CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J0731

Project Title
Batteries: The Most Bang for Your Buck

Abstract

Objectives/Goals
The objective of this project was to determine which major brand of AA alkaline batteries, by scientific testing, offers the best value to the consumer.

Methods/Materials
I shopped to find the best prices of major brands of batteries. Then these batteries were placed under a given load, 22 ohms, and their voltage was measured using an HP Data Logger 34970A to determine how long it took until it dropped below a useable value (0.9 volts). This process was repeated at a second load condition, 10 ohms. To determine value, the cell cost was divided by the average amount of useable time by brand.

Results
I logged about 14,000 voltage readings on the 60 cells tested. At the 22 ohm load the life varied from 45.40 hrs. to 49.22 hrs. At the 10 ohm load the life varied from 18.70 hrs. to 20.16 hrs. Kirkland offered the best value, not because of its performance, but because of its low price.

Conclusions/Discussion
There is hardly any difference in the performance of the batteries. The price was the most influential factor in the value of batteries. That is why the least expensive battery, which in this case was Kirkland, offers the best value. If the Kirkland batteries are not available, I recommend that you purchase the battery with the lowest cost.

Summary Statement
My project is to determine which major AA alkaline battery manufacturer offers the best value.

Help Received
My father provided me with consultance. Carlos Gonzales loaned me the HP Data Logger.