

***Washington State Patrol Toxicology Laboratory  
2203 Airport Way S.,  
Seattle WA 98004***

***August 9, 2007***

***Calculation Error in Program used to calculate Reference Values for External Standard Simulator Solutions.***

In August 2005 a program used by the State Toxicology Laboratory to calculate the mean and standard deviation of simulator solution test results was updated to add four additional analysts. A formula in the program was not updated to include the four additional results in the calculation of the mean as required by the laboratory procedure. The program also contained an error in the calculation used to determine precision; however, this did not affect the acceptability of any solution, or its use in breath test instruments.

The program has been corrected and the solution results recalculated. Thirty two solutions tested between August 2005 and August 2007 were affected, and the adjusted means are listed in the attachment. This did not affect the results of any Quality Assurance solutions which are tested by only three analysts.

Only six of these solutions resulted in a change in the third decimal place average after rounding, such that it would affect its use in a subject's breath test.

Additionally, in order for the change to impact a subject's breath alcohol test result the solution would have to have been used to calibrate a breath test instrument. Only two of those six solutions (batch numbers 05036 and 06030) were used to calibrate the breath test instruments. The instruments affected are listed in Table 1.

The change in the reference value for solution number 06030 resulted in an underestimate of the correct breath alcohol result of 0.001g/100mL at the 0.08g/210L level (see table 1).

The change in the reference value for solution number 05036 resulted in an overestimate of the correct breath alcohol result of 0.001g/100mL at the 0.080g/210L level. This impacts approximately 580 tests conducted on instrument number 140030 which is in the Spokane County Public Safety Building, between February 2<sup>nd</sup> 2006, and January 4<sup>th</sup> 2007.

Reviewing the records for instrument 140030, the WSP Impaired Driving Section has identified four subject tests at the 0.080g/210L threshold which should have been reported as 0.079g/210L, and four subject tests at the 0.150/0.151g/210L (sentencing enhancement threshold) which should have been correctly reported as 0.148/0.149g/210L

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using the adjusted solution average value. There were no tests affected at 0.020 involving minors or at 0.040 involving commercial vehicle operators.

Table 1. Instruments affected by calculation error.

Solution Number	Instrument number	Original Reported Solution Value	Corrected Solution Value	Consequence at 0.08 threshold	Consequence at 0.15 threshold
06030	140088 (Pullman PD) 140089 (Cheney PD) 949030 (Chewelah) 949123 (Collville) 949131 (Kittitas Jail)	0.0824 (rounds to 0.082)	0.0826 (rounds to 0.083)	Subjects 0.079 result should have been reported as 0.080	Subjects 0.148/149 result should have been reported as 0.150/0.151
05036	140030 (Spokane PSB)	0.0825 (rounds to 0.083)	0.0824 (rounds to 0.082)	Subjects 0.080 result should have been reported as 0.079	Subjects 0.150/0.151 result should have been reported as 0.148/0.149

The Spokane County Prosecutors Office and the Department of Licensing have been notified of these tests and will be contacting the subjects or their attorneys.

The simulator solution reference value is also used to calculate accuracy during the annual breath test quality assurance procedure (QAP). QAP results have been recalculated for every instrument checked with an affected solution, and each instrument continues to meet the requirements under which it was initially certified, a repair record has been generated to document this.

The program which caused the error has been corrected and replaced, the protocol for simulator solution preparation has been changed, and new batches of simulator solutions have been distributed to all breath test technicians. Every instrument affected by the calibration error has been removed from the field and is being recalibrated. The WSP is continuing to evaluate the simulator solution process, and is seeking an independent consultant to provide a review of proposed changes.

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Subject breath test results on the State's other 200 instruments for the two year period affected have been reviewed, and no other impacts have been found.

Inquiries regarding individual tests should be directed to the WSP Breath Test Section at (206) 720-3018. Inquiries regarding the simulator solution testing process should be directed to the State Toxicology Laboratory at (206) 262-6000.

Attachment: External standard simulator solutions tested by more than 12 analysts through August 2007

