



TO: HCHS/SOL Quality Control Committee

FROM: Daniela Sotres-Alvarez, HCHS/SOL Coordinating Center

DATE: October 27, 2011

RE: HCHS/SOL Quality Control Report, October 2011

## MEMORANDUM

Attached is the HCHS/SOL Quality Control Report produced during the month of October, 2011. **This report** does not include any new tables; it only includes few tables and figures that were updated from the September Report due to data cleaning from Reading Centers. We cut-off the inclusion of data used in this report on October 18<sup>th</sup> when the SAS analysis files were created. **The QC section for the OSMB Report** for the annual meeting in November 2011 will include these updated tables and figures plus those included in the September QC Report. In particular in this Oct. report we include the following tables and figures:

### QC Report generated by the CC

#### *Reliability Study*

Table 3.2 Reliability of Spirometry measurements

#### *All HCHS/SOL participants*

Table 3.10 Spirometry Quality Grades and Figure for Percent of bad FVC and FEV tests

Table 3.24 Hours of sleep data collected

Table 5.0 Fasting glucose value higher than post-OGTT glucose

### In addition we include QC Reports sent by the following Reading Centers:

**Sleep:** Final Report for Inter and Intra Reliability

**Spirometry:** Final QC Report

## HCHS/SOL OSMB Quality Control Report, October 2011

### Table 3.2 Reliability of spirometry measurements

		QC Pairs		Lab SD (1)	Reliab (2)	CV (3)	Mean	Difference			pval (4)	
		N	Outliers removed					Mean	95% CI	Prop > 0		
Test Results FVC (L)	Bronx	126	2	3.4	0.09	0.99	2.7	0.00	-0.03	0.04	0.59	0.061
	*Bronx	128	.	3.4	0.14	0.98	4.1	0.00	-0.03	0.04	0.58	0.093
	Chicago	113	1	3.7	0.11	0.99	3.1	0.03	-0.03	0.08	0.61	0.014
	*Chicago	114	.	3.7	0.19	0.97	5.1	0.03	-0.03	0.08	0.61	0.019
	Miami	119	3	3.7	0.08	0.99	2.2	0.04	-0.02	0.10	0.57	0.142
	*Miami	122	.	3.7	0.27	0.91	7.3	0.04	-0.02	0.10	0.58	0.123
	San Diego	118	3	3.6	0.07	0.99	1.9	-0.00	-0.03	0.02	0.49	0.927
	*San Diego	121	.	3.6	0.10	0.99	2.8	-0.00	-0.03	0.02	0.49	1.000
	Overall	476	3	3.6	0.09	0.99	2.5	0.02	-0.01	0.04	0.57	0.004
	*Overall	485	.	3.6	0.19	0.96	5.1	0.02	-0.01	0.04	0.56	0.005
Test Results FEV1 (L)	Bronx	127	1	2.8	0.10	0.99	3.6	0.00	-0.05	0.05	0.61	0.033
	*Bronx	128	.	2.8	0.20	0.95	7.1	0.00	-0.05	0.05	0.60	0.042
	Chicago	113	1	3.0	0.09	0.99	3.1	0.00	-0.05	0.05	0.58	0.132
	*Chicago	114	.	3.0	0.18	0.96	5.9	0.00	-0.05	0.05	0.57	0.160
	Miami	119	3	3.0	0.07	0.99	2.4	0.02	-0.04	0.08	0.56	0.199
	*Miami	122	.	3.0	0.25	0.89	8.4	0.02	-0.04	0.08	0.57	0.174
	San Diego	118	3	3.0	0.07	0.99	2.5	-0.01	-0.03	0.02	0.47	0.645
	*San Diego	121	.	3.0	0.10	0.98	3.5	-0.01	-0.03	0.02	0.48	0.716
	Overall	477	3	2.9	0.09	0.99	2.9	0.00	-0.02	0.03	0.56	0.013
	*Overall	485	.	2.9	0.19	0.95	6.5	0.00	-0.02	0.03	0.55	0.014
Test Results FEV1/FVC (%)	Bronx	126	2	80.4	2.31	0.90	2.9	-0.15	-1.16	0.86	0.53	0.533
	*Bronx	128	.	80.3	4.11	0.74	5.1	-0.15	-1.16	0.86	0.52	0.659
	Chicago	112	2	81.0	1.47	0.91	1.8	-0.52	-0.99	-0.06	0.43	0.156
	*Chicago	114	.	81.1	1.70	0.88	2.1	-0.52	-0.99	-0.06	0.42	0.111
	Miami	120	2	81.2	1.37	0.93	1.7	-0.18	-0.60	0.25	0.42	0.082

