

## **Inertia Dynamometer Friction Behaviour Assessment for Automotive Brake Systems**

Test Req #: N/A  
Nucap Test #: NU-10K-E1136-1  
Customer Reference: 8K BRAKE  
Control Program: W030905

Prepared for :

**BILL GLIDEWELL  
KODIAK TRAILER**



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**NUCAP R&D CENTER**  
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Test Req #	N/A	<b>NUCAP R&amp;D CENTER</b> <b>Brake Dynamometer Testing</b>	Cust Ref:	8K BRAKE
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**Test Description**

FRICION BEHAVIOR ASSESSMENT

**Test Information**

Test Requestor:	KODIAK TRAILER
Requested By:	BILL GLIDEWELL
Test Procedure:	SAE J2681
Control Program:	W030905
Dynamometer:	3239
Fixture ID:	KODIAK AXLE 250
Test Coordinator:	JACOB
Test Technician:	N/A
Date Started:	11/12/10
Date Completed:	11/12/10
Date Parts Received:	11/11/2010
Datalog, Report Version:	2.72, 1.01

**Dynamometer Information**

Rolling Radius:	12.6 inch	321.0 mm
Required Wheel Load:	1766 lb	801 kg
Actual Wheel Load:	2489 lb	1129 Kg
Gross Axle Wt:	2372 lb	1076 Kg
Required Inertia:	60.8 slug-ft <sup>2</sup>	82.5 Kg-m <sup>2</sup>
Actual Inertia:	85.9 slug-ft <sup>2</sup>	116.4 Kg-m <sup>2</sup>
Piston Diameter:	2.50 inch	63.50 mm
Effective Radius:	4.12 inch	104.70 mm
Number of Pistons:		1

**Brake Information**

Brake Name/Type:	KODIAK 250
Brake Size:	330*25.73
Rotor/Drum ID:	KODIAK TRAILER
Pri/Lead/Inner Lining:	G-0710-T
Sec/Trail/Outer Lining:	G-0710-T
Drum/Rotor Type:	VENTED
Brake Orientation:	Right

**Final Comments:**

INITIAL LRO IS 003"  
USED KODIAK ROTOR AND PADS  
FRICION BEHAVIOR ASSESSMENT ON D215.

Signature:



Title:

Test Engineer

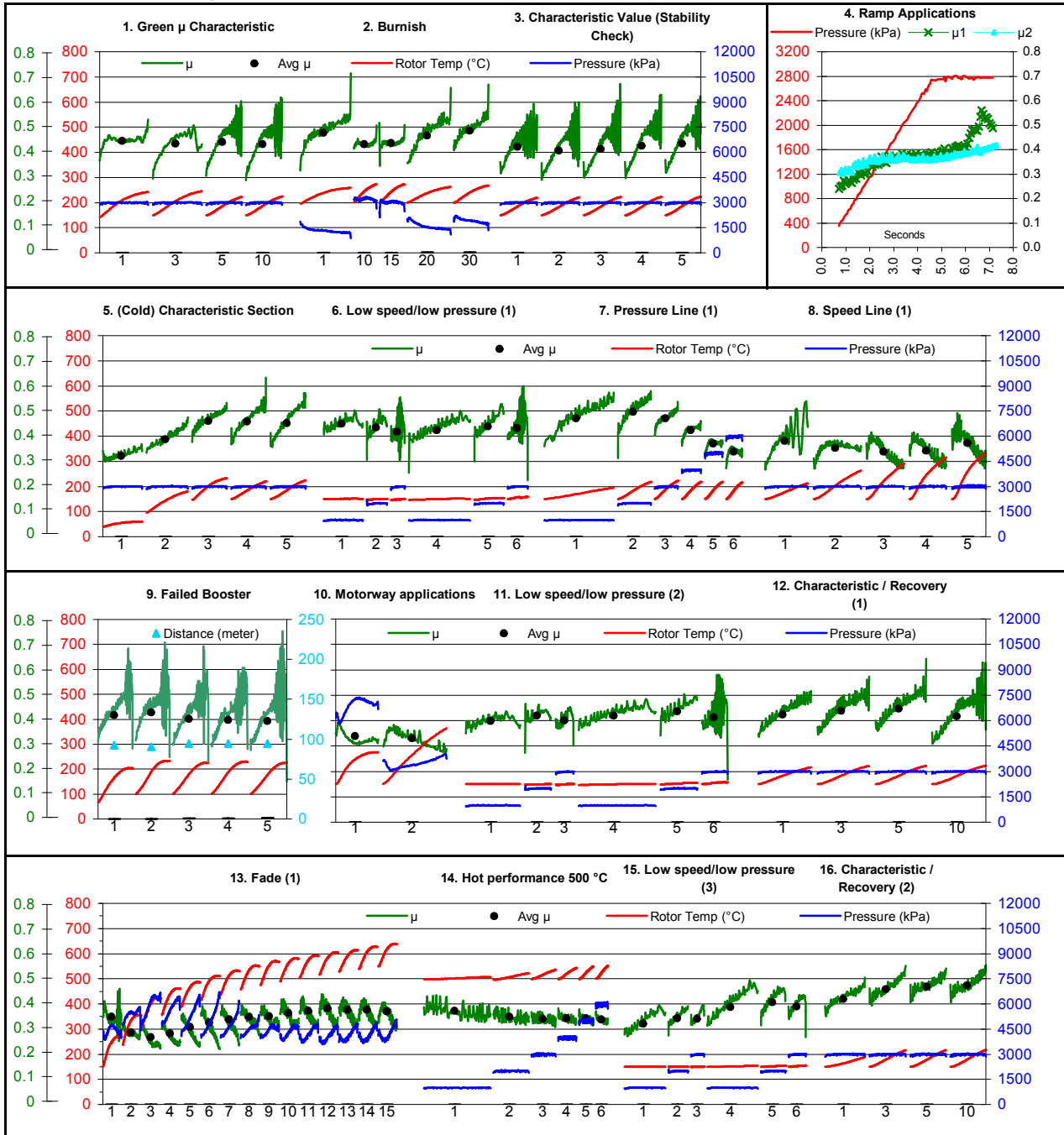
Date:

