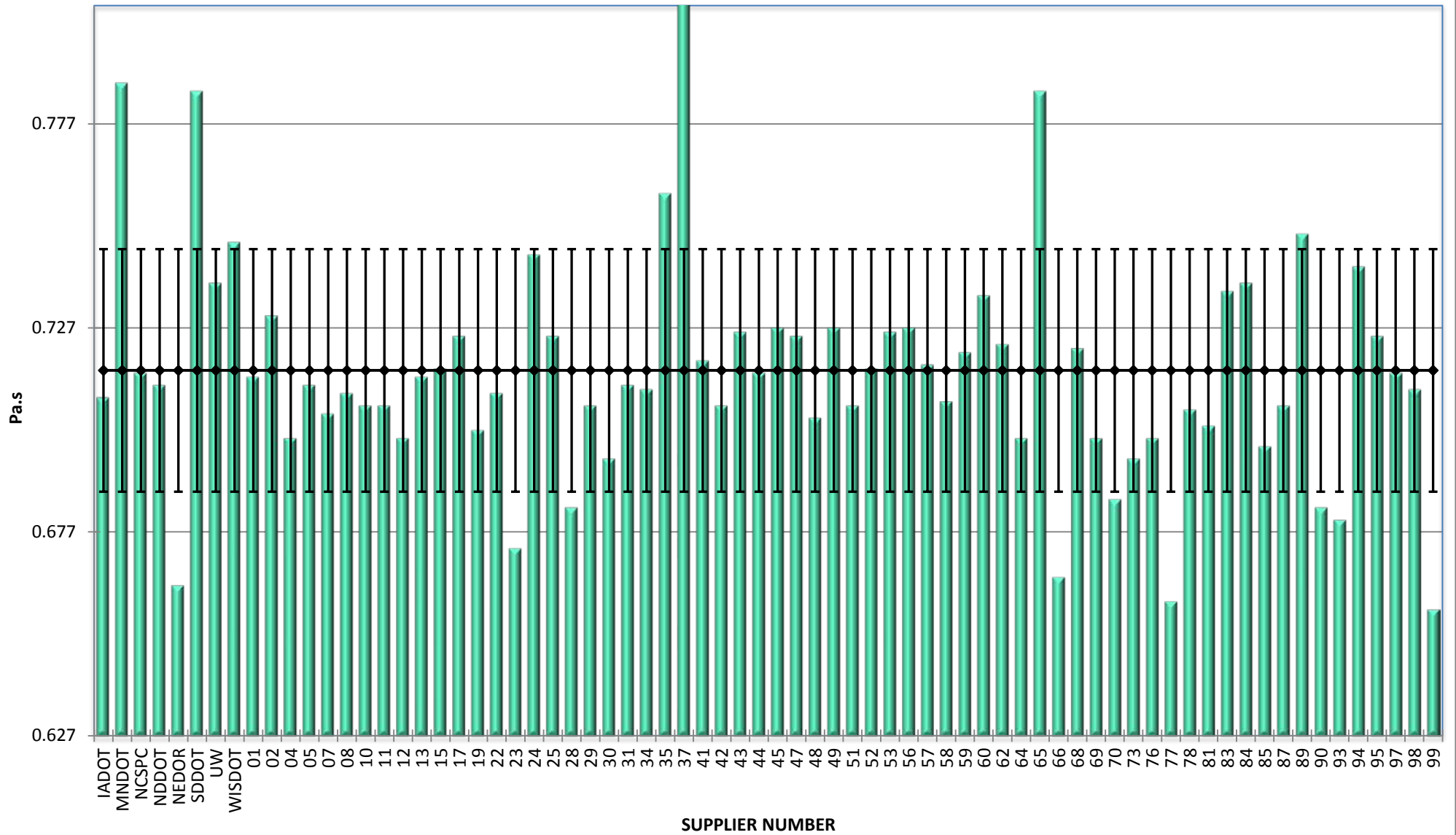


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28

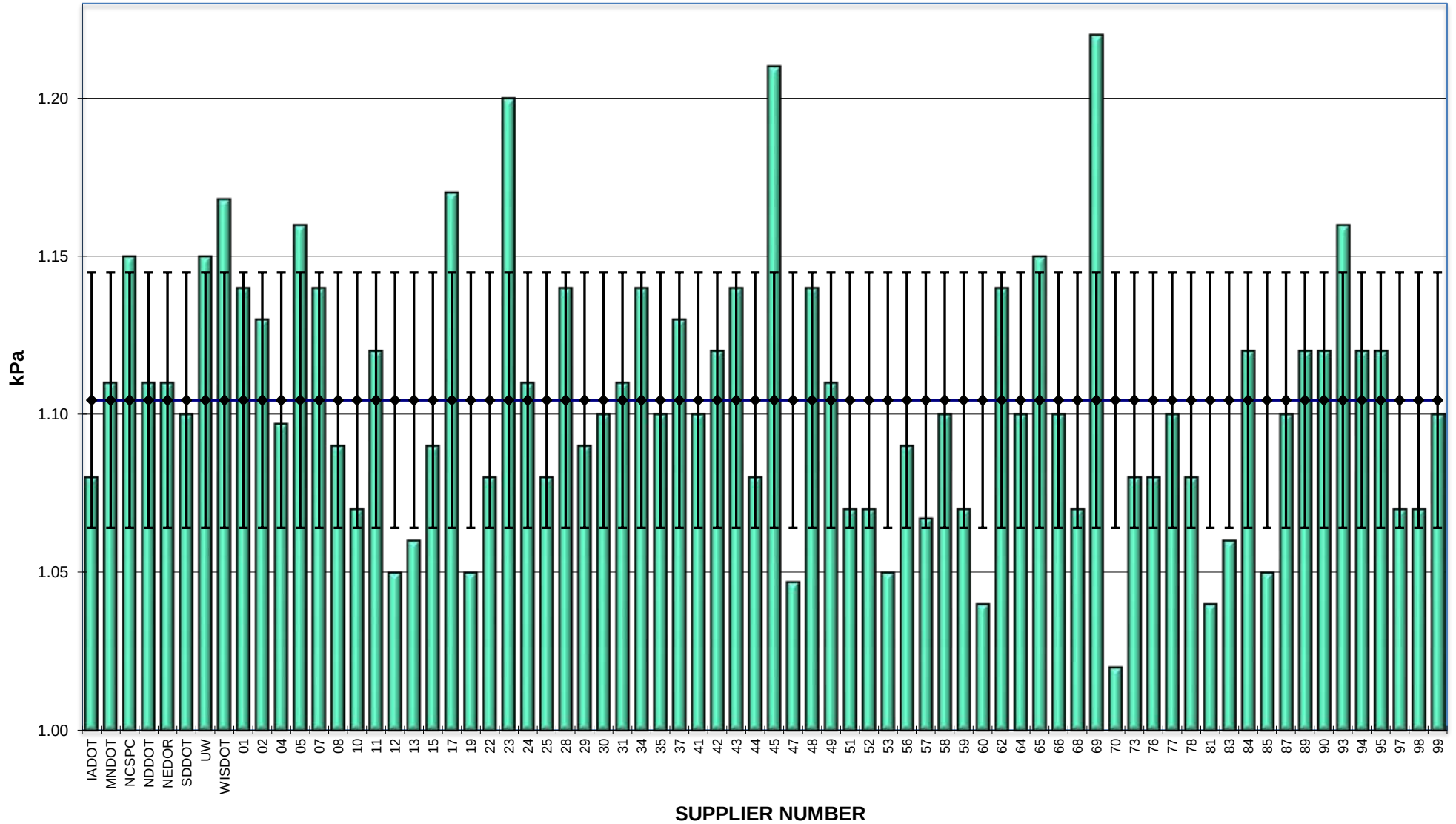
Supplier Number	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @70°C	DSR RTFO (kPa) @70°C	DSR PAV (kPa) @25°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-18°C	BBR m-value @-18°C	DTT Strain (%) @ -18°C	DTT Stress (MPa) @-18°C	CRITICAL CRACK TEMP (°C)	Jnr @ 100Pa @ 58°C	% RECOVER @ 100Pa @ 58°C	Jnr @ 3200Pa @ 58°C	% RECOVER @ 3200Pa @ 58°C
IADOT	0.710	1.08	2.69	1580	-0.266	181	0.331				0.121	81.19	0.161	74.69
MNDOT	0.787	1.11	2.96	1705	-0.235	151	0.328				0.101	83.23	0.137	77.20
NCSPC	0.716	1.15	3.37	1620	-0.351	182	0.325				0.100	80.36	0.101	79.80
NDDOT	0.713	1.11	2.81	1699	-0.275	174	0.323				0.149	76.60	0.160	74.85
NEDOR	0.664	1.11	3.04	1511	-0.130	189	0.314				0.130	78.30	0.135	76.94
SDDOT	0.785	1.10	2.74	1387	-0.239	167	0.336							
UW	0.738	1.15	3.56	1475	-0.351	207	0.303				0.110	78.88	0.110	78.95
WISDOT	0.748	1.17	3.04	1308	-0.242	174	0.345				0.134	77.37	0.140	76.23
01	0.715	1.14	3.32	1368	-0.246	168	0.318				0.116	79.25	0.125	77.66
02	0.730	1.13	3.03	1510	-0.281	195	0.330				0.093	84.08	0.126	78.39
04	0.700	1.10	2.72	1382	-0.259	187	0.334	1.72	4.25					
05	0.713	1.16	3.17	1629	-0.272	176	0.339				0.077	86.20	0.122	78.90
07	0.706	1.14	2.99	1882	-0.285	178	0.325				0.140	76.84	0.160	74.49
08	0.711	1.09	3.03	1478	-0.313	178	0.335				0.081	85.40	0.127	78.10
10	0.708	1.07	2.96	1591	-0.310	179	0.322				0.124	78.92	0.128	77.83
11	0.708	1.12	2.98	1630	-0.256	201	0.326				0.097	83.70	0.132	77.87
12	0.700	1.05	2.87	1850	-0.298	190	0.316							
13	0.715	1.06	2.93	1610	-0.282	182	0.342	2.27	4.35	-32.2	0.105	82.61	0.141	76.70
15	0.717	1.09	2.84	1660	-0.250	182	0.332				0.111	82.19	0.146	76.45
17	0.725	1.17	3.24	1618	-0.243	170	0.324				0.118	78.57	0.122	77.65
19	0.702	1.05	2.75	1629	-0.311	184	0.326				0.156	76.00	0.163	74.50
22	0.711	1.08	2.87	1652	-0.277	175	0.325				0.126	79.14	0.139	76.91
23	0.673	1.20	3.08	1332	-0.303	183	0.339				0.092	83.48	0.125	77.34
24	0.745	1.11	3.10	1510	-0.290	177	0.341	2.6	4.8	-32.2	0.081	85.08	0.112	79.21
25	0.725	1.08	2.83	1465	-0.220	179	0.330				0.115	82.01	0.155	75.87
28	0.683	1.14	2.94	1803	-0.242	192	0.322				0.138	78.36	0.142	77.49
29	0.708	1.09	2.85	1611	-0.347	193	0.338				0.144	77.68	0.148	76.82
30	0.695	1.10	2.69	1782	-0.275	182	0.328				0.118	81.80	0.160	75.50
31	0.713	1.11	3.04	1584	-0.269	179	0.336				0.082	85.40	0.128	78.10
34	0.712	1.14	3.19	1720	-0.268	197	0.325				0.115	79.61	0.116	79.33
35	0.760	1.10	3.04	2380	-0.227	177	0.331							
37	0.850	1.13	3.18	1735	-0.278	154	0.324				0.131	77.90	0.138	76.60
41	0.719	1.10	3.03	1547	-0.289	186	0.334				0.067	87.70	0.114	80.00
42	0.708	1.12	2.88	1490	-0.359	175	0.331				0.111	81.90	0.151	75.62
