



# PowerBatt Solution Field Test Report

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## Approvals:

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Approval: Donald Karner  
President

*Company certifies this test has been conducted in accordance with the referenced Battery Test Plan and Test Specifications. Testing was performed in accordance with requirements of ISO/IEC 17025 with measuring standards traceable to the National Institute of Standards and Technology. Units of measurement are stated according to the International System of Units (SI). All raw data is reported as uncorrected for uncertainty or environmental effects and relate only to the items tested. Measurement uncertainty is taken into account by listing the uncertainty measurement with the results. The end user is responsible to determine the fitness for use. The uncertainty is not used when determining In/Out of tolerance conditions. Measurement uncertainty is reported per measurement, when available.*

*Any information provided by the customer can affect the validity of results.*

*EAI has incorporated a customer supplied interpretation of the test results in Appendix 7. EAI does not offer an opinion on the analysis or conclusions presented in this document*

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# 1 Evaluation Procedure

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Testing was conducted to determine the impact of adding PowerBatt solution to flooded lead-acid batteries that have been in operation for multiple years and have lost a significant portion of their nominal capacity. Three 36V flooded battery packs manufactured by GNB, Hawker and Douglas were selected for testing at Dircks Logistics, a logistics warehouse located in Tolleson, AZ for this study. The batteries were selected as representative of flooded products with significant capacity loss from in service operations. Two load tests were conducted on each of the three battery packs, one before and one after the addition of the PowerBatt solution, allowing an evaluation of the impact of PowerBatt on the run time of batteries in field use.

Before the first load test, the battery packs were fully charged and equalized using Dircks Logistics inhouse Enersys Enforcer charger (serial #KJ123435). This is the charger that the warehouse operators typically used to charge these batteries. Open circuit voltage and acid gravity were measured in this fully charged and equalized mode. The first load tests were then conducted using a BLT 96V discharge unit provided by PowerBatt. Discharge was performed at a constant current 160A or 150A and the total discharge time recorded. The discharge voltages of each cell were measured every hour during discharge and more frequently as they were approaching the end of discharge voltage of 1.75 vpc.

After this first load test, PowerBatt solution was added into each cell with a calculated amount of 60mL/100Ah of plate capacity. The batteries were then returned to service in the Dircks Logistics warehouse. The battery packs were returned to service in their typical warehouse service after addition of the PowerBatt solution.

A second load test on each battery was conducted after the batteries were in service for approximately one-month. The same test procedure was used to on the second constant current load test as was used to conduct the first load tests.

Table 1 Summarizes the general conditions used for this evaluation study.

**Table 1 Evaluation Test General Information**

<b>Test Site:</b>	Dircks Logistics, 860 S 83rd Ave, Tolleson, AZ 85353
<b>EAI Test Engineer</b>	Richard Simpson
<b>Begin of Test Date</b>	21-Apr-22
<b>End of Test Date</b>	26-May-22
<b>Charger</b>	Enersys Enforcer, Serial #KJ123435
<b>Load Test Discharger</b>	BLT 96V 160A, Serial # FS1001, P.B.M. S. R.L. Vignola, Italy <sup>(1)</sup>

(1) This equipment was not calibrated. However, the same settings were used for both the initial discharge and the discharge after adding PowerBatt solution

Upon completion of testing, PowerBatt USA provided its interpretation of the test results. This is documented in Appendix 7.

## 2 Test Results

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An increase in the time to discharge was observed for all three battery packs tested. Table 2 summarizes results of the battery discharge tests results. An increase in discharge time varying from 13% to 48% was measured in the test battery packs after the addition of PowerBatt solution.

**Table 2 Summary of Load Test Results with Three Tested Batteries**

Battery Manufacture	Year In Service	Serial Number	Pack Voltage (V)	Pack Capacity (Ah)	BOT Test Date	BOT Rate (A)	BOT Test Duration (HH:MM)	PowerBatt Solutions Added (mL/cell)	EOT Test Date	EOT Test Duration (HH:MM)	BOT to EOT Change
GNB	2015	GAT3262	36	1020 @ C <sub>20</sub>	4/22/2022	160	3:18	612	5/24/2022	4:52	48%
Douglas	2015	MNA1191611	36	750 @ C <sub>6</sub>	4/25/2022	150	3:26	400	5/25/2022	3:52	13%
Hawker	2016	PL106162171	36	750 @ C <sub>6</sub>	4/23/2022	160	2:40	450	5/26/2022	3:29	30%

An increase in cell voltage and specific gravity at full charge was also generally observed for all three battery packs tested. Appendices 1 through 6 present cell voltage and specific gravity data for each battery pack both before and after the addition of PowerBatt solution. An interpretation of the test results was provided by PowerBatt USA and is documented in Appendix 7.

