



# Standing Review Board Handbook Rev A Draft for NPR 7120.5



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## Preface

This draft revision A of the Standing Review Board Handbook is an interim placeholder and will be revised to implement the requirements of NPR 7120.5E when revision E is released.

This document's revision will also support and complement the guidance in the new NASA Space Flight Program and Project Management (PM) Handbook which is under development to implement the requirements of NPR 7120.5E.

The content of this document is based on guidance, detail, and explanation that was developed in the process of developing the policy for the two NASA Interim Directives to NPR 7120.5D.

# Signature Page

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## Reference Documents

NPD 1000.0A	Governance and Strategic Management Handbook
NPD 1000.5A	Policy for NASA Acquisition
NPR 1080.1A	Requirements for Conduct of NASA Research and Technology
NPR 7120.5D NID	NASA Space Flight Program and Project Management Requirements
NPR 7120.8	NASA Research and Technology Program and Project Management Requirements
NPR 7123.1A	Systems Engineering Processes and Requirements
NPR 8000.4A	Agency Risk Management Procedural Requirements
NPR 8705.4	Risk Classification for NASA Payloads
TBD	NASA Space Flight Program and Project Management Handbook

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# Chapter 1 Introduction

Chapter 1 provides an introduction to key elements of NASA's strategic framework for managing Programs and projects (P/ps). Note that in this handbook, the word, "independence", is used in broad terms and encompasses the term "independent" that is used extensively in NASA policy documents.

## 1.1 Purpose of the Handbook

The Standing Review Board (SRB) Handbook is a Special Publication (SP) of the Independent Program Assessment Office (IPAO) which expands on the concept of the SRB introduced in the NASA Policy Requirement (NPR) 7120.5, *NASA Space Flight Program and Project Management Requirements*. The SRB Handbook provides review guidance and best practices to most effectively administer and satisfy the P/p review requirements that are established in *NASA Interim Directive (NID) for NPR 7120.5D* and NPR 7123.1, *NASA Systems Engineering Processes and Requirements*.

The SRB Handbook has review guidance for the NASA P/p communities and for the SRBs regarding the expectations, processes, products, timelines, and working interfaces with review organizations, NASA Centers, NASA Mission Directorates (MDs) and NASA Management Councils. It provides the philosophy and guidelines for SRB membership selection, review implementation, review products, and reporting of results.

The SRB Handbook guidance can be supplemented and tailored, with Convening Authority (CA) approval, to meet the needs of the Agency and P/ps being reviewed. For example, the level of implementation of a Life Cycle Review (LCR) is based on the scope, complexity, priority and risk of the P/p. The review agreement between the SRB, P/p and CAs for P/p's LCRs is documented in the Terms of Reference (ToR).

## 1.2 Governance

The requirement for a SRB to conduct LCRs is established under the authority of NPR 7120.5, which is the governing document for LCR processes and products. NPR 7120.5 also defines the CA and Decision Authority (DA) for each LCR. NPR 7120.5's governance of the SRB is derived from and consistent with NASA Policy Directive (NPD) 1000.0, *Governance and Strategic Management Handbook*.

## 1.3 Scope of the Handbook

This SRB Handbook applies to all independent P/p LCRs that are specified in NPR 7120.5 for SRB review and all P/p special reviews that the CAs authorize for SRB participation. It consists of guidelines that are considered best practices for SRB processes and products. Some of these guidelines are worth noting as "major principles" that the reader should be cognizant of at the onset. Additional principles are noted throughout the SRB Handbook.

## 1.4 Major Principles

- a. NPR 7120.5 and NPR 7123.1 define the LCR requirements; this SRB handbook describes how to implement these requirements.
- b. Apart from the Organizational Conflicts of Interest (OCI) and the Personal Conflicts of Interest (PCI) review and clearance process discussed in section 3.2, the SRB handbook is strictly advisory; it is not a requirements document. The SRB Handbook provides best practice guidance that has been proven in the field.
- c. The SRB functions independently of the P/p. SRB members are selected from outside the P/p management chain and are free of any OCI or PCI.
- d. A focus of the SRB is to promote Agency mission success.
- e. The SRB conducts the LCRs and members can provide recommendations, but the SRB and its members do not impose requirements on, give actions to, make decisions for, or direct the P/p. SRBs are advisory to the CAs.
- f. The explicit customers of the SRB are the LCR's CAs; the implicit customers are the P/p being reviewed.
- g. The SRB remains in place for the life cycle of the program or project as specified by NASA policy. The goal is for the SRB to have the same core membership although it may be modified or augmented over time with specialized reviewers.
- h. The SRB chair and Review Manager (RM) manage the content and schedule of work that is performed by the SRB.
- i. The SRB members may write Request for Actions (RFAs) for P/p at reviews.
- j. The SRB chair and RM coordinate the SRB's activities with the P/p to minimize the impact on P/p resources and schedule while still fulfilling the LCR and SRB requirements, e.g., SRB members attend P/p meetings rather than requesting special sessions.
- k. When an SRB member attends a P/p decisional review or meeting (non-SRB led activity), the SRB member is a non-voting observer to ensure his/her continued independence.
- l. The SRB RM, cost analyst and schedule analyst are funded by the Independent Program Assessment Office (IPAO). The SRB chair and all other SRB members including civil servant and non-civil servant technical board members and expert support will be funded by the MD. Contracts for non-civil servant board members and expert support is through independent means, i.e., not the P/p organization; contracting for members of the SRB is handled on a case-by-case basis between the IPAO and the MD. The contracting organization has the responsibility and accountability to ensure that all team members and supporting technical experts are vetted in compliance with the independence criteria outlined in this handbook.
- m. The SRB findings are articulated to the P/p being reviewed at the conclusion of the site review.

- n. Templates and examples are available to assist in development of the required SRB documents.

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## Chapter 2 Standing Review Board Overview

### 2.1 SRB Scope

NPR 7120.5 requires the use of a single, independent LCR team called the SRB. All LCRs are shown in figures 2-2, 2-3, and 2-4 in the NID for NPR 7120.5D. All of these LCRs are conducted by a SRB with the exceptions noted in Table 2-3 of the Project Management (PM) Handbook. The SRB is responsible for meeting all of the objectives of the CAs at each LCR. The SRB's involvement with the P/p is minimal between LCRs and it is inactive except as requested by the CAs or DA.

The P/p life cycles, defined in NPR 7120.5, formalize the management process for P/ps. Each life cycle phase includes one or more LCRs. A LCR is a review designed to provide a periodic assessment of a P/p's technical and programmatic status and health at a key point in its life cycle. LCRs are essential elements of conducting, managing, evaluating, and approving space flight P/ps, and are an important part of NASA's system of checks and balances. NASA accords special importance to maintaining the integrity of its independent review process. LCRs provide the P/p and NASA's senior management with a credible, objective assessment of the P/p's progress, issues, risks and status. A LCR is complete when the governing DA's decision is made.

Central to NASA's management process are the Key Decision Points (KDPs) that occur within the life cycle. A KDP is an event at which the DA approves or disapproves the P/p's transition to the next life cycle phase. The final LCR in a given life cycle phase provides the essential information for the KDP.

A preference is to have the SRB comprised of essentially the same members reviewing the P/p throughout its life cycle. This provides a strong advantage of continuity and familiarity with the P/p's purpose, history, programmatic and technical approach, challenges, risks and issues. By using the SRB, the needs and objectives of the CAs, DAs, Center, Technical Authorities (TAs), Mission Directorate Associate Administrator (MDAA), Chief Engineer (CE) and the Associate Administrator (AA) for the Office of IPCE are combined which avoids individual reviews for each. The SRB process ensures that the P/p, CAs, TAs, and other appropriate stakeholders are briefed with consistent results and conclusions based on the same material gathered by the same SRB.

The intent of the SRB implementation is to enhance the LCR quality and efficiency through the development of common definitions, the development of a complete set of evaluation requirements and the use of consistent processes for the LCR execution and results reporting. The SRB process integrates the review requirements of NPR 7120.5, NPR 7123.1, the MD and Center into a single set of LCR requirements.

### 2.2 SRB Reviews

NASA formulates P/ps to implement a diversity of products with widely varying costs and risks. For this reason, the SRB has varying levels of assessment, participation and reporting based on the categorization of the P/p.

The SRB does not conduct all LCRs. Table 2-3 in the PM handbook identifies the LCRs that the SRB typically does not conduct. The CAs and DA can choose to use the SRB for any review.

The Agency has six assessment criteria that are used for all four types of programs. These criteria are:

- Alignment with and contribution to Agency strategic goals and the adequacy of requirements flow down from those.
- Adequacy of management approach.
- Adequacy of technical approach, as defined by NPR 7123.1 entrance and success criteria.
- Adequacy of the integrated cost and schedule estimate and funding strategy in accordance with NPD 1000.5.
- Adequacy and availability of resources other than budget.
- Adequacy of the risk management approach and risk identification and mitigation per NPR 8000.4, *Agency Risk Management Procedural Requirements*.

These criteria are used for defining the expected maturity states that the P/p needs to demonstrate at each LCR and KDP as required in the following:

- NID Table 2-2, Expected Maturity State Through the Uncoupled and Loosely Coupled Program Life Cycle;
- NID Table 2-3, Expected Maturity State Through the Tightly Coupled Program Life Cycle;
- NID Table 2-4, Expected Maturity State Through the Project Life Cycle;
- NID Table 2-5, Objective for Other Reviews;
- NID Appendix C, Program and Project Requirements by Phase;
- PM handbook Appendix L, Maturity Tables.

More detail on these criteria can be found in section 2.6.1 of the PM handbook.

### **2.2.1 Program SRB Reviews**

NASA Programs are initiated and implemented to accomplish scientific or exploration goals that generally require a collection of mutually supporting projects. The Program's scientific and exploration goals vary significantly and range from very simple to very complex. NASA accommodates this range with four types of programs that have different SRB assessment requirements. The four types of programs are single-project programs, uncoupled programs, loosely coupled programs and tightly coupled programs. Section 2.1.3.1 in the NASA Space Flight Program and Project Management Handbook (called the PM handbook) provides more detail on the program types.

#### **2.2.1.1 SRB Involvement with Uncoupled or Loosely Coupled Programs**

Programs consisting of multiple projects that are either independent of each other or are individual projects where each project has an assigned set of mission objectives, architectural and technological synergies and strategies that benefit the overall program, are characterized as uncoupled or loosely coupled programs. There is a specific life-cycle for these programs and a

specific, expected project maturity level for each of the six assessment criterion for each review. The program's maturity is defined in detail in maturity Table L-1 found in PM handbook, Appendix L.

There are three types of LCRs for uncoupled or loosely coupled programs. Each of these reviews is conducted by the SRB and has an associated KDP. The reviews are the Program System Requirements Review (SRR) (P/SRR), the Program System Definition Review (SDR) (P/SDR) and the Program Implementation Review (PIR). The third type of review, PIR, is a periodic review typically held biennially or as requested by the MD (but its need is evaluated annually by the Agency). Figure 2-3a in the PM handbook shows the Program Life Cycle.

The SRB participation in and reporting venues for uncoupled or loosely coupled programs are presented in Table 2-1.

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**Table 2-1 SRB Participation In and SRB Reporting Venues for Uncoupled or Loosely Coupled Programs**

	<b>Reviews</b>		
<b>Function</b>	<b>SRR</b>	<b>SDR</b>	<b>PIR</b>
SRB Participation	Full Board	Full Board	Full Board
Reporting Venues			
Program	X	X	X
CMC <sup>1</sup>	X	X	X
MDPMC <sup>1</sup>	X	X	X
APMC	X	X	X
Notes			
1. The SRB chair and RM will make themselves available to support the interim briefings.			

### 2.2.1.2 SRB Involvement in Tightly Coupled Programs

Programs consisting of just one large project or multiple projects that execute portions of a mission are defined as single-project programs or tightly coupled programs respectively. There is a specific life-cycle for these programs and specific, expected Program maturity states for each review. The expected maturity is defined for each of the six Agency's assessment criterion. Table L-2 in the PM handbook, Appendix L defines the maturity expectations of these Programs.

Tightly coupled program reviews typically occur after all of the Program's projects have completed "like" reviews. This sequence permits the SRB to make an integrated assessment of the totality of the Program at that particular point in its life cycle.

The SRB does not conduct all of the LCRs for these Programs. During the operations phase, program-level Post Launch Assessment Reviews (PLARs) and Critical Events Readiness Reviews (CERRs) may be held for the benefit of the Program and their associated MD. Only the SRB chair or designee attends these reviews. The SRBs participation in the Flight Readiness Review (FRR), Mission Readiness Briefing (MRB) and project-level Post-Flight Assessment Review (PFAR) is at the discretion of the MDAA or Center Director (CD). The Program's SRB chair and projects' SRB chairs that are part of the mission are typically included as advisory members to the flight and mission operations review boards. Once in the operational phase of the Program life cycle, PIRs are held at the discretion of the DA. The SRB does conduct the PIRs. Figure 2-3b in the PM handbook shows the Program life cycle for tightly coupled programs.

For tightly coupled programs and their projects, separate SRBs may be structured for the program and each of the projects. However, separate SRBs for each project are not required. There can be one SRB for a tightly coupled program and its projects.

The SRB participation in and reporting venues for tightly coupled programs are provided in Table 2-2.

**Table 2-2 SRB Participation In and SRB Reporting Venues for Single or Tightly Coupled Programs**

Reviews	SRR	SDR	PDR	CDR	SIR	ORR	FRR/ MBR Note 2	PLAR	CERR	PFAR	PIR	DR
SRB Participation	Full Board	Discretion of MDAA Note 3	Note 4	Note 4	Discretion of MDAA Note 3	Full Board	None					
Reporting Venues												
Program	X	X	X	X	X	X		X	X		X	
CMC Note 1	X	X	X	X	X	X		X	X		X	
MDPMC	X	X	X	X	X	X		X	X		X	
APMC	X	X	X		X						X	

**Notes:**

1. The SRB chair and RM will make themselves available to support the interim briefings.
2. FRR is for human space flight Programs and MBR is for robotic space flight Programs.
3. The FRR, Launch Readiness Review (LRR), and PFAR for tightly coupled Programs are at the discretion of the MDAA. (Rather than utilizing a complete independent SRB for these flight and mission operations reviews, the program SRB chair and project SRB chairs are included as advisory members to the flight and mission operations review boards. The SRB input is provided during the board meeting.)
4. For human space flight, PLAR and CERR are conducted by the Mission Management Team (MMT). For robotic missions, the extent of the SRB participation in the PLAR and CERR will be documented in the plan for reviews in the Project Plan.

### 2.2.1.3 SRB for Projects

Projects are categorized into one of three categories. The project's category is determined by the life cycle cost (LCC), priority level, human flight involvement, and significant radioactive materials. Section 2.1.4.1 in the PM Handbook provides more detail. The category defines the level of management attention and KDP decision level appropriate for each project. Table 2-1, *Project Categorization Guidelines*, in the PM handbook defines the categories.

Coupled or uncoupled Programs typically consist of multiple projects. As with Programs, there is an expected project maturity level for each LCR. The expected maturity is defined for each of the six Agency's assessment criterion. The expected maturity for each project review is defined in detail in maturity Table L-3 in the PM handbook, Appendix L.

Most of the project's LCRs are conducted by the SRB. The ORR is the last LCR that the SRB will conduct. Post ORR LCRs, such as MRR, PLAR, and CERR are institutionally convened reviews. Any SRB participation in reviews beyond ORR is requested by the CAs, typically during the project definition, and documented in the project plan. The SRB's participation in the FRR and PFAR is at the discretion of the MDAA. Section 4.11 of this handbook addresses late life cycle reviews.

The SRB chair will be retained on contract by IPAO (if not a civil servant) after ORR through launch. Funding is provided by the MD. After ORR, the contracts for all other SRB members will be terminated. The SRB chair will be available to report ORR results at the MRR if invited. The SRB chair will report out ORR results at the Mission Readiness Briefing (MRB) or KDP E. The SRB chair provides the results of the ORR assessment in briefings past the ORR. The SRB chair provides only his/her personal opinion/views on other items past ORR since the SRB is dissolved unless the SRB is reconstituted at the request of the CAs. The Center will procure (contract and fund) any former SRB member that it desires to be on the institutional review team for post-ORR reviews. Center practices will be followed for center-convened reviews.

The SRB participation in and reporting venues for projects are provided in Table 2-3 of this handbook.

**Table 2-3 SRB Participation In and SRB Reporting Venues for Projects**

Reviews	MCR	SRR	MDR SDR Note 6	PDR	CDR	SIR	ORR	FRR MRR Note 2	PLAR	CERR	PFAR	DR	DRR
SRB Participation	Note 3	Full Board	Full Board	Full Board	Full Board	Full Board	Full Board	Discretion of MDAA Note 4	Note 5	Note 5	Discretion of MDAA Note 4	None	None
Reporting Venues													
Program	X	X	X	X	X	X	X	X	X	X	X		
CMC Note 1	X	X	X	X	X	X	X	X	X	X	X		
MDPMC	X	X	X	X	X	X	X	X	X	X	X		
APMC		X	X	X		X							

**Notes:**

1. The SRB chair and RM will make themselves available to support the interim briefings.
2. FRR is for human space flight programs and MRR is for robotic space flight programs.
3. The FRR, LRR, and PFAR for tightly coupled Programs at the discretion of the MDAA. (Rather than utilizing a complete independent SRB for these flight and mission operations reviews, the Program’s SRB chair and projects’ SRB chairs are included as advisory members to the flight and mission operations review boards. The SRB input is provided during the review board’s meeting.)
4. For human space flight PLAR and CERR are conducted by the MMT. For robotic missions, the extent of the SRB participation in the PLAR and CERR will be documented in the plan for reviews in the Project Plan.
5. For robotic missions the SRR and the MDR may be combined. MDR is for robotic programs and SDR is for human space flight programs.

