

Topol Test: Slipped Secrets of the Russian Nuclear Attack Industry
James Oberg // January 15, 2014 // 3000 words

How do major military secrets leak into the open? Sometimes through random glances out of windows, defensive use of dashcams in traffic, and as all-too-easily-ignored 'UFO reports'. Here's just such a story.

Last October 10, as the US federal government went on a partial shutdown, astronauts aboard the International Space Station were still on duty. Along with them were workers at Mission Control in Houston, but few other NASA employees, particularly anybody in the Public Affairs Office.

So when three of the crew – Italian astronaut Luca Parmitano and Americans Mike Hopkins and Karen Nyberg – witnessed an amazing and unprecedented phenomenon out the windows of their observation deck [the so-called “cupola module”], their subsequent outreach-program tweets were easily passed through the understaffed communications center without review and then broadcast to the planet, with pictures.



“Saw something launch into space today,” tweeted Hopkins less than eight hours afterwards, adding: “Not sure what it was but the cloud it left behind was pretty amazing.” A few hours later, his spaceshipmate Parmitano sent more pictures with the note: “A missile launch seen from space: an unexpected surprise!” He soon elaborated: “The object disintegrates before our eyes...”



Views from space [above] and from Earth [below] showed same features



Two weeks later, with the NASA bureaucracy back up at full strength, I asked an official in Houston for the REST of the 140-odd photographs that the crew had made during the encounter. The answer was they couldn't be released because their experts didn't know enough about the event to write captions. [Over the

following weeks they did dribble a few more releases, innocuously captioned: “This is one of a series of views that captured a missile launch from Earth....”, using the original tweet from Hopkins with no further details]

The images certainly looked mysterious. And the true identity of the vehicle the astronauts had seen actually may have deserved some official reluctance to draw attention to it. It turns out not to have been the innocent “rocket launch” for space exploration that the astronauts had first surmised. Nor were most of the pictures of a “launch” at all.

Simo view post-spiral plume

The circle is in FRONT of the cloud, centered at its former apex



- [left] Almaty, ground
- [right] ISS, 440 kilometers
- See also Chelyabinsk viewpoint <http://www.youtube.com/watch?v=II0mLxScS30>

What the astronauts really saw was far more sinister. It was the in-space operation of a new-generation Russian nuclear weapons platform being developed to evade and penetrate any potential ‘missile shield’ that the US might try to erect against a Russian nuclear strike. And the pictures that the astronauts took [which I eventually obtained by means I’d rather not specify], along with dozens of videos made by ground observers in Russia, Kazakhstan, and Uzbekistan, can provide significant details about the function and capabilities of that top secret weapon.

The test was entirely legal, and the Russians had made no secret of it. Within half an hour of its launch at 13:39 GMT on Thursday evening [local time], October 10, an official press release came out in Moscow. Colonel Igor Yegorov, spokesman for the Defense Ministry, described a launch of an old-model ‘Topol’ missile from Kapustin Yar to Sary Shagan. Yegorov added that the flight was

made “as part of the tests of a new warhead,” as well as to verify lifetime-extension techniques for the 25-year-old missile.

But penetrating American defenses was the primary goal, he stressed: “During the test, data was gathered on the parameters of the target environment shaped by the payloads of future ballistic missiles in the process of missile defenses being overridden,” he added. “Subsequently, these results will be used in developing effective systems to override missile defenses and equipping new missiles with them.”

The flight path of the rocket was a giveaway of its anti-missile connection, too. Kapustin Yar, on the lower Volga, had been a missile testing range since the late 1940s. When the time came to develop anti-missile systems, a base was built on the north shore of Lake Balkhash, 2300 kilometers to the east. Radars, tracking cameras, and prototype defensive missiles had been installed by the end of the 1950s. Hundreds of test flights had been conducted in secret over ensuing decades. And in the recent resurgence of Russian military spending, both bases have been significantly upgraded.



