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February 25, 2013

Mr. Jeff Derouen  
Executive Director  
Commonwealth of Kentucky  
Kentucky Public Service Commission  
PO Box 615  
Frankfort, KY 40602-0615

RECEIVED  
FEB 25 2013  
PUBLIC SERVICE  
COMMISSION

RE: Case No. 2012-00310  
Case No. 2012-00311  
Case No. 2012-00312 ✓

Dear Mr. Derouen:

Enclosed please find the original and ten copies of Meade County Rural Electric Cooperative Corporation's Response to the Second Request for Information from the Commission's staff in the above-styled cases.

Respectfully submitted,



Thomas C. Brite  
Attorney for Meade County RECC

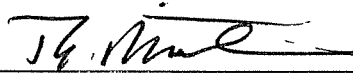
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enclosure



CERTIFICATE OF SERVICE

The undersigned as Attorney for Meade County Rural Electric Cooperative Corporation does hereby certify that he supervised the foregoing response which is true and correct to the best of his knowledge and belief and that the original and ten (10) copies of this response was mailed to Jeff Derrouen, PSC Executive Director, P.O. Box 615, Frankfort, KY 40602, and one (1) copy to David Ballantine Bell, 5615 Big Bend Rd., Battletown, KY 40104, this 25<sup>th</sup> day of February 2013.



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Thomas C. Brite  
Attorney for Meade County Rural  
Electric Cooperative Corporation



MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION

CASE NO. 2012-00312

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**Question 1)** State whether the “Agreement For Retail Electric Service” dated April 6, 1999 (“Service Agreement”) attached as an Appendix hereto, is the same “Agreement for Retail Electric service dated April 6, 1999” that was referenced in the letter dated July 13, 2012 (“July letter”) to John Morgan, Hilltop Companies (“Hilltop”), from Thomas C. Brite.

**Response 1)** Yes

**Witness)** David Poe



**MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION**

**CASE NO. 2012-00312**

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**Question 2)** If the response to Item 1, above is yes:

**a)** Provide documentation indicating that Hilltop Basic Resources, Inc. or any of its subsidiaries is the current owner or operator of the quarry that is referenced in the July letter instead of Liter's Quarry, Inc. or any of its subsidiaries.

**b)** Refer to Section 7 of the Service Agreement. Has Hilltop operated in violation of Section 7?

**c)** Refer to Section 8 of the Service Agreement. Has Hilltop operated in violation of Section 8?

**Response 2a)** Attached as Exhibit 2a

**Response 2b)** Yes

**Response 2c)** No

**Witness)** David Poe

Hilltop Basic Res Inc  
825-374-000-013

Exhibit  
2a  
1 of 4

**ASSIGNMENT AND ASSUMPTION OF AGREEMENT FOR RETAIL  
ELECTRIC SERVICE AGREEMENT**

THIS ASSIGNMENT AND ASSUMPTION is made and entered into effective as of September \_\_\_\_, 2004, by and between Liter's, Inc., formerly known as Liter's Quarry, Inc., a Kentucky corporation with an office and place of business at 5918 Haunz Lane, Louisville, Kentucky 40241 doing business as "Big Bend Quarry" at the address of 1994 Paradise Bottom Road, Battletown, Meade County, Kentucky ("Assignor"), and Hilltop Big Bend Quarry, LLC, a Kentucky limited liability company, with an office and place of business at One West Fourth Street - Suite 1100, Cincinnati, Ohio 45202 ("Assignee").

**WITNESSETH:**

WHEREAS, Assignor is a party to that certain Agreement for Retail Electric Service dated April 6, 1999, by and between Meade County Rural Electric Cooperative Corporation ("MCRECC"), as seller, and Assignor, as customer (the "Agreement"); and

WHEREAS, effective as of August 30, 2004, Assignor entered an agreement with Hilltop Basic Resources, Inc., an Ohio corporation, for the sale of certain assets of Assignor to Assignee, including Assignor's interest in and to the Agreement;

WHEREAS, Assignor desires to convey, transfer, and assign to Assignee all of Assignor's right, title, and interest in and to the Agreement;

NOW, THEREFORE, in consideration of the premises, and of the covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee hereby agree as follows:

(A) Assignor does hereby assign to Assignee all of Assignor's right, title, and interest in and to the Agreement.

(B) Assignor represents and warrants to Assignee that Assignor has the exclusive right to assign the Agreement, that the Agreement is valid and in force, that Assignor is not presently in default under the Agreement, that Assignor has full right and power to assign the Agreement, and that the Agreement being assigned hereby is free of any liens, claims, encumbrances, or charges whatsoever.

(C) Assignee does hereby accept the foregoing assignment and assumes and agrees to perform, observe, and discharge all of the duties, obligations, and undertakings of Assignor thereunder which may arise and accrue from and after the date hereof; provided, however, that in the event that quarry operations are discontinued by Assignee, then any remaining debt or obligations owing to MCRECC under the terms and conditions of the Agreement shall revert to Assignor and Assignor shall be fully responsible for such payments and obligations from such point in time forward.

(D) Assignee further agrees to indemnify and hold Assignor harmless from and against all damage, deficiency, loss, action, judgment, cost, and expense, including reasonable attorney fees to the extent permitted by

sent copy of Commercial Note



Hilltop Basic Res Inc <sup>Exhibit</sup>  
La  
2 of 4

law, resulting from any failure of Assignee to faithfully perform, observe, and discharge all of the duties, obligations, and undertakings of Assignor assumed hereunder.

(E) This instrument shall be binding upon and inure to the benefit of the respective successors and assigns of each of the parties hereto and shall likewise inure to the benefit of MCRECC as if Assignee were the original signatory to the Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this assignment to be executed and delivered by their duly authorized representatives effective as of September 30, 2004.

LITERS, INC., f/k/a Liter's Quarry, Inc., a Kentucky corporation

By: [Signature] V.P.  
John G. Liter, Vice President

HILLTOP BIG BEND QUARRY, LLC, a Kentucky limited liability company

By: [Signature]  
Name: Kevin M. Sheehan  
Title: Manager

Exhibit  
2a  
3 of 4

Hilltop Basic Inc  
2 25-374 000 013  
GUARANTY AGREEMENT

Liter's, Inc., a Kentucky corporation  
**Guarantor's Name**  
5918 Haunz Lane  
Louisville, Kentucky 40241  
**Address**

Hillside Big Bend Quarry, LLC  
**Name of Borrower**  
One West Fourth Street – Suite 1100, Cincinnati,  
Ohio 45202  
**Address**

1. **Agreement to Guaranty.** For value received, and in order to induce Meade County Rural Electric Cooperative Corporation (the "MCRECC") to consent to the transfer by Liter's, Inc., a Kentucky corporation (the "Guarantor") to Big Bend Quarry, LLC, a Kentucky limited liability company, Guarantor for itself, its successors and assigns hereby absolutely and unconditionally guaranties to MCRECC, its successors, transferees and assigns, the payment when and as due, whether by acceleration or otherwise, of:

(a) all liabilities and obligations of the Borrower to the MCRECC arising under paragraphs 12.04 and 15.03 of that certain Agreement for Retail Electric Service dated April 6, 1999, by and between Meade County Rural Electric Cooperative Corporation ("MCRECC"), as seller, and Assignor, as customer (the "Agreement");

(b) all renewals, extensions, modifications and revivals of such obligations and liabilities;

(c) all reasonable attorneys fees and costs and expenses incurred by MCRECC in collecting, or attempting to collect the obligations and liabilities herein guaranteed and in enforcing this Guaranty (the liabilities and obligations described in the foregoing clauses (a) through (c) are referred to herein as the "Guarantied Obligations").

The liability of the Guarantor shall be joint and several for the payment in full of the entire amount of the Guarantied Obligations with that of the Borrower, any co-maker, accommodation party or any other guarantor.

2. **Absolute and Unconditional Guaranty; Waiver of Defenses.** This Guaranty is an absolute and unconditional guaranty of payment and not of collection and is in addition to any other Guaranty given by Guarantor to the MCRECC. This Guaranty creates a direct and primary obligation of the Guarantor to the MCRECC without regard to any other guarantor or obligor to the MCRECC or the value of any security or collateral held by the MCRECC. Guarantor expressly waives, to the fullest extent permitted by applicable law, each and every defense which under principles of guaranty or suretyship would otherwise operate to impair or diminish the Guarantor's direct and primary liability and obligation to pay the Guarantied Obligations if and when called upon to so do. Guarantor acknowledges and understands that nothing except the full and final payment of the Guarantied Obligations shall release and discharge the Guarantor from its obligations and liability hereunder.

3. **Waiver of Notices; Additional Waivers.** Guarantor expressly waives, to the fullest extent permitted by applicable law, each and every notice to which it would otherwise be entitled under principles of guaranty or suretyship law.

4. **Subrogation.** Guarantor agrees that Guarantor shall not exercise any right which Guarantor may acquire by way of subrogation under this Guaranty, whether by any payment made

Hilltop Basic Res Inc  
2-25-374-000-013

Exhibit  
2a  
4 of 4

hereunder or otherwise, unless and until all of the Guaranteed Obligations have been paid and satisfied in full.

5. **Benefit and Burden.** This Guaranty shall be binding upon the Guarantor and the Guarantor's heirs, successors, assigns and personal representatives and shall inure to the benefit of, and be enforceable by MCRECC, its successors, assigns and transferees and each and every holder of the Agreement.

6. **Modification.** This Guaranty may not be modified or amended without the prior written consent of MCRECC, and any attempted modification or amendment without such consent shall be void.

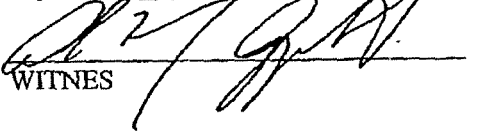
7. **Governing Law.** This Guaranty shall in all respects be governed by, and construed and enforced in accordance with the laws (including, without limitation, the conflicts of laws rules) of the Commonwealth of Kentucky.

8. **Headings.** The headings in this Guaranty have been included for ease of reference only, and shall not be considered in the construction or interpretation of this Guaranty.

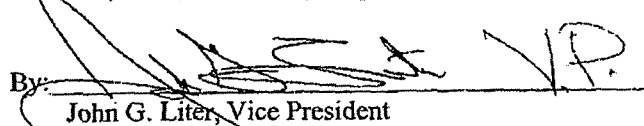
9. **Gender.** The use of any gender in this Guaranty shall be deemed to include each other gender to the extent the context requires.

10. **Severability.** If any part, term or provision of this Guaranty is unenforceable or prohibited by any law applicable to this Guaranty, the rights and obligations of the parties shall be construed and enforced with that part, term or provision limited so as to make it enforceable to the greatest extent allowed by law, or if it is totally unenforceable, as if this Guaranty did not contain that particular part, term or provision. A determination in one jurisdiction that any part, term or provision of this Guaranty is unenforceable or prohibited by law shall not affect the validity of such part, term or provision in any other jurisdiction.

IN TESTIMONY WHEREOF, the Guarantor has executed this Guaranty Agreement on  
September 30, 2004.

  
WITNES

LITER'S, INC., a Kentucky corporation

By:   
John G. Liter, Vice President

**MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION**

**CASE NO. 2012-00312**

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**Question 3)** If the response to Item 1, above is no, provide a copy of any and all agreements for electric service that Meade County has with Hilltop. Has Hilltop operated in violation of any of the terms of the agreement for electric service concerning phase balancing and harmonics that it has with Meade County?

**Response)** Not Applicable

**MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION**

**CASE NO. 2012-00312**

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2 **Question 4)** Refer to Meade County's Response to Commission Staff's First Request for  
3 Information filed September 21, 2012. In its response to Item 8.a., Meade County stated that:

4 Hilltop Quarry upgraded its facility in December 2011. Complaints from  
5 nearby members began in January 2012. Meade County RECC first checked  
6 the lines and services, not knowing the issue was due to Hilltop's operations.  
7 MCRECC then began downline monitoring using voltage recorders in early February.  
8 The high flicker levels coincided with the hours of Hilltop's operation.<sup>1</sup>

9 In its response to Item 7.b, Meade county stated that "MCRECC was satisfied that Hilltop's operations  
10 were the source of the problem; however, Hilltop was not and insisted on concurrent monitoring."<sup>2</sup>

11 **a)** Provide any and all documentation and data gathered by Meade County and any and all  
12 documentation and data gathered by Hilltop which is in the possession of Meade County on any power  
13 quality survey(s) performed on this circuit in the last two years, including data collected after  
14 completion of the new line on December 28, 2012.

15 **b)** Provide detailed documentation with the power quality survey information requested in  
16 part a. which indicates whether equipment installed at Hilltop Quarry has caused any undesirable  
17 effects (voltage variation) upon the quality of service for any customers on this circuit.

18  
19 **Response 4a)** Attached as Exhibit 4a - This data may be interpreted, if necessary by David Poe and/or  
20 Mike French.

21 **Response 4b)** (Provided in 4a.) With the exception of the data acquired from the Fluke Power  
22 Analyzer from 3/19/12, MCRECC did not receive any data from Hilltop. In a meeting with officers

**MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION**

**CASE NO. 2012-00312**

1 and staff of Hilltop and Meade on October 11, 2012, Hilltop and MCRECC determined and noted that  
2 Hilltop's operation was causing the flickering conditions in the Big Bend area without divulging  
3 Hilltop's data. This meeting resulted in the decision to construct the new line (express single-phase  
4 circuit). Included in this response is a report from Meade's consultant received prior to this meeting.  
5 (Exhibit 4b)

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7 **Witness)** David Poe  
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Ronald Burrell  
41-049-4 (Location)

Dates Feb. 2, 2012 to Feb. 7, 2012

# Flicker Report

Start: Feb 02, 2012 09:23:02  
 Stop: Feb 07, 2012 09:05:29  
 Duration: 4 days, 23:42:27  
 Firmware Version: 2.36 Unit Type: iVS-3 rev 2  
 Software Version: 0.00 Serial No.: 62191

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 1 minute

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/02/12	09:24:02	0.9%	10 seconds	5	6
02/02/12	09:24:07	1.2%	1 minute	10	11
02/02/12	09:24:12	0.9%	10 seconds	5	9
02/02/12	09:31:46	0.9%	10 seconds	5	6
02/02/12	09:31:53	1.2%	1 minute	10	11
02/02/12	09:31:56	0.9%	10 seconds	5	8
02/02/12	09:32:06	0.9%	10 seconds	5	6
02/02/12	09:32:16	0.9%	10 seconds	5	9
02/02/12	09:32:53	1.2%	1 minute	10	21
02/02/12	09:35:13	0.9%	10 seconds	5	6
02/02/12	09:36:09	1.2%	1 minute	10	11
02/02/12	09:39:27	0.9%	10 seconds	5	6
02/02/12	09:39:46	1.2%	1 minute	10	11
02/02/12	09:40:01	0.9%	10 seconds	5	6
02/02/12	09:41:02	0.9%	10 seconds	5	6
02/02/12	09:41:04	1.2%	1 minute	10	11
02/02/12	09:41:12	0.9%	10 seconds	5	9
02/02/12	09:41:22	0.9%	10 seconds	5	12
02/02/12	09:41:32	0.9%	10 seconds	5	10
02/02/12	09:41:42	0.9%	10 seconds	5	6
02/02/12	09:42:04	1.2%	1 minute	10	38
02/02/12	09:42:58	0.9%	10 seconds	5	6
02/02/12	09:43:04	1.2%	1 minute	10	13
02/02/12	09:43:08	0.9%	10 seconds	5	8



## Exhibit 4a

Page 3 of 74

02/02/12 09:44:04	1.2%	1 minute	10	12
02/02/12 09:45:59	0.9%	10 seconds	5	6
02/02/12 09:46:11	1.2%	1 minute	10	11
02/02/12 09:48:08	0.9%	10 seconds	5	6
02/02/12 09:48:18	1.2%	1 minute	10	11
02/02/12 09:48:20	0.9%	10 seconds	5	6
02/02/12 09:48:30	0.9%	10 seconds	5	11
02/02/12 09:48:40	0.9%	10 seconds	5	9
02/02/12 09:48:50	0.9%	10 seconds	5	6
02/02/12 09:49:18	1.2%	1 minute	10	28
02/02/12 09:49:43	0.9%	10 seconds	5	6
02/02/12 09:49:53	0.9%	10 seconds	5	10
02/02/12 09:50:03	0.9%	10 seconds	5	9
02/02/12 09:50:13	0.9%	10 seconds	5	8
02/02/12 09:50:18	1.2%	1 minute	10	40
02/02/12 09:50:23	0.9%	10 seconds	5	7
02/02/12 09:52:28	1.2%	1 minute	10	11
02/02/12 09:56:05	0.9%	10 seconds	5	6
02/02/12 09:56:10	1.2%	1 minute	10	11
02/02/12 09:56:15	0.9%	10 seconds	5	10
02/02/12 09:56:25	0.9%	10 seconds	5	6
02/02/12 09:57:10	1.2%	1 minute	10	11
02/02/12 09:57:41	0.9%	10 seconds	5	6
02/02/12 09:57:51	0.9%	10 seconds	5	13
02/02/12 09:58:01	0.9%	10 seconds	5	10
02/02/12 09:58:10	1.2%	1 minute	10	38
02/02/12 09:58:11	0.9%	10 seconds	5	6
02/02/12 09:58:57	0.9%	10 seconds	5	6
02/02/12 09:59:07	0.9%	10 seconds	5	6
02/02/12 09:59:10	1.2%	1 minute	10	15
02/02/12 09:59:17	0.9%	10 seconds	5	10
02/02/12 09:59:27	0.9%	10 seconds	5	10
02/02/12 09:59:37	0.9%	10 seconds	5	8
02/02/12 10:00:10	1.2%	1 minute	10	28
02/02/12 10:00:39	0.9%	10 seconds	5	6
02/02/12 10:00:49	0.9%	10 seconds	5	10
02/02/12 10:00:59	0.9%	10 seconds	5	7
02/02/12 10:01:09	0.9%	10 seconds	5	6
02/02/12 10:01:10	1.2%	1 minute	10	31
02/02/12 10:02:11	1.2%	1 minute	10	11
02/02/12 10:04:39	1.2%	1 minute	10	11

	10:06:27	0.9%	10 seconds	5	6
02/02/12	10:06:31	1.2%	1 minute	10	11
02/02/12	10:06:37	0.9%	10 seconds	5	9
02/02/12	10:06:47	0.9%	10 seconds	5	10
02/02/12	10:06:57	0.9%	10 seconds	5	8
02/02/12	10:07:07	0.9%	10 seconds	5	6
02/02/12	10:07:31	1.2%	1 minute	10	29
02/02/12	10:07:59	0.9%	10 seconds	5	6
02/02/12	10:08:09	0.9%	10 seconds	5	9
02/02/12	10:08:19	0.9%	10 seconds	5	8
02/02/12	10:08:31	1.2%	1 minute	10	30
02/02/12	10:14:53	0.9%	10 seconds	5	6
02/02/12	10:14:56	1.2%	1 minute	10	11
02/02/12	10:15:03	0.9%	10 seconds	5	9

**Channel 2 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/02/12	09:23:57	0.9%	10 seconds	5	6
02/02/12	09:24:02	1.2%	1 minute	10	11
02/02/12	09:24:07	0.9%	10 seconds	5	9
02/02/12	09:24:17	0.9%	10 seconds	5	9
02/02/12	09:25:02	1.2%	1 minute	10	14
02/02/12	09:31:46	0.9%	10 seconds	5	6
02/02/12	09:31:55	1.2%	1 minute	10	11
02/02/12	09:31:56	0.9%	10 seconds	5	6
02/02/12	09:32:06	0.9%	10 seconds	5	6
02/02/12	09:32:16	0.9%	10 seconds	5	10
02/02/12	09:32:26	0.9%	10 seconds	5	8
02/02/12	09:32:55	1.2%	1 minute	10	26
02/02/12	09:34:11	0.9%	10 seconds	5	6
02/02/12	09:34:14	1.2%	1 minute	10	11
02/02/12	09:39:20	0.9%	10 seconds	5	6
02/02/12	09:39:20	1.2%	1 minute	10	11
02/02/12	09:40:09	0.9%	10 seconds	5	6
02/02/12	09:41:16	0.9%	10 seconds	5	6
02/02/12	09:41:19	1.2%	1 minute	10	11
02/02/12	09:41:26	0.9%	10 seconds	5	7
02/02/12	09:42:19	1.2%	1 minute	10	13
02/02/12	09:42:46	0.9%	10 seconds	5	6
02/02/12	09:42:56	0.9%	10 seconds	5	9

02/02/12 09:43:06	0.9%	10 seconds	5	9
02/02/12 09:43:16	0.9%	10 seconds	5	9
02/02/12 09:43:19	1.2%	1 minute	10	37
02/02/12 09:48:26	0.9%	10 seconds	5	6
02/02/12 09:48:37	1.2%	1 minute	10	12
02/02/12 09:48:38	0.9%	10 seconds	5	6
02/02/12 09:48:48	0.9%	10 seconds	5	8
02/02/12 09:48:58	0.9%	10 seconds	5	8
02/02/12 09:49:37	1.2%	1 minute	10	18
02/02/12 09:49:46	0.9%	10 seconds	5	6
02/02/12 09:49:56	0.9%	10 seconds	5	8
02/02/12 09:50:06	0.9%	10 seconds	5	10
02/02/12 09:50:16	0.9%	10 seconds	5	8
02/02/12 09:50:26	0.9%	10 seconds	5	7
02/02/12 09:50:37	1.2%	1 minute	10	42
02/02/12 09:51:18	0.9%	10 seconds	5	6
02/02/12 09:51:37	1.2%	1 minute	10	14
02/02/12 09:56:00	0.9%	10 seconds	5	6
02/02/12 09:56:05	1.2%	1 minute	10	11
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02/02/12 09:56:20	0.9%	10 seconds	5	10
02/02/12 09:56:30	0.9%	10 seconds	5	9
02/02/12 09:57:05	1.2%	1 minute	10	26
02/02/12 09:57:35	0.9%	10 seconds	5	6
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02/02/12 09:57:55	0.9%	10 seconds	5	9
02/02/12 09:58:05	1.2%	1 minute	10	31
02/02/12 09:59:04	0.9%	10 seconds	5	6
02/02/12 09:59:10	1.2%	1 minute	10	11
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02/02/12 09:59:24	0.9%	10 seconds	5	8
02/02/12 10:00:10	1.2%	1 minute	10	14
02/02/12 10:00:44	0.9%	10 seconds	5	6
02/02/12 10:01:10	1.2%	1 minute	10	12
02/02/12 10:04:37	1.2%	1 minute	10	11
02/02/12 10:06:30	0.9%	10 seconds	5	6
02/02/12 10:06:33	1.2%	1 minute	10	11
02/02/12 10:06:40	0.9%	10 seconds	5	7
02/02/12 10:06:50	0.9%	10 seconds	5	9
02/02/12 10:07:00	0.9%	10 seconds	5	7
02/02/12 10:07:33	1.2%	1 minute	10	23

	10:07:59	0.9%	10 seconds	5	6
02/02/12	10:08:09	0.9%	10 seconds	5	8
02/02/12	10:08:19	0.9%	10 seconds	5	8
02/02/12	10:08:33	1.2%	1 minute	10	30
02/02/12	10:14:50	0.9%	10 seconds	5	6
02/02/12	10:14:55	1.2%	1 minute	10	11
02/02/12	10:15:00	0.9%	10 seconds	5	8

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.

End of Line  
Pole 12206 (Location)

Dates Feb. 14, 2012 to Feb. 23, 2012

# Flicker Report

Exhibit 4a

Page 8 of 74

Start: Feb 14, 2012 14:07:59

Stop: Feb 23, 2012 09:26:43

Duration: 8 days, 19:18:44

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 62341

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 30 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq</u>	<u>Limit</u>	<u>Events</u>
02/14/12	15:15:38	0.9%	10 seconds	5		6
02/14/12	15:15:47	1.2%	1 minute	10		11
02/14/12	15:16:44	0.9%	10 seconds	5		6
02/14/12	15:16:47	1.2%	1 minute	10		17
02/14/12	15:19:43	1.2%	1 minute	10		11
02/14/12	16:16:02	1.2%	1 minute	10		11
02/14/12	16:21:54	1.2%	1 minute	10		11
02/15/12	07:05:45	0.9%	10 seconds	5		6
02/15/12	07:29:19	0.9%	10 seconds	5		6
02/15/12	07:29:26	1.2%	1 minute	10		11
02/15/12	07:29:29	0.9%	10 seconds	5		7
02/15/12	07:31:35	0.9%	10 seconds	5		6
02/15/12	07:46:02	0.9%	10 seconds	5		6
02/15/12	07:46:10	1.2%	1 minute	10		11
02/15/12	07:46:12	0.9%	10 seconds	5		6
02/15/12	07:46:22	0.9%	10 seconds	5		6
02/15/12	07:46:32	0.9%	10 seconds	5		10
02/15/12	07:46:42	0.9%	10 seconds	5		9
02/15/12	07:47:10	1.2%	1 minute	10		29
02/15/12	09:36:56	1.2%	1 minute	10		11
02/15/12	09:36:57	0.9%	10 seconds	5		6
02/15/12	09:37:24	0.9%	10 seconds	5		6
02/15/12	09:37:56	1.2%	1 minute	10		15
02/15/12	09:46:25	0.9%	10 seconds	5		6

02/15/12 09:46:35	1.2%	1 minute	10	11
02/15/12 09:51:25	0.9%	10 seconds	5	6
02/15/12 09:51:31	1.2%	1 minute	10	11
02/15/12 09:51:35	0.9%	10 seconds	5	9
02/15/12 09:52:31	1.2%	1 minute	10	13
02/15/12 10:14:11	0.9%	10 seconds	5	6
02/15/12 10:14:21	1.2%	1 minute	10	11
02/15/12 10:15:45	1.2%	1 minute	10	11
02/15/12 10:22:09	0.9%	10 seconds	5	6
02/15/12 10:22:14	1.2%	1 minute	10	11
02/15/12 10:22:19	0.9%	10 seconds	5	8
02/15/12 10:22:41	0.9%	10 seconds	5	6
02/15/12 10:23:01	0.9%	10 seconds	5	6
02/15/12 10:23:14	1.2%	1 minute	10	24
02/15/12 10:32:00	0.9%	10 seconds	5	6
02/15/12 10:32:10	1.2%	1 minute	10	11
02/15/12 10:32:12	0.9%	10 seconds	5	6
02/15/12 10:32:39	0.9%	10 seconds	5	6
02/15/12 10:33:10	1.2%	1 minute	10	17
02/15/12 10:55:44	0.9%	10 seconds	5	6
02/15/12 10:55:44	1.2%	1 minute	10	11
02/15/12 10:56:00	0.9%	10 seconds	5	6
02/15/12 10:56:11	0.9%	10 seconds	5	6
02/15/12 10:56:21	0.9%	10 seconds	5	7
02/15/12 10:56:31	0.9%	10 seconds	5	7
02/15/12 10:56:44	1.2%	1 minute	10	35
02/15/12 10:56:47	0.9%	10 seconds	5	6
02/15/12 11:02:30	0.9%	10 seconds	5	6
02/15/12 11:02:38	1.2%	1 minute	10	11
02/15/12 11:02:40	0.9%	10 seconds	5	6
02/15/12 11:02:50	0.9%	10 seconds	5	8
02/15/12 11:03:38	1.2%	1 minute	10	12
02/15/12 11:57:29	0.9%	10 seconds	5	6
02/15/12 11:57:37	1.2%	1 minute	10	11
02/15/12 15:53:19	0.9%	10 seconds	5	6
02/15/12 15:53:44	1.2%	1 minute	10	11
02/15/12 15:59:13	0.9%	10 seconds	5	7
02/15/12 15:59:17	1.2%	1 minute	10	11

**Channel 2 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/14/12	15:16:01	1.2%	1 minute	10	11
02/14/12	15:17:01	1.2%	1 minute	10	14
02/14/12	15:19:44	1.2%	1 minute	10	11
02/14/12	16:21:54	1.2%	1 minute	10	11
02/14/12	16:48:46	1.2%	1 minute	10	11
02/15/12	07:05:45	0.9%	10 seconds	5	6
02/15/12	07:29:16	0.9%	10 seconds	5	6
02/15/12	07:29:21	1.2%	1 minute	10	11
02/15/12	07:29:26	0.9%	10 seconds	5	10
02/15/12	07:31:34	0.9%	10 seconds	5	6
02/15/12	07:46:14	0.9%	10 seconds	5	6
02/15/12	07:46:14	1.2%	1 minute	10	11
02/15/12	07:46:29	0.9%	10 seconds	5	6
02/15/12	07:46:39	0.9%	10 seconds	5	7
02/15/12	07:47:14	1.2%	1 minute	10	18
02/15/12	08:11:22	1.2%	1 minute	10	11
02/15/12	08:11:23	0.9%	10 seconds	5	6
02/15/12	08:11:33	0.9%	10 seconds	5	9
02/15/12	08:11:43	0.9%	10 seconds	5	8
02/15/12	08:11:53	0.9%	10 seconds	5	10
02/15/12	08:12:03	0.9%	10 seconds	5	8
02/15/12	08:12:22	1.2%	1 minute	10	39
02/15/12	09:36:57	0.9%	10 seconds	5	6
02/15/12	09:36:57	1.2%	1 minute	10	11
02/15/12	09:37:24	0.9%	10 seconds	5	6
02/15/12	09:37:57	1.2%	1 minute	10	14
02/15/12	09:46:19	0.9%	10 seconds	5	6
02/15/12	09:46:50	1.2%	1 minute	10	11
02/15/12	09:51:23	0.9%	10 seconds	5	6
02/15/12	09:51:29	1.2%	1 minute	10	11
02/15/12	09:51:33	0.9%	10 seconds	5	8
02/15/12	09:51:43	0.9%	10 seconds	5	6
02/15/12	09:52:29	1.2%	1 minute	10	16
02/15/12	10:22:27	1.2%	1 minute	10	11
02/15/12	10:22:33	0.9%	10 seconds	5	6
02/15/12	10:23:27	1.2%	1 minute	10	12
02/15/12	10:25:07	1.2%	1 minute	10	11
02/15/12	10:25:09	0.9%	10 seconds	5	6
02/15/12	10:32:00	0.9%	10 seconds	5	6
02/15/12	10:32:05	1.2%	1 minute	10	11



10:32:10	0.9%	10 seconds	5	7
02/15/12 10:32:20	0.9%	10 seconds	5	6
02/15/12 10:32:38	0.9%	10 seconds	5	6
02/15/12 10:33:05	1.2%	1 minute	10	21
02/15/12 10:55:44	0.9%	10 seconds	5	6
02/15/12 10:55:46	1.2%	1 minute	10	11
02/15/12 10:56:00	0.9%	10 seconds	5	6
02/15/12 10:56:10	0.9%	10 seconds	5	7
02/15/12 10:56:20	0.9%	10 seconds	5	8
02/15/12 10:56:30	0.9%	10 seconds	5	8
02/15/12 10:56:40	0.9%	10 seconds	5	6
02/15/12 10:56:46	1.2%	1 minute	10	40
02/15/12 10:56:50	0.9%	10 seconds	5	6
02/15/12 11:02:39	0.9%	10 seconds	5	6
02/15/12 11:02:39	1.2%	1 minute	10	11
02/15/12 11:02:49	0.9%	10 seconds	5	8
02/15/12 11:03:39	1.2%	1 minute	10	11
02/15/12 11:57:29	0.9%	10 seconds	5	6
02/15/12 11:57:37	1.2%	1 minute	10	11
02/15/12 15:52:52	0.9%	10 seconds	5	6
02/15/12 15:53:18	1.2%	1 minute	10	11
02/15/12 15:53:19	0.9%	10 seconds	5	6
02/15/12 15:59:14	0.9%	10 seconds	5	7

**Channel 3 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/15/12	14:26:13	0.9%	10 seconds	5	6
02/15/12	14:26:18	1.2%	1 minute	10	11
02/15/12	14:26:23	0.9%	10 seconds	5	10
02/15/12	14:26:33	0.9%	10 seconds	5	10
02/15/12	14:26:43	0.9%	10 seconds	5	8
02/15/12	14:26:53	0.9%	10 seconds	5	8
02/15/12	14:27:00	2.2%	15 minutes	10	48
02/15/12	14:27:00	2.7%	30 minutes	10	48
02/15/12	14:27:00	3.2%	1 hour	10	48
02/15/12	14:27:03	0.9%	10 seconds	5	6
02/15/12	14:27:18	1.2%	1 minute	10	40
02/15/12	14:27:27	0.9%	10 seconds	5	6
02/15/12	14:27:37	0.9%	10 seconds	5	6
02/15/12	14:27:47	0.9%	10 seconds	5	6

## Exhibit 4a

02/15/12 14:28:01	0.9%	10 seconds	5	6
02/15/12 14:28:12	0.9%	10 seconds	5	6
02/15/12 14:28:18	1.2%	1 minute	10	34
02/15/12 14:28:41	0.9%	10 seconds	5	6
02/15/12 14:28:51	0.9%	10 seconds	5	6
02/15/12 14:29:18	1.2%	1 minute	10	18
02/15/12 14:42:00	2.2%	15 minutes	10	57
02/15/12 14:57:00	2.7%	30 minutes	10	57
02/15/12 15:13:00	2.2%	15 minutes	10	11
02/15/12 15:27:00	2.7%	30 minutes	10	11
02/15/12 15:27:00	3.2%	1 hour	10	68

Page 12 of 74**Channel 4 Report**

No flicker events were recorded.

