

# समाचार पत्रों से चयित अंश Newspapers Clippings

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*Fri, 01 Nov 2019*

## **Mig 27 jets which played crucial role in Kargil war to bid farewell in December**

*MIG 27 fighter jets, which played a crucial role for the IAF in the Kargil War, will take their last flight from Rajasthan's Jodhpur in December this year*

*By Dev Ankur Wadhawan*

Jaipur: MIG 27 fighter jets, which played a crucial role for the Indian Air Force (IAF) in the Kargil War, will take their last flight from Rajasthan's Jodhpur in December this year.

The last Squadron of MIG 27, 29 Scorpio, is based in Rajasthan's Jodhpur.

All the MIG 27 fighter aircraft in the Squadron will take their last flight in December this year after which they will be phased out.

An official source informed India Today TV that during an official ceremony in Jodhpur, scheduled for December 27 this year, these fighter aircraft will take their last flight.

The MIG 27 was inducted in the Indian Air Force in 1981 and after serving for 38 years, they will be decommissioned.

Three years ago, two squadrons of MIG 27 were phased out in Bengal's Hashimara and Squadron 29 is the last remaining Squadron of MIG 27 in the country, based in Jodhpur.

The MIG 27s have been involved in several incidents of crashes in the last decade.

<https://www.indiatoday.in/india/story/mig-27-kargil-war-last-flight-jodhpur-1614526-2019-10-31>



*Fri, 01 Nov 2019*

## **Selection of women soldiers to join Indian Army over, training to begin in December**

*The Adjutant General's branch is responsible for welfare and discipline within the Army at all levels*

*By Mayank Singh*

New Delhi: The selection process of women candidates for the first-ever batch of women joining as soldiers in the Indian Army is completed and they will begin training from December at Corps of Military Police Centre (CMP) in Bengaluru.

Lt Gen Ashwini Kumar said, "Selection of 100 women candidates is completed and their training will start from December".

The infrastructure at the training centre is also ready to support the new trainees, said Lt Gen Kumar, The Adjutant General's branch is responsible for welfare and discipline within the Army at all levels.

Keeping the significance of the training of selected women officers have been posted as instructors including Maj Julie who was the instructor to the first batch of women constables in Assam Rifles. The training is likely to last for about two years and the first batch will pass out by the end of 2021.

Ten women jawans, collectively termed as a Section in Army, will be posted with each provost unit which has also been identified and pre-informed. “We have already informed the 10 future CMP Units so that they prepare the infrastructure,” said Lt Gen Kumar.

The Indian Army is likely to induct total of 1700 women soldier into CMP with the induction of 100 soldiers every year subsequently till it reaches the required number. The adjustments to cater to those leaving or unable to complete the training will be made in batches joining in future.

The decision for inducting women soldiers was announced in January this year by the Ministry of Defence with an aim to enhance their representation in the three services.

The roles of Military Police includes policing cantonments and Army establishments, maintaining discipline, preventing the breach of rules and regulations by soldiers, maintaining movement of soldiers as well as logistics during peace and war, handling prisoners of war and extending aid to civil police.

The Women will eventually comprise 20 per cent of the total Corps of Military Police and their role would range from probing crime cases to assisting the Army in field operations wherever required. Currently, women are allowed to join as officers in medical, legal, education, signals and engineering wings of the Army.

The Indian Air Force pioneered to induct three women fighter pilots in 2016. The number of women fighter pilots has risen to eight. IAF has 13 per cent women representation, Navy has six per cent and Army has four per cent women in its ranks.

<http://www.newindianexpress.com/nation/2019/oct/31/selection-completed-first-batch-of-women-soldiers-to-begin-training-in-december-2055247.html>



*Fri, 01 Nov 2019*

## **India, Saudi Arabia ready to start new defence chapter**

*First-ever naval exercise next year; arms business to open new avenues*

*By Ajay Banerjee*

Riyadh: In a turn of events that could add to India’s diplomatic heft in West Asia and the ‘Arab world’, India and Saudi Arabia will do their first-ever joint naval exercise next year in March. The two countries are working to have a white shipping information-sharing agreement and New Delhi is looking to sell military grade vehicles and equipment to Saudi Arabia.

