

## ВОЕННЫЕ НАУКИ

### CHINESE AIRCRAFT CARRIERS: IMPLICATIONS FOR INDIA

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*“You should build up the carrier’s combat readiness, logistics and support expeditiously.”<sup>1</sup>*

- President Xi Jinping, People’s Republic of China



*Photo 1 – Chinese President Xi Jinping visits Liaoning at Dalian, in Liaoning Province on 30 August 2013<sup>2</sup>  
Photo credit: Xinhua*

#### **Liaoning**

PLAN's first carrier, *Liaoning*, originally the Soviet Admiral Kuznetsov class carrier *Varyag*, was sold to a Chinese travel agency in 1998 and was transferred in a partially completed state from Ukraine in 2001 after it was stripped of all weapons and engines. It underwent years of refitting and was handed over to the Chinese Navy in September 2012 as an "aircraft carrier training platform", which was not assigned to any of the fleets. Two months after commissioning the PLAN conducted its first carrier based takeoffs and landings. In 2013, it made its first long range operational deployment in the South China Sea. It has slowly and steadily built up its combat capability. In November 2016 it was reported that it was fully combat worthy. In December 2016, it was reported that the *Liaoning* conducted its first “live-fire” drills. From September 2018, the carrier has been undergoing a major refit which reportedly includes an upgrade to the island structure.<sup>3</sup> As per the American think Center for Strategic and International Studies, “*The Liaoning may be best suited for regional missions short of a high intensity conflict. ....The Liaoning’s lack of an aircraft catapult, inefficient propulsion and the relative*

*inexperience of its aviators and support crew do not augur well for high intensity combat operations.....Beijing considers the Liaoning as a symbol of its great power status. Regardless of the Liaoning’s future abilities, the ship commands a degree of political utility, as a tool of naval diplomacy, through various operations, regional and global.”<sup>4</sup>*

However, there were media reports including originally from the US based defence website ‘*navyrecognition.com*’, the Pakistan based new outlet ‘*The Nation*’ in February 2019 and ‘*Russia Today*’ that China is likely to sell *Liaoning* to Pakistan so as to compete with India. However, the state media was quick to deny these reports as completely untrue. Song Zhongpin, a Chinese military expert told *Global Times* that it is a groundless allegation and complete falsehood. He said that there is zero possibility of China reselling it. He further added that “*such reports have no credibility from Pakistan’s perspective, as the country pursues an onshore defence strategy, which means that it does not need an aircraft carrier. And its*

<sup>1</sup>Quoted in Wu Nan, Xi Jinping told *Liaoning’s* Captain to get the aircraft carrier shipshape soon, Website <https://www.scmp.com/>, 04 February 2014. URL: <https://www.scmp.com/news/china/article/1420471/xi-jinping-told-aircraft-carrier-captain-build-combat-readiness-official> (accessed 19 May 2020).

<sup>2</sup>Ibid.

<sup>3</sup>Center for Strategic and International Studies, How does China’s Aircraft Carrier stackup?, Website <https://www.eng.chinapower.csis.org/>, 2019. URL: <https://chinapower.csis.org/aircraft-carrier/> (accessed 19 May 2020).

<sup>4</sup> Ibid.

*defence budget cannot afford an aircraft carrier or maintain one.”<sup>5</sup>*



*Photo 2 – Liaoning taking part in a drill in the Pacific Ocean in April 2018<sup>6</sup>  
Photo credit: Xinhua*

Shandong



A screen grab of CCTV-13 video footage of the commissioning ceremony of the PLAN's second aircraft carrier. The platform was commissioned into the Chinese navy on 17 December at the Sanya-Yulin naval base on Hainan Island. Source: Via CCTV-13

<sup>5</sup>Quoted in Global Times (Editor Huang Panyue), Liaoning sale to Pakistan totally false, Website <https://www.eng.chinamil.com/>, 11 February 2019. URL: [http://eng.chinamil.com.cn/view/2019-02/11/content\\_9424548.htm](http://eng.chinamil.com.cn/view/2019-02/11/content_9424548.htm) (accessed 19 May 2020).