## Appendices

### Appendix 1 GNB Load Test Before Adding Power Batt Solutions

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/22/2022			
<b>MAKE</b>	GNB		<b>SERIAL</b>	GAT3262		<b>YEAR</b>	2015
<b>Capacity</b>	1020 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.295
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	612
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>	<b>LOAD TEST</b>				
			<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3HR-18 MN</i>	
1	2.08	1250	1.94	1.89	1.80	1.73	
2	2.08	1230	2.35	1.76	1.79	1.75	
3	2.30	1250	0.99	0.70	1.78	1.73	
4	2.10	1250	1.94	1.90	1.82	1.80	
5	2.07	1250	0.48	0.41	1.78	1.75	
6	2.09	1250	1.94	1.89	1.79	1.69	
7	2.07	1225	0.57	1.88	1.77	1.67	
8	2.07	1225	1.75	1.87	1.75	1.65	

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/22/2022			
<b>MAKE</b>	GNB		<b>SERIAL</b>	GAT3262		<b>YEAR</b>	2015
<b>Capacity</b>	1020 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.295
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	612
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>	<b>LOAD TEST</b>				
			<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3HR-18 MN</i>	
9	2.09	1230	2.13	1.89	1.71	No Data	
10	2.09	1250	1.95	1.90	1.81	No Data	
11	2.09	1225	2.06	1.89	1.81	No Data	
12	2.08	1225	1.95	1.89	1.79	No Data	
13	2.11	1250	1.97	1.93	1.87	No Data	
14	2.09	1225	1.95	1.90	1.82	No Data	
15	2.11	1250	1.98	1.94	1.89	No Data	
16	2.09	1225	1.95	1.90	1.82	No Data	
17	2.10	1225	1.96	1.91	1.85	No Data	
18	2.09	1250	1.95	1.89	1.80	No Data	
<p>NOTES: Charged and equalized on Enersys Enforcer Serial number KJ123435. The yellow highlighted cell voltage readings were confirmed to be in error on the following day after load test. TOTAL POWERBATT PER CELL = 612ML.</p>							

**Appendix 2 GNB Load Test One Month in Service After Adding Power Batt Solutions**

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	5/24/2022				
<b>MAKE</b>	GNB		<b>SERIAL</b>	GAT3262		<b>YEAR</b>	2015	
<b>Capacity</b>	1020 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.295	
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	612	
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>	<b>LOAD TEST</b>					
			<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>4 HR</i>	<i>4HR-43MN</i>	<i>4HR - 52MN</i>
<b>1</b>	2.12	1250	2.01	1.97	1.92	1.86	1.79	1.75
<b>2</b>	2.11	1250	2.03	1.96	1.91	1.84	1.77	1.74
<b>3</b>	2.12	1250	2.00	1.95	1.89	1.81	1.72	1.67
<b>4</b>	2.12	1250	2.01	1.97	1.92	1.86	1.81	1.79
<b>5</b>	2.12	1250	2.02	1.97	1.91	1.84	1.77	1.74
<b>6</b>	2.11	1250	2.00	1.94	1.92	1.85	1.76	1.72
<b>7</b>	2.10	1250	2.00	1.95	1.88	1.80	1.71	No Data
<b>8</b>	2.10	1250	1.99	1.95	1.89	1.81	1.69	No Data
<b>9</b>	2.12	1250	2.01	1.96	1.92	1.85	1.79	No Data
<b>10</b>	2.12	1250	2.01	1.97	1.92	1.86	1.79	No Data