	Batch number	See footnote	Number of analysts included in calculation	Avg sol conc (g/100mL)	SD	Precision CV (%)	Equivalent vapor concentration	Rounded average
As originally reported	05036	2	12	0.1015	0.00145	1.4329	0.0825	0.083
Recalculated 08/07/2007	05036		14	0.1013	0.00147	1.4523	0.0824	0.082
As originally reported	05041		12	0.1016	0.00088	0.8612	0.0826	0.083
Recalculated 08/07/2007	05041		16	0.1014	0.00094	0.9253	0.0824	0.082
As originally reported	05042	1	12	0.1014	0.00086	0.8433	0.0824	0.082
Recalculated 08/07/2007	05042		16	0.1014	0.00091	0.8957	0.0824	0.082
As originally reported	06001		12	0.1016	0.00165	1.6205	0.0826	0.083
Recalculated 08/07/2007	06001		14	0.1016	0.00153	1.5085	0.0826	0.083
As originally reported	06002		12	0.1024	0.00210	2.0498	0.0833	0.083
Recalculated 08/07/2007	06002		14	0.1024	0.00203	1.9782	0.0833	0.083
As originally reported	06003	1	12	0.1024	0.00215	2.0961	0.0833	0.083
Recalculated 08/07/2007	06003		14	0.1024	0.00199	1.9401	0.0833	0.083
As originally reported	06009		12	0.1043	0.00176	1.6874	0.0848	0.085
Recalculated 08/07/2007	06009		14	0.1042	0.00170	1.6309	0.0847	0.085
As originally reported	06018	1	12	0.1012	0.00109	1.0775	0.0823	0.082
Recalculated 08/07/2007	06018		15	0.1013	0.00120	1.1833	0.0824	0.082
As originally reported	06019		12	0.1016	0.00110	1.0857	0.0826	0.083
Recalculated 08/07/2007	06019		15	0.1016	0.00106	1.0393	0.0826	0.083
As originally reported	06020		12	0.1015	0.00082	0.8053	0.0825	0.083
Recalculated 08/07/2007	06020		16	0.1015	0.00086	0.8427	0.0825	0.083
As originally reported	06025		12	0.1025	0.00125	1.2203	0.0833	0.083
Recalculated 08/07/2007	06025		16	0.1023	0.00139	1.3625	0.0832	0.083
As originally reported	06026		12	0.1019	0.00098	0.9657	0.0828	0.083
Recalculated 08/07/2007	06026		16	0.1016	0.00110	1.0839	0.0826	0.083
As originally reported	06027		12	0.1016	0.00128	1.2566	0.0826	0.083
Recalculated 08/07/2007	06027		16	0.1014	0.00127	1.2492	0.0824	0.082
As originally reported	06029		12	0.1017	0.00075	0.7404	0.0827	0.083
Recalculated 08/07/2007	06029		15	0.1016	0.00077	0.7619	0.0826	0.083
As originally reported	06030	2	12	0.1014	0.00145	1.4291	0.0824	0.082
Recalculated 08/07/2007	06030		14	0.1016	0.00143	1.4077	0.0826	0.083
As originally reported	06031		12	0.1015	0.00104	1.0245	0.0825	0.083
Recalculated 08/07/2007	06031		15	0.1016	0.00097	0.9586	0.0826	0.083
As originally reported	06036		12	0.1011	0.00122	1.2018	0.0822	0.082
Recalculated 08/07/2007	06036		13	0.1012	0.00119	1.1792	0.0823	0.082
As originally reported	06041		12	0.1021	0.00074	0.7205	0.0830	0.083
Recalculated 08/07/2007	06041		14	0.1020	0.00075	0.7369	0.0829	0.083
As originally reported	06043		12	0.1005	0.00086	0.8522	0.0817	0.082
Recalculated 08/07/2007	06043		14	0.1004	0.00081	0.8068	0.0816	0.082
As originally reported	06048		12	0.1020	0.00124	1.2143	0.0829	0.083
Recalculated 08/07/2007	06048		14	0.1027	0.00213	2.0751	0.0835	0.084

As originally reported	06049		12	0.1025	0.00262	2.5581	0.0833	0.083
Recalculated 08/07/2007	06049		14	0.1023	0.00247	2.4137	0.0832	0.083
As originally reported	06054		12	0.1020	0.00111	1.0918	0.0829	0.083
Recalculated 08/07/2007	06054		14	0.1019	0.00111	1.0847	0.0828	0.083
As originally reported	07001	1	12	0.1010	0.00144	1.4300	0.0821	0.082
Recalculated 08/07/2007	07001		14	0.1011	0.00144	1.4278	0.0822	0.082
As originally reported	07006	1	12	0.1017	0.00120	1.1840	0.0827	0.083
Recalculated 08/07/2007	07006		15	0.1017	0.00113	1.1121	0.0827	0.083
As originally reported	07007		12	0.1021	0.00115	1.1279	0.0830	0.083
Recalculated 08/07/2007	07007		16	0.1018	0.00138	1.3598	0.0828	0.083
As originally reported	07008	1	12	0.1009	0.00131	1.2943	0.0820	0.082
Recalculated 08/07/2007	07008		15	0.1008	0.00128	1.2664	0.0820	0.082
As originally reported	07010		12	0.1015	0.00130	1.2849	0.0825	0.083
Recalculated 08/07/2007	07010		15	0.1013	0.00126	1.2412	0.0824	0.082
As originally reported	07015		12	0.1009	0.00090	0.8959	0.0820	0.082
Recalculated 08/07/2007	07015		15	0.1010	0.00086	0.8535	0.0821	0.082
As originally reported	07016	1	12	0.1008	0.00126	1.2540	0.0820	0.082
Recalculated 08/07/2007	07016		16	0.1006	0.00125	1.2413	0.0818	0.082
As originally reported	07017		12	0.1024	0.00105	1.0220	0.0833	0.083
Recalculated 08/07/2007	07017		15	0.1023	0.00097	0.9476	0.0832	0.083
As originally reported	07018		12	0.1014	0.00122	1.2037	0.0824	0.082
Recalculated 08/07/2007	07018		16	0.1014	0.00120	1.1831	0.0824	0.082
As originally reported	07023		12	0.1021	0.00146	1.4262	0.0830	0.083
Recalculated 08/07/2007	07023		16	0.1019	0.00164	1.6059	0.0828	0.083

<sup>1</sup> These field solutions were used to calibrate breath test instruments during their QAP however the rounded equivalent vapor concentration did not change

<sup>2</sup> These field solutions were used to calibrate breath test instruments during their QAP however the rounded equivalent vapor concentration changed