

# Some Technical and Legal Issues on the DPRK Launch

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- Launches – Missile or Space?
- Impact of the DPRK Launch on the International Climate
- Conclusions

- Three attempts to put a long range missile into orbit
  - 31<sup>st</sup> August 1998
    - Taepo Dong – 1
      - Stated aim of putting satellite into orbit
      - First two stages of the rocket worked well, third stage failed
      - DPRK officials claimed it was a success and that, contrary to reality, a satellite was placed in orbit
  - 4<sup>th</sup> July 2006
    - Taepo Dong – 2
      - Again with the stated aim of putting a satellite in orbit
      - Blew up less than a minute after launch

- April 5<sup>th</sup> 2009
  - Unha-2
  - Thought to be a reworked version of the Taepo Dong – 2
  - First stage and initial stage separation went well, however...
  - Appears payload and 3<sup>rd</sup> stage failed to separate properly from second stage and whole rocket body ended up in the Pacific

# The Unha-2 Captured by Geoeye-1 Satellite

*Promoting Cooperative Solutions for Space Security*



- What defines the difference between a space launcher and a missile?
  - Key differential in rocket is purpose:
    - Space launcher provides two functions:
      - Lift payload to a desired altitude above to Earth
      - Give payload enough forward speed to remain in orbit at that altitude
    - Ballistic Missiles
      - Nearly exactly the same EXCEPT:
        - » Payload has less velocity so that instead of orbiting the Earth it follows an elliptical path and impacts the Earth
  - Also not insignificant issue of payload targeting and miniaturization

- After Launch:
  - First analysis will be from space-based early-warning infrared sensors:
    - Defense Support Program (DSP) Satellites
    - Space Based Infrared Satellites (SBIRS)
      - KEY ANALYSIS:
        - » Length and Intensity of each rocket stage (the greater these are the more likely it is an attempted space launch)
        - » Trajectory ( As DPRK released impact zones, one can calculate the “azimuth” or heading of the Rocket and thus can define endpoint
        - » DPRK went close to the Northern end of Honshu
        - » THEREFORE if the azimuth were significantly higher (Southern) that would swing the rocket towards the middle of Japan

- How concerned should the international community have been as regards debris from the DPRK launch?
  - Given past history of DPRK launch failures, concern was not misplaced
  - HOWEVER,
    - The only real way to work out if there was going to be potential impact of debris would be post-launch monitoring of the trajectory and velocity of the rocket
    - It should be noted that if this was the case, for Japan the warning time would have been no more than a few minutes



- Rocket Destruction
  - Risk of debris landing on Japan
  - Only sure way is to destroy rocket on launch pad or over DPRK
    - DPRK would almost certainly have interpreted this as an act of war
- Jamming of Telemetry
  - Possible and if successful would prevent DPRK from gathering information on the flight
  - HOWEVER,
    - It appears that the DPRK had no means of tracking the launch after the rocket went out of line of sight.
      - Some reports say that a DPRK tracking ship attempted to position itself downrange but was forced to turn back due to mechanical issues.

- What does the DPRK launch demonstrate?
  - Space is a one of most globalised environments
  - There is a need, from a safety perspective, to engage with emerging space States to ensure that launches and orbital activities, if orbit is achieved, are carried out with all due care and safeguard the interests of other space actors and States under a potential launch trajectory
  - Need for further CSBMs focused on dialogue with launching States.
    - In this regard, the DPRK accession to the Outer Space Treaty and the Registration Convention as well as their publication of the potential impact zones helped in this regard.
    - ITU engagement did not occur

- Soon to be published research argues that the DPRK does not have indigenous capability for producing rockets and that the Unha-2 was an amalgam of different Russian ballistic missile stages.
- If this is the case, it changes the threat dynamics and the required reaction of the international community significantly

# Questions?