## 2.3 Process

An overview of the SRB review approach is presented in Figure 2-1. There are three areas of responsibility in the approach: 1) the SRB chair and RM's specific responsibilities, 2) the responsibilities of all the SRB members, and 3) the responsibilities of expert consultants performing the support assessments. The review approach is divided into four generic functions, as indicated by the colors applied to each task in the figure. These functions are:

- a. Review Preparations;
- b. Performing Supporting Analyses;
- c. Conducting the Review;
- d. Finalizing Assessments.

As shown in Figure 2-1 of this handbook within each responsibility block (gray background) the order of functions being completed proceeds from top to bottom. Each of these functions is discussed in detail in the Chapter 4.

LCR schedules vary widely across the different P/ps and the different reviews. As such, it is not possible to develop a single schedule that covers all P/p LCRs. However, there is a natural sequence of functions that are performed and align with the functions listed above.

The actual review schedule is formulated as part of the preparation of the ToR for the LCRs. Dates for the schedule are determined on a case-by-case basis in the preparation of each LCR. There is a general guide for the schedule flow and preferred lead times identified in the single ToR template in Appendix F.

## 2.4 Convening Authorities

All SRB LCRs are authorized by the CAs. The CAs are the management officials responsible for convening the review, establishing the ToR, appointing the SRB chair and approving SRB membership. They are the management officials that receive the briefings and documented results of the review.

Table 2-4, NASA CAs for Standing Review Boards, in PM handbook defines the participation and the role of each CA for all programs and projects.

In addition to the standard LCRs, the CAs can authorize the SRB to conduct special reviews as needed.

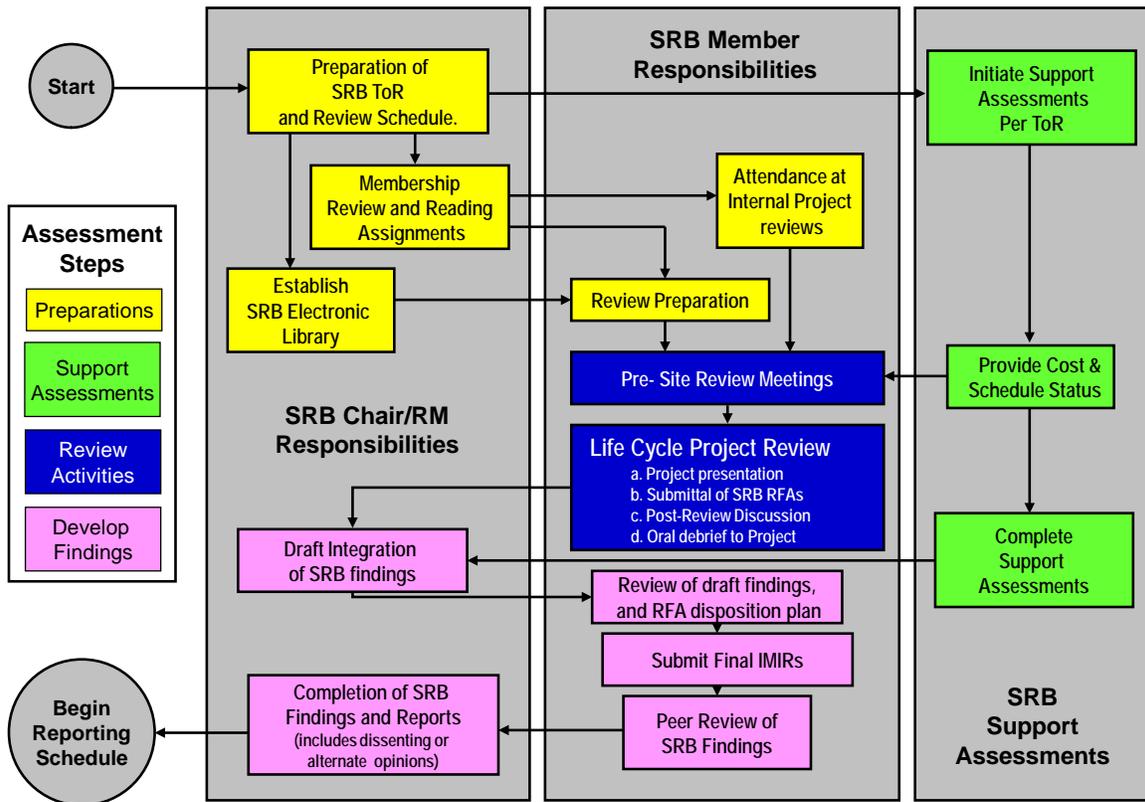


Figure 2-1 SRB Review Process Flow

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## Chapter 3 Forming a Standing Review Board

Chapter 3 provides a number of principles to consider when forming a new SRB. The factors for membership are: 1) competency, 2) currency and 3) independence. There is no master formula, “one-size-fits-all” philosophy or predetermination for staffing the SRBs.

The “standing” feature of the SRB means that the SRB’s core membership should remain stable over the P/p life cycle. This ensures a strong and consistent knowledge base about the P/p under review and minimizes the need for the SRB to be re-oriented prior to each review. To assure a thorough review, reviewers can be added to provide specialized skills as needed. In the event that members must be added or replaced, the process for member selection and approval described in section 3.4 will be followed.

### 3.1 Structure

The SRB has a single chairperson and a NASA RM<sup>1</sup>. The Agency allows the following three structures for a SRB. The SRB organization, management and reporting differ between the three structures.

#### 1 -- Civil Service Consensus Board --- (CS)

The CS board is an Agency-approved SRB wherein the chair and the members are all civil servants. SRB forms a consensus opinion. The SRB is responsible for preparing the SRB report. The SRB chair briefs the report. Any SRB member may have a dissenting opinion. The dissenting opinion is documented in the SRB final report.

#### 2 -- Civil Service Consensus Board with Expert Support --- (CS2)

The CS2 is an Agency-approved SRB wherein the chair and the members are all civil servants. SRB forms a consensus opinion. The SRB is responsible for preparing the SRB report. The SRB chair briefs the SRB report. The consultants to the board (experts) are not SRB members and provide analyses to the SRB. Any SRB member may have a dissenting opinion. The dissenting opinion is documented in the SRB final report.

#### 3 -- Non-Consensus Board --- (NC)

The NC is an Agency approved SRB board wherein the SRB Chair and the members can be either Civil Servants or non-Civil Servants. The essential difference with a NC Board is that the board members are being asked for their individual opinions. While they may meet as a group for purposes of data gathering, briefings or other events, care should be taken under this model of the SRB to reinforce among members that their individual opinions are being sought. The RM documents the individual findings of the SRB members. The SRB Chair prepares and briefs his/her personal findings and recommendations. Any SRB member may have an alternate opinion. The alternate opinion is documented in the SRB final report.

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<sup>1</sup> The NASA RM may be from JPL.

NASA highly prefers to have CS or CS2 boards. Experience demonstrates that consensus boards lead to more meaningful discussion of the review findings and recommendations, especially where dissenting opinions are discussed. Consensus SRBs produce an integrated final report with findings of fact and recommendations that provide more confidence in the results briefed to senior management. They are generally more current on Agency policy, procedures and culture.

If a situation exists that requires special expertise, a non-CS chair or member can be nominated. Appendix E of this handbook contains Table E-1 which compares the features of the three structures and provides more detail.

## 3.2 Independence of Standing Review Board

NASA accords special importance to the policies and procedures established to assure the integrity of SRBs. The work of the SRBs can be performed by persons from every part of the nation and from every sector of society -- academia, industry, government, and nonprofit organizations. The technical skills and perspectives of these individuals are essential to the ability of NASA to consistently produce accurate and objective assessments of NASA's P/p. Extensive efforts are made by NASA to assure the soundness of the SRB by selecting highly qualified members and consultants to the board.

Each SRB member must be free from, and stay free from, conflicts that have the potential to significantly impair the individual's objectivity or create an unfair competitive advantage for any person or organization. The specifics of Conflicts of Interest (COI) management are addressed in Appendix C, *The NASA Policy Guidance on SRB Composition, Balance and Conflicts of Interest (COIs)*. Appendix D is a copy of the NASA forms, *Background Information and Confidential Conflict of Interest and Non-Disclosure Agreement*, that are required from all non-civil servants who serve on a SRB. All non-civil servant SRB members and consultants to the board must have a signed Non-Disclosure Agreement (NDA) and certified COI form before participating in any SRB activity.

The NDA limits the individual's use of restricted information obtained during the course of SRB activities. Any use, intended use, or disclosure of restricted information during the course of an SRB activity for an individual's own direct and substantial economic benefit constitutes a breach of the NDA and are grounds for removal from the SRB. The same rule applies if the individual discloses, or intends to disclose, such information to other individuals or to organizations that may confer a direct and substantial economic benefit on such individuals or organizations. These restrictions do not apply to information once it has become publicly available.

A sound and effective SRB final report must be (and must be perceived to be) the product of a process that is free of bias and is fairly balanced in the knowledge, experience, and perspectives utilized to produce it.

### 3.2.1 Civil Servant Conflict-of-Interest and Independence Screening

Internal screening is performed to ensure the independence of any civil servant on a SRB. All civil servants must have a current Office of Government Ethics (OGE) 450 Form or Form (SF) 278, as applicable, on file with NASA (or available to NASA) prior to being nominated for SRB membership. These forms must be updated annually. Prior to installing any civil servant on a

SRB, the RM will contact the Langley Research Center (LaRC) Office of Chief Counsel (OCC) for a PCI and a positional conflict of interest (PCOI) review. The PCOI review determines if the civil servant has COIs caused by his position within NASA or his involvement in the P/p. The rules for civil servant COI are delineated in the “*Employees of Sponsors*” section of Appendix C, *The NASA Policy Guidance on Standing Review Board Composition, Balance and Conflicts of Interest*.

LaRC OCC will identify disqualifying PCIs and PCOIs in accordance with the relevant laws and regulations governing standards of ethical conduct.<sup>2</sup> When LaRC OCC informs IPAO that a person cannot serve on the SRB due to a PCI or PCOI, IPAO may (i) find an alternative SRB member, (ii) request divestiture of the conflicting interest, or (iii) pursue a waiver for the disqualified individual. If IPAO chooses to pursue either divestiture or a waiver, IPAO coordinates the action with LaRC OCC. The RM will send an annual request to LaRC OCC to re-verify that all SRB members do not have a PCI or PCOI. Typically, the annual conflicts review of civil service SRB members takes place in the June or July unless the SRB review schedule dictates otherwise. The LaRC OCC will consult with the NASA Office of the General Counsel (OGC) on any perceived independence issues.

### 3.2.2 Contractor Conflict-of-Interest Screening

To the extent consistent with the contractual requirements, the contracting officer (CO) on the relevant contract is responsible for facilitating the screening of any proposed contractor SRB member or consultant to the board for OCIs<sup>3</sup> and PCIs prior to initiating any work on SRB activities. The CO is also responsible for taking appropriate action (e.g., Limitation of Future Contracting, firewalls, NDAs) to ensure that SRB members and consultants to the board do not provide an unfair competitive advantage for SRB contractors.

With regard to OCIs, the CO will conduct OCI analysis in accordance with the Federal Acquisition Regulations (FAR), the requirements of the contract, and *The NASA Policy Guidance on Standing Review Board Composition, Balance and Conflicts of Interest* (See Appendix C). If the CO determines that the contractor has an OCI that cannot be resolved, IPAO may pursue an OCI waiver in accordance with FAR 9.503 and NASA Far Supplement 1809.503.

Once all OCIs have been successfully addressed in accordance with the process above, the CO will facilitate a PCI screen of each proposed SRB member and consultant to the board, in conjunction with the OCC where the contract is located. The CO will direct the contractor to provide a completed Confidential COI Disclosure Form and NDA (See Appendix D) for all proposed contractor SRB members and consultants to the board. The CO will review these Certifications by applying the thresholds and standards applicable to civil servants discussed in section 3.2.1. The local OCC will screen each contractor for any PCI problems and make recommendations on all issues. When the local OCC recommends that an individual contractor employee or consultant not serve on an SRB due to a PCI, the IPAO will coordinate with the CO to (i) request an alternative individual, (ii) inquire as to a possible divestiture of the conflicting

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<sup>2</sup> See 18 USC § 208, and “Standards of Ethical Conduct for Employees of the Executive Branch” contained in 5 CFR part 2635, as supplemented by 14 CFR 1207.

<sup>3</sup> The FAR provisions on organizational conflicts of interest only apply to contractors and consultants on an SRB. Those OCI provisions concerned with bias are designed in part to ensure the objectivity of any contractor or consultant on an SRB.

interest, or (iii) pursue a PCI waiver<sup>4</sup> for the contractor employee or consultant. In the case of a PCI waiver, the CO, with the assistance of local legal counsel, will draft an analysis in support of this recommendation for the CAs. The CO will include the analysis and recommendation with the IPAO analysis in support of a waiver. The CO will forward the completed PCI waiver request package to the OGC. OGC will review the PCI waiver request package before forwarding the package with an OGC recommendation to the CAs. The CAs will make an acceptance or rejection decision based on the waiver criteria in *The NASA Policy Guidance on Standing Review Board Composition, Balance and Conflicts of Interest*.

### 3.2.3 Integrity of the Independent Review Process

To maintain the integrity of the independent review process and the SRB's reports and to comply with federal law, the OCI/PCI procedures detailed in the this handbook and the requirements set forth below are to be strictly followed:

- a. SRB members are free and remain free of financial or other COIs. Conflicts of interest may be personal, based on the personal interests of the individual (PCI) or organizational, based upon the interests of the individual's employer (OCI). Individuals must be free from conflicts that have the potential to significantly impair the individual's objectivity or create an unfair competitive advantage for any person or organization. Detailed requirements regarding the OCI/PCI screening and resolution process are provided in this handbook.
- b. Individuals employed by an organization that institutionally supports the program or project (e.g., a NASA Center, MD, or contractor) may serve as a member of an SRB when the following requirements are met:
  - (1) The service of the individual on the SRB must be based upon the unique scientific, technical, or programmatic expertise that the individual brings to the SRB;
  - (2) With regard to civil servant members of an SRB, the individual and the individual's supervisory chain must not be located within the chain of command for programmatic-level decisions made at the program or project level; and
  - (3) There must be a specific determination during the SRB appointment process that service by the individual will not compromise the independence or objectivity of the review.
- c. All non-civil servant SRB members selected to serve on SRBs must have an approved NDA that limits the individual's use of restricted information obtained during the course of SRB activities.
- d. However, nothing in this section authorizes the CAs or DA to make determinations required by or reserved to another official by statute, regulation, or NASA directive.

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<sup>4</sup> Under The NASA Policy Guidance on Standing Review Board Composition, Balance and Conflicts of Interest, the DA has the authority to approve a written determination that a contractor's expertise outweighs his COI in those cases where the local OCC determines a personal COI exists.

### 3.3 Composition and Balance

The SRB remains in place, with the goal of having the same core membership for the duration of the program or project, although it may be augmented over time with specialized reviewers as needed. SRB members are competent, current, and independent from the management chain of the P/p, with membership balanced between the host Center and other organizations to ensure the needs of the CAs are met. Specifically, the CD's and MDAA's needs are as follows:

- a. The CD needs SRB members with sufficient specific systems and technical expertise to ensure the project's detailed technical design and technical implementation is being executed in accordance with best Center practices.
- b. The MDAA needs SRB members who focus on the ability to achieve the mission objectives within resource constraints, while evaluating the P/p from the Agency perspective rather than the Center perspective.

As a result, all individuals selected to serve on SRBs are expected to be highly qualified and to have the ability to make a broad assessment of the P/p's implementation which employs numerous engineering and other disciplines. The nomination and vetting process ensures these needs are met while satisfying the Agency-level need to have an informed, independent recommendation to the CAs at key milestones and decision points. This process also demonstrates to external stakeholders that the SRB is independent. In cases of reimbursable P/ps, SRB membership will be determined based on the NASA-to-sponsor agreements for the work being performed.

Members and consultants to the board can be selected both from within the Agency and from external sources including such communities as the Department of Defense (DoD), industry, academia, and other government agencies. When looking internal to the Agency, consideration should be given to unique insights of the various NASA Centers and the perspective that cross-mission opportunities can add to the SRB expertise.

For an SRB to be fully competent, its membership should represent a balance of diverse backgrounds and professional and organizational perspectives. Depth and breadth of knowledge are phrases often used to describe well-rounded candidate reviewers. Depth is the degree of competency in a particular discipline area and is a prerequisite for being nominated for the SRB. Competency should not be thought of from a technology discipline standpoint alone but also from management, programmatic, testing and integration perspectives. Those who have more than one competency are considered to have a breadth of knowledge. SRBs that have members with breadth have the advantage of topics being assessed by several members, resulting in a more thorough evaluation.

However, SRB member competency is just one attribute to be emphasized. Two other important attributes for members are relevant independence and currency as a practitioner. In NASA, where technology, process, and policy are changing rapidly, currency is an important aspect to consider for a reviewer. In the selection of well-qualified SRB members it is important to balance competence with current experience.