Independently, however, other local technologies had also improved, and most relevant here was the personal camcorder. Enough Russians now carry them [or have installed them in their cars] that dozens saw and captured the most spectacular and mysterious portion of this flight. And these images, posted on the Internet or on local news media websites, provided critical clues to deciphering the meaning of the missile launch.

The initial launch itself took two minutes and had left only a brief contrail that quickly was warped into a zig-zag path by high altitude crosswinds. But then, three minutes later and in an entirely different portion of the sky, a new apparition flashed out in the darkening evening sky.

Beginning as a bright moving star, it quickly grew a fan-shaped tail. The tail, with a rounded but sharply defined back end, continued to grow over about a minute's time. But then suddenly the bright head of the comet-shaped cloud flared into a spinning spiral which then transformed into an expanding circle, like a single ripple of a stone thrown into a pond. The cone-shaped fan broke free of the bright head, fell back, and faded away.



[camcorder view from Omsk showing cloud with expanding nose circle]

It's important to realize this "cloud" wasn't floating like some aircraft contrail or even as a fast-streaming fiery exhaust plume we're familiar with in a thousand rocket launches. Instead, something moving across the sky in nearly level flight was ejecting millions of tiny particles at about half the speed of its forward motion, particles that together fell through the vacuum of space until they would drop back into the upper atmosphere a few minutes later.

The stream of dust-sized particles 'painted' a shape in the sky that was fortuitously visible because it was lit by the setting sun even as the land beneath it was in post-sunset darkness. This created the darkened sky that was transparent enough for the cloud, on the other side of the sky, to be visible..

But there was more to the cloud than just its fan shape. In viewing video after video and still image after image, I detected irregularities in the otherwise symmetrical shape. First and most obvious was a "hole" in the back end of the cloud, a large black circle visible even through the surrounding haziness. It looked as if the plume were HOLLOW, at least in its initial stages.

Even more bizarre, but less strongly defined, were notches around the circumference at the big end of the fan. When interpreted as a three-dimensional cone [or 'gown'] of fog, it looked like four evenly-space "cut-outs" around the base of the cloud.



I remember speculating initially that these features, if real, could be clues to shadowing effects on the thruster plume [or multiple plumes] from engines on the vehicle itself. And so it seems, it did turn out – but I get ahead of myself.

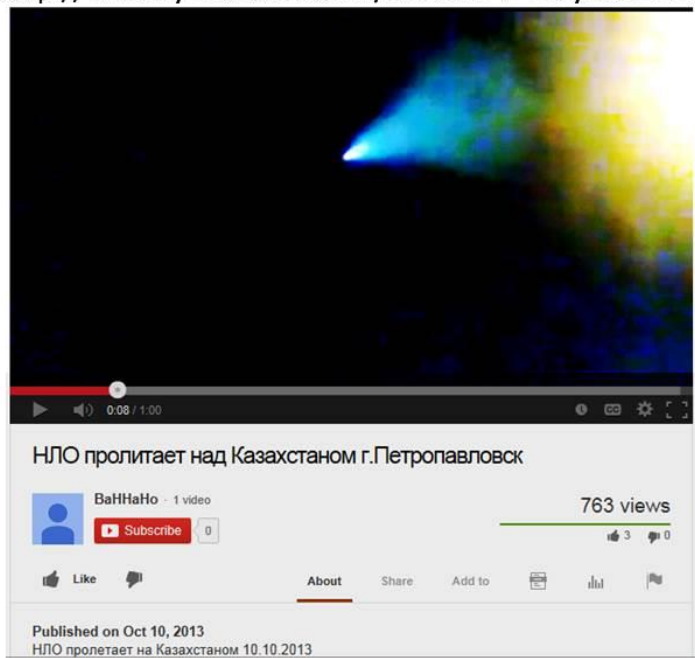
In the Urals region of Russia, where the sun had set long enough earlier for the sky to adequately darken, this awesome apparition [in some areas as large as the hand of an out-stretched arm] was seen by thousands of people in places such as Chelyabinsk [its population already sensitized to sky fireballs by their near-miss a few months earlier with the biggest meteor impact since Tunguska], Yekaterinburg, Kurgan, Omsk in the north, and Tashkent to the south of the path.

