

SEMAPHORE

NEWSLETTER OF THE SEA POWER CENTRE - AUSTRALIA

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AIR WARFARE DESTROYERS

Australia's security is defined by the sea. All of our borders are maritime borders, and the protection of those borders and the marine resources within them is a significant task for the Australian Defence Force (ADF) and especially the Royal Australian Navy (RAN). Furthermore, any external threat to Australia's security will emerge under, on, or over the sea. Similarly, any significant Australian military operation beyond our shores will be predominantly sea-based. The Australian economy is also substantially defined by the sea, with the vast majority of both exports and imports (by value and volume) moving by ship, and the marine industry is a significant contributor in its own right.

Consequently, the ADF must have a strong maritime component to reflect our geographic realities. These naval and maritime air forces must be able to detect and if necessary, deal with any potentially hostile air, surface or submarine operations in our extended maritime approaches. They must also be able to support Australian forces deployed offshore, contribute to maritime security in our region, protect Australian ports, and support civil law enforcement and coastal surveillance operations.

Our maritime air forces include the P3C Orion maritime patrol aircraft, the not yet operational Boeing 737 Wedgetail airborne early warning and control aircraft, the soon to be decommissioned F-111 strike reconnaissance aircraft and the F/A-18 Hornet fighter and attack aircraft. In conflict, few maritime operations can be contemplated without control of the air in the vicinity of surface forces. Depending on the circumstances, these aircraft complement naval forces – surface or sub-surface. Each element brings unique attributes to the full range of operations.

Australia's naval forces include surface combatants (destroyers, frigates and patrol boats), submarines, amphibious forces, minewarfare and clearance diving forces, afloat support vessels and hydrographic ships. The most capable of our surface combatants will be the three air warfare destroyers (AWD), which will be able to operate for extended periods against high-level air, surface and sub-surface threats. They will be supported by the less capable frigates and in some cases patrol boats. The destroyers' combination of great endurance, offensive and defensive weapons, flexibility and versatility will see them become the warships of first resort in the full spectrum of conflict and in support of the ADF's diplomatic and constabulary roles.

For example, the destroyers will be able to operate for long periods at considerable distances from home. In the absence of the necessary land bases to support fighter aircraft, the destroyers will be able to provide autonomous air defence for protracted periods against high-level threats, through their own long-range air surveillance

radars, multi-channel fire control radars, surface-to-air missiles and closer range self-defence weapons and countermeasures systems. Even where bases are available, land-based air defence aircraft will rarely be able to respond quickly enough to threats developing at sea. In these cases, the ever-present destroyers will be the main providers of air defence.



The Future Australian Destroyer (AWD Alliance)

Operations against high-level threats must remain the basic rationale for the destroyers, because the frigates lack the ability to provide protection to other units against such threats. When conducting operations against high-level threats, the destroyers can be rapidly deployed and sustained for joint or combined operations with allies or coalition partners, wherever Australia's interests demand. The destroyers will contribute significantly to littoral manoeuvre and land operations with their air defence and fire support capabilities. They will also be critical for the joint projection of power in other than benign circumstances. They will be able to provide open ocean and littoral escort for ground forces, force protection, including area air defence, in support of littoral operations, command and control, fire support for forces ashore, special forces insertion, limited sea lift and support, and evacuation. The destroyers will also be particularly useful in establishing maritime presence and will be versatile building blocks for larger national and coalition formations, essential defensive elements of task groups, and contributors of organic helicopters to a task force.

Because warships operating outside the territorial seas of other countries do not challenge national sovereignty in the way that land forces or over-flying air forces do, in some instances warships may be the preferred or only military diplomatic option available to the Australian Government. The air warfare destroyers will possess substantial combat power, enabling them to exercise a



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range of influences, from the benign to the coercive, without violating national sovereignty. This range of possible responses makes them particularly useful tools in periods of uncertainty or crisis, providing the Australian Government with the maximum freedom of decision. Their utility in peacetime for policing, interdiction and boarding is considerable and government has often called upon these inherent capabilities in the past.