43	0.726	1.14	2.39	1750	-0.221	182	0.338				0.173	74.43	0.192	71.80
44	0.716	1.08	2.97	1628	-0.313	174	0.328				0.107	80.73	0.116	79.10
45	0.727	1.21	3.29	1684	-0.243	174	0.318				0.118	78.66	0.118	76.89
47	0.725	1.05	2.61	1500	-0.269	177	0.336	2.01	4.42					
48	0.705	1.14	3.16	1570	-0.256	202	0.331				0.120	78.96	0.123	78.41
49	0.727	1.11	3.28	1660	-0.329	175	0.330				0.082	84.55	0.111	79.18
51	0.708	1.07	2.82	1628	-0.265	185	0.331				0.158	75.10	0.169	73.00
52	0.717	1.07	2.96	1522	-0.273	167	0.327				0.103	81.78	0.126	78.22
53	0.726	1.05	2.61	1500	-0.269	178	0.336							
56	0.727	1.09	2.91	1580	-0.250	201	0.333				0.104	83.03	0.145	76.67
57	0.718	1.07	2.79	1670	-0.303	173	0.338							
58	0.709	1.10	2.82	1690	-0.285	174	0.337				0.110	81.56	0.147	72.21
59	0.721	1.07	2.84	1459	-0.257	186	0.325				0.130	78.52	0.138	77.60
60	0.735	1.04	2.52	1310	-0.205	175	0.345				0.170	76.20	0.181	74.65
62	0.723	1.14	2.86	1480	-0.257	197	0.336				0.100	83.76	0.139	77.55
64	0.700	1.10	2.72	1382	-0.259	187	0.334							
65	0.785	1.15	2.97	2240	-0.262	82	0.357				0.064	83.18	0.065	82.60
66	0.666	1.10	2.88	1709	-0.247	200	0.327				0.152	77.07	0.155	76.36
68	0.722	1.07	2.89	1814	-0.280	177	0.328				0.134	78.08	0.142	76.73
69	0.700	1.22	3.03	2187	-0.262	174	0.324	2.75	4.90	-30.5	0.150	75.01	0.170	73.08
70	0.685	1.02	2.93	1445	-0.283	171	0.350				0.105	79.62	0.109	78.72
73	0.695	1.08	2.88	1838	-0.279	169	0.325				0.103	83.10	0.138	77.20
76	0.700	1.08	2.90	1670	-0.241	198	0.326				0.158	75.31	0.173	73.16
77	0.660	1.10	3.16	1660	-0.272	154	0.336				0.113	79.55	0.114	79.14
78	0.707	1.08	2.90	1670	-0.286	179	0.340				0.110	82.27	0.150	75.19
81	0.703	1.04	2.90	1700	-0.287	180	0.336				0.100	82.08	0.137	75.79
83	0.736	1.06	3.03	1889	-0.277	189	0.314				0.123	79.73	0.123	79.39
84	0.738	1.12	2.90	1770	-0.290	176	0.322				0.139	77.27	0.144	76.36
85	0.698	1.05	2.75	1740	-0.244	187	0.320				0.173	74.64	0.193	71.95
87	0.708	1.10	2.97	1600	-0.325	176	0.338				0.071	87.40	0.127	78.40
89	0.750	1.12	2.84	1490	-0.249	181	0.332				0.107	82.68	0.146	76.39
90	0.683	1.12	3.17	1750	-0.250	192	0.328				0.124	79.57	0.125	79.44
93	0.680	1.16	2.69	1322	-0.286	177	0.343				0.081	84.92	0.111	79.41
94	0.742	1.12	2.69	1535	-0.146	268	0.293				0.133	80.55	0.187	73.34
95	0.725	1.12	2.96	1696	-0.248	165	0.331				0.140	76.70	0.150	74.60
97	0.716	1.07	2.95	1656	-0.250	183	0.328				0.138	77.10	0.140	76.10
98	0.712	1.07	2.95	1513	-0.318	188	0.340				0.143	76.40	0.147	75.20
99	0.658	1.10	3.25	1669	-0.239	200	0.321				0.126	77.87	0.129	77.20
Average	0.717	1.10	2.94	1629	-0.270	181	0.330	2.27	4.54	-31.63	0.118	80.27	0.138	76.83
Std. Dev.	0.0297	0.0404	0.2024	193.13	0.0389	19.17	0.0099	0.4211	0.2880	0.9815	0.0259	3.3169	0.0228	2.1713
Coef. of Var.	4.150	3.659	6.878	11.854	14.423	10.602	2.986	18.552	6.337	-3.103	21.946	4.132	16.523	2.826

COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28

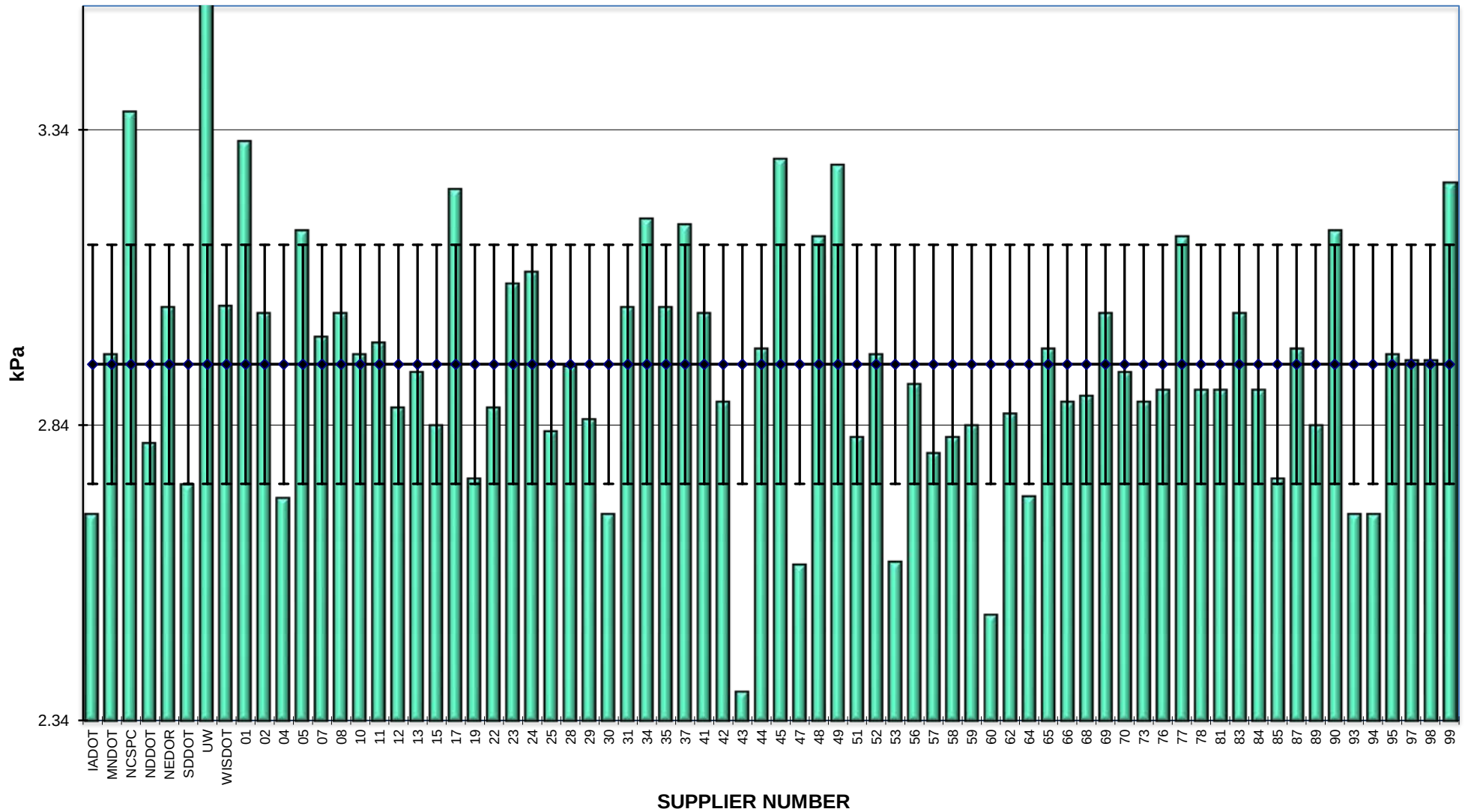
ROTATIONAL VISCOSITY



COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28
DSR - ORIGINAL

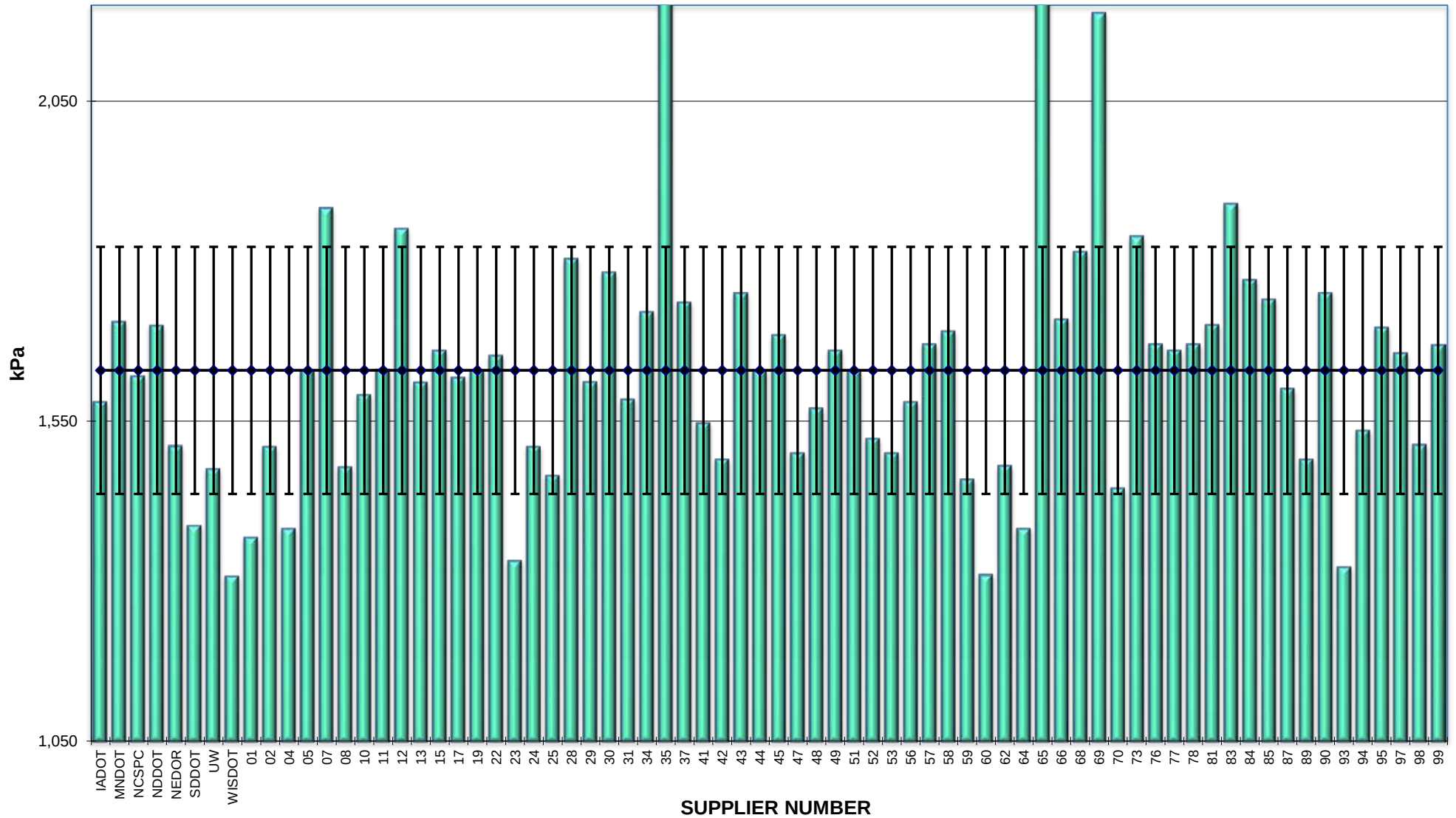


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28
DSR - RTFO



COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28

DSR - PAV

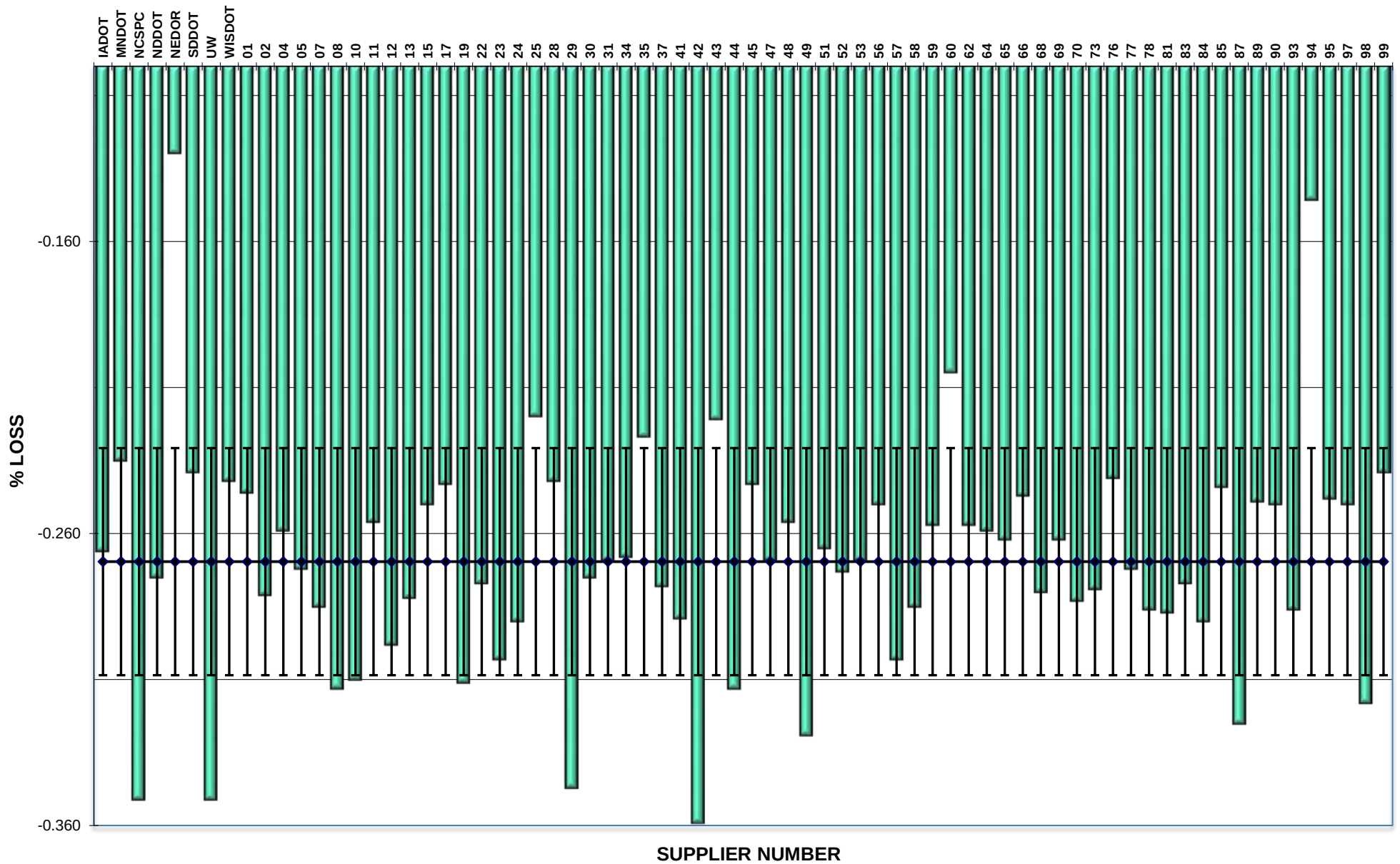


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

RTFO MASS LOSS

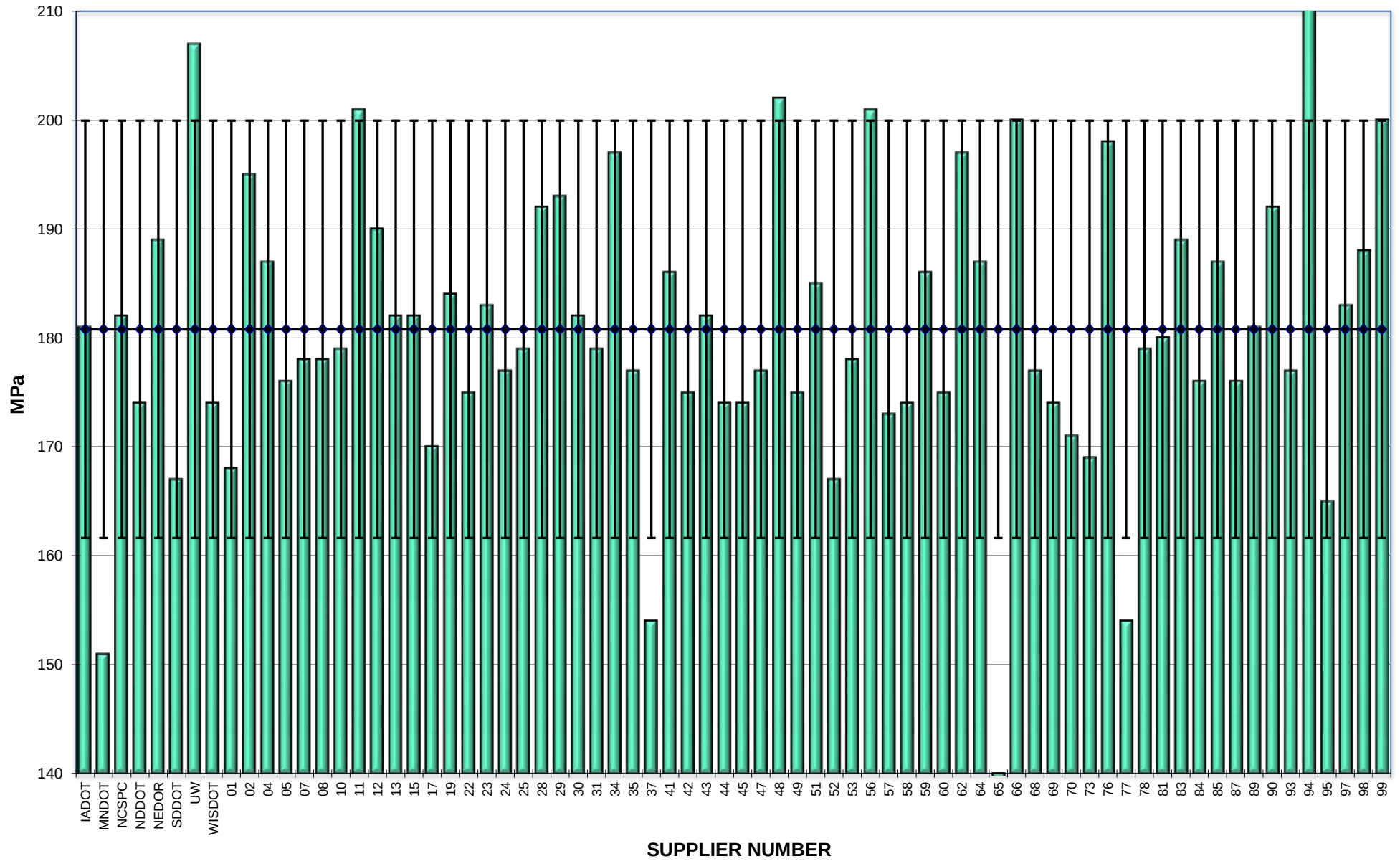


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

BBR STIFFNESS

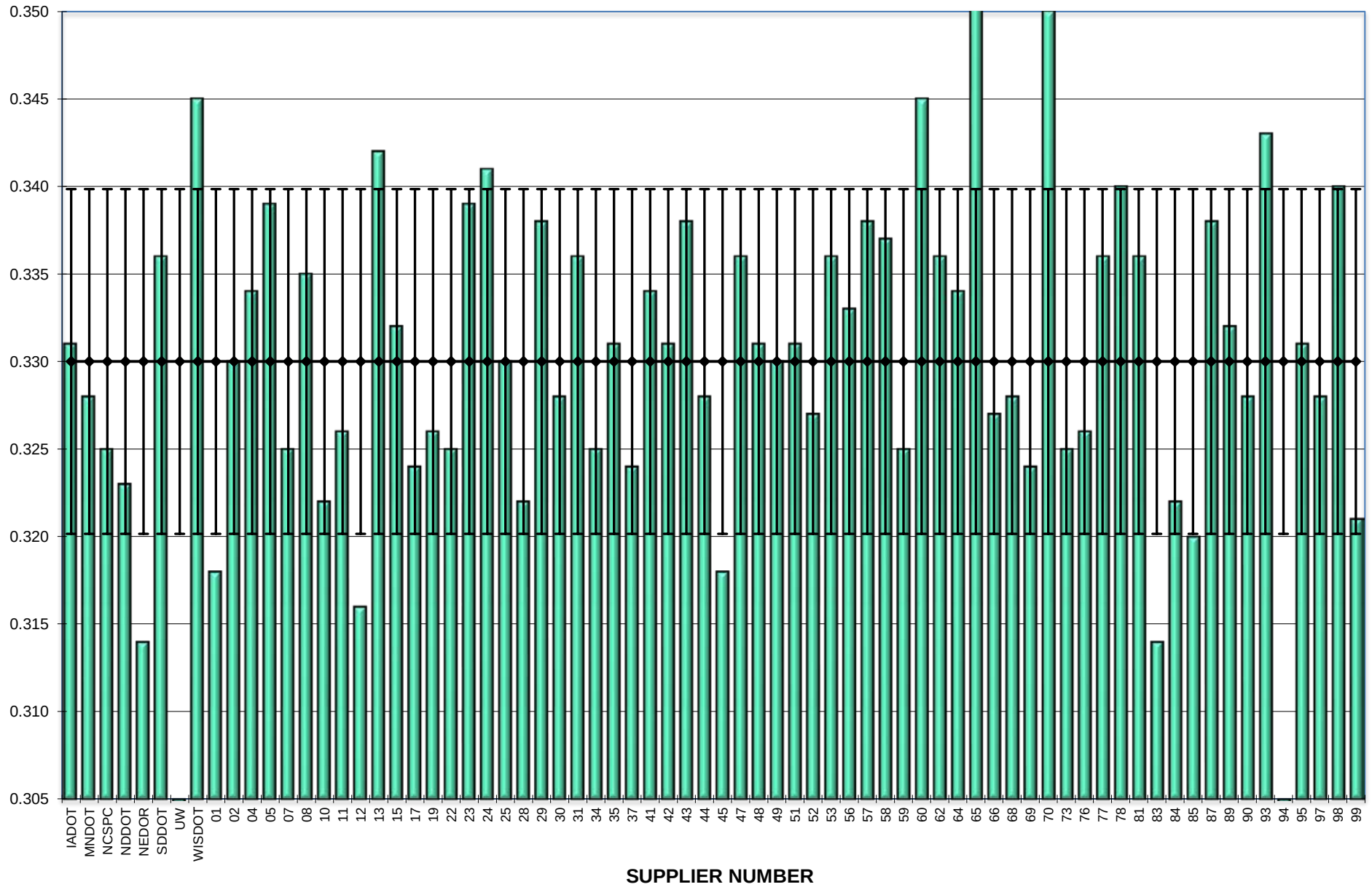