The two sides have had discussions on how the growing Indian defence industry can be roped in to provide the needs of Saudi Arabia, so far dependent on supplies from the US-led NATO Bloc.

A delegation of the Indian industry that included Bharat Forge, Ashok Leyland and L&T among others has been hosted in the Kingdom in the recent past. The General Authority of Military Industry has visited India. “Initial talks have been conducted to see what all cooperation is possible,” sources on the Indian side said.

Saudi Arabia is the world’s largest importer of weapons and equipment. Data released in March 2019, by Swedish think-tank Stockholm International Peace Research Institute, titled “Trends in

World Military Expenditure, 2018” says: “Saudi Arabia imported 12 per cent of all global arms sales during the five year period 2014-2018”. Global arms sales are estimated close to \$280-290 billion.

The US supplied 68 per cent of these weapons, arms and platforms, followed by the UK at 16 per cent and France at 4.3 per cent, respectively. India is itself is the second-largest importer but has ambitions of exports.

The sharing of information about cargo vessels in Arabian waters would entail the Indian Navy getting a wider picture of its western flank. The Naval exercise will be path-breaker. its complexity and scope will be decided at meeting in December this year, sources said.

<https://www.tribuneindia.com/news/nation/india-saudi-arabia-ready-to-start-new-defence-chapter/854605.html>



*Fri, 01 Nov 2019*

## **India, Saudi Arabia to hold first joint naval drills in early March**

*"The two sides will conduct their first-ever joint naval exercises in the first week of March next year," said the source*

India and Saudi Arabia will conduct their first-ever joint naval exercises in the first week of March next year, as the two sides agreed to enhance their cooperation in defence and security areas, sources said on Thursday. An Indian source privy to the development said a preparatory meeting on the proposed drills took place early this month in India and another meeting would take place in December.

“The two sides will conduct their first-ever joint naval exercises in the first week of March next year,” said the source. Sources said the Gulf Kingdom wants to deepen its maritime cooperation with India in the western Indian Ocean, which constitutes busy and sensitive shipping routes such as the Red Sea, the Gulf of Aden, the Arabian Sea, the Gulf of Oman, and the Persian Gulf.

A series of damaging drone and missile attacks on oil facilities of Saudi Aramco, the country’s national petroleum company, in Abqaiq and Khurais in the Persian Gulf on September 14 drove oil prices to their highest level in nearly four months.

The attack had knocked out over half of Saudi Arabia’s production as it cut 5.7 million barrels per day or over 5 per cent of the world’s supply. India had condemned the attacks and reiterated its resolve to oppose terrorism in all its forms and manifestations.

The two sides are moving away from a purely buyer-seller relationship towards a closer strategic partnership, sources said. Some new areas of cooperation between India and Saudi Arabia have been worked out and one of them is the defence industry, they said.

An MoU between Saudi Arabia’s General Authority of Military Industries (GAMI) and Department of Defence Production, the Ministry of Defence concerning collaboration in military acquisition, industries, research, development and technology was signed after Prime Minister Narendra Modi’s wide ranging talks with powerful Saudi Crown Prince Mohammed bin Salman on Tuesday.

“We had a mechanism called Joint Defence Coordination Committee (JDCC). On the sidelines of its fourth meeting in Riyadh this January, we for the first time ever facilitated interaction between Indian defence industry – both public and private – with the Saudi establishment,” the source said.

“GAMI proposed an MoU in August and within a short span of time we worked it out,” the source said, adding that the two sides are looking for more collaboration in security areas, including counter terrorism. The two sides also signed an agreement in the civil aviation sector. “Saudis feel that there’s market enough for 100,000 seats. As of now 33 per cent of civil aviation market between India and Saudi Arabia is occupied by other carriers,” he said.

The agreement signed between the two countries talked about proportional increase in the number of seats. “We will increase from current 32,000 to 36,000 seats. It will be further increased to 44,000 and finally up to 50,000 per week from both the sides,” the source said, adding that the two sides will review whether there is need for further increase or not after six months.

