Electrical Reliability Services, Inc.
13350 International Parkway, Unit 102
Jacksonville, FL 32218
T 770-541-6600
F 770-541-6501
www.electricalreliability.com

June 22, 2017

Gainesville Renewable Energy Center LLC
11201 Northwest U.S. Highway 441
Gainesville, FL 32653-8001

Attention: Mr. Tommy Gardner

Subject: Battery Discharge Test Report
Project No. 1015045

Dear Mr. Gardner,

Thank you for the opportunity to provide services for you during this project. Our comprehensive report and recommendations are attached. They detail the work we performed, results obtained and provide recommendations for any corrective actions. Please let us know if you have any questions or need additional information.

As an independent third party electrical testing, maintenance and engineering services firm and full member of the InterNational Electrical Testing Association (NETA), Electrical Reliability Services prides itself in the quality of our services and skills of our people. Thanks again for the opportunity to provide you with electrical testing services. If there is anything more we can do for you, please don't hesitate to contact us.

Sincerely,

Brandon L Schuler
Manager Ind DC & Battery Oper
Electrical Reliability Services, Inc.

Gainesville Renewable Energy Center LLC

Battery Discharge Test Report

VERTIV – ELECTRICAL RELIABILITY SERVICES

Purchase Order No. PO-2017-0216

Project No. 1015045

Report Date 6/22/2017

Site Address 11201 Northwest U.S. Highway 441, Gainesville, FL 32653-8001

Project Leader Eric C Carroll

Approved by Brandon Schuler - Operations Manager DC Services

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1. SUMMARY

1.1 This project was initiated by Mr. Tommy Gardner with Gainesville Renewable Energy Center LLC. All testing was performed by Electrical Reliability Services Field Engineers Eric C Carroll and Ryan Cooper between May 23, 2017 and May 24, 2017.

1.2 Maintenance tests and inspections of electrical equipment help assure proper and safe operation.

1.3 This project involved testing of battery systems.

1.4 Please refer to Section 5 for complete details regarding comments, deficiencies and recommendations.

2. OBJECTIVES

2.1 The battery systems listed in Section 3 of this report have been inspected and tested to help assure their proper and safe operation. Defective or marginal equipment can be identified, repaired, replaced or scheduled for future repairs without costly or unexpected interruptions during normal operating periods.

2.2 The test results are particularly valuable when kept for comparison with past and future maintenance test results. This historic database enables one to predict the probability of equipment failure and thus schedule facility production and financial budgets to accommodate preventive maintenance or repair rather than breakdown maintenance.

3. SERVICE DESCRIPTION

3.1 This project was initiated by Mr. Tommy Gardner with Gainesville Renewable Energy Center LLC. All testing was performed by Electrical Reliability Services Field Engineers Eric C Carroll and Ryan Cooper between May 23, 2017 and May 24, 2017.

3.2 Discharge testing of the following battery systems:

- DS-DC1
- DS-DC2
- Plant Battery String A
- Plant Battery String B

4. PROCEDURES

The following procedures were followed in the performance of this project:

4.1 DC Systems, Batteries, Vented Lead-Calcium / Vented-Lead Selenium

4.1.1 Visual and Mechanical Inspection

.1 Verify that battery area ventilation system is operable.

.2 Inspect physical and mechanical condition.

.3 Inspect battery support racks, mounting, battery spill containment system, anchorage, clearances, alignment, and grounding.

.4 Verify presence of flame arresters.

.5 Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA MTS Table 100.12.

4.1.2 Electrical Tests

.1 Measure charger float and equalizing voltage levels. Adjust to battery manufacturer's recommended settings.

.2 Verify all charger functions and alarms.

.3 Measure the battery system voltage from positive-to-ground and negative-to-ground.

.4 Measure and record ac ripple current and voltage imposed on the battery.

.5 Perform a load test in accordance with manufacturer's specifications or ANSI/IEEE 450, Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries for Generating Stations and Substations.

5. RESULTS, COMMENTS, DEFICIENCIES AND RECOMMENDATIONS

5.1 Based on the results of the inspections and tests performed, except as described below or in the Comment, Deficiency, and Recommendations Summary located in the Appendix, the equipment included in this project is considered serviceable.

5.1.1 DS-DC1: The battery performance (capacity) test passed with 104.7% capacity. **It is recommended to continue performing battery preventive maintenance inspection in accordance with NERC/IEEE standards.**

5.1.2 DS-DC2:

.1 The jars are not numbered properly. **The cells should be numbered following the electrical circuit of the battery, beginning at the positive post of cell 1, in accordance with the applicable IEEE Standard and the battery manufacturer’s installation instructions. ERS recommends numbering the string starting with the most positive cell.**

.2 The battery performance (capacity) test passed with 99.4% capacity. **It is recommended to continue performing battery preventive maintenance inspection in accordance with NERC/IEEE standards.**

5.1.3 Plant Battery String A:

.1 During the test, cells 28 and 29 had leads that were malfunctioning. Both cells have passed. Cell 28 has a capacity of 104.4% and cell 29 never reached end voltage. The voltage displayed in the test results is 80 mVDC lower than actual.

.2 The battery performance (capacity) test passed with 110.4% capacity. **It is recommended to continue performing battery preventive maintenance inspection in accordance with NERC/IEEE standards.**

5.1.4 Plant Battery String B: The battery performance (capacity) test passed with 109% capacity. **It is recommended to continue performing battery preventive maintenance inspection in accordance with NERC/IEEE standards.**

6. APPENDIX

APPENDIX

Capacity Test
Performance

5/24/2017

Customer:	Gainesville Renewable Energy Center LLC		
Address:	11201 NW US Hwy 441 Gainesville, FL 32653-8001	Job Number:	1015045
		Technician:	Eric Carroll, Ryan Cooper
Site Contact:	Tommy Gardner	Phone #:	(386) 315-8012

Battery Nameplate Data				Equipment Nameplate Data			
Manufacturer:	C&D			Datasheet Attached:	Yes	Type:	Charger
Model:	4JC 100 SAN			Equipment ID:	DS-DC1	Input Voltage:	480 VAC
Date code:	Jun-12			Manufacturer:	C&D	Input Current:	7 AAC
Battery Type:	Vented Lead-Calcium			Model #:	ARR-M12525F	DC Voltage:	125 VDC
Jars per String:	60	# of Strings:	1	Serial #:	ECS127431	DC Current:	25 ADC
Cells per Jar:	1	Cells / String:	60	Size: (AMPS, kW, kVA)	25 ADC	Part #:	N/A
Capacity:	104.7%			Date code:	May-12		

Measurement and Inspection Data

Electrical Inspection			Visual Inspection		
	As Found	**As Left**		**Condition**	**Notes**
Alarms	OK	OK	*Cell Numbering*	OK	
Float Voltage	134.6 VDC	134.6 VDC	*Water Level*	OK	
Equalize Voltage	139.8 VDC	139.8 VDC	*Visual Plate Inspection*	OK	
DC + to G	66.8 VDC	66.8 VDC	*Jar Cover Inspection*	OK	
DC - to G	66.8 VDC	66.8 VDC	*Connection Torque*	OK	
DC Amps	0.0 ADC	0.0 ADC	*Visible Heat Damage*	OK	
Ripple Volts	12 mVAC	12 mVAC	*Spill Containment*	OK	
Ripple Current	0.1 AAC	0.1 AAC	*Cables/Connectors*	OK	
Room Temp	77.0 °F	77.0 °F	*Post Seals*	OK	
			Flame Arrestors	OK	

Manufacturer Recommended Voltage Ranges @ 77.0 °F

Float Voltage					Equalize Voltage			
Minimum:	132.0 VDC	*Maximum:*	135.0 VDC		Minimum:	139.8 VDC	*Maximum:*	142.8 VDC

Comments

Performed battery performance (capacity) test IAW NERC/IEEE Standards.

Battery performance (capacity) test passed with 104.7% capacity.

Deficiencies and Recommendations

Continue to perform battery PMI and PM IAW NERC/IEEE Standards.

BCT-2000 Battery Load Test Report

Battery Information

Name: DS-DC1

Manufacturer: C&D

Model: 4JC 100 SAN

ID: DS-DC1

Installed: 06/01/12

Next Test: 05/24/23

Number of strings: 1

Number of cell/string: 60

String Names:

1) String 1

Test Setup

Date of Test: 05/24/17

Start Time of Test: 09:24:29 am

Ending Time of Test: 10:27:45 am

Test Type: Performance

Load Type: Constant Current

Rated Time: 01:00:00

Cell Voltage Warning: 1.750

Battery Voltage Warning: 105.0

Cell Voltage Shutdown: 1.000

Battery Voltage Shutdown: 105.0

Temperature at Time of Test: 77° F

TEST was Temperature Corrected to IEEE Standards

Total Programmed Test Time: 10:00:00

Actual Discharge Time: 01:02:49

Number of Test Steps: 1

Step 1 duration = 10:00:00 @ 51 Amps TEMPERATURE CORRECTED TO 51 Amps

OV/Load

Test Time	Battery Voltage	Battery Load
00:00:00	127.7	51.4
00:05:00	115.7	52.4
00:10:00	115.4	51.9
00:15:00	115.0	52.2
00:20:00	114.5	51.8
00:25:00	113.8	51.8
00:30:00	113.3	51.8
00:35:00	112.6	51.8
00:40:00	111.7	51.6
00:45:00	111.0	51.8
00:50:00	110.2	52.0
00:55:00	109.0	51.7
01:00:00	107.2	52.0
01:02:49	105.0	51.5

Test Results

The Following cells dropped below the low threshold level of 1.750 Vs

Cell	Step	Step Time	Test Time	Capacity(%)
String: String 1				
2	1	00:58:56	00:58:56	98.2
3	1	00:56:36	00:56:36	94.3
4	1	01:02:32	01:02:32	104.2
9	1	01:00:42	01:00:42	101.2
11	1	00:59:24	00:59:24	99.0
13	1	00:58:49	00:58:49	98.0
14	1	00:55:54	00:55:54	93.2
15	1	00:55:49	00:55:49	93.0
16	1	00:56:51	00:56:51	94.8
17	1	00:59:55	00:59:55	99.9
18	1	00:59:38	00:59:38	99.4
19	1	00:55:50	00:55:50	93.1
20	1	00:57:58	00:57:58	96.6
21	1	01:01:37	01:01:37	102.7
22	1	00:59:51	00:59:51	99.8
23	1	01:01:15	01:01:15	102.1
24	1	01:00:53	01:00:53	101.5
25	1	01:01:24	01:01:24	102.3
26	1	00:55:51	00:55:51	93.1
27	1	01:00:49	01:00:49	101.4
28	1	01:00:32	01:00:32	100.9
58	1	00:58:15	00:58:15	97.1
59	1	00:57:15	00:57:15	95.4
60	1	00:58:51	00:58:51	98.1

The Following Cells Failed the CAPACITY TEST(BELOW 80%):

Cell	Capacity(%)
None	

Battery string results:

Battery Capacity = 104.7 %

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
1	2.213	1.982	1.897	1.791
2	2.209	2.028	1.892	< 1.716 >
3	2.202	2.027	1.895	< 1.612 >
4	2.203	2.027	1.893	< 1.744 >
5	2.199	2.037	1.894	1.800
6	2.198	2.033	1.891	1.792
7	2.203	2.033	1.895	1.791
8	2.199	2.030	1.891	1.787
9	2.204	2.020	1.894	< 1.729 >
10	2.203	2.129	1.898	1.750
11	2.203	2.119	1.891	< 1.713 >
12	2.201	2.116	1.892	1.752
13	2.202	2.112	1.892	< 1.701 >
14	2.201	2.006	1.892	< 1.510 >
15	2.202	2.072	1.892	< 1.475 >
16	2.199	2.068	1.892	< 1.645 >
17	2.199	2.010	1.895	< 1.718 >
18	2.197	2.062	1.897	< 1.719 >
19	2.198	2.056	1.893	< 1.549 >
20	2.198	2.054	1.896	< 1.682 >
21	2.198	2.005	1.897	< 1.740 >
22	2.199	2.051	1.896	< 1.725 >
23	2.197	2.052	1.897	< 1.735 >
24	2.198	2.047	1.895	< 1.735 >
25	2.199	2.049	1.899	< 1.743 >
26	2.198	2.043	1.897	< 1.200 >
27	2.202	2.043	1.897	< 1.731 >
28	2.197	1.993	1.896	< 1.730 >
29	2.197	2.044	1.887	1.783
30	2.197	2.041	1.884	1.778
31	2.196	2.042	1.886	1.780
32	2.197	2.041	1.886	1.794
33	2.204	1.999	1.889	1.790
34	2.200	2.035	1.887	1.795
35	2.198	2.036	1.888	1.786
36	2.198	2.032	1.886	1.790
37	2.197	2.034	1.889	1.782
38	2.200	2.034	1.889	1.794
39	2.198	2.033	1.889	1.798
40	2.200	2.030	1.888	1.792
41	2.201	2.033	1.894	1.804
42	2.201	2.123	1.890	1.790
43	2.203	2.121	1.892	1.800
44	2.198	2.115	1.891	1.797
45	2.197	2.112	1.889	1.790
46	2.201	2.025	1.891	1.803
47	2.200	2.079	1.891	1.793
48	2.203	2.073	1.890	1.785
49	2.198	2.022	1.892	1.788

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
50	2.201	2.064	1.890	1.780
51	2.200	2.062	1.890	1.785
52	2.201	2.062	1.892	1.793
53	2.193	2.014	1.889	1.779
54	2.197	2.056	1.890	1.787
55	2.196	2.056	1.892	1.794
56	2.198	2.055	1.892	1.795
57	2.207	2.049	1.891	1.758
58	2.201	2.041	1.889	< 1.687 >
59	2.202	2.039	1.889	< 1.646 >
60	2.201	2.039	1.889	< 1.716 >