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

BBR m-VALUE

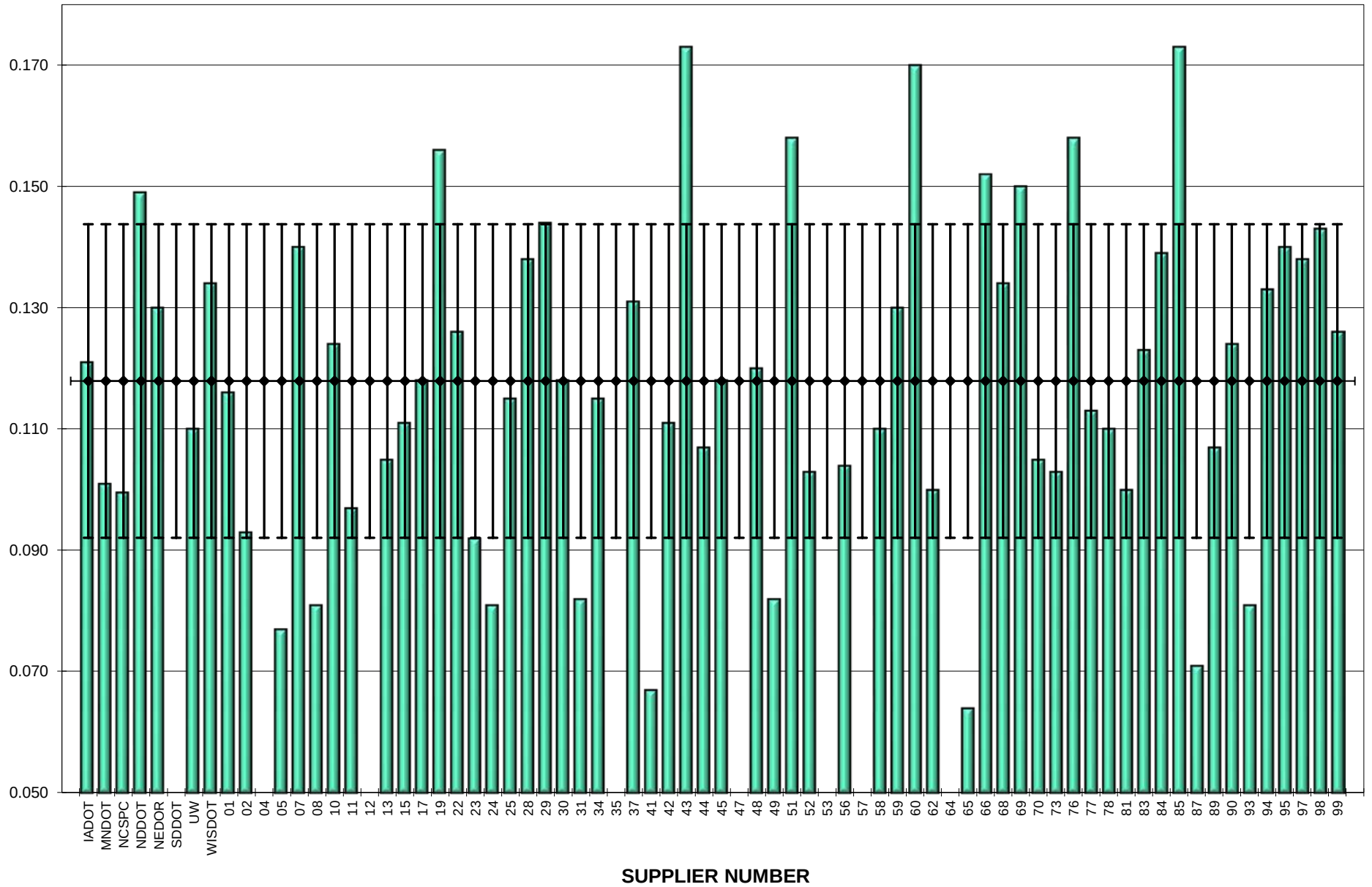


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

Jnr@100 Pa

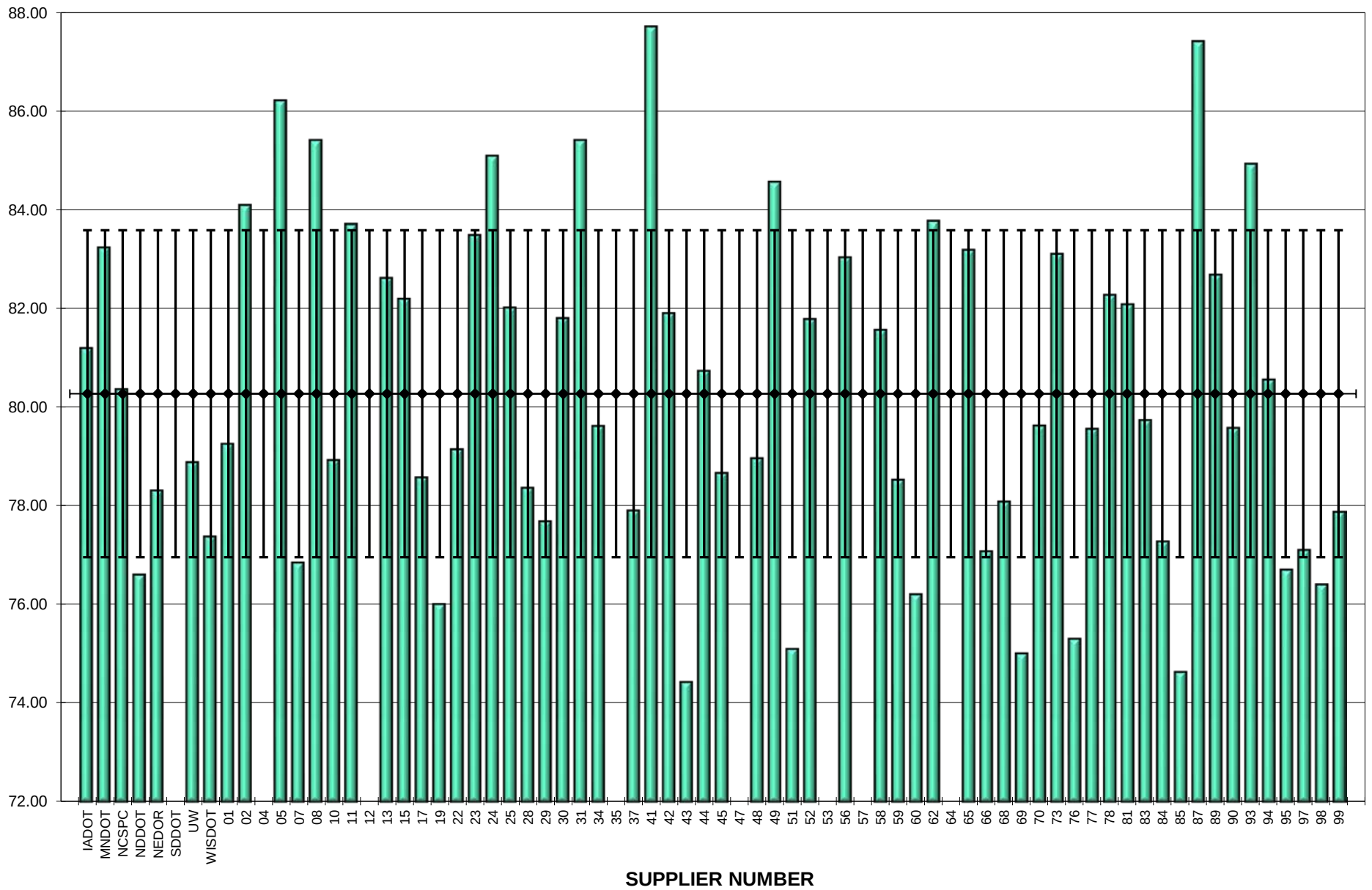


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

%Recovery@100 Pa

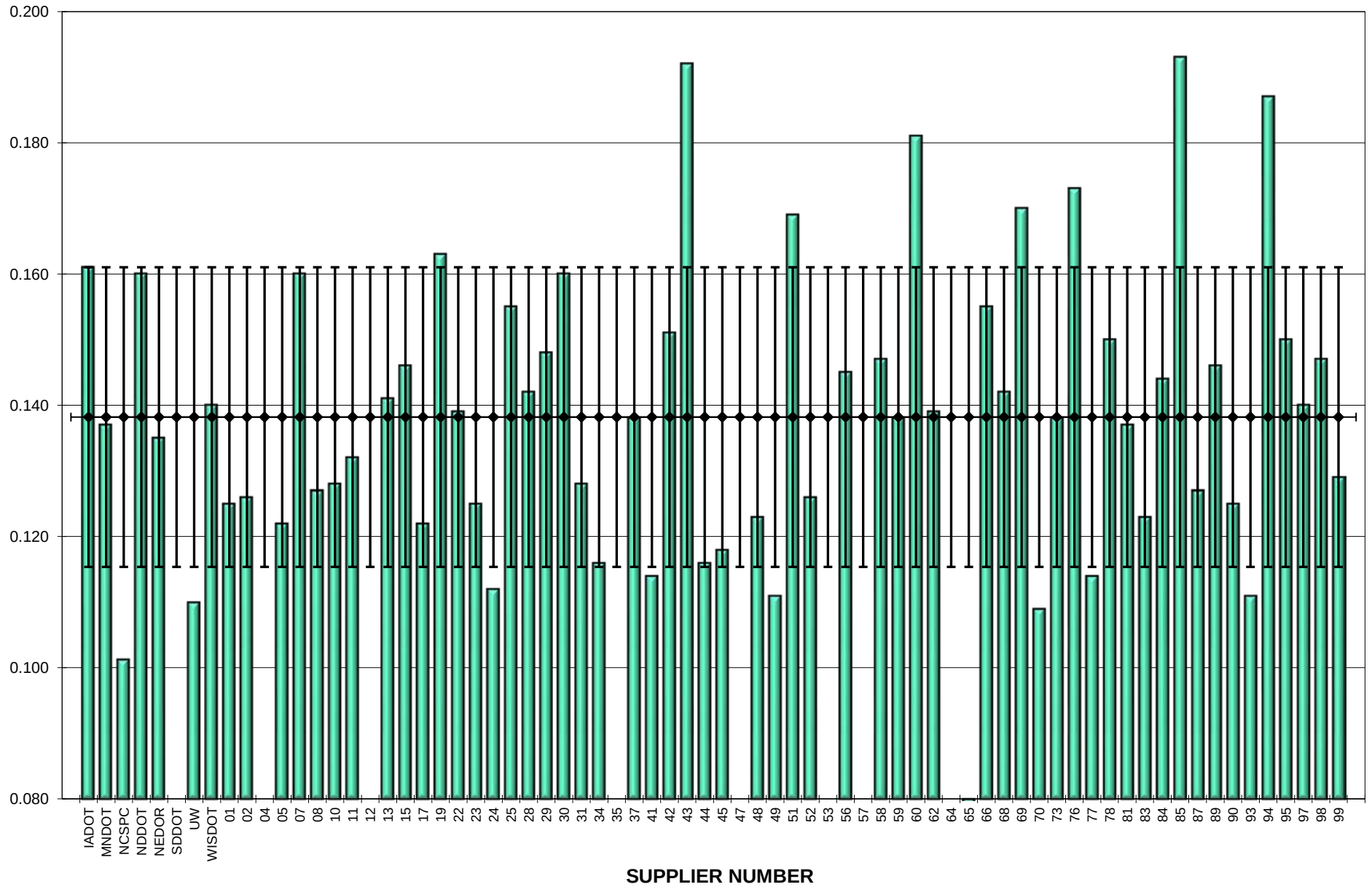