# Channel Voltage

Ch 1 Min

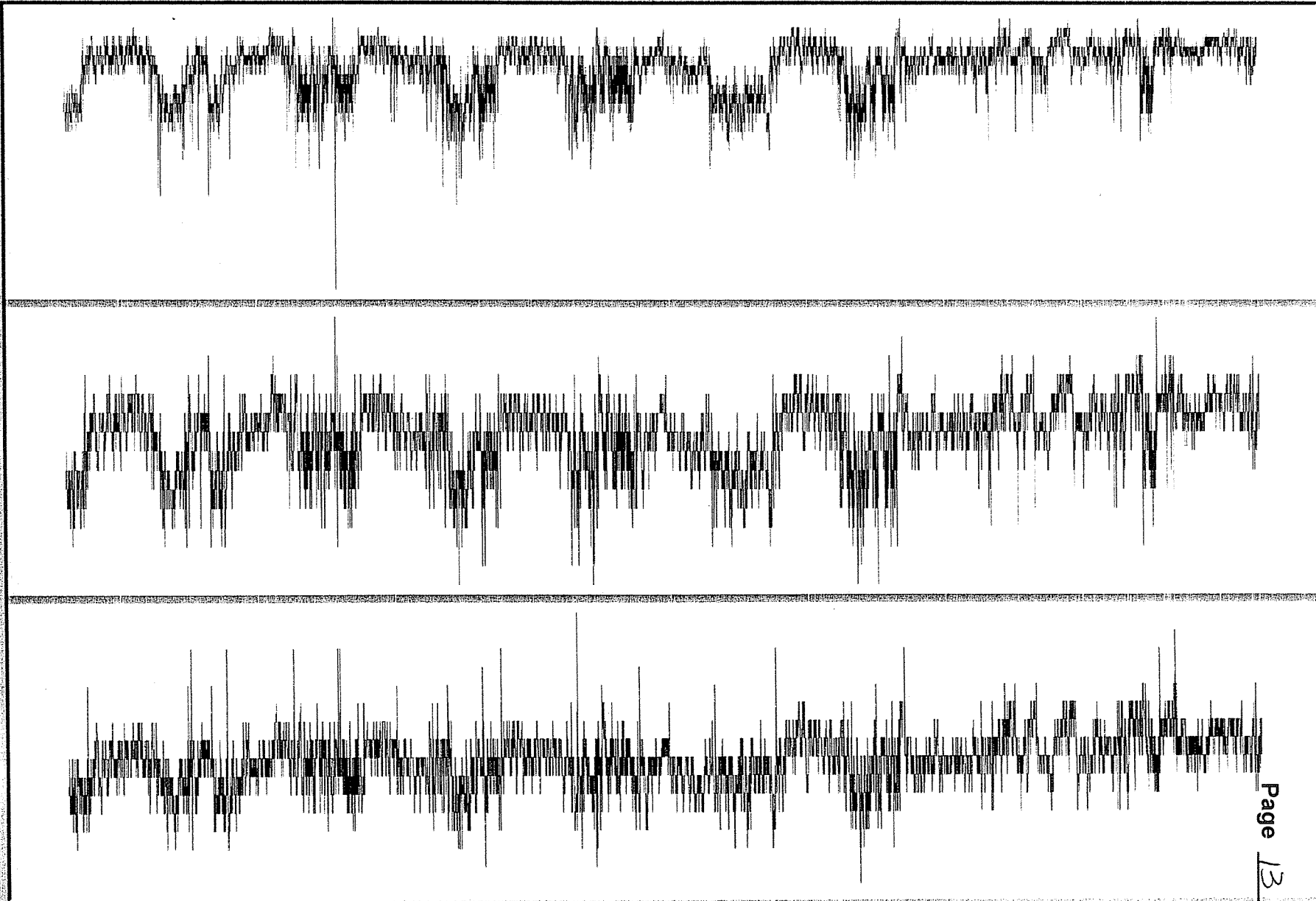
Ch 1 Ave

Ch 1 Max

Ch 1 Min  
125  
120  
115

Ch 1 Ave  
126  
124  
122  
120

Ch 1 Max  
128  
126  
124  
122



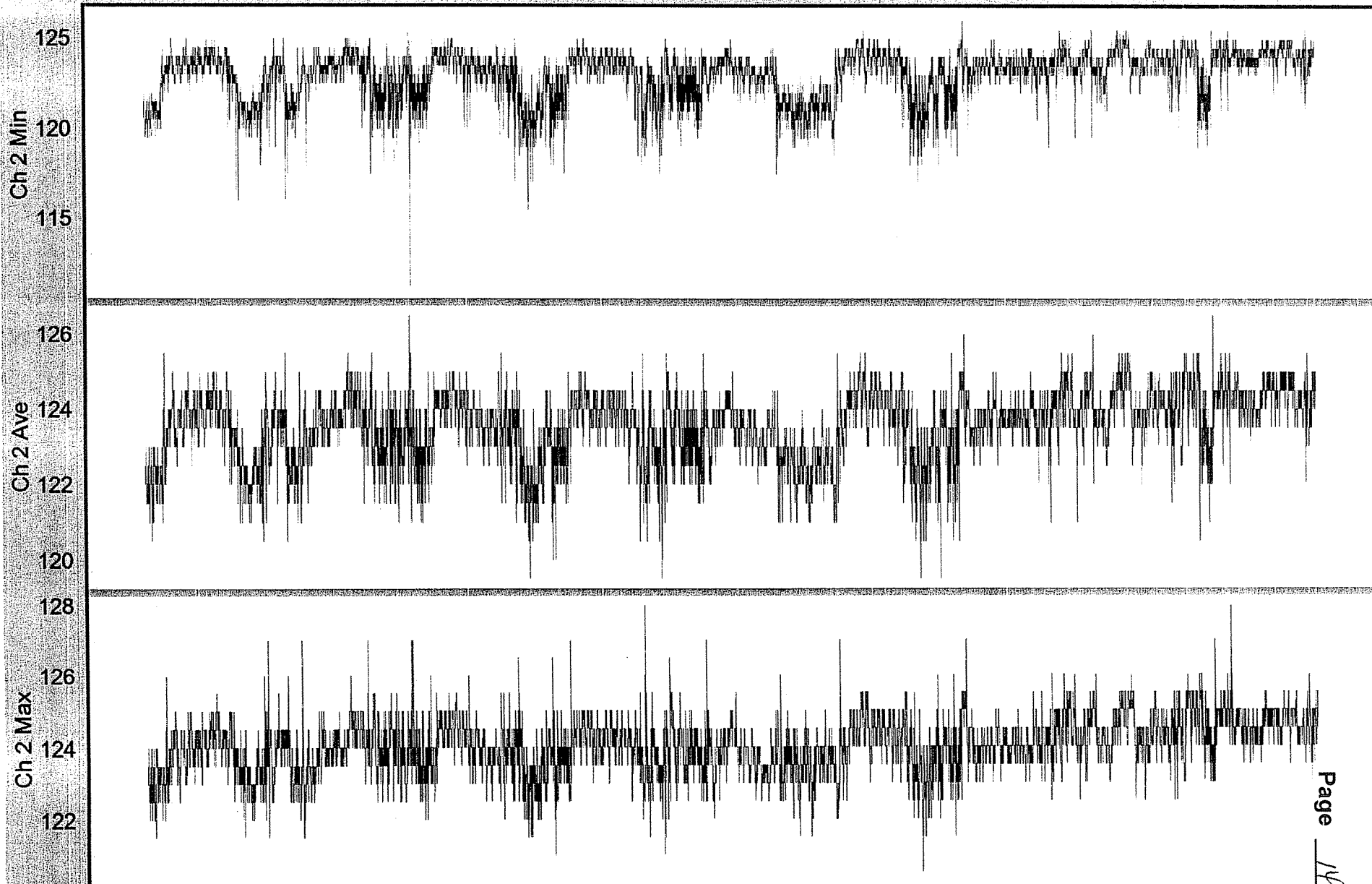
Feb 2012      15 Wed      16 Thu      17 Fri      18 Sat      19 Sun      20 Mon      21 Tue      22 Wed      23 Thu

# Channel Voltage

Ch 2 Min

Ch 2 Ave

Ch 2 Max



Feb 2012    15 Wed    16 Thu    17 Fri    18 Sat    19 Sun    20 Mon    21 Tue    22 Wed    23 Thu

End of Line  
Pole 12206 (Location)

Dates Feb. 28, 2012 to March 22, 2012

# Flicker Report

Start: Feb 28, 2012 08:37:33  
Stop: Mar 22, 2012 15:02:46  
Duration: 23 days, 06:25:13  
Firmware Version: 2.36 Unit Type: iVS-3 rev 2  
Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye  
Voltage Scale Factor: x1.00  
Current Scale Factor: x1.00  
Current Range: 1000 Amps  
Interval Time: 30 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/28/12	08:40:14	0.9%	10 seconds	5	6
02/28/12	08:40:22	1.2%	1 minute	10	11
02/28/12	08:40:24	0.9%	10 seconds	5	6
02/28/12	09:09:08	0.9%	10 seconds	5	6
02/28/12	09:17:13	0.9%	10 seconds	5	7
02/28/12	09:54:10	0.9%	10 seconds	5	6
02/28/12	09:54:42	1.2%	1 minute	10	11
02/28/12	09:56:47	0.9%	10 seconds	5	6
02/28/12	10:03:22	0.9%	10 seconds	5	6
02/28/12	10:24:16	0.9%	10 seconds	5	6
02/28/12	10:24:33	1.2%	1 minute	10	11
02/28/12	11:08:16	0.9%	10 seconds	5	6
02/28/12	12:16:45	0.9%	10 seconds	5	6
02/28/12	14:01:19	0.9%	10 seconds	5	6
02/29/12	08:44:58	0.9%	10 seconds	5	7
02/29/12	08:45:00	1.2%	1 minute	10	11
02/29/12	08:45:08	0.9%	10 seconds	5	7
02/29/12	09:21:07	0.9%	10 seconds	5	6
02/29/12	09:21:29	1.2%	1 minute	10	11
02/29/12	09:32:00	0.9%	10 seconds	5	6
02/29/12	09:32:34	1.2%	1 minute	10	11
02/29/12	09:32:35	0.9%	10 seconds	5	6
02/29/12	09:37:38	0.9%	10 seconds	5	6
02/29/12	12:03:02	0.9%	10 seconds	5	6

## Exhibit 4a

Page 17 of 74

02/29/12 12:03:05	1.2%	1 minute	10	11
02/29/12 12:56:14	0.9%	10 seconds	5	6
02/29/12 16:34:08	0.9%	10 seconds	5	6
02/29/12 17:58:34	0.9%	10 seconds	5	6
02/29/12 17:58:40	1.2%	1 minute	10	11
03/01/12 06:59:41	1.2%	1 minute	10	11
03/01/12 09:02:51	0.9%	10 seconds	5	6
03/01/12 12:07:54	0.9%	10 seconds	5	6
03/01/12 12:41:28	0.9%	10 seconds	5	6
03/01/12 13:02:03	0.9%	10 seconds	5	6
03/01/12 13:02:06	1.2%	1 minute	10	12
03/01/12 13:02:13	0.9%	10 seconds	5	6
03/01/12 13:17:36	0.9%	10 seconds	5	6
03/01/12 17:01:41	0.9%	10 seconds	5	6
03/02/12 15:46:00	2.2%	15 minutes	10	11
03/05/12 01:43:05	0.9%	10 seconds	5	7
03/05/12 01:56:31	0.9%	10 seconds	5	7
03/05/12 01:57:00	2.2%	15 minutes	10	16
03/05/12 01:57:00	2.7%	30 minutes	10	16
03/05/12 01:57:00	3.2%	1 hour	10	16
03/05/12 10:15:14	0.9%	10 seconds	5	6
03/05/12 11:09:01	0.9%	10 seconds	5	7
03/06/12 15:59:59	0.9%	10 seconds	5	6
03/06/12 17:12:00	1.2%	1 minute	10	11
03/06/12 17:12:01	0.9%	10 seconds	5	6
03/06/12 17:15:46	0.9%	10 seconds	5	6
03/06/12 17:15:53	1.2%	1 minute	10	11
03/06/12 17:15:56	0.9%	10 seconds	5	6
03/06/12 17:16:42	0.9%	10 seconds	5	6
03/06/12 17:16:53	1.2%	1 minute	10	13
03/06/12 17:17:57	0.9%	10 seconds	5	6
03/06/12 17:33:33	0.9%	10 seconds	5	7
03/06/12 17:33:35	1.2%	1 minute	10	11
03/06/12 17:33:43	0.9%	10 seconds	5	6
03/06/12 18:04:02	0.9%	10 seconds	5	6
03/07/12 09:40:09	0.9%	10 seconds	5	6
03/07/12 12:07:19	0.9%	10 seconds	5	6
03/07/12 14:48:49	0.9%	10 seconds	5	6
03/08/12 11:51:17	1.2%	1 minute	10	11
03/08/12 16:25:46	0.9%	10 seconds	5	6
03/09/12 07:04:56	1.2%	1 minute	10	11

	07:22:39	0.9%	10 seconds	5	6
03/09/12	09:26:38	0.9%	10 seconds	5	6
03/09/12	09:51:34	0.9%	10 seconds	5	7
03/09/12	11:49:35	0.9%	10 seconds	5	6
03/09/12	12:06:22	0.9%	10 seconds	5	6
03/09/12	12:13:10	0.9%	10 seconds	5	6
03/09/12	13:11:49	0.9%	10 seconds	5	6
03/09/12	13:26:53	0.9%	10 seconds	5	6
03/09/12	13:31:02	0.9%	10 seconds	5	6
03/09/12	13:49:33	0.9%	10 seconds	5	6

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq</u>	<u>Limit</u>	<u>Events</u>
02/28/12	08:40:11	0.9%	10 seconds	5	6	
02/28/12	08:40:18	1.2%	1 minute	10	11	
02/28/12	09:38:13	0.9%	10 seconds	5	6	
02/28/12	10:24:17	0.9%	10 seconds	5	6	
02/28/12	10:24:32	1.2%	1 minute	10	11	
02/28/12	10:38:17	0.9%	10 seconds	5	6	
02/28/12	11:08:48	1.2%	1 minute	10	11	
02/28/12	13:21:10	0.9%	10 seconds	5	6	
02/28/12	13:38:52	0.9%	10 seconds	5	6	
02/28/12	14:01:20	0.9%	10 seconds	5	6	
02/28/12	14:19:23	0.9%	10 seconds	5	6	
02/29/12	07:32:38	1.2%	1 minute	10	11	
02/29/12	08:44:59	0.9%	10 seconds	5	6	
02/29/12	09:21:19	1.2%	1 minute	10	11	
02/29/12	09:32:35	0.9%	10 seconds	5	6	
02/29/12	09:32:40	1.2%	1 minute	10	11	
02/29/12	09:37:37	0.9%	10 seconds	5	6	
02/29/12	12:03:02	0.9%	10 seconds	5	6	
02/29/12	12:03:03	1.2%	1 minute	10	11	
02/29/12	16:34:09	0.9%	10 seconds	5	6	
02/29/12	17:58:33	0.9%	10 seconds	5	6	
03/01/12	09:02:49	0.9%	10 seconds	5	6	
03/01/12	09:15:59	0.9%	10 seconds	5	6	
03/01/12	09:20:09	0.9%	10 seconds	5	6	
03/01/12	09:20:17	1.2%	1 minute	10	11	
03/01/12	09:20:19	0.9%	10 seconds	5	6	
03/01/12	09:44:10	0.9%	10 seconds	5	6	



## Exhibit 4a

Page 19 of 74

03/01/12 10:05:55	0.9%	10 seconds	5	6
03/01/12 11:20:05	0.9%	10 seconds	5	6
03/01/12 12:37:06	0.9%	10 seconds	5	6
03/01/12 12:41:32	0.9%	10 seconds	5	6
03/01/12 13:02:06	0.9%	10 seconds	5	7
03/01/12 13:17:34	0.9%	10 seconds	5	6
03/02/12 15:46:00	2.2%	15 minutes	10	11
03/05/12 01:43:05	0.9%	10 seconds	5	7
03/05/12 01:56:31	0.9%	10 seconds	5	7
03/05/12 01:57:00	2.2%	15 minutes	10	16
03/05/12 01:57:00	2.7%	30 minutes	10	16
03/05/12 01:57:00	3.2%	1 hour	10	16
03/05/12 10:15:14	0.9%	10 seconds	5	6
03/05/12 11:09:01	0.9%	10 seconds	5	8
03/06/12 15:59:57	0.9%	10 seconds	5	6
03/06/12 16:00:05	1.2%	1 minute	10	11
03/06/12 16:39:36	0.9%	10 seconds	5	6
03/06/12 17:12:29	1.2%	1 minute	10	11
03/06/12 17:15:45	0.9%	10 seconds	5	6
03/06/12 17:15:58	1.2%	1 minute	10	11
03/06/12 17:16:42	0.9%	10 seconds	5	6
03/06/12 17:16:58	1.2%	1 minute	10	11
03/06/12 17:17:58	1.2%	1 minute	10	14
03/06/12 17:34:12	0.9%	10 seconds	5	6
03/06/12 17:34:16	1.2%	1 minute	10	11
03/06/12 18:04:00	0.9%	10 seconds	5	6
03/07/12 09:40:16	0.9%	10 seconds	5	7
03/07/12 12:07:19	0.9%	10 seconds	5	6
03/07/12 13:27:11	0.9%	10 seconds	5	6
03/07/12 13:27:32	1.2%	1 minute	10	11
03/07/12 14:48:49	0.9%	10 seconds	5	6
03/07/12 17:12:14	0.9%	10 seconds	5	6
03/08/12 11:51:24	1.2%	1 minute	10	11
03/08/12 16:13:05	0.9%	10 seconds	5	6
03/09/12 07:04:57	1.2%	1 minute	10	11
03/09/12 07:21:51	0.9%	10 seconds	5	6
03/09/12 07:22:32	1.2%	1 minute	10	11
03/09/12 07:22:36	0.9%	10 seconds	5	6
03/09/12 07:26:26	0.9%	10 seconds	5	6
03/09/12 09:20:29	0.9%	10 seconds	5	6
03/09/12 11:49:37	0.9%	10 seconds	5	6

03/09/12

	11:53:57	0.9%	10 seconds	5	6
03/09/12	11:54:06	1.2%	1 minute	10	11
03/09/12	12:13:05	0.9%	10 seconds	5	6
03/09/12	12:15:25	0.9%	10 seconds	5	6
03/09/12	12:54:55	0.9%	10 seconds	5	6
03/09/12	13:11:49	0.9%	10 seconds	5	6
03/09/12	13:20:02	0.9%	10 seconds	5	6
03/09/12	13:49:33	1.2%	1 minute	10	12

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.

# Channel 2 Voltage

Exhibit 4a  
100

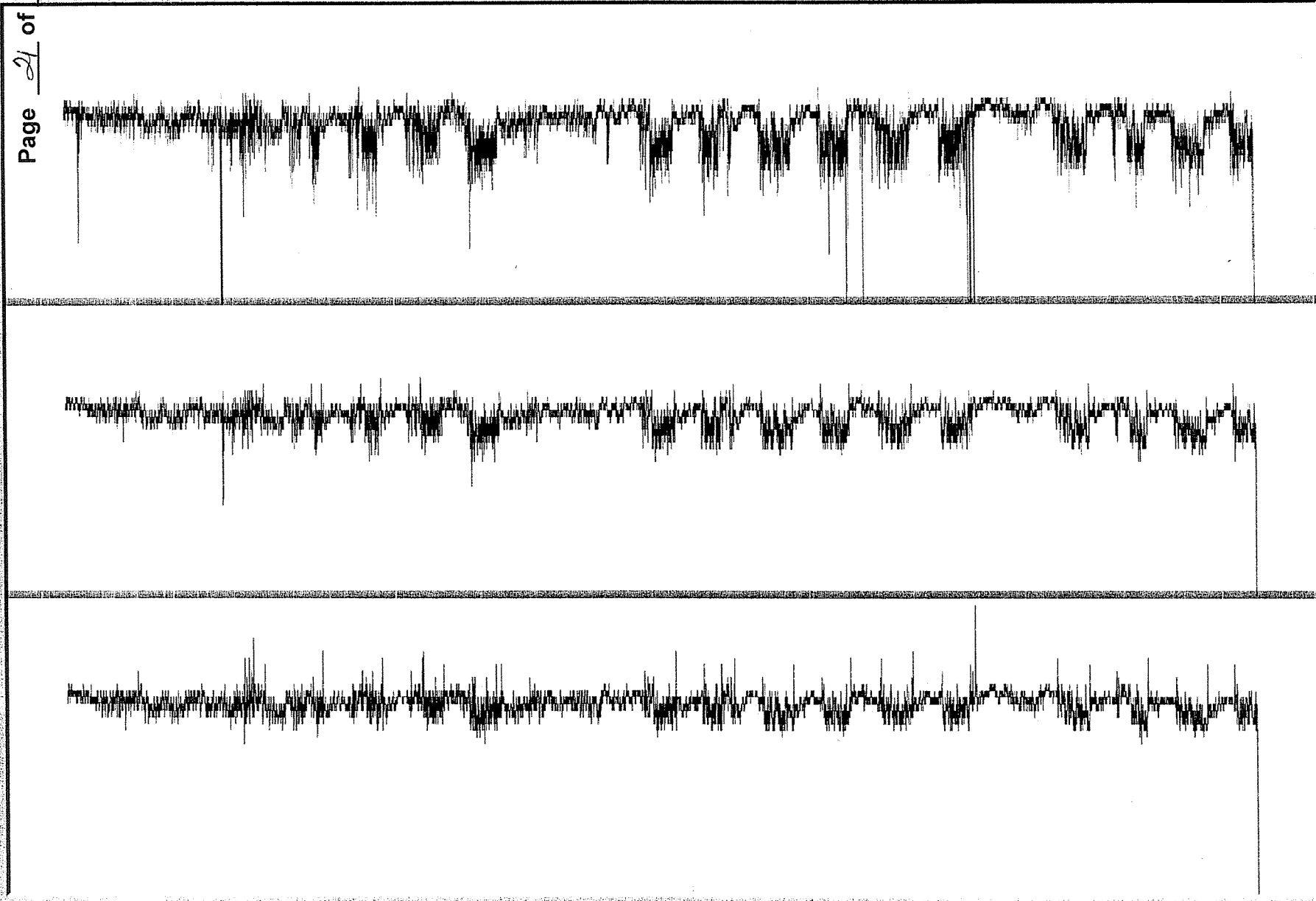
Page 24 of 74

Ch 2 Min

Ch 2 Ave

Ch 2 Max

Ch 2 Min  
125  
120  
115  
110  
130  
Ch 2 Ave  
125  
120  
115  
110  
130  
Ch 2 Max  
125  
120  
115  
110



