Case Study

CLARKE CHAPMAN

We can handle it.

Transfer Car Case Study

Compatibility Engineering, Detail Design, Prototype Manufacture and Production Run

Original cars supplied in the 1980s

Phase 1 – Compatibility Engineering

In 2017, a requirement for further Transfer Cars to supplement the existing fleet was identified. However, with the lack of information available, BAE Systems engaged with Clarke Chapman Ltd (CCL), who were part of the original supply group back in the 1980's, to undertake the concept design of a Transfer Car, with the aim to produce further cars that would operate within the existing fleet, whilst maintaining a degree of interchangeability of critical components such as the hydraulic cylinder and the wheel sets. CCL also designed the associated Mode Select Panel (MSP), a Control Supply Panel (CSP) and a Transformer Panel (TP) using current available components but again compatible with the existing fleet.

This phase of the project was successfully completed and signed off with a client design review involving all stakeholders allowing our design team to produce detailed engineering/manufacturing drawings of the Transfer Car and associated panels. This was successfully completed and final sign off by the BAE stakeholders via a further design review was completed late 2019 allowing for manufacture of a prototype.

Phase 2 – Prototype Transfer Car Manufacture

Following the sign off of the design review CCL were awarded a second phase contract to take the new design drawings, prove the design and provide the client with a prototype Transfer Car and associated panels. As part of the update and the change to current standards this new prototype required the design and manufacture to follow LR rules for marine equipment. Where OEM's of the Transfer Car's components (e.g. cylinder and hydraulics) still existed, they were once again engaged to provided like for like ensuring maximum interchangeability with the existing equipment. The structure, wheels and axles were all manufactured to LR rules to ensure they were fit for purpose.

Once assembled, the prototype Transfer Car was statically load tested using an existing structure within our works. The load readings were then taken comparing our panels gauge to the calibrated gauge placed within the temporary test jacks circuit, deemed acceptable, the prototype completed our works tests and then dispatched to site.

Transfer cars supplied in 2024

Site testing was then undertaken with the transfer car first placed onto the BAE's own test rig where dynamic load testing could be undertaken. This test established that our new travel motors and gearbox under load achieved the required speed of 1m/min. The transfer car and panels were then connected to Transfer cars and panels from the existing fleet. Further testing was carried out and despite a few minor issues, such as the remote reset not resetting the entire fleet following an e-stop press (successfully addressed) the transfer car and panels passed site testing confirming its suitability to operate as part of the existing fleet.

Phase 3 — Multiple Transfer Car Production

BAE systems further contracted CCL at the beginning of 2022 following successful trials of the prototype to commence manufacture of a further 28 transfer cars, 14 MSPs, 2 CSPs & 2 TPs.

A detailed programme was produced to establish a detailed plan to achieve the required completion dates and to ensure that production continuity throughout the 3yr project. However, with the after effects of COVID and Brexit, followed by the impact of the Russia – Ukraine conflict upon material availability that became apparent at the same time a number of key supply orders had to be placed quickly with some bought in ahead of program to ensure availability to meet the production schedule. This period was carefully managed and through constant discussions with our suppliers and the client team, orders for key components were placed within hours of receiving our instruction to proceed.

To allow for a manageable and constant flow of transfer cars the programme managed the transfer cars in batches of four ensuring a smooth flow of equipment into, through our works, and into the testing phase.

To facilitate full factory testing, our design team developed the design for our own dynamic test rig. Once installed, this allowed the transfer cars to be dynamically load tested to replicate the testing which would be done on site, witnessed by BAE's commissioning engineer and the LR surveyor who both sign(ed) the testing documentation confirming that the Transfer Cars had successfully passed testing allowing for release to site.

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