

Balancing Authority ACE Limit Proof-of-Concept Field Trial Project 2010-14

Eastern Interconnection Update
Discussion
September, 2011

CERTS-EPG

Balancing Authority Reliability-based Control Standard Drafting Team
(BARCSDT)

From December 2010, NERC 1-minute ACE and Frequency Data are used
to generate the report

Balancing Authority ACE Limit Proof-of-Concept Field Trial

Eastern Interconnection Field Trial Participation

Participation reflects approximately 67% of the projected 2011 peak load for the Eastern Interconnection

Eastern Interconnection Balancing Authority Participants	2011 Frequency Bias	Region	Reliability Coordinator	Start Date
American Electric Power (CSWS)	103.6	SPP	SPP	September 1, 2005
Associated Electric Cooperative, Inc. (AECI)	44	SERC	TVA	April 1, 2010
Duke Energy Carolinas (DUK)	196	SERC	VACS	April 1, 2009
East Kentucky Power Cooperative, Inc. (EKPC)	42.73	SERC	TVA	July 6, 2005
Entergy Services, Inc. (EES)	231.7	SERC	ICTE	July 6, 2005
EON-US (LGEE)	71.3	SERC	TVA	April 1, 2008
Independent Electricity System Operator (IESO)	234.8	NPCC	IESO	March 1, 2008
Manitoba Hydro (MHEB)	44.4	MRO	MISO	July 6, 2005
Midwest Independent System Operator (MISO)	1114.8	MRO, RFC, SERC	MISO	January 6, 2009
PJM Interconnection (PJM)	1366	RFC	PJM	August 1, 2005
Santee Cooper (SC)	61.37	SERC	VACS	March 1, 2006
Southern Company Services, Inc. (SOCO)	450	SERC	SOCO	October 15, 2005
Tennessee Valley Authority ESO (TVA)	323.95	SERC	TVA	October 1, 2005

Balancing Authority ACE Limit Proof-of-Concept Field Trial

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

	Longest exceedence of the Balancing Authority ACE Limit since starting operation under the Field Trial (Minutes)		CERTS-EPG September 2011 Performance under the Field Trial	
	Max MinCtLow	Max MinCtHigh	Max MinCtLow	Max MinCtHigh
BA01	26	16	7	11
BA02	17	17	9	7
BA03	19	19	12	9
BA04	10	20	8	10
BA05	16	22	14	9
BA06	28	25	20	16
BA07	15	23	4	5
BA08	20	24	8	10
BA09	28	26	9	11
BA10	21	31	11	9
BA11	14	32	6	5
BA12	29	40		
BA13	28	43	7	14

MinCtLow = Count of consecutive clock-minutes BAALow was exceeded

MinCtHigh = Count of consecutive clock-minutes BAALHigh was exceeded

*BA12 did not send data into NERC

*BAAL being exceeded for more than 30 consecutive clock-minutes would be a violation under the proposed BAL-007 standard