Mar 2012

8 Thu

15 Thu

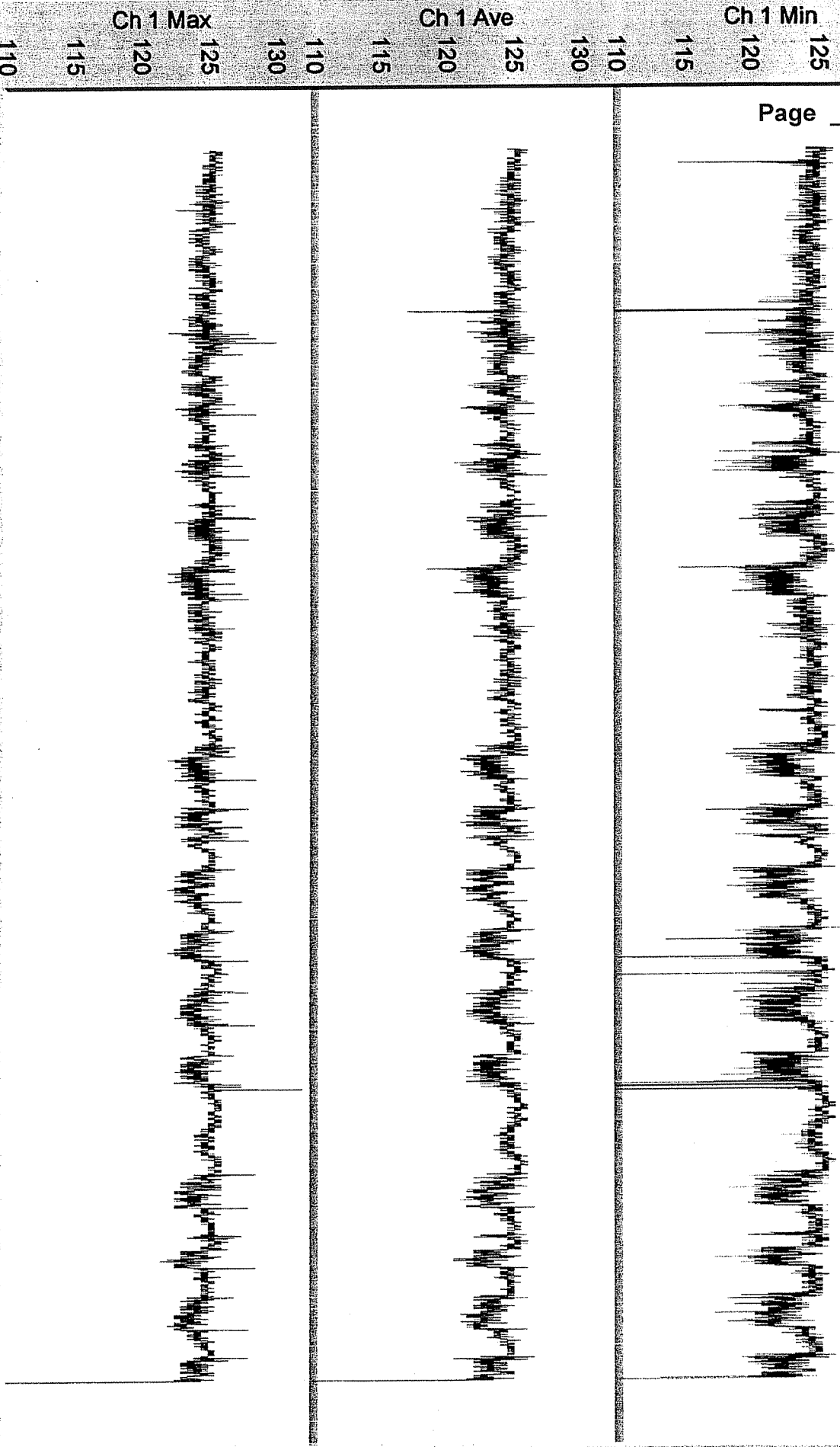
22 Thu

Channel 1 Voltage

Ch 1 Min

Ch 1 Ave

Ch 1 Max



Mar 2012

8 Thu

15 Thu

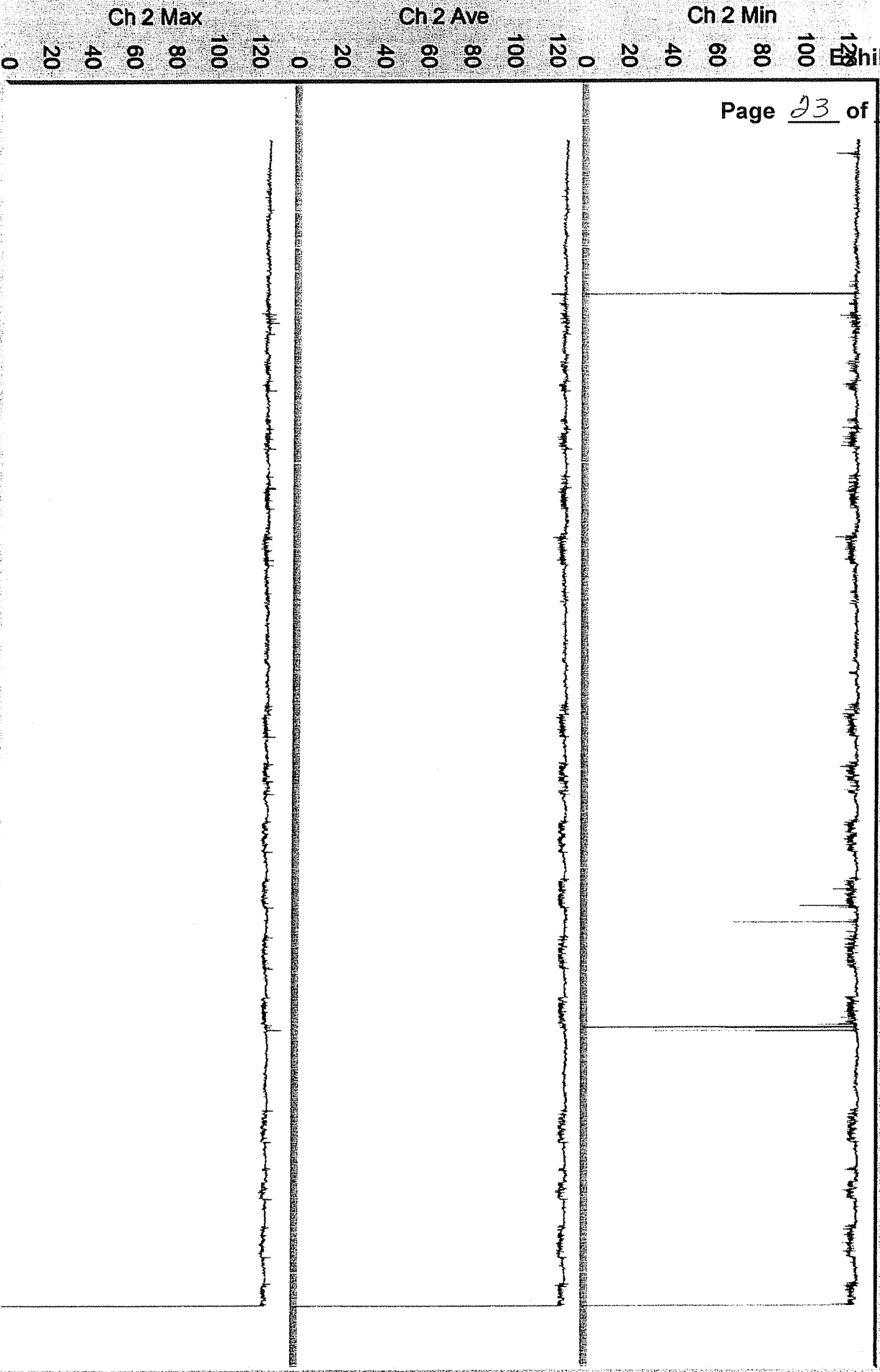
22 Thu

Channel 2 Voltage

Ch 2 Min

Ch 2 Ave

Ch 2 Max



Mar 2012

8 Thu

15 Thu

22 Thu

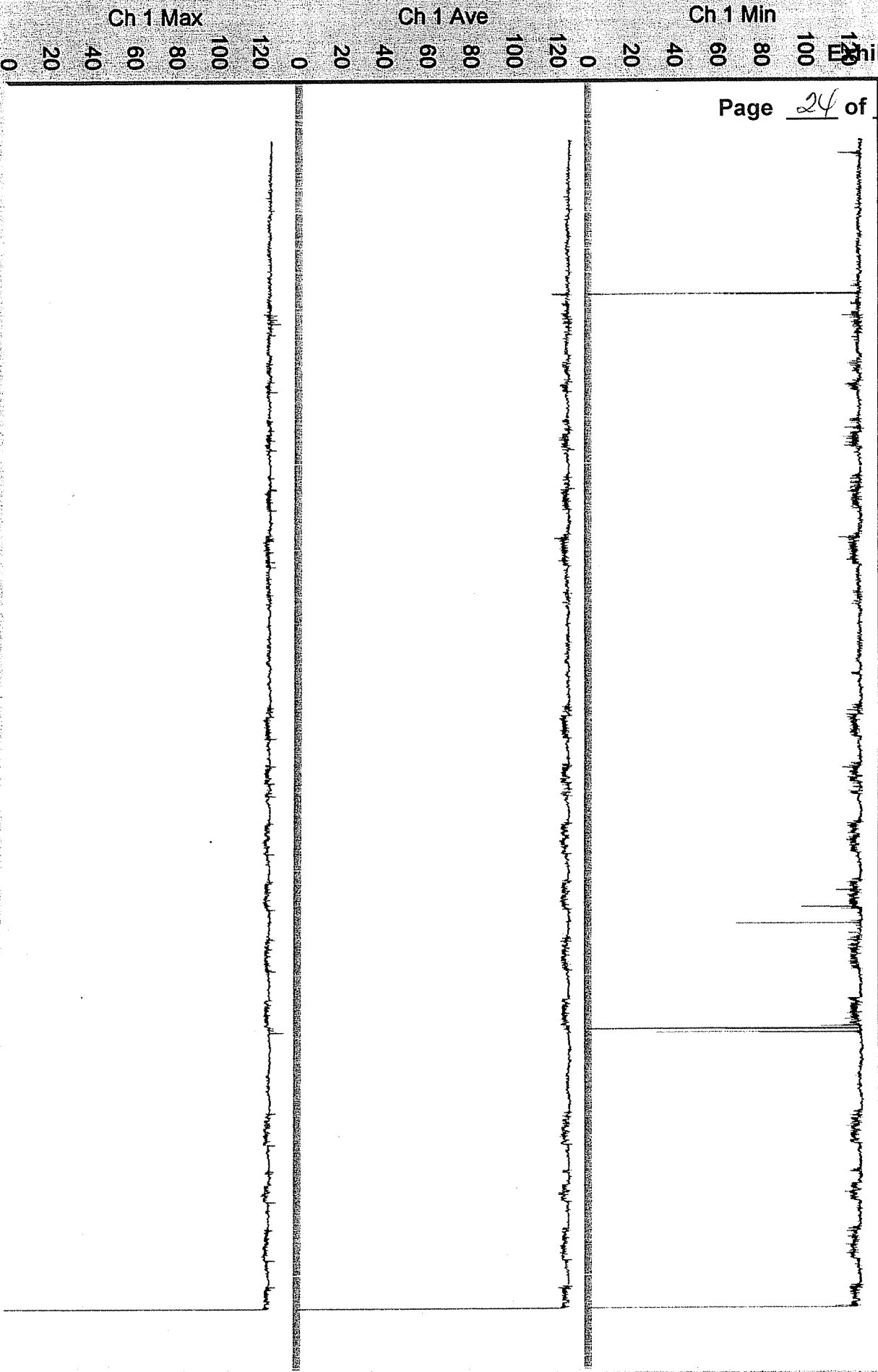
Channel 1 Voltage

Ch 1 Min

Ch 1 Ave

Ch 1 Max

Page 24 of 74



Mar 2012

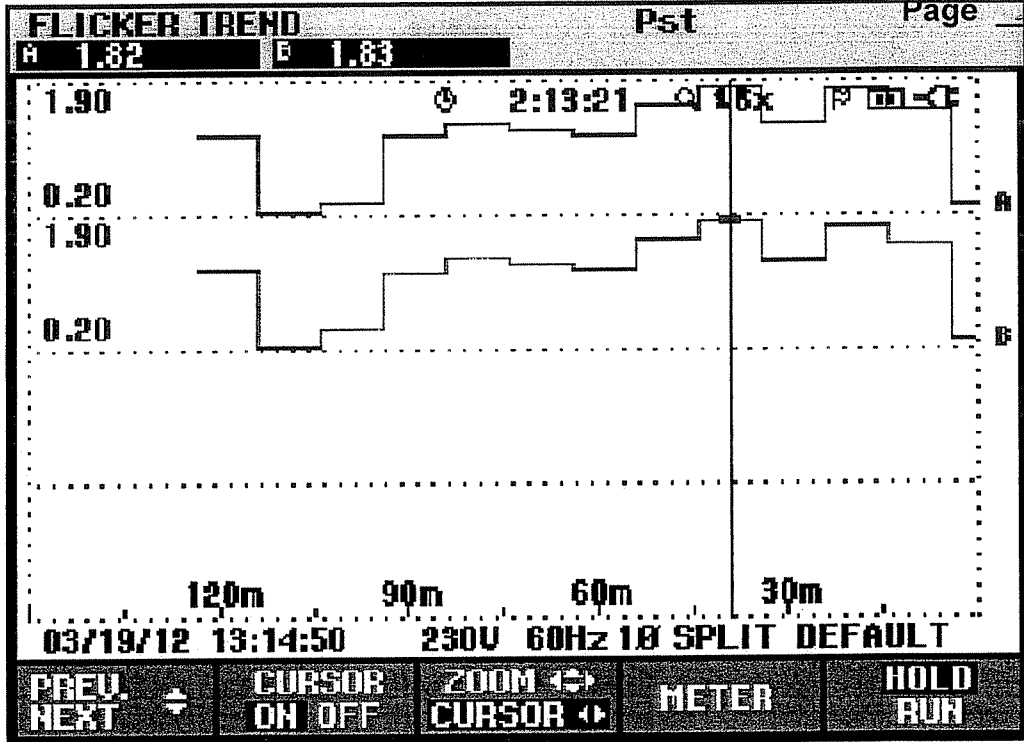
8 Thu

15 Thu

22 Thu

Fluke Power Analyzer  
Hilltop's Electrical Contractor

Location: Mr. Bells service/meter base

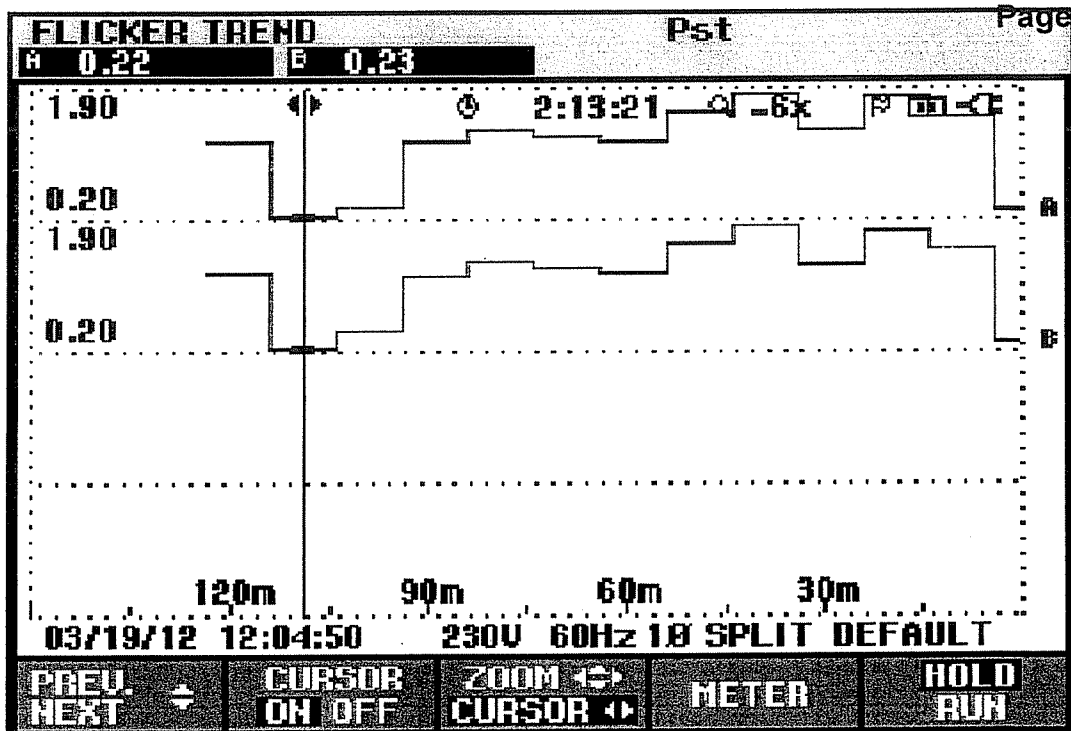


*Fluke Power Analyzer*

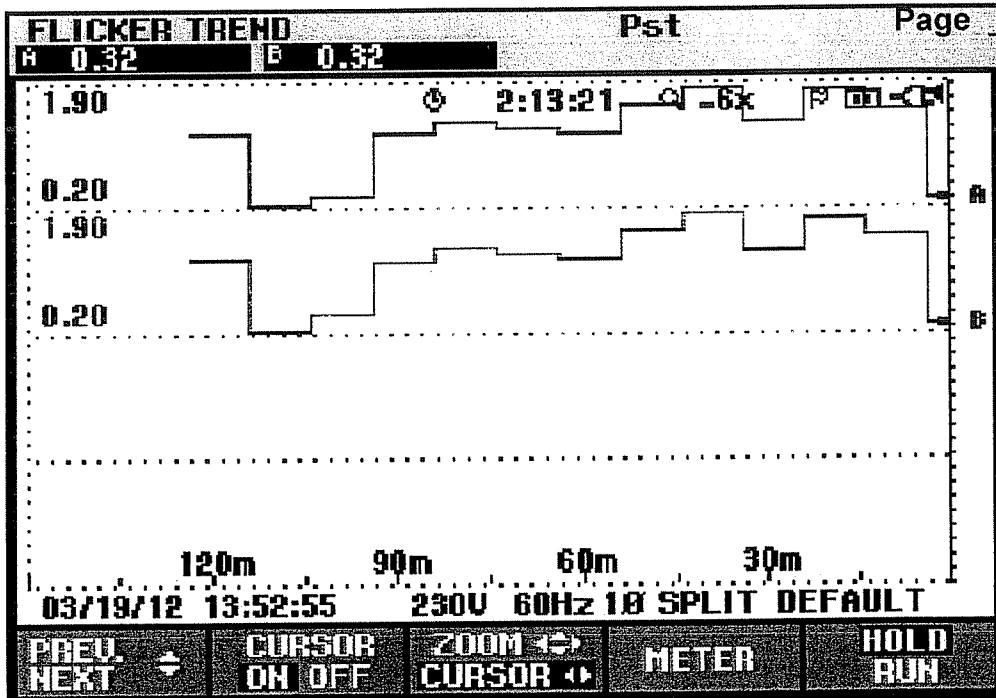
*Hilltop's Electrical Contractor*

*Location: Mr. Balls service/meter base*





Flicker		
	A	B
Pst(1min)	0.55	0.55
Pst	0.32	0.32
Plt	1.37	1.37
Dc(%)	0.0	0.0
Dmax(%)	0.0	0.0
TD<(s)	0.000	0.000
03/19/12 13:52:57 230V 60Hz 1Ø SPLIT DEFAULT		
	MAX-D VALUES	PF5
	TREND	HOLD RUN



Flicker		
	A	B
Pst(1min)	0.55	0.55
Pst	0.32	0.32
Plt	1.37	1.37
$\hat{D}_c(\%)$	0.2	0.2
$\hat{D}_{max}(\%)$	2.4	2.4
$\hat{T}D<(\%)$	0.000	0.000
START 03/19/12 11:39:35		2:13:21
BACK		RESET MAX-D

End of Line  
Pole 12206 (Location)

Dates May 3, 2012 to May 10, 2012

*Big Bend @ end of Line*

Exhibit 4a

**Flicker Report**Page 30 of 74

Start: May 03, 2012 11:15:09

Stop: May 10, 2012 09:11:25

Duration: 6 days, 21:56:16

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye

Voltage Scale Factor: x1.00

Current Scale Factor: x1.00

Current Range: 1000 Amps

Interval Time: 30 seconds

**Channel 1 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
05/03/12	11:21:19	1.2%	1 minute	10	11
05/03/12	11:28:11	0.9%	10 seconds	5	6
05/03/12	11:28:25	1.2%	1 minute	10	11
05/03/12	11:50:51	0.9%	10 seconds	5	6
05/03/12	12:05:38	0.9%	10 seconds	5	6
05/03/12	12:21:02	0.9%	10 seconds	5	6
05/03/12	12:36:30	0.9%	10 seconds	5	6
05/03/12	12:36:36	1.2%	1 minute	10	11
05/03/12	12:43:41	0.9%	10 seconds	5	6
05/03/12	12:44:27	1.2%	1 minute	10	11
05/03/12	13:08:10	1.2%	1 minute	10	11
05/03/12	13:10:22	0.9%	10 seconds	5	6
05/03/12	13:10:34	1.2%	1 minute	10	11
05/03/12	13:21:27	0.9%	10 seconds	5	6
05/03/12	13:21:54	1.2%	1 minute	10	11
05/03/12	14:04:39	0.9%	10 seconds	5	6
05/03/12	14:41:57	0.9%	10 seconds	5	6
05/03/12	15:14:29	0.9%	10 seconds	5	7
05/03/12	15:14:39	1.2%	1 minute	10	11
05/03/12	15:22:31	0.9%	10 seconds	5	7
05/03/12	15:22:36	1.2%	1 minute	10	11
05/03/12	16:07:24	0.9%	10 seconds	5	6
05/03/12	16:07:51	1.2%	1 minute	10	11
05/03/12	18:06:54	0.9%	10 seconds	5	7

05/03/12 19:02:57	0.9%	10 seconds	5	7
05/03/12 19:39:07	0.9%	10 seconds	5	6
05/03/12 19:46:02	0.9%	10 seconds	5	6
05/03/12 19:46:25	1.2%	1 minute	10	11
05/04/12 21:46:41	0.9%	10 seconds	5	7
05/04/12 21:46:46	1.2%	1 minute	10	11
05/04/12 21:47:00	2.3%	15 minutes	10	11
05/05/12 03:31:35	0.9%	10 seconds	5	7
05/05/12 03:31:52	1.2%	1 minute	10	11
05/05/12 03:32:00	2.3%	15 minutes	10	12
05/05/12 03:48:00	2.8%	30 minutes	10	13
05/05/12 03:48:00	3.3%	1 hour	10	12
05/05/12 06:40:39	0.9%	10 seconds	5	6
05/05/12 13:38:39	0.9%	10 seconds	5	7
05/05/12 14:10:15	0.9%	10 seconds	5	6
05/05/12 14:10:25	1.2%	1 minute	10	11
05/05/12 14:10:43	0.9%	10 seconds	5	6
05/05/12 14:11:25	1.2%	1 minute	10	23
05/05/12 14:12:25	1.2%	1 minute	10	11
05/05/12 14:12:55	0.9%	10 seconds	5	6
05/05/12 14:13:25	1.2%	1 minute	10	15
05/05/12 14:13:33	0.9%	10 seconds	5	7
05/05/12 14:14:25	1.2%	1 minute	10	15
05/05/12 14:15:30	1.2%	1 minute	10	11
05/05/12 14:16:23	0.9%	10 seconds	5	6
05/05/12 14:16:30	1.2%	1 minute	10	20
05/05/12 14:17:51	1.2%	1 minute	10	11
05/05/12 14:18:51	1.2%	1 minute	10	15
05/05/12 14:18:53	0.9%	10 seconds	5	6
05/05/12 14:46:10	0.9%	10 seconds	5	6
05/05/12 14:52:30	1.2%	1 minute	10	11
05/05/12 14:52:49	0.9%	10 seconds	5	6
05/05/12 14:52:59	0.9%	10 seconds	5	6
05/05/12 14:53:09	0.9%	10 seconds	5	6
05/05/12 14:53:19	0.9%	10 seconds	5	6
05/05/12 14:53:30	1.2%	1 minute	10	30
05/05/12 14:55:02	0.9%	10 seconds	5	6
05/05/12 14:55:04	1.2%	1 minute	10	11
05/05/12 15:06:52	0.9%	10 seconds	5	6
05/05/12 15:17:56	0.9%	10 seconds	5	6
05/07/12 06:44:20	0.9%	10 seconds	5	6

	06:44:46	1.2%	1 minute	10	11
05/07/12	06:59:11	1.2%	1 minute	10	11
05/07/12	07:02:39	1.2%	1 minute	10	11
05/07/12	07:13:48	0.9%	10 seconds	5	6
05/07/12	07:14:07	1.2%	1 minute	10	11
05/07/12	07:19:41	1.2%	1 minute	10	11
05/07/12	07:19:42	0.9%	10 seconds	5	6
05/07/12	07:23:05	1.2%	1 minute	10	11
05/07/12	07:25:20	1.2%	1 minute	10	11
05/07/12	07:29:06	1.2%	1 minute	10	11
05/07/12	07:40:18	1.2%	1 minute	10	11
05/07/12	07:53:12	0.9%	10 seconds	5	6

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
05/03/12	11:20:36	0.9%	10 seconds	5	6
05/03/12	11:28:12	0.9%	10 seconds	5	6
05/03/12	11:28:54	1.2%	1 minute	10	11
05/03/12	11:36:32	0.9%	10 seconds	5	6
05/03/12	11:50:49	0.9%	10 seconds	5	6
05/03/12	11:57:53	0.9%	10 seconds	5	6
05/03/12	12:21:00	0.9%	10 seconds	5	6
05/03/12	12:36:31	0.9%	10 seconds	5	6
05/03/12	12:36:36	1.2%	1 minute	10	11
05/03/12	12:36:41	0.9%	10 seconds	5	6
05/03/12	12:43:41	0.9%	10 seconds	5	6
05/03/12	13:06:35	1.2%	1 minute	10	11
05/03/12	13:07:33	0.9%	10 seconds	5	7
05/03/12	13:07:35	1.2%	1 minute	10	12
05/03/12	14:04:39	0.9%	10 seconds	5	6
05/03/12	14:05:29	1.2%	1 minute	10	11
05/03/12	14:42:03	0.9%	10 seconds	5	6
05/03/12	15:14:28	0.9%	10 seconds	5	6
05/03/12	15:14:39	1.2%	1 minute	10	11
05/03/12	15:22:31	0.9%	10 seconds	5	7
05/03/12	15:22:35	1.2%	1 minute	10	12
05/03/12	15:22:41	0.9%	10 seconds	5	8
05/03/12	16:07:24	0.9%	10 seconds	5	6
05/03/12	16:07:30	1.2%	1 minute	10	11
05/03/12	18:06:53	0.9%	10 seconds	5	6

## Exhibit 4a

Page 33 of 74

05/03/12 19:46:06	0.9%	10 seconds	5	6
05/04/12 21:46:40	0.9%	10 seconds	5	7
05/04/12 21:46:42	1.2%	1 minute	10	11
05/04/12 21:46:50	0.9%	10 seconds	5	8
05/05/12 03:31:35	0.9%	10 seconds	5	7
05/05/12 03:32:00	2.3%	15 minutes	10	11
05/05/12 03:46:00	2.8%	30 minutes	10	11
05/05/12 03:48:00	3.3%	1 hour	10	12
05/05/12 06:40:39	0.9%	10 seconds	5	6
05/05/12 13:38:39	0.9%	10 seconds	5	6
05/05/12 14:07:35	0.9%	10 seconds	5	6
05/05/12 14:08:16	1.2%	1 minute	10	11
05/05/12 14:10:16	0.9%	10 seconds	5	6
05/05/12 14:10:29	1.2%	1 minute	10	11
05/05/12 14:10:36	0.9%	10 seconds	5	6
05/05/12 14:11:29	1.2%	1 minute	10	17
05/05/12 14:12:29	1.2%	1 minute	10	14
05/05/12 14:13:52	1.2%	1 minute	10	11
05/05/12 14:15:40	1.2%	1 minute	10	11
05/05/12 14:16:11	0.9%	10 seconds	5	6
05/05/12 14:16:21	0.9%	10 seconds	5	9
05/05/12 14:16:40	1.2%	1 minute	10	21
05/05/12 14:17:14	0.9%	10 seconds	5	6
05/05/12 14:17:40	1.2%	1 minute	10	15
05/05/12 14:18:40	1.2%	1 minute	10	12
05/05/12 14:18:49	0.9%	10 seconds	5	6
05/05/12 14:18:59	0.9%	10 seconds	5	6
05/05/12 14:19:40	1.2%	1 minute	10	11
05/05/12 14:52:49	1.2%	1 minute	10	11
05/05/12 14:53:06	0.9%	10 seconds	5	6
05/05/12 14:53:49	1.2%	1 minute	10	20
05/05/12 14:54:49	1.2%	1 minute	10	11
05/05/12 14:55:53	1.2%	1 minute	10	11
05/05/12 15:28:25	0.9%	10 seconds	5	6
05/05/12 15:39:19	0.9%	10 seconds	5	6
05/07/12 06:44:20	0.9%	10 seconds	5	6
05/07/12 06:44:45	1.2%	1 minute	10	11
05/07/12 07:13:49	0.9%	10 seconds	5	6
05/07/12 07:14:07	1.2%	1 minute	10	11
05/07/12 07:20:03	1.2%	1 minute	10	11
05/07/12 07:21:25	0.9%	10 seconds	5	6

07:21:29	1.2%	1 minute	10	11
05/07/12 07:23:01	1.2%	1 minute	10	11
05/07/12 07:23:02	0.9%	10 seconds	5	6
05/07/12 07:24:37	0.9%	10 seconds	5	6
05/07/12 07:25:21	1.2%	1 minute	10	11
05/07/12 07:29:08	1.2%	1 minute	10	11
05/07/12 07:42:53	1.2%	1 minute	10	11

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.