<sup>6</sup>Kristin Huang and Lee Jeong-Ho, Chinese Warship Liaoning Sails through the Miyako Strait on way to the Pacific Ocean for drills, 11 June 2019. URL: <https://www.scmp.com/news/china/military/article/3014079/chinese-warship-liaoning-sails-through-miyako-strait-way> (accessed 19 May 2020).

*Photo 3 – Commissioning ceremony of the PLAN's second aircraft carrier Shandong at the Sanya-Yulin naval base on Hainan island<sup>7</sup>  
Photo credit: CCTV via screengrab by janes.com*

China's second aircraft carrier was commissioned into the People's Liberation Army Navy (PLAN) on December 17, 2019 in a ceremony held at the Sanya-Yulin naval base on Hainan Island, and was given the name Shandong after a Chinese province with the pennant number 17. The ceremony was honoured by the presence of Chinese President Xi Jinping, who presented the PLA flag and naming certificate to the

ship's captain and political commissar, reflecting the significance with which the entry into service of China's first completely indigenously built aircraft carrier is viewed. "Commending China's achievements in aircraft carrier construction, Xi encouraged them to continue their efforts to make new contributions in the service of the party and the people", the official Xinhua news agency reported.<sup>8</sup>



*Photo 4 – Chinese leader Xi Jinping reviews the guard of honour on the Shandong commissioned on December 17, 2019, Hainan island<sup>9</sup>  
Photo credit: Xinhua via Kyodo*

The carrier's base-port of Sanya-Yulin is on the northern shores of the South China Sea, at the doorstep of the South China Sea which may indicate as to where the carrier is likely to operate in the immediate future. Although it will be geographically co-located with the

naval forces of the Southern Theatre Command (South Sea Fleet), the carrier may be under the direct command and control of the Central Military Commission because of its perceived strategic value. Liaoning's base port is Qingdao, which is closer to Japan.

<sup>7</sup>CCTV screengrab in Andrew Tate, Chinese Navy commissions its second aircraft carrier, December 19, 2019. URL: <https://www.janes.com/article/93238/chinese-navy-commissions-its-second-aircraft-carrier>, (accessed 19 May 2020).

<sup>8</sup>Jesse Johnson, The Shandong, China's first homegrown Aircraft carrier: More than just a symbol of prestige, 18 December 2019. URL: <https://www.japantimes.co.jp/news/2019/12/18/asia-pacific/shandong-china-homegrown-aircraft-carrier/#.Xft9q9IzbMw> (accessed 19 May 2020).

<sup>9</sup>Teddy Ng, Chinese new Aircraft Carrier, the Shandong could confront other countries in South China Sea, reports state media, 18 December 2019. URL: <https://www.scmp.com/news/china/military/article/3042580/chinas-new-aircraft-carrier-shandong-could-confront-other>, (accessed 19 May 2020).





Photo 5 – Shandong commissioned on December 17, 2019 will be commissioned in China's Far South<sup>10</sup>

Photo credit: ifeng

*Shandong* was built by Dalian Shipbuilding International Corporation (DSIC) and was launched on 26 April 2017. It commenced sea trials in May 2018 and has completed a total of nine trial sea-sorties. The final trials phase included a transit from Dalian to Hainan, during which it passed through the politically sensitive Taiwan Strait and predictably US and Japanese vessels shadowed the ship for intelligence carrying purposes.