Cell Tabular

Load (amps):	0.0	51.4	52.4	51.9	52.2	51.8	51.8	51.8	51.8	51.6	51.8	52.0
Battery Voltage:	132.9	127.7	115.7	115.4	115.0	114.5	113.8	113.3	112.6	111.7	111.0	110.2
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
1	2.213	1.982	1.918	1.913	1.907	1.896	1.885	1.880	1.869	1.852	1.846	1.835
2	2.209	2.028	1.912	1.906	1.901	1.884	1.873	1.862	1.851	1.834	1.818	1.801
3	2.202	2.027	1.912	1.906	1.901	1.884	1.878	1.862	1.851	1.829	1.812	1.796
4	2.203	2.027	1.911	1.911	1.900	1.888	1.877	1.866	1.855	1.844	1.827	1.811
5	2.199	2.037	1.917	1.917	1.912	1.906	1.895	1.890	1.879	1.867	1.856	1.845
6	2.198	2.033	1.914	1.914	1.908	1.903	1.892	1.886	1.875	1.864	1.848	1.837
7	2.203	2.033	1.918	1.918	1.913	1.902	1.896	1.885	1.880	1.863	1.852	1.841
8	2.199	2.030	1.914	1.914	1.908	1.897	1.892	1.881	1.870	1.858	1.847	1.837
9	2.204	2.020	1.912	1.912	1.901	1.889	1.878	1.868	1.856	1.840	1.829	1.812
10	2.203	2.129	1.917	1.917	1.906	1.895	1.884	1.873	1.862	1.845	1.834	1.818
11	2.203	2.119	1.908	1.908	1.897	1.886	1.875	1.864	1.853	1.836	1.820	1.803
12	2.201	2.116	1.909	1.909	1.899	1.887	1.882	1.871	1.860	1.842	1.831	1.814
13	2.202	2.112	1.908	1.908	1.897	1.886	1.875	1.864	1.853	1.835	1.819	1.802
14	2.201	2.006	1.908	1.903	1.897	1.881	1.870	1.859	1.848	1.831	1.809	1.792
15	2.202	2.072	1.909	1.904	1.893	1.881	1.870	1.859	1.842	1.825	1.809	1.787
16	2.199	2.068	1.908	1.903	1.897	1.881	1.870	1.858	1.848	1.831	1.814	1.792
17	2.199	2.010	1.913	1.913	1.902	1.891	1.880	1.869	1.858	1.840	1.823	1.807
18	2.197	2.062	1.913	1.913	1.902	1.891	1.880	1.869	1.858	1.841	1.824	1.808
19	2.198	2.056	1.911	1.905	1.894	1.883	1.872	1.861	1.844	1.827	1.811	1.789
20	2.198	2.054	1.913	1.907	1.902	1.885	1.874	1.863	1.852	1.835	1.819	1.797
21	2.198	2.005	1.912	1.912	1.906	1.895	1.884	1.873	1.856	1.845	1.829	1.812
22	2.199	2.051	1.913	1.907	1.902	1.891	1.880	1.869	1.852	1.841	1.824	1.808
23	2.197	2.052	1.912	1.912	1.901	1.889	1.884	1.868	1.856	1.840	1.829	1.812
24	2.198	2.047	1.912	1.906	1.901	1.889	1.878	1.868	1.856	1.840	1.823	1.807
25	2.199	2.049	1.916	1.911	1.905	1.894	1.883	1.872	1.861	1.844	1.828	1.817
26	2.198	2.043	1.914	1.908	1.897	1.886	1.875	1.859	1.848	1.831	1.814	1.787
27	2.202	2.043	1.914	1.908	1.903	1.892	1.881	1.870	1.859	1.842	1.825	1.809
28	2.197	1.993	1.914	1.908	1.903	1.892	1.881	1.870	1.853	1.842	1.825	1.809
29	2.197	2.044	1.912	1.912	1.906	1.901	1.889	1.884	1.873	1.856	1.845	1.834
30	2.197	2.041	1.911	1.911	1.905	1.894	1.888	1.877	1.866	1.855	1.844	1.828
31	2.196	2.042	1.913	1.913	1.907	1.896	1.891	1.880	1.868	1.857	1.846	1.830
32	2.197	2.041	1.913	1.913	1.907	1.901	1.889	1.884	1.873	1.862	1.851	1.834

Cell Tabular

Load (amps):	0.0	51.4	52.4	51.9	52.2	51.8	51.8	51.8	51.8	51.6	51.8	52.0
Battery Voltage:	132.9	127.7	115.7	115.4	115.0	114.5	113.8	113.3	112.6	111.7	111.0	110.2
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
33	2.204	1.999	1.918	1.912	1.912	1.901	1.896	1.885	1.874	1.863	1.851	1.840
34	2.200	2.035	1.912	1.912	1.907	1.900	1.895	1.884	1.872	1.861	1.850	1.839
35	2.198	2.036	1.914	1.914	1.909	1.898	1.892	1.881	1.870	1.858	1.847	1.836
36	2.198	2.032	1.912	1.912	1.907	1.896	1.890	1.879	1.868	1.857	1.846	1.835
37	2.197	2.034	1.914	1.914	1.909	1.898	1.892	1.881	1.870	1.859	1.848	1.831
38	2.200	2.034	1.916	1.916	1.910	1.899	1.894	1.882	1.877	1.860	1.849	1.838
39	2.198	2.033	1.916	1.916	1.910	1.899	1.894	1.882	1.877	1.866	1.849	1.838
40	2.200	2.030	1.913	1.913	1.908	1.897	1.891	1.880	1.875	1.858	1.847	1.836
41	2.201	2.033	1.920	1.920	1.915	1.904	1.898	1.887	1.881	1.870	1.859	1.843
42	2.201	2.123	1.918	1.912	1.907	1.901	1.890	1.885	1.874	1.863	1.851	1.840
43	2.203	2.121	1.917	1.917	1.911	1.906	1.895	1.889	1.878	1.867	1.856	1.845
44	2.198	2.115	1.919	1.914	1.908	1.902	1.897	1.886	1.875	1.864	1.853	1.841
45	2.197	2.112	1.912	1.912	1.907	1.901	1.890	1.885	1.874	1.863	1.851	1.835
46	2.201	2.025	1.914	1.914	1.909	1.904	1.898	1.887	1.876	1.865	1.854	1.843
47	2.200	2.079	1.914	1.914	1.909	1.904	1.892	1.881	1.876	1.859	1.848	1.837
48	2.203	2.073	1.912	1.912	1.907	1.896	1.890	1.879	1.868	1.857	1.846	1.829
49	2.198	2.022	1.916	1.916	1.910	1.899	1.894	1.882	1.877	1.860	1.849	1.838
50	2.201	2.064	1.913	1.913	1.908	1.897	1.891	1.880	1.869	1.858	1.847	1.830
51	2.200	2.062	1.913	1.913	1.908	1.902	1.891	1.880	1.875	1.864	1.847	1.836
52	2.201	2.062	1.914	1.914	1.909	1.904	1.892	1.887	1.876	1.865	1.854	1.837
53	2.193	2.014	1.913	1.908	1.908	1.897	1.891	1.880	1.869	1.858	1.841	1.830
54	2.197	2.056	1.914	1.914	1.909	1.898	1.892	1.881	1.870	1.859	1.848	1.831
55	2.196	2.056	1.917	1.917	1.911	1.900	1.895	1.884	1.872	1.861	1.850	1.839
56	2.198	2.055	1.917	1.917	1.911	1.900	1.895	1.884	1.878	1.867	1.850	1.839
57	2.207	2.049	1.908	1.902	1.897	1.886	1.880	1.869	1.858	1.847	1.830	1.814
58	2.201	2.041	1.906	1.900	1.895	1.884	1.872	1.861	1.845	1.834	1.817	1.795
59	2.202	2.039	1.906	1.900	1.895	1.884	1.872	1.856	1.845	1.834	1.811	1.795
60	2.201	2.039	1.906	1.900	1.895	1.884	1.872	1.861	1.850	1.834	1.817	1.800

Cell Tabular

Load (amps):	**51.7**	**52.0**	**51.5**
Battery Voltage:	**109.0**	**107.2**	**105.0**
Cell	**00:55:00**	**01:00:00**	**01:02:49**

String: String 1

1	1.819	1.796	1.791									
2	1.779	< 1.743>	< 1.716>									
3	1.768	< 1.703>	< 1.612>									
4	1.794	1.766	< 1.744>									
5	1.829	1.811	1.800									
6	1.820	1.803	1.792									
7	1.824	1.802	1.791									
8	1.820	1.798	1.787									
9	1.790	1.756	< 1.729>									
10	1.801	1.772	1.750									
11	1.781	< 1.742>	< 1.713>									
12	1.798	1.769	1.752									
13	1.780	< 1.735>	< 1.701>									
14	1.759	< 1.690>	< 1.510>									
15	1.759	< 1.689>	< 1.475>									
16	1.764	< 1.714>	< 1.645>									
17	1.784	< 1.745>	< 1.718>									
18	1.786	< 1.747>	< 1.719>									
19	1.761	< 1.692>	< 1.549>									
20	1.775	< 1.729>	< 1.682>									
21	1.795	1.762	< 1.740>									
22	1.786	< 1.747>	< 1.725>									
23	1.790	1.756	< 1.735>									
24	1.790	1.756	< 1.735>									
25	1.794	1.760	< 1.743>									
26	1.759	< 1.681>	< 1.200>									
27	1.792	1.759	< 1.731>									
28	1.786	1.752	< 1.730>									
29	1.818	1.794	1.783									
30	1.817	1.794	1.778									
31	1.813	1.791	1.780									
32	1.823	1.800	1.794									

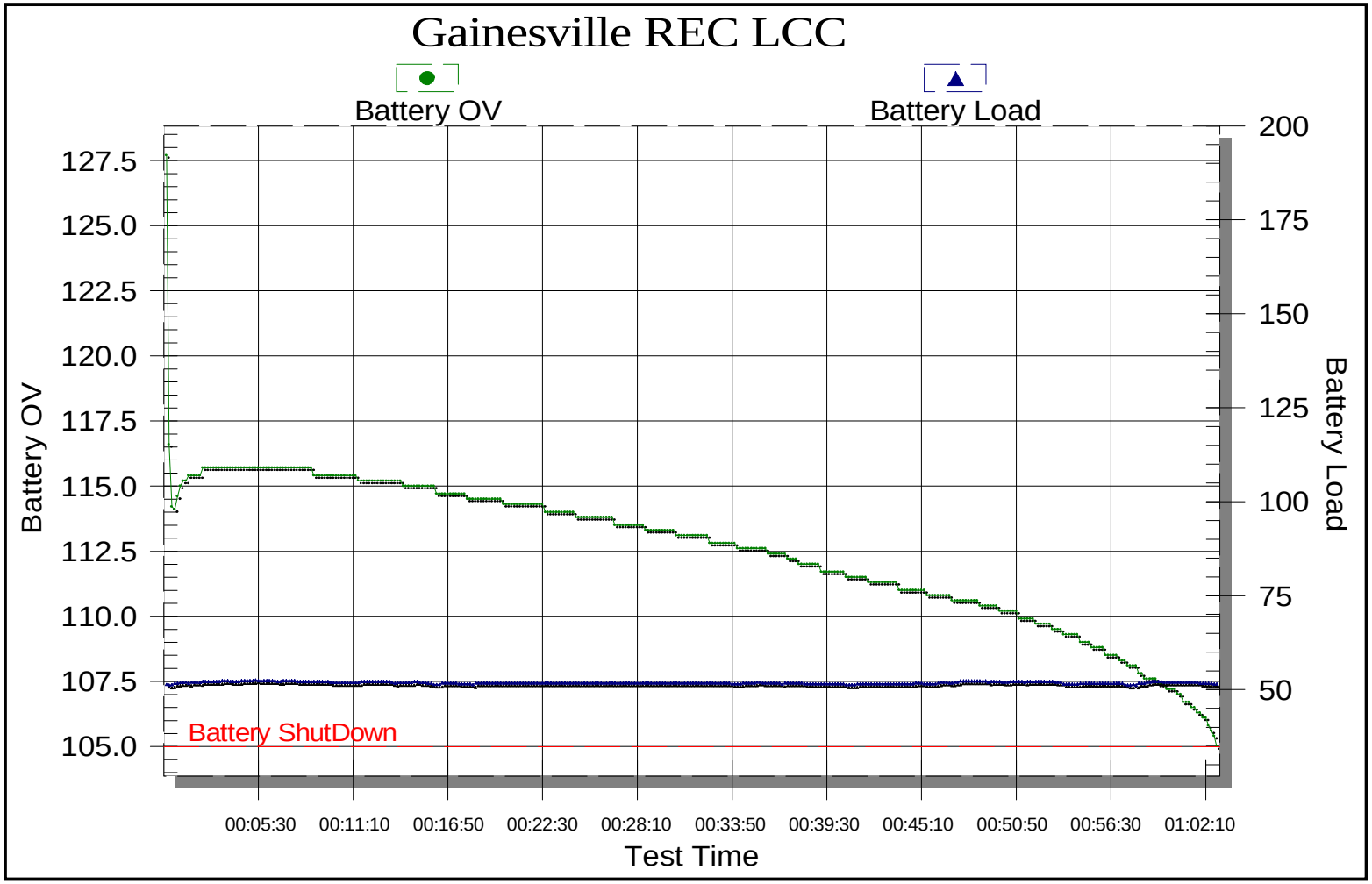
Cell Tabular

Load (amps):	**51.7**	**52.0**	**51.5**
Battery Voltage:	**109.0**	**107.2**	**105.0**
Cell	**00:55:00**	**01:00:00**	**01:02:49**

String: String 1

33	**1.824**	**1.802**	**1.790**									
34	**1.823**	**1.806**	**1.795**									
35	**1.819**	**1.797**	**1.786**									
36	**1.818**	**1.802**	**1.790**									
37	**1.820**	**1.798**	**1.782**									
38	**1.827**	**1.805**	**1.794**									
39	**1.827**	**1.804**	**1.798**									
40	**1.825**	**1.803**	**1.792**									
41	**1.831**	**1.815**	**1.804**									
42	**1.824**	**1.802**	**1.790**									
43	**1.828**	**1.811**	**1.800**									
44	**1.825**	**1.808**	**1.797**									
45	**1.824**	**1.802**	**1.790**									
46	**1.831**	**1.808**	**1.803**									
47	**1.820**	**1.804**	**1.793**									
48	**1.818**	**1.796**	**1.785**									
49	**1.821**	**1.799**	**1.788**									
50	**1.819**	**1.797**	**1.780**									
51	**1.819**	**1.796**	**1.785**									
52	**1.826**	**1.804**	**1.793**									
53	**1.814**	**1.790**	**1.779**									
54	**1.820**	**1.798**	**1.787**									
55	**1.823**	**1.799**	**1.794**									
56	**1.828**	**1.806**	**1.795**									
57	**1.797**	**1.775**	**1.758**									
58	**1.773**	**< 1.727>**	**< 1.687>**									
59	**1.767**	**< 1.716>**	**< 1.646>**									
60	**1.778**	**< 1.744>**	**< 1.716>**									

Battery OV & Load Graph



Capacity Test
Performance

5/24/2017

Customer:	Gainesville Renewable Energy Center LLC		
Address:	11201 NW US Hwy 441 Gainesville, FL 32653-8001	Job Number:	1015045
		Technician:	Eric Carroll, Ryan Cooper
Site Contact:	Tommy Gardner	Phone #:	(386) 315-8012

Battery Nameplate Data				Equipment Nameplate Data			
Manufacturer:	C&D			Datasheet Attached:	Yes	Type:	Charger
Model:	4JC 100 SAN			Equipment ID:	DS-DC2	Input Voltage:	480 VAC
Date code:	Jun-12			Manufacturer:	C&D	Input Current:	7 AAC
Battery Type:	Vented Lead-Calcium			Model #:	ARR-M12525F	DC Voltage:	125 VDC
Jars per String:	60	# of Strings:	1	Serial #:	ECS127432	DC Current:	25 ADC
Cells per Jar:	1	Cells / String:	60	Size: (AMPS, kW, kVA)	25 ADC	Part #:	N/A
Capacity:	99.4%			Date code:	May-12		

Measurement and Inspection Data

Electrical Inspection			Visual Inspection		
	As Found	As Left		Condition	Notes
Alarms	OK	OK	*Cell Numbering*	PROBLEM	See Below
Float Voltage	134.6 VDC	134.6 VDC	*Water Level*	OK	
Equalize Voltage	139.8 VDC	139.8 VDC	*Visual Plate Inspection*	OK	
DC + to G	66.8 VDC	66.8 VDC	*Jar Cover Inspection*	OK	
DC - to G	66.8 VDC	66.8 VDC	*Connection Torque*	OK	
DC Amps	0.0 ADC	0.0 ADC	*Visible Heat Damage*	OK	
Ripple Volts	12 mVAC	12 mVAC	*Spill Containment*	OK	
Ripple Current	0.1 AAC	0.1 AAC	*Cables/Connectors*	OK	
Room Temp	77.0 °F	77.0 °F	*Post Seals*	OK	
			Flame Arrestors	OK	

Manufacturer Recommended Voltage Ranges @ 77.0 °F

Float Voltage					Equalize Voltage			
Minimum:	132.0 VDC	*Maximum:*	135.0 VDC		Minimum:	139.8 VDC	*Maximum:*	142.8 VDC

Comments

Performed battery performance (capacity) test IAW NERC/IEEE Standards.

