[**How You Can Track Every Spy Satellite In Orbit**](http://io9.gizmodo.com/how-you-can-track-every-spy-satellite-in-orbit-1685316357)



[Mika McKinnon (mika.mckinnon@gmail.com)](http://kinja.com/spacemika)

[2/12/15 2:40pm](http://io9.gizmodo.com/how-you-can-track-every-spy-satellite-in-orbit-1685316357)

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Nobody should be surprised that spy satellites are kept secret. But it's actually more complicated. The [launches are aired](http://space.io9.com/successful-night-launch-for-a-spacecraft-shrouded-in-se-1635635335), but with scheduled media blackouts. We get [mission patches](http://io9.com/decoding-hidden-messages-in-those-geeky-spy-satellite-m-1671164600), but no details on the nature of the payload. But the weirdest thing is how easy it is to track these satellites.

[**Decoding Hidden Messages In Those Geeky Spy Satellite Mission Patches Decoding Hidden Messages In Those Geeky Spy Satellite Mission Patches Decoding Hidden Messages In Those Geeky Spy…**](http://io9.com/decoding-hidden-messages-in-those-geeky-spy-satellite-m-1671164600)

Last year, the National Reconnaissance Office sparked a media frenzy when it released a spy… [Read more io9.​com](http://io9.com/decoding-hidden-messages-in-those-geeky-spy-satellite-m-1671164600)

*Top image: The National Reconnaissance Office needed a Delta IV Heavy rocket to boost their secretive NROL-15 payload into orbit in June 2012. Credit:* [*NRO*](http://www.nro.gov/about/launches/launches2012.html)

The lack of secrecy around spy satellites isn't a choice, but more a basic consequence of the nature of reality. To start with, rocket launches are really bloody obvious. When thousands of pounds of thrust fires off and blazes across the sky, [everyone notices](http://space.io9.com/a-successful-clandestine-launch-was-widely-seen-in-cal-1670962185). The National Reconnaissance Office bows to the inevitable and does us the courtesy of [publicly releasing the times and locations of launches](http://gizmodo.com/5696611/us-spy-satellite-is-the-largest-satellite-in-the-world) in advance instead of trying to pretend we won't notice.

[![data:image/gif;base64,R0lGODlhAQABAAAAACH5BAEKAAEALAAAAAABAAEAAAICTAEAOw==](data:None;base64...)](http://space.io9.com/a-successful-clandestine-launch-was-widely-seen-in-cal-1670962185%22%20%5Ct%20%22_blank)

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Is a launch still clandestine if everyone sees it? Apparently so, as the launch of a secretive… [Read more space.​io9.​com](http://space.io9.com/a-successful-clandestine-launch-was-widely-seen-in-cal-1670962185)

They aren't entirely open with the launch information: we rarely know anything about the duration of a launch window, which limits our ability to piece together where in orbit the rocket is attempting to deliver its payload.

![data:image/gif;base64,R0lGODlhAQABAAAAACH5BAEKAAEALAAAAAABAAEAAAICTAEAOw==](data:None;base64...)

Yet even the extremely limited information of where a satellite is launching from is enough to give us some pretty hefty hints about its purpose. For satellites destined to near-Earth orbits, the launch location tells us exactly what type of orbit it is aiming for. Anything launching east out of Florida is heading into an equatorial orbit, while anything boosted south out of California is going into a polar orbit. While equatorial orbits can slip a satellite into geosynchronous positioning for continuous monitoring, a polar orbit is sun-synchronous, passing over the same place at the same time of day, everyday.

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*When NROL-25 launched in April 2012, we knew the payload had to fit within this shroud Image credit:* [*NRO*](http://www.nro.gov/about/launches/launches2012.html)

We also know from the size of the rocket the maximum mass of the payload, while visual examination of the payload shroud can give us a bit of a, "larger than a breadbox, yet smaller than a school bus" sense of size.

