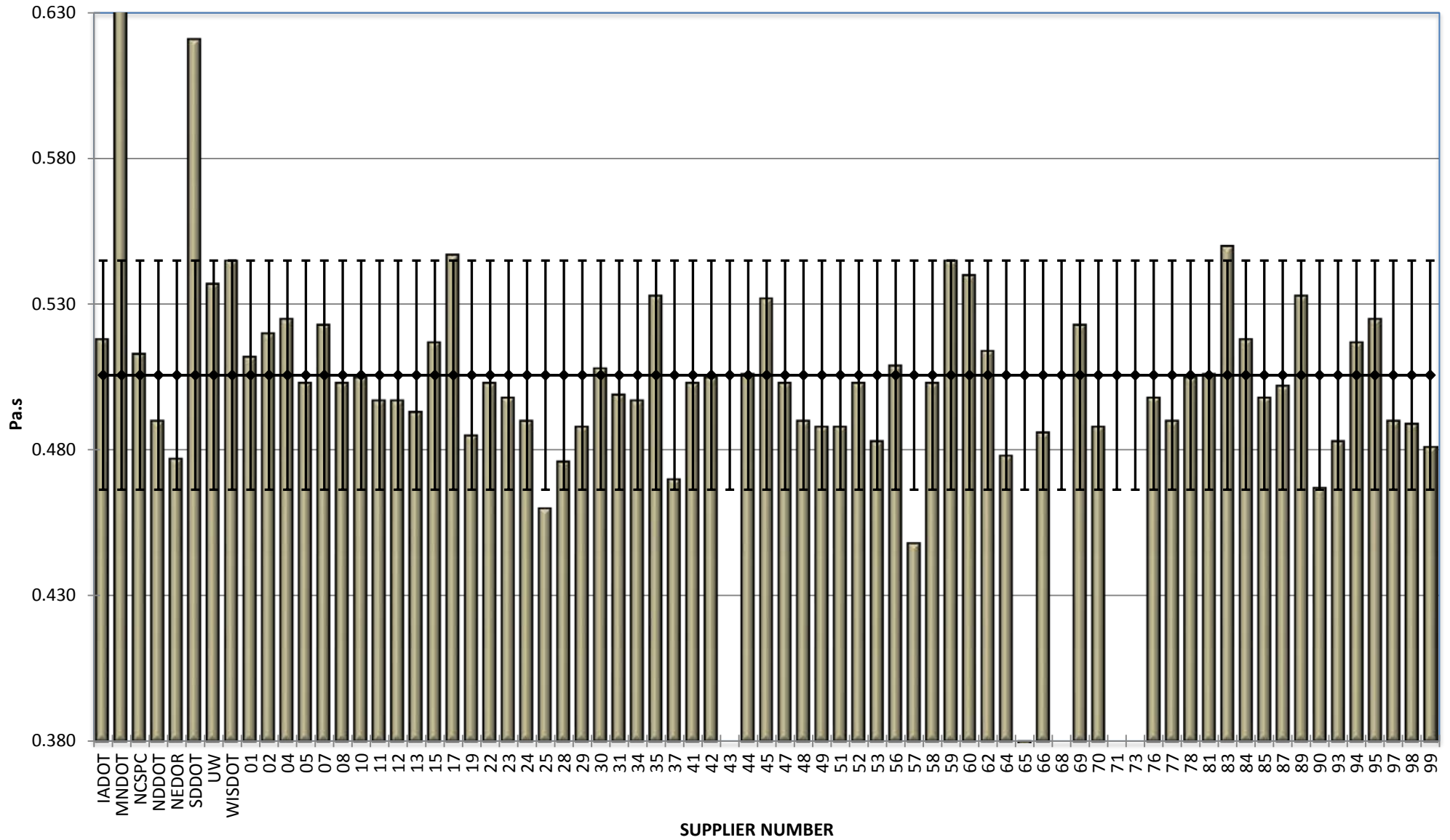


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34

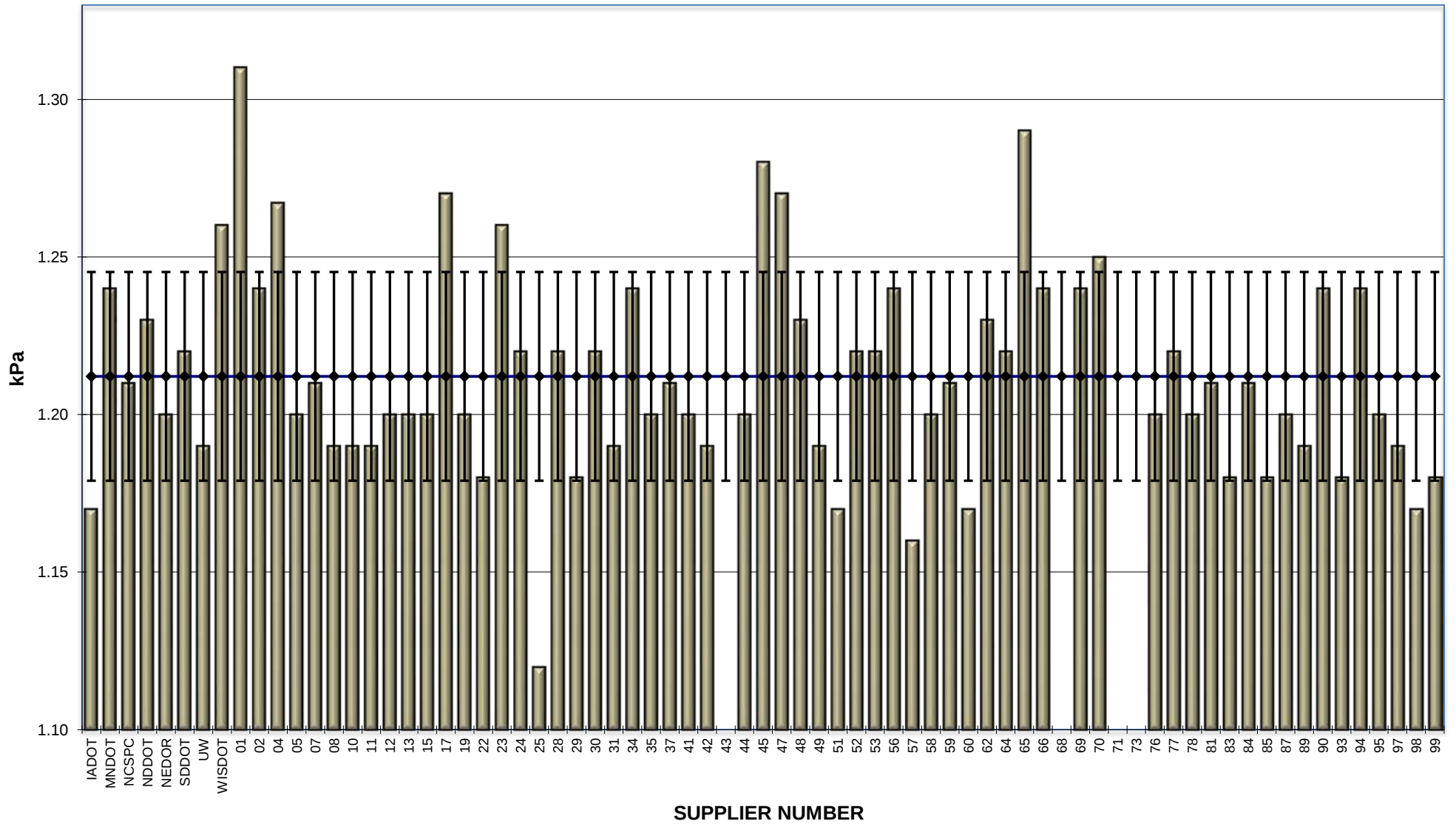
Supplier Number	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @58°C	DSR RTFO (kPa) @58°C	DSR PAV (kPa) @16°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-24°C	BBR m-value @-24°C	DTT Strain (%) @ -24°C	DTT Stress (MPa) @-24°C	CRITICAL CRACK TEMP (°C)	Jnr @ 100Pa @ 58°C	% RECOVER @ 100Pa @ 58°C	Jnr @ 3200Pa @ 58°C	% RECOVER @ 3200Pa @ 58°C
IADOT	0.518	1.17	2.63	2180	-0.805	272	0.328				1.200	52.08	1.692	35.16
MNDOT	0.700	1.24	2.93	2350	-0.785	266	0.332				1.075	53.29	1.547	36.02
NCSPC	0.513	1.21	3.30	2430	-1.002	338	0.322				0.916	53.63	1.197	41.47
NDDOT	0.490	1.23	2.92	2376	-0.935	288	0.336				1.094	52.87	1.572	35.86
NEDOR	0.477	1.20	3.11	2438	-0.825	273	0.335				1.040	51.94	1.374	39.10
SDDOT	0.621	1.22	2.90	2076	-0.627	274	0.367				1.157	50.43	1.522	37.83
UW	0.537	1.19	3.04	2112	-0.888	321	0.324				1.029	51.68	1.317	40.01
WISDOT	0.545	1.26	3.07	2521	-0.737	282	0.344				1.207	47.74	1.593	34.24
01	0.512	1.31	3.71	2479	-0.844	252	0.326				0.830	53.86	1.057	42.97
02	0.520	1.24	3.30	2450	-0.823	306	0.329				0.983	51.63	1.287	39.28
04	0.525	1.27	2.87	2033	-0.786	260	0.348	1.63	5.48		1.254	47.20	1.637	34.30
05	0.503	1.20	2.93	2352	-0.850	275	0.334				1.150	50.66	1.490	37.10
07	0.523	1.21	2.82	1910	-0.804	286	0.331				1.260	48.02	1.720	33.52
08	0.503	1.19	2.94	2444	-0.975	266	0.327				1.070	51.50	1.430	37.67
10	0.505	1.19	2.93	2378	-0.804	261	0.332				1.100	51.53	1.460	37.93
11	0.497	1.19	3.35	2560	-0.818	306	0.330				0.973	51.64	1.275	39.26
12	0.497	1.20	2.90	2805	-1.044	288	0.318							
13	0.493	1.20	2.79	2450	-0.731	267	0.338	1.10	4.44	-34.1	1.050	54.32	1.580	36.49
15	0.517	1.20	3.03	2580	-0.833	272	0.327				1.090	50.76	1.470	36.74
17	0.547	1.27	3.26	1384	-0.797	252	0.332				0.940	52.58	1.225	40.33
19	0.485	1.20	2.78	2391	-0.868	273	0.344				1.250	47.80	1.669	33.50
22	0.503	1.18	3.00	2339	-0.970	266	0.333				1.060	51.68	1.430	37.89
23	0.498	1.26	3.03	1965	-0.789	278	0.354				1.010	54.54	1.433	38.36
24	0.490	1.22	2.89	2300	-0.730	242	0.344	1.23	4.98	-34.6	1.120	52.63	1.590	35.95
25	0.460	1.12	2.86	2609	-0.871	286	0.334				1.076	53.37	1.535	36.86
28	0.476	1.22	3.91	2889	-0.734	342	0.318				1.158	49.18	1.505	37.41
29	0.488	1.18	2.87	2595	-0.877	269	0.334				1.162	51.04	1.641	34.02
30	0.508	1.22	2.92	2420	-0.847	277	0.333							
31	0.499	1.19	2.90	2275	-0.808	257	0.330				1.110	51.00	1.520	36.66
34	0.497	1.24	3.06	2280	-0.687	269	0.340				1.076	51.21	1.418	38.27
35	0.533	1.20	3.00	2237	-0.769	239	0.358							
37	0.470	1.21	2.49	2832	-0.758	270	0.333	1.00	3.55		1.504	46.52	2.065	31.42
41	0.503	1.20	2.99	2290	-0.941	260	0.331				1.090	50.83	1.450	37.63
42	0.505	1.19	3.00	2370	-0.875	263	0.339				1.033	53.86	1.485	36.76