CUSTOMER	DIRCKS LOGISTICS		LOAD TEST DATE	5/24/2022					
MAKE	GNB		SERIAL	GAT3262		YEAR		2015	
Capacity	1020 Ah		Plate Volts	36 V		Specific Gravity		1.295	
TEST ENGINEER	Richard Simpson		LOAD TEST Current	160 A		PowerBatt Solution Added (mL)		612	
CELL#:	Voltage at full charge	Specific Gravity at full charge		LOAD TEST					
				1 HR	2 HR	3 HR	4 HR	4HR-43MN	4HR - 52MN
11	2.12	1230		2.00	1.96	1.91	1.85	1.78	No Data
12	2.11	1250		2.01	1.96	1.91	1.85	1.78	1.75
13	2.13	1260		2.01	1.96	1.91	1.85	1.77	1.76
14	2.12	1230		2.01	1.97	1.93	1.87	1.82	1.77
15	2.14	1250		2.00	1.96	1.91	1.85	1.77	1.77
16	2.11	1250		2.03	1.99	1.95	1.90	1.86	1.54
17	2.13	1250		2.00	1.96	1.92	1.86	1.79	1.77
18	2.12	1250		2.02	1.98	1.94	1.88	1.84	1.83

NOTES: 5/23/22: Battery was fully charged and equalized. 5/24/22. Discharge was terminated before measurement of the “close to complete” discharge voltage for cell 7, 8, 9, 10 and 11 could be taken.

**Appendix 3 Hawker Load Test Before Adding Power Batt Solutions**

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/23/2022			
<b>MAKE</b>	Hawker		<b>SERIAL</b>	PL106162171		<b>YEAR</b>	2016
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.275-1.285
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	450
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>		<b>LOAD TEST</b>			
				<i>1 HR</i>	<i>2 HR</i>	<i>2 HR- 40 MN</i>	
<b>1</b>	2.23	1250		1.94	1.88	1.83	
<b>2</b>	2.17	1225		1.90	1.81	1.58	
<b>3</b>	2.19	1250		1.93	1.87	1.81	
<b>4</b>	2.19	1225		1.94	1.88	1.82	
<b>5</b>	2.19	1250		1.93	1.87	1.81	
<b>6</b>	2.21	1275		1.94	1.88	1.82	
<b>7</b>	2.20	1225		1.93	1.87	1.82	
<b>8</b>	2.18	1180		1.93	1.87	1.81	
<b>9</b>	2.17	1180		1.92	1.85	1.78	
<b>10</b>	2.17	1225		1.91	1.83	1.70	

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/23/2022			
<b>MAKE</b>	Hawker		<b>SERIAL</b>	PL106162171		<b>YEAR</b>	2016
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.275-1.285
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	450
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>		<b>LOAD TEST</b>			
				<i>1 HR</i>	<i>2 HR</i>	<i>2 HR- 40 MN</i>	
<b>11</b>	2.18	1200		1.93	1.86	1.80	
<b>12</b>	2.19	1260		1.93	1.87	1.81	
<b>13</b>	2.20	1200		1.94	1.88	1.82	
<b>14</b>	2.19	1250		1.93	1.87	1.81	
<b>15</b>	2.20	1200		1.94	1.88	1.82	
<b>16</b>	2.18	1250		1.92	1.85	1.78	
<b>17</b>	2.19	1220		1.93	1.86	1.79	
<b>18</b>	2.20	1200		1.93	1.86	1.80	
<p>NOTES: Cells topped off with a total of 8 gallons of water. Charged and equalized on Enersys Enforcer Serial number KL123405. 225 ML PowerBatt Solution added after load test on 4/23/22. An additional 225ML added on 4/26/22. TOTAL POWERBATT PER CELL = 450ML</p>							

**Appendix 4 Hawker Load Test One Month in Service After Adding Power Batt Solutions**

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	5/26/2022				
<b>MAKE</b>	Hawker		<b>SERIAL</b>	PL106162171		<b>YEAR</b>	2016	
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.275-1.285	
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	450	
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>		<b>LOAD TEST</b>				
				<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3 HR 29MN</i>	
<b>1</b>	2.14	1270		1.95	1.89	1.82	1.78	
<b>2</b>	2.12	1270		1.93	1.87	1.77	1.70	
<b>3</b>	2.16	1275		1.94	1.88	1.80	1.76	
<b>4</b>	2.14	1275		1.94	1.88	1.80	1.76	
<b>5</b>	2.14	1270		1.94	1.88	1.80	1.75	
<b>6</b>	2.13	1275		1.94	1.88	1.81	1.77	
<b>7</b>	2.14	1275		1.93	1.86	1.78	1.74	
<b>8</b>	2.14	1250		1.94	1.88	1.81	1.76	
<b>9</b>	2.14	1250		1.93	1.87	1.78	1.73	
<b>10</b>	2.13	1250		1.93	1.86	1.76	1.67	

