Are all batteries created equal?

All batteries are created equal – or at least that's what an article that I read implied about current manufacturing techniques of alkaline batteries. But for a sound technician and recording engineer, battery life is essential to a good show or recording. For years I have only used Duracell Pro Cell batteries in my wireless microphones because it was the accepted standard among audio/video professionals – or so I thought. I contacted several wireless mic manufactures and was surprised that most of them didn't seem to care what brand you used except for Lectrosonics who said they use Eveready as their standard. So after buying another bulk supply of Duracell Pro Cells and comparing price differences with other brands, I decided to put it to the test.

In our TV studio, we use 2 Lectrosonic MM400b microphone belt packs that uses 1 AA battery pretty fast (2-3 hours) compared to the Lectrosonic UM400 (4-5 hours) or the Sennheiser EW112 G3 mics (8+ hours) that we use in our classrooms. I double tested each battery side by side using the same mic elements which were secured at the same distance from a desk top radio that was playing music 24/7. I monitored the audio on my mixer and recorded the time of signal failure (the moment that the audio started to fail) and critical failure (the final death of the battery).

Using Duracell Pro Cell batteries as my baseline, I have listed my findings in the chart below. Since I double tested with 2 mics, I used the best recorded time for my comparisons. All the batteries were new AA alkalines at room temperature.

BRAND	SIGNAL FAILURE	CRITICAL FAILURE	START VOLTS	END VOLTS	%
DURACELL PRO CELL	177 min (2:57)	180 min (3:00)	1.6	1.1	100%
DURACELL - STANDARD	159 min (2:39)	161 min (2:41)	1.6	1.1	89.5%
ENERGIZER- STANDARD	136 min (2:16)	139 min (2:19)	1.6	1.1	77%
ENERGIZER-INDUSTRIAL	133 min (2:13)	135 min (2:15)	1.6	.9	75%
RAYOVAC- STANDARD	123 min (2:03)	126 min (2:06)	1.6	1.2	70%

SUMMARY:
Duracell Pro Cell outlasts Duracell Standard by 10.5%
Duracell Pro Cell outlasts Energizer Standard by 23%
Duracell Pro Cell outlasts Energizer Industrial by 25%
Duracell Pro Cell outlasts Rayovac Standard by 30%
I could not find any Eveready Batteries

As a result, I will continue to use Duracell Pro Cell for live events and critical recordings. However, I have switched to Energizer Industrials for all of our non-critical classrooms since microphones are occasionally left on and because Shields Electronics gives me a great deal on them. You must also realize that all wireless microphones drain batteries at different speeds so you may want to do your own drain tests to see how long your batteries will last.

What about Lithium batteries? I did not compare the Alkaline with Lithium or rechargeable batteries for three reasons. First is the expense involved is more than my budget will we bear. Second, we actually tried Lithium batteries when we first purchased the Lectrosonic MM400b mics and found out the batteries swell as they die which makes them nearly impossible to remove the Lithium batteries from the mics. Third – in my opinion – off the shelf rechargeable batteries are not reliable. Over the years we have had a number of troubleshooting calls from our trainers in the field who have used rechargeable batteries and most of the time the problem has been these batteries. With that said, there

may be some rechargeable batteries available through your microphone manufacturer that may work better, however over time they will not keep their charge as long as they did when they were new.

Rosemont AV Services & Studio
rosemontstudio.com