

CLEANLINESS STEAM PLANT COMPONENTS

CLEANLINESS AND CERTIFICATION TO SUPPLEMENTARY TECHNICAL REQUIREMENT (STR) 4P37, REV. C, CLEANLINESS REQUIREMENTS FOR HARDWARE

THIS STANDARD CLAUSE (SC) APPLIES TO PROCUREMENT OF STEAM PLANT CLEAN HARDWARE. WHERE INVOKED, THIS SC APPLIES ONLY TO INTERNAL SURFACES AND PARTS THAT CONTACT FRESHWATER, STEAM, OR AIR/NITROGEN (FOR APPLICABLE GAS SYSTEMS). THIS SC DOES NOT APPLY TO THE LUBE OIL OR SEAWATER PORTION OF ANY HARDWARE. SURFACES FOR WHICH NO OTHER CLEANLINESS REQUIREMENTS ARE SPECIFIED SHALL BE CLEANED AND SHALL BE FREE FROM DIRT, CORROSION, GREASE, OIL, AND FOREIGN RESIDUE. ANY CONFLICT BETWEEN THIS DOCUMENT AND OTHER CONTRACT REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE BUYER AS SOON AS PRACTICABLE.

1. VISUAL ACCEPTANCE CRITERIA: ALL APPLICABLE HARDWARE INTERNAL SURFACES AND PARTS SHALL BE DRY AND VISUALLY CLEAN (E.G., FREE OF DIRT, LOOSE CORROSION PRODUCTS, GREASE, OIL, INKS, DYES, MACHINING PARTICLES, RESIDUE FROM GRINDING, CHIPPING, WELDING, BLASTING AND OTHER MAINTENANCE FUNCTIONS, TOOLS, RAGS, AND OTHER FOREIGN MATERIAL). THE REQUIREMENTS OF THIS PARAGRAPH SHALL BE VERIFIED BEFORE THE APPLICATION OF CONTACT PRESERVATIVE FOR SURFACES WHERE PRESERVATIVE IS SPECIFIED.

2. VISUAL ACCEPTANCE CRITERIA EXCEPTIONS:

A. A THIN ADHERENT OXIDATION FILM, OTHER THAN RUST, WITH NO VISIBLE THICKNESS FROM HEAT TREATMENTS, WELDING, OR SPECIFIED TESTS WITH WATER IS ACCEPTABLE ON SURFACES ALLOWED TO BE FINAL MACHINED BEFORE THESE OPERATIONS.

B. A LIGHT, SUPERFICIAL, ADHERENT RUST FILM (IRON OXIDE, USUALLY RED OR ORANGE) WITH NO VISIBLE THICKNESS IS ACCEPTABLE ON CARBON STEEL, LOW ALLOY STEEL, ALLOY STEEL, AND 400 AND 500 SERIES STAINLESS STEEL OR CAST EQUIVALENTS (E.G., CA6NM), PROVIDING THE RUST WILL NOT IMPAIR THE HARDWARE'S PROPER FUNCTION (E.G., SEALING ABILITY OF VALVE SEATING SURFACES).

C. A SMALL AMOUNT OF LIGHT, SUPERFICIAL, ADHERENT RUST WITH NO VISIBLE THICKNESS COMPRISING LESS THAN ONE PERCENT OF ANY ONE SQUARE FOOT (929 SQUARE CENTIMETERS) AREA IS ALSO ACCEPTABLE ON THE SURFACE OF CORROSION RESISTANT MATERIALS (E.G., 300 SERIES OR ITS CAST EQUIVALENTS AND 2205 DUPLEX

STAINLESS STEEL, NICKEL BASE ALLOYS, COPPER BASE ALLOYS, COBALT BASE ALLOYS, ALUMINUM BASE ALLOYS, AND TITANIUM BASE ALLOYS) PROVIDING THE RUST WILL NOT IMPAIR THE HARDWARE'S PROPER FUNCTION AND IS NOT LOCATED ON THE SURFACE OF THIN-WALLED MATERIALS (E.G., BELLOWS, DIAPHRAGMS, MEMBRANES, OR HEAT EXCHANGER TUBING).