The cells should be numbered following the electrical circuit of the battery, beginning at the positive post of cell 1, in accordance with the applicable IEEE Standard and the battery manufacturer's installation instructions.

Battery performance (capacity) test passed with 99.4% capacity.

Deficiencies and Recommendations

Continue to perform battery PMI and PM IAW NERC/IEEE Standards.

Jars are not numbered properly. Recommend numbering the string starting with the most positive cell.

BCT-2000 Battery Load Test Report

Battery Information

Name: DS-DC2

Manufacturer: C&D

Model: 4JC 100 SAN

ID: DS-DC2

Installed: 06/01/12

Next Test: 05/24/23

Number of strings: 1

Number of cell/string: 60

String Names:

1) String 1

Test Setup

Date of Test: 05/24/17

Start Time of Test: 11:46:15 am

Ending Time of Test: 12:46:16 pm

Test Type: Performance

Load Type: Constant Current

Rated Time: 01:00:00

Cell Voltage Warning: 1.750

Battery Voltage Warning: 105.0

Cell Voltage Shutdown: 1.200

Battery Voltage Shutdown: 105.0

Temperature at Time of Test: 77° F

Total Programmed Test Time: 10:00:00

Actual Discharge Time: 00:59:37

Number of Test Steps: 1

Step 1 duration = 10:00:00 @ 51 Amps

OV/Load

Test Time	Battery Voltage	Battery Load
00:00:00	127.7	51.3
00:05:00	115.7	51.6
00:10:00	115.2	51.7
00:15:00	114.7	51.4
00:20:00	114.2	51.8
00:25:00	113.5	51.9
00:30:00	112.7	51.9
00:35:00	112.0	51.6
00:40:00	111.3	51.4
00:45:00	110.3	51.8
00:50:00	109.0	51.6
00:55:00	107.7	51.7
00:59:37	105.1	51.3

Test Results

The Following cells dropped below the low threshold level of 1.750 Vs

Cell	Step	Step Time	Test Time	Capacity(%)
String: String 1				
25	1	00:57:57	00:57:57	96.6
26	1	00:57:27	00:57:27	95.8
27	1	00:55:46	00:55:46	92.9
28	1	00:58:37	00:58:37	97.7
29	1	00:57:18	00:57:18	95.5
30	1	00:55:28	00:55:28	92.4
31	1	00:55:55	00:55:55	93.2
32	1	00:55:29	00:55:29	92.5
33	1	00:56:00	00:56:00	93.3
34	1	00:53:39	00:53:39	89.4
35	1	00:56:27	00:56:27	94.1
36	1	00:54:28	00:54:28	90.8
37	1	00:54:02	00:54:02	90.1
38	1	00:55:47	00:55:47	93.0
39	1	00:56:31	00:56:31	94.2
40	1	00:57:11	00:57:11	95.3
41	1	00:57:33	00:57:33	95.9
42	1	00:56:36	00:56:36	94.3
43	1	00:56:50	00:56:50	94.7
44	1	00:58:44	00:58:44	97.9
45	1	00:56:45	00:56:45	94.6
46	1	00:55:00	00:55:00	91.7
47	1	00:54:25	00:54:25	90.7
48	1	00:57:25	00:57:25	95.7
49	1	00:55:05	00:55:05	91.8
50	1	00:56:20	00:56:20	93.9
51	1	00:55:53	00:55:53	93.1
52	1	00:55:10	00:55:10	91.9
53	1	00:58:32	00:58:32	97.6
54	1	00:55:10	00:55:10	91.9
55	1	00:58:10	00:58:10	96.9
56	1	00:58:19	00:58:19	97.2
57	1	00:55:41	00:55:41	92.8
58	1	00:54:48	00:54:48	91.3
59	1	00:55:46	00:55:46	92.9
60	1	00:57:18	00:57:18	95.5

The Following Cells Failed the CAPACITY TEST(BELOW 80%):

Cell	Capacity(%)
None	

Battery string results:

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
1	2.213	2.036	1.899	1.804
2	2.211	2.034	1.895	1.798
3	2.210	2.125	1.895	1.794
4	2.206	2.118	1.893	1.790
5	2.205	2.118	1.896	1.795
6	2.210	2.114	1.895	1.792
7	2.206	2.024	1.895	1.792
8	2.207	2.077	1.893	1.790
9	2.206	2.072	1.895	1.790
10	2.206	1.946	1.893	1.790
11	2.205	2.066	1.895	1.798
12	2.206	2.059	1.892	1.795
13	2.202	2.060	1.895	1.792
14	2.203	2.015	1.896	1.792
15	2.204	2.059	1.896	1.800
16	2.204	2.054	1.894	1.793
17	2.206	2.051	1.895	1.790
18	2.205	2.006	1.893	1.788
19	2.205	2.049	1.895	1.808
20	2.206	2.046	1.894	1.801
21	2.204	2.045	1.891	1.790
22	2.206	2.041	1.887	1.792
23	2.204	2.044	1.891	1.795
24	2.204	2.041	1.892	1.791
25	2.207	2.035	1.895	< 1.732 >
26	2.204	1.913	1.896	< 1.731 >
27	2.200	2.030	1.895	< 1.701 >
28	2.204	2.029	1.895	< 1.733 >
29	2.201	2.026	1.894	< 1.720 >
30	2.206	2.021	1.894	< 1.689 >
31	2.203	2.023	1.896	< 1.700 >
32	2.203	2.041	1.915	< 1.690 >
33	2.210	2.020	1.899	< 1.697 >
34	2.211	2.014	1.896	< 1.623 >
35	2.209	2.129	1.899	< 1.713 >
36	2.210	2.120	1.895	< 1.645 >
37	2.206	2.117	1.897	< 1.636 >
38	2.209	2.113	1.898	< 1.708 >
39	2.204	2.010	1.898	< 1.715 >
40	2.209	2.072	1.895	< 1.721 >
41	2.208	2.071	1.897	< 1.723 >
42	2.205	1.924	1.898	< 1.719 >
43	2.209	2.060	1.896	< 1.720 >
44	2.208	2.057	1.897	< 1.739 >
45	2.205	2.054	1.896	< 1.716 >
46	2.208	1.997	1.897	< 1.685 >
47	2.199	2.048	1.895	< 1.662 >
48	2.203	2.048	1.897	< 1.725 >
49	2.205	2.044	1.894	< 1.668 >

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
50	2.206	1.990	1.892	< 1.713 >
51	2.200	2.041	1.892	< 1.703 >
52	2.203	2.036	1.890	< 1.688 >
53	2.205	2.039	1.892	< 1.736 >
54	2.203	2.034	1.892	< 1.676 >
55	2.205	2.036	1.892	< 1.735 >
56	2.206	2.032	1.891	< 1.735 >
57	2.205	2.031	1.894	< 1.698 >
58	2.202	1.907	1.895	< 1.670 >
59	2.206	2.027	1.894	< 1.701 >
60	2.204	2.027	1.894	< 1.726 >

Cell Tabular

Load (amps):	0.0	51.3	51.6	51.7	51.4	51.8	51.9	51.9	51.6	51.4	51.8	51.6
Battery Voltage:	133.4	127.7	115.7	115.2	114.7	114.2	113.5	112.7	112.0	111.3	110.3	109.0
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
1	2.213	2.036	1.921	1.915	1.909	1.904	1.898	1.887	1.876	1.865	1.854	1.837
2	2.211	2.034	1.920	1.915	1.909	1.904	1.893	1.887	1.876	1.865	1.854	1.837
3	2.210	2.125	1.918	1.912	1.906	1.901	1.889	1.884	1.873	1.862	1.844	1.827
4	2.206	2.118	1.917	1.912	1.906	1.895	1.889	1.878	1.867	1.856	1.845	1.829
5	2.205	2.118	1.919	1.919	1.913	1.902	1.891	1.885	1.874	1.863	1.845	1.829
6	2.210	2.114	1.919	1.914	1.908	1.897	1.892	1.881	1.870	1.858	1.847	1.831
7	2.206	2.024	1.920	1.914	1.908	1.897	1.892	1.881	1.870	1.858	1.847	1.831
8	2.207	2.077	1.917	1.912	1.906	1.901	1.889	1.878	1.867	1.856	1.845	1.829
9	2.206	2.072	1.918	1.913	1.907	1.896	1.891	1.880	1.868	1.857	1.846	1.830
10	2.206	1.946	1.918	1.912	1.906	1.895	1.889	1.878	1.867	1.856	1.845	1.829
11	2.205	2.066	1.920	1.914	1.908	1.903	1.892	1.881	1.870	1.864	1.847	1.831
12	2.206	2.059	1.917	1.912	1.906	1.895	1.889	1.878	1.867	1.856	1.845	1.829
13	2.202	2.060	1.919	1.914	1.908	1.897	1.892	1.881	1.870	1.858	1.847	1.831
14	2.203	2.015	1.920	1.914	1.908	1.897	1.892	1.881	1.870	1.858	1.847	1.831
15	2.204	2.059	1.921	1.916	1.911	1.905	1.894	1.888	1.877	1.866	1.850	1.839
16	2.204	2.054	1.915	1.915	1.904	1.898	1.893	1.882	1.871	1.860	1.843	1.826
17	2.206	2.051	1.918	1.912	1.906	1.901	1.889	1.878	1.867	1.856	1.845	1.829
18	2.205	2.006	1.915	1.909	1.904	1.893	1.887	1.876	1.865	1.854	1.843	1.826
19	2.205	2.049	1.918	1.913	1.907	1.902	1.896	1.885	1.874	1.868	1.852	1.841
20	2.206	2.046	1.917	1.912	1.906	1.901	1.895	1.884	1.873	1.862	1.851	1.834
21	2.204	2.045	1.917	1.912	1.906	1.901	1.889	1.878	1.867	1.856	1.845	1.829
22	2.206	2.041	1.914	1.908	1.903	1.897	1.886	1.881	1.870	1.858	1.842	1.831
23	2.204	2.044	1.918	1.912	1.906	1.901	1.889	1.884	1.873	1.862	1.845	1.834
24	2.204	2.041	1.918	1.913	1.907	1.896	1.891	1.880	1.868	1.857	1.846	1.830
25	2.207	2.035	1.916	1.905	1.899	1.888	1.877	1.861	1.850	1.839	1.816	1.800
26	2.204	1.913	1.914	1.909	1.898	1.887	1.876	1.860	1.849	1.837	1.815	1.799
27	2.200	2.030	1.916	1.905	1.899	1.883	1.872	1.860	1.849	1.832	1.815	1.788
28	2.204	2.029	1.916	1.905	1.899	1.888	1.877	1.861	1.850	1.839	1.822	1.800
29	2.201	2.026	1.912	1.906	1.895	1.884	1.873	1.862	1.851	1.834	1.816	1.794
30	2.206	2.021	1.912	1.902	1.896	1.885	1.868	1.857	1.841	1.830	1.808	1.784
31	2.203	2.023	1.913	1.907	1.896	1.885	1.874	1.857	1.846	1.830	1.813	1.791
32	2.203	2.041	1.914	1.903	1.897	1.881	1.870	1.857	1.846	1.830	1.808	1.785

