MSR cHecklisT

1. Identification: MSR-CHECKLIST-SSDDR-V5.3
2. TITLE: SUPPORT SYSTEM DETAILED DESIGN REVIEW Checklist
3. DESCRIPTION and intended use

The objectives of the Support System Detailed Design Review (SSDDR) are to demonstrate that:

specifications and/or drawings or Software-development documentation for Support System Components have been appropriately defined;

the designs for the Support System Constituent Capabilities have been adequately defined;

the design and/or selection of the required Support System Components will enable the Functional Baselines (FBLs) for the Mission System and Support System to be met; and

the Support System Components are either ready for further development, adequately defined for procurement, or adequately defined for fabrication.

The SSDDR will often be held as the conclusion to a period of review for Support System process and component design and the review of task-analysis activities. The SSDDR reviews the Support System information to ensure it reflects the required FBL and is an accurate source from which recommended provisioning lists and resource development can be based.

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

1. INTER-RELATIONSHIPS

The SSDDR 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:

Integrated Support Plan (ISP); and

Verification and Validation Plan (V&VP).

The SSDDR inter-relates with the following data items, where these data items are required under the Contract:

Support System Description (SSDESC);

Life Cycle Cost Report and Model (LCCRM) (to demonstrate that the Contractor’s design solution for the Support System represents a minimised LCC solution within the boundaries set by other ILS objectives and program constraints);

Task Resources Report (to ensure that the Support Resources for Operating Support, Engineering Support, Maintenance Support and Supply Support tasks are sufficiently defined to enable Level of Repair Analysis (LORA) modelling, resource utilisation calculations, and resource optimisation to be performed, consistent with Contract requirements);

Logistic Support Analysis Record (LSAR) (to ensure that the Support Resources for operations, Maintenance, and supply support tasks are sufficiently defined for further analysis);

Support System Technical Data List (SSTDL) (to ensure that the Technical Data for the Support System has been appropriately addressed, including in relation to Australian Industry Capability (AIC));

Australia and New Zealand (ANZ) Subcontractor Technical Data List (ASTDL) (to ensure that the Technical Data being provided to ANZ Subcontractors will enable the AIC Obligations to be satisfied and the AIC Objectives to be achieved); and

Software Support Plan (SWSP) (to ensure that the Support Resources (including Software tools) associated with Software support has been appropriately addressed).

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 SSDDR have been delivered and the Commonwealth Representative considers the data items to be suitable for the purposes of conducting SSDDR. | 1. Mandatory |
|  | 1. The Contractor has reviewed Contract plans (including the Performance Measurement Baseline) to assess their consistency with the system requirements. | 1. Highly Desirable |
|  | 1. Action items from any previous System Reviews affecting SSDDR have been successfully addressed or action plans agreed with the Commonwealth Representative. | 1. Mandatory |

