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# BIGGEST BANGS

India, Pak and China's conventional bombs are no match for the US and Russia's non-nuclear biggies



## THE MOAB AND FOAB

Both these bombs are too large to be strapped on to combat bombers, and are delivered using modified cargo planes as GPS-guided warheads

■ The GBU-43/B Massive Ordnance Air Blast (MOAB) bomb (above) REUTERS

### UNITED STATES

**GBU-43 Massive Ordnance Air Blast Bomb**  
a.k.a Mother of All Bombs (MOAB), developed in 2003

**21,000 lb** | **11 tons of TNT**  
Weight | Explosive yield



### RUSSIA

**Aviation Thermobaric Bomb of Increased Power**  
a.k.a Father of All Bombs (FOAB), developed in 2007

**15,650 lb** | **44 tons of TNT**  
Weight | Explosive yield



Both bombs detonate just above the ground, flattening surface structures, destroying mines and killing enemy troops within a radius of up to about 150m (MOAB) and 300m (FOAB)

### INDIA, CHINA AND PAKISTAN

The three nations have roughly similar arsenals of conventional explosives that are designed to be delivered using the combat aircraft they operate

#### INDIA

**550-2,000 lb**  
Bomb class

Origin: Israel's Rafael Advanced Defence Systems Ltd (not to be confused with French Rafale)

#### PAKISTAN

**250-2,000 lb**  
Bomb class

Origin: Based on the US Mk 80 series bombs

#### CHINA

**500-3,000 lb**  
Bomb class

Origin: Built by Chinese firms, based on imports from Russia



TEXT: HTC, REUTERS

## North Korean Army Vows 'Merciless' Response to Any US Provocation

Seoul: North Korea's army vowed a 'merciless' response to any US provocation, the official news agency reported Friday, as tensions soar over Pyongyang's rogue nuclear programme. A statement on KCNA, which cited Washington's recent missile strike on Syria, said the administration of President Donald Trump had "entered the path of open threat and blackmail against the DPRK". Trump recently threatened unilateral action against Pyongyang if Beijing failed to help curb its neighbour's nuclear weapons programme.

The North has conducted a series of missile launches and nuclear tests in defiance of UN sanctions and there is growing speculation that it is preparing another atomic or missile test.

The Korean People's Army statement was typically defiant and menacing, boasting that US military bases in the South "as well as the headquarters of evils such as the (South Korean presidential) Blue House would be pulverized within a few minutes".

"The closer such big targets as nuclear powered aircraft carriers come (to the Korean peninsula), the greater would be the effect of merciless strikes," the statement added.



## Conflict may break out at any moment over North Korea: China

*There are fears that Pyongyang may conduct sixth nuclear weapons test today*

China said on Friday tension over North Korea had to be stopped from reaching an "irreversible and unmanageable stage" as a U.S. aircraft carrier group steamed towards the region amid fears the North may conduct a sixth nuclear weapons test on Saturday, the 105th anniversary of the birth of state founder Kim Il-sung.

Concern has grown since the U.S. Navy fired 59 Tomahawk missiles at a Syrian airfield last week in response to a deadly gas attack, raising questions about U.S. President Donald Trump's plans for North Korea, which has conducted missile and nuclear tests in defiance of UN and unilateral sanctions.

The United States has warned that a policy of "strategic patience" is over. U.S. Vice-President Mike Pence will travel to South Korea on Sunday on a long-planned 10-day trip to Asia.

China, North Korea's sole major ally and neighbour which nevertheless opposes its weapons programme, has called for talks leading to the denuclearisation of the Korean peninsula. "One has the feeling that a conflict could break out at any moment. We call on all parties to refrain from provoking and threatening each other, whether in words or actions, and not let the situation get to an irreversible and unmanageable stage," Chinese Foreign Minister Wang Yi told reporters in Beijing.

"If a war occurs, the result is a situation in which everybody loses and there can be no winner," he added.

'Ready to strike back'

North Korea denounced the U.S. for bringing "huge nuclear strategic assets" to the region as the USS Carl Vinson strike group with a flag-ship nuclear-powered aircraft carrier steamed closer, and said it stood ready to strike back.