Naturally the videos wound up being posted on UFO websites, where the 'UFO' ['NLO' in Russian] was described as a starship entering a wormhole to depart for home. But other posters, who had seen the official announcement and recalled a handful of earlier similar apparitions in previous years, correctly made the missile test connection. Seeking out such videos was a tedious and delicate task since they were indexed if at all with a wide variety of different key words, ranging from 'missile' to 'meteor' to genuine 'UFO'. "Missile" was probably the most common designator.

Except it wasn't the missile launch itself that people were seeing. Their minds were still focused on the wrong hardware.

Youtube videos began rolling in

<http://www.youtube.com/watch?v=60ykaLoK55k>



- **Comments from other witnesses**

- Kairat Myrzagaliyev
- такое же вчера было над ЮКО в Туркестан, так же видели и Сары-Агаче яркая вспышка а потом кольцо из дыма 10.10.13 в 19-00 примерно
- [Aidar Muratow](#)
- в Астане наблюдал тоже самое, сегодня в 22-00 примерно, сначала он стоял на месте вокруг него образовался свет, перешел немного и вырисовался какой то орнамент, что это может быть ???

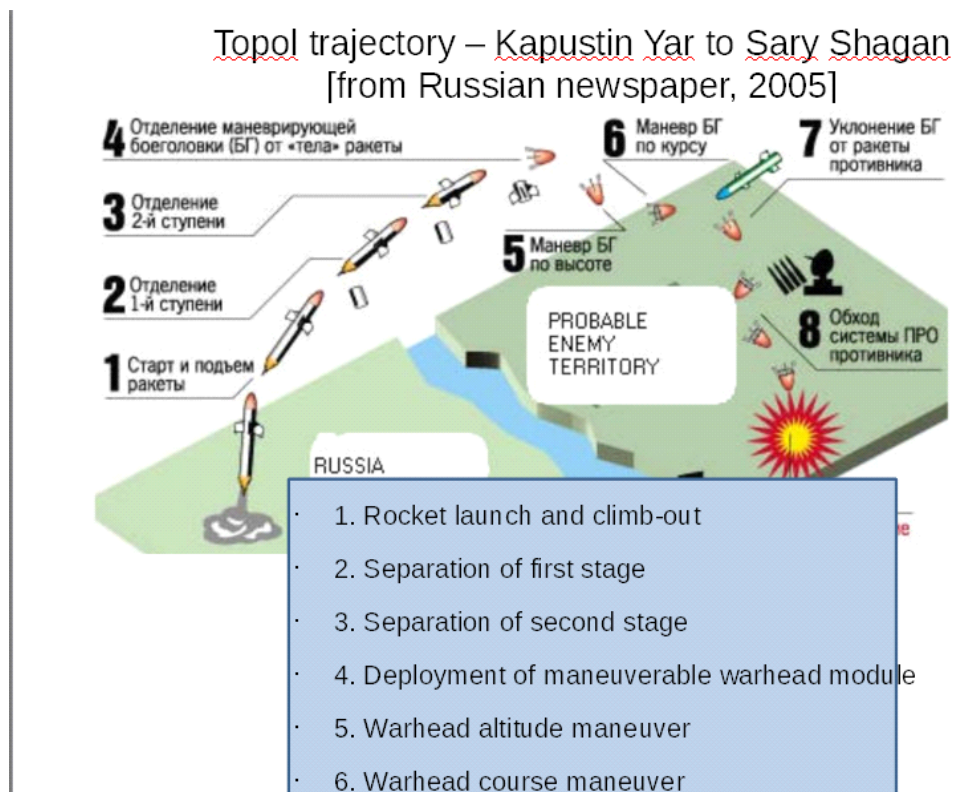
Trigonometric analysis of the multiple images showed me that whatever it was had been high and fast. By an astronomically beneficent stroke of luck, observers north of the track had captured the moon in their camera fields-of-view, allowing calculation of azimuth angle. And where a sharp horizon was also visible [the

best such view was from a dashcam in Krasnoturginsk in the northern Urals], the angular elevation of the apparition could be estimated.