Cell Tabular

Load (amps):	0.0	51.3	51.6	51.7	51.4	51.8	51.9	51.9	51.6	51.4	51.8	51.6
Battery Voltage:	133.4	127.7	115.7	115.2	114.7	114.2	113.5	112.7	112.0	111.3	110.3	109.0
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
33	2.210	2.020	1.917	1.906	1.900	1.883	1.872	1.861	1.845	1.833	1.811	1.789
34	2.211	2.014	1.911	1.900	1.894	1.878	1.867	1.856	1.839	1.822	1.800	1.772
35	2.209	2.129	1.916	1.905	1.899	1.888	1.877	1.860	1.849	1.832	1.816	1.788
36	2.210	2.120	1.913	1.901	1.890	1.879	1.868	1.857	1.840	1.823	1.806	1.778
37	2.206	2.117	1.914	1.902	1.891	1.880	1.869	1.858	1.841	1.825	1.802	1.780
38	2.209	2.113	1.916	1.905	1.899	1.888	1.871	1.860	1.843	1.832	1.810	1.788
39	2.204	2.010	1.915	1.909	1.898	1.887	1.876	1.865	1.848	1.831	1.815	1.792
40	2.209	2.072	1.912	1.906	1.894	1.883	1.872	1.861	1.845	1.828	1.811	1.789
41	2.208	2.071	1.911	1.906	1.894	1.883	1.872	1.861	1.845	1.833	1.817	1.795
42	2.205	1.924	1.915	1.909	1.898	1.887	1.876	1.859	1.848	1.831	1.815	1.792
43	2.209	2.060	1.909	1.904	1.898	1.887	1.876	1.859	1.848	1.831	1.815	1.792
44	2.208	2.057	1.914	1.908	1.897	1.885	1.873	1.862	1.851	1.835	1.818	1.796
45	2.205	2.054	1.913	1.907	1.896	1.885	1.873	1.862	1.846	1.835	1.812	1.790
46	2.208	1.997	1.910	1.905	1.893	1.882	1.871	1.860	1.843	1.827	1.810	1.782
47	2.199	2.048	1.907	1.901	1.890	1.879	1.868	1.856	1.839	1.828	1.806	1.782
48	2.203	2.048	1.914	1.908	1.897	1.886	1.875	1.863	1.847	1.836	1.819	1.797
49	2.205	2.044	1.911	1.906	1.894	1.883	1.872	1.856	1.845	1.828	1.806	1.784
50	2.206	1.990	1.911	1.906	1.894	1.882	1.871	1.859	1.848	1.831	1.815	1.787
51	2.200	2.041	1.910	1.904	1.898	1.887	1.876	1.859	1.842	1.831	1.809	1.787
52	2.203	2.036	1.908	1.902	1.891	1.880	1.869	1.858	1.841	1.825	1.808	1.780
53	2.205	2.039	1.914	1.908	1.897	1.886	1.875	1.863	1.852	1.836	1.819	1.797
54	2.203	2.034	1.912	1.906	1.894	1.883	1.872	1.856	1.845	1.828	1.806	1.784
55	2.205	2.036	1.914	1.908	1.897	1.886	1.875	1.862	1.851	1.835	1.818	1.796
56	2.206	2.032	1.914	1.908	1.897	1.886	1.875	1.863	1.847	1.836	1.819	1.796
57	2.205	2.031	1.911	1.906	1.894	1.883	1.872	1.861	1.845	1.833	1.811	1.789
58	2.202	1.907	1.912	1.906	1.894	1.883	1.872	1.861	1.845	1.828	1.810	1.782
59	2.206	2.027	1.910	1.905	1.899	1.882	1.871	1.859	1.848	1.831	1.815	1.787
60	2.204	2.027	1.911	1.906	1.900	1.889	1.878	1.861	1.850	1.833	1.816	1.794

Cell Tabular

Load (amps):	**51.7**	**51.3**
Battery Voltage:	**107.7**	**105.1**
Cell	**00:55:00**	**00:59:37**

String: String 1

1	**1.821**	**1.804**										
2	**1.821**	**1.798**										
3	**1.816**	**1.794**										
4	**1.812**	**1.790**										
5	**1.818**	**1.795**										
6	**1.814**	**1.792**										
7	**1.814**	**1.792**										
8	**1.812**	**1.790**										
9	**1.813**	**1.790**										
10	**1.812**	**1.790**										
11	**1.814**	**1.798**										
12	**1.812**	**1.795**										
13	**1.814**	**1.792**										
14	**1.814**	**1.792**										
15	**1.822**	**1.800**										
16	**1.815**	**1.793**										
17	**1.812**	**1.790**										
18	**1.810**	**1.788**										
19	**1.824**	**1.808**										
20	**1.823**	**1.801**										
21	**1.812**	**1.790**										
22	**1.814**	**1.792**										
23	**1.818**	**1.795**										
24	**1.813**	**1.791**										
25	**1.772**	**< 1.732>**										
26	**1.771**	**< 1.731>**										
27	**1.760**	**< 1.701>**										
28	**1.772**	**< 1.733>**										
29	**1.767**	**< 1.720>**										
30	**1.751**	**< 1.689>**										
31	**1.758**	**< 1.700>**										
32	**1.752**	**< 1.690>**										

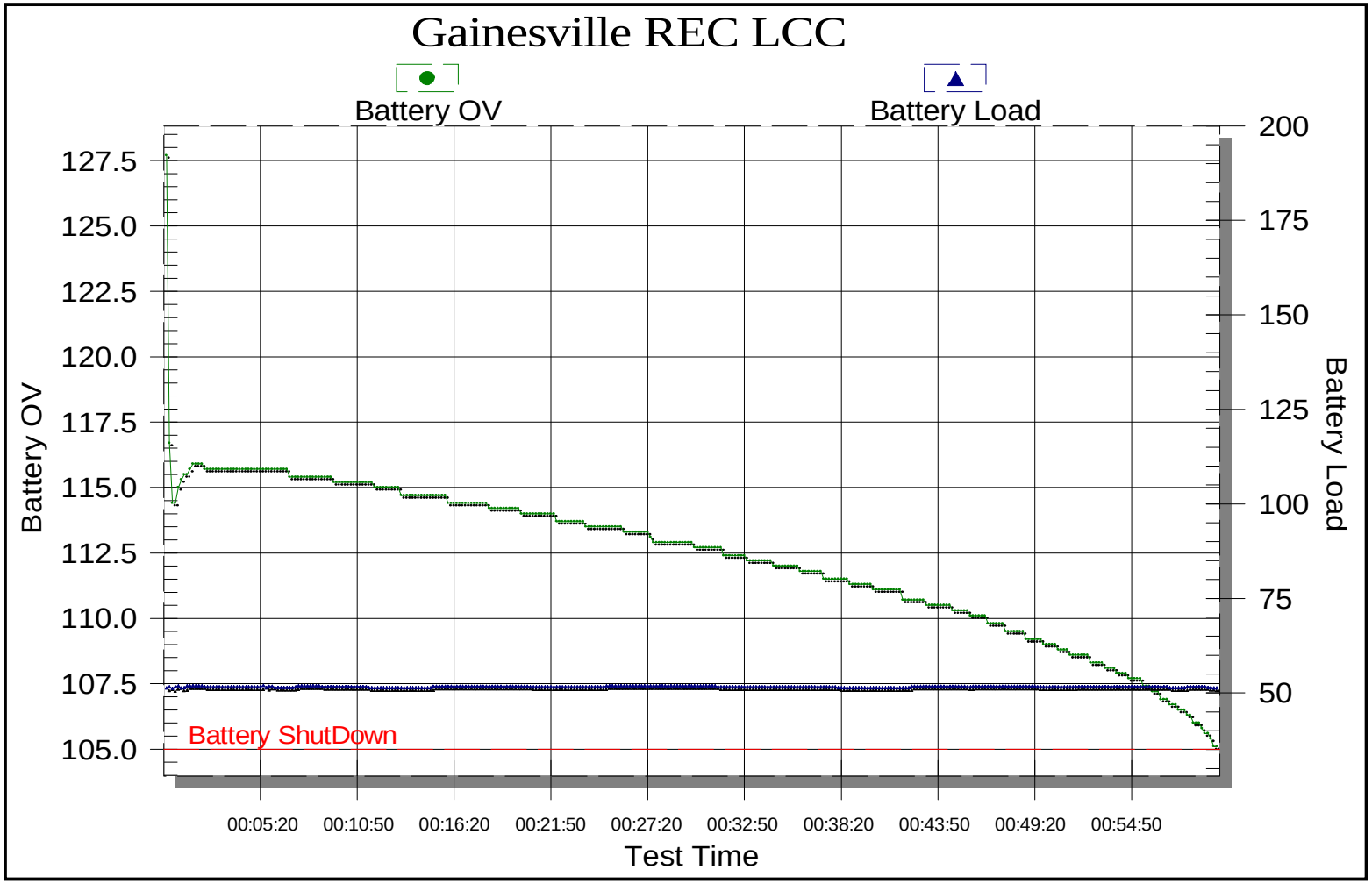
Cell Tabular

Load (amps):	**51.7**	**51.3**
Battery Voltage:	**107.7**	**105.1**
Cell	**00:55:00**	**00:59:37**

String: String 1

33	**1.756**	**< 1.697>**											
34	**< 1.734>**	**< 1.623>**											
35	**1.760**	**< 1.713>**											
36	**< 1.745>**	**< 1.645>**											
37	**< 1.741>**	**< 1.636>**											
38	**1.760**	**< 1.708>**											
39	**1.765**	**< 1.715>**											
40	**1.761**	**< 1.721>**											
41	**1.767**	**< 1.723>**											
42	**1.765**	**< 1.719>**											
43	**1.765**	**< 1.720>**											
44	**1.774**	**< 1.739>**											
45	**1.762**	**< 1.716>**											
46	**< 1.749>**	**< 1.685>**											
47	**< 1.744>**	**< 1.662>**											
48	**1.769**	**< 1.725>**											
49	**1.750**	**< 1.668>**											
50	**1.759**	**< 1.713>**											
51	**1.759**	**< 1.703>**											
52	**1.753**	**< 1.688>**											
53	**1.775**	**< 1.736>**											
54	**1.750**	**< 1.676>**											
55	**1.774**	**< 1.735>**											
56	**1.774**	**< 1.735>**											
57	**1.756**	**< 1.698>**											
58	**< 1.749>**	**< 1.670>**											
59	**1.759**	**< 1.701>**											
60	**1.766**	**< 1.726>**											

Battery OV & Load Graph



Capacity Test
Performance

5/23/2017

Customer:	Gainesville Renewable Energy Center LLC		
Address:	11201 NW US Hwy 441 Gainesville, FL 32653-8001	Job Number:	1015045
		Technician:	Eric Carroll, Ryan Cooper
Site Contact:	Tommy Gardner	Phone #:	(386) 315-8012

Battery Nameplate Data

Manufacturer:	Alcad		
Model:	LSe 1400		
Date code:	May-12		
Battery Type:	Vented Lead-Selenium		
Jars per String:	58	# of Strings:	1
Cells per Jar:	1	Cells / String:	58
Capacity:	110.4%		

Equipment Nameplate Data

Datasheet Attached:	Yes	Type:	UPS
Equipment ID:	Plant Battery String A	Input Voltage:	480 VAC
Manufacturer:	Gutor	Input Current:	79.41 AAC
Model #:	SDC 125-400	DC Voltage:	125 VDC
Serial #:	1120044001-01	DC Current:	400 ADC
Size: (AMPS, kW, kVA)	400 ADC	Part #:	EDC-BC-1001
Date code:	2012		

Measurement and Inspection Data

Electrical Inspection

	As Found	As Left
Alarms	OK	OK
Float Voltage	130.3 VDC	130.3 VDC
Equalize Voltage	135.1 VDC	135.1 VDC
DC + to G	65.1 VDC	65.1 VDC
DC - to G	65.0 VDC	65.0 VDC
DC Amps	0.0 ADC	0.0 ADC
Ripple Volts	41 mVAC	41 mVAC
Ripple Current	0.5 AAC	0.5 AAC
Room Temp	79.0 °F	79.0 °F

Visual Inspection

	Condition	Notes
Cell Numbering	OK	
Water Level	OK	
Visual Plate Inspection	OK	
Jar Cover Inspection	OK	
Connection Torque	OK	
Visible Heat Damage	OK	
Spill Containment	OK	
Cables/Connectors	OK	
Post Seals	OK	
Flame Arrestors	OK	

Manufacturer Recommended Voltage Ranges @ 77.0 °F

Float Voltage				Equalize Voltage			
Minimum:	128.8 VDC	*Maximum:*	N/A	Minimum:	135.1 VDC	*Maximum:*	139.2 VDC

Comments

Performed battery performance (capacity) test IAW NERC/IEEE Standards.

Battery performance (capacity) test passed with 110.4% capacity.

Deficiencies and Recommendations

Continue to perform battery PMI and PM IAW NERC/IEEE Standards.

BCT-2000 Battery Load Test Report

Battery Information

Name: Plant Battery String A

Manufacturer: Alcad

Model: LSe 1400

ID:

Installed: 05/01/12

Next Test: 05/23/23

Number of strings: 1

Number of cell/string: 58

String Names:

1) String 1

Test Setup

Date of Test: 05/23/17

Start Time of Test: 10:38:13 am

Ending Time of Test: 12:52:07 pm

Test Type: Performance

Load Type: Constant Current

Rated Time: 02:00:00

Cell Voltage Warning: 1.750

Battery Voltage Warning: 101.5

Cell Voltage Shutdown: 0.000

Battery Voltage Shutdown: 101.5

Temperature at Time of Test: 79° F

TEST was Temperature Corrected to IEEE Standards

Total Programmed Test Time: 10:00:00

Actual Discharge Time: 02:12:27

Number of Test Steps: 1

Step 1 duration = 10:00:00 @ 476 Amps TEMPERATURE CORRECTED TO 482 Amps

OV/Load

Test Time	Battery Voltage	Battery Load
00:00:00	123.6	483.3
00:05:00	112.8	483.0
00:10:00	112.6	483.1
00:15:00	112.4	482.9
00:20:00	112.3	483.1
00:25:00	111.9	482.8
00:30:00	111.6	483.0
00:35:00	111.3	483.0
00:40:00	111.0	483.0
00:45:00	110.6	483.1
00:50:00	110.4	482.8
00:55:00	110.0	482.7
01:00:00	109.7	483.1
01:05:00	109.4	482.8
01:10:00	108.9	483.0
01:15:00	108.4	482.7
01:20:00	107.9	482.8
01:25:00	107.5	482.8
01:30:00	107.0	483.0
01:35:00	106.6	482.7
01:40:00	106.0	483.0
01:45:00	105.6	482.8
01:50:00	105.0	482.9
01:55:00	104.3	483.0
02:00:00	103.6	482.6
02:05:00	102.7	483.0
02:10:00	101.9	482.7
02:12:27	101.5	483.0

Test Results

The Following cells dropped below the low threshold level of 1.750 Vs

Cell	Step	Step Time	Test Time	Capacity(%)
String: String 1				
2	1	02:11:49	02:11:49	109.8
9	1	02:12:12	02:12:12	110.2
10	1	02:10:27	02:10:27	108.7
11	1	02:11:41	02:11:41	109.7
12	1	02:10:58	02:10:58	109.1
16	1	02:07:39	02:07:39	106.4
17	1	02:08:32	02:08:32	107.1
18	1	02:11:04	02:11:04	109.2
19	1	02:11:39	02:11:39	109.7
20	1	02:11:26	02:11:26	109.5
21	1	02:10:04	02:10:04	108.4
22	1	02:10:16	02:10:16	108.6
23	1	02:10:16	02:10:16	108.6
24	1	02:11:00	02:11:00	109.2
25	1	02:12:10	02:12:10	110.1
26	1	02:09:03	02:09:03	107.5
28	1	00:01:22	00:01:22	1.1
29	1	00:01:22	00:01:22	1.1
30	1	02:12:22	02:12:22	110.3
31	1	02:12:02	02:12:02	110.0
32	1	02:10:39	02:10:39	108.9
35	1	02:11:37	02:11:37	109.7
37	1	02:12:15	02:12:15	110.2
38	1	02:09:39	02:09:39	108.0
40	1	02:11:45	02:11:45	109.8
41	1	02:11:38	02:11:38	109.7
42	1	02:08:39	02:08:39	107.2
46	1	02:12:08	02:12:08	110.1
50	1	02:09:41	02:09:41	108.1
51	1	02:09:32	02:09:32	107.9
52	1	02:12:12	02:12:12	110.2
53	1	02:11:00	02:11:00	109.2
54	1	02:11:56	02:11:56	109.9
56	1	02:10:51	02:10:51	109.0
57	1	02:12:17	02:12:17	110.2

