

Balance Resources and Demand Proof-of-Concept Field Trial

Update Discussion

May 7 2007

Doug Hils

Balance Resources and Demand Standard Drafting Team

Balance Resources and Demand Proof-of-Concept Field Trial

Balancing Authorities under Field Trial	Region	RC	2006 Bias (MW/0.1Hz)	Projected Peak (MWH)
Central and Southwest	SPP	SPP	-97	9,738
Alliant Energy (ALTE)	MRO	MISO	-42	3,054
Alliant Energy (ALTW)	MRO	MISO	-57	3,850
Cinergy	RFC	MISO	-130	13,023
East Kentucky Power Cooperative	SERC	TVA	-36	2,893
Entergy Services Inc	SERC	Entergy	-211	21,103
Manitoba Hydro	MRO	MISO	-45	4,130
Michigan Electric Coordinated Systems	RFC	MISO	-225	22,494
Northern Indiana Public Service	RFC	MISO	-59	3,491
PJM	RFC	PJM	-1,358	135,757
Santee Cooper	SERC	VACAR	-84	5,419
Southern Company	SERC	SOCO	-445	44,491
Tennessee Valley Authority	SERC	TVA	-319	31,935
Wisconsin Energy Corporation	RFC	MISO	-72	7,147
				308,525
ERCOT	ERCOT	ERCOT	-538	62,148

Balance Resources and Demand Proof-of-Concept Field Trial

The Balancing Authority ACE Limit (BAAL) shall not be exceeded for more than 30 consecutive clock-minutes

	JULY 2005 - MARCH 2007 Performance under BAAL		MARCH 2007 Performance under BAAL	
	Max MinCtLow	Max MinCtHigh	Max MinCtLow	Max MinCtHigh
BA1	12	16	10	6
BA2	13	15	7	4
BA3	13	16	13	7
BA4	15	22	10	10
BA5	17	18	10	15
BA6	18	38	15	10
BA7	21	26	15	20
BA8	22	33	17	14
BA9	24	29	16	18
BA10	25	24	18	14
BA11	25	31	14	10
BA12	26	23	13	11
BA13	26	40	14	14
BA14	28	43	28	17

MinCtLow = Count of consecutive clock-minutes BAAL_Low was exceeded

MinCtHigh = Count of consecutive clock-minutes BAAL_High was exceeded

Balance Resources and Demand Proof-of-Concept Field Trial

Clock-Minutes of Actual Frequency <= FTL _{Low}												
Year	Month	>=1 Min	>=2 Min	>=3 Min	>=4 Min	>=5 Min	>=6 Min	>=7 Min	>=8 Min	>=9 Min	>=10 Min	Max_Duration
2005	7	32	14	7	3	2						5
2005	8	56	36	20	12	8	2	1	1	1	1	10
2005	9	33	20	9	4	2	1	1	1			8
2005	10	43	21	12	5	2	2	1	1	1	1	11
2005	11	58	26	14	5	4	1					6
2005	12	41	18	5	4	2	2	1				7
2006	1	43	20	7	2	2	1					6
2006	2	39	17	4	2	1	1					6
2006	3	50	23	4	2							4
2006	4	58	30	10	5	2						5
2006	5	54	30	15	10	4	4	1	1			8
2006	6	41	22	11	4	1						5
2006	7	34	18	9	4	2	1	1	1	1		9
2006	8	50	26	15	8	3						5
2006	9	38	21	11	4	3	1					6
2006	10	50	25	8	5	1	1					6
2006	11	46	22	10	8	4						5
2006	12	33	14	3	1							4
2007	1	44	21	10	7	3	2	1				7
2007	2	33	13	2								3
2007	3	76	39	18	10	3	2	2	1	1	1	15
2007	4	45	18	7	4	3						5

This chart lists the number of times that the duration of the FTL_{LOW} exceedance was greater than or equal to 1 minute, 2 minutes, 3 minutes and so on, with the maximum duration for the month noted in the right column.

