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J-15 and CATOBAR: Pointer to China's Naval Ambition

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Recently, the online media was abuzz with reports on an image of a new variant of J-15 fighter, alleged to be the re-engineered version of Su-33, released on the Chinese Xinhua and other websites in which an important modification was observed. The front landing gear was modified to cater for catapult launch of the aircraft from an aircraft carrier. The institute developing the aircraft was found to be China Shipbuilding Industry Corporation [CASIC] 704 Research Institute from better quality images of the aircraft.¹ The image has given rise to speculation among China naval observers on whether China's future carriers would function with CATOBAR system to launch aircrafts.

Sometime even a small engineering modification to a weapon platform could be a pointer to a major strategic ambition of a country. This exactly could be the case with the recent modification seen on the Chinese J-15 fighter aircraft for CATOBAR operation. The landing gear retraction jack of the new J-15 seems to be thicker compared to earlier models. The nose gear seems to be designed for catapults and arresting gear.² At present, China operates the Liaoning aircraft carrier which is a former Russian ship. The Liaoning carrier uses Short Takeoff But Arrested Recovery (STOBAR) system to launch and recover fighter aircrafts with a ski-jump set up at the end of the short runway. All Russian and older British carriers use Ski-Jump technique to launch aircrafts.

In 2009, in an interview, the then Brazilian Defence Minister is reported to have stated that Brazil and China had reached an agreement to train personnel from the People Liberation Army Navy on their aircraft carrier Nae Sao Paulo.³ It is to be noticed that the Brazilian carrier is a Clemenceau-class ship which uses CATOBAR for aircraft operation. Moreover, last year a land based CATOBAR aircraft testing facility was spotted in China via satellite imagery.⁴ So it might be a well thought long term plan of the Chinese government to have a carrier with CATOBAR system.



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Till date three methods are used to launch aircrafts from ships: STOBAR (Ski-Jump), Catapulted Take-Off but Arrested Recovery (CATOBAR) and aircraft with Vertical Short Take Off and Landing (VSTOL) capability. For example, VSTOL capable Sea Harrier aircraft is being operated in the Indian aircraft carrier INS Viraat and the in the recently procured INS Vikramaditya STOBAR system is used to launch the Mig-29K. In the US aircraft carriers, CATOBAR technique is employed where a steam operated catapult is used to shoot aircraft from the deck for it to gain enough lift to get airborne.

The STOBAR has a limitation; it can only launch aircraft with limited take-off weight. For the same reason heavier aircraft like maritime surveillance, AWACS and transport aircraft cannot be operated from the carrier. In case of a steam operated catapult launch system, a wide variety of aircrafts including turbo-prop aircraft can be launched. The ability to operate heavier aircrafts greatly enhances the utility of the aircraft carrier by increasing its offensive and defensive power. For example surveillance aircraft can cover more area in a given time and has longer range compared to maritime surveillance helicopters. Fighter jets can be launched with their maximum take-off weight (full weapon load and fuel).

So, given the advantages of having a carrier with CATOBAR capability, it raises questions on China's naval ambitions and as a result its grand strategy. It is well known that China's business and political interests are spreading across the globe. For example, China has several mining rights and other business interests in Africa. China is Africa's largest trade partner with trade exceeding \$166 billion and has invested huge money exceeding 40 billion in early 2013 itself.⁵ Likewise in Latin America Chinese investments are raising particularly in the mining sector which has exceeded 30%.⁶ These engagements are bound to increase in the future and China need to have the ability to project power wider to protect its expanding business interests.

With the kind of naval equipment acquisition trend, it is likely that China is planning to follow the Carrier Battle Group (CBG) concept. And a carrier with CATOBAR system would give the CBG much more fire power and operational flexibility. Last year images of a part of a large hull from the Dalian shipyard which is believed to be for a carrier was floating around in the internet. A trench like wedge was observed on the starboard side on the flat deck which is apparently for a catapult system.⁷ In June this year, a full scale model of a nuclear powered aircraft carrier resembling the US Nimitz class model was displayed at an official event in Zhongzhan.⁸



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At present, China's official position is that it has no plans for establishing military bases abroad. Hence, its only option to project power at longer distances is to have platforms with longer range. Hence, in future China might build nuclear powered aircraft carriers that has virtually unlimited endurance. However, at present China is facing significant technical hurdles in developing an efficient and reliable miniaturised Pressurised Water Reactor (PWR) to power its SSNs and SSBNs. Nevertheless, adopting the design for surface vessels would be less complex compared to optimising it for submarines.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

End Notes

¹ "Images Suggest China Developing J-15 for CATOBAR-equipped carrier", <http://www.janes.com/article/45636/images-suggest-china-developing-j-15-for-catobar-equipped-carrier>, accessed on 16 December 2014.

² "J-15 Carrier Based fighter modified for catapult launch", <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20141103000042&cid=1101>, accessed on 16 December 2014.

³ "PLAN Officers to Train on Brazilian Aircraft Carrier", www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=35116&tx_ttnews%5BbackPid%5D=25&chHash=d54502568f#_VHmcOaW3TqC, accessed on 17 December 2014

⁴ "Chinese CATOBAR Aircraft Carrier Test Facility", <http://chinesemilitaryreview.blogspot.in/2013/10/chinese-catobar-aircraft-carrier.html>, accessed on 17 December 2014.

⁵ "Chinese trade with Africa keeps growing; fears of neo-colonialism are overdone", <http://www.economist.com/news/middle-east-and-africa/21574012-chinese-trade-africa-keeps-growing-fears-neocolonialism-are-overdone-more>, accessed on 18 December 2014.

⁶ "Latin America, A Perfect Fit for China's Global Trade Strategy", http://www.worldcrunch.com/business-finance/latin-america-a-perfect-fit-for-china-039-s-global-trade-strategy/bambas-mine-china-minmetals-corporation-investment-hydrocarbon-/c2s17462/#_VHlwB_mSzf8, accessed on 18 December 2014.

⁷ "Is this China's Second Aircraft Carrier", <https://medium.com/war-is-boring/is-this-chinas-second-aircraft-carrier-2a3fbfab3851>, accessed on 18 December 2014.

⁸ Chinese Nuclear-Powered Aircraft Carrier (CVN): Design Finalized", <http://china-defense.blogspot.in/2014/06/chinese-nuclear-powered-aircraft.html>, accessed on 19 December 2014.

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