November 22, 2010

Data applicable to the materials tested. Valid if signed by the test engineer. Report can be copied in full.  
Bilateral uncertainty of measurements 0.63% of FS. Coverage factor of 2. Confidence of 95%. Details available upon request.

Test Req #:		N/A		NUCAP R&D CENTER Brake Dynamometer Testing										Cust Ref:		8K BRAKE				
Section	Stop	Brake Speed kph	Release Speed kph	Stop Distance meter	Decel Torque g	Press Min kPa	Pres Avg kPa	Press Max kPa	Torque Min N-m	Torque Avg N-m	Torque Max N-m	MFDD m/s <sup>2</sup>	μ Min	μ Avg	μ Max	Fluid Disp cm <sup>3</sup>	Rotor Init °C	Rotor Final °C	Lining Init °C	Lining Final °C
<b>100 Green μ Characteristic</b>																				
100	1	79.9	30.0		0.25	2921	2998	3043	810	893	1050	2.56	0.362	0.445	0.523	2.58	143	242	107	170
100	3	79.9	30.0		0.25	2914	2996	3045	661	933	1256	2.67	0.296	0.433	0.610	2.77	150	246	111	169
100	5	80.1	30.0		0.36	2920	2996	3032	675	965	1345	3.74	0.302	0.441	0.669	2.82	150	222	113	159
100	10	80.0	30.0		0.36	2918	2995	3033	636	950	1347	3.69	0.284	0.431	0.686	2.81	150	224	114	162
<b>200 Burnish</b>																				
200	1	80.1	30.0		0.17	1165	1276	1390	394	425	467	1.65	0.322	0.476	0.699	2.17	196	258	158	208
200	5	80.0	30.0		0.25	1754	1882	1990	584	627	668	2.43	0.401	0.486	0.611	2.45	200	269	153	210
200	10	80.0	30.0		0.37	3058	3229	3334	875	923	953	3.57	0.414	0.433	0.507	2.80	200	273	153	204
200	15	80.1	30.0		0.35	2844	3032	3112	831	877	909	3.40	0.346	0.435	0.541	2.73	200	273	153	204
200	20	80.1	30.0		0.20	1360	1489	1658	460	498	555	1.94	0.337	0.465	0.648	2.34	200	262	153	205
200	25	80.1	30.0		0.30	2266	2437	2533	698	749	818	2.91	0.358	0.448	0.568	2.56	200	265	152	200
200	30	80.1	30.0		0.25	1679	1867	2000	581	627	683	2.44	0.376	0.486	0.657	2.43	200	267	154	211
200	32	80.0	30.0		0.42	3814	4097	4242	1001	1049	1088	4.06	0.373	0.398	0.438	2.96	200	276	155	204
<b>300 Characteristic Value (Stability Check)</b>																				
300	1	80.1	30.0		0.35	2926	2997	3034	580	914	1305	3.55	0.310	0.422	0.648	2.87	150	219	121	162
300	2	80.1	30.0		0.34	2930	2997	3036	617	908	1336	3.52	0.284	0.406	0.668	2.82	151	220	117	157
300	3	80.0	30.0		0.34	2931	2997	3032	662	931	1367	3.62	0.285	0.412	0.703	2.81	150	223	115	160
300	4	80.1	30.0		0.36	2930	2996	3031	685	959	1368	3.72	0.286	0.426	0.664	2.80	150	223	115	165
300	5	80.1	30.0		0.36	2928	2997	3034	703	967	1376	3.76	0.308	0.434	0.667	2.78	150	224	115	167
<b>400 Ramp Applications</b>																				
400	1	50.1	3.0		0.26			2807			1107	2.55	0.282	0.402	0.591	2.94	101	127	82	106
400	2	50.0	3.0		0.25			2815			768	2.43	0.352	0.377	0.418	2.69	100	126	83	108
<b>500 (Cold) Characteristic Section</b>																				
500	1	40.1	3.0		0.26	2940	2994	3030	604	646	716	2.50	0.299	0.320	0.378	2.87	40	59	33	51
500	2	80.1	30.0		0.31	2935	2998	3040	721	810	929	3.14	0.333	0.388	0.469	2.55	97	181	81	136
500	3	80.1	30.0		0.37	2933	2997	3033	879	952	1040	3.69	0.376	0.460	0.531	2.44	147	232	112	167
500	4	80.1	30.0		0.37	2933	2996	3029	865	971	1230	3.77	0.363	0.457	0.624	2.55	150	220	98	142
500	5	80.1	30.0		0.37	2933	2998	3029	859	976	1192	3.79	0.346	0.450	0.610	2.60	150	223	107	151
<b>600 Low speed/low pressure (1)</b>																				
600	1	20.1	0.5		0.12	966	991	1024	277	300	335	1.17	0.405	0.448	0.504	2.14	150	151	112	123
600	2	20.1	3.0		0.23	1959	1986	2019	523	589	685	2.32	0.306	0.434	0.516	2.39	147	150	120	124
