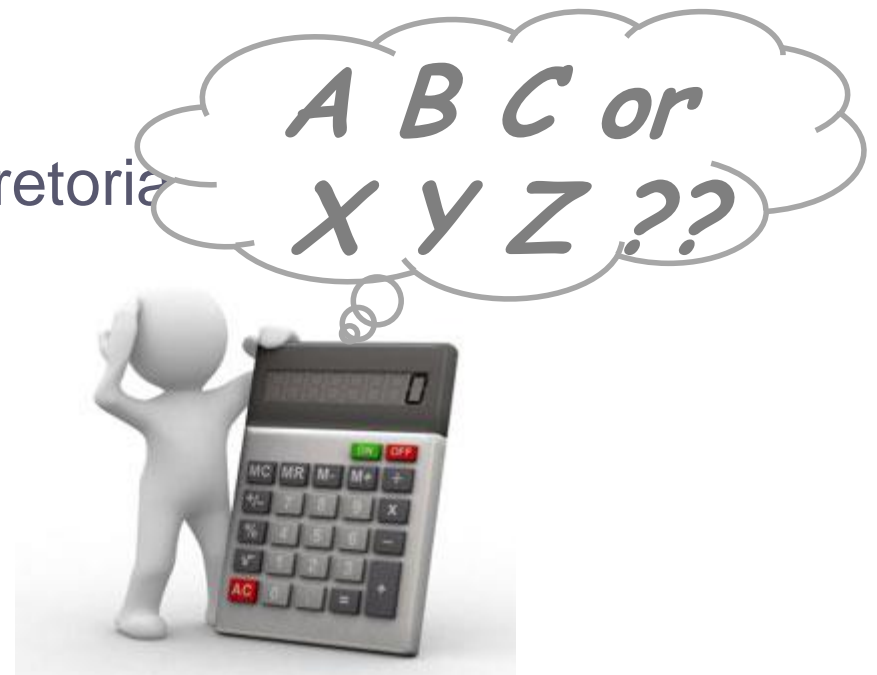# NLA PTS FEEDBACK AS & AG

30th RPF
10th November 2015
CSIR Conference Centre, Pretoria
Barry Pearce

Discussion to include…

- Intro – Latest developments
- Benefits of PTS
- AS analysis & feedback
- AG analysis & feedback
- Proposed program 2016
- Future plans

Intro – latest developments

- NLA now accredited as PTS provider
  - ISO 17043
  - Conformity assessment - General requirements for proficiency testing
- As a result of this more stringent requirements imposed on NLA regarding analysis of results
  - If results not submitted as requested in protocols results omitted from analysis
- Analysis of results
  - Removal of OB & OL before analysis
  - Robust analysis weighting results
- Currently MatCivils PTS not part of NLA schedule of PTS
  - MatCivils looking to join in 2017

- Only 2 PTS undertaken this year
  - AS & AG
  - Far less than was planned
- Bitumen programmed for early in 2016
  - Invites still to be sent out this year
  - Combined Pen & DSR Tests
- Concrete to be added next year thru SARMA
- What needs to be achieved to join NLA PTS
  - Planned program
  - Fixed dates for invites, sample issue, results submission, draft results, draft report, final report.

Costs vs Benefits of PTS

- Each PTS now priced to cover costs & further improve reporting
- Sample preparation, Courier, analysis, report compilation
- Site labs can recover costs thru SANRAL contracts

- Conform to ISO17025
- Validates results
  - Thru industry means
- Competencies
  - Use various staff members for each PTS
- Improves quality
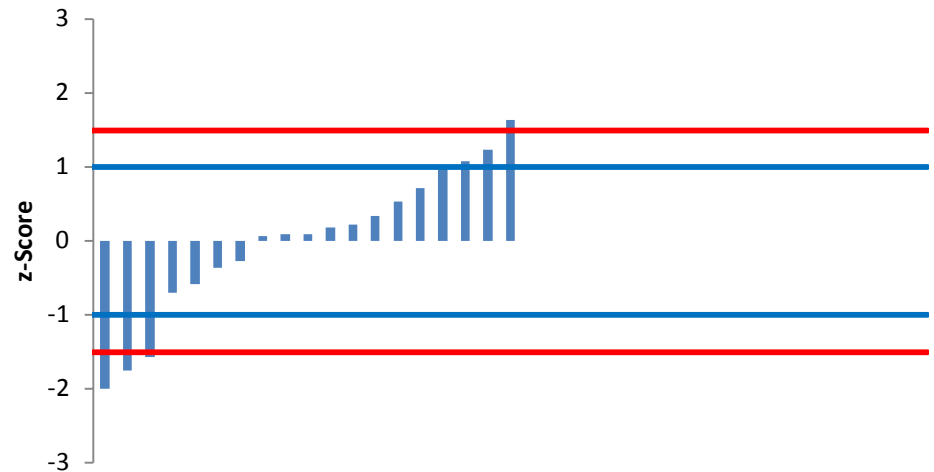- Improve Industries confidence in results

AS ANALYSIS

AS PTS - Over all comments

- 38 Laboratories participated.
  - good participation
  - allows for a robust set of results
- Some areas requiring attention.
  - The results all need to be reported correctly
  - BD & MVD are still the biggest contributors to this matter.
- On average testing had a set of results with 74 % of z-scores <1 which is promising.
  - VIM & flow results had worst statistical records
  - ITS still a problematic result with too wide a range of results
- Grading results had 76 % with z-scores <1.
  - 300 µm & 150 µm worst statistically

- Still some laboratories not on SANS 3001 methods
  - some results reported in different formats
  - the gradings make use of different sieves sizes.
  - Grading results analyzed as if done on SANS 3001
  - One lab was consistently the outlier on sieving analysis.
- Main issue - grouping of BD into 2 sets for ITS & stability & flow method.
  - If this issue is addressed various results should reflect better in future PTS

