Newport News Shipbuilding

September 18, 2012

Subject: Letter of Advisement for Recent Fastener Nonconformance Issues

Dear Valued Supplier,

The purpose of this letter is to notify our suppliers that it is critical that fasteners specified by the drawing or contract ordering data meet all requirements. There have been two recent instances with several different suppliers where it was discovered that the fasteners supplied did not meet contract requirements. As a supplier of product intended for use aboard a United States Navy nuclear powered submarine, it is imperative that all applicable contract requirements be met. As members of the shipbuilding supplier base, we are all responsible to ensure that all applicable contract requirements are met.

The two recent issues involving fasteners have included the following:

1) Hex Head Cap Screws were supplied that did not have the required unthreaded body length and were instead supplied essentially fully threaded to the head. In many cases, Hex Head Cap Screws are required to be manufactured dimensionally to ASME B18.2.1. The ASME specification requires a minimum unthreaded body length which varies depending on the length/diameter ratio of the fastener. Fasteners supplied by one of our suppliers have been found to be nonconforming in some instances with respect to the unthreaded body length dimensions. The supplier on regular occasions supplied fasteners essentially fully threaded to the head where in fact the specification required the fasteners to have an unthreaded body length. The supplier ordered fully threaded fasteners so that they could cut down the screw length as needed in order to fulfill urgent orders and reduce lead times. An unthreaded body length becomes important when the design requires the larger unthreaded body diameter to sustain shear stresses during shock loading. The nonconforming fasteners that had been previously shipped in this condition numbered in the thousands and required an enormous effort to evaluate the technical impact on a ship ready to go to sea.

2) Bolts, Screws and Studs supplied to ASTM F593 were required to be Cold Worked (CW) and were instead supplied in the annealed condition. ASTM F593 requires that Alloy Groups 1, 2, and 3 fasteners be supplied in the cold worked condition unless otherwise specified in the purchase order. NNS purchase orders for Virginia Class did not include a condition in the purchase order, so the fasteners were required to be supplied in the cold worked condition. A review of test reports for ASTM F593 Group 1 fasteners showed that two fastener suppliers have delivered these fasteners in the annealed condition. The suspected cause of the problem is that the suppliers are misreading Footnote B to Table 2 (the legend of conditions), which for cold worked fasteners states "CW – Headed and rolled from annealed stock thus acquiring a degree of cold work; sizes 0.75 in. and larger may be hot worked and solution annealed." The footnote allows the supplier the option to manufacture a CW fastener ¾" an above by cold working or by hot working and annealing, but the finished fasteners 0.75 in. and above are still required to meet the minimum mechanical properties specified for the cold worked (CW) condition. The suppliers have interpreted Footnote B to allow supplying fasteners 0.75 in. and above that conform to annealed mechanical property requirements. This issue was limited to ASTM F593 Alloy Groups 1, 2, and

3 fasteners with sizes ¾ in. and above. Previously shipped nonconforming fasteners again required an enormous effort to evaluate the technical impact on a ship ready to go to sea.

Newport News Shipbuilding requests suppliers to be aware that supplying nonconforming fasteners can result in serious consequences and should not be taken lightly. When nonconforming fasteners are used or misapplied, it can result in:

- Rework and costs associated with the corrective actions
- The component not operating or not operating properly
- Loss of system capability
- Loss of mission capability
- Loss of life

Suppliers should review their internal procedures and controls to ensure that the material being supplied is in strict accordance with all contract requirements. It is strongly suggested that in addition to your normal inspection, suppliers should confirm that compliant fasteners are being supplied in accordance with contract requirements. If it is found that nonconforming fasteners have been previously shipped, it is requested that you notify your customer as soon as possible so that corrective action can be taken.

Caution should be taken during contract review and material ordering to ensure that all contract requirements are being specified and verified. Any questions relating to unclear drawing or contract requirements should be forwarded to the procuring activity on a Vendor Information Request (VIR) for resolution or ordering data clarification.

Please share this Lesson Learned letter with your sub-tier suppliers. Any questions concerning the above can be forwarded to Aaron Loehr, Newport News Shipbuilding Material Engineering at (757) 380-3463 or E-mail Aaron.J.Loehr@hii-nns.com.

Sincerely,

Rudie L. Simpson
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