

## DESIGN REVIEW CHECKLIST

Title: \_\_\_\_\_

Date: \_\_\_\_\_

DMS Design Review Collection ID: \_\_\_\_\_

Design Review Chairperson (if applicable): \_\_\_\_\_

Design Review Team (if applicable): \_\_\_\_\_

Design Review Type (check one):

☐ Conceptual Design Review      ☐ Preliminary Design Review      ☐ Final Design Review

Respond to each question by marking the block in front of the question "YES", "NO" or "N/A". Items that are questionable or incomplete should be marked "NO" and explained briefly. Items marked "N/A" should be minimal in number, and reflect lack of relevance or applicability to this particular Design Review. In preliminary versions of the form, you may respond as if all action items are satisfactorily resolved.

Design Objectives	Yes, No, N/A
1. Is there a clear statement as to what the design is intended to do or achieve?	
2. Is there a quantitative assessment that shows that the intent of the design is likely to be accomplished?	
3. If any of the motivation for the design is economic (e.g., reduce manufacturing cost), has the design been evaluated to confirm that the increment of improvement is justified by the development cost and/or the potential economic incentive?	
4. Have questions of intellectual property, patentability or patent infringement been considered in developing the design?	
5. Have all action items been suitably addressed and approved by responsible party?	

Functional Requirements	Yes, No, N/A
1. Are the functional requirements for the design clearly identified and complete?	
2. Are assumptions adequately described and reasonable?	
3. Have appropriate regulatory or performance requirements been invoked for the design?	
4. Have pertinent interface requirements been established?	

<b>Functional Requirements</b>	<b>Yes, No, N/A</b>
5. Has compatibility with other resident components or systems and impact on respective design margins been considered?	
6. Does the design team fully understand the environment in which the product is to operate and how that environment may change over time and the resulting impact on the functional requirements of the design?	

<b>Design Requirements and Design Bases</b>	<b>Yes, No, N/A</b>
1. Are the mechanical design requirements and design bases appropriate, complete, and quantitative (e.g., with specific acceptance criteria or limits) including (but not limited to): <ul style="list-style-type: none"> <li>a. Interfaces with other components or systems, especially dimensional interfaces.</li> <li>b. Stress, strain, and load limits for all structural components under normal operating conditions, accident conditions, and shipping and handling conditions.</li> <li>c. Limits on the cumulative effect of cyclic mechanical or thermal loadings (e.g., fatigue) on the structural members.</li> <li>d. Environmentally induced effects on materials or components (e.g., oxidation, hydriding, corrosion, water chemistry)</li> <li>f. Dimensional changes (e.g., bowing, dimensional growth, creep)</li> <li>g. Integrity of encapsulated components considering credible failure mechanisms (e.g., collapse, burst, heat transfer).</li> <li>i. Worst case pneumatic or hydraulic loads under normal operating conditions</li> </ul>	

<b>Design Drawings and Documents</b>	<b>Yes, No, N/A</b>
1. Have all necessary drawings, specifications, test reports, etc., been approved and released?	
2. Have all necessary calculations, tests, or analyses been performed and documented?	
3. Has all review and independent verification of design documents been completed?	
4. Have all necessary changes to design manuals or the equivalent been initiated?	

<b>Design Evaluation</b>	<b>Yes, No, N/A</b>
1. Were appropriate design methods used, and were design inputs correctly incorporated?	

<b>Design Evaluation</b>	<b>Yes, No, N/A</b>
2. Has applicable manufacturing and operating experience been considered?	
3. Have adequate provisions been included for qualifying new materials, suppliers, and manufacturing processes/methods?	
4. Have changes from prior proven designs been justified (e.g., risk versus potential benefit)?	
5. Has design been evaluated against comparable facility or national lab designs?	
6. Have historical problems and the potential for aggravating old problems been considered?	
7. Have reasonable alternatives to the proposed design been adequately evaluated and considered?	
8. Have past performance issues been addressed?	
9. Have any new analytical methods/models been appropriately verified?	
10. Has applicability of old methods/models been appropriately verified?	
11. Has adequate margin been provided to account for uncertainties of tests, measurements, analyses and assumptions?	
12. Are the major risks, uncertainties and development items documented and evaluated?	
13. Have recommendations from previous applicable Design Reviews been addressed?	
14. Do the design criteria satisfy generic functional requirements as opposed to cycle specific requirements?	
15. If a technology from a similar design is being applied, were appropriate scaling and other assessments considered and evaluated?	
16. Has a risk assessment been performed for the overall design?	

<b>Testing, Inspection and Surveillance</b>	<b>Yes, No, N/A</b>
1. If any aspects of the design are being verified by test or demo operation, are the proposed tests necessary and sufficient for the intended purpose?	
2. Have unique testing and inspection requirements for any new manufacturing process and/or supplier been considered and documented in the design specification?	

Testing, Inspection and Surveillance	Yes, No, N/A
3. Has the applicability of existing specifications been reviewed for the design?	
4. Do the tests adequately address variability arising from the drawing tolerances with regard to design criteria/parameters?	
5. Has sufficient testing been performed to verify the consistency or repeatability of complying with design parameters?	
6. Have shipping and handling requirements for any new manufacturing process been considered?	

Quality Assurance	Yes, No, N/A
1. Are quality assurance aspects of design work being done in accordance with all applicable engineering procedures?	
2. Are any unique quality assurance requirements being invoked?	

Manufacturing Considerations	Yes, No, N/A
1. Do manufacturing development efforts effectively support the design for any new or unique manufacturing processes needed (e.g., scope, depth, schedule)?	
2. Have any unique material availability problems been adequately considered?	
3. Is the design complete and acceptable with regard to manufacturing process control?	
4. Has a risk assessment been performed on the manufacturing process?	

Safety Considerations	Yes, No, N/A
1. Has a safety evaluation been completed by the responsible Committee?	
2. Do the design features or methods avoid increasing the probability of occurrence or consequences of an accident or malfunction of equipment important to safety?	
3. Have any unique personnel safety concerns been adequately considered and resolved?	
4. Have interface evaluations been performed by the impacted groups, or has the scope of effort required for specific application been identified? Have generic evaluations been performed, where applicable?	

<b>Change Control</b>	<b>Yes, No, N/A</b>
1. Have core interface features of the design been compared to current standards and/or limits?	
2. Do new/changed features of the design represent an acceptable departure from existing standards or limits?	

<b>Repairability</b>	<b>Yes, No, N/A</b>
1. Have design features adequately addressed specific functional requirements for repair of the product?	
2. Do criteria for repair facilitate simple, economical and prompt correction of product deficiencies?	
3. Are interface organizations which may be ultimately involved in a repair program familiar with the design features?	

<b>Methodology</b>	<b>Yes, No, N/A</b>
1. Is the design or design change compatible with current safety evaluation methodology?	
2. In case methodology changes or amendments are proposed have they been properly described or reviewed or are they part of the design package?	
3. Has the supporting testing been evaluated and necessary correlations for design purposes been established?	