

CONTRACTS & SPECIFICATIONS COMMITTEE**CHINA CONGRESS**

Technical Specifications Group

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Chairman: Mr. W. Heath (South Africa)

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Report on Independent Laboratory Round Trial 3635 - 3740: January 2021 to December 2021

By

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SUMMARY

This ILRT Group Report covers 106 trials (3635 - 3740) for the period January 2021 to December 2021. The range of wool variables covered by this series is similar to the range covered in the previous series, and the source of sample material was similar. The ILRT Group attempts to ensure that the samples tested in the trials are representative of the wool types produced in the home nations of the participating laboratories and in proportion to the quantity of wool tested.

The data in the report includes Wool Base, VM Base, Airflow Mean Fibre Diameter, LASERSCAN Mean Fibre Diameter and LASERSCAN Standard Deviation of Fibre Diameter.

Overall the mean, within-lab and between lab standard deviation for the parameters reported are similar to the previous 6 trials, indicating continuing consistent performance of the member laboratories. Calculations of the 95% Confidence Limits confirm that the ILRT laboratories are producing results within the Confidence Limits reported in the respective IWTO Test Methods for most parameters.

For the reporting period eleven (11) outliers were due to difference in Wool Base and ten (10) to difference in VM Base. Further examination of the results showed that 5 (3647, 3650, 3682 3715 and 3729) of the 11 Wool Base outliers were associated with VM outliers for the same trials. This is a feature of the dependent relationship between the Wool Base and VM Base parameters. It was also noted that trial 3729 was a VM outlier for two laboratories. Other outliers were identified for WB trial 3642, 3667, 3724, 3726, 3735 and 3739. Other VM outliers were identified for trials 3653, 3656, 3659 and 3679. As reported in the previous report¹⁵, a review of VM testing processes was conducted by the member laboratories and has results in improved VM testing performance in this current series.

One outlier was reported for Airflow Mean Fibre Diameter trial 3699 and one (3696) for LASERSCAN Mean Fibre Diameter.

All laboratories continue to work to reduce the number of outliers.

By reporting⁽¹⁻¹⁶⁾ the results of its round trials the ILRT Group is providing commercial participants in the industry with a basis for confidence in the IWTO Certificates produced by its members. The ILRT Group is unique in reporting its technical performance and the series of trials provides a mechanism for ensuring that the member laboratories are harmonised and when differences are identified they can be addressed by the member laboratories.

INTRODUCTION

This report is prepared on behalf of the Independent Laboratories Round Trials (ILRT) Group. It covers 106 trials tested at a frequency of 2 per week over 53 weeks for the period January 2021 to December 2021.

The 5 laboratories currently participating in the first series ILRT are:

- Australian Wool Testing Authority Ltd - Fremantle Laboratory;
- Australian Wool Testing Authority Ltd - Melbourne Laboratory;
- New Zealand Wool Testing Authority Ltd, (NZWTA Ltd), Napier;
- Wool Testing Bureau S.A., (WTB), Port Elizabeth; and
- Wool Testing Authority Europe Ltd (WTAE Ltd), United Kingdom.

The ILRT Group Members comprise Members from the largest independent wool testing laboratories in the world. The objectives and aims of the Group are:

- to develop co-operation between the Members' laboratories, with a view to ensuring the most correct and uniform application of approved testing and sampling methods as may be set out in the Specifications of the International Wool Textile Organisation (IWTO) and in any associated IWTO Regulations;
- to ensure that the Members' laboratories obtain accurate test results having a high level of precision, in their application of those specific IWTO Test Methods and procedures which are relevant to the Group's agreed annual work programme;
- to collect such precision data, with respect to those IWTO specifications being utilised in the ILRT programme, as is required or desirable, but having regard to the principle ILRT functions of harmonising and monitoring the technical performance of the Members' laboratories;
- to assist Members' laboratories in resolving disputes arising from differences in test results, by ascertaining the causes of any discrepancies; and
- to the extent feasible, allow non-competing commercial laboratories to become Participating Laboratories in the inter-laboratory round trials from time to time.

The ILRT Group report is presented to every IWTO Congress.

SOURCE OF SAMPLE MATERIAL

The ILRT attempts to ensure that the samples tested in the trials are representative of the wool types produced in the home nations of the participating laboratories and in proportion to the quantity of wool tested. Table 1 summarises the countries of origin for the samples used in this series.

TABLE 1
SOURCE OF SAMPLE MATERIAL

COUNTRY OF ORIGIN	NUMBER OF SAMPLES
Australia	78
New Zealand	13
South Africa	13
United Kingdom	2
TOTAL	106

RANGE OF WOOL TESTED

Sample material covers a similar range of Wool Base, Vegetable Matter Base, Mean Fibre Diameter and Standard Deviation of Fibre Diameter to that reported at previous meetings (Table 2).

TABLE 2
RANGES OF PARAMETERS OF WOOLS TESTED
(TRIALS 3635 - 3740)

PARAMETER	MEAN	RANGE		
Wool Base (%)	58.31	44.12	to	67.17
Vegetable Matter Base (%)	1.75	0.10	to	8.40
Mean Fibre Diameter (µm) (Based on IWTO-28)	25.03	15.50	to	37.38
Mean Fibre Diameter (µm) (Based on IWTO-12)	24.98	15.10	to	37.70
Standard Deviation of Fibre Diameter (µm) (Based on IWTO-12)	5.61	2.90	to	9.30

OVERALL RESULTS

Means & Standard Deviations

The between sub-samples within-laboratory and between-laboratory variation for Wool Base, Vegetable Matter Base are compared, by calculating the Standard Deviation for each and comparing them with data from previous ILRT Reports. Similarly, for Mean Fibre Diameter the between test specimens within-laboratory and between-laboratory variation is compared. Comparisons of the overall values for each parameter against values obtained in the 6 previous reporting periods are reported in Table 3 for yield and Table 4 for diameter.

