MID
MARINE INDUSTRIAL DESIGN

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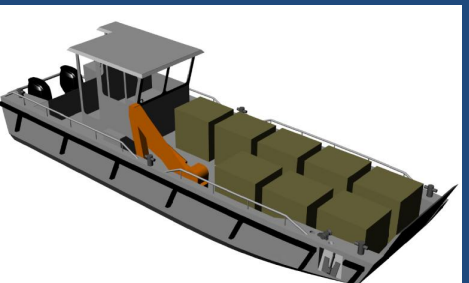


December 2012 Newsletter

Another busy year has flown past for the team at MID and it is time for an overdue update on some of the interesting projects that have kept us busy for the last 12 months.

Thanks to some significant projects requiring a wide variety of skills we have continued to grow our technical team and added experienced engineers and naval architects, as well as taking on graduates to train the next generation.

It has been rewarding to secure a number of significant analysis, engineering and design projects from the New Zealand Government and the Royal New Zealand Navy that in recent years would have been awarded to offshore consultants and there seems to be an increasing confidence in New Zealand's technical capability. Alongside these longer term contracts we have been working with a number of local shipyards and shipowners on conversions, modifications and some major repairs, and in amongst them all our newbuilds for the year in the form of a tuna skiff and a rather unique floating dock.

While we have continued to restructure the business to improve our service to clients, we are committed to maintaining our presence in Whangarei. To ensure we are responsive and close to where the action is we have an engineer working from premises next to Ship Repair NZ slipway on Port Road, where he has access to all of MID services and systems.

If you haven't talked to us recently and would like an update on how we can help, we would be pleased to invite you to our offices and catch up over a coffee.

Paddle steamer Vallejo sitting in its new dry dock home

Dry Dock for Paddle Steamer Vallejo

"It works!" – The email received by MID from their client in San Francisco confirming the installation and completion of the project to save an 1870's paddle steamer.

The idea of a new drydock type hull came about as the client wished to preserve the hull of the steamer, now being used in its retirement as a house boat. The original hull was completely wasted and not repairable, replacement with a new hull would have been prohibitively expensive and not required as the vessel no longer goes to sea. MID developed, in conjunction with the client, the unique solution of an outer dry-dock, shaped to fit the existing hull and in which the existing hull would be supported.

There were no plans or drawings of the paddle steamer available so the vessel was 3D laser scanned, inside and out, by a US company and a hull model developed by MID in New Zealand. From there structural scantlings were developed, drawings produced and cut parts sent to the clients shipyard in China. The dry-dock had a bolt on aft section, necessary for installation purposes. Recently the on-site installation took place and it was reported that the paddle steamer fitted perfectly into its new dock.

Converting "Kahu"

MID were asked to assist in the conversion of the ex RNZN patrol vessel "Kahu" for use as a private yacht to be suitable for adventure exploration.

The Steel hull was lengthened to 32m overall with the addition of a new 8m long midbody section. MID developed the general arrangement, hull lines, produced steelwork drawings and cut parts for construction. The original aluminium superstructure was removed and a full length aluminium superstructure designed and drawn by MID. The owner wanted to preserve elements of the original character and look of the vessel, the new superstructure lines were developed with this in mind.

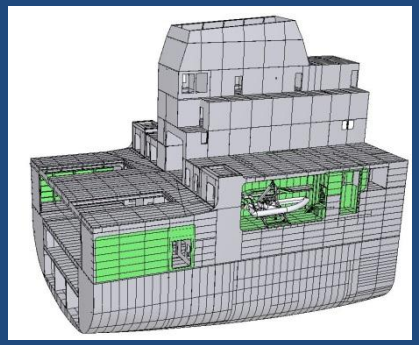
Structural drawings and cut parts were produced for construction, all to Lloyds SCC rules. MID worked with the ship yard - Fitzroy yachts - during the conversion culminating in the launching, inclining experiment and stability calculations. The Owner is very pleased with the outcome and the boat has now departed on its voyage, starting in the Pacific and possibly going through the North West Passage.

