MEMORANDUM FOR [INSERT MILESTONE DECISION AUTHORITY’S OFFFICE]

SUBJECT: [PROGRAM] Preliminary Design Review Assessment Executive Summary and Report

The [PROGRAM] conducted its Preliminary Design Review (PDR) through a series of subsystem reviews from [DATE] to [DATE], culminating in a system-level review held on [DATE]. [OFFICE CONDUCTING THE ASSESSMENT] participated in these reviews and has conducted an assessment of the PDR in accordance with Title 10, United States Code, Section 2366b and DoD Instruction 5000.88, Engineering of Defense Systems.

I assess the program [has / has not] completed its preliminary design and program risk [is / is not] acceptable to continue to detailed design. *Note: If the assessment is that the risk IS NOT acceptable, briefly summarize the key risks in one to two sentences.* I assess the program [demonstrates / does not demonstrate] a high likelihood of accomplishing its intended mission. Note: This statement directly supports the 2366b certification. If the program DOES NOT demonstrate a high likelihood, briefly summarize the key issues in one to two sentences.

* The design [is or is not] projected to meet all draft Key Performance Parameters (KPPs).
* The program [is or is not] on track to meet Acquisition Program Baseline (APB) schedule thresholds (if appropriate).
* The allocated baseline [has or has not] been established and [is or is not] under configuration control.

Provide a summary of each of the top program-level technical issues and risks (or state none). State your assessment of the program’s ability to adequately manage the risks or whether the program is in need of further action. Include only the key risks that should be brought to the attention of the Milestone Decision Authority. Not all risks in the risk section should be included.

Attached is the detailed assessment. My point of contact for this matter is [NAME; CONTACT INFORMATION]

Approving Signature

Attachments: As stated

# System Description

The [System] . . . *Include a short (one paragraph) description of the system.*

Include a small picture of the system. Place figure title below the figure.



Figure X. System Name

Briefly identify key elements of the design and compare them to legacy or similar systems.

# Conduct of the Preliminary Design Review

The [organization conducted the PDR . . . ]

Assess whether the review was conducted adequately to assess the preliminary design, for example, whether:

* The review chair was appropriate.
* Adequate time was allocated.
* Attendance included program personnel, independent subject matter experts (SMEs), and stakeholders.
* The process to gather and address attendee’s questions and requests was adequate.
* The review was event driven.
* Subordinate reviews were adequate and properly closed.
* Entrance criteria were met.
* The maturity of the design was adequate to support the review.
* The review was closed properly (exit criteria were met).

Identify the date and location of the system-level PDR. If applicable, list the subordinate PDRs leading up to the system-level PDR. Identify and discuss the significance of any open Requests for Action/Requests for Information (RFA/RFI) from the subsystem PDRs.

State whether the review attendance was adequate to fully assess the preliminary design (Program Management Office, contractor, critical vendors/partners, independent SMEs, and stakeholders). Include a table of the key participants and their organization. [Include as attachment if too long]. Identify the PDR chair(s). In an appendix, identify independent SMEs, Office of the Secretary of Defense offices, and user representatives who attended.

List the entrance criteria, as documented in the Systems Engineering Plan (SEP). State whether the criteria were met in advance of the review. Note: The SEP criteria are the minimum acceptable. If the program directed additional entrance criteria, you may also include those. If not, discuss the rationale for continuing, who made the decision to proceed, and the potential impact to the program. [Include in an appendix.]

Identify the percentage of drawings released or the appropriate measure of design maturity if the program does not track drawings. Discuss the identification and release of critical safety items and critical application documentation. For Major Automated Information System programs, discuss release of software architecture products. Assess the impact of incomplete drawings on the preliminary design.

State the total number of RFAs/RFIs generated by the review. Identify all open RFAs/RFIs along with their planned closure dates. Discuss the significance of the open RFAs/RFIs and their impact on the preliminary design.

If critical RFAs/RFIs are still open, justify why the Milestone Decision Authority should consider the PDR complete (if appropriate).

List the exit criteria, as identified in the program’s SEP. State whether the criteria have been met. If not, discuss the significance of the criteria along with their respective closure plans and dates. [Include in an appendix] Note: The SEP criteria are the minimum acceptable. If additional exit criteria were directed by the program, you may also include those.

