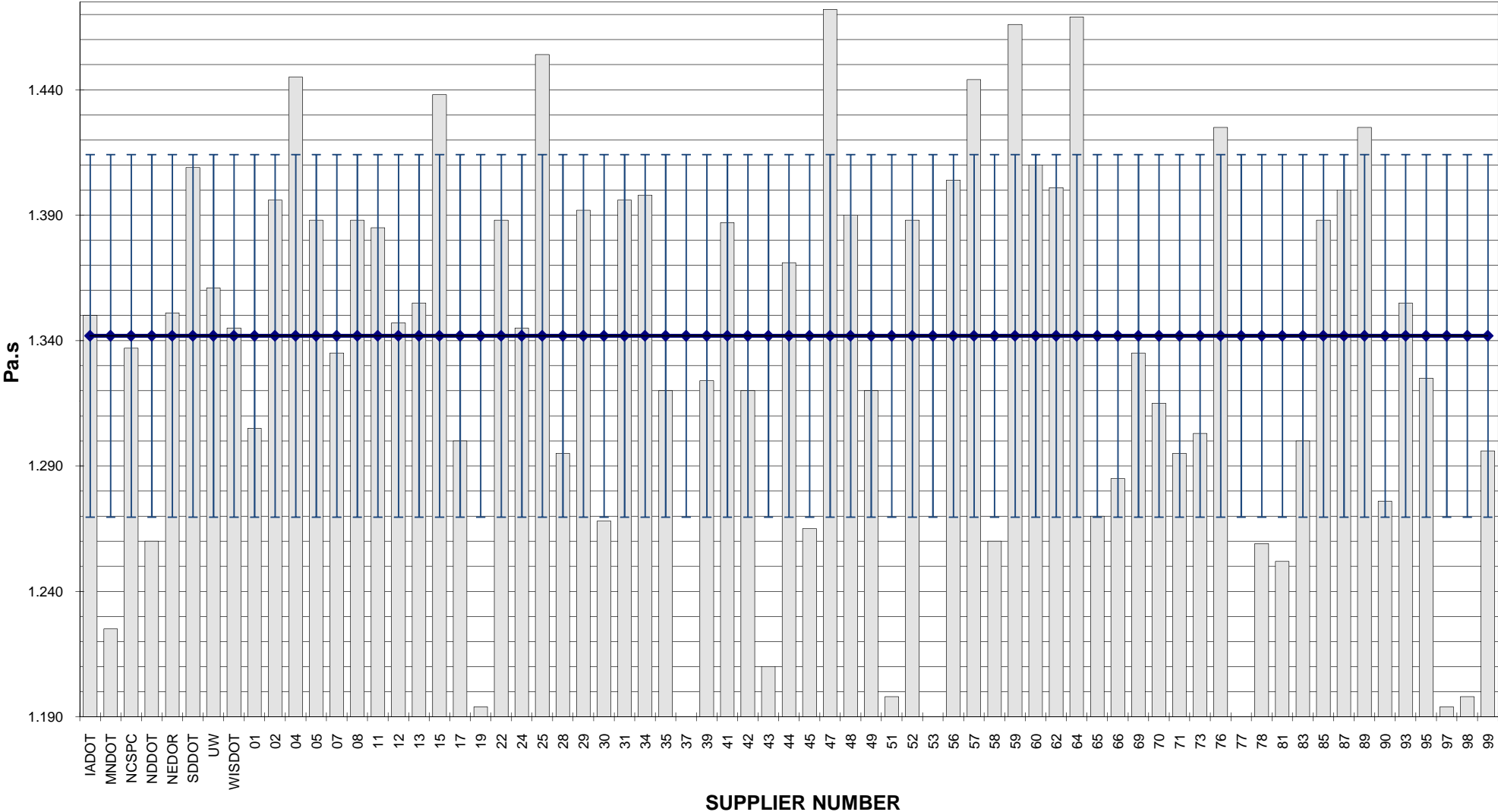


**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
PG 70-28**

Supplier Number	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	DTT Strain (%) @-18°C	DTT Stress (MPa) @-18°C	CRITICAL CRACK TEMP (°C)	MSCR % RECOVERY @ 100Pa @58° C	MSCR % RECOVERY @ 3200Pa @ 58° C
IADOT	1.350	1.34	2.96	1430	-0.519	211	0.330				72.78	71.79
MNDOT	1.225	1.31	2.75	1409	-0.688	203	0.334					
NCSPC	1.337	1.38	2.75	1440	-0.984	210	0.335				64.63	61.82
NDDOT	1.260	1.29	2.87	1432	-0.592	221	0.344				72.51	70.66
NEDOR	1.351	1.39	3.16	1378	-0.451	207	0.355				74.54	73.67
SDDOT	1.409	1.38	3.04	1517	-0.654	212	0.339				64.80	59.10
UW	1.361	1.34	3.17	1681	-1.205	230	0.329					
WISDOT	1.345	1.23	2.78	1487	-0.581	202	0.345					
01	1.305	1.32	3.15	1905	-0.576	202	0.340				64.34	57.84
02	1.396	1.47	2.85	1602	-0.597	230	0.348				73.52	72.70
04	1.445	1.38	2.93	1314	-0.553	223	0.337					
05	1.388	1.44	3.52	1310	-0.612	207	0.342				25.96	26.05
07	1.335	1.24	2.65	1485	-0.570	205	0.353				65.84	64.45
08	1.388	1.37	3.51	1389	-0.663	206	0.340				25.62	25.61
11	1.385	1.39	3.10	1648	-0.605	229	0.338				74.00	73.58
12	1.347	1.40	2.89	1482	-0.602	210	0.352					
13	1.355	1.34	2.99	1420	-0.517	203	0.365	1.85	4.56	-30	70.51	70.94
15	1.438	1.26	2.58	1452	-0.611	200	0.350				75.16	74.24
17	1.300	1.29	3.21	1895	-0.557	202	0.346				65.35	56.38
19	1.194	1.35	3.08	1412	-0.627	228	0.349				73.68	71.41
22	1.388	1.35	2.90	1274	-0.623	197	0.345					
24	1.345	1.29	3.05	1420	-0.517	221	0.350	1.86	4.68	-29.6	71.81	72.39
25	1.454	1.25	2.77	1449	-0.656	224	0.344				70.93	69.05
28	1.295	1.33	3.19	1353	-0.541	241	0.328				71.96	70.94
29	1.392	1.41	3.17	1913	-0.554	237	0.338				73.20	72.28
30	1.268	1.35	2.71	1133	-0.546	208	0.347					
31	1.396	1.39	3.16	1375	-0.616	220	0.343				25.75	26.00
34	1.398	1.45	3.21	1895	-0.616	229	0.349				75.45	75.13
35	1.320	1.40	2.92	1780	-0.504	255	0.320					
37												
39	1.324	1.24	2.68	1710	-0.566	233	0.339				73.95	73.20
41	1.387	1.41	3.01	1654	-0.650	216	0.347				24.99	24.98
42	1.320	1.34	2.62	1330	-0.687	200	0.344					
