

## AVIATION ASPECTS OF THE NEW AMPHIBIOUS SHIPS

*Our capacity to deploy and sustain land forces from the sea will be substantially enhanced when the Landing Helicopter Dock (LHD) amphibious ships enter service in the coming decade. They will be able to carry a substantial quantity of equipment stores and personnel.*

- Force 2030<sup>1</sup>

To develop the full potential of its two new *Canberra* class LHDs the Royal Australian Navy (RAN) needs to develop sophisticated multi-spot flightdeck operating skills. These joint skills have not seen similar use in the Australian Defence Force (ADF) since the decommissioning of the fast troop transport HMAS *Sydney* (III) in 1973. Nevertheless, other operators of large, helicopter-capable amphibious ships, such as the United States (US) Navy and Royal Navy (RN), have evolved techniques to launch heli-borne assaults and continuously refined them over the past fifty years. Australia is already leveraging off our allies' experience, and by establishing a number of loan postings seeks to generate the necessary expertise before the LHDs enter service. Key issues requiring attention range from the composition of the flightdeck crew, through to the use of non-naval helicopters and the systems integration of unique army, navy and air force equipment and ordnance.



*Soldiers from 3 Squadron, Special Air Service Regiment, embark in Royal Australian Air Force Iroquois helicopters on the flightdeck of HMAS Sydney (III) in 1972 (RAN)*

During operations the LHD's flightdeck will be a busy and dangerous place. Aircraft handlers and assault logistics specialists must work together to get troops and equipment ashore and back again in the most efficient and effective manner; in RN and US Navy/Marine Corps amphibious ships, the latter group comprises dedicated marines. Without them, the RAN will need to develop its own unique solution, and planning for flightdeck manning is already well underway. The LHDs will have specialised departments for both air and amphibious operations, and likewise being developed is a concept of employment in areas such as flightdeck management and mission planning.

The number of helicopters needed for an initial assault is dictated by the size of the military force to be landed. Numbers of troops, known as 'sticks', carried by each helicopter will vary according to the fuel needed to fly to the landing zone (LZ) and return with a viable reserve. It is quicker to add fuel to an aircraft than to pump it out, so

helicopters are usually ranged with pre-planned low fuel states and brought up to the required amount at the last minute before the assault to give greatest flexibility. A late planning change would be very difficult to implement and could cause chaos. Standardised stick sizes and fuel states give flexibility, but might be a limitation on longer-ranged insertions if not carefully briefed. Ammunition, artillery, stores and vehicles have to be pre-positioned on the flightdeck or other concentration areas but kept clear of operating spots. Mechanical handling equipment must be placed ready to move palletised loads at short notice. Each stick and each load will have an identity to allow the amphibious command to know what has been flown ashore, or taken ashore in landing craft. The order in which they are taken must be reactive at short notice; it is no good flying in ammunition according to a pre-arranged plan, for instance, if the military force urgently needs engineering equipment, barbed wire and water.

In other navies a primary assault technique is to range helicopters on the standard deck spots with extra fuel and launch them empty to orbit the ship at low level. Further helicopters, manned and with engines or auxiliary power units started are then towed onto the spots, spreading their rotors and engaging them when in position. Once ready they are loaded and launched, but the process takes time. The first group then lands on to pick up their loads and re-launch. Both groups join up and fly in tactical sections to the LZ inshore. An alternative technique packs helicopters into the available deck space, ranged as tightly as possible with minimum clearance between them, without using the painted spots. The result is a single group which would launch from aft to forward and set off immediately for the target. Getting sticks of troops into the helicopters and removing lashings would be more difficult and slower in the latter case but the overall effect would be a slightly faster first assault group, albeit with a smaller military force to land. The latter technique also needs more marshallers to control the start-up and launch of each helicopter and first-aid firesuitmen would be spread thin between them as they start. The embarkation of helicopters that do not auto-fold may limit the first option but both methods have their basic merits and drawbacks and can form the basis of a plan to suit individual operations.

After the initial assault waves it is a judgement decision whether to break down to a continuous shuttle of individual helicopters or to continue to fly in tactical formations. The former keeps a stream of personnel and stores moving ashore and is more flexible in matching loads to aircraft quickly. The latter might be a better counter to enemy air and ground based opposition, but would need a larger number of marshallers to be available at any given time. The officer in charge of the flying control position (FLYCO) controls the deck and the movements of aircraft in the visual circuit. He or she has a considerable responsibility to ensure the efficient, safe operation of helicopters, many of which will be from Army Aviation with crews unaccustomed to regular flightdeck operations. Helicopters from coalition allies may also need

to be assimilated carefully into the flightdeck's operation. FLYCO must liaise with the command to keep the LHD in the right place with enough wind over the deck to help heavy helicopters to lift off safely for many hours on end. He must ensure that the deck is able to deliver the number of helicopter sorties at the pace required by amphibious operations.