Live-broadcasting the launches is a relatively recent increase in transparency — but even then we run into a media blackout the moment the aerodynamic protective casings peel off after leaving the atmosphere, exposing the payload. Even though the payloads are secret and [the technology is classified](http://gizmodo.com/5994202/how-the-us-built-its-super-secret-spy-satellite-program) [for decades](http://gizmodo.com/5841514/this-massive-cold-war-spy-satellite-was-hidden-from-the-world-until-now/#_ga=1.78076951.281055699.1415252107), it doesn't take much logic to work out that [any technology actively in use on a scientific research satellite](http://space.io9.com/nasa-is-spying-out-every-earthly-secret-1665382223) could very easily be on a spy satellite.

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Ethics aside, espionage is an indispensable part of statecraft. The ISR [Intelligence,… [Read more gizmodo.​com](http://gizmodo.com/5994202/how-the-us-built-its-super-secret-spy-satellite-program)

Between [visible light](http://gizmodo.com/5977666/darpas-seemee-satellites-will-keep-soldiers-from-getting-lost-in-the-fog-of-war#_ga=1.86974363.281055699.1415252107), infrared, and radar observations, any time we marvel over the high-resolution datasets available for scientific research, we can uneasily acknowledge that the intelligence trade has access to equal or better quality images for their own projects, and that [the technology is going to just keep getting better](http://gizmodo.com/how-cold-war-spy-satellites-revealed-10-000-lost-cities-1567729482#_ga=1.86974363.281055699.1415252107). The same holds true for signal tracking and communications relay — as coverage keeps expanding to more remote locations, know that the civilian market is behind the cutting edge.

Once a satellite is in orbit, intelligence agencies run into the next insurmountable obstacle to secrecy: space is transparent. Depending on how big it is, what it's made of, and its orbit, every single satellite is naked-eye visible. With enough methodical patience and even a low-powered telescope, even the [darkest, dimmest, and strangest-shaped satellite](http://gizmodo.com/5162837/misty-stealth-satellite-hides-perfectly-while-watching-you) isn't going to be able to [hide forever](http://archive.wired.com/wired/archive/14.02/spy.html). Every time [a new satellite is launched](http://gizmodo.com/5739256/giant-fcking-rocket-carries-giant-fcking-spy-satellite-into-orbit), satellite trackers around the world immediately start scouring the horizons along its probable trajectory [to find it, then track every move it makes](http://gizmodo.com/5900704/the-government-cant-even-hide-secret-spy-satellites-anymore#_ga=1.86974363.281055699.1415252107).

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Misty. That's the codename for one of the most advanced spy satellites up there. Launched in a … [Read more gizmodo.​com](http://gizmodo.com/5162837/misty-stealth-satellite-hides-perfectly-while-watching-you)

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Last week, the National Reconnaissance Office, which runs our country's top secret spy… [Read more gizmodo.​com](http://gizmodo.com/5900704/the-government-cant-even-hide-secret-spy-satellites-anymore#_ga=1.86974363.281055699.1415252107)

![data:image/gif;base64,R0lGODlhAQABAAAAACH5BAEKAAEALAAAAAABAAEAAAICTAEAOw==](data:None;base64...)

*Hobbyist satellite trackers can sometimes even determine satellite orientation. Image credit:* [*Thierry Legault/Emmanuel Rietsch*](http://www.astrophoto.fr/spy_satellites.html)

Spotting satellites poses no great technical challenge: go outside at night, look up, and watch the tiny streaks of artificial stars racing around our planet. For many satellites, [you can even look up the orbital parameters](http://spotthestation.nasa.gov/sightings/) to know exactly where and when a specific satellite will be visible from your location.

The operators of spy satellites try to keep those [orbital parameters](http://spaceflight.nasa.gov/realdata/elements/) hidden, but in practice this just means [hobbyist observers compete to track new satellites and orbital changes](http://www.universetoday.com/87005/spying-on-spy-satellites-with-thierry-legault/) in existing satellites as [a nightly challenge](http://www.space-travel.com/reports/Hobbyists_track_secret_orbits_of_spy_satellites_999.html). As for governments, they have serious resources to devote to [tracking spy satellites from competing agencies](http://gizmodo.com/5138954/pentagon-mitex-satellites-are-the-first-to-actively-spy-on-other-satellites), which makes trying to hide anything even more futile.

