

**Appendix A - Chemical Composition of Lubricating Oils (ug/g)**

Sample		High W1-1	High W1-2	High W3-1	Med W4-2	Med W5-3
Na	Sodium	124.27+66.66	278.40+133.36	197.48+33.87	303.44+55.14	249.50+83.63
Mg	Magnesium	261.47+94.95	240.93+58.50	282.01+37.92	221.97+66.41	507.93+179.25
Al	Aluminum	0.00+239.73	96.47+34.72	166.09+63.21	121.63+81.36	0.00+1.00
Si	Silicon	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
P	Phosphorus	3987.97+117.25	4203.06+25.73	3882.55+68.18	3594.14+65.06	3851.65+46.59
S	Sulfur	3393.73+21.80	2343.74+15.51	3355.30+72.48	2591.66+19.70	4772.44+34.37
Ca	Calcium	1222.09+0.89	2898.05+4.62	2482.03+3.75	2570.55+9.30	2253.16+5.91
Ti	Titanium	0.00+0.13	0.00+0.37	0.00+0.13	0.00+0.12	0.00+0.23
Va	Vanadium	0.14+0.08	0.00+1.00	0.05+0.09	0.08+0.13	0.09+0.08
Cr	Chromium	1.91+0.16	1.82+0.05	6.71+0.14	1.95+0.13	3.27+0.11
Mn	Manganese	0.98+0.13	0.00+0.03	0.00+0.13	0.00+0.34	0.00+0.07
Fe	Iron	44.72+0.29	10.17+0.22	74.95+2.54	38.84+0.50	36.39+0.22
Ni	Nickel	0.00+0.06	0.00+0.00	0.00+0.14	0.00+0.13	0.00+0.07
Cu	Copper	75.93+0.02	3.08+0.32	10.23+0.26	3.31+0.14	27.70+0.46
Zn	Zinc	1393.18+4.24	1342.30+1.67	1243.83+1.03	1165.27+0.54	1511.58+0.88
Mo	Molybdenum	33.64+1.28	92.21+0.32	47.40+0.35	97.41+1.81	0.00+0.41
Ag	Silver	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Cd	Cadmium	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Sn	Tin	0.05+0.08	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Ba	Barium	2.15+1.52	4.91+1.07	3.57+1.44	4.59+0.82	1.80+1.45
W	Tungsten	0.00+1.48	0.00+12.81	6.98+0.83	1.20+10.46	0.00+14.27
Pb	Lead	77.56+0.76	7.54+0.02	17.99+0.50	3.46+0.24	11.70+0.44
NAPHTH	Naphthalene	291.69+8.62	314.80+9.31	431.58+18.03	253.48+7.49	648.58+27.12
MNAPH2	2-methylnaphthalene	611.11+8.28	770.29+10.44	946.26+18.11	531.60+7.19	1811.12+34.73
MNAPH1	1-methylnaphthalene	313.47+6.79	399.95+8.69	515.26+15.82	265.46+5.77	964.67+29.61
BIPHEN	Biphenyl	11.60+0.38	18.32+0.58	17.16+0.80	8.54+0.30	47.69+2.18
ENAP12	1+2ethylnaphthalene	87.62+1.91	90.39+1.98	140.73+4.32	70.91+1.54	217.99+6.71
DMN267	2,6+2,7-dimethylnaphthalene	173.02+2.78	144.69+2.33	277.08+6.29	141.14+2.25	328.74+7.46
DM1367	1,3+1,6+1,7dimethylnaphth	287.61+9.15	209.31+6.68	463.85+20.89	223.81+7.12	494.78+22.28
D14523	1,4+1,5+2,3-dimethylnaphth	80.56+1.98	52.51+1.28	134.35+4.66	65.89+1.61	117.65+4.08
DMN12	1,2-dimethylnaphthalene	28.46+0.34	17.23+0.19	45.60+0.80	22.89+0.26	36.88+0.62
M_2BPH	2-methylbiphenyl	4.39+0.76	8.11+1.40	7.10+1.76	2.85+0.49	21.10+5.11
M_3BPH	3-methylbiphenyl	26.09+1.14	10.05+0.43	36.26+2.27	17.72+0.79	27.64+1.74
M_4BPH	4-methylbiphenyl	10.15+0.76	3.65+0.27	12.96+1.41	6.44+0.49	8.82+0.96
DBZFUR	Dibenzofuran	4.27+0.65	1.01+0.16	4.80+1.01	1.20+0.19	2.89+0.64
BIBENZ	Bibenzyl	29.10+2.33	15.49+1.24	86.43+9.83	31.91+2.58	53.52+6.09
ATMNAP	A-trimethylnaphthalene	104.06+2.14	46.50+0.97	140.79+4.08	67.95+1.39	94.64+2.73
EM_12N	1-ethyl-2-methylnaphthalene	21.17+1.56	7.65+0.58	27.24+2.85	13.33+0.97	18.01+1.87
BTMNAP	B-trimethylnaphthalene	86.97+0.61	36.91+0.27	119.24+1.23	59.78+0.45	75.07+0.78
CTMNAP	C-trimethylnaphthalene	78.23+2.90	29.03+1.09	98.96+5.19	52.85+1.95	61.88+3.25
EM_21N	2-ethyl-1-methylnaphthalene	3.51+0.34	0.27+0.04	4.84+0.67	0.60+0.07	2.35+0.34
ETMNAP	E-trimethylnaphthalene	52.11+6.41	19.02+2.33	67.39+11.77	33.30+4.12	42.56+7.45
FTMNAP	F-trimethylnaphthalene	49.70+1.64	19.13+0.62	64.68+3.01	33.30+1.09	39.55+1.85
TMI235N	2,3,5+1-trimethylnaphthalene	26.21+1.98	7.02+0.54	67.52+7.31	19.18+1.46	61.82+6.68
TM245N	2,4,5-trimethylnaphthalene	13.92+1.37	4.93+0.50	16.82+2.37	9.03+0.90	12.07+1.69
JTMNAP	J-trimethylnaphthalene	13.24+0.92	5.08+0.35	19.93+1.92	9.93+0.67	12.35+1.20
TM145N	1,4,5-trimethylnaphthalene	10.57+1.60	0.27+0.04	13.54+2.91	7.08+1.09	9.92+2.14
ACNAPY	Acenaphthylene	6.18+0.23	1.71+0.08	10.62+0.56	2.92+0.11	8.42+0.44
ACNAPE	Acenaphthene	7.90+0.53	3.10+0.19	11.09+1.07	2.36+0.15	9.87+0.96
FLUORE	Fluorene	23.76+0.88	7.68+0.27	26.63+1.39	15.06+0.56	20.18+1.04
DBTH	Dibenzothiophene	2.02+0.11	0.16+0.04	0.77+0.08	0.22+0.04	0.48+0.05