Frequency Statistics

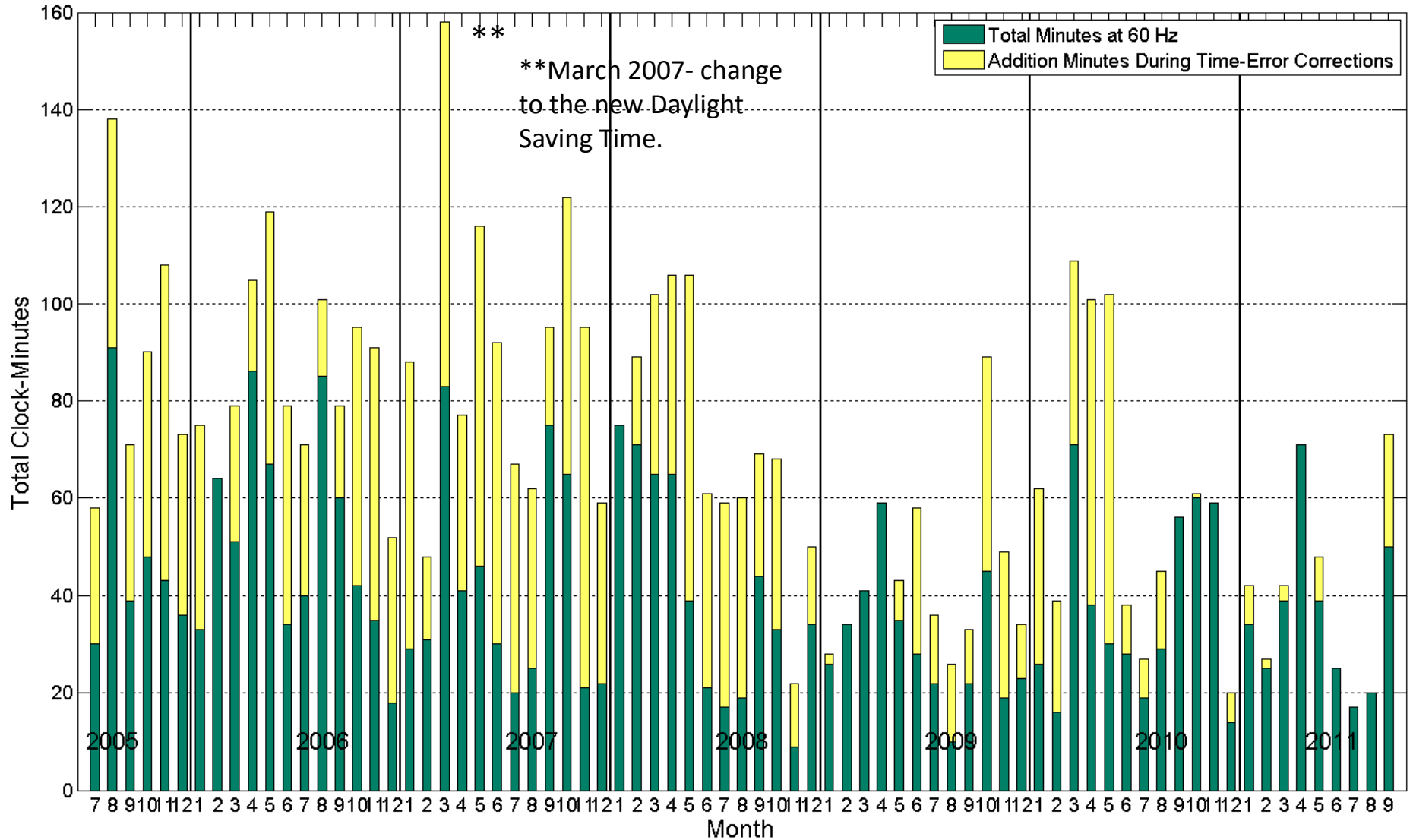
Year	Month	Total Minutes FTL_Low at 59.98 Hz SF	Total Minutes FTL_Low at 60 Hz SF	Total Minutes FTL_Low	Percentag Low During TEC	FTL_Low Events	FTL_Low Max Duration	Total Minutes FTL_High at 60.02 Hz SF	Total Minutes FTL_High at 60 Hz SF	Total Minutes FTL_High	Percentag High During TEC	FTL_High Events	FTL_High Max Duration	Total FTL_Low and FTL_High Minutes at 60 Hz SF	Total FTL_Low and FTL_High Minutes
2009	3	0	41	41	0.00%	23	5	0	25	25	0.00%	11	9	66	66
2009	4	0	59	59	0.00%	37	5	0	27	27	0.00%	20	3	86	86
2009	5	8	35	43	18.60%	31	4	0	27	27	0.00%	15	8	62	70
2009	6	30	28	58	51.72%	28	5	0	25	25	0.00%	16	3	53	83
2009	7	14	22	36	38.89%	22	3	0	28	28	0.00%	16	6	50	64
2009	8	16	10	26	61.54%	20	2	0	13	13	0.00%	10	2	23	39
2009	9	11	22	33	33.33%	21	3	0	20	20	0.00%	14	4	42	53
2009	10	44	45	89	49.44%	44	6	0	18	18	0.00%	10	3	63	107
2009	11	30	19	49	61.22%	33	3	0	34	34	0.00%	21	4	53	83
2009	12	11	23	34	32.35%	20	5	0	22	22	0.00%	15	3	45	56
2010	1	36	26	62	58.06%	35	6	0	16	16	0.00%	9	3	42	78
2010	2	23	16	39	58.97%	24	3	0	26	26	0.00%	16	2	42	65
2010	3	38	71	109	34.86%	65	6	0	40	40	0.00%	22	6	111	149
2010	4	63	38	101	62.38%	65	5	0	54	54	0.00%	34	6	92	155
2010	5	72	30	102	70.59%	60	6	0	40	40	0.00%	29	4	70	142
2010	6	10	28	38	26.32%	27	2	0	10	10	0.00%	9	2	38	48
2010	7	8	19	27	29.63%	17	4	0	30	30	0.00%	13	5	49	57
2010	8	16	29	45	35.56%	24	4	0	17	17	0.00%	11	3	46	62
2010	9	0	56	56	0.00%	31	4	0	22	22	0.00%	11	4	78	78
2010	10	1	60	61	1.64%	40	5	0	19	19	0.00%	15	4	79	80
2010	11	0	59	59	0.00%	44	3	5	26	31	16.13%	21	3	85	90
2010	12	6	14	20	30.00%	16	3	3	29	33	9.09%	17	5	43	53
2011	1	8	34	42	19.05%	29	5	0	12	12	0.00%	9	4	46	54
2011	2	2	25	27	7.41%	25	2	0	28	28	0.00%	17	5	53	55
2011	3	3	39	42	7.14%	30	3	0	25	25	0.00%	13	7	64	67
2011	4	0	71	71	0.00%	45	6	0	36	36	0.00%	20	5	107	107
2011	5	9	39	48	18.75%	33	4	0	24	24	0.00%	18	3	63	72
2011	6	0	25	25	0.00%	18	3	0	13	13	0.00%	9	2	38	38
2011	7	0	17	17	0.00%	12	3	4	8	12	33.33%	9	3	25	29
2011	8	0	20	20	0.00%	13	3	0	25	25	0.00%	10	6	45	45
2011	9	23	50	73	31.51%	41	5	0	17	17	0.00%	11	3	67	90

This chart is a summary of frequency-related statistics gathered since the start of the Field Trial. Of particular interest is the drop in operation outside of the FTL bounds, trending lower in the latter part of 2008 with November 2008 having the least number of clock-minutes of operation outside the FTL bounds, followed by August 2009, over the dataset