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Clock-Minutes of Actual Frequency <= FTL _{Low}												
Year	Month	>=1 Min	>=2 Min	>=3 Min	>=4 Min	>=5 Min	>=6 Min	>=7 Min	>=8 Min	>=9 Min	>=10 Min	Max_Duration
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2005	8	56	36	20	12	8						
2005	9	33	20	9	4	2						
2005	10	43	21	12	5	2						
2005	11	58	26	14	5	4						
2005	12	41	18	5	4	2						
2006	1	43	20	7	2	2						
2006	2	39	17	4	2	1						
2006	3	50	23	4	2							
2006	4	58	30	10	5	2						
2006	5	54	30	15	10	4						
2006	6	41	22	11	4	1						
2006	7	34	18	9	4	2						
2006	8	50	26	15	8	3						5
2006	9	38	21	11	4	3	1					6
2006	10	50	25	8	5	1	1					6
2006	11	46	22	10	8	4						5
2006	12	33	14	3	1							4
2007	1	44	21	10	7	3	2	1				7
2007	2	33	13	2								3
2007	3	76	39	18	10	3	2	2	1	1	1	15
2007	4	45	18	7	4	3						5

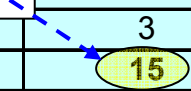
Since the start of the Field Trial in July 2005, FTL_{Low} has been exceeded 0.19% of the clock-minutes. Approximately 43% of the FTL_{Low} exceedances occurred during time-error correction at 59.98 Hz where the frequency error did not exceed -0.05 Hz.

This chart lists the number of times that the duration of the FTL_{Low} exceedance was greater than or equal to 1 minute, 2 minutes, 3 minutes and so on, with the maximum duration for the month noted in the right column.

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2005	10	43	21	12	5	2	2	1	1	1	1	11
2005	11	58	26	14	5	4	1					6
2005	12	41	18	5	4	2	2	1				7
2006	1	43	20	7	2	2	1					6
2006	2	39	17	4	2	1	1					6
2006	3	50	23	4	2							4
2006	4	58	30	10	5	2						5
2006	5	54	30	15	10	4	4	1	1			8
2006	6	41	22	11	4	1						5
2006	7	34	18	9	4	2	1	1	1	1		9
2006	8	50	26	15	8	3						5
2006	9	38	21	11	4	3	1					6
2006	10	50	25	8	5	1	1					6
2006	11	46	22	10	8	4						5
2006	12	33	14	3	1							4
2007	1	44	21	10	7	3						7
2007	2	33	13	2								3
2007	3	76	39	18	10	3	2	2	1	1	1	15
2007	4	45	18	7	4	3						5

Monday morning after change to new Daylight Savings Time



This chart lists the number of times that the duration of the FTL_{Low} exceedance was greater than or equal to 1 minute, 2 minutes, 3 minutes and so on, with the maximum duration for the month noted in the right column.