The strategic partnership council, the source said, to be headed by the Indian Prime Minister and the Saudi Crown Prince, will review key issues during a summit every two years while the ministers will meet annually. India is the fourth country after the UK, France and China with which Saudi Arabia has signed an agreement on strategic partnership.

The council will have two parallel verticals – one on political, security, culture and society headed by the foreign ministers of the two sides, and another on economy and investments headed by the commerce minister of India and energy minister of the Kingdom.

“There will also be several groups of senior officials from the countries that will work on important issues,” he added. India’s relations with Saudi Arabia have been on an upswing over the last few years based on burgeoning energy ties. India’s bilateral trade with Saudi Arabia was at USD 27.48 billion in 2017-18, making Saudi Arabia its fourth largest trading partner. Saudi Arabia last month said that it was looking at investing USD 100 billion in India in areas of energy, refining, petrochemicals, infrastructure, agriculture, minerals and mining.

<https://www.financialexpress.com/defence/india-saudi-arabia-to-hold-first-joint-naval-drills-in-early-march/1750843/>

**hindustantimes**

*Fri, 01 Nov 2019*

## **First bilateral naval exercise in 2020 will deepen India-Saudi Arabia ties**

*The two sides held a meeting in Riyadh this month and are expected to hold another meet in India in December to decide the contours of the naval drill that will be held in the first half of March next year*

Riyadh: The first bilateral naval exercise in 2020 and collaboration in research and acquisition of military hardware will help broaden defence cooperation between India and Saudi Arabia, people familiar with developments said on Thursday.

The two sides held a meeting in Riyadh this month and are expected to hold another meet in India in December to decide the contours of the naval drill that will be held in the first half of March next year. The scale of the exercise is yet to be decided though both sides are expected to field several warships for it.

The exercise is expected to strengthen the position of the Indian Navy, whose stated position is that its area of interest spans from the Straits of Hormuz to the Strait of Malacca.

A joint statement issued after Prime Minister Narendra Modi’s visit to Riyadh on Tuesday said the two sides had agreed on the “importance of bilateral engagement to promote ways to ensure the

security and safety of waterways in the Indian Ocean region and the Gulf region from the threat and dangers that may affect the interests of the two countries”.

The Indian Navy has been conducting anti-piracy operations in the Gulf of Aden since 2008 and briefly deployed warships in the Persian Gulf to escort Indian merchant vessels when tensions soared between Iran and the US earlier this.

Though the location for the drill is yet to be finalised, a drill off the Saudi coast will bolster the Indian Navy’s efforts aimed at force projection and building inter-operability with the navies of countries in West Asia, experts said.

The people cited above said the move to step up research and acquisition of military equipment as a new area of cooperation that had been suggested by the Saudi side. Work done over the past six months had led to the signing of a memorandum of understanding between Saudi Arabia’s General Authority of Military Industries (GAMI) and the department of defence production under India’s defence ministry during Modi’s visit.

The MoU covers collaboration in military acquisition, industries, research, development and technology. In August, a delegation from GAMI travelled to India and visited companies engaged in making military equipment, including Ashok Leyland, Bharat Forge and L&T.

“There is traction between what Indian defence industries are making and what the Saudis need,” said a person who declined to be identified so that he could speak freely on the issue.

One area in which the Saudi side had shown interest is military vehicles. “In the first stage, they are looking at procurement and later, there could be things like joint production,” the person cited above said. In an interview with Arab News ahead of his visit, Modi described security and defence cooperation as “robust and deep” and said the two sides had identified a number of areas of mutual interest and cooperation in this field.

Saudi Arabia was the world’s largest importer of military hardware during 2014-18, according to a report released in March by the influential think tank SIPRI.

<https://www.hindustantimes.com/india-news/first-bilateral-naval-exercise-in-2020-will-deepen-india-saudi-arabia-ties/story-ttPRSGOxpuJgeBFcwPkAeI.html>

## Business Standard

Fri, 01 Nov 2019

### US urges other countries to buy arms from it, and not Russia or China

*Cooper identified China and Russia as strategic competitors whose efforts have been to proliferate arms around the world*

Washington: A Trump administration official on Thursday urged countries not to buy military hardware from Russia and China, asserting that America's competitors were using arms sales as key tools to build their own influence around the world.