“The Trump administration, which made a surprise guided cruise-missile strike on Syria on April 6, has entered the path of open threat and blackmail,” the North’s KCNA news agency quoted the military as saying. “The army and people of the DPRK will as ever courageously counter those who encroach upon the dignity and sovereignty of the DPRK and will always mercilessly ravage all provocative options of the U.S. with Korean-style toughest counteraction.”

Japan’s Nikkei daily, meanwhile, said the government had discussed how to rescue an estimated 57,000 Japanese citizens in South Korea as well as how to cope with a possible flood of North Korean refugees.



Sat, 15 Apr, 2017

## **N-test will be dangerous, China warns North Korea**

### **Beijing suspends flights to Pyongyang**

- *Air China flights between Beijing and Pyongyang will be suspended from Monday, state broadcaster CCTV said on Friday without assigning any reason for the decision*
- *China banned all imports of North Korean coal on February 26 under UN sanctions, cutting off the North’s most important export*

### **North vows to ‘mercilessly ravage’ US**

- *Denouncing the US’ pressure tactics in the region, North Korea on Friday said it stands ready to strike back, if provoked by Washington*
- *“The army of the Democratic People’s Republic of Korea will always mercilessly ravage all provocative options of the US,” KCNA news agency quoted the army as saying*

China today warned its ally North Korea against carrying out a nuclear test, saying such a “dangerous and irresponsible” move could lead to a breakout of conflict at any moment amid soaring tensions with the US. Conflict over North Korea could break out “at any moment”, China’s Foreign Minister Wang Yi said, warning there would be “no winner”.

“There has been heightened tension between the United States, the Republic of Korea and the Democratic People’s Republic of Korea. The precarious situation deserves our attention and concern,” Wang said without directly referring to strong retaliation threatened by US President Donald Trump if North Korea resorted to nuclear test.

“We urge all parties to refrain from inflammatory or threatening statements and deeds to prevent the situation on the Korean Peninsula from becoming irreversible,” Wang said. Later, Chinese Foreign Ministry spokesman Geng Shuang said North Korea should not carry out nuclear test. “UNSC resolution stated clearly that DPRK (North Korea) should give up all nuclear and missile-related programmes. Stop relevant programmes. It is very clear,” he said when asked about reports that Pyongyang is bracing to carry out its sixth nuclear test.

China’s strong statement comes a day after Trump said he believed Chinese President Xi Jinping would “work very hard” to help resolve the Korean crisis. Trump has also said the US is prepared to tackle the crisis without China, if necessary. He diverted the Carl Vinson aircraft carrier towards the Korean peninsula last weekend in a show of force. North Korea denounced the US for bringing “huge nuclear strategic assets” to the region and said it stood ready to strike back. Chinese officials said Trump’s retaliation against nuclear test by North Korea could become a certainty after he ordered recent airstrikes against Syria and bombed IS militants in Afghanistan. — Agencies



Sat, 15 Apr, 2017

## US says chemical weapons attack in Syria was ‘war crime’

*87 people were killed at the suspected chemical attack last week*

The Syrian government’s suspected chemical weapons attack on civilians last week amounts to a “war crime,” the US State Department has said. It also ridiculed comments by President Bashar al-Assad in an interview with AFP to the effect that the alleged attack was fabricated by the United States to justify an American military strike.

“Sadly, it’s vintage Assad. It is an attempt by him to throw up false flags, create confusion,” said department spokesman Mark Toner, alluding to what Assad said in the interview Wednesday. It was Assad’s first since the alleged April 4 chemical weapons attack prompted a US cruise missile strike on a Syrian air base.

The suspected chemical attack killed at least 87 people, including many children, and images of the dead and of suffering victims provoked global outrage.

“Frankly, it’s a tactic we’ve seen on Russia’s part as well in the past,” Toner told a daily press briefing.

Echoing charges by Defense Secretary James Mattis and Secretary of State Rex Tillerson, Toner said there can be little doubt that the chemical weapons attack in Idlib province was carried out by Syrian government forces.

“It wasn’t only a violation of the laws of war but it was a — we believe, a war crime,” Toner said.

Tillerson, visiting Moscow on Wednesday, addressed the issue of the chemical weapons attack but he stopped short of calling it a war crime.