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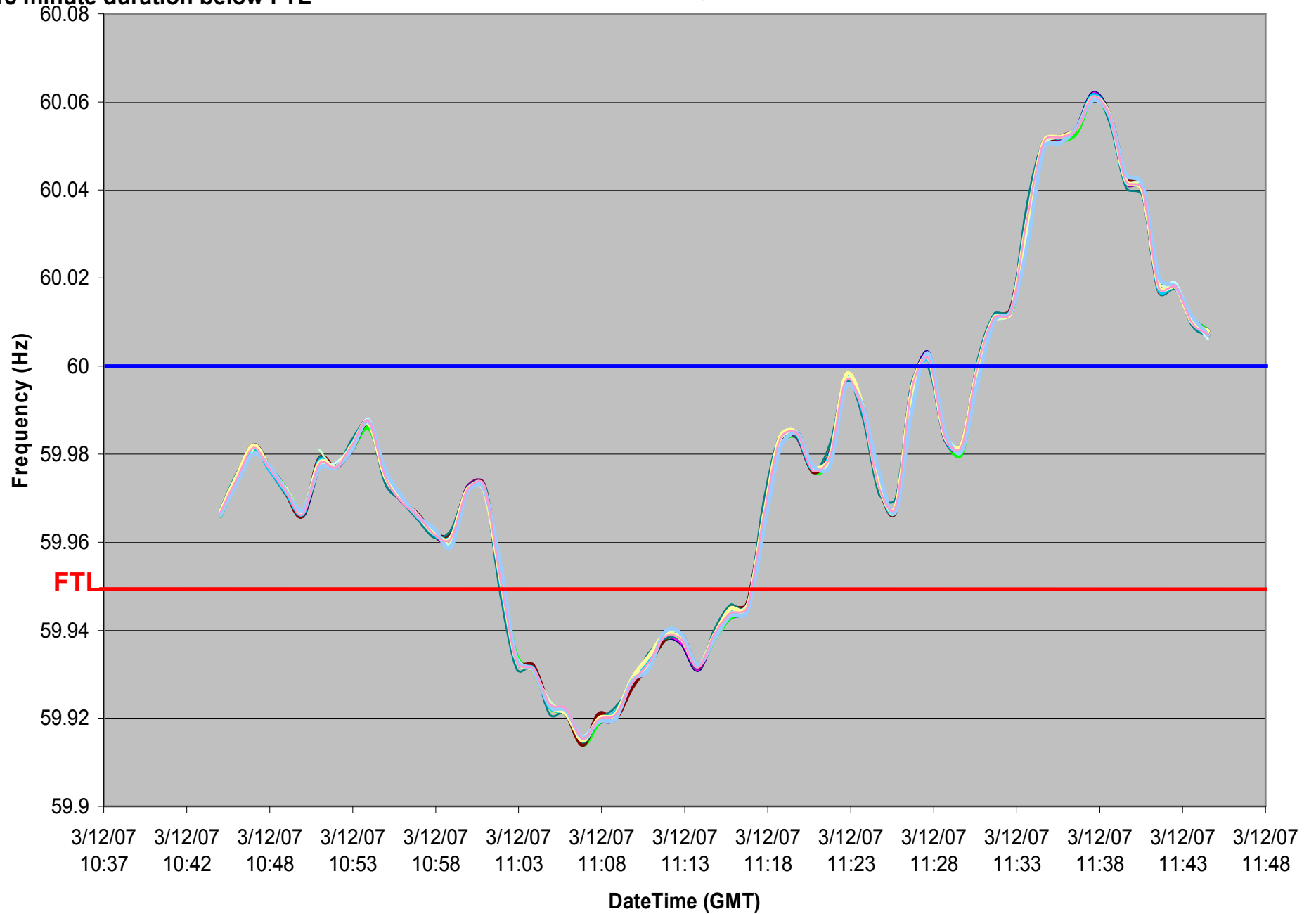
Clock-Minutes of Actual Frequency >= FTL_High												
Year	Month	>=1 Min	>=2 Min	>=3 Min	>=4 Min	>=5 Min	>=6 Min	>=7 Min	>=8 Min	>=9 Min	>=10 Min	Max_Duration
2005	7	11	4	1								3
2005	8	21	7	4	2	1						5
2005	9	21	9	3	2	2	1	1				7
2005	10	23	6	2	1	1						5
2005	11	22	7	4	1	1	1	1				7
2005	12	19	6	2								3
2006	1	27	15	11	6	2						5
2006	2	24	10	7	5							4
2006	3	33	12	4	2	1	1	1	1			8
2006	4	46	22	3	1	1	1	1	1			8
2006	5	39	20	9	4	1						5
2006	6	24	10	7	4	4	3	3	2	1	1	10
2006	7	29	11	8	2							4
2006	8	26	13	10	5	1	1	1	1			8
2006	9	33	14	4	2							4
2006	10	28	14	4	3	2	1	1	1			8
2006	11	22	11	4								3
2006	12	29	12	7	3	2	1					6
2007	1	31	14	5	2	1	1	1				7
2007	2	21	13	4	1							4
2007	3	39	21	10	4	2	1	1	1			8
2007	4	30	15	8	4							4

This chart lists the number of times that the duration of the FTL_{HIGH} exceedance was greater than or equal to 1 minute, 2 minutes, 3 minutes and so on, with the maximum duration for the month noted in the right column.