Channel Voltage

Ch 1 Max

Ch 1 Ave

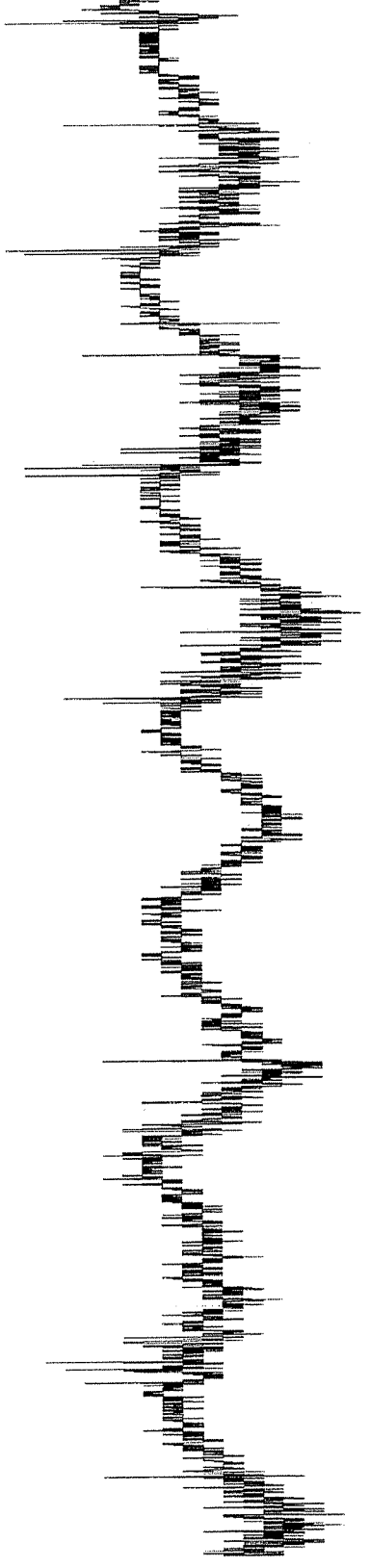
Ch 1 Min



Ch 1 Min  
120  
100  
80  
60  
40  
20  
0



Ch 1 Ave  
128  
126  
124  
122  
120

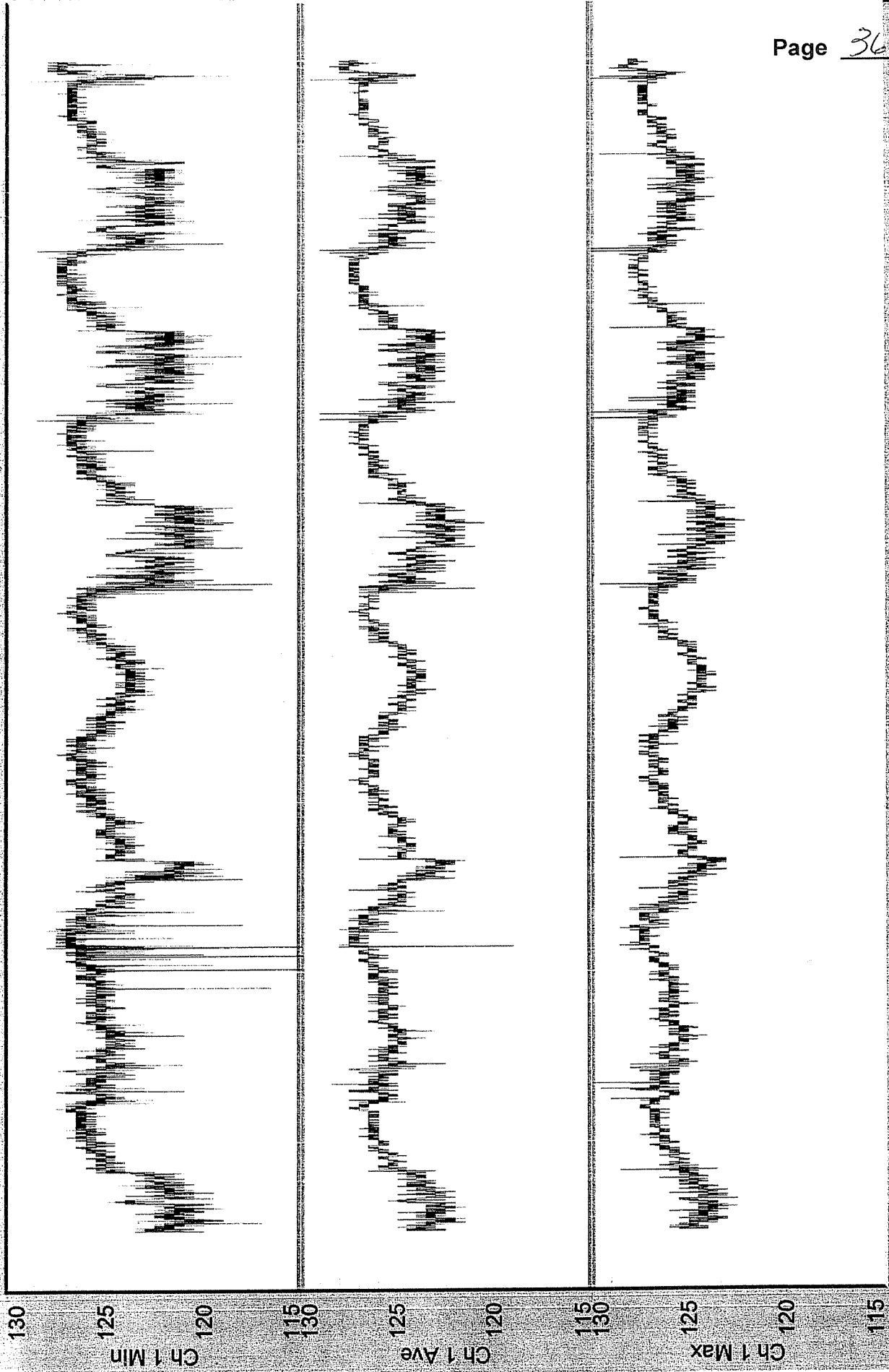


Ch 1 Max  
130  
128  
126  
124  
122

10 Thu  
9 Wed  
8 Tue  
7 Mon  
6 Sun  
5 Sat  
4 Fri

May 2012

Channel Voltage



4 Fri 5 Sat 6 Sun 7 Mon 8 Tue 9 Wed 10 Thu

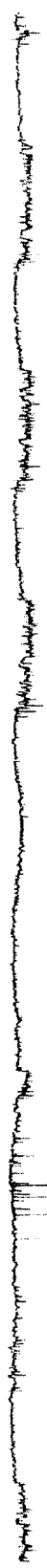
May 2012

Channel Voltage

Ch 2 Max

Ch 2 Ave

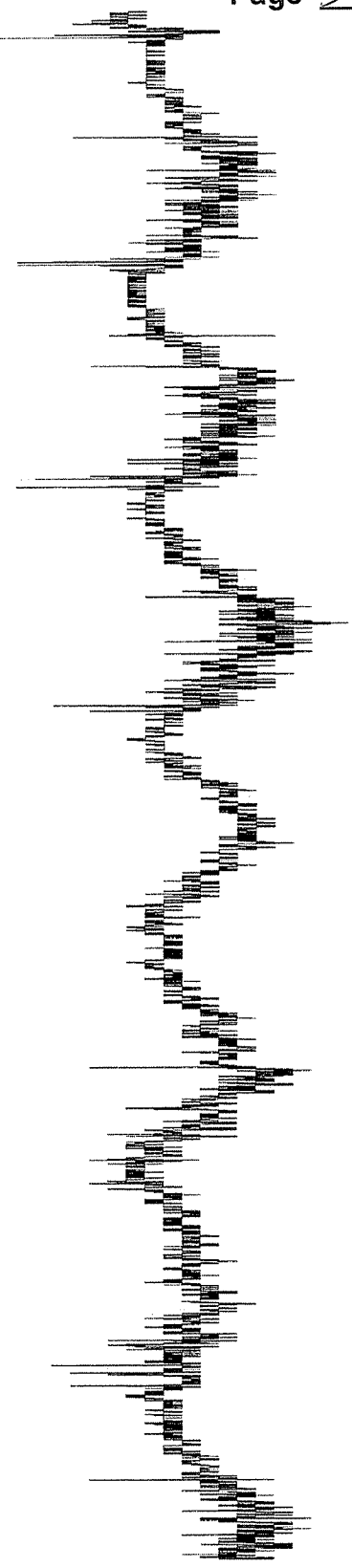
Ch 2 Min



Ch 2 Min  
120  
100  
80  
60  
40  
20  
0



Ch 2 Ave  
128  
126  
124  
122  
120



Ch 2 Max  
130  
128  
126  
124  
122

4 Fri 5 Sat 6 Sun 7 Mon 8 Tue 9 Wed 10 Thu

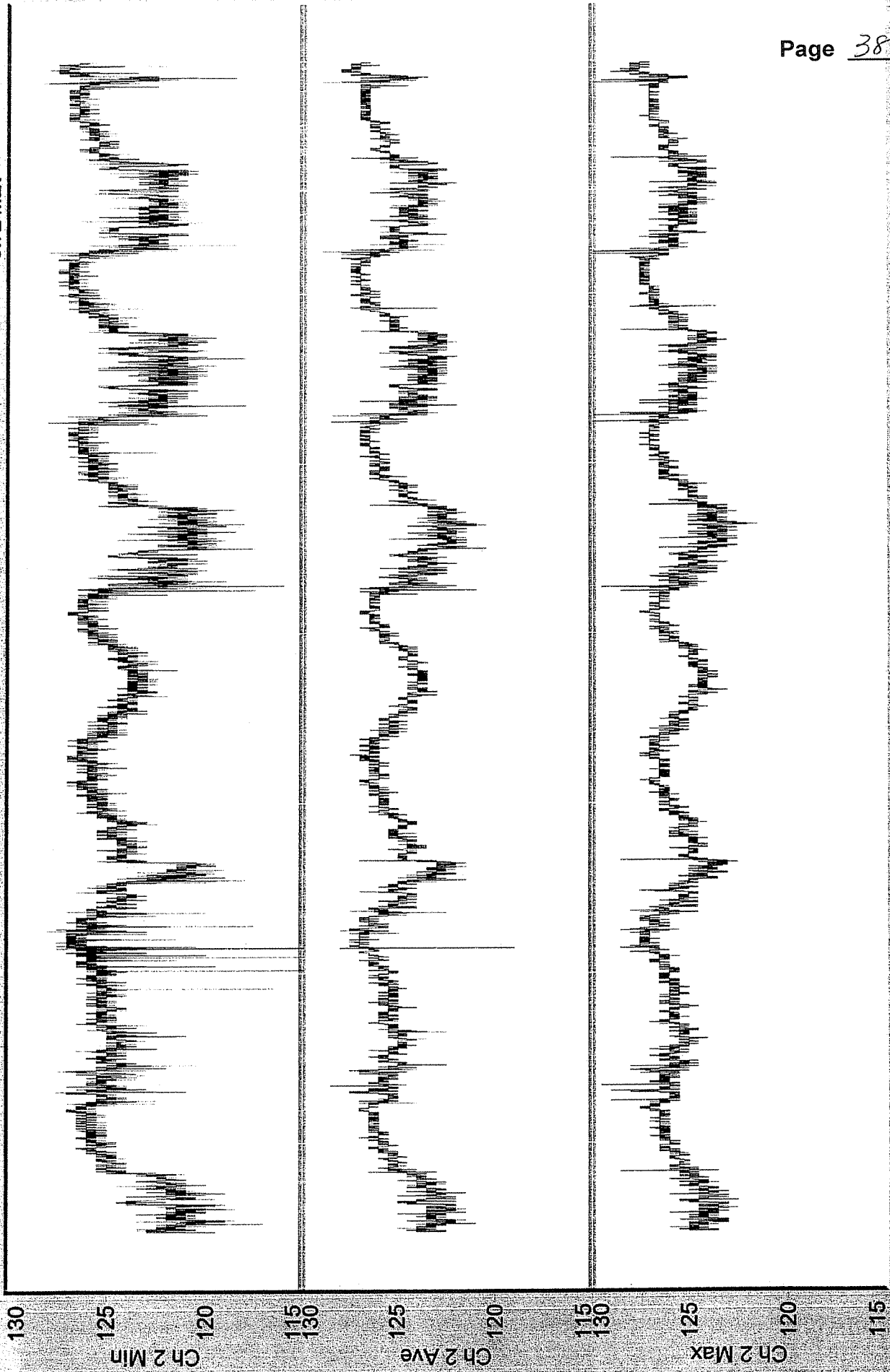
May 2012

Channel Voltage

Ch 2 Max

Ch 2 Ave

Ch 2 Min



10 Thu

9 Wed

8 Tue

7 Mon

6 Sun

5 Sat

4 Fri

May 2012

End of Line  
Pole 12206 (Location)

Dates Sept. 5, 2012 to Sept. 12, 2012

# Flicker Report

Start: Sep 05, 2012 11:00:42  
 Stop: Sep 12, 2012 15:13:21  
 Duration: 7 days, 04:12:39  
 Firmware Version: 2.36 Unit Type: iVS-3 rev 2  
 Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 10 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
09/05/12	11:21:14	0.9%	10 seconds	5	6
09/05/12	11:21:19	1.2%	1 minute	10	11
09/05/12	11:26:11	0.9%	10 seconds	5	6
09/05/12	11:26:44	1.2%	1 minute	10	11
09/05/12	11:40:19	0.9%	10 seconds	5	6
09/05/12	11:40:23	1.2%	1 minute	10	11
09/05/12	11:40:29	0.9%	10 seconds	5	6
09/05/12	11:40:40	0.9%	10 seconds	5	6
09/05/12	11:40:50	0.9%	10 seconds	5	6
09/05/12	11:41:23	1.2%	1 minute	10	13
09/05/12	11:46:47	0.9%	10 seconds	5	6
09/05/12	11:48:20	0.9%	10 seconds	5	6
09/05/12	11:52:56	0.9%	10 seconds	5	6
09/05/12	11:53:02	1.2%	1 minute	10	11
09/05/12	11:53:17	0.9%	10 seconds	5	7
09/05/12	12:00:17	0.9%	10 seconds	5	6
09/05/12	12:00:23	1.2%	1 minute	10	11
09/05/12	12:00:27	0.9%	10 seconds	5	9
09/05/12	12:00:37	0.9%	10 seconds	5	9
09/05/12	12:01:23	1.2%	1 minute	10	18
09/05/12	12:14:02	1.2%	1 minute	10	11
09/05/12	12:26:57	0.9%	10 seconds	5	6
09/05/12	12:39:50	1.2%	1 minute	10	11
09/05/12	12:39:52	0.9%	10 seconds	5	6

## Exhibit 4a

Page 41 of 74

09/05/12 12:45:55	0.9%	10 seconds	5	6
09/05/12 12:46:10	1.2%	1 minute	10	11
09/05/12 12:46:12	0.9%	10 seconds	5	6
09/05/12 13:00:28	0.9%	10 seconds	5	6
09/05/12 13:00:31	1.2%	1 minute	10	11
09/05/12 13:00:38	0.9%	10 seconds	5	6
09/05/12 13:06:58	0.9%	10 seconds	5	6
09/05/12 13:07:05	1.2%	1 minute	10	11
09/05/12 13:07:08	0.9%	10 seconds	5	7
09/05/12 13:29:14	0.9%	10 seconds	5	6
09/05/12 13:29:14	1.2%	1 minute	10	11
09/05/12 13:43:55	0.9%	10 seconds	5	6
09/05/12 13:51:28	1.2%	1 minute	10	11
09/05/12 13:51:32	0.9%	10 seconds	5	6
09/05/12 13:58:10	0.9%	10 seconds	5	6
09/05/12 14:05:55	0.9%	10 seconds	5	6
09/05/12 14:05:58	1.2%	1 minute	10	11
09/05/12 14:23:46	0.9%	10 seconds	5	6
09/05/12 14:24:06	1.2%	1 minute	10	11
09/05/12 14:24:07	0.9%	10 seconds	5	6
09/05/12 14:31:58	0.9%	10 seconds	5	6
09/05/12 14:32:15	1.2%	1 minute	10	11
09/05/12 14:32:17	0.9%	10 seconds	5	6
09/05/12 14:39:42	0.9%	10 seconds	5	6
09/05/12 14:40:15	1.2%	1 minute	10	11
09/05/12 14:53:06	0.9%	10 seconds	5	6
09/05/12 14:53:12	1.2%	1 minute	10	11
09/05/12 14:53:35	0.9%	10 seconds	5	6
09/05/12 15:04:03	0.9%	10 seconds	5	6
09/05/12 15:04:10	1.2%	1 minute	10	11
09/05/12 15:04:13	0.9%	10 seconds	5	6
09/05/12 16:37:58	0.9%	10 seconds	5	6
09/05/12 17:08:02	0.9%	10 seconds	5	6
09/06/12 07:04:22	0.9%	10 seconds	5	6
09/06/12 07:21:53	0.9%	10 seconds	5	6
09/06/12 07:27:59	1.2%	1 minute	10	11
09/06/12 07:28:01	0.9%	10 seconds	5	6
09/06/12 07:52:15	0.9%	10 seconds	5	6
09/06/12 07:52:27	1.2%	1 minute	10	11
09/06/12 08:28:00	0.9%	10 seconds	5	6
09/06/12 08:28:15	1.2%	1 minute	10	11

	08:28:17	0.9%	10 seconds	5	6
09/06/12	08:33:59	0.9%	10 seconds	5	6
09/06/12	08:34:06	1.2%	1 minute	10	11
09/06/12	08:34:09	0.9%	10 seconds	5	8

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
09/05/12	11:21:15	0.9%	10 seconds	5	6
09/05/12	11:26:11	0.9%	10 seconds	5	6
09/05/12	11:26:16	1.2%	1 minute	10	11
09/05/12	11:26:21	0.9%	10 seconds	5	7
09/05/12	11:26:51	0.9%	10 seconds	5	6
09/05/12	11:27:16	1.2%	1 minute	10	12
09/05/12	11:32:52	1.2%	1 minute	10	11
09/05/12	11:40:19	0.9%	10 seconds	5	6
09/05/12	11:40:24	1.2%	1 minute	10	11
09/05/12	11:40:40	0.9%	10 seconds	5	6
09/05/12	11:40:50	0.9%	10 seconds	5	6
09/05/12	11:41:24	1.2%	1 minute	10	13
09/05/12	11:46:47	0.9%	10 seconds	5	6
09/05/12	11:48:20	0.9%	10 seconds	5	6
09/05/12	11:52:56	0.9%	10 seconds	5	6
09/05/12	11:53:02	1.2%	1 minute	10	11
09/05/12	11:53:16	0.9%	10 seconds	5	6
09/05/12	11:54:02	1.2%	1 minute	10	11
09/05/12	12:00:17	0.9%	10 seconds	5	6
09/05/12	12:00:23	1.2%	1 minute	10	11
09/05/12	12:00:27	0.9%	10 seconds	5	9
09/05/12	12:00:37	0.9%	10 seconds	5	10
09/05/12	12:00:47	0.9%	10 seconds	5	6
09/05/12	12:01:23	1.2%	1 minute	10	20
09/05/12	12:26:56	0.9%	10 seconds	5	6
09/05/12	12:26:59	1.2%	1 minute	10	11
09/05/12	12:33:58	1.2%	1 minute	10	11
09/05/12	12:39:28	0.9%	10 seconds	5	6
09/05/12	12:39:35	1.2%	1 minute	10	11
09/05/12	12:39:38	0.9%	10 seconds	5	8
09/05/12	12:39:52	0.9%	10 seconds	5	6
09/05/12	12:40:35	1.2%	1 minute	10	11
09/05/12	12:45:55	0.9%	10 seconds	5	6



## Exhibit 4a

Page 43 of 74

09/05/12 12:46:10	1.2%	1 minute	10	11
09/05/12 12:46:12	0.9%	10 seconds	5	6
09/05/12 12:46:22	0.9%	10 seconds	5	6
09/05/12 13:00:27	1.2%	1 minute	10	11
09/05/12 13:00:33	0.9%	10 seconds	5	6
09/05/12 13:28:57	1.2%	1 minute	10	11
09/05/12 13:36:12	0.9%	10 seconds	5	6
09/05/12 13:36:21	1.2%	1 minute	10	11
09/05/12 13:36:23	0.9%	10 seconds	5	6
09/05/12 13:57:49	0.9%	10 seconds	5	6
09/05/12 13:58:06	1.2%	1 minute	10	11
09/05/12 13:58:10	0.9%	10 seconds	5	6
09/05/12 14:05:51	0.9%	10 seconds	5	6
09/05/12 14:05:51	1.2%	1 minute	10	11
09/05/12 14:06:01	0.9%	10 seconds	5	7
09/05/12 14:12:35	1.2%	1 minute	10	11
09/05/12 14:23:46	0.9%	10 seconds	5	6
09/05/12 14:24:05	1.2%	1 minute	10	11
09/05/12 14:24:06	0.9%	10 seconds	5	6
09/05/12 14:39:41	0.9%	10 seconds	5	7
09/05/12 14:39:54	1.2%	1 minute	10	11
09/05/12 14:40:16	0.9%	10 seconds	5	6
09/05/12 14:40:54	1.2%	1 minute	10	11
09/05/12 14:53:06	0.9%	10 seconds	5	6
09/05/12 14:53:12	1.2%	1 minute	10	11
09/05/12 14:53:33	0.9%	10 seconds	5	6
09/05/12 14:53:43	0.9%	10 seconds	5	10
09/05/12 14:54:12	1.2%	1 minute	10	18
09/05/12 15:04:04	0.9%	10 seconds	5	6
09/05/12 15:55:19	0.9%	10 seconds	5	6
09/05/12 15:56:06	1.2%	1 minute	10	11
09/06/12 07:34:56	1.2%	1 minute	10	11
09/06/12 07:45:52	0.9%	10 seconds	5	6
09/06/12 07:46:26	1.2%	1 minute	10	11
09/06/12 07:52:13	0.9%	10 seconds	5	6
09/06/12 07:52:20	1.2%	1 minute	10	11
09/06/12 07:52:23	0.9%	10 seconds	5	7
09/06/12 07:52:33	0.9%	10 seconds	5	6
09/06/12 08:03:31	0.9%	10 seconds	5	6
09/06/12 08:03:32	1.2%	1 minute	10	11
09/06/12 08:09:54	0.9%	10 seconds	5	6

08:22:20	0.9%	10 seconds	5	6
09/06/12 08:22:42	1.2%	1 minute	10	11
09/06/12 08:22:43	0.9%	10 seconds	5	6
09/06/12 08:28:21	1.2%	1 minute	10	11
09/06/12 08:28:26	0.9%	10 seconds	5	6
09/06/12 08:28:44	0.9%	10 seconds	5	6
09/06/12 08:29:21	1.2%	1 minute	10	15

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.

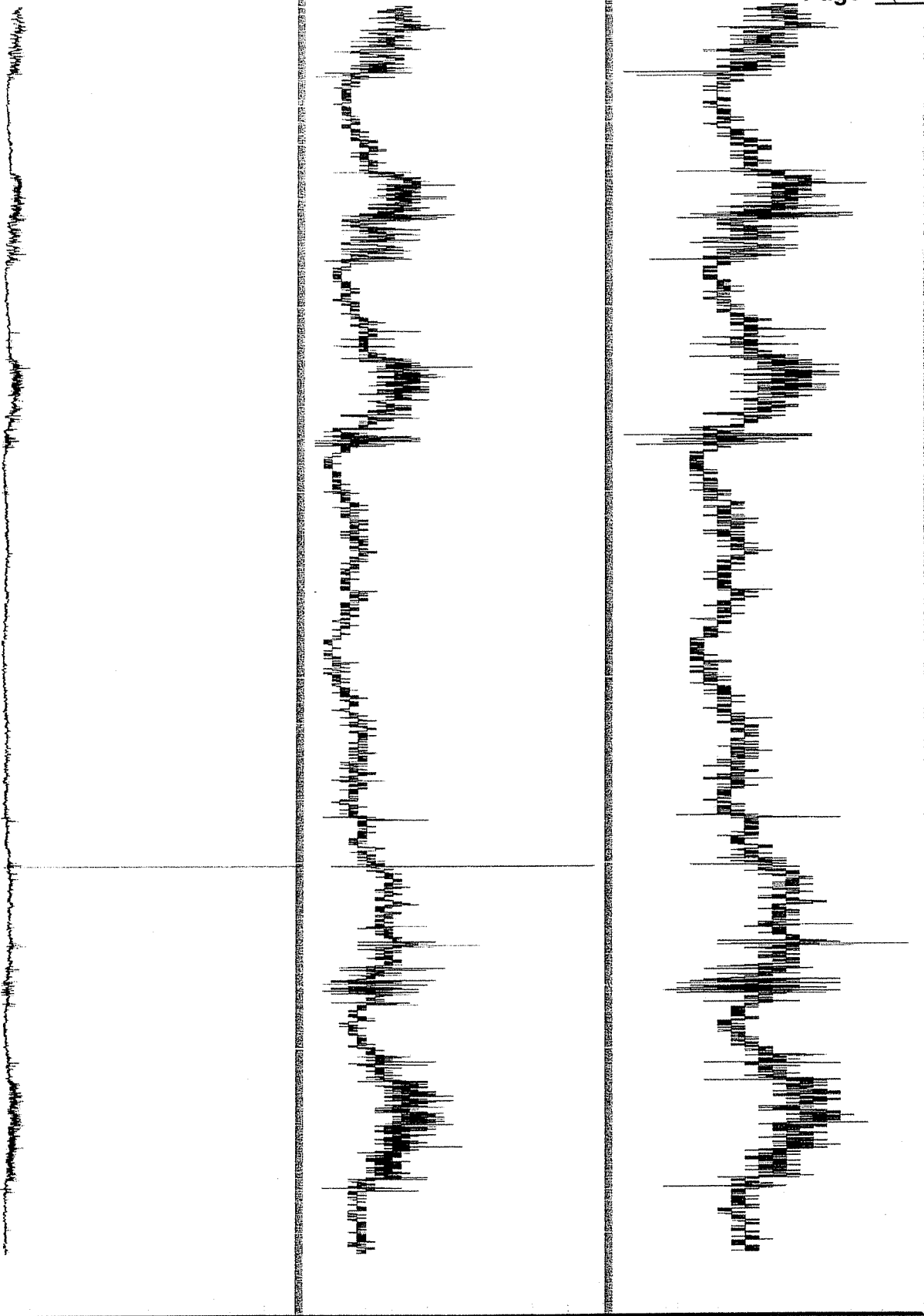
Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min

120  
100  
80  
60  
40  
20  
0  
125  
120  
115  
130  
128  
126  
124  
122  
120



6 Thu  
7 Fri  
8 Sat  
9 Sun  
10 Mon  
11 Tue  
12 Wed

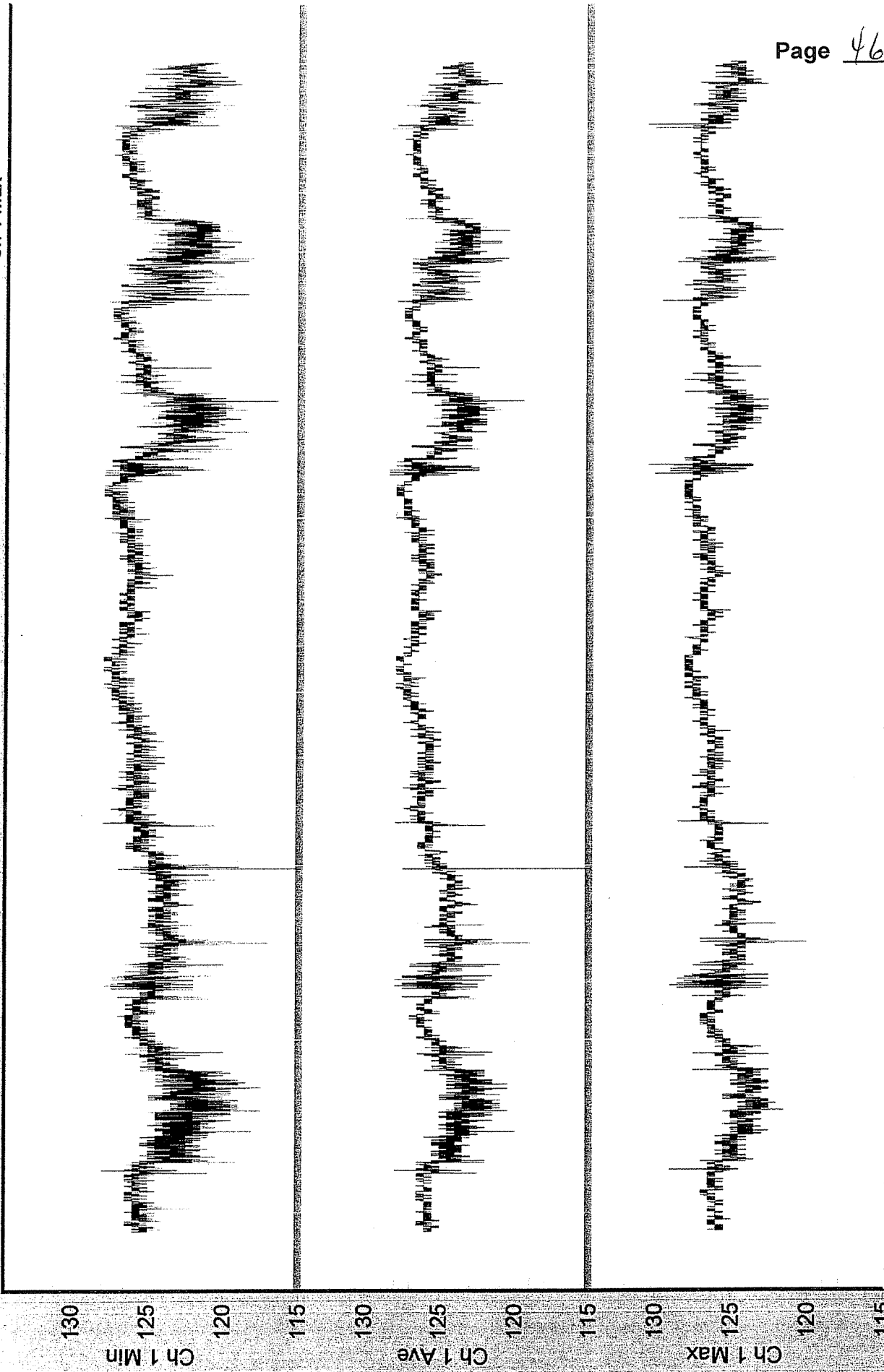
Sep 2012

Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min



12 Wed

11 Tue

10 Mon

9 Sun

8 Sat

7 Fri

6 Thu

Sep 2012

Channel Voltage

Ch 2 Max

Ch 2 Ave

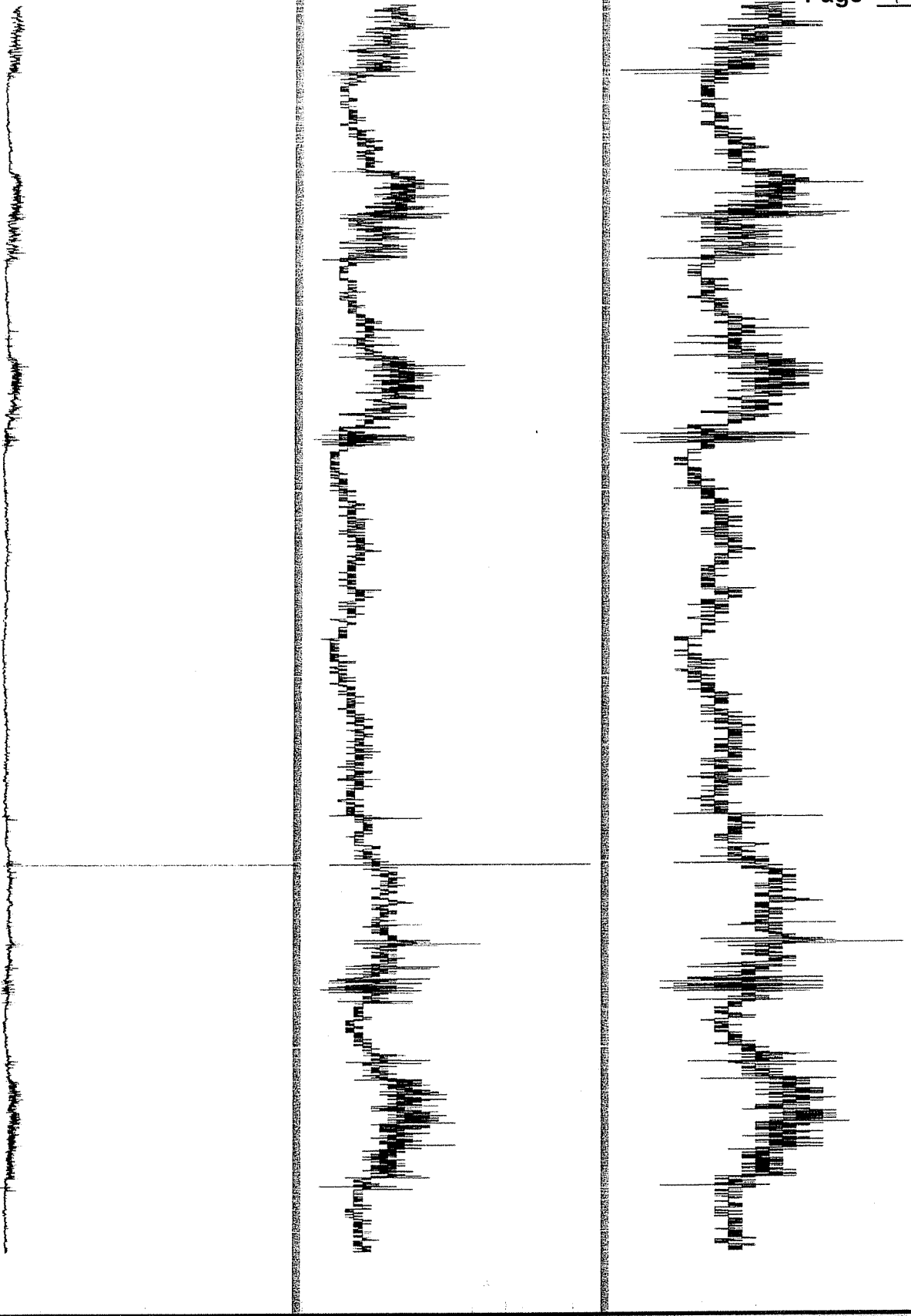
Ch 2 Min

120  
100  
80  
60  
40  
20  
0  
125  
120  
115  
130  
128  
126  
124  
122  
120