# Performance

Assess whether the preliminary design is projected to meet all Key Performance Parameters (KPPs). Assess the impact of any KSAs or Technical Performance Measures (TPMs) the preliminary design is not projected to meet.

Provide a table of the draft KPPs and Key System Attributes (KSAs) needed to tell the story, and include the full list in an appendix. Include their threshold values and their estimated performance at the time of the PDR in the Status column. Assess whether the projections are appropriate and credible (e.g., projections come from estimates, modeling, or test data, or they compare with legacy or similar system performance; large jumps in projected performance are credible because of X circumstances.) Place table title above the table.

Table X. KPP and KSA Status

|  |  |  |
| --- | --- | --- |
| KPPs | Threshold | Status |
| KPP #1 |  |  |
| KPP #2 |  |  |
| KPP #3 |  |  |

Provide a table of the TPMs in an appendix. Include their threshold values and their estimated performance at the time of the PDR in the Status column. Assess whether the TPMs are adequate to ensure success of the program KPPs and to control program risks (KSAs are linked to program KPPs and key risks and provide a leading indication of performance and risk mitigation).

Discuss the significance of any requirements not projected to meet thresholds and the plans to resolve these design gaps.

# Schedule

If applicable, assess whether the program is on track to meet draft APB schedule thresholds (if available) and to conduct the systems engineering technical reviews reflected in the SEP.

Coordinate for a schedule assessment. Note: A program Integrated Master Schedule (IMS) is necessary to support schedule assessments. If unavailable, coordinate with the schedule assessment team to identify appropriate data. This section should include a Defense Contract Management Agency (DCMA) 14-point health check at a minimum. Include a short description of any red (high-risk) areas. Discuss the critical path and near critical path.

Include the technical schedule as shown at the PDR in an appendix. Discuss any significant changes from the current schedule to the one in the program’s SEP. Include a date line locating the PDR on the schedule.

Identify the latest program Schedule Risk Analyses and summarize the results.

Assess the program’s schedule risk exposure. If applicable, identify any key issues or risks that may impact the program critical path. Note: To assess the amount of risk exposure, review the program’s risk register for risks with identified schedule impacts.

# Technical Risks, Issues, and Opportunities

Assess whether the program’s risks, issues, and opportunities encompass the technical effort and if the plans in place are adequate to control risks and issues. Note: This review may be conducted in advance of the system-level PDR. State how many high and moderate technical risks were identified or have been identified. State how many significant issues have been identified. State how many opportunities have been pursued.

Identify and summarize your top 4-5 risks in the risk cube (Figure X). List all other technical risks in an appendix. Discuss only the technical risks. Note: Provide one summary risk cube. Do not include multiple cubes. Use the risk cube format provided.

Assess the Program Management Office’s (PMO) risk mitigation plans and make a statement that the assessment team has reviewed the plans and assesses them as adequate, or that the team recommends additional mitigation steps (be specific).

= Original Risk Analysis

= Current assessment

= Prediction at next MS or SETR

= Predicted Final

**Risk:** IF GFE aircraft receivers are not received in time THEN the flight test and system verification may be delayed

**Impacts: Cost:** RDT&E: TBD
**Schedule:** 6 months
**Performance:** None

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B

Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

**Risk**: Flight test efficiencies. IF GFE aircraft receivers are not received in time THEN the flight test and system verification may be delayed

**Impacts: Cost:** RDT&E: TBD
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B

Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

**Risk**: If XXX then YYYY

**Impacts: Cost:** RDT&E: $XXXk
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B
	+ Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

**Risk**: If XXX then YYYY

**Impacts: Cost:** RDT&E: $XXXk
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B
	+ Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

**Risk**: If XXX then YYYY

**Impacts: Cost:** RDT&E: $XXXk
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B
	+ Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

GFE: ; RDT&E: ...;

Figure X. [Program] Risk Cube

Identify and briefly summarize the top issues in the issue bar (Figure X). Ensure the PDR revisited all issues raised in previous assessments or program reviews. Discuss only the technical issues. Note: Provide one summary issue bar. Do not include multiple bars. Use the issue bar format provided.

