

- One x F/C finish coat.
- Unless otherwise specified ALLOW for 3% ST3 preparation.

12.2.3 Decks

Degrease, high pressure water wash with water soluble detergent at 340 bar minimum, fresh water rinse and dry off on completion. All decks to be prepared to minimum ST3.

Full Blast SA2.5/Machine Scaled to ST3 Preparation/Hydro Blast to HB2.5 Coat using an approved epoxy system having non-slip finish as specified by the Paint Manufacturer. System used is to be fully compatible with existing coatings.

Colour to be Dark Grey BS 632.

For repairs, unless otherwise specified, ALLOW for 3% ST3 preparation.

12.3 Internal Coatings

12.3.1 Before painting internally, oil and grease, etc, are to be removed by emulsion cleaning. The entire area to be painted must be fresh water cleaned (high pressure) in order to remove salts and other contaminants. Rusty and damaged areas must be mechanically cleaned to ST 3 according to ISO 8501-1:2007.

12.3.2 The compartments are to be adequately ventilated and dried out prior to over-coating.

12.3.3 The first coat is to be applied within 8 hours of preparation to avoid surface build-up of rust. Light "gingering" is acceptable.

12.3.4 The coats to be applied in the compartments are as follows:

- One x F/C primer, Grey – DFT 125 microns.
- One x F/C primer, Off White – DFT 125 microns.
- One x F/C undercoat, White – DFT 40 microns.
- One x F/C enamel, White – DFT 40 microns.

12.3.5 The coats to be applied to internal decks are as follows:

- One x F/C primer, Grey – DFT 125 Microns.
- One x F/C primer, Off white – DFT 125 Microns
- One x F/C non-skid, Grey – DFT 125 Microns The preferred method application is by airless spray.

12.3.6 Bulkheads and Deckheads.

- Steam clean using water soluble detergent. Fresh water rinse and dry. All bare and damaged areas to be prepared to minimum ST3 and edges to be disked to a firm edge and feathered.
- One x T/U appropriate water based primer.
- One x F/C water based topcoat.
- After washing, the area should be thoroughly rinsed with clean fresh water. It should then be washed down again with miscible cleaner applied with stiff brushes and again thoroughly rinsed with clean fresh water.
- The area must then be allowed to dry. The cleaner should be used at a strength of approx. 20% in water. Rinsing should also be thorough to remove all traces of the cleaning solution before painting.
- Water based top coat should be high gloss with good hiding power when applied over existing coatings. Product to comply with the latest fire/smoke/toxicity regulations.
- Unless otherwise specified ALLOW for 1 % ST3 preparation.

12.3.7 New Steelwork

- All welds, burned and damaged areas to be manually prepared to ST3. All weldspatter and undercuts shall be removed by grinding or re-welding. Any oil or grease contamination shall be fully removed by solvent wiping with CLEAN dry rags followed by a wash with water-soluble detergent.
- To prepared areas apply one full stripe coat.
- Two x F/C water based primer.
- Two x F/C water based topcoat.

12.3.8 Exposed Steelwork

- To be primed to a minimum of two coats as recommended by the Paint Manufacturer then two full coats of top-coat to match existing system.

12.3.9 Steelwork Behind Linings

- To be primed with two coats of appropriate primer followed by a minimum of one top-coat of fire retardant paint.

12.3.10 Machinery, Equipment, Pipes, etc.

- Fresh water and detergent wash to remove all surface contamination.
- Fresh water rinse and dry.
- All bare and damaged areas to be machine scaled to ST3 and edges disked to a firm edge and feathered.
- One x T/U appropriate primer.
- One x F/C tie/undercoat.
- One x F/C Machinery enamel or fire retardant finish to latest standard.
- Finish colour for machinery to be 'eau-de-nil'.
- Full system to be fire retardant. Where aluminium heat resisting paint is specified one coat will suffice after above preparation.
- Unless otherwise specified ALLOW for 3 % ST3 preparation.

12.3.11 Decks

- Decks are to be prepared to a minimum of ST3.
- Primers are to be a minimum of 2 coats of recommended primer.
- Top coats to be 2 coats of approved top-coat non-skid deck paint.
- Unless otherwise specified ALLOW for 3 % ST3 preparation.
- Stripe coats are to be applied where required to attain the full, specified DFT.
- Paints as received from the manufacturer must not be thinned or diluted in excess of their recommendations. Only solvents approved by the manufacturer shall be used. Requisite adjustments to the wet film thickness are to be made to ensure dry film thickness requirement is met.
- All coatings are to be smoothly applied, free from sags and runs.
- No paint is to be applied outside of the manufacturer's specified climatic conditions.

