In addition to any basic quality system requirements of this order, the supplier shall maintain a quality system in support of Software and Firmware development, creation, implementation and maintenance based on industry software best practices (e.g., IEEE 12207, Capability Maturity Model Integration (CMMI)) and shall provide for the following at a minimum.

a. Maintain specific standards, methods, tools, actions, and responsibilities associated with development, qualification, and maintenance of all software including a method for identification and tracking of safety related requirements.

b. Ensure all system requirements have been identified and are clearly understood.

c. Software operating systems, languages, architectures and tools used will provide for an open system

d. A designated manager shall be identified.

e. Development shall require cross functional team participation to ensure all system requirements are met and any variance is documented and approved by the customer.

f. Method of estimating project schedules, resources, costs and process improvements.

g. Personnel engaged in verification or use to be trained according to the task they are performing.

h. Software and firmware integrity to be managed to ensure no corruption occurs during storage, changes, duplication processes and processed of transferring the software or firmware to a different media.

i. Bi-directional traceability shall be established from the source requirement down to its implementation level requirements and from the implementation level requirements back to the source.

j. Configuration management plan to include the following
   i. Milestone identification of when the software or firmware falls under the CM control,
   ii. Details of the library system used to manage software and firmware.
   iii. Method for older versions of the software or firmware regeneration from backups.
   iv. Change control process (reviews, approvals, verifications, revision identification note: firmware versions to be identified on component drawings).
   v. Customer approval requirements of any changes.
   vi. Regression testing supporting changes.

k. Develop operating procedures for software and/or firmware to support the following
   i. Procedures for testing software and firmware product in its operational environment.
   ii. Procedure for receiving, recording, tracking problems, providing feedback on problems, and resolving problems.
   iii. Procedures required for providing assistance and consultation to users.
   iv. Procedures for forwarding user requests, as necessary, to maintenance organization for resolution.
v. Procedures for systems operations.

Northrop Grumman reserves the right to conduct surveillance at the supplier's facility to determine that the supplier's quality system meets the requirements of the quality standard as set forth herein. Acceptance of this contract includes the support of on-site quality and process audits to be conducted as determined necessary by Northrop Grumman. The supplier shall ensure that these on-site quality and process audit requirements are flowed down through the supply chains that support the item(s) on this order.

<table>
<thead>
<tr>
<th>Supplier Quality Assurance: Thomas J. Hugman</th>
<th>Date: 6/6/2018</th>
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<tr>
<td>Mission Assurance:</td>
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