<1.000	0.13	2.252	
Cu	25	<1.000	0.17	6.956	
Sn	10	<1.000	0.20	3.204	
Ni	10	<1.000	0.08	<1.000	

TREND ANALYSIS WITH PREVIOUS REPORTS

	Fresh Oil Sample	No 02 Generator (Port)															
		S/I-M003143	S/I-M003466	S/I-M003735	S/I-M004076	S/I-M004349	S/I-M004911	S/I-M005176	S/I-M005739	S/I-M005978	S/I-M005998	S/I-M005999	S/I-M006000	S/I-M006001	S/I-M006190	S/I-M006222	
Oil Running Hrs	-	436.05	924.5	1258.3	1422	1598.4	1746.15	2152.4	2414.5	2419.5	2420.20	2420.2	2420.2	2420.2	250.3	499.05	
T/R/H of Machinery	-	97814.55	98303.4	98637.3	98801	98977.4	99125.15	99531.4	99793.4	99798.4	99799.10	99799.1	99799.1	99799.1	100041.4	100290.15	
Basic Properties																	
Viscosity@40°C(cSt)	128	128.47	132.36	134.69	130.54	132.38	132.41	136.88	138.63	132.25	148.05	154.38	133.29	130.74	128.13	130.16	
Viscosity@100°C(cSt)	13.7	13.84	14.1	14.71	14.7	14.58	15.13	14.42	13.83	14.24	15.52	14.15	14.74	13.65	13.82	13.84	
Viscosity Index	103	111.04	106.32	112.72	100	108.97	106.9	97.8	97.65	97.7	107.31	87.08	111.24	99.8	104.53	102.79	
Total Base No. (mg KOH/g)	10.48*	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	6.94	
Water content %	< 0.2	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	<0.1	
Flash Point (°C)	230	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	190	
Element	Max. Permissible Limit																
Fe	80	< 1.000	5.26	2.688	5.146	3.59	3.229	7.579	6.193	7.437	15.913	2.139	2.422	4.105	2.201	2.201	6.157
Cr	10	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	
Si	15	< 1.000	3.424	< 1.000	< 1.000	1.427	5.195	8.042	7.272	5.716	15.964	< 1.000	1.055	4.393	3.738	3.738	7.485
Al	20	< 1.000	4.29	1.031	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	11.84	< 1.000	< 1.000	1.891	< 1.000	< 1.000
Pb	20	< 1.000	2.196	2.715	1.382	4.826	4.98	6.071	4.475	12.678	14.069	3.206	12.065	12.234	< 1.000	< 1.000	1.07
Cu	25	< 1.000	5.309	2.919	5.089	5.392	6.68	12.197	9.748	10.533	11.292	2.342	9.467	8.354	3.565	3.565	2.492
Sn	10	< 1.000	1.571	1.265	2.039	1.888	< 1.000	2.27	< 1.000	2.25	4.147	1.530	2.812	2.722	1.188	1.188	2.983
Ni	10	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	< 1.000	N/C	N/C	N/C	N/C	N/C	< 1.000	< 1.000	< 1.000	

