

# China's Missile Buildup



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**Missile Defense Advocacy Alliance Forum,**  
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## **Debate Over China's Nuclear Forces**

**China will not disclose its nuclear missile order of battle or modernization plans; consistently refuses simple discussions on nuclear issues with the United States.**

**In 2015 DoD estimates the PLA has "50-60" ICBMs and could build up to 60 SLBMs.**

**DoD does not present many worst case estimates. Has not issued descriptive missile table since 2010.**

**Most Western open sources put the total number of PLA nuclear warheads at 200 to 400.**

**Int'l Panel on Fissile Materials estimates Chinese HEU at 16 tons, and Plutonium at about 1.8 tons.**

**In 2012 retired CoS of Russian Strategic Missile Force Colonel-General Victor Esin says:**

**HEU: 40 tons; Plutonium: 10 tons; enough for over 3,600 warheads. China may have 1,600 to 1,800 warheads already, of which 800-900 may be intended for deployment. 500 tactical warheads.**

**China is developing strategic missile defenses. Some sources predict deployment by 2025, but it could be much sooner.**

**China's proliferation of nuclear and missile technologies could become a force multiplier.**

# DF-5B MIRV

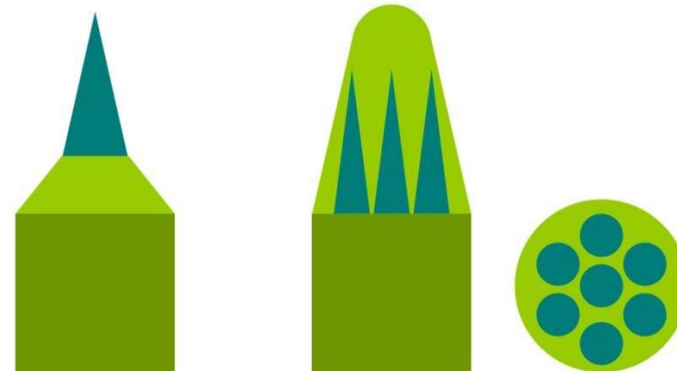
Asian sources report MIRV “DF-5B” since 2008.

DoD 2012 and 2013 says DF-5 is “enhanced.”

In 2015 DoD report, first mention of “multiple independently-targetable re-entry vehicle (MIRV-equipped Mod 3 (DF-5).”

Usual reports of “20” DF-5s in silos. But what about possible reloads ?

9/3 Parade revealed DF-5B for first time, clear relationship to Long March 2C SLV.



DF-5弹头

DF-5B弹头

**DF-31 and DF-31A:**

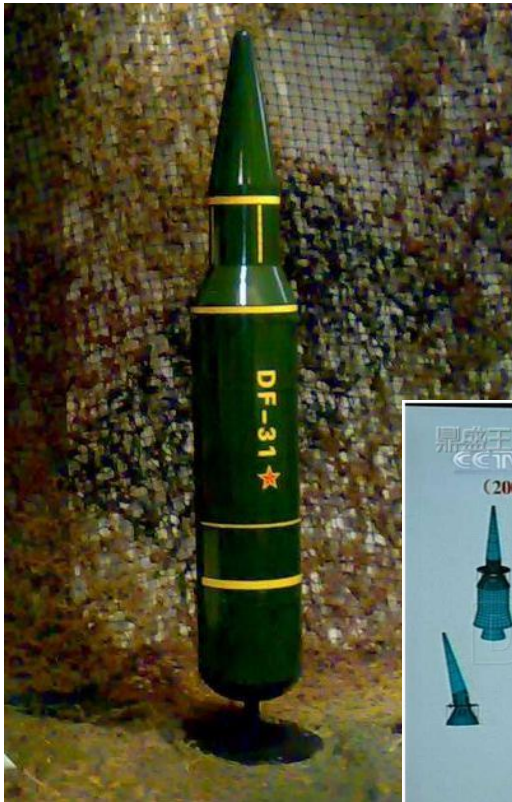
**DF-31: 8,000km range estimated.**

**DF-31A 11,200+ km range estimated.**

**Both single warhead.**

**One brigade of DF-31, service entry 1999 ?**

**Possible two brigades of DF-31A.**



## New DF-31 Variants

“DF-31B” tested on 25 September 2014 according to US sources as told to the Washington Free Beacon.

