



South Australian Aviation Museum  
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## IKARA



The Ikara missile was an Australian ship-launched anti-submarine missile, named after an Australian Aboriginal word for "throwing stick".

The Ikara was a "Rocket-Thrown-Weapon". It weighed 513 kilograms (1,131 lb), was 3.429 metres (135.0 in) long and had a wingspan of 1.524 metres (60.0 in). It launched an acoustic torpedo to a range of 10 nautical miles (19 km), allowing fast-reaction attacks against submarines at ranges that would otherwise require the launching ship to close for attack, placing itself at risk. Also, by flying to the general area of the target, the engagement time was dramatically reduced, giving the target less time to respond. Known initially under the rainbow code name Blue Duck, but submariners referred to IKARA as "Insufficient Knowledge And Random Action".

Ikara was powered by a two-stage in-line solid-fuel Murawa rocket engine developed by Bristol Aerojet Ltd in the UK and was guided by radio command link until it reached the vicinity of the submarine, as determined by the ship's sonar, where it would first jettison the rear ventral fin and torpedo rear covering and then release its 12.7 inch Mark 44 or Mark 46 acoustically-guided anti-submarine torpedo. The torpedo payload would descend by parachute



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while the missile itself was programmed to splashdown some distance away to avoid interference with the acoustic torpedo's seeker head. The torpedo would then begin a circular search pattern to find and lock-on a submarine contact.

Ikara was generally considered a superior system to ASROC "Anti-Submarine ROcket" developed by the United States Navy, as Ikara was accurately guided during flight to ensure optimal targeting. A submarine would be aware from sonar contacts that it was about to be attacked and could engage in evasive changes of course. In ASROC's flight time to maximum range of 55 seconds, a submarine travelling at 25 knots (46 km/h) would move 700 metres (2,300 ft) from its position at launch.

The Turana target drone was designed and built in Australia as a development of the Ikara anti-submarine weapon system. It was a target drone with remote control that was launched from the Ikara launcher for use in naval anti-aircraft target practice.

Ikara was fitted to all of the Royal Australian Navy's River class frigates/destroyer escorts and Perth class guided missile destroyers. There were three main variants of the system fitted to RAN ships; F1, F2, and F3. The F1 system, using an analogue computer, a single launcher and without a data link, and was fitted to HMA Ships Stuart and Derwent only. The F3 system, with a digital computer, digital display, single launcher and a digital data link, was fitted to the other four River class ships. HMAS Stuart and Derwent were fitted with F3/0 systems during Half-life refits during the 1980s. The F2 system, using a digital computer, digital display, two launchers and with a digital data link, was fitted to the three Perth class destroyers. The computer used by the RAN was the AN/UYK-1 NTDS (Naval Tactical Data System) (Bunker Ramo 133).

Ikara was also operated by the Brazilian Navy, Chilean Navy, Royal Navy, and Royal New Zealand Navy. It was phased out in the early 1990's. The British purchased Ikara to fit to the two new CVA-01 aircraft carriers planned (and later cancelled) in the 1960s, and their escorts, the Type 82 destroyers, of which only one, HMS Bristol was built. With the cancellation of the remaining escorts, the British were left with purchased Ikara missiles in storage, and opted to fit them into eight existing Batch 1 Leander class frigates in need of modernisation.



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A variant fitted to these British Royal Navy's Leander class frigate differed in several respects from the original Australian version designed to operate in the Pacific. The Royal Navy required changes to the frequencies used to enable Ikara to be used in the NATO area, where different electronic warfare conditions and international frequency agreements had to be taken into account. Also, neither the Australian-built analogue computer system, or the American Bunker Ramo Corporation 133 digital computer system, used in most RAN systems, were compatible with the ADA digital battle-control computers being fitted into Royal Navy ships, and this was also changed.

The UK-manufactured version of the Mark 44 torpedo also differed from the US-built version purchased by Australia for our Ikara missiles. The British also required the missile payload to be changeable aboard ship to permit a Nuclear Depth Bomb (NDB) option, and this, together with the different internal ship layouts required further changes to the missile, its storage, and handling arrangements. The Australian practice was to combine the missile and payload at a shore-based ordnance facility, before issuing the complete unit to a ship. Repair or maintenance was only possible ashore, whereas in the British ships, the changes made enabled a faulty torpedo to be removed and replaced on a functioning missile, and thereby increasing the flexibility of use; especially on lengthy deployments around the globe, as was more common with British ships than Australian.

### **Technical Specifications**

**Engine:** Murawa 2-stage solid fuel rocket

**Empty weight:** 513 kg

**Length:** 3.43 m

**Wingspan:** 1.52 m

**Height:** 1 m

**Cruising speed:** 358 knots (658 kph)

**Range:** 10 nm (18.5 km)

**Warhead:** 1 Mk 44 torpedo