

# The Doc's Battery Test Report

## Battery Details

Brand	Arlec 600
Size	AAA AA C D 9V 6V
Type	Ni-MH Ni-Cd RAM Alkaline Titanium
Current in mAhs	600
Stated Voltage	1.5 volts 1.2 volts
Number of batteries	Single Set of 2 Set of 4
Battery Set used	Set 1
Times charged before test started	12
Charger used to charge	Rezap RBC883 Vanson Speedy Box UBA4
Time Batteries charged in charger	See UBA graph.

## Test Procedures

Spreadsheet name	Arlec600NiCd-AA-Set1.123 (Discharge data file)
UBA file name	Arlec600NiCd-AA-Set1-12.uba (Charge file)
Select Resistance 5 or 10 ohms	5 ohms 10 ohms
Voltage cut off	3.5 volts 3.6 volts
Date of test	26/12/03

## Summary of test

Voltage	Starting voltage 5.6 volts, cut off voltage 3.6 volts
Test duration	3,149 seconds or 52.48 minutes
Max Battery Temp	34.5 degrees Celsius
Min Battery Temp	26.9 degrees Celsius

## Methodology

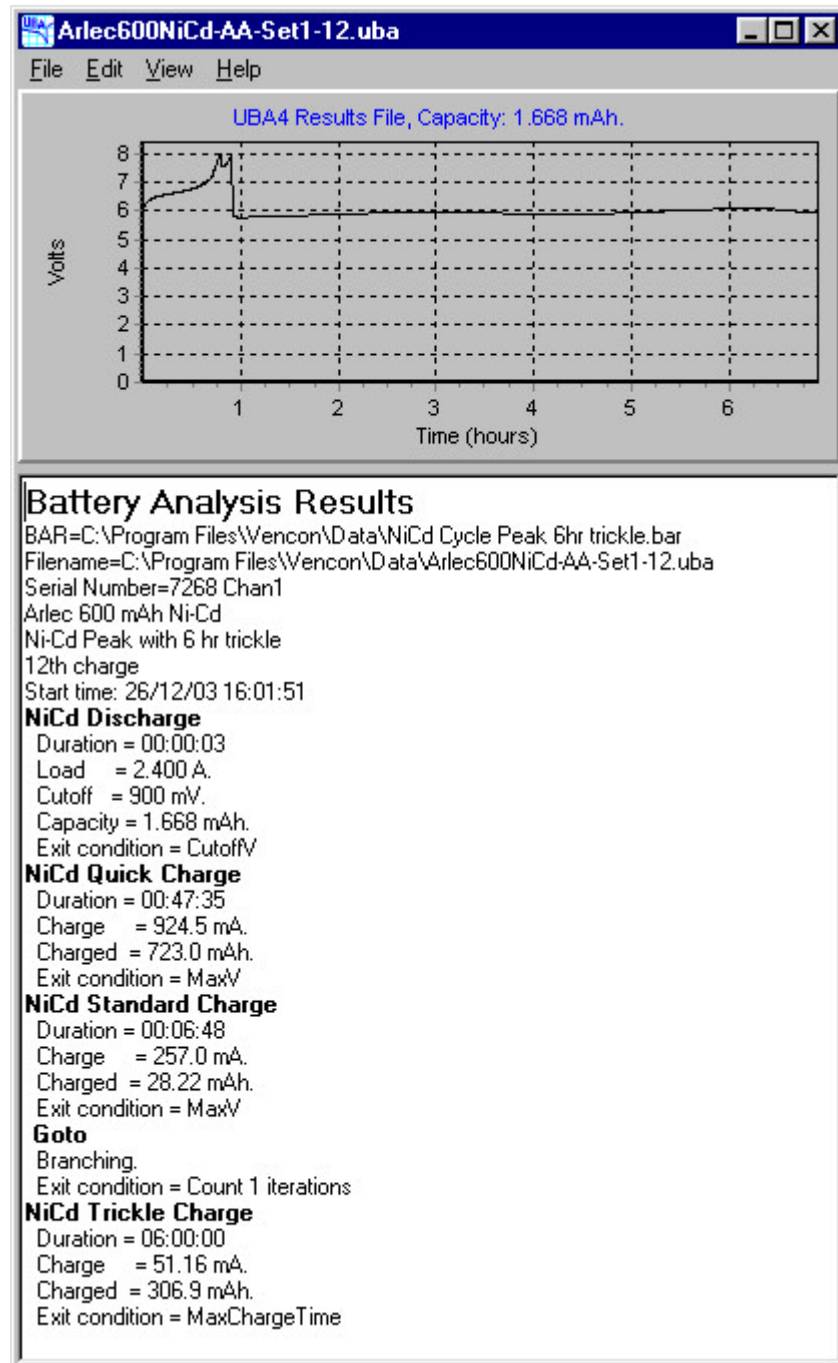
The battery set being tested has been charged at least 5 times. The charge actually used in the test is noted above. The battery set is charged in a Universal Battery Charger (UBA4). It is then tested under a load of 5 ohms, in the scientific dooverlackie. In this test the battery set was also charged in several different types of charger. The following pages give various data, including:

1. charging information from the UBA4;
2. a graph of the voltage during the test (cut off voltage being 3.6 volts);
3. a graph of the battery temperature during the test;
4. a graph of the battery temperature verse ambient air temperature during the test; and
5. a graph comparing the charging performance of different chargers with the Arlecs.

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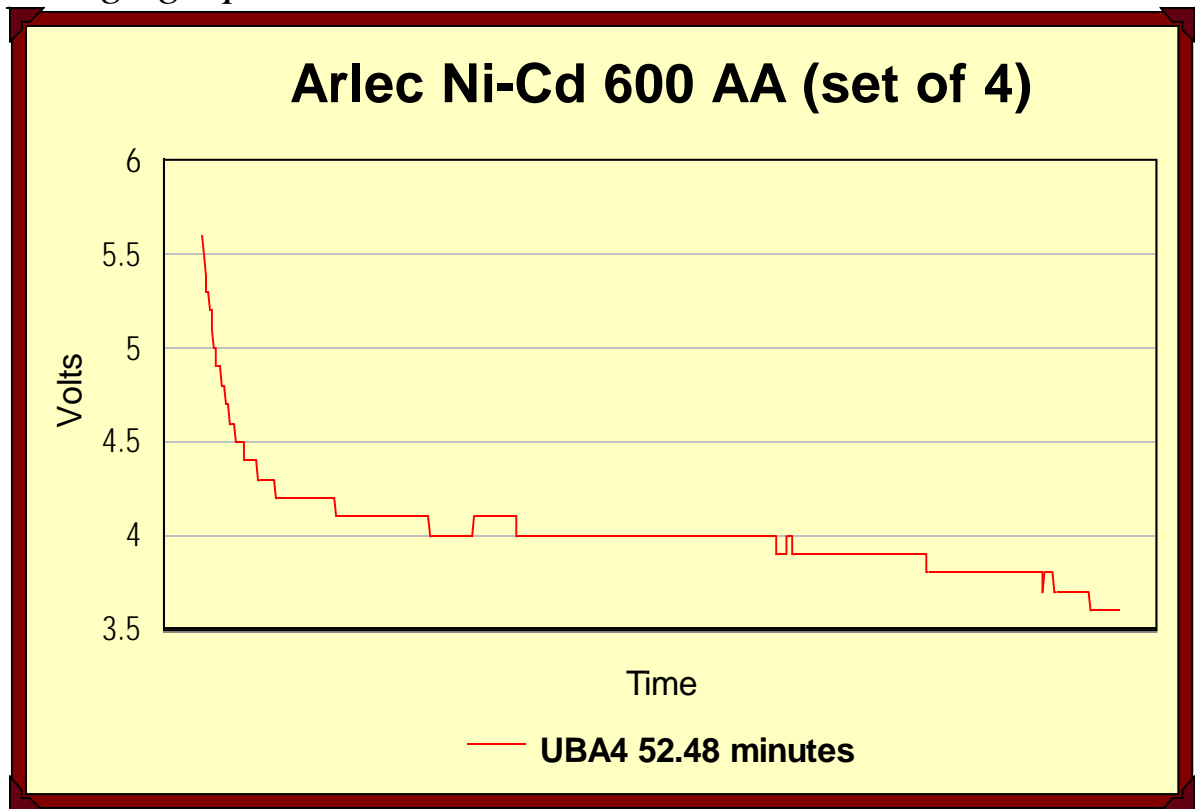
## UBA report