Total Clock-Minutes of Frequency below 59.95 Hz*

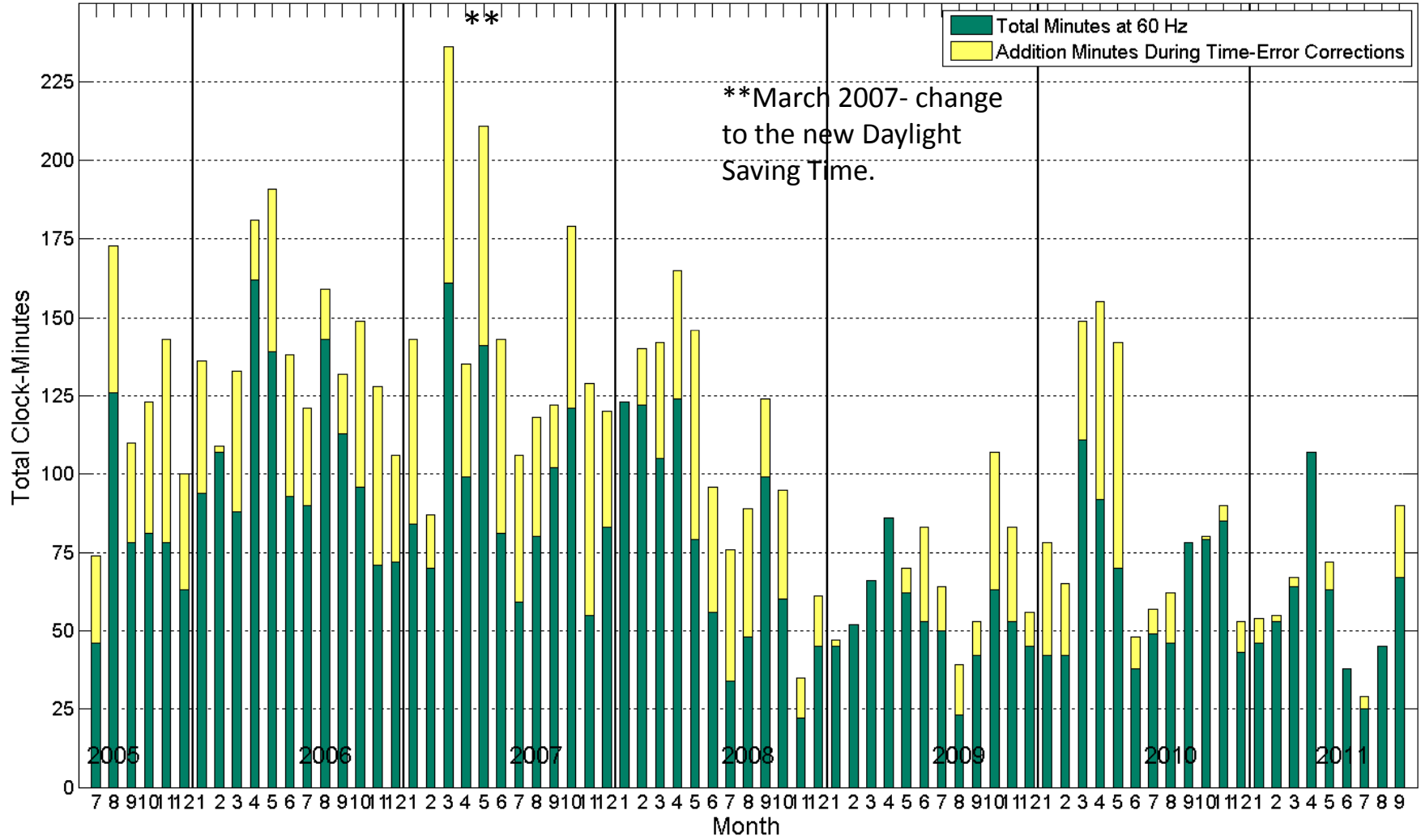
This chart illustrates the monthly total minutes of FTL_{Low} being exceeded

*Under the proof-of-concept field test of the Balancing Authority ACE Limit ("BAAL") under NERC Project 2010-14 in the Eastern Interconnection, 59.95 Hz represents the low Frequency Trigger Limit from which the BAAL is calculated for each participating Balancing Authority. The BAAL is the an ACE limit which becomes more restrictive as the interconnection frequency deviates further from 60 Hz, driving real-time operating decisions supportive of the Interconnection frequency .



Total Clock-Minutes less than 59.95 Hz or greater than 60.05 Hz

This chart illustrates the monthly total minutes of FTL_{Low} plus FTL_{High} being exceeded.



Clock-Minutes of Actual Frequency<=FTL-Low(59.95Hz)												
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	49	26	15	8	3						5
2006	9	39	21	11	4	3	1					6
2006	10	51	26	9	6	2	1					6
2006	11	47	22	10	8	4						5
2006	12	34	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
2007	5	64	32	10	7	3						5
2007	6	47	24	12	6	2	1					6
2007	7	33	19	8	4	2	1					6
2007	8	31	16	9	3	2	1					6
2007	9	41	27	12	6	4	2	2	1			8
2007	10	73	25	15	8	1						5
2007	11	60	23	10	2							4
2007	12	38	13	4	2	1	1					6
2008	1	34	21	11	4	2	1	1	1			8
2008	2	46	27	8	4	1	1	1	1			8
2008	3	55	27	10	7	2	1					6
2008	4	60	28	11	4	3						5
2008	5	63	31	9	3							4
2008	6	34	16	6	4	1						5
2008	7	29	17	9	1	1	1	1				7
2008	8	35	18	5	1	1						5
2008	9	39	20	9	1							4
2008	10	38	18	8	3	1						5
2008	11	13	5	2	1	1						5
2008	12	35	11	3	1							4
2009	1	16	7	3	2							4
2009	2	18	10	5	1							4
2009	3	23	10	4	2	2						5
2009	4	37	14	5	2	1						5
2009	5	31	9	2	1							4
2009	6	28	19	8	2	1						5
2009	7	22	12	2								3
2009	8	20	6									2
2009	9	21	10	2								3
2009	10	44	24	12	5	2	2					6
2009	11	33	12	4								3
2009	12	20	9	3	1	1						5
2010	1	35	14	6	3	2	2					6
2010	2	24	11	4								3
2010	3	65	28	11	3	1	1					6
2010	4	65	22	10	3	1						5
2010	5	60	22	11	5	3	1					6
2010	6	27	11									2
2010	7	17	8	1	1							4
2010	8	24	12	6	3							4
2010	9	31	13	10	2							4
2010	10	40	14	4	2	1						5
2010	11	44	12	3								3
2010	12	16	3	1								3
2011	1	29	9	2	1	1						5
2011	2	25	3									2
2011	3	30	10	2								3
2011	4	45	15	6	2	2	1					6
2011	5	33	10	4	1							4
2011	6	18	5	2								3
2011	7	12	4	1								3
2011	8	13	6	1								3
2011	9	41	20	8	3	1						5
SUM		2875	1307	526	227	100	38	14	9	4	3	

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. *The 15-minute duration in March 2007 was for the Monday morning after the change to the new Daylight Saving Time.

