





# TEST REPORT

FUJI NOVEL BATTERIES  
 300 CORPORATE DRIVE  
 MAHWAH, NEW JERSET 07430

**LAB LOCATION:** BUFFALO, NY  
**LAB NUMBER:** (5109)085-0154R

**ATTN:** RUSS BONGIORNO  
[russ@fujinovelbatteries.com](mailto:russ@fujinovelbatteries.com)  
**CC:** KISHORE BHASIN  
[lal@fujinovelbatteries.com](mailto:lal@fujinovelbatteries.com)

**DATE IN:** MARCH 26, 2009

**MOD. LOG IN:** N/A  
**DATE OUT:** JUNE 30, 2009  
**REVISED DATE:** N/A  
**WORKING DAYS:** 68  
**PAGE:** 2 OF 10

OVERALL RATING	
PASS	_____
FAIL	_____
DATA	_____ X _____

**TESTING FOR  
 PRIMARY CELL BATTERIES**

<b>Sample Description:</b>	AAA ALKALINE BATTERIES								
<b>Manufacturer:</b>	NOT LISTED			<b>P.O. No.:</b>	LAL323				
<b>Buyer:</b>	NOT LISTED			<b>Style:</b>	NOT LISTED				
<b>Country of Origin:</b>	NOT LISTED ON TRF			<b>Country of Destination:</b>	NOT LISTED				
<b>Color:</b>	NOT LISTED			<b>SKU Number:</b>	NOT LISTED				
<b>Re-test:</b>	<b>Yes:</b>	<input type="checkbox"/>	<b>No:</b>	<input checked="" type="checkbox"/>	<b>Charge Vendor:</b>	<b>Yes:</b>	<input type="checkbox"/>	<b>No:</b>	<input checked="" type="checkbox"/>
<b>Previous Report No.:</b>	N/A								



## EXECUTIVE SUMMARY:

The submitted samples were compared to Duracell, Energizer, Panasonic, and Rayovac AAA batteries, and were subjected to 4 separate discharges per quote Q090003.

The results of this test are presented as **DATA** only.

The first discharge was a discharge of 100 mA for 1 hour per day. This is the ANSI standard test simulating battery performance in a digital music player. For this discharge, the ANSI standard minimum service life for Alkaline batteries is 7.5 hours. The Fuji samples averaged 10.64 hours service life and 1058 mAh capacity. The Duracell samples averaged 9.93 hours service life and 992 mAh capacity. The Energizer samples averaged 10.95 hours service life and 1057 mAh capacity. The Panasonic samples averaged 9.74 hours service life and 974 mAh capacity. The Rayovac samples averaged 11.04 hours service life and 1065 mAh capacity.

The second discharge was a discharge of 5.1 $\Omega$  for 4 minutes per hour for 8 hours per day. This is the ANSI standard test simulating battery performance in portable lighting. For this discharge, the ANSI standard minimum service life for Alkaline batteries is 2.2 hours. The Fuji samples averaged 3.791 hours service life and 875 mAh capacity. The Duracell samples averaged 4.166 hours service life and 941 mAh capacity. The Energizer samples averaged 4.270 hours service life and 969 mAh capacity. The Panasonic samples averaged 3.942 hours service life and 903 mAh capacity. The Rayovac samples averaged 3.702 hours service life and 849 mAh capacity.

The third discharge was a discharge of 600 mA for 10 seconds per minute for 1 hour per day. This is the ANSI standard test simulating battery performance powering a photoflash. For this discharge, the ANSI standard minimum service life for Alkaline batteries is 170 pulses. The Fuji samples averaged 454 pulses service life and 750 mAh capacity. The Duracell samples averaged 285 pulses service life and 478 mAh capacity. The Energizer samples averaged 397 pulses service life and 659 mAh capacity. The Panasonic samples averaged 349 pulses service life and 578 mAh capacity. The Rayovac samples averaged 396 pulses service life and 661 mAh capacity.