KAHU PROFILE STBD FWD

HMNZS Canterbury RHIB Alcove Relocation

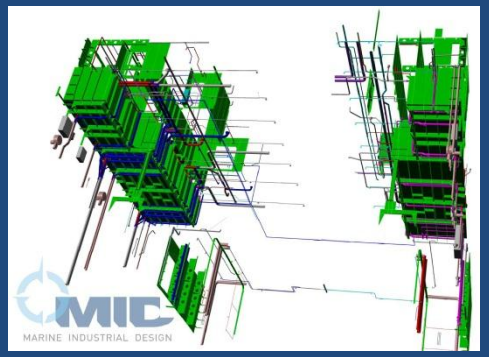
For more than a year now MID have been involved in a conversion project to re-locate the RHIB alcove pockets on HMNZS Canterbury, from their original location under the flight deck and main deck (Deck 3) level , to a new location forward under the LCM mooring deck and higher up at Deck 4 level. This new location will provide for enhanced security and deployment of the RHIB's.

MID have been working with the MOD, their representatives, Babcock and associated suppliers to provide design services associated with the conversion. Initial concept feasibility studies were undertaken including sea keeping analysis, stability, risk analysis and 3D modelling, then moving onto structural design, drawings, calculations, FEA, submission to class and production information including cut parts.



Canterbury RHIB Alcove -
Original and New Locations

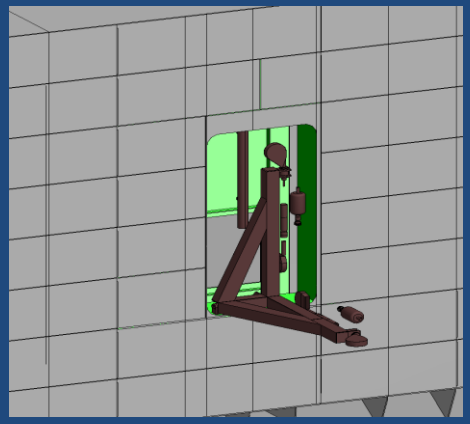
The re-location of the alcoves requires extensive modifications to ship systems, MID have been involved with piping and HVAC, producing revised schematics for class approval, piping spool drawings for production, HVAC production drawings. Currently Canterbury is about halfway through the conversion works at the Devonport dockyard with old steel removed and new alcoves offered up and almost complete. Systems installation is well underway.



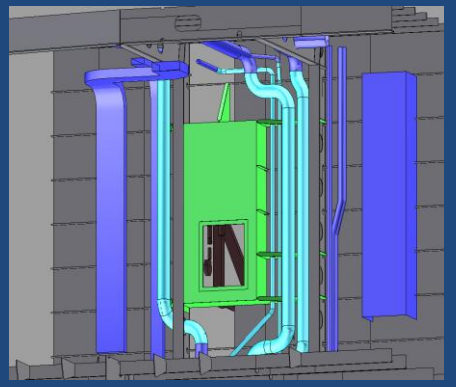
Canterbury Piping systems

HMNZS Canterbury Boat Boom

MID were tasked with integrating the supplied boat boom into the ships structure.



During RHIB alcove works a requirement developed to fit boat booms each side of the vessel, forward of the RHIB alcoves, to provide enhanced launching and recovery of the RHIBs whilst underway. The boat boom provides for the RHIB painter line to led from the RHIB directly forward (rather than into the ships side) and then back to selected ship side tie-off locations. This involved designing suitable foundations and an enclosure for the boom, identifying affected systems and providing for their re-location. The models and structural drawings were developed within the ambitious timescale set and will shortly be released for approval and production.



Itasca

Originally launched in 1961 as Ocean Going tug “Thames”, Itasca was one of the first “Super Yacht” conversions of her size and Class in the world.

The initial stage of her conversion was carried out in the Gulf Of Mexico and completed in Seattle Washington in 1992. MID have had a traditional association with Motor Yacht Itasca since her first visit to NZ back in 1995.
Last year MID was requested to carry out a feasibility study of her superstructure to ascertain the practicality of landing the owners new Euro copter on the aft deck. She had previously carried a helicopter when she transited the North West Passage, the first private motor vessel to do so. That was a smaller machine and carried under an exemption to Class.

The current owner’s requirement was for a private helicopter operation from the boat which met LR Class and satisfied the insurance underwriters. At this time Itasca was cruising in NE Australia and PNG while the owner waited for his new flying machine to be delivered. MID undertook the task, Snr Naval Arch, Jason Smith attending the vessel with tape measure, camera and clipboard in an effort to replicate non existing structural plans and detail. After numerous phone calls, emails to the Captain and LR, plus hours of drawings and calculations, plans were submitted and approved by Lloyds.

