

KYSST-13 [December 24, 2015 17:55 gmt] [Kapustin Yar to Sary Shagan Topol] Category: **Darkness** flight, not observable

PREVIOUS OBERG LAUNCH OBSERVATION REPORTS

- [KYSST from ISS Oct 10, 2013] http://www.jamesoberg.com/Topol_Test_with_images.pdf
[KYSST-8 May 20, 2014] <http://www.jamesoberg.com/140520-topol-ky.pdf>
KYSST-9-- <http://www.jamesoberg.com/KYSS-9.pdf>]
KYSST-12 http://satobs.org/seesat_ref/misc/KYSS-12.pdf

RELATED

- [LA Trident Nov 7, 2015] http://satobs.org/seesat_ref/misc/misperceiving_missiles.pdf
[Dec 15, 2015 Soyuz] http://satobs.org/seesat_ref/misc/Soyuz_launch_4.pdf
[Plesetsk Soyuz –GLONASS from ISS, June 15, 2014]
http://www.jamesoberg.com/ISS_crew_spots_second_russian_rocket_rev_c.pdf

JAMES OBERG
JANUARY 22, 2016
DRAFT-1

RUSSIAN DEFENSE MINISTRY OFFICIAL ANNOUNCEMENT

С полигона «Капустин Яр» проведен испытательный пуск межконтинентальной баллистической ракеты // 24.12.2015 (20:59)

- http://function.mil.ru/news_page/country/more.htm?id=12072357@egNews
- 24 декабря 2015 года в 20 часов 55 минут по московскому времени боевым расчетом Ракетных войск стратегического назначения с государственного центрального межвидового полигона «Капустин Яр» в Астраханской области проведён испытательный пуск межконтинентальной баллистической ракеты (МБР) РС-12М «Тополь».
- Целью пуска стало испытание перспективного боевого оснащения межконтинентальных баллистических ракет.
- Учебная боевая часть ракеты с заданной точностью поразила условную цель на полигоне «Сары-Шаган» (Республика Казахстан).
- Для испытаний элементов боевого оснащения баллистических ракет полигон «Капустин Яр» является уникальным. Только его испытательные трассы и полигонный измерительный комплекс позволяют испытывать перспективное боевое оснащение, способное преодолевать систему ПРО, в том числе перспективной конфигурации во всем диапазоне возможных условий его доставки к целям в интересах РВСН и ВМФ.
- представитель управления пресс-службы и информации Министерства обороны РФ Игорь Егоров

Official website included false photo
[launch was five hours after sunset]



ICBM RS-12M Topol successfully test-fired from Kapustin Yar firing range // MOSCOW. Dec 25 0705 GMT (Interfax)

- - A combat crew of the Strategic Missile Forces has successfully test-fired an RS-12M Topol intercontinental ballistic missile on Thursday, representative of the Russian Defense Ministry press service and information department for the Russian Strategic Missile Forces Col. Igor Yegorov told Interfax.
- The test-firing was conducted at 08.55 p.m. Moscow time from the Kapustin Yar state-run central multiservice firing range in the Astrakhan region, he said. "The test-firing was aimed at **testing a promising combat equipment** of intercontinental ballistic missiles," Yegorov said.
- "The exercise head of the missile has hit a simulated target with the set accuracy at the Sary-Shagan [Republic of Kazakhstan] firing range," he said.
- Yegorov said that the Kapustin Yar firing range was unique for the trials of elements of combat equipment of ballistic missiles. "Only its test tracks and the measuring system at the firing range allow testing promising combat equipment, **which can overcome a missile defense system**, including its promising configuration in the whole range of possible conditions for its delivery to the targets in the interests of the Russian Strategic Missile Forces and the Navy," he said.

Votkinsk Press Report

Межконтинентальная баллистическая ракета Воткинского завода прошла испытания

- Администрация Воткинска поздравила коллектив Воткинского завода с успешным испытательным пуском межконтинентальной баллистической ракеты, сообщает официальный сайт города.
- Испытания ракеты РС-12М «Тополь» прошли 24 декабря в Астраханской области на государственном межвидовом полигоне «Капустин Яр». Учебная болевая часть ракеты поразила условную цель на полигоне «Сары-Шаган» в Казахстане с заданной точностью.
- Пуск был совершён с целью испытания перспективного боевого оснащения межконтинентальных баллистических ракет.
- http://www.izhevskinfo.ru/news/cont_44081.html

Stock photo [note pine forest, obviously Plesetsk -- but GOOD details of warhead bus thrusters]



Launch news and views

- Third launch in four months [8th in **last three years**] of a fascinating, often visually spectacular series of missile defense penetration tests
- Highest launch rate of entire program
- Sunset 16:06 local 1306 gmt 4h49m post sunset
- Long after sunset, NO ascent or 3rd stage videos
- No launch photo [various stock photos used]
- No further Moscow discussion
- NOTAMS – [unavailable]
- TBS
- TBS

Putin wants weapons that can penetrate US missile shield

By Associated Press

November 10, 2015 | 5:06pm



<http://nypost.com/2015/11/10/putin-wants-weapons-that-can-penetrate-us-missile-shield/>

Associated Press -- November 10, 2015

- Russia will counter NATO's U.S.-led missile defense program by deploying new strike weapons capable of piercing the shield, President Vladimir Putin said Tuesday.
- Putin told defense officials that by developing defenses against ballistic missiles Washington aims to "neutralize" Russia's strategic nuclear deterrent and gain a "decisive military superiority."
- He said that Moscow will respond by developing "strike systems capable of penetrating any missile defenses."
- "Over **the past three years**, companies of the military-industrial complex have created and **successfully tested** a number of prospective weapons systems that are capable of performing combat missions in a layered missile defense system. Such systems have already begun to enter the military this year. And now we are talking about development of new types of weapons," Putin said.

Russia plans 16 launches of intercontinental ballistic missiles in 2016 -- TASS

- Military & Defense January 10, 2016, 13:41 UTC+3
- <http://tass.ru/en/defense/848617>
- "For 2016 we planned 16 test launches of intercontinental ballistic missiles, **including flight test procedures for advanced weapons**, and control of the technical readiness of missile systems that entered service. The number of test launches should increase next year," the Ministry of Defense said.