1. Review Checklist

| Item | Checklist Item | Status |
| --- | --- | --- |
|  | 1. Were all entry criteria satisfied before starting SSDDR? | 1. Mandatory |
|  | 1. Has the impact of Approved CCPs been assessed? | 1. Highly Desirable |
|  | 1. Have all Commonwealth Representative review comments against data items been adequately addressed? | 1. Mandatory |
|  | 1. Have changes to the Support System Functional Baseline (FBL) since the last review been identified and captured in the design? | 1. Mandatory |
|  | 1. Are there any outstanding unresolved issues (eg, requirements annotated with TBD) in the Support System FBL? | 1. Mandatory |
|  | 1. Has a consistent configuration baseline been established for all documents associated with SSDDR? | 1. Mandatory |
|  | 1. Where, as a result of the refinement of the design, any proposed change to the Support System FBL is in conflict with the FPS, has an Application for a Deviation been proposed for Commonwealth Representative Approval? | 1. Mandatory |
|  | 1. Has downwards traceability been established from the Support System FBL to the individual Support System Components in the final design solution for the Support System? | 1. Mandatory |
|  | 1. Are Acceptance Verification criteria for the Support System, including Support System Components and processes, agreed with the Commonwealth Representative? | 1. Mandatory |
|  | 1. Have remaining areas of requirements variances, voids and conflicts been identified and an approach defined to address them? | 1. Mandatory |
|  | 1. Have all potential tasks for each Support System Constituent Capability to be undertaken by Defence and support contractors (including, where applicable, the Contractors (Support) and Subcontractors (Support), but excluding Original Equipment Manufacturers) been identified? | 1. Mandatory |
|  | 1. Is it technically feasible that Defence and the support contractors (including, where applicable, the Contractors (Support) and Subcontractors (Support)) could undertake all the potential tasks that have been identified for them? | 1. Mandatory |
|  | 1. Are the tasks allocated to ANZ support contractors (including, where applicable, the Contractor (Support) and Subcontractors (Support)) consistent with the AIC Obligations and plans? | 1. Mandatory |
|  | 1. For each Support System Hardware and Software Configuration Item (CI):    1. For any developmental items, confirm that the relevant design details (including functional flow block diagrams, logic diagrams, Software specifications, interface specifications, schematics, etc) have been completed.    2. For any Support System CIs that must interface with other CIs (including the Mission System), confirm that the behaviour and compatibility of interfaces with those other CIs in each of their applicable states and modes, and the failure modes of the Support System CIs that may impact upon the other CIs, have been addressed.    3. For any Support System CIs that must interface with other CIs (including the Mission System), determine that all designs for interfaces with the Mission System and between the Support System CIs and other Support System CIs, meet their functional and interface requirements.    4. Ensure that the interface designs have addressed any interfaces with the existing support infrastructure and with any new facilities.    5. Determine that the final design provides the capability of satisfying the performance characteristics of its specification.    6. Determine the risks associated with the deployment and production of the Support System Configuration Items and the mitigation strategies to address them. | 1. Mandatory |
|  | 1. Operating Support: 2. Has the allocation of all Operating Support tasks to operational locations and/or deployment situations been completed? 3. Have all Support Resources (including Personnel) for the identified Operating Support tasks been identified adequately for use in system level resource calculations and allocations to units/locations? 4. Confirm that the delivery schedule for these Support Resources will enable the Mission System to be operated and the Support System to be implemented when required. 5. Confirm that the overall Support System solution from an Operating Support perspective will enable the Mission System and Support System FBLs to be met. | 1. Mandatory |
|  | 1. Engineering Support: 2. Have the functions and processes of the approved / accredited in-service engineering organisation, and associated Design/Technical Support Network, been adequately defined and the allocation of tasks completed? 3. Have all Support Resources (including Personnel) for all Engineering Support tasks, been identified adequately for use in system level resource calculations and allocations to the System Program Office, design and ADF regulatory / assurance framework authorities, Software support facilities, and any other supporting units? 4. Confirm that the delivery schedule for these Support Resources will enable the Support System to be implemented when required. 5. Are the Engineering Support tasks allocated to ANZ support contractors (including Contractor (Support) and Subcontractors (Support)) consistent with the AIC Obligations and plans? 6. Confirm that the overall Support System solution from an Engineering Support perspective will enable the Support System FBL to be met. | 1. Mandatory |