03/12/2007 6:02-6:16 EST

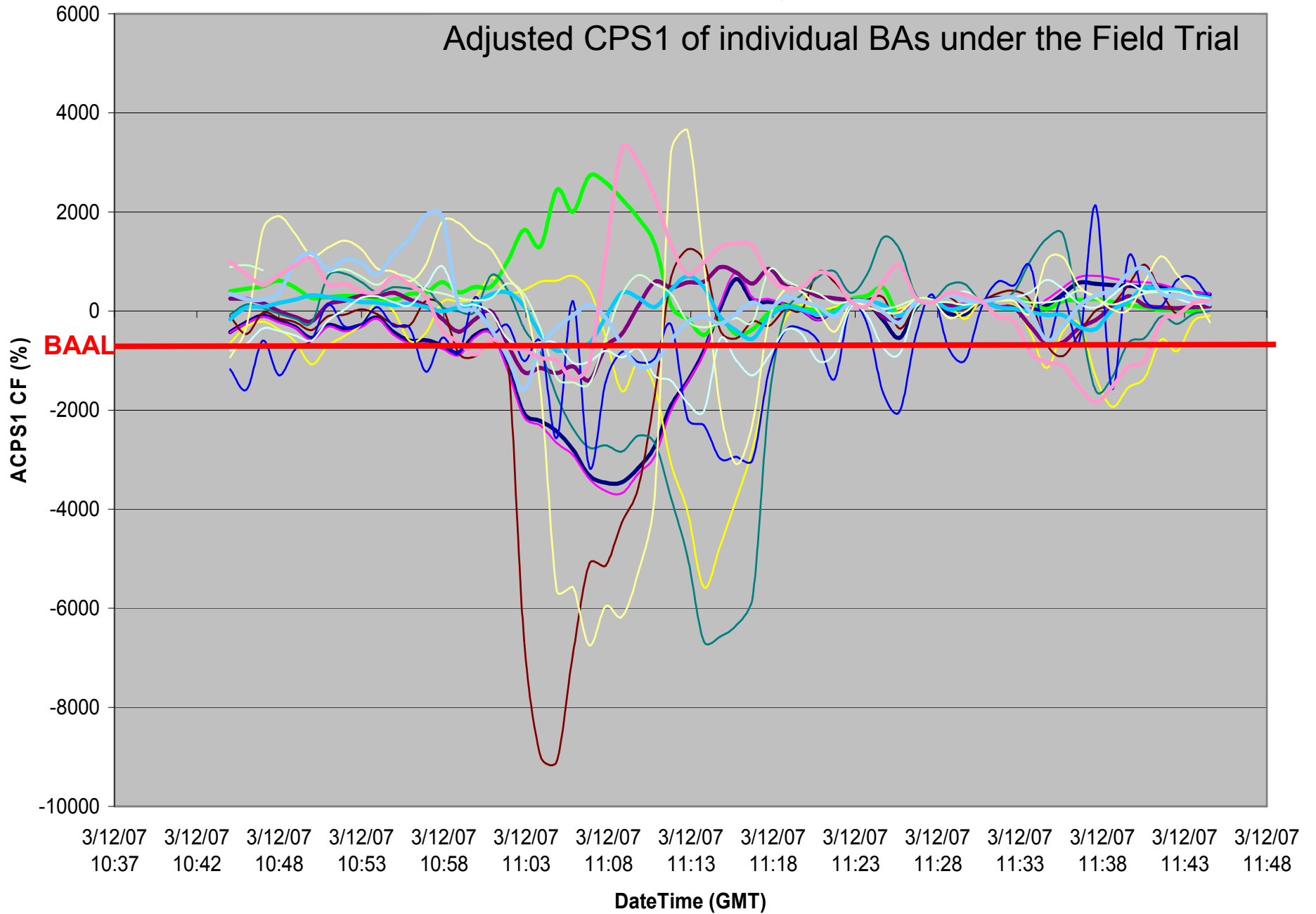
15 minute duration below FTL

Frequency



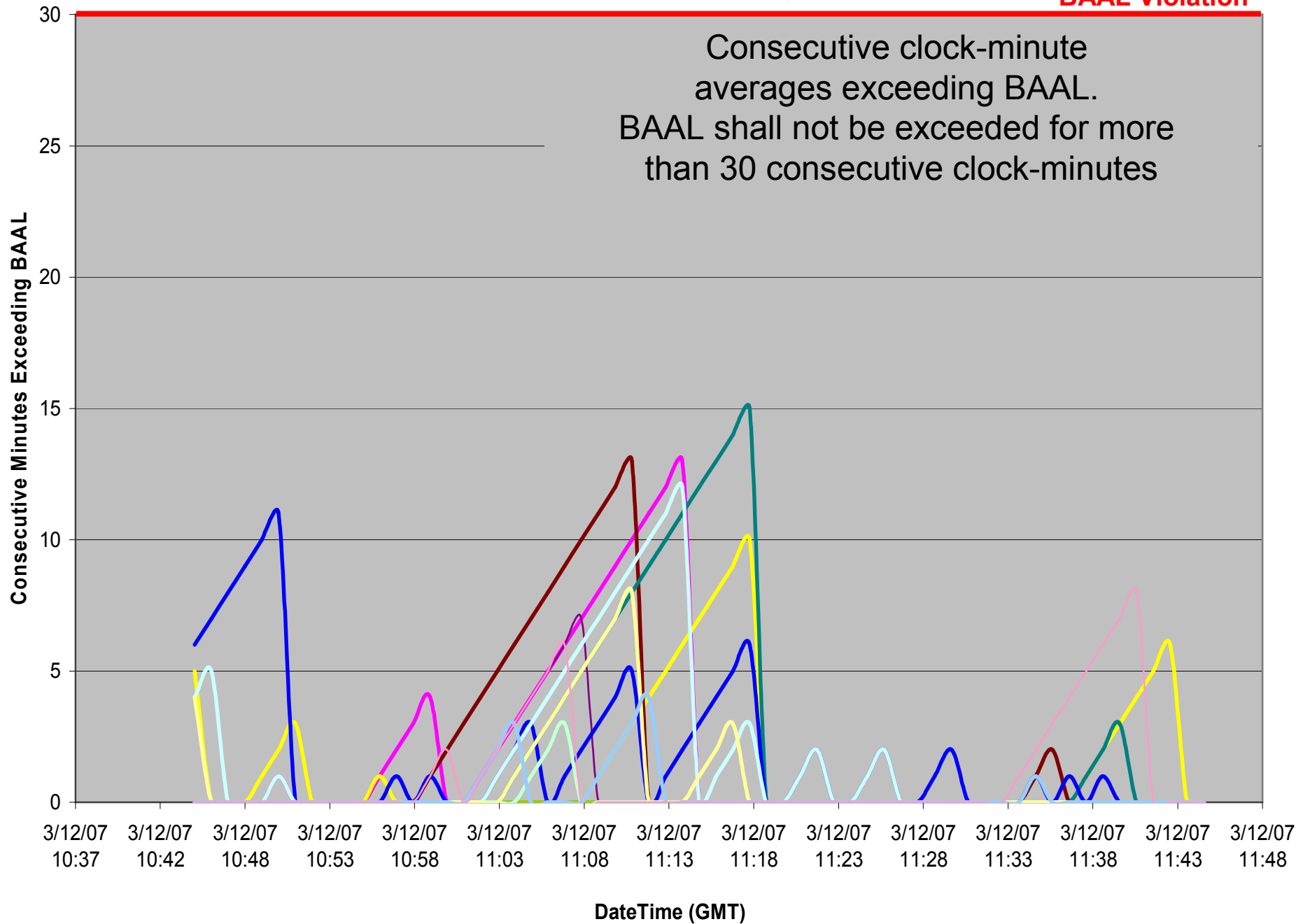