Ch 2 Min

Ch 2 Ave

Ch 2 Max



12 Wed

11 Tue

10 Mon

9 Sun

8 Sat

7 Fri

6 Thu

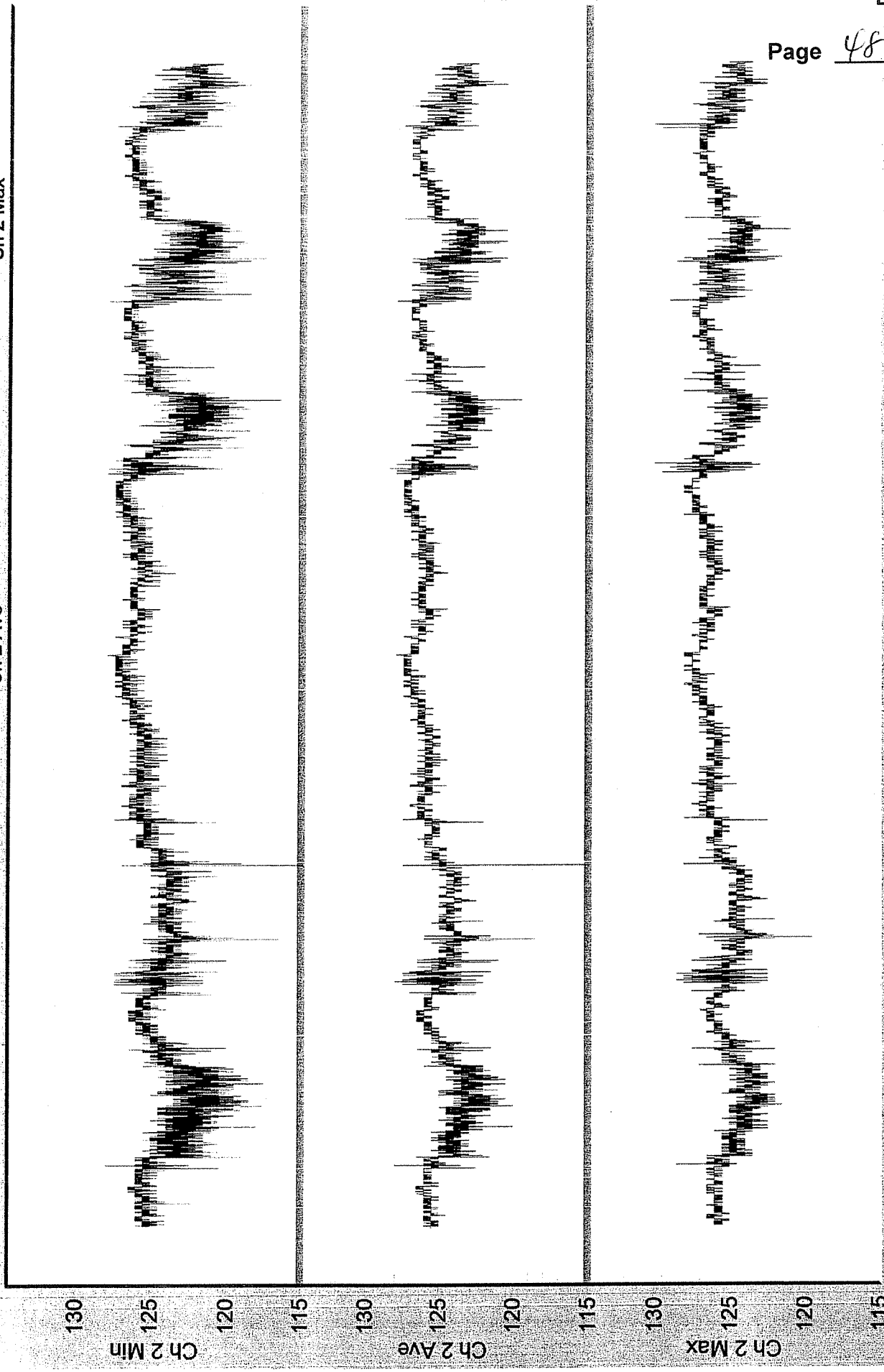
Sep 2012

Channel Voltage

Ch 2 Max

Ch 2 Ave

Ch 2 Min



12 Wed

11 Tue

10 Mon

9 Sun

8 Sat

7 Fri

6 Thu

Sep 2012

At the split

Dates Sept. 5, 2012 to Sept. 13, 2012

**Flicker Report***Hilltop Monitoring  
@ blue split.*

Start: Sep 05, 2012 11:34:03

Stop: Sep 13, 2012 09:35:55

Duration: 7 days, 22:01:52

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 62341

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 10 seconds

**Channel 1 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
09/07/12	23:35:41	0.9%	10 seconds	5	8
09/07/12	23:35:42	1.2%	1 minute	10	11
09/07/12	23:45:00	2.4%	15 minutes	10	11
09/07/12	23:49:00	2.9%	30 minutes	10	12
09/07/12	23:54:00	3.4%	1 hour	10	11
09/13/12	09:31:27	0.9%	10 seconds	5	6

**Channel 2 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
09/07/12	23:35:41	0.9%	10 seconds	5	8
09/07/12	23:35:42	1.2%	1 minute	10	11
09/07/12	23:45:00	2.4%	15 minutes	10	11
09/07/12	23:49:00	2.9%	30 minutes	10	12
09/07/12	23:54:00	3.4%	1 hour	10	12

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.

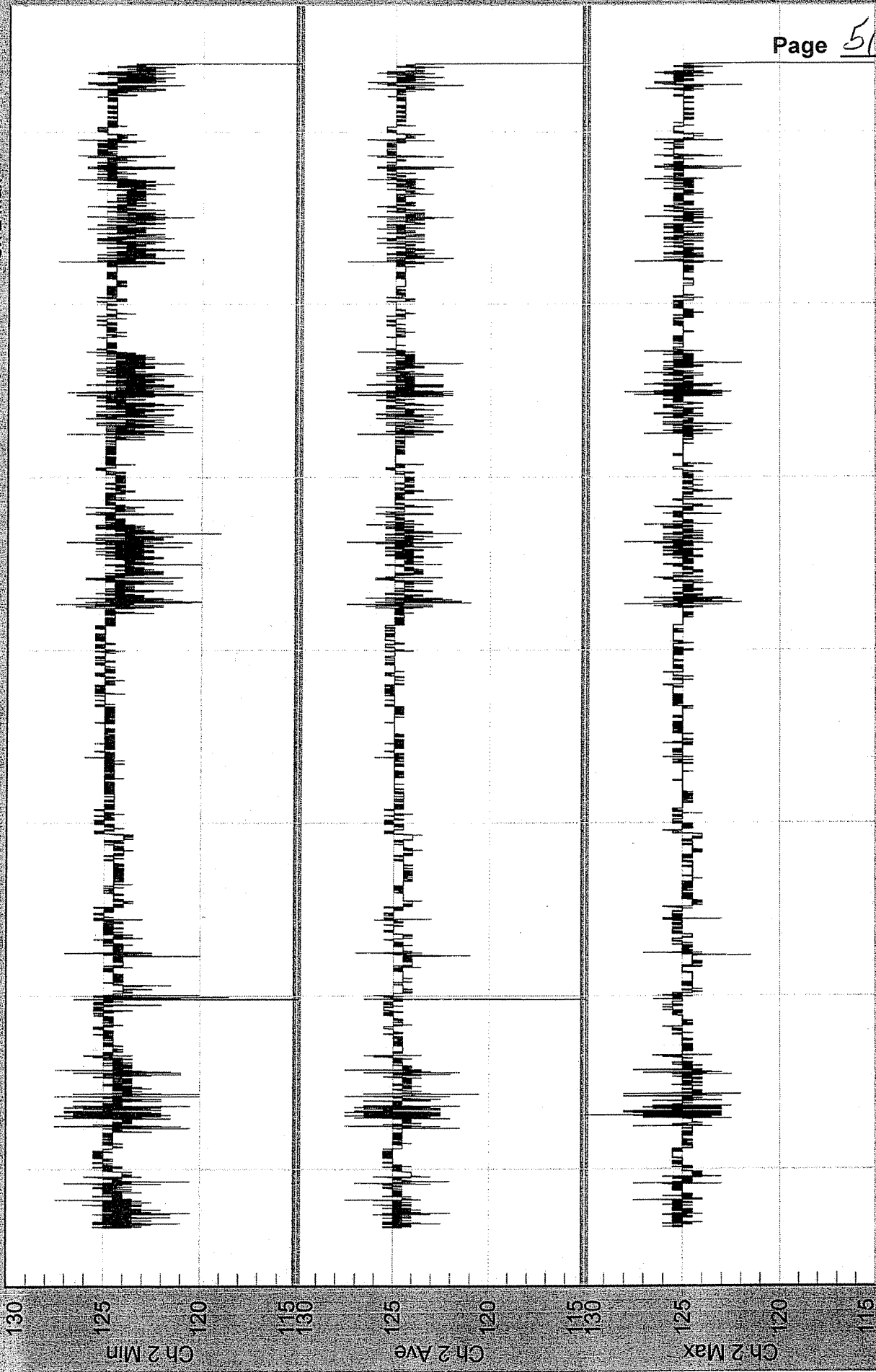


Channel Voltage

Ch 2 Max

Ch 2 Ave

Ch 2 Min



13 Thu  
12 Wed  
11 Tue  
10 Mon  
9 Sun  
8 Sat  
7 Fri

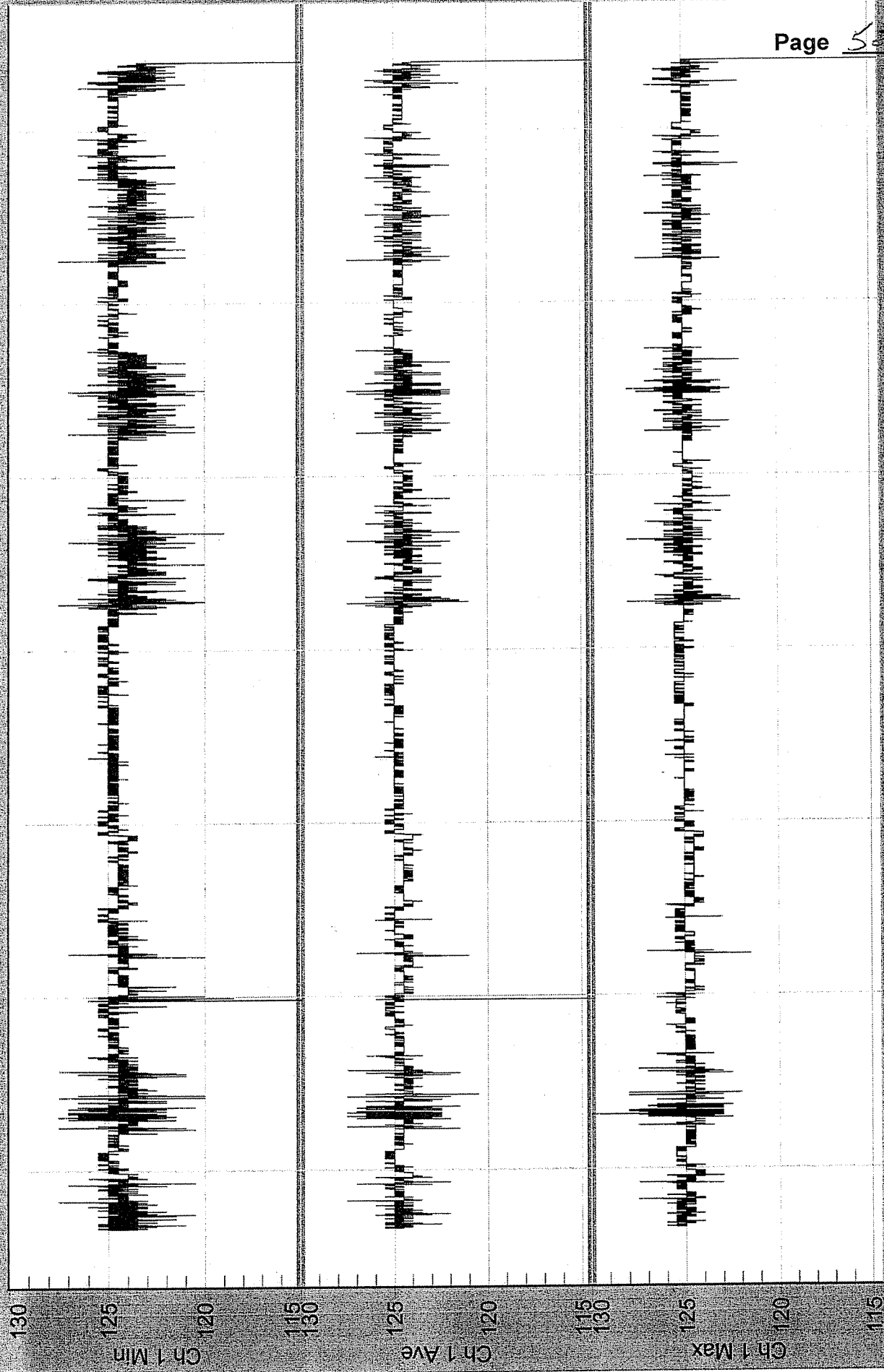
Sep 2012

Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min



13 Thu  
12 Wed  
11 Tue  
10 Mon  
9 Sun  
8 Sat  
7 Fri

Sep 2012

Grain Bin  
Before Mr. Bell  
Pole #1254  
41-081-003 (Location)

Dates Jan. 9, 2013 to Jan. 14, 2013

*Grain Bin Before Mr. Bell***Exhibit 4a***41-081-003*Page 54 of 74

# Flicker Report

Start: Jan 09, 2013 09:20:08

Stop: Jan 14, 2013 14:35:39

Duration: 5 days, 05:15:31

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 62341

Circuit Type: Wye  
Voltage Scale Factor: x1.00  
Current Scale Factor: x1.00  
Current Range: 1000 Amps  
Interval Time: 4 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/10/13	08:34:55	0.9%	10 seconds	5	6
01/11/13	19:26:02	0.9%	10 seconds	5	6
01/11/13	19:26:04	1.2%	1 minute	10	11
01/11/13	19:26:12	0.9%	10 seconds	5	6

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/10/13	08:34:55	0.9%	10 seconds	5	6
01/11/13	19:26:02	0.9%	10 seconds	5	6
01/11/13	19:26:04	1.2%	1 minute	10	11
01/11/13	19:26:12	0.9%	10 seconds	5	6

## Channel 3 Report

No flicker events were recorded.

## Channel 4 Report

No flicker events were recorded.

End of Line  
Pole 12206 (Location)

Dates Jan. 8, 2013 to Jan. 14, 2013

*End of Line*

Exhibit 4a

# Flicker Report

Page 56 of 74

Start: Jan 08, 2013 08:39:00  
 Stop: Jan 14, 2013 14:26:05  
 Duration: 6 days, 05:47:05  
 Firmware Version: 2.36 Unit Type: iVS-3 rev 2  
 Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 10 seconds

## Channel 1 Report

Date	Time	Tolerance	Time Span	Freq Limit	Events
01/09/13	14:04:57	0.9%	10 seconds	5	6
01/11/13	11:01:38	0.9%	10 seconds	5	6
01/11/13	19:26:01	0.9%	10 seconds	5	7
01/14/13	09:01:22	0.9%	10 seconds	5	6
01/14/13	13:33:00	0.9%	10 seconds	5	6

## Channel 2 Report

Date	Time	Tolerance	Time Span	Freq Limit	Events
01/08/13	13:12:43	0.9%	10 seconds	5	6
01/11/13	11:01:38	0.9%	10 seconds	5	6
01/11/13	19:26:01	0.9%	10 seconds	5	6
01/14/13	09:01:22	0.9%	10 seconds	5	6
01/14/13	13:33:00	0.9%	10 seconds	5	6
01/14/13	14:22:54	0.9%	10 seconds	5	7
01/14/13	14:22:54	1.2%	1 minute	10	11
01/14/13	14:23:00	2.3%	15 minutes	10	16
01/14/13	14:23:00	2.8%	30 minutes	10	16
01/14/13	14:23:00	3.3%	1 hour	10	16
01/14/13	14:23:04	0.9%	10 seconds	5	10
01/14/13	14:23:14	0.9%	10 seconds	5	12
01/14/13	14:23:24	0.9%	10 seconds	5	7
01/14/13	14:23:34	0.9%	10 seconds	5	7
01/14/13	14:23:44	0.9%	10 seconds	5	6

*unit being removed at end of monitoring*

End of Line  
Pole 12206 (Location)

Dates Jan. 17, 2013 to Jan. 25, 2013

# Flicker Report

Pole 12206

Page 58 of 74

end of Line

Start: Jan 17, 2013 14:42:14

Stop: Jan 25, 2013 13:36:04

Duration: 7 days, 22:53:50

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 62341

Circuit Type: Wye

Voltage Scale Factor: x1.00

Current Scale Factor: x1.00

Current Range: 1000 Amps

Interval Time: 10 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/22/13	05:12:36	0.9%	10 seconds	5	6
01/22/13	15:27:43	1.2%	1 minute	10	11

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/21/13	13:35:49	0.9%	10 seconds	5	6
01/23/13	06:41:40	0.9%	10 seconds	5	6
01/23/13	06:41:47	1.2%	1 minute	10	11
01/23/13	21:51:25	0.9%	10 seconds	5	6

## Channel 3 Report

No flicker events were recorded.

## Channel 4 Report

No flicker events were recorded.

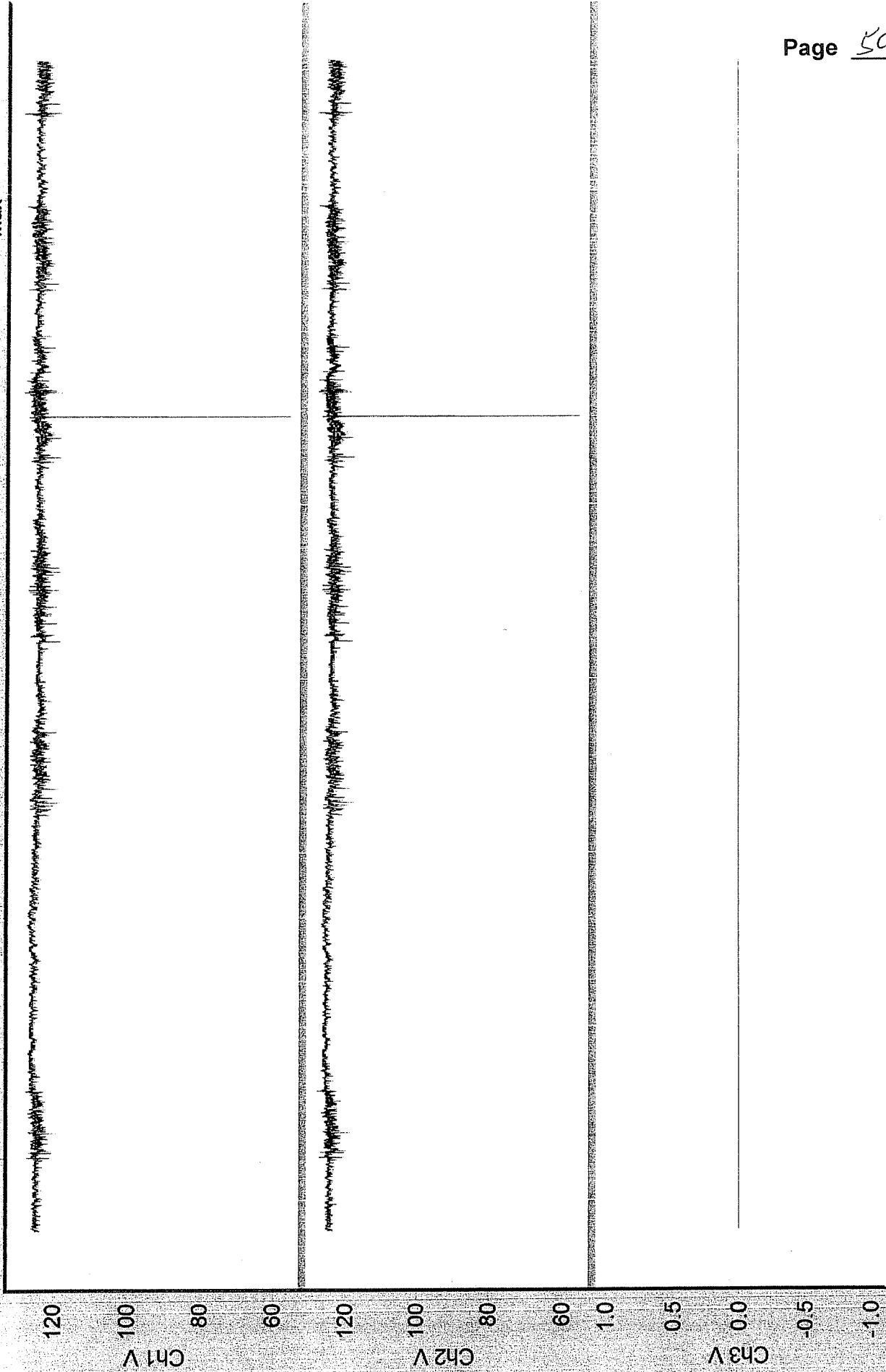


RMS Itage

Max

Ave

Min



19 Sat 20 Sun 21 Mon 22 Tue 23 Wed 24 Thu 25 Fri

Jan 2013

Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min

130

128

126

124

122

120

118

116

130

128

126

124

122

120

118

116

130

128

126

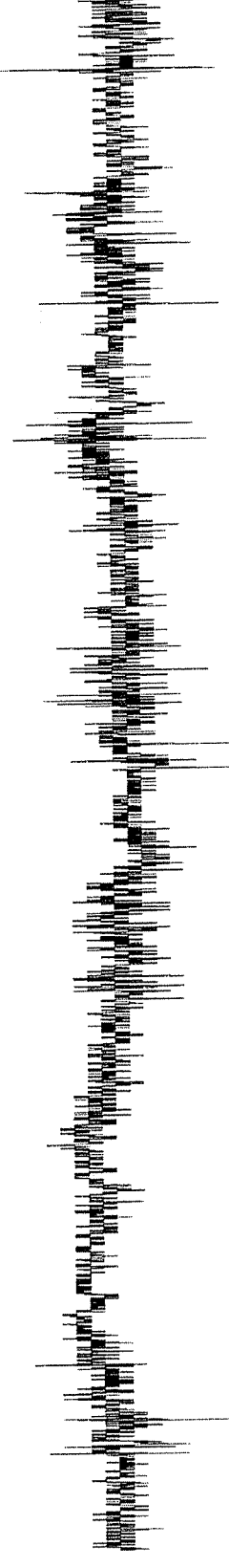
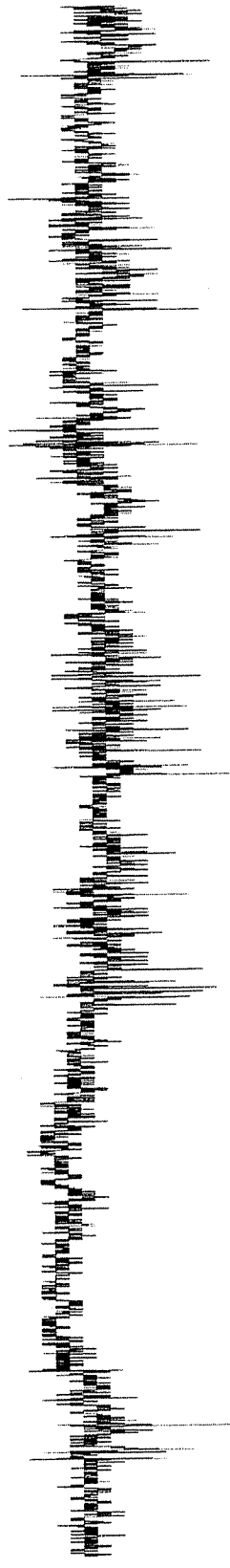
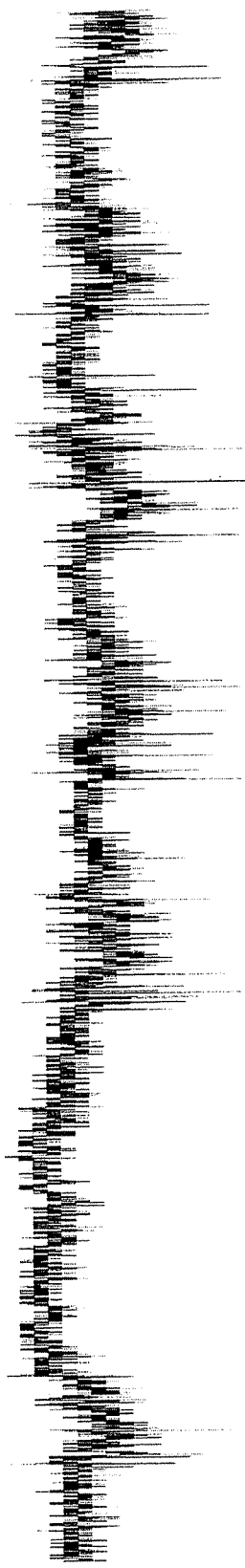
124

122

120

118

116



19 Sat  
20 Sun  
21 Mon  
22 Tue  
23 Wed  
24 Thu  
25 Fri

Jan 2013

Channel ~ Voltage

Ch 2 Max

Ch 2 Ave

Ch 2 Min

130

128

126

124

122

120

118

116

Ch 2 Min

126

124

122

120

Ch 2 Ave

128

126

124

122

120

Ch 2 Max

19 Sat

20 Sun

21 Mon

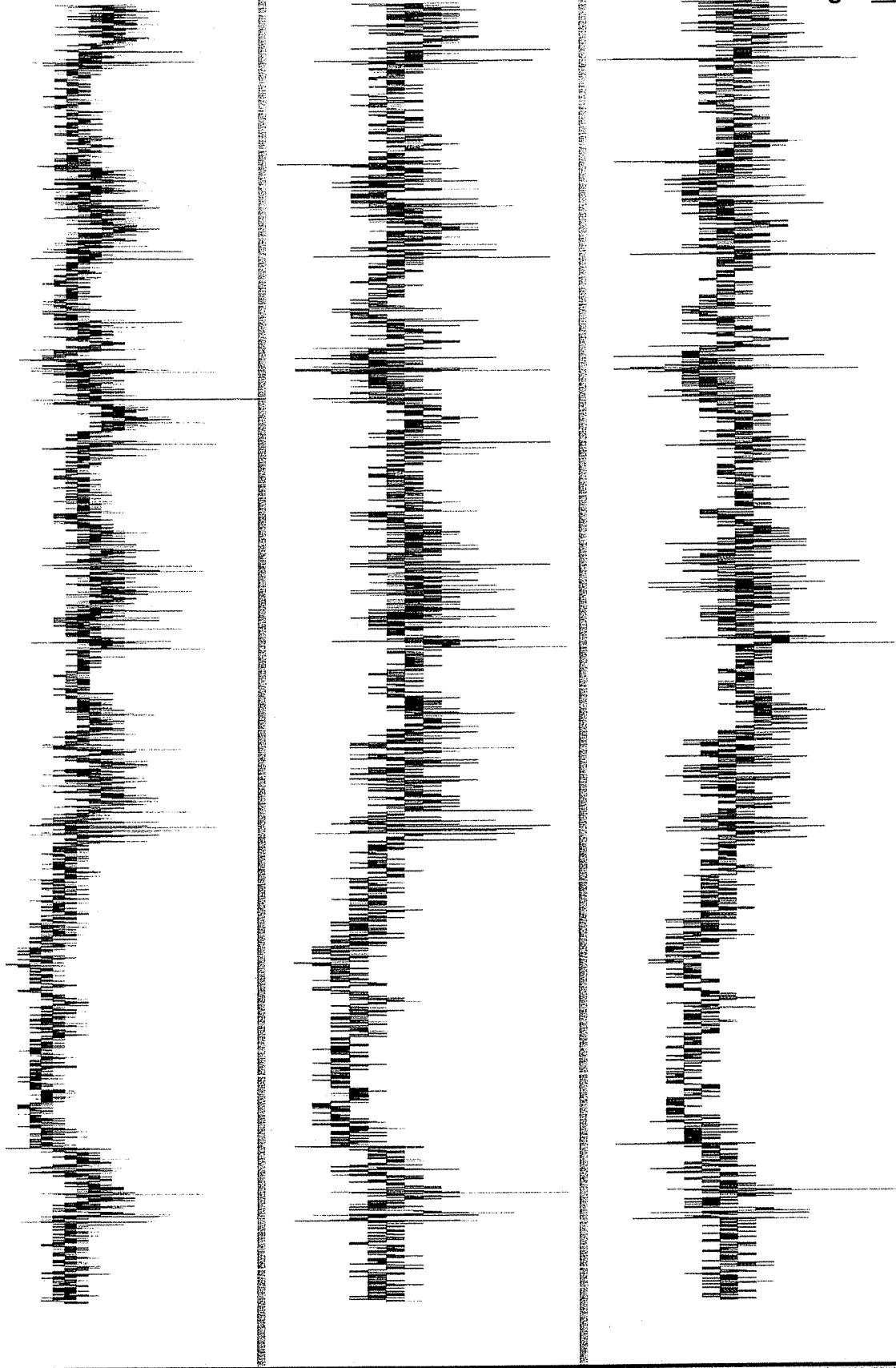
22 Tue

23 Wed

24 Thu

25 Fri

Jan 2013



Grain Bin  
Before Mr. Bell  
Pole # 12154  
41-081-003 (Location)

Dates Jan. 17, 2013 to Jan. 25, 2013

# Flicker Report

*Pole 12154*

*Grain Bin Before Bell* Page 63 of 74

Start: Jan 17, 2013 15:01:30

Stop: Jan 25, 2013 14:06:39

Duration: 7 days, 23:05:09

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye

Voltage Scale Factor: x1.00

Current Scale Factor: x1.00

Current Range: 1000 Amps

Interval Time: 10 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/23/13	06:41:38	0.9%	10 seconds	5	6

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/25/13	06:22:18	0.9%	10 seconds	5	6

## Channel 3 Report

No flicker events were recorded.