Will be analysing trends in results once 3 sets of results obtained for each material type as further proof of benefits of PTS
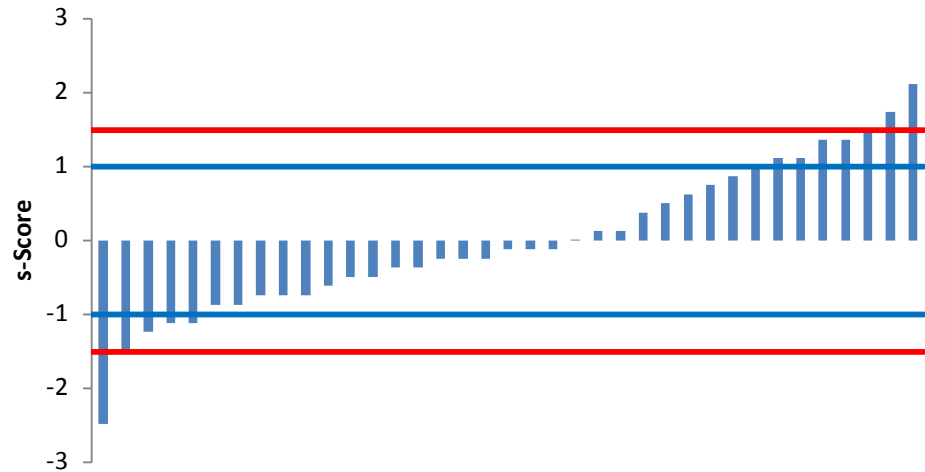
Bulk Density (ITS-S&F) kgm^{-3}

	BD (S&F)	BD (ITS)		BD (Avg) k	Z-score	
j5pg5	2307	2295	12	2301	**-2.00**	
tgsk4	2312	2298	14	2305	**-1.75**	
bs8gh	2308	2308	0	2308	**-1.57**	
d3dhr	2323	2321	2	2322	-0.70	
xsh2p	2324	2324	0	2324	-0.58	
xp2hp	2326	2329	-3	2328	-0.36	
4pckj	2328	2330	-2	2329	-0.27	
zpd87	2332	2337	-5	2335	0.07	
epdkm	2337	2333	4	2335	0.10	
rghr4	2330	2340	-10	2335	0.10	
hywqx	2335	2338	-3	2337	0.19	
va6mu	2337	2337	0	2337	0.22	
sc5pd	2349	2329	20	2339	0.34	
sb2w8	2344	2340	4	2342	0.53	
s5pgz	2346	2344	2	2345	0.71	
b9ksw	2362	2338	24	2350	**1.02**	
kps8t	2348	2354	-6	2351	**1.08**	
jcpt9	2355	2352	3	2354	**1.24**	
kmqwt	2352	2368	-16	2360	**1.64**	
as7hk	2.351	2.352	-0.001	2.352		OB
fsbt9	2.349	2.352	-0.003	2.351		OB
qpd9j	2.349	2.349	0.000	2.349		OB
pcmd8	2.349	2.346	0.003	2.348		OB
cksm4	4.2	2.347	1.853	3.274		OB
npxm4	2.346	2.348	-0.002	2.347		OB
psm4m	2.348	2.345	0.003	2.347		OB
tjd3d	2.341	2.345	-0.004	2.343		OB
akz6k	2.345	2.338	0.007	2.342		OB
uumre	2.341	2.342	-0.001	2.342		OB
jgxsk	2.340	2.338	0.002	2.339		OB
bhx3q	2.337	2.340	-0.003	2.339		OB
epmj9	2.338	2.329	0.009	2.334		OB
wz55t	2.334	2.329	0.005	2.332		OB
hyx2g	2.335	2.321	0.014	2.328		OB
zqk9h	2.320	2.321	-0.001	2.321		OB
83mgr	2.303	2.303	0.000	2.303		OB
r6zmc	2.257	2.251	0.006	2.254		OB

- 63 % had z-scores < 1 (range 23 kg/m^3)
- 1 BRD value of 4.2 (*excluded from analysis as OB*)
- Concept of grouping briquettes still poorly implemented
- SANS 3001 report format kg/m^3.
  - 12 results (43.2 %) reported as ratio
    - Excluded from analysis as OB
    - Requirement to conform to ISO PTS requirements
  - simple enough process which all laboratory can do
  - BRD ratios conversion cannot be assumed to be @ 25 ^{o}C
- Range is 59 kg/m^3
  - **NB!** It correct selection of briquettes used further reduction in results expected.
- 5 results in total (13.5 %) reflect a difference of 0 kg/m^3
  - possibly no separate averages determined
- 9 results in total (24.3 %) had difference > 7 kg/m^3
  - largest being 24 kg/m^3
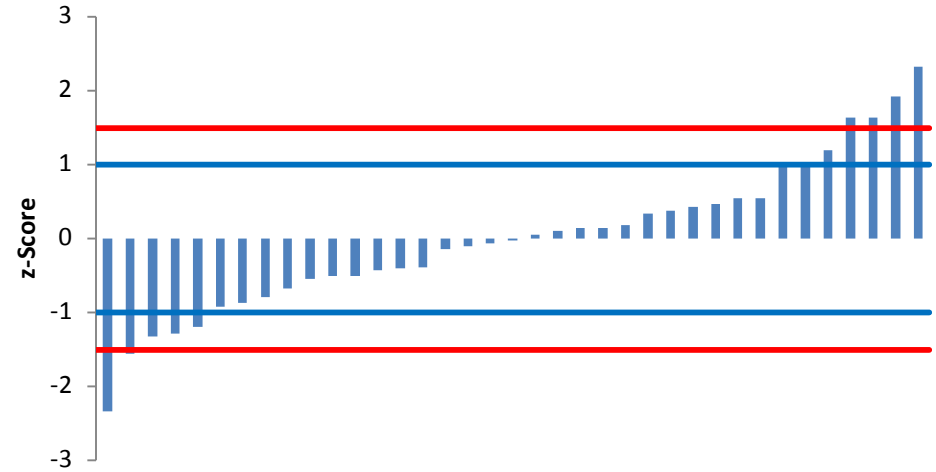- Avg   2 333 kg/m^3 StDev   16.2 kg/m^3

