

North Korean 'Satellite' Launch Campaign April 13, 2012 James Oberg



May 9, 2012

www.jamesoberg.com

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jamesEoberg@comcast.net

“Don’t be afraid of our peaceful, harmless rocket”



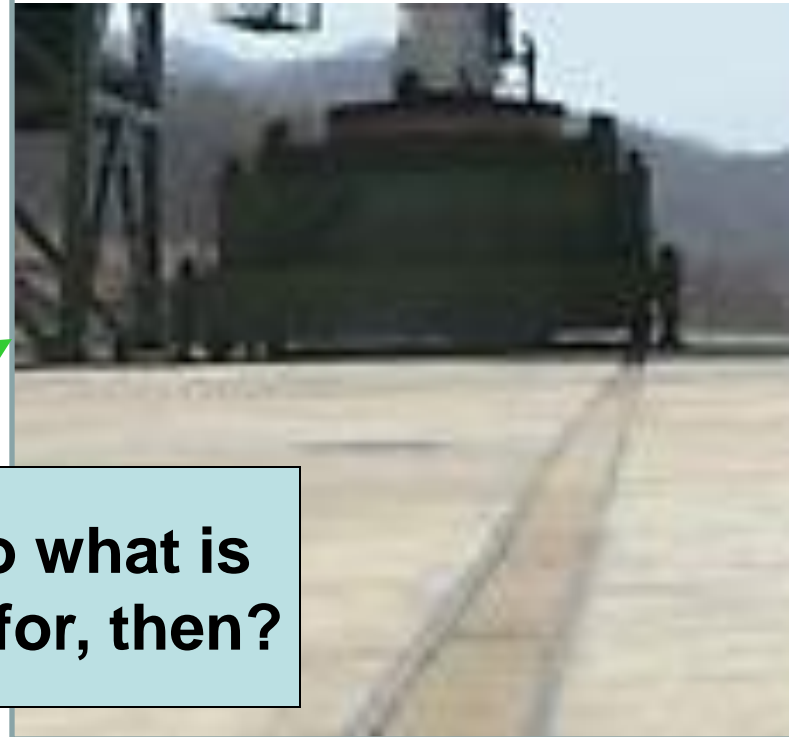
[left] Friendly security detail at launch site



[right] North Korean army propaganda posters of blowing up US Capitol with missiles and shells – shredding US flag – “we don’t really mean it” “Pretend not to see these.”

Pad railway to nowhere??

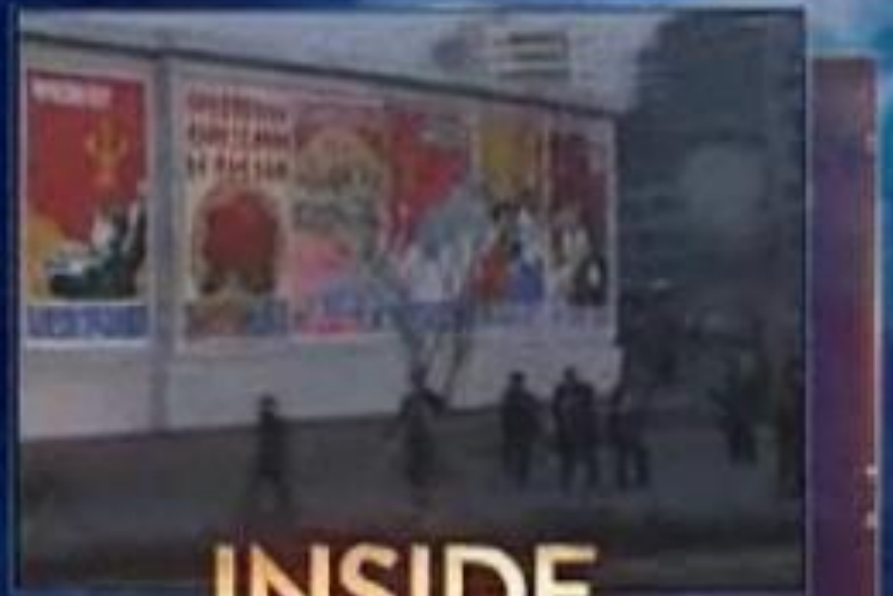
Wheelway for the mobile launch platform runs the entire length of the concrete pad apron, but except for a small segment nearest the platform's launch location, the recessed run appears to be bricked in, perhaps to provide flush apron surface for wheeled crossing traffic.



So what is
It for, then?



NBC News took part in a by-invitation visit to North Korea's satellite project, which was part of the 100th anniversary of birth of Kim Il Sung



**INSIDE
NORTH
KOREA**

We were there for ten days, led by correspondent Richard Engel



NEW YORK



04/29/2012 23:21
PYONGYANG, N.K.

NBC's North Korean news team at work



Hotel conference center was turned over to the visiting journalists as a 'press center' complete with adequate Internet.

Producing the 'inside North Korea' reports



Live shots were from the patio just outside the hotel, on an island in the middle of a river.



TV broadcasts were relayed through a satellite link controlled by the DPRK government, subject to their whims.

In New York, the North Korean UN Ambassador explicitly invited NBC to “bring a rocket expert” with their team. NBC ‘Special Events’ producers spent about 20 seconds weighing their options.



I agreed. It had been my idea from the moment I learned that the general invitation was issued.

This clearly was going to be fun, and a real challenge in so many different ways [here, at the main 'Mission Control' site].



I was the only technical expert to accompany any of the news teams that were approved to come. As such I became the particular focus of the proclamations of North Korean space officials.



**Tally ho. Rocket
in sight at Sohae.**



**Fortunately,
the weather
was splendid
for the entire
duration,
especially the
site visits
& launch day.**

04/07/2012 23:54

The North Korean space adventure

- Setting the stage
- Getting there
- The cultural context
- A little history
- The secret space launch site – Sohae
- The “General Control Center”
- Preparing to observe
- Launch day – Friday the 13th of April
- Open questions

Setting the stage

- Formal description of the press tour
- Formal warnings of rocket stage impact locations as hazards to navigation
- Formal by-name invitation enabled application for Chinese 'transit visa'

Description of press tour [March 28]

- DPRK's Korean Committee for Space Technology's Space Development Department Vice Director [unnamed] on 28 March, reported by Pyongyang KCNA at 10:43 GMT Mar 28, 2012.
- “Foreign experts and reporters to the satellite launch... will go to the Sohae Satellite Launching Station to witness carrier rocket Unha-3 on the launching pad and Kwangmyongsong-3.”
- “They will watch the preparation for the launch of the carrier rocket with satellite on it in the General Launch Command Centre.”
- “They will also visit the General Satellite Control and Command Centre in Pyongyang and see the satellite being launched in a relevant place.”
- “We will organize special visits going beyond the international usage to show with transparency the peaceful, scientific and technological nature of the satellite.”

Notice to Airmen/Mariners

[standard warning to traffic]

NAVAREA NO.12-0174 Date:2012/03/19 12 UTC

YELLOW SEA AND NORTH PACIFIC, LUZON.
ACCORDING TO INFORMATION FROM NORTH
KOREA VIA IMO, ROCKET LAUNCHING.
IMPACT HOUR 2200Z TO 0300Z COMMENCING
DAILY 11 TO 15 APR.

IMPACT AREAS BOUNDED BY

A. 35-12-25N 124-52-23E

35-12-13N 124-30-34E

35-55-20N 124-32-10E

35-55-10N 124-50-25E.

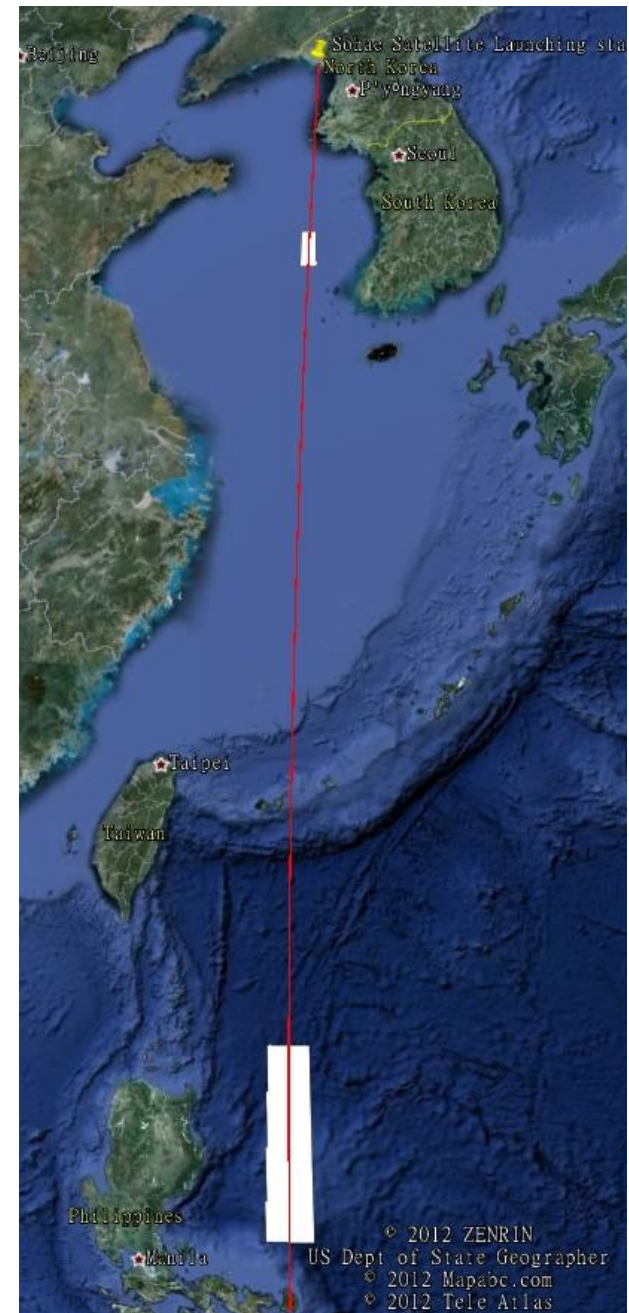
B. 15-08-19N 124-46-15E

15-09-35N 123-45-27E

19-24-32N 123-54-26E

19-23-08N 124-45-13E.