**The fourth discharge was a load of 24 $\Omega$  for 15 seconds per minute for 8 hours per day. This is the ANSI standard test simulating battery performance in a remote. For this discharge. The ANSI standard minimum service life for Alkaline batteries is 14.5 hours. The Fuji samples averaged 22.67 hours service life and 1165 mAh capacity. The Duracell samples averaged 22.76 hours service life and 1170 mAh capacity. The Energizer samples averaged 22.53 hours service life and 1162 mAh capacity. The Panasonic samples averaged 20.84 hours service life and 1075 mAh capacity. The Rayovac samples averaged 21.80 hours service life and 1136 mAh capacity.**



**BUREAU  
VERITAS**

100 mA, 1 hour per day	Sample	Service life (hours)		Capacity (mAh)	
	ANSI minimum	7.50			N/A
Fuji 1	11.36	Average:	1136	Average:	
Fuji 2	10.30	10.64	1011	1058	
Fuji 3	10.25		1027		
Duracell 1	9.55	Average:	954	Average:	
Duracell 2	9.97	9.93	997	992	
Duracell 3	10.26		1026		
Energizer 1	10.55	Average:	1040	Average:	
Energizer 2	11.59	10.95	1060	1057	
Energizer 3	10.72		1072		
Panasonic 1	9.71	Average:	970	Average:	
Panasonic 2	9.74	9.74	974	974	
Panasonic 3	9.77		977		
Rayovac 1	10.70	Average:	1054	Average:	
Rayovac 2	11.68	11.04	1069	1065	
Rayovac 3	10.73		1073		
<b>5.1 Ω load for 4 minutes per hour, 8 hours per day</b>					
	Sample	Service life (hours)		Capacity (mAh)	
ANSI minimum	2.20			N/A	
Fuji 1	4.047	Average:	931	Average:	
Fuji 2	4.062	3.791	928	875	
Fuji 3	3.263		766		
Duracell 1	4.253	Average:	964	Average:	
Duracell 2	4.051	4.166	912	941	
Duracell 3	4.195		948		
Energizer 1	4.185	Average:	948	Average:	
Energizer 2	4.247	4.270	964	969	
Energizer 3	4.378		996		
Panasonic 1	3.913	Average:	902	Average:	
Panasonic 2	3.995	3.942	905	903	
Panasonic 3	3.918		902		
Rayovac 1	4.392	Average:	994	Average:	
Rayovac 2	2.262	3.702	543	849	
Rayovac 3	4.453		1010		



**BUREAU  
VERITAS**

<b>600 mA for 10 seconds per minute, 1 hour per day</b>	<b>Sample</b>	<b>Service life (pulses)</b>		<b>Capacity (mAh)</b>	
	ANSI minimum	170		N/A	
	Fuji 1	536	Average:	887	Average:
	Fuji 2	414	454	675	750
	Fuji 3	413		688	
	Duracell 1	393	Average:	658	Average:
	Duracell 2	356	285	596	478
	Duracell 3	106		180	
	Energizer 1	380	Average:	622	Average:
	Energizer 2	403	397	673	659
	Energizer 3	408		682	
	Panasonic 1	340	Average:	567	Average:
	Panasonic 2	336	349	555	578
	Panasonic 3	372		612	
	Rayovac 1	402	Average:	669	Average:
	Rayovac 2	391	396	653	661
	Rayovac 3	395		660	

<b>24 Ω for 15 seconds per minute, 8 hours per day</b>	<b>Sample</b>	<b>Service life (hours)</b>	<b>Average Service Life (Hours)</b>	<b>Capacity (mAh)</b>	<b>Average Capacity (mAh)</b>
	ANSI minimum	14.5		N/A	
	Fuji 1	22.72	Average:	1163	Average:
	Fuji 2	22.39	22.67	1152	1165
	Fuji 3	22.90		1181	
	Duracell 1	22.95	Average:	1178	Average:
	Duracell 2	22.66	22.76	1153	1170
	Duracell 3	23.13		1179	
	Energizer 1	22.93	Average:	1165	Average:
	Energizer 2	21.63	22.53	1130	1162
	Energizer 3	23.03		1193	
	Panasonic 1	20.73	Average:	1068	Average:
	Panasonic 2	21.03	20.84	1078	1075
	Panasonic 3	20.77		1079	
	Rayovac 1	21.84	Average:	1139	Average:
	Rayovac 2	21.62	21.80	1118	1136
	Rayovac 3	21.95		1152	



**Note: This report was revised to add the results for the 245  $\Omega$  Load Discharge.**

For general inquiries, please contact Bureau Veritas at (716) 505-3300.