	QC Pairs						Difference				
	N	Outliers removed	Mean	Lab SD (1)	Reliab (2)	CV (3)	Mean	95% CI	Prop > 0		pval (4)
*Miami	122	.	81.2	1.69	0.89	2.1	-0.18	-0.60	0.25	0.42	0.085
San Diego	118	3	81.3	1.36	0.91	1.7	-0.07	-0.54	0.40	0.43	0.167
*San Diego	121	.	81.2	1.86	0.84	2.3	-0.07	-0.54	0.40	0.44	0.203
Overall	476	3	81.0	1.68	0.91	2.1	-0.22	-0.55	0.11	0.45	0.049
*Overall	485	.	80.9	2.57	0.81	3.2	-0.22	-0.55	0.11	0.45	0.037

Outliers (diff > 3 SD) excluded unless row label is preceded by \*

(1) Standard deviation = square root (within-subject variance)

(2) The reliability coefficient is an estimate of the correlation between repeated measurements

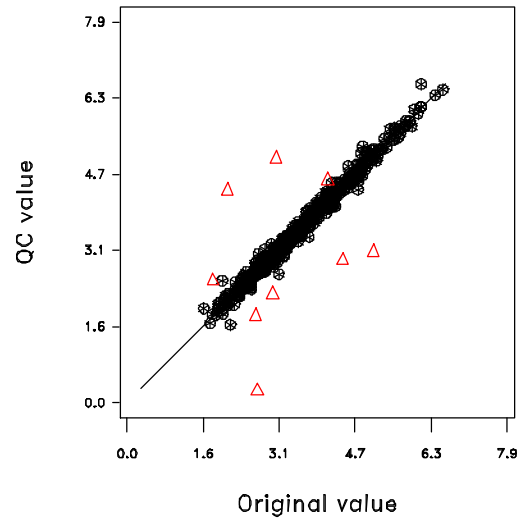
(3) The coefficient of variation (CV) is the lab SD expressed as a percent of the mean of QC pairs

(4) P-value for test that the proportion of positive differences = 50% (test for systematic bias)

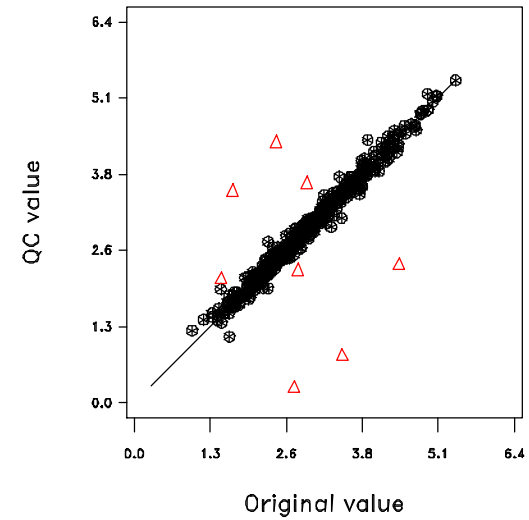
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## Reliability of spirometry measurements

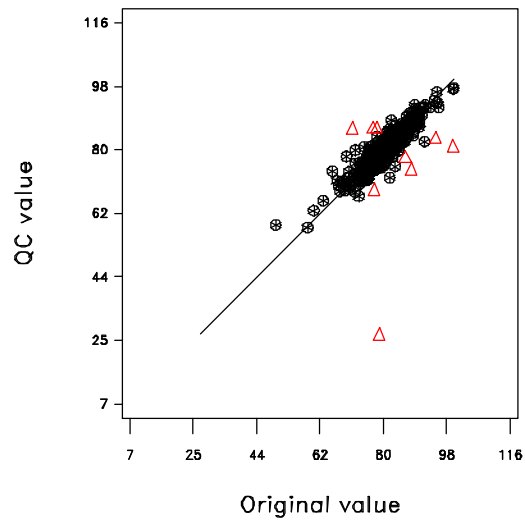
Test Results FVC (L)



Test Results FEV1 (L)



Test Results FEV1/FVC (%)



Circles indicate differences larger than 2 SD, and triangles larger than 3 SD  
Outliers excluded unless variable name is preceded by \*

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### Table 3.10 Spirometry Quality Grades

		<u>Bronx</u> <u>(N=3704)</u>			<u>Chicago</u> <u>(N=3982)</u>			<u>Miami</u> <u>(N=3950)</u>			<u>San Diego</u> <u>(N=3986)</u>			<u>Overall</u> <u>(N=15622)</u>		
		<i>N</i>	<i>Bad Tests</i>	<i>% Bad Tests</i>	<i>N</i>	<i>Bad Tests</i>	<i>% Bad Tests</i>	<i>N</i>	<i>Bad Tests</i>	<i>% Bad Tests</i>	<i>N</i>	<i>Bad Tests</i>	<i>% Bad Tests</i>	<i>N</i>	<i>Bad Tests</i>	<i>% Bad Tests</i>
<i>Bad tests (grade D,F) on either FVC or FEV1</i>	<i>Mar-Aug 08</i>	221	26	11.8	174	14	8.1	254	6	2.4	256	10	3.9	905	56	6.2
	<i>Sep 08-Feb 09</i>	392	58	14.8	473	24	5.1	239	5	2.1	523	29	5.5	1627	116	7.1
	<i>Mar-Aug 09</i>	543	29	5.3	880	27	3.1	529	20	3.8	837	19	2.3	2789	95	3.4
	<i>Sep 09-Feb 10</i>	542	25	4.6	650	14	2.2	754	14	1.9	561	17	3.0	2507	70	2.8
	<i>Mar-Aug 10</i>	840	40	4.8	448	23	5.1	828	16	1.9	674	23	3.4	2790	102	3.7
	<i>Sep 10-Feb 11</i>	668	45	6.7	766	23	3.0	815	13	1.6	676	18	2.7	2925	99	3.4
	<i>Mar-Jun 11</i>	498	36	7.2	591	33	5.6	531	27	5.1	459	12	2.6	2079	108	5.2

