

Bunker Buster Bombs

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Why in News?

Recently, The U.S has threatened to attack a suspected Iranian nuclear site buried deep under Pickaxe Mountain.

- **Bunker Buster Bombs** - These weapons are **designed to penetrate soil, rock, and reinforced concrete before detonating**, targeting facilities buried deep underground.
- **Mechanism** - Penetrate underground using kinetic energy + hardened casing + delayed fuse.

Conventional Bombs - *Explode on/near surface; energy absorbed by soil/rock limits damage to buried targets.*

GBU-57A/B Massive Ordnance Penetrator (MOP)

- **Type** - World's largest non-nuclear bunker buster (13.6 tonnes).
- **Delivery** - Exclusively by B-2 Spirit stealth bomber.

B-2 Spirit is a U.S. stealth flying-wing bomber capable of delivering both conventional and nuclear weapons.

- **Energy** - Dropped from 50,000 ft theoretical 2 GJ kinetic energy; actual 0.6-0.8 GJ (170 kg TNT equivalent).
- **Design** - Hardened steel casing, narrow nose (20 cm), delayed fuse for underground detonation.

Limitations

- **Depth** - Effectiveness decreases with deeper facilities.

- **Geology** - Different rocks absorb/transmit shock differently.
- Stiff rocks withstand high compressive stress, reducing bomb effectiveness.
- **High Cost** - Estimated 15-20 million dollars per bomb and multiple bombs are required for deeper penetration.
- **Critical Minerals** - Production constrained by resource demand (Gallium).

Gallium powers the advanced radars and precision guidance chips needed to deploy the bombs

Reference

[The Hindu | Bunker Buster Bombs](#)