Possible new TEL, possible MRV—up to 3 warheads ?

Possible reload carrying vehicle ?



**DF-41(CSS-X-20): MIRV—6-10 warheads ? IOC in 2014 or 2015 ?**



# More SSBNs

Four Type 094 SSBNs now in service; deterrence patrols expected soon.

Up to 5 or possibly 8 new Type 094 SSBNs expected ? 60 to 96 JL-2 SLBMs?

Future MRV equipped JL-2A or JL2B variant?

2020s: Type 096 SSBN and new JL-3 SLBM ?



**PLA Intercontinental Missiles, 2015-2020+: Range of Estimates for Numbers of Missiles and Warheads Assuming Possible Multiple Reentry Vehicles (MRVs)**

	<b>Range</b>	<b>Low Missile Number Est. (1)</b>	<b>High Missile Number Est. (2)</b>	<b>Low MRV &amp; Low Missile Est (3)</b>	<b>High MRV &amp; Low Missile (4)</b>	<b>High MRV &amp; High Missile Est.</b>
DF-5B	13,000km	20	20	1x20=20	3x20=60	8x20=160
DF-31	7,250+km	12	12	1x12=12	1x12=12	1x12=12
DF-31A	11,270+km	12	24	1x12=12	3x12=36	3x24=72
DF-31B	10,000 to 12,000km	12	24	1x12=12	3x12=36	3x24=72
DF-41	14,000km	12	24	1x12=12	5x12=60	10x24=240
JL-2	8,000+km	60 (12 SLBM x 5 SSBN)	96 (12 SLBM x 8 SSBN)	1x60=60	3x60=180	3x96=384
<b>TOTALS</b>		<b>128</b>	<b>176</b>	<b>128</b>	<b>384</b>	<b>940</b>
		<b>missiles &amp; warheads</b>	<b>missiles &amp; warheads</b>	<b>warheads</b>	<b>warheads</b>	<b>warheads</b>

1. Estimates from DoD 2002 and ONI 2006. 5x SSBNs and 1x brigade (12 missiles) for road mobile ICBM.
2. High missile number estimate based on "The United States Wants China To Stop Deployment of DF-31A: China's Military Rejects Categorically," WarSky web page, March 3, 2008, [http://www.war-sky.com/forum/htm\\_data/18/0803/248075.html](http://www.war-sky.com/forum/htm_data/18/0803/248075.html) . Assumes 2x brigades for road mobile ICBMs, or 24 missiles and 8x SSBNs.
3. Low MRV number based on author estimate.
4. High MRV estimate based on author interviews.

# SRBM Trends

- Taiwan's MND says there are about 1,600 PLA missiles targeting Taiwan.
- The 2010 DoD China report, last to do so, describes SRBMs as follows:  
 CASC DF-15 (CSS-6) is listed-- Launchers: 90-110; Missiles: 350-400, or less than 4 missiles per launcher.  
 CASIC DF-11A (CSS-7) is listed—Launchers: 120-140; Missiles: 700-750, or more than 5 missiles per launcher.
- At the 2015 IDEX show a Chinese official stated the PLA was going to purchase the CASC A-300 300km MLR/SRBM.  
 4x A-200s are marketed as paired with one 300+km range M-20 SRBM, per TEL, usually called the M-20 system.  
 If the PLA buys CASC's new M-20, it will likely also buy the CASIC's BP-12A, paired with the 4x SY-400 MLR/SRBM.
- If these are new gen SRBMs, taking the max 2010 number for launchers,  $250 \times 5 = 1,250$  missiles + 3x reloads = 5,000 missiles. Cost grows to \$2 million per TEL + missiles ?
- Also possible that PLA Army artillery rocket units will start acquiring 280km range Norinco AR3 precision-guided artillery rocket.



### A300火箭弹武器系统

A300 Rocket Weapon System

- 最大射程 Maximum Range : 290km
- 最小射程 Minimum Range : 120km
- 制导方式 Guidance : 惯组+GPS  
 IMU/GPS Integrated Navigation
- 精度 Accuracy : 子母战斗部 Cluster Warhead CEP ≤45m  
 整弹战斗部 Unitary Blast Warhead CEP ≤30m
- 火箭弹单车齐射攻击范围  
 Salvo Fire Area of A Single Launch Vehicle : 20km×20km
- 战斗部类型包括杀破子母战斗部、整体爆破战斗部、整体杀爆战斗部、整体侵爆战斗部。  
 Warheads: Cluster Warhead, Unitary blast warhead, Blast-fragment warhead, Unitary penetration warhead

## MRBM and IRBM Trends

800km to 1,000km range DF-16 MRBM entering service. Longer range, higher speed to counter Taiwan BMD systems.