### 3.3.1 Size and Membership

When forming the SRB, a very important aspect is determining the “right size” of membership that can meet the expectations of the LCR charter. Minimizing the number of members is considered best practice; however, every SRB size decision requires consideration of many variables including balance, competency, currency and relevance. The members are selected for the duration of the P/p life cycle. Multiple disciplines can sometimes be covered by one member (e.g. electrical and systems engineering). Consultants to the board can be added temporarily to review specific items identified by the SRB members.

There are several Mission Support Offices (MSOs) internal to the Agency that are defined by the Agency governance model to be independent of the P/p. These MSOs can give a SRB a second level of support when analysis is needed. For example, the IPAO may have one cost analyst defined as a team member, yet when discrete cost risk analyses are needed, this member may utilize a “reach back” capability into his/her organization to garner support for the analyses. This latitude reduces the need for additional permanent SRB members. Such consultants to the board can come from the Office of Safety and Mission Assurance (OSMA), the NASA Safety Center (NSC), Center Safety & Mission Assurance (S&MA) organizations, the Office of the Chief Engineer (OCE), the NASA Engineering and Safety Center (NESC) and Center engineering organizations. Another option to leverage existing resources is to use membership from other related teams: e.g., project SRB chairs may have membership on Program SRBs.

## 3.4 SRB Member Selection and Approval

The SRB formulation process includes the nomination and approval of the chair, all other board members and consultants to the board, assignment of the RM and development of the ToR. The process is depicted in Figure 3-1. The ToR is the official, final approval document for the SRB members, chair and RM.

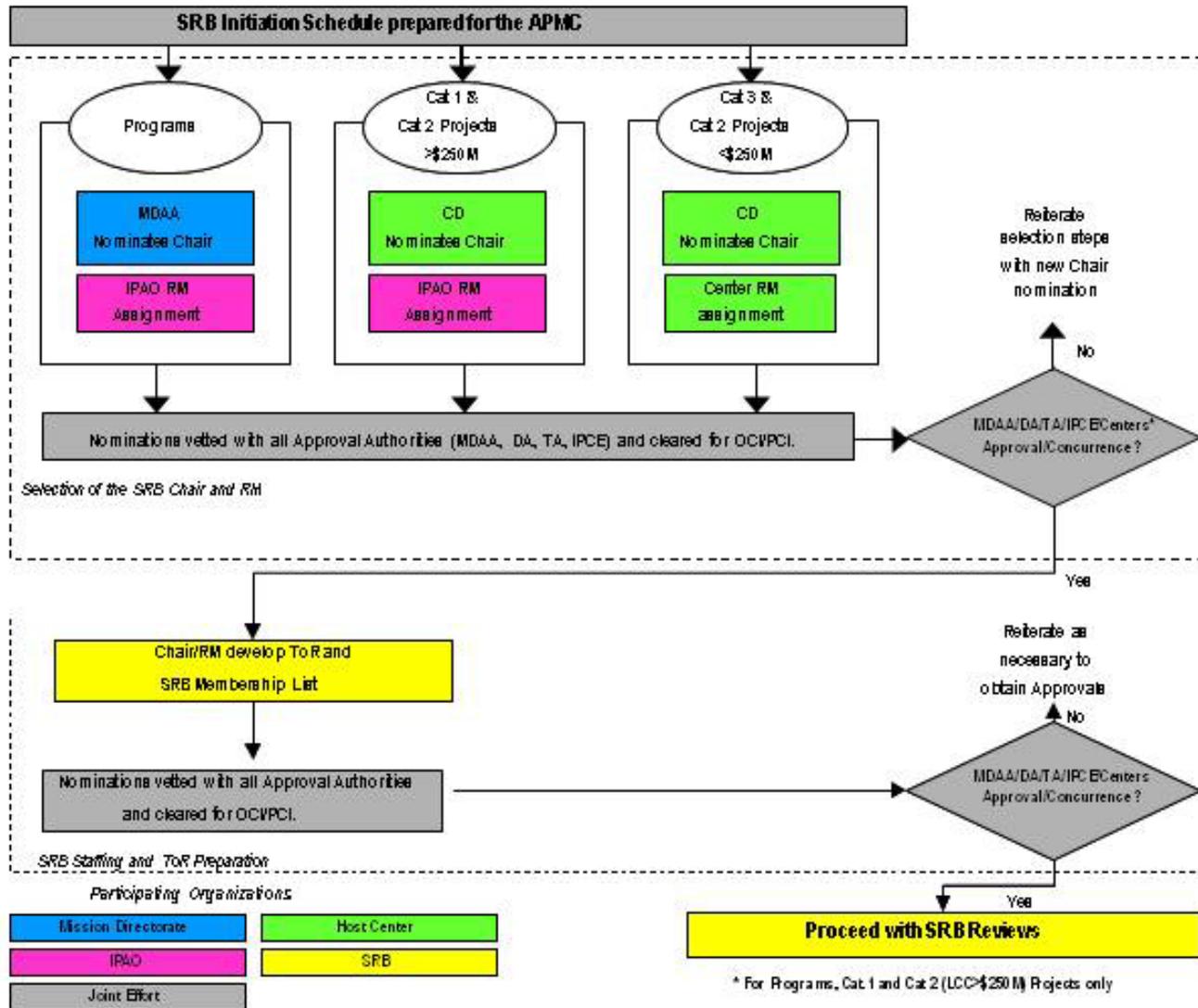
### 3.4.1 SRB Chair Selection and Approval

The chair of the SRB is the first member selected. The chair is typically a person who is well recognized for expertise related to the P/p being reviewed. It is expected that the chair has a depth of technical knowledge pertinent to the P/p being reviewed and the breadth of experience that supports the leadership role for the SRB. Personal attributes for the chair include good communication skills (both written and oral), organizational skills and leadership skills. The chair is recruited with the intent to lead the SRB for the full life cycle of the P/p. The prospective chair must understand the full importance of this commitment prior to acceptance of this role. It is preferable to have civil servants serve as chairs.

#### 3.4.1.1 Selection Process for the SRB Chair

The chair selection requires collaboration between the CAs. Although the initial candidate(s) is/are nominated at the Center for projects and MD for Programs, the selection process permits new candidates to be identified and evaluated until one is found acceptable to all of the CAs. Final approval of the SRB chair rests solely with the CAs. The following is the step-by-step selection process.

- a. For a project, the CD or his/her representative nominates a chair. For all Programs, including single-project Programs, the MDAA nominates a chair and provides a schedule date for the first review.
- b. The chair nomination is sent to the IPCE/IPAO for a Program, category 1 projects and category 2 projects that have a Life Cycle Cost (LCC)  $\geq$  \$250M. The chair nomination is sent to the host Center's review organization for category 3 projects and category 2 projects that have LCC  $<$  \$250M.
- c. After reviewing the chair nomination, the EAG manager assigns a RM to facilitate the completion of the SRB formulation process.
- d. The IPAO distributes the chair nomination to the remainder of the CAs and requests unofficial approval or alternative nominations. The IPAO facilitates all subsequent iterations in the chair nomination process. (See Figure 4-1).
- e. Simultaneously, the RM facilitates the due diligence of the chair nomination. Due diligence includes, but is not limited to, a check on availability, request of involvement by OCC or CO for conflict and independence determination and distribution of Agency documentation to the nominee so he/she sees the big picture of the services being requested.
- f. The RM facilitates the prioritization of the CAs' nominations then gains the appropriate approvals/concurrence by each.
- g. If agreement on the chair cannot be reached between the CAs, the DA, as defined by NPR 7120.5, will make the final decision.
- h. The RM concludes the process by documenting the decision in a single letter for the Chair and RM approval. The Chair and RM approval letter is submitted to the CAs and the DA for signature. It is archived as a part of the IPAO documentation system and contains the following as a minimum:
  - A description of the P/p for which the chair and RM are nominated and assigned;
  - A short bio of each with relevant information that justifies nomination for their position on the SRB;
  - Verification documentation of their independence and compliance with COI policy;
  - The SRB structure selected from the three board types.
- i. The CA's signing of the ToR provides final approval of the chair.



**Figure 3-1 SRB Formulation Process Flow**

## 3.4.2 Review Manager Selection

The RM provides the critical function of ensuring appropriate and consistent implementation of Agency policy, process, and products for LCRs. The RM must possess a high level of knowledge of the SRB policies derived from NPD 1000.5, NPR 7120.5 and NPR 7123.1 and P/p review processes defined in this handbook and the current version of the Systems Engineering Handbook. The RM may serve on the SRB as a discipline expert.

### 3.4.2.1 Selection Process for a Review Manager

- a. The RM is assigned by IPAO for a Program and category 1 and category 2 (LCC > \$250M) projects. The RM must comply with the OCI/PCI policy in Appendix C. Note that the host Center's review organization not IPAO provides coordination for category 3 and category 2 (LCC < \$250M) projects.
- b. The RM assignment is approved by the same process as the chair, via the chair and RM approval letter described in section 3.4.1.1, *Selection Process for the SRB Chair*.
- c. The CAs' signing of the ToR provides final approval of the RM.

## 3.4.3 Board Members and Consultants to the Board Selection

Each P/p is unique which requires review members tailored for the P/p's technical and programmatic situation. There is no "one size fits all" circumstance for SRB membership composition. When forming a SRB, consider the following:

- a. Member compliance with the OCI/PCI policy in this handbook including Appendix C is mandatory.
- b. The disciplines necessary to make up the SRB must be derived from the P/p content. A good practice is to start with the P/p work breakdown structure (WBS). Consideration should be given to risk areas of the P/p.
- c. A good practice is to develop a matrix that crosses needed disciplines with available experts. Keep in mind that one individual can cover more than one discipline.
- d. Assess members based on the 3 factors of membership, competency, currency and independence.
- e. Consider membership from non-host Centers and functional support offices.
- f. A SRB member should be the best, available person; wherever he/she is from. No office has an automatic right to representation.
- g. Civil service SRB members are preferable.
- h. IPAO has a database of SRB candidate members for Agency use.

### 3.4.3.1 Selection Process for SRB Members and Consultants to the Board

- a. The chair develops the initial nominee membership list for the SRB. The RM supports the chair by providing points of contact for Center and MD nominations.
- b. The IPAO distributes the initial nomination(s) to all CAs and requests unofficial approval or alternative nominations. The IPAO facilitates all subsequent iterations in the nomination process. (See Figure 3-1).

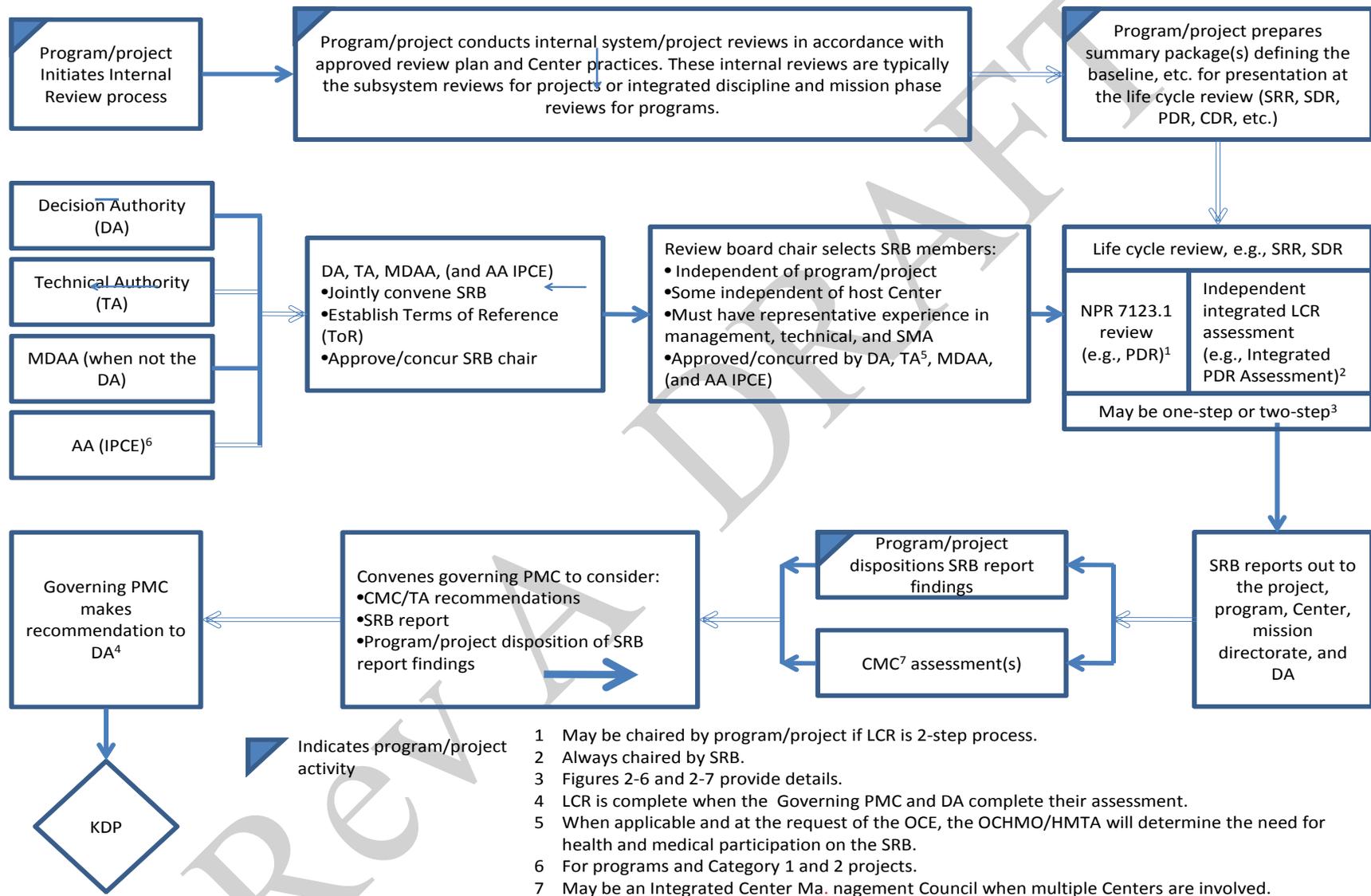
- c. Simultaneously, the RM facilitates the due diligence of the nominated members. Due diligence includes, but is not limited to:
- A check on nominee's availability;
  - Initiation of OCI/PCI and independence policy compliance;
  - Distribution of Agency documentation to the candidates. Documentation provides the big picture view of the services he/she is being requested to provide.
- d. The RM facilitates the CAs nominations, and then gains the informal appropriate approvals/concurrence of each.
- e. SRB balance is provided to the CAs at the beginning of establishing a board.
- f. If agreement cannot be reached between the CAs, the DA as defined in NPR 7120.5 will make the final decision.
- g. The RM concludes the process by documenting the SRB list of candidate members and candidate consultants to the board in Attachment 1 of the P/p's ToR. The ToR template is provided in Appendix H.  
Attachment 1 of the ToR contains the following information for each nominee:
- Nominee's name and position (if applicable);
  - Identify if CS or contractor;
  - Organizational affiliation;
  - Knowledge area and specialty expertise;
  - Verification of OCI/PCI status.
- h. Nominees can be added to the SRB member list through future revisions to the ToR or through joint approval by the CAs through email exchange with the appropriate representatives from each organization included in the distribution.
- i. The final selected members for any upcoming review will be published in an appointment letter prepared by the IPAO director to the P/p's CAs that is sent at least two weeks in advance of the review.
- j. The CAs signing of the ToR approves the SRB nominees listed in Attachment 1 of the ToR.

## Chapter 4 Life Cycle Review Process

The overall P/p life cycle includes two categories of reviews – the internal reviews conducted by the P/p and the LCRs conducted by the SRB. Information from the project’s internal system and subsystem reviews is used by the SRB to gain understanding of the project’s maturity, issues, plans and risks. The integrated perspective of the overall review process is provided in Figure 2-8, *Program/Project Independent Life Cycle Review Process*, in the PM handbook. It is duplicated as Figure 4-1 in this handbook for convenience. If a conflict exists, use the material in the PM handbook.

The SRB is only responsible for the LCRs. LCRs are conducted under documented Agency review processes. The LCR process provides:

- a. The P/p with a credible, objective assessment of how they are doing.
- b. NASA senior management with an understanding of whether
  - (1) The P/p is on track to meet P/p objectives;
  - (2) The P/p is performing according to plan; and
  - (3) Impediments to P/p success are addressed.
- c. A credible basis for the DA to approve or disapprove the transition of the P/p at a KDP to the next life cycle phase.



**Figure 4-1 Program/Project Independent Life Cycle Review Process {From PM handbook Figure 2-8}**

## 4.1 Terms of Reference

The ToR is the agreement between the SRB and the CAs that specifies the nature, scope, schedule and ground rules for the conduct of the LCR. Only one ToR is written for the life cycle of a P/p and includes all of the LCRs to be performed by the SRB. Appendices are used as necessary to detail unique requirements for the reviews the SRB will conduct. The ToR can be revised, if necessary, but all revisions must be approved by the original ToR signatories.

The ToR development is a cooperative effort by the SRB chair and the RM. The chair and RM work collaboratively and iteratively with the CAs and the P/p to develop a ToR that meets the assessment expectations of the Agency.

For tightly coupled programs and their projects, separate ToRs are not required for each project. The projects may be listed with the program under the description and governance section. The program's ToR may include the projects' LCRs.

For loosely coupled or uncoupled programs, the projects under the program typically have separate ToRs. For single-project programs, there will be a single ToR.

### 4.1.1 Terms of Reference Content

The ToR template is provided in Appendix F.