12.3.12 Overspray, paint splashes or drops will be removed at the vessel repairer's expense unless agreed with the nominated Authority's Authorised Representative that they were evident before painting operations commenced.

12.3.13 The vessel repairer is responsible for the supply and erection of all coverage as required for protection against overspray, etc. They are also responsible for the similar supply, erection, dismantling and disposal of all coverage necessary to protect against the results of actions which might cause a nuisance to others.

- 12.3.14 The vessel repairer and paint applier are to maintain a close liaison with respect to expertise of labour, methods of application and their results.
- 12.3.15 Any areas where standards of preservation and finish have deteriorated, either directly or indirectly, as a result of other work shall be WORK IN WAKE. The standards of preservation and finish will be made good in accordance with the relevant repair system defined within these instructions and to the satisfaction of the Inspecting Officer.
- 12.3.16 Throughout this refit specification areas of new steel may be required to be fitted and then painted. All new steel is to be shot-blasted and primed both sides before fitting. The correct preparation prior to painting is to be carried out to the Paint Manufacturer's requirements. This will invariably require local surface preparation to ST3, undertaken immediately after completion of hot work on the particular item and extensive enough to ensure that all existing damaged paintwork or primer is removed. The first priming coat is to be applied before surface blooming has occurred. The remaining coats are then to be built up in accordance with Paint Manufacturers requirements. This requirement is particularly applicable to the removal of products of hot work. The practice of painting directly over black steel, mill scale or other contaminant will not be accepted.
- 12.3.17 Where painting of pipework is specified existing pipe identification tape is to be removed before painting commences and is to be renewed on completion - Vessel repairer's Supply.
- 12.3.18 Where it is specified for handrails to be painted, areas are to be calculated at the rate of 1 square metre for 3 running metres of handrail. DFTs in this case are to be attained using brush or roller application. Preparation is to be to ST3.
- 12.3.19 Where it is specified for machinery to be painted application is to be by hand after the compartment, if specified, has been painted.
- Internal machinery paint is generally to be 'eau de nil'.
 - External machinery paint is generally to be grey.
 - Preparation and painting of machinery is to be as for the respective internal or external coatings system.
 - Machinery detail plates, pressure gauges etc are to be protected against drips and splashes.
 - Valve spindles are to be protected against drips and splashes and hand wheels are to be re-coated in accordance with the existing colour scheme.
 - Lagged pipe systems that normally contain fluid at elevated temperatures are to be painted with an emulsion.
- 12.3.20 The vessel repairer is to obtain from the paint manufacturer a written guarantee such that less than 0.5 % area detachment of their products become evident within the first six months after application.
- 12.3.21 The vessel repairer is to supply suitable and adequate illumination and ventilation during all preparation and painting operations, including inspections.
- 12.3.22 Areas of equipment exposed to friction drive of any kind, such as winch drums, capstan drums, bitts and bollards, etc. are not to be coated unless agreed with the nominated Authority's Authorised Representative.
- 12.3.23 All additional costs of labour, time and materials incurred in correcting work not carried out in accordance with this specification shall be to the vessel repairer's account.
- 12.3.24 Curing of Paint. All coatings are to be applied and allowed to cure strictly in accordance with the Paint Manufacturer's instructions. Deviation from these instructions may only be taken with written approval from the Paint Manufacturer. The time of curing is dependent on the temperature. If the temperature inside any tank is below 55 deg. F. then Fan Heaters are to be used to accelerate curing. The

vessel repairer is to take this into consideration and any costs of such heaters will be to their account. The max. time between subsequent coats must not normally exceed that recommended by the Paint Manufacturer.

- 12.3.25 Draught marks at Bow, Amidships, Stern - Port and Stbd and Load-Line markings Port and Stbd are to be painted with two coats of Tin-Free Hard Racing Anti-Fouling. (black on Topsides and white on Boot-topping and Bottom areas). Bow thrust and any other such safety markings to repaint.

13 Inspection of Refit and Associated Work

The following defines different types of formal inspection which may be called up by other specific specifications as part of a progressive acceptance process. All Refit work will be subject to a Final Inspection.