Void Content %

	VIM %	Z-score
jcpt9	6.3	-2.48
kmqwt	7.1	-1.48
kps8t	7.3	-1.23
b9ksw	7.4	-1.11
fsbt9	7.4	-1.11
psm4m	7.6	-0.86
qpd9j	7.6	-0.86
r6zmc	7.7	-0.74
s5pgz	7.7	-0.74
tjd3d	7.7	-0.74
wz55t	7.8	-0.61
cksm4	7.9	-0.49
npxm4	7.9	-0.49
hywqx	8.0	-0.37
zpd87	8.0	-0.37
as7hk	8.1	-0.24
epmj9	8.1	-0.24
uumre	8.1	-0.24
bhx3q	8.2	-0.12
pcmd8	8.2	-0.12
rghr4	8.2	-0.12
sb2w8	8.3	0.01
akz6k	8.4	0.13
epdkm	8.4	0.13
xp2hp	8.6	0.38
xsh2p	8.7	0.50
hyx2g	8.8	0.63
zqk9h	8.9	0.75
va6mu	9.0	0.88
d3dhr	9.1	1.00
4pckj	9.2	1.12
jgxsk	9.2	1.12
83mgr	9.4	1.37
sc5pd	9.4	1.37
bs8gh	9.5	1.50
tgsk4	9.7	1.74
j5pg5	10.0	2.12

- 68 % had z-score < 1   (range of 1.5 %)
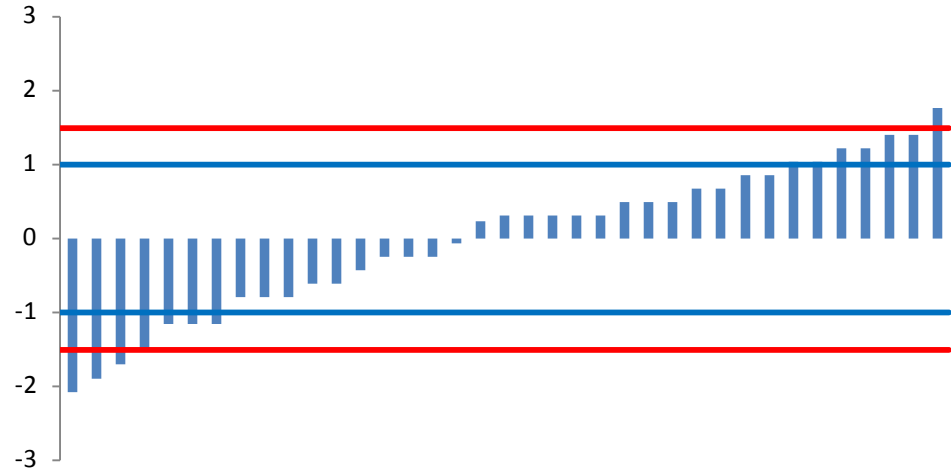- Range 3.7 %
- Avg   8.3 %
- StDev 0.81 %

Stability kN

	Stab kN	Z-score
zqk9h	7.8	**-2.33**
wz55t	9.7	**-1.56**
fsbt9	10.3	**-1.32**
uumre	10.4	**-1.28**
pcmd8	10.6	**-1.20**
j5pg5	11.3	-0.91
sc5pd	11.4	-0.87
hyx2g	11.6	-0.79
rghr4	11.9	-0.67
kps8t	12.2	-0.55
bs8gh	12.3	-0.51
qpd9j	12.3	-0.51
va6mu	12.5	-0.43
r6zmc	12.58	-0.39
xsh2p	12.6	-0.39
b9ksw	13.2	-0.14
as7hk	13.3	-0.10
d3dhr	13.4	-0.06
sb2w8	13.5	-0.02
jgxsk	13.7	0.06
cksm4	13.8	0.10
hywqx	13.9	0.14
jcpt9	13.9	0.14
epdkm	14.0	0.18
npxm4	14.4	0.34
zpd87	14.5	0.38
kmqwt	14.6	0.42
s5pgz	14.7	0.47
bhx3q	14.9	0.55
tgsk4	14.9	0.55
4pckj	16.0	0.99
83mgr	16.0	0.99
tjd3d	16.5	**1.20**
epmj9	17.6	**1.64**
xp2hp	17.6	**1.64**
psm4m	18.3	**1.93**
akz6k	19.3	**2.33**

- 73 % had z-score < 1   (range 4.7 kN)
- 1 result reported to 2 decimal places.
- Range of 11.5 kN
- Avg   13.6 kN
- StDev 2.47 kN

Flow mm

	Flow mm	Z-score
epmj9	2.3	**-2.07**
jcpt9	2.4	**-1.89**
b9ksw	2.5	**-1.71**
r6zmc	2.6	**-1.52**
j5pg5	2.8	**-1.16**
pcmd8	2.8	**-1.16**
tgsk4	2.8	**-1.16**
bhx3q	3.0	-0.79
tjd3d	3.0	-0.79
wz55t	3.0	-0.79
psm4m	3.1	-0.61
xp2hp	3.1	-0.61
bs8gh	3.2	-0.42
cksm4	3.3	-0.24
sb2w8	3.3	-0.24
xsh2p	3.3	-0.24
qpd9j	3.4	-0.06
sc5pd	3.6	0.24
83mgr	3.6	0.31
akz6k	3.6	0.31
as7hk	3.6	0.31
d3dhr	3.6	0.31
fsbt9	3.6	0.31
hywqx	3.7	0.49
hyx2g	3.7	0.49
kps8t	3.7	0.49
kmqwt	3.8	0.68
s5pgz	3.8	0.68
uumre	3.9	0.86
zqk9h	3.9	0.86
4pckj	4.0	**1.04**
va6mu	4.0	**1.04**
jgxsk	4.1	**1.22**
npxm4	4.1	**1.22**
epdkm	4.2	**1.41**
rghr4	4.2	**1.41**
zpd87	4.4	**1.77**

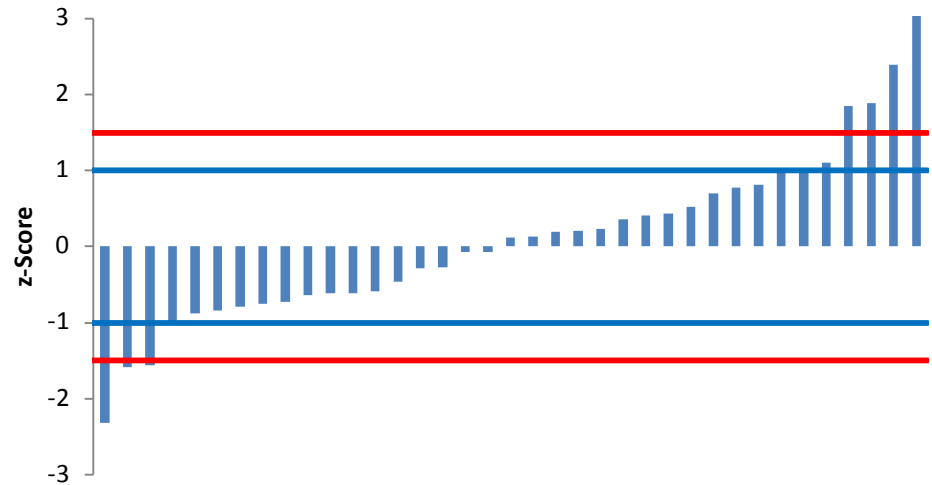- 62 % had z-scores < 1 (range of 0.9 mm)
- All results reported correctly.
- Range of 2.1 mm
- Avg   3.4 mm
- StDev 0.55 mm

