

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.¹ Like India and Pakistan, Israel has never been a party to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT).²

Declassified US and Israeli government documents indicate that Israel began building a stockpile of nuclear weapons in the early 1960s, using plutonium produced by the Israel Research Reactor 2 (IRR-2) at the Negev Nuclear Research Center near Dimona.³ There is little publicly available information about the operating history and power capacity of the unsafe-guarded IRR-2. The ageing heavy water reactor remained operational in 2017 despite the existence of a number of identified structural problems.⁴ It may now be operated primarily to produce tritium.⁵

It is estimated that Israel has approximately 80 nuclear weapons (see table 6.9). Of these, approximately 30 are gravity bombs for delivery by combat aircraft. Several bunkers thought to contain nuclear bombs are located at the Tel Nof airbase south of Tel Aviv. The remaining 50 weapons are for delivery by land-based ballistic missiles. Israel's arsenal includes solid-fuelled, two-stage Jericho II medium-range ballistic missiles, which are believed to be based, along with their mobile transporter-erector-launchers, in caves at an airbase near Zekharia in the Negev desert.⁶ A three-stage Jericho III intermediate-range ballistic missile, with a range exceeding 4000 kilometres, was declared operational in 2011.⁷ In 2013 Israel tested a Jericho III with a new motor that some sources believe may give the missile an intercontinental range—that is, a range exceeding 5500 km.⁸ Its development status is unknown.

There are numerous unconfirmed reports that Israel has equipped its fleet of German-built Dolphin class diesel-electric submarines with

¹ 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).

² For a summary and other details of the NPT see annex A, section I, in this volume.

³ For a history of Israel's nuclear weapon programme see Cohen, A., *The Worst-kept Secret: Israel's Bargain with the Bomb* (Columbia University Press: New York, 2010).

⁴ *Times of Israel*, 'Government has no plans to close aging Dimona nuclear facility', 19 Sep. 2017.

⁵ International Panel on Fissile Material (IPFM), *Global Fissile Material Report 2015: Nuclear Weapon and Fissile Material Stockpiles and Production* (IPFM: Princeton, NJ, Dec. 2015), p. 26.

⁶ O'Halloran, J. (ed.), 'Jericho missiles', *IHS Jane's Weapons: Strategic, 2015–16* (IHS Jane's: Coulsdon, 2015), p. 53.

⁷ O'Halloran, ed. (note 6).

⁸ Ben David, A., 'Israel tests Jericho III missile', *Aviation Week & Space Technology*, 22 July 2013.

Table 6.9. Israeli nuclear forces, January 2018

Type	Range (km) ^a	Payload (kg)	Status	No. of warheads
<i>Aircraft^b</i>				
F-16A/B/C/D/I Falcon	1 600	5 400	205 aircraft in the inventory; some are believed to be equipped for nuclear weapon delivery	30
<i>Land-based ballistic missiles^c</i>				
Jericho II	1 500–1 800	750–1 000	c. 25 missiles; first deployed in 1990	25
Jericho III	>4 000	1 000–1 300	First became operational in 2011–15 and is gradually replacing Jericho II	25
<i>Cruise missiles</i>				
..	Dolphin class diesel-electric submarines are rumoured to have been equipped with nuclear-armed SLCMs; denied by Israeli officials	..
Total				80^d

.. = not available or not applicable; SLCM = sea-launched cruise missile.

^a 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.

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

^c The Jericho III is based on the Shavit space launch vehicle, which if converted to a ballistic missile, could deliver a 775-kg payload to a distance of 4000 km.

^d SIPRI's estimate, which is approximate, is that Israel has 80 stored warheads. There is significant uncertainty about the size of Israel's nuclear arsenal and its warhead capabilities.

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); IHS Jane's *Strategic Weapon Systems*, various issues; International Institute for Strategic Studies, *The Military Balance 2018* (Routledge: London, 2018); Fetter, S., 'Israeli ballistic missile capabilities', *Physics and Society*, vol. 19, no. 3 (July 1990); 'Nuclear notebook', *Bulletin of the Atomic Scientists*, various issues; and authors' estimates.

nuclear-armed sea-launched cruise missiles, giving it a sea-based second-strike capability. German and Israeli officials have consistently denied these reports. Israel has purchased six Dolphin class submarines, five of which have been delivered to Israel. The sixth submarine is scheduled to be delivered by the end of 2019.⁹ In October 2017 the German Government announced that it had agreed to subsidize the sale of three new submarines to Israel to replace the first three Dolphin class boats, which were delivered in the late 1990s.¹⁰ The new submarines will enter service from 2027.

⁹ Opall-Rome, B., 'Israeli Navy backs Netanyahu's submarine scheme', *Defense News*, 19 Apr. 2017.

¹⁰ Reuters, 'Deutschland beteiligt sich finanziell an U-Booten für Israel' [Germany participates financially in submarines for Israel], *Der Spiegel*, 23 Oct. 2017.