From three different videos that I analyzed carefully, I calculated an altitude of well above 800 kilometers for the plume. And it was moving at a large fraction of full ICBM horizontal speed, about 4-5 km per second.

More interestingly, the map position of the end of the apparition – the spiral – could be triangulated along the known flight path, from observers both north and south of the track. Some initial ambiguity that suggested it was just prior to reentry and impact at the Sary Shagan test range, where batteries of radars and telescope cameras were waiting to observe it. This was nowhere near the western or “launch phase” portion of the flight.

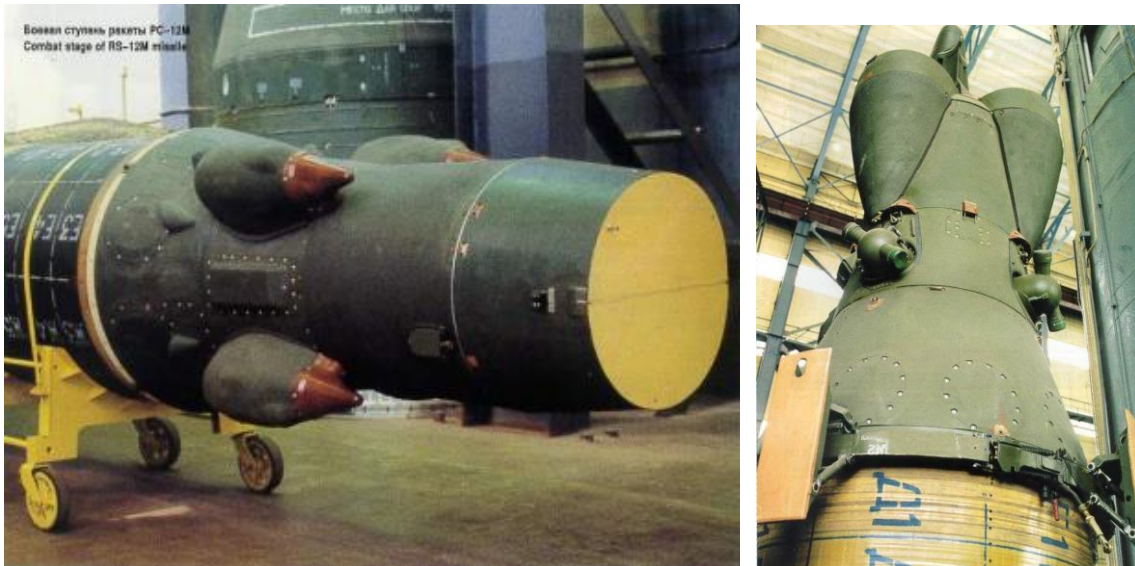
So at first I thought what was being observed was not connected to the launching at all, but to the “landing”. More precisely, it seemed to fit exactly as the official announcement had described, a hardware test of techniques to evade “enemy” [read, United States] missile defense systems of the future, so that the landing would succeed in detonating the megaton-sized nuclear warhead of future operational missiles equipped with such a warhead.



When the first of these tests [this was the fifth, it turned out, and the 3rd to spark ‘UFO panics’] occurred in 2005, a Russian newspaper actually carried a schematic of the flight path. And elsewhere, a “User’s Guide” to the commercial

satellite launch version of the missile had provided nominal burn times for a version with a 4th 'kick' stage for satellite insertion. After the three 'fast-burn' stages [thrusting more than 6 G's for little more than three minutes] insert the payload, there is a coasting period. Then, nearing "enemy territory", the "maneuverable warhead module" [in Russian, "boyegolovka" or "BG"] fires its engines to complicate enemy radar tracking, deploy decoys, and dodge any attacking interceptors. I first thought it was this vehicle's thrusting that was seen from the ground, and from the ISS.