TABLE 3

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATIONS FOR YIELD PARAMETERS

TRIAL PERIOD	WOOL BASE			VEGETABLE MATTER BASE		
	MEAN	BETWEEN SUBS WITHIN LABS	BETWEEN LABS	MEAN	BETWEEN SUBS WITHIN LABS	BETWEEN LABS
3113 - 3216	58.43	0.36	0.23	1.85	0.20	0.15
3217 - 3320	59.11	0.38	0.19	1.94	0.22	0.14
3321 - 3426	58.10	0.37	0.22	1.93	0.22	0.15
3427 - 3530	56.85	0.36	0.26	1.87	0.23	0.18
3531 - 3634	56.66	0.39	0.23	1.77	0.20	0.18
3635 - 3740	58.31	0.39	0.26	1.75	0.20	0.15
OVERALL MEAN	57.91	0.37	0.23	1.85	0.21	0.16

TABLE 4

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATIONS FOR DIAMETER PARAMETERS

TRIAL PERIOD	MEAN FIBRE DIAMETER AIRFLOW			MEAN FIBRE DIAMETER LASERSCAN			SD OF FIBRE DIAMETER LASERSCAN		
	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3113 - 3216	25.19	0.16	0.22	24.95	0.29	0.08	5.58	0.24	0.08
3217 - 3320	25.17	0.16	0.20	24.93	0.29	0.07	5.53	0.22	0.06
3321 - 3426	25.13	0.15	0.15	24.96	0.30	0.06	5.61	0.23	0.06
3427 - 3530	24.97	0.16	0.18	24.83	0.29	0.07	5.77	0.24	0.05
3531 - 3634	24.95	0.15	0.17	24.81	0.32	0.07	5.70	0.24	0.06
3635 - 3740	25.03	0.16	0.17	24.98	0.30	0.07	5.61	0.24	0.04
OVERALL MEAN	25.08	0.16	0.18	24.91	0.31	0.07	5.63	0.24	0.06

From the variances reported for each trial in Tables 3 and 4 above, the 95% confidence limits for a normal presale test can be calculated. For the purposes of calculation, in the case of Wool Base and VM Base a 2 sub-sample test is assumed. In the case of Mean Fibre Diameter, a 2 test specimen test (with 2 readings per test specimen) is assumed. For the Laserscan results, a 4 test specimen test is assumed. These assumptions are the minimum requirements that must be met to issue an IWTO Certificate.

The calculated 95% Confidence Limits are presented in Table 5, along with the Confidence Limits for the respective IWTO Test Method (calculated for the overall mean for each parameter). Comparing the Overall Confidence Limit to the Test Method Confidence Limit confirms that the ILRT laboratories are producing results within the limits of the respective IWTO Test Methods.

TABLE 5
95% CONFIDENCE LIMITS

TRIAL PERIOD	WOOL BASE		VM BASE		AIRFLOW		LASERSCAN		LASERSCAN	
	Mean	Con. Limit	Mean	Con. Limit	Mean Fibre Diameter	Con. Limit	Mean Fibre Diameter	Con. Limit	Fibre Diameter SD	Con. Limit
3113 - 3216	58.43	0.67	1.85	0.41	25.19	0.48	24.95	0.43	5.58	0.28
3217 - 3320	59.11	0.64	1.94	0.42	25.17	0.45	24.93	0.42	5.53	0.25
3321 - 3426	58.10	0.67	1.93	0.43	25.13	0.35	24.96	0.42	5.61	0.25
3427 - 3530	56.85	0.72	1.87	0.48	24.97	0.42	24.83	0.42	5.77	0.26
3531 - 3634	56.66	0.70	1.77	0.45	24.95	0.40	24.81	0.47	5.70	0.26
3635 - 3740	58.31	0.73	1.75	0.40	25.03	0.40	24.98	0.43	5.61	0.25
OVERALL MEAN	57.91	0.69	1.85	0.43	25.08	0.42	24.91	0.45	5.63	0.26
(TEST METHOD)		(1.10)		(0.42)		(0.57)		(0.47)		(0.25)

For any given parameter, the consistency of the confidence limits indicates the laboratory performance has been stable over the periods reported in Tables 3 to 5 inclusive.

Data for IWTO-19 and IWTO-28 for each trial and over all trials in the current reporting period are summarised in Table 6. Corresponding data for IWTO-12 is reported in Table 7.

