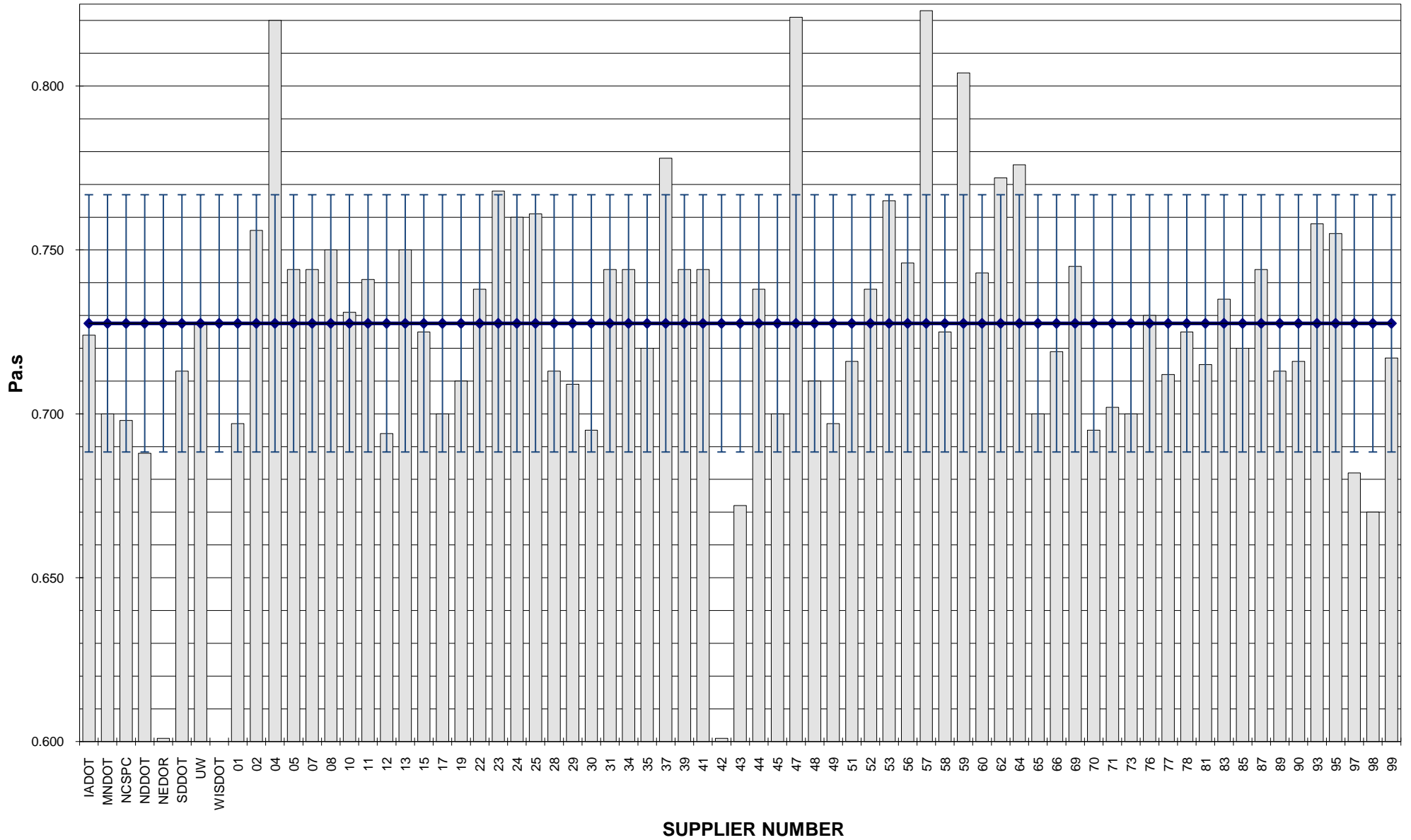


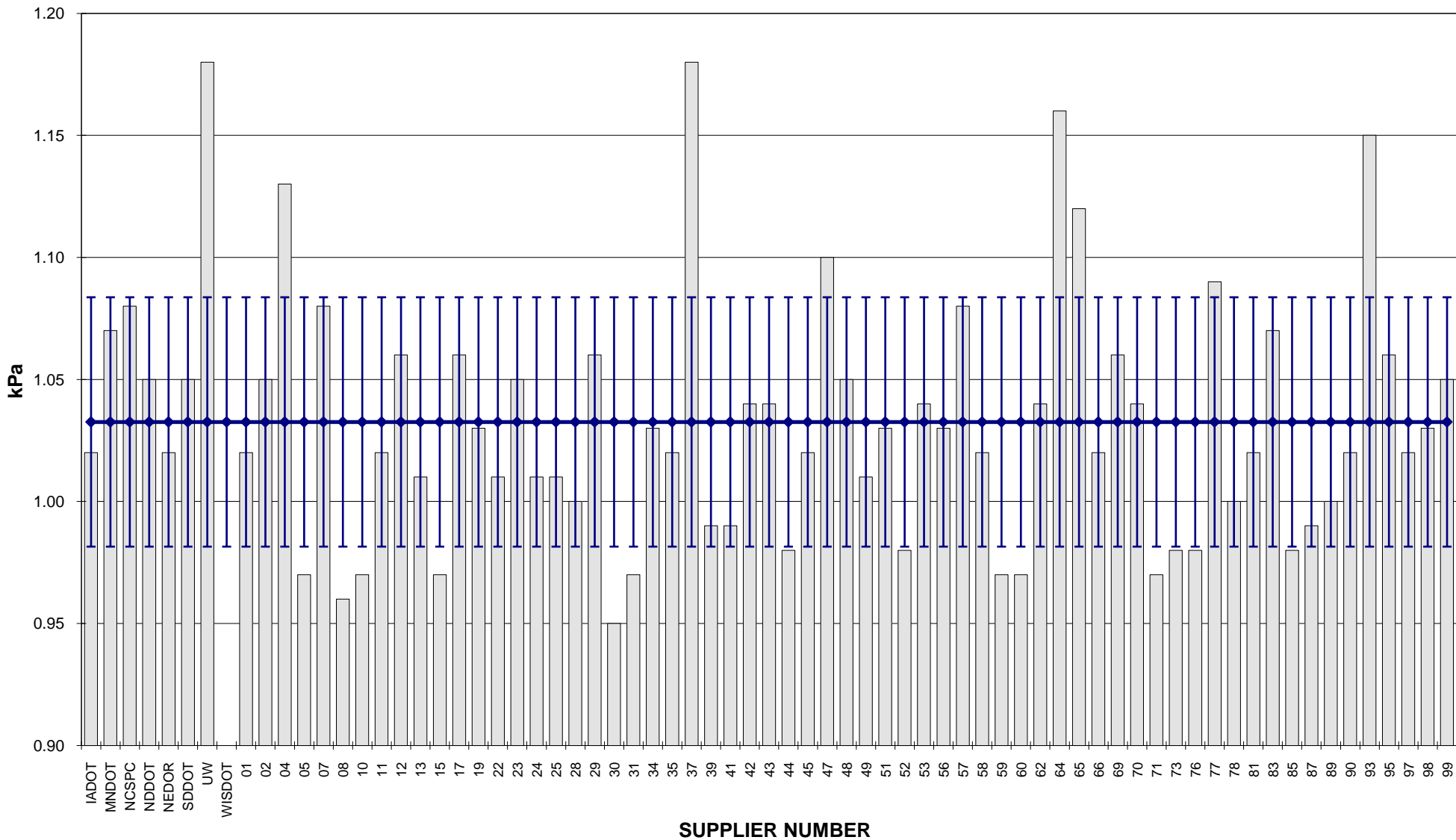
**COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34**