Clock-Minutes of Actual Frequency<=FTL-Low(59.95Hz) and 60 Hz Scheduled Frequency												
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	16	8	4	1	1						5
2005	8	39	23	13	9	6	1					6
2005	9	16	9	6	3	2	1	1	1			8
2005	10	22	10	5	2	2	2	1	1	1	1	11
2005	11	26	10	4	1	1	1					6
2005	12	23	8	2	1	1	1					6
2006	1	21	7	2	1	1	1					6
2006	2	39	17	4	2	1	1					6
2006	3	33	15	2	1							4
2006	4	46	25	9	4	2						5
2006	5	33	19	8	5	1	1					6
2006	6	19	9	5	1							4
2006	7	22	11	6	1							4
2006	8	38	22	14	8	3						5
2006	9	30	17	8	2	2	1					6
2006	10	24	14	2	2							4
2006	11	19	8	4	3	1						5
2006	12	10	5	2	1							4
2007	1	14	7	3	2	1	1	1				7
2007	2	22	8	1								3
2007	3	41	17	7	6	2	1	1	1	1	1	15*
2007	4	21	10	4	3	3						5
2007	5	26	10	4	4	2						5
2007	6	18	10	2								3
2007	7	12	5	2	1							4
2007	8	9	6	5	2	2	1					6
2007	9	28	22	10	6	4	2	2	1			8
2007	10	33	14	11	6	1						5
2007	11	14	5	2								3
2007	12	14	5	1	1	1	1					6
2008	1	34	21	11	4	2	1	1	1			8
2008	2	39	21	5	2	1	1	1	1			8
2008	3	38	19	4	3	1						5
2008	4	38	16	6	3	2						5
2008	5	23	12	3	1							4
2008	6	13	6	1	1							4
2008	7	10	5	2								3
2008	8	13	5	1								3
2008	9	25	11	7	1							4
2008	10	19	9	3	2							4
2008	11	6	2	1								3
2008	12	23	7	3	1							4
2009	1	15	6	3	2							4
2009	2	18	10	5	1							4
2009	3	23	10	4	2	2						5
2009	4	37	14	5	2	1						5
2009	5	25	7	2	1							4
2009	6	17	8	3								3
2009	7	14	7	1								3
2009	8	8	2									2
2009	9	13	8	1								3
2009	10	22	12	6	3	1	1					6
2009	11	14	4	1								3
2009	12	12	6	3	1	1						5
2010	1	13	7	2	2	1	1					6
2010	2	11	5									2
2010	3	40	19	7	3	1	1					6
2010	4	24	8	4	2							4
2010	5	19	8	2	1							4
2010	6	21	7									2
2010	7	14	5									2
2010	8	15	8	4	2							4
2010	9	31	13	10	2							4
2010	10	39	14	4	2	1						5
2010	11	44	12	3								3
2010	12	10	3	1								3
2011	1	23	7	2	1	1						5
2011	2	23	3									2
2011	3	28	9	2								3
2011	4	45	15	6	2	2	1					6
2011	5	28	8	3								3
2011	6	18	5	2								3
2011	7	12	4	1								3
2011	8	13	6	1								3
2011	9	31	12	5	1	1						5
SUM		1729	762	292	127	58	22	8	6	2	2	

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, when Scheduled Frequency = 60 Hz, with the maximum duration for the month noted in the right column. *The 15-minute duration in March 2007 was for the Monday morning after the change to the new Daylight Saving Time.

Clock-Minutes of Actual Frequency >= FTL_High(60.05Hz)												
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	38	21	10	4	2	1	1	1			8
2007	4	31	15	8	4							4
2007	5	49	20	11	7	4	4	1				7
2007	6	25	14	7	2	1	1	1				7
2007	7	20	12	8	2							4
2007	8	32	14	7	3	2						5
2007	9	16	6	4	2	1						5
2007	10	36	16	4	1	1						5
2007	11	24	7	5	2	1						5
2007	12	38	16	7	2							4
2008	1	24	16	8	1							4
2008	2	24	11	6	3	3	2	1	1			8
2008	3	34	6									2
2008	4	33	12	8	3	3	1					6
2008	5	20	10	6	4	1						5
2008	6	19	10	3	2	1						5
2008	7	12	4	1								3
2008	8	17	6	3	1	1	1					6
2008	9	21	11	6	5	3	3	3	3	2	1	11
2008	10	19	7	1								3
2008	11	9	2	1	1							4
2008	12	8	2	1								3
2009	1	9	6	4								3
2009	2	11	3	1	1	1	1					6
2009	3	11	4	3	2	1	1	1	1	1		9
2009	4	20	6	1								3
2009	5	15	4	2	2	1	1	1	1			8
2009	6	16	8	1								3
2009	7	16	7	2	1	1	1					6
2009	8	10	3									2
2009	9	14	4	1	1							4
2009	10	10	5	3								3
2009	11	21	8	4	1							4
2009	12	15	5	2								3
2010	1	9	6	1								3
2010	2	16	10									2
2010	3	22	9	3	3	2	1					6
2010	4	34	16	4	1	1	1					6
2010	5	29	9	2	1							4
2010	6	9	1									2
2010	7	13	7	4	4	2						5
2010	8	11	4	2								3
2010	9	11	5	4	2							4
2010	10	15	2	1	1							4
2010	11	21	8	2								3
2010	12	17	10	4	1	1						5
2011	1	9	1	1	1							4
2011	2	17	5	3	1	1						5
2011	3	13	3	3	2	2	1	1				7
2011	4	20	12	2	1	1						5
2011	5	18	5	1								3
2011	6	9	4									2
2011	7	9	2	1								3
2011	8	10	7	3	3	1	1					6
2011	9	11	5	1	0	0	0	0	0	0	0	3
SUM		1569	662	284	124	59	32	20	13	4	2	

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.