This interpretation was reinforced by a unique set of photographs on a private Russian website that showed the arrangement of thrusters on this Topol missile "maneuverable module"? The amazing images at the <http://ruzhany.info/> website show the unit with four side-mounted thruster pods, each protected during launch by its own detachable heat shield. Designed to allow efficient thrusting in ANY desired direction during descent, the thrusters look like they would create a plume that was hollow straight behind where it was blocked by the module's tail end. In addition, that set-up quite possibly would create notches at the intersection of the separate plumes from each of the four thruster sets.



The four thruster pods are clearly visible just aft of the warhead nose cone itself in standard photographs of Topol launches from Plesetsk, where it can perform full-range tests into Kamchatka.

They are also clearly present in a unique image allegedly of the 2005 Topol test out of Kapustin Yar, the first of the series and the only one for which a photo has ever been released. What is odd about this vehicle is that it uses a much larger aerodynamic protective shroud on its nose. In fact it looks like the payload fairing developed for and flown aboard the commercialized Topol missiles in the 1990s under the 'Start-1' project. It can't be a mislabeled Start-1 photo, however,

because in place of the military ICBM's "BG" module, that orbital booster installed a fourth stage and its own trim engine bloc, but under the fairing.

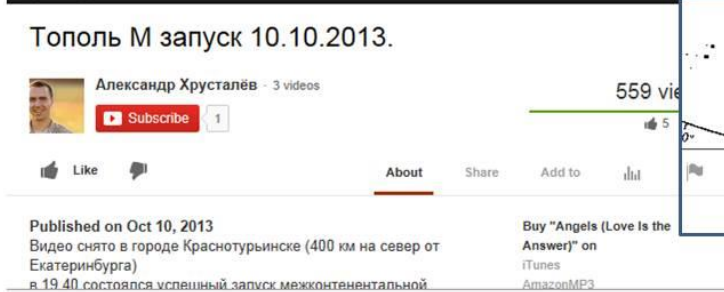


The larger fairing is fully consistent with these flights being test beds for new reentry techniques and penetration aids testing. But that's a guess based only on a single photograph of uncertain origin.



“Видео снято в 19 40 в городе Краснотурьинске (400 км на север от Екатеринбурга)”
KRASNOTURINSK
[SVERDLOVSK REGION]

www.heavens-above.com
sky chart shows view is due south, moon off to right



- <http://www.youtube.com/watch?v=KbiJY-0Bmu4>

This all-too- neat hypothesis than ran head-on into analysis of a new set of videos from the June 2012 launching, the one seen widely from the Middle East against

the back-lighting 'midnight sun' over the north pole. Two videos – one from a dashcam of a driver tooling across the deserted steppe and the other from a military reservist actually AT Kapustin Yar – show the early ascent from essentially launch until burnout.

And the time duration of both videos is two minutes, not three. There isn't time for the third stage to burn.

Further analysis of dashcams from Jne 2012 and October 2013 also clearly show that there is a 180-second gap before the second thrusting period, and that thrusting lasts about 62 seconds – right on the nominal duration of the third stage.

That also makes sense since the trajectory would be a nominal high-angle 'lofting' climb-out, followed by the third stage burning with a downwards cant to drop the warhead into the nearby impact zone. The full three-stage sequence would give ICBM-scale entry velocity, and the delayed and canted third stage burn would give the desired short range.

The "hole" in the back end of the plume could then simply be the shadow of the second stage as the third stage ignites and pulls away. The symmetrical rim features could reflect brief separation rocket plumes, or the fine-tuning operation of the warhead bus side thrusters.