The inspections are in addition to general requirements for acceptance of work, stated elsewhere in the contract and apply only when this General Specification item is called up by other specific specifications to which all costs are to be associated.

13.1 Detailed Requirements

- 13.1.1 Inspections will take place at the Authority's request, the purpose being for the Authority's Authorised Representative to confirm compliance with the specified requirements.
- 13.1.2 The Contractor shall plan for a Final Inspection of ALL Refit work packages covered under this specification, irrespective of whether or not this is specifically called up in the specification.
- 13.1.3 The Authority's Authorised Representative, or a member of his/her staff, will act as Inspecting Officer (IO) and lead the inspection and the IO will occasionally invite assistance from external authorities.
- 13.1.4 The Contractor shall provide the Authority's Authorised Representative with a minimum of 3 working days' notice of an inspection. This will allow sufficient time for the IO to arrange attendance of the necessary MoD Personnel.
- 13.1.5 The Contractor shall present the inspection to the IO and shall ensure that the area and/or system to be inspected is in a clean and uncluttered state and that all areas to be inspected are accessible. Where compartment inspections are involved, these requirements shall also apply to other side boundaries. Non-essential Personnel are to be kept clear of the area under inspection, until it is completed.
- 13.1.6 A representative from the Contractor's Quality Assurance (QA) staff shall attend the inspection to record any identified non-compliance with or deviation from the specified requirements and provide relevant certification.
- 13.1.7 At the time of the inspection, the Contractor shall provide a copy of the relevant work package specification to the IO for use in conducting the inspection.
- 13.1.8 Actions arising and liability shall be determined by the IO at the time of inspection and also recorded. Actions may take the form of:
- Defect: Deviation to be rectified by Contractor prior to final acceptance.
 - Concession: Deviation to be processed as required by the Contract.
 - Investigate: Deviation requires further consideration before action and liability can be determined.

Individual specifications may state that certain tests and trials must have been completed prior to the specified inspection(s). Where so stated, certification to confirm this is to be presented to the IO at the inspection.

The following types of inspection may be called up:

- Progress Inspection (PI): Presentation of a compartment, system or installation at an intermediate stage during implementation, to assess the installation work at that point (for example prior to replacing compartment linings). The criteria defining when the inspection will take place and any pre-requisites that must be achieved, will be stated in individual specifications.
 - Installation Inspection (II): Carried out on completion of installation work, excluding final painting and cleaning, and prior to setting to work and/or functional trials. Any work likely to generate dirt or arisings is to have been completed. Pressure testing of all fluid/air systems and adjacent compartment boundaries (where relevant), and load testing of any lifting/securing arrangements, shall also have been completed and accepted.
 - Functional Trial: A trial carried out on a system or equipment on completion of all installation, testing and setting to work, to demonstrate full and correct operation. Trials may be presented concurrent with other inspections. Any certification required in the relevant specification is to be available to the IO at the trial. Where appropriate all systems shall have been purged and cleaned to the relevant standards and correctly balanced.
 - Final Inspection (FI): Applicable to ALL work packages covered by this general specification. Carried out on completion of ALL work including final painting, cleaning, systems identification and tallying, etc. The purpose is to confirm acceptance of the work carried out and agreement to clearance of all known defects and concessions. On satisfactory completion of a compartment inspection, the compartment is to be locked and keys placed under the authority of the Authority's Authorised Representative.
- 13.1.9 An electronic copy of each inspection report is to be supplied to the IO within 3 working days of the inspection. The report shall be titled and dated, those attending to be identified and actions grouped together into separate lists.
- 13.1.10 All inspection reports are to be included in the Refit Documentation supplied under the Contract.

14 Manufacturers' Representatives Attendance

14.1 Attendance

- 14.1.1 A list of proposed Sub-Contractors is to be provided as part of the tender response.
- 14.1.2 The Vessel Repairer is to arrange for attendance of representatives or agents to Vessel Repairer order unless otherwise stated, and provide suitable facilities and secure stowage for specialist tools and equipment.

15 Contractor Documentation

The following items are to be delivered within the time scales indicated if they have been included in the specification in electronic format where possible:

- Certification: Prior to CAD.
- Equipment handbooks: At least one week before CAD.
- Those supplied with new GFE equipment: Two copies to the Authority's Authorised Representative.
- For new CSM equipment: Two copies to the nominated MOD Project

Manager.