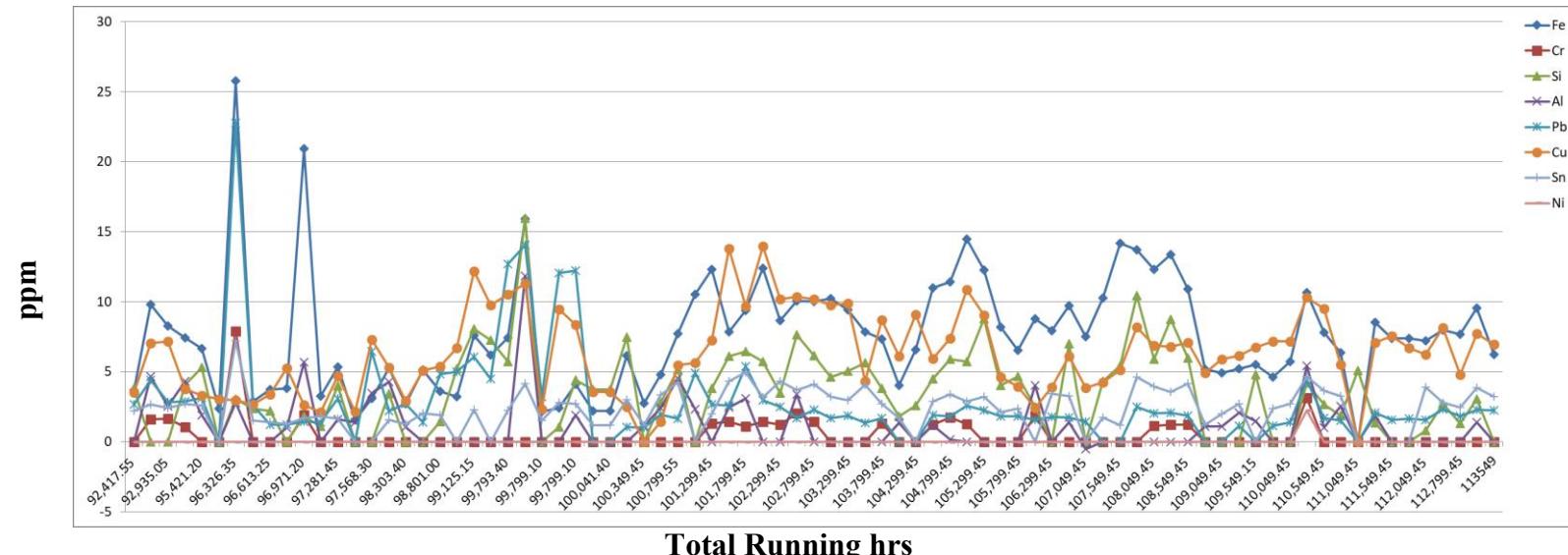
		Fresh Oil Sample	No 02 Generator (Port)										
			S/I-M006379	S/I-M006435	S/I-M006520	S/I-M006586	S/I-M006663	S/I-M006759	S/I-M006844	S/I-M006930	S/I-M006951	S/I-M006993	S/I-M007064
Oil Running Hrs	-		50	250	500	750	1000	1250	1500.00	1750.00	2000.00	2250.00	2500.00
T/R/H of Machinery	-		100349.45	100549.45	100799.55	101,049.55	101,299.45	101,549.45	101,799.45	102,049.45	102,299.45	102,549.45	102,799.45
Basic Properties													
Viscosity@40°C(cSt)		128	129.67	129.34	130.07	130	135.18	132.99	134.99	136.99	137.57	131.38	129.20
Viscosity@100°C(cSt)		13.7	13.98	13.82	13.9	13.43	14.52	14.39	14.68	15.01	15.12	14.32	14.02
Viscosity Index		103	105.09	103.32	103.9	102.87	105.56	107.12	102.69	111.09	111.87	107.79	106.10
Total Base No. (mg KOH/g)		10.48*	8.19	8.07	8.13	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Water content %		< 0.2	<0.1	<0.1	<0.1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Flash Point (°C)		230	195	195	190	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Element	Max. Permissible Limit												
Fe	80	< 1.000	2.758	4.804	7.733	10.516	12.301	7.863	9.392	12.405	8.668	10.045	10.019
Cr	10	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000	1.286	1.436	1.110	1.428	1.230	2.015
Si	15	< 1.000	<1.000	2.777	5.182	<1.000	3.802	6.113	6.456	5.740	3.471	7.651	6.164
Al	20	< 1.000	1.125	2.422	4.519	2.34	<1.000	2.464	3.100	<1.000	<1.000	3.380	<1.000
Pb	20	< 1.000	1.011	1.947	1.653	4.896	2.678	2.584	5.393	2.976	2.505	1.679	2.290
Cu	25	< 1.000	<1.000	1.416	5.476	5.644	7.253	13.796	9.678	13.965	10.170	10.368	10.170
Sn	10	< 1.000	1.182	3.344	4.249	<1.000	1.999	4.339	4.938	3.194	4.329	3.704	4.094
Ni	10	< 1.000	N/C	<1.000	<1.000	N/C	<1.000	<1.000	N/A	<1.000	<1.000	<1.000	<1.000