The graph and charging information from the UBA4.

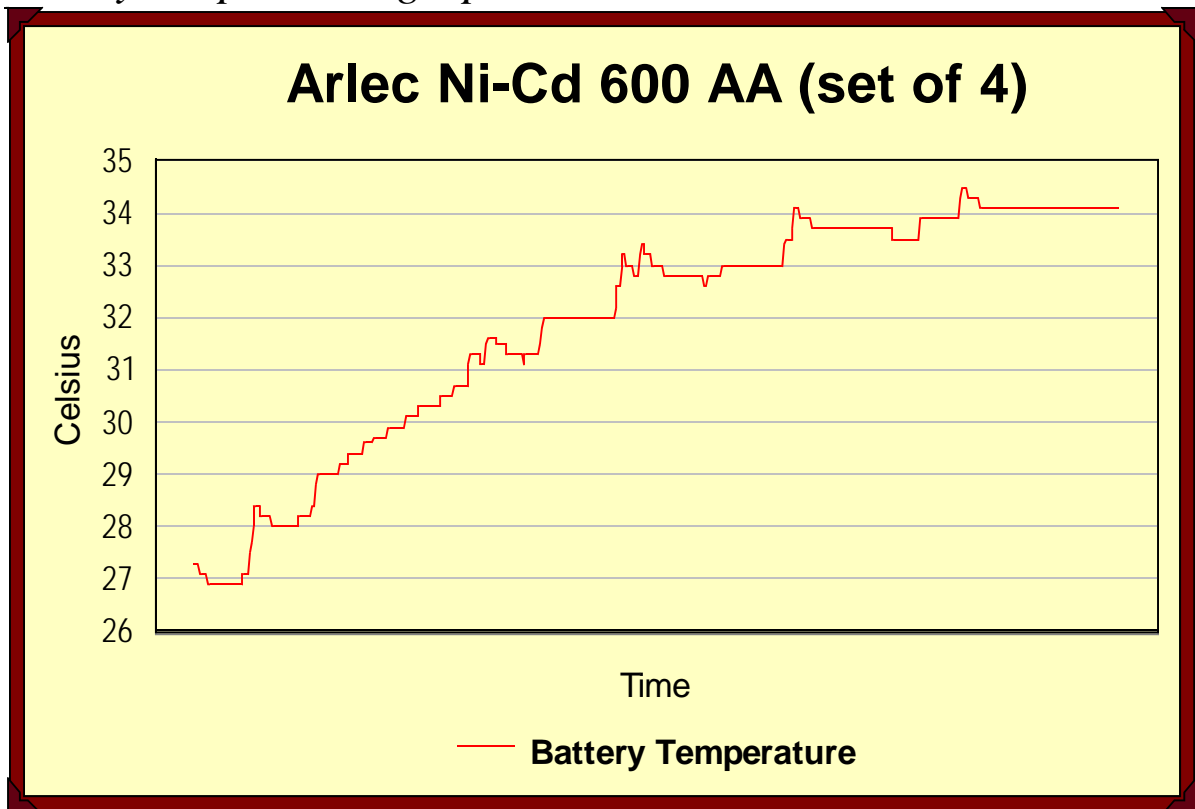


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*Voltage graph*