Discussion: <http://thediplomat.com/2016/01/russia-to-test-launch-16-intercontinental-ballistic-missiles-in-2016/>

MISSILE GROUND TRACK

Kapustin Yar to Sary Shagan

Explicit comments from Moscow that tests were flown in Russia's deep interior to evade prying eyes of enemies

Kapustin Yar,
lower Volga

Sary Shagan,
Kazakhstan

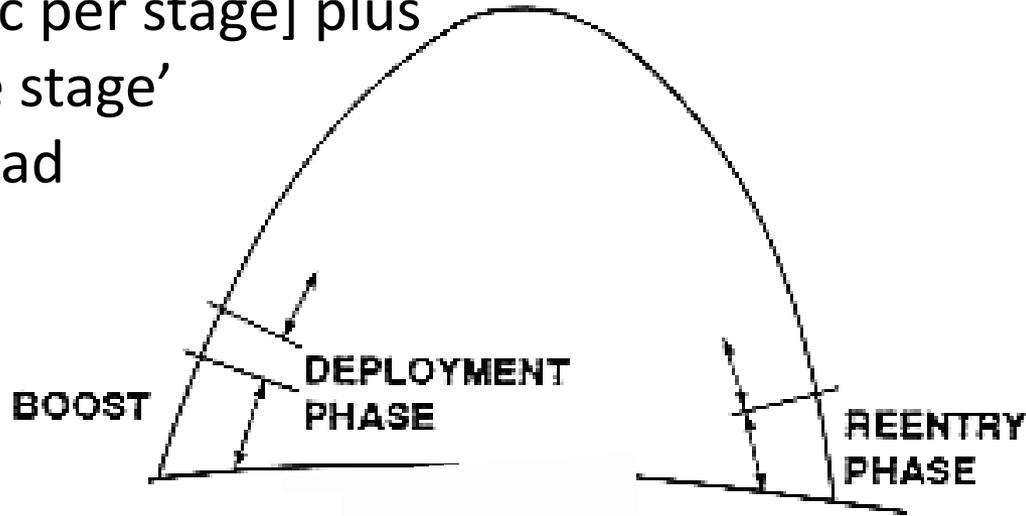


Short range test with high apogee [so are visible 1000+ kilometers off track]



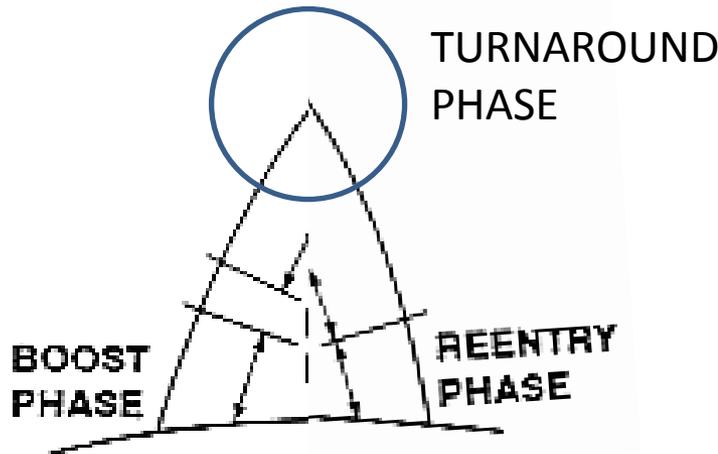
<https://www.youtube.com/watch?v=QHUKyrEU7vc>

Standard solid-fuel ICBM ascent involves rapid sequence high-G burns [60-sec per stage] plus 'battle stage' warhead bus.



FULL RANGE [above]

SHORT RANGE [below]



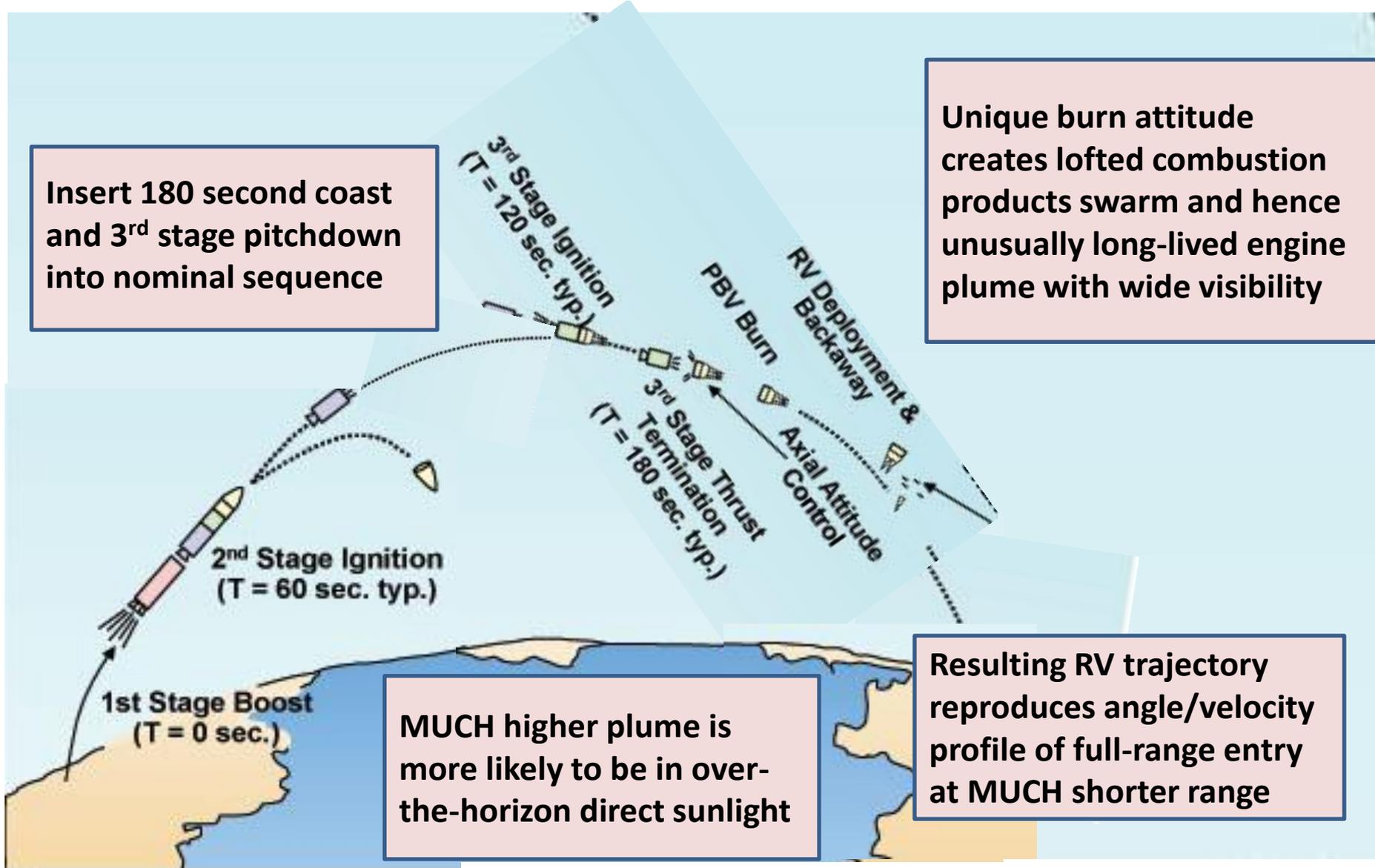
How the shorter range is performed

Normal high-G ascent for first two stages, then insert 180-second delay as stack coasts higher, conduct 3rd stage burn angled downwards to get onto nominal end-of-mission profile.