Supplier Number	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @64°C	DSR RTFO (kPa) @64°C	DSR PAV (kPa) @19°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-24°C	BBR m-value @-24°C	Strain (%) @ -24°C	DTT Stress (MPa) @-24°C	CRITICAL CRACK TEMP (°C)	MSCR % RECOVERY @ 100Pa @58° C	MSCR % RECOVERY @ 3200Pa @ 58° C
IADOT	0.724	1.02	2.32	1730	-0.627	271	0.326				62.47	54.62
MNDOT	0.700	1.07	2.54	1633	-0.602	237	0.330				62.41	55.18
NCSPC	0.698	1.08	3.16	2050	-0.874	306	0.324				60.29	50.65
NDDOT	0.688	1.05	2.45	1693	-0.708	272	0.328				64.88	58.38
NEDOR	0.601	1.02	2.47	1795	-0.614	294	0.328				63.60	56.85
SDDOT	0.713	1.05	2.56	1682	-0.544	267	0.319				65.82	60.92
UW	0.728	1.18	2.79	1975	-0.066	294	0.315					
WISDOT												
01	0.697	1.02	2.70	1616	-0.684	279	0.333				58.97	47.68
02	0.756	1.05	2.41	1662	-0.515	302	0.318				62.43	55.48
04	0.820	1.13	2.61	1796	-0.649	296	0.341					
05	0.744	0.97	2.45	1902	-0.730	269	0.323				63.01	56.10
07	0.744	1.08	2.43	1554	-0.665	274	0.334				58.63	52.95
08	0.750	0.96	2.50	1778	-0.733	264	0.325				63.57	56.78
10	0.731	0.97	2.51	1804	-0.753	275	0.324				63.66	57.13
11	0.741	1.02	2.36	1851	-0.514	303	0.322				61.65	54.58
12	0.694	1.06	2.58	1694	-0.852	304	0.330					
13	0.750	1.01	2.34	1710	-0.648	288	0.337	1.24	5.06	-35.1	62.59	55.29
15	0.725	0.97	2.67	1580	-0.716	271	0.341				64.95	59.07
17	0.700	1.06	2.75	1676	-0.658	271	0.328				58.75	47.63
19	0.710	1.03	2.65	1680	-0.624	293	0.329				65.00	55.70
22	0.738	1.01	2.55	1992	-0.720	279	0.322				63.76	56.90
23	0.768	1.05	2.64	1763	-0.695	269	0.335				66.25	60.67
24	0.760	1.01	2.28	1680	-0.666	270	0.336	1.79	5.54	-36.2	62.12	54.23
25	0.761	1.01	2.75	1930	-0.813	291	0.327				65.87	57.58
28	0.713	1.00	2.50	1762	-0.654	301	0.326				62.67	58.73
29	0.709	1.06	2.66	2104	-0.822	284	0.338				66.62	61.83
30	0.695	0.95	2.49	1790	-0.695	283	0.342					
31	0.744	0.97	2.48	1814	-0.734	268	0.323				63.10	56.27
34	0.744	1.03	2.35	1805	-0.650	313	0.320				61.02	53.17
35	0.720	1.02	2.55	1530	-0.616	248	0.330					
37	0.778	1.18	2.58	2053	-0.720	300	0.337	1.47	5.53	-36.30	18.17	55.85
39	0.744	0.99	2.42	1899	-0.751	277	0.322				64.50	58.16
41	0.744	0.99	2.49	1741	-0.721	262	0.321				63.59	57.36
42	0.601	1.04	2.55	1740	-0.776	291	0.334				63.84	56.87
43	0.672	1.04	2.41	1810	-0.633	289	0.333				62.02	54.48
44	0.738	0.98	2.46	1917	-0.739	284	0.323				64.15	58.08
45	0.700	1.02	2.92	1379	-0.698	255	0.322				58.92	47.34
47	0.821	1.10	2.60	1805	-0.648	297	0.338					
48	0.710	1.05	2.16	1753	-0.569	308	0.325				58.68	49.62
49	0.697	1.01	2.38	1280	-0.628	241	0.351				63.99	57.58
51	0.716	1.03	2.57	1620	-0.713	300	0.332				66.10	57.00
52	0.738	0.98	2.52	1999	-0.727	279	0.322				63.86	57.66
53	0.765	1.04	2.53	1740	-0.783	258	0.335					
56	0.746	1.03	2.41	1633	-0.587	308	0.327				62.70	55.19
57	0.823	1.08	2.61	1763	-0.652	297	0.340					
58	0.725	1.02	2.70	1710	-0.750	276	0.332				65.04	58.53
59	0.804	0.97	2.30	1508	-0.571	341	0.314					
60	0.743	0.97	2.54	1670	-0.812	262	0.335				64.99	59.19
62	0.772	1.04	2.49	1731	-0.542	305	0.327				62.60	56.37
64	0.776	1.16	2.70	1530	-0.808	257	0.332					
65	0.700	1.12	2.36	1952	-0.648	265	0.308				64.70	58.50
66	0.719	1.02	2.57	1768	-0.621	291	0.322				61.44	55.31
69	0.745	1.06	2.46	1805	-0.662	282	0.335				63.69	54.96
70	0.695	1.04	2.72	1870	-0.628	272	0.336				63.25	56.48
71	0.702	0.97	2.66	1483	-0.671	281	0.339					
73	0.700	0.98	2.70	1824	-0.674	284	0.336					
76	0.730	0.98	2.97	1520	-0.688	273	0.351				68.22	64.09
77	0.712	1.09	2.65	1590	-0.613	249	0.334					
78	0.725	1.00	2.70	1770	-0.750	273	0.330				65.36	57.89
81	0.715	1.02	2.65	1710	-0.750	277	0.334				64.87	57.75
83	0.735	1.07	2.43	1591	-0.652	289	0.342				65.26	59.67
85	0.720	0.98	2.74	1580	-0.765	265	0.364				65.66	59.82
87	0.744	0.99	2.50	1810	-0.747	276	0.322					57.44
89	0.713	1.00	2.66	1560	-0.704	274	0.337				64.70	58.92
90	0.716	1.02	2.52	1873	-0.576	299	0.319				62.98	57.04
93	0.758	1.15	2.28	1773	-0.709	278	0.342				65.59	59.41
95	0.755	1.06	3.10	1538	-0.640	270	0.348					
97	0.682	1.02	2.49	1680	-0.667	295	0.331				64.30	54.10
98	0.670	1.03	2.39	1680	-0.633	289	0.332				64.50	54.10
99	0.717	1.05	2.62	1764	-0.611	281	0.332				66.34	61.71
Average	0.728	1.03	2.56	1735	-0.673	281	0.331	1.50	5.38	-35.87	62.69	56.44
Std. Dev.	0.0392	0.0511	0.1789	155.60	0.1065	18.19	0.0094	0.2762	0.2743	0.6658	6.4773	3.3464
Coef. of Var.	5.394	4.948	6.994	8.968	15.831	6.470	2.840	18.415	5.101	-1.856	10.332	5.929

