

## Re: How are Spirit and Opportunity able to operate for so long?

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*Source:* <http://sci.tech-archive.net/Archive/sci.astro/2005-08/msg00119.html>

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- *From:* [rages@xxxxxxxxxxxxxxxxxxxxxxxx](mailto:rages@xxxxxxxxxxxxxxxxxxxxxxxx) (Kathy Rages)
  - *Date:* Mon, 15 Aug 2005 20:19:04 -0000
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In article <1124108231.912874.78670@xx>, <killerclick@xxxxxxxx> wrote:

>

>Very surprised, if my computer happened to be millions of miles away  
>working in a hostile environment with extreme temperatures and powered  
>by solar panels being slowly covered with dust. :)

The one really pleasant surprise they've had with regard to rover operations is that the winds on Mars don't always deposit dust on the solar panels; sometimes they remove it. So they have done much better than they thought they would on the issue of "available power will decrease with time as the solar panels get covered with dust".

Another thing they really thought would put a limit on rover lifetime was the onset of martian winter, which causes both thermal stress (it gets REALLY cold) and reduced sunlight/power. So it turned out the rovers were tough enough to survive the cold and they figured out various tricks to get more sunlight on the solar panels (like parking on north-facing slopes). And now summer is approaching again.

>"Hey, Mars isn't as dusty as we thought!"

See above.

>"Okay, we just didn't want to look like idiots if the whole thing broke  
>down in the first hundred days."

... and there may have been an element of this. Lifetime estimates made by spacecraft engineers tend to be very conservative -- more like lower bounds.

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Kathy Rages

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Re: How are Spirit and Opportunty able to operate for so long?

- **References:**

- ◆ **[How are Spirit and Opportunty able to operate for so long?](#)**

- ◇ *From:* killerclick

- ◆ **[Re: How are Spirit and Opportunty able to operate for so long?](#)**

- ◇ *From:* George Dishman

- ◆ **[Re: How are Spirit and Opportunty able to operate for so long?](#)**

- ◇ *From:* killerclick

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