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Based on data retrieved at the CC on October 18, 2011

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**Table 3.24 Hours of sleep data collected**

	<i>Bronx</i> <i>(N=3764)</i>		<i>Chicago</i> <i>(N=3962)</i>		<i>Miami</i> <i>(N=3556)</i>		<i>San Diego</i> <i>(N=4004)</i>		<i>Overall</i> <i>(N=15286)</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Less 0.5 Hours of Sleep Data</i>										
<i>2008</i>	53	11.1	17	3.6	22	5.6	18	3.3	110	5.8
<i>2009</i>	76	7.3	36	2.5	77	7.7	68	4.7	257	5.2
<i>2010</i>	122	8.0	18	1.5	77	5.4	42	3.2	259	4.7
<i>2011</i>	52	7.3	18	2.1	44	6.0	26	3.8	140	4.7
<i>0.5-3.7 Hours of Sleep Data</i>										
<i>2008</i>	75	15.7	43	9.2	52	13.1	66	11.9	236	12.5
<i>2009</i>	152	14.5	130	9.0	158	15.9	174	12.0	614	12.4
<i>2010</i>	200	13.2	110	9.1	235	16.5	120	9.2	665	12.2
<i>2011</i>	98	13.7	77	9.1	145	19.7	103	14.9	423	14.2
<i>More than 3.7 Hours of Sleep Data</i>										
<i>2008</i>	351	73.3	407	87.2	322	81.3	470	84.8	1550	81.8
<i>2009</i>	820	78.2	1275	88.5	761	76.4	1207	83.3	4063	82.4
<i>2010</i>	1199	78.8	1083	89.5	1116	78.2	1150	87.7	4548	83.1
<i>2011</i>	566	79.1	750	88.9	547	74.3	561	81.3	2424	81.2

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Based on data retrieved at the CC on October 18, 2011

## HCHS/SOL Quality Control Report, October 2011

**Table 5.0 Fasting glucose value higher than post-OGTT glucose**

Baseline Characteristic	Bronx (N=4006)		Chicago (N=4118)		Miami (N=4077)		San Diego (N=4066)		Overall (N=16267)	
	N	%	N	%	N	%	N	%	N	%
OGTT glucose non-missing	3144	78.5	3273	79.5	3462	84.9	3407	83.8	13286	81.7
OGTT glucose < fasting glucose	741	23.6	690	21.1	707	20.4	732	21.5	2870	21.6
Mar 08-Feb 09	116	23.7	103	20.2	84	20.0	117	18.1	420	20.3
Mar 09-Feb 10	244	25.9	266	20.4	222	19.8	267	22.1	999	21.8
Mar 10-Feb 11	295	22.8	214	21.7	322	22.0	256	22.3	1087	22.2
Mar 11-Jun 11	86	20.5	107	22.7	79	17.3	92	22.8	364	20.8
Fasting*	727	23.5	683	21.2	700	20.4	726	21.4	2836	21.6
Non-fasting	12	28.6	7	17.5	6	24.0	6	31.6	31	24.6
Males	418	33.3	466	31.6	411	28.0	403	32.9	1698	31.3
Females	323	17.1	223	12.4	296	14.8	329	15.1	1171	14.9
18-44	447	30.0	453	27.9	408	28.6	443	28.7	1751	28.8
45+	294	17.8	237	14.4	299	14.7	289	15.5	1119	15.6

\* Participants with fasting blood collected before the glucola/snack (bioa11=yes) and more than 8 hours fasting

Based on analysis files created on 10/18/2011.  
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## SOL Scoring Reliability Summary

Four scorers, identified as 930, 931, 932 and 935, took part in scoring 93% of the 15,727 studies received at the Reading Center. All original studies were scored between March 2008 and August 2011. Scoring exercises were done on key scoring variables throughout the scoring period on a monthly basis. Scorer 930 did preliminary review of incoming studies to identify potential priority studies and/or equipment problems with failed studies and so has more failed (-1) and short studies (0) identified. Certification of the main 4 scorers took place in January and February of 2008 requiring scoring of two different sets of 10 studies (pilot studies) that had been de-identified. In order to be certified scorers were required to demonstrate a 5% level of agreement for AHI and a 10% agreement on other key variables.