600	3	20.1	3.0		0.34	2943	2973	2993	581	842	1148	3.39	0.294	0.416	0.580	2.49	146	150	122	124
600	4	30.1	3.0		0.11	972	989	1017	256	289	338	1.12	0.255	0.423	0.503	1.91	147	151	122	131
600	5	30.1	3.0		0.24	1963	1993	2026	539	597	700	2.32	0.300	0.439	0.528	2.34	147	155	125	133
600	6	30.1	3.0		0.35	2944	2983	3013	637	881	1255	3.46	0.235	0.432	0.616	2.41	150	159	128	135
<b>700 Pressure Line (1)</b>																				
700	1	80.1	40.1		0.13	971	988	1014	293	338	397	1.31	0.347	0.472	0.591	1.90	150	195	127	160
700	2	80.0	40.1		0.27	1962	1997	2039	639	700	789	2.72	0.313	0.497	0.585	2.38	150	219	121	163
700	3	80.0	40.1		0.38	2926	2995	3026	912	965	1035	3.73	0.403	0.472	0.532	2.63	150	222	121	164
700	4	80.1	40.1		0.45	3892	3983	4026	1102	1148	1231	4.43	0.362	0.423	0.467	2.87	150	219	121	158
700	5	80.1	40.1		0.49	4902	5001	5056	1140	1247	1335	4.81	0.305	0.370	0.403	3.12	150	218	121	155
700	6	80.1	40.1		0.54	5878	5989	6061	1230	1356	1439	5.25	0.272	0.337	0.362	3.35	150	215	122	153
<b>800 Speed Line (1)</b>																				
800	1	80.1	40.1		0.31	2818	2983	3035	499	756	1148	3.22	0.262	0.382	0.584	2.70	150	211	122	155
800	2	120.0	80.0		0.28	2792	2986	3047	469	697	777	2.75	0.252	0.352	0.386	2.69	150	262	126	186
800	3	160.0	130.0		0.26	2841	2983	3057	525	669	839	2.60	0.267	0.338	0.422	2.73	150	290	132	208
800	4	180.1	150.1		0.27	2807	2984	3067	517	678	839	2.64	0.263	0.343	0.421	2.72	150	315	136	219
800	5	200.0	170.0		0.29	2764	2983	3096	523	735	1022	2.85	0.267	0.371	0.510	2.75	150	331	138	225
<b>900 Failed Booster</b>																				
900	1	100.1	0.5	92.5	0.49	4014	4086	4156	881	1208	1971	4.69	0.291	0.416	0.699	3.33	66	203	59	139
900	2	100.1	3.0	90.3	0.50	4006	4087	4155	782	1241	2048	4.81	0.258	0.427	0.749	3.16	100	233	77	165
900	3	100.0	3.0	94.0	0.47	4018	4086	4143	732	1184	2093	4.60	0.239	0.401	0.769	3.20	100	224	81	159
900	4	100.1	3.0	94.2	0.47	4031	4086	4156	667	1182	2087	4.59	0.281	0.397	0.733	3.27	101	229	81	169
900	5	100.1	3.0	94.2	0.47	4032	4086	4137	702	1182	2113	4.59	0.161	0.393	0.775	3.26	101	226	82	159
900	6	100.1	3.0	93.0	0.47	4036	4086	4140	699	1200	2124	4.66	0.153	0.398	0.754	3.29	101	228	81	170
<b>1000 Motorway applications</b>																				
1000	1	100.1	5.0		0.60	5802	6723	7369	1297	1500	1669	5.79	0.303	0.338	0.404	3.77	150	276	110	199
1000	2	159.4	88.5		0.30	3049	3438	4041	679	747	842	2.90	0.269	0.329	0.386	2.98	150	370	118	250
<b>1100 Low speed/low pressure (2)</b>																				
1100	1	20.1	0.5		0.10	976	992	1021	246	267	294	1.03	0.335	0.397	0.438	2.26	150	150	118	124
1100	2	20.1	3.0		0.22	1958	1987	2012	516	563	616	2.21	0.274	0.420	0.468	2.59	147	150	123	125
1100	3	20.2	3.0		0.33	2949	2975	3001	717	808	923	3.22	0.302	0.400	0.463	2.66	147	150	125	126
1100	4	30.1	3.0		0.11	977	990	1014	254	285	324	1.11	0.358	0.418	0.486	1.96	147	151	126	129
1100	5	30.1	3.0		0.24	1967	1994	2023	524	592	679	2.31	0.341	0.436	0.508	2.52	148	155	126	130
1100	6	30.0	3.0		0.34	2952	2985	3014	445	850	1278	3.32	0.178	0.413	0.622	2.61	150	158	127	131
<b>1200 Characteristic /Recovery (1)</b>																				
1200	1	80.0	30.0		0.35	2961	2996	3033	804	904	1085	3.50	0.336	0.424	0.544	2.63	150	215	128	155
1200	3	80.1	30.0		0.36	2964	2997	3031	830	942	1209	3.65	0.330	0.438	0.603	2.84	150	221	120	166
1200	5	80.0	30.0		0.37	2964	2996	3031	857	956	1179	3.71	0.344	0.447	0.644	2.82	150	221	120	171
1200	10	80.0	30.0		0.35	2970	2997	3031	601	927	1447	3.60	0.303	0.417	0.706	2.82	150	222	119	170