The heart of the air warfare destroyers will be the Aegis combat system; the most sophisticated and capable naval command and weapons control system in the world and already in service with the navies of the United States of America, Japan, Norway, Spain and the Republic of Korea. Aegis is designed to integrate overall management of a task group's combat assets for air, surface and underwater operations, although the emphasis is on air operations.

Aegis can react quickly and with enough firepower to destroy fast, intelligent targets in the most difficult electronic warfare and physical environments. It comprises four main components: the phased array multi-function radar (SPY-1D[V]), the command and decision system, the Aegis display system and the weapon control system. The SPY-1 radar comprises four 3.6 by 3.6 metre fixed antennae situated relatively high on the forward superstructure of the ship, and the version for the AWD (SPY-1D[V]) features enhanced ability to detect targets in high clutter environments – such as inshore operations. The radar can track over 100 contacts simultaneously and has a detection range in excess of 200 nautical miles. The command decision system accepts data from its own ship and other sensors and assesses threats automatically or with operator assistance, while the display system comprises several large screen multifunction displays and consoles located in the ship's operations room. Finally, the weapon control system accepts weapon assignment commands and threat criteria from the command system as well as tracking data from the radar. Processed data is shown on displays and engagement parameters are transmitted to the missiles or gun system. The Aegis combat system will also be capable of accepting the United States Navy Cooperative Engagement Capability, which generates a common and very high quality 'air picture' by fusing the track data of all participating units and allowing any of those units (even one that has not actually detected the target itself) to engage targets.

On 20 June 2007, the government announced that the Spanish Navantia F100 design had been selected to be the RAN's AWD. With four of the class already commissioned in the Spanish Navy, and fifth under contract, the F100 was selected ahead of the US Gibbs and Cox Evolved Design. The ships, to be named *Hobart*, *Brisbane* and *Sydney*, are expected to enter service in 2014, 2016 and 2017 respectively and will be known as the *Hobart* class.

The *Hobart* class destroyers will displace around 6250 tonnes full load, be 147 metres in length, have a maximum speed of over 28 knots, a range in excess of 5000 nautical miles at a cruising speed of 18 knots, with a ship's company of about 180 personnel. They will be fitted with a 48 cell Vertical Launch System (VLS) that can carry the SM-2 surface-to-air missile (SAM), which has a speed

of Mach 3.5 and a range of over 70 nautical miles, and Evolved Sea Sparrow Missile (ESSM) surface-to-air missiles, which have a range of over 8 nautical miles. The ESSM are carried in 'quad-packs' where four ESSM can be carried in one SM-2 cell. The *Hobart* class will also be armed with a 5-inch gun, Harpoon surface-to-surface missiles, anti-submarine torpedoes, as well as smaller calibre weapons for close-in defence. The *Hobart* class will also be capable of carrying one medium weight helicopter (such as the S-70B-2) for ASW and surface operations. Additional capabilities, such as the inclusion of SM-3 for ballistic missile defence and Tomahawk for strategic strike, could also potentially be incorporated into the ships.

The decision to acquire the air warfare destroyers will provide the RAN and deployed ADF units with a genuine area air defence capability, whether operating independently or as part of a joint force. These ships represent a level of combat capability not previously seen in the RAN and will form a vital element of any expeditionary operation mounted by the ADF and represent a quantum improvement in maritime warfare capability for the RAN and the ADF.

Specifications for the future *Hobart* class AWD

Complement	180
Accommodation	234
Length overall	147 metres
Maximum beam	18.6 metres
Full load displacement	6250 tonnes
Full load navigational draught	7.2 metres
Maximum speed	28+ knots
Cruising speed	18 knots
Range at cruising speed	5000+ miles
Propulsion Type	Combined diesel and gas turbine (CODAG)
Gas turbines	2 x GE LM 2500 (34.8 MW)
Diesel engines	2 x 6 MW diesels
Combat System	Aegis
Sensors	Hull Mounted Sonar Towed Array Sonar Phased Array Radar SPY-1D[V] Horizon Search Radar
Armament	Standard SM-2 SAM Evolved Sea Sparrow SAM Harpoon SSM ASW Torpedoes 5-inch Automatic Gun Close-In Weapon System Nulka Missile Decoy