- Scorer 936 was certified in March of 2009 and scored studies from April 2009 through February 2010
- Scorer 937 was certified in March of 2009 and scored studies from May 2009 through November 2009

Scorer 936 left the Reading Center in March of 2010 and Scorer 937 was assigned to another project in November of 2009. Separate statistics run for Reliability Set #2 that includes scorers 936 and 937 can be found on pages 9 and 10.

Scorer	Total Scored	-1	0	1	2	3	4	15,727 Total Studies
930	4487	388	622	9	31	62	3375	28.5% of Total
931	2770	128	330	6	16	30	2260	17.6% of Total
932	3191	184	523	33	13	19	2419	20.3% of Total
935	4171	198	563	16	55	42	3297	26.5% of Total
936	825	8	41	1	3	6	766	5.2% of Total
937	283	14	56		2	6	205	1.8% of Total



Study Selection for formal reliability scoring of 10 studies scored in 2008, 2009, 2010 and 2011.

All studies were initially selected from actual sleep studies scored in the first half of 2008. Studies were de-identified by ABM and study IDs were changed. (two studies became corrupted during this process and resulted in two de-identified certification pilot studies being substituted for the master set of 10 reliability studies). Studies selected required quality grade of 3 or 4. Selection was based on distribution of studies among all sites, AHI ranged from 3.5 to 39.2, and required 2-3 studies for each of the four key scorers.

StudyID	Reliability ID	Orig Date/Scorer	Reliability #1	Reliability #2	Reliability #3	Reliability #4
B0100096-Pilot	CC11008	12/13/2007 - 932	Jan 2008	Oct 2009	Oct 2010	Aug 2011
B5001703	CC11022	5/27/2008 - 931	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
C6000642	CC11029	4/21/2008 - 930	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
C6002021	CC11024	5/19/2008 - 935	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
C6002457	CC11025	6/9/2008 - 931	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
M7001065	CC11028	4/25/2008 - 935	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
M7002307	CC11027	5/20/2008 - 931	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
S0100805-Pilot	CC11003	12/11/2007 - 931	Jan 2008	Oct 2009	Oct 2010	Aug 2011
S8000112	CC11021	4/17/2008 - 932	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011
S8002625	CC11023	5/22/2008 - 930	Jun/Jul 2008	Oct 2009	Oct 2010	Aug 2011

No one scorer was identified as a gold standard – scorers were treated equally. Reliability results for Pass 1 on the following pages contain only inter-scorer reliability statistics. Pass 2 has intra-scorer statistics comparing Pass 2 vs. Pass 1.

### **SOL Reliability Exercise – Pass #4 (2011-09-14)**

The following statistics are based on 40 scored SOL reports (4 scorers, 10 studies each). Studies were scored in August and September of 2011. Key report and QS receipt values were entered into the PSG Reading Center SQL database by Susan Surovec. Descriptive statistics include mean, std, min, and max. ICCs were run for each scorer as compared to the other 3 scorers.

<b><u>Descriptive Statistics</u></b>	<b>All</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>935</b>
<b>Artifact-free Saturation (hrs)</b>	6.17 ± 1.31 (3.60 - 7.80)	6.23 ± 1.21 (4.60 - 7.60)	6.07 ± 1.31 (4.60 - 7.60)	5.90 ± 1.70 (3.60 - 7.90)	6.48 ± 1.10 (4.90 - 7.80)
<b>AHI 3%</b>	19.67 ± 11.53 (1.25 - 47.57)	19.6 ± 12.17 (1.52 - 41.16)	20.57 ± 13.34 (1.76 - 47.57)	20.18 ± 11.00 (4.17 - 39.32)	18.37 ± 11.20 (1.25 - 37.11)
<b><u>930 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.904	0.662	0.975		
<b>AHI 3%</b>	0.988	0.952	0.997		
<b><u>931 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.905	0.665	0.975		
<b>AHI 3%</b>	0.989	0.957	0.997		
<b><u>932 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.913	0.691	0.978		
<b>AHI 3%</b>	0.988	0.954	0.997		
<b><u>935 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.916	0.700	0.978		
<b>AHI 3%</b>	0.991	0.963	0.997		

### **Intra-Scorer Reliability Results 09-14-11**

Each of the 10 reliability studies was scored previously 3 times by each scorer as part of ongoing reliability scoring throughout the study. The ICCs below represent comparisons between each scorer's 4th pass and his/her previous 3 passes. (January 2008, October 2009, November 2010, August 2011)

<b><u>930</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.986	0.944	0.996
<b>AHI 3%</b>	0.997	0.986	0.999

<b><u>931</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.959	0.846	0.990
<b>AHI 3%</b>	0.991	0.964	0.998

<b><u>932</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.942	0.786	0.985
<b>AHI 3%</b>	0.995	0.979	0.999

<b><u>935</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.997	0.986	0.999
<b>AHI 3%</b>	0.989	0.956	0.997

### **SOL Reliability Exercise – Pass #3 (2010-11-22)**

The following statistics are based on 40 scored SOL reports (4 scorers, 10 studies each). Studies were scored in October of 2010. Key report and QS receipt values were entered into the PSG Reading Center SQL database by Susan Surovec. Descriptive statistics include mean, std, min, and max. ICCs were run for each scorer as compared to the other 3 scorers.