Test Req #:		N/A		NUCAP R&D CENTER Brake Dynamometer Testing											Cust Ref:		8K BRAKE			
Section	Stop	Brake Speed kph	Release Speed kph	Stop Distance meter	Decel Torque g	Press Min kPa	Pres Avg kPa	Press Max kPa	Torque Min N-m	Torque Avg N-m	Torque Max N-m	MFDD m/s <sup>2</sup>	μ Min	μ Avg	μ Max	Fluid Disp cm <sup>3</sup>	Rotor Init °C	Rotor Final °C	Lining Init °C	Lining Final °C
<b>1300 Fade (1)</b>																				
1300	1	100.1	5.0		0.40	4003	4510	4763	523	1003	1454	3.89	0.235	0.349	0.480	3.17	150	270	127	217
1300	2	100.1	5.0		0.40	5129	5435	5804	956	1003	1075	3.89	0.254	0.287	0.331	3.11	236	353	191	284
1300	3	100.1	5.0		0.40	5244	6012	6706	946	998	1069	3.87	0.221	0.267	0.320	3.25	310	422	249	342
1300	4	100.1	5.0		0.40	4959	5609	6435	959	999	1070	3.87	0.232	0.282	0.326	3.30	355	460	291	378
1300	5	100.1	5.0		0.40	4544	5196	6556	944	998	1086	3.87	0.229	0.308	0.366	3.50	388	486	326	406
1300	6	100.1	5.0		0.40	4277	4925	6761	931	997	1089	3.87	0.215	0.326	0.394	3.58	415	510	357	435
1300	7	100.1	5.0		0.40	4204	4685	6267	919	999	1091	3.88	0.230	0.338	0.401	3.48	437	530	385	459
1300	8	100.1	5.0		0.40	4134	4470	5351	918	1002	1088	3.89	0.271	0.349	0.403	3.22	457	550	407	480
1300	9	100.1	5.0		0.40	4034	4423	4800	916	1002	1094	3.89	0.302	0.352	0.399	3.11	475	567	425	495
1300	10	100.1	5.0		0.40	3796	4276	4803	895	1001	1097	3.89	0.299	0.364	0.425	3.09	490	579	441	508
1300	11	100.1	5.0		0.40	3678	4165	4816	881	1001	1102	3.88	0.300	0.373	0.436	3.05	504	590	456	520
1300	12	100.1	5.0		0.40	3590	4033	4765	867	1001	1106	3.89	0.308	0.383	0.441	2.98	517	604	468	532
1300	13	100.1	5.0		0.40	3678	4058	4813	869	1002	1105	3.89	0.304	0.376	0.431	2.96	529	613	479	545
1300	14	100.0	5.0		0.40	3630	4027	4887	873	1002	1095	3.89	0.302	0.377	0.428	2.96	540	627	490	561
1300	15	100.0	5.0		0.40	3685	4073	5073	875	1002	1077	3.88	0.294	0.370	0.413	2.98	550	638	501	573
<b>1400 Hot performance 500 °C</b>																				
1400	1	80.1	40.1		0.10	960	989	1026	205	238	287	0.93	0.317	0.373	0.448	2.08	500	508	471	483
1400	2	80.1	40.1		0.18	1923	2001	2051	397	457	523	1.78	0.310	0.349	0.438	2.33	497	523	473	499
1400	3	80.1	40.1		0.27	2870	3000	3077	591	669	748	2.59	0.307	0.339	0.380	2.65	500	536	473	506
1400	4	80.1	40.1		0.36	3826	3986	4101	813	893	973	3.45	0.315	0.342	0.382	2.95	500	543	473	510
1400	5	80.0	40.1		0.45	4830	5003	5129	1032	1120	1194	4.32	0.315	0.342	0.379	3.22	500	549	474	511
1400	6	80.0	40.1		0.53	5799	5988	6133	1232	1323	1386	5.11	0.312	0.338	0.374	3.47	500	551	475	511
<b>1500 Low speed/low pressure (3)</b>																				
1500	1	20.1	3.0		0.09	975	993	1014	195	223	264	0.87	0.261	0.322	0.397	2.41	150	151	145	148
1500	2	20.1	3.0		0.18	1959	1992	2026	423	464	517	1.81	0.273	0.341	0.387	2.77	149	150	145	148
1500	3	20.1	3.0		0.28	2947	2981	3012	638	689	732	2.73	0.317	0.341	0.396	2.95	149	151	145	148
1500	4	30.1	3.0		0.11	973	991	1016	230	272	324	1.06	0.312	0.387	0.499	2.21	150	153	145	151
1500	5	30.1	3.0		0.22	1959	1996	2021	501	563	628	2.19	0.315	0.406	0.471	2.68	150	154	142	151
1500	6	30.0	3.0		0.32	2942	2988	3022	706	802	878	3.13	0.273	0.389	0.441	2.88	150	155	138	148
<b>1600 Characteristic /Recovery (2)</b>																				
1600	1	80.0	30.0		0.34	2928	3000	3045	794	875	978	3.39	0.345	0.420	0.491	2.90	150	188	138	204