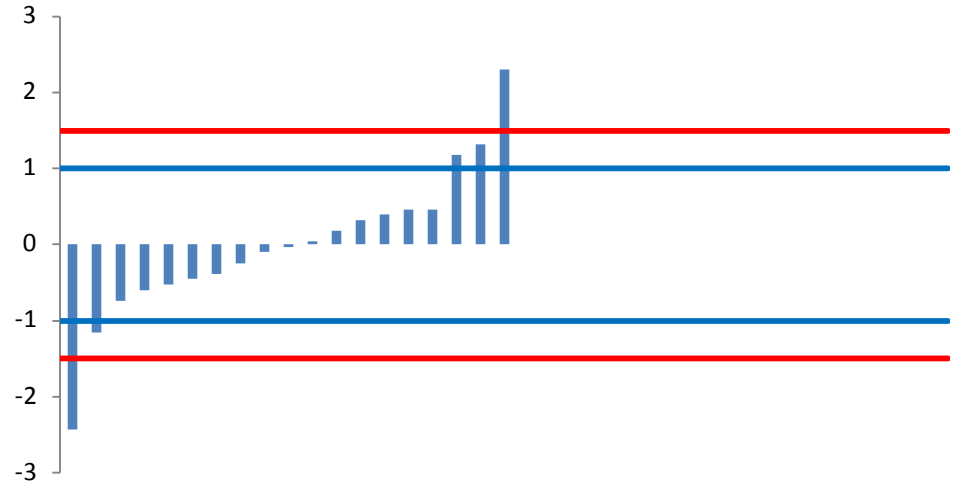|	ITS kPA	Z-score
r6zmc	767	**-2.32**
83mgr	933	**-1.59**
zqk9h	940	**-1.56**
fsbt9	1060	**-1.03**
d3dhr	1094	-0.88
pcmd8	1103	-0.84
epdkm	1114.6	-0.79
hyx2g	1122	-0.76
sc5pd	1128	-0.73
zpd87	1150	-0.63
qpd9j	1155	-0.61
s5pgz	1155	-0.61
cksm4	1160	-0.59
kps8t	1188	-0.47
uumre	1230	-0.28
sb2w8	1233	-0.27
4pckj	1278	-0.07
xsh2p	1279	-0.07
wz55t	1320	0.11
bs8gh	1325	0.13
va6mu	1339	0.20
b9ksw	1340	0.20
j5pg5	1346	0.23
bhx3q	1375.4	0.36
tgsk4	1386	0.40
rghr4	1393	0.43
as7hk	1414	0.53
psm4m	1454.6	0.70
jcpt9	1470	0.77
kmqwt	1480	0.82
akz6k	1520	0.99
npxm4	1520	0.99
hywqx	1544	**1.10**
xp2hp	1716	**1.85**
epmj9	1723	**1.88**
tjd3d	1839	**2.39**
jgxsk	2545	**5.49** OL

- 1 OL
  - Worst value (2 545 kPa) omitted as OL.
- 78 % had z-score < 1   (range 426 kPa)
  - Still unacceptably high.
- 3 results reported accurate to 1 decimal place.
- Range of 1 072 kPa still very high
- **NB!**! *It is believed that correct selection of briquettes as described in SANS method & mentioned in BD comments will assist in reducing range further.*
- Avg   1 294 kPa   StDev   228 kPa

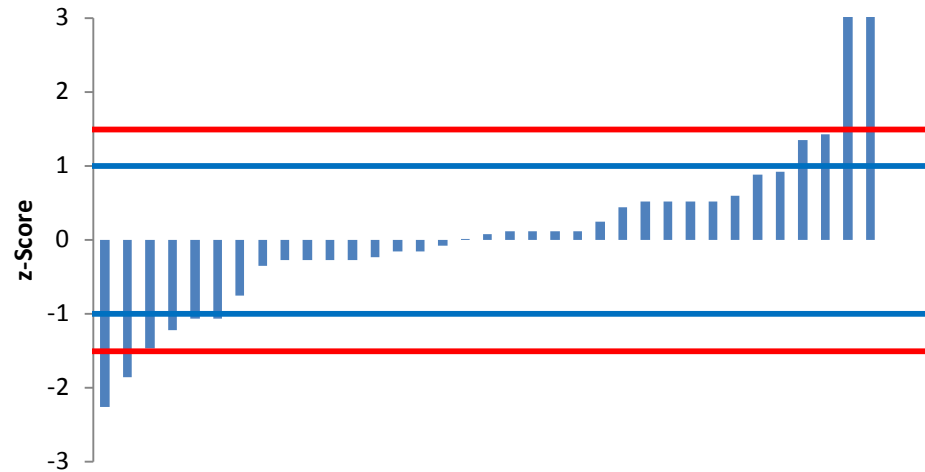|	MVD kg/m3	Z-score	
jcpt9	2514	**-2.43**	
kps8t	2532	**-1.16**	
zpd87	2538	-0.74	
b9ksw	2540	-0.60	
hywqx	2541	-0.52	
s5pgz	2542	-0.45	
rghr4	2543	-0.38	
xp2hp	2545	-0.24	
xsh2p	2547	-0.10	
kmqwt	2548	-0.03	
bs8gh	2549	0.04	
epdkm	2551	0.18	
tgsk4	2553	0.32	
d3dhr	2554	0.39	
j5pg5	2555	0.47	
sb2w8	2555	0.47	
4pckj	2565	**1.17**	
va6mu	2567	**1.31**	
sc5pd	2581	**2.30**	
jgxsk	2.577		OB
as7hk	2.559		OB
akz6k	2.558		OB
pcmd8	2.557		OB
hyx2g	2.552		OB
cksm4	2.550		OB
zqk9h	2.548		OB
bhx3q	2.547		OB
npxm4	2.547		OB
uumre	2.547		OB
qpd9j	2.543		OB
r6zmc	2.542		OB
83mgr	2.541		OB
psm4m	2.541		OB
tjd3d	2.539		OB
epmj9	2.538		OB
fsbt9	2.538		OB
wz55t	2.525		OB