43														
44	0.506	1.20	2.89	2318	-0.822	266	0.336				1.140	50.47	1.530	36.61
45	0.532	1.28	3.56	2649	-0.795	257	0.330				0.790	55.86	1.040	43.66
47	0.503	1.27	2.95	2148	-0.772	260	0.344	1.50	4.25		1.120	49.00	1.432	37.40
48	0.490	1.23	2.74	2090	-0.713	286	0.347				1.288	48.71	1.729	34.42
49	0.488	1.19	2.84	2210	-0.889	258	0.339				1.096	53.57	1.629	35.99
51	0.488	1.17	3.07	2330	-0.849	274	0.345				1.080	50.00	1.418	36.60
52	0.503	1.22	2.90	2358	-0.820	266	0.328				1.120	50.65	1.500	36.85
53	0.483	1.22	2.83	2270	-0.882	246	0.347				1.217	49.43	1.641	35.10
56	0.509	1.24	3.05	2460	-0.922	297	0.326				1.087	50.84	1.449	37.50
57	0.448	1.16	2.84	2102	-0.716	251	0.354	1.40	4.97		1.320	46.30	1.693	34.30
58	0.503	1.20	3.18	2240	-1.047	280	0.342				0.855	54.96	1.203	39.87
59	0.545	1.21	2.92	2321	-0.740	272	0.334				1.160	50.36	1.546	37.01
60	0.540	1.17	2.70	2490	-0.898	265	0.339				1.010	51.17	1.321	38.68
62	0.514	1.23	2.99	2410	-0.988	293	0.334				1.128	50.05	1.475	37.48
64	0.478	1.22	2.81	2220	-0.847	246	0.346				1.210	49.85	1.637	35.41
65	0.350	1.29	3.28	3354	-0.156	239	0.339				0.992	53.40	1.311	40.90
66	0.486	1.24	3.61	2873	-0.728	333	0.321				1.127	49.82	1.471	38.01
68														
69	0.523	1.24	2.75	2075	-0.749	270	0.337	1.78	5.43	-35.3	1.370	44.76	1.740	34.12
70	0.488	1.25	2.94	2489	-0.771	287	0.345				1.190	49.17	1.573	35.73
71														
73														
76	0.498	1.20	2.77	2390	-0.721	283	0.338				1.240	49.61	1.644	35.73
77	0.490	1.22	3.09	2690	-0.879	259	0.343				1.115	50.05	1.479	36.71
78	0.505	1.20	3.12	2375	-0.989	282	0.340				1.064	51.84	1.488	35.84
81	0.506	1.21	3.22	2260	-1.010	286	0.341				0.948	54.61	1.335	38.72
83	0.550	1.18	3.04	2327	-0.797	278	0.333				1.083	50.70	1.430	37.83
84	0.518	1.21	2.95	2700	-0.800	274	0.342				1.031	54.85	1.487	37.63
85	0.498	1.18	2.82	2500	-0.723	279	0.334				1.250	48.75	1.680	34.30
87	0.502	1.20	2.99	2329	-0.964	276	0.330				1.050	51.97	1.430	37.76
89	0.533	1.19	3.11	2540	-0.810	276	0.328				1.080	49.97	1.450	36.79
90	0.467	1.24	3.36	2754	-0.758	314	0.316				1.229	48.11	1.575	36.76
93	0.483	1.18	3.03	1884	-0.765	259	0.349				1.020	54.24	1.449	38.03
94	0.517	1.24	2.72	2323	-0.888						1.250	50.54	1.800	33.56
95	0.525	1.20	2.84	2490	-0.671	276	0.332				1.230	49.70	1.650	35.70
97	0.490	1.19	2.90	2229	-0.653	267	0.348				1.130	49.80	1.506	36.10
98	0.489	1.17	2.87	2277	-0.649	272	0.343				1.160	49.60	1.555	35.40
99	0.481	1.18	3.86	2716	-0.718	335	0.312				1.060	50.37	1.358	39.10
Average	0.506	1.21	3.01	2381	-0.814	276	0.336	1.38	4.73	-34.67	1.111	50.97	1.498	36.99
Std. Dev.	0.0393	0.0331	0.2631	274.97	0.1257	22.26	0.0100	0.2836	0.6928	0.6028	0.1222	2.2705	0.1696	2.2358
Coef. of Var.	7.780	2.733	8.730	11.549	15.452	8.069	2.975	20.593	14.650	-1.739	11.001	4.454	11.328	6.044

COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34

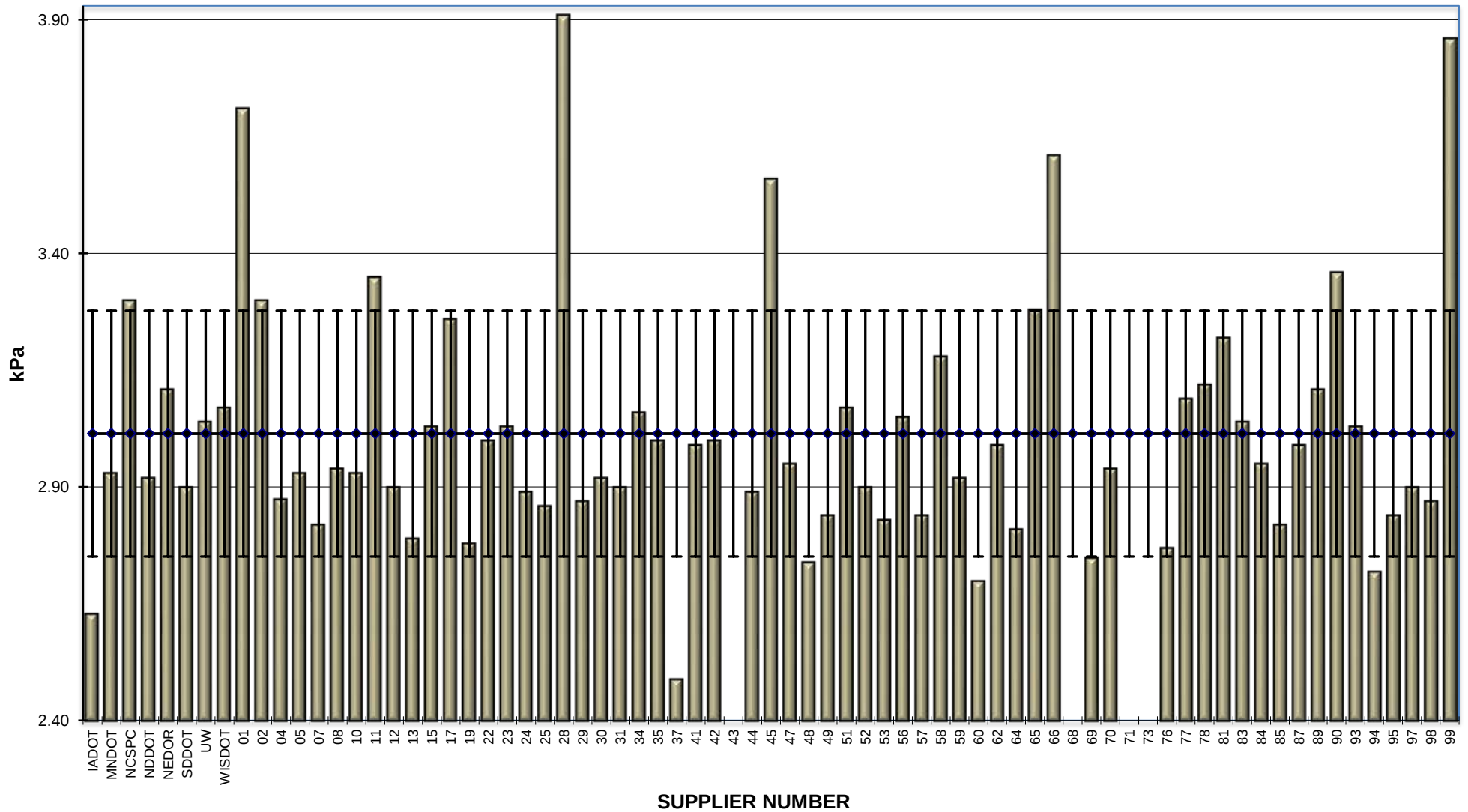
ROTATIONAL VISCOSITY



COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34
DSR - ORIGINAL

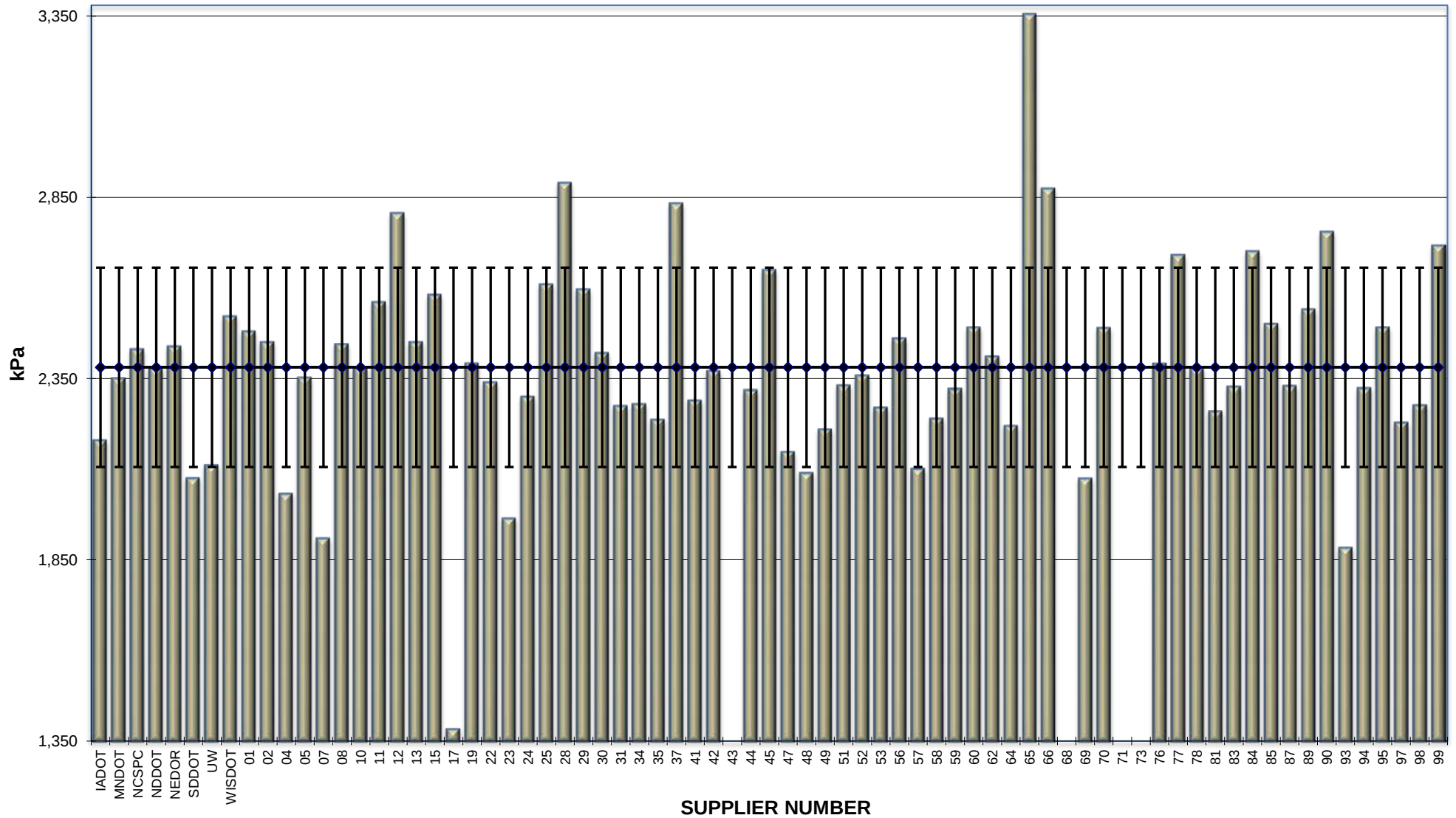


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34
DSR - RTFO



COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34

DSR - PAV

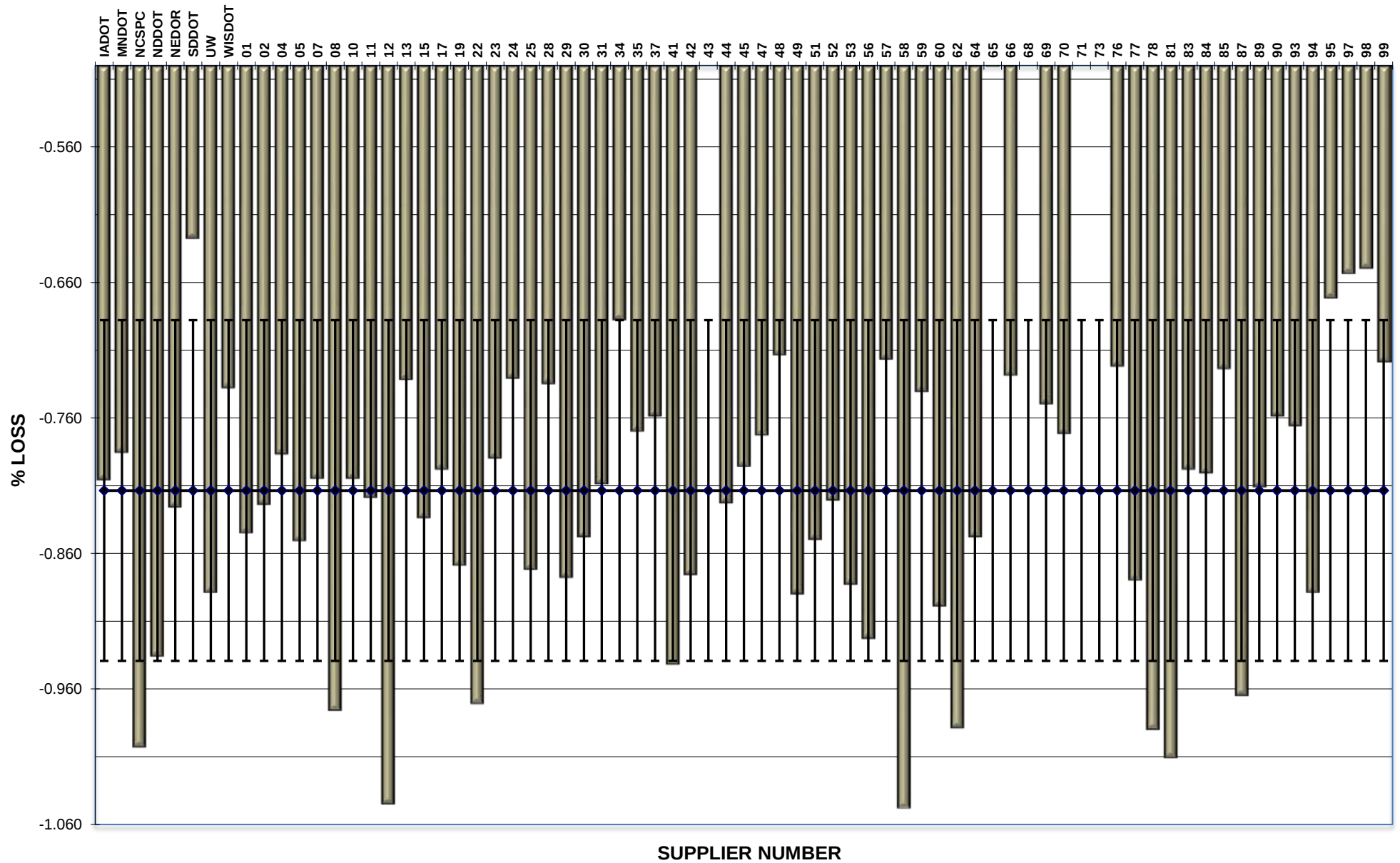