Although the official did not name any country, Washington has in the past cautioned India that its decision to buy the long-range S-400 Triumf missile defence system from Russia will have serious implications on defence ties.

India and Russia signed a \$5 billion S-400 air defence system deal in October last after wide-ranging talks between Prime Minister Narendra Modi and Russian President Vladimir Putin. In a major policy speech, Assistant Secretary of State for Political Military Affairs Clarke Cooper said that a partnership with America offers something a purchase from Russia or China never will: friendship.

"Our competitors are turning to arms sales and security assistance as key tools to build their own influence around the world, and to weaken ours," Assistant Secretary of State for Political Military Affairs Clarke Cooper said in a major policy speech.

In her speech on 'America As The Partner of Choice' at Meridian International Center, the top American diplomat illustrated with multiple, specific examples that those who seek to purchase Russian and Chinese military equipment should consider carefully and follow the rule of Caveat emptor -- a principle that the buyer alone is responsible for checking the quality and suitability of goods before a purchase is made.

In contrast, the United States offers quality, transparency and accountability, and a long term, secure, and sincere partnership in support of shared security interests and common values, she said.

Cooper identified China and Russia as strategic competitors whose efforts have been to proliferate arms around the world.

"We have come a long way since the AK-47 became the ubiquitous symbol of Soviet-backed insurgencies from Southeast Asia to Africa. Today, Russia is working hard to foist variants of its S-400 air defence system around the world, while China is supplying everything from armoured personnel carriers to armed drones.

"To quote another Latin phrase caveat emptor! Buyer, beware. We have seen countries around the world leap at the chance to obtain high-tech, low cost defensive capabilities only to see their significant investments crumble and rust in their hands," Cooper said.

"It is true that the United States remains far and away the greatest provider both of direct security through the deterrence of our alliances and the presence of our global forces, true we remain the single greatest provider of grant security assistance, to the tune of over \$10 billion a year between State and Defence, and, true we remain far and away the most significant source of defensive equipment for countries around the world," she said.

Cooper alleged that through the targeted marketing of systems like the S-400, Russia seeks to exploit the genuine security requirements of partners to create challenges in US' ability legal and technological to provide them with the most advanced defensive capabilities.

And through a combination of cut-price systems such as unmanned aerial systems, predatory financing mechanisms and sometimes outright bribery, China is using arms transfers as a means of getting its foot in the door a door that, once opened, China quickly exploits both to exert influence and to gather intelligence, she said.

"It is true, if we scratch the surface of the offers laid out by our adversaries we find failed systems, flawed training, false bargains. And it is important countries around the world understand the risks of choosing to procure systems from China or from Russia.

"But while it is important that we lift the veil on our strategic competitors, it is more important that we make the case for why partnering with America is not just the better choice, but indeed the best choice," Cooper said.

It is the quality of US defence equipment. It is American commitment not just to make deals, but to build capabilities, she said.

"It is the transparency, accountability, and predictability of our policies and processes. And it is the reassurance that comes from partnering with the United States military," Cooper asserted.

The United States is the preeminent global security partner in both the capabilities it provides, and the reassurance that comes with its friendship.

US defence equipment remains far-and-away the most capable in every warfighting domain, from the F-35 to the Theater High Altitude Air Defense (THAAD), from its electronic warfare suites to early warning radars, from the Apache in the air to the Joint Light Tactical Vehicle on the ground to the Multi-Mission Surface Combatant in the oceans, she added.

The S-400 is known as Russia's most advanced long-range surface-to-air missile defence system. China was the first foreign buyer to seal a government-to-government deal with Russia in 2014 to procure the lethal missile system.