CANCEL THIS MSG 150400Z APR.



Visa for North Korea [DPRK] entry



The image shows a North Korean visa for James Oberg. On the left is a color portrait of a man with glasses and a mustache. To the right of the portrait is a large blue circular official stamp. The visa form contains the following information:

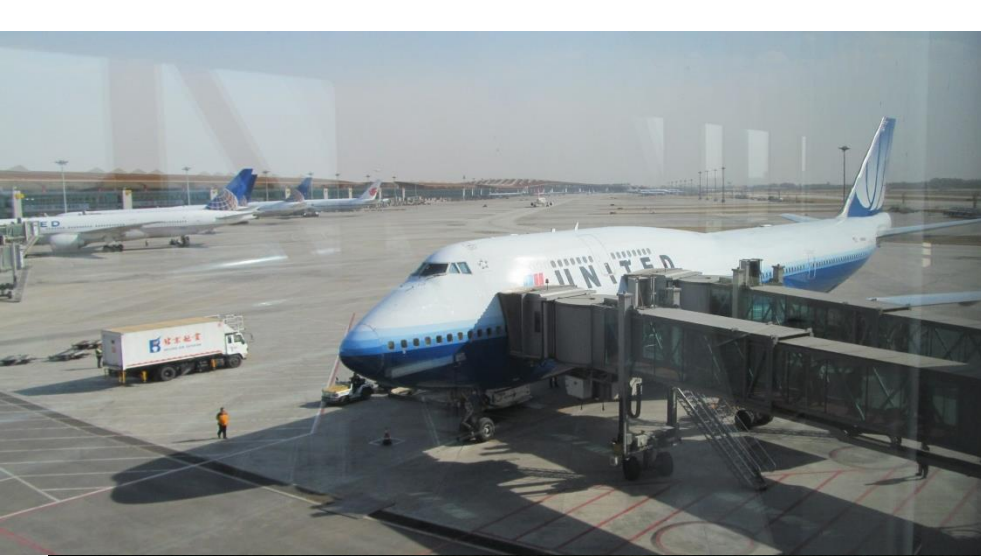
조선민주주의인민공화국 DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	
이름 Name	오베르그 제임스 에드워드
성별 Sex	남
생년월일 Birth date	1944. 11. 07
사증종류 Type of visa	39502185 일반/왕복
국적 Nationality	미국
여행번호 Passport No.	485406351
동반자 Children	
출발지 Place of departure	평양
목적지 Destination	평양, 신의주, 두만강
체류일수 Duration of stay	11일간
발급장소 Issued in	베이징
날자 On	2012. 04. 05

수표 

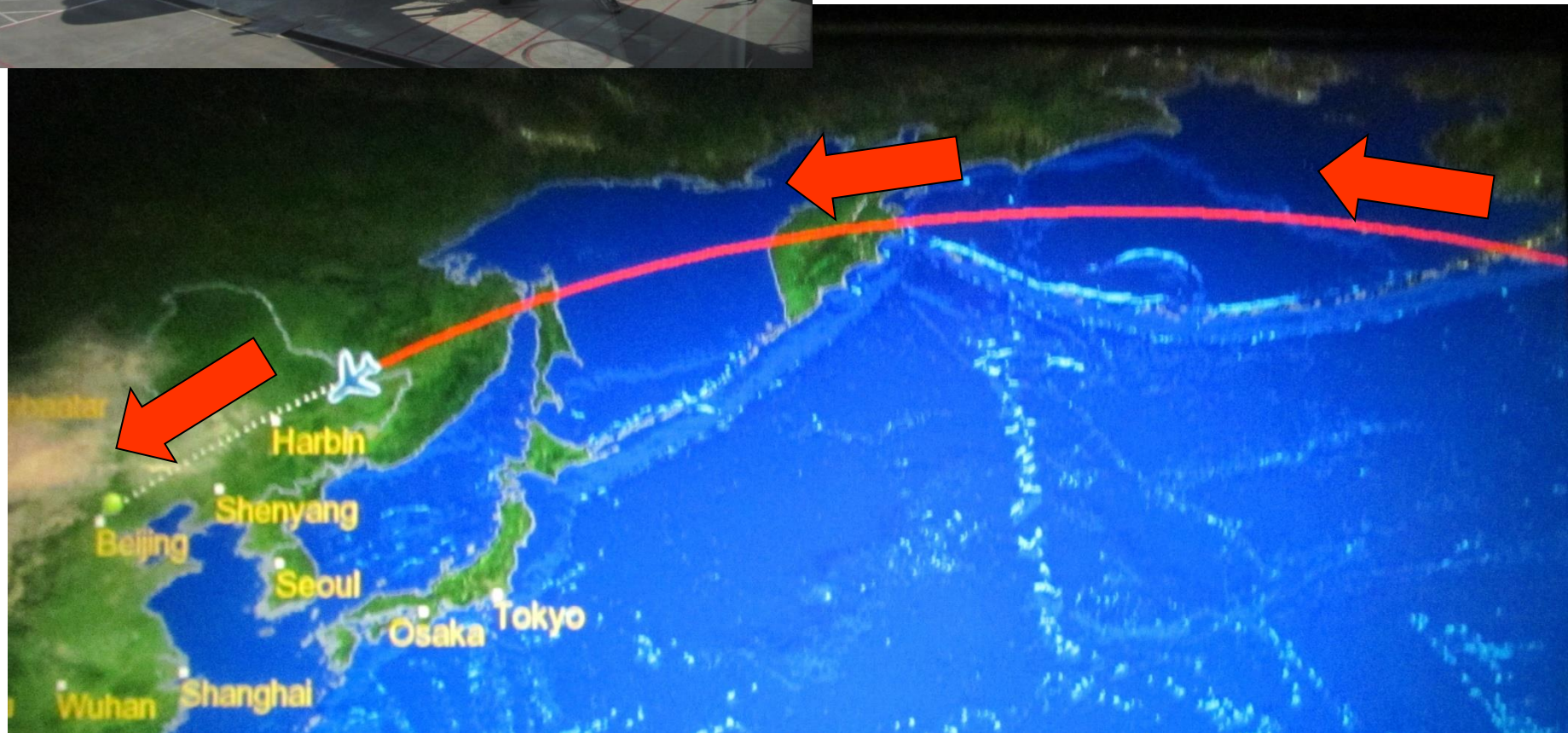
This required a by-name invitation, and had to be personally picked up at the embassy in Beijing. Politeness helped.

Getting there

- Crossing the Pacific
- Last leg to Pyongyang via Antonov-22
- “Not in Kansas any more.”
- Moving a film crew – big challenge
- Our arrival big local news
- Getting credentials and badges



ACROSS THE PACIFIC
Kamchatka, Okhotsk,
Sakhalin, Manchuria... to
Beijing's "Capital Airport"





AIR KORYO BRINGS us to Pyongyang, DPRK

Photos from KCNA, official news agency



Surprise meeting there with space journalists Yuri Karash [Russia] and Christian Lardier [France]

Half of our camera luggage



Note: Even the luggage CART was part of our 'checked luggage'

KCNA = Official North Korean news agency – the arrival of the ‘foreign observers’ was big news on Pyongyang television.



위대한 수령님 탄생

100돐

Centenary of the Birth of President **Kim Il Sung**



제임스 오베르그

James Oberg

미국 우주과학론평원

USA Space Consultant

My documents:

“space consultant” badge

BUT

no ‘press’ armband



The cultural context

- Swarms of foreign visitors to “100th” party
- Banquet tables for the ‘kimilsongist’ guests
- The regular cafeteria & the ‘salt shortage’
- We demand rockets!! [street poster]
- Hunting a ‘typical store and shoppers’
- The invisible eyesore [‘hotel of doom’]
- Clumsy ‘hiding’

**“WELCOME” – the only sign in English we ever saw
on the city streets – and it was only temporary.**





**Special banquet rooms
for foreign admirers of
Kim Il Sung and progeny**

Communists of
the world have
few places left
to go to party
and pig out



The regular cafeteria & the 'salt shortage'



We were allowed this much every noon, and we had to ask for it

We demand rockets!!

The slogan reads "Let's raise the spirits of winners and build a strong and prosperous nation!"

[below] My photo from the bus

[lower right] AP photo from right in front





The missing '5'

Yang Gak Do hotel

WHY advertise a 'secret' floor by drawing attention to it by **omitting** its number from the elevator buttons? Why not include a button '5' and just make it not work?

The secret “Fifth Floor”

Americans called “seung nyang”, a hated/feared man-eating wolf-tiger of legend, on a who-to-hate poster

<http://monsoondiaries.com/2011/08/23/piso-cinco/>

"This bomb is the product of the Americans. Every product of the Americans is our enemy. Get revenge a thousand hundred times against the Americans."



APPARENTLY this floor contains the listening devices for monitoring foreigners

Dominating the Pyongyang skyline & visible from a dozen miles outside the city is a giant futuristic building that NOBODY talks about, even as a joke or a curse. They just don't SEE it.



North Korea's "Invisible Skyscraper"



1992-2008, gaping windows, rusting crane



Exterior completed, 2011

Rockets versus Pyongyang's Ryugyong Hotel

- 105-story pyramidal hotel in Pyongyang
- Would have been world's tallest hotel – if ever finished
- Began in 1987, \$750 million was spent
- Construction halted in 1992 – end of USSR aid
- Became known as the “Hotel of Doom”
- European inspection concluded ‘irreparable’, concrete too decayed and elevator shafts mis-aligned
- Not on any official city map or in any tour book
- Never seen in any news images, even in the distance
- Work resumed in 2008 by Egyptian company that also sold mobile phone network; added cost unknown
- Completion promised by Kim Il Song's 100th
- Still empty as of our visit – still not on any maps
- “Hotel? What hotel? I don't see any hotel!”

The secret space launch site –
Sohae



- The location of the launch site allows the North Korea the ability to place a satellite in orbit without overflying South Korea territory. (Image Credit: GeoEye and Google Earth)
- Located on the West coast of the Korean peninsula just 30 miles south of the Chinese border, the new facility has been under construction for several years. It is intended to replace the aging and remote launch site at Musudan-ri on the Northeast coast.
- The launch date has been announced to fall between April 12-16th. The North Korean's plan to place the satellite in orbit in southerly direction thus avoiding overflight of South Korean territory.