PHENAN	Phenanthrene	98.79+1.83	22.74+0.43	95.36+2.48	59.71+1.09	73.69+1.90
ANTHRA	Anthracene	16.06+0.76	6.48+0.31	33.45+2.21	17.01+0.79	18.95+1.25
A_MFLUO	A-Methylfluorene	65.91+26.24	9.08+3.61	54.53+31.27	42.78+17.04	45.12+25.95
M_1FLUO	1-Methylfluorene	38.37+1.56	9.08+0.39	45.54+2.64	26.18+1.09	35.43+2.05
B_MFLUO	B-Methylfluorene	9.12+1.30	2.56+0.35	10.94+2.20	1.24+0.19	2.61+0.52
FL9ONE	9-fluorenone	0.34+0.08	1.28+0.23	11.04+2.67	2.25+0.37	6.54+1.60
XANONE	Xanthone	20.71+3.05	1.63+0.23	21.47+4.46	11.61+1.69	11.85+2.48
ACQUONE	Acenaphthenequinone	54.81+11.37	9.55+1.98	121.11+36.44	9.81+2.02	89.19+26.28
PNAPONE	Perinaphthenone	2.17+0.04	1.51+0.04	13.73+0.27	0.71+0.04	6.21+0.13
M_2ANTH	2-methylanthracene	29.22+1.26	7.37+0.31	49.99+3.09	33.64+1.46	26.85+1.64
M_3PHEN	2-methylphenanthrene	131.52+4.12	27.63+0.85	130.28+5.81	89.22+2.81	96.26+4.29
M_2PHEN	3-methylphenanthrene	152.04+5.57	28.99+1.05	136.91+7.11	100.31+3.67	106.33+5.54
M_9PHEN	9-methylphenanthrene	38.83+7.36	11.22+2.13	41.25+11.17	25.51+4.83	31.52+8.45
M_45PHEN	4,5-methylenephenanthrene	18.23+2.29	4.19+0.54	17.37+3.12	12.81+1.61	13.64+2.46
MPHT_1	1-methylphenanthrene	57.06+5.53	10.48+1.01	57.69+7.91	40.60+3.93	42.47+5.80
ANTHRON	Anthrone	16.75+1.95	3.38+0.39	13.00+2.13	9.33+1.09	14.83+2.47
ANRQUONE	Anthraquinone	0.53+0.11	1.79+0.31	2.34+0.59	0.56+0.11	0.96+0.24
DM36PH	3,6-dimethylphenanthrene	49.63+3.93	7.45+0.58	46.52+5.22	34.76+2.77	33.67+3.78

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Sample		High W1-1	High W1-2	High W3-1	Med W4-2	Med W5-3
A_DMPH	A-dimethylphenanthrene	80.64+4.42	13.35+0.74	69.78+5.38	55.66+3.03	49.25+3.80
B_DMPH	B-dimethylphenanthrene	41.88+3.78	7.84+0.70	40.80+5.20	27.64+2.47	29.20+3.72
C_DMPH	C-dimethylphenanthrene	109.70+6.41	21.07+1.24	100.33+8.28	79.41+4.64	76.19+6.32
D_DMPH	D-dimethylphenanthrene	36.24+6.29	2.68+0.47	31.53+7.77	27.64+4.79	28.34+6.95
DM17PH	1,7-dimethylphenanthrene	59.12+5.61	3.53+0.35	56.50+7.58	43.11+4.08	41.81+5.62
E_DMPH	E-dimethylphenanthrene	47.03+2.40	8.69+0.43	37.10+2.67	35.77+1.84	32.34+2.31
M_9ANT	9-methylantracene	0.34+0.08	1.86+0.39	2.56+0.76	1.46+0.30	0.90+0.29
FLUORA	Fluoranthene	27.88+1.60	7.76+0.43	30.19+2.43	28.95+1.65	23.63+1.92
PYRENE	Pyrene	78.39+1.41	15.18+0.27	71.87+1.84	63.72+1.12	55.19+1.40
ANTAL9	9-anthraldehyde	14.84+1.60	4.27+0.47	11.17+1.73	13.71+1.50	5.79+0.89
RETENE	Retene	0.38+0.04	0.19+0.04	0.11+0.05	0.15+0.04	0.00+0.05
BNTIOP	Benzonaphthothiophene	0.92+0.08	0.50+0.04	0.00+0.05	0.71+0.04	0.48+0.05
M_13FL	1+3-methylfluoranthene	18.61+3.70	3.84+0.78	19.49+5.55	24.05+4.79	16.58+4.70
C1MFLPY	1-MeFl+C-MeFl/Py	33.61+3.43	3.07+0.31	33.19+4.80	38.17+3.90	27.07+3.90
BMPYFL	B-MePy/MeFl	34.98+0.99	9.12+0.27	45.73+1.87	43.83+1.27	31.98+1.30
CMPYFL	C-MePy/MeFl	27.27+1.72	9.24+0.58	45.94+4.08	38.36+2.40	26.13+2.31
DMPYFL	D-MePy/MeFl	49.09+2.56	5.90+0.31	41.47+3.07	41.35+2.17	25.64+1.90
M_4PYR	4-methylpyrene	31.55+5.04	2.79+0.47	23.54+5.33	23.07+3.71	17.46+4.00
M_1PYR	1-methylpyrene	34.29+0.65	0.50+0.04	22.88+0.61	26.41+0.49	19.76+0.52
BZCPHEN	benzo(c)phenanthrene	0.53+0.04	0.62+0.04	1.56+0.14	1.54+0.07	0.00+0.05
BGHIFL	Benzo(ghi)fluoranthene	0.53+0.04	1.36+0.12	7.18+0.69	0.37+0.04	1.58+0.16
CP_CDPYR	Cyclopenta(c,d)pyrene	0.99+0.11	0.19+0.04	7.27+1.15	0.86+0.11	3.73+0.60
BAANTH	Benz(a)anthracene	1.03+0.08	4.35+0.35	24.00+2.64	30.45+2.36	17.39+1.92
CHR_TR	Chrysene-Triphenylene	27.12+2.71	2.91+0.31	20.93+2.93	24.31+2.40	19.70+2.79
BZANTHR	Benzanthrone	0.42+0.04	0.54+0.04	1.34+0.11	0.45+0.04	0.00+0.05
M_7BAA	7-methylbenz(a)anthracene	3.62+0.34	0.70+0.08	3.31+0.43	5.17+0.45	5.73+0.73
M_3CHR	3-methylchrysene	3.85+0.31	0.23+0.04	4.61+0.53	5.88+0.49	4.78+0.55
BAA7_12	Benz(a)anthracene-7,12-dione	2.48+0.15	2.13+0.12	2.79+0.21	1.57+0.07	0.00+0.05
CHRY56M	5+6-methylchrysene	1.56+0.08	0.27+0.04	1.41+0.11	2.06+0.11	0.00+0.05
BBJKFL	Benzo(b+j+k)fluoranthene	9.35+1.68	2.41+0.43	14.86+3.76	22.85+4.08	13.05+3.37
BAFL	Benzo(a)fluoranthene	0.00+0.04	0.08+0.04	0.49+0.05	0.67+0.04	1.10+0.10