TABLE 6
WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3635	61.79	0.18	0.22	1.2	0.14	0.13	30.1	0.28	0.00
3636	55.07	0.39	0.00	3.2	0.25	0.15	21.3	0.17	0.04
3637	62.11	0.26	0.19	0.2	0.07	0.05	33.8	0.24	0.24
3638	61.90	0.35	0.00	0.2	0.09	0.06	31.5	0.19	0.08
3639	55.15	0.34	0.43	0.7	0.09	0.09	20.6	0.13	0.26
3640	46.97	0.72	0.47	5.8	0.65	0.00	20.2	0.13	0.19
3641	53.58	0.41	0.12	0.6	0.09	0.07	21.2	0.11	0.18
3642	54.52	0.57	0.71	5.5	0.27	0.42	20.3	0.13	0.17
3643	65.61	0.24	0.18	0.1	0.03	0.03	35.3	0.26	0.25
3644	54.23	0.23	0.36	0.5	0.08	0.09	22.1	0.17	0.04
3645	56.39	0.38	0.34	0.6	0.12	0.02	36.6	0.24	0.27
3646	62.03	0.17	0.08	0.3	0.09	0.09	25.0	0.29	0.00
3647	62.77	0.46	0.44	0.8	0.11	0.21	15.8	0.10	0.03
3648	52.27	0.92	0.20	6.9	1.11	0.31	17.2	0.13	0.18
3649	48.96	0.44	0.59	2.4	0.42	0.25	26.4	0.28	0.23
3650	48.98	0.60	1.09	2.9	0.40	0.75	25.8	0.28	0.00
3651	64.05	0.27	0.12	0.3	0.05	0.07	30.6	0.38	0.00
3652	60.56	0.38	0.00	1.3	0.19	0.11	28.0	0.21	0.16
3653	64.22	0.33	0.00	0.3	0.09	0.17	29.3	0.25	0.07
3654	57.18	0.50	0.26	3.6	0.30	0.14	22.2	0.17	0.19
3655	61.49	0.12	0.20	0.4	0.08	0.00	24.0	0.16	0.17
3656	55.78	0.26	0.41	0.7	0.14	0.20	32.6	0.17	0.28
3657	55.94	0.42	0.09	2.7	0.20	0.14	18.6	0.21	0.15
3658	51.49	0.67	0.59	6.7	0.59	0.44	20.3	0.17	0.06
3659	55.18	0.21	0.24	0.4	0.14	0.13	22.0	0.17	0.12
3660	59.93	0.30	0.17	1.6	0.13	0.15	24.9	0.23	0.23
3661	64.39	0.21	0.21	0.2	0.05	0.03	32.5	0.21	0.28
3662	57.30	0.22	0.16	1.2	0.17	0.00	24.2	0.13	0.09
3663	52.42	0.60	0.00	0.8	0.17	0.13	19.4	0.14	0.13
3664	65.30	0.37	0.00	0.2	0.04	0.07	29.9	0.20	0.26
3665	62.23	0.16	0.14	0.2	0.06	0.07	22.1	0.18	0.21
3666	52.65	0.49	0.36	6.7	0.44	0.26	22.1	0.16	0.19
3667	54.91	0.43	0.48	1.4	0.13	0.07	20.3	0.15	0.15
3668	59.69	0.48	0.17	0.2	0.05	0.09	33.3	0.19	0.41
3669	56.10	0.45	0.27	0.6	0.14	0.08	21.2	0.15	0.00
3670	64.55	0.30	0.20	0.9	0.15	0.00	34.4	0.15	0.48
3671	58.52	0.49	0.11	0.5	0.11	0.15	20.3	0.11	0.13
3672	63.70	0.14	0.14	0.4	0.08	0.09	31.3	0.20	0.17
3673	65.21	0.33	0.18	0.5	0.12	0.09	31.0	0.19	0.21
3674	63.74	0.22	0.00	0.2	0.04	0.04	35.7	0.17	0.46
3675	54.31	0.40	0.36	4.6	0.26	0.05	23.1	0.17	0.06

TABLE 6
WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3676	54.86	0.25	0.23	1.4	0.18	0.14	21.3	0.15	0.19
3677	57.01	0.26	0.17	0.6	0.13	0.08	22.0	0.15	0.04
3678	63.32	0.37	0.00	0.4	0.09	0.05	20.0	0.11	0.25
3679	60.54	0.20	0.16	1.5	0.13	0.28	30.0	0.19	0.33
3680	59.11	0.57	0.25	1.4	0.18	0.21	21.8	0.12	0.17
3681	65.19	0.35	0.18	0.3	0.07	0.09	34.6	0.13	0.21
3682	50.82	0.67	1.04	6.5	0.50	0.80	20.5	0.12	0.21
3683	56.91	0.24	0.26	0.4	0.12	0.03	21.9	0.12	0.14
3684	52.17	0.41	0.19	5.6	0.43	0.24	21.2	0.19	0.07
3685	52.63	0.45	0.00	0.3	0.16	0.09	32.8	0.21	0.21
3686	59.12	0.22	0.38	0.1	0.05	0.03	20.3	0.16	0.08
3687	58.43	0.41	0.48	1.5	0.25	0.00	20.0	0.10	0.05
3688	59.23	0.22	0.44	0.3	0.08	0.09	17.3	0.12	0.07
3689	66.39	0.16	0.26	0.1	0.03	0.00	37.4	0.21	0.42
3690	62.25	0.42	0.00	1.7	0.18	0.16	31.0	0.14	0.34
3691	63.07	0.31	0.31	0.7	0.15	0.11	23.9	0.12	0.22
3692	50.88	0.87	0.00	6.1	0.69	0.26	17.5	0.07	0.08
3693	52.49	0.49	0.35	5.2	0.54	0.00	22.0	0.16	0.14
3694	59.12	0.15	0.30	0.3	0.08	0.07	22.1	0.14	0.18
3695	56.55	0.24	0.32	0.8	0.07	0.11	18.9	0.15	0.11
3696	53.96	0.57	0.00	3.6	0.43	0.31	25.0	0.14	0.32
3697	59.00	0.35	0.21	2.3	0.23	0.24	27.1	0.14	0.22
3698	52.74	0.76	0.00	3.5	0.47	0.19	26.1	0.12	0.29
3699	62.80	0.62	0.06	0.2	0.08	0.06	20.2	0.07	0.30
3700	61.34	0.32	0.00	0.1	0.05	0.00	32.6	0.31	0.34
3701	60.50	0.21	0.30	1.7	0.16	0.22	30.0	0.23	0.16
3702	64.67	0.32	0.13	0.6	0.07	0.12	27.3	0.17	0.34
3703	56.44	0.40	0.38	1.3	0.10	0.13	20.1	0.09	0.08
3704	49.92	0.47	0.00	5.6	0.32	0.17	22.0	0.15	0.12
3705	63.40	0.24	0.18	0.5	0.13	0.06	25.2	0.10	0.19
3706	57.82	0.26	0.12	1.4	0.13	0.10	26.0	0.14	0.20
3707	53.96	0.29	0.09	1.6	0.26	0.13	20.1	0.15	0.13
3708	60.38	0.51	0.00	2.4	0.34	0.04	17.3	0.11	0.05
3709	62.53	0.27	0.23	0.5	0.07	0.09	28.2	0.13	0.22
3710	66.41	0.18	0.17	0.2	0.04	0.07	34.5	0.18	0.48
3711	53.81	0.27	0.00	1.3	0.20	0.06	24.4	0.15	0.00
3712	66.25	0.28	0.23	0.4	0.07	0.07	29.0	0.07	0.23
3713	55.82	0.51	0.27	1.3	0.19	0.00	19.2	0.11	0.11
3714	54.86	0.27	0.00	0.9	0.15	0.08	19.9	0.10	0.11
3715	51.61	0.70	1.33	7.1	0.34	1.16	18.3	0.12	0.11
3716	65.70	0.49	0.27	0.2	0.07	0.00	36.2	0.16	0.42