**SOHAE –
New rocket
launch site**

Launch site layout [as of 2009]

commercial
imaging satellite
photos



Analysis Center



Tongch'ang-ni Launch Facility (Sohae Satellite Launching Site)

P'yŏngan-bukto, DPRK

39 39 49 N 124 42 13 E



Launch Pad

April 9, 2012

Support Vehicles

Instrumentation
Tower

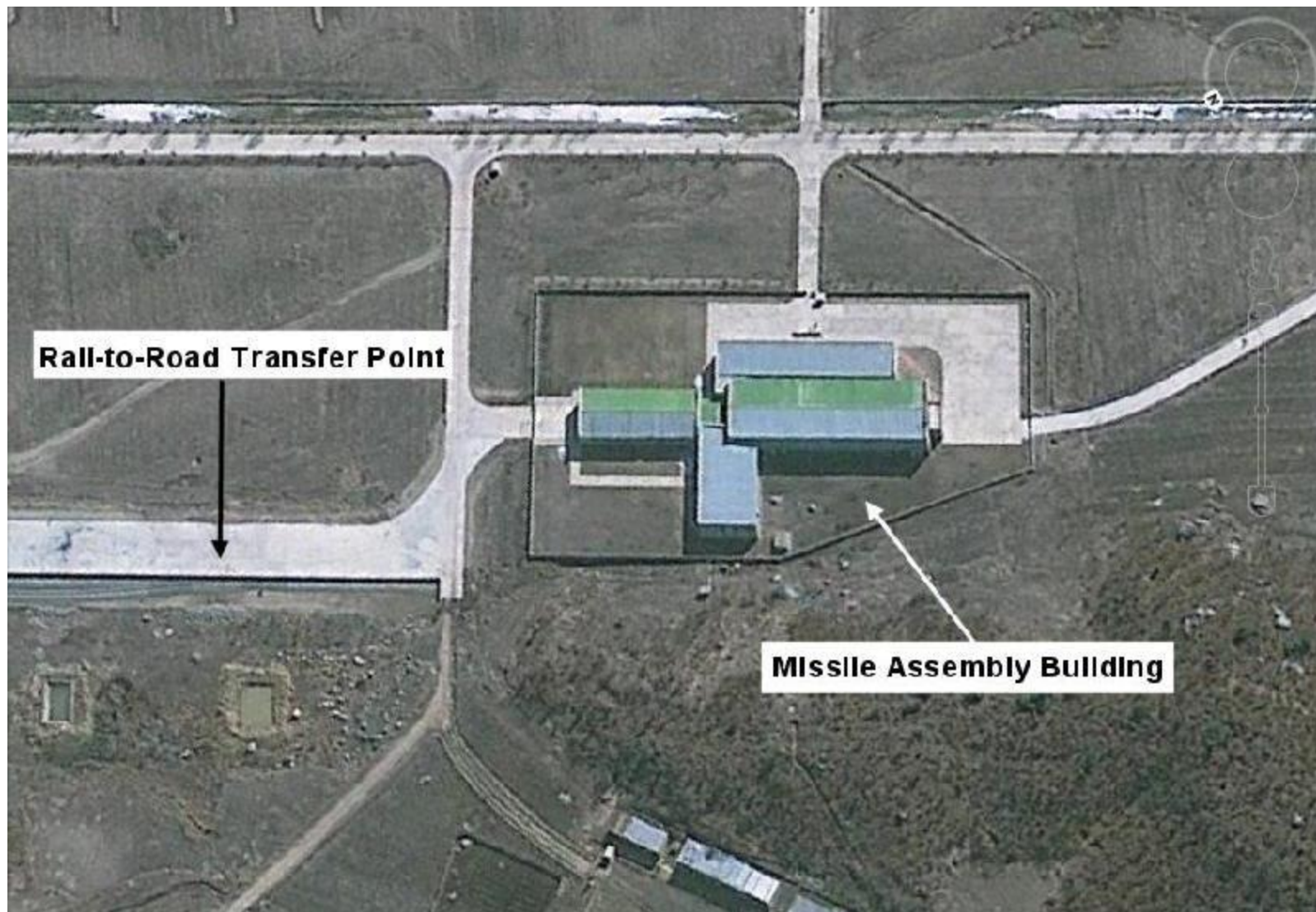
Umbilical Tower with
Unha 3 SLV inside
Servicing Platforms

Rail-Mounted
Mobile Launch
Platform

Bermed Fuel And
Oxidizer
Buildings with
Shipping Tanks

Exhaust
Deflector

DIGITALGLOBE



Detail of
the Missile
Assembly
Building
and the
new rail-to-
road
transfer
point

March 28 –
the parking lot
changes
color!



Was it an attempt at camouflage?

**Or some cosmetic upgrade ahead of the
arrival of the foreign journalists?**

Or just a coincidental construction step?

Change in color of pavement around unknown 2nd building

posted by [Martyn Williams](#) on April 6, 2012 at 07:30

<http://www.northkoreatech.org/2012/04/06/launch-preparations-underway-at-sohae/>



Visiting Sohae – April 8, 2012



By luxury railcars
to the secret Sohae
space launch center
[5 hour trip]



Brown landscape still awaiting spring....





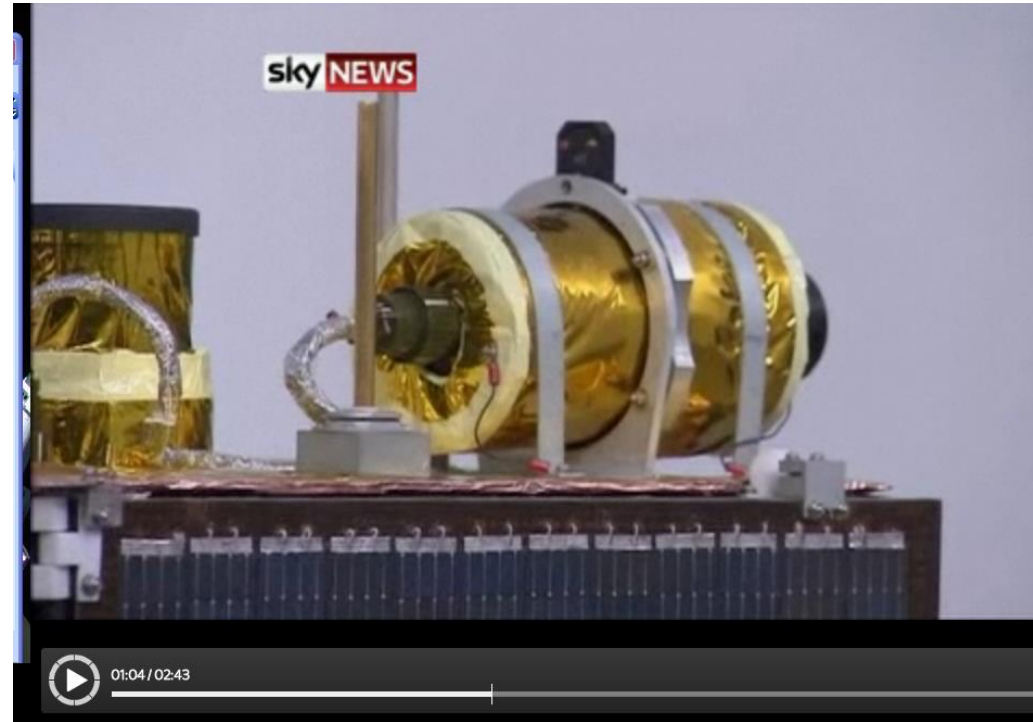
Arrival by train



Stylized official map



The Satellite



“Kwangmyongsong-3 as an earth observation satellite will assess the distribution of forests and natural resources of the DPRK, the level of natural disaster, the crop estimate, etc. and collect data necessary for weather forecast, natural resources prospecting and others. .. It weighs 100kg and will circle along the solar synchronous orbit at 500km high altitude. Its life is two years “

Puzzles about the satellite









The Launch Pad





04/07/2012 23:57



sky NEWS



sky NEWS





The “Launch Control Center”

The press in front of the launch control center

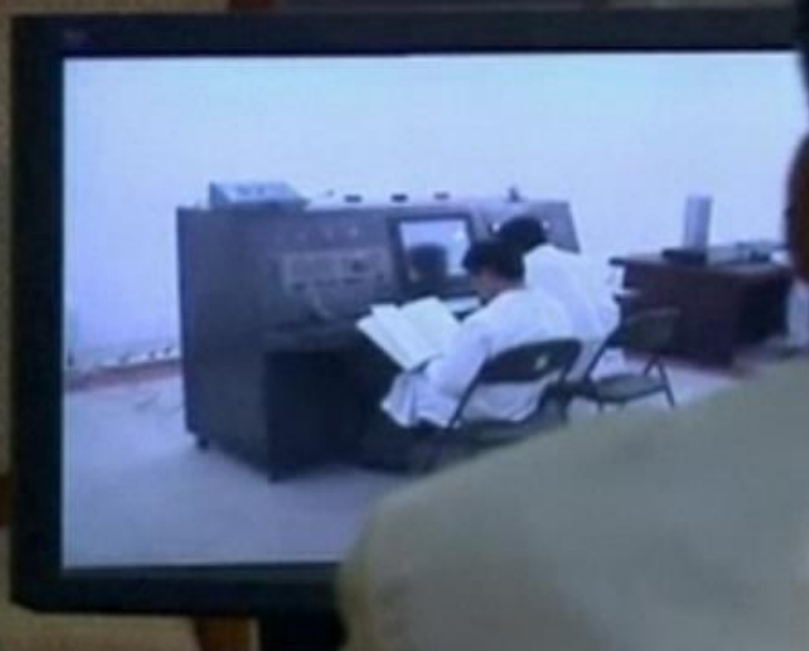


“Launch Control Center” at Sohae





sky NEWS



sky NEWS





Impressions



Riding home, discussing what we saw



Main Gate

“The facility has one road entrance guarded by a main gate approx two kilometers north of the launch pad. The road is about 5 meters wide & appears to be concrete. Outside of the main gate, the road is narrower and appears to consist of graded loose gravel.”