Assess the PMO’s issue mitigation action and make a statement that the assessment team has reviewed the plans and assesses them as adequate, or that the assessment team recommends additional mitigation steps (be specific).

Figure X. [Program] Issue Bar

**Issue**: XXX

**Impacts: Cost:** RDT&E: $XXXk
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B
	+ Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

**Issue**: XXX

**Impacts: Cost:** RDT&E: $XXXk
**Schedule:** TBD
**Performance:** Not meet KPP

**Mitigation Action(s):**

* + Recommendation A
	+ Recommendation B
	+ Recommendation C

**Expected Closure Event/Date:**Event / Mmm 201X

Identify the top opportunities in the opportunity cube (Figure X). Review the opportunities identified in the latest program SEP. Identify the status of those opportunities. Discuss only the technical opportunities. Note: Provide one summary opportunity cube. Do not include multiple cubes. Use the opportunity cube format provided.

**Opportunity**: XXX

**Description:**  $XXXk

**Cost of Opportunity**: XXXX

**Potential Cost Benefit:** XXXXX

**Potential Performance Benefit:** XXX

**Opportunity Closure Date:**Event / Mmm 201X

Figure X. [Program] Opportunities Cube

# Establishment of the Allocated Baseline

Assess whether an allocated baseline has been established (i.e., all subsystem functional, performance, interoperability, and interface requirements have been allocated to configuration items) and placed under configuration control.

Provide the system specification tree and identify the allocated baseline in an appendix. If appropriate, identify and discuss any changes from the one provided in the SEP.

List the documentation that makes up the allocated baseline (e.g., assembly and component interface specifications, subsystem specifications, assembly specifications). Identify and discuss the significance of any documents not finalized and their respective completion date. Note: The components of the allocated baseline should be identified in the SEP.

Discuss the establishment of interface requirements documentation (i.e., interface control documents (ICDs), interface description documents (IDDs), interface requirements documents (IRDs), and architectures). Identify and discuss the significance of any interfaces not defined.

State how the program will maintain configuration control of the baseline and how the program will maintain traceability of requirements and artifacts included in the baseline.

Discuss the decomposition of requirements from the Capability Development Document (CDD) to the Government Specification and down to the contractor’s developed specification. Assess the requirements stability and include a table that documents the requirements from System Requirements Review through PDR in an appendix.

# Design Considerations

## Software

Assess whether the software development plan is adequate and if development is being executed to the plan. Assess if the software metrics are adequate to manage the program.

Assess whether the software architecture designs have been established and whether all computer software configuration items (CSCIs), computer software components (CSCs), and computer software units (CSUs) have been defined. Include a diagram of the software architecture in an appendix.

Identify and assess the status of software requirements decomposition to design documentation, build contents, significance of software design not yet estimated, and expected software development schedule and resources.

Identify and assess the software code estimates and stability. Provide a table that shows the total source lines of code (SLOC), reused, modified, and new code over time in an appendix.

Assess whether the expected software and hardware margins (e.g., bus capacity, processor usage, computer memory) support future growth.

## Reliability and Maintainability

Assess whether the program has a comprehensive reliability and maintainability (R&M) program and an active reliability growth program. State if R&M performance is projected to meet requirements. Assess whether planned R&M metrics are adequate to manage the program.

State whether the program has established an R&M growth program. If available, insert the program’s reliability growth curve(s) in an appendix. Compare the curve to the one documented in the SEP and discuss any changes. Note: The growth curve horizontal axis should show test hours, schedule, and key events.

## Integration

Assess whether interoperability planning is sufficient to support Engineering Manufacturing and Development (EMD) activities. If applicable, identify and discuss any issues with external programs or with size, weight, power, and cooling (SWAP-C) allocations. Assess if planned integration metrics are adequate to manage the program.

List any external programs that have critical interdependencies and interfaces with the program. Identify and discuss any risks or issues. State if there are memoranda of agreement with those programs that clearly delineate the roles and responsibilities of each program. Assess if these external program schedules and demonstrated capability are on track to support the program’s integration, test, and production.

Assess whether the program requirements have enough growth margin (SWAP-C, bandwidth, etc.) to support future growth and upgrades.

