

Photographing an Iridium Flare

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Last night, I was taking 2 minute exposures of the constellation of Cygnus the Swan from my observatory. This morning when I went through the exposures, I discovered I had caught something in one of the exposures. It didn't look like a meteor, as it appeared to rise and fall in brightness over a period of time, whereas a meteor I would expect to start off dim and get brighter and then vanish. My suspicion was that it was a satellite - specifically one of the [Iridium](#) group of satellites.

The Iridium satellites are used for satellite phone calls. They are named because it was originally intended to launch 77 satellites providing call coverage around the globe. However, it was determined that all 77 satellites were not needed to provide full worldwide coverage, so there are currently 66 operating satellites in orbit, with 6 spares in a holding orbit. The orbital height of the operational satellites is 485 miles on average. They are travelling at 16,832 miles per hour, and complete one orbit of the Earth every 100 minutes.

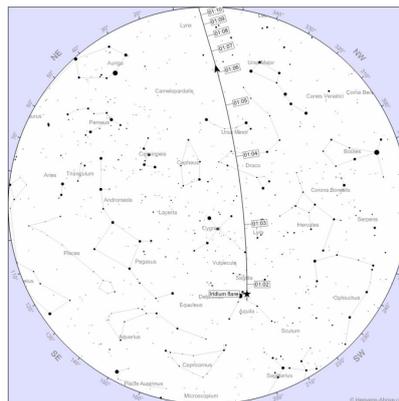
The reason for the flare seen in the picture is that these satellites have 3 door-sized antennas angled at 40 degrees away from the main body of the satellite itself. They are arranged equally, with 120 degrees between them. When the light from our Sun hits the antenna, about 4-5 times a day the reflected light create a 6.2 mile wide circle of light on the surface of the Earth. To an observer, this appears as a bright flash of light which suddenly gets brighter, then dimmer as the satellite moves over their head. The date and time of each flash is easily predictable, as the orbit and attitude of the satellite is known precisely.



To find out whether I had accidentally caught an Iridium flare, and check which satellite and antenna my camera saw the reflection from, I checked on <http://www.heavens-above.com>, which provides detailed prediction for most satellites circling the Earth, including the International Space Station and Iridium Flares.

I was able to determine exactly which satellite I had captured - Iridium 72 - and the reflection was from the front facing antenna (its direction of travel). At the time of the flash, the satellite was 640 miles away.

Here is the track of the satellite from Heavens-Above.com showing the predicted position of the flare:



I PDF'd a version of the Flare information from Heavens-Above.com, which you can download [here](#).