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	5/26/2022				
<b>MAKE</b>	Hawker		<b>SERIAL</b>	PL106162171		<b>YEAR</b>	2016	
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.275-1.285	
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	160 A		<b>PowerBatt Solution Added (mL)</b>	450	
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>		<b>LOAD TEST</b>				
				<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3 HR 29MN</i>	
<b>11</b>	2.13	1275		1.94	1.89	1.79	1.75	
<b>12</b>	2.14	1275		1.94	1.87	1.79	1.73	
<b>13</b>	2.14	1275		1.93	1.87	1.80	1.77	
<b>14</b>	2.14	1275		1.94	1.87	1.79	1.75	
<b>15</b>	2.15	1275		1.95	1.89	1.82	1.78	
<b>16</b>	2.13	1270		1.93	1.87	1.78	1.72	
<b>17</b>	2.14	1270		1.94	1.87	1.79	1.73	
<b>18</b>	2.14	1270		1.93	1.87	1.79	1.75	
<p>NOTES: Battery charged and equalized on 5/25/22. Load test complete on 5/26/22. Voltage readings of Hawker cells were taken immediately after equalization, with no rest time for depolarization. As a result, these voltages are higher than the voltage readings for the second load test which were taken after an overnight rest period.</p>								

**Appendix 5 Douglas Load Test Before Adding Power Batt Solutions**

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/25/2022					
<b>MAKE</b>	Douglas		<b>SERIAL</b>	MNA1191611		<b>YEAR</b>		2015	
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>		1.285	
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	150 A		<b>PowerBatt Solution Added (mL)</b>		400	
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>	<b>LOAD TEST</b>						
			<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3HR 15MN</i>	<i>3HR 26MN</i>		
<b>1</b>	2.16	1250		1.94	1.87	1.78	1.74	1.69	
<b>2</b>	2.15	1225		1.93	1.86	1.77	1.72	1.66	
<b>3</b>	2.16	1250		1.95	1.89	1.82	1.80	1.78	
<b>4</b>	2.15	1250		1.94	1.88	1.80	1.78	1.76	
<b>5</b>	2.16	1220		1.95	1.90	1.83	1.81	1.80	
<b>6</b>	2.16	1250		1.94	1.89	1.81	1.79	1.76	
<b>7</b>	2.16	1250		1.95	1.90	1.83	1.80	1.79	
<b>8</b>	2.15	1230		1.94	1.89	1.81	1.79	1.77	
<b>9</b>	2.15	1210		1.94	1.88	1.81	1.79	1.77	

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	4/25/2022						
<b>MAKE</b>	Douglas		<b>SERIAL</b>	MNA1191611		<b>YEAR</b>	2015			
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.285			
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	150 A		<b>PowerBatt Solution Added (mL)</b>	400			
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>		<b>LOAD TEST</b>						
				<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3HR 15MN</i>	<i>3HR 26 MN</i>		
<b>10</b>	2.15	1250		1.94	1.88	1.79	1.76	1.73		
<b>11</b>	2.15	1225		1.93	1.87	1.80	1.77	1.75		
<b>12</b>	2.16	1250		1.95	1.89	1.82	1.80	1.78		
<b>13</b>	2.16	1240		1.95	1.89	1.81	1.79	1.77		
<b>14</b>	2.15	1250		1.94	1.88	1.81	1.78	1.76		
<b>15</b>	2.15	1250		1.94	1.88	1.80	1.77	1.74		
<b>16</b>	2.14	1225		1.94	1.88	1.80	1.78	1.75		
<b>17</b>	2.16	1260		1.95	1.88	1.81	1.78	1.76		
<b>18</b>	2.16	1260		1.96	1.89	1.82	1.79	1.78		
<p>NOTES: Cells topped off with 3 gallons of water on 4/25/22. Charged and equalized with Enersys Enforcer Serial #KJ123435. PowerBatt solution added on 4/25/22. Calculated addition is 450ML. However, only 400ML added due to limited head space.</p>										

