

Research Briefing

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Nuclear weapons at a glance: Israel



Summary

- 1 Nuclear status
- 2 Nuclear policy
- 3 Nuclear arms control agreements
- 4 Nuclear capabilities

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Summary

Israel has an official policy of ambiguity with respect to nuclear weapons. It has never confirmed or denied possessing nuclear weapons and has never conducted a nuclear test.

However, it is universally acknowledged that Israel has a nuclear weapons capability which it developed outside the framework of the Nuclear Non-Proliferation Treaty (NPT).

Along with India and Pakistan, Israel is therefore considered a de facto nuclear weapon state.

Due to its official stance, clarification of Israel's nuclear policies and capabilities is difficult.

Is estimated to have a nuclear stockpile of approximately 90 warheads; while production of plutonium for weapons purposes is thought to be continuing.

On the basis of unconfirmed reports, Israel could be in possession of the nuclear triad for delivery of its nuclear warheads.

This short paper is intended as an introduction to Israel's nuclear weapons policies and programmes, as far as is known from publicly available sources. It is part of a series of country profiles which are available on the [House of Commons Library website](#).

1 Nuclear status

Although Israel is widely believed to have begun building a stockpile of nuclear weapons in the early 1960s, it has never demonstrated its capability through a nuclear test.¹ Nor has the country ever officially confirmed or denied having nuclear weapons.

Successive Israeli governments have maintained a policy of official ambiguity on the issue of nuclear weapons.

Despite this, it is universally acknowledged that Israel possesses a nuclear weapons capability, outside of the framework of the NPT, after a former Israeli nuclear technician revealed details of the country's alleged nuclear weapons programme in 1988.²

¹ Although some believe that Israel conducted secret atmospheric nuclear tests in the late 1970s

² The technician kidnapped by Mossad and brought back to Israel where, in 2018, he was [sentenced to 18 years in jail for treason and espionage](#).

2 Nuclear policy

Clarification of Israel's nuclear policies and capabilities is difficult due to its policy of ambiguity.

Since 1963 Israel's official declaratory policy has stated that "Israel will not be the first country to introduce nuclear weapons in the Middle East".³ This has been broadly interpreted to mean that Israel will not test or publicly declare the existence of its nuclear weapons.⁴

In April 2010 the country reaffirmed its policy of deliberate ambiguity regarding its nuclear operations. Then Israeli Deputy Foreign Minister, Danny Ayalon, stated that "this policy will continue and no pressure from any country will make it change".⁵

³ Arms Control Association, [Arms control and proliferation profile: Israel](#), July 2018

⁴ Nuclear Threat Initiative, [Nuclear Disarmament: Israel](#), September 2015

⁵ Global Security Newswire, "Israel to keep nuclear policy of deliberate ambiguity", 7 April 2010

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Nuclear arms control agreements

Israel is not a State Party to the NPT. In April 2010 the then Israeli Defence Minister, Ehud Barak, indicated that the international community should not expect Israel to join the NPT anytime soon.⁶

Israel signed the CTBT in 1996 but has not ratified the treaty. It is one of the designated Annex II states that must ratify the treaty before it can enter into force.

Israel opposes a fissile material cut-off treaty on the basis that it would undermine Israel's official position of ambiguity on nuclear weapons.

Like the rest of the nuclear weapon states, it has not signed the [Treaty on the Prohibition of Nuclear Weapons](#).

⁶ Global Security Newswire, "Israel still not prepared to join NPT", 15 April 2010

4 Nuclear capabilities

4.1 Stockpile

SIPRI estimates that Israel possesses a highly developed nuclear arsenal of approximately 90 warheads.⁷

4.2 Fissile Material

It is not known how much fissile material Israel has produced. As the Arms Control Association has noted “it is assumed by some analysts that Israel has a uranium-enrichment program, although there is not enough evidence to support a credible estimate of how much highly enriched uranium (HEU) Israel might have produced”.⁸ In its Global Fissile Material Report 2009, the International Panel on Fissile Materials (IPFM) concluded:

We continue to assign to Israel an inventory of 100kg of HEU, which may have been acquired covertly from the United States before 1966. Israel may also have produced enriched uranium with laser or centrifuge technology, but information on this program is very limited and it may have ended.⁹

The IPFM currently estimates that Israel has 0.3 metric tons of HEU and 0.8 metric tons of plutonium stockpiled for weapons production.¹⁰

Overall, it is estimated that Israel has enough stockpiled fissile material for the production of up to 200 second generation warheads.¹¹

⁷ SIPRI Yearbook 2022

⁸ Arms Control Association, [Arms control and Proliferation Profile: Israel](#)

⁹ International Panel on Fissile Materials, Global Fissile Material Report 2009, p.14

¹⁰ [International Panel on Fissile Materials](#) (accessed 25 July 2022)

¹¹ According to the International Panel on Fissile Materials, a first-generation warhead would require 15-18kg of HEU or 5-6kg of plutonium. The amount of fissile material in a warhead can be reduced, and their yield increased, by using tritium to ‘boost’ the fission process. A second generation boosted warhead would require 12kg of HEU or 4-5kg of plutonium.

4.3

Delivery Systems

On the basis of unconfirmed reports, Israel could be in possession of the nuclear triad, i.e. capable of delivering a nuclear capability via land, air and sea.

Air-launched capability

Over the last few decades Israel has acquired several aircraft types capable of delivering a nuclear weapon, including US-sourced F-16 and F-15 fast jet aircraft. It is thought that approximately 30 of its 90 nuclear warheads are gravity bombs assigned to the F-16.

