MSR ChecklisT

1. Identification: MSR-CHECKLIST-PCA-V5.3
2. TITLE: PHYSICAL CONFIGURATION AUDIT Checklist
3. DESCRIPTION and intended use

The objective of a Physical Configuration Audit (PCA) is to formally examine the as-built version of a Configuration Item against its design documentation in order to establish the Product Baseline. A PCA is applicable to Configuration Items of the Mission System and the Support System as defined under the Contract, including Support System Components such as Support and Test Equipment (S&TE).

The PCA also determines that the production acceptance testing requirements prescribed by the documentation is adequate for acceptance of production units of a Configuration Item by quality assurance activities.

After successful completion of the PCA, all subsequent changes are formally processed by engineering change action. The PCA includes a detailed audit of engineering drawings (which include three-dimensional models / computer-aided design drawings, as applicable), specifications, Technical Data and tests utilised in production of the Configuration Item, including the design documentation, listings, and manuals for Software Configuration Items. The review includes an audit of the released engineering documentation and quality control records to make sure the as-built or as-coded configuration is reflected by this documentation. For Software elements, the Software product specification and Software version description documentation are part of the PCA review.

A PCA should be conducted on the first article of a Configuration Item and those that are a re-procurement of a Configuration Item already in the inventory. A PCA should also be conducted on the first Configuration Item to be delivered by a new contractor even though a PCA was previously accomplished on the first article delivered by a different contractor.

Satisfactory completion of a PCA for a Configuration Item results in the establishment of the Product Baseline for that Configuration Item.

A final review is to be made of all operation and support documents to check format, completeness, and conformance with applicable data item descriptions. A review of engineering data as to its suitability for intended use is also to be performed in conjunction with the results of the Functional Configuration Audit (FCA).

The PCA cannot be performed unless data pertinent to the Configuration Item being audited is provided to the PCA team at time of the audit. The Contractor must compile and make this information available for ready reference.

This MSR Checklist sets out the Commonwealth’s requirements and minimum expectations for the conduct of a PCA.

1. INTER-RELATIONSHIPS

The PCA shall be conducted in accordance with the Approved System Review Plan (SRP), and shall be consistent with the following data items, where these data items are required under the Contract:

Systems Engineering Management Plan (SEMP);

Configuration Management Plan (CMP);

Integrated Support Plan (ISP); and

Verification and Validation Plan (V&VP).

Note: The Status column in the following three tables indicates whether or not the associated Checklist items are able to be tailored by the Contractor in its SRP, based on the following definitions:

1. Mandatory items are not to be tailored;
2. Highly Desirable items should not be tailored, but may be tailored depending upon the specifics of the Contract and the Contractor’s internal processes; and
3. Optional items may be tailored, based upon the specifics of the Contract and the Contractor’s internal processes.

Notwithstanding the Status assigned to each Checklist item, the items are to be included in the SRP if they are applicable.

1. Review Entry Criteria

| Item | Entry Criteria | Status |
| --- | --- | --- |
|  | 1. All data items required to be delivered before, and linked to, the PCA have been delivered and the Commonwealth Representative considers the data items to be suitable for the purposes of conducting PCA. | 1. Mandatory |
|  | 1. Where specified in the Contract, the Commonwealth Representative has Approved the Functional Baseline for the Configuration Item in accordance with the Contract. | 1. Mandatory |
|  | 1. The Contractor has submitted the final draft of the product specification for the Configuration Item to be audited to the Commonwealth Representative for review prior to PCA. | 1. Mandatory |
|  | 1. The Contractor has provided the Commonwealth Representative with a current listing of all deviations/waivers against the Configuration Item, either requested of, or Approved by the Commonwealth Representative. | 1. Mandatory |
|  | 1. The Contractor has provided the Commonwealth Representative with identification of the Configuration Item to be audited in terms of nomenclature, specification identification number and Configuration Item number. | 1. Mandatory |
|  | 1. The Contractor has provided the Commonwealth Representative with drawings, part numbers and build status of the Configuration Item subject to audit, including serial numbers and Software identification. | 1. Mandatory |