<b><u>Descriptive Statistics</u></b>	<b>All</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>935</b>
<b>Artifact-free Saturation (hrs)</b>	6.41 ± 1.08 (4.70 - 7.80)	6.31 ± 1.17 (4.70 - 7.60)	6.44 ± 1.11 (4.90 - 7.70)	6.42 ± 1.14 (4.90 - 7.70)	6.48 ± 1.08 (4.90 - 7.80)
<b>AHI 3%</b>	19.10 ± 11.14 (2.00 - 42.82)	18.6 ± 11.96 (2.00 - 39.32)	19.63 ± 12.18 (2.14 - 42.82)	19.08 ± 11.00 (2.59 - 37.78)	19.10 ± 11.19 (2.11 - 38.22)
<b><u>930</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.991	0.966	0.998		
<b>AHI 3%</b>	0.996	0.984	0.999		
<b><u>931</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.990	0.959	0.997		
<b>AHI 3%</b>	0.996	0.984	0.999		
<b><u>932</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.990	0.962	0.998		
<b>AHI 3%</b>	0.996	0.982	0.999		
<b><u>935</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.990	0.962	0.998		
<b>AHI 3%</b>	0.996	0.982	0.999		

### **SOL Reliability Exercise – Pass #2 October 2009 (2011-10-26)**

The following statistics are based on 40 scored SOL reports (4 scorers, 10 studies each). Studies were scored in October of 2009. Key report and QS receipt values were entered into the PSG Reading Center SQL database by Susan Surovec. Descriptive statistics include mean, std, min, and max. ICCs were run for each scorer as compared to the other 3 scorers.

<b><u>Descriptive Statistics</u></b>	<b>All</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>935</b>
<b>Artifact-free Saturation (hrs)</b>	6.47 ± 1.05 (4.80 - 7.80)	6.45 ± 1.07 (4.80 - 7.60)	6.46 ± 1.06 (4.90 - 7.60)	6.47 ± 1.12 (4.90 - 7.80)	6.50 ± 1.10 (4.90 - 7.80)
<b>AHI 3%</b>	18.52 ± 10.87 (0.71 - 39.07)	17.64 ± 11.57 (0.71 - 37.33)	19.09 ± 11.09 (2.32 - 37.33)	19.22 ± 11.06 (3.64 - 38.67)	18.15 ± 11.45 (2.11 - 39.07)
<b><u>930 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.998	0.990	0.999		
<b>AHI 3%</b>	0.995	0.980	0.999		
<b><u>931 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.997	0.990	0.999		
<b>AHI 3%</b>	0.994	0.976	0.999		
<b><u>932 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.997	0.990	0.999		
<b>AHI 3%</b>	0.994	0.977	0.999		
<b><u>935 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.998	0.990	0.999		
<b>AHI 3%</b>	0.994	0.975	0.998		

**Intra-Scorer Reliability**

Each of the 10 reliability studies was scored previously 3 times by each scorer. The ICCs below represent comparisons between each scorer's 2<sup>nd</sup> pass and his/her previous pass.

<b><u>930</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.998	0.992	0.999
<b>AHI 3%</b>	0.994	0.978	0.999

<b><u>931</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.991	0.965	0.998
<b>AHI 3%</b>	0.984	0.937	0.996

<b><u>932</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.993	0.972	0.998
<b>AHI 3%</b>	0.994	0.975	0.998

<b><u>935</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.992	0.967	0.998
<b>AHI 3%</b>	0.992	0.968	0.998

### **SOL Reliability Exercise – Pass #1 June/July 2008 (2011-10-26)**

The following statistics are based on 40 scored SOL reports (4 scorers, 10 studies each). Studies were scored June/July 2008. Key report and QS receipt values were entered into the PSG Reading Center SQL database by Susan Surovec. Descriptive statistics include mean, std, min, and max. ICCs were run for each scorer as compared to the other 3 scorers.

<b><u>Descriptive Statistics</u></b>	<b>All</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>935</b>
<b>Artifact-free Saturation (hrs)</b>	6.41 ± 1.03 (4.70 - 7.80)	6.38 ± 1.06 (4.80 - 7.60)	6.36 ± 1.08 (4.80 - 7.70)	6.49 ± 1.12 (4.70 - 7.80)	6.39 ± 1.03 (4.90 - 7.60)
<b>AHI 3%</b>	17.14 ± 11.42 (0.54 - 40.00)	17.35 ± 12.14 (0.70 - 38.14)	17.70 ± 12.02 (0.54 - 40.00)	17.60 ± 11.53 (1.21 - 37.73)	15.89 ± 11.75 (0.73 - 35.81)
<b><u>930 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.993	0.973	0.998		
<b>AHI 3%</b>	0.994	0.975	0.998		
<b><u>931 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.994	0.975	0.998		
<b>AHI 3%</b>	0.994	0.977	0.999		
<b><u>932 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.995	0.979	0.999		
<b>AHI 3%</b>	0.994	0.977	0.999		
<b><u>935 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>		
<b>Artifact-free Saturation (hrs)</b>	0.993	0.973	0.998		
<b>AHI 3%</b>	0.996	0.985	0.999		

**SOL Reliability Exercise – Pass #2 October 2009 (2011-10-27) – Includes Scorer 936 and 937**

The following statistics are based on 60 scored SOL reports (6 scorers, 10 studies each). Key report and QS receipt values were entered into the PSG Reading Center SQL database by Susan Surovec. Descriptive statistics include mean, std, min, and max. ICCs were run for each scorer as compared to the other 3 scorers.