TABLE 6

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3717	55.69	0.48	0.00	0.4	0.14	0.05	19.3	0.13	0.08
3718	58.05	0.40	0.15	2.5	0.27	0.09	16.5	0.13	0.12
3719	57.94	0.44	0.20	3.3	0.39	0.32	17.3	0.07	0.05
3720	63.52	0.24	0.27	1.3	0.20	0.11	29.9	0.15	0.22
3721	59.91	0.26	0.27	0.5	0.13	0.08	23.2	0.12	0.04
3722	64.02	0.30	0.00	0.3	0.09	0.04	29.2	0.11	0.14
3723	54.75	0.29	0.55	0.3	0.06	0.04	35.1	0.18	0.26
3724	63.35	0.33	0.39	0.6	0.12	0.03	24.0	0.18	0.03
3725	50.40	0.33	0.29	0.8	0.18	0.22	22.0	0.13	0.10
3726	54.24	0.38	0.71	3.2	0.28	0.48	25.3	0.25	0.15
3727	52.56	0.60	0.39	4.0	0.56	0.00	26.1	0.11	0.16
3728	63.70	0.44	0.30	0.5	0.09	0.09	28.2	0.12	0.26
3729	44.12	0.88	1.62	8.4	0.83	1.60	20.0	0.15	0.18
3730	62.55	0.19	0.13	0.4	0.09	0.03	29.2	0.19	0.22
3731	63.55	0.29	0.00	0.4	0.09	0.05	25.2	0.19	0.13
3732	63.48	0.29	0.19	1.2	0.22	0.16	30.4	0.13	0.28
3733	67.17	0.18	0.04	0.2	0.04	0.03	32.9	0.24	0.26
3734	57.75	0.24	0.00	0.3	0.10	0.00	19.9	0.11	0.10
3735	64.49	0.27	0.76	0.6	0.09	0.10	15.5	0.13	0.11
3736	53.27	0.44	0.54	3.4	0.30	0.44	25.2	0.10	0.08
3737	56.18	0.65	0.07	2.4	0.27	0.00	23.5	0.14	0.03
3738	56.37	0.44	0.17	3.3	0.43	0.00	22.3	0.23	0.12
3739	62.26	0.46	0.42	1.1	0.21	0.00	30.1	0.17	0.17
3740	54.51	0.44	0.58	5.4	0.18	0.32	21.3	0.12	0.13
Mean	58.31	0.38	0.26	1.75	0.20	0.15	25.03	0.16	0.17
Min	44.12	0.12	0.00	0.10	0.03	0.00	15.50	0.07	0.00
Max	67.17	0.92	1.62	8.40	1.11	1.60	37.38	0.38	0.48

TABLE 7

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3635	30.2	0.41	0.00	6.6	0.25	0.00
3636	21.1	0.23	0.00	4.3	0.17	0.05
3637	33.7	0.46	0.26	8.4	0.24	0.07
3638	31.3	0.40	0.00	7.2	0.25	0.00
3639	20.3	0.18	0.09	4.1	0.16	0.00
3640	19.9	0.30	0.00	4.4	0.23	0.11
3641	21.0	0.19	0.10	4.6	0.19	0.00
3642	20.1	0.24	0.07	4.0	0.16	0.11
3643	35.5	0.50	0.19	8.9	0.30	0.09
3644	21.8	0.24	0.12	4.7	0.21	0.17
3645	36.7	0.39	0.00	8.8	0.30	0.15
3646	24.9	0.29	0.17	5.7	0.18	0.00
3647	15.5	0.24	0.03	3.4	0.23	0.00
3648	16.9	0.36	0.09	3.7	0.41	0.00
3649	26.8	0.40	0.00	5.9	0.23	0.00
3650	26.1	0.42	0.00	5.7	0.34	0.00
3651	30.9	1.00	0.00	6.8	0.45	0.00
3652	28.1	0.27	0.13	6.3	0.27	0.00
3653	29.2	0.23	0.13	6.5	0.21	0.10
3654	22.0	0.21	0.00	4.4	0.14	0.00
3655	24.0	0.17	0.09	4.7	0.17	0.04
3656	32.9	0.53	0.25	8.7	0.36	0.00
3657	18.2	0.17	0.02	3.7	0.18	0.00
3658	20.0	0.22	0.07	4.0	0.18	0.12
3659	21.8	0.23	0.00	4.6	0.14	0.06
3660	25.0	0.30	0.00	6.1	0.34	0.00
3661	32.7	0.36	0.03	8.4	0.28	0.00
3662	23.9	0.27	0.00	5.4	0.20	0.00
3663	19.1	0.14	0.00	3.8	0.22	0.01
3664	30.0	0.21	0.12	6.8	1.01	0.00
3665	22.0	0.21	0.00	4.6	0.21	0.00
3666	22.0	0.28	0.11	4.5	0.17	0.06
3667	20.0	0.13	0.00	4.3	0.18	0.09
3668	33.9	0.40	0.23	9.0	0.24	0.00
3669	21.0	0.17	0.04	4.3	0.20	0.00
3670	34.7	0.34	0.20	8.4	0.31	0.00
3671	20.0	0.12	0.09	4.3	0.15	0.10
3672	31.5	0.29	0.00	7.3	0.20	0.00
3673	31.2	0.26	0.15	7.1	0.26	0.00
3674	36.5	0.51	0.12	9.3	0.29	0.00
3675	22.9	0.15	0.11	4.8	0.18	0.00