Tillerson did raise the prospect of criminal proceedings at some point over the attack, including against Assad himself, but warned there were be major legal obstacles to this.



Sat, 15 Apr, 2017

## MOAB: Trump hails US military for targeting IS

*Bomb weighing 21, 6000 pounds was developed for use in the Iraq war and first tested in 2003*

President Donald Trump has hailed the US military's “very, very successful” strike on an Islamic State tunnel complex in Afghanistan with the largest non-nuclear bomb ever used in combat which killed 36 militants and destroyed their mountain hideouts near the Pakistan border. In another dramatic show of military force after the bombing of a Syrian airfield with 59 Tomahawk missiles, the US military yesterday dropped a GBU-43/B, colloquially known as the “Mother Of All Bombs” or MOAB, to target tunnels and bunkers built by Islamic State fighter in Nangarhar province. Trump said he authorised the use of the MOAB - Massive Ordnance Air Blast - and called the mission “very, very successful”.

“It was really another successful job, we are very proud of our military. We are so proud of our military, it was another successful event,” Trump told reporters at the White House. The MOAB, developed for use in the Iraq war and first tested in 2003, is dropped from an aircraft on a pallet. A MOAB is a 21,600 pound, Global Positioning System (GPS)-guided munition that is US's most powerful nonnuclear bomb. Its main effect is a massive blast wave - said to stretch for 1.6 kms. The bomb was dropped by an MC-130 aircraft, operated by the Air Force Special Operations Command. It's the first-ever combat use of the bomb, said Pentagon spokesman Adam Stump. “Everybody knows exactly what happened, what I do is I authorise our military. We

have the greatest military in the world, they've done a job, as usual, so we have given them total authorisation and that's what they're doing, and frankly, that's why they've been so successful lately,” Trump said.

The bombing in Afghanistan was the second major incident when the US military in recent days have shown its combat prowess, after missile strikes on a Syrian airfield. “If you look at what's happened over the last eight weeks and you compare that to what's happened over the last eight years, you'll see there's a tremendous difference. So we have incredible leaders of the military and incredible military, and we are very proud of them, and this was another very very successful mission,” Trump said. He, however, said he does not know if this would send a message to North Korea.

“I don't know if this sends a message. It doesn't make any difference if it does or not. North Korea is a problem. The problem will be taken care of. I will say this: I think China has really been working very hard,” he said. White House Press Secretary Sean Spicer told reporters that the tunnels and caves IS fighters used to “move around freely” were targeted as they make it easier for them to target US military advisers and Afghan forces in the area. “The United States takes the fight against ISIS very seriously and in order to defeat the group, we must deny them operational space, which we did.” Spicer said the US took “all precautions necessary” to prevent civilian casualties and collateral damage. The strike was part of efforts to defeat Islamic State's local affiliate ISIS-K in Afghanistan, the US Central Command said. Nangarhar borders Pakistan and is a hotbed of militancy.

According to the Department of Defence, there are about 600- 800 ISIS-Khorasan fighters in the area where the bomb was dropped.



Sat, 15 Apr, 2017

## Ex-diplomat urges Trump to hit terror groups in Pak

*He also suggested that military balance has to change in favour of the Afghan government*

The Trump administration should “shake things up” and hit terrorist groups inside Pakistan, a top former American diplomat has said, identifying the Taliban sanctuaries in the country as a “big problem” for Afghanistan. The remarks by Zalmay Khalilzad, who served as the US ambassador to the United Nations and Afghanistan in the Bush administration, came as the US dropped a massive bomb - the largest non-nuclear bomb ever used by Americans in a conflict - near the Pakistan border in Afghanistan's Nangarhar province. The US said the bomb targeted a tunnel complex of Islamic State-Khorasan, a regional affiliate of the terror group. Khalilzad said the terrorist sanctuaries inside Pakistan “should not be accepted as (just) sanctuaries”.

The US and NATO forces were being attacked by terrorists hiding in those sanctuaries and “if we are attacked from those places... They would be legitimate targets for a response,” Khalilzad said during a discussion at the Hudson Institute, an American think tank, in Washington yesterday. Khalilzad, who had hosted Donald Trump for his first foreign policy speech during his presidential campaign, said, “Perhaps we have to do something to shake things up.” He called for changing the balance on the ground from the one of stalemate that has favoured the Taliban to the one that favours the Afghan government and the coalition forces.