- 74 % had z-score < 1 (range 17 kg/m^3)
  - expected as its one of more contestant test methods which gives good correlation.
- No values were omitted from the analysis.
  - same conversion issue applied to results submitted as ratios in TMH1 format as against SANS 3001's kg/m^3.
- Range 67 kg/m^3 (> BD range ??)
- Avg   2 548 kg/m^3
- StDev 14.1 kg/m^3

Binder Absorption %

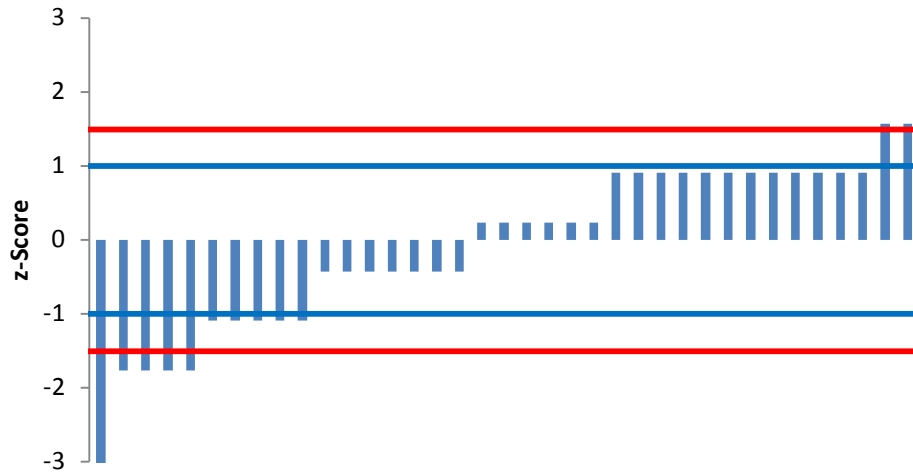| Binder	Absorbed %	Z-score
tgsk4	0.0	**-2.26**
qpd9j	0.1	**-1.86**
r6zmc	0.2	**-1.46**
jcpt9	0.26	**-1.23**
fsbt9	0.3	**-1.07**
zpd87	0.3	**-1.07**
kps8t	0.38	-0.75
xp2hp	0.48	-0.35
akz6k	0.5	-0.27
bs8gh	0.5	-0.27
epmj9	0.5	-0.27
hywqx	0.5	-0.27
rghr4	0.51	-0.23
s5pgz	0.53	-0.15
xsh2p	0.53	-0.15
pcmd8	0.55	-0.07
bhx3q	0.57	0.01
epdkm	0.59	0.09
d3dhr	0.60	0.12
tjd3d	0.6	0.12
uumre	0.6	0.12
va6mu	0.6	0.12
j5pg5	0.63	0.24
npxm4	0.68	0.44
as7hk	0.70	0.52
hyx2g	0.7	0.52
kmqwt	0.70	0.52
zqk9h	0.7	0.52
cksm4	0.72	0.60
sc5pd	0.79	0.88
sb2w8	0.8	0.92
jgxsk	0.91	**1.36**
psm4m	0.93	**1.44**
b9ksw	1.37	**3.18**
83mgr	1.71	**4.53** OL
4pckj	-0.78	OB
wz55t	nr	

- 1 OL & 1 OB
- 76 % had z-score < 1   (range of 0.5 %)
- 2 laboratories did not report a value
- 2 labs reported values above 1.0 % absorption
  - an unlikely result
- Avg   0.57 %
- StDev 0.252 %

Soluble Binder Content %

Soluble Binder Content

	%	Z-score	
sc5pd	3.7	-3.77	OL
epdkm	4.0	-1.76	
jgxsk	4.0	-1.76	
tgsk4	4.0	-1.76	
zpd87	4.0	-1.76	
83mgr	4.1	-1.10	
bs8gh	4.1	-1.10	
d3dhr	4.1	-1.10	
j5pg5	4.1	-1.10	
qpd9j	4.1	-1.10	
as7hk	4.2	-0.43	
b9ksw	4.2	-0.43	
hywqx	4.2	-0.43	
rghr4	4.2	-0.43	
va6mu	4.2	-0.43	
wz55t	4.2	-0.43	
xsh2p	4.2	-0.43	
akz6k	4.3	0.24	
kps8t	4.3	0.24	
npxm4	4.3	0.24	
pcmd8	4.3	0.24	
s5pgz	4.3	0.24	
xp2hp	4.3	0.24	
4pckj	4.4	0.91	
bhx3q	4.4	0.91	
cksm4	4.4	0.91	
epmj9	4.4	0.91	
hyx2g	4.4	0.91	
jcpt9	4.4	0.91	
kmqwt	4.4	0.91	
psm4m	4.4	0.91	
sb2w8	4.4	0.91	
tjd3d	4.4	0.91	
uumre	4.4	0.91	
zqk9h	4.4	0.91	
fsbt9	4.5	1.58	
r6zmc	4.5	1.58	

- 1 OL
- 81 % had z-score < 1   (range 0.5 %)
- Range 0.8 %
- Avg   4.3 %
- StDev 0.150 %

AG ANALYSIS

AG PTS feedback : general comments

- 1st Aggregates PTS
- 27 labs partook in the PTS
- Will be expanded in 2016 to include
  - ACV/10% FACT,
  - BD
  - SE in future PTS
- Mass of samples used is questioned in some cases
- ALD sample prep (numbers of particles counted) questionable in some results
- ALD by Computation undertaken by fewer labs
- FI good results in general

- Grading results generally acceptable
  - besides some questionable sample masses used
- Grading issues limited to finer sieve results
  - omitted by some labs
- 2 labs did not do duplicate tests
- 3 labs did not report a dry grading mass
- 7 labs did not use all the sieves
  - Some omitted intermediate sieves but reported 0.075 mm result
  - Some omitted all intermediate sieves but reported 0.425 mm only
- 65 % have z-score < 1 (< AS)