TABLE 7

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3676	21.1	0.16	0.18	4.7	0.17	0.10
3677	22.0	0.23	0.00	4.8	0.20	0.00
3678	20.0	0.19	0.06	3.9	0.18	0.04
3679	30.1	0.17	0.10	6.8	0.19	0.00
3680	21.8	0.16	0.13	4.5	0.16	0.11
3681	34.8	0.44	0.25	8.0	0.23	0.00
3682	20.2	0.23	0.12	4.3	0.28	0.04
3683	21.8	0.19	0.00	4.3	0.20	0.00
3684	21.1	0.20	0.05	4.4	0.26	0.00
3685	32.7	0.60	0.30	8.7	0.37	0.00
3686	20.4	0.12	0.07	4.0	0.23	0.00
3687	19.9	0.16	0.00	4.0	0.15	0.00
3688	17.2	0.16	0.14	3.5	0.18	0.00
3689	37.7	0.67	0.19	8.8	0.39	0.00
3690	30.9	0.25	0.06	7.2	0.26	0.14
3691	24.1	0.24	0.00	5.6	0.25	0.00
3692	17.4	0.33	0.00	3.7	0.31	0.00
3693	21.8	0.22	0.00	4.4	0.19	0.04
3694	22.2	0.20	0.11	4.6	0.16	0.16
3695	18.7	0.19	0.08	3.9	0.19	0.04
3696	24.7	0.26	0.38	6.1	0.25	0.00
3697	27.1	0.35	0.00	6.1	0.30	0.10
3698	26.2	0.35	0.07	6.6	0.28	0.03
3699	20.1	0.20	0.17	4.1	0.37	0.00
3700	33.1	0.37	0.00	8.4	0.20	0.09
3701	30.1	0.33	0.00	7.1	0.18	0.00
3702	27.2	0.24	0.21	6.0	0.27	0.00
3703	19.7	0.20	0.16	4.3	0.30	0.09
3704	21.8	0.43	0.00	4.3	0.26	0.00
3705	25.2	0.37	0.02	6.0	0.25	0.00
3706	26.0	0.29	0.13	5.9	0.29	0.00
3707	19.9	0.14	0.00	4.0	0.11	0.01
3708	17.0	0.14	0.00	3.2	0.15	0.09
3709	28.1	0.28	0.07	6.2	0.19	0.14
3710	35.1	0.88	0.00	8.7	0.45	0.00
3711	24.2	0.27	0.07	5.1	0.23	0.15
3712	29.1	0.37	0.25	6.6	0.15	0.00
3713	18.9	0.16	0.13	4.1	0.18	0.13
3714	19.7	0.18	0.00	4.1	0.19	0.07
3715	18.2	0.12	0.00	3.8	0.21	0.13
3716	36.4	0.50	0.19	8.8	0.30	0.00