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

Jnr@3200 Pa

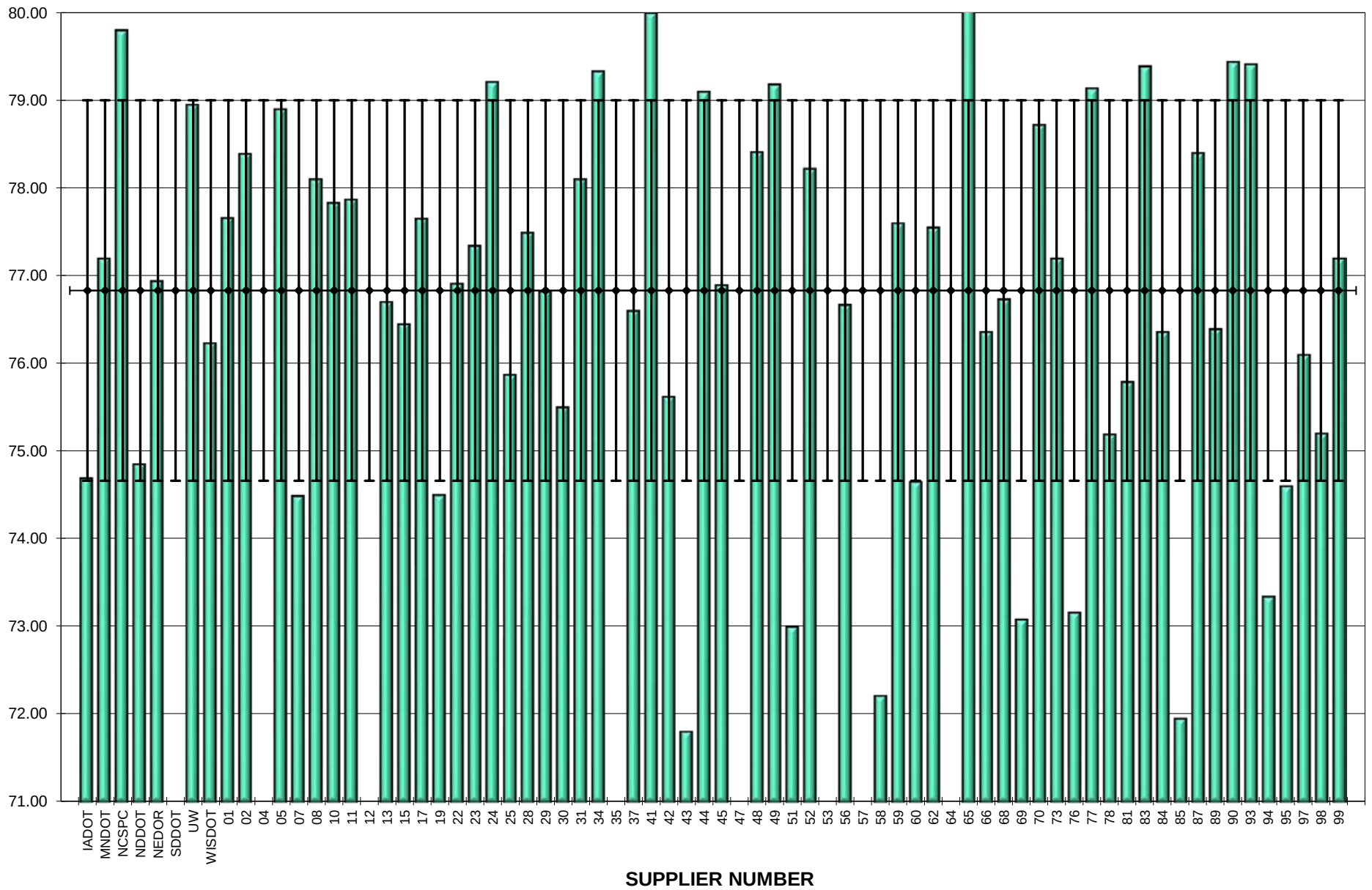


COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1

SUMMARY A

PG 70-28

%Recovery@3200 Pa



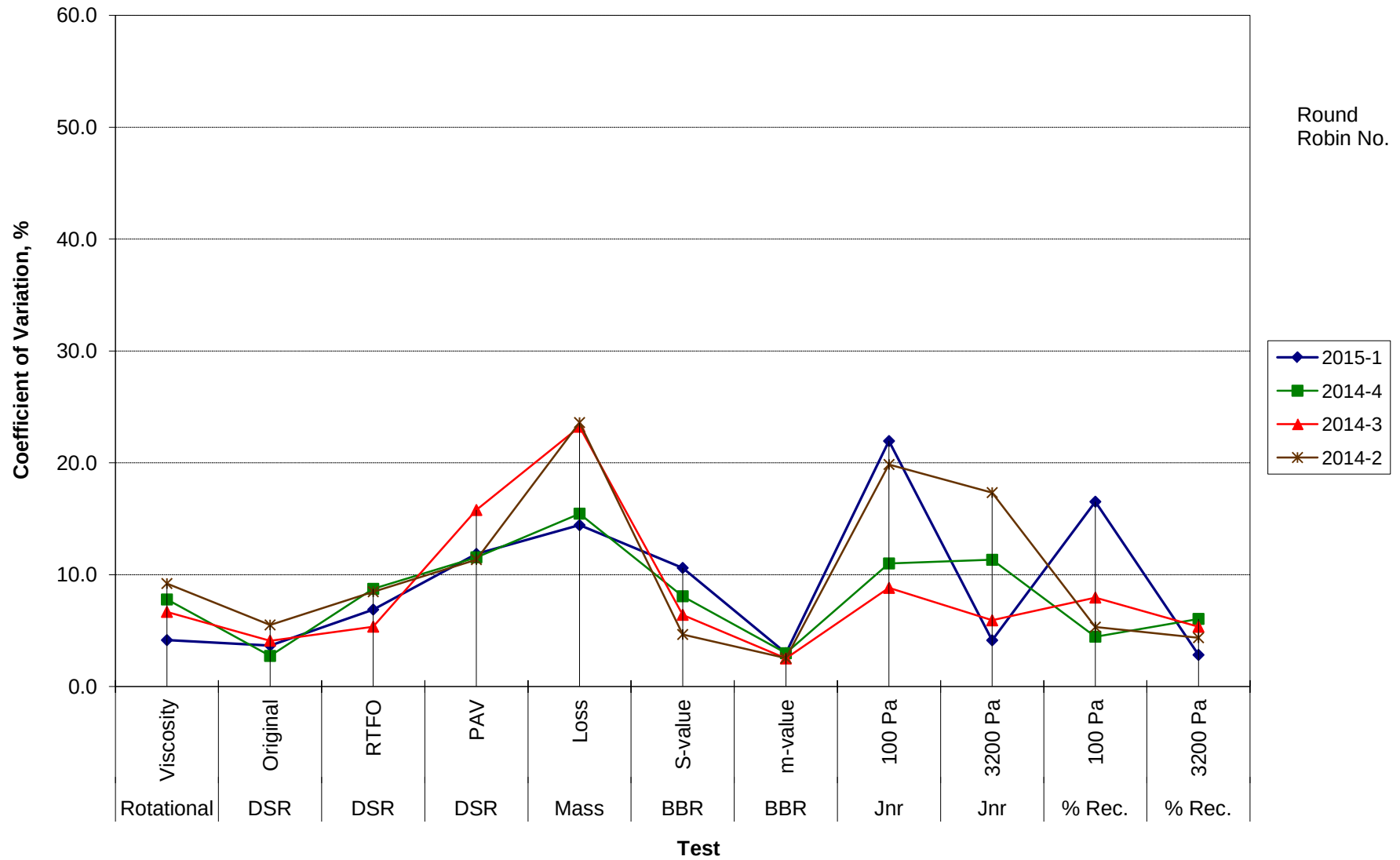
COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
70-28

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
2015-1	72	4.150	3.659	6.878	11.854	14.423	10.602	2.986	21.946	4.132	16.523	2.826	18.552
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

COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
70-28

COEFFICIENT OF VARIATION



COMBINED STATE BINDER GROUP ROUND ROBIN 2015-1
SUMMARY A
PG 70-28

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	0.715	1.10	2.93	1,601	-0.273	181	0.331	0.118	80.27	0.139	76.83
Std. Dev.	0.0253	0.0404	0.1899	140.76	0.0322	11.24	0.0077	0.0259	3.3169	0.0210	2.1713
Coef. of Var.	3.537	3.659	6.471	8.790	11.783	6.211	2.333	21.946	4.132	15.087	2.826