43	1.210	1.32	2.93	1510	-0.564	240	0.343				73.03	71.96
44	1.371	1.41	3.19	1448	-0.667	217	0.342				24.21	25.13
45	1.265	1.36	3.03	1751	-0.546	196	0.338				63.20	56.26
47	1.472	1.33	2.93	1293	-0.588	222	0.339					
48	1.390	1.43	3.30	1692	-0.596	224	0.333				74.58	74.01
49	1.320	1.32	3.33	1410	-0.585	219	0.348				74.00	73.11
51	1.198	1.34	3.06	1397	-0.631	224	0.350				74.69	73.85
52	1.388	1.37	3.22	1380	-0.612	206	0.339				26.07	26.24
53												
56	1.404	1.42	2.89	1600	-0.663	227	0.337				73.55	73.12
57	1.444	1.33	2.93	1307	-0.547	224	0.335					
58	1.260	1.34	2.88	1420	-0.690	211	0.350				35.95	18.31
59	1.466	1.25	2.73	1460	-0.617	220	0.339				68.91	66.29
60	1.410	1.29	2.76	1530	-0.694	214	0.346					
62	1.401	1.45	3.03	1497	-0.616	224	0.344				74.17	73.63
64	1.469	1.18	2.62	1608	-0.715	226	0.330					
65	1.270	1.35	3.00	1380	-0.597	182	0.358					
66	1.285	1.29	3.43	1162	-0.549	245	0.330				74.18	74.31
69	1.335	1.26	2.86	1460	-0.591	221	0.343	1.72	4.93	-33.70	69.29	66.03
70	1.315	1.40	3.06	1608	-0.541	225	0.343				73.53	72.57
71	1.295	1.41	2.73	1202	-0.519	220	0.352					
73	1.303	1.39	2.57	1328	-0.514	209	0.356					
76	1.425	1.31	2.87	1390	-0.518	206	0.343				74.05	73.00
77												
78	1.259	1.32	2.97	1500	-0.679	211	0.347					
81	1.252	1.32	2.97	1530	-0.688	218	0.343					
83	1.300	1.41	3.41	1353	-0.673	204	0.343				25.12	25.45
85	1.388	1.32	3.34	1420	-0.534	209	0.334				74.15	72.99
87	1.400	1.37	2.79	1669	-0.611	211	0.344					
89	1.425	1.25	2.74	1585	-0.616	184	0.349				74.82	74.14
90	1.276	1.31	2.72	1480	-0.528	250	0.330				72.90	72.61
93	1.355	1.40	3.20	1205	-0.483	179	0.353	1.99	4.68	-34.40	77.50	76.30
95	1.325	1.34	3.31	1455	-0.496	211	0.351					
97	1.194	1.34	3.07	1390	-0.620	230	0.352				73.99	73.23
98	1.198	1.33	2.94	1308	-0.642	229	0.357				74.85	73.77
99	1.296	1.32	2.67	1501	-0.499	255	0.325				75.27	74.78
Average	1.342	1.34	2.98	1479	-0.607	217	0.343	1.86	4.71	-31.93	64.20	62.51
Std. Dev.	0.0723	0.0601	0.2331	173.12	0.1073	15.62	0.0085	0.1103	0.1556	2.4757	17.7673	18.2354
Coef. of Var.	5.387	4.474	7.818	11.706	17.671	7.201	2.492	5.946	3.303	-7.755	27.674	29.174