BEPYRN	BeP	10.87+0.19	0.93+0.04	12.05+0.32	20.38+0.37	12.57+0.31
BAPYRN	BaP	8.32+0.31	1.20+0.08	10.45+0.53	15.77+0.56	8.75+0.47
PERYLE	Perylene	2.71+0.19	0.23+0.04	3.48+0.37	5.02+0.37	3.60+0.40
M_7BPY	7-methylbenzo(a)pyrene	1.41+0.08	0.31+0.04	0.62+0.05	3.30+0.19	0.00+0.05
BPY910DIH	9,10-dihydrobenzo(a)pyrene-7(8H-	0.46+0.15	1.01+0.31	0.23+0.11	0.52+0.19	0.61+0.29
DBAJAN	Dibenzo(a,j)anthracene	0.57+0.04	0.12+0.04	0.17+0.05	0.37+0.04	0.00+0.05
IN123PYR	Indeno[123-cd]pyrene	0.11+0.04	0.31+0.08	0.30+0.08	5.58+0.86	3.99+0.89
DBAHACAN	Dibenzo(ah+ac)anthracene	0.57+0.04	0.43+0.04	0.73+0.08	0.34+0.04	0.00+0.05
BBCHR	Benzo(b)chrysene	0.15+0.04	0.12+0.04	0.00+0.05	0.22+0.04	0.31+0.05
PIC	Picene	0.57+0.15	0.54+0.16	0.40+0.19	0.11+0.04	0.00+0.05
BGHIPE	Benzo(ghi)perylene	22.92+0.88	4.23+0.16	23.88+1.31	41.43+1.61	23.78+1.33
ANTHAN	Anthanthrene	0.19+0.04	0.08+0.04	0.00+0.05	0.60+0.04	0.18+0.05
DBBKFL	Dibenzo(b,k)fluoranthene	0.08+0.04	0.19+0.04	0.00+0.05	1.16+0.07	0.00+0.05
DBAEPYR	Dibenzo(a,e)pyrene	0.11+0.04	0.16+0.04	0.00+0.05	0.04+0.04	0.00+0.05
CORONE	Coronene	5.23+0.38	0.16+0.04	3.60+0.37	6.07+0.45	4.63+0.49
DBAHPYR	Dibenzo(a,h)pyrene	0.15+0.04	0.12+0.04	0.08+0.05	0.04+0.04	0.04+0.05
STER42	C27-20S5a(H),14a(H)-cholestane	145.60+35.55	29.15+7.10	0.00+0.05	26.86+6.56	118.28+28.89
STER43	C27-20R5a(H),14β(H)-cholestane	139.23+23.12	32.83+5.43	37.26+8.84	22.55+3.75	171.57+28.45
STER44	C27-20S5a(H),14β(H),17β(H)-chc	115.77+15.45	26.90+3.57	19.31+3.64	23.37+3.11	142.54+19.00
STER45_40	ster45+40(cholestane)	200.68+17.93	44.13+3.96	28.84+3.86	20.41+1.84	218.69+19.55
STER46	C28-20S5a(H),14a(H),17a(H)-erg	53.29+9.50	14.28+2.56	12.53+3.15	8.35+1.50	24.74+4.41
STER47	C28-20R5a(H),14β(H),17β(H)-erç	97.19+12.97	21.23+2.83	17.10+3.25	12.85+1.72	124.16+16.58
STER48	C28-20S5a(H),14β(H),17β(H)-erg	222.61+36.85	43.35+7.18	26.82+6.73	19.14+3.18	124.56+20.62
STER49	C28-20R5a(H),14a(H),17a(H)-erg	71.90+5.57	15.83+1.24	11.04+1.20	8.69+0.67	76.27+5.92
STER50	C29-20S5a(H),14a(H),17a(H)-stič	70.07+16.21	14.09+3.26	5.50+1.89	9.29+2.14	100.08+23.16
STER51	C29-20R5a(H),14β(H),17β(H)-stič	237.91+10.83	42.38+1.94	25.84+1.65	26.60+1.20	242.73+11.06
STER52	C29-20S5a(H),14β(H),17β(H)-stič	132.09+13.31	26.47+2.68	14.75+2.11	17.94+1.80	177.53+17.90
HOP13_14	18a(H),21β(H)-22,29,30-Trisnorhc	155.17+16.36	122.06+12.89	51.08+7.69	83.87+8.84	373.03+39.36
STER53	C29-20R5a(H),14a(H),17a(H)-stič	113.02+25.71	14.20+3.22	8.98+2.95	8.99+2.06	114.45+26.02
HOP15	17a(H),21β(H)-22,29,30-Trisnorhc	221.89+30.59	63.26+8.73	29.18+5.76	54.91+7.57	586.32+80.86
HOP17	17a(H),21β(H)-30-Norhopane	891.81+56.03	430.26+27.05	120.34+10.71	210.66+13.22	2146.97+134.89
HOP19	17a(H),21β(H)-Hopane	485.58+50.81	228.95+23.95	68.26+10.14	111.59+11.69	1060.56+111.00
HOP20	17β(H),21a(H)-hopane	56.84+0.80	30.39+0.43	3.62+0.08	14.76+0.22	166.68+2.28
HOP21	22S-17a(H),21β(H)-30-Homohopi	310.95+32.16	172.59+17.85	45.05+6.64	96.53+10.00	719.66+74.43
HOP22	22R-17a(H),21β(H)-30-Homohopi	254.31+23.15	146.36+13.31	37.48+4.85	77.80+7.08	533.17+48.55
HOP23	17β(H),21β(H)-Hopane	46.12+5.00	48.01+5.20	10.32+1.57	18.80+2.02	108.90+11.80
HOP24	22S-17a(H),21β(H)-30,31-Bishorr	159.02+13.88	99.98+8.73	22.71+2.84	51.99+4.53	319.58+27.90
HOP25	22R-17a(H),21β(H)-30,31-Bishorr	132.36+12.66	82.16+7.88	17.16+2.36	41.62+3.97	225.12+21.54

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<b>Sample</b>		<b>High W1-1</b>	<b>High W1-2</b>	<b>High W3-1</b>	<b>Med W4-2</b>	<b>Med W5-3</b>
<b>HOP26</b>	22S-17a(H),21β(H)-30,31,32-Tris	121.45+24.41	87.79+17.66	12.43+3.65	38.17+7.68	183.04+36.79
<b>HOP27</b>	22R-17a(H),21β(H)-30,31,32-Tris	92.84+19.26	69.05+14.32	10.70+3.23	28.95+5.99	127.21+26.39
<b>DODEC</b>	Dodecane	81.21+6.71	59.81+4.97	160.00+18.79	76.30+6.33	122.82+14.41
<b>TRIDEC</b>	Tridecane	103.03+5.80	95.48+5.39	140.11+11.19	81.51+4.61	155.86+12.45
<b>NORFARN</b>	norfarnesane	50.96+7.21	37.18+5.24	60.46+12.40	103.12+14.53	106.26+21.26
<b>HPYCYHX</b>	Heptylcyclohexane	12.05+1.56	15.10+1.98	11.88+2.21	8.05+1.05	24.13+4.48