**Appendix 6 Douglas Load Test One Month in Service After Adding Power Batt Solutions**

<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	5/25/2022						
<b>MAKE</b>	Douglas		<b>SERIAL</b>	MNA1191611		<b>YEAR</b>	2015			
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.285			
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	150 A		<b>PowerBatt Solution Added (mL)</b>	400			
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>			<b>LOAD TEST</b>					
					<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3 HR 30MN</i>	<i>3 HR 52 MN</i>	
<b>1</b>	2.18	1250			1.97	1.91	1.84	1.80	1.77	
<b>2</b>	2.15	1250			1.95	1.92	1.83	1.80	1.75	
<b>3</b>	2.14	1230			1.96	1.90	1.82	1.79	1.76	
<b>4</b>	2.16	1250			1.94	1.91	1.81	1.77	1.73	
<b>5</b>	2.16	1250			1.95	1.90	1.84	1.78	1.76	
<b>6</b>	2.16	1250			1.96	1.91	1.84	1.80	1.77	
<b>7</b>	2.17	1250			1.95	1.90	1.83	1.79	1.76	
<b>8</b>	2.16	1250			1.96	1.91	1.85	1.82	1.78	
<b>9</b>	2.16	1250			1.96	1.90	1.83	1.79	1.76	



<b>CUSTOMER</b>	DIRCKS LOGISTICS		<b>LOAD TEST DATE</b>	5/25/2022						
<b>MAKE</b>	Douglas		<b>SERIAL</b>	MNA1191611		<b>YEAR</b>	2015			
<b>Capacity</b>	750 Ah		<b>Plate Volts</b>	36 V		<b>Specific Gravity</b>	1.285			
<b>TEST ENGINEER</b>	Richard Simpson		<b>LOAD TEST Current</b>	150 A		<b>PowerBatt Solution Added (mL)</b>	400			
<b>CELL#:</b>	<b>Voltage at full charge</b>	<b>Specific Gravity at full charge</b>	<b>LOAD TEST</b>							
					<i>1 HR</i>	<i>2 HR</i>	<i>3 HR</i>	<i>3 HR 30MN</i>	<i>3 HR 52 MN</i>	
<b>10</b>	2.17	1250			1.96	1.91	1.84	1.79	1.76	
<b>11</b>	2.16	1250			1.95	1.89	1.81	1.76	1.71	
<b>12</b>	2.16	1250			1.94	1.89	1.81	1.75	1.68	
<b>13</b>	2.17	1250			1.96	1.90	1.84	1.79	1.71	
<b>14</b>	2.15	1230			1.94	1.89	1.81	1.77	1.73	
<b>15</b>	2.15	1230			1.95	1.89	1.81	1.76	1.71	
<b>16</b>	2.16	1250			1.94	1.89	1.82	1.76	1.72	
<b>17</b>	2.16	1250			1.95	1.90	1.83	1.79	1.76	
<b>18</b>	2.16	1250			1.95	1.90	1.83	1.79	1.76	
NOTES: Charged and equalized on 5/24/22. Load test performed and voltage and specific gravity measurements taken 5/25/22.										

## Appendix 7 PowerBatt USA Interpretation of Test Report



### EXECUTIVE SUMMARY AND SUMMATION OF RESULTS

As directed by the Department of Energy, PowerBatt USA presented its PowerBatt product to EAI under the premise that it is a liquid additive which will reduce or eliminate the presence of performance inhibiting hard crystalized sulfate, a by-product of all lead acid batteries. As a result, the capacity of batteries will be restored to an appreciably greater percentage of full capacity.

Based upon this premise, EAI performed controlled tests on six- and seven-year-old GNB, Hawker, and Douglas batteries still in operation and furnished by Toyota Material Handling of Phoenix, AZ. Based upon the results of that testing, EAI test results affirm PowerBatt desulfated the batteries and improved the batteries' discharge times up to 48%. This resulted in a statistically appreciable increase in the overall capacity of the batteries. The data also reflects increased and equalized voltage and density.

Based on EAI test results, we conclude the use of PowerBatt effectively restored the capacity of the operational batteries and enabled continued use. These certified results allow us to state conclusively the restoration and enhanced performance would appreciably postpone the need for new battery replacement due to sulfation. This in turn will lead to a reduction in the carbon footprint associated with manufacturing and recycling of the lead acid batteries.

Christopher French: President  
PowerBatt USA  
Hugo, MN.

<End of Test Report>