Sample prep – Grading, FI

Lab code	Method	AG1-1 Dry Sample Mass	AG1-2 Dry Sample Mass	AG4-1 Mass of sample	AG4-2 Mass of sample
skf9g	TMH1 A4	3243	3227	3231	3216
bhx3q	TMH1 (a)	1694	1813	1688	1808
b9ksw	TMH1 B4	1658.8	1511.4	989.1	1415.3
cmws7	TMH1 B4	2239	2112	2225	2100
j5pg5	SANS 3001	1674.3	nr	1667.9	nr
epdkm	SANS 3001	1197.3	1198.8	1505.1	1265.2
sc5pd	SANS 3001	1614.7	nr	1619.8	nr
dck4d	SANS 3001	1118.7	1197.2	1239.1	1300.1
epmj9	SANS 3001	1517.6	1533.9	1511.2	1527.0
sb2w8	SANS 3001	1587.4	1607.2	1587.4	1607.2
xmb89	SANS 3001	1426.9	1433.1	1426.9	1433.1
tgsk4	SANS 3001	1662	1613.6	1658.7	1610.7
bs8gh	SANS 3001	1237.9	1228.1	1230	1218.1
psm4m	SANS 3001	1498	1690	1492	1681
rjws3	SANS 3001	nr	nr	1354	1361
r6zmc	SANS 3001	2619.1	2688.4	2614.7	2682.8
dwg4m	SANS 3001	2962	3205	2931.8	3062.3
83mgr	SANS 3001	2439.5	2238.8	2420.8	2237.5
ndc6z	SANS 3001	1553.4	1546.7	1544.8	1537.5
xp2hp	SANS 3001	2799.1	2924.7	1327.0	1460.0
jcpt9	SANS 3001	1509.9	1675.5	1505.3	1672.1
whf7j	SANS 3001	1472	1522	1470	1518
4smdt	SANS 3001	nr	nr	1488	1492
zpd87	SANS 3001	nr	nr	1600	1586
fsbt9	SANS 3001	1182.4	1124.4	1181.9	1123.4
tjd3d	SANS 3001	1541.3	1979.9	1990.4	1785.4
hywqx	SANS 3001	850.2	809.6	850.2	809.6

- SANS 3001-AG1
  - Approx 1 500 g
    - 14 mm fraction
  - 5/27 (19 %)
    - sample too small
- SANS 3001-AG4
  - Approx 2 000 or 1 250 g
    - depending on how one interprets Table 1
  - 4/27 (15 %)
    - sample too small (1250 g)
  - 22/27 (81 %)
    - sample too small (2000 g)
- GR1 & FI sample mass should differ
  - FI between 75 & 5 mm fraction only
  - Fractions < 10 % of sample mass excluded
  - 3 labs had same mass for both tests
  - 6 (24 %) labs had larger FI samples than graded material

Average Least Dimension Comments

- 1 OL
- 2 labs didn't undertake duplicate samples
- Exactly same number/sample
  - 1x 200
  - 1x 250
  - 1x 245
  - 2x 280
  - 2x just > 200 with small differences
  - 15 sample < 10 particles different
- 7/26 (27 %) poorly sampled
- 15/26 (58%) questionable sampling

Lab code	Method	Result 1 No of particles counted	Result 2 No of particles counted
skf9g	TMH1 A4	236	228
bhx3q	TMH1 (a)	204	208
b9ksw	TMH1 B4	313	292
cmws7	TMH1 B4	230	255
j5pg5	SANS 3001	224	nr
epdkm	SANS 3001	463	436
sc5pd	SANS 3001	320	nr
dck4d	SANS 3001	250	250
epmj9	SANS 3001	280	280
sb2w8	SANS 3001	335	339
xmb89	SANS 3001	302	291
tgsk4	SANS 3001	231	236
bs8gh	SANS 3001	nr	nr
psm4m	SANS 3001	259	236
rjws3	SANS 3001	245	245
r6zmc	SANS 3001	215	233
dwg4m	SANS 3001	200	200
83mgr	SANS 3001	226	224
ndc6z	SANS 3001	261	235
xp2hp	SANS 3001	269	251
jcpt9	SANS 3001	235	227
whf7j	SANS 3001	259	263
4smdt	SANS 3001	280	280
zpd87	SANS 3001	250	248
fsbt9	SANS 3001	200	200
tjd3d	SANS 3001	279	393
hywqx	SANS 3001	206	208

ALD : 85 % rule

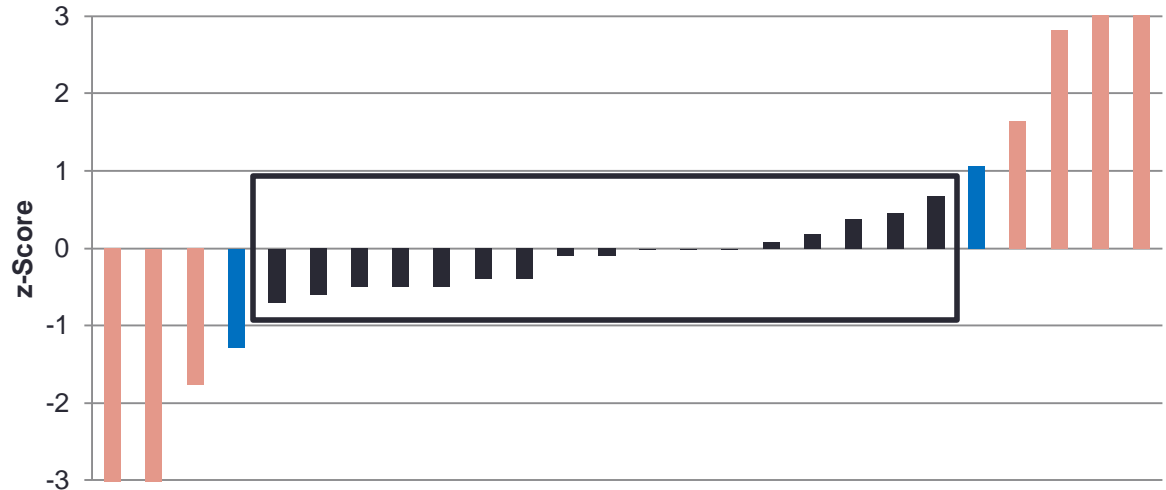| Lab code	Method		Result 1 20 mm	Result 2 20 mm		Result 1 14 mm	Result 2 14 mm
skf9g	TMH1 A4		100	100		71	73
bhx3q	TMH1 (a) B4		100	100		77	80
83mgr	SANS 3001-AG1		100	100		79	82
b9ksw	TMH1 B4		100	100		84	82
cmws7	TMH1 B4		99.9	99.9		80.7	82.1
r6zmc	SANS 3001-AG1		100	100		83.3	82.7
ndc6z	SANS 3001-AG1		100	100		84	84
dck4d	SANS 3001-AG1		100.0	100.0		83.4	85.1
epdkm	SANS 3001-AG1		100	100		84.0	85.8
jcpt9	SANS 3001-AG1		100	100		88	86
rjws3	SANS 3001-AG1		100	100		87.5	86.1
whf7j	SANS 3001-AG1		100	100		88.5	86.9
4smdt	SANS 3001-AG1		100	100		87	87
zpd87	SANS 3001-AG1		100	100		87	87
epmj9	SANS 3001-AG1		100	100		86	88
xmb89	SANS 3001-AG1		100	100		88	88
dwg4m	SANS 3001-AG1		100	100		89	89
tgsk4	SANS 3001-AG1		100	100		90	89
sb2w8	SANS 3001-AG1		100	100		92	89
xp2hp	SANS 3001-AG1		100	100		89	90
bs8gh	SANS 3001-AG1		100	100		90	90
psm4m	SANS 3001-AG1		100	100		90	90
fsbt9	SANS 3001-AG1		100	100		85	91
tjd3d	SANS 3001-AG1		100	100		89	91
hywqx	SANS 3001-AG1		100	100		90	92
sc5pd	SANS 3001-AG1		100	nr		87	nr
j5pg5	SANS 3001-AG1		100	nr		88	nr