The Following Cells Failed the CAPACITY TEST(BELOW 80%):

Cell	Capacity(%)
String: String 1	
28	1.1
29	1.1

Battery string results:

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
1	2.214	2.137	1.934	1.751
2	2.210	2.129	1.926	< 1.749 >
3	2.210	2.029	1.929	1.750
4	2.208	2.075	1.926	1.753
5	2.208	2.073	1.926	1.753
6	2.209	1.932	1.929	1.755
7	2.207	2.064	1.924	1.754
8	2.207	2.061	1.924	1.753
9	2.205	2.059	1.924	< 1.748 >
10	2.204	1.919	1.924	< 1.741 >
11	2.206	2.056	1.923	< 1.746 >
12	2.206	2.054	1.923	< 1.747 >
13	2.208	2.057	1.929	1.757
14	2.207	1.927	1.925	1.750
15	2.209	2.064	1.937	1.762
16	2.201	2.045	1.924	< 1.730 >
17	2.201	2.039	1.919	< 1.733 >
18	2.204	2.044	1.926	< 1.747 >
19	2.204	2.044	1.925	< 1.746 >
20	2.205	2.044	1.925	< 1.748 >
21	2.204	2.042	1.925	< 1.740 >
22	2.199	1.923	1.924	< 1.738 >
23	2.198	2.036	1.924	< 1.739 >
24	2.200	2.036	1.924	< 1.747 >
25	2.201	2.037	1.927	< 1.748 >
26	2.200	1.921	1.927	< 1.737 >
27	2.204	2.036	1.929	1.754
28	2.204	2.032	1.925	< 1.737 >
29	2.205	1.970	1.862	< 1.684 >
30	2.201	1.929	1.924	< 1.744 >
31	2.203	2.129	1.920	< 1.744 >
32	2.199	2.125	1.920	< 1.740 >
33	2.208	2.131	1.930	1.762
34	2.206	2.126	1.925	1.758
35	2.203	2.022	1.923	< 1.746 >
36	2.205	2.071	1.921	1.753
37	2.205	2.069	1.922	< 1.746 >
38	2.203	1.926	1.924	< 1.743 >
39	2.205	2.065	1.929	1.757
40	2.204	2.061	1.926	< 1.749 >
41	2.202	2.057	1.928	< 1.746 >
42	2.203	1.912	1.916	< 1.734 >
43	2.208	1.925	1.930	1.760
44	2.209	2.064	1.932	1.766
45	2.208	2.053	1.931	1.756
46	2.206	1.927	1.925	< 1.747 >
47	2.204	2.047	1.923	1.756
48	2.205	2.050	1.926	1.759
49	2.206	2.049	1.929	1.757

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
50	2.201	2.036	1.919	< 1.740 >
51	2.202	2.040	1.922	< 1.744 >
52	2.204	2.040	1.922	< 1.749 >
53	2.204	2.041	1.925	< 1.749 >
54	2.201	1.925	1.925	< 1.746 >
55	2.205	2.039	1.926	1.759
56	2.202	2.040	1.929	< 1.744 >
57	2.205	2.037	1.928	< 1.746 >
58	2.205	1.934	1.941	1.762

Cell Detail

String: String 1

Cell: 28

Float Voltage (No Load): 2.204

Start Voltage (Load): 2.032

Test Time	Battery Voltage	Load	Cell Voltage
00:05:00	112.8	483.0	1.936
00:10:00	112.6	483.1	1.936
00:15:00	112.4	482.9	1.936
00:20:00	112.3	483.1	1.931
00:25:00	111.9	482.8	1.925
00:30:00	111.6	483.0	1.919
00:35:00	111.3	483.0	1.914
00:40:00	111.0	483.0	1.908
00:45:00	110.6	483.1	1.903
00:50:00	110.4	482.8	1.897
00:55:00	110.0	482.7	1.892
01:00:00	109.7	483.1	1.886
01:05:00	109.4	482.8	1.875
01:10:00	108.9	483.0	1.869
01:15:00	108.4	482.7	1.864
01:20:00	107.9	482.8	1.853
01:25:00	107.5	482.8	1.847
01:30:00	107.0	483.0	1.836
01:35:00	106.6	482.7	1.831
01:40:00	106.0	483.0	1.820
01:45:00	105.6	482.8	1.808
01:50:00	105.0	482.9	1.797
01:55:00	104.3	483.0	1.786
02:00:00	103.6	482.6	1.775
02:05:00	102.7	483.0	1.759
02:10:00	101.9	482.7	< 1.742 >
		End Voltage:	< 1.737 >

Cell Detail

String: String 1

Cell: 29

Float Voltage (No Load): 2.205

Start Voltage (Load): 1.970

Test Time	Battery Voltage	Load	Cell Voltage
00:05:00	112.8	483.0	1.878
00:10:00	112.6	483.1	1.878
00:15:00	112.4	482.9	1.878
00:20:00	112.3	483.1	1.873
00:25:00	111.9	482.8	1.867
00:30:00	111.6	483.0	1.862
00:35:00	111.3	483.0	1.856
00:40:00	111.0	483.0	1.851
00:45:00	110.6	483.1	1.845
00:50:00	110.4	482.8	1.840
00:55:00	110.0	482.7	1.834
01:00:00	109.7	483.1	1.828
01:05:00	109.4	482.8	1.817
01:10:00	108.9	483.0	1.812
01:15:00	108.4	482.7	1.806
01:20:00	107.9	482.8	1.801
01:25:00	107.5	482.8	1.790
01:30:00	107.0	483.0	1.784
01:35:00	106.6	482.7	1.773
01:40:00	106.0	483.0	1.762
01:45:00	105.6	482.8	1.756
01:50:00	105.0	482.9	< 1.745 >
01:55:00	104.3	483.0	< 1.734 >
02:00:00	103.6	482.6	< 1.723 >
02:05:00	102.7	483.0	< 1.706 >
02:10:00	101.9	482.7	< 1.695 >
		End Voltage:	< 1.684 >

Cell Tabular

Load (amps):	0.0	483.3	483.0	483.1	482.9	483.1	482.8	483.0	483.0	483.0	483.1	482.8
Battery Voltage:	128.4	123.6	112.8	112.6	112.4	112.3	111.9	111.6	111.3	111.0	110.6	110.4
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
1	2.214	2.137	1.950	1.945	1.939	1.939	1.934	1.928	1.923	1.917	1.912	1.906
2	2.210	2.129	1.938	1.938	1.938	1.933	1.927	1.922	1.916	1.911	1.905	1.899
3	2.210	2.029	1.944	1.944	1.938	1.938	1.933	1.927	1.922	1.916	1.911	1.905
4	2.208	2.075	1.941	1.941	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903
5	2.208	2.073	1.941	1.941	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903
6	2.209	1.932	1.943	1.943	1.938	1.938	1.933	1.927	1.922	1.916	1.911	1.905
7	2.207	2.064	1.937	1.937	1.937	1.932	1.926	1.921	1.915	1.909	1.904	1.898
8	2.207	2.061	1.936	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903	1.897
9	2.205	2.059	1.936	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903	1.897
10	2.204	1.919	1.934	1.934	1.934	1.929	1.924	1.918	1.913	1.907	1.907	1.896
11	2.206	2.056	1.935	1.935	1.935	1.929	1.924	1.918	1.913	1.907	1.907	1.896
12	2.206	2.054	1.935	1.935	1.935	1.929	1.924	1.918	1.913	1.907	1.902	1.896
13	2.208	2.057	1.939	1.939	1.939	1.939	1.934	1.928	1.923	1.917	1.912	1.906
14	2.207	1.927	1.939	1.939	1.939	1.933	1.927	1.922	1.916	1.911	1.905	1.899
15	2.209	2.064	1.950	1.950	1.950	1.945	1.939	1.934	1.934	1.928	1.917	1.912
16	2.201	2.045	1.934	1.934	1.934	1.929	1.924	1.918	1.913	1.907	1.902	1.896
17	2.201	2.039	1.932	1.932	1.932	1.927	1.922	1.916	1.911	1.905	1.899	1.894
18	2.204	2.044	1.940	1.940	1.935	1.935	1.929	1.924	1.918	1.913	1.907	1.902
19	2.204	2.044	1.935	1.935	1.935	1.935	1.929	1.924	1.918	1.913	1.907	1.902
20	2.205	2.044	1.936	1.936	1.936	1.931	1.931	1.925	1.919	1.914	1.908	1.903
21	2.204	2.042	1.934	1.934	1.934	1.934	1.928	1.923	1.917	1.912	1.906	1.901
22	2.199	1.923	1.933	1.933	1.933	1.933	1.927	1.922	1.916	1.911	1.905	1.899
23	2.198	2.036	1.939	1.939	1.933	1.933	1.927	1.922	1.916	1.911	1.905	1.899
24	2.200	2.036	1.935	1.935	1.935	1.929	1.929	1.924	1.918	1.913	1.907	1.902
25	2.201	2.037	1.942	1.942	1.942	1.936	1.931	1.925	1.919	1.914	1.908	1.903
26	2.200	1.921	1.937	1.937	1.937	1.932	1.932	1.926	1.921	1.915	1.909	1.904
27	2.204	2.036	1.943	1.943	1.943	1.937	1.932	1.926	1.921	1.915	1.909	1.904
28	2.204	2.032	1.936	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903	1.897
29	2.205	1.970	1.878	1.878	1.878	1.873	1.867	1.862	1.856	1.851	1.845	1.840
30	2.201	1.929	1.938	1.938	1.938	1.933	1.927	1.922	1.916	1.911	1.905	1.899
31	2.203	2.129	1.933	1.933	1.933	1.927	1.922	1.922	1.916	1.911	1.899	1.899
32	2.199	2.125	1.933	1.933	1.933	1.928	1.923	1.917	1.912	1.906	1.901	1.895

Cell Tabular

Load (amps):	0.0	483.3	483.0	483.1	482.9	483.1	482.8	483.0	483.0	483.0	483.1	482.8
Battery Voltage:	128.4	123.6	112.8	112.6	112.4	112.3	111.9	111.6	111.3	111.0	110.6	110.4
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
33	2.208	2.131	1.946	1.946	1.946	1.940	1.934	1.929	1.923	1.918	1.912	1.906
34	2.206	2.126	1.936	1.942	1.936	1.936	1.931	1.925	1.920	1.914	1.909	1.903
35	2.203	2.022	1.936	1.936	1.936	1.930	1.924	1.924	1.919	1.913	1.907	1.896
36	2.205	2.071	1.937	1.937	1.937	1.931	1.925	1.920	1.914	1.908	1.903	1.897
37	2.205	2.069	1.936	1.936	1.936	1.930	1.924	1.924	1.919	1.913	1.908	1.896
38	2.203	1.926	1.938	1.938	1.938	1.932	1.926	1.921	1.915	1.910	1.904	1.899
39	2.205	2.065	1.941	1.941	1.941	1.935	1.930	1.930	1.924	1.919	1.913	1.902
40	2.204	2.061	1.939	1.939	1.939	1.933	1.928	1.922	1.916	1.911	1.905	1.900
41	2.202	2.057	1.941	1.941	1.941	1.935	1.930	1.924	1.919	1.913	1.907	1.902
42	2.203	1.912	1.929	1.929	1.929	1.923	1.918	1.918	1.906	1.906	1.895	1.890
43	2.208	1.925	1.943	1.943	1.943	1.938	1.938	1.932	1.927	1.921	1.915	1.910
44	2.209	2.064	1.944	1.944	1.944	1.944	1.939	1.933	1.928	1.922	1.916	1.911
45	2.208	2.053	1.940	1.945	1.940	1.940	1.934	1.929	1.923	1.917	1.912	1.906
46	2.206	1.927	1.937	1.937	1.937	1.931	1.931	1.925	1.920	1.914	1.909	1.903
47	2.204	2.047	1.935	1.935	1.935	1.935	1.929	1.923	1.918	1.912	1.906	1.901
48	2.205	2.050	1.938	1.938	1.938	1.938	1.932	1.926	1.921	1.915	1.910	1.904
49	2.206	2.049	1.941	1.941	1.941	1.935	1.930	1.930	1.924	1.919	1.913	1.908
50	2.201	2.036	1.930	1.930	1.930	1.924	1.924	1.919	1.913	1.908	1.902	1.896
51	2.202	2.040	1.933	1.933	1.933	1.928	1.928	1.922	1.916	1.911	1.905	1.900
52	2.204	2.040	1.933	1.933	1.933	1.928	1.928	1.922	1.916	1.911	1.905	1.900
53	2.204	2.041	1.939	1.939	1.939	1.933	1.928	1.922	1.916	1.911	1.905	1.900
54	2.201	1.925	1.936	1.936	1.936	1.936	1.930	1.924	1.919	1.913	1.908	1.902
55	2.205	2.039	1.938	1.938	1.938	1.932	1.926	1.926	1.921	1.915	1.910	1.904
56	2.202	2.040	1.939	1.939	1.939	1.933	1.933	1.928	1.922	1.916	1.911	1.905
57	2.205	2.037	1.941	1.941	1.941	1.935	1.930	1.924	1.919	1.913	1.907	1.902
58	2.205	1.934	1.951	1.951	1.951	1.945	1.940	1.940	1.934	1.929	1.923	1.918

Cell Tabular

Load (amps):	482.7	483.1	482.8	483.0	482.7	482.8	482.8	483.0	482.7	483.0	482.8	482.9
Battery Voltage:	110.0	109.7	109.4	108.9	108.4	107.9	107.5	107.0	106.6	106.0	105.6	105.0
Cell	00:55:00	01:00:00	01:05:00	01:10:00	01:15:00	01:20:00	01:25:00	01:30:00	01:35:00	01:40:00	01:45:00	01:50:00