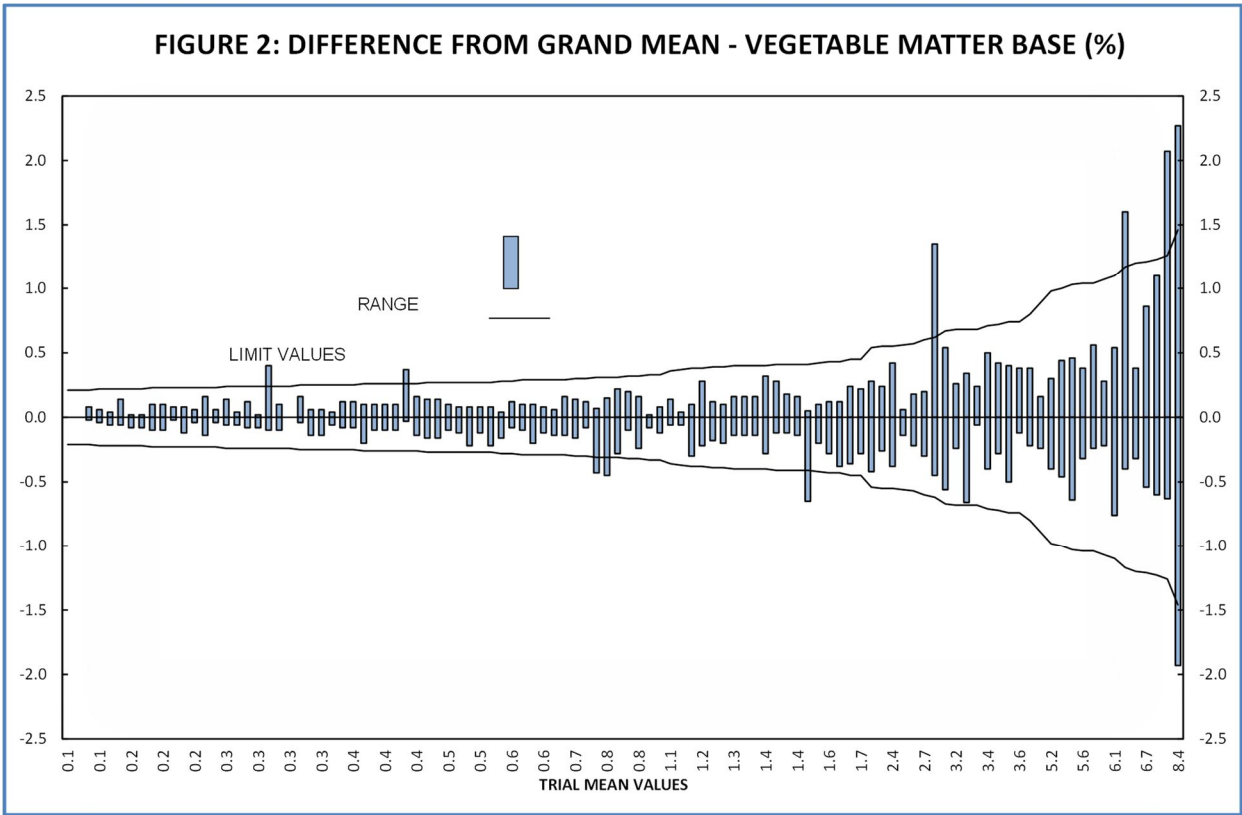
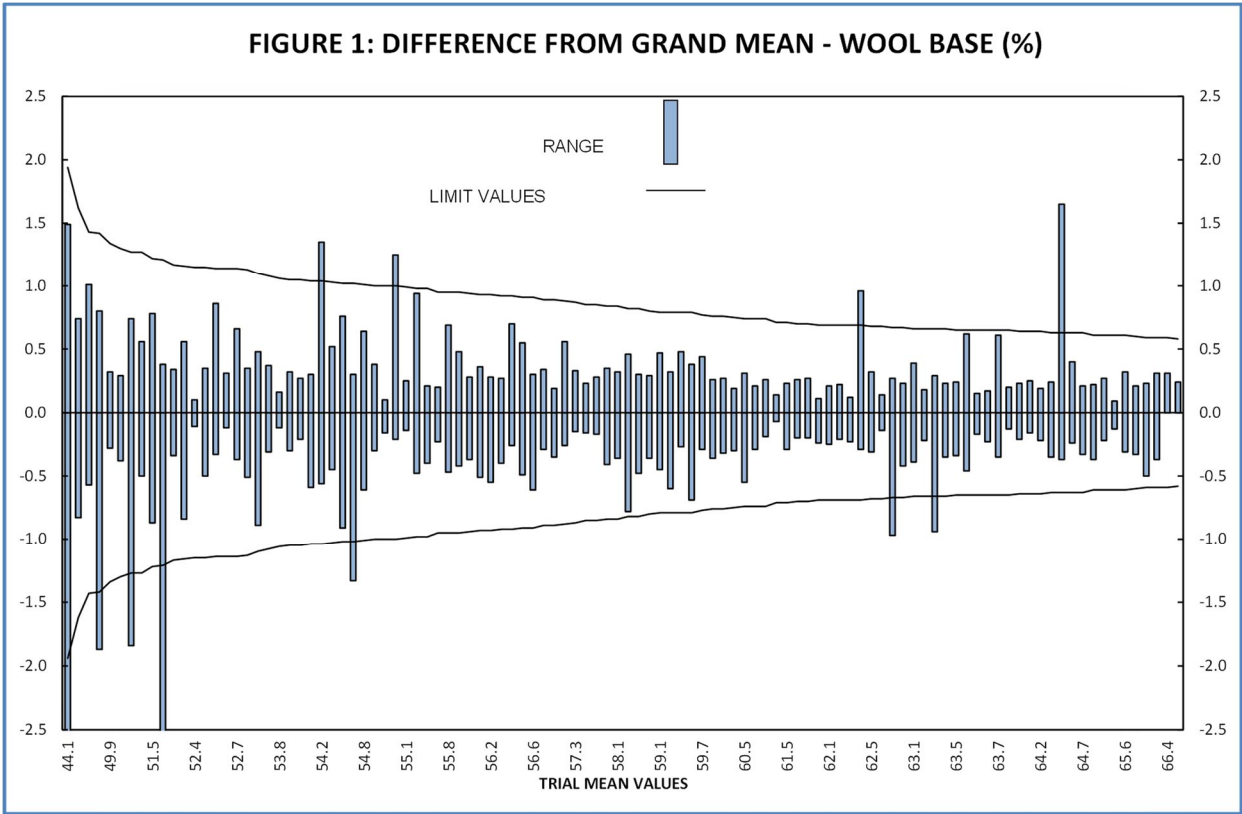
TABLE 7