## Manufacturing

Assess whether manufacturing planning is sufficient to support the EMD phase. Assess whether planned manufacturing metrics are adequate to manage the program.

State whether manufacturing assessments are being conducted. State if the manufacturing processes have been defined and characterized and if the initial manufacturing approaches have been documented

State whether producibility assessments of key technologies have been conducted.

Assess whether the industrial base is capable of supporting production and the identification of long-lead and key supply chain elements.

## Prototyping and Trade Studies

Identify and summarize the competitive prototyping conducted in the Technology Maturation and Risk Reduction (TMRR) phase to reduce technical risk, validate design, and assess integration. Discuss how the information informed the Technology Readiness Assessment, draft Capability Development Document (CDD), and the PDR.

Identify and summarize any design trades made during the TMRR phase that relate to cost, schedule, or performance drivers. Specifically comment on technical trade-off analysis conducted to show how cost varies as major design parameters and time to complete are varied. Discuss any designing for manufacturing trade studies made.

Assess whether the requirements in the preliminary design are balanced with the program’s funding and schedule. Identify key design drivers and discuss trade studies conducted to reduce the impact of these drivers.

## Cybersecurity / Program Protection

Assess whether the preliminary design provides adequate protection for critical program information and ensures information assurance and system security.

Assess whether the planned cybersecurity efforts are adequate to manage the risks to critical program information and mission-critical functions and components associated with the program. If appropriate discuss if cybersecurity requirements were adequately flowed to sub-tier developers and if sub-system PDRs reviewed these requirements.

If applicable discuss any issues or risks to cybersecurity or the Program Protection Plan (PPP).

## Technology Insertion / Refresh

Assess if the technical plan supports technology insertion and refresh as identified in the program’s Acquisition Strategy.

Assess the program’s plan for addressing technical refresh and obsolesces. Assess whether the program’s Technical Data Rights strategy, as identified in the program’s Acquisition Strategy, supports the technical refresh and obsolesces plans.

If applicable, discuss any issues or risks to technology insertion and refresh.

## Other Design Considerations

Include other design considerations as appropriate for the program. The table below identifies some (but not all) potential design considerations.

If one or multiple considerations are to be included in the assessment, create a new section for each consideration using the format of the sections above.

|  |  |
| --- | --- |
| Consideration | Attributes to review |
| Certifications (e.g., airworthiness, safety, spectrum, etc.) | * Plan to obtain certificates
* Schedule to obtain certificates
* Execution to Schedule
 |
| Spectrum supportability and Electronic Environmental Effects (E3) | * Risks or Issues
* Spectrum supportability and E3 requirements defined
 |
| Human systems integration | * Risks or Issues
* HSI inclusion in WIPTs
 |
| Survivability | * Risks or Issues
* Survivability requirements defined
* Survivability verification defined (e.g. Live Fire, Modeling and Simulation)
 |
| Force protection | * Risks or Issues
* Force protection requirements defined
* Force protection verification defined (e.g. Live Fire, Modeling and Simulation)
 |

## Conclusion

Provide a quick recap of key findings. Include good as well as bad. Make sure all recommendations are also described in the body of the assessment.

Limit to 2-3 paragraphs.

# Appendix A - Acronyms

Customize table for report. Put each term in its own table row. Hide borders in final.]

|  |  |
| --- | --- |
| APB | Acquisition Program Baseline |
| CDD | Capability Development Document |
| CSC | Computer Software Component  |
| CSCI | Computer Software Configuration Item |
| CSU | Computer Software Unit |
| EMD | Engineering and Manufacturing Development (phase) |
| ICD | Interface Control Document |
| IDD | Interface Description Document |
| IOT&E | Initial Operational Test and Evaluation |
| IRD | Interface Requirements Document |
| KPP | Key Performance Parameter |
| KSA | Key System Attribute |
| PDR | Preliminary Design Review |
| PMO | Program Management Office |
| PPP | Program Protection Plan |
| R&M | Reliability and Maintainability |
| SME | Subject Matter Expert |
| SEP | Systems Engineering Plan |
| SLOC | Source Lines of Code |
| SWAP-C | Size, Weight, Power, and Cooling |
| TMRR | Technology Maturation and Risk Reduction (phase) |
|  |  |
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