ACPS1 One-Minute Averages

Adjusted CPS1 of individual BAs under the Field Trial



Consecutive Minutes Exceeding BAAL

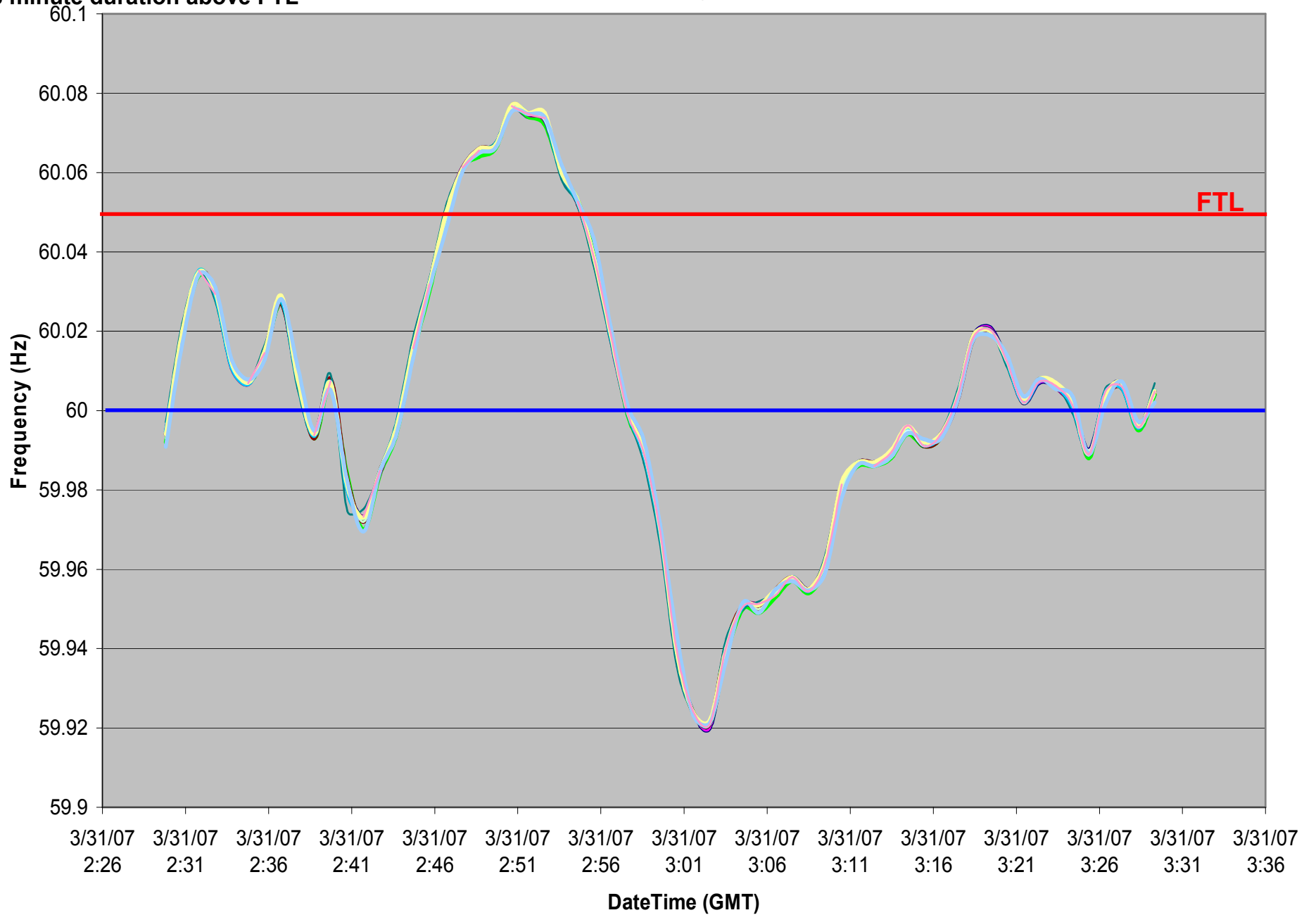