## Channel 4 Report

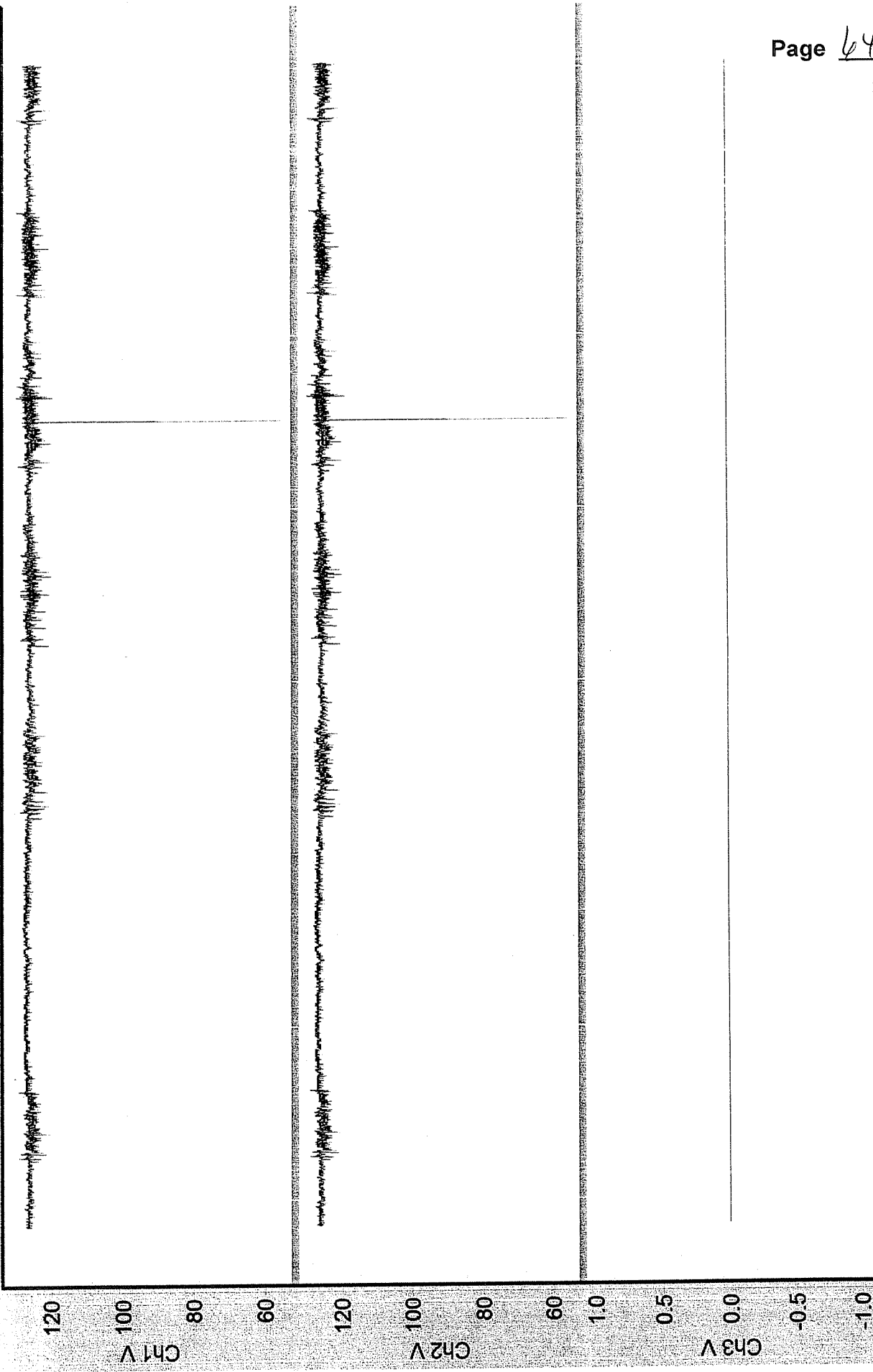
No flicker events were recorded.

RMS Voltage

Min

Ave

Max



25 Fri

24 Thu

23 Wed

22 Tue

21 Mon

20 Sun

19 Sat

Jan 2013

End of Line  
Pole 12206 (Location)

Dates Jan. 29, 2013 to Feb. 5, 2013

# Flicker Report

Start: Jan 29, 2013 08:56:20

Stop: Feb 05, 2013 10:11:21

Duration: 7 days, 01:15:01

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 10 seconds

*End of line  
 Pole 12206*

## Channel 1 Report

Date	Time	Tolerance	Time Span	Freq Limit	Events
01/29/13	08:58:32	0.9%	10 seconds	5	6
01/29/13	08:58:34	1.2%	1 minute	10	11
01/29/13	09:11:00	2.2%	15 minutes	10	11
01/29/13	09:26:00	2.7%	30 minutes	10	11
01/29/13	09:56:00	3.2%	1 hour	10	11
01/30/13	04:03:08	0.9%	10 seconds	5	7
01/30/13	04:03:23	1.2%	1 minute	10	12
01/30/13	04:03:37	0.9%	10 seconds	5	7
01/30/13	04:04:00	2.2%	15 minutes	10	20
01/30/13	04:10:00	2.7%	30 minutes	10	11
01/30/13	04:10:00	3.2%	1 hour	10	11
01/30/13	04:19:00	2.2%	15 minutes	10	11
01/30/13	04:46:54	0.9%	10 seconds	5	6
02/02/13	05:42:36	0.9%	10 seconds	5	6
02/04/13	17:43:38	0.9%	10 seconds	5	6

*Wind +  
 winter storm*

## Channel 2 Report

Date	Time	Tolerance	Time Span	Freq Limit	Events
01/29/13	08:58:32	0.9%	10 seconds	5	6
01/29/13	08:58:34	1.2%	1 minute	10	11
01/29/13	09:11:00	2.2%	15 minutes	10	11
01/29/13	09:26:00	2.7%	30 minutes	10	11
01/29/13	09:56:00	3.2%	1 hour	10	11

*Wind +  
 winter storm*



## Exhibit 4a

01/30/13 04:03:08	0.9%	10 seconds	5	7
01/30/13 04:03:23	1.2%	1 minute	10	12
01/30/13 04:03:37	0.9%	10 seconds	5	7
01/30/13 04:04:00	2.2%	15 minutes	10	20
01/30/13 04:10:00	2.7%	30 minutes	10	11
01/30/13 04:10:00	3.2%	1 hour	10	11
01/30/13 04:19:00	2.2%	15 minutes	10	11
01/30/13 04:46:54	0.9%	10 seconds	5	6
01/31/13 05:16:14	0.9%	10 seconds	5	6
02/01/13 05:33:00	0.9%	10 seconds	5	6
02/01/13 07:27:38	0.9%	10 seconds	5	6

wind  
+ winter  
storms

Page 67 of 74

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.

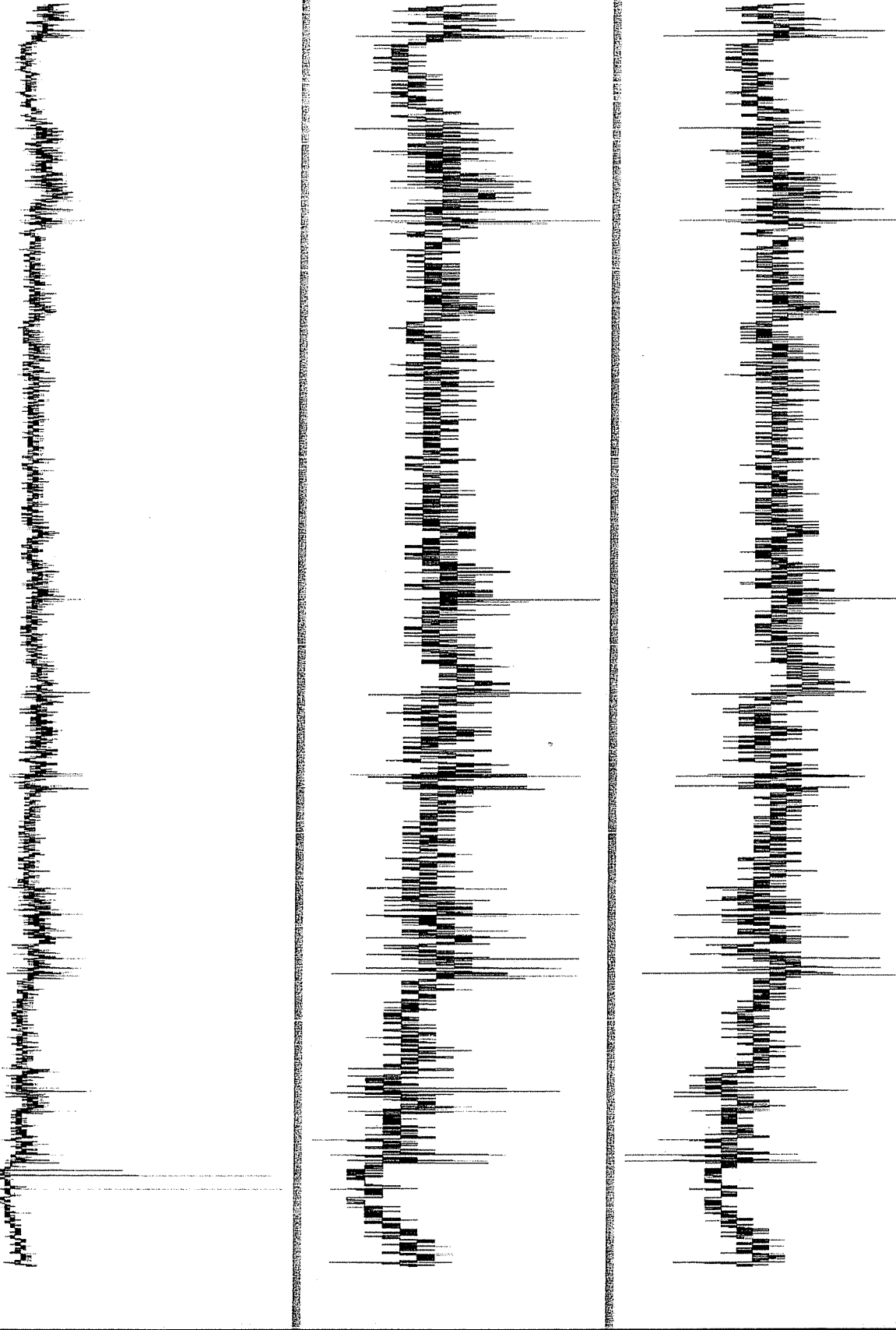
Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min

125  
120  
115  
110  
105  
100  
128  
126  
124  
122  
130  
128  
126  
124  
122



30 Wed 31 Thu 1 Fri 2 Sat 3 Sun 4 Mon 5 Tue

Jan 2013

Channel Voltage

Ch 2 Max

Ch 2 Ave

Ch 2 Min

125

120

115

110

105

100

128

126

124

122

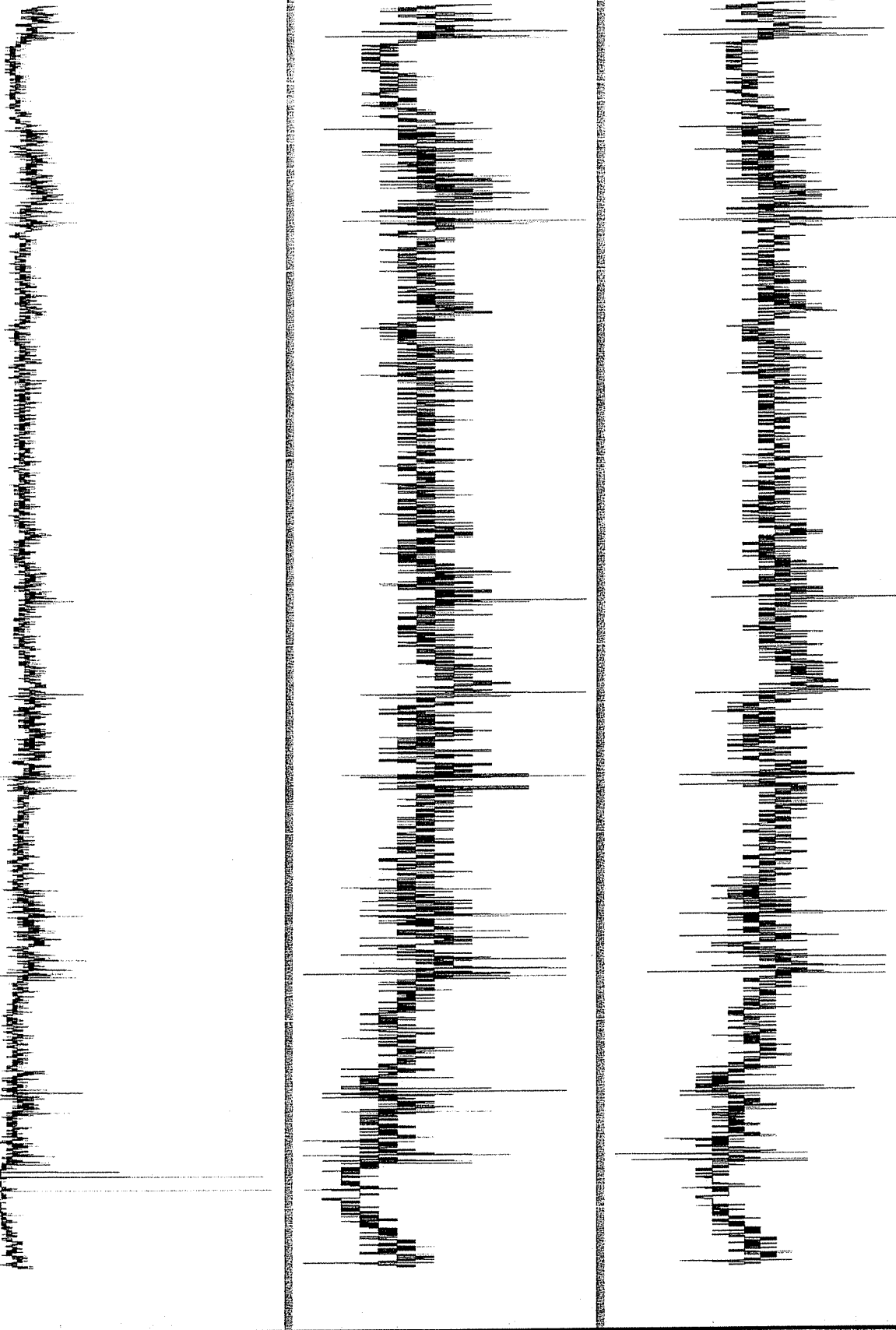
130

128

126

124

122



5 Tue

4 Mon

3 Sun

2 Sat

1 Fri

31 Thu

30 Wed

Jan 2013

Grain Bin  
Before Mr. Bell  
Pole # 12154  
41-081-003 (Location)

Dates Jan. 29, 2013 to Feb. 5, 2013

# Flicker Report

Page 21 of 24  
 Grain Bin  
 Pole 12154

Start: Jan 29, 2013 09:17:12  
 Stop: Feb 05, 2013 10:23:51  
 Duration: 7 days, 01:06:39  
 Firmware Version: 2.36 Unit Type: iVS-3 rev 2  
 Software Version: 0.00 Serial No.: 62341

Circuit Type: Wye  
 Voltage Scale Factor: x1.00  
 Current Scale Factor: x1.00  
 Current Range: 1000 Amps  
 Interval Time: 10 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/30/13	04:03:08	0.9%	10 seconds	5	7
01/30/13	04:03:23	1.2%	1 minute	10	12
01/30/13	04:03:37	0.9%	10 seconds	5	8
01/30/13	04:04:00	2.2%	15 minutes	10	21
01/30/13	04:06:00	2.7%	30 minutes	10	12
01/30/13	04:06:00	3.2%	1 hour	10	12
01/30/13	04:19:00	2.2%	15 minutes	10	12
01/30/13	04:46:54	0.9%	10 seconds	5	6
02/01/13	05:33:00	0.9%	10 seconds	5	6
02/01/13	07:27:38	0.9%	10 seconds	5	7

} winter storm with high winds

## Channel 2 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
01/30/13	04:03:08	0.9%	10 seconds	5	7
01/30/13	04:03:23	1.2%	1 minute	10	12
01/30/13	04:03:37	0.9%	10 seconds	5	8
01/30/13	04:04:00	2.2%	15 minutes	10	21
01/30/13	04:06:00	2.7%	30 minutes	10	12
01/30/13	04:06:00	3.2%	1 hour	10	12
01/30/13	04:19:00	2.2%	15 minutes	10	12
01/30/13	04:46:54	0.9%	10 seconds	5	6
01/30/13	14:53:49	0.9%	10 seconds	5	6
01/30/13	14:53:49	1.2%	1 minute	10	11

} winter storm with high winds

02/01/13 05:33:00	0.9%	10 seconds	5	6
02/01/13 07:27:38	0.9%	10 seconds	5	7

Page 72 of 74

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

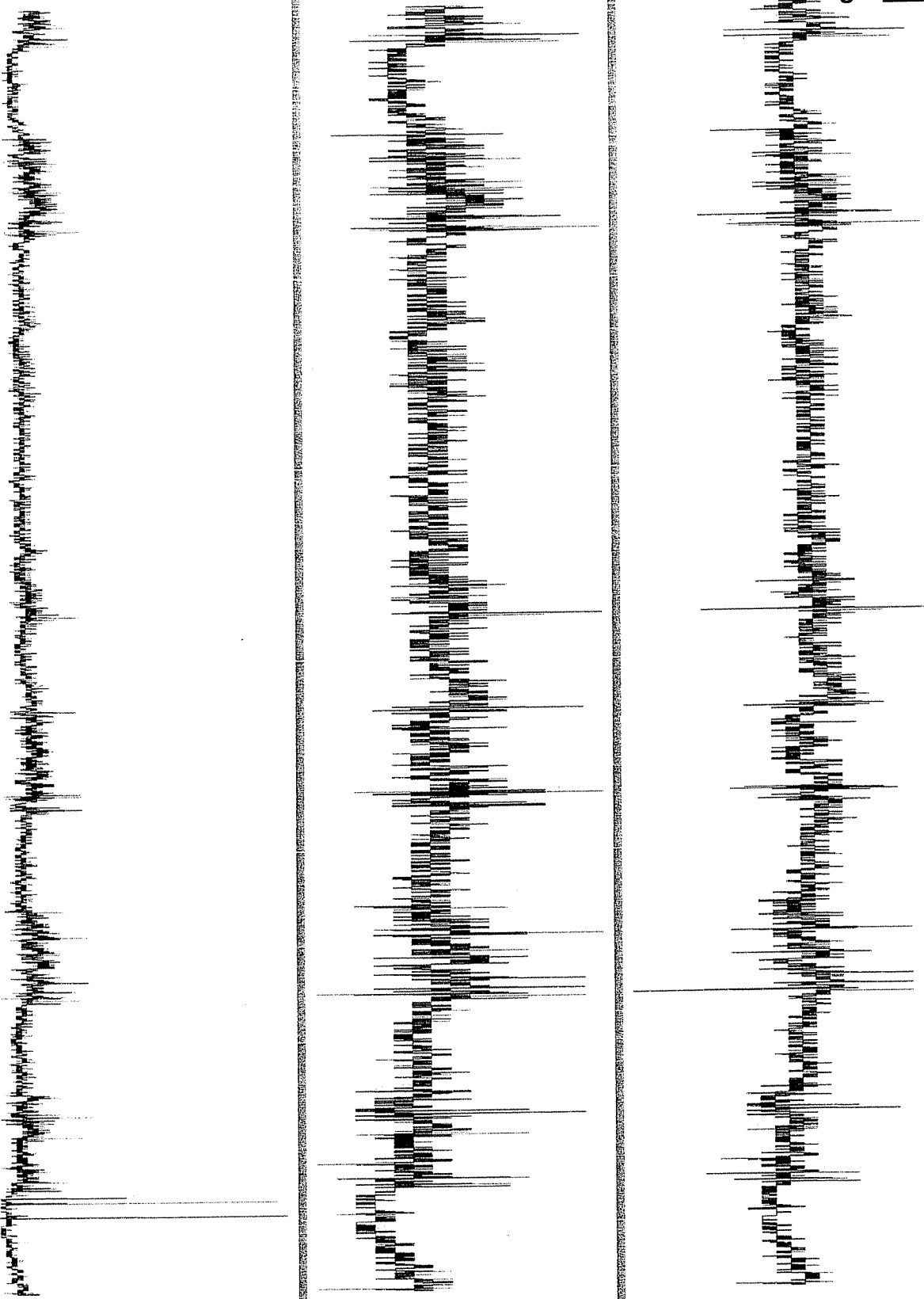
No flicker events were recorded.

Channel Voltage

Ch 1 Max

Ch 1 Ave

Ch 1 Min



125  
120  
115  
110  
105  
100  
128  
126  
Ch 1 Ave  
124  
122  
132  
130  
128  
Ch 1 Max  
126  
124  
122

5 Tue

4 Mon

3 Sun

2 Sat

1 Fri

31 Thu

30 Wed

Jan 2013

Channel Voltage

Ch 2 Max

Ch 2 Ave

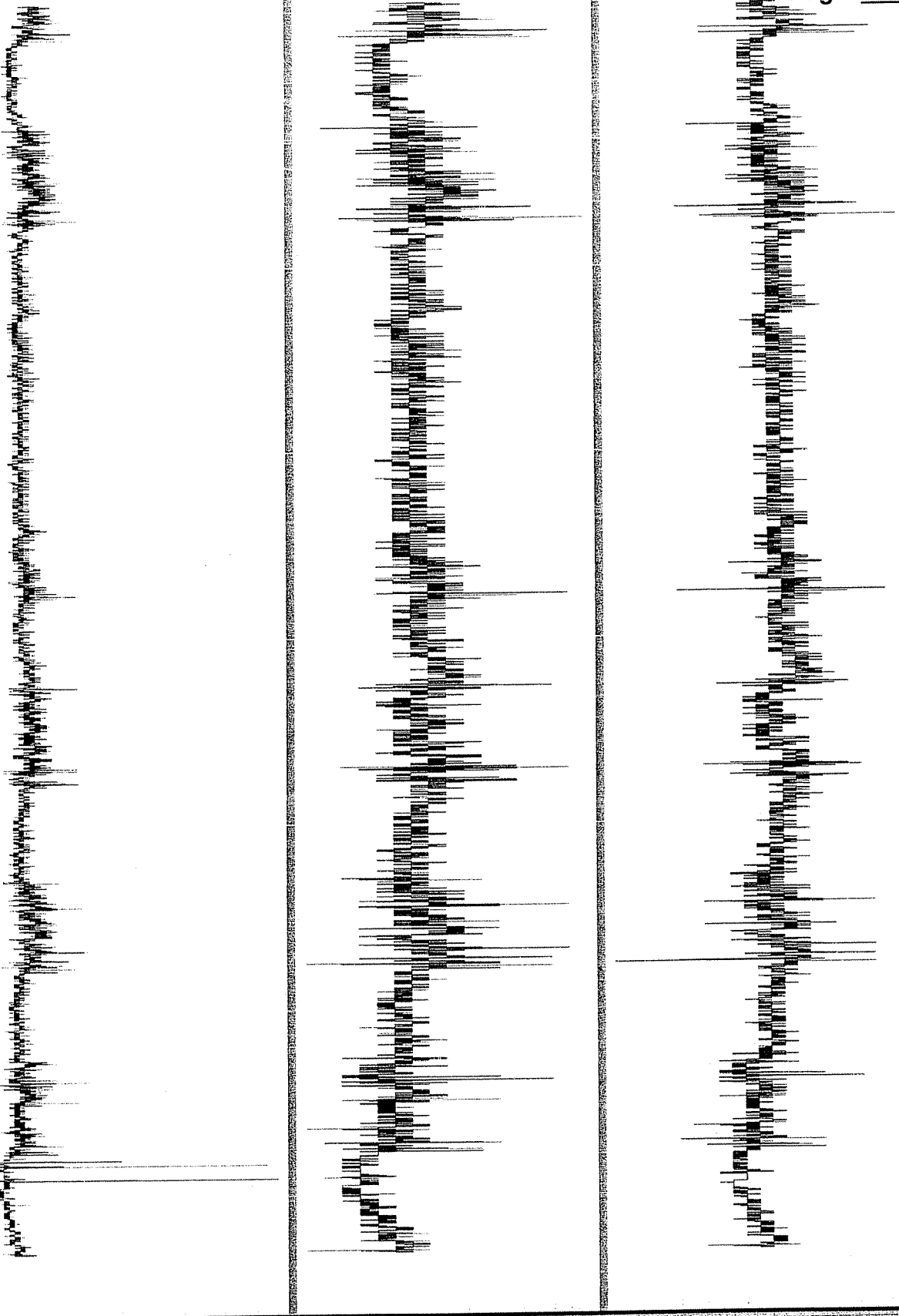
Ch 2 Min

125  
120  
115  
110  
105  
100  
128  
126  
124  
122  
132  
130  
128  
126  
124  
122

Ch 2 Min

Ch 2 Ave

Ch 2 Max



30 Wed 31 Thu 1 Fri 2 Sat 3 Sun 4 Mon 5 Tue

Jan 2013



## Assessment of possible flicker or harmonic distortion on the Battletown Substation

### Preliminary evaluation of the PMI metering data & Base charting descriptions

The Meade County Rural Electric Cooperative was asked by its members to investigate the reason for light flicker in a northern section of the system, served by the Battletown Substation. A Voltage recording device, manufactured by PMI, that was capable of gathering and storing Voltage flicker was placed in the area of the on February 28th and was retrieved on March 9 to cover an 11 day period. The data print-out sheet included: date, time, tolerance, time span [10 seconds or 1 minute], frequency limit [5 or 10 events per time frame], and events counter. These documents are listed as *Hilltop PMI Flicker and Hilltop PMI Flicker Report data Compiled* in the first section of data in the back of the report. The data records show there were a total of 1177 triggered events that took place over the 11 day span on the two channels that were used to record data. The triggered events were Voltages that were outside a set limit for a 10 second period for more than five times, or a trigger of 10 times over 1 minute. This coincides with the IEEE Standard 141. This curve is designed to show only Voltage flicker that is perceived as irritating. When this occurs, a flicker event is recorded with the time and magnitude. The default curve allows 5 voltage fluctuations of 1% or greater in a ten second period, 10 fluctuations of 1.5% or greater in a one minute period, and so on up to 10 fluctuations of 6% or greater in a 24 hour period.

Of the 1177 events over the 11 day period, there were none on the weekend days and only 136 events outside the normal work hours from 7:00 am to 5:30 pm. The remaining 1041 events occurred during the normal work day period as mentioned. Based on the results of events during work period times, it was concluded to investigate: capacitors for switching issues, any large motor driven industries, or newly installed large motor loads.

A switched bank, with recording capability, was downloaded at the Hilltop Quarry. A portion of the data was compiled and charted as Report Data from Hilltop Capacitor Panel. The data was given in 30 minute intervals and was graphed starting at 3/31/2012 at 12: 01 am until 4/2/2012 at 23: 59 {to coincide with the Dranetz Section later discussed}. The graphed portion of the report shown has a correlation of time to the following: rms Voltage, kVA, Amperage, and power factor. The entire report was reviewed for events of missed or multiple switching operations and none were found. There were some events that may have issues in Voltage sags and heavy peaks on demand. A PX5 Dranetz-BMI was also placed on the Voltage terminals and current transformer leads at the quarry's metering point for gathering additional data on Pst [short term flicker], THD [total harmonic distortion], and Voltage levels. This information is graphically shown in several graphs in the Dranetz Section of this report. The data is graphed by 10 minute intervals as explained by individual graphs, for converting back to actual day and hour.

**Suggested Points to resolve Flicker down line of Battletown Substation**Page 2 of 17

- ***An energy audit of the plants within the substation's service.***

To include the following:

How do they start their large motor? If there is a high inertia load they might have to start it across the line and then slow it down with the VSD (Variable Speed Drive). If the dips are not from starting they may be from variable load. In some places quarries have issues in motor loads varying greatly. A large rock may hang up the crusher or they dump a load in the crusher and the current on the motor almost increases to full starting current momentarily.

Could they be dumping a large load on a nearly empty table? These issues may be as simple as operator training or equipment sizing. But the issues we see in the charting of were occurring during the plant's operation.

Also, an audit of capacitor banks which are switched automatically for power factor correction. (Data has been gathered and examined from the HillTop Quarry capacitor (noted in this report as Partial Graph from Hilltop Capacitor Panel's Data).

- ***A sizing and installation of Harmonic filter.***

Cooper Power Systems suggested ---not installing static-var compensators, but filters (to filter out the harmonics). They are basically a pole mounted capacitor rack.....just tuned! We will need a data sheet of the required info to put together a price quote on this type of equipment.

- ***Construction of double circuit to a known problem plant or upgrade of wire sizes.***

I did a short and brief Milsoft model of a single substation having the 3/0 ACSR to a plant with 1500 kW load installed (increased above actual plant load to pick up peak loading because of average missed on power meter?). This does not represent an actual system in a true sense; but does give an idea what is happening with the load that would spike above the metered value. I found that the system does shiver some from loading. It saw some members at 116 V down line and the plant itself dipping to 119V. This does represent the Dranetz information gathered at a sampled plant taken at the metering point (HillTop Quarry).

Several options would be investigated such as the construction of robust feeder to plant, upgrading single phase taps, or installation of a double circuit to existing plants and future quarries that may be developed.

- ***A sizing and installation of a Static VAR Compensator***

ABB Systems has not responded to an inquiry of a Static VAR compensator. This option was not considered due to non-response, in this report.