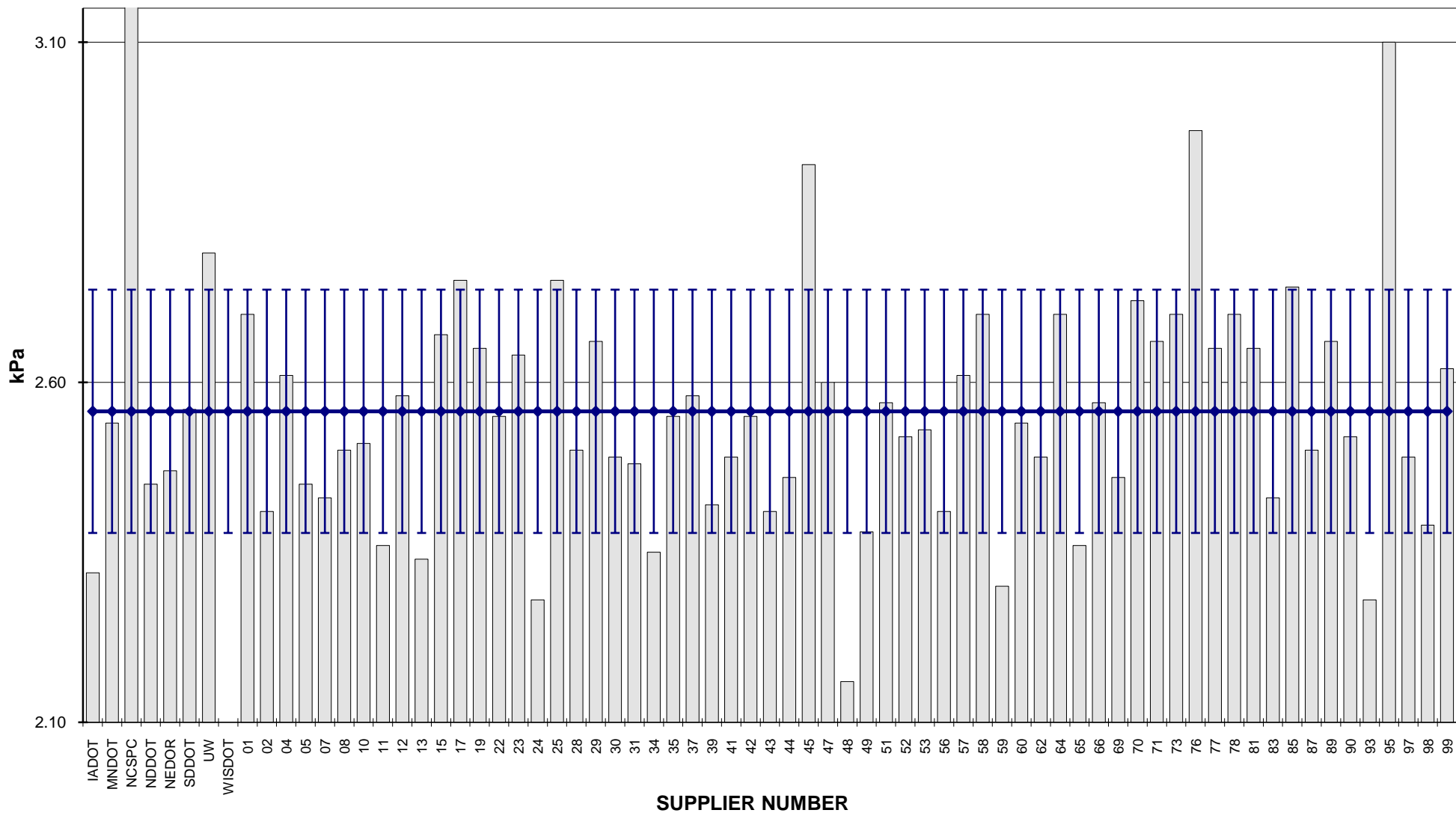
COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34
ROTATIONAL VISCOSITY



COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34
DSR - ORIGINAL

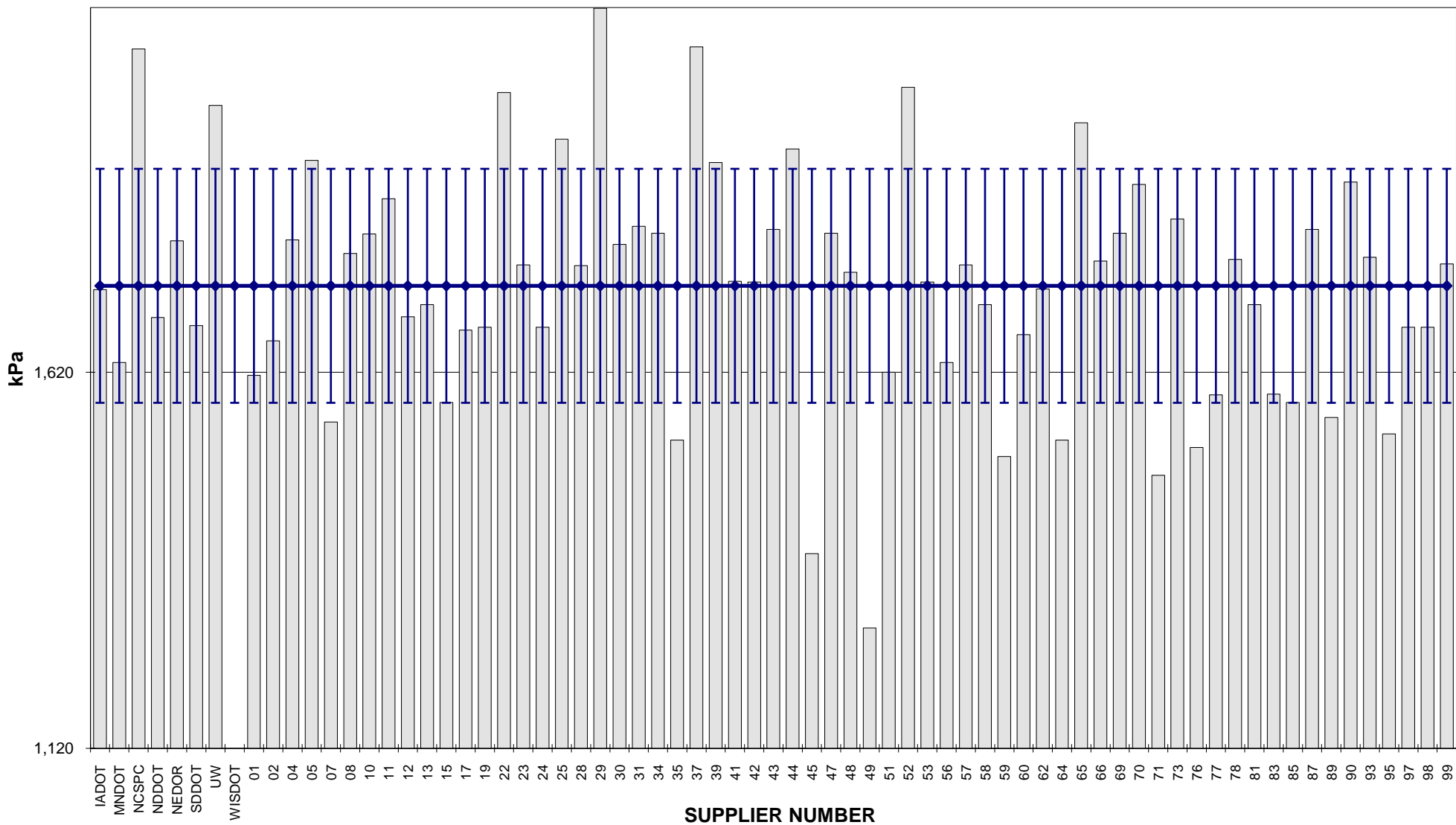


COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