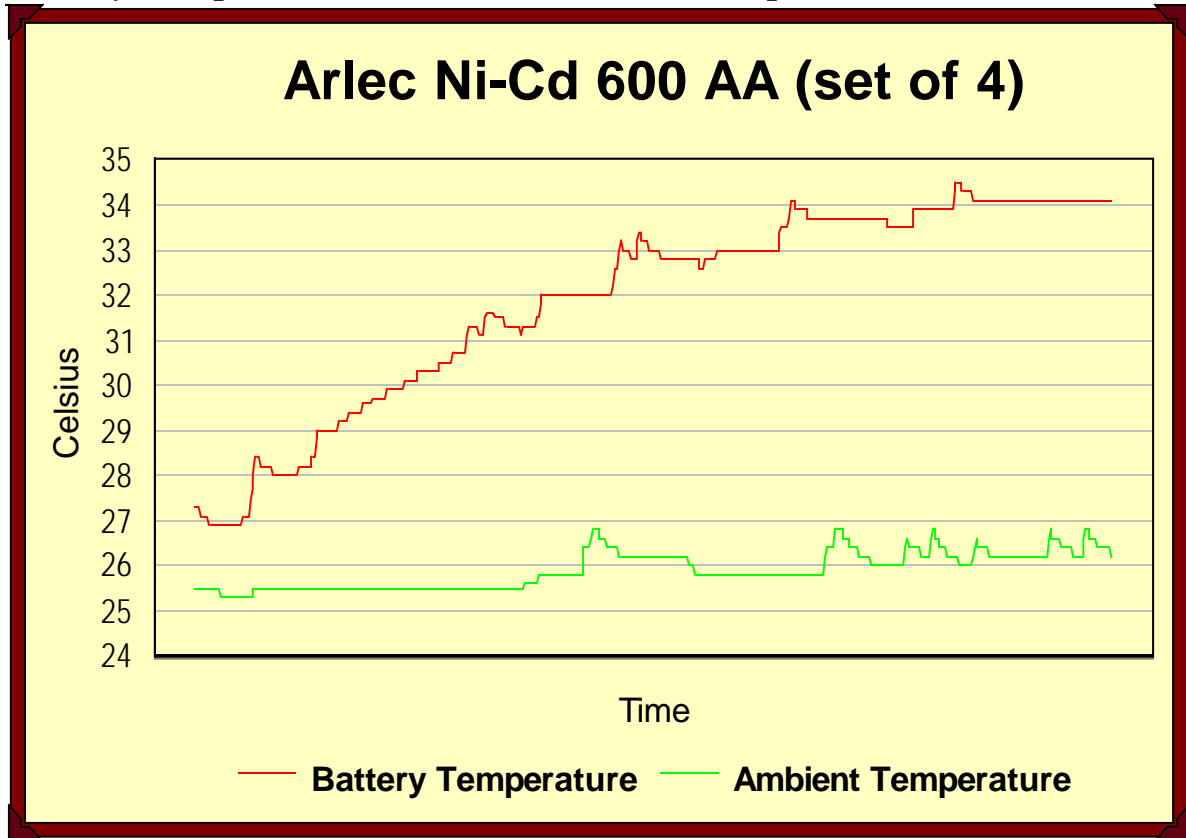
*Battery temperature graph*



The battery temperature moves up by a greater amount than Ni-MH batteries tested to date.