**SUGGESTED ORDER OF PRIORITY**

Given the above information I would suggest a meeting with HillTop Quarry to discuss this report for compliance to standards set by IEEE for flicker and harmonics, which is feeding back on the power system,

and its effect on others. In the Rock Quarry sample [showing only 72 hour period of the reported data at a 10 minute interval and defined as Dranetz Section] issues may have been caused by the plant operating procedures and practices or equipment influence on harmonics. I would expect the petition for an investigation be a fair request, if not part of their large power agreement. It will also be of benefit to the industry in providing more efficient usage, possible savings on their power bill's demand cost, longer equipment life, and help the power quality for neighbors and community. This could include the possible purchase and installation of a filter or other equipment to correct the issues.

Secondly, if the first is rejected, I would suggest the alternate to toughen, modify and strengthen the existing system to better provide service for the impulse demand in kW. This would entail the upgrade to a larger conductor of sufficient size for the plant's pulsed operation. Modifying the feed to the plant to a double circuit will also provide an industrial feed to the existing plant and the proposed new quarry. This also should be discussed with the industry causing power quality issues. The latter option, if no internal changes are made, would leave the industry open to premature equipment failure due to inappropriate operating procedures, and no savings on a more efficient operation.

Thirdly and last is the option to a pricing and bid for a harmonic filter to be placed in line. Knowing that this will be a 'tuned' device and when a new plant or change in the system occurs (wire upgrade or extensions) on the line, the device will need to be re-tuned for the impedance and resistance modification.

Respectively submitted:

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Wilson Consulting INC

211 Davis Hollow

Berea, KY 40403

email: rogerwil@windstream.net

phone: 859-985-2474

[cell: 859-619-2400]

# Hilltop PMI Flicker Report

Start: Feb 28, 2012 08:37:33

Stop: Mar 22, 2012 15:02:46

Duration: 23 days, 06:25:13

Firmware Version: 2.36 Unit Type: iVS-3 rev 2

Software Version: 0.00 Serial No.: 61986

Circuit Type: Wye  
Voltage Scale Factor: x1.00  
Current Scale Factor: x1.00  
Current Range: 1000 Amps  
Interval Time: 30 seconds

## Channel 1 Report

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/28/12	08:40:14	0.9%	10 seconds	5	6
02/28/12	08:40:22	1.2%	1 minute	10	11
02/28/12	08:40:24	0.9%	10 seconds	5	6
02/28/12	09:09:08	0.9%	10 seconds	5	6
02/28/12	09:17:13	0.9%	10 seconds	5	7
02/28/12	09:54:10	0.9%	10 seconds	5	6
02/28/12	09:54:42	1.2%	1 minute	10	11
02/28/12	09:56:47	0.9%	10 seconds	5	6
02/28/12	10:03:22	0.9%	10 seconds	5	6
02/28/12	10:24:16	0.9%	10 seconds	5	6
02/28/12	10:24:33	1.2%	1 minute	10	11
02/28/12	11:08:16	0.9%	10 seconds	5	6
02/28/12	12:16:45	0.9%	10 seconds	5	6
02/28/12	14:01:19	0.9%	10 seconds	5	6
02/29/12	08:44:58	0.9%	10 seconds	5	7
02/29/12	08:45:00	1.2%	1 minute	10	11
02/29/12	08:45:08	0.9%	10 seconds	5	7
02/29/12	09:21:07	0.9%	10 seconds	5	6
02/29/12	09:21:29	1.2%	1 minute	10	11
02/29/12	09:32:00	0.9%	10 seconds	5	6
02/29/12	09:32:34	1.2%	1 minute	10	11
02/29/12	09:32:35	0.9%	10 seconds	5	6
02/29/12	09:37:38	0.9%	10 seconds	5	6

02/29/12 12:03:02	0.9%	10 seconds	5	6
02/29/12 12:03:05	1.2%	1 minute	10	11
02/29/12 12:56:14	0.9%	10 seconds	5	6
02/29/12 16:34:08	0.9%	10 seconds	5	6
02/29/12 17:58:34	0.9%	10 seconds	5	6
02/29/12 17:58:40	1.2%	1 minute	10	11
03/01/12 06:59:41	1.2%	1 minute	10	11
03/01/12 09:02:51	0.9%	10 seconds	5	6
03/01/12 12:07:54	0.9%	10 seconds	5	6
03/01/12 12:41:28	0.9%	10 seconds	5	6
03/01/12 13:02:03	0.9%	10 seconds	5	6
03/01/12 13:02:06	1.2%	1 minute	10	12
03/01/12 13:02:13	0.9%	10 seconds	5	6
03/01/12 13:17:36	0.9%	10 seconds	5	6
03/01/12 17:01:41	0.9%	10 seconds	5	6
03/02/12 15:46:00	2.2%	15 minutes	10	11
03/05/12 01:43:05	0.9%	10 seconds	5	7
03/05/12 01:56:31	0.9%	10 seconds	5	7
03/05/12 01:57:00	2.2%	15 minutes	10	16
03/05/12 01:57:00	2.7%	30 minutes	10	16
03/05/12 01:57:00	3.2%	1 hour	10	16
03/05/12 10:15:14	0.9%	10 seconds	5	6
03/05/12 11:09:01	0.9%	10 seconds	5	7
03/06/12 15:59:59	0.9%	10 seconds	5	6
03/06/12 17:12:00	1.2%	1 minute	10	11
03/06/12 17:12:01	0.9%	10 seconds	5	6
03/06/12 17:15:46	0.9%	10 seconds	5	6
03/06/12 17:15:53	1.2%	1 minute	10	11
03/06/12 17:15:56	0.9%	10 seconds	5	6
03/06/12 17:16:42	0.9%	10 seconds	5	6
03/06/12 17:16:53	1.2%	1 minute	10	13
03/06/12 17:17:57	0.9%	10 seconds	5	6
03/06/12 17:33:33	0.9%	10 seconds	5	7
03/06/12 17:33:35	1.2%	1 minute	10	11
03/06/12 17:33:43	0.9%	10 seconds	5	6
03/06/12 18:04:02	0.9%	10 seconds	5	6
03/07/12 09:40:09	0.9%	10 seconds	5	6
03/07/12 12:07:19	0.9%	10 seconds	5	6
03/07/12 14:48:49	0.9%	10 seconds	5	6

03/08/12 11:51:17	1.2%	1 minute	10	11
03/08/12 16:25:46	0.9%	10 seconds	5	6
03/09/12 07:04:56	1.2%	1 minute	10	11
03/09/12 07:22:39	0.9%	10 seconds	5	6
03/09/12 09:26:38	0.9%	10 seconds	5	6
03/09/12 09:51:34	0.9%	10 seconds	5	7
03/09/12 11:49:35	0.9%	10 seconds	5	6
03/09/12 12:06:22	0.9%	10 seconds	5	6
03/09/12 12:13:10	0.9%	10 seconds	5	6
03/09/12 13:11:49	0.9%	10 seconds	5	6
03/09/12 13:26:53	0.9%	10 seconds	5	6
03/09/12 13:31:02	0.9%	10 seconds	5	6
03/09/12 13:49:33	0.9%	10 seconds	5	6

**Channel 2 Report**

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>
02/28/12 08:40:11		0.9%	10 seconds	5	6
02/28/12 08:40:18		1.2%	1 minute	10	11
02/28/12 09:38:13		0.9%	10 seconds	5	6
02/28/12 10:24:17		0.9%	10 seconds	5	6
02/28/12 10:24:32		1.2%	1 minute	10	11
02/28/12 10:38:17		0.9%	10 seconds	5	6
02/28/12 11:08:48		1.2%	1 minute	10	11
02/28/12 13:21:10		0.9%	10 seconds	5	6
02/28/12 13:38:52		0.9%	10 seconds	5	6
02/28/12 14:01:20		0.9%	10 seconds	5	6
02/28/12 14:19:23		0.9%	10 seconds	5	6
02/29/12 07:32:38		1.2%	1 minute	10	11
02/29/12 08:44:59		0.9%	10 seconds	5	6
02/29/12 09:21:19		1.2%	1 minute	10	11
02/29/12 09:32:35		0.9%	10 seconds	5	6
02/29/12 09:32:40		1.2%	1 minute	10	11
02/29/12 09:37:37		0.9%	10 seconds	5	6
02/29/12 12:03:02		0.9%	10 seconds	5	6
02/29/12 12:03:03		1.2%	1 minute	10	11
02/29/12 16:34:09		0.9%	10 seconds	5	6
02/29/12 17:58:33		0.9%	10 seconds	5	6
03/01/12 09:02:49		0.9%	10 seconds	5	6
03/01/12 09:15:59		0.9%	10 seconds	5	6

03/01/12 09:20:09	0.9%	10 seconds	5	6
03/01/12 09:20:17	1.2%	1 minute	10	11
03/01/12 09:20:19	0.9%	10 seconds	5	6
03/01/12 09:44:10	0.9%	10 seconds	5	6
03/01/12 10:05:55	0.9%	10 seconds	5	6
03/01/12 11:20:05	0.9%	10 seconds	5	6
03/01/12 12:37:06	0.9%	10 seconds	5	6
03/01/12 12:41:32	0.9%	10 seconds	5	6
03/01/12 13:02:06	0.9%	10 seconds	5	7
03/01/12 13:17:34	0.9%	10 seconds	5	6
03/02/12 15:46:00	2.2%	15 minutes	10	11
03/05/12 01:43:05	0.9%	10 seconds	5	7
03/05/12 01:56:31	0.9%	10 seconds	5	7
03/05/12 01:57:00	2.2%	15 minutes	10	16
03/05/12 01:57:00	2.7%	30 minutes	10	16
03/05/12 01:57:00	3.2%	1 hour	10	16
03/05/12 10:15:14	0.9%	10 seconds	5	6
03/05/12 11:09:01	0.9%	10 seconds	5	8
03/06/12 15:59:57	0.9%	10 seconds	5	6
03/06/12 16:00:05	1.2%	1 minute	10	11
03/06/12 16:39:36	0.9%	10 seconds	5	6
03/06/12 17:12:29	1.2%	1 minute	10	11
03/06/12 17:15:45	0.9%	10 seconds	5	6
03/06/12 17:15:58	1.2%	1 minute	10	11
03/06/12 17:16:42	0.9%	10 seconds	5	6
03/06/12 17:16:58	1.2%	1 minute	10	11
03/06/12 17:17:58	1.2%	1 minute	10	14
03/06/12 17:34:12	0.9%	10 seconds	5	6
03/06/12 17:34:16	1.2%	1 minute	10	11
03/06/12 18:04:00	0.9%	10 seconds	5	6
03/07/12 09:40:16	0.9%	10 seconds	5	7
03/07/12 12:07:19	0.9%	10 seconds	5	6
03/07/12 13:27:11	0.9%	10 seconds	5	6
03/07/12 13:27:32	1.2%	1 minute	10	11
03/07/12 14:48:49	0.9%	10 seconds	5	6
03/07/12 17:12:14	0.9%	10 seconds	5	6
03/08/12 11:51:24	1.2%	1 minute	10	11
03/08/12 16:13:05	0.9%	10 seconds	5	6
03/09/12 07:04:57	1.2%	1 minute	10	11

03/09/12 07:21:51	0.9%	10 seconds	5	6
03/09/12 07:22:32	1.2%	1 minute	10	11
03/09/12 07:22:36	0.9%	10 seconds	5	6
03/09/12 07:26:26	0.9%	10 seconds	5	6
03/09/12 09:20:29	0.9%	10 seconds	5	6
03/09/12 11:49:37	0.9%	10 seconds	5	6
03/09/12 11:53:57	0.9%	10 seconds	5	6
03/09/12 11:54:06	1.2%	1 minute	10	11
03/09/12 12:13:05	0.9%	10 seconds	5	6
03/09/12 12:15:25	0.9%	10 seconds	5	6
03/09/12 12:54:55	0.9%	10 seconds	5	6
03/09/12 13:11:49	0.9%	10 seconds	5	6
03/09/12 13:20:02	0.9%	10 seconds	5	6
03/09/12 13:49:33	1.2%	1 minute	10	12

**Channel 3 Report**

No flicker events were recorded.

**Channel 4 Report**

No flicker events were recorded.



### Hilltop PMI Flicker Report data Compiled

A Flicker curve is specified by a list of allowable voltage thresholds, and a limit on their quantity in certain time spans. The default curve allows 5 voltage fluctuations of 1% or greater, in a ten second period; 10 fluctuations of 1.5% or greater, in a one minute period, and so on up to 10 fluctuations of 6% or greater, in a 24 hour period. In general, the larger the voltage variation, the less often it is allowed before triggering a Flicker record. There are nine pre-set time periods used, from 10 seconds to 24 hours

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>	<u>Events outside work window</u>
2/28/2012	8:40:14	0.90%	10 seconds	5	6	
2/28/2012	8:40:22	1.20%	1 minute	10	11	
2/28/2012	8:40:24	0.90%	10 seconds	5	6	
2/28/2012	9:09:08	0.90%	10 seconds	5	6	
2/28/2012	9:17:13	0.90%	10 seconds	5	7	
2/28/2012	9:54:10	0.90%	10 seconds	5	6	
2/28/2012	9:54:42	1.20%	1 minute	10	11	
2/28/2012	9:56:47	0.90%	10 seconds	5	6	
2/28/2012	10:03:22	0.90%	10 seconds	5	6	
2/28/2012	10:24:16	0.90%	10 seconds	5	6	
2/28/2012	10:24:33	1.20%	1 minute	10	11	
2/28/2012	11:08:16	0.90%	10 seconds	5	6	
2/28/2012	12:16:45	0.90%	10 seconds	5	6	
2/28/2012	14:01:19	0.90%	10 seconds	5	6	
2/29/2012	8:44:58	0.90%	10 seconds	5	7	
2/29/2012	8:45:00	1.20%	1 minute	10	11	
2/29/2012	8:45:08	0.90%	10 seconds	5	7	
2/29/2012	9:21:07	0.90%	10 seconds	5	6	
2/29/2012	9:21:29	1.20%	1 minute	10	11	
2/29/2012	9:32:00	0.90%	10 seconds	5	6	
2/29/2012	9:32:34	1.20%	1 minute	10	11	
2/29/2012	9:32:35	0.90%	10 seconds	5	6	
2/29/2012	9:37:38	0.90%	10 seconds	5	6	
2/29/2012	12:03:02	0.90%	10 seconds	5	6	
2/29/2012	12:03:05	1.20%	1 minute	10	11	
2/29/2012	12:56:14	0.90%	10 seconds	5	6	
2/29/2012	16:34:08	0.90%	10 seconds	5	6	
2/29/2012	17:58:34	0.90%	10 seconds	5	6	
2/29/2012	17:58:40	1.20%	1 minute	10	11	
3/1/2012	6:59:41	1.20%	1 minute	10	11	
3/1/2012	9:02:51	0.90%	10 seconds	5	6	

3/1/2012	12:07:54	0.90%	10 seconds	5	6	
3/1/2012	12:41:28	0.90%	10 seconds	5	6	
3/1/2012	13:02:03	0.90%	10 seconds	5	6	
3/1/2012	13:02:06	1.20%	1 minute	10	12	
3/1/2012	13:02:13	0.90%	10 seconds	5	6	
3/1/2012	13:17:36	0.90%	10 seconds	5	6	
3/1/2012	17:01:41	0.90%	10 seconds	5	6	6
3/2/2012	15:46:00	2.20%	15 minutes	10	11	
3/5/2012	1:43:05	0.90%	10 seconds	5	7	7
3/5/2012	1:56:31	0.90%	10 seconds	5	7	7
3/5/2012	1:57:00	2.20%	15 minutes	10	16	16
3/5/2012	1:57:00	2.70%	30 minutes	10	16	16
3/5/2012	1:57:00	3.20%	1 hour	10	16	16
3/5/2012	10:15:14	0.90%	10 seconds	5	6	
3/5/2012	11:09:01	0.90%	10 seconds	5	7	
3/6/2012	15:59:59	0.90%	10 seconds	5	6	
3/6/2012	17:12:00	1.20%	1 minute	10	11	
3/6/2012	17:12:01	0.90%	10 seconds	5	6	
3/6/2012	17:15:46	0.90%	10 seconds	5	6	
3/6/2012	17:15:53	1.20%	1 minute	10	11	
3/6/2012	17:15:56	0.90%	10 seconds	5	6	
3/6/2012	17:16:42	0.90%	10 seconds	5	6	
3/6/2012	17:16:53	1.20%	1 minute	10	13	
3/6/2012	17:17:57	0.90%	10 seconds	5	6	
3/6/2012	17:33:33	0.90%	10 seconds	5	7	
3/6/2012	17:33:35	1.20%	1 minute	10	11	
3/6/2012	17:33:43	0.90%	10 seconds	5	6	
3/6/2012	18:04:02	0.90%	10 seconds	5	6	6
3/7/2012	9:40:09	0.90%	10 seconds	5	6	
3/7/2012	12:07:19	0.90%	10 seconds	5	6	
3/7/2012	14:48:49	0.90%	10 seconds	5	6	
3/8/2012	11:51:17	1.20%	1 minute	10	11	
3/8/2012	16:25:46	0.90%	10 seconds	5	6	
3/9/2012	7:04:56	1.20%	1 minute	10	11	
3/9/2012	7:22:39	0.90%	10 seconds	5	6	
3/9/2012	9:26:38	0.90%	10 seconds	5	6	
3/9/2012	9:51:34	0.90%	10 seconds	5	7	
3/9/2012	11:49:35	0.90%	10 seconds	5	6	
3/9/2012	12:06:22	0.90%	10 seconds	5	6	
3/9/2012	12:13:10	0.90%	10 seconds	5	6	
3/9/2012	13:11:49	0.90%	10 seconds	5	6	
3/9/2012	13:26:53	0.90%	10 seconds	5	6	
3/9/2012	13:31:02	0.90%	10 seconds	5	6	
3/9/2012	13:49:33	0.90%	10 seconds	5	6	

## Channel 2 Report

Page 11 of 17

<u>Date</u>	<u>Time</u>	<u>Tolerance</u>	<u>Time Span</u>	<u>Freq Limit</u>	<u>Events</u>	
2/28/2012	8:40:11	0.90%	10 seconds	5	6	
2/28/2012	8:40:18	1.20%	1 minute	10	11	
2/28/2012	9:38:13	0.90%	10 seconds	5	6	
2/28/2012	10:24:17	0.90%	10 seconds	5	6	
2/28/2012	10:24:32	1.20%	1 minute	10	11	
2/28/2012	10:38:17	0.90%	10 seconds	5	6	
2/28/2012	11:08:48	1.20%	1 minute	10	11	
2/28/2012	13:21:10	0.90%	10 seconds	5	6	
2/28/2012	13:38:52	0.90%	10 seconds	5	6	
2/28/2012	14:01:20	0.90%	10 seconds	5	6	
2/28/2012	14:19:23	0.90%	10 seconds	5	6	
2/29/2012	7:32:38	1.20%	1 minute	10	11	
2/29/2012	8:44:59	0.90%	10 seconds	5	6	
2/29/2012	9:21:19	1.20%	1 minute	10	11	
2/29/2012	9:32:35	0.90%	10 seconds	5	6	
2/29/2012	9:32:40	1.20%	1 minute	10	11	
2/29/2012	9:37:37	0.90%	10 seconds	5	6	
2/29/2012	12:03:02	0.90%	10 seconds	5	6	
2/29/2012	12:03:03	1.20%	1 minute	10	11	
2/29/2012	16:34:09	0.90%	10 seconds	5	6	
2/29/2012	17:58:33	0.90%	10 seconds	5	6	
3/1/2012	9:02:49	0.90%	10 seconds	5	6	
3/1/2012	9:15:59	0.90%	10 seconds	5	6	
3/1/2012	9:20:09	0.90%	10 seconds	5	6	
3/1/2012	9:20:17	1.20%	1 minute	10	11	
3/1/2012	9:20:19	0.90%	10 seconds	5	6	
3/1/2012	9:44:10	0.90%	10 seconds	5	6	
3/1/2012	10:05:55	0.90%	10 seconds	5	6	
3/1/2012	11:20:05	0.90%	10 seconds	5	6	
3/1/2012	12:37:06	0.90%	10 seconds	5	6	
3/1/2012	12:41:32	0.90%	10 seconds	5	6	
3/1/2012	13:02:06	0.90%	10 seconds	5	7	
3/1/2012	13:17:34	0.90%	10 seconds	5	6	
3/2/2012	15:46:00	2.20%	15 minutes	10	11	
3/5/2012	1:43:05	0.90%	10 seconds	5	7	7
3/5/2012	1:56:31	0.90%	10 seconds	5	7	7
3/5/2012	1:57:00	2.20%	15 minutes	10	16	16
3/5/2012	1:57:00	2.70%	30 minutes	10	16	16
3/5/2012	1:57:00	3.20%	1 hour	10	16	16
3/5/2012	10:15:14	0.90%	10 seconds	5	6	

3/5/2012	11:09:01	0.90%	10 seconds	5	8
3/6/2012	15:59:57	0.90%	10 seconds	5	6
3/6/2012	16:00:05	1.20%	1 minute	10	11
3/6/2012	16:39:36	0.90%	10 seconds	5	6
3/6/2012	17:12:29	1.20%	1 minute	10	11
3/6/2012	17:15:45	0.90%	10 seconds	5	6
3/6/2012	17:15:58	1.20%	1 minute	10	11
3/6/2012	17:16:42	0.90%	10 seconds	5	6
3/6/2012	17:16:58	1.20%	1 minute	10	11
3/6/2012	17:17:58	1.20%	1 minute	10	14
3/6/2012	17:34:12	0.90%	10 seconds	5	6
3/6/2012	17:34:16	1.20%	1 minute	10	11
3/6/2012	18:04:00	0.90%	10 seconds	5	6
3/7/2012	9:40:16	0.90%	10 seconds	5	7
3/7/2012	12:07:19	0.90%	10 seconds	5	6
3/7/2012	13:27:11	0.90%	10 seconds	5	6
3/7/2012	13:27:32	1.20%	1 minute	10	11
3/7/2012	14:48:49	0.90%	10 seconds	5	6
3/7/2012	17:12:14	0.90%	10 seconds	5	6
3/8/2012	11:51:24	1.20%	1 minute	10	11
3/8/2012	16:13:05	0.90%	10 seconds	5	6
3/9/2012	7:04:57	1.20%	1 minute	10	11
3/9/2012	7:21:51	0.90%	10 seconds	5	6
3/9/2012	7:22:32	1.20%	1 minute	10	11
3/9/2012	7:22:36	0.90%	10 seconds	5	6
3/9/2012	7:26:26	0.90%	10 seconds	5	6
3/9/2012	9:20:29	0.90%	10 seconds	5	6
3/9/2012	11:49:37	0.90%	10 seconds	5	6
3/9/2012	11:53:57	0.90%	10 seconds	5	6
3/9/2012	11:54:06	1.20%	1 minute	10	11
3/9/2012	12:13:05	0.90%	10 seconds	5	6
3/9/2012	12:15:25	0.90%	10 seconds	5	6
3/9/2012	12:54:55	0.90%	10 seconds	5	6
3/9/2012	13:11:49	0.90%	10 seconds	5	6
3/9/2012	13:20:02	0.90%	10 seconds	5	6
3/9/2012	13:49:33	1.20%	1 minute	10	12

601

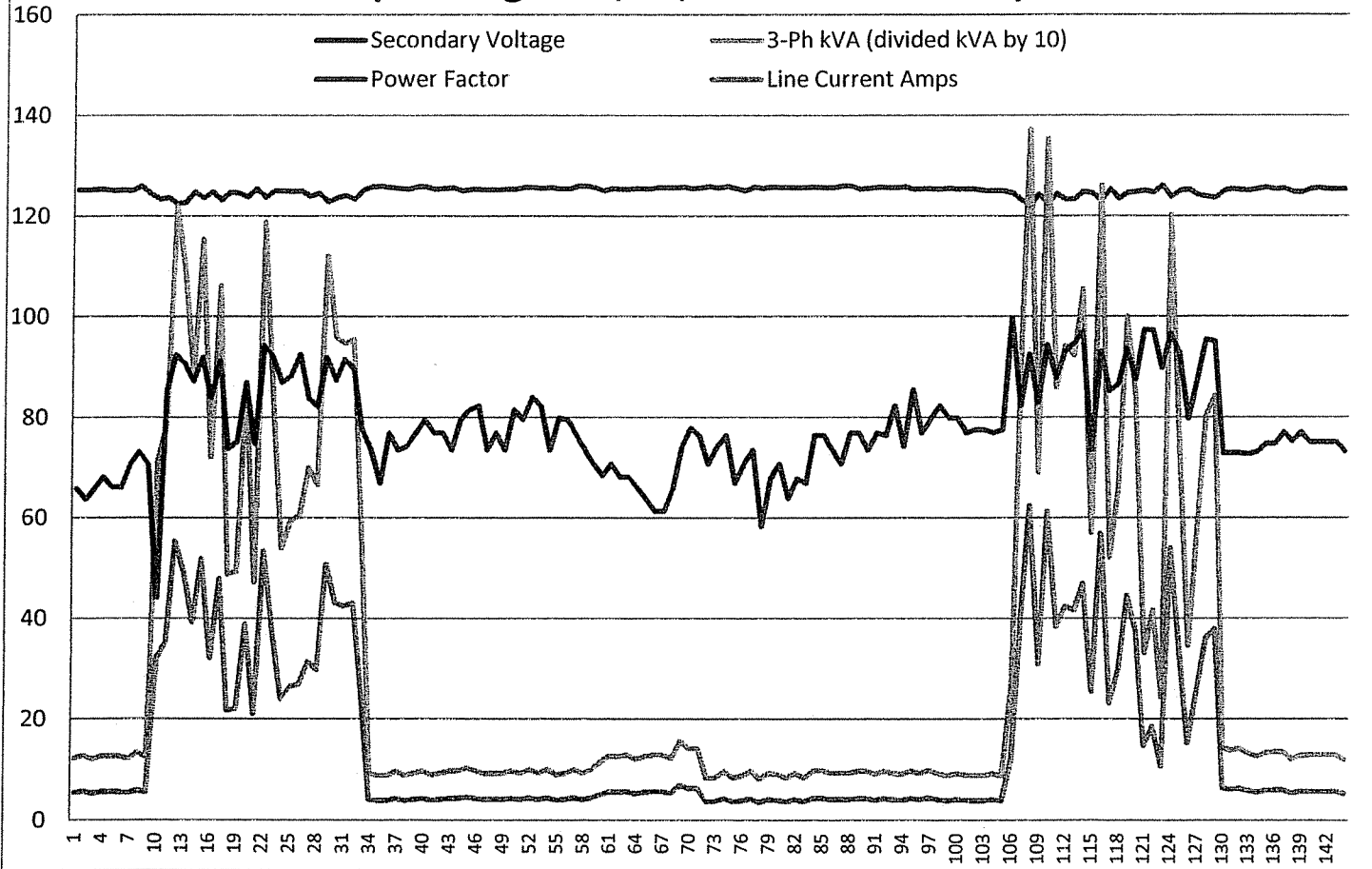
62

11 days			<u>Total for events 10 sec &amp; 1 min</u>		<u>1177</u>	<u>136</u>	events outside of work window and weekend period
	no weekend events		<u>events 7am-5:30pm</u>		<u>1041</u>	Events outside work window was added by Wilson Consulting and not part of original data base.	

# Partial Graph from Hilltop Capacitor Panel's Data

Fisher Pierce: SmartSet

Data interval set at 30 minutes  
{starting on 3/31/2012 at 12:01am}



Use this Key for changes in EVENT day-clock times to intervals (for this graph only):

**March 31**

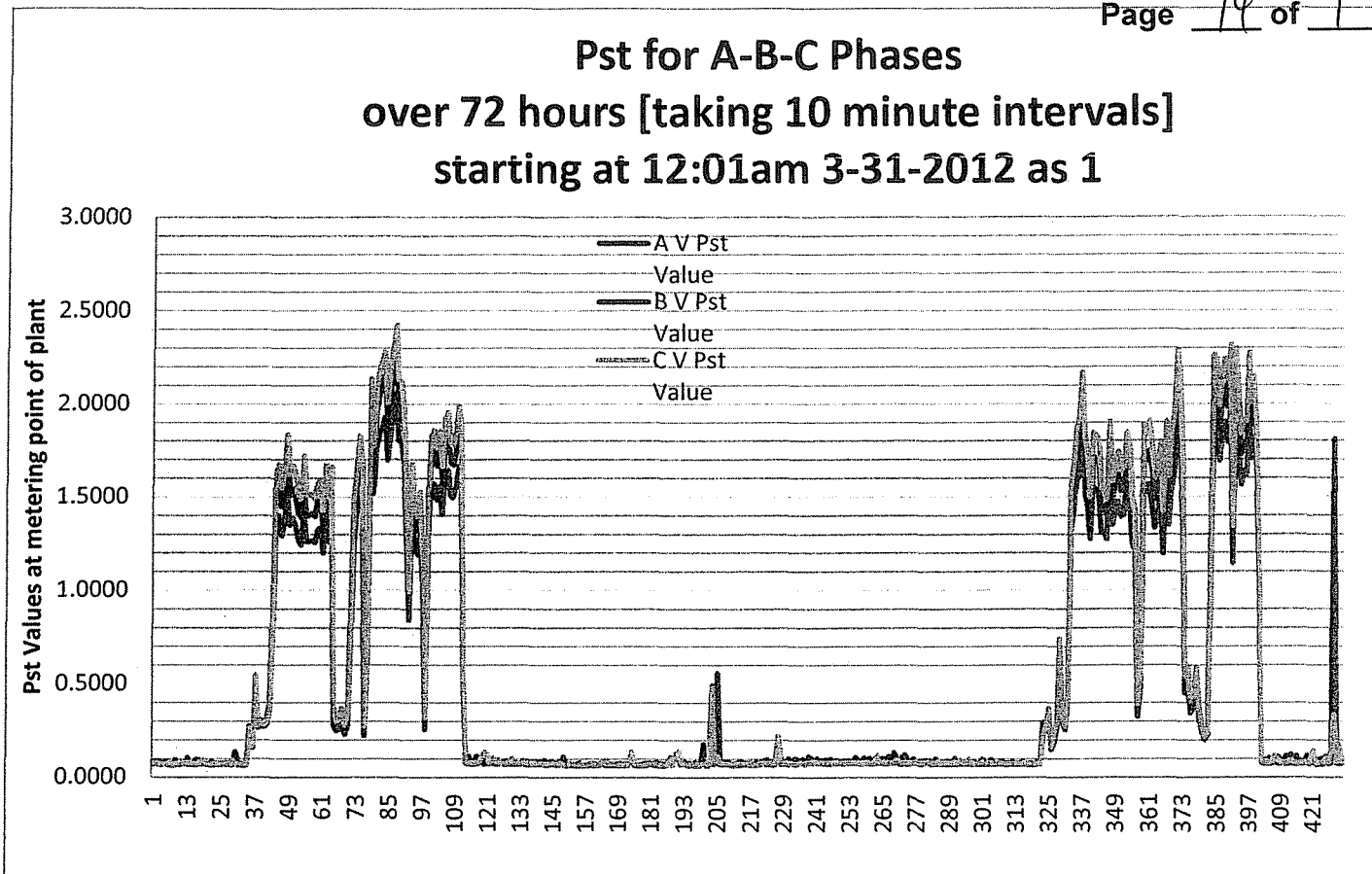
- 5:30 Cap bank engaged (plant start up) **event 11**
- 6:00- Large THD **event 12**
- 12:00 THD starts mild series **event 24**
- 16:30 Cap bank disengages (plant lessens operation) **event 33**

**April 2**

- 5:00 Cap bank engaged (plant startup) **event 106**
- 6:00 Large THD event for one hour **event 108**
- 9:00-10:00 Mild event-period from **114--116**
- 15:50 Large THD **event period from 127--128**
- 16:30 Cap bank disengages (plant lessens operation **event 129**
- 18:40 Stray event on A phase-C phase **event 133**
- 23:50 event study cycle limit **event 144**

**.Note:**

kVA was down sized by a 1/10 to maintain a viewable range of all elements at one time.