[https://www.business-standard.com/article/pti-stories/us-urges-countries-to-buy-arms-from-america-not-from-russia-china-119103101550\\_1.html](https://www.business-standard.com/article/pti-stories/us-urges-countries-to-buy-arms-from-america-not-from-russia-china-119103101550_1.html)

# U.S. slams Russia over S-400 deals

Military Affairs envoy says Moscow is exploiting countries' security requirements

SRIRAM LAKSHMAN  
WASHINGTON

A month after External Affairs Minister S. Jaishankar said he was "reasonably convinced" that he could persuade the U.S. of India's decision to buy the S-400 Russian missile defence system, the top U.S. diplomat for Political Military Affairs, Clarke Cooper, called out Russia and China for exploiting countries' security requirements. He also made a strong pitch for the U.S. being the defence partner of choice.

Countries like Russia and China are using arms sales and security assistance to weaken the U.S.'s global influence and strengthen their own, Mr. Cooper said, at the

Meridian International Center, a Washington-based think-tank on Thursday.

"Through the targeted marketing of systems like the S-400, Russia seeks to exploit the genuine security requirements of partners to create challenges in our ability – legal and technological – to provide them with the most advanced defensive capabilities."

India had decided to buy the S-400 for \$5.2 billion in 2018 – a decision that could potentially attract U.S. sanctions under a law called Countering America's Adversaries Through Sanctions Act (CAATSA). While the U.S. President has the authority to grant waivers under various conditions, the admini-



Clarke Cooper

nistration has repeatedly (including earlier in October in response to Mr. Jaishankar's comments) cautioned countries, including India, that it is at risk of sanctions if it goes ahead with the Russian deal.

However, Mr. Cooper said

on Thursday that there was no "blanket application" of CAATSA laws.

"It can be scalable depending on what the issue is, scalable as far as application of when it's issued, timeline-wise, and to what sections would be applied where."

The U.S. has warned Turkey, a NATO ally that is buying the S-400, of CAATSA sanctions, though these have not yet been imposed. Turkey was, however, kicked out of a programme to build American F-35 jets, in July this year. Mr. Clarke clarified that CAATSA was not intended to target historical "sustainment" lines countries had with Moscow but designed to "mitigate new significant acquisitions".



## **Russian nuclear submarines sailed past UK waters on secret mission into the Atlantic to prove they can strike the United States in largest operation since the Cold War**

*By Chris Pleasance*

- *10 Russian submarines, at least eight of them nuclear, set sail early last week*
- *Six of them taking part in defensive operations in Barents and Norwegian Sea*
- *But another four are thought to be on a secret mission to sail into the Atlantic*
- *Goal is to show that Moscow can strike the US East Coast and to test NATO's ability to detect such a threat, Norway's intelligence service said*
- *Mission is the largest carried out by Russia's Northern Fleet since the Cold War*

Russian submarines are conducting a secret mission to sail into the North Atlantic and threaten the US East Coast, according to Norwegian intelligence.

Ten submarines, at least eight of them nuclear-powered, set sail from the port of Murmansk early last week before some of them passed through the Greenland-Iceland-UK Gap, skirting British territorial waters.

Those submarines are now heading out into the North Atlantic with the goal being to pass west of Greenland and as far into the North Atlantic as possible.

The mission, the largest fielded by Russia's Northern Fleet since the Cold War, is designed to prove that Moscow has the ability to strike the US East Coast, Norway's intelligence service said.

It is also designed to test NATO's ability to track and respond to such an operation.

Moscow has made at least part of the mission public, reporting that submarines are taking part in defensive and testing operations in the Barents and Norwegian sea.

But Norway's intelligence service revealed the second, secretive, part of the mission to public broadcaster NRK.

Intelligence sources stressed that the mission is a full combat operation and not simply a drill.

Norway's E-Service, Oslo's term for the intelligence services, said they are monitoring the submarines and have 'reasonably good control' of their locations at the current time.

Two submarines are known to be sailing to the west of Bear Island, located between Svalbard and northern Norway, near the Greenland Sea.

Another two are known to be located to the south and east of the island, guarding the eastern entrance to the Barents Sea.

Meanwhile two Sierra-Class submarines, Russia's most technologically advanced subs with titanium hulls, are carrying out deep-dive and weapons testing in the Norwegian Sea.

That leaves another four vessels unaccounted for, meaning they are potentially participating in the Atlantic mission.