1600	3	80.0	30.0		0.37	2916	2999	3041	840	951	1117	3.69	0.383	0.458	0.559	3.00	150	215	134	225
1600	5	80.1	30.0		0.38	2914	2999	3049	855	959	1083	3.71	0.396	0.469	0.544	2.98	151	216	132	217
1600	10	80.1	30.0		0.38	2910	2999	3048	856	969	1108	3.75	0.395	0.473	0.557	2.94	150	217	131	215
<b>1700 Pressure Line (2)</b>																				
1700	1	80.0	40.1		0.12	978	991	1011	260	325	381	1.26	0.360	0.464	0.569	2.26	150	182	133	157
1700	2	80.0	40.1		0.26	1954	1999	2043	602	685	793	2.66	0.368	0.485	0.589	2.60	150	209	130	196
1700	3	80.1	40.1		0.37	2907	2999	3051	849	943	1025	3.64	0.400	0.466	0.541	2.84	150	211	131	207
1700	4	80.1	40.1		0.45	3870	3985	4060	1047	1129	1201	4.35	0.406	0.430	0.457	3.10	150	210	132	196
1700	5	80.1	40.1		0.50	4861	5003	5095	1177	1255	1321	4.84	0.364	0.390	0.430	3.34	150	207	132	188
1700	6	80.1	40.1		0.55	5846	5990	6078	1292	1366	1458	5.26	0.328	0.359	0.409	3.56	150	205	132	185
<b>1800 Fade (2)</b>																				
1800	1	100.1	5.0		0.40	3360	4188	4409	388	1006	1556	3.90	0.209	0.370	0.617	3.15	150	270	136	249
1800	2	100.2	5.0		0.40	4121	4652	4835	923	1005	1069	3.90	0.303	0.336	0.428	2.95	238	356	208	324
1800	3	100.1	5.0		0.40	4010	4444	4618	903	1006	1083	3.90	0.315	0.342	0.385	2.78	312	430	263	383
1800	4	100.1	5.0		0.40	4092	4646	5032	898	1006	1086	3.90	0.294	0.332	0.389	2.84	355	459	287	397
1800	5	100.1	5.0		0.40	3741	4251	4925	873	1006	1119	3.90	0.298	0.355	0.408	2.99	388	493	331	435
1800	6	100.1	5.0		0.40	3666	3999	4373	865	1006	1117	3.91	0.332	0.376	0.410	2.93	415	521	361	467
1800	7	100.1	5.0		0.40	3553	3804	4196	872	1006	1099	3.91	0.348	0.395	0.432	2.86	437	541	388	490
1800	8	100.1	5.0		0.40	3375	3628	4214	872	1005	1089	3.90	0.353	0.413	0.453	2.83	457	560	411	508
1800	9	100.1	5.0		0.40	3553	3810	4224	877	1005	1089	3.90	0.344	0.395	0.431	2.85	475	573	429	527
1800	10	100.1	5.0		0.40	3573	3830	4277	870	1005	1091	3.90	0.345	0.393	0.431	2.84	490	587	446	544
1800	11	100.1	5.0		0.40	3584	3877	4236	867	1005	1086	3.90	0.341	0.387	0.429	2.85	504	604	460	568
1800	12	100.1	5.0		0.40	3588	3874	4298	888	1005	1074	3.90	0.339	0.386	0.423	2.84	517	618	475	584
1800	13	100.1	5.0		0.40	3630	3912	4478	908	1004	1073	3.89	0.336	0.383	0.418	2.89	529	630	489	596
1800	14	100.0	5.0		0.40	3718	3971	4604	913	1004	1074	3.89	0.329	0.378	0.408	2.91	539	641	501	608
1800	15	100.1	5.0		0.40	3838	4079	4773	920	1004	1067	3.90	0.316	0.369	0.393	2.98	550	649	512	620
<b>1900 Low speed/low pressure (4)</b>																				
1900	1	20.1	3.0		0.09	978	993	1006	193	220	255	0.85	0.223	0.316	0.385	2.59	150	150	140	144
1900	2	20.1	3.0		0.19	1966	1993	2011	430	472	527	1.86	0.237	0.346	0.395	2.99	149	150	141	147
1900	3	20.1	3.0		0.30	2943	2978	3006	666	737	848	2.94	0.324	0.363	0.427	3.13	149	151	142	148
1900	4	30.1	3.0		0.11	978	992	1006	253	286	342	1.11	0.275	0.414	0.516	2.28	150	153	144	145
1900	5	30.1	3.0		0.22	1972	1997	2020	500	564	641	2.19	0.265	0.405	0.479	2.79	150	154	138	151
1900	6	30.0	3.0		0.34	2950	2986	3010	630	864	1201	3.38	0.343	0.416	0.578	3.01	150	155	136	151
<b>2000 Final characteristic</b>																				
2000	1	80.0	30.0		0.36	2942	3000	3036	850	928	1037	3.60	0.365	0.447	0.537	3.01	151	202	137	237
2000	3	80.1	30.0		0.37	2935	3001	3041	845	947	1105	3.66	0.378	0.456	0.557	3.15	150	210	133	240
2000	5	80.1	30.0		0.38	2932	3000	3039	880	970	1074	3.76	0.382	0.471	0.540	3.11	150	212	131	241