Flicker levels in IEC standards are characterized by two parameters:

- Pst is a value measured over 10 minutes that characterizes the likelihood that the voltage fluctuations would result in perceptible light flicker. A value of 1.0 is designed to represent the level that 50% of people would perceive flicker in a 60 watt incandescent bulb.
- Plt is derived from 2 hours of Pst values (12 values combined in cubic relationship).

Note that IEEE is also adopting this method of characterizing flicker (IEEE 1453).

IEC 61000-2-2 specifies flicker compatibility levels:

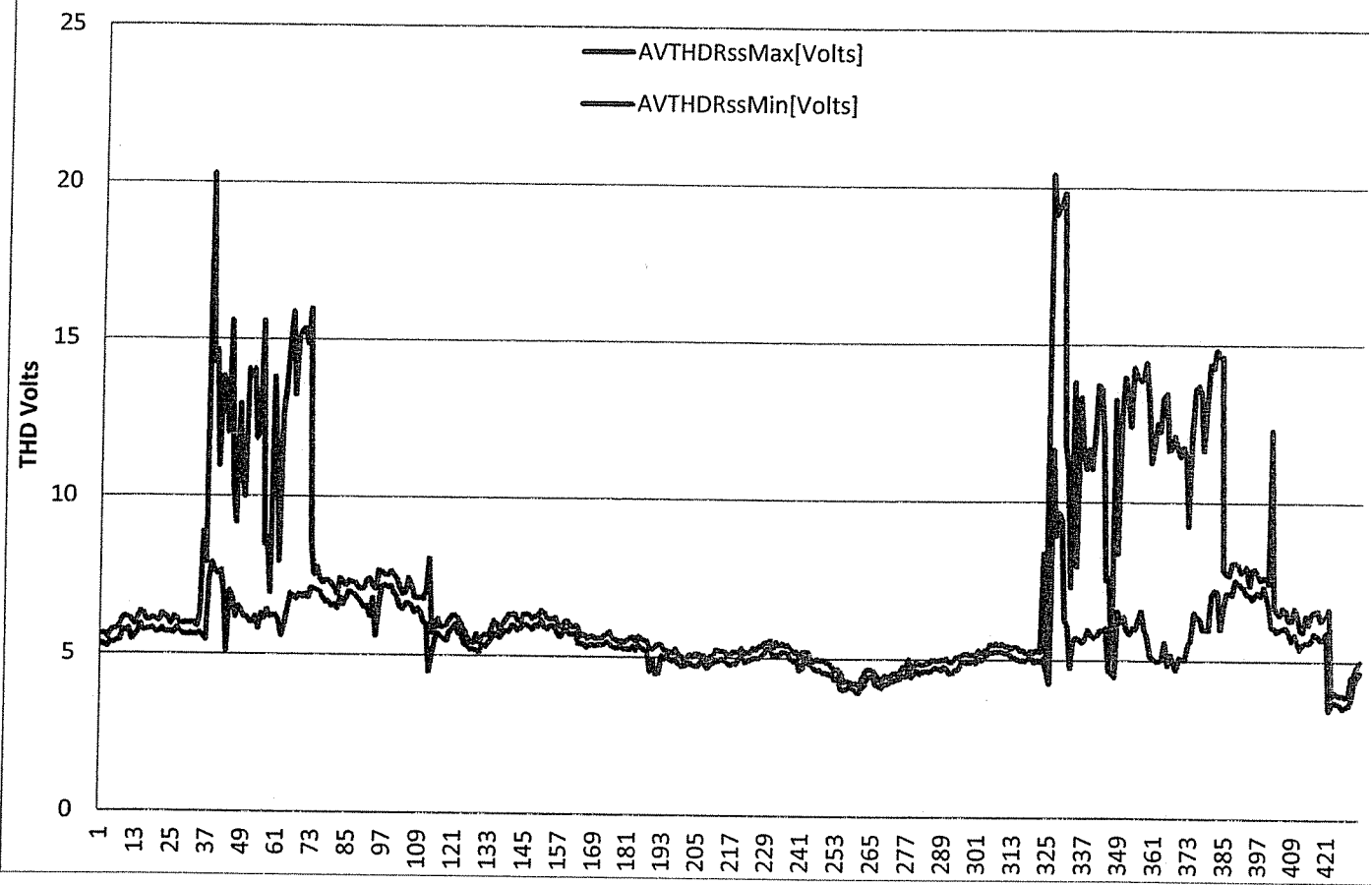
- Compatibility level for short term flicker (Pst) is 1.0.
- Compatibility level for long term flicker (Plt) is 0.8.

Recognizing that it is not always possible to maintain flicker levels within these compatibility levels, EN 50160 specifies less restrictive requirements for the supply system performance. The EN 50160 limit is that 95% of the long term flicker values (Plt) should be less than 1.0 in one week measurement period

It should also be noted that I have heard the following from a person that has had 50 years of experience in the power quality field that:

***" People's sensitivity to light flicker is quite interesting. Because PQ used to be part of my mission, I would see the flicker caused by as little as ½ % Voltage sag. An angry customer will also see the flicker of this small amount sometimes. On the other hand, I have been in offices and factories where the lights were flickering constantly, in one case caused by welding and in another case caused by the heater in the copier on the same circuit as the lights cycling on an off, and nobody saw anything."***

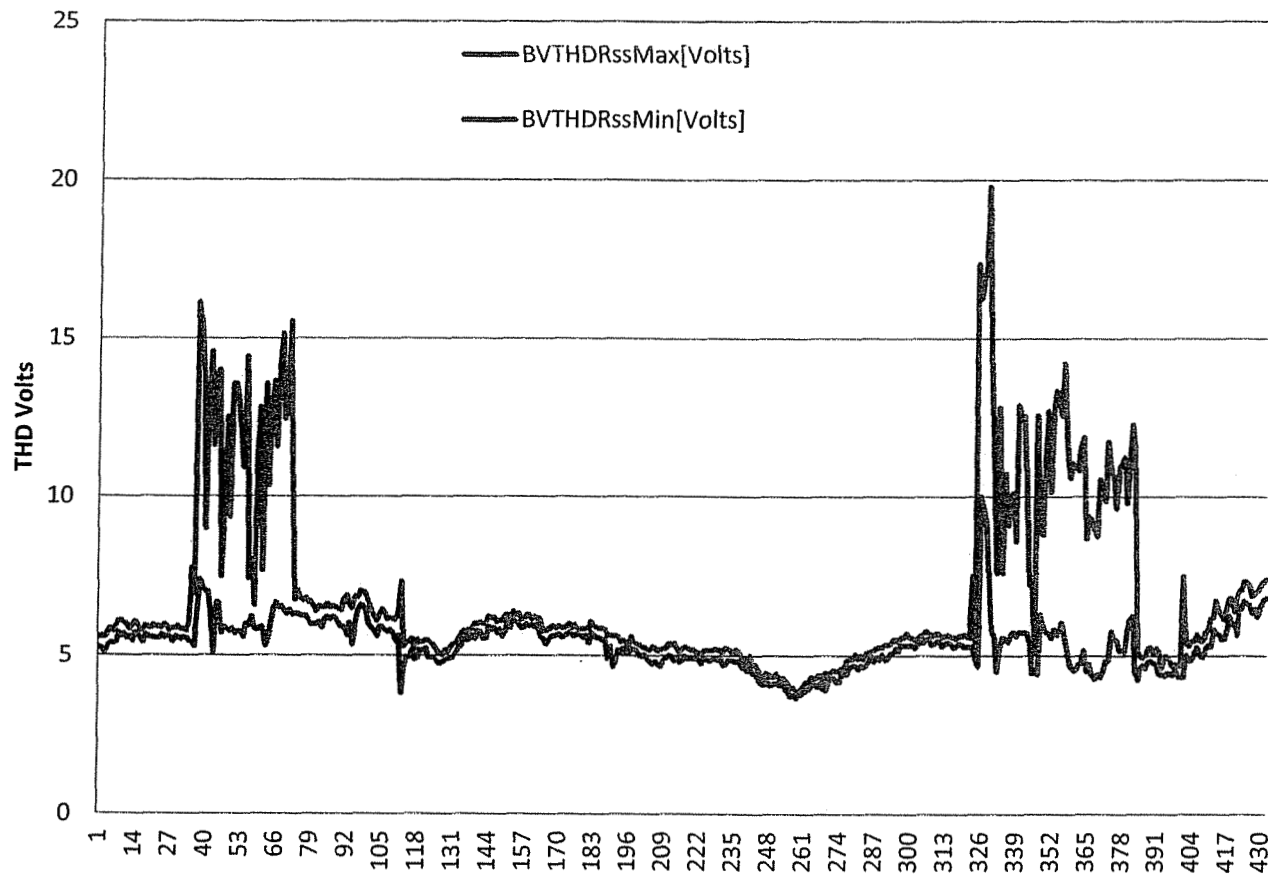
**THD (harmonic distortion) A phase Min & Max  
over 72 hours [taking 10 minute intervals]  
starting at 3-31-2012 12:01 am equals 1**



Help chart for Dranetz graphics converting 10 minute intervals into day/ hours: minutes

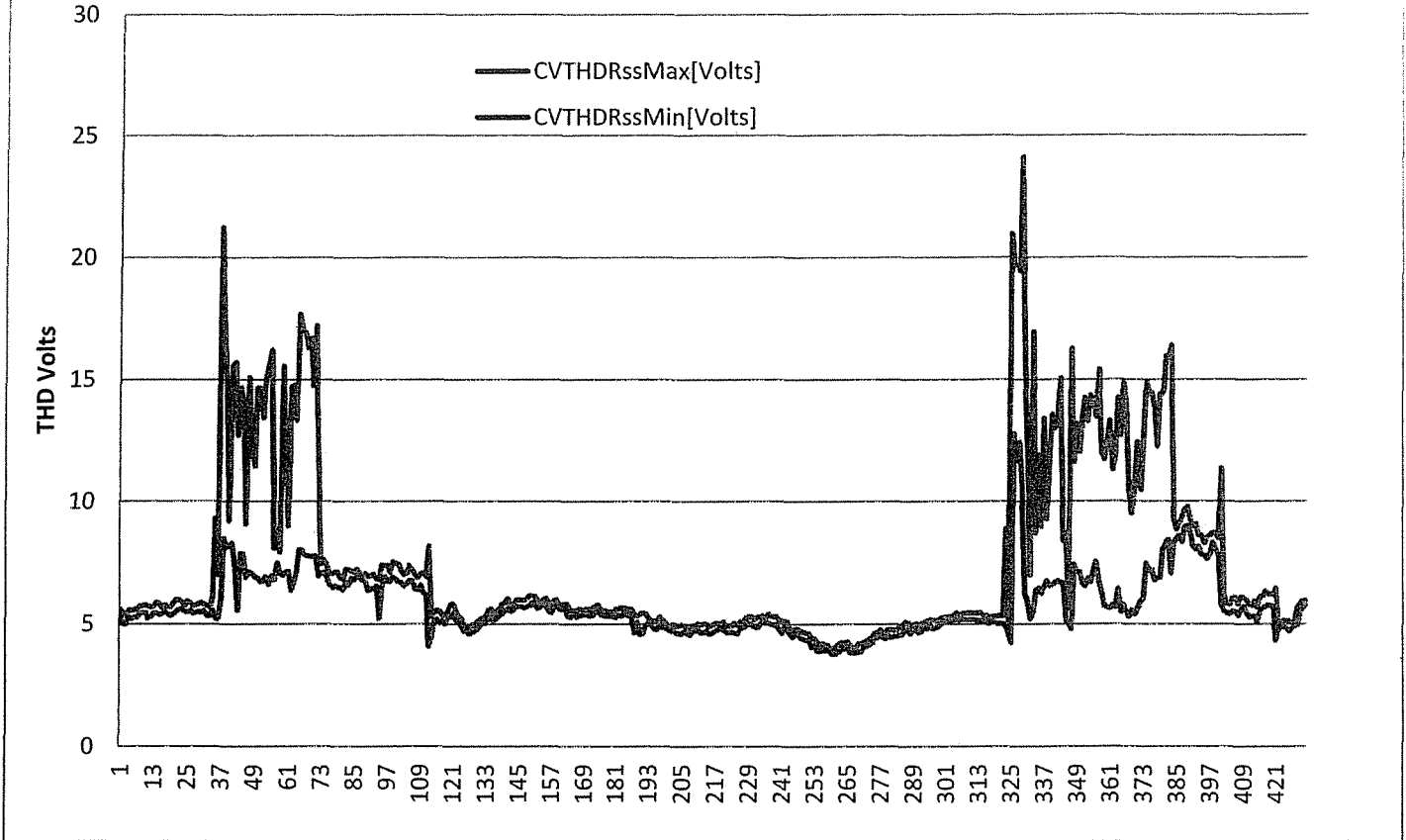
Day	Military time	= Interval
3/31/2012	5:30	----34
3/31/2012	12:00	----35
3/31/2012	17:00	----103
4/1/2012	0:00	----104
4/1/2012	5:30	----178
4/1/2012	12:00	----217
4/1/2012	16:00	----241
4/2/2012	0:00	----289
4/2/2012	5:00	----319
4/2/2012	12:00	----361
4/2/2012	16:30	----388
4/2/2012	18:40	----401
4/2/2012	23:50	----432

**THD (harmonic distortion) B phase Min & Max  
over 72 hours [taking 10 minute intervals]  
starting at 3-31-2012 12:01 am equals 1**





**THD (harmonic distortion) C phase Min & Max  
over 72 hours [taking 10 minutes intervals]  
starting at 3-31-2012 12:01 am - equals 1**



While there is no national standard dictating THD limits on systems, there are recommended values for acceptable harmonic distortion. IEEE Std 519, "RECOMMENDED PRACTICES AND REQUIREMENTS FOR HARMONIC CONTROL IN ELECTRICAL POWER SYSTEMS" provides suggested harmonic values for power systems:

"Computers and allied equipment, such as programmable controllers, frequently require ac sources that have no more than 5% harmonic voltage distortion factor [THD], with the largest single harmonic being no more than 3% of the fundamental voltage. Higher levels of harmonics result in erratic, sometimes subtle, malfunctions of the equipment that can, in some cases, have serious consequences."

The limits on voltage harmonics are thus set at 5% for THD and 3% for any single harmonic. It is important to note that the suggestions and values given in this standard are purely voluntary. However, keeping low THD values on a system will further ensure proper operation of equipment and a longer equipment life span.



MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION

CASE NO. 2012-00312

1  
2 **Question 5)** The letter filed by the Complainant on January 28, 2013, stated:

3        Though the new line seems, at this time, to have helped decrease the  
4        intensity of some of the “flickering,” I take issue with Mr. Brites’ closing  
5        statement “that the new electric line has achieved its purpose in  
6        reducing the flicker to acceptable levels for the Big Bend area.

7        ...Until a year ago I wasn’t aware of any flickering of our lights. The new  
8        line has not achieved its purpose in reducing the “flicker” to acceptable  
9        levels in the Big Bend area.<sup>3</sup>

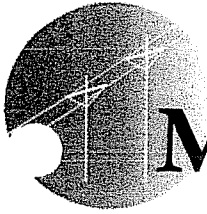
10        a.        Has a termination of service notice been delivered to Hilltop Basic Resources, Inc. or  
11        any of its subsidiaries or affiliates?

12        b.        If yes, on what date is service to be terminated or was the service terminated?

13  
14 **Response 5a)** No, but two letters were presented to Hilltop signifying their operations were causing  
15 the flickering issues on the MCRECC system and they could be disconnected if it was not resolved  
16 soon; one was from David Poe, V.P. of Operations (dated 4/27/12) and one from MCRECC’s attorney,  
17 Thomas Brite (dated 7/13/12). Copies of both letters are attached as Exhibit 5a.

18 **Response 5b)** Not applicable

19  
20 Witness)        David Poe  
21  
22



# Meade County RECC

Exhibit 59  
10/3

P.O. Box 489  
Brandenburg, KY 40108-0489  
(270) 422-2162  
Fax: (270) 422-4705

4/27/12

Hilltop Basic Res. Inc.  
Big Bend Quarry  
1994 Paradise Bottom Road  
Battletown, KY 40104

To Whom It May Concern,

In January 2012, Meade County RECC began receiving complaints about dimming and blinking lights in and around the Paradise Bottom and Big Bend areas of our system. During the next three months MCRECC sampled the voltages in this area to understand what our members in this area were experiencing. MCRECC solicited the assistance of an independent consulting engineer, Roger Wilson, P.E., with experience with these types of issues and he has concluded the disturbance is due to the operation of the quarry who recently upgraded their equipment.

Please consider this Hilltop's official notice that the Big Bend Quarry is causing disturbances in the electrical system in the local area in excess of those limits set forth in the contract, the Kentucky statutes (807 KAR 5:041. Section 6 (2)(c), and the IEEE standards 519 and 141. It is imperative that this issue be resolved as soon as possible. Continuing disturbances and the lack of effort on Hilltop's part could result in the discontinuance of electrical service to the quarry.

Sincerely,

David R. Poe, P.E.  
Vice President of Operations & Engineering

Exhibit 5a  
2 of 3

**David Poe**

---

**From:** Burns Mercer  
**Sent:** Friday, July 13, 2012 11:29 AM  
**To:** David Poe  
**Subject:** FW: Morgan, John.let

FYI.

---

**From:** Linda [<mailto:lwalton@bbtel.com>]  
**Sent:** Friday, July 13, 2012 10:56 AM  
**To:** Burns Mercer  
**Subject:** Morgan, John.let

***BRITE & HOPKINS, PLLC***  
***ATTORNEYS AT LAW***  
83 BALLPARK ROAD, P.O. BOX 309  
HARDINSBURG, KENTUCKY 40143-0309  
*PHONE (270) 756-2184, FAX (270) 756-1214*

OMAS C. BRITE  
e-mail: [fbrite@bbtel.com](mailto:fbrite@bbtel.com)

STEPHEN G. HOPKINS  
e-mail: [shopkins@bbtel.com](mailto:shopkins@bbtel.com)

July 13, 2012

John Morgan  
Vice President-Mining Operations  
One West Fourth Street  
Suite 1100  
Cincinnati, Ohio 45202-3610

RE: Hilltop Quarry Electrical Disturbances

Dear Mr. Morgan:

Please be advised that this firm represents the Meade County RECC.

Mr. David Poe has discussed with me a problem which exists and which he informs me you and your agents are aware. Mr. Poe indicated that representatives of Hilltop had a conference with Meade County RECC in our offices on April 27<sup>th</sup> where it was stated that Hilltop would conduct further tests and monitor the situation to pinpoint the equipment causing the problem. According to Mr. Poe, Hilltop has never denied that the flickering situation of which our residential customers are complaining has not been caused by Hilltop's operations. This has been confirmed by our consultant, Roger Wilson, who installed two power logging devices in the area over a four – five day period and Meade County also installed a voltage logger and monitor voltage logger for several more days thereafter to verify

the problem(s). A copy of three (3) complaints filed to date with the Kentucky Public Service Commission, being Case No. 2012-00310, 2012-00311 and 2012-00312 are included with this letter.

We have reviewed the applicable Kentucky Administrative Regulations and the Agreement for Retail Electric Service dated April 6, 1999 regarding the termination of electrical service with an attorney at the Kentucky Public Service Commission. We agree that Meade County RECC must give you reasonable effort to correct the problem that exists, then if you fail to comply after ten days notice, we can terminate your service.

Mr. John Morgan  
Page 2  
July 13, 2012

If this issue is not resolved to our satisfaction by August 1, 2012, we plan to mail to you the 10 day notice letter terminating service to Hilltop.

A copy of this letter is being furnished the Kentucky Public Service Commission to advise the commission of Meade County RECC's response to the above-mentioned complaints of our customer/members.

Yours very truly,

THOMAS C. BRITE

TCB: bep/lsw

cc: Mr. Burns Mercer, President  
Meade County RECC  
P.O. Box 489  
Brandenburg, Kentucky 40108

Jeff Derouen  
Executive Director  
Commonwealth of Kentucky  
Public Service Commission  
P. O. Box 615  
Frankfort, Kentucky 40602-0615



MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION

CASE NO. 2012-00312

1  
2 **Question 6)** Refer to the letter Meade County filed on January 22, 2013, which stated:

3 Since our status report to you dated December 28, 2012, Meade County

4 RECC ("Meade") has completed the single phase line.

5 Thereafter all three complainants indicated to Meade and the commission's

6 staff that the flickering problem continued. On or after Monday, January 7, 2013,

7 Meade began monitoring the area where the complainants reside measuring voltage

8 flickering on said electric line. The test results indicated a dramatic improvement

9 as our previous monitoring indicated multitudes of flicker events (enough to fill the

10 recorder memories in a day). In the past week, the monitoring reading indicated four

11 or five events of which only one would be considered outside of the IEEE standard

12 limits. Meade has reinstalled the recorders for future monitoring, however, we

13 believe that the new electric line has achieved its purpose in reducing the flicker

14 to acceptable levels for Big Bend area. 4

15  
16 a. Provide all Meade County test results collected in the vicinity of the Complainant's  
17 location and Hilltop, since monitoring began on January 7, 2013.

18 b. Indicate the exact location on the system where the data was collected.

19 c. Explain the origin of, and the remedy for, the high 1.2 percent flicker level measured  
20 around 7:30 P.M. on Friday, January 11, 2013.

21  
22 **Response 6a)** Previously provided in section 4a.



MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE TO COMMISSION STAFF'S  
SECOND REQUEST FOR INFORMATION

CASE NO. 2012-00312

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**Response 6b)** Two locations were monitored to best understand and measure. One location is located 1063 feet preceding Mr. Bell's residence on Big Bend Road at a disconnected grain bin. The second location is at 8305 Big Bend Road, a disconnected account approximately 3.0 miles downline of the first location and 1.2 miles downline of the last complainant, Ms. Jarboe. These locations were selected because there is no load on these transformers that could compromise the data and monitoring and one precedes the complainants and the other is located beyond them. Location map is attached as Exhibit 6b.

**Response 6c)** The cause of the recorded flicker on 1/11/13 at 7:30 PM that exceeded the IEEE level of perception is unknown. We do know Hilltop was not in operation at the time (an e-mail from Mr. John Morgan of Hilltop stating that is included with this response-Exhibit 6c.) A flicker event that would exceed the normal limits can be caused by a multitude of things such as a reclosure operation somewhere on the system, an animal (such as a bird) very briefly shorting out a phase wire, a limb briefly brushing against a wire, or a vehicle or tractor bumping a pole or guy wire causing the neutral and phase wire to slap together. It could have been a very brief disturbance from our power supplier. Having an event large enough to record a flicker event is not unusual at any time.

**Witness)** David Poe

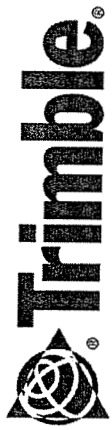


Exhibit 66  
1 of 1

Map Display

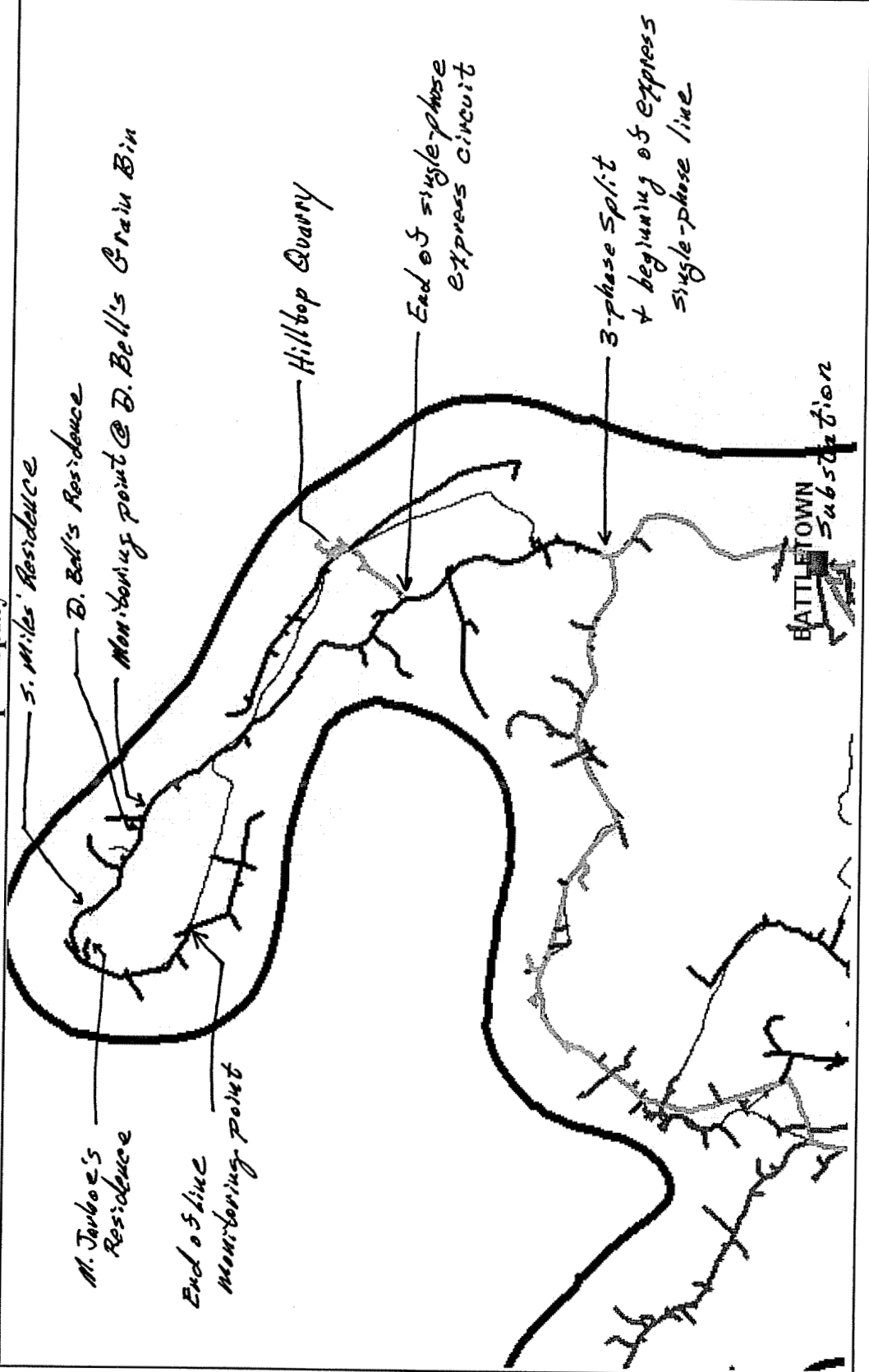


Exhibit 6C  
1071

**Melanie Raley**

---

**From:** Burns Mercer  
**Sent:** Monday, January 21, 2013 10:41 AM  
**To:** Melanie Raley  
**Subject:** FW: Flicker Occurrence

Hilltop file.

---

**From:** John Morgan [<mailto:jmorgan@morganworldwide.com>]  
**Sent:** Thursday, January 17, 2013 4:53 PM  
**To:** Burns Mercer  
**Cc:** [ksheehan@hilltopbasic.com](mailto:ksheehan@hilltopbasic.com); [douglas.brent@skofirm.com](mailto:douglas.brent@skofirm.com)  
**Subject:** Flicker Occurrence

Burns,

As a follow up to your earlier email, I checked with Gary Lewis, the General Manager at Hilltop's Big Bend Quarry and he responded to me that:

"Friday evening he 11<sup>th</sup> there was no activity electrical wise. We had our maintenance people working that night and we quit running rock at 5pm. It rained most of the morning but I don't believe there were any storms in the area at that time."

Therefore, the statement in the letter from Mr. Brite to the PSC is correct, that Hilltop was not operating and therefore not a potential cause of the recorded Flicker event on January 11..

I hope this helps.

John

CERTIFICATE OF SERVICE

The undersigned as Attorney for Meade County Rural Electric Cooperative Corporation does hereby certify that he supervised the foregoing response which is true and correct to the best of his knowledge and belief and that the original and ten (10) copies of this response was mailed to Jeff Derrouen, PSC Executive Director, P.O. Box 615, Frankfort, KY 40602, and one (1) copy to David Ballantine Bell, 5615 Big Bend Rd., Battletown, KY 40104, this 25<sup>th</sup> day of February 2013.

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Thomas C. Brite  
Attorney for Meade County Rural  
Electric Cooperative Corporation