“I am encouraged by what is going on in terms of the review - to weaken the adversaries and strengthen the government, to strengthen it not only militarily but also economically and politically, but also to review the policy towards Pakistan, because I think one of the big problems of Afghanistan is the policies of Pakistan: the sanctuary policies,” he said. Robin Raphel, a former assistant secretary of state for South and Central Asian Affairs, felt the US should not walk away from the region at this point. Raphel, however, opposed the idea of an “all-out war” against Pakistan. “In my view, at the end of the day there has to be a negotiated political solution in Afghanistan, which would undoubtedly include some of the conservative elements including the Taliban in the government,” she said. Hussain Haqqani, a former Pakistani ambassador to the US and the director, South and Central Asia, at the institute, who moderated the discussion, said Taliban are

irreconcilable, a sentiment shared by Khalilzad, who said the alliance between the Taliban and Pakistan was the main problem. "You cannot have reconciliation, if the insurgency feels that time is on its side.

You cannot have a successful negotiation if there are safe sanctuaries. You cannot have successful negotiations if they feel that the Americans are going to leave," Khalilzad said. He also suggested ways to deal with the issue. "One, the military balance has to change in favour of the Afghan government. Two, Pakistan has to confront with the choices.



Sat, 15 Apr, 2017

## 'US must accept Pak's ties with China'

**PRESS TRUST OF INDIA**  
WASHINGTON, 14 APRIL

Pakistan's former president General Pervez Musharraf has equated the China-Pakistan relationship with the Indo-US ties and asked America to accept this fact and adjust its strategic interests in the region.

Musharraf, who ruled over Pakistan from 1999 to 2008, said the US must review its relationship with Pakistan and give his country the importance it deserves.

He said that in a changing world, the US must adjust its strategic interests with those of the other emerging powers, which he identified as Russia and China.

"Those emerging powers,

China and Russia have their own interests in our region," he said in his keynote address at a conference on Pakistan organised by the School of Advanced International Studies of the Johns Hopkins University.

Musharraf said that the US needs to watch that and then decide what is in its best interest.

"Pakistan needs to carefully articulate its relationships with China, Russia and the United States," said the former general, who overthrew a democratically elected government to become the dictator of the country.

Responding to a question, Musharraf said Pakistan has to balance its relationship

with the US and China. This needs to be done bilaterally, he noted.

"The US has relationship with India, as it thinks it is in its national interest. So, the US has to accept that Pakistan's relationship with China is in its interest," he said.

"On bilateral basis, we must carry out our relationship with the US and China," he said in response to a question.

"With the US, we had long term relationship not only militarily, but also in social economic sector. We cannot undo them and we must carry on this relationship," Musharraf observed.

Musharraf expressed optimism about US-Pak rela-

tionship under the Trump Administration.

"I see that President Donald Trump starts with a clean slate," Musharraf said, adding that Trump needs to understand the complexities of Pakistan-India relations and the complexities of Afghanistan, Taliban and the al-Qaeda.

He also accused the US of committing "one of the greatest blunders" in Afghanistan by not converting its military victory over the Taliban and al-Qaeda post-9/11 into a political one.

"After 9/11 Taliban and Al-Qaeda were defeated in Afghanistan. This was military victory. This military victory was to be converted into a political one," Musharraf said.



Sat, 15 Apr, 2017

## NASA: Mars spacecraft's first missions face delays

*NASA will probably delay the first two missions of its Orion deep-space capsule, being developed to send astronauts beyond earth's orbit and eventually to Mars.*

NASA will probably delay the first two missions of its Orion deep-space capsule, being developed to send astronauts beyond earth's orbit and eventually to Mars, the US space agency said. A report by NASA's Office of Inspector General cited technical as well as budget challenges. The first launch of the Orion spacecraft atop the planned Space Launch System, or SLS — set to become the world's most powerful rocket when it flies — is currently scheduled for early November 2018 with no crew.

A second mission carrying astronauts is envisioned for August 2021 at the earliest. However, "NASA's initial exploration missions on its Journey to Mars — EM-1 and EM-2 — face multiple cost and technical challenges that likely will affect their planned launch dates," the report said of the conclusions from a nine-month audit.