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

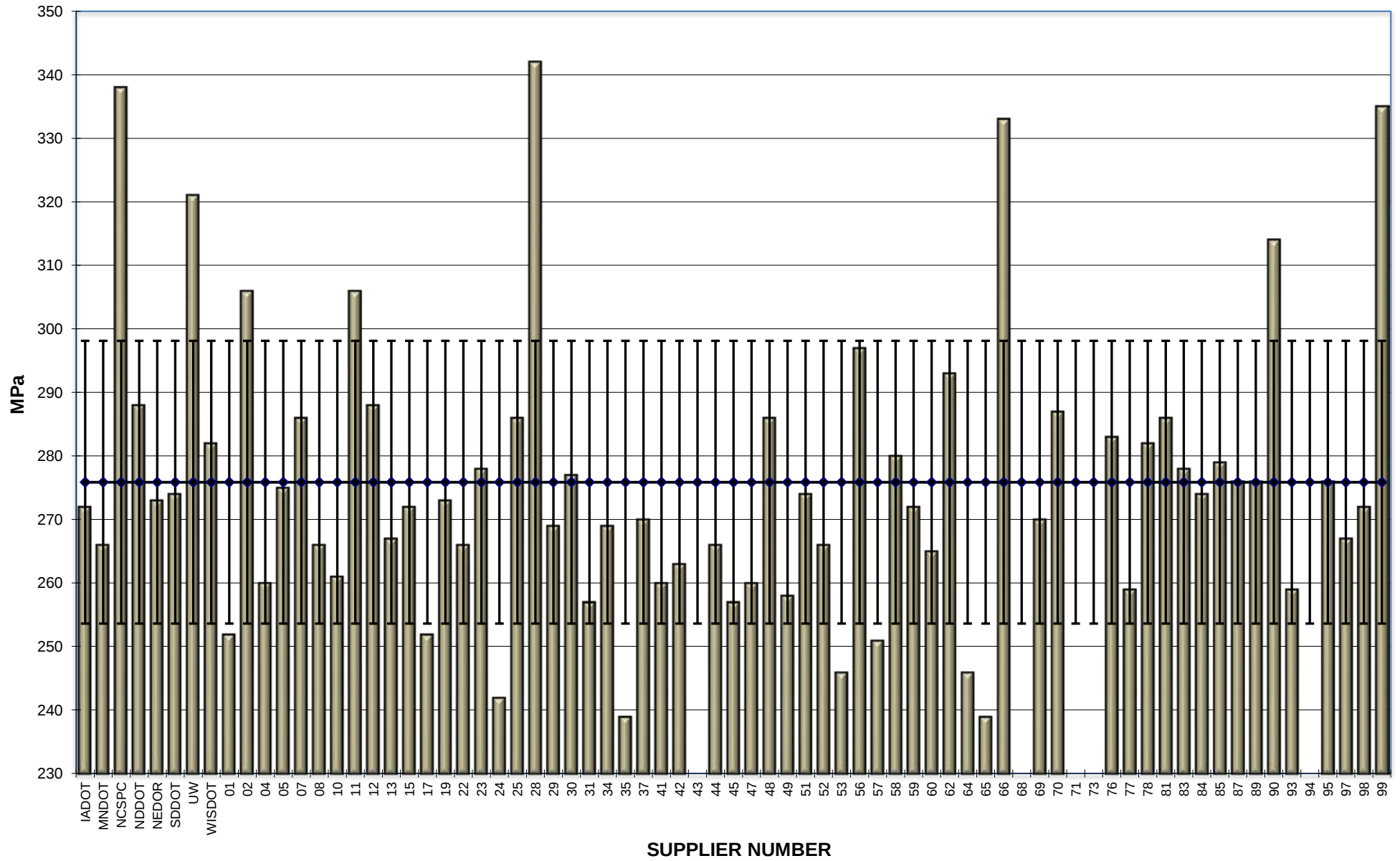
PG 58-34

RTFO MASS LOSS



COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34

BBR STIFFNESS

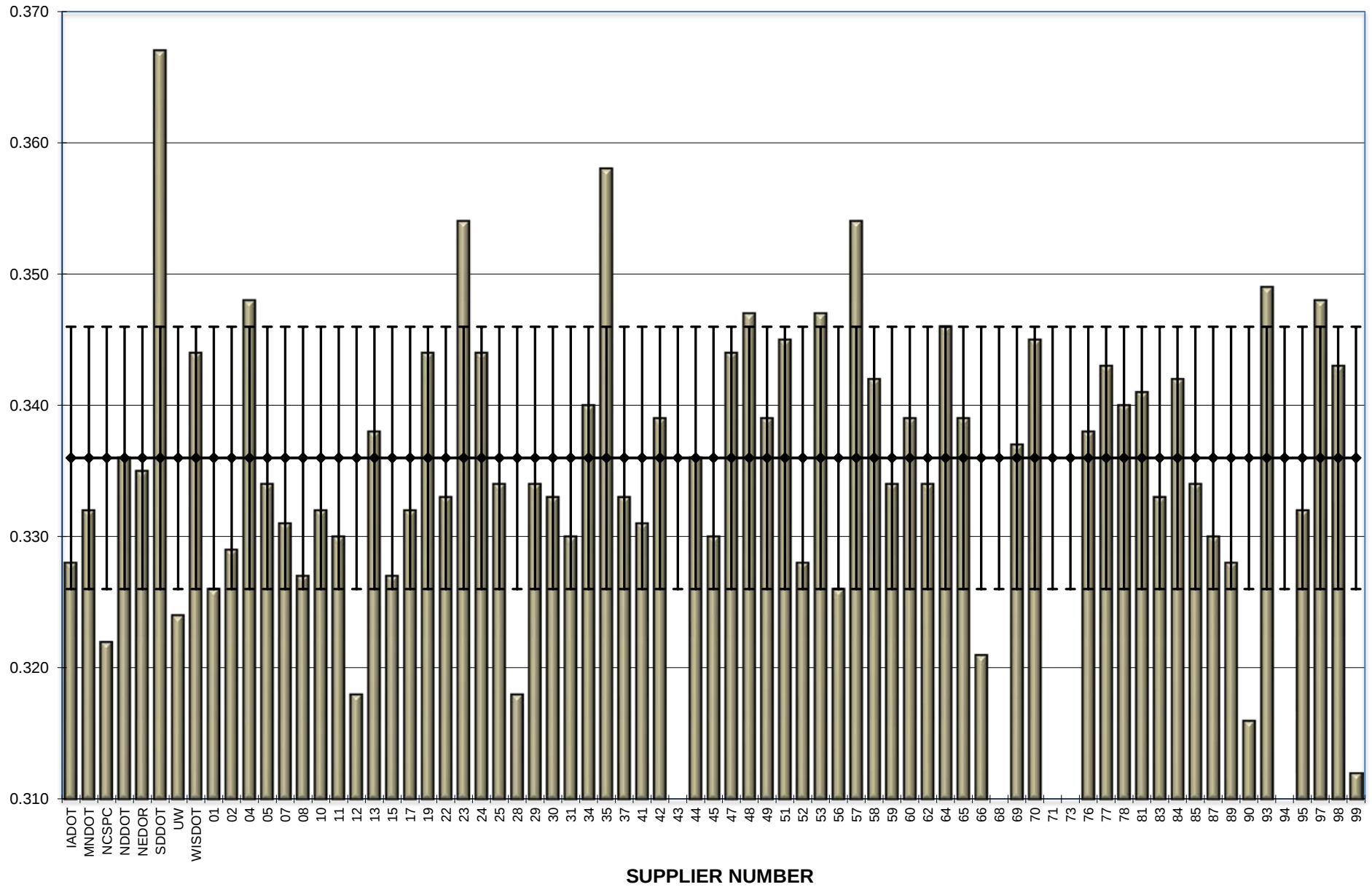


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

PG 58-34

BBR m-VALUE

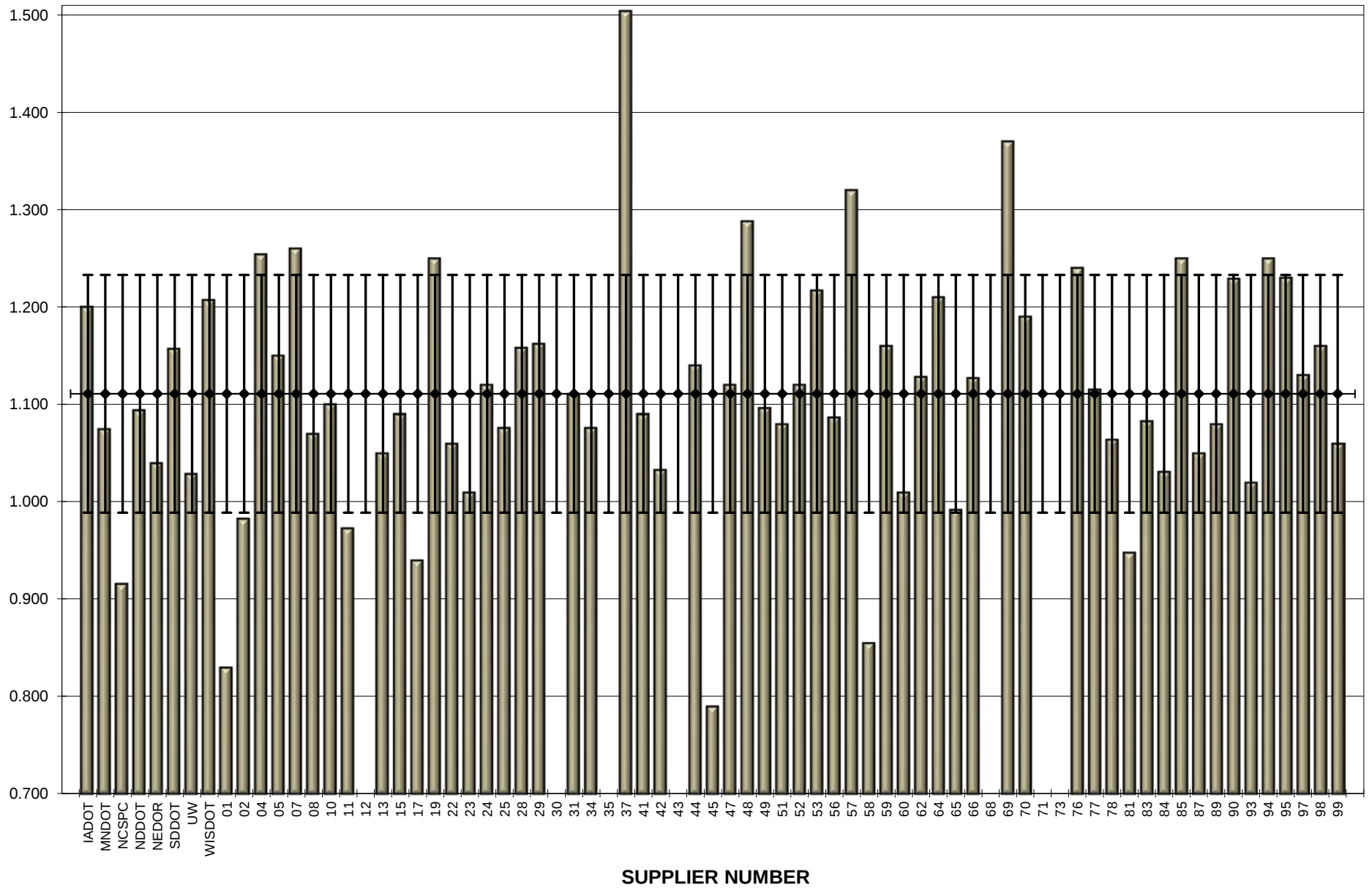


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

PG 58-34

Jnr@100 Pa

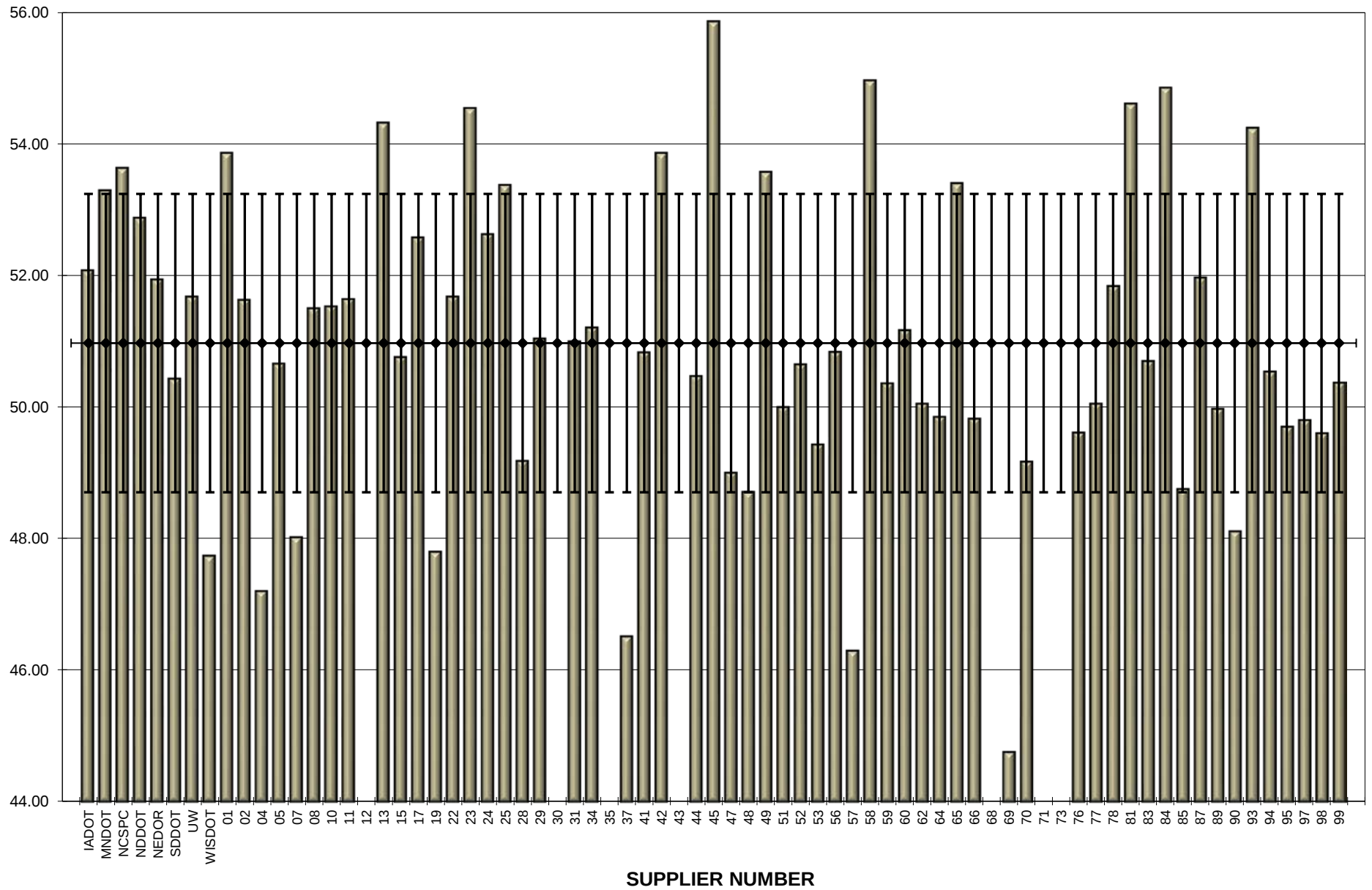