String: String 1

1	1.901	1.895	1.884	1.884	1.873	1.867	1.856	1.851	1.840	1.828	1.823	1.812
2	1.894	1.888	1.877	1.872	1.866	1.861	1.850	1.844	1.833	1.827	1.816	1.805
3	1.894	1.888	1.883	1.877	1.872	1.861	1.855	1.844	1.838	1.827	1.822	1.811
4	1.897	1.886	1.881	1.875	1.869	1.858	1.853	1.847	1.836	1.825	1.820	1.808
5	1.897	1.886	1.881	1.875	1.869	1.858	1.853	1.847	1.836	1.831	1.820	1.808
6	1.899	1.894	1.883	1.877	1.872	1.861	1.855	1.850	1.838	1.833	1.822	1.811
7	1.893	1.887	1.882	1.876	1.865	1.860	1.854	1.843	1.837	1.826	1.821	1.810
8	1.892	1.886	1.881	1.875	1.864	1.858	1.853	1.842	1.836	1.825	1.820	1.808
9	1.892	1.886	1.881	1.875	1.864	1.858	1.853	1.842	1.836	1.825	1.814	1.808
10	1.891	1.885	1.879	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.813	1.802
11	1.891	1.885	1.879	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.818	1.807
12	1.891	1.885	1.879	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.813	1.807
13	1.901	1.889	1.884	1.878	1.873	1.862	1.856	1.851	1.840	1.834	1.823	1.812
14	1.894	1.888	1.883	1.877	1.866	1.861	1.855	1.844	1.838	1.827	1.816	1.805
15	1.906	1.900	1.895	1.889	1.878	1.873	1.867	1.856	1.850	1.839	1.828	1.817
16	1.891	1.885	1.879	1.868	1.863	1.857	1.846	1.841	1.830	1.818	1.807	1.796
17	1.888	1.883	1.872	1.866	1.861	1.855	1.844	1.838	1.827	1.816	1.811	1.800
18	1.896	1.885	1.879	1.874	1.868	1.857	1.852	1.841	1.835	1.824	1.818	1.807
19	1.896	1.885	1.879	1.874	1.868	1.857	1.852	1.846	1.835	1.824	1.818	1.807
20	1.897	1.886	1.881	1.875	1.869	1.858	1.853	1.842	1.836	1.825	1.820	1.808
21	1.895	1.884	1.878	1.873	1.867	1.856	1.851	1.840	1.834	1.823	1.812	1.801
22	1.894	1.888	1.877	1.872	1.866	1.855	1.850	1.838	1.833	1.822	1.816	1.805
23	1.894	1.888	1.877	1.872	1.866	1.855	1.850	1.844	1.833	1.822	1.816	1.805
24	1.896	1.885	1.879	1.874	1.868	1.857	1.852	1.841	1.835	1.824	1.813	1.807
25	1.897	1.892	1.886	1.875	1.869	1.864	1.853	1.847	1.836	1.831	1.820	1.808
26	1.893	1.887	1.882	1.876	1.865	1.860	1.854	1.843	1.837	1.826	1.815	1.804
27	1.898	1.893	1.887	1.876	1.871	1.865	1.854	1.848	1.837	1.832	1.821	1.810
28	1.892	1.886	1.875	1.869	1.864	1.853	1.847	1.836	1.831	1.820	1.808	1.797
29	1.834	1.828	1.817	1.812	1.806	1.801	1.790	1.784	1.773	1.762	1.756	< 1.745>
30	1.894	1.888	1.883	1.872	1.866	1.861	1.855	1.844	1.838	1.827	1.816	1.805
31	1.888	1.883	1.877	1.872	1.866	1.855	1.850	1.838	1.833	1.822	1.816	1.805
32	1.889	1.884	1.878	1.867	1.862	1.856	1.851	1.840	1.834	1.823	1.812	1.801

Cell Tabular

Load (amps):	482.7	483.1	482.8	483.0	482.7	482.8	482.8	483.0	482.7	483.0	482.8	482.9
Battery Voltage:	110.0	109.7	109.4	108.9	108.4	107.9	107.5	107.0	106.6	106.0	105.6	105.0
Cell	00:55:00	01:00:00	01:05:00	01:10:00	01:15:00	01:20:00	01:25:00	01:30:00	01:35:00	01:40:00	01:45:00	01:50:00
String: String 1												
33	1.901	1.895	1.890	1.884	1.873	1.867	1.862	1.851	1.845	1.834	1.828	1.817
34	1.897	1.892	1.886	1.875	1.869	1.864	1.858	1.847	1.842	1.831	1.825	1.814
35	1.891	1.885	1.880	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.818	1.807
36	1.892	1.886	1.881	1.875	1.864	1.858	1.853	1.842	1.836	1.825	1.819	1.808
37	1.891	1.885	1.880	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.819	1.807
38	1.893	1.887	1.882	1.871	1.865	1.860	1.848	1.843	1.832	1.826	1.815	1.804
39	1.896	1.891	1.885	1.880	1.874	1.863	1.857	1.852	1.841	1.829	1.824	1.813
40	1.894	1.889	1.883	1.877	1.866	1.861	1.855	1.844	1.838	1.827	1.822	1.811
41	1.896	1.891	1.885	1.874	1.869	1.863	1.852	1.846	1.835	1.829	1.818	1.807
42	1.884	1.879	1.873	1.867	1.856	1.851	1.845	1.834	1.828	1.817	1.806	1.795
43	1.899	1.893	1.888	1.882	1.877	1.865	1.860	1.849	1.843	1.832	1.827	1.815
44	1.905	1.900	1.894	1.883	1.877	1.872	1.866	1.855	1.849	1.838	1.827	1.822
45	1.901	1.895	1.890	1.878	1.873	1.867	1.856	1.851	1.839	1.834	1.823	1.812
46	1.897	1.886	1.881	1.875	1.870	1.858	1.853	1.847	1.836	1.825	1.819	1.808
47	1.895	1.890	1.884	1.873	1.867	1.862	1.856	1.845	1.839	1.829	1.817	1.812
48	1.899	1.893	1.887	1.876	1.871	1.865	1.860	1.848	1.843	1.832	1.821	1.815
49	1.902	1.891	1.885	1.880	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.813
50	1.891	1.885	1.874	1.868	1.863	1.852	1.846	1.841	1.829	1.818	1.813	1.802
51	1.894	1.889	1.877	1.872	1.866	1.855	1.849	1.838	1.833	1.822	1.816	1.805
52	1.894	1.889	1.877	1.872	1.866	1.861	1.849	1.844	1.833	1.827	1.816	1.811
53	1.894	1.888	1.883	1.872	1.866	1.861	1.855	1.844	1.833	1.827	1.816	1.805
54	1.896	1.891	1.885	1.874	1.869	1.863	1.852	1.846	1.835	1.829	1.818	1.807
55	1.898	1.887	1.882	1.876	1.871	1.865	1.854	1.848	1.837	1.832	1.821	1.809
56	1.900	1.894	1.883	1.877	1.872	1.861	1.855	1.849	1.838	1.827	1.822	1.811
57	1.896	1.891	1.885	1.874	1.869	1.863	1.852	1.846	1.835	1.829	1.818	1.807
58	1.906	1.901	1.895	1.890	1.884	1.873	1.867	1.856	1.851	1.839	1.834	1.823

Cell Tabular

Load (amps):	483.0	482.6	483.0	482.7	483.0
Battery Voltage:	104.3	103.6	102.7	101.9	101.5
Cell	01:55:00	02:00:00	02:05:00	02:10:00	02:12:27

String: String 1

1	1.801	1.790	1.773	1.757	1.751							
2	1.794	1.783	1.772	1.761	< 1.749 >							
3	1.800	1.789	1.772	1.761	1.750							
4	1.797	1.786	1.775	1.759	1.753							
5	1.797	1.786	1.775	1.759	1.753							
6	1.800	1.789	1.777	1.761	1.755							
7	1.798	1.787	1.776	1.760	1.754							
8	1.797	1.786	1.775	1.759	1.753							
9	1.797	1.786	1.770	1.759	< 1.748 >							
10	1.791	1.780	1.769	1.752	< 1.741 >							
11	1.796	1.785	1.769	1.757	< 1.746 >							
12	1.796	1.780	1.769	1.752	< 1.747 >							
13	1.801	1.790	1.779	1.762	1.757							
14	1.794	1.783	1.772	1.755	1.750							
15	1.806	1.795	1.784	1.767	1.762							
16	1.785	1.774	1.757	< 1.741 >	< 1.730 >							
17	1.789	1.772	1.761	< 1.744 >	< 1.733 >							
18	1.796	1.780	1.769	1.752	< 1.747 >							
19	1.796	1.785	1.769	1.752	< 1.746 >							
20	1.797	1.786	1.770	1.753	< 1.748 >							
21	1.790	1.779	1.762	1.751	< 1.740 >							
22	1.794	1.777	1.766	1.750	< 1.738 >							
23	1.794	1.777	1.766	1.750	< 1.739 >							
24	1.796	1.780	1.769	1.752	< 1.747 >							
25	1.797	1.786	1.770	1.759	< 1.748 >							
26	1.793	1.782	1.765	< 1.749 >	< 1.737 >							
27	1.798	1.787	1.776	1.760	1.754							
28	1.786	1.775	1.759	< 1.742 >	< 1.737 >							
29	< 1.734 >	< 1.723 >	< 1.706 >	< 1.695 >	< 1.684 >							
30	1.794	1.783	1.772	1.755	< 1.744 >							
31	1.794	1.783	1.766	1.755	< 1.744 >							
32	1.790	1.779	1.767	1.751	< 1.740 >							

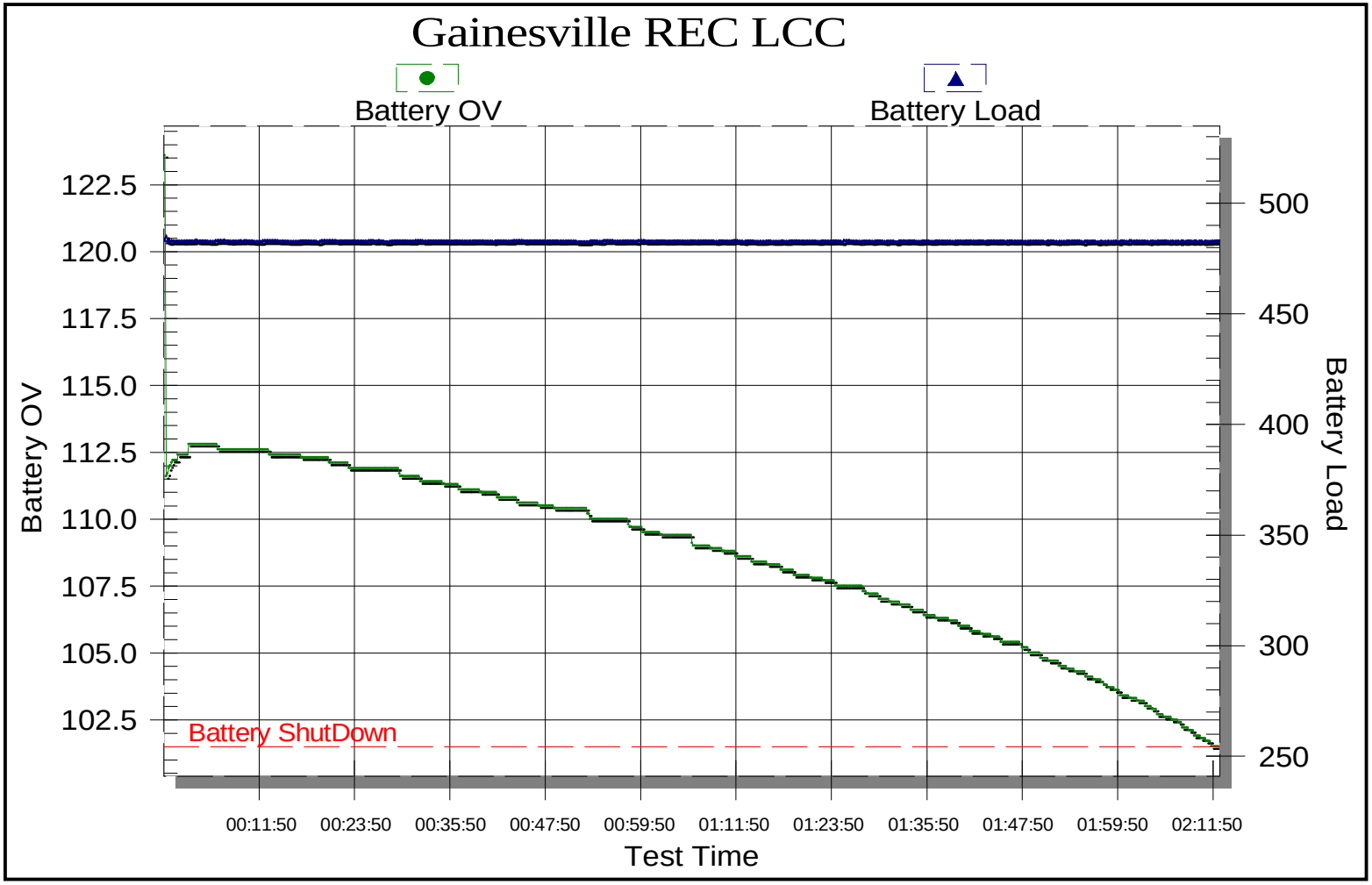
Cell Tabular

Load (amps):	483.0	482.6	483.0	482.7	483.0
Battery Voltage:	104.3	103.6	102.7	101.9	101.5
Cell	01:55:00	02:00:00	02:05:00	02:10:00	02:12:27

String: String 1

33	1.806	1.795	1.784	1.773	1.762							
34	1.803	1.792	1.781	1.764	1.758							
35	1.796	1.785	1.768	1.752	< 1.746>							
36	1.797	1.786	1.775	1.758	1.753							
37	1.796	1.785	1.774	1.757	< 1.746>							
38	1.793	1.782	1.765	< 1.748>	< 1.743>							
39	1.802	1.791	1.779	1.763	1.757							
40	1.799	1.788	1.772	1.755	< 1.749>							
41	1.796	1.785	1.768	1.752	< 1.746>							
42	1.784	1.773	1.762	< 1.745>	< 1.734>							
43	1.804	1.793	1.782	1.765	1.760							
44	1.811	1.799	1.788	1.772	1.766							
45	1.806	1.789	1.778	1.762	1.756							
46	1.797	1.786	1.775	1.758	< 1.747>							
47	1.801	1.789	1.773	1.762	1.756							
48	1.804	1.793	1.776	1.765	1.759							
49	1.802	1.791	1.779	1.763	1.757							
50	1.791	1.779	1.763	< 1.746>	< 1.740>							
51	1.794	1.777	1.766	< 1.749>	< 1.744>							
52	1.799	1.788	1.772	1.761	< 1.749>							
53	1.794	1.783	1.772	1.755	< 1.749>							
54	1.796	1.785	1.768	1.757	< 1.746>							
55	1.804	1.793	1.776	1.765	1.759							
56	1.799	1.788	1.772	1.755	< 1.744>							
57	1.796	1.785	1.774	1.757	< 1.746>							
58	1.812	1.801	1.784	1.767	1.762							

Battery OV & Load Graph



Test Notes

During the test, cells 28 and 29 had leads that were malfunctioning. Both cells have passed. Cell 28 has a capacity of 104.4% and cell 29 never reached end voltage. The voltage displayed in the test results is 80 mVDC lower than actual.