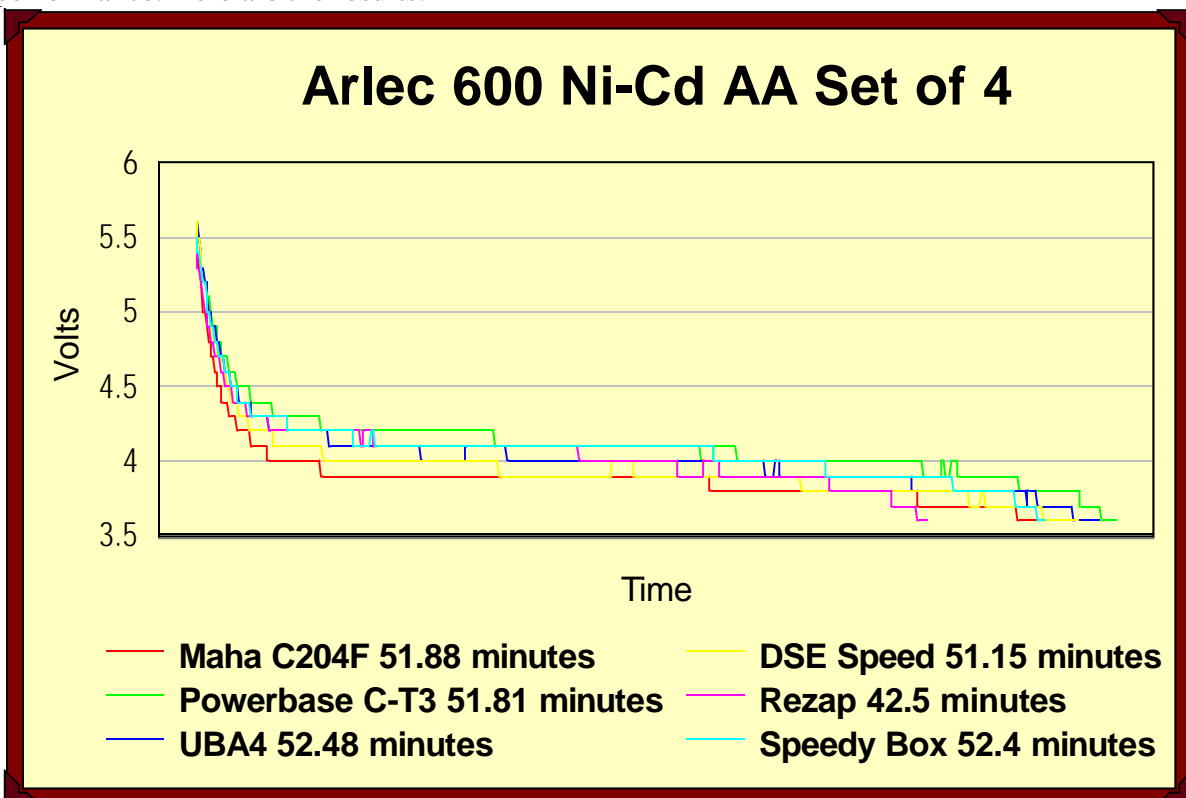
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*Battery temperature -v- Ambient air temperature*



## Charger comparison

The Arlec battery set was then tested in various battery chargers to compare charging performance. Here are the results:



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The performance between all the chargers (except the Rezap) was remarkably consistent. This is probably because the Ni-Cd battery chemistry has been around quite a few years allowing the companies to refine their charging regimes. Secondly, the Arlec battery is only 600 mAh. Chargers tend to struggle once the rating goes above 1500 mAh. The test was probably not fair to the Rezap as it results were from an early test before the battery was taking a full charge. But as the Rezap uses a conservative charge cycle you could only add another few minutes at best.

The Arlec 600 mAh is often the most powerful rechargeable battery stocked by supermarkets – who sell great quantities of primary cell batteries. No wonder customers do not think rechargeable are that powerful.

## *Conclusion*

A battery rated at 600 mAh cannot meaningfully compete against high capacity batteries such as the Sanyo 2100 Ni-MH. The real strength of Ni-Cd batteries lies in industrial uses where environmental conditions are harsher and the number of recharges greater. In tests a Ni-Cd battery set had been recharged 2,300 times and was still working well. You cannot get that number of recharges out of a Ni-MH battery. You cannot argue with the cost either. That said, there are better options for home use, especially if you wish to avoid the highly toxic cadmium.

<b>Run Time (5 ohm)</b>	<b>52.48 minutes</b>
<b>Battery build quality</b>	<b>Very Good</b>
<b>Place of Origin</b>	<b>China</b>
<b>Cost (set of 4)</b>	<b>AUD\$10.00</b>

*Report date: 4 January 2004*

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