<b><u>Descriptive Statistics</u></b>	<b>All</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>935</b>	<b>936</b>	<b>937</b>
<b>Artifact-free Saturation (hrs)</b>	6.45 ± 1.07 (4.40 - 7.80)	6.45 ± 1.07 (4.80 - 7.60)	6.46 ± 1.06 (4.90 - 7.60)	6.47 ± 1.12 (4.90 - 7.80)	6.50 ± 1.10 (4.90 - 7.80)	6.36 ± 1.28 (4.40 - 7.80)	6.45 ± 1.08 (5.00 - 7.70)
<b>AHI 3%</b>	18.39 ± 11.02 (0.71 - 39.07)	17.64 ± 11.57 (0.71 - 37.33)	19.09 ± 11.09 (2.32 - 37.33)	19.22 ± 11.06 (3.64 - 38.67)	18.15 ± 11.45 (2.11 - 39.07)	18.95 ± 11.67 (0.86 - 38.86)	17.32 ± 12.11 (1.37 - 38.80)
<b><u>930 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>				
<b>Artifact-free Saturation (hrs)</b>	0.990	0.965	0.997				
<b>AHI 3%</b>	0.995	0.982	0.999				
<b><u>931 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>				
<b>Artifact-free Saturation (hrs)</b>	0.990	0.965	0.997				
<b>AHI 3%</b>	0.995	0.982	0.999				
<b><u>932 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>				
<b>Artifact-free Saturation (hrs)</b>	0.990	0.965	0.997				
<b>AHI 3%</b>	0.995	0.982	0.999				
<b><u>935 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>				
<b>Artifact-free Saturation (hrs)</b>	0.991	0.965	0.997				
<b>AHI 3%</b>	0.995	0.981	0.999				



<b><u>936 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.991	0.967	0.998
<b>AHI 3%</b>	0.995	0.981	0.999

<b><u>937 vs. Others</u></b>	<b>ICC</b>	<b>Lower</b>	<b>Upper</b>
<b>Artifact-free Saturation (hrs)</b>	0.990	0.965	0.997
<b>AHI 3%</b>	0.995	0.983	0.999

