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Macintosh Portable: Battery DA Doesn't Exactly Measure Charge

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TOPIC -----

I am evaluating 10 Macintosh Portables.

Eight were removed from their shipping materials and charged for 4 to 5 hours. They were then left untouched for 4 hours, and as soon as they were activated, the battery DA indicated that there was only a 3/4 charge.

After examining the documentation, it was apparent that the battery should be charged for at least 10 hours. Macintosh Portables number 9 and 10 were then charged (for the first time) for 12 and 24 hours, respectively.

From this point on, all systems were treated and behaved in essentially the same ways. When one system was tested, the "battery-low" warning appeared after only 3 hours of non-continuous use. On some occasions, after charging, the battery DA would say 3/4 full, then, although the machine had not been used, it would indicate almost completely full 2 hours later. On other occasions, one could actually watch the battery power level go down.

Is this kind of activity to be expected from the Portable Battery?

DISCUSSION -----

The Battery DA is not an exact representation of battery state.

It indicates battery-low conditions by comparing the current battery state to the power curve of a "typical" Macintosh Portable battery. Since the actual curve for all batteries is not the same (some start higher and decay slower), the output of the DA cannot be considered exact.

A perception problem may also exist in regards to the portable battery DA. When the hard drive wakes up or the back lighting is turned on and off the battery DA fluctuates a significant amount. Many customers interpret this a 1 to 1 voltage drain on the battery and think their battery has suddenly lost most of it's voltage. Because of the increased load of the

back-lighting the battery DA will fluctuate even more than it did on the original non-backlit portable. It is important that the customer understand that the batter DA is only a "rough" estimate of the battery voltage level and will vary significantly according the current load on the system.

(NOTE: Even after the first warning is received, the user should have about an hour before hardware shutdown occurs.)

There are many possible explanations for the situation you report: namely, the DA indicating a higher charge after the Macintosh sits inactive for a while.

First, a warm battery indicates a higher charge than a cold one. If the first reading was taken immediately after bringing the Macintosh Portable indoors, the DA would show a higher charge after the system reached room temperature. The same could hold true with the system operating.

The estimated time before the battery needs recharging depends on how the system is being used. For example, the charge life of a hard disk-equipped Macintosh Portable would be closer to 6 hours, while the same system using a RAM disk would last closer to 12 hours. The how-long-until-sleep setting in the Macintosh Portable CDEV also changes battery life. Also, floppy disk-intensive applications require more power than those that use the more efficient hard disk.

As far as the low-power warning appearing after only 3 hours, it's unclear whether that system was one of the original eight that were undercharged to begin with. It's important to remember that the Macintosh Portable battery is lead-acid and not ni-cad. Ni-cad batteries benefit if they are charged completely and then fully drained each time. Lead-acid batteries are just the opposite; the more charged you keep the battery, the longer it holds a charge.

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