LEFT: Satellite photo

BOTTOM: On-site photo



Urgent construction at Sohae

<http://www.northkoreatech.org/2012/04/06/launch-preparations-underway-at-sohae/>

In previous images construction progress could be seen on a building near the main entrance. An image from February 27th showed the structure without a roof, while a picture from March 20th (taken through light cloud) showed the roof partially constructed. The roof has now been completed:



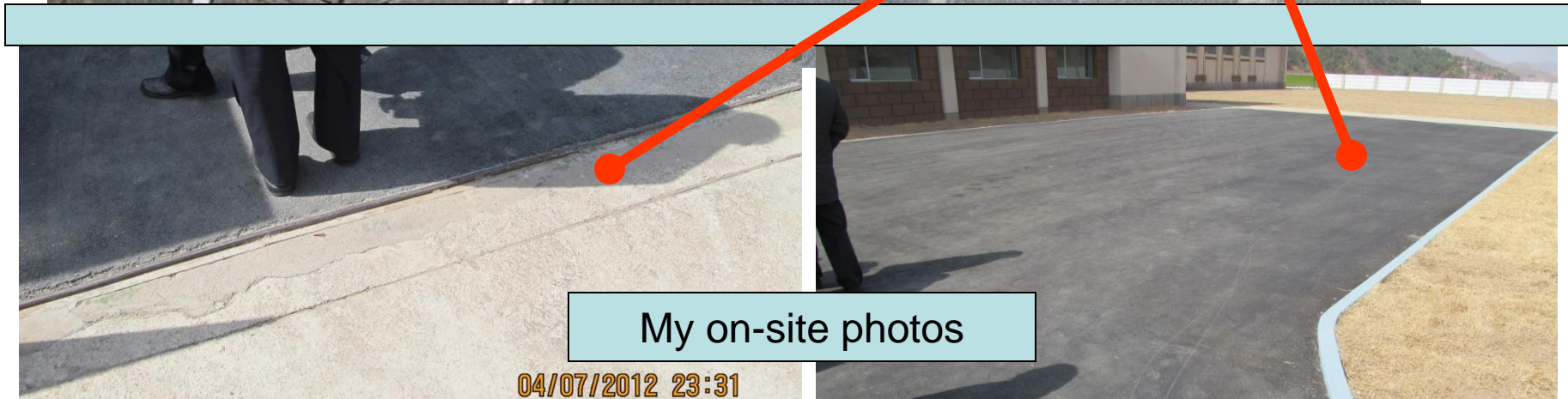
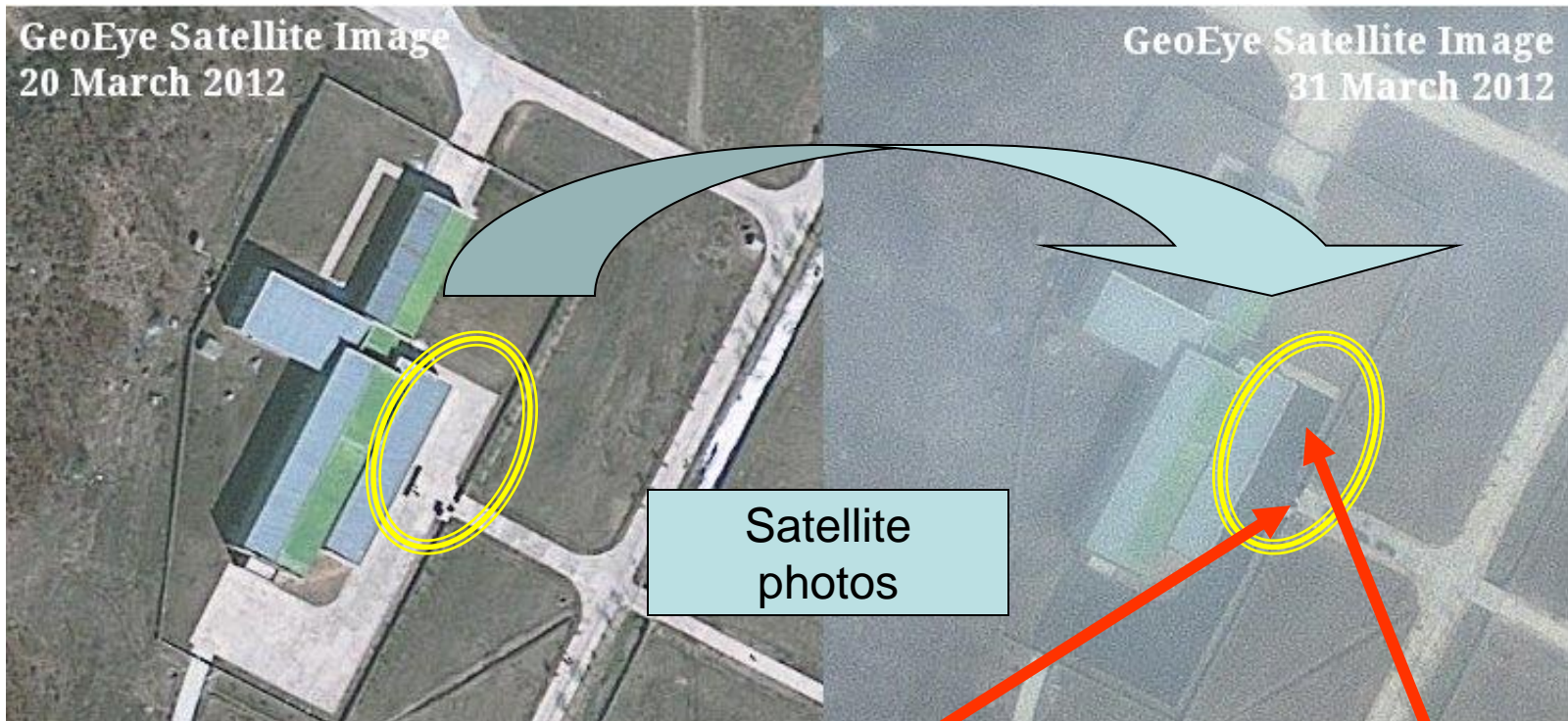
TOP: Satellite pix
RIGHT: Jim's pix
[April 8]



Change in color of pavement around assembly building

posted by [Martyn Williams](#) on April 6, 2012 at 07:30

<http://www.northkoreatech.org/2012/04/06/launch-preparations-underway-at-sohae/>



The “General Control Center”

General Control Center

Director greets the visiting journalists



Seriously – official North Korean news agency [KCNA] photograph shows Jim's roving eye

Highly unusual “quad Yagi” antenna on nearby hilltop



General Satellite Control Center
Pyongyang, DPRK



“General Satellite Control Center”



“Live” view sent from Sohae launch site – note rain tarps



“Pardon me while I just get some views over that way...”



Question: How soon do you expect to get first signals?



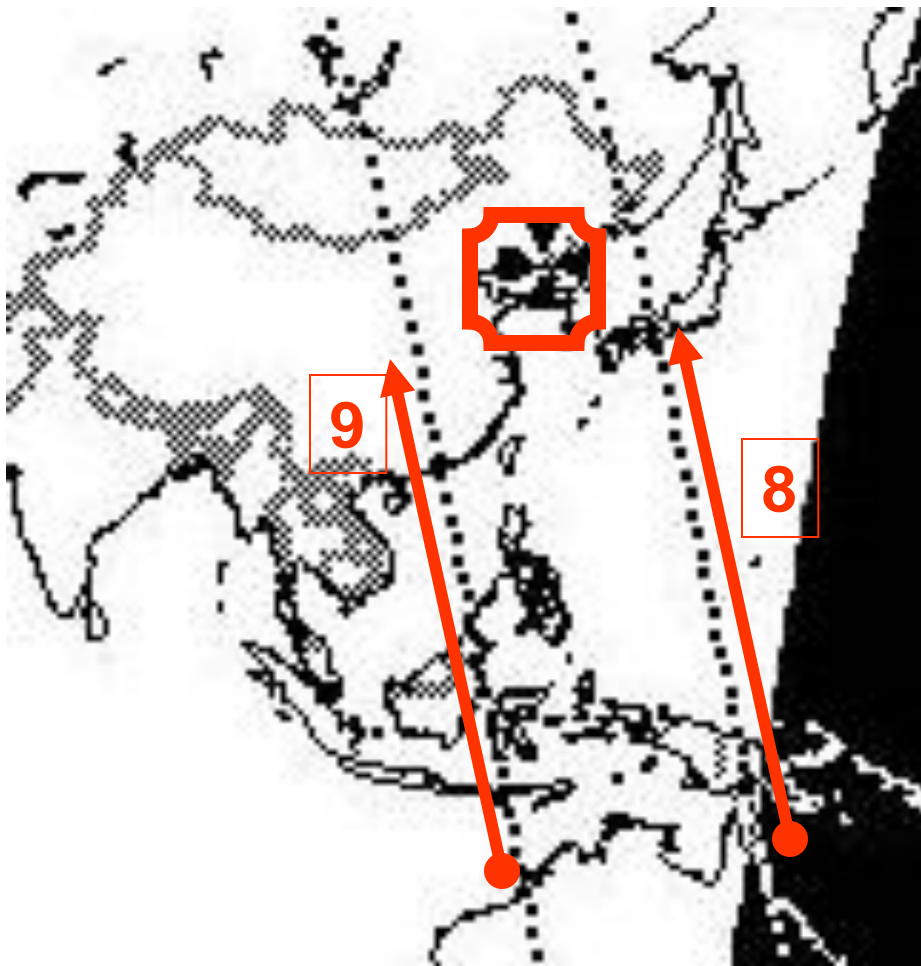
Answer: “About eleven hours.” THIS WAS EXACTLY RIGHT.

High-precision tracking and telemetry

The first solid opportunity for precision communications and tracking does not occur until half a day after launch.

