



CALL THE HANDS

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Operation DAMASK - HMA Ships BRISBANE and SYDNEY

The following story was contributed by Hugh Hyland. Hugh worked for the variously named Defence departments for over 50 years until retiring in December 2015. He held numerous positions in NSW, France and WA: including Garden Island, Cockatoo Island Dockyard, and Fleet Base West. He also has Bachelor's degrees in Naval Architecture and Mechanical Engineering, and a Masters of Engineering Science.

In 1990 I was the Senior Design Engineer at ADI Garden Island, about a year after transitioning from a Naval Dockyard.

On 15 August we were given a priority tasking to design the fitting of a pair of CIWS (Close In Weapons System) for DDGs in the lead-up to sending one to the Gulf War. These had never been fitted to any such vessels before and no plans existed, however I remembered discussing this aspect with one of the naval architects in Canberra a few years earlier, (who had since died). The suggestion was to replace the P & S boats and davits with RHIBS (Rigid Hull Inflatable Boats) and SLADS (Slewing Lifting Arm Davits), and install the mounts just aft of the IKARA magazines, the CIWS magazines being above 01 Deck and the CIWS mounts being above 02 Deck.

On 17 August we conducted a ship-check on HMAS BRISBANE. Two days later the Chief Design Engineer left for the USA for 17 days to chase up requirements from there. Daily meetings were called involving all the stakeholders. The decision was made to fully integrate both mounts with respect to the ship's weapons systems. By 3 September there was still no Cabinet approval to fit CIWS, so the RAN actioned the fitting of one pair to HMAS BRISBANE from available units, eg the set currently in the USA finishing upgrade and one of the mounts for the FFGs being built in Williamstown - to be completed by 5 October! Design drawings were fast-tracked in so far as the traditional rip-out drawings were replaced by using spray cans of yellow paint on board, and we made an engineering decision to use 20mm aluminium plate for the magazines on which the mounts would be installed before actually confirming with strength calculations. We were given till 7 September to complete these overall designs so that Production could start on the 10th. By the 19th, all but 4 of the drawing office staff were working on this project, with some (along with the naval architects and engineers) putting in up to 30 hours a week paid (and unpaid) overtime. The detailed designs were still to come, sometimes from on-board discussions and sketches in chalk on bulkheads and decks, where the drawing office would follow and prepare official drawings. We also used this opportunity to manufacture the magazine on one side using photogrammetry, which turned out quite well, in comparison to the traditional construction of the other magazine with "green" and scribing and trimming on the other side. The preliminary weight estimate was not able to be developed till 21 September.

Once the magazines were installed, the internals were fitted using components from an FFG in refit and from one of the FFGs being built in Williamstown. The same applied to the SLADS. Then the foundations were machined on the topsides of the magazines, using the jig originally used for the installation of IKARA on these ships in the mid to late 1960s. One of the problems encountered during machining on one side was due to some welding on the deck below during the day, which slightly contracted the aluminium vertically, so that the four corners were no longer in the same plane. This took a bit of calculating and re-setting, in the rain after midnight, to get the bedplate machined within 20 minutes of arc of the ship's master datum level while still maintaining the minimum thickness requirements in what was left of the mis-machined plate. (Noting that the CIWS mount has an integrated radar, this tight tolerance comes from the USN requirements whereby alternative ship's radars can be used if the CIWS radar is not working.)

By 8 October the second (port) CIWS was installed. Cooling was plumbed from the chilled water main, with back-up fittings to the salt water firemain. Some piping items for the cooling water were long-lead ex USA, so we used compatible items from local hardware suppliers, sentenced to be changed-out in 12 months when the approved

fittings were expected to be available. (This possibly was never actioned through to the ship's paying off.)

An inclining experiment confirmed there was sufficient stability with all the added topweight. This also included the fitting of IRST (Infra-Red Search and Track) and of radar absorbing covers along the guard-wires (which reportedly are very un-stealthy).

Apart from commencing installation before there were verified designs, (we were literally working from our prior experience in naval engineering,) there were unknowns, for example potential interference from adjacent whip aerials, but there was no time to undertake the usual modelling - however shut-down precautions would be observed to ensure both mounts and whip aerials were not operating at the same time. Also there was no formal quality assurance, noting the lag in documentation and drawing, so reliance reverted to "overseeing" by key senior staff. The only aspect we could not achieve in the time was to set to work the Popup - so that if the mounts were facing aft they would not shoot the barrel of Mount 52 (the aft 5" gun) if it was elevated outboard.

The floodlighting on board all night every night was indeed a sight to see.

As a further unsolicited service we worked out what to blank on the external ventilation inlets and dismantle on certain internal trunking so as to gain a fully recirculating gas citadel, albeit non-pressurised and without Air Filtration Units for fresh air makeup. We did this for both HMA Ships BRISBANE and SYDNEY.

On 15 October, both ships sailed one week earlier than originally programmed. Not only had we designed, fabricated, installed and set to work a pair of CIWS on a DDG as a world first, (and a pair of SLADS,) we also accomplished it in an amazingly short time, working 24/7, using experienced personnel and a minimum of paperwork. On 9 November Vice Admiral Hudson, Chief of Naval Staff awarded a Commendation to the Naval Engineering Division at ADI, see attached.

The go-ahead to fit CIWS on the 2nd DDG, HMAS PERTH, was received on 23 October. The 3rd and last DDG, HMAS HOBART, followed on.