### 4.1.2 Terms of Reference Approval Process

The RM's draft ToR is reviewed for content accuracy and correct format by the IPAO management, EAG Manager, the PRM, and the AO. The approval steps are as follows:

- a. IPAO managers review and approve the ToR for submittal for signature;
- b. The IPAO AO transmits the ToR with a cover letter to the signatories for approval or concurrence. Signatures are performed electronically.

## 4.2 Readiness-to-Proceed Assessment

The readiness-to-proceed assessment is conducted to assure that the P/p is at the proper programmatic and technical level to support the Agency's maturity expectations for that LCR. Passing the readiness-to-proceed assessment is a prerequisite for the P/p advancing to the site review. A readiness-to-proceed assessment is conducted prior to each LCR. The assessment is typically conducted 30 - 90 days before the site review and can be accomplished via a telecon between the chair, RM, CD or designee and the P/p. In this "readiness-to-proceed conversation," the P/p manager, the SRB chair, and the CD (or designated TA representative) discuss the P/p's maturity with respect to entry criteria, gate products, and the expected states of maturity.

The P/p presents to the SRB chair its rationale for claiming readiness to proceed with the LCR. The P/p must address all of the maturity parameters in Table 4-1 below. The SRB chair develops an individual assessment of the P/p's readiness-to-proceed. The chair sends his assessment to the IPAO Director. The IPAO sends this assessment to the CAs with the review agenda, the review schedule, briefings schedule and a list of SRB members that will participate in this

review. If the chair does not agree with the P/p, the DA decides whether or not to proceed with the review.

**Table 4-1 Maturity Parameters**

<b>Maturity Parameter</b>	<b>Requirement Location</b>
Review Entry Criteria	NPR 7123.1A App. G
Review Success Criteria	NPR 7123.1A App. G
Control Plans	NPR 7120.5D NID Appendix C Tables C-2 and C-3
Products Maturity Matrix (Tightly coupled Program)	NPR 7120.5D NID Appendix C Table C-1
Expected Maturity State Overall at KDP	NPR 7120.5D NID Tables 2-2 through 2-5
Expected Maturity State by Review Criteria	PM handbook Appendix L Tables L-1 through L-4

### 4.3 One-Step and Two-Step Review

All LCRs must assess both the P/p’s technical maturity and its alignment with the Agency’s six assessment criteria. The full assessment can be completed in one review, called a one-step review, or divided into two separate reviews, called a two-step review. If a two-step review method is used, the first review focuses on the P/p’s technical maturity and health and the second review covers all of the Agency’s assessment criteria. Typically, a two-step review is appropriate when the P/p can use the technical assessment session (step one) to help prepare for the overall criteria review (step two). The two steps can be held up to 6 months apart.

#### 4.3.1 One-Step Review

A one-step review is an independent LCR conducted by the SRB. As noted earlier, LCRs after the ORR are not conducted by the SRB. In a one-step review, all six Agency assessment criteria identified in section 2.6.1 of the PM handbook are reviewed. The one-step review is referred to by the name of the LCR. For example, the one-step LCR preceding KDP C would be called the “PDR LCR.” Figures 4-2 presents an overview of the one-step review using the PDR as the example.

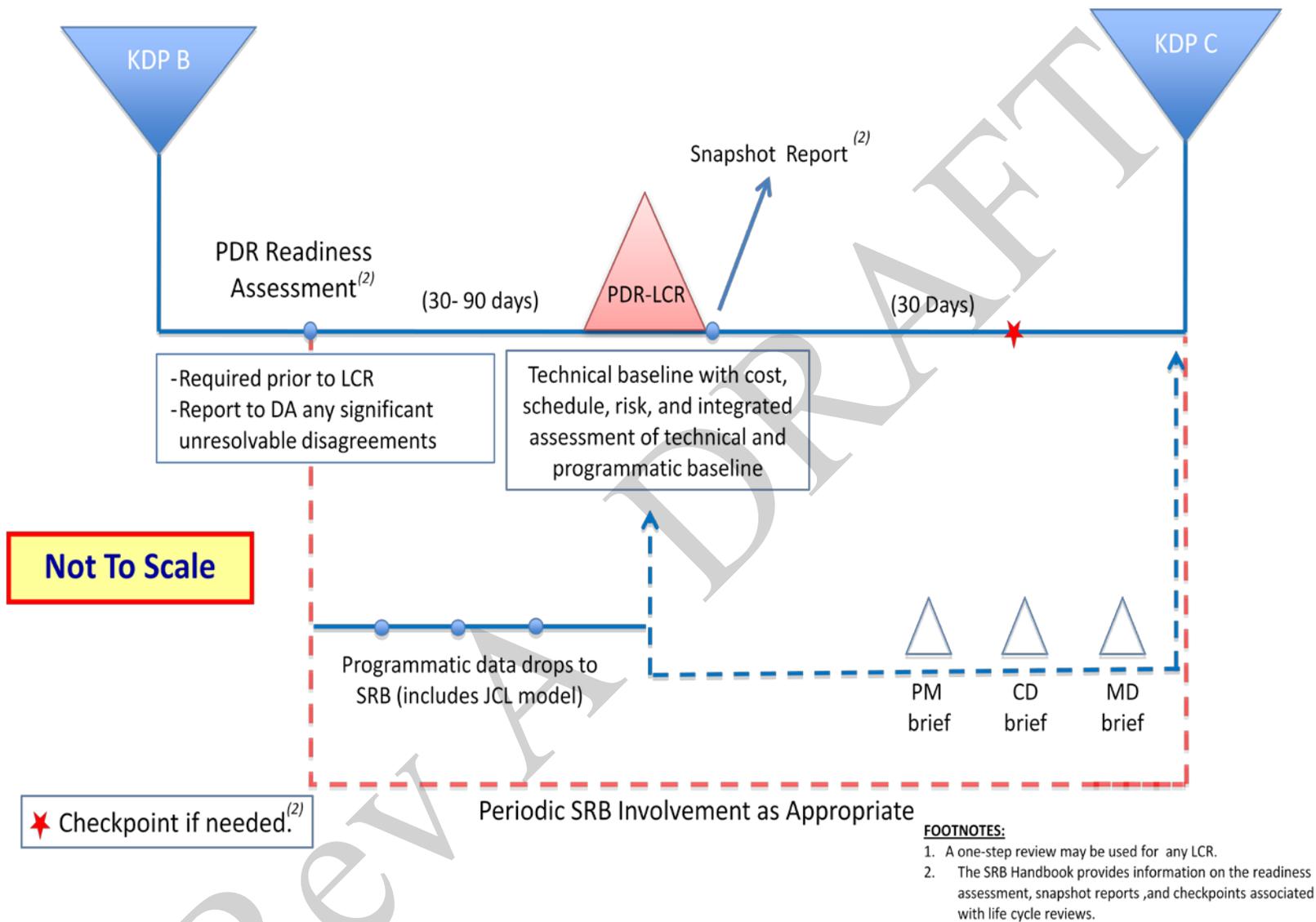
#### 4.3.2 Two-Step Review

The first step of the two step review addresses the technical adequacy of the P/p’s technical approach identified in Section 2.6.1 item C of the PM handbook and establishes the technical baseline informed by cost and schedule. The first step of the review is chaired by either the P/p manager or the SRB chair, in accordance with the P/p plan. The first step of the review is referred to by the name of the LCR. For example, the first step of the review preceding KDP C is called “PDR.”

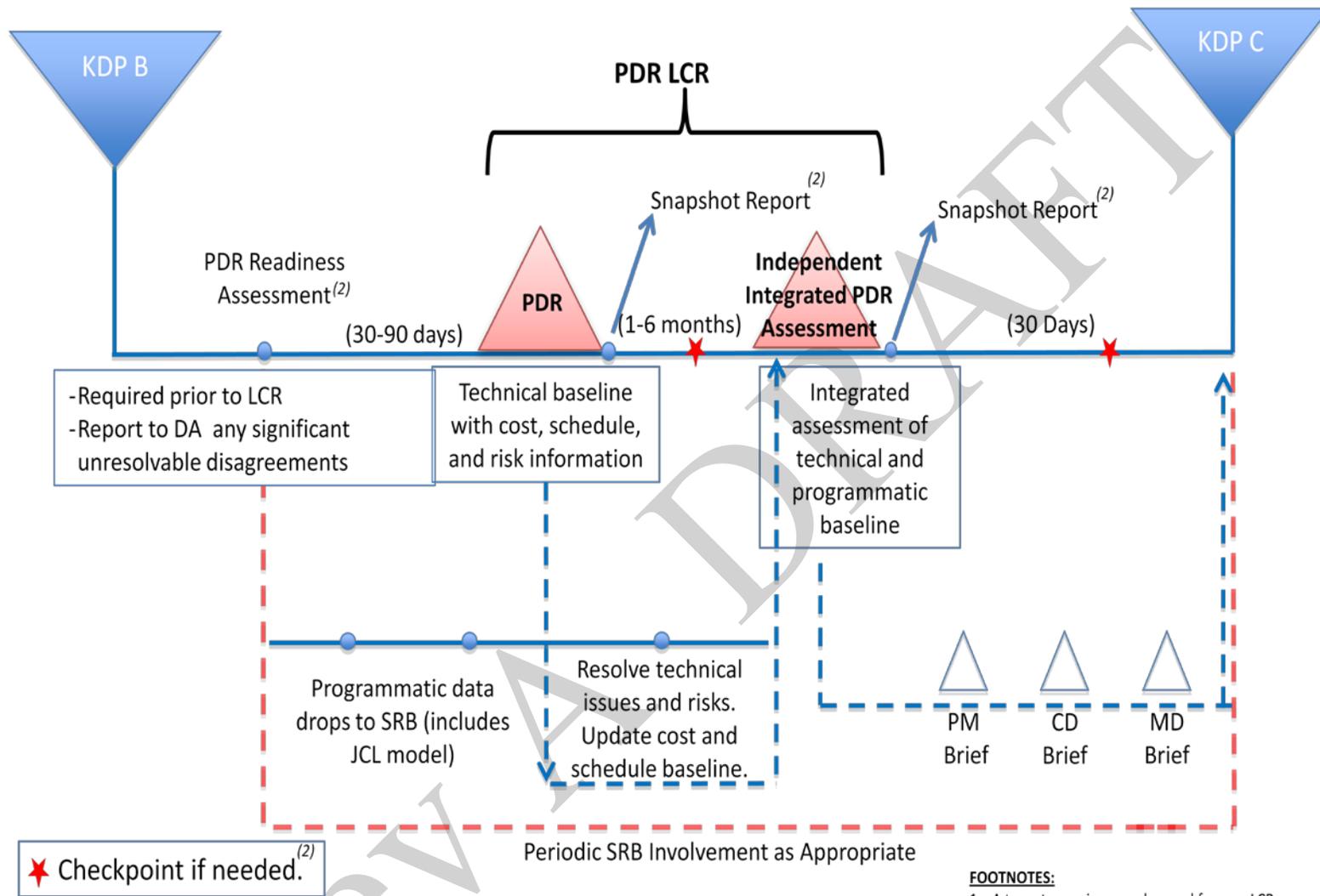
The second step of the review occurs no later than 6 months after the first step of the review and addresses all six Agency assessment criteria identified in Section 2.6.1 of the PM handbook. The second step of the review is an independent review conducted by the SRB. Step two of the review is referred to as the independent, integrated LCR assessment. For example, the second step of a two-step LCR preceding KDP C would be called the “Independent Integrated PDR

Assessment.” The two steps combined are referred to collectively by the name of the LCR. For example, the combined first and second steps of the review preceding KDP C are called “PDR LCR.” Figures 4-3 presents an overview of the two-step review using the PDR as the example.

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**Figure 4-2. One-Step PDR Life Cycle Review Overview Example {From PM handbook Figure 2-6}**



**FOOTNOTES:**  
 1. A two-step review may be used for any LCR.  
 2. The SRB Handbook provides information on the readiness assessment, snapshot reports, and checkpoints associated with life cycle reviews.

**Figure 4-3 Two-Step PDR Life Cycle Review Overview Example {From PM handbook Figure 2-7}**

## 4.5 Snapshot Report Process (Quick Look Report)

Rapid reporting to the CAs and DA is essential to efficient and effective management of P/p's. To support this requirement, the SRB chair is required to provide a summary of his or her preliminary findings to the DA no later than 48 hours after the review is concluded. This summary is known as the Snapshot Report (SR). For a one-step review process, one SR is required for the single review. After the SR is submitted to the CAs, the P/p manager is required to respond to the SRB chair's findings. The PM's response is required prior to the KDP. The PM's response should describe plans for significant decisions, activities and commitments. This response is sent to the CAs. If the KDP scheduled date is significantly greater than 30 days after the review concluded, a Checkpoint is required. Checkpoint is described in section 4.6.

For the two-step review process, a SR is required after both the first step review and the second step review. As in the one-step process, the PM is required to respond to each of the SRs. For the first review (step one) the PM's response is required prior to the start of the second review (step two) and should describe plans for significant decisions, activities and commitments. If the estimated time to the second step review is greater than 6 months, a checkpoint is required. For the second review (step two), the PM's response is required prior to the KDP. If the KDP scheduled date is significantly greater than 30 days after the review conclusion, a checkpoint is required. If a Checkpoint is not required, the CA provides interim authorization for the P/p's plans or directs changes. The SR content and logistics are addressed in section 5.7 of this handbook.

## 4.6 Checkpoints

When the KDP or second review of the two-step review process cannot be held within the nominal time, a checkpoint is required. The checkpoint is used by the DA to provide the P/p interim authorization, guidance and direction until the formal review process is completed. Checkpoints are required when the KDP is estimated to be significantly greater than 30 days after the review conclusion or when the second review of a two-step review process is estimated to occur greater than 6 months after the conclusion of the first review.

## 4.7 SRB Kick-Off Meeting

A preparation activity prior to active engagement of the SRB in the site review is the SRB kick-off meeting. The coordination and execution of the SRB kick-off meeting is the responsibility of the RM. The SRB chair, with assistance from the RM, prepares the kick-off meeting agenda. The SRB members and consultants to the board should participate in (travel is not required) the meeting. The SRB members should be prepared by familiarizing themselves with the P/p to be reviewed and reading the current version of this handbook.

The SRB kick-off meeting is typically held 30 - 90 days prior to the start of the site review. The meeting objective is to familiarize the SRB members and consultants to the board with the P/p under review, with the current LCR process and with the expectations of NASA management. The kick-off meeting content addresses as a minimum:

1. NASA management's expectations of the SRB;
2. The review's scope;

3. P/p updates;
4. The LCR process;
5. Changes to the LCR process since the last LCR;
6. Data sensitivity and protection;
7. IPCE and Strategic Investments Division (SID)'s overview of the P/p status;
8. Initial assignments for the SRB members;
9. Review the P/p risk list.

At the kick-off meeting the chair and RM configure the SRB Document Library, facilitate P/p document access and ensure the initiation of the appropriate independent programmatic analyses. This early interaction eliminates many “informational” questions asked by SRB members during the time-constrained LCR. It is recommended that the kick-off meeting be conducted at a designated site. If this is not possible, the meeting may be conducted via WebEx or telecom.

For both P/p, a kick-off meeting is conducted before each LCR. Since there are multiple PIRs for uncoupled or loosely coupled programs, it is appropriate to schedule a kick-off meeting before each PIR.

#### **4.8 Programmatic Data Submittal from Program and Project**

A component in all reviews is the programmatic assessment of the P/p's progress relative to the schedule and cost. Before the site review, three drops of schedule and cost data are required. The first delivery is at 100 days, the second at 60 days and the last at 20 days prior to the start of the site review.

#### **4.9 Site Review**

The actual review is called the site review. The site review start and end dates are the anchor points for the preceding and subsequent activities respectively. The SRB chair and RM coordinate the site review agenda with the P/p, Center TA and PE to ensure that the entire scope of the review is fully exercised. The review schedule is developed with a goal of minimizing adverse impacts to the activities of the P/p.

During the site review, the P/p presents its status through sequential briefings for each topic, typically given by the P/p lead. The SRB chair presides over the review and is responsible for keeping it on schedule. The presenters answer questions from the SRB members in real time if possible. If further detail is required, the P/p may offer to provide the necessary information later in the review or arrange a splinter session in parallel with additional presentations.

When the review concludes, the SRB members caucus and each member reports his findings and conclusions. Consultants to the board do not participate in developing the final SRB position. The members provide the chair and RM an initial written individual member independent report (IMIR) prior to the P/p out brief and the final IMIR within 48 hours of the site review's conclusion.

## 4.10 Key Decision Point

Central to the P/p management process are the P/p life cycles, and the KDPs within these life cycles. A KDP is an event where the DA determines the readiness of a program to advance to the next phase of the life cycle (with the exception of KDP E). Although this event is outside of the scope of the SRB's responsibilities, the SRB provides essential information to the DA to make this determination. Understanding what information the DA needs to make the decision is critical in conducting an effective review. The standard needs and any special needs of the DA must be understood and incorporated into the ToR. KDPs associated with programs are designated by a Roman numeral and for projects designated by a letter. Section 2.2.2.2 in the PM handbook provides more detail for the KDP.

## 4.11 Late Life Cycle Reviews

The ORR is the last LCR that the SRB routinely conducts per PM handbook. There are other non-SRB reviews that follow the ORR and they happen in rapid succession. These reviews include the FRR, the PLAR and the CERR. The CAs can request that the SRB conduct any or all of the remaining late reviews. The SRB should know well in advance of the ORR if it will conduct any of the late life cycle LCRs. The planning for the ORR will include the planning for any additional LCRs. The approach for the execution, briefings and written reports is streamlined for efficiency. Since each P/p is different with different timing for the late reviews, the planning for each review's execution, briefings, briefings' content, any combination of review briefings and written report is unique for each P/p.