We know that DF-21 units employ reloads. In 2015 we see a new CASC TEL that may carry two MRBMs. If this is a CASC system, then we can expect a new CASIC system to succeed the DF-21. Will this too carry 2x MRBMs ?

9/3 parade reveals 3,000km to 4,000km range DF-26, which can carry nuclear, non-nuclear and ASBM warheads.



# New CASIC Mobile SLVs—ICBMs and PGS ?

Kuaizhou-1 mobile SLV, w/ 1.4meter diameter three-stage motor derived from DF-21 can loft 250kg to 500km orbit.  
Kuaizhou-2 SLV, w/ 2.2 meter diameter three-stage motor due to be tested in 2016; 1,000kg to 700km orbit.  
Both could become ASAT or new ICBM. As CASC KT-1 = SC-19/DN-1 ASAT, could KZ-1 = DN-2 ASAT ?  
Both could become basis for new non-nuclear Prompt Global Strike system with version of DF-ZF hypersonic maneuvering warhead. By 2030, 138 “Jilin” surveillance sats provide 10 minute target revisit rate.



中国航天科工集团公司  
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### The Prospects of Space Technology

## Low-cost and High-Reliability Solid Rocket

三級點火  
三級分離  
二級點火  
二級分離  
一級點火  
一級分離

末助推劑  
星箭分離

120km  
90km  
90km

Cost Effectiveness

More Flexibility

Better Responsiveness

中国航天

中国航天

# ASAT and Future ABM Capabilities



“FJ-1” 模型巡洋弹



70年代初研制的7010型相控阵超远程导弹预警雷达天线阵（面宽40米，高20米）

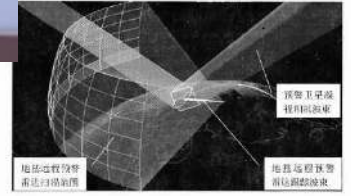
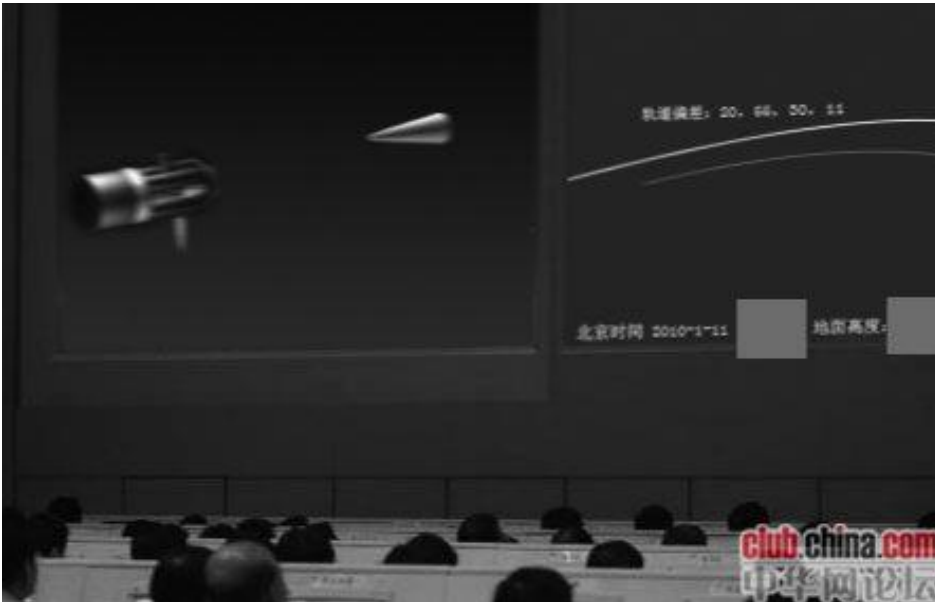
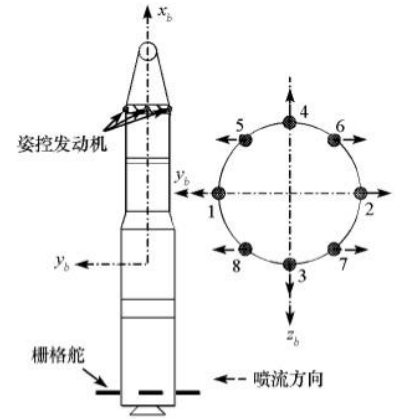