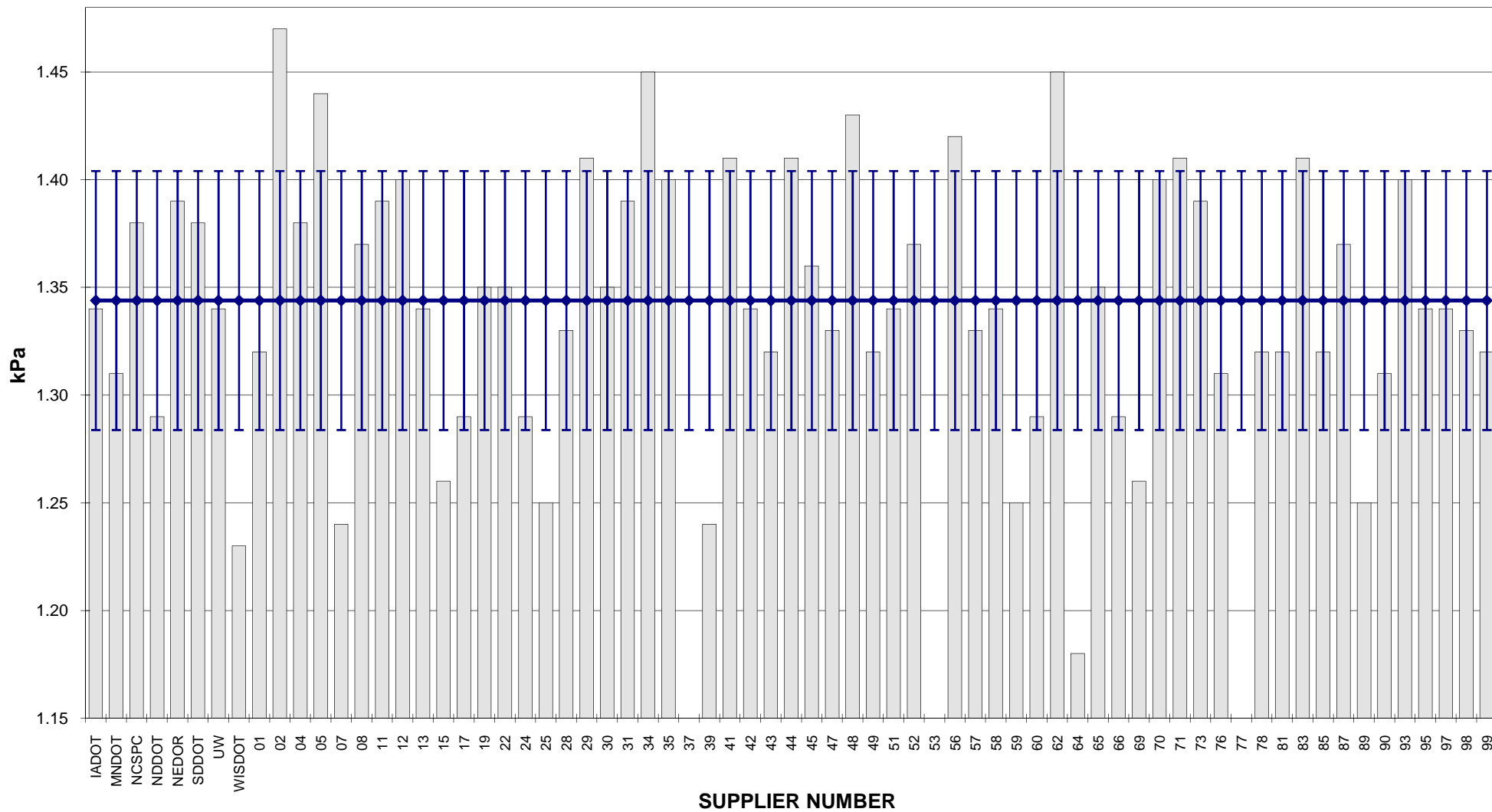
**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
PG 70-28**