1. Review Checklist

| Item | Checklist Item | Status |
| --- | --- | --- |
|  | 1. Were all entry criteria satisfied before starting PCA? | 1. Mandatory |
|  | 1. Has the impact of Approved and pending CCPs been assessed? | 1. Mandatory |
|  | 1. Have all Commonwealth Representative review comments against data items been adequately addressed? | 1. Mandatory |
|  | 1. Have all deviations/waivers for the Configuration Item been Approved by the Commonwealth Representative? | 1. Mandatory |
|  | 1. Has the Contractor provided the Commonwealth Representative with the following information for review:    1. Configuration Item product specification;    2. engineering drawing index and drawings including revision status;    3. operating, maintenance, and illustrated parts breakdown manuals;    4. approved nomenclature and nameplates;    5. Software operations, maintenance and support documentation;    6. Software version description documentation;    7. FCA minutes for the Configuration Item; and    8. the findings and status of quality assurance activities relating to the Configuration Item? | 1. Mandatory |
|  | 1. Has the Contractor provided all data describing the configuration of the Configuration Item, including:    1. current approved issue of hardware development specifications, Software requirements specifications, and interface requirements specifications and approved deviations/ waivers;    2. identification of all changes actually made to the Configuration Item during testing;    3. identification of any required changes not completed;    4. all approved drawings and documents, in the form specified in the Contract, by the top drawing number as identified in the Configuration Item product specification; and    5. manufacturing instruction sheets for hardware Configuration Items identified by the Commonwealth Representative? | 1. Mandatory |
|  | 1. Are there any differences between the physical configurations of the selected production item and the item used for the FCA? 2. Has it been demonstrated to the Commonwealth Representative that any differences do not degrade the functional characteristics of the selected units? | 1. Mandatory |
|  | 1. Have the drawings and manufacturing instructions been reviewed? 2. Selected drawings and associated manufacturing instructions for each hardware Configuration Item, as identified by the Commonwealth Representative, should be reviewed to determine their accuracy and ensure that they include the authorised changes reflected in the engineering drawings and the hardware. Inspection of drawings and associated manufacturing instruction may be accomplished on a valid sampling basis. The purpose of this review is to ensure the manufacturing instructions accurately reflect all design details contained in the drawings. Since the hardware is built in accordance with the manufacturing instructions, any discrepancies between the instructions and the design details and changes in the drawings will also be reflected in the hardware. 3. The following information should be recorded for each drawing reviewed:    1. drawing number/title (include revision letter);    2. date of drawing approval;    3. list of manufacturing instructions (numbers with change letter/titles and date of approval) associated with this drawing; and    4. discrepancies / comments. 4. Select a sample of part numbers reflected on the drawing. Check to ensure compatibility with any parts standardisation activities and/or Contract requirements, and examine the Configuration Item to ensure that the proper parts are actually installed. 5. As a minimum, the following inspections are to be accomplished for each drawing and associated manufacturing instructions:    1. Drawing number identified on manufacturing instruction should match latest released drawing.    2. List of materials on manufacturing instruction should match materials identified on the drawing.    3. All special instructions called on the drawing should be on the manufacturing instruction.    4. All dimensions, tolerances, finishes, etc., called out on the drawing should be identified on the manufacturing instruction.    5. All special processes called out on the drawing should be identified on the manufacturing instruction.    6. Nomenclature descriptions, part numbers and serial number markings called out on the drawing should be identified on the manufacturing instruction.    7. Review drawings and associated manufacturing instructions to ascertain that all approved changes have been incorporated into the Configuration Item.    8. Check release record to ensure all drawings reviewed are identified.    9. Record the number of any drawings containing more than five outstanding changes attached to the drawing.    10. Check the drawings of a major assembly / black box of the hardware Configuration Item for continuity from top drawing down to piece-part drawing. | 1. Mandatory |
|  | 1. Have all records of baseline configuration for the hardware been reviewed by direct comparison with the Contractor's engineering release system and change control procedures to establish that the configuration being produced does accurately reflect released engineering data? This includes interim releases of Spares provisioned prior to PCA to ensure delivery of currently configured Spares. | 1. Mandatory |