Clock-Minutes of Actual Frequency >= FTL _{HIGH} (60.05Hz) and 60 Scheduled Frequency												
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	20	7	4	1	1	1	1				7
2005	12	19	6	2								3
2006	1	27	15	11	6	2						5
2006	2	22	9	7	5							4
2006	3	20	8	3	2	1	1	1	1			8
2006	4	46	22	3	1	1	1	1	1			8
2006	5	38	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	21	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	38	21	10	4	2	1	1	1			8
2007	4	31	15	8	4							4
2007	5	48	20	11	7	4	4	1				7
2007	6	25	14	7	2	1	1	1				7
2007	7	19	11	7	2							4
2007	8	29	14	7	3	2						5
2007	9	15	5	4	2	1						5
2007	10	34	16	4	1	1						5
2007	11	21	6	4	2	1						5
2007	12	36	15	7	2							4
2008	1	24	16	8	1							4
2008	2	24	11	6	3	3	2	1	1			8
2008	3	34	6									2
2008	4	32	12	8	3	3	1					6
2008	5	19	10	6	4	1						5
2008	6	19	10	3	2	1						5
2008	7	12	4	1								3
2008	8	17	6	3	1	1	1					6
2008	9	20	10	5	4	3	3	3	3	2	1	11
2008	10	19	7	1								3
2008	11	9	2	1	1							4
2008	12	8	2	1								3
2009	1	9	6	4								3
2009	2	11	3	1	1	1	1					6
2009	3	11	4	3	2	1	1	1	1	1		9
2009	4	20	6	1								3
2009	5	15	4	2	2	1	1	1	1			8
2009	6	16	8	1								3
2009	7	16	7	2	1	1	1					6
2009	8	10	3									2
2009	9	14	4	1	1							4
2009	10	10	5	3								3
2009	11	21	8	4	1							4
2009	12	15	5	2								3
2010	1	9	6	1								3
2010	2	16	10									2
2010	3	22	9	3	3	2	1					6
2010	4	31	16	4	1	1	1					6
2010	5	28	9	2	1							4
2010	6	9	1									2
2010	7	13	7	4	4	2						5
2010	8	11	4	2								3
2010	9	11	5	4	2							4
2010	10	15	2	1	1							4
2010	11	18	7	1								3
2010	12	14	9	4	1	1						5
2011	1	9	1	1	1							4
2011	2	17	5	3	1	1						5
2011	3	13	3	3	2	2	1	1				7
2011	4	20	12	2	1	1						5
2011	5	18	5	1								3
2011	6	9	4									2
2011	7	5	2	1								3
2011	8	10	7	3	3	1	1					6
2011	9	11	5	1								3
SUM		1520	650	279	123	59	32	20	13	4	2	3

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, when **Scheduled Frequency = 60 Hz**, with the maximum duration for the month noted in the right column.

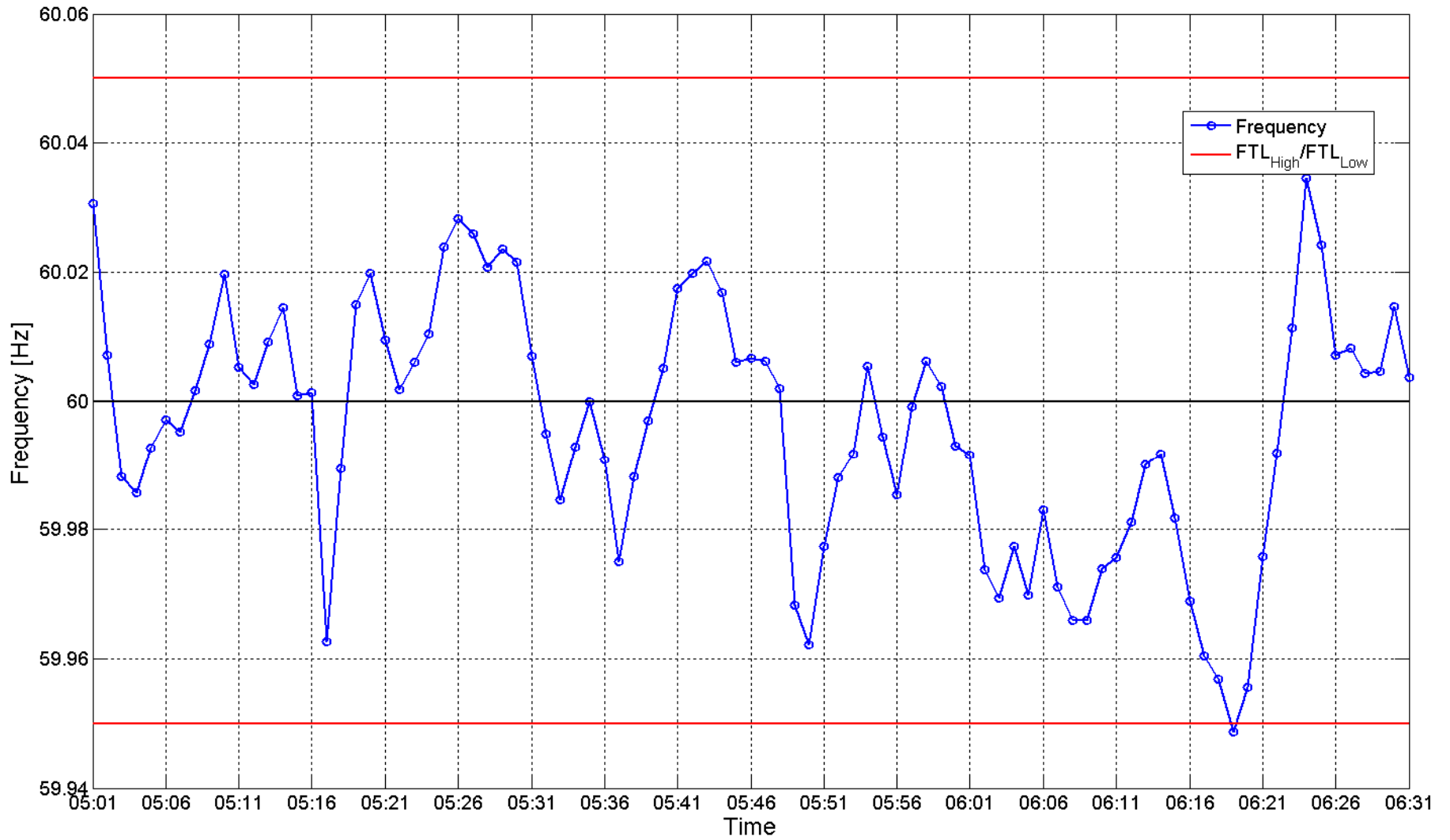
All minutes of the BAAL being exceeded for 15 consecutive clock-minutes or more

date_time	freq	schedfreq	BAALLow	BAALHigh
9/2/2011 22:51	60.031	60	0	15
9/2/2011 22:52	60.012	60	0	16
9/8/2011 20:15	59.985	60	15	0
9/8/2011 20:16	59.983	60	16	0
9/8/2011 20:17	59.987	60	17	0
9/8/2011 20:18	59.976	60	18	0
9/9/2011 6:16	59.971	60	15	0
9/9/2011 6:17	59.983	60	16	0
9/22/2011 1:14	59.967	59.98	15	0
9/22/2011 1:15	59.976	59.98	16	0
9/22/2011 1:16	59.977	59.98	17	0
9/27/2011 22:57	60.0213	60	0	15
9/27/2011 22:58	60.0135	60	0	16
9/28/2011 6:16	59.9689	60	15	0
9/28/2011 6:17	59.9605	60	16	0
9/28/2011 6:18	59.9568	60	17	0
9/28/2011 6:19	59.9487	60	18	0
9/28/2011 6:20	59.9556	60	19	0
9/28/2011 6:21	59.9758	60	20	0