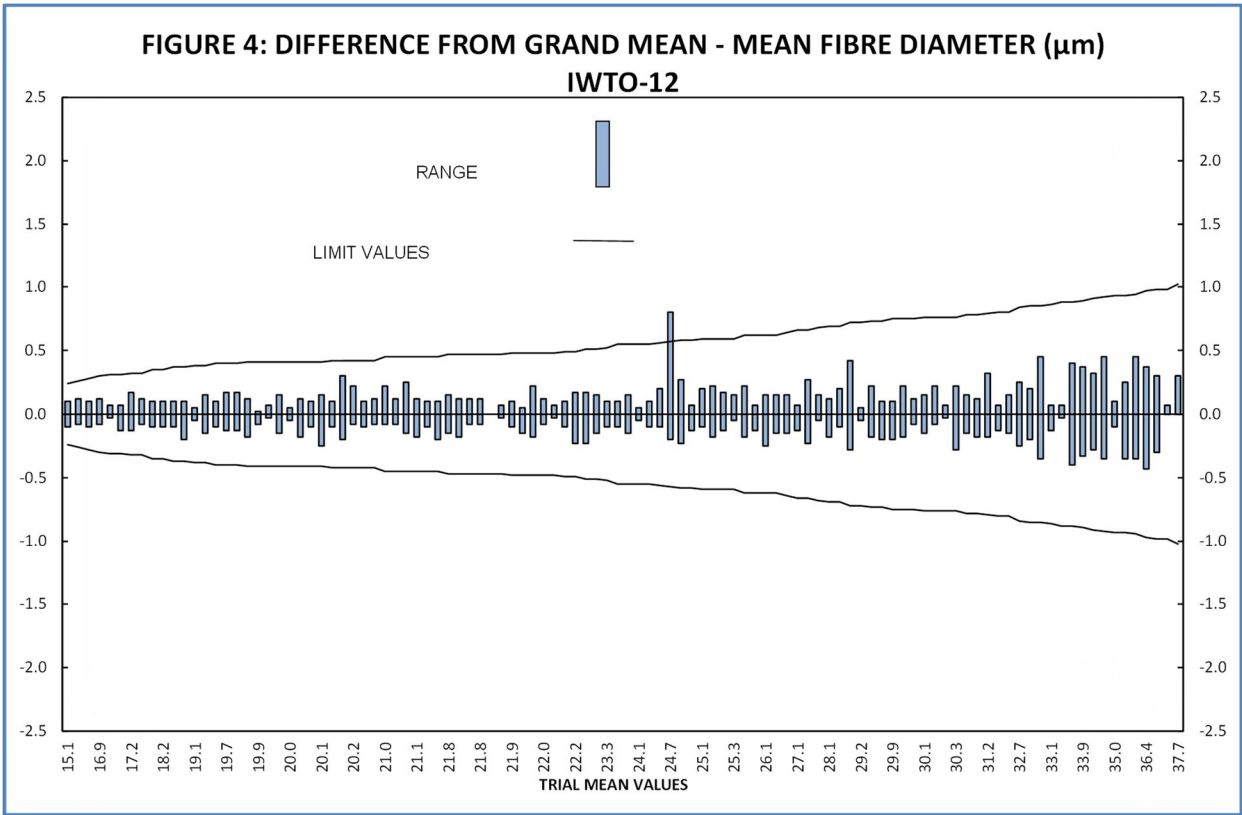
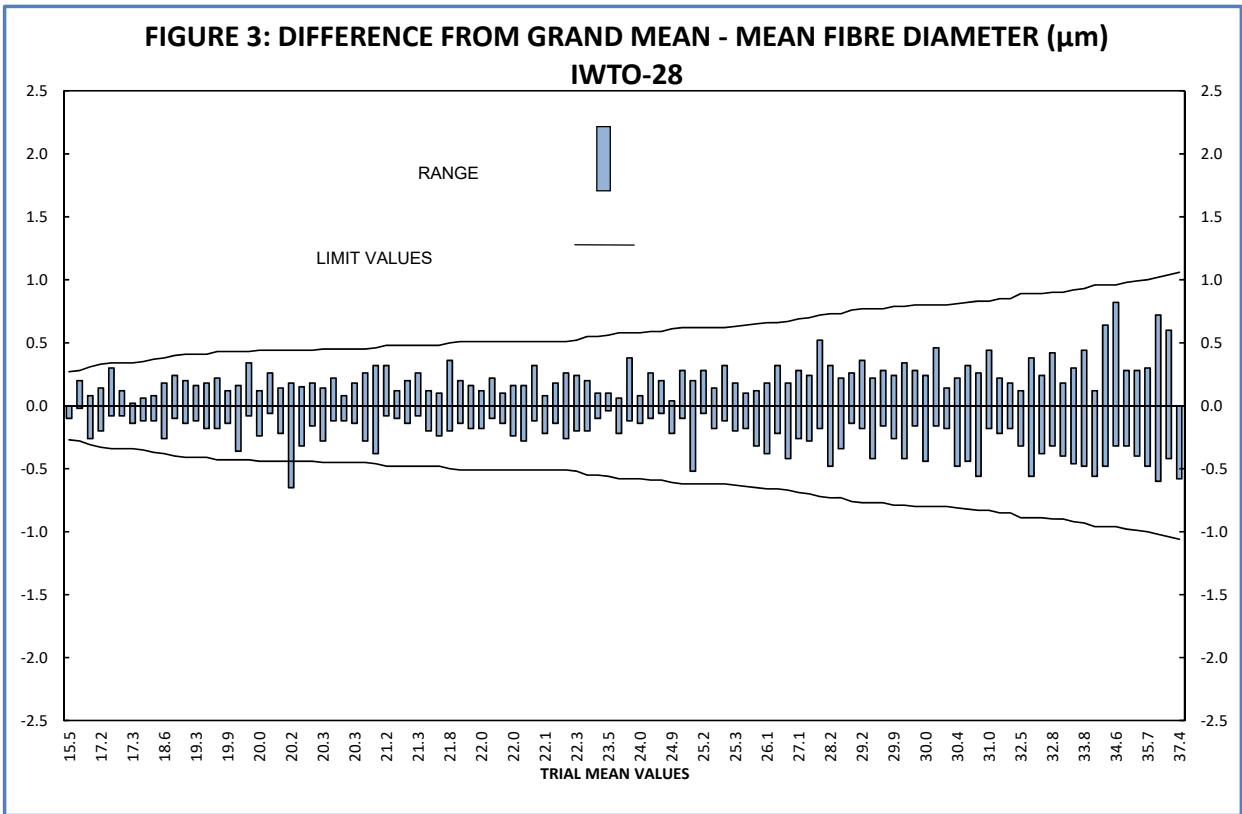
WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