The spiral itself is no longer a puzzle, either. As with single-warhead US ICBMs, the Topol is clearly triggering a longitudinal spin-up of the reentry vehicle ['RV'] for both stability and damage control from radiation weapons. Ground videos show the precise timing and rotation direction of this spin-up, a nice datum for US military planners.

Minuteman-3 RV spinup

<http://www.youtube.com/watch?v=3wdjgL40wc4>



Uzbekistan



Tashkent, SE of spiral point, same plume features as on north side



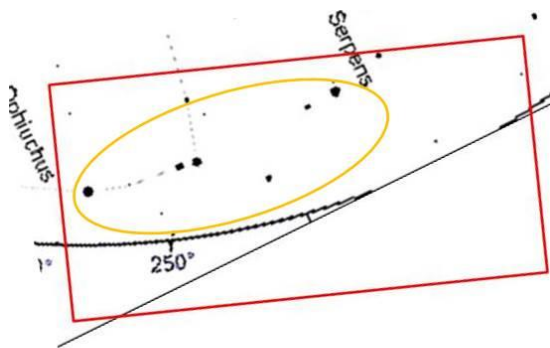
View from Omsk [northeast of track]

Where does this leave the astronauts' photos from the ISS? With the October 10 profile and timing and dynamic visual characteristics defined by analysis of the astounding wealth of ground imagery, it's clear that the first set of views showing a profile of the already zig-zagging wind-sheared ascent trail were taken within a minute or two of shutdown, while the third stage was still coasting. Parmitano then reports he rushed into the main station lab and called his spaceshipmates, and they all rushed back to the cupola.

The photo sequence then resumed, but the very first view shows the cloud had already just disgorged the "nose spiral". The entire 'space plume' thrust sequence was missed as the crew rushed to the cupola. Only the now-dissipating exhaust plume was visible. That first image, clearly carelessly rushed because it shows reflected cabin lighting, depicts the tell-tale expanding circle at the nose of the extinguished plume fan.

But a rapid-fire sequence of images, each only several seconds after the previous, then covers the next few minutes in high resolution with superb background illumination from the just-set sun, from a stable viewing platform with uninterrupted line-of-sight. Viewing conditions and observation devices were perfect.

Because the photos were taken from above the atmosphere, background stars could be located and identified, to provide angular coordinates and angular size of the cloud. The station had passed just south of the launch site and was rapidly pulling ahead to the east of the rocket's path, looking backwards with the sun over the western but still back-lighting the plume.



Star match-up verifies ISS-cloud viewing azimuth and also provides angular scale for images, which when combined w/ range [based on occultation by horizon] gives absolute scale [yellow oval narrow diameter is 10 deg].

What happens to be going on with the missile in that period? EVERYTHING of interest to US military intelligence: penaid deployment, terminal guidance and control, deception and misdirection stimuli for anti-missile trackers, actual RV entry and chaff deploy, and other totally unexpected tricks of Russia's nuclear weapons delivery trade.



