

**Automobile**  
**Mercury Sable GS**

<b>Date:</b>	November 07, 2005
<b>Type:</b>	Starter Battery for Automobile.
<b>Manufacturer:</b>	Exide 840
<b>Specification:</b>	Flooded battery / 800 CA / 630 CCA
<b>Age of the battery:</b>	Made in June 2001. (Possibly installed to a car by Aug. 2001)

- \* Battery was obtained from a pile for recycle at "7th Avenue Auto Service" in Seattle, WA.
- \* Water was low and top portion of the electrode plates were exposed.
- \* Before installed to a car, water was added and charged for 2 hours.

**Specific Gravity from positive to negative.**

<b>Cell / Date</b>	<b>11-07</b>	<b>11-10</b>	<b>11-13</b>	<b>11-20</b>	<b>11-27</b>	
<b>1</b>	1.170	1.205	1.195	1.200	1.200	
<b>2</b>	1.205	1.235	1.245	1.265	1.265	
<b>3</b>	1.185	1.230	1.245	1.265	1.265	
<b>4</b>	1.185	1.220	1.235	1.265	1.265	
<b>5</b>	1.185	1.220	1.240	1.265	1.265	
<b>6</b>	1.185	1.205	1.220	1.245	1.250	
<b>Average S.G.</b>	<b>1.186</b>	<b>1.219</b>	<b>1.230</b>	<b>1.251</b>	<b>1.252</b>	
<b>Charging Rate</b>	53%	69%	75%	86%	86%	
<b>Temp</b>			12	15	8	
<b>Time</b>			9:15AM	12:30PM	9:30 AM	

**CCA rating**

<b>Date</b>	<b>11-07</b>	<b>11-10</b>	<b>11-13</b>	<b>11-20</b>	<b>11-27</b>	
<b>CCA</b>	648	581	584	578	540	
<b>Voltage</b>	13.47	12.41	12.31	12.25	12.17	
<b>Status</b>	Good Batt	Good Batt	Good ReChg	Good ReChg	Good ReChg	

**Mileage per Gallon**

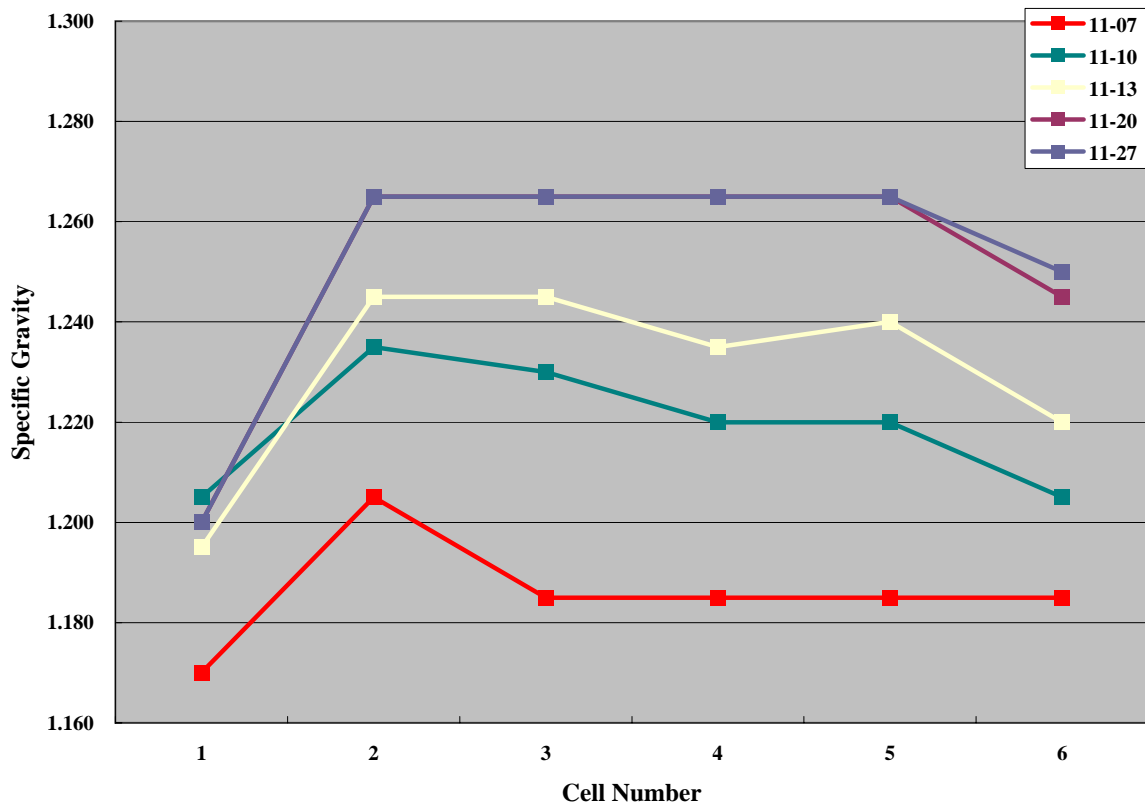
<b>Date</b>	<b>11-10</b>	<b>11-16</b>	<b>11-23</b>	<b>12-02</b>		
<b>Trip Meter</b>	222.600	236.1	260.7	259.6		
<b>Gasoline</b>	11.812	12.244	13.157	12.596		
<b>Mile / Gal.</b>	18.845	19.283	19.815	20.610		

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**Comments**

11-07-05	First CCA and voltage measurement were high, apparently because of right after charging. Electrolyte are in brown color because of burnt sulfation on exposed plates.
11-10-05	CCA and voltage were measured after over night rest when battery is settled down and cooled. S.G. already improving +0.033 average after three days.
11-27-05	S.G. has stopped improving from 11-20-2005. CCA rate has slightly decreased. Possible explanation is cell #1 causing poor CCA reading.. Also, weather is getting colder. Mileage has improved since Nanopulser was installed. It is very likely because of less load to alternator. First mileage reading on 11-10 is from 8 years old original battery that failed. (When alternator charges battery, it requires more force to turn the alternator. This load makes engine to work harder and burn more fuel.)