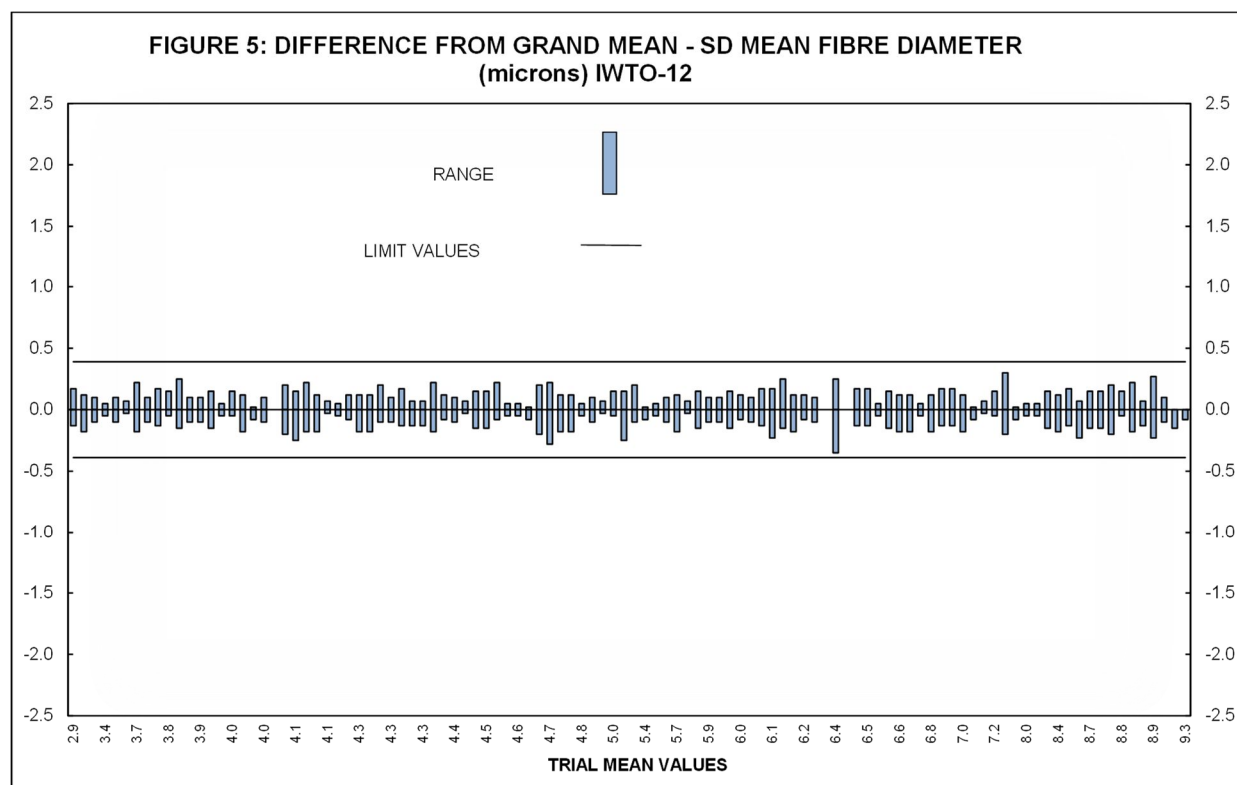
TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3717	19.1	0.24	0.04	4.0	0.15	0.00
3718	16.2	0.18	0.00	3.2	0.24	0.03
3719	17.1	0.17	0.00	3.4	0.19	0.00
3720	29.9	0.25	0.04	6.5	0.17	0.02
3721	23.0	0.32	0.00	4.8	0.20	0.00
3722	29.2	0.37	0.00	6.2	0.21	0.00
3723	35.0	0.40	0.00	9.1	0.27	0.12
3724	24.1	0.25	0.00	5.5	0.23	0.00
3725	21.9	0.39	0.00	5.0	0.27	0.00
3726	25.2	0.29	0.00	6.2	0.26	0.12
3727	26.0	0.45	0.00	6.4	0.25	0.21
3728	28.0	0.21	0.03	6.4	0.13	0.00
3729	20.1	0.21	0.24	4.0	0.28	0.13
3730	29.2	0.34	0.00	6.6	0.25	0.00
3731	25.3	0.76	0.38	5.9	0.22	0.08
3732	30.3	0.57	0.00	6.8	0.22	0.09
3733	33.6	0.42	0.00	8.6	0.31	0.00
3734	19.7	0.16	0.09	4.0	0.21	0.07
3735	15.1	0.07	0.05	2.9	0.24	0.00
3736	25.1	0.38	0.00	6.2	0.21	0.00
3737	23.3	0.24	0.00	5.2	0.14	0.13
3738	22.2	0.16	0.00	4.5	0.25	0.08
3739	30.0	0.34	0.00	7.0	0.19	0.13
3740	21.1	0.37	0.00	4.3	0.13	0.02
Mean	24.98	0.30	0.07	5.61	0.24	0.04
Min	15.10	0.07	0.00	2.90	0.11	0.00
Max	37.70	1.00	0.38	9.30	1.01	0.21

Ranges of Laboratory Differences

The overall ranges of laboratory differences from the Grand Mean for five parameters are reported in Figures 1-5 together with the statistical limit values of these differences. In the case of Figure 4, which presents the ranges for LASERSCAN, the Airflow statistical limit values have been employed to enable easy comparison with the Airflow. The data are arranged in ascending order of Grand Mean for ease of interpretation, rather than on a trial-by-trial basis. Note also that to ensure easy reading of the graphs the Trial Mean Values for every third value only are printed on the horizontal axes.







Overall the mean, within-lab and between lab standard deviation for the parameters reported are similar to the previous 6 trials, indicating continuing consistent performance of the member laboratories. Calculations of the 95% Confidence Limits confirm that the ILRT laboratories are producing results within the Confidence Limits reported in the respective IWTO Test Methods for most parameters.

For the reporting period eleven (11) outliers were due to difference in Wool Base and ten (10) to difference in VM Base. Further examination of the results showed that 5 (3647, 3650, 3682 3715 and 3729) of the 11 Wool Base outliers were associated with VM outliers for the same trials. This is a feature of the dependent relationship between the Wool Base and VM Base parameters. It was also noted that trial 3729 was a VM outlier for two laboratories. Other outliers were identified for WB trial 3642, 3667, 3724, 3726, 3735 and 3739. Other VM outliers were identified for trials 3653, 3656, 3659 and 3679. As reported in the previous report¹⁵, a review of VM testing processes was conducted by the member laboratories and has results in improved VM testing performance in this current series.

One outlier was reported for Airflow Mean Fibre Diameter trial 3699 and one (3696) for LASERSCAN Mean Fibre Diameter.

All laboratories continue to work to reduce the number of outliers.

By reporting⁽¹⁻¹⁶⁾ the results of its round trials the ILRT Group is providing commercial participants in the industry with a basis for confidence in the IWTO Certificates produced by its members. The ILRT Group is unique in reporting its technical performance and the series of trials provides a mechanism for ensuring that the member laboratories are harmonised and when differences are identified they can be addressed by the member laboratories.

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