|  | 1. Maintenance Support (Level of Repair): 2. Has the LORA for the Mission System been performed in a way that is:    1. consistent with the Maintenance concept and other, related, support concepts, including those operational concepts where Maintenance Support is required to be deployed;    2. consistent with the AIC Obligations and plans;    3. compliant with non-economic LORA criteria (eg, strategic, legal and regulatory criteria) and limits placed on Defence Personnel numbers, skills and distribution;    4. consistent with the Mission System and Support System FBLs; and    5. within the given constraints, a minimised LCC solution? 3. Have the plans for the Maintenance of Support System Components (which exclude Mission System Spares) been adequately defined in terms of tasks, skills, Support Resources, and locations? 4. Have calibration requirements for Support System Components been defined, including the necessary Support Resources associated with the calibration requirements? | 1. Mandatory |
|  | 1. Maintenance Support (Maintenance Data): 2. Review adequacy of the Support System solution from a Maintenance Support perspective. 3. Review status of unresolved Maintenance and Maintenance data problems since the DDR. 4. Where applicable, review updates to FMECA, as a result of design changes since DDR, to confirm that all Mission System Corrective Maintenance tasks have been identified, are achievable, and are consistent with Maintenance concepts. 5. Where applicable, review updates to RCM analyses, as a result of design changes since DDR, to confirm that all Mission System Preventive Maintenance tasks have been identified, are achievable, and are consistent with Maintenance concepts. 6. Review the packaging of Preventive Maintenance tasks and the resulting planned servicing schedule data. 7. Confirm that the Support Resource requirements for all Mission System Maintenance tasks, including updates resulting from design changes since DDR, have been defined. 8. Confirm that the Support Resource requirements (including Personnel) for all Support System Maintenance tasks have been defined. 9. Confirm that the delivery schedule for these Support Resources will enable the Support System to be implemented when required. | 1. Mandatory |
|  | 1. Maintenance Support (Interfaces): 2. Review the allocation of Engineering Support, Supply Support and Training Support tasks to the related Maintenance levels and locations. 3. Confirm that the overall Support System solution from a Maintenance Support perspective will enable:    1. the Maintenance demands to be met at the various levels and proposed locations of repair; and    2. the Support System FBL to be met. | 1. Mandatory |
|  | 1. Supply Support: 2. Have the required functions and processes of the Supply Support system, including inventory control, supply chain management, supplier networks, on-going export/import provisions, etc, been adequately defined and the allocation of related tasks completed? 3. Have all Support Resources (including Personnel) for all Supply Support tasks been identified adequately for use in system level resource calculations and allocations to units/locations? 4. Confirm that the delivery schedule for these Support Resources will enable the Support System to be implemented when required. 5. Have all Supply Support interfaces and lines of communication been identified and incorporated into the Support System design? 6. Have the disposal requirements associated with Mission System Spares and Support System Components been addressed? 7. Confirm that the overall Support System solution from a Supply Support perspective will enable:    1. the demands for Spares and other applicable Support System Components to be met, including the demands at the various levels of, and the proposed locations for undertaking, repair; and    2. the Support System FBL to be met. | 1. Mandatory |
|  | 1. Performance Needs (Training) Analysis: 2. Confirm that Personnel skills and competency levels, for all tasks to be conducted by Defence and support contractors (including, where applicable, Contractors (Support) and Subcontractors (Support)), have been identified adequately to complete the task inventory and the performance needs (Training) analysis (including feasibility studies). 3. Confirm that the planned training programs are compatible with the skill levels of those Personnel to be involved in the operational and support tasks. 4. Confirm that the analysis of performance needs and Training has addressed the requirements for all of the different types of Training required under the Contract (eg, Introduction into Service Training, Sustainment Training, Conversion Training, Continuation Training and Train-the-trainer Training). 5. Is the proposed Training to be delivered to ANZ support contractors (including, where applicable, the Contractor (Support) and Subcontractors (Support)) consistent with the AIC Obligations and plans? | 1. Mandatory |