Why the KY-SS missions are so visible

Insert 180 second coast and 3rd stage pitchdown into nominal sequence

Unique burn attitude creates lofted combustion products swarm and hence unusually long-lived engine plume with wide visibility



MUCH higher plume is more likely to be in over-the-horizon direct sunlight

Resulting RV trajectory reproduces angle/velocity profile of full-range entry at MUCH shorter range

KY-SS Flight Profile Peculiarities

- This burn scenario has not been described in any Russian press reports, but is derived from my study of hundreds of videotapes posted as 'UFOs' on youtube.com and rutube.ru
- Stage-3 burn with plume ejected aft with upward tilt creates a long-lived effluent particle cloud of enormous length [200 km]
- High apogee [> 900 km] and apparently orchestrated illumination conditions create visibility over vast distances
- Probably most spectacular space/missile-related OSINT opportunities into sensitive Moscow military activities since Soviet "crescent UFO flap" of 1967-8 revealed operational features of top secret treaty-breaking 'Fractional Orbital Bombardment System' [FOBS] space nuclear weapon

KY-SS family of Topol launches [KYSST]

1. 2005 Nov 01 1710 gmt +3 [sunset + 4h33m]
2. 2007 Dec 08 14:43 gmt +3 [sunset + 1h41m] ???
3. 2009 Dec 10 1235 gmt +3 [sunset + 34m] SEEN
4. 2010 Dec 05 1911 gmt +3 [sunset + 7h09m]
5. 2012 Jun 07 1739 gmt +4 [sunset + 43m] SEEN
6. 2013 Oct 10 1339 gmt +4 [sunset - 39m] SEEN +ISS
7. 2013 Dec 27 1730 gmt +4 [sunset + 4h33m]
8. 2014 Mar 04 1810 gmt +4 [sunset + 3h25m]
9. 2014 May 20 1708 gmt +4 [sunset + 31m] SEEN
10. 2014 Nov 11 ??? +3 [rumored failure] sunset = 1323
11. 2015 Aug 22 1513 gmt +3 [sunset - 45m] SEEN
12. 2015 Nov 17 1212 gmt +3 [sunset - 1h04m] SEEN
13. 2016 Dec 24 1755 gmt +3 [sunset + 4h49m]

- Sunset Launch#
- -205 8
- -64 12
- -45 11
- -39 6
- +31 9
- +34 3
- +43 5
- +101 2
- +273 7
- +273 1
- +289 13
- +429 4
- Unknown 10

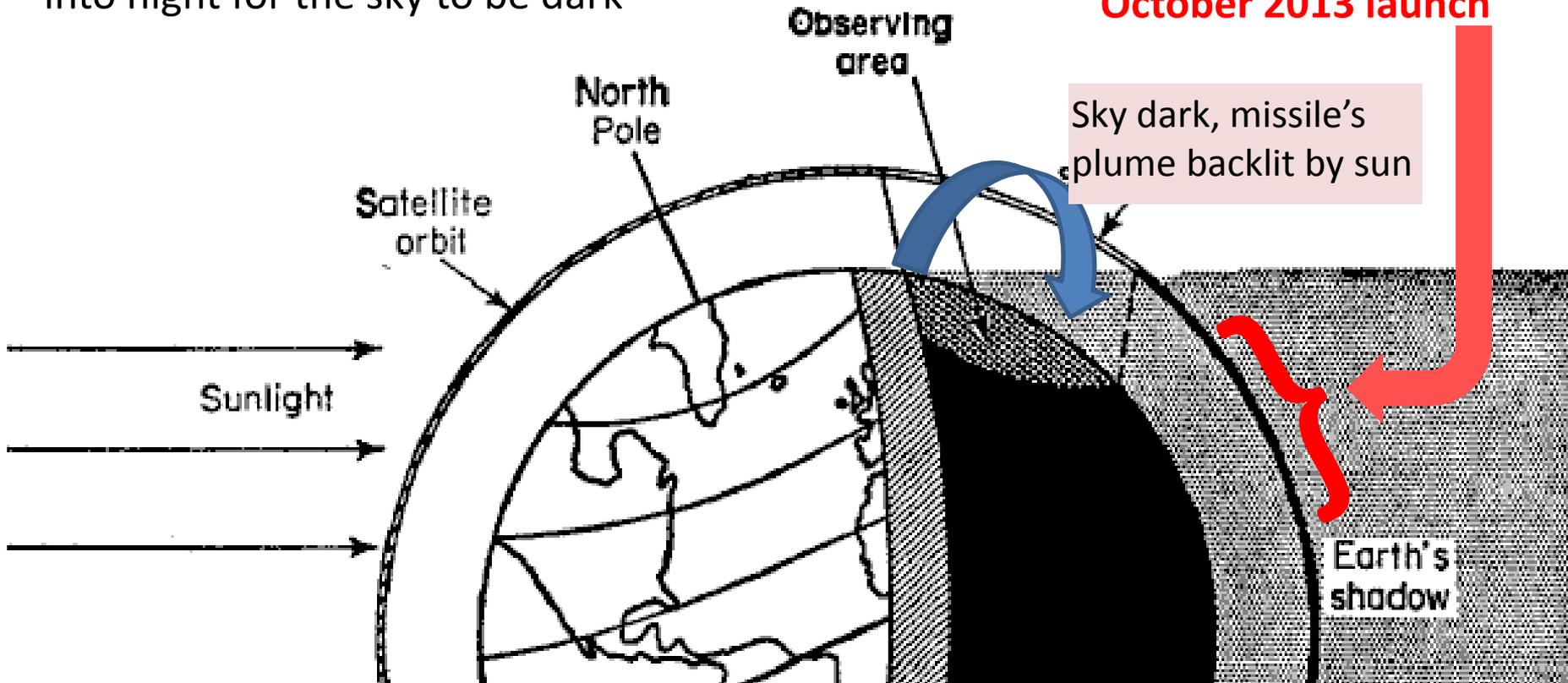
Significance of distribution of launch times

Seven of the twelve known launch times [$\sim 60\%$] fall within a $<$ two hour interval centered near sunset. One very obvious factor could involve ground-based optical tracking of decoy and other penetration aids deployment and maneuver during terminal descent into Sary Shagan.

Evening twilight visibility

As with observing artificial satellites, the target must be high enough to be sunlit while the observer is far enough into night for the sky to be dark

Position of International Space Station during observation of plume for October 2013 launch



Most recent previous visible launch

- KYSST-12 at 2015 Nov 17
- "At 15:12 Moscow time [1212 gmt] the strategic missile force test-launched an inter-continental ballistic missile RS-12M Topol from the Kapustin Yar test site in the Astrakhan Region"