End of story ….. No.

November last Year, Itasca arrived in Auckland with helicopter aboard. MID was requested aboard to take another instruction. Now the Owner has his helicopter aboard he wants the ability to fuel the helicopter, which of course involves fuel tankage, pumping, polishing and metering and dispensing. In addition the installation had to be discrete and aesthetically pleasing. It left Auckland early July with the installation complete and commissioned with 6000 liters of Jet A1 on board.

Amaltal Columbia

MID has been engaged by Talley’s, the owners of the Amaltal Columbia to assist with post fire refit by providing design engineering for the Ship board Electrical Systems.

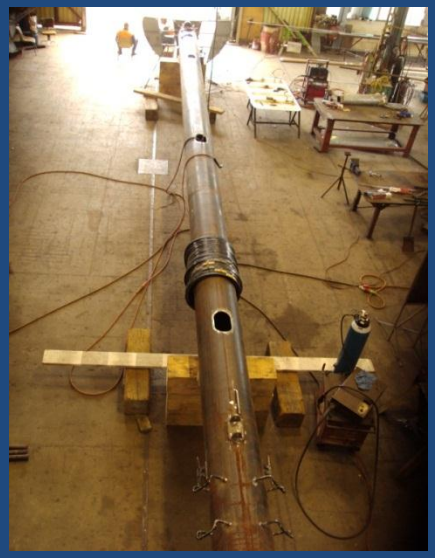
The 1900 GRT trawler, factory ship was gutted by fire off the East Coast of the South Island in September 2012. A fire apparently started in the fish meal bagging plant and quickly engulfed the adjacent factory deck. The blaze then tracked up through the accommodation to the bridge deck. The machinery spaces and exterior working deck areas were not affected. No damage to crew or catch. The fire damaged areas have subsequently been gutted of all damaged linings, equipment, wiring, plant and mechanical services.

A new factory is on order from Norway, new accommodation outfit from China.
MID have been engaged by Talley’s to generate LR compliant Electrical Installation drawings and schedules. The design is being undertaken in conjunction with the Nelson based installation contractors Rzocka Electrical and ENL.

The Amaltal Columbia is scheduled to be back fishing in the second quarter of 2013

SPIRIT OF NEW ZEALAND

The Spirit of New Zealand is undertaking the second phase of her refit at Ship Repair NZ. This is an extensive refit with the engine room being stripped, new generators being installed, changes to the exhaust system and replacement of the three steel tube lower masts. As well as drawings produced for phase one of the refit completed last year MID has designed the new exhaust brackets and exhaust configuration in the mainmast. The three generator exhausts run up the lower section of the main mast. We were able to improve on the original design and reduce the number of inspection port cut outs in the 18m DN 500 mast and increase the spacing of the brackets, this reduced fabrication time for the yard and weak points in the mast. The rest of the mast fittings were removed from the original mast and put in the same position on the new mast section.



Mast being fabricated and Exhaust Brackets

Purse Seiner Masts

MID has a history of working with the South Pacific Tuna fishing boats (Purse Seiners) all of which are of a similar design and vintage. The same hulls have changed, names, owners, lengths and been refitted over the years. Most still have their original Masts.

A Purse Seiner vessel's mast collapsed whilst attempting to haul a bag (Purse) of fish aboard, the Mast collapsed bringing down all associated booms and rigging.
The demasted vessel was stripped of (collapsed) mast, rigging, booms and skiff and relocated to SRNZ's yard in Whangarei. MID were engaged to undertake an engineering analysis of what caused the mast failure, subsequent to that MID was engaged to design a replacement mast, booms and associated fittings, and crows nest. In addition the vessels stability data was checked and updated.

MID have also been called upon to inspect and report on other masts and rigs in the Pacific Tuna fleet.
MID created a model of the original mast and has run structural finite analysis to simulate the failure and has run a further analysis of the new structure to ascertain SWL's. We are now in an informed position to report on the condition of other mast structures in the fleet.

Tangaroa

MID have been involved with NIWA Vessels since 2006, with the initial feasibility and budgeting study for upgrading Research Vessel Tangaroa to DP2 Capability. The feasibility was subsequently approved in 2007 and MID was engaged as the principle Engineering designers for the DP upgrade and vessel refit. The refit was undertaken in 2010 at ST Marine in Singapore.