A spokesman for Norway's E-Service said: 'Russia wants to say that "this is our sea", we can do this. We are able to reach the United States.

'That is what Russia wants to tell us. They want to test the West's ability to detect and handle this.'

The existence of the mission was revealed at the same time Russia announced it had tested a new type of nuclear-capable submarine-launched ballistic missile.

Russia's defence ministry released footage of the Bulava missile being launched from the nuclear-powered submarine Prince Vladimir.

The 'successful' test launch from the northern White Sea hit a target 3,500 miles away in Kamchatka on the country's Pacific coast, the Russian military said.

The state-of-the-art submarine is expected to enter active service in December.

The Knyaz Vladimir is the first upgraded 955A model to be produced in the Borei class of Russian nuclear-powered ballistic missile submarines.

It will enter service with Russia's Northern Fleet at the end of this year once it has completed trials including weapons tests, the fleet's commander said.

The Bulava - or Mace - is seen as a cornerstone of the Russian military triad comprising sea, land and air launched weapons.

The launch was carried out with a dummy payload and reached a test site in the far east of Russia.

On top of that, flight tests on Russia's new Sarmat ballistic missile are expected to begin early next year, according to Russian media.

The hypersonic missile, also known as Satan-2, is due to be deployed in 2021 after Vladimir Putin hailed progress on its development.

Moscow says Satan-2 can evade the United States' defence shield and is capable of destroying an area the size of England and Wales - or Texas.

The weapon is seen as a crucial part of Russia's ongoing push to modernise its nuclear arsenal.

<https://www.dailymail.co.uk/news/article-7634271/Russian-nuclear-submarines-secret-mission-North-Atlantic-prove-Moscow-strike-US.html>



*Fri, 01 Nov 2019*

## **North Korea fires two 'ballistic missiles' into Sea of Japan**

*North Korea has fired two unidentified "projectiles" into the sea, the South Korean military says*

According to Japan's Defence Ministry, the objects "appeared to be ballistic missiles".

If confirmed as a missile test, it would be the North's 12th such launch this year.

Earlier this month, North Korea test-fired a new type of missile which is thought could also be launched from a submarine.

That missile was, in theory, able to carry a nuclear weapon. Being launched from a submarine can make missiles harder to detect, and allows them to get closer to other targets.

Thursday's projectiles were fired into the East Sea, also known as the Sea of Japan. The launches are thought to have come from South Pyongan province, according to Seoul's Joint Chiefs of Staff.

The projectiles landed outside Japan's maritime exclusive economic zone, the Japanese coast guard said.

The South Korean military said it would maintain its readiness to track and monitor further launches.

The launch coincided with the day South Korean President Moon Jae-in attended the funeral of his mother, who died earlier this week.

On Wednesday, North Korean leader Kim Jong-un had expressed "deep condolences" and "consolation" to Mr Moon.

North Korea is widely believed to have missiles capable of striking long-range targets, including the US mainland.

It also claims to have a nuclear bomb it can mount it on a missile.

The apparent testing comes as nuclear talks between Pyongyang and Washington remain at a deadlock.

The last time US President Donald Trump met the North's Kim Jong-un was in June, when the two leaders met at the inter-Korean border.

Talks between US and North Korean officials in Sweden earlier this month failed to make any progress.

<https://www.bbc.com/news/world-asia-50246065>



*Fri, 01 Nov 2019*

## **China's weaponisation is a threat to like-minded nations: US Admiral**

Adm Aquilino also said that China has been involved in bullying of nations in the Indian Ocean Region is expected to increase in the future and has a concept of free and open Indo-Pacific region is threatened.

The US seeks information exchange between India and other countries in order to have a common picture of movements in the Indian Ocean Region (IOR), and says that China's increased weaponisation is a threat all "free and like-minded countries".

Visiting Admiral John C Aquilino, US Pacific Fleet commander, observed that there is no doubt that Chinese weapon is designed to continue to threaten the nations that they may have disputed with."

Adm Aquilino also said that China has been involved in bullying of nations in the Indian Ocean Region is expected to increase in the future and has a concept of free and open Indo-Pacific region is threatened.