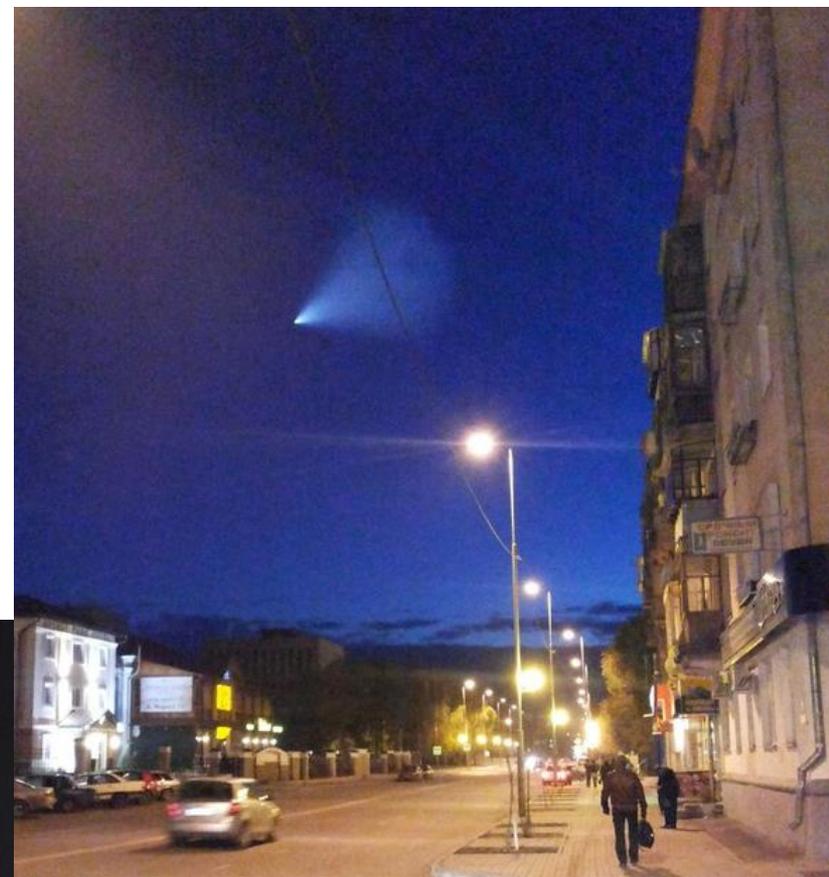
TASS: Strategic missile force tests ballistic missile Topol with advanced warhead // 2015 November 17, 13:37 gmt

- Russia's strategic missile force has successfully tested an inter-continental ballistic missile Topol with an advanced warhead, the Defense Ministry's strategic missile force spokesman Colonel Igor Yegorov has said.
- "At 15:12 Moscow time [1212 gmt] the strategic missile force test-launched an inter-continental ballistic missile RS-12M Topol from the **Kapustin Yar test site** in the Astrakhan Region," Yegorov said.
- According to the official, the purpose of the launch was to test an **advanced warhead** of the inter-continental ballistic missile.
- "The missile's dummy warhead hit a hypothetical target at **the Sary-Shagan proving ground**, in neighboring Kazakhstan. The accuracy was within the expected parameters," he said.
- This is not the first launch of the Topol missile this year. At the end of August an RS-12M missile was launched from Kapustin Yar for **the same purpose** of testing a new warhead. And at the end of September a Topol missile was launched from Russia's northern test site Plesetsk during a routine testing of the Armed Forces' control system

KYSS-12 [Nov 17] may become known as the “IKEA launch” because first videos were from store parking lot



Typical Topol ICBM from Kapustin Yar [diving on ABM radar test range]



- Usually post-sunset twilight
- Third stage burn canted slightly down
- Warhead deploy spinup
- Multiple flights
- Observed in Russia, central Asia, Middle East, and once by astronauts on space station

Rocket plumes aren't like jet plumes or flamethrower plumes or smoke plumes

- First 50-60 kilometers of ascent, smoke trail is narrow, hemmed in, particles stopped and then buoyed by air
- This 'floating' non-vertical-moving portion is quickly zig-zagged by strong high-altitude crosswinds
- When rocket enters region of purer vacuum above the von Karman 'line' [~ 100 km], particle motions unimpeded, so the plume widens to fan shape
- Both engine exhaust [wide fan] and hydraulic pressure generator [to steer engines] exhaust [narrow trail] can leave visually distinguishable plumes
- Earlier [lower] portions of plume may not be fully sunlit for some 'twilight flights' [time-of-day dependent]

In space, plumes are even weirder than THAT!!

- Unlike atmospheric plumes suspended by buoyancy, plumes in space are clouds of effluent particles following ballistic trajectories so they behave in a literally unearthy manner
- Exhaust velocity is typically ~ 2 km/sec so early in ascent the particles are quickly flung back down into the atmosphere
- But as vehicle climbs and accelerates, with speed in the range 3-4 km/sec, the particles ejected from an already-fast-moving vehicle still retain significant forward speed with significant upwards angle – they are ‘lofted’ en masse through space, seem to ‘follow’ the missile [gradually falling behind, and only slowly disperse and fall
- This odd effect is enhanced as upper stages pitch over closer to horizontal – and a special category of recent Russian ICBM tests actually burn the third stage angled slightly downwards, thus giving plume particles a substantially greater UPWARDS initial component and extending their lifetime before air impact
- As third stage accelerates it pulls ahead of plume more quickly, narrowing the forward plume and introducing a noticeable taper

View from Urals



<https://www.youtube.com/watch?v=I2fDzcg7oT4>



Жители Урала приняли отделившуюся ступень ракеты за НЛО



Новости России

 **Subscribe** 597

411 views

View from Tyumen, Russia



View from Omsk, Russia



Новости

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Происшествия

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Интернет

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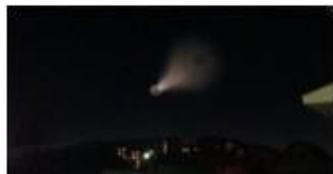
Наука и техника

Здоровье

Раздел [Отдых](#)

18 ноября 2015, 12:32

На эту же тему!



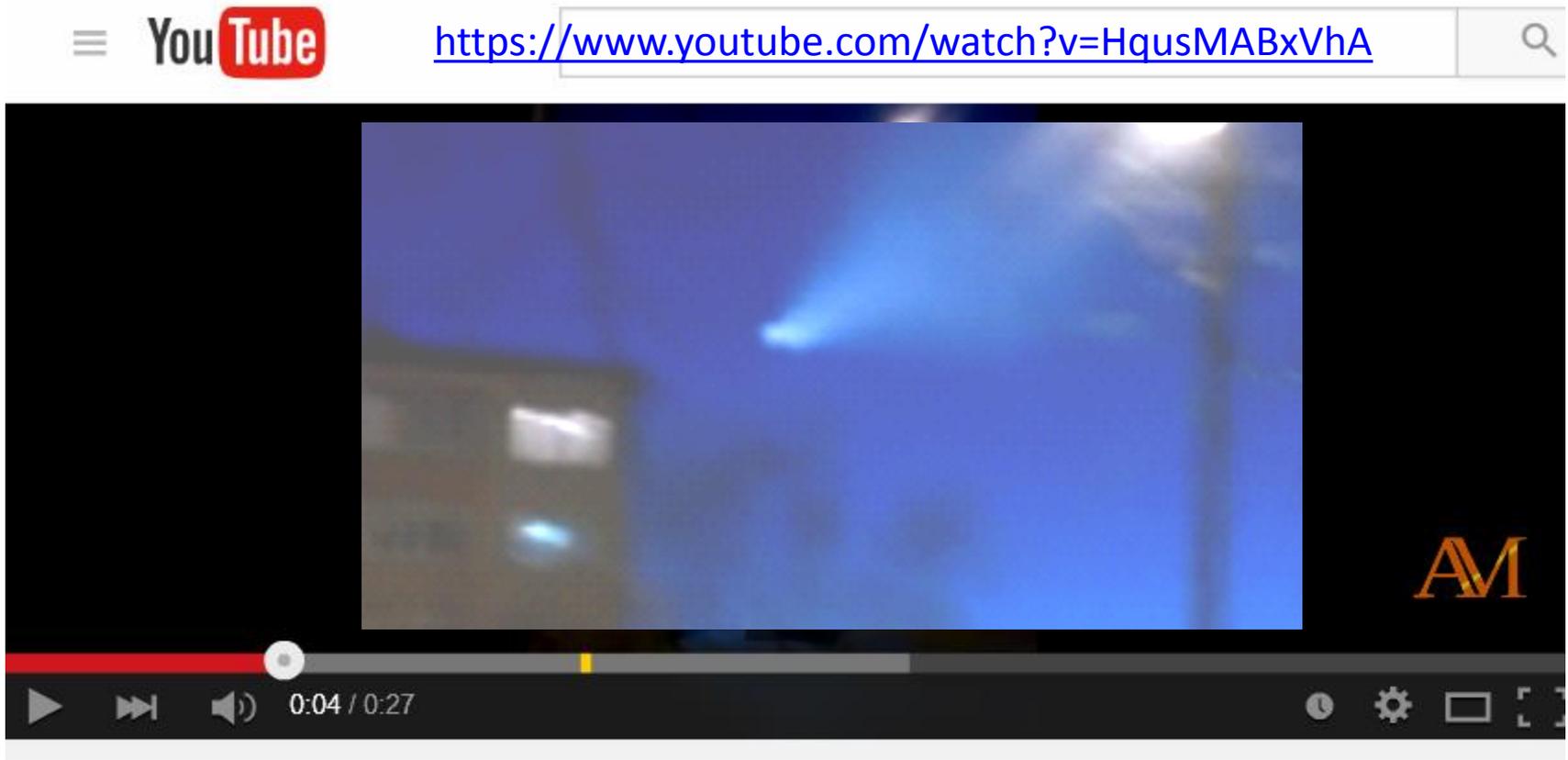
Вопышки в небе: запуск ракеты
всполошил омичей (фото
и видео)