34
DSR - RTFO



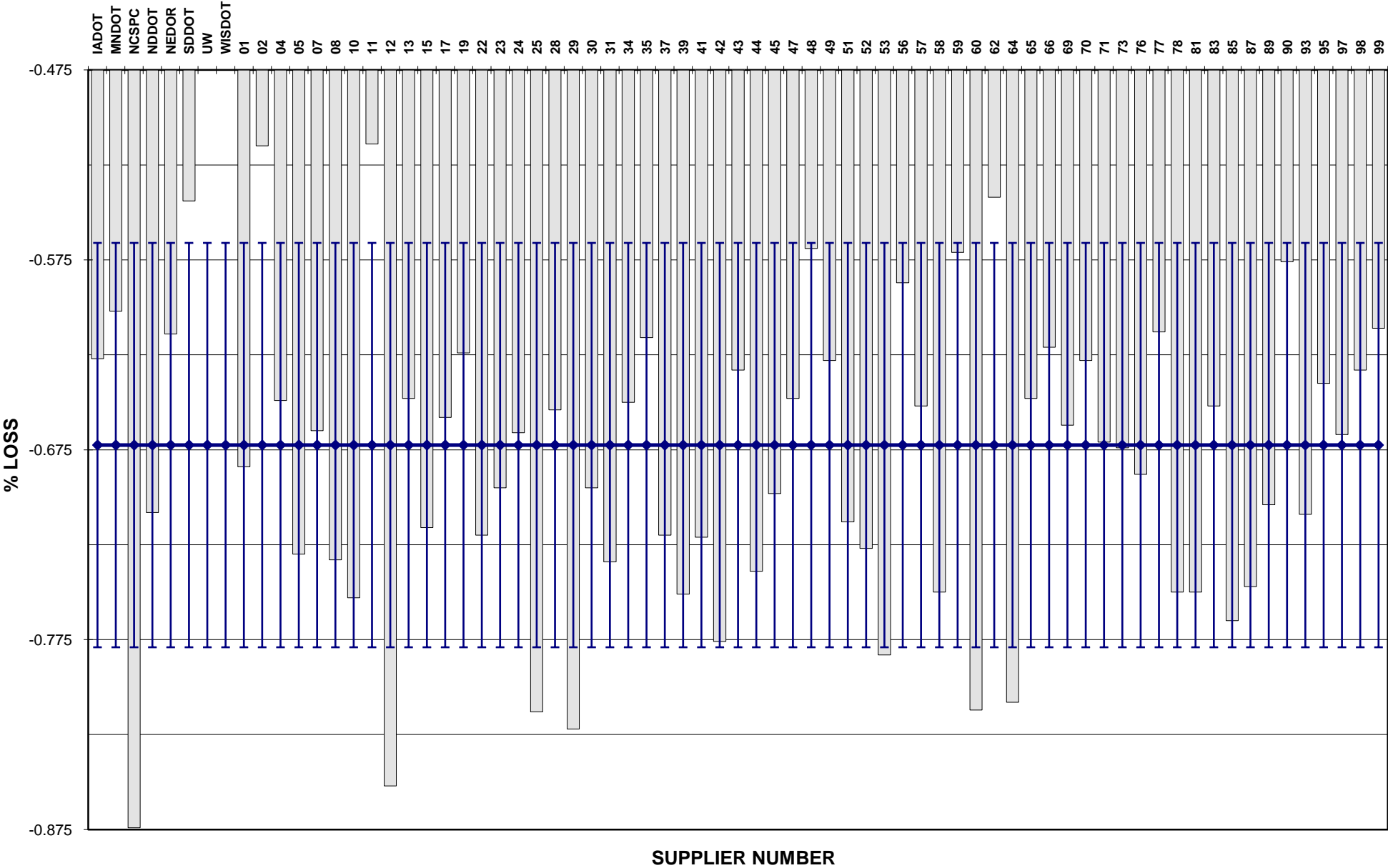
**COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34**

