

## French nuclear weapons capability

### [Overview]

Information is available in the public domain about the overall size of France's warheads. French President Nicolas Sarkozy announced on March 31 2008 that France would reduce number of warheads to 300 or less (**Sarkozy, Nicolas M. 2008**). This was followed by President Hollande, who on February 19, 2015, provided a status update, including the plan's completion (**Hollande, François 2015**). In a document submitted to the 2015 NPT Review Conference (**Government of France 2015**), France reconfirmed such details in Hollande's speech as follows: French warheads below 300; submarine-launched cruise missiles to number 16 per vessel and their ordnance to equate three vessels; and air-launched cruise missiles to total 54. This last figure corresponds to the sum (50) of 40 operational warheads of "Air-launched systems (Bombers, etc.)" and 10 non-operational stockpiles of "Air-launched systems (Bombers, etc.)". The variance of four is understood to represent the attrition through retirement, resulting in surplus. President Macron, who succeeded Hollande in May 2017, inherited his predecessor's nuclear posture and policy. The figures in this table are derived from Kristensen and others (**Kristensen, Hans M. & Korda, Matt 2019**). To modernize its entire arsenal, France is developing a whole new range of next-generation weapons systems, such as new strategic nuclear submarines (SSBNs), missiles (SLBMs) to be carried by them, and cruise missiles to be launched by aircraft. According to the French government, the annual cost of maintaining nuclear posture is about USD 4.6 billion but some documents peg it at USD 3.6 billion. Some forecast that the nuclear weapon-related budget will swell to USD6 billion by 2025 due to modernization of nuclear weapons (**Kristensen, Hans M., with update by Allison Pytlak 2019**). The French government states that it will spend about EUR 25 billion (USD 28 billion) on nuclear weapons between 2019 and 2023.

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Type / designation	Types of nuclear warheads	Yield (kt)	No. of warheads	Remarks
<b>Deployed</b>			<b>280</b>	
Submarine-launched ballistic missile (SLBM) <sup>1)</sup>			240	
MSBS M51 <sup>2)</sup>	M51.1	TN75	150	3)
	M51.2	TNO	100	40
Air-launched systems (Bombers, etc.)			40	
Bomber payloads ASMPA <sup>4)</sup>	TNA	Variable~ 300	40	5)
ASPMA7 for carrier planes ASPMA <sup>6)</sup>	TNA	Variable~ 300	0	7)
<b>Reserve / Nondeployed</b>			<b>~20</b>	
SLBM			~10	8)
Air-launched systems (Bombers, etc.)			~10	9)
<b>Total inventory</b>			<b>300</b>	

### [Notes]

- The warheads are carried by four Triomphant-class\* ballistic missile nuclear submarines (SSBN): Triomphant, Téméraire, Vigilant and Terrible. At least two of these are in a complete state of readiness for action, and one of them is used in deterrent patrols (for approximately 10 weeks). They are based at the Ile Longue, a peninsula near Brest (**Kristensen, Hans M. & Korda, Matt 2019**).  
\*Triomphant-class SSBN: The Terrible's commissioning made the total of four SSBNs on September 20, 2010. They are equipped with 16 missile launch tubes.
- MSBS is the abbreviation for Mer-Sol Balistique Strategique, French for SLBM. The previous M45, with a range of more than 4,000 km and six-warhead MIRV-capable, completed retirement by the end of 2016. Since then, all four strategic nuclear submarines are equipped with the M51. The test launches of version M51.1 were carried out on January 27 and July 10, 2010. The test launch of the Vigilant failed on May 5, 2013 (**Collin, Jean-Marie 2013**). The M51.2 variant was test launched on July 1, 2016 from Le Triomphant and operational deployment was announced in December 2017. Later it was deployed on the Téméraire. The other two Triomphant-class submarines will continue to carry the M51.1. The M51.1 carries the TN75 thermonuclear warhead (approximately 100 kilotons) and the M51.2 carries a more powerful TNO (150 kilotons) than the TN75.  
\*TN75: The thermonuclear warhead that was used in the last French nuclear test in Moruroa in 1995-96. TN is the French abbreviation for Tête Nucléaire (nuclear warhead). They are planned to be changed to TNO from 2015.
- It is thought that three of the four submarines carry warheads in shifts and one submarine is in overhaul (**Kristensen, Hans M. & Korda, Matt 2019**), leading to a calculation of three submarines x 16 launch tubes x (four to six) MIRV. This means an average of five MIRV.
- ASMPA is the abbreviation for Air-Sol Moyenne Portee Ameliore, French for medium range air-to-ground missile. It is a cruise missile with range of 500km. Its warhead is TNS (Tête Nucléaire Aeroporte: Airborne nuclear warhead) and worth up to 300 kt, but lower yield alternatives are thought to be available.
- The nuclear-capable fighter bomber Mirage 2000N retired in June 2018, leaving some 40 of the Rafale BF3 to continue with nuclear missions. One warhead per aircraft (**Kristensen, Hans M. & Korda, Matt 2019**).  
\*The Rafale F3 entered operational service in 2008. It was equipped with ASMPA in 2010. It has a flight range of 2,000km (**Kristensen, Hans M. 2015**).
- The 10 carrier-based aircraft Rafale MF3\* on Charles de Gaulle, the only French aircraft carrier (R92, nuclear powered), carry out nuclear missions. Missions were previously the work of the Super Étendard, but this craft was replaced by the Rafale M3. The Super Étendard is expected to be retired in 2016 (**Kristensen, Hans M. 2015**).  
\*The Rafale MF3 entered operational service in 2010. It was equipped with ASMPA in 2011. It has a flight range of 2,000km (**Kristensen, Hans M. 2015**).
- The aircraft carrier Charles de Gaulle does not usually carry nuclear weapons. The ASMPA for loading on the Rafale MF3 are stored at a terrestrial base, probably the Istres or Avord Air Base (**Kristensen, Hans M. & Korda, Matt 2019**). In this context, it was categorized to be in reserve (just as we did for China).
- President Hollande mentioned in his announcement that "France has no nuclear weapons other than those for use in military operations (**Hollande, François 2015**)."  
The government of France made a similar report to the 2015 NPT Review Conference (**Government of France 2015**) but this is thought to mean that they have no spare nuclear weapons for reserve purpose such as the US's "rapid deployment nuclear weapons." It is believed that within the nuclear warhead maintenance cycle France possesses some new or under repair warheads and warheads awaiting disassembly (**Kristensen, Hans 2015**).
- Approximately 10 warheads for the ASMP-A cruise missile for naval aviation.

### [Source]

**Collin, Jean-Marie 2013:** "The M51 missile failure: where does this leave French nuclear modernization?," BASIC Blog, June 27, 2013. <http://www.basicint.org/blogs/2013/06/m51-missile-failure-where-does-leave-french-nuclear-modernization> (accessed May 18, 2019)

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