ROTATIONAL VISCOSITY



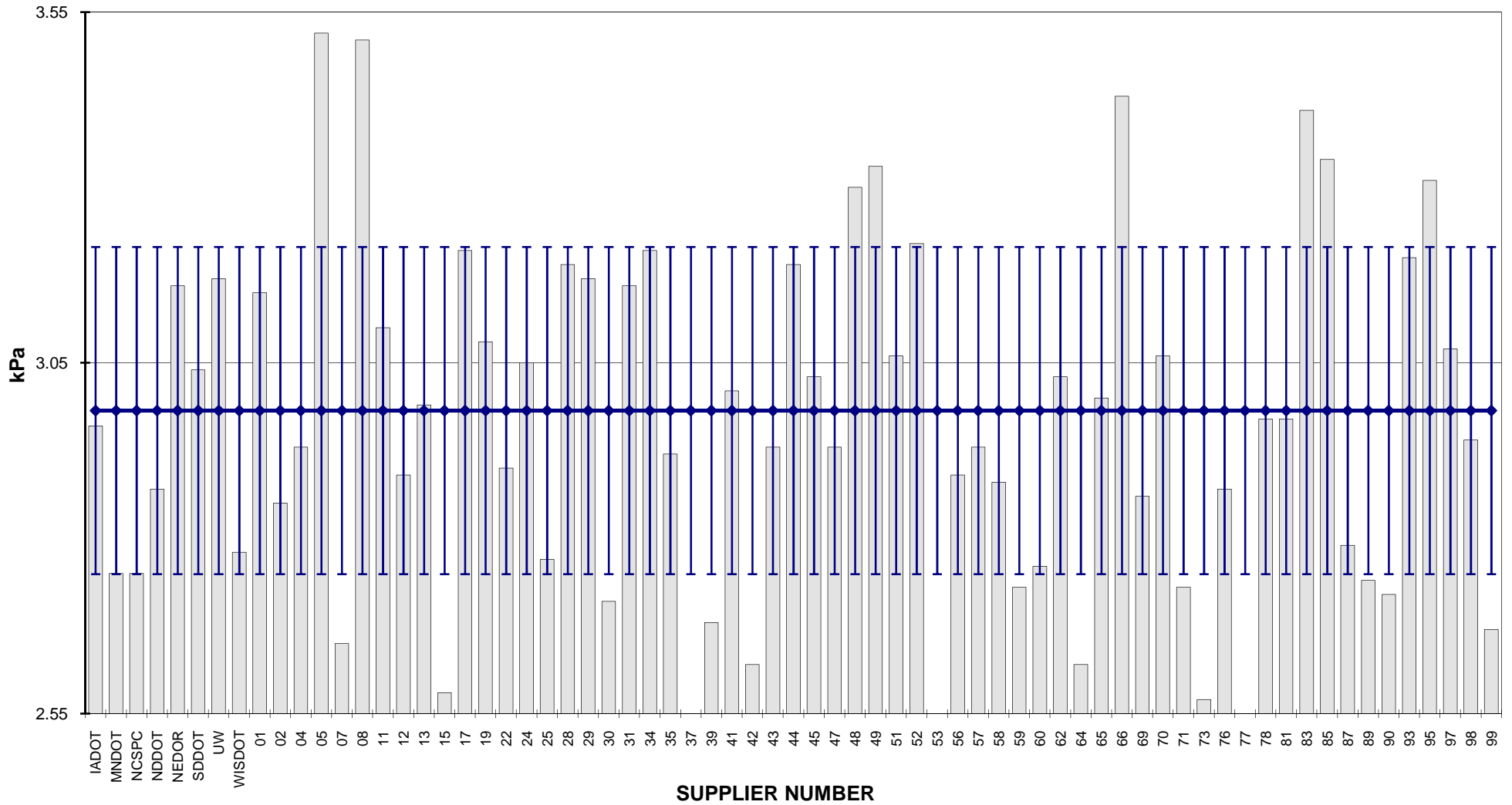
**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
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DSR - ORIGINAL