- As fitted Drawings: Within one month of CAD.
- Documentation arising from refit contract: Within one month of CAD
- Refit readings, calibration certification: At CAD Loose Bound files to be supplied to the nominated Authority's Authorised Representative.
- As fitted photographs: Within one month of CAD.
- Stability information (if required): Within one month of CAD Interim Report to be available prior to vessel tow to mooring.

16 Supply of As Fitted Drawings

16.1 Drawings

- 16.1.1 General arrangements drawings (obtained from MOD) are to be marked in red to show all new cable routes, and pipe runs. If existing runs are used these are also to be marked up in red and annotated accordingly.

These drawings are also to include positions of all new equipment fitted.

- 16.1.2 In addition to the as fitted drawings a list of new equipment and its associated manufacturer/supplier is to be provided to enable spares to be ordered at a later date. This is to be provided in an Excel spreadsheet format.

Amended prints shall be marked in red with 'TV TRISTRAM REFIT 2022'

- 16.1.3 All drawing information produced in accordance with this specification is to be supplied to MOD within one month of the Contract Completion Date.

17 Supply of As Fitted Photographs

17.1 Brief Description

- 17.1.1 Supply copy of As Fitted digital photographs, indexed as specified and saved to Universal Serial Bus (USB). Allow to supply 100 photographs.

17.2 General Requirement

- Storage medium shall be USB.
- USB shall be marked 'TV TRISTRAM REFIT 2022', and 'OFFICIAL SENSITIVE'
- An index of the photographs held on the USB is to be provided in MS Excel format, and saved to the USB under the filename: INDEX.XLS.
- The index shall provide the following information for each and every digital photograph:
 - Filename (Long Filename).
 - Subject (arrangement or equipment shown).
 - Compartment (Location of the Subject).
 - Frame Station (Location of the Subject and Port or Stbd).
 - Date (when the photograph was taken).
 - Orientation (direction photographs taken).

- The Spatial Resolution of any digital photographs taken shall be 800x600 pixels, or better.
- The digital photographs may only be saved/supplied in the following format, which is readable with Microsoft Photo Editor:
 - Joint Photographic Experts Group (*.jpg)
 - Portable Network Graphics (*.png)
 - Graphics Interchange Format (*.gif)
- The importance attached to the clarity of photographs must be emphasised. Photographs are not to include scaffolding, debris or clutter. The task is to be programmed accordingly.
- The vessel repairer must include for crane/access equipment to enable aerial/overhead photographs to be taken when necessitated by the subject matter, e.g. masthead equipment.
- USB to be supplied to the MOD within one month of the Contract Completion Date.

18 Clean Vessel

18.1 Cleanliness

- 18.1.1 The cleanliness and appearance of the vessel at CAD is of great importance to the owner and will form a major item governing acceptance.
- 18.1.2 The Contractor must apply quality control to this aspect throughout the Refit period and commit sufficient resources to it from the outset.
- 18.1.3 The standard of cleanliness required is absolute and is not limited to the condition as delivered by the owner at Take in Hand (TIH). Neither will it be governed by the contracted vessel repairer's notion of what may be acceptable to other owners.
- 18.1.4 The required standard is high and demands a continuous combined effort from the Contractor and vessel's staff. At the TIH meeting, the Authority's Authorised Representative will call for nominations from the Contractor for a Clean Vessel Representative. At least once every two weeks, the Representative will walk the vessel together with the Authority's Authorised Representative to identify actions needed to maintain standards of cleanliness at an acceptable level. They will produce a written list of these actions and the responsibility for achieving them.
- 18.1.5 The Contractor is responsible for providing staff and suitable equipment for removing all arisings and cleaning to an acceptable standard all those spaces and areas for which they have a contractual liability.
- 18.1.6 Bilges are to be kept clear of liquids and debris throughout the refit as specified in the Refit Specification.
- 18.1.7 Any areas where work is not being carried out during the refit period are to be maintained in a clean condition throughout.
- 18.1.8 All refuse, scrap material and dirt arisings to be removed ashore daily and not allowed to accumulate on board the vessel, in compliance with the local Public Health Authorities regulations.

19 Lifting Equipment

19.1 Testing of Lifting Equipment

- 19.1.1 The following tests apply where lifting equipment is called up for testing in individual specifications included elsewhere in this specification. All tests to be to the satisfaction of the accepting authority.