## Quality Control Report for All Operators

From: 10/30/2007 To: 10/6/2011

All IDs selected

18080 Test Analyzed

Average number acceptable curves = 4.23

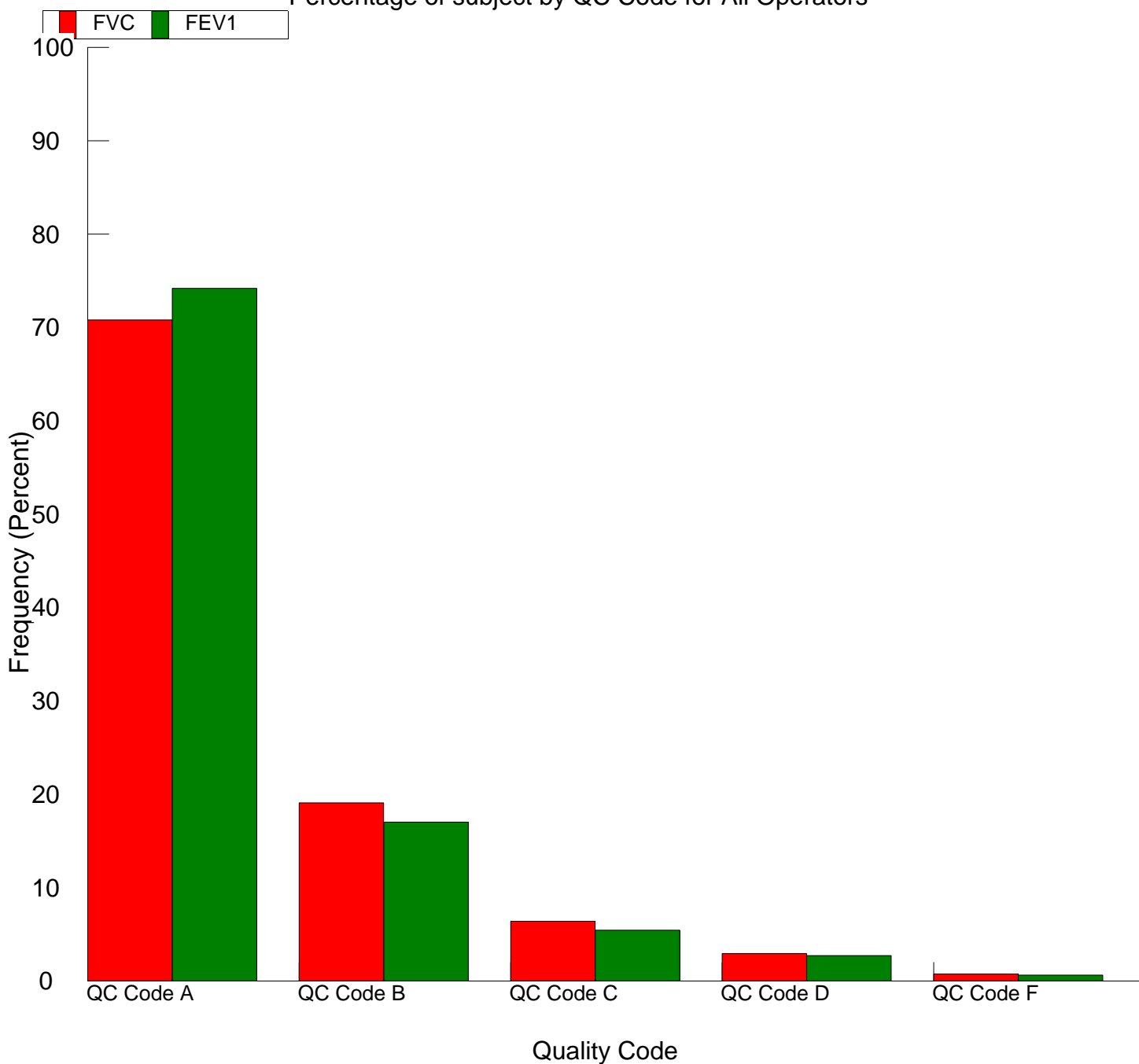
Average FVC QC Code = 3.56 Average FEV1 QC Code = 3.61

Percentage of non-repeatable tests = 7.0%

Percentage tests < 3 acceptable curves = 1.4%; 2.5% (EOT)

Percentage tests < 2 acceptable curves = 0.7%; 1.5% (EOT)

Percentage of subject by QC Code for All Operators



### QC Summary Report

From: 10/30/2007 To: 10/6/2011

All IDs selected

22379 calibration checks, 21954 leak checks

515 ( 2.3%) syringe calibration check errors

338 ( 1.5%) leak check errors

#### Quality Control Summary Report By Operator; A=4

From: 10/30/2007 To: 10/6/2011

All IDs selected

Operators	Number	NA	QC(FVC)	QC(FEV1)
All Operators	18080	4.26	3.56	3.61
	2	4.03	4.00	4.00
108	1213	4.27	3.47	3.47
110	1342	4.04	3.30	3.41
111	945	4.03	3.41	3.50
112	200	4.25	3.36	3.37
126	410	4.54	3.51	3.42
142	1	4.00	4.00	3.00
209	925	4.48	3.50	3.66
211	419	4.94	3.64	3.74
212	37	3.98	3.03	3.32
213	375	3.80	3.54	3.67
214	6	4.05	3.50	3.00
222	153	3.96	3.58	3.67
226	127	4.38	3.49	3.56
230	144	4.22	3.51	3.42
236	1018	3.79	3.68	3.76
259	26	3.58	3.69	3.73
277	262	3.57	3.33	3.44
279	90	4.68	3.59	3.67
298	640	3.37	3.40	3.39
30	1	3.07	4.00	4.00
310	143	4.48	3.64	3.73
316	390	4.63	3.84	3.85
317	2	3.54	2.50	2.00
330	2467	4.68	3.68	3.74
349	334	3.88	3.54	3.63
352	288	4.96	3.73	3.70
353	25	4.65	3.76	3.76
360	829	4.37	3.81	3.81
372	84	4.09	3.73	3.80
406	715	4.16	3.59	3.61
409	176	3.75	3.46	3.51
410	215	4.07	3.54	3.57
412	1	3.00	3.00	4.00
420	4	3.50	4.00	4.00
425	756	4.10	3.55	3.57
435	43	4.34	3.70	3.65
437	262	4.29	3.74	3.70
447	660	4.33	3.51	3.55
449	394	4.18	3.53	3.57
450	503	4.42	3.67	3.70
457	617	4.59	3.61	3.65
460	524	4.34	3.64	3.67
636	301	4.23	3.58	3.59
646	5	4.26	3.00	3.00
DA	1	3.00	4.00	4.00
JB	1	4.00	1.00	1.00
LM	2	5.26	2.00	3.00
LR	2	3.50	2.50	2.50
All Operators	18080	4.26	3.56	3.61