D. WHEN PERMITTED BY THE APPLICABLE HARDWARE DRAWING, SEALANTS, ADHESIVES, LUBRICANTS, AND LOCKING COMPOUNDS SHOULD BE USED SPARINGLY ON INTERNAL SURFACES, AND ALL VISIBLE RESIDUE SHALL BE REMOVED FOLLOWING COMPLETION OF WORK. A FEW DISCRETE LINT FIBERS (LESS THAN 1/4-INCH IN LENGTH) AND SMALL AMOUNTS OF GRAPHITE IN ISOPROPANOL PER MIL-L-24131 (MILITARY SYMBOL CGI) WHEN USED FOR ASSEMBLY ARE ACCEPTABLE.

3. CLEANING, INSPECTION, AND CLEANLINESS CONTROL PRIOR TO AND AFTER ASSEMBLY: INTERNAL SURFACES AND PARTS, WHICH CANNOT BE CLEANED AFTER ASSEMBLY, SHALL BE CLEANED AND INSPECTED TO SATISFY PARAGRAPHS 1 AND 2 ABOVE PRIOR TO THE ASSEMBLY OPERATION THAT PRECLUDES FURTHER CLEANING.

DURING SUBSEQUENT ASSEMBLY OPERATIONS, SUCH PARTS SHALL BE PROTECTED FROM ENTRY OF DIRT, GRIT, CUTTING OILS, AND OTHER FOREIGN MATERIAL. HOWEVER, FLUSHING MAY BE USED TO CLEAN AFTER ASSEMBLY WHERE IT IS DEMONSTRATED TO BE EFFECTIVE FOR THE HARDWARE GEOMETRY AND MATERIAL TO BE REMOVED.

4. FINAL INSPECTION: A VISUAL INSPECTION OF INTERNAL SURFACES AND PARTS THROUGH REMAINING HARDWARE OPENINGS (E.G., PORTS, PIPES) SHALL BE PERFORMED PRIOR TO SHIPMENT TO VERIFY COMPLIANCE WITH PARAGRAPHS 1 AND 2 ABOVE.

5. MAINTENANCE OF CLEANLINESS AND PACKAGING: FOLLOWING FINAL INSPECTION, ALL HARDWARE OPENINGS NOT COVERED BY PERMANENT CLOSURES SHALL BE SEALED WITH TEMPORARY CLEANLINESS COVERS OR CAPTIVATED PLUGS MADE OF RUBBER, RIGID PLASTIC, OR METAL. PLUGS AND COVERS SHALL BE SECURELY ATTACHED TO THE HARDWARE TO PREVENT LOOSENING DURING SHIPPING AND ENTRY OF FOREIGN MATERIAL. EXCEPT FOR POLYTETRAFLUOROETHYLENE (TEFLON), COVERS OR PLUG MATERIALS SHALL NOT CONTAIN SULFUR OR HALOGENS IN THEIR CHEMICAL STRUCTURE. FOR EXAMPLE, FLUOROCARBON (E.G., VITON) OR CHLOROCARBON (E.G., CHLOROPRENE (NEOPRENE)) RUBBER OR PLASTIC SHALL NOT BE USED FOR THESE COVERS OR PLUGS. EXAMPLES OF ACCEPTABLE NONMETALLIC MATERIALS ARE SILICONE RUBBER, ETHYLENE PROPYLENE RUBBER, NITRILE BUTADIENE (BUNA-N) RUBBER, POLYETHYLENE, POLYTETRAFLUOROETHYLENE (TEFLON), POLYURETHANE (PELLETHANE), POLYAMIDE (NYLON), AND ACETAL HOMOPOLYMER (DELRIN). MATERIALS USED FOR PLUGS, COVERS, AND PACKAGING

SHALL NOT BE YELLOW-COLORED OR TRANSPARENT.
INTERNAL PARTS, IF PACKAGED SEPARATELY, SHALL BE SEALED IN PLASTIC BAGS OR OTHER SUITABLE PACKAGING THAT MAINTAINS CLEANLINESS. HARDWARE, PACKAGES, OR CONTAINERS SHALL BE LABELED WITH THE FOLLOWING STATEMENT OR EQUIVALENT STATEMENT: "STEAM PLANT CLEAN AND IN FULL COMPLIANCE WITH ELECTRIC BOAT SC 16-16 (STR-4P37)."