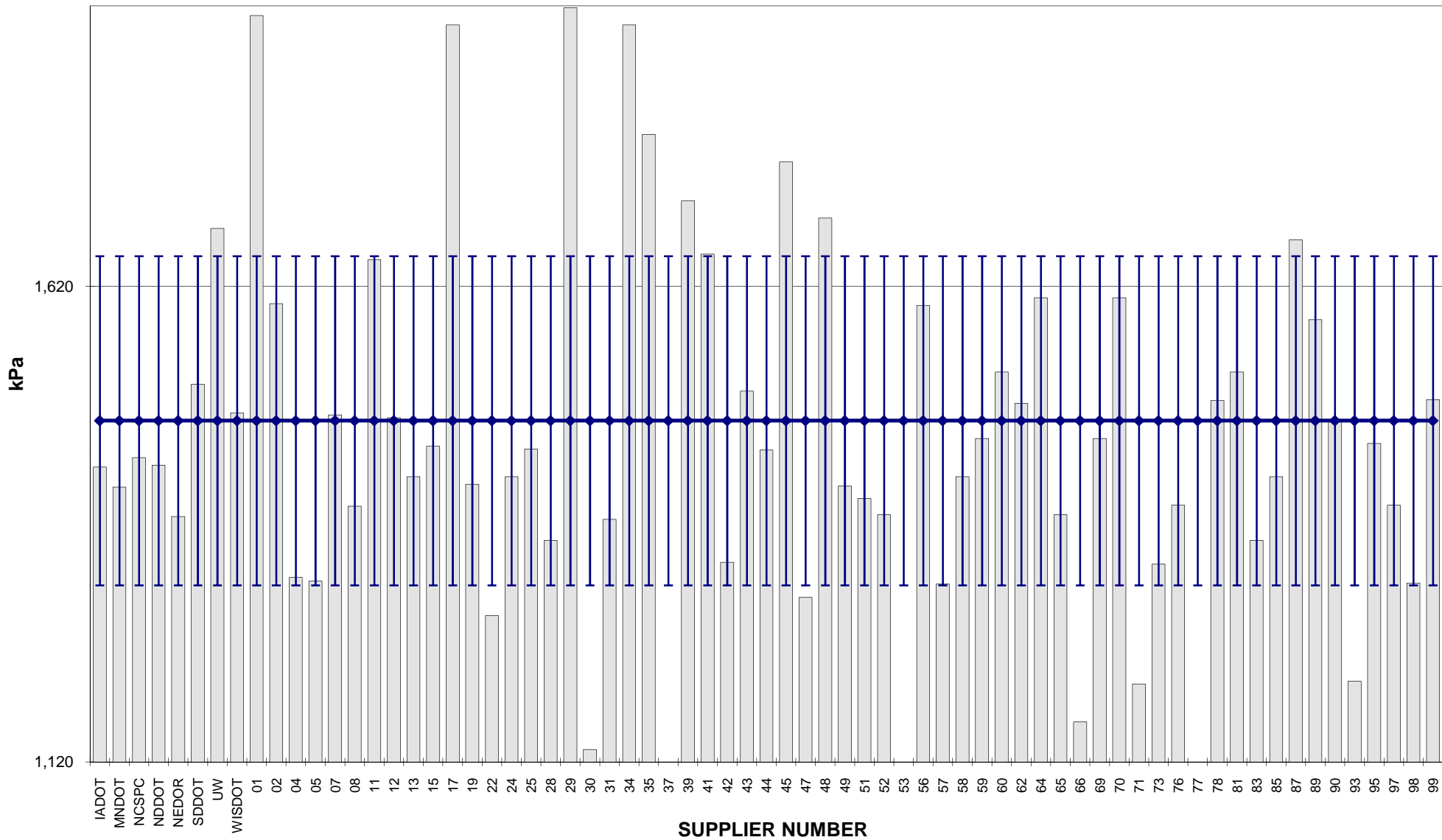
COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
 SUMMARY A
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DSR - RTFO