The carrier was built to broadly the same design as the PLAN's first carrier, *Liaoning*, which was formerly the Kuznetsov-class carrier *Varyag*. It is modelled on the Soviet design with a "ski jump" flight deck for takeoffs and has a conventional steam turbine propulsion. The Chinese shipbuilding chief says Type 001A is big departure from its sister, while several military commentators think that the new vessel could showcase at least some lessons that were learned from the *Liaoning*. Therefore several modifications may have been included in *Shandong* that are likely to

reflect the knowledge gained from operating *Liaoning*, as well as the PLAN's concept of carrier operations, which differs from that of the former Soviet Navy, which originally designed the Kuznetsov-class as aircraft-carrying cruisers armed with long range anti-ship and surface-to-air missiles. State media says that the ship will be able to carry 36 J-15 jets as compared to *Liaoning's* capacity of 24 and it also asserts that it will be more powerful than *Liaoning*.<sup>11</sup> The rapidity with which *Shandong* was constructed (reportedly early 2015)<sup>12</sup>, subsequently launched (26 April 2017) and delivered to the PLAN in September 2019 a total time duration of less than five years is a direct reflection of the competency of the Chinese design bureau and shipbuilding industry, from which India has a lot to learn. According to a China's Defense Ministry spokesman, China's first domestically built aircraft carrier, the *Shandong*, commenced its first sea trial on 29 May 2020 since being commissioned in December 2019<sup>13</sup>.

<sup>10</sup>Teddy Ng, Chinese new Aircraft Carrier, the Shandong could confront other countries in South China Sea, reports state media, 18 December 2019. URL: <https://www.scmp.com/news/china/military/article/3042580/chinas-new-aircraft-carrier-shandong-could-confront-other> (accessed 19 May 2020).

<sup>11</sup>Jesse Johnson, The Shandong, China's first homegrown Aircraft carrier: More than just a symbol of prestige, Website: <https://www.japantimes.com/> available at URL: <https://www.japantimes.co.jp/news/2019/12/18/asia-pacific/shandong-china-homegrown-aircraft-carrier/#.Xft9q9IzbMw>, December 18, 2019, (accessed 19 May 2020).

<sup>12</sup>Vinayak Bhat, China's Aircraft carrier program: India must speed up its CV programme, 09 May 2017. URL: <https://www.orfonline.org/expert-speak/chinas-aircraft-carrier-programme-india-must-speed-up-its-cv-programme/> (accessed 19 May 2020).

<sup>13</sup>CGTN, Chinese built aircraft carrier undergoes sea trial, 29 May 2020. URL: <https://news.cgtn.com/news/2020-05-29/Chinese-built-aircraft-carrier-undergoes-sea-trial-QTeKmuVrsQ/index.html> (accessed 30 May 2020).