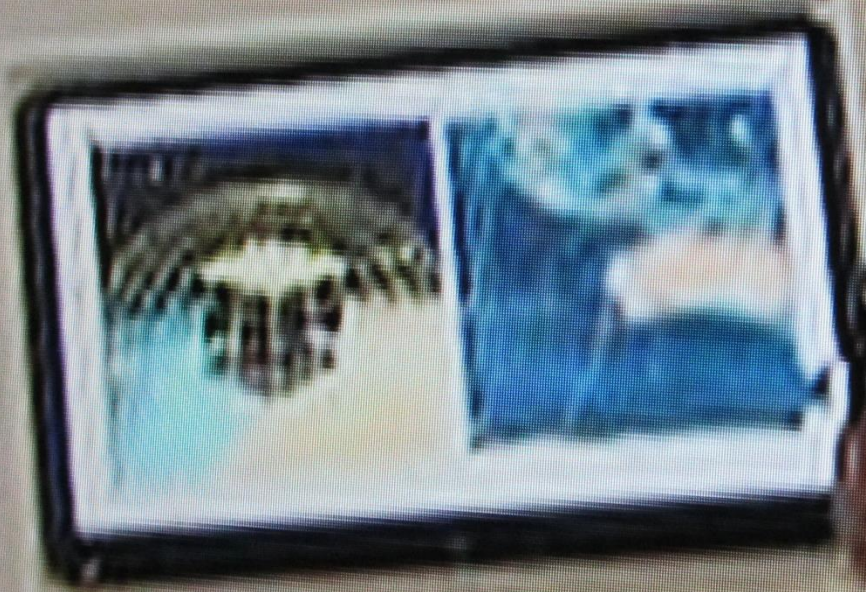
Earth will have rotated halfway around, under the north-south plane of the satellite's orbit.

Two passes from south to north will rise high enough in sky for several minutes of good comm

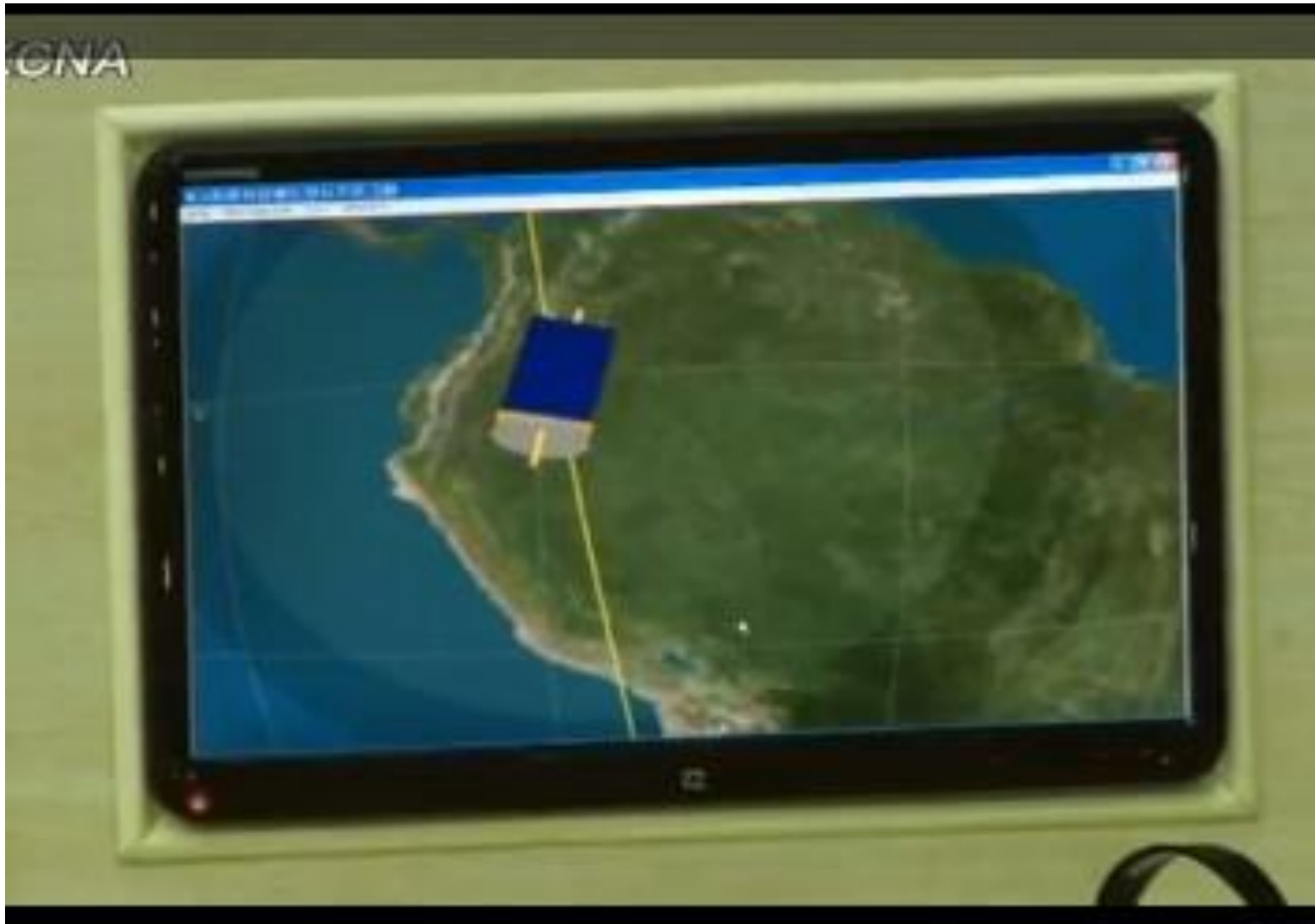


Orbit	Time from launch	max elevation
8	0/10:39:15	29.0
9	0/12:07:55	15.9

Disregard day/night indicators on map



One display showed satellite crossing South America on first orbit, but tilted at a small angle. Significance?





KCNA

Director and
me continue
our debate in
gallery [far
left, top]

Official NK news agency:
fancy consoles are empty shells



One operator was wearing a headset
BUT the voice links still seemed to be by telephone





04/29/2012 23:12

Satellite Control Center – Staff Parking



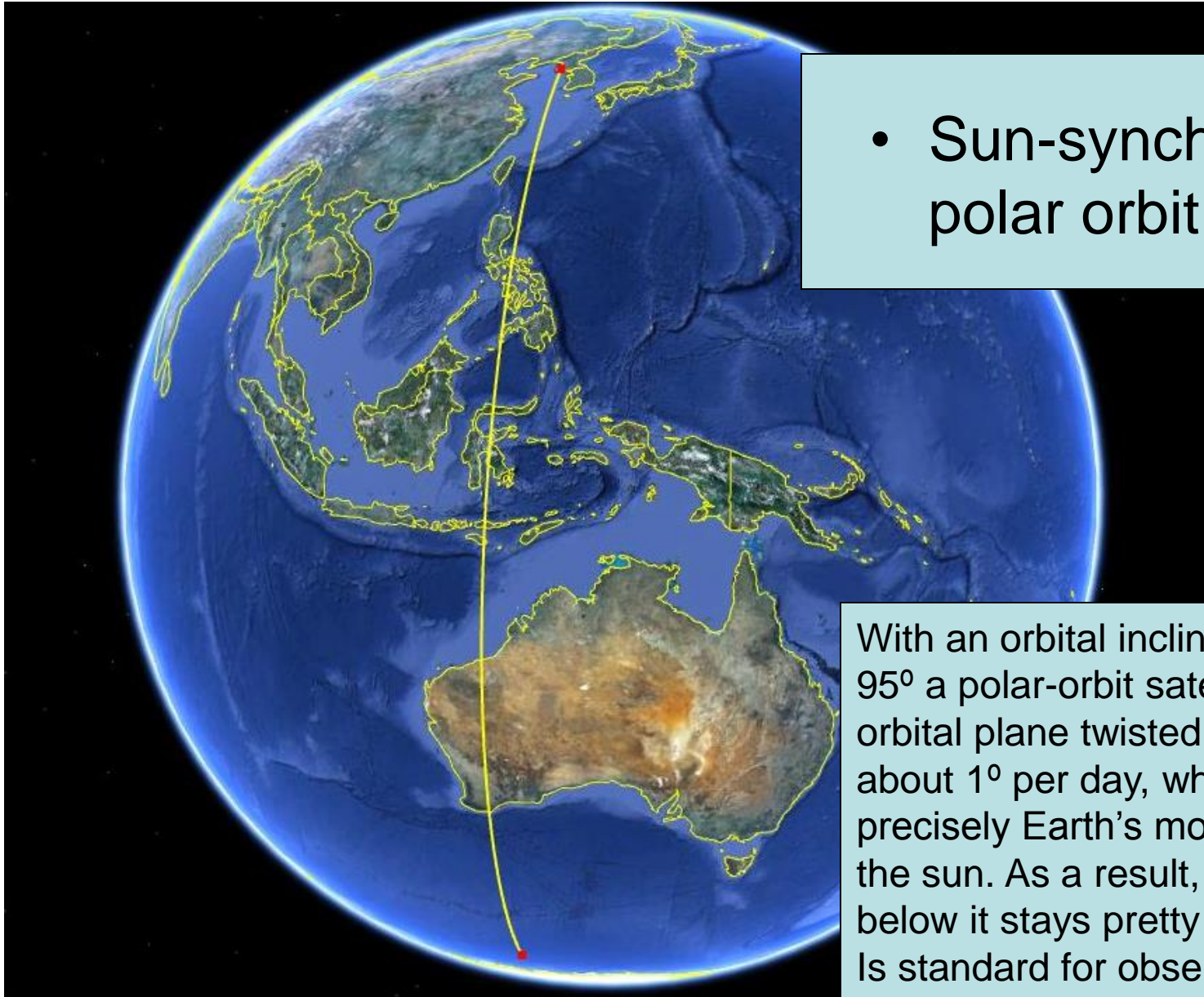
Preparing to observe

There were chances to see it

-- on ascent

And

-- in orbit



- Sun-synchronous polar orbit

With an orbital inclination of about 95° a polar-orbit satellite has its orbital plane twisted westward by about 1° per day, which matches precisely Earth's motion around the sun. As a result, light/shadow below it stays pretty constant. This is standard for observation sats.

Analogous launches from such a distance



Delta launch from Vandenberg, 50 miles away, May 5. 2009

http://richardduncan.net/wp-content/uploads/2009/05/dsc_6076a.jpg

CAUTION: The 'Delta' has a set of solid-rocket-boosters that leave a smoke trail, probably more striking than Unha-3.