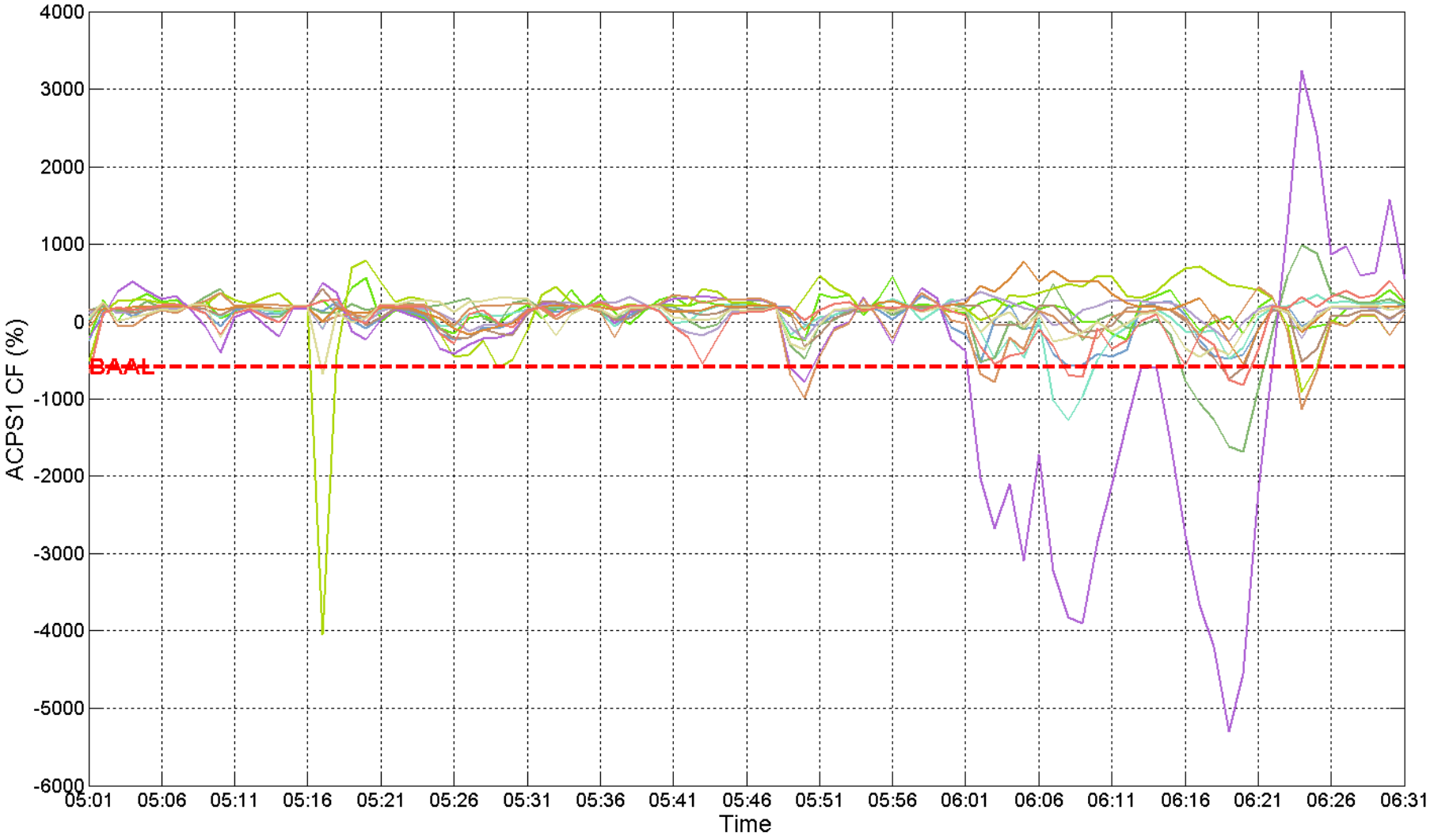
Periods of the FTL being exceeded for 3 consecutive clock minutes or more

in_id	date_time	freq	schedfreq	FTLLowDur	FTLHighDur
1	9/9/2011 6:02	59.944	60	1	0
1	9/9/2011 6:03	59.941	60	2	0
1	9/9/2011 6:04	59.95	60	3	0
1	9/19/2011 7:03	59.942	60	1	0
1	9/19/2011 7:04	59.93	60	2	0
1	9/19/2011 7:05	59.936	60	3	0
1	9/21/2011 7:44	60.057	60	0	1
1	9/21/2011 7:45	60.057	60	0	2
1	9/21/2011 7:46	60.05	60	0	3
1	9/22/2011 6:03	59.931	60	1	0
1	9/22/2011 6:04	59.928	60	2	0
1	9/22/2011 6:05	59.939	60	3	0
1	9/24/2011 1:02	59.949	59.98	1	0
1	9/24/2011 1:03	59.95	59.98	2	0
1	9/24/2011 1:04	59.949	59.98	3	0
1	9/24/2011 1:05	59.944	59.98	4	0
1	9/24/2011 11:49	59.931	60	1	0
1	9/24/2011 11:50	59.939	60	2	0
1	9/24/2011 11:51	59.949	60	3	0
1	9/26/2011 6:02	59.9485	60	1	0
1	9/26/2011 6:03	59.9271	60	2	0
1	9/26/2011 6:04	59.9414	60	3	0
1	9/26/2011 6:05	59.9489	60	4	0
1	9/26/2011 6:06	59.9426	60	5	0
1	9/29/2011 23:02	59.9479	59.98	1	0
1	9/29/2011 23:03	59.9399	59.98	2	0
1	9/29/2011 23:04	59.9468	59.98	3	0
1	9/29/2011 23:05	59.9464	59.98	4	0
1	9/30/2011 1:03	59.9455	59.98	1	0
1	9/30/2011 1:04	59.9486	59.98	2	0
1	9/30/2011 1:05	59.9496	59.98	3	0