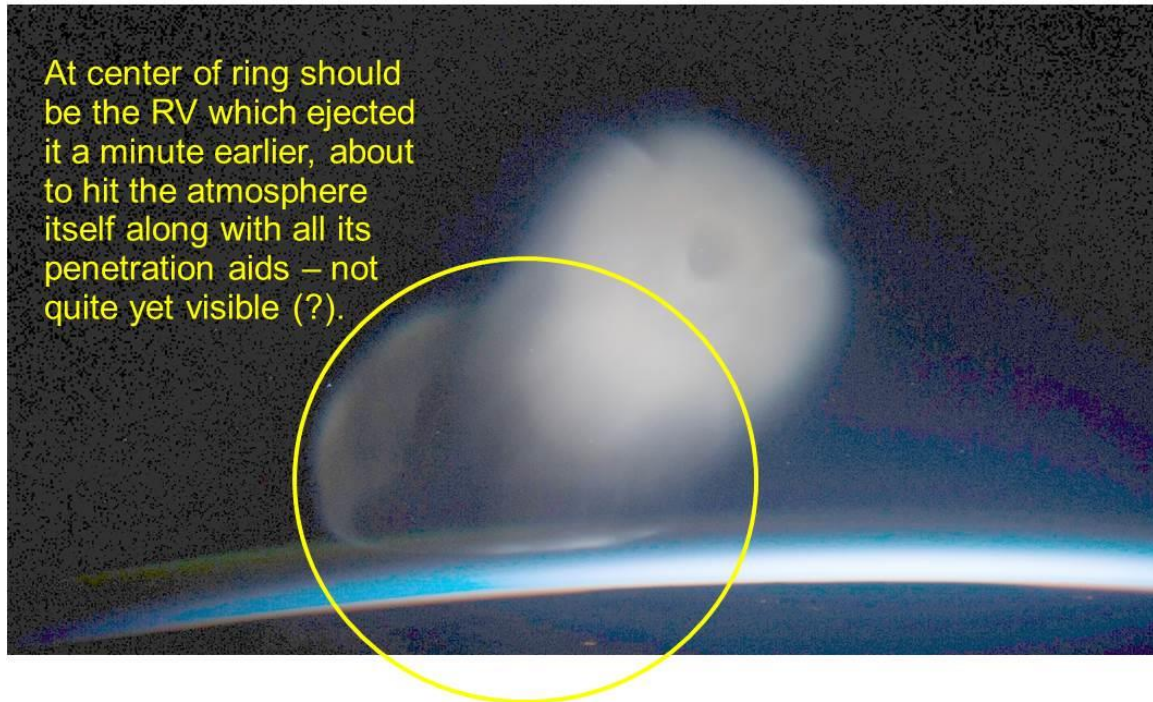
Spiral Concluding Phase

- Thrusting and lengthening of gown from the head, visible tapering and hollow center
- Brief [1-2 second] dynamic spiral [more than one trail] with small gap to point of fan
- Expanding spiral ring and rapid separation of spiral center from blunt head of fan
- Rapid dimming with expansion of combustion products fan

And there is a bull's-eye-in-the-sky showing EXACTLY where the action is concentrated – right in the center of the expanding smoke ring. The ring points to the origin of the spin-up rocket plumes, on the warhead RV itself just after detachment from the warhead bus [the 'BG']. While the main exhaust plume drops behind at the propellant ejection velocity, the ring expands symmetrically while flying forward with precisely the same velocity the BG and the deployed RV have.

The view from the ISS, rapidly distancing itself to the east, still shows the ring [also moving eastward at a significant fraction of station's own speed] and the cloud [about half as fast] both gradually descending into the atmosphere. As the lower segments of the ring encounter air resistance about 120 km high, the particles that comprise the ring slow down to a gentle fall. The ring begins to flatten.

Terminal descent as spinup ring's bottom flattens as it encounters upper atmosphere



It is in the center that the space station images need to be examined most intensely, especially when that center reaches the same thin atmosphere that the front of the smoke circle encountered. The RV's fireball ought to be in the camera's field of view, along with other objects accompanying it. The cloud itself remains backlit by the distant setting sun, but anything hitting that atmosphere will conveniently become self-luminous.

How much the images would reveal to intensive analysis may be a question that NASA is afraid to ask, and for which the Russians may fear they already know the answer. Whatever the outcome of this amazing spaceflight serendipity, it underscores the value of perspicacity, of keeping eyes and minds always open for unexpected phenomena that may need to be quickly observed and recorded. Spaceflight will continue to astound and surprise us, and present apparitions that only the human mind is flexible enough to recognize as unusual and important.

The moral of the story seems to be that serendipitous sightings of unusual lights in the skies – especially near Russian missile bases – deserve attention from more than just the UFO buffs. Furthermore, human ability instantly interpret such visual reports accurately must defer to sound mathematical analysis, and not rely only on first impressions fuelled by earlier earthside experience. That perceptual experience base has time and again proven inadequate to properly understand some of the strange sights enabled by skywatching and by space exploration.