Capacity Test
Performance

5/23/2017

Customer:	Gainesville Renewable Energy Center LLC		
Address:	11201 NW US Hwy 441 Gainesville, FL 32653-8001	Job Number:	1015045
		Technician:	Eric Carroll, Ryan Cooper
Site Contact:	Tommy Gardner	Phone #:	(386) 315-8012

Battery Nameplate Data

Manufacturer:	Alcad		
Model:	LSe 1400		
Date code:	May-12		
Battery Type:	Vented Lead-Selenium		
Jars per String:	58	# of Strings:	1
Cells per Jar:	1	Cells / String:	58
Capacity:	109.0%		

Equipment Nameplate Data

Datasheet Attached:	Yes	Type:	UPS
Equipment ID:	Plant Battery String B	Input Voltage:	480 VAC
Manufacturer:	Gutor	Input Current:	79.41 AAC
Model #:	SDC 125-400	DC Voltage:	125 VDC
Serial #:	1120044001-01	DC Current:	400 ADC
Size: (AMPS, kW, kVA)	400 ADC	Part #:	EDC-BC-1001
Date code:	2012		

Measurement and Inspection Data

Electrical Inspection

	As Found	As Left
Alarms	OK	OK
Float Voltage	130.3 VDC	130.3 VDC
Equalize Voltage	135.1 VDC	135.1 VDC
DC + to G	65.1 VDC	65.1 VDC
DC - to G	65.0 VDC	65.0 VDC
DC Amps	0.0 ADC	0.0 ADC
Ripple Volts	41 mVAC	41 mVAC
Ripple Current	0.5 AAC	0.5 AAC
Room Temp	80.0 °F	80.0 °F

Visual Inspection

	Condition	Notes
Cell Numbering	OK	
Water Level	OK	
Visual Plate Inspection	OK	
Jar Cover Inspection	OK	
Connection Torque	OK	
Visible Heat Damage	OK	
Spill Containment	OK	
Cables/Connectors	OK	
Post Seals	OK	
Flame Arrestors	OK	

Manufacturer Recommended Voltage Ranges @ 77.0 °F

Float Voltage				Equalize Voltage			
Minimum:	128.8 VDC	*Maximum:*	N/A	Minimum:	135.1 VDC	*Maximum:*	139.2 VDC

Comments

Performed battery performance (capacity) test IAW NERC/IEEE Standards.

Battery performance (capacity) test passed with 109% capacity.

Deficiencies and Recommendations

Continue to perform battery PMI and PM IAW NERC/IEEE Standards.

BCT-2000 Battery Load Test Report

Battery Information

Name: Plant Battery String B

Manufacturer: Alcad

Model: LSe1400

ID:

Installed: 05/01/12

Next Test: 05/23/23

Number of strings: 1

Number of cell/string: 58

String Names:

1) String 1

Test Setup

Date of Test: 05/23/17

Start Time of Test: 01:44:22 pm

Ending Time of Test: 03:56:25 pm

Test Type: Performance

Load Type: Constant Current

Rated Time: 02:00:00

Cell Voltage Warning: 1.750

Battery Voltage Warning: 101.5

Cell Voltage Shutdown: 1.200

Battery Voltage Shutdown: 101.5

Temperature at Time of Test: 80° F

TEST was Temperature Corrected to IEEE Standards

Total Programmed Test Time: 10:00:00

Actual Discharge Time: 02:10:49

Number of Test Steps: 1

Step 1 duration = 10:00:00 @ 476 Amps TEMPERATURE CORRECTED TO 486 Amps

OV/Load

Test Time	Battery Voltage	Battery Load
00:00:00	122.9	485.8
00:05:00	112.5	487.0
00:10:00	112.5	486.3
00:15:00	112.3	486.6
00:20:00	112.1	486.1
00:25:00	111.7	486.3
00:30:00	111.4	486.6
00:35:00	111.2	486.1
00:40:00	110.9	486.7
00:45:00	110.6	486.7
00:50:00	110.2	486.7
00:55:00	109.9	486.5
01:00:00	109.4	486.2
01:05:00	109.0	486.4
01:10:00	108.7	486.1
01:15:00	108.4	486.5
01:20:00	107.9	486.6
01:25:00	107.3	486.5
01:30:00	106.9	486.1
01:35:00	106.5	486.6
01:40:00	105.8	486.2
01:45:00	105.2	486.3
01:50:00	104.7	486.5
01:55:00	104.0	486.6
02:00:00	103.3	486.3
02:05:00	102.6	486.5
02:10:00	101.8	486.1
02:10:49	101.5	486.4

Test Results

The Following cells dropped below the low threshold level of 1.750 Vs

Cell	Step	Step Time	Test Time	Capacity(%)
String: String 1				
1	1	02:10:17	02:10:17	108.6
2	1	02:10:26	02:10:26	108.7
3	1	02:09:12	02:09:12	107.7
4	1	02:08:07	02:08:07	106.8
5	1	02:08:46	02:08:46	107.3
8	1	02:08:46	02:08:46	107.3
9	1	02:08:12	02:08:12	106.8
10	1	02:10:35	02:10:35	108.8
12	1	02:09:04	02:09:04	107.6
13	1	02:09:53	02:09:53	108.2
16	1	02:07:51	02:07:51	106.5
17	1	02:08:52	02:08:52	107.4
18	1	02:04:09	02:04:09	103.5
19	1	02:09:27	02:09:27	107.9
27	1	02:10:38	02:10:38	108.9
28	1	02:10:29	02:10:29	108.7
30	1	02:09:55	02:09:55	108.3
32	1	02:10:38	02:10:38	108.9
33	1	02:02:44	02:02:44	102.3
34	1	02:07:58	02:07:58	106.6
36	1	02:06:53	02:06:53	105.7
39	1	02:08:38	02:08:38	107.2
40	1	02:07:03	02:07:03	105.9
41	1	02:06:28	02:06:28	105.4
42	1	02:06:06	02:06:06	105.1
46	1	02:10:18	02:10:18	108.6
47	1	02:10:45	02:10:45	109.0
57	1	02:10:33	02:10:33	108.8

The Following Cells Failed the CAPACITY TEST(BELOW 80%):

Cell	Capacity(%)
None	

Battery string results:

Battery Capacity = 109.0 %

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
1	2.196	2.045	1.929	< 1.747 >
2	2.192	1.932	1.931	< 1.749 >
3	2.190	2.029	1.927	< 1.742 >
4	2.191	2.029	1.919	< 1.743 >
5	2.192	2.031	1.922	< 1.739 >
6	2.193	2.034	1.923	1.752
7	2.193	2.034	1.926	1.760
8	2.187	2.019	1.922	< 1.739 >
9	2.187	2.020	1.924	< 1.741 >
10	2.190	1.988	1.924	< 1.749 >
11	2.191	2.028	1.926	1.760
12	2.187	2.020	1.918	< 1.741 >
13	2.187	2.018	1.917	< 1.745 >
14	2.191	2.023	1.924	1.759
15	2.191	1.968	1.935	1.764
16	2.186	2.016	1.920	< 1.743 >
17	2.188	2.015	1.918	< 1.741 >
18	2.187	1.914	1.919	< 1.727 >
19	2.188	2.117	1.918	< 1.744 >
20	2.188	2.116	1.921	1.750
21	2.191	2.115	1.930	1.751
22	2.190	2.114	1.923	1.751
23	2.191	2.014	1.929	1.752
24	2.190	2.061	1.932	1.753
25	2.189	2.058	1.932	1.752
26	2.189	2.008	1.928	1.750
27	2.190	2.051	1.921	< 1.749 >
28	2.190	2.049	1.921	< 1.747 >
29	2.191	1.930	1.930	1.763
30	2.190	1.924	1.924	< 1.745 >
31	2.191	2.048	1.929	1.754
32	2.186	2.040	1.919	< 1.744 >
33	2.189	2.037	1.926	< 1.716 >
34	2.188	1.928	1.926	< 1.739 >
35	2.190	2.034	1.921	1.750
36	2.189	2.032	1.926	< 1.738 >
37	2.193	2.041	1.928	1.757
38	2.194	2.040	1.926	1.757
39	2.186	2.030	1.921	< 1.744 >
40	2.186	2.027	1.916	< 1.735 >
41	2.186	2.025	1.916	< 1.735 >
42	2.186	1.983	1.914	< 1.732 >
43	2.188	1.993	1.927	1.751
44	2.189	2.029	1.925	1.754
45	2.189	2.023	1.921	1.750
46	2.189	2.022	1.920	< 1.749 >
47	2.190	2.020	1.920	< 1.748 >
48	2.190	2.021	1.925	1.753
49	2.195	2.027	1.930	1.759

Cell Summary

Cell	Float V	Start V	V @30 Sec	End V
String: String 1				
50	2.186	1.912	1.918	1.750
51	2.189	2.117	1.919	1.752
52	2.190	2.116	1.921	1.754
53	2.191	2.115	1.924	1.763
54	2.192	2.114	1.925	1.764
55	2.190	2.010	1.921	1.758
56	2.190	2.060	1.921	1.756
57	2.186	2.054	1.920	< 1.745 >
58	2.190	2.017	1.933	1.758

Cell Tabular

Load (amps):	0.0	485.8	487.0	486.3	486.6	486.1	486.3	486.6	486.1	486.7	486.7	486.7
Battery Voltage:	127.5	122.9	112.5	112.5	112.3	112.1	111.7	111.4	111.2	110.9	110.6	110.2
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
1	2.196	2.045	1.942	1.942	1.936	1.931	1.931	1.919	1.919	1.914	1.903	1.897
2	2.192	1.932	1.937	1.937	1.937	1.932	1.932	1.926	1.921	1.915	1.904	1.898
3	2.190	2.029	1.936	1.936	1.936	1.931	1.925	1.919	1.914	1.908	1.903	1.897
4	2.191	2.029	1.932	1.932	1.932	1.926	1.921	1.915	1.909	1.904	1.898	1.893
5	2.192	2.031	1.933	1.933	1.933	1.927	1.927	1.922	1.916	1.911	1.905	1.894
6	2.193	2.034	1.935	1.935	1.935	1.929	1.929	1.924	1.918	1.913	1.907	1.902
7	2.193	2.034	1.937	1.937	1.937	1.932	1.932	1.926	1.921	1.915	1.909	1.904
8	2.187	2.019	1.932	1.932	1.932	1.927	1.922	1.916	1.911	1.905	1.899	1.894
9	2.187	2.020	1.935	1.935	1.935	1.929	1.924	1.918	1.913	1.907	1.902	1.896
10	2.190	1.988	1.937	1.937	1.937	1.932	1.926	1.921	1.915	1.909	1.904	1.898
11	2.191	2.028	1.937	1.937	1.937	1.932	1.932	1.926	1.921	1.915	1.909	1.904
12	2.187	2.020	1.930	1.930	1.930	1.924	1.924	1.918	1.913	1.907	1.902	1.896
13	2.187	2.018	1.928	1.928	1.928	1.923	1.923	1.917	1.912	1.906	1.901	1.895
14	2.191	2.023	1.936	1.936	1.936	1.931	1.931	1.925	1.919	1.914	1.908	1.903
15	2.191	1.968	1.947	1.947	1.947	1.941	1.941	1.936	1.930	1.925	1.919	1.914
16	2.186	2.016	1.932	1.932	1.932	1.926	1.921	1.915	1.909	1.909	1.898	1.893
17	2.188	2.015	1.929	1.929	1.929	1.924	1.924	1.918	1.913	1.907	1.902	1.896
18	2.187	1.914	1.932	1.932	1.932	1.926	1.921	1.915	1.915	1.904	1.904	1.893
19	2.188	2.117	1.928	1.928	1.928	1.928	1.922	1.916	1.911	1.905	1.899	1.894
20	2.188	2.116	1.933	1.933	1.933	1.927	1.922	1.922	1.916	1.911	1.905	1.894
21	2.191	2.115	1.939	1.939	1.939	1.934	1.928	1.928	1.923	1.917	1.906	1.901
22	2.190	2.114	1.934	1.934	1.934	1.934	1.928	1.923	1.917	1.912	1.906	1.901
23	2.191	2.014	1.941	1.941	1.941	1.935	1.929	1.924	1.918	1.913	1.907	1.902
24	2.190	2.061	1.941	1.941	1.941	1.936	1.931	1.925	1.919	1.914	1.908	1.903
25	2.189	2.058	1.941	1.941	1.941	1.935	1.929	1.929	1.924	1.918	1.907	1.902
26	2.189	2.008	1.939	1.939	1.939	1.933	1.927	1.922	1.916	1.911	1.905	1.899
27	2.190	2.051	1.932	1.932	1.932	1.932	1.926	1.921	1.915	1.909	1.904	1.898
28	2.190	2.049	1.931	1.931	1.931	1.931	1.925	1.919	1.914	1.908	1.903	1.897
29	2.191	1.930	1.945	1.945	1.945	1.939	1.934	1.928	1.923	1.917	1.912	1.906
30	2.190	1.924	1.934	1.934	1.934	1.934	1.928	1.923	1.917	1.912	1.906	1.901
31	2.191	2.048	1.938	1.938	1.938	1.938	1.932	1.926	1.921	1.915	1.909	1.904
32	2.186	2.040	1.927	1.933	1.933	1.927	1.922	1.916	1.911	1.905	1.899	1.894