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

PG 58-34

%Recovery@100 Pa

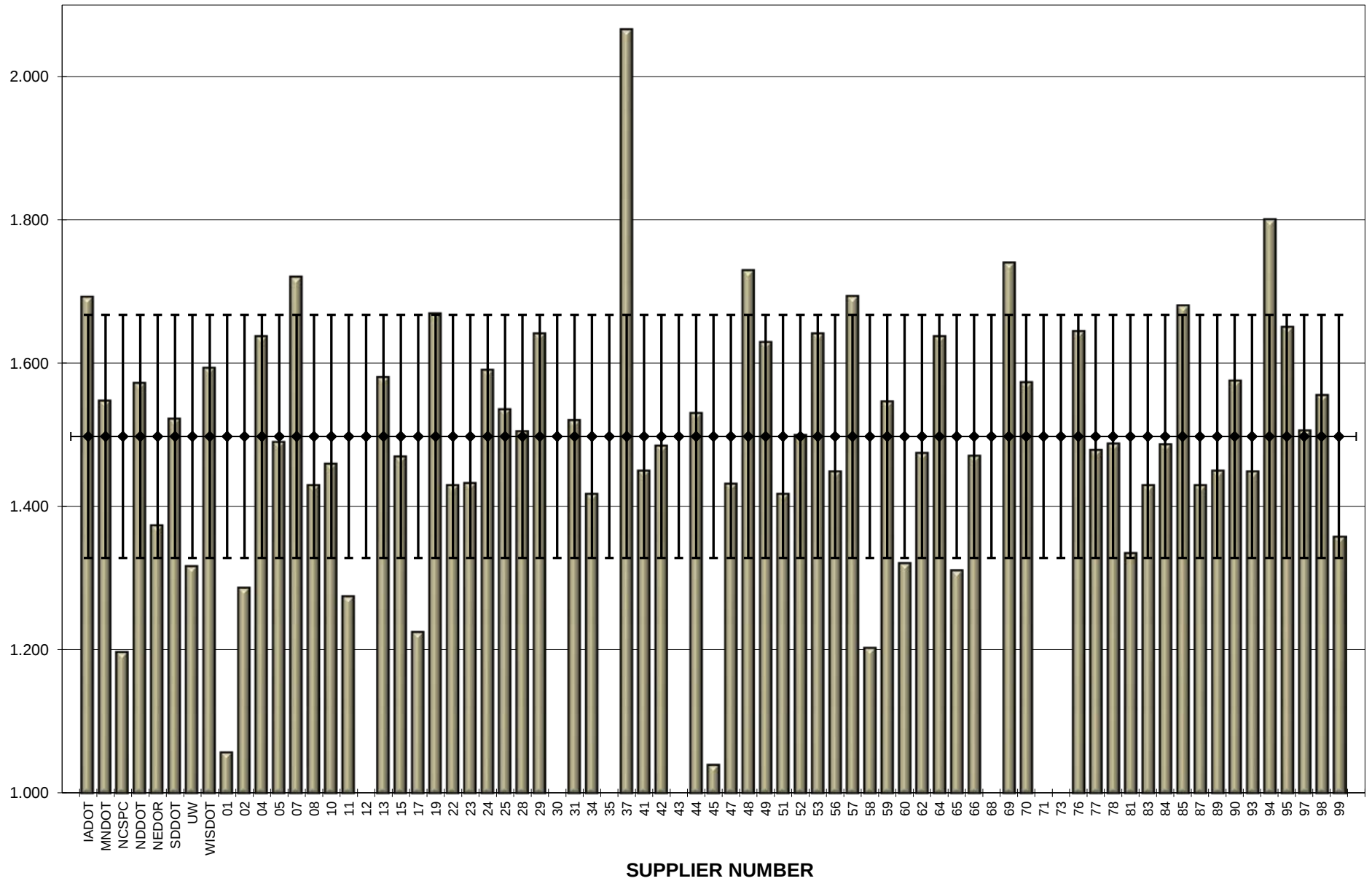


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

PG 58-34

Jnr@3200 Pa

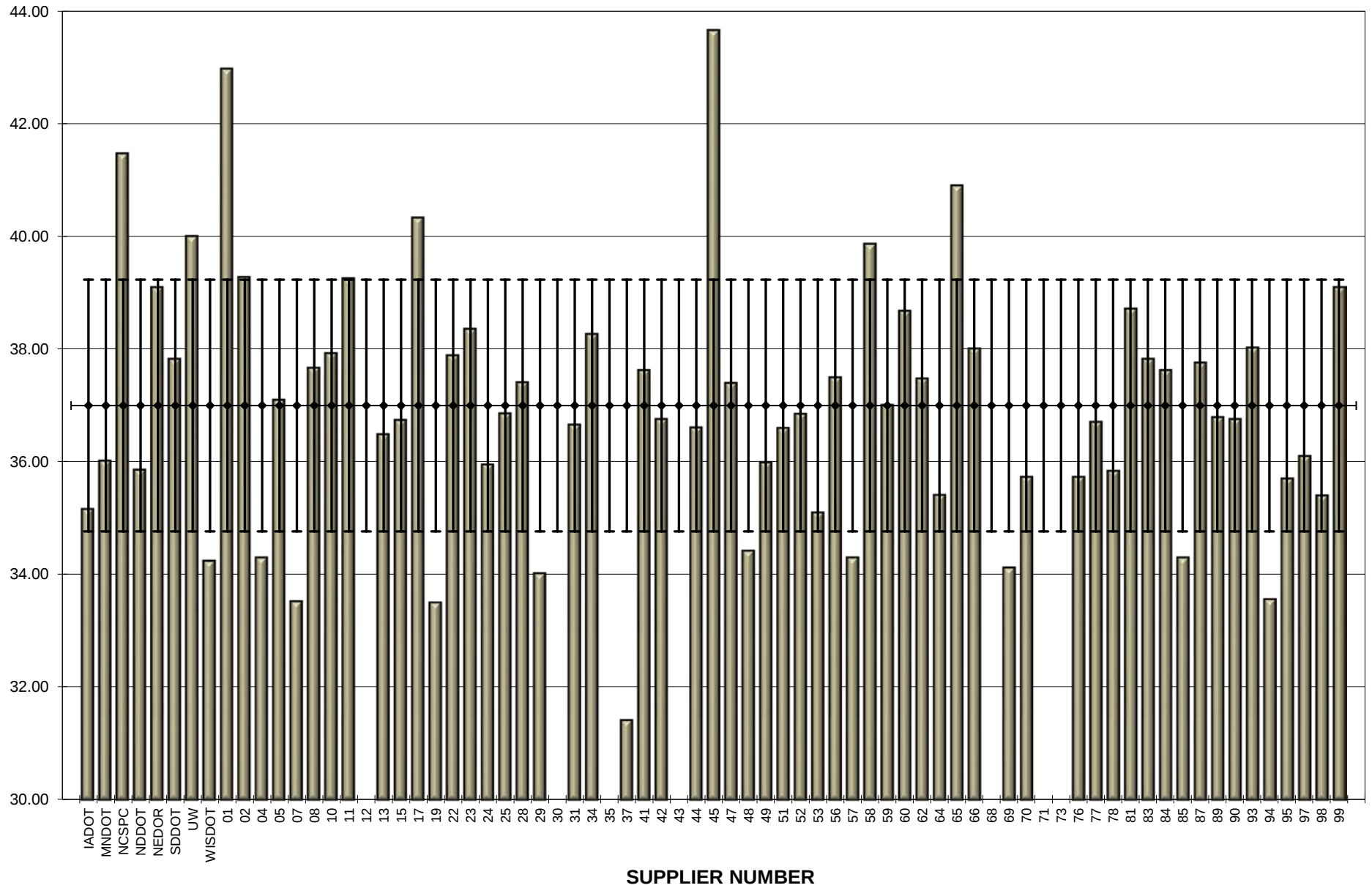


COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4

SUMMARY A

PG 58-34

%Recovery@3200 Pa



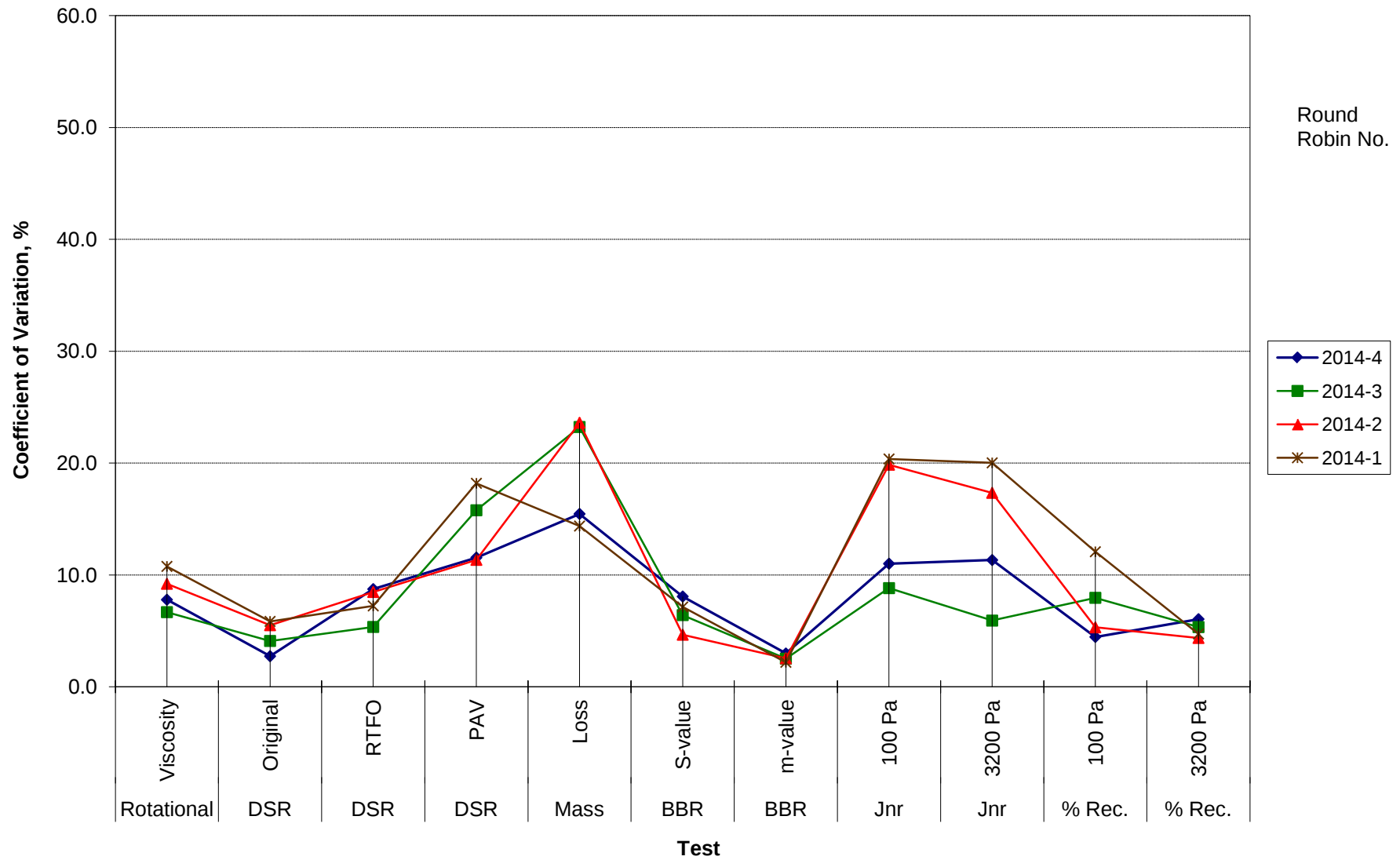
COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