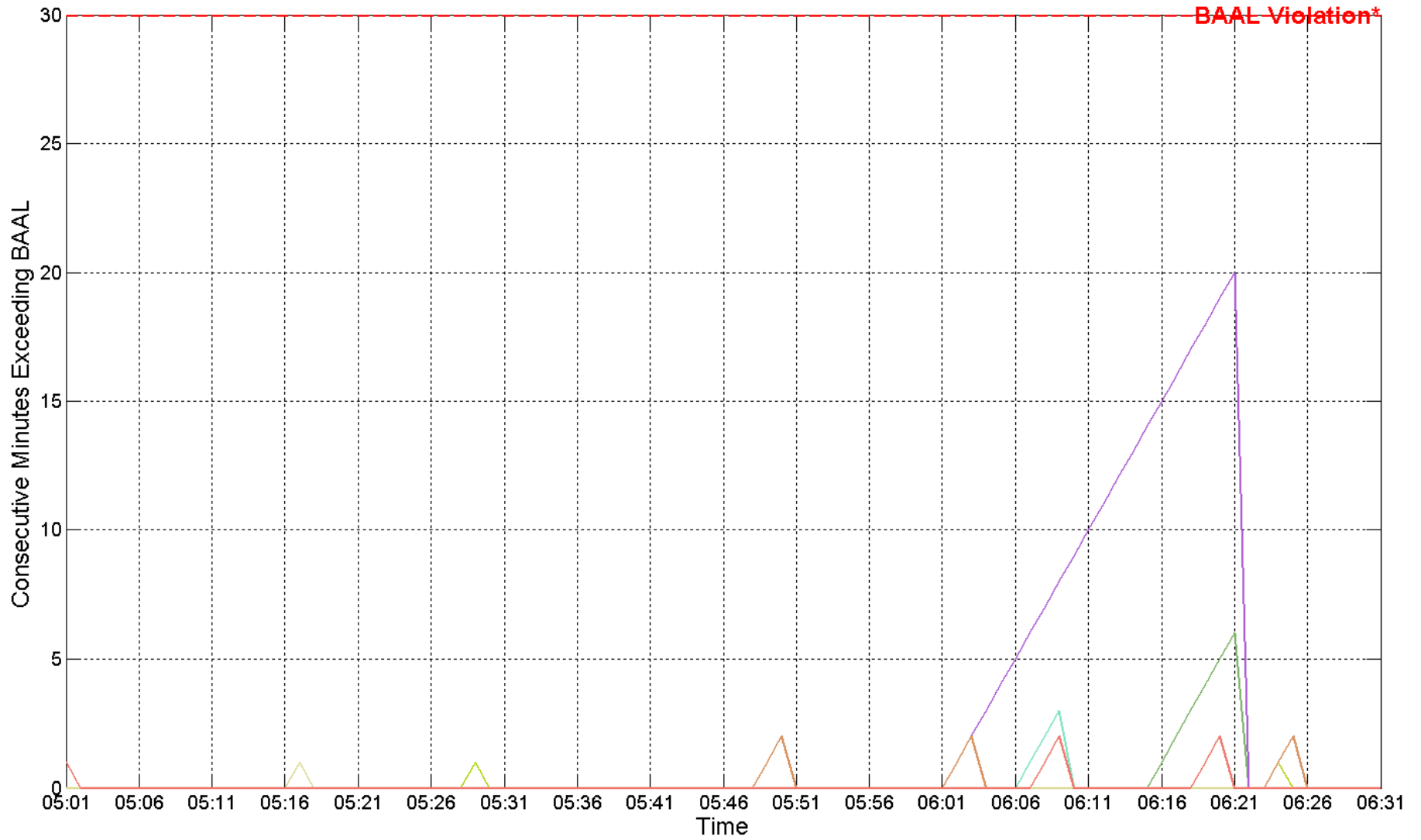
9/28/2011 ending 6:21 EST
20-minute duration below BAAL_{Low}



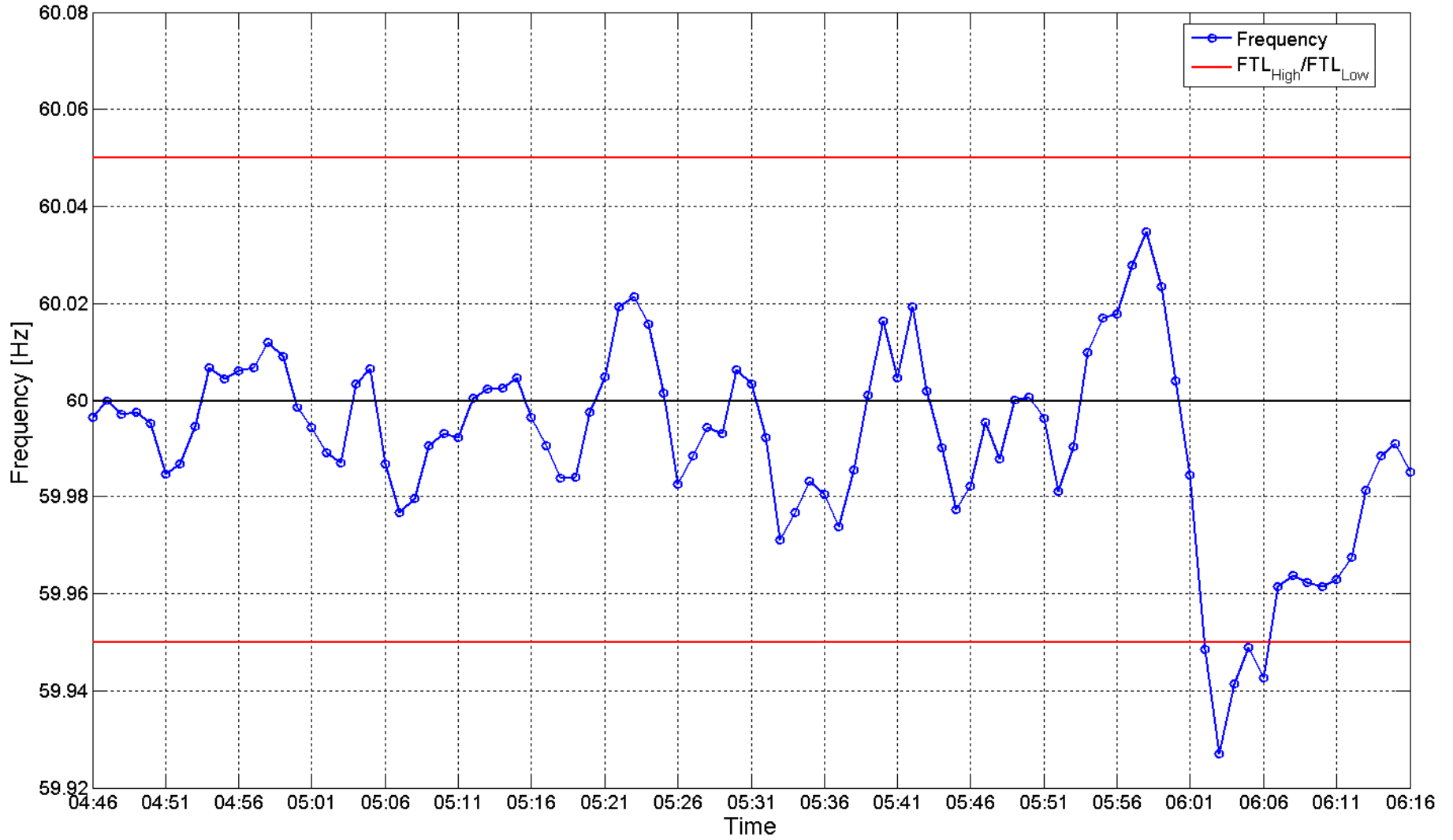
9/28/2011 ending 6:21 EST
20-minute duration below BAAL_{Low}



