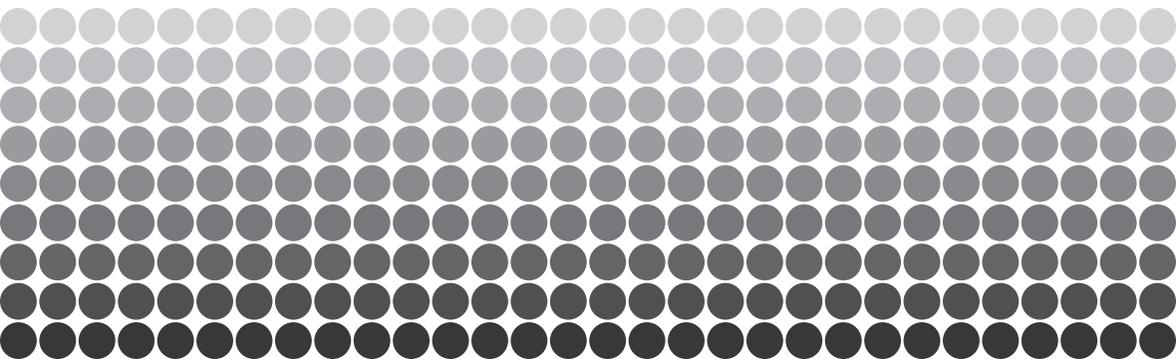


# **SIPRI YEARBOOK 2013**

Armaments, Disarmament and International Security

## Israeli nuclear forces

PHILLIP SCHELL AND HANS M. KRISTENSEN



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## VIII. Israeli nuclear forces

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Israel continues to maintain its long-standing policy of nuclear opacity. It neither officially confirms nor denies that it possesses nuclear weapons.<sup>1</sup> It is estimated here that Israel has approximately 80 intact nuclear weapons, of which 50 are for delivery by Jericho II medium-range ballistic missiles and 30 are gravity bombs for delivery by aircraft (see table 6.9). The operational status of the longer-range Jericho III ballistic missile is unknown. Israel may also have produced non-strategic nuclear weapons, including artillery shells and atomic demolition munitions.

Israel is widely believed to have produced plutonium for its undeclared nuclear weapon programme at the Negev Nuclear Research Center, near Dimona. It is estimated that Israel had 710–970 kilograms of weapon-grade plutonium as of 2012 (see section X below). However, only part of this plutonium could have been used for nuclear weapons.

In 2012, there was intensified speculation that Israel may be equipping its current fleet of four Type 800 Dolphin class diesel-electric submarines, which were purchased from Germany, with indigenously produced nuclear-armed sea-launched cruise missiles (SLCMs). Israel has consistently denied these reports. The missile is believed to be based on the Israeli-made Popeye Turbo, but no reliable open-source information on the missile's technical characteristics is available. Two additional boats of the same class are expected to be delivered to the Israeli Navy in 2013 and 2017, respectively. The submarines are under construction at the Howaldts-werke-Deutsche Werft AG shipyard, near Kiel, Germany. The fourth, fifth and sixth submarines are advanced Dolphin class vessels equipped with air-independent propulsion (AIP), which makes the submarines extremely quiet and allows them to remain submerged for an extended period of time.<sup>2</sup>

According to one media report, German Government officials had long assumed that Israel had an undeclared nuclear weapon capability and might use its submarines in a nuclear delivery role.<sup>3</sup> Officially, the German Government has not explicitly denied these reports, but in 2006 and 2012 it replied to parliamentary inquiries stating that the non-proliferation of nuclear weapons was a principal norm of the German Government's policies and the provision of nuclear-capable delivery vehicles would never

<sup>1</sup> On the role of this policy in Israel's national security decision making see Cohen, A., 'Israel', eds H. Born, B. Gill and H. Hänggi, SIPRI, *Governing the Bomb: Civilian Control and Democratic Accountability of Nuclear Weapons* (Oxford University Press: Oxford, 2010).

<sup>2</sup> Von Bergman, R. et al., 'Made in Germany', *Der Spiegel*, 4 June 2012 (in German).

<sup>3</sup> Von Bergman (note 2).

**Table 6.9.** Israeli nuclear forces, January 2013

Type	Range (km) <sup>a</sup>	Payload (kg)	Status
<i>Aircraft<sup>b</sup></i>			
F-16A/B/C/D/I Falcon	1 600	5 400	205 aircraft in the inventory; some are believed to be certified for nuclear weapon delivery
<i>Ballistic missiles<sup>c</sup></i>			
Jericho II	1 500– 1 800	750– 1 000	c. 50 missiles; first deployed in 1990; test-launched on 27 June 2001
Jericho III	>4 000	1 000– 1 300	Test-launched on 17 Jan. 2008 and 2 Nov 2011; status unknown

<sup>a</sup> Aircraft range is for illustrative purposes only; actual mission range will vary. Missile payloads may have to be reduced in order to achieve maximum range.

<sup>b</sup> Some of Israel's 25 F-15I aircraft may also have a long-range nuclear delivery role.

<sup>c</sup> There is speculation that Israel might also have developed a nuclear-capable cruise missile for use on its attack submarines.

Sources: Cohen, A., *The Worst-kept Secret: Israel's Bargain with the Bomb* (Columbia University Press: New York, 2010); Cohen, A. and Burr, W., 'Israel crosses the threshold', *Bulletin of the Atomic Scientists*, vol. 62, no. 3 (May/June 2006); Cohen, A., *Israel and the Bomb* (Columbia University Press: New York, 1998); Albright, D., Berkhout, F. and Walker, W., SIPRI, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies* (Oxford University Press: Oxford, 1997); *Jane's Strategic Weapon Systems*, various issues; Fetter, S., 'Israeli ballistic missile capabilities', *Physics and Society*, vol. 19, no. 3 (July 1990)—for an updated analysis, see unpublished 'A ballistic missile primer', <<http://faculty.publicpolicy.umd.edu/fetter/pages/publications>>; 'Nuclear notebook', *Bulletin of the Atomic Scientists*, various issues; and authors' estimates.

be approved.<sup>4</sup> German Government officials stated that the vessels were handed over to Israel without any weapons and referred to the Israeli Government as being solely responsible for the decision about how the submarines were equipped.<sup>5</sup>

<sup>4</sup> German Parliament (Bundestag), 'Deutsche Rüstungsexporte nach Israel' [German arms exports to Israel], Response of the Federal Government, Drucksache 16/3430, 16 Nov. 2006; and German Parliament (Bundestag), Written questions that received responses from the Federal Government in the week of 7 May 2012, Drucksache 17/9615, 11 May 2012, p. 50.

<sup>5</sup> Weiland, S., 'Deutsche Waffenlieferungen: Heikler U-Boot-Deal mit Israel' [German arms supplies: tricky submarine deal with Israel], *Der Spiegel*, 3 June 2012, <<http://www.spiegel.de/politik/deutschland/lieferung-deutscher-u-boote-an-israel-provoziert-kritik-a-836715.html>>; and 'Israels Regierungschef würdigt deutsche U-Boote' [Israeli Prime Minister praises German submarines], *Die Welt*, 5 June 2012.