Test Req #:	N/A	Test Date:	11/12/10
Cust. Ref:	KODIAK TRAILER	Program:	W030905
Brake Name:	KODIAK 250	Effective Radius (mm):	104.70
Rotor/Drum ID:	KODIAK TRAILER	Actual Wheel Load (kg):	1129
Pri/Lead/Inner Lining:	G-0710-T	Actual Inertia (kgm <sup>2</sup> ):	116.4
Sec/Trail/Outer Lining:	G-0710-T	SAE J2681 Report Version 1.01	





**AFTER STAMPING TEMPLATE RUN CLEAN PLOTS MACRO TO REMOVE SPIKES**

CLEAN PLOTS



Test Req #:	N/A	<b>NUCAP R&amp;D CENTER Brake Dynamometer Testing</b>	Cust Ref:	8K BRAKE
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### Pad and Rotor Wear

<u>Inboard Pad Thickness (mm)</u>	Individual Positions								Avg
	1	2	3	4	5	6	7	8	
Initial	14.485	14.640	14.699	14.561	14.551	14.579	14.560	14.511	14.573
Final	14.147	13.956	13.745	13.489	13.279	13.425	13.612	13.858	13.689
Loss	0.338	0.684	0.954	1.072	1.272	1.154	0.948	0.653	<b>0.884</b>

<u>Outboard Pad Thickness (mm)</u>	Individual Positions								Avg
	1	2	3	4	5	6	7	8	
Initial	12.496	12.602	12.531	12.412	12.391	12.532	12.647	12.570	12.523
Final	11.245	11.360	11.456	11.385	12.255	12.379	12.143	12.036	11.782
Loss	1.251	1.242	1.075	1.027	0.136	0.153	0.504	0.534	<b>0.740</b>

<u>Rotor Thickness (mm)</u>	POSITION 1		POSITION 2		POSITION 3		POSITION 4		Avg
	In	Out	In	Out	In	Out	In	Out	
	Initial	25.730	25.728	25.729	25.731	25.731	25.727	25.729	
Final	25.713	25.719	25.710	25.709	25.690	25.702	25.701	25.707	25.706
Loss	0.017	0.009	0.019	0.022	0.041	0.025	0.028	0.019	<b>0.022</b>

<u>Pad &amp; Rotor Weight (gram)</u>	Inboard Pad	Outboard Pad	Rotor
Initial	375.19	348.56	16195.00
Final	359.05	335.25	16187.00
Loss	16.14	13.31	8.00

<u>MicroFinish (micron)</u>	POSITION 1		POSITION 2		POSITION 3		POSITION 4	
	In	Out	In	Out	In	Out	In	Out
	Initial	1.58	1.73	1.69	1.76	1.74	1.70	1.62
Final	1.24	0.85	1.29	0.87	1.26	0.85	1.27	0.86
Difference	0.34	0.88	0.40	0.89	0.48	0.85	0.35	0.86