**Change in Specific Gravity**



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- \* An old battery, pulled from recycle bin.
- \* Made in June 2001. Possibly installed by Aug. 2001
- \* Water level was low and had some sulfation burned on the plate. When the water was added, the water became brown from the burned sulfation.



Cell #1



Cell #2



Cell #3



Cell #4



Cell #5



Cell #6

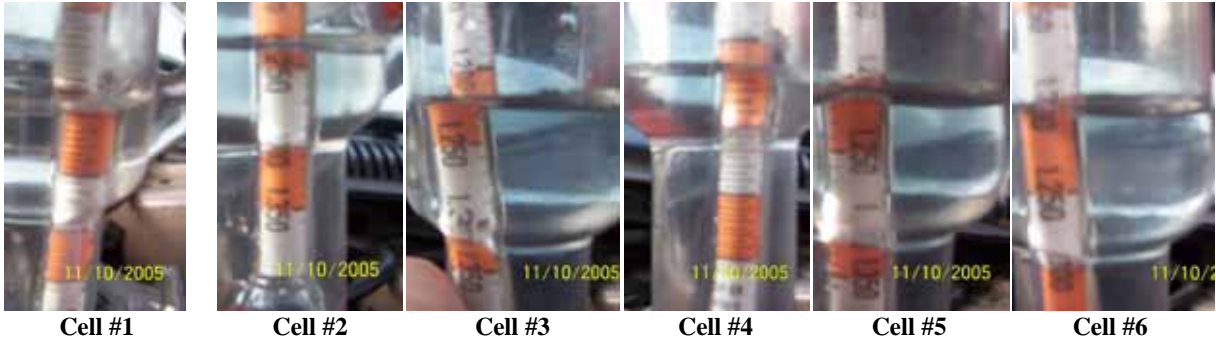


CCA Tester reading is 648 CCA and 13.47V.  
 It is right after the 2 hour recharge.  
 (High reading is expected because of surface voltage right after charge.)



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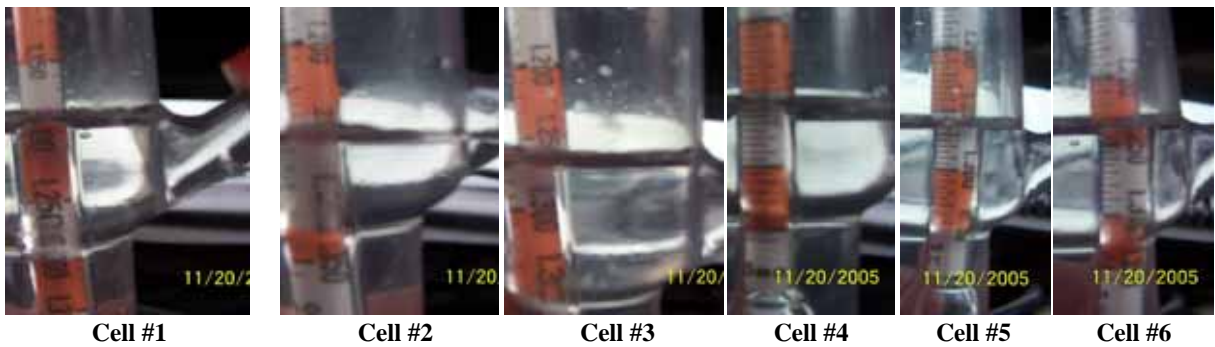
**Date:** November 10, 2005



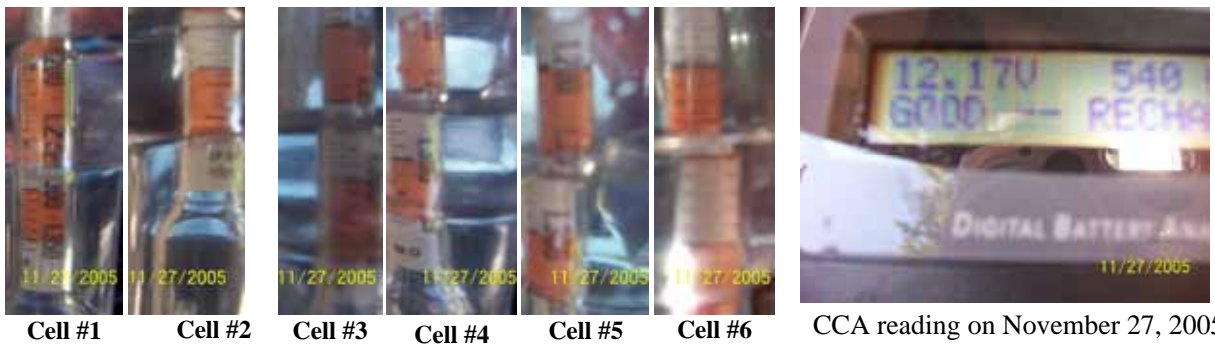
**November 8, 2005**

Measurement was taken 8:15AM when battery was rested over night. Voltage settled at 12.41V and CCA was 581. Shows as good battery.

**Date:** November 20, 2005      Hydrometer readings.



**Date:** November 27, 2005



These photos are not the best shot. Water line on cell #1 and 2 is at top portion of the photo.