		Fresh Oil Sample	No 02 Generator (Port)																		
			S/I-M007109	S/I-M007127	S/I-M007152	S/I-M007219	S/I-M007315	S/I-M007400	S/I-M007418	S/I-M007456	S/I-M007554	S/I-M007606	S/I-M007746	S/I-M007747	S/I-M007833	S/I-M007888	S/I-M007932	S/I-M008011	S/I-M008088	S/I-M008118	S/I-M008118
Oil Running Hrs	-	2750.00	3000.00	3250.00	3500.00	3750.00	4000.00	4250.00	4500.00	4750.00	50000.00	5250.00	5500.00	5750.00	6000.00	6250.00	6750.00	7000.00	7250.00	7500.00	
T/R/H of Machinery	-	103,049.45	103,299.45	103,549.45	103,799.45	104,049.45	104,299.45	104,549.45	104,799.45	105,049.45	105,299.45	105,549.45	105,799.45	106,049.45	106,299.45	106,549.00	107,049.45	107,299.45	107549.45	107799.45	
Basic Properties																					
Viscosity@40°C(cSt)	128	132.96	136.63	130.12	139.65	140.16	130.27	133.45	155.53	134.04	140.05	141.18	138.71	141.55	132.14	135.01	141.64	137.01	143.72	158.45	
Viscosity@100°C(cSt)	13.7	14.29	14.98	14.68	15.04	15.03	14.31	14.62	16.57	14.84	15.44	15.32	14.72	15.39	15.68	15.52	15.89	15.07	16.20	18.17	
Viscosity Index	103	104.59	111.04	113.619	109.01	106.52	102.35	109.60	113.01	111.77	113.41	110.97	105.8	111.48	124.10	119.21	117.31	111.82	116.45	127.687	
Total Base No. (mg KOH/g)	10.48*	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	
Water content %	< 0.2	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	
Flash Point (°C)	230	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	
Element	Max. Permissible Limit																				
Fe	80	< 1.000	10.241	9.422	7.833	7.331	4.026	6.564	10.971	11.430	14.479	12.250	8.204	6.537	8.774	7.930	9.712	7.495	10.257	14.157	13.698
Cr	10	< 1.000	<1.000	<1.000	<1.000	1.297	<1.000	<1.000	1.224	1.743	1.283	<1.000	<1.000	<1.000	1.866	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Si	15	< 1.000	4.604	5.036	5.622	3.830	1.829	2.558	4.498	5.877	5.740	8.787	4.040	4.677	2.485	<1.000	6.999	<1.000	4.307	5.417	10.447
Al	20	< 1.000	<1.000	<1.000	<1.000	<1.000	1.333	<1.000	1.192	0.139	<1.000	<1.000	<1.000	<1.000	4.015	<1.000	1.386	-0.519	<1.000	<1.000	<1.000
Pb	20	< 1.000	1.681	1.838	1.356	1.701	<1.000	<1.000	1.887	1.827	2.558	2.250	1.796	1.814	1.562	1.790	1.720	1.411	<1.000	<1.000	2.480
Cu	25	< 1.000	9.771	9.888	4.332	8.691	6.109	9.058	5.921	7.372	10.859	9.041	4.599	3.952	2.425	3.906	6.111	3.871	4.226	5.116	8.183
Sn	10	< 1.000	3.202	2.947	4.058	2.709	1.685	<1.000	2.873	3.379	2.861	3.199	2.127	2.369	<1.000	3.422	3.238	<1.000	1.737	1.167	4.606
Ni	10	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	N/C	N/C	<1.000	