|  | 1. Training Support: 2. Have the required functions and processes of the Training Support system been adequately defined and the allocation of related tasks completed? 3. Have all Support Resources (including Personnel) for the identified Training Support tasks been identified adequately for use in system level resource calculations and allocations to units/locations? 4. Confirm that the delivery schedule for these Support Resources will enable the Support System to be implemented when required. 5. Confirm that the overall Support System solution from a Training Support perspective will enable the Support System FBL to be met. | 1. Mandatory |
|  | 1. Have the results of Commonwealth-directed trade studies been presented, and have the implications for the requirements and design of the Support System been addressed? 2. Have the agreed outcomes from Commonwealth-directed trade studies presented at previous reviews been incorporated into the requirements and design for the Support System? | 1. Optional |
|  | 1. Growth, Evolution and Obsolescence: 2. Have the likely areas for future Support System change or expansion over the LOT been considered and reviewed since DDR? 3. Has the purchasing strategy been assessed to ensure that the COTS elements of the solution, which are subject to rapid change in the marketplace, are acquired using just-in-time principles? 4. Has the robustness of the final Support System design with respect to areas of likely growth and change over the LOT, including likely changes to user requirements and changes to hardware or Software technology solutions been addressed? | 1. Mandatory |
|  | 1. Design Reliability: 2. Confirm that the design and/or selection of Support System Components has addressed the reliability requirements specified in the Support System FBL. | 1. Mandatory |
|  | 1. Design Maintainability: 2. Confirm that the design and/or selection of Support System Components has addressed the maintainability requirements specified in the Support System FBL. | 1. Mandatory |
|  | 1. Logistics Engineering (Transportability): 2. Confirm that the design/selection of Support System Components will satisfy the Support System FBL with respect to size and weight to permit economical handling, loading, securing, transporting, and disassembly for shipment within existing capabilities of military and commercial carriers. Identify any updates since DDR to the list of potential oversized and overweight items. 3. Identify any updates since DDR to the list of system/items defined as being hazardous. Confirm that packaging requirements afforded hazardous items complies with Hazardous Chemicals and Dangerous Goods regulations. 4. For those Support System Components identified as requiring special temperature and humidity control or those possessing sensitive and shock susceptibility characteristics, confirm that special transportation requirements will be available for use. 5. Review transportability analyses to confirm that transportation conditions have been evaluated and that these conditions are reflected in the design of protective, shipping, and handling devices. In addition to size and weight characteristics, confirm that analyses have addressed provisions for temperature and humidity controls, minimisation of sensitivity, susceptibility to shock, and transit damage. 6. Review design/selection of special materials handling equipment, when required, and action taken to acquire equipment. 7. Identify equipment to be test loaded for transportability via the transportation modes identified in the Mission System FBL and Support System FBL. | 1. Mandatory |
|  | 1. Logistics Engineering (Parts Standardisation and Interchangeability): 2. Have Support Resources that are already in use in Defence and that have been identified as preferable for use as common / standardised resources, or that are Support Resources to be reused from a Mission System being replaced, been considered by the Contractor for the purposes of provisioning screening and standardisation? | 1. Highly Desirable |
|  | 1. Human Engineering: 2. Review Support System Component drawings (including three-dimensional / computer-aided design models, if applicable), schematics, mock-ups, or actual hardware to determine that it meets human performance requirements and accepted human engineering practices. 3. Review each facet of design for human/machine compatibility and confirm the requirements for special materiel handling and other support equipment. Review time/cost/effectiveness considerations and forced trade-offs of human engineering design. 4. Evaluate the following human engineering / biomechanical design factors:    1. anthropometry;    2. safety features and emergency equipment;    3. workspace layout;    4. workspace environmental conditions (noise, lighting, ventilation, etc);    5. Training Equipment; and    6. Personnel accommodations. |  |
|  | 1. Electromagnetic Environmental Effects: 2. Review the Support System EMC including effects on the electromagnetic environment (inter-system EMC) and intra-system EMC. Determine acceptability of final EMC design and residual risks in meeting contractual EMC requirements. 3. Confirm Support System design for EMC with Mission System components, existing support infrastructure components, and associated Maintenance and Operating Support procedures. 4. Review EMC test plans for the Support System. Determine adequacy to confirm EMC design characteristics of the system/Hardware Configuration Item/subsystem. | 1. Mandatory |