Due to mechanical PTO gearbox issues Tangaroa returned to NZ without her DP (DNV) Certification. She went been back on her normal operating schedule but without the Dynpos Autr Classification Certification. In July MID were requested to assist NIWA Vessels in organising the DP Sea trials and provide an independent Survey witness for DNV. The trials were undertaken over a two week period at the end of May on Wellington Harbour in perfect conditions.

In the first weeks trials the 240 DP FMEA tests were simulated in conjunction with the Master, Engineers and OEMS, ABB (Electrical Control & Monitoring) Cummins (Generation) Kongsberg (DP control) NIWA technicians and MID. The trials were completed to the satisfaction of the attending surveyors and RV Tangaroa has subsequently been issued with her Certificate for DYNPOS AUTR Classification.

Carol Linda Tuna Boat Mast

The owner and crew is that they are delighted with the mast, crows nest, boom and rigging package that MID has designed for them and are keen to put them into action and get back out fishing.

Crows nest lift

The crows nest (aka the penthouse) was lifted onto the mast and the booms are being installed. The hydraulics are in the closing stages of completion and once they are done the actual rigging of the vessel can take place. The crow's nest towers 18m above the deck and is quite a climb even when the boat is still at the dock. The increased wind strength at that level is very noticeable. The crows nest is a key component to the mast and considerable time went into its design to provide tan ideal crows nest for the vessel.

MID will undertake a inclining experiment on the vessel once the installation of the rigging is completed and provide an updated stability booklet.

Whilst the project was underway we were interacting with the yard constantly to get designs out as fast as possible. We look forward to having the opportunity to provide more design services to the Tuna Purse Seiner fleet.

View from crows nest looking down inside the mast

Flat rack mounted Telescopic Crane

MID recently designed a portable standard containerised base for a hydraulic telescopic crane to allow loose cargo to be loaded directly into lighters to be taken ashore.

Crane mounted flat rack locked in position ready for load test

7414 kg certified test load ready for lifting

Many pacific Islands have no container facilities and off loading cargo using existing onboard cranes presented problems to MID's client.

MID was asked to design a crane base similar to a flat rack container, so that a telescopic crane could be attached to the deck via twist lock container feet. This would allow loose cargo to be transferred quickly and safely into awaiting lighters.

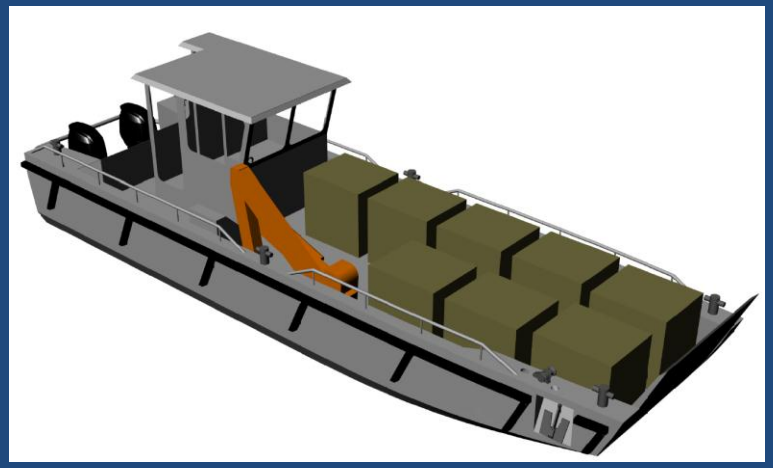
In the space of 6 weeks the flat rack was designed, built, load tested and used for the first time on the cargo vessel Danny Rose to off load cargo at Norfolk Island.

2184 kg test load lift at full 9.5 m extension

7414 kg certified test load lift

Work Barge Concept design

As part of on-going business development and marketing, MID have taken the opportunity to develop a concept design for a small work barge. This barge could be deployed in oil recovery operations, general harbour duties, commercial operations and government department tasks. The barge has a load deck suitable for a UTE sized vehicle or 8 x pallets, bow ramp, fully enclosed wheelhouse and crane. Load carrying ability was set at 8.2 tonnes at 16 knots, using outboard power. Constructed in aluminium or steel, the structure of the barge is simplified with "eggboxed" cut parts providing for fast and easy construction methods. The design offers versatility, robustness, flexibility and efficient operating regimes.



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