BAAL Violation



03/30/2007 21:47-21:54 EST

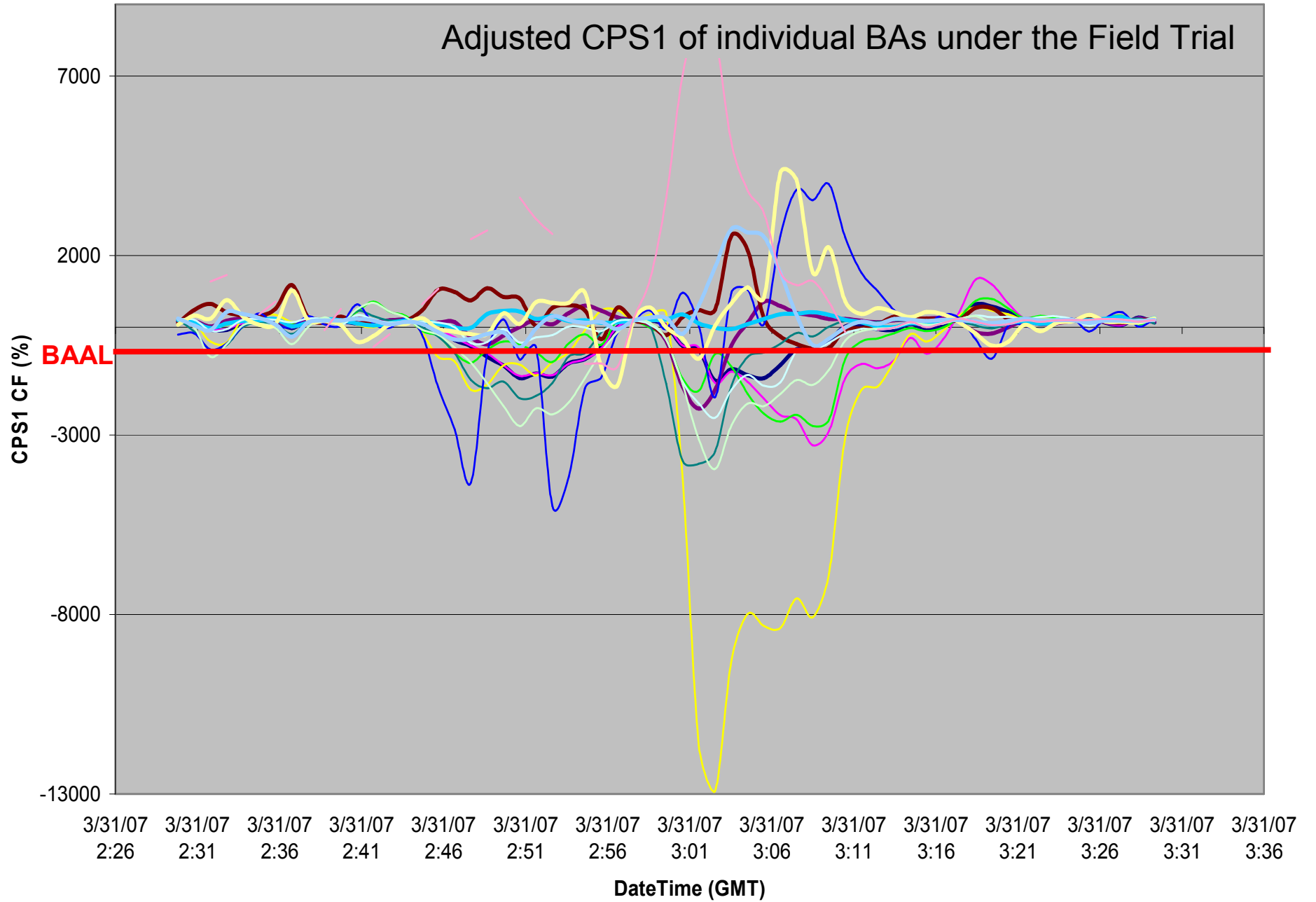
8 minute duration above FTL

Frequency



CPS1 One-Minute Averages