|  | 1. System Safety: 2. Have all Materiel Safety issues that affect the requirements and design of the Support System Components and interfaces with the existing support infrastructure, including those identified through hazard analyses, been addressed? 3. Has an analysis of failure modes of significant Support System Components been undertaken to determine the safety implications of those modes? 4. Does the Hazard Log include all problematic items of Supplies that represent a risk to health and safety, including for both Mission System Spares and Support System Components? 5. Review safety analyses and procedures for all support functions. 6. Evaluate adequacy of detailed design for safety and protective equipment/devices. 7. Ensure the safety authority has reviewed any changes to the Safety Case Report, and supporting evidence, required since DDR to incorporate safety issues arising out of the Support System detailed design. | 1. Mandatory |
|  | 1. System Security: 2. Review unique security requirements and the techniques to be used for implementing and maintaining security within the Support System, including in relation to physical security, Emanation Security (EMSEC), Information and Communications Technology (ICT) security and cyber security. | 1. Mandatory |
|  | 1. Regulatory: 2. Confirm that appropriate regulatory issues have been addressed for the implementation of the Support System and its interface with the existing support infrastructure. For example, consider:    1. Australian Communications and Media Authority (ACMA) regulatory requirements,    2. environmental requirements,    3. EMI/EMC regulatory requirements,    4. Materiel Safety requirements,    5. system security requirements (eg, for Certifications and Accreditations), and    6. ADF regulatory requirements. | 1. Mandatory |
|  | 1. Environmental: 2. Ensure that studies concerning the effects of the natural environment on, or interacting with, the Support System have been concluded and the implementation requirements documented. 3. Ensure that studies concerning the effects of the Support System on the natural environment have been concluded, and the implementation requirements documented. | 1. Mandatory |
|  | 1. Assignment of Official Nomenclature: 2. Determine whether official nomenclature and approval of nameplates for Support System Components have been obtained to the extent practical. 3. Identify problems associated with nomenclature requests together with status of actions towards resolving the problems. | 1. Highly Desirable |
|  | 1. Codification: 2. For applicable Mission System CIs, determine whether Codification Data has been submitted to:    1. the Commonwealth, for Codification by the Australian National Codification Bureau (NCB); or    2. an overseas NCB, for Codification in the country of origin. 3. Determine whether Support System Components that will require Codification have been identified, including any Support System Components that may require extant Codification Data to be updated due to the item being modified. | 1. Highly Desirable |
|  | 1. Verification & Validation (V&V): 2. Review updating changes to all Support System specifications subsequent to the DDR, to determine whether the specifications adequately reflect these changes. 3. Review all available Supportability V&V documentation for currency, technical adequacy, and compatibility with requirements specifications. 4. Review the Software Supportability aspects of test descriptions and ensure they are consistent with Software test plans. Ensure the Supportability of Software will be adequately assessed. 5. Can the Support System (once assembled) be tested, analysed, or inspected to show that it satisfies the Support System FBL? | 1. Mandatory |
|  | 1. Spares: 2. Confirm that the Spares-optimisation modelling (including valid data sets and procedures), where required under the Contract, is being developed to meet the requirements of the Mission System and Support System FBLs at a minimised LCC. 3. Review provisioning planning through normal logistics channels and the Commonwealth Representative to ensure its compatibility (content and time phasing) with contractual requirements (data and SOW items). The end objective is to provision by a method which ensures supportability of the Mission System at the required Contract time (eg, at the System Acceptance Audit). Also accomplish the following:    1. ensure Contractor understanding of contractual requirements, including time phasing, instructions from logistics support agencies, interim release authority and procedure, and responsibility to deliver spare/repair parts by need date;    2. determine that scheduled provisioning actions, such as provisioning reviews, interim release and screening, are being accomplished adequately and on time; and    3. identify existing or potential provisioning problems. 4. Determine quantitative and qualitative adequacy of provisioning drawings and data. Verify that logistics critical items are listed for consideration and that adequate procedures exist for reflecting design change information in provisioning documentation and other Technical Data. 5. Ensure support requirements have been determined for installation, checkout, and Verification for approval by the Commonwealth Representative. Ensure screening has been accomplished and the results are included into provisioning lists. 6. Determine that adequate storage space requirements have been programmed for on-site handling of installation and checkout, Verification support material, and a scheme has been developed for "down streaming" and joint use of insurance (high cost) or catastrophic failure support items. | 1. Mandatory |