6. PRESERVATIVES, DESICCANTS, AND PROTECTIVE PACKING: PRESERVATIVES SHALL NOT BE APPLIED TO INTERNAL WETTED SURFACES WITHOUT CUSTOMER APPROVAL. IF THE PURCHASE ORDER OR DOCUMENTS REFERENCED THEREIN REQUIRE PRESERVATION OF INTERNAL WETTED SURFACES, THE SELLER SHALL SUBMIT A PRESERVATION PROCEDURE TO THE BUYER FOR APPROVAL. FOR ELECTRIC BOAT AND NEWPORT NEWS SHIPBUILDING PURCHASE ORDERS, THE PROCEDURE SHALL BE SUBMITTED ON A VENDOR PROCEDURE APPROVAL REQUEST (VPAR FORM 84-01-2974).

THE APPROVED PRESERVATION PROCEDURE SHALL INCLUDE THE APPROXIMATE QUANTITY AND TYPE OF PRESERVATIVE TO BE APPLIED INTERNALLY AS WELL AS TO PACKING HOUSINGS AND LOOSE PARTS THAT WOULD BE EXPOSED TO THE WETTED AREAS OF THE COMPONENT WHEN ASSEMBLED. THIS PROHIBITION OF PRESERVATIVES SUPERSEDES ANY OTHER CLEANLINESS CLAUSES THAT REFER TO "COMMERCIAL PRACTICES". IF PRESERVATIVES ARE USED, A TAG SHALL BE SECURELY AFFIXED TO THE HARDWARE TO INDICATE THE TYPE OF PRESERVATIVE USED, THE DATE IT WAS APPLIED, AND, UNLESS THE PRESERVATIVE WAS SPECIFIED BY THE BUYER, THE RECOMMENDED REMOVAL METHOD. IF DESICCANTS ARE USED, THE HARDWARE SHALL BE TAGGED AT EACH LOCATION WHERE THE DESICCANT IS LOCATED. THE TAGS SHALL BE SECURELY AFFIXED AND SHALL INDICATE THE NUMBER OF DESICCANT BAGS AT EACH LOCATION, AND WHEN DESICCANT INSPECTION OR REPLACEMENT IS RECOMMENDED.

IF PROTECTIVE PACKING/PACKAGING MATERIAL IS PLACED INSIDE HARDWARE TO PRECLUDE DAMAGE DURING SHIPPING AND HANDLING, A PROMINENT TAG CAUTIONING THE INSTALLING ACTIVITY TO REMOVE THE INTERNAL PROTECTIVE PACKING/PACKAGING MATERIAL BEFORE INSTALLATION, SHALL BE SECURELY AFFIXED TO THE HARDWARE. DOCUMENTATION ACCOMPANYING THE HARDWARE SHALL ALSO IDENTIFY THE LOCATION OF ANY PRESERVATIVES, DESICCANTS, OR PROTECTIVE PACKING/PACKAGING MATERIAL USED.

7. CERTIFICATION: DOCUMENTATION ACCOMPANYING THE HARDWARE AND HARDWARE PACKAGING SHALL IDENTIFY THAT THE HARDWARE MEETS THE REQUIREMENTS OF SC 16-16 (STR-4P37). HARDWARE PROCURED TO SPECIFICATIONS (E.G., SC 53-13 (MIL-STD-767)) WITH CLEANLINESS REQUIREMENTS AT LEAST AS RESTRICTIVE AS THOSE HEREIN NEED NOT INVOKE SC 16-16 (STR-4P37). ONE COPY OF A REPORT OF THE SATISFACTORY COMPLETION OF THE ABOVE INSPECTION AND SEALING ARE TO ACCOMPANY EACH SHIPMENT. THE REPORT SHALL BE SIGNED AND

DATED BY THE SELLER'S AUTHORIZED REPRESENTATIVE. WHEN PRESERVATIVES ARE APPLIED TO INTERNAL WETTED SURFACES, THE REPORT SHALL REFERENCE THE APPROVED PROCEDURE NUMBER AND EVIDENCE OF APPROVAL SHALL BE INCLUDED IN THE CERTIFICATION PACKAGE (I.E., EB VPAR OR HII-NNS APPROVAL LETTER).

8. INSPECTION REPORTS SHALL BE ATTACHED TO THE PACKING LIST. WHERE MORE THAN ONE CONTAINER OR PACKAGE IS INCLUDED IN THE SHIPMENT, THE INSPECTION REPORT SHALL BE ATTACHED SECURELY TO OR PLACED IN ONE CONTAINER OR PACKAGE AND CLEARLY IDENTIFIED ON THE OUTSIDE