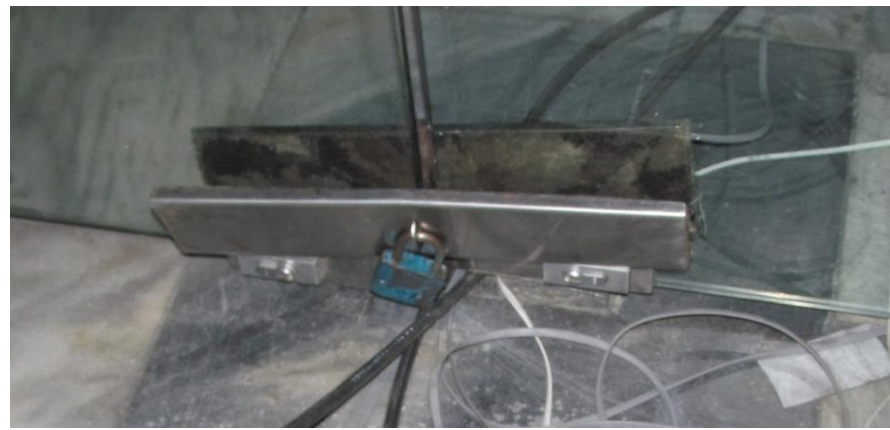
Vandenberg, 50 miles,
June 27, 2006 [below]

<http://franklin2.tbo.net/blog/?m=200606>

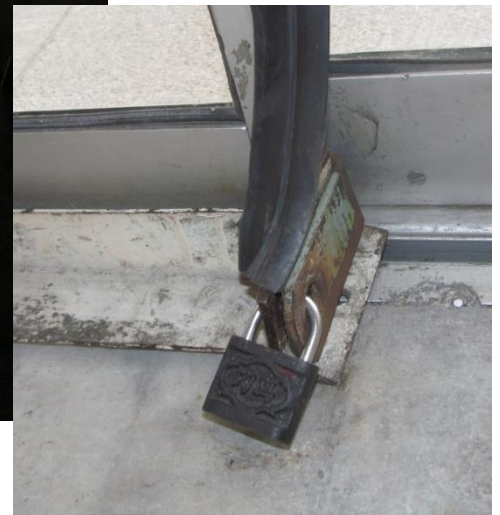
Also caught booster sep.



From our hotel --
Dash for the exit



**IF the
door is
unlocked**



PATH CULMINATES HIGH IN
SKY 80 SECONDS AFTER
LIFTOFF FROM 'SOHAE'

Viewing the rocket's path

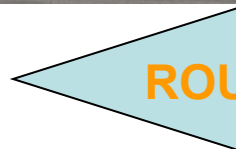


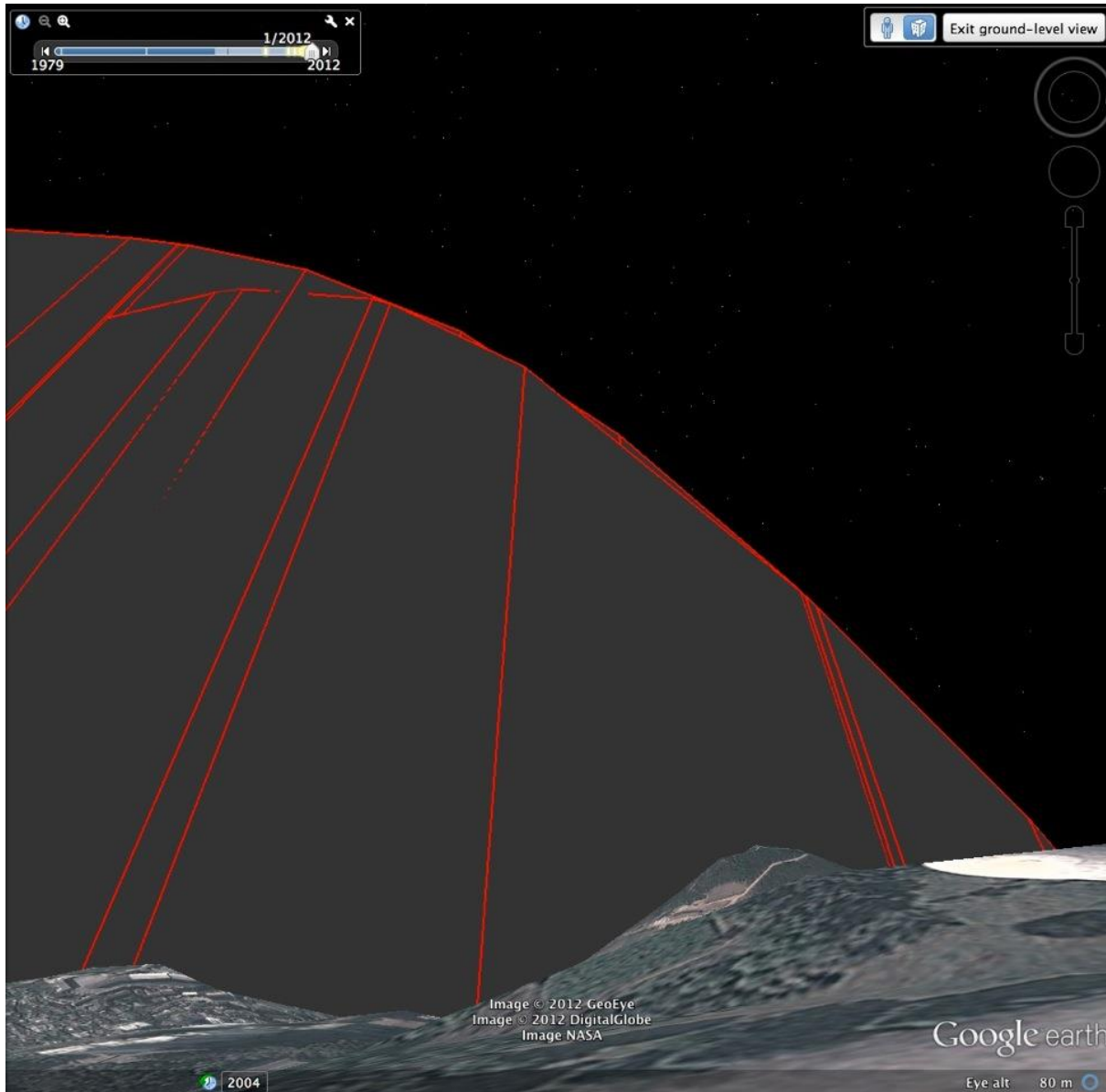
'CONFERENCE CENTER'
{AKA "PRESS CENTRE"}



PARKING LOT WITH
CLEAR VIEW TO WEST

ROUTE OF THE "ROCKET DASH"

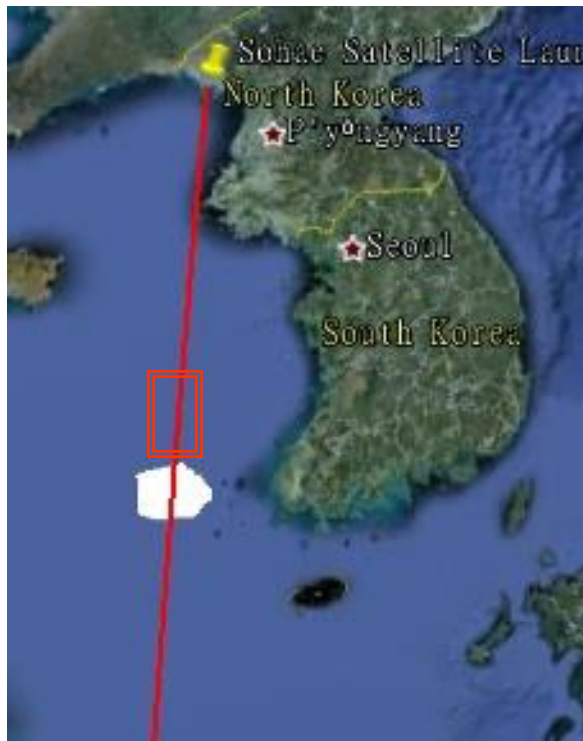




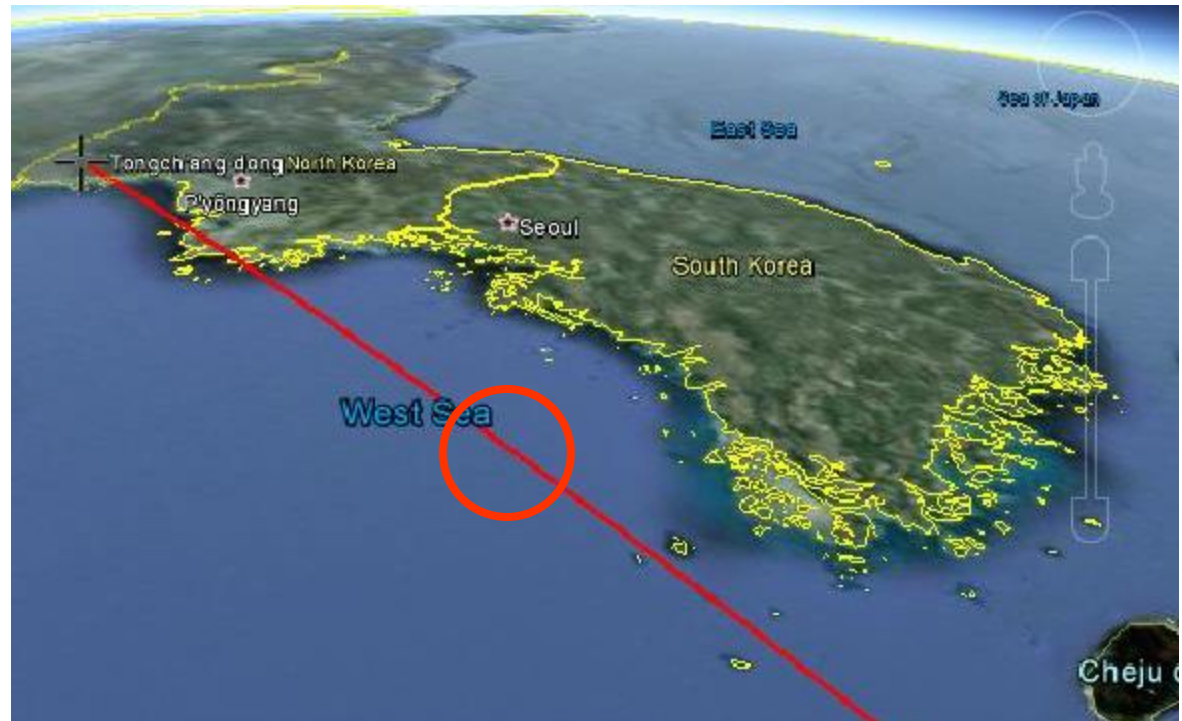
This is a street view of the Unha3 launch 30 seconds into flight, from the Pyongyang Space Museum Grounds, looking due East, showing the 3D trajectory flying from right to left, and showing the spent second stage beginning its return to earth. The vertical red lines connect the trajectory data points, at approximately 30 second intervals, vertically to the ground, and are not part of the trajectory, but are part of the computer code. This view also shows that there is a hilly area in the direction of the Sohae launch site that might delay the first sighting of the rocket 10 seconds or so. Lew Franklin

Where will first stage splash down?