- Top 7 results should all be using sample
  - -20 mm, +10 mm
- All other samples should be using
  - -14 mm, + 7.1 mm
- All TMH1 samples fail standard 85 % rule,
  - Max nominal size = 1st sieve thru which min 85 % passes

Average Least Dimension - ALD

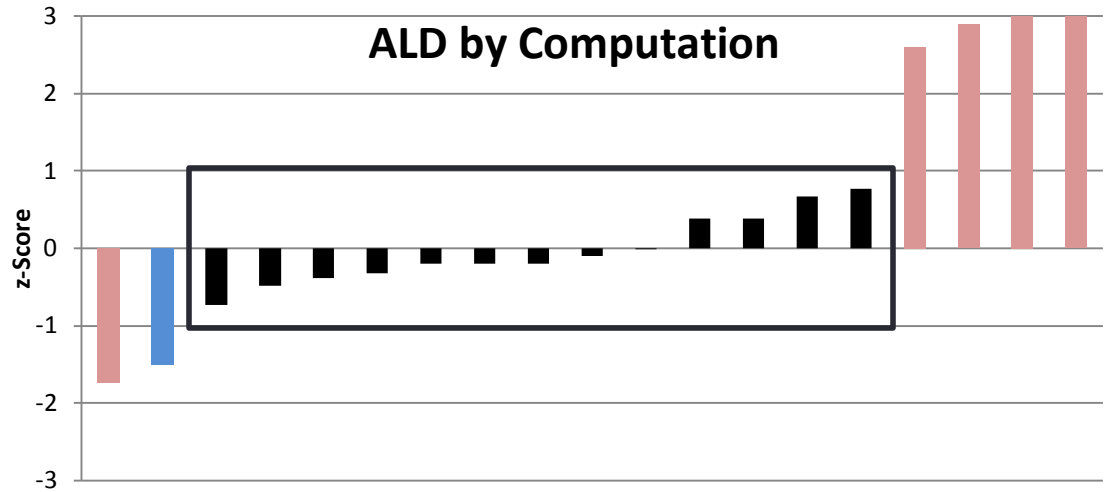|	Lab code	Method	mm	AMC Ex C
OL	epmj9	SANS 3001	**5.7**	-6.756
	rjws3	SANS 3001	6.3	-5.622
	83mgr	SANS 3001	8.3	-1.771
	cmws7	TMH1 B4	8.5	-1.282
	tgsk4	SANS 3001	8.8	-0.696
	xmb89	SANS 3001	8.9	-0.598
	dwg4m	SANS 3001	8.9	-0.500
	hywqx	SANS 3001	8.9	-0.500
	xp2hp	SANS 3001	8.9	-0.500
	b9ksw	TMH1 B4	9.0	-0.402
	tjd3d	SANS 3001	9.0	-0.402
	psm4m	SANS 3001	9.1	-0.109
	zpd87	SANS 3001	9.1	-0.109
	whf7j	SANS 3001	9.2	-0.011
	bhx3q	TMH1 (a)	9.2	-0.011
	sb2w8	SANS 3001	9.2	-0.011
	dck4d	SANS 3001	9.2	0.086
	jcpt9	SANS 3001	9.3	0.184
	skf9g	TMH1 A4	9.4	0.380
	ndc6z	SANS 3001	9.4	0.458
	4smdt	SANS 3001	9.5	0.673
	sc5pd	SANS 3001	9.7	1.064
	epdkm	SANS 3001	10.0	1.650
	fsbt9	SANS 3001	10.6	2.823
	r6zmc	SANS 3001	10.7	3.068
	j5pg5	SANS 3001	11.1	3.801

ALD direct measure

- 1 OL
- Range = 5.4 mm
- 17/26 (65 %) within z-score <1
  - Range = 0.7 mm
- Avg   9.00 mm
- StDev 1.10 mm