<b>FARNES</b>	farnesane	19.99+3.78	12.34+2.33	32.58+8.83	14.16+2.66	9.74+2.60
<b>TDEC</b>	Tetradecane	85.21+1.83	67.34+1.47	104.08+3.20	68.51+1.50	127.01+3.90
<b>OCYCYHX</b>	Octylcyclohexane	4.73+0.34	1.90+0.16	7.23+0.73	1.46+0.11	4.15+0.42
<b>PENTAD</b>	pentadecane	93.91+2.17	53.91+1.24	103.72+3.38	64.09+1.50	68.99+2.26
<b>NOYCYHX</b>	Nonylcyclohexane	7.90+0.95	0.74+0.12	6.59+1.15	1.50+0.19	4.02+0.71
<b>HEXAD</b>	Hexadecane	137.70+3.70	68.97+1.86	148.06+5.62	81.88+2.21	89.54+3.40
<b>NORPRST</b>	Norpristane	62.29+13.31	18.63+3.96	65.64+19.94	33.19+7.08	31.76+9.62
<b>HEPTAD</b>	Heptadecane	255.03+12.97	127.03+6.44	257.75+18.51	210.29+10.68	197.91+14.22
<b>DECYHX</b>	Decylcyclohexane	9.61+0.88	4.39+0.39	10.62+1.36	7.27+0.67	4.91+0.65
<b>HEPTDPRIS</b>	Heptadecane_Pristane	96.51+7.13	24.10+1.79	85.00+8.90	40.79+3.00	45.12+4.73
<b>DEC1YHX</b>	Undecylcyclohexane	17.43+2.67	6.33+0.97	11.92+2.56	11.61+1.76	11.52+2.48
<b>OCTAD</b>	octadecane	303.32+17.24	111.93+6.37	241.14+19.37	153.13+8.69	267.45+21.49
<b>PHYTAN</b>	phytane	173.10+14.57	107.90+9.08	137.36+16.33	69.52+5.84	125.61+14.97
<b>DEC2YHX</b>	Dodecylcyclohexane	30.74+5.42	19.29+3.42	13.30+3.36	9.51+1.69	27.97+6.99
<b>NONAD</b>	nonadecane	383.85+3.36	93.53+0.82	251.43+3.12	147.73+1.31	467.16+5.80
<b>DEC3YHX</b>	Tridecylcyclohexane	33.22+2.40	25.58+1.86	18.65+1.92	17.08+1.24	40.47+4.16
<b>EICOSA</b>	eicosane	518.99+12.78	268.38+6.60	325.81+11.32	241.98+5.96	807.97+28.10
<b>DEC4YHX</b>	Tetradecylcyclohexane	78.62+9.96	69.08+8.77	53.60+9.60	17.12+2.17	106.83+19.19
<b>HENEIC</b>	heneicosane	542.72+23.65	346.70+15.10	380.05+23.39	288.65+12.59	852.27+52.48
<b>DEC5YHX</b>	Pentadecylcyclohexane	270.06+12.05	125.20+5.59	128.59+8.13	68.62+3.07	243.67+15.39
<b>DOCOSA</b>	docosane	466.51+33.03	407.40+28.88	530.09+53.19	370.27+26.22	825.00+82.69
<b>DEC6YHX</b>	Hexadecylcyclohexane	121.45+27.39	8.27+1.86	34.60+11.10	28.47+6.41	151.43+49.14
<b>TRICOSA</b>	Tricosane	342.46+10.72	407.32+12.73	697.15+30.85	515.42+16.14	637.46+28.24
<b>DEC7YHX</b>	Heptadecylcyclohexane	148.42+18.88	156.14+19.87	87.05+15.69	113.12+14.38	160.86+29.40
<b>DEC8YHX</b>	Octadecylcyclohexane	56.87+2.14	43.47+1.63	5.44+0.30	20.79+0.79	103.76+5.51
<b>TETCOS</b>	Tetracosane	156.96+15.87	263.30+26.62	724.95+103.70	552.39+55.81	323.79+46.33
<b>PENCOS</b>	Pentacosane	431.41+68.05	389.28+57.83	653.19+238.54	462.60+64.32	605.72+163.00
<b>DEC9YHX</b>	Nonadecylcyclohexane	23.88+2.59	23.21+2.52	42.40+6.49	25.55+2.77	37.84+5.77
<b>HEXCOS</b>	Hexacosane	708.34+92.23	319.80+54.84	678.62+152.34	405.67+44.69	342.12+40.45
<b>CYHXEIC</b>	Eicosylcyclohexane	11.21+1.56	97.42+13.47	46.03+9.07	62.25+8.62	49.78+9.75
<b>HEPCOS</b>	Heptacosane	648.45+76.02	222.47+21.85	132.28+18.37	422.86+41.50	159.88+22.22
<b>CYHXHEN</b>	Heneicosylcyclohexane	22.12+4.27	2.60+0.50	10.60+3.22	24.83+4.79	26.08+7.15
<b>OCTCOS</b>	Octacosane	49.85+17.24	287.05+99.36	159.00+82.25	206.84+71.58	154.37+75.55
<b>NONCOS</b>	Nonacosane	47.26+10.91	20.96+4.85	78.96+25.96	125.00+28.88	95.32+33.17
<b>TRICONT</b>	Triacontane	109.89+6.60	116.20+6.99	37.71+3.20	67.87+4.08	128.13+10.92
<b>HTRICONT</b>	Hentriacontane	155.44+42.45	11.18+3.07	28.52+11.11	14.08+3.86	96.10+37.46
<b>DTRICONT</b>	Dotriacontane	57.29+16.10	10.48+2.95	12.83+5.14	24.24+6.82	7.66+3.07
<b>TTRICONT</b>	Tritriacontane	22.70+1.95	50.14+4.31	3.77+0.45	43.94+3.78	22.70+2.76
<b>TETRICONT</b>	Tetraatriacontane	14.00+5.07	25.69+9.31	11.28+6.00	18.58+6.74	6.29+3.27
<b>PTRICONT</b>	Pentatriacontane	99.37+24.98	19.72+4.97	44.58+16.28	23.41+5.88	18.12+6.50
<b>HXTRICONT</b>	Hexatriacontane	28.99+8.93	71.02+21.89	19.32+8.51	20.41+6.29	24.98+11.25
<b>HPTRICONT</b>	Heptatriacontane	3.89+0.50	8.77+1.16	3.01+0.57	8.58+1.12	2.70+0.52
<b>OTRICONT</b>	Octatriacontane	9.99+1.53	4.97+0.78	2.56+0.56	2.25+0.34	2.52+0.55
<b>NTRICONT</b>	Nonatriacontane	10.60+0.72	13.47+0.93	3.07+0.30	4.05+0.26	5.40+0.52
<b>TECONT</b>	Tetracontane	4.58+0.65	12.46+1.71	8.97+1.79	5.28+0.75	6.63+1.30