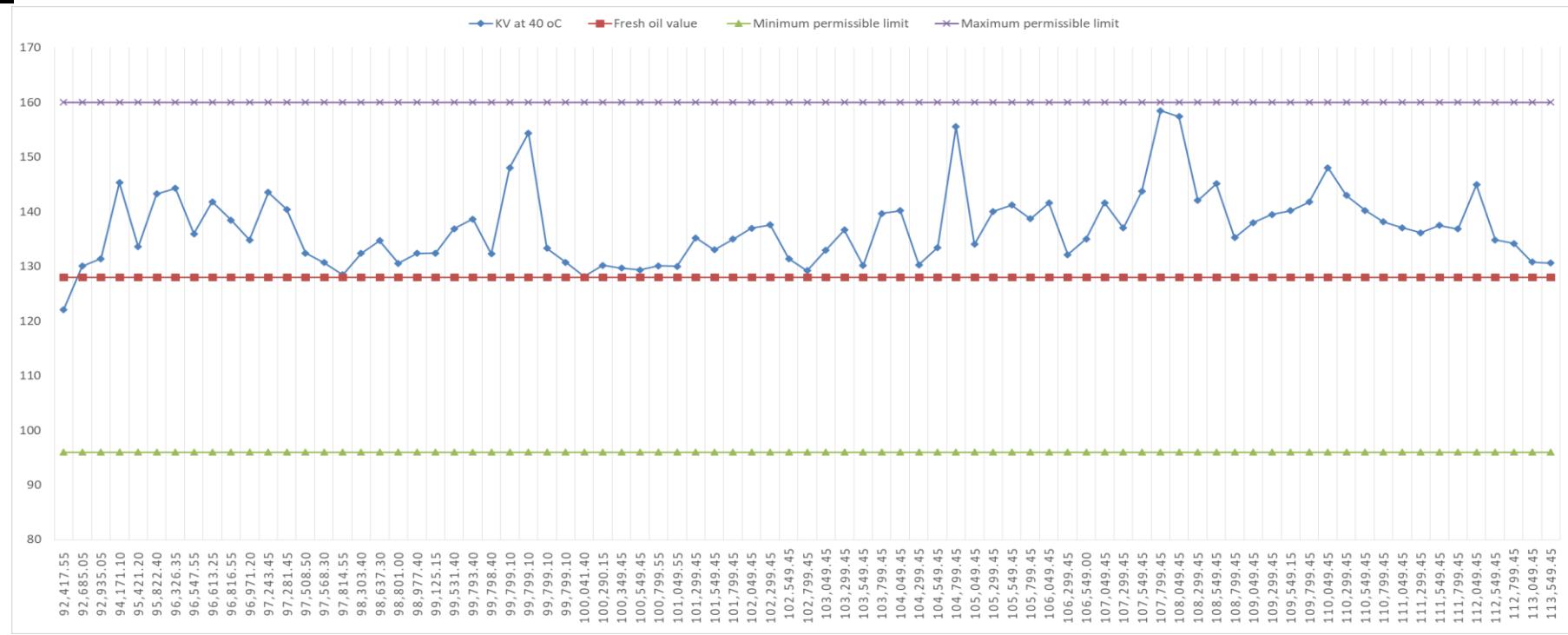
	Fresh Oil Sample	No 02 Generator (Port)															
		S/I-M008214	S/I-M008258	S/I-M008315	S/I-M008411	S/I-M008520	S/I-M008521	S/I-M008562	S/I-M008593	S/I-M008663	S/I-M008737	S/I-M008798	S/I-M008901	S/I-M008968	S/I-M008988	S/I-M009099	S/I-M009100
Oil Running Hrs	-	7750.00	8000.00	8250.00	204.15	454.15	704.15	954.15	1204.15	1454.15	1704.15	1954.15	2204.15	2454.15	2704.15	2954.15	3204.15
T/R/H of Machinery	-	108049.45	108299.45	108549.45	108799.45	109049.45	109299.45	109549.15	109799.45	110049.45	110,299.45	110,549.45	110,799.45	111049.45	111299.45	111,549.45	111,799.45
Basic Properties																	
Viscosity@40°C(cSt)	128	157.39	142.02	145.12	135.25	138.00	139.46	140.17	141.76	148.04	142.97	140.21	138.12	137.04	136.12	137.50	136.81
Viscosity@100°C(cSt)	13.7	18.32	16.02	16.61	14.88	14.30	14.57	15.46	15.50	16.78	15.98	15.56	15.10	14.91	14.20	14.22	14.21
Viscosity Index	103	130.10	127.687	122.39	111.10	101.40	103.432	113.56	112.78	122.39	117.14	114.72	111.15	109.77	101.85	100.86	101.356
Total Base No. (mg KOH/g	10.48*	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Water content %	< 0.2	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Flash Point (°C)	230	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Element	Max. Permissible Limit																
Fe	80	< 1.000	12.315	13.355	10.908	5.171	4.933	5.194	5.525	4.603	5.716	10.633	7.787	6.359	<1.000	8.512	7.368
Cr	10	< 1.000	1.150	1.209	1.206	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000	3.145	<1.000	<1.000	<1.000	<1.000	<1.000
Si	15	< 1.000	5.882	8.755	5.996	< 1.000	<1.000	<1.000	4.804	<1.000	<1.000	4.178	2.684	1.864	5.088	1.338	<1.000
Al	20	< 1.000	<1.000	<1.000	<1.000	1.083	1.100	2.057	1.473	<1.000	<1.000	5.444	1.001	2.552	<1.000	1.862	<1.000
Pb	20	< 1.000	2.029	2.073	1.858	< 1.000	<1.000	1.143	<1.000	1.121	1.397	4.419	1.666	1.522	<1.000	2.066	1.550
Cu	25	< 1.000	6.881	6.764	7.086	4.895	5.881	6.127	6.730	7.163	7.158	10.310	9.502	5.495	<1.000	7.061	7.542
Sn	10	< 1.000	3.948	3.556	4.167	1.202	1.966	2.700	<1.000	2.354	2.709	4.679	3.660	3.242	<1.000	<1.000	<1.000
Ni	10	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	2.227	<1.000	<1.000	<1.000	<1.000	<1.000