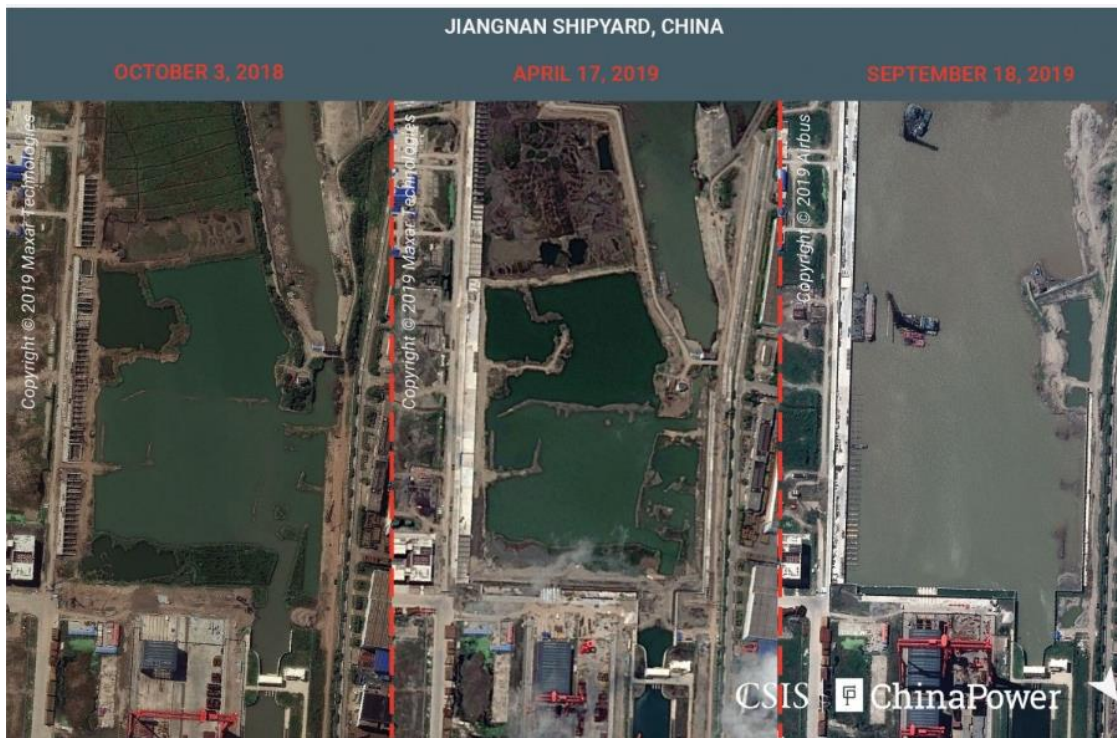


Photo 6 – Satellite images showing China is expanding the Jiangnan shipyard<sup>14</sup>



A satellite image from last month shows parts for an aircraft carrier under construction at the Jiangnan Shipyard. Photo: CSIS/ChinaPower/Airbus via Reuters

Photo 7 – A satellite image from September 2019 shows parts of aircraft carrier under construction at the Jiangnan shipyard<sup>15</sup>

Photo credit: CSIS/ChinaPower/Airbus via Reuters

<sup>14</sup>Center for Strategic and International Studies, Satellite Images show China is expanding shipyard to build more aircraft carriers, 17 October 2019. URL: <https://www.scmp.com/news/china/military/article/3033434/satellite-images-show-china-expanding-shipyard-build-more> (accessed 19 May 2020).

<sup>15</sup>Center for Strategic and International Studies, Satellite Images show China is expanding shipyard to build more aircraft carriers, op.cit.



According to Ying Yu Lin, an expert on the PLA, *“The successive commissioning of two aircraft carriers stands for the PLA’s determination to establish a far seas presence. Whether the goal can be reached of course depends on technologies and technical capabilities, ranging from catapult aircraft launch systems on carriers and carrier-borne early warning aircraft to the anti-aircraft and anti-submarine operations capabilities of carrier escort ships. All are necessary for the PLAN carriers to bring their combat capabilities into play. A huge defense expenditure is needed to build carriers in succession. Keeping them operational will cost even more money. Whether the Chinese leadership will take a different attitude toward carriers with the evolution of the war-fighting environment and war type is still unknown.”*<sup>16</sup>

Type 002

Washington based think tank CSIS based on satellite images of September 2019 in comparison to previous taken images said in October 2019 that China was making first progress on its third aircraft carrier and the Jiangnan shipyard may be expanded to build bigger ships. They expect the construction to be finished in one year and thereafter outfitting to start. Though China is still to reveal details of Type 002, the state media has confirmed that it is being built. Several naval experts predict that China may build ships so as to have a fleet of five to six aircraft carriers by 2030-2035 and these may include two nuclear powered carriers. Chinese Defence Ministry spokesman Ren Guoqiang said in November 2018 that the development of aircraft carriers will be based on the country’s overall plan.<sup>17</sup>



<sup>16</sup>Ibid.

<sup>17</sup>Quoted in Global Times (Editor Huang Panyue), Liaoning sale to Pakistan totally false, op.cit.