Ground-launched ballistic missiles

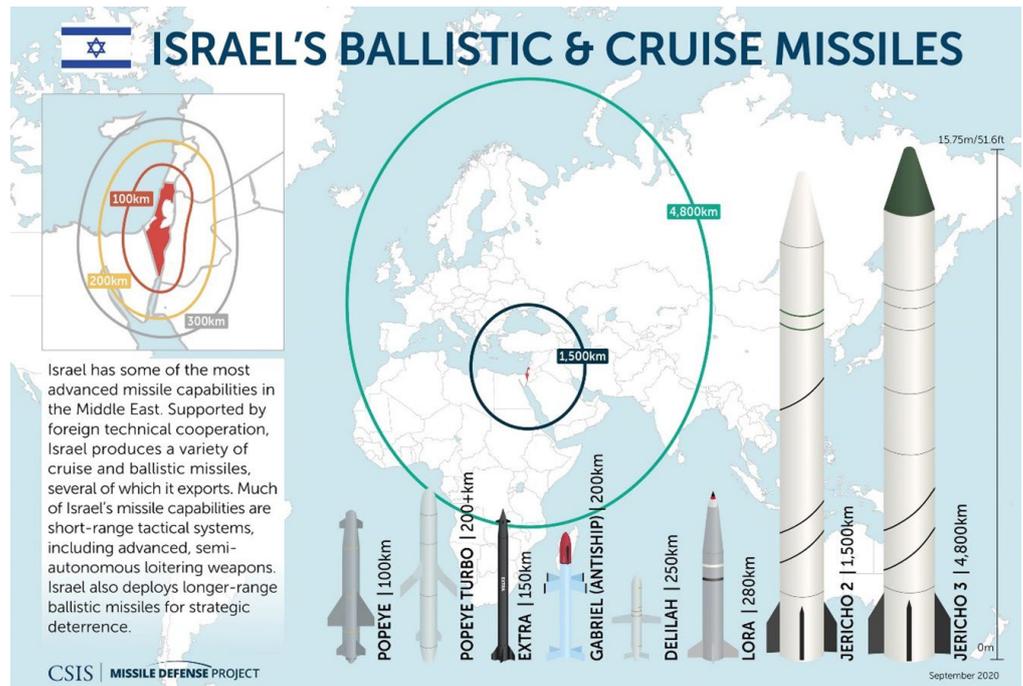
Israel has also pursued the indigenous development of the Jericho family of ground-launched ballistic missiles.¹² The Jericho 1, with a range of 1,200km was first deployed in the 1970s, although it is now believed to have retired from service. The Jericho 2, first deployed in 1990, is understood, after a series of improvements, to have a range of 1,500-1,800km.

That missile is now believed to be being incrementally replaced by the intermediate-range Jericho 3. The Jericho 3 was first tested in 2008 and became operational in 2011. It is thought to have a range in excess of 4,000km. That missile would enable Israel to target all of Iran, Pakistan and Russia west of the Urals.¹³ In 2013 it was reported that Israel had tested an upgraded version of the Jericho 3. Some analysts believe that this latest variant has a range exceeding 5,500km, thereby giving Israel an intercontinental ballistic missile capability. A series of tests in the last few years of an unspecified rocket propulsion system, has led to renewed speculation that Israel may now be developing the Jericho 4.¹⁴

¹² The Jericho missile was originally obtained from France in the early 1960s until France imposed an embargo on new military equipment exports to Israel after which time it began producing the missile independently.

¹³ Hans Kristensen and Robert Norris, [Israeli nuclear weapons 2014](#), Bulletin of the Atomic Scientists: Nuclear Notebook, 2014

¹⁴ Kristensen and Korda, [Israeli nuclear weapons 2022](#)



CSIS Missile Defense Project (accessed July 2022)

The Israeli Government has never confirmed that it possesses the Jericho missile family and therefore its current deployment status is unknown.

Submarine-launched

Since 1999 Israel has procured five diesel-powered Dolphin-class submarines from Germany.¹⁵ In 2002 former Pentagon officials suggested that they were being armed with indigenously modified Harpoon cruise missiles capable of carrying nuclear warheads.¹⁶ If true, that development would provide Israel with a sea-based second-strike capability. Israeli officials have, however, consistently refused to comment publicly on those reports, which remain unconfirmed.

In January 2022, Israel announced that it would purchase three advanced Dakar-class submarines from German company Thyssenkrupp Marine Systems to replace three of its oldest Dolphin-class submarines. The first submarine is expected to be delivered by the end of the decade.¹⁷

¹⁵ The Dolphin class is expected to comprise six vessels in total.

¹⁶ Norris, Arkin, Kristensen and Handler, [Israeli nuclear forces 2002](#), Bulletin of the Atomic Scientists, September/October 2002

¹⁷ Deutsche Welle, ["Israel to buy 3 submarines from Germany's Thyssenkrupp"](#), 20 January 2022

Box 1: Suggested reading

- SIPRI Yearbook 2022, [World Nuclear Forces](#) (PDF)
- Kristensen and Korda, [Israeli nuclear weapons 2022](#), Bulletin of the Atomic Scientists
- Arms Control Association, [Arms Control and Proliferation Profile: Israel](#), July 2018
- Bulletin of the Atomic Scientists, [“A double flash from the past and Israel’s nuclear arsenal”](#), August 2018
- The Guardian, [“The truth about Israel’s secret nuclear arsenal”](#), 15 January 2014
- Avner Cohen and Marvin Miller, [“Bringing Israel’s bomb out of basement”](#), Foreign Affairs, September 2010

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