FLYCO's 'eyes, ears and strong right arm' on deck will be the Flightdeck Officer (FDO) and his handful of senior sailors. As well as moving helicopters on deck and marshalling them at take-off and landing, the aircraft handlers must ensure that sticks of men are brought safely but quickly to them, past aircraft lashings and under turning rotor blades, only when cleared to do so by the pilots. The assault supply team work under the direction of the handlers to move bulk stores into helicopter cabins or hook them on as an external load. If 'break-bulk' stores have to be packed into the cabin, the assault suppliers must ensure that there are sufficient personnel available to do so quickly. The potential need in a non-benign environment to move quantities of fuel and water ashore can represent a considerable part of the assault supply requirement. Information is the key to assault flying. After the initial waves, FLYCO must know how many aircraft are needed to maintain support for the military force at the required level and match helicopters to reinforcement sticks and loads. They may return from shore low on fuel and a 'flop spot' kept clear with fuel line rigged is a very good idea.

The squadrons need to know for some hours ahead how many aircraft they need to have ready and when replacement crews will be needed. Surges such as those required to land a mobile air operations team, the military force commander and staff, or a field hospital need to be forecast and the extra aircraft prepared and moved to the flightdeck. As flying hours increase, maintenance and battle damage repair will need management, and parts of the deck may be required for helicopters not immediately available for operational flying. Without maintenance time, the number of available helicopters will gradually diminish.

In many ways the operation of an LHD flightdeck is more complicated than that of a strike carrier. In the latter, launches and recoveries tend to happen in planned pulses of activity; in an LHD they can be non-stop and may continue for days, including at night and in adverse weather. This must be taken into account in the provision of manpower, with most tasks 'doubled up'. Yet even with the flightdeck party in two watches there will be occasions - such as the initial assault or the early stages of humanitarian relief operations - when both watches might be required simultaneously. Again the need to use both watches and for how long is a judgement decision.

The Australian LHDs will routinely operate both Fleet Air Arm and Army Aviation helicopters. The latter will need to spend sufficient time embarked to be familiar with deck operations. Thought needs to be given to the number of different types that might embark; these will include Army Chinooks and Tigers, Navy Seahawks and joint force MRH-90s. Chinooks provide a very significant load-lifting ability but take up a lot of deck and their blades cannot be folded. The blades may have to be removed to stow the aircraft into a smaller area of deck parking space. Good procedural knowledge will be essential, especially when instrument recoveries prove necessary at night, in adverse weather or sand-storms. To prepare for this, the

ADF will need to emphasise a joint approach to getting full value from the LHD's flightdeck and flying patterns. It should not be assumed that someone from a non ship-orientated background will slot into the deck operating technique immediately, but there is no reason why they should not do well once briefed and trained. In 1956 the first ever helicopter assault was conducted by the RN's 845 Squadron and the Joint RAF/Army Helicopter Development Unit. Joint operations work well when all participants accept the need for differing operational techniques to suit the environment from which they are flying.

In an example of the attention to detail required, the provision of assault life jackets (ALJ) may seem trivial, but their inadequate management can cause problems. They are worn by all troops and passengers in sticks that fly over water and are designed so that as the helicopter goes 'feet dry' over land the wearer can remove a locking pin in the ALJ straps to slide out of them as they leave the seat to disembark. The aircrew must ensure that ALJs come back to the ship with the helicopter; otherwise if they are taken ashore by troops and discarded, later serials might be limited by the low numbers available on board until sufficient are collected and brought back. Good ALJ discipline is one of the hallmarks of good amphibious operations.

Recovering a military force from shore resembles the assault phase functions in reverse, with slightly differing priorities. A stream of helicopters returning at short intervals is more easily assimilated than groups flying in tactical formation. Each shore-bound helicopter needs sufficient ALJs for any stick it might have to lift, and guides must be ready on the flightdeck to lead sticks to concentration areas for the removal of unused ammunition and its return to the magazines. They will then lead them back down the assault routes to the domestic areas where they can shower. Again the command needs to know what sticks and serials of equipment have been recovered. For troops who have been ashore for days, fresh water requirements will be significant. Plans for feeding and de-briefing will also need to be flexible.



Canberra class LHDs (RAN)

With their ability to carry out amphibious strike, humanitarian assistance and disaster relief operations at long range, LHDs have become valuable strategic assets in a number of navies including those of Spain, France, Italy and Korea as well as the United Kingdom and the United States. Australia's LHD's will no doubt prove equally important and versatile.

1 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Canberra, 2009, p. 73.