**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
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DSR - PAV

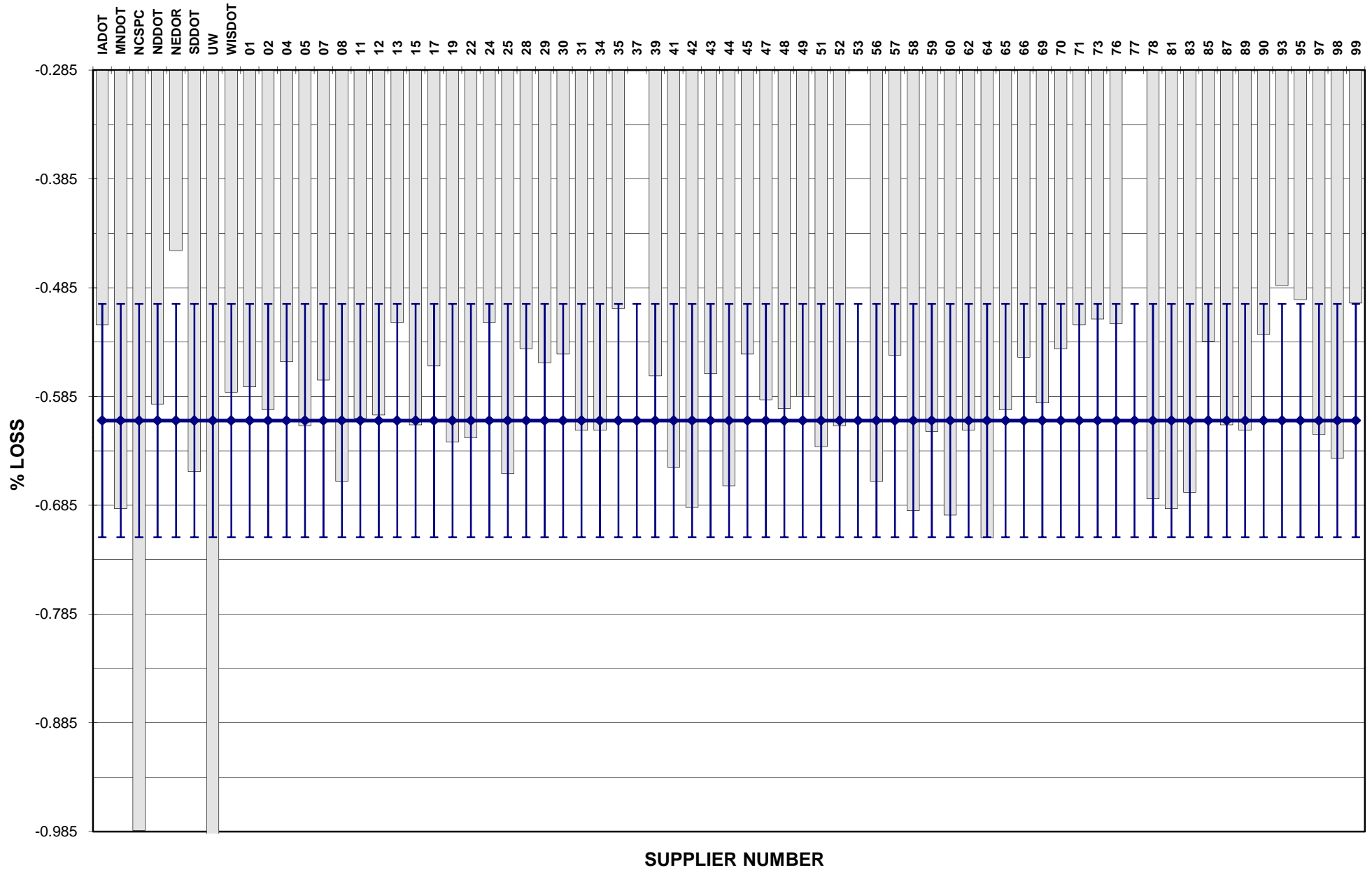


COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2

SUMMARY A

PG 70-28

RTFO MASS LOSS

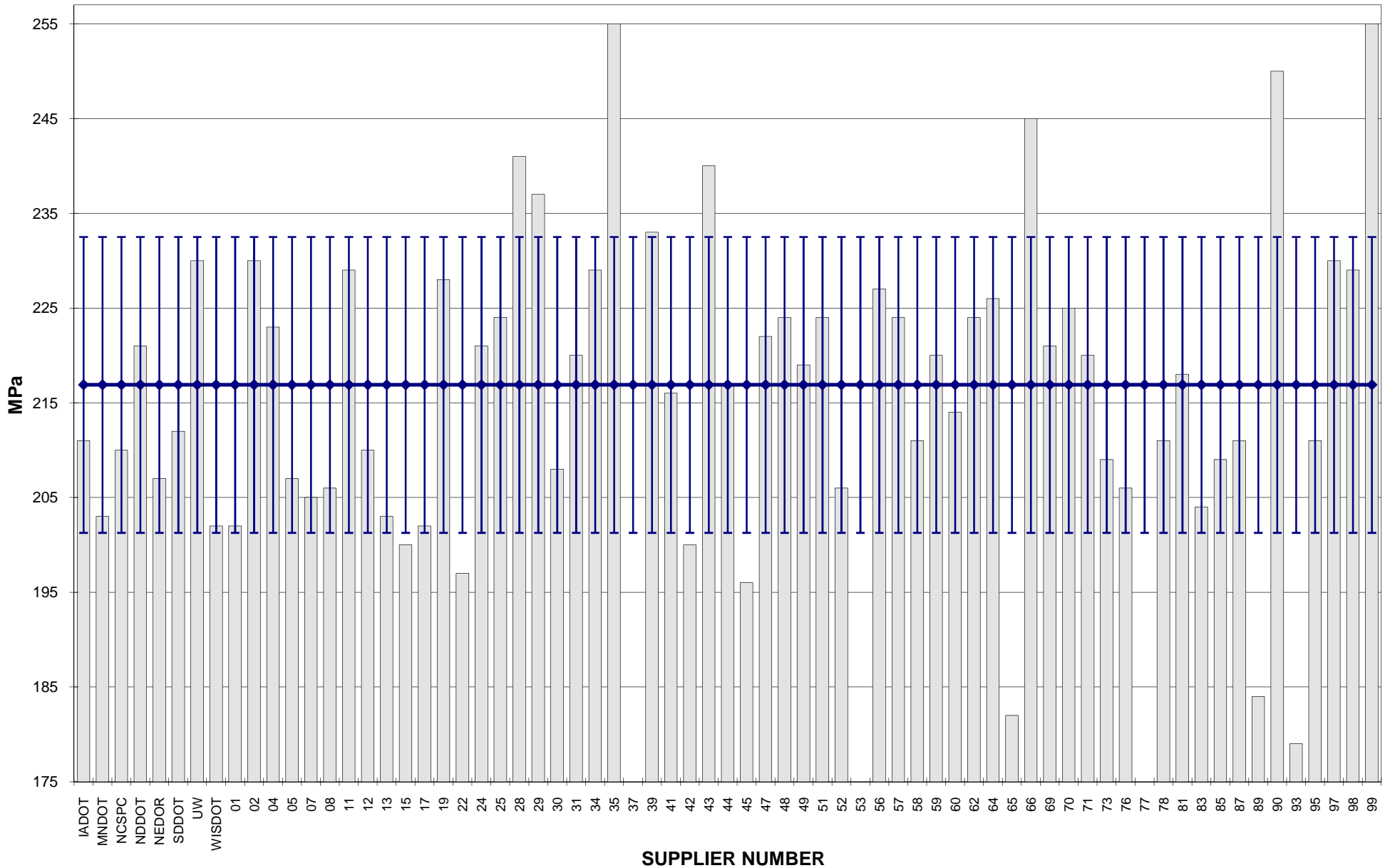


COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2

SUMMARY A

PG 70-28

BBR STIFFNESS

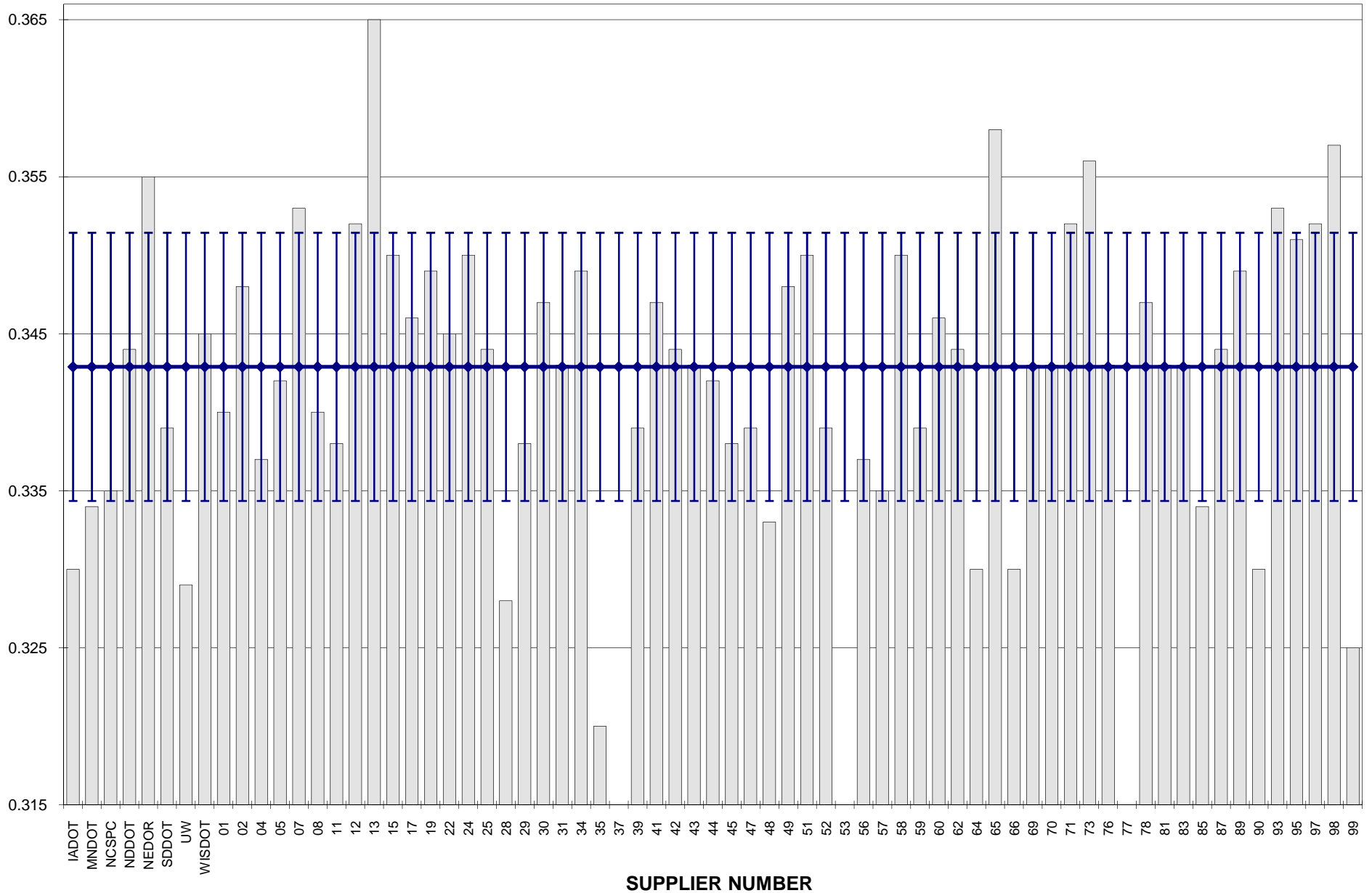


COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2

SUMMARY A

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BBR m-VALUE



