Coded Note Number: IC079
Revision: **C020**
Date: **September 16, 2019**
Title: Steam Plant Cleanliness

1. Quantity: one (1) copy
   Steam Plant Cleanliness Report - A report of satisfactory cleanliness inspection signed and dated by the seller's authorized representative, shall be forwarded with the shipment. The report shall indicate compliance with coded note IC079.
   See Paragraph 13 below for guidance regarding oxygen cleanliness.

2. Applicability: This coded note applies to internal, fluid wetted, surfaces. It does not apply to external surfaces or lube oil or seawater wetted surfaces. Surfaces for which no other cleanliness requirements are specified shall be cleaned and shall be free from dirt, corrosion, oil, grease, and foreign residue.

3. Cleanliness Acceptance Criteria:

   - All applicable hardware internal surfaces and parts shall be dry and visually clean (e.g. free of dirt, loose corrosion products, grease, non-approved preservative, oil, flux, scale, water residue, machining particles and other foreign material).
   - No temporary markings (e.g., paint stick, magic marker, layout dye, grease pencil, chalk marks, PT developer or dye, mechanically applied inks, etc.) are allowed.
   - A few discrete lint fibers (less than one fourth inch in length) and small amounts of graphite in isopropanol per MIL-L-24131 when used for assembly are acceptable.
   - A thin adherent oxidation film, other than rust, with no visible thickness from heat treatments, welding, or specified tests with water are acceptable on surfaces allowed to be final machined before these operations.
   - A light, superficial, adherent rust film (iron oxide, usually red or orange) with no visible thickness is acceptable on carbon steel, alloy steel, and 400 and 500 series stainless steel (except 403 and 410), providing the rust will not impair the hardware's proper function.
   - A small amount of light, superficial, adherent rust with no visible comprising less than one percent of the visually accessible surface area is also acceptable on the surface of corrosion resistant materials (e.g., 300 series, 403, and 410 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 (for example, bellows, diaphragms, membranes, seating surfaces for valves, or heat exchanger tubing.)

4. Optional Cleanliness Training for Suppliers: Suppliers have the option to provide cleanliness training to their personnel who will be performing cleanliness and inspection duties. This training is available from NNS at no charge. For more information, contact the NNS contact person listed in the purchase order.

5. Build Clean Philosophy: Internal surfaces and parts, which cannot be cleaned after assembly, shall be cleaned and inspected prior to the assembly operation that precludes further cleaning. During subsequent assembly operations (including any required performance testing of the finished assembly), such parts shall be protected from entry of dirt, grit, cutting oils and other foreign material. See paragraph 3 for cleanliness acceptance criteria for piece parts. Assembling non-clean piece parts with the intent of flushing later is not acceptable, unless approved by NNS on a case by case basis.

6. Lubricant and Sealant Prohibition: The only approved assembly lubricant is collodial graphite in isopropanol per MIL-l-24131 (Neolube #1 manufactured by Huron Industries). Lubricants, sealants, teflon tape, etc. shall not be utilized on final cleaned parts unless specifically required by the purchase order requirements. If the hardware cannot be assembled properly or will not function properly without lubricants/sealants, the seller shall submit a VIR listing the products recommended to be used by the manufacturer. When these products are authorized to be applied to sealing and operating surfaces, they must not be present on other surfaces in contact with system fluid. Lubricants, sealants, and other materials approved for use during assembly must be used sparingly on fluid-wetted surfaces and all visible residue shall be removed following completion of work. Special care shall be used when mating flange faces where joint closure could force sealant into fluid-wetted surfaces.

7. Preservative and Desiccant Prohibition: Preservatives and desiccants shall not be applied to internal wetted surfaces unless they are specifically required by other purchase order documents or approved by the purchaser on a case basis.

8. Final Inspection: When the component is ready for shipment, a visual inspection through all hardware openings shall be performed to the maximum extent practical per the cleanliness acceptance criteria listed in paragraph 3 above. If foreign material is found, the component must be disassembled as necessary and re-cleaned.

9. Cleanliness Protection: Final cleaned hardware shall be individually sealed in bags or all hardware openings shall be sealed with temporary caps, covers or plugs. Typically, smaller items are bagged and larger items are capped/covered/plugged.

    - Bags shall be made of polyethylene or polyurethane. Clear bags are not allowed.
    - Bags shall be heat sealed or taped sealed.
    - Caps/covers/plugs shall be made of silicon rubber, stainless steel, aluminum, rigid Teflon, rigid polyethylene, ethylene propylene rubber, nitrile butadiene (Buna-N) rubber, polyamide (Nylon), acetal homopolymer (Delrin), or rigid polyurethane (Pellethane). Clear materials are not allowed.
    - Sealing tape, if required, shall be 3M Performance Plus Duct Tape 8979N, slate blue in color.
    - When cleanliness covers are taped on flanges, the back of the bolt holes must be taped unless the cover is secured inside the bolt hole diameter.

Any deviation from these requirements requires prior NNS approval.

10. Support System Cleanliness - Support systems which are utilized for testing or drying clean components shall be maintained to the same cleanliness level as this coded note. If the entire support system is not maintained clean, then following filter(s) shall be installed as near as practical to the clean component: (a) liquid support systems: 80 micron or finer stainless steel mesh or edge type filter, and (b) gaseous support system: 10 micron or finer fiber filter followed by an 80 micron or finer stainless steel mesh or edge type filter.

11. Order of Precedence: Where this coded note (IC079) and EBSC 16-16 are both invoked for the same part number, IC079 takes precedence.

12. Conflicts: Any conflict between this coded note and other contract requirements shall be brought to the attention of the NNS contact person listed in the purchase order as soon as practical.

13. Guidance regarding oxygen cleanliness: oxygen cleaning does not meet the requirements of this coded note. However, items which have been oxygen cleaned may be upgraded if all of the following conditions are met:

    1) The item has no grease, lubricants, adhesives, etc. (e.g. Krytox) used in the assembly (see note 6).
    2) The item has been final rinsed. One of the following solutions shall be used for the final rinse:
        - distilled water
        - demineralized water
        - denatured alcohol
        - isopropanol
        - acetone
    3) All oxygen clean tags/markings have been removed.

    The final rinse revokes the oxygen cleaning certification per MIL-STD-1330 and **ASTM-G-93**, therefore requiring the removal of oxygen clean tags.

Revision History Table		
Rev	**Description**	**Revision Date**
C020	REVISED: 1. Corrected typo in paragraph 13. ASTM-G-33 corrected to ASTM-G-93.	9/16/2019

This revision history is provided for convenience and does not alleviate the supplier's responsibility with understanding and complying with the full coded

note.