DSR - PAV

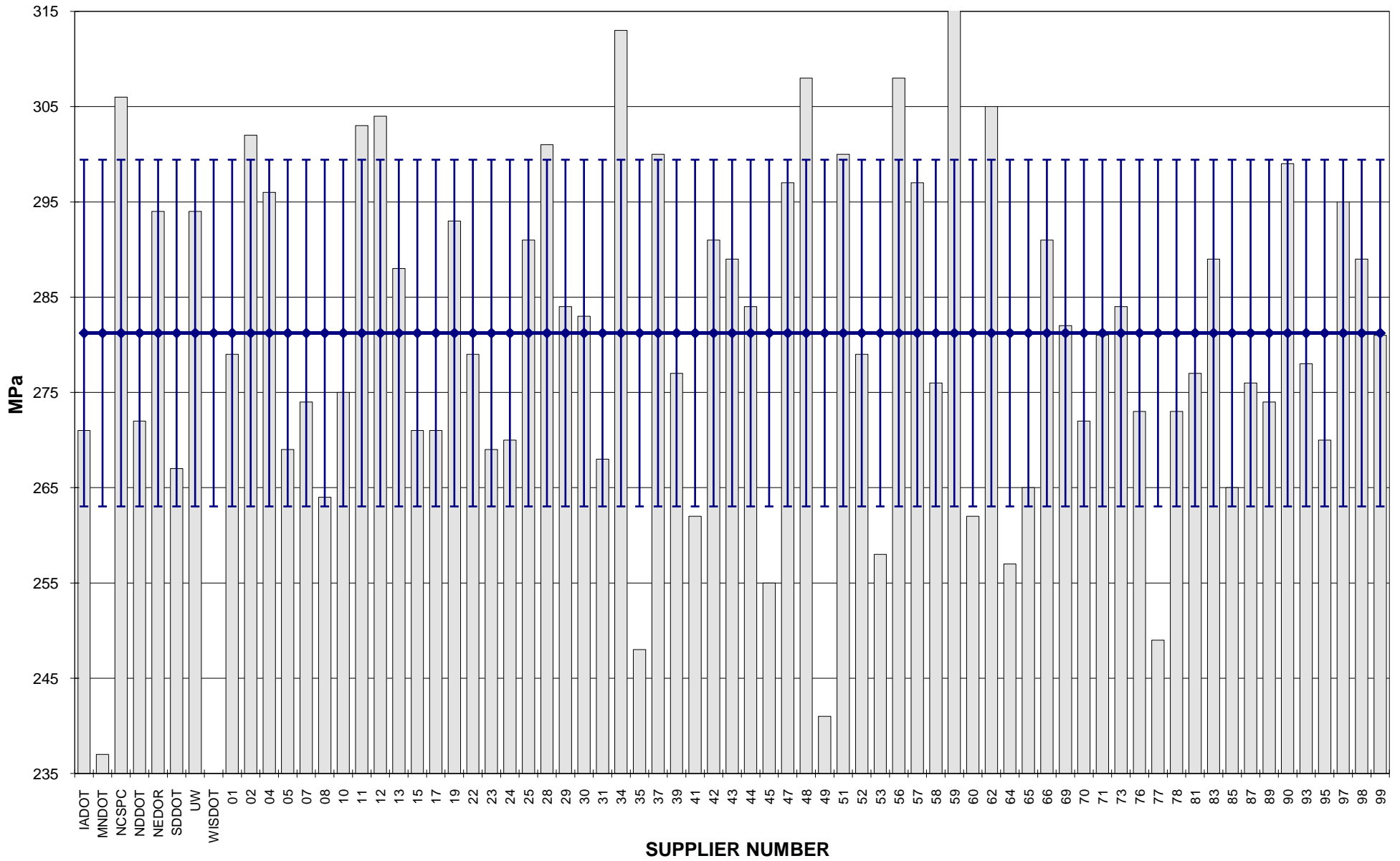


COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34

RTFO MASS LOSS



BBR STIFFNESS

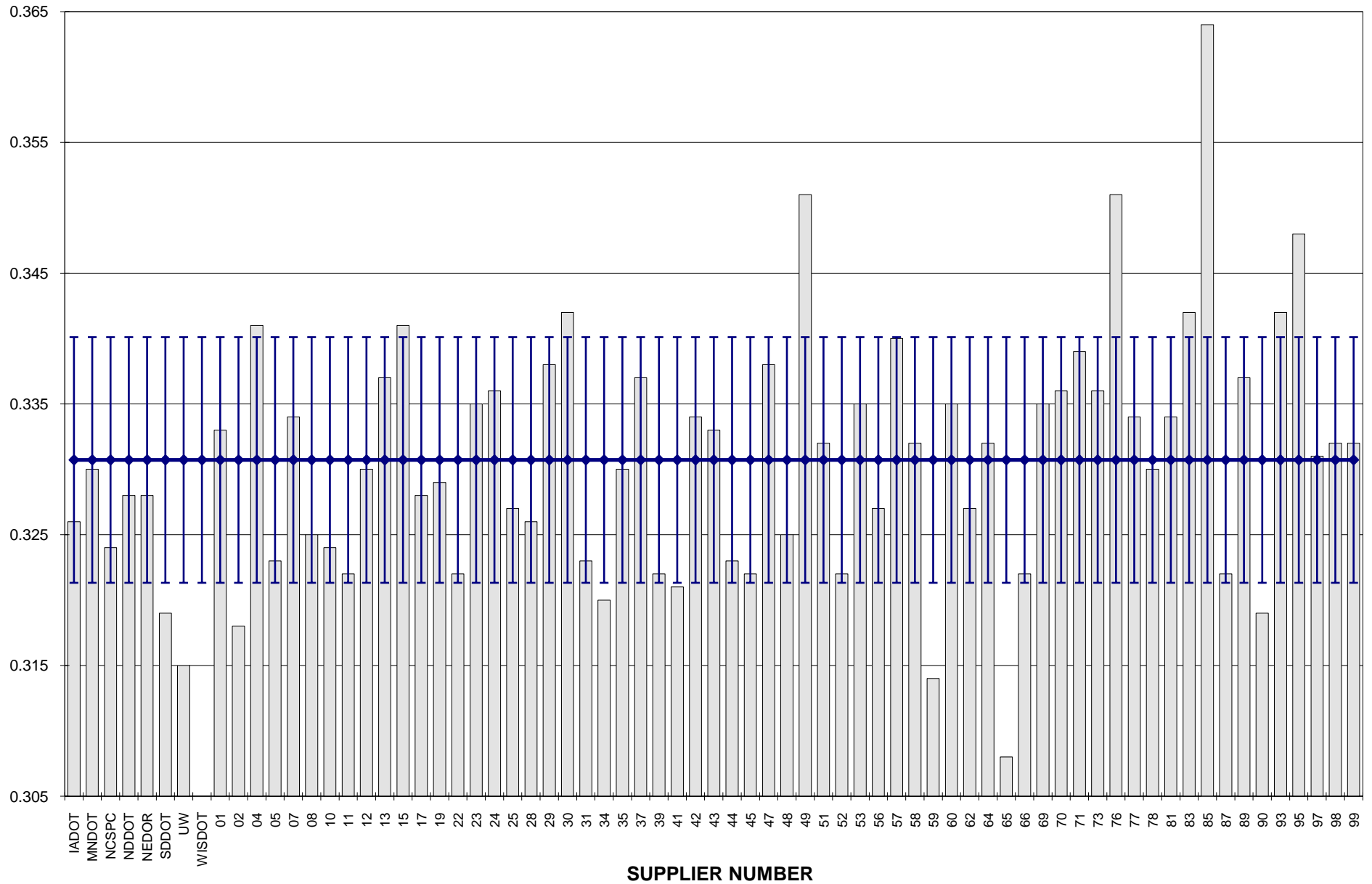


COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2

SUMMARY A

PG 64-34

BBR m-VALUE



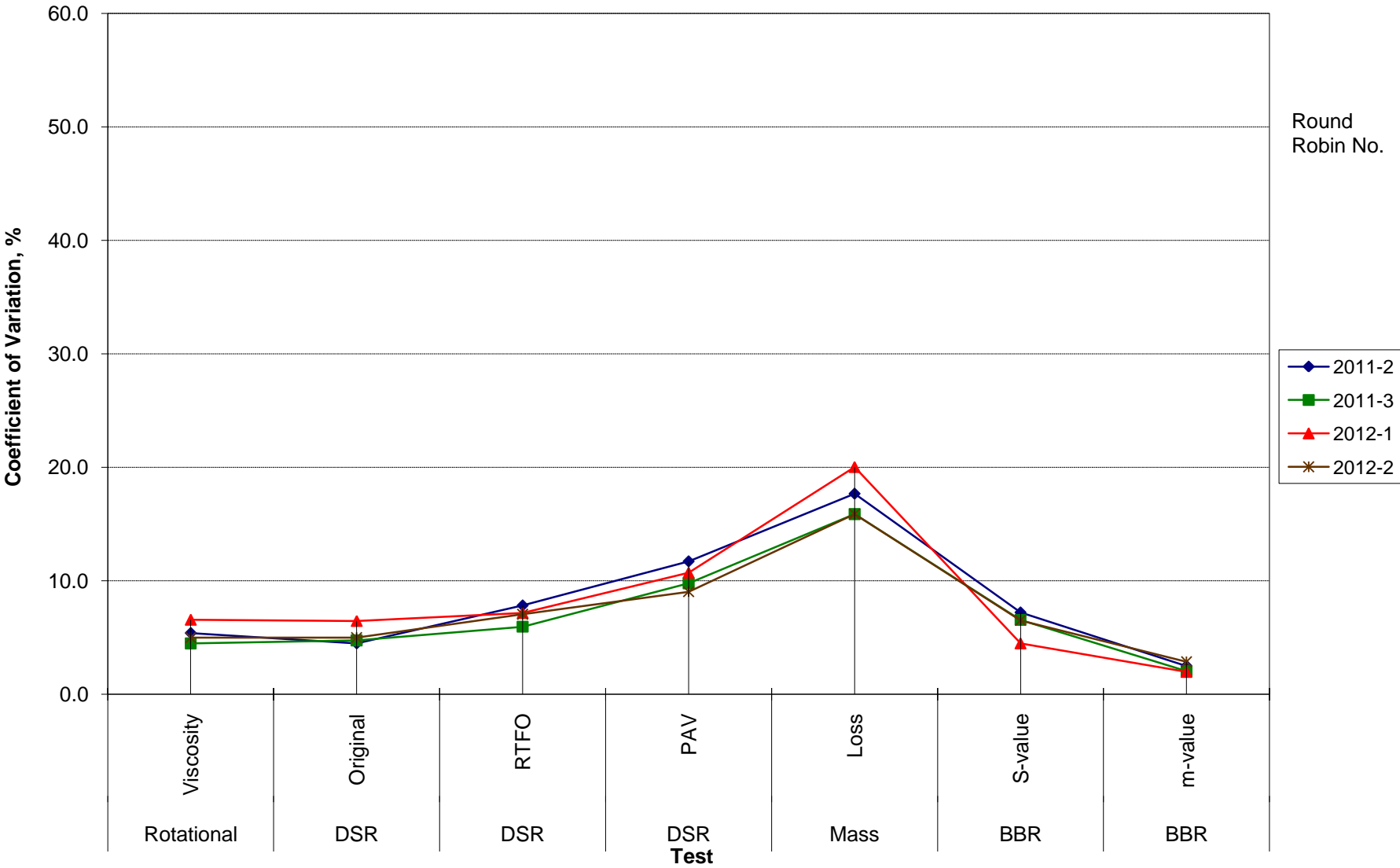
**COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
64-34**

COEFFICIENT OF VARIATION

Round Robin No.	Number of Participants	Coefficient of Variation, %							
		Rotational Viscosity	DSR Original	DSR RTFO	DSR PAV	Mass Loss	BBR S-value	BBR m-value	DTT Strain
2011-2	66	5.387	4.474	7.818	11.706	17.671	7.201	2.492	5.946
2011-3	67	4.478	4.737	5.952	9.779	15.876	6.551	2.034	8.775
2012-1	68	6.563	6.456	7.152	10.709	20.015	4.479	1.967	10.431
2012-2	69	4.988	4.984	7.045	9.034	15.871	6.507	2.859	18.415

COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
64-34

COEFFICIENT OF VARIATION



**COMBINED STATE BINDER GROUP ROUND ROBIN 2012-2
SUMMARY A
PG 64-34**

STATISTICS WITH OUTLIERS REMOVED:

	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @64°C	DSR RTFO (kPa) @64°C	DSR PAV (kPa) @19°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-24°C	BBR m-value @-24°C
Average	0.731	1.03	2.54	1,735	-0.680	280	0.330
Std. Dev.	0.0331	0.0515	0.1523	156.74	0.0773	16.89	0.0086
Coef. of Var.	4.522	4.984	5.994	9.034	11.361	6.026	2.603