|  | 1. Packaging/Special Design Protective Equipment (SDPE): 2. Confirm that the proposed Packaging solution has addressed requirements for handling, storage and transportation for Mission System Spares and Support System Components. 3. Review proposed Packaging design to ensure that adequate protection to Hardware CIs, and the media on which Software CIs are recorded, is provided against natural and induced environments/hazards to which the equipment will be subjected throughout its life cycle, and to ensure compliance with contractual requirements. 4. Review the results of trade studies, engineering analyses, etc, to substantiate selected Packaging/SDPE design approach, choice of materials, handling provisions, environmental features, etc. 5. Ensure that Packaging/SDPE design provides reasonable balance between cost and desired performance. 6. Review all pre-production test results of the prototype Packaging design to ensure that Hardware CIs are afforded the proper degree of protection. 7. Review Packaging requirements of Hardware CI product specifications for correct format, accuracy and technical adequacy. | 1. Mandatory |
|  | 1. Support and Test Equipment (S&TE) and Training Equipment: 2. Confirm requirements for S&TE and Training Equipment for the support of Mission System Hardware CIs and Software CIs. 3. Identify existing or potential S&TE and Training Equipment provisioning problems. 4. Determine qualitative and quantitative adequacy of provisioning drawings and data. 5. Review reliability and maintainability of S&TE and Training Equipment. 6. Review logistic support requirements for S&TE and Training Equipment items. 7. Review calibration requirements. 8. Review documentation for S&TE and Training Equipment. | 1. Mandatory |
|  | 1. Technical Data: 2. Review the suitability of final commercial manuals and/or proposed modifications. 3. Review the application of Technical Data standards in the development of Technical Data, including, when applicable, definition documents (eg, information sets for data modules) for Interactive Electronic Technical Publications. 4. Review the range and scope of proposed publications (either hardcopy or electronic) to determine their suitability in enabling the support concepts to be met. 5. Review the availability of publications and other Technical Data for V&V activities. | 1. Mandatory |
|  | 1. Is the proposed Technical Data to be delivered to ANZ support contractors (including, where applicable, the Contractor (Support) and Subcontractors (Support)) consistent with the AIC Obligations and plans? | 1. Mandatory |
|  | 1. Have all Support System risks identified prior to SSDDR been reported against? | 1. Mandatory |
|  | 1. Does the Contractor’s design for the Support System provide for a minimised LCC solution, for the combination of the Mission System and Support System, as determined in accordance with the Approved governing plan for LCC (eg, LCC Management Plan (LCCMP))? | 1. Mandatory |
|  | 1. Have any Contractor-provided proposals to reduce LCC been addressed (eg, as documented in the LCCRM)? | 1. Highly Desirable |
|  | 1. Are Contract plans and schedules consistent with the Support System requirements and design? | 1. Mandatory |
|  | 1. Does the Contractor's management of technical requirements with Subcontractors and vendors allow the Contract needs to be achieved? | 1. Mandatory |

1. Review Exit Criteria

|  |  |  |
| --- | --- | --- |
| Item | Exit Criteria | Status |
|  | 1. All checklist items have been addressed to the satisfaction of the Contractor and the Commonwealth Representative. | 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. The design for the Support System, including interfaces with the existing support infrastructure, are consistent with the requirements, are achievable, and are able to support the implementation and V&V activities of the next phase. | 1. Mandatory |
|  | 1. Plans for the next phase are deemed to be realistic and achievable by both the Contractor and the Commonwealth Representative. | 1. Mandatory |
|  | 1. Plans for the measurement and analysis program for the next phase have been agreed by the Commonwealth Representative, including the measures to be collected, associated collection methods, and analysis techniques. | 1. Mandatory |
|  | 1. All risks identified during the course of SSDDR 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. 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 |