**Appendix A - Chemical Composition of Lubricating Oils (ug/g)**

Sample	Med W6-1	Low W6-4	Low W7-3	Low W8-2	Quaker	Castrol	Penzoil
Na	336.20+107.41	137.75+59.32	0.00+93.97	145.46+82.62	216.75+40.46	236.01+80.16	255.28+49.16
Mg	402.08+134.09	346.79+91.46	228.29+134.09	187.22+63.77	263.05+45.21	315.19+42.13	264.63+10.95
Al	0.00+1.00	0.00+296.39	0.00+193.24	89.76+16.18	139.25+41.68	134.21+36.67	139.25+40.45
Si	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
P	4470.87+114.91	4120.66+130.91	2878.59+81.80	4034.63+21.69	3752.89+72.49	4708.38+22.73	3878.31+212.85
S	4414.73+47.00	3478.84+21.07	2411.91+10.78	2539.40+67.32	2823.17+65.45	1943.64+48.01	2001.14+66.44
Ca	2580.20+7.70	2103.52+5.21	1790.72+10.80	2633.80+4.67	2586.36+5.04	2597.57+9.10	2528.61+39.70
Ti	0.00+0.21	0.00+0.22	0.00+0.09	0.00+0.27	0.00+0.12	0.00+0.15	0.00+0.11
Va	0.00+1.00	0.19+0.06	0.00+1.00	0.00+1.00	0.09+0.09	0.42+0.12	0.05+0.09
Cr	1.09+0.31	2.34+0.16	4.31+0.22	1.18+0.08	0.88+0.27	1.03+0.10	1.06+0.05
Mn	0.00+0.06	0.00+0.16	0.00+0.14	0.00+0.10	0.00+0.08	0.00+0.21	0.00+0.11
Fe	9.68+0.28	18.49+0.25	109.93+1.44	3.27+0.28	0.16+0.10	0.10+0.06	0.00+0.23
Ni	0.00+0.10	0.00+0.07	0.00+0.09	0.00+0.04	0.00+0.08	0.00+0.10	0.00+0.07
Cu	0.39+0.22	33.73+0.11	28.04+0.19	0.92+0.17	0.00+0.09	0.00+0.17	0.00+0.21
Zn	1339.10+5.48	1326.19+3.80	1126.66+4.02	1242.51+0.31	1086.30+1.34	1412.96+0.67	1155.77+1.00
Mo	19.85+0.22	115.86+0.86	65.96+1.54	72.00+0.10	55.16+0.81	56.21+1.04	277.54+8.47
Ag	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Cd	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Sn	0.00+1.00	0.00+1.00	2.35+0.40	0.00+1.00	0.00+1.00	0.00+1.00	0.00+1.00
Ba	0.89+1.12	2.71+2.03	4.86+2.55	6.19+2.27	3.84+0.28	3.55+0.55	2.00+2.85
W	0.00+0.58	8.19+0.97	0.00+8.25	7.57+0.17	7.62+0.55	0.00+14.01	0.00+0.14
Pb	2.80+0.03	20.64+0.14	21.22+0.32	0.36+0.08	0.00+0.10	0.00+0.22	0.18+0.05
NAPHTH	401.15+11.84	231.64+6.84	261.91+7.72	276.09+8.15	0.15+0.04	1.07+0.04	0.11+0.04
MNAPH2	856.04+11.62	477.31+6.46	482.98+6.53	609.90+8.27	0.19+0.04	1.26+0.04	0.91+0.04
MNAPH1	471.65+10.22	249.79+5.42	245.72+5.35	326.23+7.08	0.08+0.04	0.46+0.04	0.27+0.04
BIPHEN	18.20+0.61	7.31+0.23	8.43+0.26	11.34+0.38	0.00+0.04	0.04+0.04	0.00+0.04
ENAP12	138.01+2.99	63.49+1.38	60.99+1.34	90.90+1.96	0.00+0.04	0.11+0.04	0.04+0.04
DMN267	292.89+4.69	117.36+1.88	129.67+2.08	189.42+3.04	0.00+0.04	0.08+0.04	0.00+0.04
DM1367	520.24+16.57	202.84+6.46	217.66+6.94	312.54+9.96	0.00+0.04	0.31+0.04	0.08+0.04
D14523	159.12+3.90	56.22+1.38	64.19+1.56	89.44+2.19	0.00+0.04	0.23+0.04	0.00+0.04
DMN12	61.87+0.76	19.65+0.23	19.82+0.26	31.30+0.38	0.00+0.04	0.00+0.04	0.00+0.04
M_2BPH	6.32+1.10	1.81+0.31	2.45+0.41	4.85+0.85	0.00+0.04	0.00+0.04	0.00+0.04
M_3BPH	43.03+1.89	16.15+0.69	14.52+0.63	24.53+1.08	0.31+0.04	0.08+0.04	0.15+0.04
M_4BPH	13.85+1.06	5.77+0.46	3.90+0.30	11.77+0.88	0.23+0.04	0.11+0.04	0.08+0.04
DBZFUR	5.60+0.83	1.69+0.27	1.23+0.19	2.27+0.35	0.00+0.04	0.00+0.04	0.00+0.04
BIBENZ	43.52+3.52	27.96+2.23	31.30+2.52	47.57+3.85	0.35+0.04	1.95+0.15	0.00+0.04
ATMNAP	168.51+3.44	61.99+1.27	60.14+1.23	92.75+1.88	0.12+0.04	0.00+0.04	0.27+0.04
EM_12N	33.41+2.46	13.19+0.96	12.92+0.97	20.92+1.54	0.12+0.04	0.08+0.04	0.27+0.04
BTMNAP	147.43+1.06	56.10+0.42	51.60+0.37	85.21+0.62	0.12+0.04	0.08+0.04	0.00+0.04
CTMNAP	124.50+4.62	47.80+1.77	50.97+1.89	67.79+2.54	0.00+0.04	0.08+0.04	0.08+0.04
EM_21N	4.73+0.45	1.38+0.15	1.78+0.19	4.54+0.46	0.00+0.04	0.08+0.04	0.04+0.04
ETMNAP	80.18+9.88	34.92+4.31	30.92+3.82	45.64+5.61	0.00+0.04	0.08+0.04	0.04+0.04
FTMNAP	80.18+2.65	32.45+1.08	30.92+1.00	45.64+1.50	0.00+0.04	0.08+0.04	0.04+0.04
TMI235N	126.73+9.69	51.83+3.96	13.92+1.08	57.22+4.38	0.00+0.04	0.08+0.04	0.08+0.04
TM245N	20.85+2.08	8.92+0.88	3.45+0.33	11.65+1.15	0.04+0.04	0.00+0.04	0.19+0.04
JTMNAP	22.52+1.51	9.96+0.69	4.08+0.30	12.04+0.81	0.04+0.04	0.00+0.04	0.19+0.04
TM145N	19.41+2.95	7.81+1.19	6.13+0.93	9.42+1.42	0.04+0.04	0.00+0.04	0.19+0.04
ACNAPY	22.55+0.83	2.04+0.08	3.86+0.15	4.00+0.15	0.00+0.04	0.00+0.04	0.15+0.04
ACNAPE	8.29+0.57	3.69+0.27	3.08+0.22	5.42+0.38	0.00+0.04	0.53+0.04	0.00+0.04
