Australian Industry WINS!

WTIA National Diffusion Networks Project (NDNP) funded by the Federal and State and Territory Governments and industry

SUCCESS STORY NUMBER D05: FITTING THE MOAS SYSTEM TO A RAN VESSEL REQUIRES STRICT ADHERANCE TO TOLERANCES – *WTIA provides expert input to ensure Mine and Obstacle Avoidance Sonar is welded accurately in place*

The MOAS system*

Thales Underwater Systems UMS 5424 MOAS (Mine and Obstacle Avoidance Sonar) is the world's first three-dimensional, high-resolution, active hull-mounted forward-looking sonar. Unlike traditional sector scanning sonar, MOAS provides full systematic coverage of all areas ahead of the vessel.

MOAS was designed and developed in Australia by Thales in conjunction with the Royal Australian Navy (RAN) to meet their specific requirements for mine and obstacle avoidance in littoral, poorly charted waters.

MOAS comprises three main sub-systems:
- lightweight multi element transducer/wet-end,
- electronics cabinet, and
- workstation console.

MOAS wet end

MOAS's open modular structure makes it readily adaptive to numerous warship designs and it has been successfully installed on vessels ranging from a 400-tonne survey catamaran to a 3,500-tonne guided missile frigate.

WTIA involvement

Tenix Defence Marine Division in WA are an active member of the WTIA NDNP, participating in the Defence Industry Sectoral Project. The Project is also supported in the West by the State Government through the Department of Industry and Resources which is keen to promote and retain Defence project work in the region.

WTIA Technology Manager Sel Kipling contributed expert advice to a recent challenging project to fit a sea-tube through the hull of a RAN vessel for the purpose of installing a MOAS system.

*DoD Team Australia website

The technical challenges

The tolerances imposed on Tenix were very stringent and during construction, lasers were used to align the 1500 mm long and 800 mm diameter sea-tube and monitor any movement that might take place during welding.

Four stiffeners, welded along the length of the sea-tube assembly were to be butt welded, two to longitudinal webs in line with the keel of the vessel and two to transverse webs. These four single sided welds, 10/12 mm thick, were the most critical to the correct and accurate installation.

In view of the tight tolerances which had to be maintained, the WTIA was asked to provide a method statement or procedure to minimise the extent of anticipated distortion.

An initial meeting was arranged with Tenix fabrication personnel in order to ascertain their proposed fabrication and welding sequence. The welding was to be done under particularly difficult conditions inside the hull, and attention was paid to maximising the comfort of the welders. The meeting also served to introduce some new thoughts and ideas to the team and to encourage their input to the project.

A welding sequence was drafted by WTIA which Tenix commented upon and by agreement the final document was produced with diagrams and sections for comments to be recorded.

The welding programme was scheduled to take place over three days and WTIA was initially requested to be available to monitor the operations. Tenix were so confident in the procedure and their ability to follow it through, however, they decided that this would not be necessary. This was proven to be true, and upon completion the final construction was within tolerance with only very minor distortion of about two mm.

The outcome

The weld procedure developed by the WTIA has since been applied to a further two vessels which have had sea-tubes fitted for the installation of the MOAS system, keeping Australia's Navy on track and safe in the water.

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