58-34

COEFFICIENT OF VARIATION

R R No.	Number of Participants	Coefficient of Variation, %											
		Rotational Viscosity	DSR Original	DSR RTFO	DSR PAV	Mass Loss	BBR S-value	BBR m-value	Jnr 100 Pa	Jnr 3200 Pa	% Rec. 100 Pa	% Rec. 3200 Pa	DTT Strain
2014-4	69	7.780	2.733	8.730	11.549	15.452	8.069	2.975	11.001	11.328	4.454	6.044	20.593
2014-3	73	6.670	4.095	5.347	15.777	23.221	6.408	2.506	8.817	5.915	7.950	5.335	37.884
2014-2	52	9.206	5.504	8.472	11.343	23.598	4.651	2.543	19.850	17.336	5.312	4.362	30.979
2014-1	72	10.760	5.843	7.228	18.189	14.368	7.133	2.186	20.363	20.016	12.070	4.720	8.048

COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
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COEFFICIENT OF VARIATION



COMBINED STATE BINDER GROUP ROUND ROBIN 2014-4
SUMMARY A
PG 58-34

STATISTICS WITH OUTLIERS REMOVED:

	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @70°C	DSR RTFO (kPa) @70°C	DSR PAV (kPa) @25°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-18°C	BBR m-value @-18°C	Jnr @ 100Pa @ 58°C	% RECOV. @ 100Pa @58° C	Jnr @ 3200Pa @ 58°C	% RECOV. @ 3200Pa @ 58° C
Average	0.503	1.21	2.96	2,381	-0.823	276	0.336	1.105	50.97	1.489	36.99
Std. Dev.	0.0213	0.0331	0.1715	220.22	0.0974	22.26	0.0093	0.1127	2.2705	0.1553	2.2358
Coef. of Var.	4.237	2.733	5.797	9.247	11.834	8.069	2.774	10.206	4.454	10.431	6.044