## 4.12 Special Reviews

A CA can authorize the SRB to lead a special review. The special review focuses on a specific topic or a set of issues. Circumstances that may warrant a special review include an expectation that P/ps are not meeting technical, cost, or schedule requirements; there is an inability to develop an enabling technology; or there is some unanticipated change to the P/p's baseline. The RM and SRB chair work with the authorizing CA to identify the issues to address, the execution requirements, reporting requirements and method for conduct of the review. The RM and SRB chair develop the sanctioned governing document, either a ToR or a Memorandum of Understanding (MOU), including in it, the reason for the special review. Additional outside experts can be used as needed.

## Chapter 5 Standing Review Board Responsibilities and Products

The SRB is charged with the responsibility of making an independent assessment of the P/p's health and maturity. The SRB's role is to provide the CAs with an expert judgment of the adequacy of the P/p's technical and programmatic approach, risk posture, progress relative to the baseline and the P/p's readiness to advance to the next development level. Prior to holding a LCR the SRB chair makes a determination of the P/p's readiness for the review. Section 4.2 of this handbook provides details on readiness to proceed.

The depth of SRB review penetration is the responsibility of the SRB and must be sufficient to meet the requirements defined in the ToR and to permit the SRB to understand whether the P/p's design is adequate and the analyses, development work, systems engineering, and programmatic plans support the design and key decisions that were made. SRB outputs are briefed to the P/p being reviewed prior to being provided to the NASA management.

An SRB has three primary functions: 1) to perform complete comprehensive independent assessments of the P/p; 2) to develop findings and formulate recommendations based on these assessments; and 3) to report its results to the P/p and CAs. Each of these functions is discussed in greater detail below.

Because the SRB is essentially inactive between LCRs, it is the responsibility of the RM to maintain contact with the P/p and coordinate with the SRB chair, regarding the materials provided to team members outside of the LCRs for informational purposes. Examples of materials that may be provided to the SRB team are significant presentation material from periodic reviews, e.g., quarter reviews, risk reviews and major decisional change boards. The SRB members will not attend, either as observers or participants, P/p's internal meetings or reviews, outside of the LCRs, unless requested by the RM or chair.

The programmatic assessment addresses 1) LCC, 2) Life-Cycle Schedule, and 3) Management. Independent life-cycle cost assessments are based on independent budget analyses, guidance in NPD 1000.5 and NPR 7120.5 and the SRB requirement for an Independent Programmatic Analysis (IPA). The life cycle schedule assessment addresses the integrated planning. Management assessments break down into three sub-assessments: 1) resources other than budget; 2) Risk Management; and 3) P/p Management Practices including acquisition strategy and contract management performance. The level of detail and the type of assessment in each topic area varies, depending on whether it is a P/p and where it is in its life-cycle. It is important for the SRB to have full ownership of these programmatic assessments because they link the cost, schedule, and management with the technical aspects of the P/p.

To perform an independent, integrated cost and schedule analysis in a timely fashion, the SRB's cost and schedule analysts will work with the P/p prior to the LCR to understand the integrated cost and schedule estimates, including models, developed by the P/p in accordance with the JCL requirements of NPD 1000.5. JCLs are only performed at PDR and rebaselines unless specifically requested by the CAs. There are three programmatic data drops from the P/p typically at 100 days, 60 days and 20 days before the site review (second review for a 2-step review). These intervals are used to complete the integrated cost, schedule and technical baseline for final assessment by the SRB at the LCR. The integrated cost, schedule and risk assessment will be documented in a single product, the IPA report.

The technical assessment focuses on the system and subsystem designs, fabrication, integration, verification/validation testing, launch, operations and mission products. The technical assessment is addressed in section 5.1.2 below.

## 5.1 Assessment Criteria

The PM handbook calls for six assessment criteria to be used for all project approval reviews and for program reviews. These criteria will be used for all SRB led LCRs. Using the same set of criteria with different emphasis throughout the life-cycle creates a consistent metric for traceability. The criteria are presented in section 2.2.1 of this handbook.

These criteria are helpful in establishing the scope of SRB independent assessment activities. The P/p assessment criteria are also used by the SRB to organize and summarize their findings as discussed below in section 5.4 of this handbook.

The SRB performs an assessment of the degree by which the P/ps have attained the maturity state required by Table 2-2 in the NID. Appendix L in the PM handbook provides further definition and guidance on how the six criteria apply in establishing the expected maturity state for each LCR and KDP.

### 5.1.1 Alignment with and contributing to Agency needs, goals, and objectives, and the adequacy of requirements flow-down from those

One of the first assessments each SRB must perform in the P/p life-cycle is the alignment of the P/p requirements with Agency needs, goals and objectives, and how well these requirements flow down to drive all defined levels of the Program content and project design. This assessment typically takes place in the formulation phase leading to the P/SRR or SRR, and, for projects, may continue into Phase B as the Project continues to refine the definition of its design at the subsystem and component levels. The assessment focuses on completion of the requirements flow-down, without stray or open-ended requirements, and monitors requirements fulfillment as the design matures. The System Requirements Document (SRD) and Requirements Traceability Report are two key documents that the SRB should use in conducting this assessment. The SRB should complete their initial assessment findings before program acquisition or the start of the Phase B for a project.

### 5.1.2 Adequacy of Management Approach

The SRB will perform an evaluation of how well the P/p is managing its responsibilities. The scope of this evaluation includes 1) the management approach e.g. organizational structure, integrated product teams, lines of authority; 2) management practices e.g. how effective control methods are used, how earned value management (EVM) tools are being used; acquisition planning e.g. make/buy decisions, procurement strategies, partnership arrangements; and methods of communication and reporting including meetings, document obligations and leadership participation. An expected benefit of this SRB assessment is the contribution of lessons-learned from the background of experience that a well-qualified SRB team can offer. The SRB also identifies problems/issues within the P/p's controlling organization (Program, Center, or MD) that may be hindering the P/p's ability to succeed.

### 5.1.3 Adequacy of technical approach as defined by NPR 7123.1 entrance and success criteria

Technical assessments are somewhat different for projects and Tightly Coupled Programs versus Uncoupled or Loosely Coupled Programs, so each is discussed separately in the subsections that follow.

#### **Technical Assessments for all Projects and Tightly Coupled Programs**

The SRB conducts an independent technical assessment of the P/p at each LCR beginning in formulation, continuing during implementation, and concluding during operations phase. Beginning with the design, the SRB assessment subsequently focuses on technical readiness, fabrication, integration, verification/validation testing, launch, operations and mission products. Throughout this process, technical risk, failure tolerance, and margins adequacy will be continually reviewed. Guidance for these assessments can be found in the unique entrance and success criteria for each review in NPR 7123.1 Appendix G. There may be NASA Center-specific engineering process and documentation that needs to be included in the assessment criteria.

The SRB needs a broad set of engineering skills to conduct these assessments. The exact mix of skills must be tailored to the P/p's life cycle point and the specific system design of the P/p. A combination of generalists and specialists should be considered for SRB membership. The generalist is someone who has extensive technical and programmatic experience and knowledge that enables him/her to perform assessments over a broad range of the P/p. He/she may be an expert in one or more areas, but has a systems orientation and is able to penetrate issues and evaluate the trades and risks a project is faced with over a wide range of technical disciplines. The specialist is a highly skilled person in a narrow, highly focused technical area. Some assessment skills are needed throughout the life-cycle, while others may only be needed for specific LCRs. The SRB membership must be sufficiently flexible to adapt to the changing review content and focus. Knowledge of the NASA project engineering life-cycle is helpful when making SRB membership decisions.

Performing these assessments requires considerable effort on the part of each assigned SRB member. Each assessment effort begins with a thorough review of the appropriate P/p documentation, followed by selective attendance (as observers) at internal project reviews. The SRB member typically performs off-line analyses checks and participates in the formal LCRs. Additional meetings with project personnel may be necessary to ensure full understanding of complex issues and solutions. All meetings with the P/p are coordinated with the chair and RM who work to minimize the impact on the P/p's resources and schedule. Each assessment should respond to issues defined in the previous P/p review and identify important issues to be resolved before the next LCR.

#### **Technical Assessments for Uncoupled or Loosely Coupled Programs**

For uncoupled or loosely coupled programs the SRB technical assessments are characterized by specific contents defined during the initial technical assessment for program approval. These are then periodically reexamined after program acquisition in status/implementation reviews

performed typically every two years. These assessments are conducted at a less-detailed level of engineering than project reviews since they are performed at a higher level. Nonetheless, similar skills are needed within the SRB membership to ensure adequate technical readiness within the Program's mission implementation plan. This program plan should typically cover a decade in order to understand the Program's strategy for pursuing Agency goals and objectives. Project conceptual definitions within the plan should be of sufficient detail to support budget, schedule, and technology development plans within the Program. The technical assessment also includes evaluation of the Program's advanced technology development to ensure Technology Readiness Level (TRL) maturity consistent with the program plan. Each assessment should respond to issues defined in the previous program review and identify important issues to be resolved before the next status review.

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#### 5.1.4 Adequacy of the integrated cost and schedule estimate and funding strategy in accordance with NPD 1000.5

The SRB conducts an independent programmatic assessment led by the programmatic analysts to determine whether the P/p's planned budget and schedule are adequate to accomplish the proposed technical work. The intent is to help identify any potential risks in the technical design and programmatic assumptions and the possible impact to the planned cost and schedule. The IPAO Programmatic Analysis Group (PAG) provides cost and schedule expertise to conduct programmatic analysis that supports the overall SRB assessment at the various LCRs. PAG analysts work hand in hand with the SRB technical and program management experts to understand the P/p's plan and identify the risks. The independent programmatic assessment is an integration of independent cost, schedule, and risk analysis.

The programmatic assessment emphasis changes as the P/p progresses over time in its life cycle. Early on, the assessment is on the P/p plan realizing that data and basis will evolve over time. As the plans mature the assessment will focus on the baseline. After the baseline is established, the assessment typically focuses on performance with emphasis on EVM analysis. The assessment is based on the analysis of the condition of the P/p including the various programmatic products which are identified for the various KDPS as required in the product maturity matrices in *Appendix C Program and Project Requirements by Phase* and the description of these products in *Appendix G Program Plan Template* in NPR 7120.5 NID, as well as, *Chapter 4 Program and Project Activities by Phase* and *Appendix L Maturity Tables* in the PM Handbook.

#### **Independent Cost Analysis (ICA)**

An ICA is an independent analysis of the P/p's resources. The SRB uses the ICA approach to assess the adequacy of the budget and financial management practices to accomplish the work through the budget horizon. An ICA is comprehensive, qualitative and broad in scope. The analysts assess the P/p's BOE, funding obligations, budget phasing, workforce adequacy/ramp-up, unallocated future expenses (UFE) and facilities based on the planning information provided by the P/p. A combined uncertainty and risk analysis of the P/p's cost estimate is used to support recommendations for the amount of funded schedule reserve the P/p should be carrying in their budget plan. The ICA includes the cost estimating uncertainty inherent to the development project estimating process and the P/p's identified risks (possibly adjusted by the SRB and new risks identified by the SRB).

#### **Independent Cost Estimates (ICE)**

An ICE is sometimes prepared as an internal benchmark to support the ICA. ICEs are typically produced at KDP B (MDR, SDR/Program Non-Advocate Review (NAR)) and KDP C (PDR/NAR) but are also generated if warranted by special circumstances to support the LCR. ICEs are generally developed using primarily parametric estimating methods and are also supplemented by the use of factors and other estimating methodologies. The ICE is based on the same project definition documentation and technical baseline used for project Life-Cycle Cost Estimate (LCCE). It is then adjusted to reflect the design, development state, and difficulty of the project, based on the expertise of the SRB team members and their assessment of the technical risks.

The ICE will be endorsed by the SRB technical members. The SRB team as a whole will take ownership by validation of the inputs into the estimating methodologies. The ICE will be a product of the entire SRB. Under circumstances where the SRB is not willing to fully endorse the ICE, the Programmatic Analysis Group (PAG) analyst will document the findings in the IPA as a dissenting opinion.

### **Independent Schedule Assessment/Schedule Risk Analysis (ISA/SRA)**

A program ISA/SRA is performed more from a strategic viewpoint using the program plan to assess the viability of the program planning. A program ISA/SRA assesses the Program's long-term alignment with sponsors' goals and objectives. In tightly coupled programs individual project schedules should be rolled up into an Integrated Master Schedule (IMS) allowing the SRB to assess the integrated effects across all projects.

A project ISA/SRA focuses on the detail implementation plan for that specific project. Items used in performing the assessment include the Project Plan, Work Breakdown Structure (WBS), project and SRB identified risks, project IMS, and project detailed schedules.

The schedule assessment is the responsibility of the full membership of the SRB. The assessment is based on the ISA/SRA. Using the ISA/SRA the SRB can develop an understanding of the realism and completeness of the P/p schedule, assess risk and identify where there may be inadequate phasing of available resources and a shortage of required resources.

The entire technical team should participate in identifying schedule risk areas based on sound technical judgment and area of expertise. As with the cost estimate, the SRB members must take ownership of the results of the assessment.

#### **5.1.5 Adequacy and availability of resources other than budget**

Resources other than budget are essential elements of successful program functionality and project implementation and operation. These resources include: workforce, fabrication, assembly, test facilities and equipment, test beds, ground support equipment, launch sites, communication networks, and mission operation centers. They can be either government or privately held resources.

The SRB is expected to assess the adequacy of the availability and capacity of these resources to meet to the needs of the P/p throughout the life-cycle. The SRB's assessment should consider not only the adequacy of the proposed and acquired resources, but also alternatives that might reduce cost or risk, or improve the performance of associated life-cycle activities. As with the other assessments, understanding the margins and constraints within the proposed resources is also essential, especially as it relates to current and planned workforce loading.

#### **5.1.6 Adequacy of risk management approach and risk identification/mitigation per NPR 8000.4A**

The Continuous Risk Management (CRM) paradigm should be incorporated into the daily activities of every P/p to ensure that each P/p is proactively identifying and assessing risks, which will enable project managers to make risk-informed decisions. The P/p Risk Management

Plan (RMP) is written to provide detailed information on how the P/p will tailor the CRM paradigm to meet the needs of the P/p. CRM is important to every organization because it promotes mission success. It is imperative that the Standing Review Board (SRB) recognized this fact and assess the adequacy of the P/p risk management against the principles outlined in NPR 8000.4A.

Throughout the P/p lifecycle the risk list will be dynamic and living document. Periodically, the SRB should review the P/p CRM practices and risk list to ensure that best practices are being followed and incorporated.

## 5.2 NPR 7123.1 Entrance and Success Criteria

Appendix G of NPR 7123.1 describes the recommended best practices for entrance and success criteria for the technical portion of the LCRs. The appendix lists each review separately and identifies the unique expectations for that review. The entrance criteria define the P/p's expected technical maturity before the P/p can hold the review. The success criteria identify the level of maturity that the project must have achieved before the project can be advanced to the next development level. This assessment supports the Agency's technical assessment criterion described in section 5.1.2 above.

NPR 7123.1 provides guidance on the temporal importance of each of the entrance and success criteria for each of the P/p LCRs. The success criteria can be mapped into the PM handbook's six assessment criteria addressed in section 5.1 above. Table 5-1 provides an example of the mapping.

**Table 5-1 Example Mapping of NPR 7123.1 Success Criteria to PM Handbook Assessment Criteria**

Project Life-Cycle Review: Preliminary Design Review (PDR)						
NPR 7123.1 Success Criteria	Assessment Criteria (Project Adequacies) <sup>1</sup>					
	a. Reqrmts	b. Technical	c. Integrated Cost and Schedule	d. Resources	e. Risks	f. Mgmt
1. The top-level requirements - including mission success criteria, TPMs, and any sponsor-imposed constraints - are agreed upon, finalized, stated clearly, and consistent with the preliminary design.	<b>P</b> Primary Relevance	<b>S</b> Secondary Relevance				<b>P</b>
2. The flow down of verifiable requirements is complete and proper or, if not, an adequate plan exists for timely resolution of open items. Requirements are traceable to mission goals and objectives.	<b>P</b>					<b>P</b>
3. The preliminary design is expected to meet the requirements at an acceptable level of risk.	<b>S</b>	<b>P</b>			<b>S</b>	
4. Definition of the technical interfaces is consistent with the overall technical maturity and provides an acceptable level of risk.		<b>P</b>			<b>S</b>	<b>P</b>
5. Adequate technical interfaces are consistent with the overall technical maturity and provide an acceptable level of risk.		<b>P</b>			<b>S</b>	<b>P</b>
6. Adequate technical margins exist with respect to TPMs.	<b>S</b>	<b>P</b>				
7. Any required new technology has been developed to an adequate state of readiness, or back-up options exist and are supported to make them a viable alternative.		<b>P</b>	<b>S</b>			
8. The project risks are understood and have been credibly assessed, and plans, a process and resources exist to effectively manage them.			<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>
9. Safety, reliability, maintainability, quality, and EEE parts assessments have been adequately addressed in preliminary design and any associated product, such as the PRA, hazard analysis, failure modes and effects analysis, have been approved at a level consistent with the level of design maturity.	<b>S</b>	<b>P</b>			<b>S</b>	<b>P</b>
10. The operational concepts are technically sound, includes (where appropriate) human factors, and includes the flowdown of requirements for its execution.	<b>S</b>	<b>P</b>		<b>S</b>		
<sup>1</sup> . Criteria a. Alignment with and contributing to Agency needs, goals, and objectives and the adequacy of requirements flow-down from those; b. Adequacy of technical approach as defined by NPR 7123.1 entrance and success criteria; c. Adequacy of the integrated cost and schedule estimate and funding strategy in accordance with NPD 1000.5; d. Adequacy and availability of resources other than budget; e. Adequacy of the risk management approach and risk identification and mitigation per NPR 8000.4; and f. Adequacy of management approach.						