FLUORE	35.23+1.32	14.23+0.54	12.81+0.48	16.88+0.62	0.00+0.04	0.11+0.04	0.04+0.04
DBTH	1.06+0.08	0.54+0.04	0.19+0.04	0.35+0.04	0.00+0.04	0.00+0.04	0.00+0.04
PHENAN	77.35+1.44	39.41+0.73	40.28+0.74	60.95+1.12	0.04+0.04	0.04+0.04	0.04+0.04
ANTHRA	25.28+1.17	12.73+0.58	15.15+0.71	17.30+0.81	0.04+0.04	0.15+0.04	0.04+0.04
A_MFLUO	34.81+13.85	29.07+11.57	28.36+11.29	43.45+17.30	0.00+0.04	0.00+0.04	0.11+0.08
M_1FLUO	4.09+0.19	20.11+0.81	2.64+0.11	28.45+1.15	0.00+0.04	0.00+0.04	0.00+0.04
B_MFLUO	1.44+0.19	4.61+0.65	1.15+0.15	6.19+0.88	0.00+0.04	0.00+0.04	0.00+0.04
FL9ONE	2.08+0.34	2.08+0.35	0.30+0.07	3.69+0.62	0.00+0.04	0.00+0.04	0.00+0.04
XANONE	9.35+1.36	7.88+1.15	5.53+0.82	7.96+1.15	0.00+0.04	0.23+0.04	0.00+0.04
ACQUONE	31.75+6.58	13.07+2.69	144.45+29.96	30.42+6.31	0.00+0.04	0.00+0.04	0.00+0.04
PNAPONE	4.05+0.08	1.42+0.04	2.86+0.04	3.08+0.04	0.12+0.04	0.31+0.04	0.72+0.04
M_2ANTH	29.14+1.29	19.50+0.85	24.09+1.04	26.72+1.15	0.12+0.04	0.08+0.04	0.15+0.04
M_3PHEN	73.49+2.31	49.22+1.54	55.91+1.74	91.56+2.88	0.08+0.04	0.04+0.04	0.19+0.04
M_2PHEN	80.18+2.95	59.22+2.19	66.04+2.41	101.17+3.73	0.12+0.04	0.04+0.04	0.19+0.04
M_9PHEN	33.38+6.32	6.92+1.31	15.70+2.97	9.07+1.73	0.12+0.04	0.19+0.04	0.84+0.15
M_45PHEN	14.95+1.89	6.77+0.85	8.72+1.11	11.50+1.46	0.27+0.04	0.38+0.08	0.27+0.04
MPHT_1	27.17+2.61	23.84+2.31	30.74+2.97	33.22+3.19	0.23+0.04	0.42+0.04	0.61+0.08
ANTHRON	6.40+0.76	3.23+0.38	5.64+0.67	6.88+0.81	0.23+0.04	0.08+0.04	0.00+0.04
ANRQUONE	0.45+0.08	1.00+0.19	2.38+0.41	2.81+0.50	1.46+0.27	1.49+0.27	3.20+0.57
DM36PH	21.00+1.67	17.00+1.35	22.50+1.78	34.80+2.77	0.46+0.04	0.23+0.04	0.91+0.08

**Appendix A - Chemical Composition of Lubricating Oils (ug/g)**

Sample	Med W6-1	Low W6-4	Low W7-3	Low W8-2	Quaker	Castrol	Penzoil
A_DMPH	33.79+1.85	24.73+1.35	31.52+1.71	51.22+2.81	0.23+0.04	0.61+0.04	1.48+0.08
B_DMPH	19.98+1.82	14.50+1.31	17.15+1.56	32.53+2.92	0.58+0.08	0.19+0.04	1.22+0.11
C_DMPH	67.13+3.94	46.76+2.73	51.27+3.01	66.14+3.88	0.35+0.04	1.07+0.08	1.48+0.08
D_DMPH	20.24+3.52	13.57+2.35	17.04+2.97	23.30+4.04	0.58+0.12	1.26+0.23	1.10+0.19
DM17PH	35.19+3.33	22.38+2.11	29.33+2.78	23.30+2.19	0.96+0.12	0.53+0.08	1.03+0.11
E_DMPH	27.40+1.40	18.42+0.92	21.53+1.11	32.88+1.65	0.77+0.04	0.72+0.04	0.27+0.04
M_9ANT	0.83+0.19	0.35+0.08	1.74+0.37	0.38+0.08	0.31+0.08	0.42+0.08	0.19+0.04
FLUORA	22.02+1.25	10.00+0.58	15.00+0.85	26.19+1.50	0.15+0.04	0.31+0.04	0.61+0.04
PYRENE	41.51+0.76	23.49+0.42	34.78+0.63	67.02+1.19	0.12+0.04	0.15+0.04	0.30+0.04
ANTAL9	2.88+0.30	5.54+0.62	5.53+0.59	4.50+0.50	1.50+0.15	1.37+0.15	0.99+0.11
RETENE	0.26+0.04	0.23+0.04	0.15+0.04	0.31+0.04	0.08+0.04	0.23+0.04	0.19+0.04
BNTIOP	0.49+0.04	0.69+0.04	0.85+0.07	1.00+0.08	1.15+0.08	0.27+0.04	0.30+0.04
M_13FL	12.00+2.38	15.15+3.04	7.39+1.48	22.26+4.46	0.12+0.04	0.42+0.08	0.80+0.15
C1MFLPY	21.27+2.16	15.88+1.62	17.67+1.82	32.03+3.27	1.19+0.12	0.69+0.08	0.30+0.04
BMPYFL	26.19+0.76	8.96+0.27	21.68+0.63	39.84+1.15	0.12+0.04	0.42+0.04	0.80+0.04
CMPYFL	24.60+1.55	14.57+0.92	18.52+1.15	35.18+2.19	2.12+0.15	1.03+0.08	0.69+0.08
DMPYFL	20.74+1.10	12.00+0.62	19.94+1.04	46.87+2.46	0.65+0.04	0.50+0.04	0.23+0.04
M_4PYR	15.63+2.50	9.23+1.46	13.51+2.15	27.69+4.42	0.19+0.04	0.15+0.04	0.34+0.08
M_1PYR	16.50+0.30	7.65+0.15	15.78+0.30	29.19+0.54	0.42+0.04	0.15+0.04	0.46+0.04
BZCPHEN	1.10+0.08	0.65+0.04	0.59+0.04	0.23+0.04	0.31+0.04	0.19+0.04	0.30+0.04
BGHIFL	0.57+0.04	0.65+0.08	4.75+0.33	1.27+0.08	0.31+0.04	0.76+0.08	1.18+0.08
CP_CDPYR	7.57+0.83	0.42+0.08	0.85+0.11	3.85+0.42	0.23+0.04	0.19+0.04	0.19+0.04
BAANTH	15.48+1.21	7.84+0.62	13.96+1.08	17.50+1.35	0.23+0.04	0.42+0.04	0.27+0.04
CHR_TR	12.41+1.25	4.92+0.50	14.33+1.41	17.23+1.69	0.23+0.04	0.34+0.04	0.49+0.08
BZANTHR	1.06+0.08	2.85+0.15	1.37+0.07	2.04+0.12	2.16+0.12	0.34+0.04	1.48+0.08
M_7BAA	1.06+0.11	2.42+0.23	0.48+0.07	4.35+0.38	0.73+0.08	0.88+0.08	0.46+0.04
M_3CHR	1.78+0.15	1.27+0.12	1.23+0.11	3.36+0.27	0.12+0.04	0.34+0.04	0.08+0.04
BAA7_12	0.76+0.04	1.35+0.08	2.23+0.11	2.19+0.12	3.73+0.19	1.98+0.11	1.60+0.08