НЛО в Омске: омичи отреагировали на запуск ракеты шутками



Фото: соцсети

Petropavlovsk



Аномальное явление В небе над Петропавловском

Other videos of interest

- Very nice view of spiral, northern Kazakhstan
- <https://www.youtube.com/watch?v=ihHmlloFbic>

- Tbs
- Tbs
- Tbs

Sometimes reported as UFO

МК в регионах
21 ноября 2015
время 20:30

Свежий номер МК
Регистрация
Вход

Новости Политика Экономика Происшествия Общество Спорт
Культура Наука

срочная новость

МНОГО МЕБЕЛИ НА WWW.MVOPROS.RU

Новости

19:48 Москвич напал на сотрудников ДПС и эвакуаторщиков

Необычное свечение над Новосибирском оказалось следом от запуска «Тополя»

18 ноября 2015 в 11:18, просмотров: 2148

Банки Авто Недвижимость Афиша Еда Народный герой Объявления Конкурс Работа Справка

Политика Бизнес Происшествия Авто Отдых В мире Интернет Спорт Наука и техника Здоровье

НЛО в Омске: омичи отреагировали на запуск ракеты шутками

Волышки в небе: запуск ракеты всполошил омичей (фото и видео)

66.RU

Новости Банки Работа Объявления Недвижимость Авто Общение Афиша

Раздел **Наука и техника**
18 ноября 2015, 13:10

Новости в тему

Светло как днем: на трассе под Рехом регистраторы сняли ослепительную вспышку в небе

Пропавший бонинг или Сандра Баллок? НЛО попал в объектив камеры NASA

Шалит! «НЛО» в небе над Челябинском создали проекторы цирка

В небе над Челябинском засняли очередное НЛО

Curiosity заснял на поверхности Марса НЛО

«Полет завершился эффектным исчезновением»: в небе над Алапаевском видели НЛО



Фото: соцсети

Жители Сибири приняли баллистическую ракету «Тополь» за НЛО

Siberia residents take ballistic rocket for 'UFO'

18 НОЯБРЯ, 12:16



Фото Ирины Садыровой, предоставлено Новосибирск

Жители Новосибирской, Кемеровской, Омской и Томской областей приняли за НЛО, спутник Министерства обороны и за комету — испытательный полет межконтинентальной баллистической ракеты «Тополь» с полигона «Космический» в Астраханской области, вечером 18 ноября кор...

[below]

Novosibirsk also

MKRIT Новосибирск

МК в регионах
21 ноября 2015
время 20:30

Свежий номер МК
Регистрация
Вход

Новости Политика Экономика Происшествия Общество Спорт
Культура Наука

МНОГО МЕБЕЛИ НА [WWW.MVOPROS.RU](http://www.mvopros.ru)

Новости
19:48 Москвич напал на сотрудников ДПС и эвакуаторщиков

Необычное свечение над Новосибирском оказалось следом от запуска «Тополя»

18 ноября 2015 в 11:18, просмотров: 2148

<http://ad.adriver.ru/cgi-bin/click.cgi?sid=256728&ad=5437728&bid=40794078&bt=528&bn=28&pz=0&xpId=CrZguRCHD6AxigW8nXGHN>

View from Astana, Kazakhstan





Взрыв НЛО над Астаной, 17 ноября 2015, около 18:00



bor.kz

Yandex.ru search finds dozens of stories [examples below]

Новости Югры 18 ноября в 01:08

Необычное явление в небе наблюдали жители Югры. ВИДЕО

Вечером 17 ноября в небе появился объект, который петлял и оставлял за собой белый шлейф. ... К обсуждению подключились и жители других городов России (Тюмень, Омск, Новосибирск, Сургут), которые так же наблюдали странный объект и решили поделиться с горожанами своими впечатлениями.

Новокузнецк.ру 18 ноября в 00:57

Жители Кузбасса заметили НЛО

Яркий шар со светящимся шлейфом на небосклоне заметили в Кузбассе жители Ленинска-Кузнецкого. ... Выяснилось, что подобное наблюдали и в других городах Сибири: в Омске, Томске, Павлодаре.

Йод 18 ноября в 00:54

Вспышка в небе напугала жителей Омска

Жители Омска обсуждают светящийся объект, замеченный в небе 17 ноября. Многие приняли его за НЛО, есть версии о сгоревшем в атмосфере метеорите.

Тушите свет! 18 ноября в 00:49

Над Барнаулом горожане заметили загадочный летающий объект

Жители Сибири, в частности, Барнаула, Кемеровской области и Омского региона накануне поздно вечером наблюдали в небе загадочный объект. В ночном небе появился яркий круг, за ним тянулся белый шлейф, растворившись через некоторое время после появления. Многие смогли снять это на видео.

... and in Kazakhstan

uber.kz

Поиск

← Новости

Было ли НЛО в небе над Казахстаном: консультация специалистов

21 ноября, 2015 — 19:30 • [Происшествия](#)

- tbs

zakon.kz

Saturday, November 21, 2015

Найти новость

-26° \$ 308

НОВОСТИ

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Происшествия

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НОВОСТИ ЗА СЕГОДНЯ

НЛО в небе над Казахстаном: объяснение специалистов



18 ноября 2015, 22:21

Жители северных регионов страны накануне наблюдали необычное свечение.

Казахстанцы перепутали ракету с НЛО. Жители северных регионов страны накануне наблюдали необычное свечение: в ночном небе неожиданно появился яркий шар, за которым тянулся белый шлейф. Вскоре объект растворился в воздухе, передает [телеканал КТК](#).