Bureau Veritas  
Consumer Products Services, Inc.

A handwritten signature in black ink, appearing to read 'J. Fields'.

Jason Fields  
Associate Product Test Engineer  
Electronics Department  
[jason.fields@us.bureaveritas.com](mailto:jason.fields@us.bureaveritas.com)

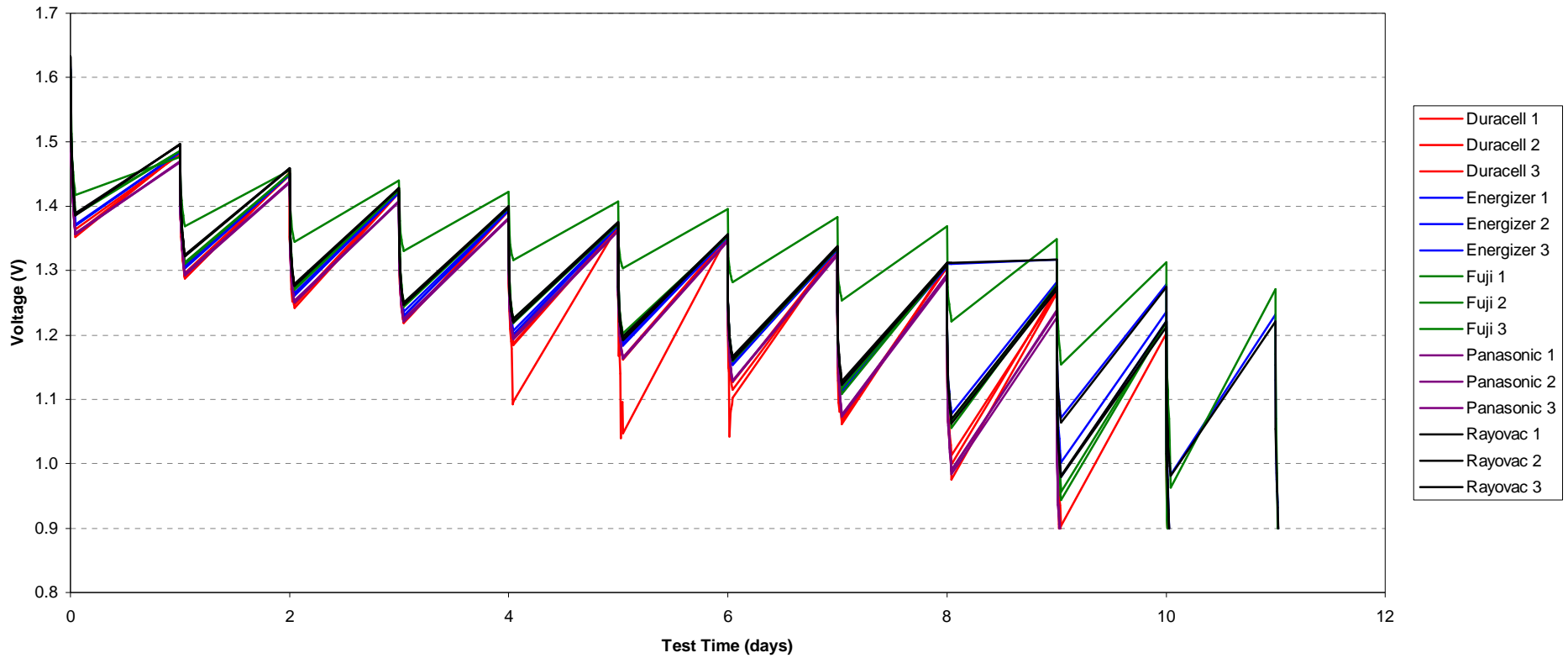
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BV Lab Number:  
Technician Name:  
Test Date:  
Reviewed By/Date:

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June 29, 2009  
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AAA batteries, 100mA load for 1 hour per day: Voltage (V) vs. Test Time (days)





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Technician Name: GM  
Test Date: June 29, 2009  
Reviewed By/Date: DC June 29, 2009  
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AAA Batteries, 5.1 Ω load for 4 minutes per hour, 8 hours per day: Voltage (V) vs. Test Time (days)