Photo 7– India’s maiden indigenous aircraft carrier under construction<sup>18</sup>

Photo credit: S Anandan, The Hindu

## India’s Indigenous Aircraft Carrier Program

**Indigenous Aircraft Carrier - 1.** The original INS Vikrant was commissioned in 1961. The ship, currently under construction, *Vikrant* is to be India’s first indigenous aircraft carrier (IAC-1). According to Admiral Vishnu Bhagwat, Former Chief of the Naval Staff, “*The Navy’s priority was to build an Air Defence Ship. In 1996, The Navy’s five year plan only permitted funds for the indigenous ADS. The Navy had recommended in 1998 that an additional budgetary grant would need to be made for the Admiral Gorshkov now INS Vikramaditya.*”<sup>19</sup> Unfortunately much water has flown under the bridge and *Vikrant* is still in the making. It may be said to metaphorically showcase New Delhi’s current international standing – which many commentators call ‘strategic autonomy’ New Delhi would like to retain what it can and what it wants from its cooperation with Russia, but it also means to enhance its growing relationship with the United States. However, it is the considered opinion of this author that strategic autonomy is of no significance when a nation needs to seek waiver from another nation to pay for a weapon system which it has purchased from a third country or to develop a strategic port project like Chabahar, Iran.<sup>20</sup> The classic example being the S-400 missile system.<sup>21</sup> This ship will similarly represent a mixture of imports (from various sources) and India’s own work. Some of its major solutions will be following the design of INS *Vikramaditya*: the launch system will be of the same type (STOVAR, which is a ski-jump launch system) and some of the systems will be provided by the Russian company (Rosoboronexport). The aviation complex was also designed by another Russian firm (Nevskoye Design Bureau). However, the ship is to be propelled by U.S.-made turbines to be provided by General Electric, just like the Washington-New Delhi relationship currently propels India in other directions as well. Due to slow construction, the infirmities of the design bureau dependent on consultants, lack of continuity in design and project teams, and the delay in contracting for certain equipment the IAC originally scheduled to be delivered by 2016, is likely to be delivered to the Indian Navy only by 2021 and may be commissioned by 2023. As per Admiral AK Saxena speaking at a curtain raiser for a seminar on ‘nation building through ship building’, organised jointly by the Navy and FICCI in

July 2019, “Basin trials are likely be conducted in February-March 2020 and contractor sea trials in 2021. Flight trials would start after the delivery in 2021.” However, it would be inappropriate to commission the IAC without its aircraft complement and completion of flight trials. It may be relevant to recall the case of INS Brahmaputra, a missile frigate which was commissioned in 2000 without its SAM system. No world-class Navy would commission a platform which is not fit for its intended purpose. In addition, it may be noted that the associated berthing infrastructure required by the Navy’s bigger ships including INS *Vikramaditya* and now IAC-1 has regrettably always lagged behind the commissioning. The aircraft carrier is a visible symbol of India’s growing naval prowess wherever they steams and is useful in non-combat missions. But in an era of precision-guided munitions, especially hypersonic cruise missiles and enhanced satellite surveillance and reconnaissance, it is the opinion of many naval experienced naval officers that in wartime aircraft carriers become vulnerable, sitting (or more accurately, floating) ducks, especially in any conflict involving a highly capable adversary.

**Indigenous Aircraft Carrier - 2.** The ship is in the project phase as of now and thus there is no way of predicting how it might be built. *Vishaal* is to be India’s second indigenous aircraft carrier, but is unlikely to follow on the lines of *Vikrant*. Its launch system is to be CATOVAR (Catapult Assisted Take-Off But Arrested Recovery) or, more precisely, its new generation: EMALS (Electromagnetic Aircraft Launch System). Such a system is being developed by the Americans and thus India would have to team up with them. It is understood that an Indo-American working group has been formed for that purpose. A change to a different launch system will probably affect the type of machines used on it as well. *Vikramaditya* uses the STOVAR system and *Vikrant* is designed for the same, and the primary embarked aircraft of the former carrier is the Russian MiG-29K. If *Vishaal* is fitted with EMALS, it will make it compatible with Western-made aircraft, and capable of working with heavier planes, such as the American E-2 Hawkeye. However, it may be noted that in early 2019, the US Navy confirmed that it had major problems with the design, construction and performance of EMALS on its latest aircraft carrier USS *Gerald Ford* and three other Ford class carriers

<sup>18</sup>Dinakar Peri, Indigenous Aircraft Carrier to developed to be handed over to the Indian Navy by 2021, available at Website: <https://www.thehindu.com> . URL: <https://www.thehindu.com/news/national/indigenous-aircraft-carrier-vikrant-to-be-delivered-to-navy-by-february-2021/article28319084.ece> (accessed 19 May 2020).