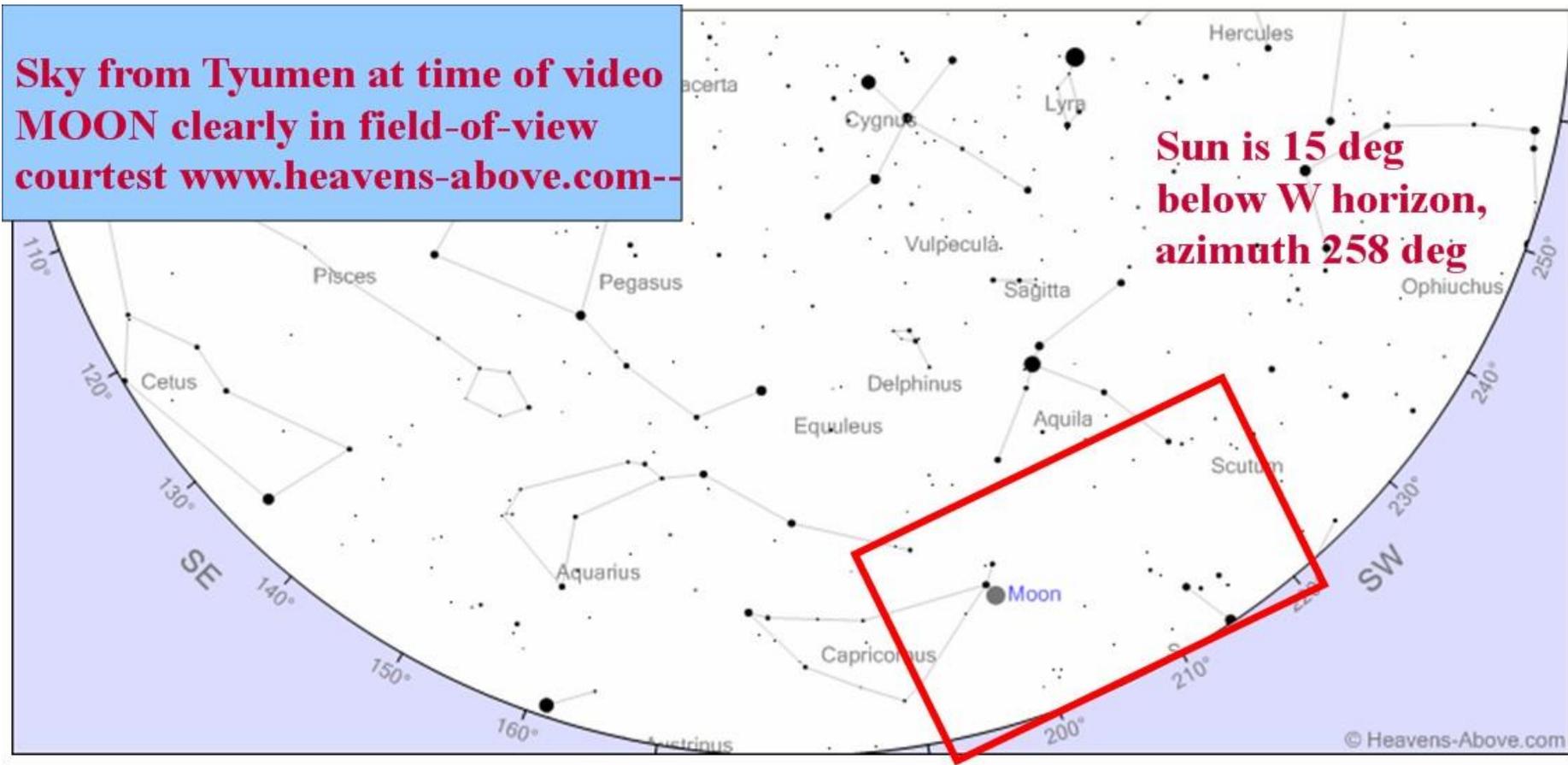
<https://www.youtube.com/watch?v=1Wk4uzqAwXE>



Video from
roadside
outside
Tyumen
includes
valuable
orientation
guide –
the MOON
[at left]

НЛО на Тюменью 17.11.2015 в 17:20

Sky over Tyumen gives azimuth, scale

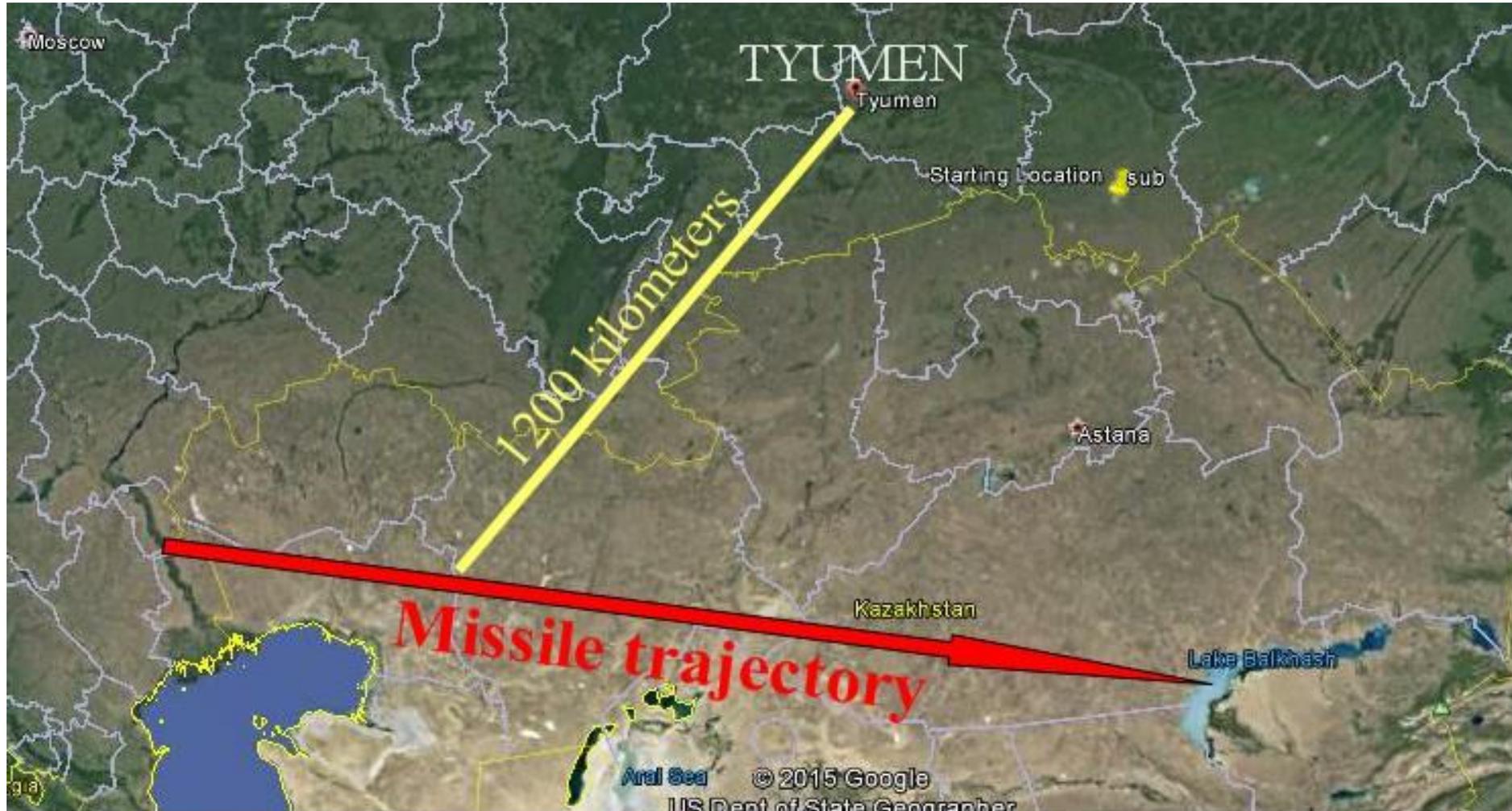


Time

Year	2015	Month	11	Day	17	Hour	18	Minute	24
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Display options

