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Ballistic proliferation and access to space...

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BRIEF OVERVIEW OF BALLISTIC MISSILE PROLIFERATION

CONTENT:

- ***1st step: Dissemination of Scud***
- ***2nd step: Acquisition of Scud technology***
- ***3rd step: Upgrading Scud Technology: Nodong***
- ***4th step: Transition to solid propellant***
- ***Trends – Present picture***

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OVERVIEW OF BALLISTIC PROLIFERATION

INITIAL PHASE (1970s and 1980s):

Dissemination of SCUD Technology by the USSR (DPRK, Egypt, Syria, Iraq, …)

Known uses of SRBM Scud type ballistic missiles:

EGYPT→ISRAEL -1973

IRAQ↔IRAN (War of cities) - 1982/1988

LIBYA→ITALY (Lampedusa) -1986

AFGHANISTAN→PAKISTAN – 1988

AFGHANISTAN (Civil war) – 1989-1992

IRAQ→ ISRAEL,SAUDI ARABIA (Gulf war 1) – 1991

YEMEN (Civil war) – 1994

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OVERVIEW OF BALLISTIC PROLIFERATION

SECOND PHASE (1980s and 1990s):

- *Indigenization of Scud technology (liquid propellants)*
- *Iraq and DRPK played a key role*
- *Foreign entities provided assistance of diverse nature.*
- *Proliferators achieved:*
  - *Assembling subsystems*
  - *Modification of tanks/payload ratio*

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OVERVIEW OF BALLISTIC PROLIFERATION

THIRD PHASE (1990s):THE NODONG GENERATION

-DPRK developed, possibly with some assistance from foreign entities, a retroengineering capability allowing upscaling SCUDS (scale1.5: Nodong)

-Systems transferred to Iran (Shahab-3) and Pakistan (Ghauri)

- DPRK also started working on a staged vehicle (Taepodong-2)

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OVERVIEW OF BALLISTIC PROLIFERATION

FOURTH PHASE (late 1990s, 2000s):

- ***Initial transition from liquid propelled systems to solid propelled systems***

- ***Resulting of existing skills related to powder, munitions, and small caliber artillery rockets***

- ***Role of foreign entities?***

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OVERVIEW OF BALLISTIC PROLIFERATION

FIFTH PHASE (PRESENT DAY):

-Transition to better operational capabilities through development of ballistic missiles of strategic value based on solid propellant

-Benefits from experience acquired in large caliber artillery rockets

- What role from foreign entities in these developments?

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OVERVIEW OF BALLISTIC PROLIFERATION

TRENDS - PRESENT PICTURE:

- DISSEMINATION OF SIGNIFICANT SYSTEMS, FREQUENTLY BASED ON ⌀600MM SOLID PROPELLANT ENGINES.

- A GROWING PART OF THEM OFFERS SOPHISTICATED (i.e. non purely ballistic) TRAJECTORIES, RENDERINGTHEM EXTREMELY DIFFICULT TO INTERCEPT.

- MTCR CONTROLS MAY NOT BE RELEVANT

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OVERVIEW OF BALLISTIC PROLIFERATION

TRENDS - PRESENT PICTURE (2):

- BALLISTIC MISSILE OF STRATEGIC VALUE (2000 KM / >500KG – SOLID PROPELLANT):
- AVAILABLE IN IRAN AND PAKISTAN;
- LIKELY DEPLOYMENT IN THE COMING MONTHS OR YEARS;

ASHURA/SEIJIL

SHAHEEN-2

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OVERVIEW OF BALLISTIC PROLIFERATION

TRENDS - PRESENT PICTURE (3):

SIGNIFICANT SATELLITE LAUNCH VEHICLES UNDER DEVELOPMENT:

- SLV PROGRAMS IN PROGRESS IN IRAN AND NORTH KOREA;
- FEEDING BALLISTIC MISSILE PROGRAMS