<sup>19</sup>Admiral Vishnu Bhagwat, ‘Air Defence Ship’, from the Book: *Betrayal of the Defence Forces*, Manas Publications, 2001, p.111.

<sup>20</sup>Press Trust of India, US says Chabahar project won’t be impacted by Iran sanctions, available at Website: <https://www.economicstimes.indiatimes.com>, April 24, 2019. URL: <https://economicstimes.indiatimes.com/news/economy/foreign-trade/us-decision-to-end-iran-oil-sanctions-waiver-wont-affect-indias-investments-in-chabahar-port/articleshow/69019491.cms> (accessed 19 May 2020).

<sup>21</sup>Franz-Stefan Gady, US warns India over S-400 air defence system deal with Russia, available at Website: <https://www.thediplomat.com>, 17 June 2019. URL: <https://thediplomat.com/2019/06/us-warns-india-over-s-400-air-defense-system-deal-with-russia/>, (accessed 19 May 2020).

under construction. According to US Navy sources, *“with steam catapults when one went down the other three could continue to operate. In case of EMALS even minor repairs or maintenance on one catapult means all four had to be out of service. The US Navy has been working on modifications to EMALS to fix all these problems. In the meantime the new Ford carrier is much less useful than older ones that use steam catapults. The U.S. Navy has been having an increasing number of similar problems (the design of the LCS, the DDG 1000 and a lot of other systems)”*.<sup>22</sup> President Trump himself faulted EMALS for causing delays and cost overruns on the first in-class USS Gerald Ford (CVN-78).<sup>23</sup> The Indian Navy and ultimately the taxpayer can ill afford such experimentation when it does not have its own indigenous design and production capability for EMALS. There was also a view within the Indian Navy that it should be nuclear powered and the Indian Navy commissioned a study under a Flag officer (former nuclear submarine captain) to examine the feasibility. This despite the fact that BARC may not have the nuclear fuel to fuel both the nuclear submarine program and the aircraft carrier. In addition, there is the tremendous cost involved, both of the platform and the associated infrastructure associated with a nuclear platform. It is understood that the government has not

given approval for the project due to lack of funds. It is also evident that the operating risks are exacerbated with nuclear platforms and therefore the periodicity of inspections of nuclear powered ships or submarines for nuclear and radiation safety certificates and testing of knowledge for seafarers also needs to be more frequent. The Indian Navy is slowly and steadily coming to grips with these stringent requirements. To a layman, this is analogous to more periodic checks on a nuclear powered station vis-à-vis a conventional hydroelectric power station.

### Conclusion

PLAN's first indigenous constructed aircraft carrier, Shandong is undoubtedly likely to be superior to *Liaoning*, in terms of military capability. It is an outstanding achievement of a nation which did not know anything of aircraft carrier construction and operation prior to 2001. India which had a head start of four decades in its experience of operating aircraft carriers has fallen well behind and would do well to emulate the Chinese example and build realistic, more affordable aircraft carriers within a shorter time period. It would also need to re-examine its plans of having three carriers at any one time in view of likely budget cuts due to a slowing economy.

<sup>22</sup>Website: <https://www.news.usni.org/>, Navy Air: EMALS in the Age of Error, 16 February 2019, URL: <https://www.strategypage.com/htmw/hnavai/articles/20190216.aspx> (accessed 19 May 2020).

<sup>23</sup>Ben Werner, Experts: Navy would spend billions to answer Trump's call to return to steam catapults, 28

May 2019, URL: <https://news.usni.org/2019/05/28/experts-navy-would-spend-billions-to-answer-trumps-call-to-return-carriers-to-steam-catapults>, (accessed 19 May 2020).