It cites delays in the development of the Orion service module, provided by the European Space Agency (ESA), as well as technical risks from changes in the design of the capsule's heat shield. The audit also reported delays in the development of software for the SLS, Orion and ground systems at the Kennedy Space Center in Florida. "We are concerned NASA will not be able to resolve all necessary software validation and verification efforts in time to meet a November 2018 launch date for EM-1," the report said.

The total cost for the SLS, Orion and ground systems development programs is expected to reach some \$23 billion by the end of fiscal year 2018. Manned exploration of Mars is expected to exceed \$33 billion by 2033. The White House in February asked the space agency to conduct a feasibility study of the cost, safety, and technical constraints of adding astronauts to the first Orion mission in late 2018.

The report also questions the feasibility of NASA's plans to launch a manned mission to Mars in the late 2030s or early 2040s. The agency has not provided target mission dates for a manned orbit of Mars or landings on the planet's surface or nearby moon, it said.

To achieve its goal of sending humans to the vicinity of Mars in the 2030s, NASA must carry out "significant development work on key systems such as a deep space habitat, in-space transportation, and Mars landing and ascent vehicles" in the 2020s, the report added. "The Agency will need to make these and many other decisions in the next 5 years or so for that to happen."

## नवभारत टाइम्स

Sat, 15 Apr, 2017

# 5 को लॉन्च होगा साउथ एशिया का सैटलाइट

■ **भापा, हैदराबाद :** भारत 5 मई को 'दक्षिण एशिया उपग्रह' के प्रक्षेपण की योजना बना रहा है। इस उपग्रह से पाकिस्तान को छोड़कर दक्षिण एशिया क्षेत्र के सभी देशों का फायदा होगा। पाकिस्तान इस परियोजना का हिस्सा नहीं है। भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के अध्यक्ष ए एस किरण कुमार ने बताया, "यह मई के पहले हफ्ते में प्रक्षेपित किया जाएगा।"

इसरो के सूत्रों ने बताया कि इस संचार उपग्रह (जीसैट-9) का प्रक्षेपण 5 मई को किया जाना है। श्रीहरिकोटा स्थित अंतरिक्ष केंद्र

से जीएसएलवी-09 रॉकेट के जरिए इस उपग्रह का प्रक्षेपण किया जाएगा। कुमार ने कहा कि प्रक्षेपण के वक्त 2,195 किलोग्राम द्रव्यमान वाला यह उपग्रह 12 केयू-बैंड के ट्रांसपोंडरों को अपने साथ लेकर जाएगा। उन्होंने कहा, "पाकिस्तान इसमें शामिल नहीं है। वे इस परियोजना में शामिल नहीं होना चाहते थे। सूत्रों ने बताया कि इस उपग्रह को ऐसे डिजाइन किया गया है जिससे यह अपने मिशन पर 12 साल से ज्यादा सक्रिय रहेगा। प्रधानमंत्री नरेंद्र मोदी ने 2014 में काठमांडो में दक्षेस शिखर वार्ता के दौरान इस उपग्रह की घोषणा की थी और इसे "भारत के पड़ोसियों को तोहफा" करार दिया था।



## Reform in science set-up sought

“...While Financial Advisers report to Secretaries of Departments, in practice a structure of dual authority has effectively emerged, despite all good intentions...many very important decisions are in suspended animation and a simple solution would be to put a timeline on decision-making,” the report emphasised in a section called ‘Ease of Doing Science.’ Financial Advisers are officers deputed from the Union Finance Ministry.

To realise India’s scientific ambitions, the science-heads proposed a new authority reporting to the Prime Minister. SPARK (Sustainable Progress through Application of Research and Knowledge), as it is tentatively called, will be a “nimble, empowered board and a quality staff.” The proposal was part of the report jointly prepared by the heads of all of India’s scientific departments including Atomic Energy, Space, Earth Sciences, Science and Technology and Biotechnology. While they submitted this to the Prime Minister in January, the details of it haven’t yet been made public. The report laid out a broad map on how India ought to prepare itself to be among the top three countries in science and technology by 2030 and ensure that 10% of the top 100 leaders in scientific fields are Indians.