

# Batteries

## Data Sample #1

date: 12/20/90  
time: 11 am

system voltage: 12.58 volts  
system amperage: 9 amps  
system temperature: 25° Fahrenheit

notes: Data taken before adding 1 Tablespoon EDTA per cell. Each Tablespoon of EDTA was dissolved in 2 ounces of distilled water.

	battery 1			battery 2			battery 3			battery 4		
back row of pack	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3
Absolute Cell Deviation From Pack	2.04	2.05	2.04	2.07	2.05	2.07	2.07	2.06	2.07	2.06	2.07	2.07
Average Absolute Cell Deviation From Pack	0.028	0.018	0.028	0.002	0.018	0.002	0.002	0.007	0.002	0.007	0.002	0.002
Absolute Cell Deviation From Battery	0.003	0.007	0.003	0.007	0.013	0.007	0.003	0.007	0.003	0.007	0.003	0.003
Average Absolute Cell Deviation From Battery	0.003	0.004		0.003	0.009		0.003	0.004		0.007	0.004	0.003
Battery Average Cell Voltage	2.043			2.063			2.067			2.067		
Battery Cell Voltage Standard Deviation	0.005			0.009			0.005			0.005		
Battery Maximum Cell Voltage Difference	0.010			0.020			0.010			0.010		
front row of pack	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3
Absolute Cell Deviation From Pack	2.07	2.08	2.07	2.08	2.06	2.08	2.07	2.09	2.08	2.07	2.08	2.07
Average Absolute Cell Deviation From Pack	0.002	0.013	0.002	0.013	0.007	0.013	0.002	0.023	0.013	0.002	0.013	0.002
Absolute Cell Deviation From Battery	0.003	0.007	0.003	0.007	0.013	0.007	0.010	0.010	0.000	0.003	0.007	0.003
Average Absolute Cell Deviation From Battery	0.003	0.004		0.003	0.009		0.010	0.007		0.003	0.004	0.003
Battery Average Cell Voltage	2.073			2.073			2.080			2.073		
Battery Cell Voltage Standard Deviation	0.005			0.009			0.008			0.005		
Battery Maximum Cell Voltage Difference	0.010			0.020			0.020			0.010		
Pack Average Cell Voltage											2.068	
Pack Cell Voltage Standard Deviation											0.012	
Pack Maximum Cell Voltage Difference											0.050	
Maximum Pack Average::Battery Cell Voltage Difference											0.014	
Maximum Pack Average::Battery Average Voltage Difference											0.024	
Average Battery:Pack Voltage Difference											0.006	

## Data Sample #2

date: 1/7/91  
time: 9:30 am

system voltage: 12.25 volts  
system amperage: 0 amps  
system temperature: 45° Fahrenheit

notes: Data taken before adding a second 1 Tablespoon of EDTA per cell. When EDTA was added to cells in batteries 6 and 7, immediate bubbling action and precipitation was observed.

	battery 1			battery 2			battery 3			battery 4		
back row of pack	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3
Absolute Cell Deviation From Pack	2.02	2.02	2.02	2.04	2.01	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Average Absolute Cell Deviation From Pack	0.010	0.010	0.010	0.010	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Absolute Cell Deviation From Battery	0.000	0.000	0.000	0.013	0.017	0.003	0.000	0.000	0.000	0.000	0.000	0.000
Average Absolute Cell Deviation From Battery	0.000	0.000		0.000	0.011		0.000	0.000		0.000	0.000	0.000
Battery Average Cell Voltage	2.020			2.027			2.030			2.030		
Battery Cell Voltage Standard Deviation	0.000			0.012			0.000			0.000		
Battery Maximum Cell Voltage Difference	0.000			0.030			0.000			0.000		
front row of pack	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3	cell 1	cell 2	cell 3
Absolute Cell Deviation From Pack	2.04	2.03	2.05	2.03	2.03	2.03	2.03	2.03	2.04	2.02	2.04	2.03
Average Absolute Cell Deviation From Pack	0.010	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.010	0.000
Absolute Cell Deviation From Battery	0.000	0.010	0.010	0.000	0.000	0.000	0.003	0.003	0.007	0.010	0.010	0.000
Average Absolute Cell Deviation From Battery	0.000	0.007		0.000	0.000		0.003	0.004		0.010	0.007	0.000
Battery Average Cell Voltage	2.040			2.030			2.033			2.030		
Battery Cell Voltage Standard Deviation	0.008			0.000			0.005			0.008		
Battery Maximum Cell Voltage Difference	0.020			0.000			0.010			0.020		
Pack Average Cell Voltage											2.030	
Pack Cell Voltage Standard Deviation											0.008	
Pack Maximum Cell Voltage Difference											0.040	
Maximum Pack Average::Battery Cell Voltage Difference											0.010	
Maximum Pack Average::Battery Average Voltage Difference											0.010	
Average Battery:Pack Voltage Difference											0.005	
% change from first sample											-33%	
											-20%	
											-29%	
											-59%	
											-17%	