Geometry of Tyumen sighting

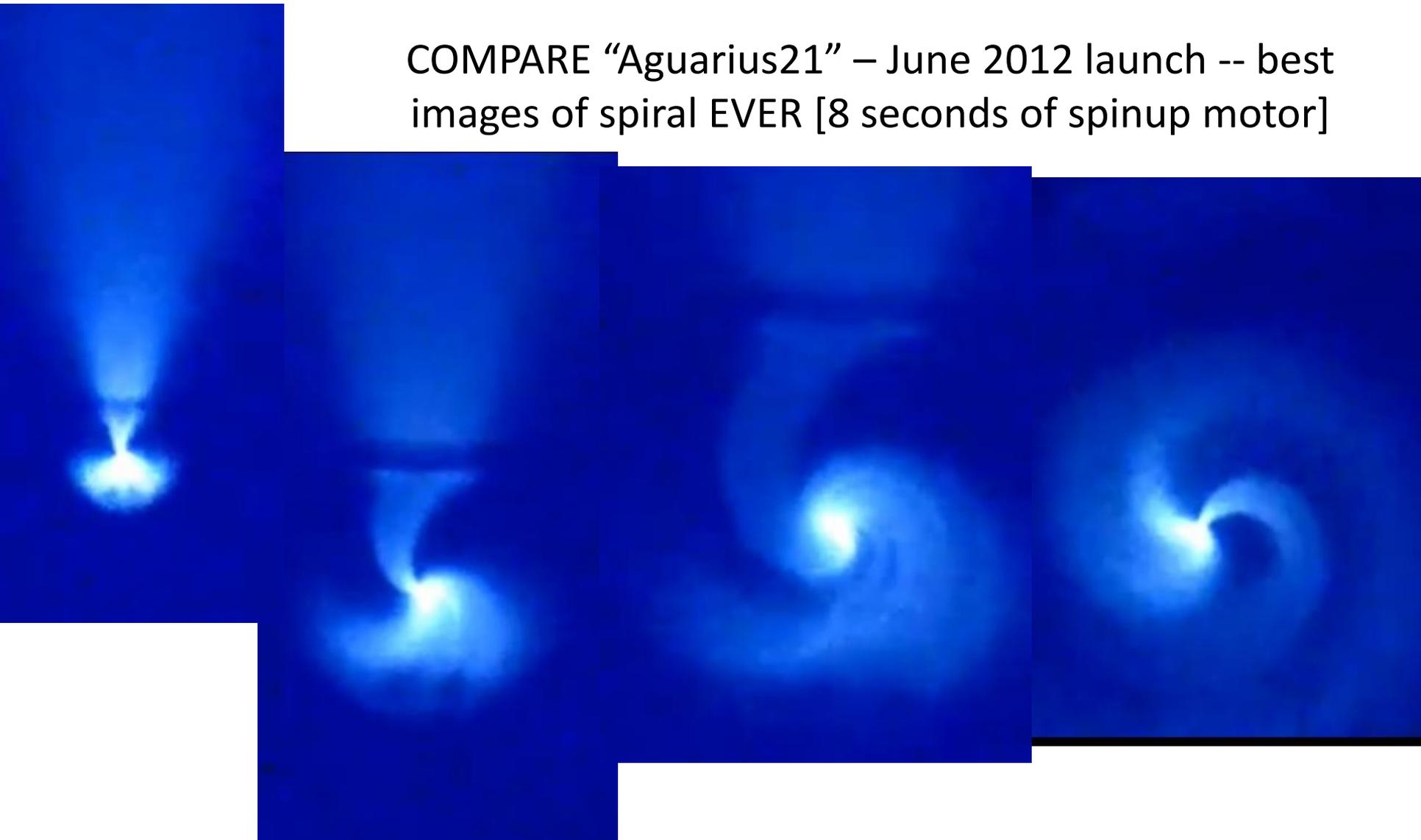


Omsk views shows warhead



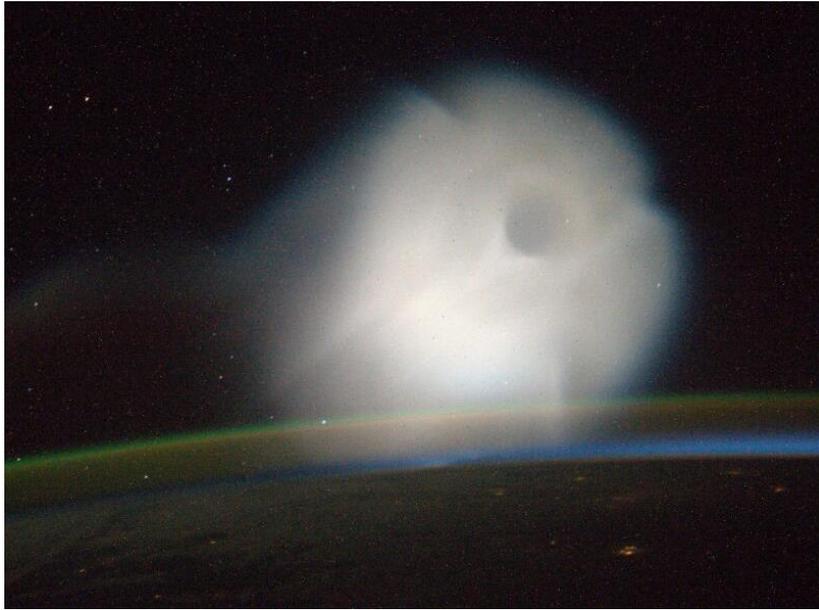
<https://www.youtube.com/watch?v=aPcMffpoURU>

COMPARE “Aguarius21” – June 2012 launch -- best images of spiral EVER [8 seconds of spinup motor]



Triple plume completes about one full rev prior to fade-out
<https://www.youtube.com/watch?v=AHX6IU7NcO0>

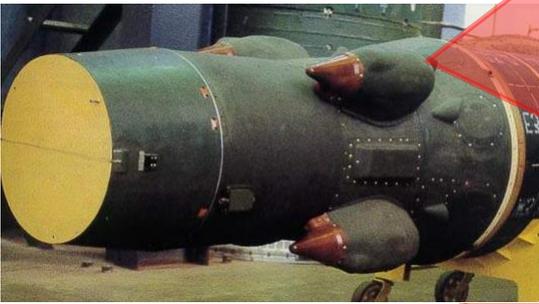
Previously noticed plume masking effect present
[left] ISS view 2013 [right] Uzbekistan view 2013



[left] This launch
– Omsk view

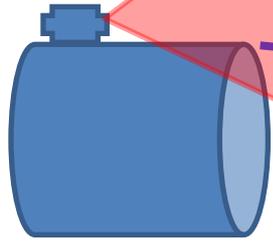
Why the distinctive plume silhouettes and masking?