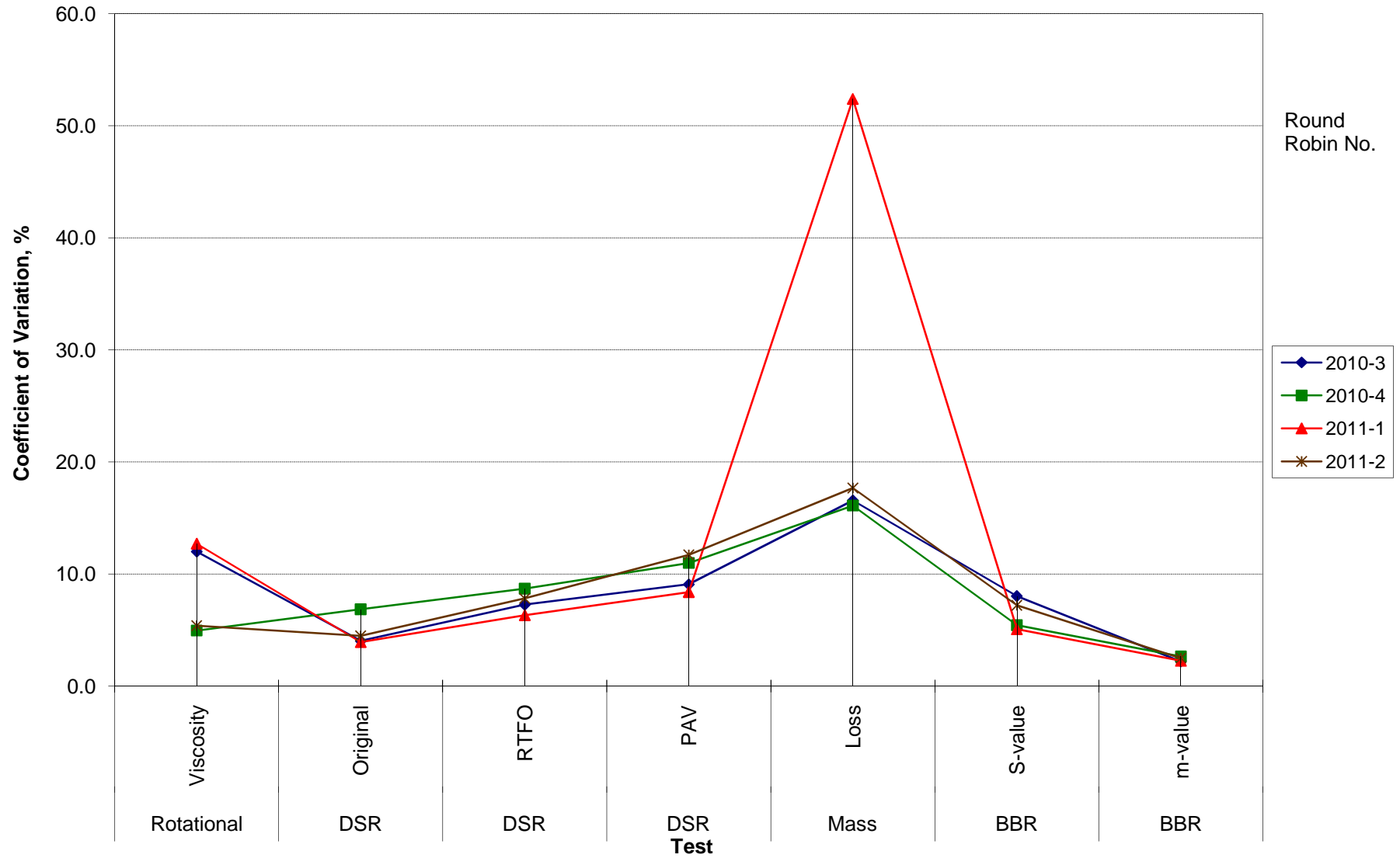
**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
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COEFFICIENT OF VARIATION

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
2010-3	68	11.997	4.030	7.262	9.080	16.568	8.029	2.199	
2010-4	69	4.954	6.857	8.698	10.983	16.107	5.434	2.649	18.298
2011-1	67	12.705	3.920	6.323	8.380	52.400	5.070	2.254	30.453
2011-2	66	5.387	4.474	7.818	11.706	17.671	7.201	2.492	5.946

**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
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COEFFICIENT OF VARIATION



**COMBINED STATE BINDER GROUP ROUND ROBIN 2011-2
SUMMARY A
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STATISTICS WITH OUTLIERS REMOVED:

	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @64°C	DSR RTFO (kPa) @64°C	DSR PAV (kPa) @25°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-12°C	BBR m-value @-12°C
Average	1.342	1.34	2.98	1,479	-0.592	217	0.343
Std. Dev.	0.0723	0.0601	0.2331	173.12	0.0609	15.62	0.0085
Coef. of Var.	5.387	4.474	7.818	11.706	10.290	7.201	2.492