Cell Tabular

Load (amps):	0.0	485.8	487.0	486.3	486.6	486.1	486.3	486.6	486.1	486.7	486.7	486.7
Battery Voltage:	127.5	122.9	112.5	112.5	112.3	112.1	111.7	111.4	111.2	110.9	110.6	110.2
Cell	Float	00:00:00	00:05:00	00:10:00	00:15:00	00:20:00	00:25:00	00:30:00	00:35:00	00:40:00	00:45:00	00:50:00
String: String 1												
33	2.189	2.037	1.933	1.933	1.933	1.933	1.927	1.922	1.916	1.911	1.905	1.900
34	2.188	1.928	1.934	1.934	1.934	1.928	1.923	1.923	1.917	1.912	1.906	1.895
35	2.190	2.034	1.934	1.934	1.934	1.928	1.923	1.917	1.912	1.906	1.901	1.895
36	2.189	2.032	1.933	1.933	1.933	1.927	1.927	1.922	1.916	1.911	1.905	1.894
37	2.193	2.041	1.941	1.941	1.941	1.935	1.930	1.924	1.924	1.913	1.907	1.902
38	2.194	2.040	1.941	1.941	1.941	1.935	1.930	1.924	1.924	1.918	1.913	1.907
39	2.186	2.030	1.933	1.933	1.933	1.927	1.922	1.916	1.916	1.905	1.900	1.894
40	2.186	2.027	1.930	1.930	1.930	1.924	1.918	1.913	1.913	1.902	1.896	1.891
41	2.186	2.025	1.930	1.930	1.930	1.924	1.918	1.913	1.913	1.902	1.896	1.891
42	2.186	1.983	1.926	1.926	1.926	1.921	1.921	1.915	1.910	1.904	1.898	1.893
43	2.188	1.993	1.939	1.939	1.939	1.934	1.929	1.923	1.918	1.912	1.907	1.901
44	2.189	2.029	1.938	1.938	1.938	1.932	1.926	1.926	1.921	1.915	1.910	1.904
45	2.189	2.023	1.934	1.934	1.934	1.928	1.923	1.923	1.917	1.912	1.906	1.901
46	2.189	2.022	1.933	1.933	1.933	1.927	1.927	1.922	1.916	1.911	1.905	1.900
47	2.190	2.020	1.932	1.932	1.932	1.932	1.926	1.921	1.915	1.910	1.904	1.898
48	2.190	2.021	1.936	1.936	1.936	1.931	1.931	1.925	1.920	1.914	1.908	1.903
49	2.195	2.027	1.943	1.943	1.943	1.937	1.932	1.932	1.926	1.921	1.915	1.910
50	2.186	1.912	1.929	1.929	1.929	1.929	1.923	1.917	1.912	1.906	1.901	1.895
51	2.189	2.117	1.930	1.930	1.930	1.930	1.924	1.918	1.913	1.907	1.902	1.896
52	2.190	2.116	1.932	1.932	1.932	1.932	1.926	1.921	1.915	1.910	1.904	1.898
53	2.191	2.115	1.935	1.935	1.935	1.935	1.930	1.924	1.918	1.913	1.907	1.902
54	2.192	2.114	1.936	1.936	1.936	1.931	1.931	1.925	1.920	1.914	1.908	1.903
55	2.190	2.010	1.931	1.936	1.931	1.931	1.925	1.920	1.914	1.908	1.903	1.897
56	2.190	2.060	1.934	1.934	1.934	1.928	1.923	1.917	1.917	1.906	1.901	1.895
57	2.186	2.054	1.934	1.934	1.928	1.928	1.923	1.917	1.912	1.906	1.901	1.895
58	2.190	2.017	1.942	1.942	1.942	1.942	1.936	1.931	1.925	1.920	1.914	1.908

Cell Tabular

Load (amps):	486.5	486.2	486.4	486.1	486.5	486.6	486.5	486.1	486.6	486.2	486.3	486.5
Battery Voltage:	109.9	109.4	109.0	108.7	108.4	107.9	107.3	106.9	106.5	105.8	105.2	104.7
Cell	00:55:00	01:00:00	01:05:00	01:10:00	01:15:00	01:20:00	01:25:00	01:30:00	01:35:00	01:40:00	01:45:00	01:50:00

String: String 1

1	1.892	1.886	1.881	1.875	1.864	1.858	1.853	1.842	1.836	1.825	1.814	1.803
2	1.893	1.887	1.882	1.876	1.865	1.860	1.854	1.843	1.837	1.826	1.815	1.804
3	1.892	1.886	1.875	1.869	1.864	1.853	1.847	1.842	1.831	1.820	1.814	1.803
4	1.887	1.882	1.871	1.865	1.860	1.854	1.843	1.837	1.826	1.815	1.810	1.798
5	1.888	1.883	1.877	1.866	1.861	1.855	1.844	1.838	1.827	1.816	1.811	1.800
6	1.891	1.885	1.879	1.874	1.868	1.857	1.852	1.841	1.835	1.824	1.818	1.807
7	1.893	1.887	1.882	1.876	1.871	1.860	1.854	1.848	1.837	1.826	1.821	1.810
8	1.888	1.883	1.872	1.866	1.861	1.850	1.844	1.833	1.827	1.816	1.805	1.800
9	1.891	1.879	1.874	1.868	1.863	1.852	1.846	1.835	1.830	1.818	1.807	1.802
10	1.893	1.887	1.882	1.871	1.865	1.860	1.848	1.843	1.832	1.826	1.815	1.804
11	1.898	1.887	1.882	1.876	1.871	1.865	1.854	1.848	1.837	1.832	1.821	1.810
12	1.885	1.879	1.874	1.868	1.863	1.852	1.846	1.835	1.830	1.818	1.813	1.802
13	1.889	1.878	1.873	1.867	1.862	1.851	1.845	1.840	1.828	1.817	1.812	1.801
14	1.897	1.886	1.881	1.875	1.869	1.858	1.853	1.847	1.836	1.825	1.820	1.808
15	1.903	1.897	1.892	1.886	1.881	1.869	1.864	1.859	1.847	1.836	1.831	1.820
16	1.887	1.882	1.876	1.871	1.860	1.854	1.848	1.837	1.832	1.821	1.810	1.798
17	1.891	1.879	1.874	1.868	1.863	1.852	1.846	1.835	1.830	1.818	1.807	1.796
18	1.887	1.882	1.876	1.865	1.860	1.848	1.843	1.832	1.826	1.815	1.804	1.793
19	1.888	1.883	1.872	1.866	1.861	1.855	1.844	1.838	1.827	1.816	1.811	1.800
20	1.888	1.883	1.877	1.872	1.866	1.855	1.850	1.838	1.833	1.822	1.816	1.805
21	1.895	1.889	1.884	1.878	1.867	1.862	1.856	1.845	1.840	1.828	1.817	1.806
22	1.895	1.884	1.878	1.873	1.867	1.856	1.851	1.845	1.834	1.823	1.817	1.806
23	1.896	1.891	1.885	1.874	1.868	1.863	1.852	1.846	1.835	1.830	1.818	1.807
24	1.897	1.892	1.886	1.875	1.869	1.864	1.853	1.847	1.836	1.825	1.820	1.808
25	1.896	1.891	1.885	1.879	1.868	1.863	1.857	1.846	1.841	1.830	1.818	1.807
26	1.894	1.888	1.883	1.877	1.866	1.861	1.850	1.844	1.833	1.827	1.816	1.805
27	1.893	1.887	1.876	1.871	1.865	1.860	1.848	1.843	1.832	1.821	1.815	1.804
28	1.892	1.886	1.875	1.869	1.864	1.858	1.847	1.842	1.831	1.825	1.814	1.803
29	1.901	1.895	1.890	1.879	1.873	1.868	1.857	1.851	1.840	1.835	1.824	1.813
30	1.895	1.889	1.878	1.873	1.867	1.856	1.851	1.840	1.834	1.823	1.812	1.801
31	1.898	1.893	1.882	1.876	1.871	1.865	1.854	1.848	1.837	1.826	1.821	1.810
32	1.888	1.883	1.877	1.866	1.861	1.855	1.844	1.838	1.827	1.822	1.811	1.800

Cell Tabular

Load (amps):	486.5	486.2	486.4	486.1	486.5	486.6	486.5	486.1	486.6	486.2	486.3	486.5
Battery Voltage:	109.9	109.4	109.0	108.7	108.4	107.9	107.3	106.9	106.5	105.8	105.2	104.7
Cell	00:55:00	01:00:00	01:05:00	01:10:00	01:15:00	01:20:00	01:25:00	01:30:00	01:35:00	01:40:00	01:45:00	01:50:00

String: String 1

33	1.888	1.883	1.877	1.866	1.861	1.855	1.844	1.833	1.827	1.816	1.805	1.794
34	1.890	1.884	1.878	1.873	1.862	1.856	1.845	1.839	1.828	1.823	1.812	1.801
35	1.890	1.884	1.878	1.867	1.862	1.856	1.851	1.839	1.834	1.823	1.812	1.801
36	1.888	1.883	1.877	1.872	1.861	1.855	1.849	1.838	1.827	1.822	1.811	1.799
37	1.896	1.891	1.885	1.880	1.868	1.863	1.857	1.846	1.841	1.829	1.818	1.807
38	1.896	1.891	1.885	1.880	1.868	1.863	1.857	1.846	1.841	1.829	1.824	1.813
39	1.888	1.883	1.877	1.872	1.861	1.855	1.849	1.838	1.833	1.822	1.811	1.799
40	1.885	1.880	1.874	1.868	1.857	1.852	1.841	1.835	1.824	1.818	1.807	1.796
41	1.885	1.880	1.874	1.863	1.857	1.852	1.841	1.835	1.824	1.813	1.807	1.796
42	1.882	1.876	1.871	1.865	1.854	1.848	1.843	1.832	1.826	1.815	1.804	1.793
43	1.896	1.890	1.885	1.879	1.868	1.863	1.857	1.846	1.835	1.829	1.818	1.807
44	1.893	1.887	1.882	1.876	1.871	1.859	1.854	1.843	1.837	1.826	1.821	1.809
45	1.890	1.884	1.878	1.873	1.867	1.856	1.851	1.839	1.834	1.823	1.817	1.806
46	1.894	1.883	1.877	1.872	1.866	1.855	1.849	1.844	1.833	1.822	1.816	1.805
47	1.893	1.887	1.876	1.871	1.865	1.859	1.848	1.843	1.832	1.826	1.815	1.804
48	1.897	1.892	1.881	1.875	1.869	1.858	1.853	1.847	1.836	1.831	1.819	1.808
49	1.898	1.893	1.887	1.882	1.871	1.865	1.859	1.854	1.843	1.832	1.826	1.815
50	1.890	1.884	1.873	1.867	1.862	1.851	1.845	1.839	1.828	1.823	1.812	1.801
51	1.891	1.885	1.874	1.868	1.863	1.857	1.846	1.841	1.829	1.824	1.813	1.802
52	1.893	1.887	1.876	1.871	1.865	1.859	1.848	1.843	1.832	1.826	1.815	1.804
53	1.896	1.891	1.885	1.874	1.868	1.863	1.857	1.846	1.841	1.829	1.824	1.813
54	1.897	1.892	1.881	1.875	1.869	1.864	1.853	1.847	1.836	1.831	1.819	1.808
55	1.892	1.886	1.881	1.875	1.864	1.858	1.853	1.842	1.836	1.825	1.819	1.808
56	1.890	1.884	1.878	1.873	1.862	1.856	1.851	1.845	1.834	1.823	1.817	1.806
57	1.890	1.884	1.873	1.867	1.862	1.856	1.845	1.839	1.828	1.823	1.812	1.801
58	1.903	1.897	1.886	1.881	1.875	1.869	1.858	1.853	1.842	1.836	1.825	1.814

Cell Tabular

Load (amps):	486.6	486.3	486.5	486.1	486.4
Battery Voltage:	104.0	103.3	102.6	101.8	101.5
Cell	01:55:00	02:00:00	02:05:00	02:10:00	02:10:49

String: String 1

1	1.792	1.781	1.770	1.753	< 1.747 >								
2	1.793	1.782	1.771	1.754	< 1.749 >								
3	1.792	1.775	1.764	< 1.747 >	< 1.742 >								
4	1.787	1.776	1.760	< 1.743 >	< 1.743 >								
5	1.789	1.772	1.761	< 1.744 >	< 1.739 >								
6	1.796	1.785	1.769	1.758	1.752								
7	1.798	1.787	1.776	1.760	1.760								
8	1.783	1.772	1.761	< 1.744 >	< 1.739 >								
9	1.785	1.774	1.757	< 1.741 >	< 1.741 >								
10	1.793	1.782	1.771	1.754	< 1.749 >								
11	1.798	1.787	1.776	1.760	1.760								
12	1.791	1.774	1.763	< 1.747 >	< 1.741 >								
13	1.790	1.779	1.762	< 1.745 >	< 1.745 >								
14	1.797	1.786	1.775	1.759	1.759								
15	1.809	1.798	1.786	1.770	1.764								
16	1.787	1.776	1.760	< 1.743 >	< 1.743 >								
17	1.785	1.774	1.763	< 1.747 >	< 1.741 >								
18	1.776	1.765	< 1.749 >	< 1.727 >	< 1.727 >								
19	1.789	1.777	1.761	< 1.744 >	< 1.744 >								
20	1.794	1.783	1.766	1.750	1.750								
21	1.795	1.784	1.773	1.757	1.751								
22	1.795	1.784	1.773	1.757	1.751								
23	1.796	1.785	1.769	1.758	1.752								
24	1.797	1.786	1.770	1.753	1.753								
25	1.796	1.785	1.769	1.752	1.752								
26	1.794	1.783	1.766	1.755	1.750								
27	1.793	1.782	1.765	1.754	< 1.749 >								
28	1.792	1.781	1.770	1.753	< 1.747 >								
29	1.802	1.790	1.779	1.763	1.763								
30	1.790	1.779	1.762	< 1.745 >	< 1.745 >								
31	1.798	1.787	1.771	1.760	1.754								
32	1.789	1.777	1.766	1.750	< 1.744 >								

Cell Tabular

Load (amps):	486.6	486.3	486.5	486.1	486.4
Battery Voltage:	104.0	103.3	102.6	101.8	101.5
Cell	01:55:00	02:00:00	02:05:00	02:10:00	02:10:49

String: String 1

33	1.777	1.761	< 1.744>	< 1.722>	< 1.716>							
34	1.784	1.773	1.756	< 1.739>	< 1.739>							
35	1.789	1.778	1.767	1.750	1.750							
36	1.788	1.772	1.761	< 1.738>	< 1.738>							
37	1.796	1.785	1.774	1.757	1.757							
38	1.802	1.791	1.774	1.763	1.757							
39	1.788	1.777	1.766	< 1.749>	< 1.744>							
40	1.785	1.768	1.757	< 1.740>	< 1.735>							
41	1.779	1.768	1.757	< 1.735>	< 1.735>							
42	1.782	1.771	1.754	< 1.737>	< 1.732>							
43	1.796	1.785	1.768	1.751	1.751							
44	1.793	1.782	1.771	1.754	1.754							
45	1.795	1.784	1.767	1.756	1.750							
46	1.794	1.783	1.766	1.755	< 1.749>							
47	1.793	1.782	1.771	1.754	< 1.748>							
48	1.797	1.786	1.775	1.758	1.753							
49	1.804	1.793	1.782	1.765	1.759							
50	1.789	1.778	1.767	1.750	1.750							
51	1.791	1.779	1.768	1.757	1.752							
52	1.793	1.782	1.771	1.754	1.754							
53	1.802	1.791	1.779	1.768	1.763							
54	1.803	1.792	1.775	1.764	1.764							
55	1.797	1.786	1.775	1.758	1.758							
56	1.795	1.784	1.773	1.756	1.756							
57	1.789	1.778	1.767	1.750	< 1.745>							
58	1.803	1.792	1.781	1.764	1.758							

Battery OV & Load Graph