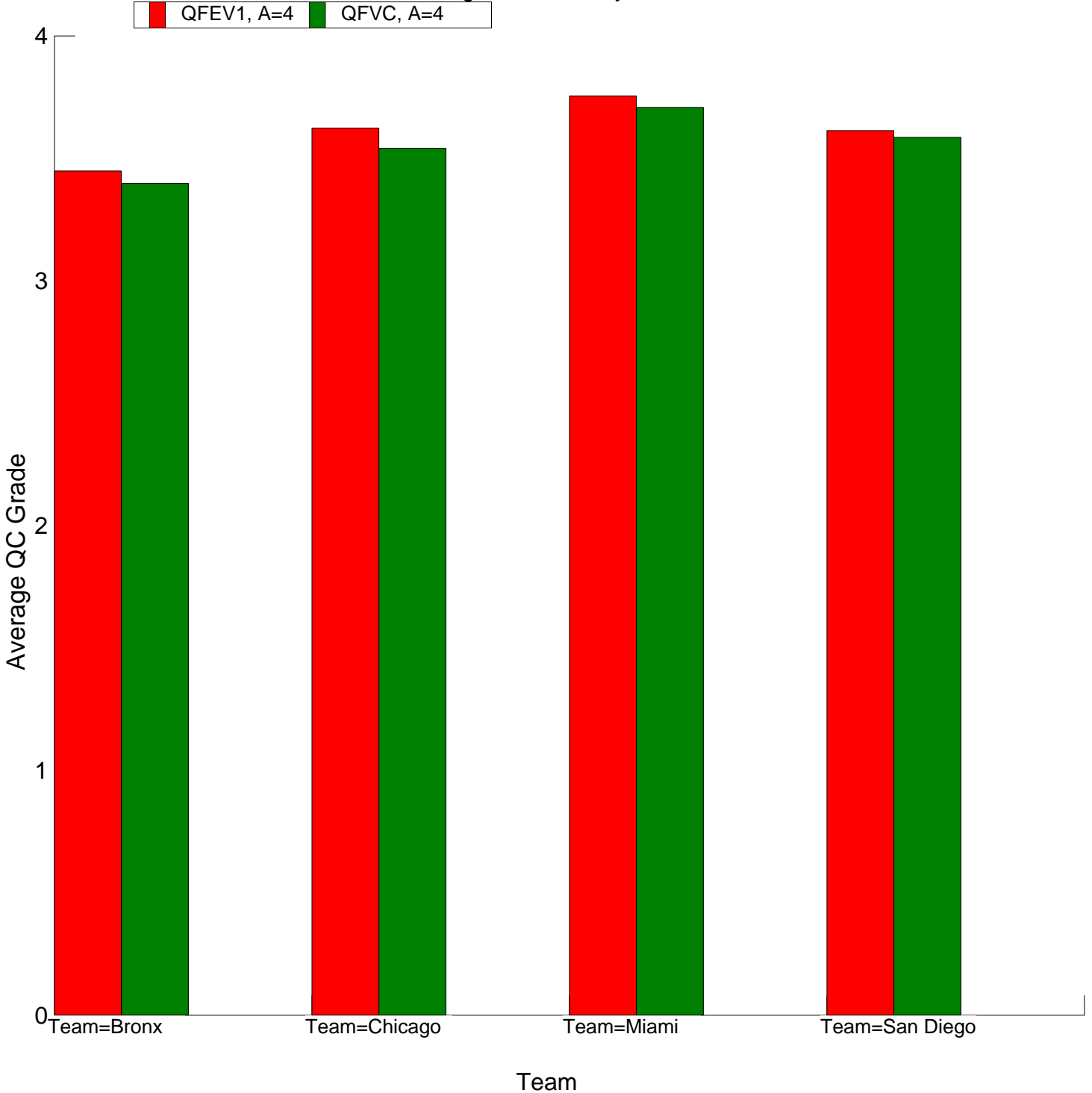
### Quality Control Report by Team

From: 10/30/2007 To: 10/6/2011

All IDs selected

Team	NTests	AQFVC	AQFEV1
Bronx	4111	3.40	3.45
Chicago	4524	3.54	3.62
Miami	4568	3.71	3.75
San Diego	4870	3.59	3.61

Average QC Code by Team



Week	N	QFVC	QFEV1	%Bad	Week	N	QFVC	QFEV1	%Bad	Week	N	QFVC	QFEV1	%Bad
0	100	3.35	3.46	11.0%	12	177	3.45	3.62	6.8%	24	544	3.46	3.53	9.7%
36	724	3.45	3.52	9.5%	48	843	3.37	3.49	11.3%	60	1094	3.54	3.61	5.9%
72	1388	3.62	3.68	4.0%	84	1583	3.58	3.64	5.6%	96	1415	3.65	3.71	3.8%
108	1301	3.65	3.70	4.8%	120	1434	3.59	3.62	6.1%	132	1401	3.62	3.65	5.6%
144	1786	3.53	3.59	7.0%	156	1407	3.53	3.55	7.0%	168	1615	3.55	3.56	7.0%
180	1208	3.39	3.43	12.8%										

QC Code Trends for All Operators; 4=A, 3=B, 2=C, 1=D, 0=F