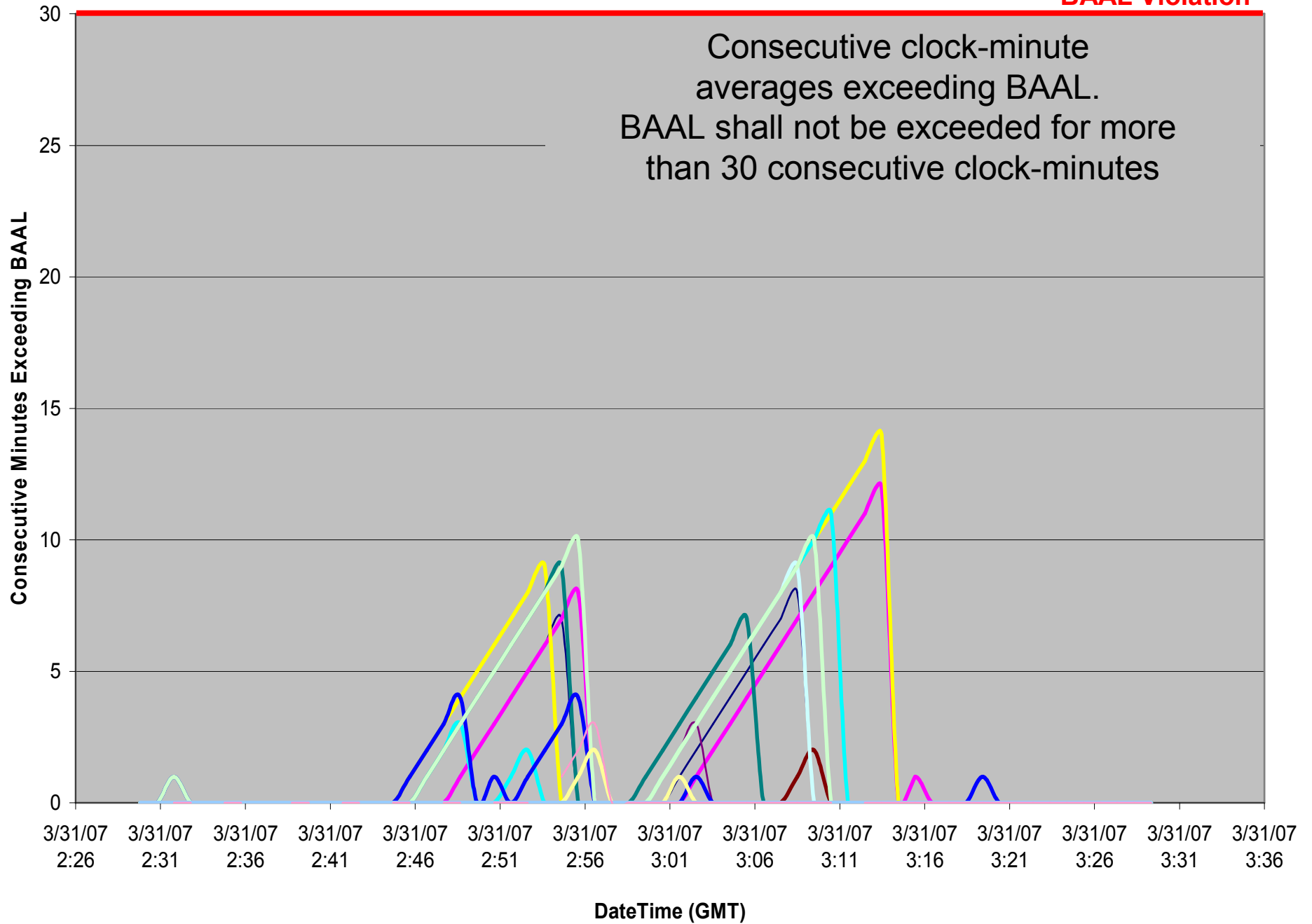
Adjusted CPS1 of individual BAs under the Field Trial



Consecutive Minutes Exceeding BAAL

BAAL Violation

Consecutive clock-minute averages exceeding BAAL. BAAL shall not be exceeded for more than 30 consecutive clock-minutes



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