Warning zone is in international waters off west coast of South Korea. Observers in area may see smoke trail, hear sonic boom, even observe splash. Recovery of floating debris could be easy; retrieval of sunken h/w including engines should be entirely feasible, but then North Korean interference is probably certain.

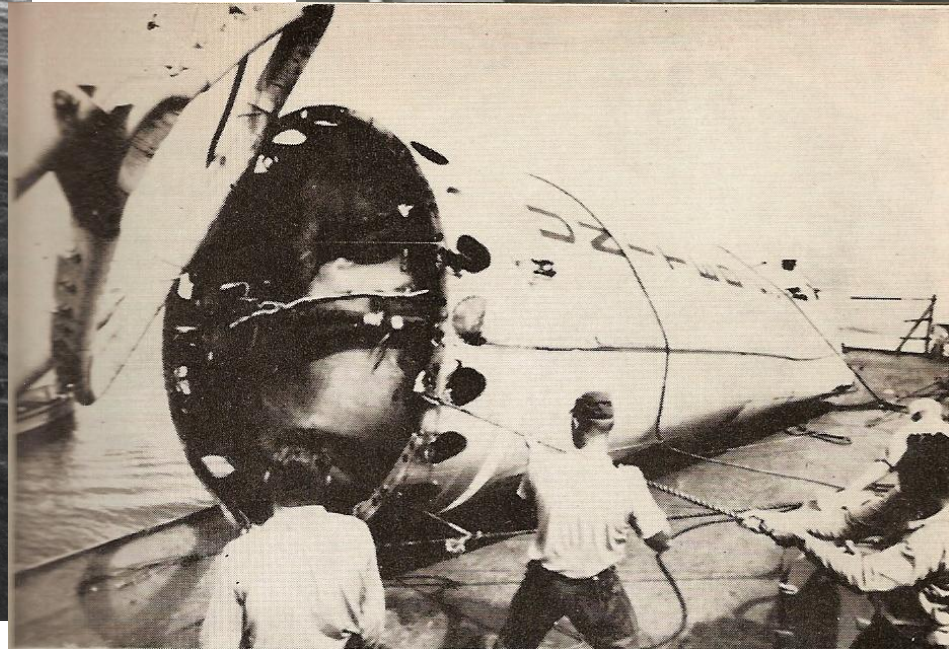


Stage impact zone on website map [above] is too far south, too near SoKorean islands. Plotting actual NOTAMS points gives more northern rectangle.



WHAT MIGHT BE FOUND?

Gemini-5 Titan booster
first stage [Aug 1965];
bottom half with engines
broke off and sank on
water impact.



Other floating rocket debris

Aerodynamic shroud fragments and buoyant tanks have been found on beaches long after actual launches and anything floating west of South Korea has high chance of discovery.



overconfidence



Launch day –
Friday the 13th of April

PREVIOUS LAUNCH



Launch images of the Unha-2 rocket

[Official photos published by Korean Central News Agency (KCNA)]

<http://english.sina.com/technology/p/2009/0408/232528.html>

Launch!

Simulated view only....



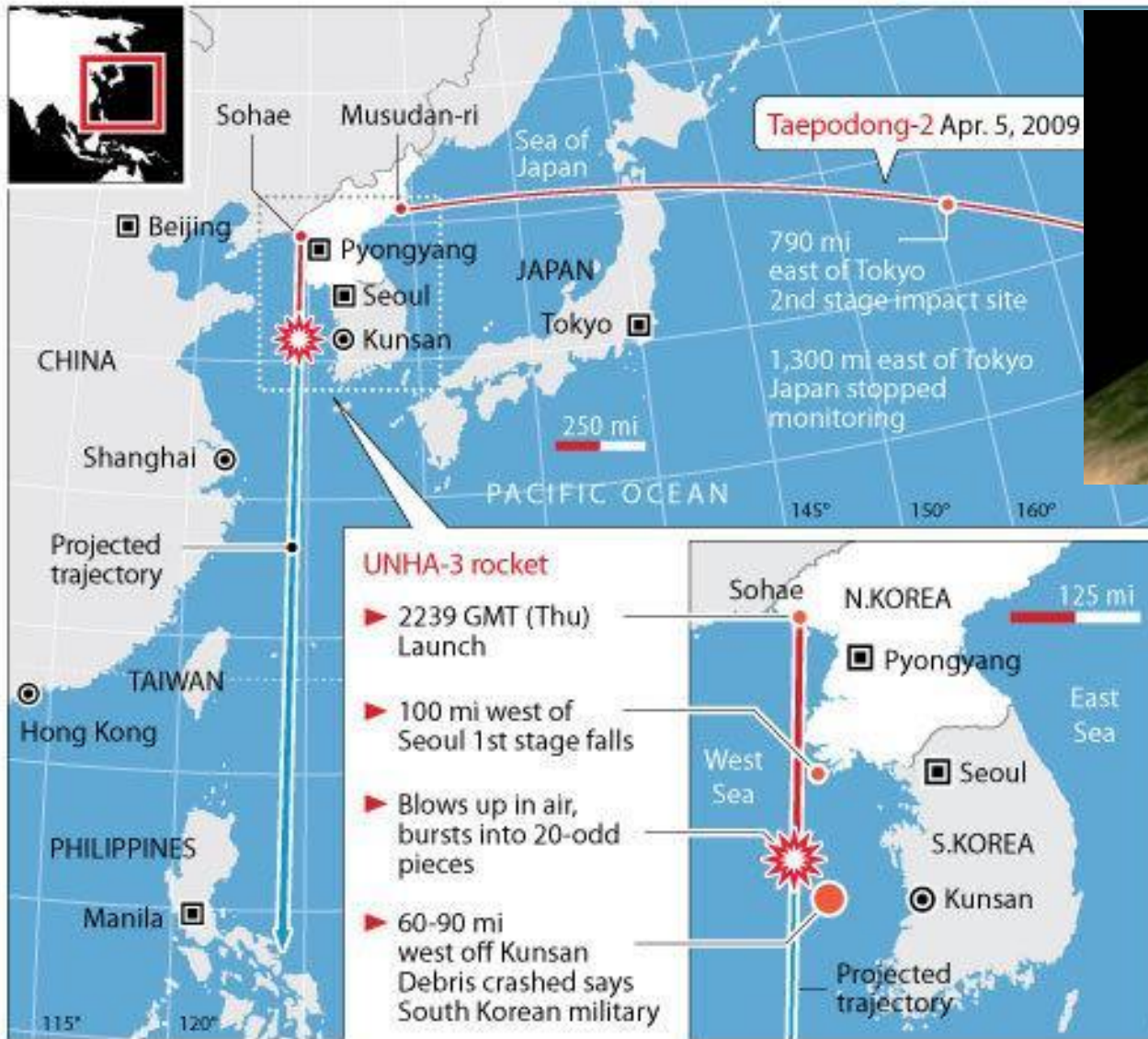
Launch day – the press room is fully staffed



The front screen – stayed blank



NORTH KOREA ROCKET FAILURE



No official word – then or later



NEW YORK



THE PENTAGON

LAUNCH FAILURE

NORTH KOREAN ROCKET BREAKS UP OVER YELLOW SEA



TODAY.COM





Clueless in Korea



CREDIT: Analytical Graphics, Inc.

Getting home

Dropped off at world-
renowned airport



이 사증의
년

유효기간을
2012-04-09

연기함

출입국사업국

This visa hereby renewed
and valid until:

평양 신의주로출발

2012-04-17

출입국사업국

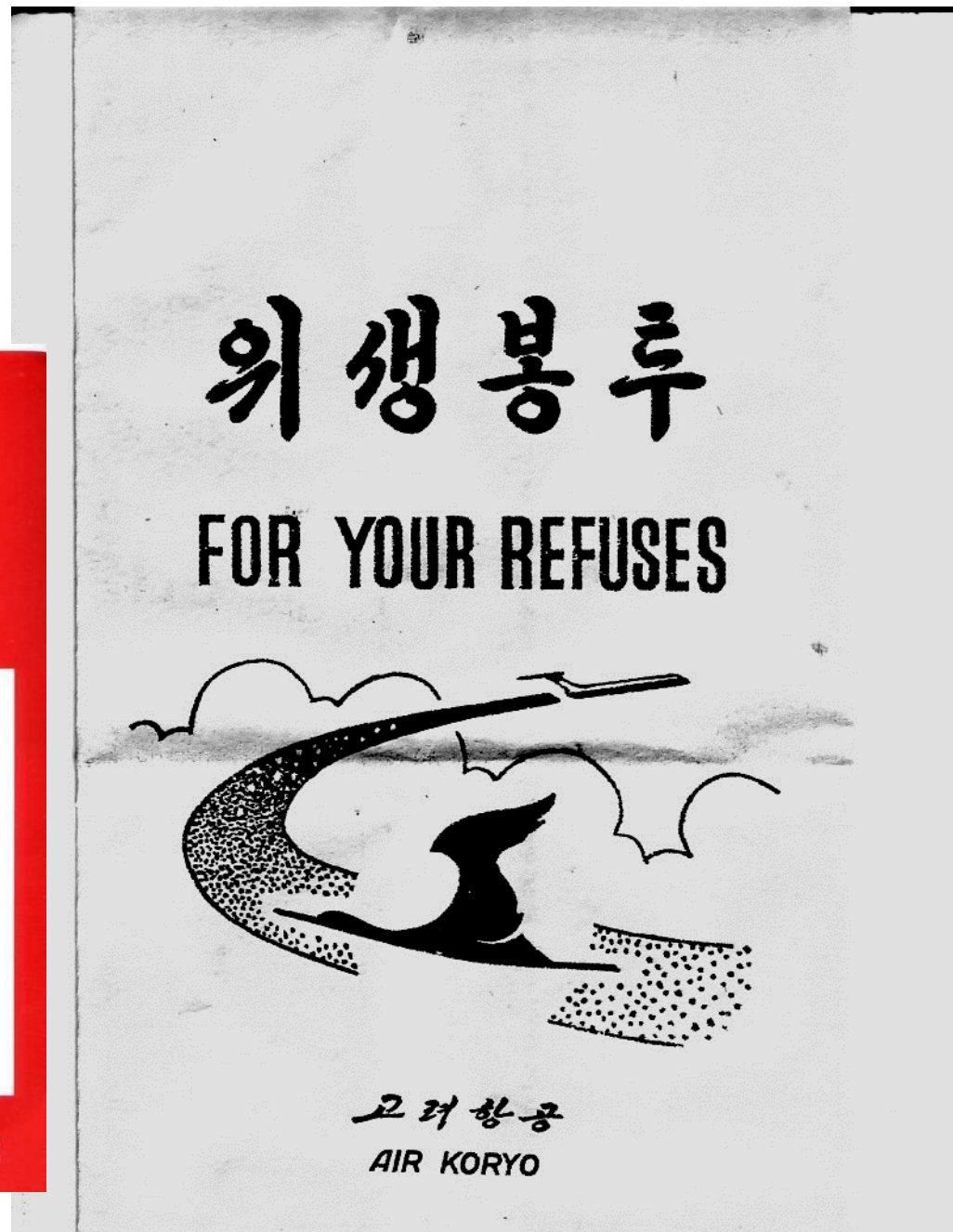
수표

조선  평양

2012-04-07

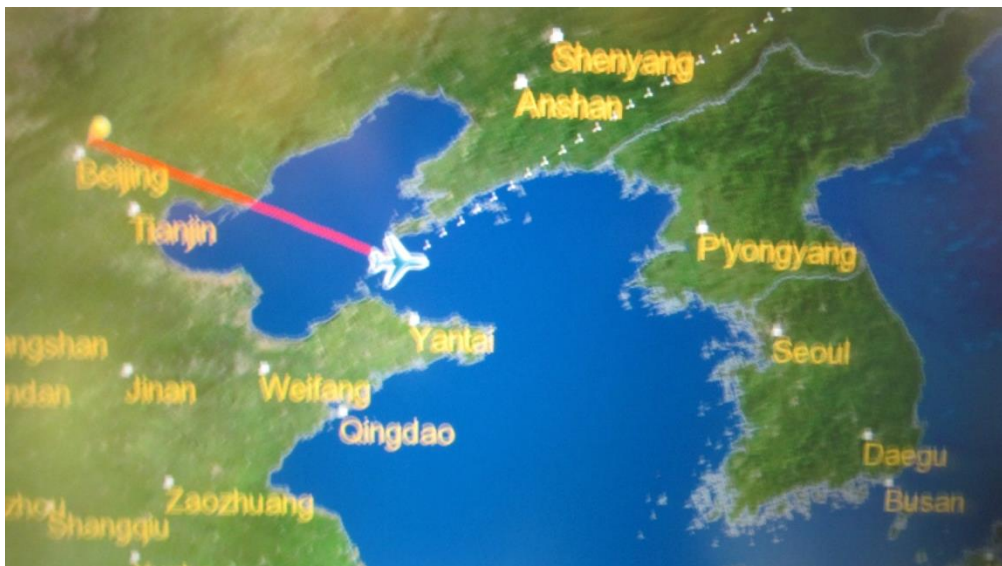
통행검사소 114

Documentary souvenirs



Illegal images

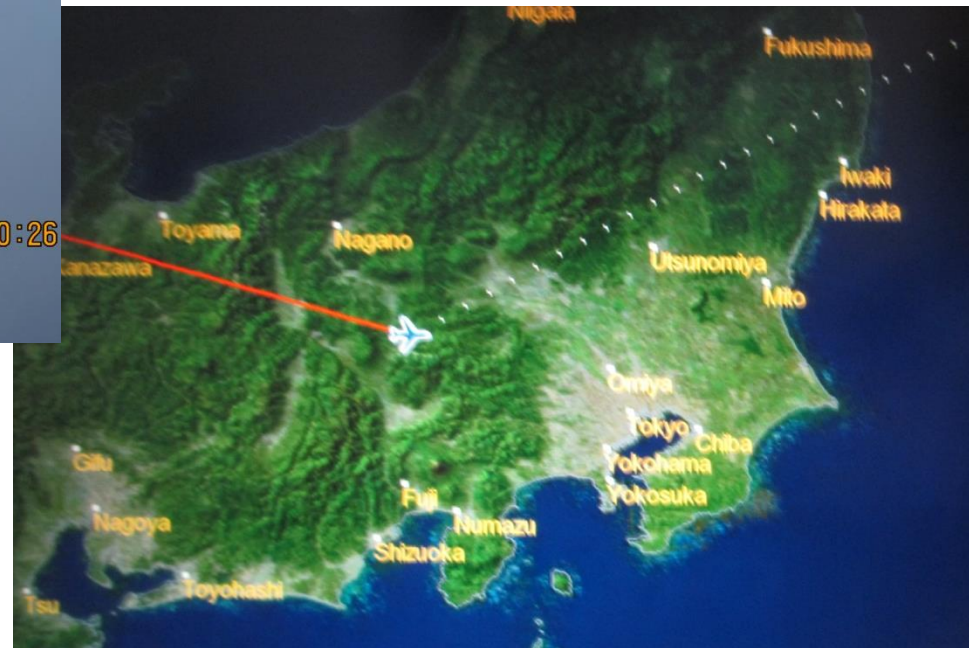




Homewards
across Japan –
our shadow &
‘glory’ below



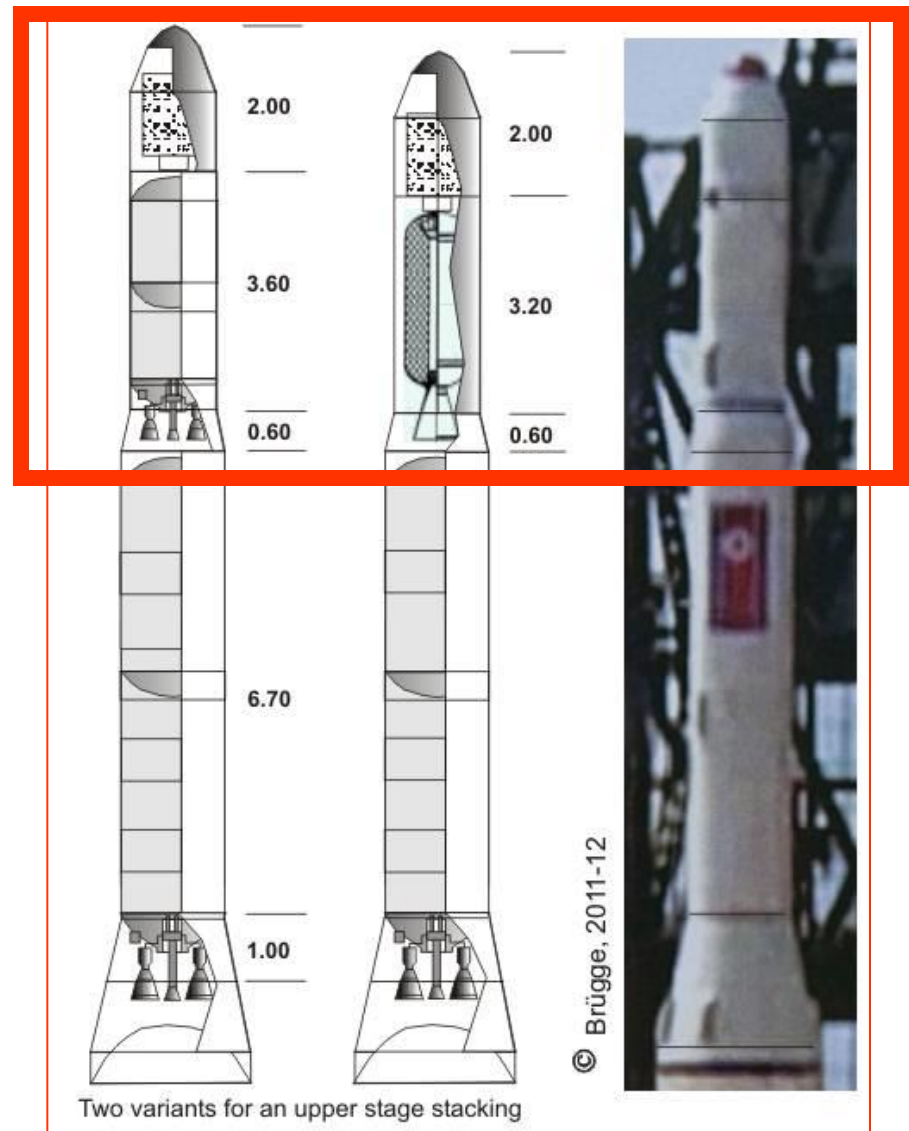
04/18/2012 00:26



Open questions

“Third stage” a complete mystery

- Unclear whether liquid or solid [more likely]
- Similar to Iranian third stage – which was first?
- Payload installation never depicted
- Gantry provided minimal access arms in this area
- Only seen in fully stacked vehicle, with aero shroud in place



Could there have been
a test warhead under
the shroud?



The bigger gantry tower



WE WILL REDUCE
YOU TO ASHES
... SOON.

S. KOREA
HOTLINE

