

## Navy's Patrol Boat Capability

### Introduction

- 3.1 During peacetime, patrol boats primarily contribute to Australia's domestic civil surveillance, interdiction and legislative enforcement operations. These operations occur within Australian maritime zones adjacent to the Australian mainland, and around Australia's island territories.
- 3.2 Most incursions into Australia's exclusive economic zone (EEZ) occur in the north, but there are also incursions by larger fishing vessels into the Southern Ocean fishing zones around Heard and McDonald Islands. While the patrol boats are theoretically required to patrol the entire Australian coast and EEZ, the practical limitations on their range, crew size, living conditions and seakeeping abilities makes them best suited to northern operations.
- 3.3 Although the Fremantle Class Patrol Boats (FCPBs) did in the past conduct patrols of the Bass Strait and the southeast and southwest coasts, they are not capable of transiting to patrol the EEZ surrounding Heard, McDonald or Macquarie Islands.<sup>1</sup> In recognition of this fact, and in response to increased illegal activity within the

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<sup>1</sup> If required, these regions can be patrolled by major surface combatants (frigates), large amphibious support ships and tankers. However, the norm is to utilise a suitable vessel under a commercial charter arrangement. This cost effective alternative allows the Navy to employ its major assets in more complex warfighting roles, as opposed to lengthy, routine operations in the Southern Ocean.

northern area of operations, the patrol boats based in Sydney and HMAS *Stirling* were moved to Darwin in 2002. All patrol boats have since been based in Darwin and Cairns, close to their main operational areas. Any incursions into the EEZ are assigned to the nearest patrol boat base, unless a surface combatant happens to be within closer range.

- 3.4 Patrol boats also train to operate within a larger force, alongside major surface combatants and to provide a self-contained maritime interception, intelligence and warning capability. Their size and draught provide a capability without the higher cost of a major surface combatant. Patrol boats train at regular intervals with regional and allied navies, and may be easily deployed for overseas operational duties as part of a larger conventional task force.
- 3.5 Patrol boats participate in a number of regional, bilateral and multilateral exercises primarily within South East Asia and the South West Pacific. During these deployments patrol boats conduct port visits in support of diplomatic and defence ties. Of particular note is the participation of Fremantle Class Patrol Boats (FCPBs) in Operation Anode in the Solomon Islands. Australia also committed personnel to assist with the training of Iraqi Navy personnel in patrol boat operations as part of Operation Catalyst.
- 3.6 During 2005–06, the patrol boat force was made up of both FCPBs and the new Armidale Class Patrol Boats (ACPBs). The patrol boat force continues to make a large and effective contribution to a number of areas including:
  - the Civil Surveillance Program (managed by the Border Protection Command) for the protection of Australia’s sovereignty which covers fisheries, quarantine, immigration and customs duties;
  - North West Shelf security patrols with emphasis on the protection of offshore oil and gas platforms; and
  - international engagement and national security through the conduct of operations, port visits and exercises with regional nations.

## **Transition to the Armidale Class Patrol Boats**

- 3.7 With the FCPBs reaching their end of life, a request for tender to replace the class was released in 2001. Following the tender

- evaluation process, a contract was signed in December 2003 with Defence Maritime Services to supply and support 12 ACPBs.
- 3.8 In the 2005-06 Budget, it was announced a further two ACPBs and an associated support package would be funded to undertake North West Shelf surveillance operations.
- 3.9 HMAS Armidale, the first ship in this new class was commissioned into the RAN on 24 June 2005. By the end of 2005-06 three ACPBs were conducting operations in Australia's northern approaches, with a further 11 vessels being prepared for operations or being built.<sup>2</sup> Of these 11, two were undergoing operational work-up prior to being commissioned in July 2006; whilst the remaining nine vessels are due to be progressively brought into service by January 2008. The last two FCPBs were decommissioned in May 2007.<sup>3</sup>
- 3.10 In relation to when the ACPB fleet will be fully operational, Defence advised the Committee that:
- The last boat, to be named Glenelg, will be accepted by DMO in November [2007]. She will then undergo the normal Navy crew work-up related activities before being appointed to service, commissioning.<sup>4</sup>
- 3.11 Of the 14 ACPBs, 10 vessels will be stationed in Darwin and 4 vessels will be based out of Cairns. Moreover, Navy advised the Committee that with the size of the ACPB fleet, it will now have the flexibility to 'maintain at least one boat on station in the North West Shelf at all times'.<sup>5</sup>

## ACPB Capabilities

### Range

- 3.12 The ACPB has a 90-day operational cycle with a requirement to replenish every 21 days. As a result, the ACPBs have a significantly greater operational range compared to the FCPBs given that they:

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2 Department of Defence, *Annual Report 2005-06*, p. 116.