图7 地基远程预警雷达与天基预警卫星交接

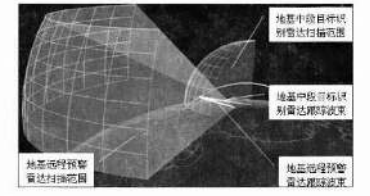


图8 地基中远程目标识别雷达与地基远程预警雷达交接

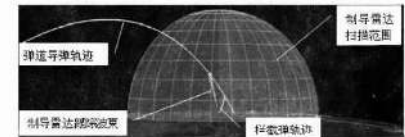


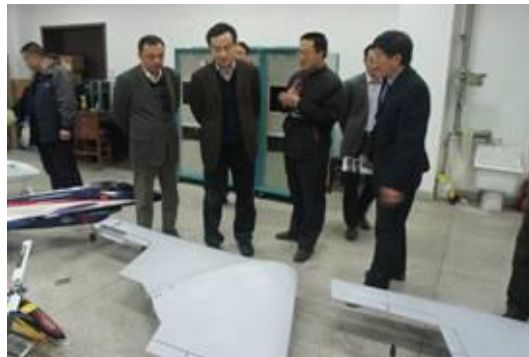
图9 制导雷达

## Potential New Bomber Cooperation: Parallel Programs

China has long had a new strategic bomber program, thought to be a Xian Aircraft Co. low-observable flying wing aircraft. Asian government sources indicate this program could result in a new bomber entering service by 2025. Open Chinese sources indicate it will be intended to strike targets out into the Second Island Chain.

It is interesting that Russia “PAK-DA” next generation bomber program is also a low-observable flying wing design also intended to enter service in about 2025. Designed by the Tupolev bureau, PAK-DA will carry a larger weapons load than the Tu-160 supersonic swing-wing intercontinental bomber. It will eventually replace Tu-160, Tu-22M3 and Tu-95. (Images on left from TsAGI circa 2007)

One possibility is that Tupolev has already conducted some “consulting” toward the Xian design, or that in the future it could offer China design consulting.



机长	35m
翼展	60m
最大厚度	4.3m
后掠角	45°
翼面积(正投影)	910m <sup>2</sup>
翼梢弦长	4.0m

表 3.9 初始布局外形参数

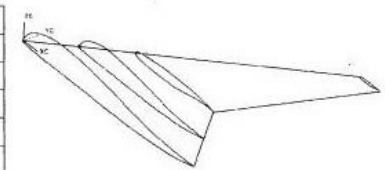


图 3.6 初始外形半模构建图

本文的初始外形建模及外形修改均使用UG。由图3.6所示，初始外形的翼型配置是：中央对称面和距对称5米处配置正力矩特性的翼型，在距对称面10处和翼梢处配置超临界翼型，也就是整个外翼为超临界机翼，机翼没有进行气动扭转及上反。初始外形三维表面如图3.7所示：

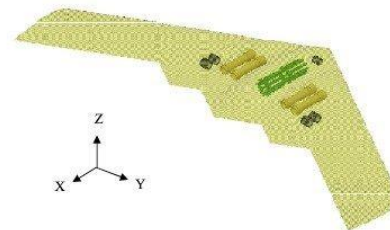


图 5.40 多发飞翼布局飞机内部主要装载布置

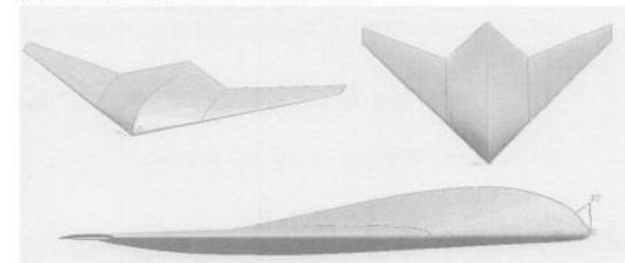


图 3.7 初始布局外形