ALD - by computation

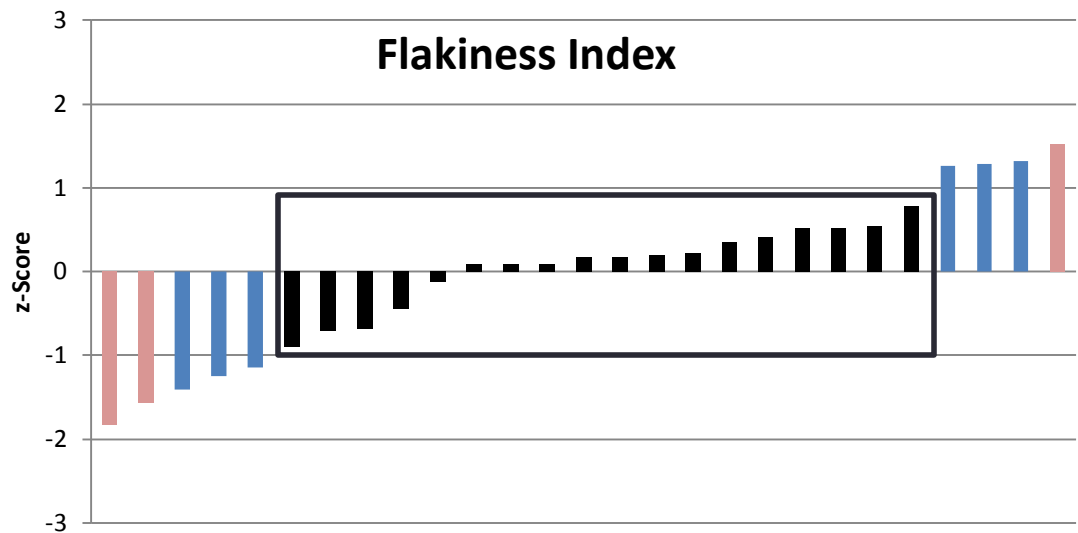| Lab code	Method	mm	AMC Ex C
epdkm	SANS 3001	8.30	-1.740
r6zmc	SANS 3001	8.43	-1.499
psm4m	SANS 3001	8.82	-0.737
tgsk4	SANS 3001	8.95	-0.487
cmws7	TMH1 B4	9.00	-0.390
tjd3d	SANS 3001	9.04	-0.323
dck4d	SANS 3001	9.10	-0.197
jcpt9	SANS 3001	9.10	-0.197
xp2hp	SANS 3001	9.10	-0.197
bhx3q	TMH1 (a)	9.15	-0.101
whf7j	SANS 3001	9.20	-0.004
skf9g	TMH1 A4	9.40	0.381
zpd87	SANS 3001	9.40	0.381
4smdt	SANS 3001	9.55	0.671
j5pg5	SANS 3001	9.60	0.767
xmb89	SANS 3001	10.55	2.600
sb2w8	SANS 3001	10.70	2.889
dwg4m	SANS 3001	11.70	4.818
fsbt9	SANS 3001	12.15	5.686
83mgr	SANS 3001-AG1		
b9ksw	TMH1 B4		
bs8gh	SANS 3001-AG1		
epmj9	SANS 3001-AG1		
hywqx	SANS 3001-AG1		
ndc6z	SANS 3001-AG1		
rjws3	SANS 3001-AG1		
sc5pd	SANS 3001-AG1		

OL

ALD by Computation

- 1 OL
- Range = 4.2 mm (5.4 mm direct ALD)
- 13/19 (68 %) within z-score <1
  - Range = 0.78 mm (0.70 mm)
- 8 labs didn't complete this test
- Good cross check on direct measure
- 10 results > 0.25 mm direct vs comp
- Avg   9.54 mm
- StDev 1.044 mm

Flakiness Index - FI

Lab code	Method	%	AMC Ex C
epdkm	SANS 3001	4.4	-1.835
rjws3	SANS 3001	4.9	-1.568
dwg4m	SANS 3001	5.2	-1.408
whf7j	SANS 3001	5.5	-1.248
b9ksw	TMH1 B4	5.7	-1.141
zpd87	SANS 3001	6.15	-0.901
hywqx	SANS 3001	6.5	-0.714
4smdt	SANS 3001	6.55	-0.687
skf9g	TMH1 A4	7	-0.447
j5pg5	SANS 3001	7.6	-0.126
epmj9	SANS 3001	8	0.087
jcpt9	SANS 3001	8	0.087
tjd3d	SANS 3001	8	0.087
xp2hp	SANS 3001	8.15	0.168
fsbt9	SANS 3001	8.15	0.168
bhx3q	TMH1 (a)	8.2	0.194
83mgr	SANS 3001	8.25	0.221
tgsk4	SANS 3001	8.5	0.354
sb2w8	SANS 3001	8.6	0.408
bs8gh	SANS 3001	8.8	0.515
psm4m	SANS 3001	8.8	0.515
r6zmc	SANS 3001	8.85	0.541
sc5pd	SANS 3001	9.3	0.782
ndc6z	SANS 3001	10.2	1.262
dck4d	SANS 3001	10.25	1.289
xmb89	SANS 3001	10.3	1.316
cmws7	TMH1 B4	10.7	1.530

Flakiness Index

- No OL
- Range = 6.3 %
- 18/27 (67 %) within z-score <1
  - Range = 3.15 %
- All labs undertook this test
- Avg   7.77 %
- StDev 1.825%

2016 Provisional Program

1st Quarter	BT	GR	AG
2nd Quarter	AS	BT	CO
3rd Quarter	GR	AG	AS
4th Quarter	BT	CO	

- Possibly additional 2 CO @ 1 per quarter
- Need to get the system sorted to get included into NLA PTS schedule
- All must be to a predetermined time line for ISO 17043
  - Published program
  - Registration
  - Sample distribution
  - Report submission
  - Draft results distributed
  - Draft report
  - Final report

Future plans

- ASPASA & SARMA also looking to join PTS
  - Potential huge increase in agg, gravel & conc participants
  - ?? How many took part in 1st AG
- SARMA assisting in putting together concrete PTS
- Looking at options for results to be electronically submitted & partially analysed
  - If results entered incorrectly, analysed as given
  - To assist in quicker turnaround times for
    - Benefit of labs needing to take action
    - For accreditation purposes

- Annual PTS advertised into end of each year
  - Select basket of PTS to partake in
  - Register for annual PTS with your choices
  - Pay applicable PTS fee
    - Once off for all PTS's chosen
    - Sit back & await your 1st sample

Additional future plans

- Looking at options of running each material type once per quarter
  - For this to happen various long term plans are required to get this process on the go
  - 20 PTS /year = 5 x 4 PTS each
  - A full time job!!
- As numbers increase,
  - may need to look at regional PTS
- Additional staff & resources required
  - up to 4x current work load
- Benefits
  - Improved quality of results
  - Better understanding of methods
  - Better handle on results likely variability

In closing… as always

Purpose

- to *improve consistency* of results between labs
- assist in <u>identifying your own internal areas</u> that require attention
- addressing these issues
- as a requirement for SANAS ISO 17025 accreditation

Building towards a more <u>*professional laboratory environment*</u> that will be seen as being

- Trustworthy
- Honest
- Quality driven

- Now we are starting to get somewhere
- Keep at it!!

Thank folks…