3 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 14.

4 Rear Admiral Trevor Ruting, *Transcript 30 March 2007*, p. 14.

5 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 16.

...are designed to have a 3,000 nautical mile range [whereas the FCPB] only had a 2,300 nautical mile range.<sup>6</sup>

- 3.13 This increased capacity will provide the RAN with improved tasking flexibility as it will enable these new vessels to remain on operations for longer periods in more areas than the FCPB. The superior range and greater sea-keeping ability of this new class in comparison to that of the FCPB was clearly highlighted by Commodore Jones RAN who commented to the Committee that:

The most demonstrable improvement in the Armidale over the Fremantle is the fact that Armidales have deployed to Christmas Island, a deployment hitherto not thought of for the Fremantle class.<sup>7</sup>

## Sea State

- 3.14 The new Armidale Class Boats also have the ability to maintain operations in Sea State 5 up to 1000 nautical miles offshore. Moreover, they are designed to be capable of surviving cyclonic conditions up to Sea State 9.<sup>8</sup>

## Boardings

- 3.15 The ACPBs are each equipped with two diesel jet propelled 7.2m Rigid Hull Inflatable Boats (RHIB). The RHIBs are able to be rapidly deployed and recovered using the Vest Davit System. Moreover, they are over the horizon capable and fitted with stand alone communications and safety systems that enable these boats to be a significant force multiplier for the ACPB.<sup>9</sup>
- 3.16 This new feature of the ACPB has provided a major improvement to Navy's patrol boat boarding and response capability as the FCPBs were only equipped with one 4.7m RHIB.
- 3.17 The new RHIBs are also an improvement on what was available under the old Fremantle class given that they provide the Armidale's with:

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6 Rear Admiral Trevor Ruting, *Transcript 30 March 2007*, p. 11.

7 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 19.

8 Sea Power Centre – Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

9 Sea Power Centre – Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

...increased boarding team capacity as well as a concurrent boarding capability. That means that...boarding teams can operate with greater effect at greater range from the [ACPB], and more importantly, in much greater safety...than was previously the case with the Fremantle's 4.7-metre RHIB.<sup>10</sup>

## Weapon Systems

- 3.18 The Armidale class are armed with a Raphael Typhoon 25mm automated cannon, in addition to two 12.7mm machine guns. The cannon, which has a rate of fire of 200 rounds per minute, is 'interfaced with [an] Electro optics Surveillance System and is controlled from the bridge'.<sup>11</sup>
- 3.19 The Typhoon cannon is the same as that fitted to the Army's Bushmaster APC and as such provides an advantage to Defence given that it offers 'value for money maintenance benefits to the Australian Defence Force'.<sup>12</sup>
- 3.20 The weapons system aboard the ACPB is a marked improvement on that of the FCPB, as the previous class' main armament was a manually aimed World War II Bofors gun.<sup>13</sup>

## Surveillance and Communications

The ACPBs are equipped with an onboard surveillance and communications suite, which comprises the following features:

- twin radars;
- radar warning system (PRISM III)
- electro optical detection system (TOPLITE) for short range detection;
- a fully calibrated and integrated Direction Finding System (WARRLOCK); and

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10 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 20.

11 Sea Power Centre - Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

12 Sea Power Centre - Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

13 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 20.

- a state of the art communications system which provides both strategic and tactical communications capabilities in the HF, VHF and UHF bands.