|  | 1. Is the following information contained on release documentation supplied by the Contractor or Subcontractor for each drawing number, if applicable:    1. serial numbers, top drawing number, specification number; and    2. drawing number, title, code number, number of sheets (for hard copy drawings), date of release, change letter / revision number, change / revision date, engineering change order (ECO) number? | 1. Mandatory |
|  | 1. Is the Contractor's release function and documentation capable of determining:    1. the composition of any part at any level in terms of subordinate part numbers (disregard standard parts);    2. the next higher assembly using the part number, except for assembly into standard parts;    3. the composition of the Configuration Item or part number with respect to other Configuration Items or part numbers;    4. the Configuration Item and associated serial number on which subordinate parts are used (noting that this does not apply to Subcontractors who are not producing Configuration Items);    5. the accountability of changes which have been partially or completely released against the Configuration Item;    6. the Configuration Item and serial number effectively of any change;    7. the standard specification number or standard part numbers used within any non-standard part number; and    8. the Contractor specification document and specification control numbers associated with any Subcontractor part number? | 1. Mandatory |
|  | 1. Is the engineering release system and associated documentation capable of:    1. identifying changes and retaining records of superseded configurations formally accepted by the Commonwealth Representative;    2. identifying all engineering changes released for production incorporation. These changes are to be completely released and incorporated prior to formal acceptance of the Configuration Item; and    3. determining the configuration released for each Configuration Item at the time of formal acceptance? | 1. Mandatory |
|  | 1. Has engineering data been released or processed through a central authority to ensure coordinated action and preclude unilateral release of data? | 1. Mandatory |
|  | 1. Are all engineering changes uniquely identified? | 1. Mandatory |
|  | 1. Have all hardware Configuration Items that failed to pass Acceptance Verification requirements been repaired, if necessary, and retested by the Contractor in accordance with the product specification? 2. Has the Contractor presented data confirming the inspection and test of Subcontractor equipment end items at the point of manufacture? 3. Has the documentation describing the Configuration Item been reviewed for correct types and quantities to ensure adequate coverage at the time of shipment to the user? | 1. Mandatory |
|  | 1. Have the following actions been performed on each Software Configuration Item being audited:    1. Review all documents which will comprise the Software product specification for format and completeness.    2. Review FCA minutes for recorded discrepancies and actions taken.    3. Review the design descriptions for proper entries, symbols, labels, tags, references, and data descriptions.    4. Compare top level Software unit design descriptions with lower level Software unit descriptions for consistency.    5. Compare all lower-level design descriptions with all Software listings for accuracy and completeness.    6. Check Software operational, maintenance and support manual format completeness and conformance with applicable data item descriptions. Formal verification/acceptance of these manuals should be withheld until system testing to ensure that the procedural contents are correct.    7. Examine actual Software delivery media to ensure conformance with contractual requirements.    8. Review the listings for compliance with approved coding standards. | 1. Mandatory |

1. Review Exit Criteria

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| Item | Exit Criteria | Status |
|  | 1. All checklist items have been addressed to the satisfaction of the Contractor and the Commonwealth Representative. | 1. Mandatory |
|  | 1. The data used by the PCA team has been made a matter of record in the PCA minutes. | 1. Mandatory |
|  | 1. All major problem and risk areas have been identified and resolved and, for minor problems and risks, corrective action plans have been recorded and agreed by the Commonwealth Representative. | 1. Mandatory |
|  | 1. All risks identified during the course of the review have been documented and analysed. | 1. Mandatory |
|  | 1. The risks with proceeding to the next phase are acceptable to the Commonwealth Representative. | 1. Mandatory |
|  | 1. Configuration differences between the Configuration Item qualified and the Configuration Item being audited have been made a matter of record in the PCA minutes. | 1. Mandatory |
|  | 1. All build records for the Configuration Item confirm that the Configuration Item has been built in accordance with the drawings and specifications. | 1. Mandatory |
|  | 1. All major action items have been closed. | 1. Mandatory |
|  | 1. All minor action items have been documented and assigned with agreed closure dates. | 1. Mandatory |
|  | 1. Review Minutes have been prepared, Approved, and distributed in accordance with the Contract. | 1. Mandatory |