The standard metric for the SRB success criteria evaluations is a three-level metric scale, i.e., successful (green), partially successful (yellow), or unsuccessful (red). This is sometimes referred to as a “stop-light” assessment.

The SRB is expected to provide its evaluation for each of the success criteria, along with supporting rationale that addresses the topics provided as guidance in these tables. Note that the metrics in the tables should be used as guidance only. As the P/p matures, the metrics for the criteria should become more demanding. A deficiency that might be acceptable early in the P/p is likely to be unacceptable later. It is up to the SRB to use its expertise to evaluate the P/p, taking into account the stage in the life-cycle or other circumstances and assess the risks that any deficiency poses against the “green” standard to the successful execution of the P/p.

## 5.3 Joint Cost and Schedule Confidence Level Assessments

Per NPD 1000.5 each P/p being reviewed is required to submit a JCL at KDP C and when re-baselined. The JCL assessment is intended to show the level of confidence that the P/p has to accomplish its technical goals and execute its plan on schedule and within budget. The SRB is responsible for analyzing the submitted P/p's JCL to determine the quality of the product and acceptability of the process used.

The SRB will incorporate the SRB risks identified in the ICA, ISA, and SRA into the P/p's JCL and evaluate their impact. There may be instances where the SRB develops its own JCL to validate the P/p's JCL.

## 5.4 SRB RFAs, Findings and Recommendations

### 5.4.1 Request for Action (RFA)

#### **Program/project Internal Reviews**

As authorized by the chair SRB members participate as observers at selected P/p's internal reviews and may submit RFAs as appropriate. The RFA process used by the P/p must be a closed-loop process that provides tracking, disposition and closure of the RFAs. The SRB chair and P/p's representative typically discuss each RFA and reach agreement on its merit for official acceptance as a RFA. The RFA initiator must be in agreement with the response before the RFA can be closed. The chair can close a RFA if the RFA's originator is unavailable. If the SRB chair and the RFA initiator cannot agree on closure, the issue is documented as part of the SRB report. The goal is to have all P/p internal review RFAs closed before the SRB's site review.

#### **LCR Site Review**

Only SRB members can submit RFAs at the site review. If a SRB member feels his or her concern is not adequately addressed, and is unlikely to be resolved within the time-span of the review or needs more information, the member will submit a RFA. The chair collects all RFAs written during the review and is responsible to review the RFAs for clarity and scope, thus eliminating redundancies, rejecting those that are out-of-scope, and requesting rewrites if the intent or description is unclear. The SRB must use a RFA process that ensures that each RFA is tracked from submission to closure. The P/p is responsible for RFA tracking, RFA closure including concurrence of the initiator and RFA closure progress status.

The P/p is required to provide a written response explaining how the RFA will be dispositioned. After reviewing the intended disposition, the author of the RFA determines whether the P/p understands the issue and whether the disposition is appropriate. The RFA author must endorse any actions arising from the RFA before it can be closed.

It is acceptable practice for an SRB member to sponsor an RFA submitted by an observer or consultant to the board at the review. The SRB member is accountable for that RFA and should feel that the subject matter is appropriate and important to the review.

If a disagreement occurs between the SRB and the P/p regarding the status of closure of a RFA, every effort should be made to resolve the differences at the SRB and P/p level. If the RFA's

resolution cannot be reached, information from both the SRB and the P/p is elevated to the next management level. Resolution should be attempted at successively higher levels of the governance structure until resolved. If necessary, issue adjudication can progress to the Office of the Administrator.

#### 5.4.2 Findings

A finding is a conclusion reached based on examination or investigation. During the participation in the site visit, SRB members document their findings according to the SRB chair's guidance. A finding can be a weakness or strength. Weaknesses are subdivided into issues, concerns and observations. The CS and CS2 SRBs derive their final findings based on the findings of the individual members. In the NC SRB the chair listens to the other members but reports his personal findings.

##### **Strength**

A strength describes a feature of the P/p that in the judgment of the SRB is better than expected at a particular stage of the life cycle. It can also be an observed attribute from which the rest of the Agency could benefit.

##### **Weakness (Issue, Concern and Observation)**

Weaknesses constitute a threat to the future success of the P/p. If the weakness is judged a very significant threat, it is an issue. Weaknesses that are less significant threats are concerns. Observations are findings that have little immediate threat but are points the SRB feels the P/p should be sensitive to.

#### 5.4.3 SRB Recommendation

The SRB's final product is its determination of whether the P/p passed or failed the LCR assessment. With this comes the recommendation to the CAs to move the P/p into the next phase of development or hold the P/p in the current phase. If the P/p is passed with qualifications, the SRB will explain the qualifications and why these areas should not delay advancing the P/p to the next development level. If the P/p does not pass, the reasons with rationale must be provided. The rationale should explain why the SRB has reservations, the significance of the reservations and what corrective actions are recommended. It is not the responsibility of the SRB to determine if a delta review is necessary, but it may make that assertion as part of its recommendation.

### 5.5 SRB Members' Product

Each SRB member is required to provide the RM and chair with their written assessment. The IMIR is the required format of the assessments. A written preliminary draft of the IMIR is delivered to the chair prior to the SRB's post site review caucus. The final written IMIR is due 48 hours after the SRB post review caucus. The final IMIR is sent to the SRB chair and RM by email.

The IMIR content is the member's assessment of the P/p's health and maturity relative to the review criteria. The IMIR includes 1) identification of issues, concerns, observations and

strengths and recommendations associated with those issues and concerns; 2) a conclusion of how well the P/p meets each NPR 7120.5 assessment criterion; 3) a conclusion of how well the P/p meets each NPR 7123.1 success criterion; and 4) an executive summary. The IMIRs are used in reaching the final SRB conclusions.

## 5.6 Readiness to Proceed Email

The readiness to proceed process is discussed in section 4.2 of this handbook. The product of the readiness to proceed activity is an email from the SRB chair to the IPAO Director. The email is composed directly after the discussions with the P/p.

The email includes a list of all areas that are not totally mature for the review with an assessment of their impact on the LCR and on the SRB's ability to reach a pass/fail conclusion. The email concludes with the chair's recommendation to proceed or delay the LCR.

The IPAO Director sends this assessment via email to the CAs including the review agenda, the review schedule, briefings schedule and a list of SRB members that will participate in this review.

## 5.7 Snapshot Report (Quick Look Report)

The snapshot report process is discussed in section 4.5 of this handbook. Within 48 hours of the completion of the site review, the SRB chair must provide a 1-page snapshot report of his or her preliminary findings to the DA.

The report contains a LCR overview, the SRB's summary findings, significant issues, significant risks and the plan forward. The RM works with the APMC Executive Secretary (ES) to schedule this briefing. The chair includes the proposed schedule for briefing the CMC, MDPMC and, if applicable, APMC.

The report is discussed via a telecom unless the presiding official requests otherwise. The RM facilitates the discussion by briefly introducing the topic, the review milestone, and the key participants in the telecom. The RM introduces the senior manager who is chairing the meeting. The SRB chair then takes the lead and presents the quick look report. The Senior Manager may direct questions to the SRB chair or the P/p manager. The P/p may address their early responses to the SRB's findings. The RM summarizes any actions resulting from the briefing. After the briefing the RM forwards the actions to the EAG Manager and the APMC ES who send them out to the attendees. For Category 2 projects, the APMC ES forwards the summary to the DA.

## 5.8 Briefings

Briefings capture a summary of the LCR process and highlight the SRB findings and recommendations. These are used to communicate the results of the review to the P/p and NASA management. The reporting venues are identified in the ToR for each specific LCR.

The SRB chair and RM develop the briefing packages with inputs from SRB members. In the case of the NC SRB, the briefing content reflects the SRB chair's personal opinion.

Listed in chronological order are the required SRB briefings.

- Initial de-briefing to the P/p;
- SR Briefing (see sections 5.7 and 4.5)
- E-mail to IPAO management of review's findings
- De-Briefing to the P/p;
- IPAO/IPCE Quality Product Review briefing (Dry Run);
- Briefing to the P/p and CMC;
- Briefing to the MDPMC;
- Briefing to the APMC, if applicable.

### 5.8.1 Initial De-briefing to P/p

On the last day of the site visit, the SRB chair, with support from the SRB members and the RM, orally briefs the P/p on the SRB's high level findings. The purpose of this briefing is to inform the P/p of the SRB's findings regarding the P/p's issues, concerns and strengths and to ensure that the findings are based on accurate data. Included in the briefing is the schedule of subsequent SRB reporting activities.

SRB members and the host Center TAs are encouraged to attend the debriefing. Other Centers may participate if they were a part of the LCR.

### 5.8.2 IPAO Quality Product Review (Briefing) [Dry Run]

The SRB's final report briefing package is presented by the SRB chair who is supported by the RM. For convenience the chair can telecom into the briefing. The briefing, called the IPAO Quality Product Review, includes the AA of IPCE, Deputy AA of IPCE, IPAO Director and IPAO Deputy Director, EAG manager and PAG lead. This briefing, referred to as a "Dry Run", is used to ensure that the package is appropriate for the intended audience and that the SRB's message is clear and concise. The cost analyst, SA, RM, PRM and SRB chair are required to participate. The SRB chair and RM consider the comments received during the review and revise the SRB's final report briefing package and the SRB's final report as they judge appropriate.

### 5.8.3 SRB Briefing to Program/Project and CMC

After SRB final report briefing package is updated with the comments received during the product quality review, the SRB chair and RM send the updated SRB final report briefing package by email to the P/p manager, the host Center TA and the PE. The P/p may send comments on the revised briefing package to the SRB chair and RM by email.

After the SRB final report briefing package is updated with any P/p response, it is distributed to the CMC(s) for its (their) review by Center personnel. The CMC schedule is coordinated by the host Center and the P/p. This briefing must precede the APMC's briefing which occurs within 30 days of the conclusion of the site visit or at the next regularly scheduled APMC thereafter. The briefing to the APMC will not be delayed by the inability to convene a lower level body in a timely fashion.

The SRB's final report briefing package is presented by the SRB chair to the CMC or to an integrated CMC if multiple Centers are involved with the P/p. The CMC briefing includes the P/p's responses to SRB's and SRB's recommendations on passing the P/p into the next life-cycle phase. Typically, the host center records the briefing minutes. The RM will request the CMC's briefing minutes.

#### 5.8.4 SRB Briefing to Directorate PMC

The highest reporting level for both Category I projects and Category II projects at non-KDP LCRs is to the Directorate PMC (DPMC). The NASA AA and the APMC reserve the right to request briefings on all project reviews. The timelines and procedures for the reporting of these project's LCRs should be similar in nature to those for Category 1 KDP projects (See section 5.8.5). The RM ensures that the AA for IPCE is briefed on the SRB's conclusions and recommendations prior to the DPMC briefing. The RM will obtain minutes, actions and any decision memoranda of the briefing from the PE. The SRB chair should be prepared to make an overall pass/fail recommendation at the DPMC.

The DPMC schedule is coordinated by the Directorate and the P/p. This briefing must precede the APMC's briefing which occurs within 30 days of the conclusion of the site visit or at the next regularly scheduled APMC thereafter. The briefing to the APMC will not be delayed by the inability to convene a lower level body in a timely fashion.

#### 5.8.5 SRB Briefing to the APMC

All Program reviews and Category 1 project KDP reviews are briefed to the APMC. The briefing package will be delivered to the Executive Secretary 10-days prior to the APMC. The P/p manager is the presenter but the SRB chair should be prepared to discuss the SRB's conclusions and recommendations. The RM ensures that the AA for IPCE is briefed on the SRB results prior to the APMC briefing. A pre-brief is conducted and coordinated with the ES.

### 5.9 Final Report

The SRB final report provides a complete and comprehensive documentation of the LCR. It is intended to provide the details of the review process with particular emphasis on the findings and any associated recommendations. The written report is due 30 days after the final PMC briefing.

The SRB members review the draft of the SRB final report and provide comments to the SRB chair and RM. The members' feedback is incorporated, as appropriate, into the report. The draft report is also provided to the P/p for critique and feedback.

The SRB chair and RM have the responsibility for the compilation, accuracy and timeliness of the SRB final report. The SRB final report must be completed and signed by the SRB chair no later than 30 days after receiving the draft of the final report from the RM. The report is for official NASA use only and should not be released outside of the Agency.

Dissenting (consensus boards) and alternative (NC boards) opinions of SRB members, briefed to the GPMC, must be included.

The SRB's final report can acknowledge the P/p's best practices. The report provides details of quantitative and qualitative assessments made by the SRB. The executive summary of the IPA Report is included as an appendix in the SRB final report. The report's format must be consistent with the IPAO standard format to assure effective communications of the SRB's finding and recommendations. The report's table of contents identifies the specific materials required in the report.

Once completed, the SRB RM distributes the report to the P/p and others involved in the LCR. The APMC ES distributes the SRB final report with the PMC members by posting them on the NX server.

## 5.10 Customer Surveys

Customer feedback is needed to monitor and improve the SRB process. Three surveys are used that are tailored to the customer category. The three customer categories are the CAs, SRB members and the Agency customers. Set surveys are used for each customer category and identical surveys are used for every LCR. This allows IPAO to have a database from which meaningful statistics and metrics can be derived over a long time span and over many reviews. The survey questions are tailored in a way that will preserve anonymity of the respondent.

At the conclusion of a LCR, the IPAO Review Manager (RM) will request the IPAO Administrative Officer to prepare the data system for the survey. The RM will send the survey information via email to the SRB members and Agency customers. The CAs will be surveyed at the discretion of the IPAO Principle Review Manager but no less than once per fiscal year. The feedback is highly encouraged; however, it is not required. For convenience to the customers, the feedback is provided on-line directly into the IPAO survey database.

## 5.11 Response Recommendation Decision (RRD)

The RM will prepare a response recommendation decision report that documents the total LCR. This report is a summary package of existing LCR materials and is comprised of the following:  
*Note: All RRD material should be in Adobe PDF format.*

1. Readiness-to-Proceed results
2. SRB Approval Letters Package
3. Vetting Package
  - a. Individual Vetting Documentation (Archive on the secure server);
  - b. Summary of SRB vetting information;
  - c. SRB Annual Vetting Verification letters.
4. ToR
5. Quick Look Package
  - a. Entrance Criteria Assessment;
  - b. Quick Look – 1 LCR;
  - c. Quick Look – 2 LCR.

6. SRB Final Report
7. PAR – Programmatic Assessment Report package
8. CMC Package
  - a. SRB Briefings;
  - b. Project Response;
  - c. Minutes
9. MDPMC Package
  - a. SRB Briefings;
  - b. Project Response;
  - c. MDPMC Response;
  - d. Minutes from MDPMC.
10. APMC Package
  - a. SRB Briefings;
  - b. Project Response;
  - c. Program Response;
  - d. MD Response;
  - e. OCFO (SID) Status;
  - f. Minutes from APMC;
  - g. KDP Decision Memo (SBU).

The RM will include an explanation memorandum for any missing information.

The completed RRD is archived in the IPAO filing system. RRDs are official IPAO records.

## Appendix A Glossary

**Acceptable Risk.** The risk that is understood and agreed to by the program/project, governing PMC, Mission Directorate, and other customer(s) such that no further specific mitigating action is required. (Some mitigating actions might have already occurred.)

**Acquisition.** The process for obtaining the systems, research, services, construction, and supplies that NASA needs to fulfill its missions. Acquisition--which may include procurement (contracting for products and services)--begins with an idea or proposal that aligns with the NASA Strategic Plan and fulfills an identified need and ends with the completion of the program or project or the final disposition of the product or service.

**Acquisition Strategy Planning Meeting.** A forum that provides an early view of potential major acquisitions so that senior leaders can consider issues such as the appropriate application of new Agency and Administration initiatives, current portfolio risk and implications for the future portfolio, high-level make-or-buy strategy, industrial base considerations, and the placement of development or operations work in-house versus out-of-house. It also provides the strategic framework for addressing challenges associated with fully utilizing NASA Centers' capabilities, including workforce and infrastructure, and shaping the Agency over time. The development of an acquisition strategy shall also include an analysis of the industrial base capability to design, develop, produce, support, and, if appropriate, restart an acquisition program or project as well as the mechanisms used to identify, monitor, and mitigate industrial base and supply chain risks.

**Agency Baseline Commitment.** Establishes and documents an integrated set of project requirements, cost, schedule, technical content, and an agreed-to JCL that forms the basis for NASA's commitment with the external entities of OMB and Congress. Only one official baseline exists for a NASA program or project and it is the Agency Baseline Commitment.

**Agency Program Management Council.** The senior management group, chaired by the NASA Associate Administrator or designee, responsible for reviewing Formulation performance, recommending approval, and overseeing implementation of programs and Category 1 projects according to Agency commitments, priorities, and policies.

**Approval.** Authorization by a required management official to proceed with a proposed course of action. Approvals must be documented.

**Approval (for Implementation).** The acknowledgment by the CA that the program/project has met stakeholder expectations and formulation requirements, and is ready to proceed to implementation. By approving a program/project, the decision authority commits the budget resources necessary to continue into implementation. Approval (for Implementation) must be documented.

**Architecture.** A term used to describe the structure and content of a NASA Program. It is not to be confused with program roadmap, which describes how/when program architecture, is executed.