3.21 The Armidale Class will also have access to networked satellites which will enable the vessels to access the wider defence common operating picture. This new feature will provide ACPB crews with far greater operational awareness than was available to crews of the FCPBs.<sup>14</sup>

## Crew Accommodation

3.22 Accommodation aboard the new ACPBs consists of modern two, three and four berth ensuite cabins which provide crews with more comfortable and spacious living quarters. This new berthing configuration is a significant improvement on the mess deck style of the FCPB. Moreover, the ACPBs are also capable of embarking an additional 20 personnel for specific missions. This additional capability vastly increases the flexibility and range of tasks that the ACPBs can undertake.<sup>15</sup>

3.23 Another improvement in berthing which the ACPBs have incorporated is the provision of facilities for crew of both genders. Whereas the Fremantle Class was not equipped to have any female junior sailors, the Armidale class by comparison has been 'specifically designed to provide appropriate facilities for mixed gender crewing'.<sup>16</sup>

## Onboard Fuel System

3.24 During late 2006, Navy encountered a problem with the ACPBs in relation to the fuel system supplying the two main engines. Specifically, HMAS Armidale developed a crack in a very high pressure fuel pump on one of its engines.

3.25 In resolving this problem Navy has worked in an integrated project team arrangement comprising the prime contractor, shipbuilder,

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14 Sea Power Centre – Australia, Semaphore Issue 4, *Welcome to the Armidale Class*, February 2006, p. 2.

15 Sea Power Centre – Australia, Semaphore Issue 4, *Welcome to the Armidale Class*, February 2006, p. 2.

16 Rear Admiral Trevor Ruting, *Transcript 30 March 2007*, p. 22.

engine manufacturer and a team from Navy. This group has developed two solutions to address this technical issue:

- The first solution provides an interim repair that allows the ACPBs to return to operational service quickly. This fix does however limit the performance of the vessels.
- The second solution involves a fuller configuration change package:

...which adds new filtration arrangements to the fuel system between the storage tanks and the engines themselves via a day tank or ready use tank.<sup>17</sup>

3.26 In terms of progress in implementing the above solutions to the ACPB fleet, Defence informed the Committee that:

We are progressively installing those changes. The interim change has been implemented on seven boats to date, and five of those boats are back in operation. We have completed the first full configuration change on an in-service boat ... we are progressively rolling that change [full configuration change package] to the boats as they become available.<sup>18</sup>

## Crewing Arrangements

3.27 The mature ACPB fleet will be split into four divisions, named Attack, Assail, Ardent and Aware. Attack, Assail and Ardent divisions will each comprise four vessels supported by six crews, whereas Aware division will consist of two boats with three crews.

3.28 These divisions will form the basis of a crew rotation model that will allow:

...greater availability of the boats (250 days per boat per year) while providing greater opportunities for leave, training and administration of personnel.<sup>19</sup>

3.29 Importantly, if an operational requirement presents itself at short notice, this model will allow Defence the flexibility to rotate crews away from their home port utilising a fly-in, fly-out concept.

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17 Rear Admiral Trevor Ruting, *Transcript 30 March 2007*, p. 14.

18 Rear Admiral Trevor Ruting, *Transcript 30 March 2007*, p. 14.

19 Department of Defence, *Annual Report 2005-06*, p. 116.

- 3.30 In terms of the status of these grouping arrangements, the Defence Annual Report 2005-06 states that 'Attack division has been formed and reached its mature state in August 2006'.<sup>20</sup>

## Multicrewing System

- 3.31 The ACPBs will be multi-crewed with 21 crews, each of 21 personnel rotating through the 14 vessels in the class. The crews will be divided into the four abovementioned divisions. Crews will remain together and will not be rotated through divisions other than the one to which they are assigned.
- 3.32 At any given time, one to two crews in a division will not be serving aboard a vessel. During this non-operational time, crews will either be on leave; undergoing training or standing by to act as operational relief for another crew.<sup>21</sup>
- 3.33 Once the ACPB fleet is fully operational, it is envisaged that the multi-crewing system will facilitate:
- ...both maximum use of the ACPB in line with the 3000 sea day (plus surge) capability, while providing for adequate crew rest and balanced work/life commitments.<sup>22</sup>
- 3.34 Although the multicrewing system is yet to reach its mature state, it has already allowed personnel not required on operations to plan their leave and future career development courses with more certainty than has occurred in the past. Encouragingly, Defence advised that:
- The feedback from personnel who are now on the Armidale class boats and enjoying the benefits of multicrewing has been very positive.<sup>23</sup>

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20 Department of Defence, *Annual Report 2005-06*, p. 116.