CHRY56M	0.45+0.04	0.42+0.04	0.30+0.04	0.62+0.04	0.77+0.04	0.69+0.04	0.19+0.04
BBJKFL	11.01+1.97	4.81+0.85	10.62+1.89	14.04+2.50	0.69+0.12	0.27+0.08	0.19+0.04
BAFL	0.91+0.08	0.23+0.04	0.11+0.04	0.08+0.04	0.23+0.04	0.04+0.04	0.15+0.04
BEPYRN	8.21+0.15	5.42+0.12	10.10+0.19	15.57+0.31	0.12+0.04	0.08+0.04	0.61+0.04
BAPYRN	10.82+0.42	6.11+0.23	10.02+0.37	10.88+0.38	0.35+0.04	0.15+0.04	0.23+0.04
PERYLE	1.55+0.11	2.15+0.15	3.04+0.22	1.69+0.12	0.12+0.04	0.95+0.08	1.03+0.08
M_7BPY	1.70+0.11	0.12+0.04	0.52+0.04	0.12+0.04	0.19+0.04	0.34+0.04	0.08+0.04
BPY910DIH	0.87+0.26	1.19+0.38	0.97+0.30	1.04+0.35	0.54+0.19	0.15+0.08	0.27+0.08
DBAJAN	0.15+0.04	0.92+0.08	0.26+0.04	0.27+0.04	0.15+0.04	1.11+0.08	0.19+0.04
IN123PYR	0.49+0.08	0.19+0.04	0.30+0.07	0.08+0.04	0.23+0.04	0.15+0.04	0.04+0.04
DBAHACAN	0.79+0.04	1.04+0.08	0.41+0.04	0.96+0.08	0.23+0.04	0.99+0.08	0.27+0.04
BBCHR	0.11+0.04	0.38+0.08	0.22+0.04	0.35+0.04	0.12+0.04	0.50+0.08	0.15+0.04
PIC	0.42+0.11	0.35+0.12	0.37+0.11	0.42+0.12	1.54+0.42	0.19+0.08	0.42+0.11
BGHIPE	12.79+0.49	10.38+0.42	17.67+0.71	27.22+1.08	0.38+0.04	0.50+0.04	0.46+0.04
ANTHAN	0.19+0.04	0.31+0.04	0.26+0.04	0.12+0.04	0.38+0.04	0.53+0.04	0.27+0.04
DBBKFL	1.10+0.08	0.23+0.04	0.82+0.04	0.35+0.04	0.12+0.04	0.19+0.04	0.19+0.04
DBAEPYR	0.34+0.04	0.08+0.04	0.11+0.04	0.08+0.04	0.15+0.04	0.19+0.04	0.27+0.04
CORONE	2.19+0.15	0.92+0.08	4.64+0.33	5.15+0.38	0.08+0.04	0.08+0.04	0.08+0.04
DBAHPYR	0.53+0.04	0.08+0.04	0.52+0.04	0.19+0.04	0.08+0.04	0.15+0.04	0.08+0.04
STER42	110.42+26.98	63.89+25.21	0.00+0.04	20.23+4.92	13.44+3.27	23.90+8.32	20.86+5.10
STER43	135.85+22.55	149.31+35.25	226.34+37.53	28.76+4.77	16.52+2.73	34.69+8.12	25.00+4.15
STER44	108.19+14.42	108.96+20.58	90.40+12.07	23.42+3.11	16.21+2.16	24.53+4.64	19.60+2.63
STER45_40	134.79+12.03	201.09+25.42	181.31+16.19	34.99+3.11	17.02+1.54	42.36+5.36	29.30+2.63
STER46	27.47+4.92	41.32+10.50	57.65+10.28	5.96+1.08	6.97+1.23	10.20+2.59	5.40+0.95
STER47	109.40+14.61	126.37+23.88	120.69+16.11	25.80+3.46	11.86+1.58	25.02+4.72	12.79+1.71
STER48	104.74+17.33	159.02+37.48	81.30+13.44	27.34+4.54	2.85+0.46	23.34+5.46	10.28+1.71
STER49	67.32+5.22	65.79+7.24	55.80+4.34	10.23+0.81	0.00+0.04	12.30+1.38	7.23+0.57
STER50	75.53+17.48	78.96+26.12	51.75+11.95	11.54+2.65	0.00+0.04	15.45+5.06	5.56+1.29
STER51	216.45+9.84	181.59+11.69	122.84+5.61	32.88+1.50	17.17+0.77	37.88+2.46	22.34+1.03
STER52	159.80+16.12	130.72+18.66	70.20+7.09	22.26+2.23	11.40+1.15	29.62+4.22	14.73+1.48
HOP13_14	270.11+28.49	179.13+26.73	168.32+17.75	78.06+8.23	36.88+3.89	45.62+6.80	48.90+5.18
STER53	111.63+25.39	95.92+31.01	55.57+12.66	20.42+4.65	6.51+1.46	18.16+5.87	7.65+1.75
HOP15	351.88+48.51	261.34+51.01	168.02+23.17	45.18+6.23	25.75+3.54	53.31+10.41	31.97+4.41
HOP17	1623.41+102.02	1038.16+92.26	408.44+25.65	265.21+16.65	95.70+6.01	191.29+17.05	95.98+6.01
HOP19	1027.34+107.54	650.27+96.26	357.76+37.46	155.23+16.27	44.43+4.66	105.49+15.61	52.79+5.52
HOP20	141.22+1.93	82.04+1.58	357.76+4.94	21.69+0.31	3.97+0.08	13.12+0.27	6.51+0.11
HOP21	974.55+100.81	471.39+68.96	165.91+17.15	112.36+11.61	30.37+3.16	64.08+9.40	33.38+3.46
HOP22	672.02+61.19	373.72+48.16	119.20+10.84	93.48+8.50	21.87+2.00	58.93+7.61	27.67+2.51
HOP23	115.26+12.49	65.52+10.03	28.14+3.04	25.15+2.73	4.66+0.50	12.45+1.93	4.76+0.53
HOP24	437.74+38.22	266.57+32.90	97.67+8.54	55.79+4.88	17.55+1.54	36.26+4.48	19.60+1.71
HOP25	318.58+30.50	179.21+24.28	82.71+7.91	45.87+4.38	9.43+0.89	25.67+3.49	13.43+1.29

**Appendix A - Chemical Composition of Lubricating Oils (ug/g)**

Sample	Med	Low	Low	Low	Quaker	Castrol	Penzoil
	W6-1	W6-4	W7-3	W8-2			
HOP26	316.80+63.65	155.27+44.13	82.60+16.59	40.80+8.19	7.39+1.50	23.80+6.78	11.23+2.25
HOP27	227.35+47.19	114.11+33.50	60.59+12.58	28.38+5.88	0.00+0.04	20.77+6.21	7.35+1.52
DODEC	167.52+13.89	64.98+5.38	66.67+5.53	94.13+7.81	0.62+0.08	14.65+1.22	0.19+0.04
TRIDEC	142.43+8.02	71.98+4.08	62.52+3.53	102.59+5.77	0.96+0.08	35.25+1.98	0.46+0.04
NORFARN	88.81+12.53	67.98+9.57	64.52+9.10	52.30+7.38	42.23+5.97	53.21+7.51	0.23+0.04