9/28/2011 ending 6:21 EST
20-minute duration below BAAL_{Low}

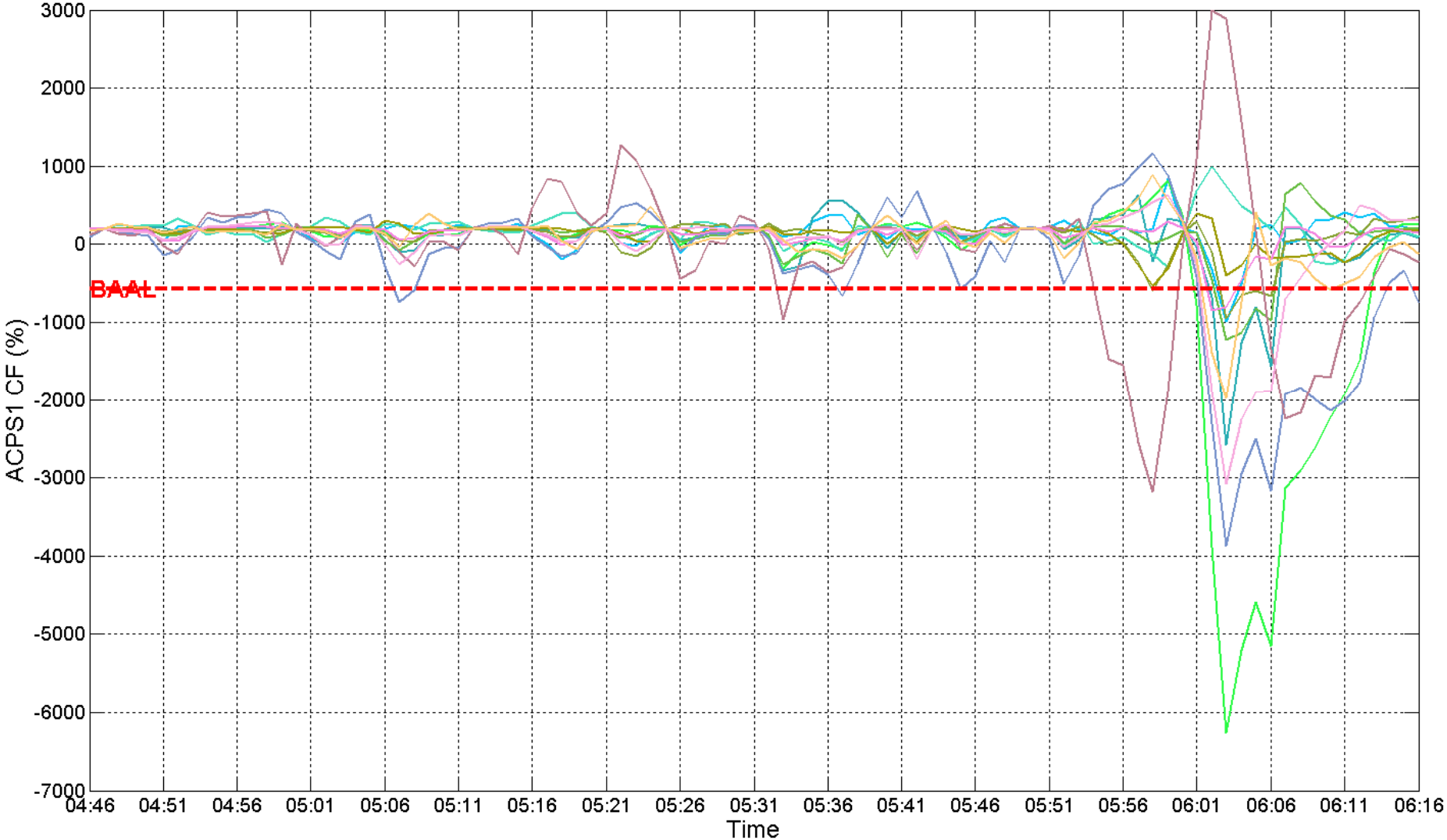


9/26/2011 ending 6:06 EST
5-minute duration below FTL_{Low}



9/26/2011 ending 6:06 EST

5-minute duration below FTL_{Low}



9/26/2011 ending 6:06 EST
5-minute duration below FTL_{Low}