**Baseline (general context).** An agreed-to set of requirements, cost, schedule, designs, documents, etc. that will have changes controlled through a formal approval and monitoring process.

**Baseline Design.** The mission design of a project, when it is sufficiently mature to comply with all requirements, has an implementation and operational schedule, and is consistent with approved/planned funding; within the Project life-cycle; the baseline design is expected at or shortly before the end of the formulation phase, i.e., in time for a PDR.

**Baseline Performance Review.** A monthly Agency-level independent assessment to inform senior leadership of performance and progress toward the Agency's mission and program/project performance. The monthly meeting encompasses a review of crosscutting mission support issues and all NASA mission areas.

**Benefit.** A strength identified by the SRB, which is clearly "better than expected" at that point in the P/p life-cycle, and offers definable value-added to NASA.

**Budget.** A detailed statement of anticipated revenues for a specified period of time with information on the purposes for which the funds will be used.

**Categorization.** A means of establishing Agency expectations of PMs relative to oversight council and planning detail; projects are either Category 1, 2, or 3, with Category 1 receiving the highest level of scrutiny (see section 2.1.4 of NPR 7120.5 for a full explanation).

**Center Management Council (CMC).** The council at a Center that performs oversight of programs and projects by evaluating all P/p work executed at that Center.

**Concern.** A minor weakness or deficiency that is substantial enough to be worthy of note and brought to the attention of the project for mitigation consideration but is not a discriminator in and of itself that affects the ability of the project to be successful.

**Concurrence.** A documented agreement by a management official that a proposed course of action is acceptable.

**Confidence Level.** A probabilistic assessment of the level of confidence of achieving a specific goal.

**Configuration Management.** A management discipline applied over the product's life cycle to provide visibility into and to control changes to performance, functional, and physical characteristics.

**Conflict of Interest (COI).** A conflict of interest involves the abuse—actual, apparent, or potential—of the trust that NASA has in its personnel. A conflict of interest is a situation in which financial or other personal considerations have the potential to compromise or bias professional judgment and objectivity. An apparent conflict of interest is one in which a reasonable person would think that the individual's judgment is likely to be compromised. A potential conflict of interest involves a situation that may develop into an actual conflict of interest. A conflict of interest exists whether or not decisions are affected by a personal interest; a conflict of interest implies only the potential for bias, not likelihood.

**Convening Authority.** The management official(s) responsible for convening a program/project review; establishing the Terms of Reference, including review objectives and success criteria (See ToR Template, Appendix F); appointing the SRB chair; approving or concurring the SRB membership; and receiving documented results of the review.

**Cost Analysis Data Requirement (CADRe).** A formal document designed to help managers understand the cost and cost risk of space flight projects. The CADRe consists of a Part A “Narrative” and a Part B “Technical Data” in tabular form, both provided by the program/project. Also, the project team produces the project life cycle cost estimate, schedule, and risk identification, which is appended as Part C.

**Critical Path Analysis (CPA).** Critical path assessment including verification of the primary schedule critical path and any other secondary critical paths that are less than the available schedule slack behind the primary critical path.

**Decision Authority (P/p context).** The individual authorized by the Agency to make important decisions on programs and projects under this or her authority.

**Decision Memorandum.** The document that summarizes the decisions made at KDPs or as necessary in between KDPs. The decision memorandum includes the Agency Baseline Commitment (if applicable), Management Agreement cost and schedule, unallocated future expense (UFE), and schedule margin managed above the project, as well as the total project cost and schedule estimate.

**Dissenting Opinion.** A Dissenting Opinion is a disagreement with a decision or action that is based on a sound rationale (not on unyielding opposition) that an individual judges is of sufficient importance that it warrants a specific review and decision by higher level management, and the individual specifically requests that the dissent be recorded and resolved by the Dissenting Opinion process.

**Earned Value Management.** A tool for measuring and assessing project performance through the integration of technical scope with schedule and cost objectives during the execution of the project. EVM provides quantification of technical progress, enabling management to gain insight into project status and project completion costs and schedules. Two essential characteristics of successful EVM are EVM system data integrity and carefully targeted monthly EVM data analyses (i.e., risky WBS elements).

**Earned Value Management System.** An integrated management system and its related sub-systems that allow for planning all work scope to completion, assignment of authority and responsibility at the work performance level, integration of the cost, schedule, and technical aspects of the work into a detailed baseline plan, objective measurement of progress (earned value) at the work performance level, accumulation and assignment of actual costs, analysis of variances from plans, summarization and reporting of performance data to higher levels of management for action, forecast of achievement of milestones and completion of events, forecast of final costs, and disciplined baseline maintenance and incorporation of baseline revisions in a timely manner.

**Entrance Criteria.** The readiness requirements imposed by NPR 7123.1 on P/p for all life-cycle reviews; these criteria are used as a helpful reminder by P/p as they prepare for each life-cycle review.

**Evaluation.** The continual self evaluation and independent assessment of the performance of a program or project and incorporation of the evaluation findings to ensure adequacy of planning and execution according to plans.

**Final (document context).** Implies the expectation of a finished product. All approvals required by Center policies and procedures have been obtained.

**Finding.** A conclusion reached by the SRB based on examination or investigation; a finding can be a concern, issue, or strength.

**Formulation.** The identification of how the program or project supports the Agency's strategic goals; the assessment of feasibility, technology and concepts; risk assessment, team building, development of operations concepts and acquisition strategies; establishment of high-level requirements and success criteria; the preparation of plans, budgets, and schedules essential to the success of a program or project; and the establishment of control systems to ensure performance to those plans and alignment with current Agency strategies.

**Formulation Authorization Document.** The document issued by the MDAA (or MSOD) to authorize the formulation of a program whose goals will fulfill part of the Agency's Strategic Plan, Mission Directorate Strategies, or Mission Support Office Functional Leadership Plans. In addition, a FAD or equivalent is used to authorize the formulation of a project.

**Funding (budget authority).** The authority to incur financial obligations that will result in outlays. Authority is delegated through the formal funds distribution process.

**Governance.** The combination of processes and structures implemented by NASA in order to inform, direct, manage and monitor the activities of the organization toward the achievement of its objectives.

**Host Center.** The Center with defined responsibility for a P/p at the Acquisition Strategy Planning (ASP) meeting and documented in the Formulation Authorization Document (FAD).

**Implementation.** The execution of approved plans for the development and operation of the program/project, and the use of control systems to ensure performance to approved plans and continued alignment with the Agency's strategic needs, goals, and objectives.

**Independence.** Unbiased and outside the management chain of the P/p. The freedom from conditions that threaten objectivity or the appearance of objectivity. Such threats to objectivity must be managed at the individual reviewer and organizational levels.

**Independent Assessment(s)** (includes reviews, evaluations, audits, analysis oversight, investigations). Assessments are independent to the extent the involved personnel apply their expertise impartially, without any conflict of interest or inappropriate interference or influence, particularly from the organization(s) being assessed.

**Independent Cost Analysis (ICA).** An independent analysis of P/p resources (including budget) and financial management associated with the P/p content over the Program's budget horizon, conducted by an impartial body independent from the management of the P/p. ICA includes, but is not limited to, the assessment of cost estimates, budgets, and schedules in relation to a P/p and a Program's constituent Projects' technical content, performance, and risk. ICAs may include ICE, assessment of resource management, distribution and planning, and verification of cost-estimating methodologies. (ICAs are not LCCEs, but are assessments of the adequacy of the budget and management practices to accomplish the work scope through the budget horizon; as such, ICAs can be performed for P/p when a life-cycle ICE is not warranted.)\*\*

**Independent Cost Estimate (ICE).** An independent P/p cost estimate prepared by an office or other entity that is not under the supervision, direction or control of the P/p (or its chain of command) that is responsible for carrying out the development or acquisition of the P/p. An ICE is bound by the P/p scope (total life-cycle through all phases), schedule, technical content, risk, ground rules, and assumptions and is conducted with objectivity and the preservation of integrity of the cost estimate. ICEs are generally developed using parametric approaches that are tailored to reflect the design, development state, difficulty, and expertise of team members.\*\*

**Integrated Master Schedule.** The IMS is a logic network-based schedule that reflects the total project scope of work, traceable to the WBS, as discrete and measurable tasks/milestones and supporting elements that are time-phased through the use of valid durations and well-defined interdependencies.

**Issue.** A deficiency or set of deficiencies taken together that are judged to substantially affect the ability of the project to meet their requirements within the planned cost and schedule. A set of deficiencies may be multiple concerns that taken together create a major weakness. Issues can be found against the project or against other organizations that affect the ability of the project to be successful. A major, significant weakness is an issue.

**Joint Cost and Schedule Confidence Level.** (1) The probability that cost will be equal to or less than the targeted cost AND schedule will be equal to or less than the targeted schedule date. (2) A process and product that helps inform management of the likelihood of a project's programmatic success. (3) A process that combines a project's cost, schedule, and risk into a complete picture. JCL is not a specific methodology (e.g., resource-loaded schedule) or a product from a specific tool.

**Key Decision Point.** The event at which the decision authority determines the readiness of a program/project to progress to the next phase of the life cycle (or to the next KDP).

**Life Cycle Cost.** The total of the direct, indirect, recurring, nonrecurring, and other related expenses incurred, or estimated to be incurred, in the design, development, verification, production, deployment, prime mission operation, maintenance, support, and disposal of a project including closeout, but not extended operations. The LCC of a project or system can also be defined as the total cost of ownership over the project or system's planned life cycle from Formulation (excluding Pre-Phase A) through Implementation (excluding extended operations).

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\* From NPR 7120.5

\*\* From NID

**Life-Cycle Cost (LCC).** The total of the direct, indirect, recurring, nonrecurring, and other related expenses incurred, or estimated to be incurred, in the design, development, verification, production, operation, maintenance, support, and disposal of a project. The LCC of a project or system can also be defined as the total cost of ownership over the Project or system's life-cycle from formulation through implementation. It includes all design, development, deployment, operation and maintenance, and disposal costs.\*

**Life-Cycle Phase.** The life-cycle of NASA P/p is divided into phases, each of which defines the activities/achievements to be accomplished before proceeding to the next phase; at the highest level there are two phases for both programs and projects: the formulation phase, followed by the implementation phase. For programs the formulation phase entails pre-program acquisition, while the implementation phase involves program acquisition and operations; for projects the formulation phase entails pre-systems acquisition (Phases A and B), and the implementation phase involves system acquisition (Phases C and D), operations (Phase E), and decommissioning (Phase F).

**Life Cycle Review.** A review of a program or project designed to provide a periodic assessment of the technical and programmatic status and health of a program or project at a key point in the life cycle, e.g., PDR, CDR. Certain life cycle reviews provide the basis for the Decision Authority to approve or disapprove the transition of a program/project at a KDP to the next life cycle phase.

**Management Agreement.** The portion cost (by year) and schedule within which the program or project will complete the approved project scope along with the associated JCL, if required. The Management Agreement forms the agreement between a project manager and his/her management about what he/she will manage to, which provides the basis for NASA's performance assessment.

**Margin.** The allowances carried in budget, projected schedules, and technical performance parameters (e.g., weight, power, or memory) to account for uncertainties and risks. Margins are allocated in the formulation process, based on assessments of risks, and are typically consumed as the program/project proceeds through the life cycle.

**Metric.** A measurement taken over a period of time that communicates vital information about the status or performance of a system, process, or activity.

**Mission.** A major activity required to accomplish an Agency goal or to effectively pursue a scientific, technological, or engineering opportunity directly related to an Agency goal. Mission needs are independent of any particular system or technological solution.

**Mission Directorate Program Management Council.** The senior management group, chaired by an MDAA or designee, responsible for reviewing project Formulation performance, recommending approval, and overseeing implementation of Category 2 and 3 projects according to Agency commitments, priorities, and policies.

**Observation.** A finding that is not substantial enough to be considered as a concern but has the potential to become a concern.

**Preliminary** (document context). Implies that the product has received initial review in accordance with Center best practices. The content is considered correct, though some TBDs may remain. All approvals required by Center policies and procedures have been obtained. Major changes are expected.

**Primary Risks.** Those undesirable events having both high probability and high impact/severity.

**Program.** A strategic investment by a Mission Directorate or Mission Support Office that has a defined architecture and/or technical approach, requirements, funding level, and a management structure that initiates and directs one or more projects. A program defines a strategic direction that the Agency has identified as critical.

**Program Commitment Agreement.** The contract between the Associate Administrator and the responsible MDAA that authorizes transition from Formulation to Implementation of a program.

**Program/Project Management Requirements.** Requirements that focus on how NASA and Centers perform P/p management activities.

**Program Plan.** The document that establishes the program's baseline for implementation, signed by the MDAA, Center Director(s), and program manager.

**Program (Project) Team.** All participants in program (project) Formulation and Implementation. This includes all direct reports and others that support meeting program (project) responsibilities.

**Programmatic Authority.** Programmatic Authority includes the Mission Directorates and their respective P/p managers. Individuals in these organizations are the official voices for their respective areas. Programmatic Authority sets, oversees, and ensures conformance to applicable programmatic requirements.

**Programmatic Requirements.** Requirements set by the Mission Directorate, program, project, and PI, if applicable. These include strategic scientific and exploration requirements, system performance requirements, and schedule, cost, and similar non-technical constraints.

**Project.** A specific investment having defined goals, objectives, requirements, life-cycle cost, a beginning, and an end. A project yields new or revised products or services that directly address NASA's strategic needs. They may be performed wholly in-house; by Government, industry, academic partnerships; or through contracts with private industry.

**Project Plan.** The document that establishes the project's baseline for implementation, signed by the responsible program manager, Center Director, project manager, and the MDAA, if required.

**Request for Action (RFA).** A formal written request from the SRB that asks for additional information from, or action by, the P/p team.

**Residual Risk.** Residual risk is the remaining risk that exists after all mitigation actions have been implemented or exhausted in accordance with the risk management process. (NPR 8700.1)

**Review Manager (RM).** The RM has the responsibility to ensure the objectivity, quality, integrity and consistency of each assigned independent review and will: define the scope of the

review (with the CAs); facilitate the identification and approval of the chair and team members; participate on the SRB as an authority in the programmatic aspects (compliance to NPR 7120.5 and generally accepted rules of good project management, cost, schedule, and risk), and in specific technical areas, if appropriate; facilitate the review process; ensure that the scope of the review is fully exercised; and be accountable for ensuring that the results of the review have been properly vetted, documented and reported.

**Risk.** The combination of the probability that a program or project will experience an undesired event and the consequences, impact, or severity of the undesired event, were it to occur. The undesired event may come from technical or programmatic sources (e.g., a cost overrun, schedule slippage, safety mishap, health problem, malicious activities, environmental impact, failure to achieve a needed scientific or technological objective, or success criterion). Both the probability and consequences may have associated uncertainties.

**Risk Assessment.** An evaluation of a risk item that determines (1) what can go wrong, (2) how likely is it to occur, (3) what the consequences are, and (4) what the uncertainties are that are associated with the likelihood and consequences.

**Risk Management.** Risk management includes risk-informed decision making (RIDM) and continuous risk management (CRM) in an integrated framework. RIDM informs systems engineering decisions through better use of risk and uncertainty information in selecting alternatives and establishing baseline requirements. CRM manages risks over the course of the development and implementation phases of the life cycle to ensure that safety, technical, cost, and schedule requirements are met. This is done to foster proactive risk management, to better inform decision making through better use of risk information, and then to more effectively manage implementation risks by focusing the CRM process on the baseline performance requirements emerging from the RIDM process. (See NPR 8000.4, *Agency Risk Management Procedural Requirements*). These processes are applied at a level of rigor commensurate with the complexity, cost, and criticality of the program.

**Signature.** A distinctive mark, characteristic, or thing that indicates identity; one's name as written by oneself.

**Stakeholder.** An individual or organization outside a specific program or project having an interest (or stake) in the outcome or deliverable of a program or project.

**Standards.** NASA Standards are formal documents that establish a norm, requirement, or basis for comparison, a reference point to measure or evaluate against. A technical standard, for example, establishes uniform engineering or technical criteria, methods, processes, and practices.

**Standing Review Board.** The board responsible for conducting independent reviews (life cycle and special) of a program/project and providing objective, expert judgments to the CAs. The reviews are conducted in accordance with approved Terms of Reference (ToR) (See ToR Template, Appendix F) and life cycle requirements per NPR 7120.5, POM Handbook and NPR 7123.1.

**Success Criteria.** That portion of the top-level requirements that defines what must be achieved to successfully satisfy NASA Strategic Plan objectives addressed by the program or project.

**System.** The combination of elements that function together to produce the capability required to meet a need. The elements include all hardware, software, equipment, facilities, personnel, processes, and procedures needed for this purpose.

**Systems Engineering.** A disciplined approach for the definition, implementation, integration, and operation of a system (product or service). The emphasis is on achieving stakeholder functional, physical, and operational performance requirements in the intended use environments over its planned life within cost and schedule constraints. Systems engineering includes the engineering processes and technical management processes that consider the interface relationships across all elements of the system, other systems, or as a part of a larger system.

**Technical Authority.** Technical Authorities are part of NASA's system of checks and balances and provide independent oversight of programs and projects in support of safety and mission success through the selection of individuals at delegated levels of authority. These individuals are the Technical Authorities. Technical Authority delegations are formal and traceable to the Administrator. Individuals with Technical Authority are funded independently of a program or project.

**Technical Authority Requirements.** Requirements invoked by OCE, OSMA, and OCHMO documents (e.g., NPRs or technical standards cited as program or project requirements) or contained in Center institutional documents. These requirements are the responsibility of the office or organization that established the requirement unless delegated elsewhere.