HPYCYHX	10.07+1.32	8.50+1.12	5.31+0.71	9.92+1.31	0.12+0.04	2.06+0.27	0.19+0.04
FARNES	19.94+3.78	9.54+1.81	23.39+4.42	18.76+3.54	0.15+0.04	1.45+0.27	0.19+0.04
TDEC	104.67+2.27	56.29+1.23	49.56+1.08	83.98+1.81	9.89+0.23	23.61+0.50	8.75+0.19
OCYCYHX	5.37+0.38	1.81+0.12	3.56+0.26	7.23+0.50	0.08+0.04	1.41+0.11	0.19+0.04
PENTAD	109.51+2.54	65.37+1.50	23.24+0.56	96.40+2.23	6.12+0.15	9.08+0.23	4.57+0.11
NOYCYHX	3.03+0.38	4.58+0.58	2.64+0.33	5.00+0.62	0.31+0.04	2.17+0.27	3.35+0.42
HEXAD	137.44+3.71	115.09+3.11	56.47+1.52	63.99+1.73	27.60+0.73	39.36+1.07	71.55+1.94
NORPRST	58.16+12.41	56.64+12.07	12.58+2.67	30.95+6.61	2.08+0.46	14.08+3.01	11.80+2.51
HEPTAD	273.36+13.89	267.59+13.61	158.67+8.06	183.30+9.31	64.44+3.27	100.17+5.07	85.89+4.38
DECYHX	8.10+0.72	5.19+0.46	2.60+0.22	3.88+0.35	0.81+0.08	6.06+0.53	5.67+0.53
HEPTDPRIS	70.57+5.22	82.02+6.08	27.88+2.04	29.53+2.19	2.77+0.19	58.97+4.35	18.08+1.33
DEC1YHX	14.53+2.23	24.57+3.73	8.35+1.26	8.50+1.31	4.89+0.73	13.05+1.98	7.42+1.14
OCTAD	285.96+16.23	272.98+15.50	122.69+6.98	77.25+4.38	49.43+2.81	77.97+4.42	89.59+5.10
PHYTAN	152.57+12.83	185.23+15.57	62.15+5.23	36.18+3.04	18.71+1.58	101.69+8.54	63.40+5.33
DEC2YHX	27.85+4.92	42.95+7.58	11.58+2.04	11.31+2.00	12.01+2.12	24.72+4.35	31.09+5.48
NONAD	357.71+3.14	318.12+2.77	121.99+1.08	94.21+0.81	35.92+0.31	74.42+0.65	86.20+0.76
DEC3YHX	33.07+2.38	37.22+2.69	15.48+1.11	13.00+0.92	20.25+1.46	17.74+1.30	33.41+2.44
EICOSA	611.62+15.06	434.86+10.69	213.39+5.23	191.07+4.69	97.40+2.39	259.11+6.37	232.19+5.71
DEC4YHX	127.41+16.16	82.52+10.46	4.79+0.59	49.14+6.23	65.02+8.24	50.50+6.41	82.93+10.50
HENEIC	675.16+29.40	461.43+20.11	215.95+9.39	293.05+12.77	103.56+4.50	276.70+12.05	257.49+11.23
DEC5YHX	296.41+13.24	225.45+10.07	73.73+3.30	107.24+4.81	124.00+5.54	92.16+4.12	152.53+6.81
DOCOSA	576.77+40.87	567.98+40.26	292.65+20.75	631.20+44.72	166.65+11.82	248.82+17.62	314.28+22.26
DEC6YHX	131.95+29.74	122.20+27.53	28.03+6.31	28.34+6.38	26.18+5.89	8.01+1.79	34.37+7.76
TRICOSA	450.99+14.11	543.80+17.03	270.11+8.46	867.34+27.15	206.65+6.47	230.66+7.21	190.29+5.97
DEC7YHX	180.50+22.97	232.02+29.53	139.29+17.71	16.53+2.11	132.74+16.90	85.94+10.95	101.50+12.90
DEC8YHX	61.45+2.31	87.40+3.27	6.09+0.22	36.80+1.38	19.79+0.73	15.68+0.57	21.39+0.80
TETCOS	252.17+25.47	348.00+35.18	325.61+32.89	445.44+45.03	232.64+23.52	192.32+19.42	425.48+43.00
PENCOS	555.13+117.16	694.07+150.77	490.40+85.09	593.32+70.71	442.72+26.41	279.03+32.69	443.75+51.95
DEC9YHX	35.08+3.78	27.72+3.00	3.42+0.37	36.57+3.96	32.15+3.46	7.44+0.80	23.71+2.55
HEXCOS	380.26+49.50	926.40+120.63	469.32+61.11	363.26+42.87	297.97+38.81	221.62+37.08	313.29+40.80
CYHXEIC	55.36+7.64	68.33+9.46	43.95+6.09	40.53+5.61	98.59+13.63	73.58+10.18	103.59+14.31
HEPCOS	103.42+10.14	291.78+28.65	123.40+12.10	260.44+25.57	179.01+17.55	212.54+20.86	206.65+20.28
CYHXHEN	13.32+2.57	38.15+7.38	3.12+0.59	27.99+5.42	23.25+4.50	9.84+1.91	17.39+3.35
OCTCOS	257.39+89.12	254.29+88.02	99.27+34.38	251.29+86.98	96.94+33.57	118.13+40.89	194.93+67.48
NONCOS	112.12+25.88	74.98+17.30	76.25+17.60	103.55+23.92	79.07+18.25	101.92+23.54	70.52+16.29
TRICONT	150.34+9.04	100.09+6.04	84.68+5.09	31.38+1.88	66.14+3.97	74.08+4.46	14.04+0.84
HTRICONT	62.02+16.95	76.56+20.92	16.93+4.64	14.27+3.88	5.70+1.54	10.07+2.75	79.16+21.62
DTRICONT	35.12+9.88	5.77+1.62	7.24+2.04	1.31+0.38	9.09+2.54	20.48+5.76	3.69+1.03
TTRICONT	35.27+3.03	12.96+1.12	11.99+1.04	88.06+7.58	56.36+4.85	15.56+1.34	19.64+1.67
TETRICONT	39.47+14.30	34.38+12.46	29.66+10.77	19.76+7.15	19.36+7.01	64.20+23.27	27.17+9.86
PTRICONT	14.87+3.75	10.11+2.54	16.52+4.16	41.80+10.50	30.14+7.58	38.07+9.57	30.14+7.57
HXTRICONT	5.52+1.70	17.50+5.38	44.81+13.81	11.69+3.61	19.17+5.89	27.77+8.54	17.13+5.29
HPTRICONT	4.54+0.61	0.58+0.08	7.65+1.00	20.38+2.69	8.28+1.08	8.20+1.07	21.50+2.82
OTRICONT	4.50+0.68	4.65+0.73	9.39+1.45	2.35+0.35	12.17+1.89	28.49+4.39	1.52+0.23
NTRICONT	3.94+0.26	11.38+0.77	5.49+0.37	10.88+0.73	18.36+1.23	10.30+0.69	2.40+0.15
TECONT	25.62+3.56	9.00+1.23	7.31+1.00	2.27+0.31	5.54+0.77	10.03+1.37	7.99+1.10