- Warhead bus normally trims dispersions and goes to deployment attitude post stage-3
- Compressed flight profile MAY use bus thrusters to maneuver to stage-3 attitude [180 sec coast]
- Bus thrusters may initiate stage-3 firing
- Actual stage-3 ignition follows quickly [for 60 sec]
- Silhouettes at aft end of plume may reflect bus thruster early masking by stage-3 structure
- This sequence allows warhead deployment and spinup immediately at stage-3 cutoff [as seen]

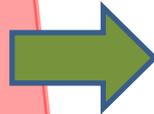


Partial shadowing of stage thruster plumes -- notional

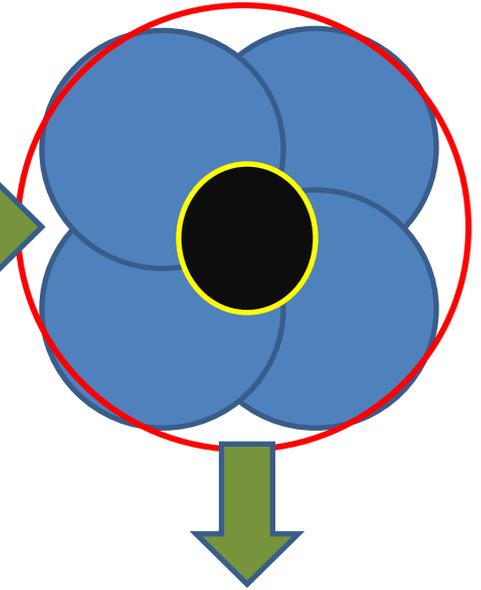
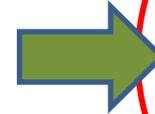
Thruster and plume



Region shadowed by stage aft structure



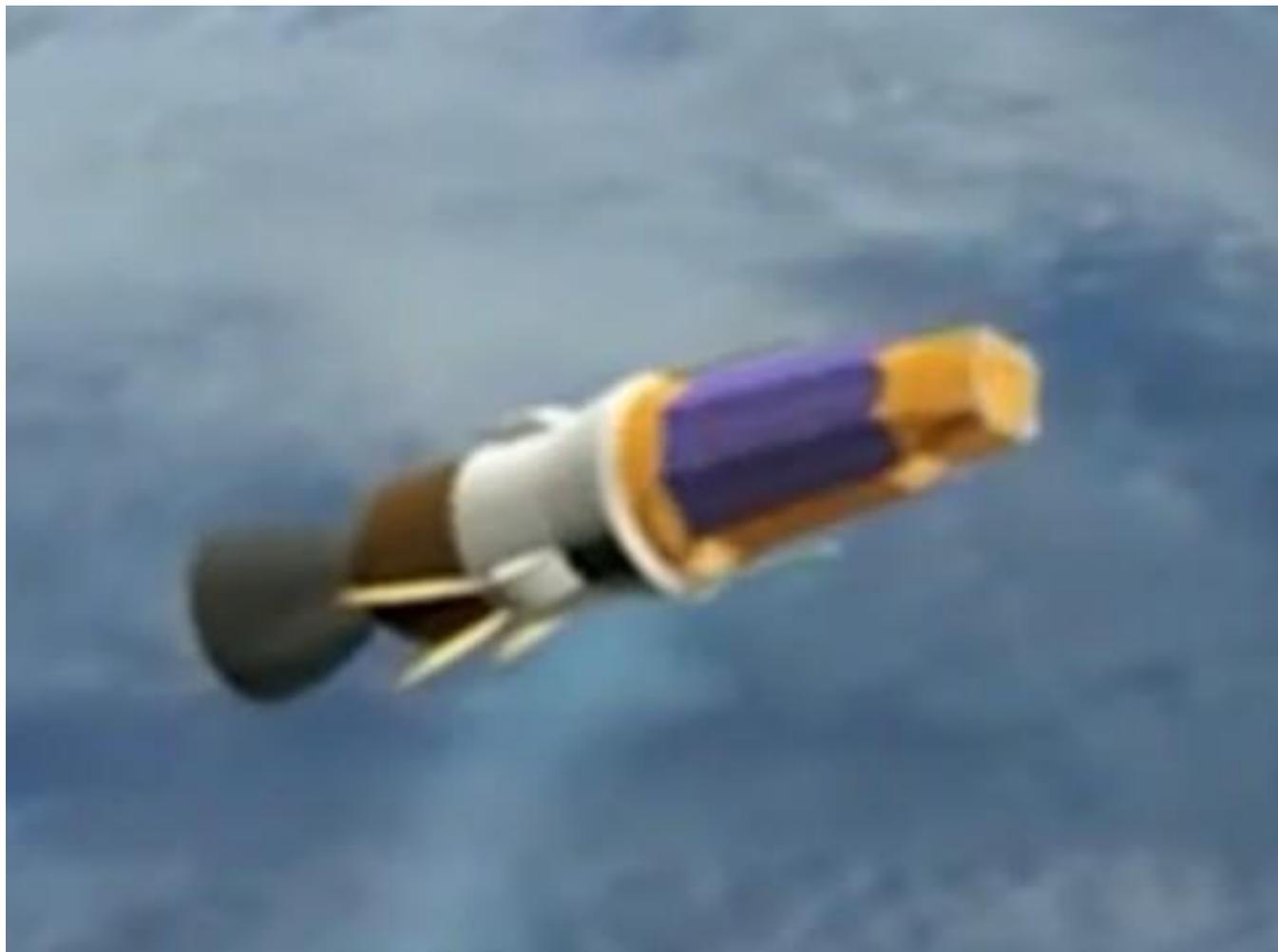
... times four waist-mounted thruster units, each shadowed by aft structure



- Similarities between observed cloud shape and thruster layout on Topol ICBM 'battle stage' are compelling
- Degree to which eyewitness videos and reports can characterize performance of top secret weapons system is amazing



Topol-based commercial satellite launcher shows payload stage thruster firing



Source – START booster users manual

Discussion

- 1.
- 2.
- 3.
- 4.

Appendix 1

TWILIGHT – tracking ‘moscow time’

- Until 2011,
 - during the winter, between the last Sunday of October and the last Sunday of March, *Moscow Standard Time (MSK, MCK)* was three hours ahead of [UTC](#), or [UTC+3](#);
 - during the summer, Moscow Time shifted forward an additional hour ahead of Moscow Standard Time to become *Moscow Summer Time (MSD)*, making it [UTC+4](#).
- In 2011, the Russian government proclaimed that [daylight saving time](#) would in future be observed all year round, thus effectively displacing [standard](#).^[1] On 27 March 2011, Muscovites set their clocks forward for a final time, effectively observing MSD, or UTC+4, permanently.
- But Moscow Time was reset to [UTC+3](#) permanently on 26 October 2014