21 Sea Power Centre – Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

22 Sea Power Centre – Australia, *Semaphore Issue 4, Welcome to the Armidale Class*, February 2006, p. 2.

23 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 13.



## Support Arrangements

### Karratha Forward Operating Base

- 3.35 To maximise the amount of time ACPBs can spend on station, Karratha/Dampier will be utilised as a forward operating base for the ACPBs patrolling off Western Australia's North West Shelf. This base will offer a major advantage to patrol boat operations in this area given that:
- ...rather than have [the boats] return all the way to Darwin to replenish, the benefit ... is that it minimises the length of time that [they are] in port replenishing before [they] then go back on station to the North West Shelf. <sup>24</sup>
- 3.36 The ACPBs will not be permanently deployed to the region and for depot-level maintenance activities, the ACPBs will return to their home port. This will reduce the logistical support required and therefore the number of personnel permanently based at Karratha. Importantly, this minimal disruption to personnel movements outside their home locality is expected to aid in the retention of ACPB crews.
- 3.37 The concept of a forward operating base is vital in maintaining the required military effect within the North West Shelf. Defence will have the flexibility to force assign vessels from their respective home port(s) to the region and thereby 'achieve the military effect of 24/7 surveillance within the North West Shelf'.<sup>25</sup>
- 3.38 The forward operating base will not be fully operational until all 14 ACPBs have been delivered and accepted by Navy.

### Facilities

- 3.39 A logistical support element facility was opened in August 2007 at Taylor Barracks in Karratha in support of the forward operating base. Infrastructure upgrades include the installation of:
- a cyclone-rated mooring buoy within nearby Dampier Harbour to secure the vessels during weather conditions in which the boats cannot berth alongside the Dampier cargo wharf; and

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24 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 15.

25 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 16.

- a stairwell on the Dampier cargo wharf so that the crew can disembark safely during the various tidal ranges.<sup>26</sup>

## Personnel

- 3.40 Two logistical support staff will be permanently based in Karratha. Should additional personnel be required to support vessels operating out of this forward operating base, Defence advised that they 'will be flown in from Darwin or Cairns, depending on where they are likely to be sourced'.<sup>27</sup>

## Larrakeyah Barracks

- 3.41 To support the 10 ACPBs home ported in Darwin, base modifications are being undertaken at Larrakeyah Barracks. These include the construction of additional wharf areas and crew facilities, and changes to the port services building. These modifications are scheduled to be completed by the end of 2007.

## Personnel

- 3.42 The total number of Navy personnel attached to Larrakeyah Barracks is approximately 400, of which 365 are specifically attached to the ACPBs.
- 3.43 Commodore Jones informed the Committee that the remaining 35 Navy personnel stationed at the base are performing administrative backup and related support. This breakdown of personnel between operational and support functions is an integral part of the multicrewing concept and therefore:

...you have a larger footprint on the actual capability and a smaller one in the logistic support element.<sup>28</sup>

## Conclusion

- 3.44 The ACPB is a fundamental improvement in capability over the FCPB. Their increased range, better sea-keeping ability, and improved weapons and communications systems provide an effective platform
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26 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 16.

27 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 15.

28 Commodore Trevor Jones, *Transcript 30 March 2007*, p. 22.

to fulfil their primary roles of surveillance, interdiction and enforcement operations.

- 3.45 The introduction of multicrewing system is an important initiative which will provide Defence with the flexibility to meet operational targets set by the Government with minimal disruption to personnel. Further, with maintenance activities ashore primarily undertaken by contractor personnel, crews not deployed on operations will have the benefit of taking leave to spend time with their families and to undertake career progression training.
- 3.46 Defence advised that Navy's remediation program will satisfactorily resolve the fuel system problem and ensure all 14 APCBs can be fully delivered and accepted by Navy.