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Quis custodiet ipsos custodes? If we're talking spy satellites, the answer this week became… [Read more gizmodo.​com](http://gizmodo.com/5138954/pentagon-mitex-satellites-are-the-first-to-actively-spy-on-other-satellites)

What does tracking the satellites and determining their orbital parameters tell us? Exactly where and when a satellite will be overhead. This can be downright frustrating for intelligence agencies — the [1998 Indian nuclear tests](http://nuclearweaponarchive.org/India/IndiaShakti.html) in the Rajasthan desert were deliberately timed to hide from American spy satellites! The inverse also happens, with displays of force marched out to be "accidentally" discovered.

While [it all feels very Cold War obsolete on occasion](http://gizmodo.com/oh-cool-that-fireball-over-the-us-was-just-a-russian-s-1635775289), the simple truth is that every country with satellites in orbit is spying, and every country those satellites pass over knows that it's happening. Because rockets are obvious and space is transparent, not only do we know about these satellites, but they know that we know, and we know that they know we know.

Just about the only thing we don't know is what these intelligence organizations choose to do with what they learn.

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[2/12/15 3:52pm](http://io9.gizmodo.com/anything-launching-west-out-of-florida-is-heading-into-1685499730)

*Anything launching west out of Florida is heading into an equatorial orbit,*

Satellites launch from west to east, if they are heading into equatorial orbits. That way, they get the additional vector from the rotation of the planet.

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[2/12/15 7:48pm](http://io9.gizmodo.com/yup-typo-fixed-its-also-to-keep-the-rockets-from-pass-1685558327)

Yup, typo fixed! It's also to keep the rockets from passing above inhabited areas. The US has rules in place that spaceflight can pose no more risk to the population than normal air travel, so always launch over ocean. That's why Florida never gets north-south launches, and California's Vandenberg is all out of luck for east-west launches.

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[2/12/15 3:13pm](http://io9.gizmodo.com/im-sure-theres-a-satellite-that-tracks-satellite-tracke-1685486192)

Im sure theres a satellite that tracks satellite trackers. Has its camera aimed downwards and snaps footage of the trackers looking up through their telescopes.

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Just wait until the soon-to-be-launched "Mini Rods from God" starts shooting a 1/2" piece of tungsten at 6000 mph through the objective of your $10,000 Takahashi. That'll keep you nosy SOBs from trying to determine the orbits of these satellites.

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Sounds like the plot from Captain America: Slightly Uncomfortable Weather Soldier

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Special Ops Weatherman: a real thing.

Saw this article the other day, and found it fascinating.

[http://www.nbcnews.com/pages/weatherm…](http://www.nbcnews.com/pages/weathermen)

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[Read on Top 10 Best Website Builders](http://www.top10bestwebsitebuilders.com/weebly-vs-web?utm_campaign=T104&a=T104&utm_source=taboolaNI&utm_medium=gawkermedia-gizmodo&ts=taboo&taboola_campaign=217755" \o "The Only 2 Sites You Need to Know About When Building a Website" \t "_blank)

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[Read on Pirates: Free Online Game](http://plarium.com/play/en/pirates/017_ships_hybrid_anim_g?plid=91798&pxl=taboola_fr&publisherID=gawkermedia-gizmodo" \o "Find out why more than 20 million people can't stop playing this game" \t "_blank)

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[Read on Womens Article](http://www.womensarticle.com/10-shockingly-highest-paying-masters-graduate-college-degrees/?utm_source=tabollalow&utm_medium=cpc&utm_campaign=taboolalow&utm_source=taboolalow&utm_medium=referral" \o "10 Shockingly High Paying Graduate College Degrees" \t "_blank)

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Parte inferior do formulário

NoneNoneNoneNone