Besides meeting top officials in the Ministry of Defence (MoD) in his maiden visit to India, the US Admiral met Indian Navy Chief Admiral Karambir Singh. And visited the Indian Navy's Information Fusion Centre – Indian Ocean Region (IFC-IOR) at Gurugram.

According to Aquilino "The IFC-IOR plays a critical role in information-sharing and Maritime Domain Awareness (MDA) in the region. And, our focus is on a common understanding of the maritime domain".

Last year the two countries had inked the foundational agreement Communications Compatibility and Security Agreement (COMCASA) which enables information sharing. "The COMCASA is the basis on the framework for information sharing and the increased information sharing arrangements are meant for MDA", said the Admiral.

And he identified aircraft carrier cooperation, technology-shared and Sea Linked Advanced Analysis as part of MDA. "In the next decade the US is looking for complete interoperability, openness and transparency with India", he said.

On the South China Sea, the Admiral said that he seen continued “bullying of nations” by China and islands or rocks turned into man-made islands and militarised. Nations in the region have been challenged and China has been increasing its pressure in the region to achieve their objectives.

To a question on the Exercise Rim of the Pacific (RIMPAC), Adm Aquilino said that the US Indo-Pacific Command has invited 30 countries to participate in June 2020 for this drill. India will send a ship and a P-8 aircraft for the second to participate in a month and a half long exercise.

<http://www.defencenews.in/article/China%e2%80%99s-weaponisation-is-a-threat-to-like-minded-nations-US-Admiral-747747>



*Fri, 01 Nov 2019*

## **Chandrayaan-2 finds easily detectable ‘Argon-40’ isotope**

### *Highlights*

- *Among the radiogenic gases on the lunar surface,  $^{40}\text{Ar}$  is one of the isotopes of Argon, a noble gas*
- *The detection of  $^{40}\text{Ar}$  is significant for Isro, but this won't be the first time that the isotope has been studied, given that it has a high escape rate*

The Indian Space Research Organisation (Isro) on Thursday said that the Chandra's Atmospheric Composition Explorer-2 (CHACE-2) payload on Chandrayaan-2 has detected Argon-40 ( $^{40}\text{Ar}$ ) from the lunar exosphere.

Among the radiogenic gases on the lunar surface,  $^{40}\text{Ar}$  is one of the isotopes of Argon, a noble gas. “Argon, is an important constituent of the lunar exosphere. It originates from the radioactive disintegration of Potassium-40 ( $^{40}\text{K}$ ), which has a half-life of  $1.2 \times 10^9$  years,” Isro said in a statement it made public on Wednesday evening.

The statement further read that  $^{40}\text{K}$  nuclide, which is present deep below the lunar surface, disintegrates to  $^{40}\text{Ar}$ , which, in turn, makes way up to the lunar exosphere through seepages and faults.

The detection of  $^{40}\text{Ar}$  is significant for Isro, but this won't be the first time that the isotope has been studied, given that it has a high escape rate.

R Richard Hodges from the University of Colorado Boulder, in a research paper published earlier, says: “In polar areas of the moon the maximum temperatures reached in some permanently shaded areas are well below the temperature required to retain water ice for billions of years, and cold enough to hold other volatiles for shorter periods. Aside from water, the most significant lunar volatiles are the radiogenic gases, of which argon-40 is the most easily detected, both in situ and as retrapped ions in rocks returned from the surface on the moon.”

Argon-40 escapes from Moon at a surprisingly high rate that is between 3% and 6% of its total production.

“Its brief lifetime in the lunar exosphere is marked by numerous adsorption/desorption events. Collisions with the lunar surface in cold, permanently shaded areas lead to long term storage, forming reservoirs of trapped gas that may be disturbed occasionally to produce sudden increases in atmospheric argon,” the paper adds.

It is postulated that this may explain at least part of the time variations in Apollo 17 mass spectrometer measurements of argon that were previously attributed to internal processes associated with the release of radiogenic gases from the moon.

<http://www.defencenews.in/article/Chandrayaan-2-finds-easily-detectable-%e2%80%98Argon-40%e2%80%99-isotope-747738>