	Fresh Oil Sample	No 02 Generator (Port)					
		S/I-M009199	S/I-M009553	S/I-M009877	S/I-M010122	S/I-M010379	
Oil Running Hrs	-	3454.15	3,954.15	4204.15	4454.15	4954.15	
T/R/H of Machinery	-	112049.45	112,549.45	112,799.45	113,049.45	113,549.45	
Basic Properties							
Viscosity@40°C(cSt)	128	144.91	134.83	134.16	130.77	130.60	
Viscosity@100°C(cSt)	13.7	16.09	14.43	14.40	14.37	14.32	
Viscosity Index	103	116.63	105.87	106.13	109.02	108.55	
Total Base No. (mg KOH/g)	10.48*	N/C	N/C	N/C	N/C	N/C	
Water content %	< 0.2	< 0.1	N/C	N/C	N/C	N/C	
Flash Point (°C)	230	N/C	N/C	N/C	N/C	N/C	
Element	Max. Permissible Limit						
Fe	80	< 1.000	7.199	7.973	7.691	9.549	6.248
Cr	10	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Si	15	< 1.000	0.794	2.723	1.288	3.027	<1.000
Al	20	< 1.000	0.008	<1.000	<1.000	1.382	<1.000
Pb	20	< 1.000	1.548	2.322	1.819	2.301	2.252
Cu	25	< 1.000	6.246	8.129	4.797	7.710	6.956
Sn	10	< 1.000	3.905	2.789	2.470	3.858	3.204
Ni	10	< 1.000	<1.000	<1.000	<1.000	<1.000	<1.000

Wear metal



Viscosity At 40 °C



At 100 °C

cSt