**Terms of Reference.** A document specifying the nature, scope, schedule, and ground rules for an independent review or independent assessment (See ToR Template, Appendix F).

**Unallocated Future Expenses.** The portion of estimated cost required to meet specified confidence level that cannot yet be allocated to the specific project WBS sub-elements because the estimate includes probabilistic risks and specific needs that are not known until these risks are realized.

**Validation.** Proof that the product accomplishes the intended purpose based on stakeholder expectations. May be determined by a combination of test, analysis, demonstration, and inspection.

**Verification.** Proof of compliance with design solution specifications and descriptive documents. May be determined by a combination of test, analysis, demonstration, and inspection.

**Waiver.** A documented authorization releasing a program or project from meeting a requirement after the requirement is put under configuration control at the level the requirement will be implemented.

**Work Breakdown Structure.** A product-oriented hierarchical division of the hardware, software, services, and data required to produce the program/project's end product(s), structured according to the way the work will be performed and reflective of the way in which program/project costs, schedule, technical, and risk data are to be accumulated, summarized, and reported.

## Appendix B Acronyms

AA	Associate Administrator
APMC	Agency Program Management Council
ASP	Acquisition Strategy Planning
BOE	Basis of Estimate
CA	Convening Authority
CADRe	Cost Analysis Data Requirement
CCB	Change Control Board
CD	Center Director
CDR	Critical Design Review
CERR	Critical Events Readiness Review
CMC	Center Management Council
CO	Contracting Officer
CoFR	Certification of Flight Readiness
COI	Conflict of Interest
CPA	Critical Path Analysis
CRM	Continuous Risk Management
CS	Civil Service Consensus Board
CS2	Civil Service Consensus Board with expert support
DA	Decision Authority
DoD	Department of Defense
ES	Executive Secretary
EVM	Earned Value Management
FAD	Formulation Authorization Document
FAR	Federal Acquisition Regulations
FRR	Flight Readiness Review
ICA	Independent Cost Analysis
ICE	Independent Cost Estimate
ILCR	Independent Life-Cycle Review
IMIR	Individual Member Independent Report
IMS	Integrated Master Schedule
IPA	Independent Programmatic Analysis
IPAO	Independent Program Assessment Office
ISA	Independent Schedule Assessment
JCL	Joint Confidence Level
JPL	Jet Propulsion Laboratory
KDP	Key Decision Point
LaRC	Langley Research Center
LCC	Life-Cycle Cost
LCCE	Life-Cycle Cost Estimate
LCR	Life-Cycle Review
LRR	Launch Readiness Review
MCR	Mission Concept Review
MD	Mission Directorate

MDAA	Mission Directorate Associate Administrator
MDPMC	Mission Directorate Program Management Council
MDR	Mission Definition Review
MOU	Memorandum of Understanding
MMT	Mission Management Team
MRB	Mission Readiness Briefing
MSO	Mission Support Office
NAR	Non-Advocate Review
NASA	National Aeronautics and Space Administration
NC	Non-Consensus Mixed Board
NESC	NASA Engineering and Safety Center
NID	NASA Interim Directive
NODIS	NASA Online Directives Information System
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
NSC	NASA Safety Center
OCC	Office of Chief Counsel
OCI	Organizational Conflict of Interest
OCE	Office of the Chief Engineer
OGC	Office of the General Counsel
OGE	Office of Government Ethics
ORR	Operational Readiness Review
OSMA	Office of Safety & Mission Assurance
P/p	Program/project
P/SRR	Program System Requirements Review
PAG	Programmatic Analysis Group
PAR	Program Approval Review
PCI	Personal Conflict of Interest
PCA	Program Commitment Agreement
PDR	Preliminary Design Review
PFAR	Post-Flight Assessment Review
PIR	Program Implementation Review
PLAR	Post-Launch Assessment Review
PM	P/p Manager
PMC	Program Management Council
PSR	Program Status Review
QSR	Quarterly Status Report
RFA	Request for Action
RIDM	Risk Informed Decision Making
RM	Review Manager
RMP	Risk Management Plan
RRD	Responses, Recommendations and Decisions
SA	Schedule Analyst
SA	Schedule Assessment
SBU	Sensitive But Unclassified
SDR	System Definition Review

SF	Standard Form
SID	Strategic Investments Division
SIR	System Integration Review
S&MA	Safety & Mission Assurance
SOPI	Standard Operation Procedure Instructions
SP	Special Publication
SR	Snapshot Report
SRA	Schedule Risk Analysis
SRB	Standing Review Board
SRD	System Requirements Document
SRR	System Requirements Review
TA	Technical Authority
TBD	To Be Determined
ToR	Terms of Reference
TRL	Technology Readiness Level
UFE	Unallocated Future Expenses
WBS	Work Breakdown Structure

REV A DRAFT

# Appendix C The National Aeronautics and Space Administration Policy Guidance on Standing Review Board Composition, Balance and Conflicts of Interest

*The National Aeronautics and Space Administration*

## POLICY ON STANDING REVIEW BOARD (SRB) COMPOSITION, BALANCE, AND CONFLICTS OF INTEREST

December 2008<sup>5</sup>

### *Introduction*

The National Aeronautics and Space Administration (NASA) accords special importance to the policies and procedures established to assure the integrity of Standing Review Board (SRB) reports. The work of the SRBs are largely done by persons drawn from every part of the nation and from every sector of society -- academia, industry, government, and nonprofit. The technical skills and perspectives of these individuals are essential to the ability of NASA to consistently produce accurate and objective assessments of NASA programs and projects.

Extensive efforts are made by NASA to assure the soundness of reports by selecting highly qualified SRB members. Yet, if a report is to be not only sound but also effective, the report also must be, and must be perceived to be, the result of a process that is generally free of bias and fairly balanced in terms of the knowledge, experience, and perspectives utilized to produce it.

### *Questions of SRB Composition and Balance*

All individuals selected to serve on SRBs must be highly qualified in terms of knowledge, training, and experience - often highly specialized and particularized -- to properly address the tasks assigned to the SRB. NASA identifies such individuals by drawing upon a network of national resources. Suggestions of potential SRB members come from the SRB Convening Authorities (CAs) and their staffs, from groups that have an interest in the underlying subject matter of a particular study and from other professionals with knowledge and expertise in relevant disciplines who have an interest in the programs and projects to be addressed.

Individual qualifications are not the only determinant in this process. Having an SRB of highly qualified and capable individuals is necessary but is not the only element necessary for successful reviews. When considering SRB membership, a well-rounded, diverse set of backgrounds can provide the most versatile perspective of opinions. Members should be selected both from within the Agency and from external sources, including such communities as private industry, academia, and other government agencies including the Department of Defense (DoD). When looking internal to the Agency, various NASA Centers and cross-mission opportunities, e.g., robotic versus human project expertise, can add unique insights. Therefore, the knowledge, experience, and perspectives of potential SRB members must be thoughtfully and carefully assessed and balanced in terms of the subtleties and complexities of the particular scientific, technical, and other issues to be addressed and the functions to be performed by the SRB. Diversity and balance of knowledge, design/development experience and organizational experience ensures the greatest opportunity to provide an independent perspective. These factors should be taken into to consideration when making recommendations for SRB membership.

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<sup>5</sup> This Policy has been implemented since December 2008 and it is being issued with the baseline version of the Standing Review Board Handbook, dated November 2009.

## *Questions of Conflict of Interest*

The work of SRBs cannot be compromised by issues of bias and lack of objectivity. In most cases these issues are caused by various forms of conflicts of interest that individual SRB members may have. For purposes of this policy, "conflict of interest" means any financial or other interest which conflicts with the individual's service on an SRB because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization. This policy involves two different types of conflicts. The first type of conflict, known as an organizational conflict of interest, is based upon the interests of the individual's employer. The second type of conflict, known as personal conflicts of interest, is based upon the personal interests of the individual. No individual that has a conflict of interest that is significant enough, as determined by NASA, to likely impair their judgment, relative to the functions to be performed, can be appointed to serve (or continue to serve) on an SRB. In some cases, such as unique expertise, it may be in the best interest of the government to approve potential SRB members despite the presence of conflicts of interest. This policy describes the process that must be followed when this occurs.

### *General Principles: Organizational Conflicts of Interest*

Organizational conflicts of interest (OCI) concern the interests of the contractor for whom the individual being considered for service on an SRB, works. Subpart 9.5 of the FAR contains guidance on OCIs which the agency must follow any time the agency uses a contract to obtain the services of an individual for an SRB. The regulations on OCI involve the two principles: preventing the existence of conflicting roles that might bias a contractor's judgment where a contractor may be a position to favor its own capabilities; and preventing unfair competitive advantage. There are three types of organizational conflicts of interest that emerge from these principles.

- "Unfair access to data" occurs when a contractor has access to nonpublic information as part of its performance and that information may provide the firm an unfair competitive advantage in a later competition for a government contract. The principle of unfair competition is involved in this conflict. An example of this conflict involves an SRB member having access to proprietary data that could give its employer an unfair competitive advantage in future competitions.
- "Biased ground rules" occurs when a contractor has the opportunity to skew a competition, whether intentionally or not, in favor of itself. The principles of unfair competition and bias are involved in this conflict. This conflict includes the interest of affiliates. An example of this conflict occurs when an SRB has substantial influence over a statement of work for a future competition when a member of that SRB intends to propose on the future competition.
- "Impaired objectivity" involves conflicting roles that might bias a contractor's judgment. This conflict contains two elements – the use of subjective judgment by the contractor and whether a contractor has a financial interest in the outcome of its performance. This conflict includes the interest of affiliates. The principle of bias is involved in this conflict. An example of this conflict occurs when an SRB member evaluates the work of its employer or of a competitor of its employer.

Strategies to avoid, neutralize, or mitigate conflicts can be addressed in a formal avoidance/mitigation plan submitted by the contractor when required by contract. In accordance with the FAR and NFS, if the contracting officer determines that a certain contractor presents an OCI that cannot be effectively avoided, neutralized or mitigated, individuals cannot serve on an SRB absent the granting of an OCI waiver by the Assistant Administrator for Procurement<sup>6</sup>. Waivers of FAR Subpart 9.5 on organizational conflicts of interest will be granted on a case-by-case basis when it is determined to be in the Government's interest to do so.

### *General Principles: Personal Conflicts of Interest*

A personal conflict of interest means something more than individual bias. There must be an *interest*, ordinarily financial, that could be directly affected by the work of the SRB.

Personal conflicts of interest are objective - they exist or they don't exist. They are not an assessment of one's actual

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<sup>6</sup> This section would only apply to members on an SRB who are not civil servants.

behavior or character, one's ability to act objectively despite the conflicting interest, or one's relative insensitivity to particular dollar amounts of specific assets because of one's personal wealth. Assessments of conflicts of interest by NASA are designed to determine if certain specific, potentially compromising situations might create a conflict of interest. Eliminating or preventing these conflicts of interests protect the individual, the other members of the SRB, NASA, and the public interest.

Personal conflicts of interest refer to *current interests*. They do not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

Personal conflicts of interest are not only assessed against the personal financial interests of the individual but also to the *interests of others* with whom the individual has substantial common financial interests if these interests are relevant to the functions to be performed. Thus, in assessing potential personal conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the individual's spouse and minor children, the individual's business partners, and others with whom the individual has substantial common financial interests. Consideration must also be given to the interests of those for whom the individual is acting in a fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

In assessing potential conflicts of interest in connection with an individual's service on an SRB, particular attention will be given to the following kinds of *financial interests* if they are relevant to the program or projects to be reviewed and evaluated: employment relationships (including private and public sector employment and self-employment); consulting relationships (including commercial and professional consulting and service arrangements, scientific and technical advisory board memberships, and serving as an expert witness in litigation); stocks, bonds, and other financial instruments and investments including partnerships; real estate investments; patents, copyrights, and other intellectual property interests; commercial business ownership and investment interests; services provided in exchange for honorariums and travel expense reimbursements; and research funding and other forms of research support.

The Decision Authority has the authority to approve a written determination that a contractor's expertise outweighs the contractor's conflict of interest when the local Office of the Chief Counsel determines that a personal conflict of interest exists. In the case of NASA employee, only the NASA Administrator may approve a written determination that the employee's expertise outweighs the employee's personal conflict of interest.

#### *Access to Restricted Information*

For the purposes of this policy, "Restricted Information," means information that is not available to the public, such as information developed at private expense embodying trade secrets or comprising commercial or financial information that is privileged or confidential; information determined by NASA to be restricted, such as U.S. Government Sensitive But Unclassified information as defined in NASA Procedural Requirement (NPR) 1600.1; and "contractor bid or proposal information" or "source selection information" as defined in the FAR. The opportunity to have access to Restricted Information during the course of SRB activities at NASA, if abused or misused, may confer an unfair competitive advantage on certain contractors. Thus, individuals selected to serve on SRBs will be asked to sign a *Non-Disclosure Agreement* that provides restrictions on the individual's use of Restricted Information obtained during the course of SRB activities (a model *Non-Disclosure Agreement* is attached hereto). If an individual during the course of participating in a P/p activity obtains and uses, or intends to use, Restricted Information for the individual's own direct and substantial economic benefit, such conduct constitutes a breach of the Non-Disclosure Agreement and will be grounds for removal from the SRB. The same rule applies if the individual discloses, or intends to disclose, such information to other individuals or to organizations in such a manner that a direct and substantial economic benefit may be conferred on such individuals or organizations. These restrictions do not apply to information once it has become publicly available.

## *Employees of Sponsors<sup>7</sup>*

There are special rules for employees of sponsors<sup>8</sup>. To the extent not prohibited by Federal or state laws or regulations, such an individual may serve as a member of such an SRB where the following requirements are met: (1) the service of the individual on the SRB must be based upon the unique scientific, technical or programmatic expertise which the individual brings to the SRB; (2) the individual and the individual's supervisory chain must not be located within the chain of command for programmatic level decisions for the P/p; (3) it must be specifically determined during the SRB appointment process that service by the individual will not compromise the independence or objectivity of the review.

### ***Implementation of this Policy***

#### *Background Information and Confidential Conflict of Interest Disclosures*

To address questions of SRB composition, balance and conflict of interest, individuals being considered for selection to serve on SRBs are required to submit certain background information, and certain information regarding conflicts of interest, relative to the P/p to be reviewed. The responsible independent review office (typically the Independent Program Assessment Office for all programs and projects with a life-cycle cost >\$250 million) will ensure that all potential members provide the necessary information and work with appropriate procurement, legal and Convening Authorities in determining suitability for SRB service and appropriate SRB diversity and balance. To facilitate collection of this information from non-federal members, the "*Background Information and Confidential Conflict Of Interest Disclosure*" form (attached) will be used by appropriate contracting officers and contractors to collect the information. Disclosure of relevant information is a *continuing obligation* for the duration of the SRB for which the "*Background Information and Confidential Conflict Of Interest Disclosure*" form was prepared. If during an individual's period of service on the SRB it becomes apparent to the individual that there have been changes in the information disclosed, or that there is new information that needs to be disclosed, such information must be reported promptly to the Review Manager for the P/p for which the form was completed. For proposed federal SRB members, the Office of Government Ethics (OGE) Form 450 or Standard Form (SF) 278 (as appropriate) will be used.

In addition to the submission of these forms, SRBs are asked to discuss the issues of SRB composition, balance and conflict of interest, and the relevant circumstances of their individual members, at the first kick-off meeting, and annually thereafter.

Except as required by law or court order, *specific conflict of interest information obtained by NASA will be held in confidence by NASA*. Access to such information will be limited to those offices whose proper business requires access to such information. Such information is not otherwise released by NASA except with the approval of the individual to whom the information pertains, unless release is required by law.

#### *Determinations on Composition, Balance and Conflicts of Interest*

The specific factors to be considered by NASA in assessing questions of SRB composition and balance will generally depend in each case upon the particular facts and circumstances involved. The resolution of these matters will be based in the final analysis upon the independent judgment of the CAs in conjunction with the appropriate support offices. Final authority over SRB appointments rests with the Decision Authority for the particular program or project under review. However, nothing in this section authorizes the Convening Authority or Decision Authority to make determinations required by, or reserved to another official by, statute, regulation or NASA directive; including, without limitation, 18 U.S.C. § 201, *et seq.* (criminal conflict of interest statutes), 5 CFR Part 2635 (Standards of Conduct), 48 CFR Subpart 9.5 (Federal Acquisition Regulation organizational conflict of interest regulation) and 48 CFR Subpart 1809.5 (NASA FAR Supplement organizational and consultant conflict of interest regulation).

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<sup>7</sup> For purposes of this policy, the term "sponsor" means an organization that institutionally supports the program or project e.g., a NASA Center or Mission Directorate.

<sup>8</sup> This paragraph only applies to members of an SRB who are civil servants.

Once a Convening Authority provides a list of candidates for membership that reflects the desired composition and balance for a particular SRB, the Review Manager will initiate the independence verification process to identify and analyze potential organizational and personal conflicts of interest. The list of candidates should include more individuals than are required to serve on an SRB to allow for alternate members if another candidate cannot serve due to a conflict of interest or other reason.

For any SRB, *the focus of the conflict of interest inquiry is on the identification and assessment of relationships to the program or projects to be reviewed and evaluated, as well as on other interests that might be directly affected by the review and evaluation.* The concern is the individual's objectivity while participating in the review and evaluation process could be impaired if that individual (or others with whom the individual has substantial common financial interests) has current interests, which could be directly affected by the P/p being evaluated. When contractors/consultants are or are being considered as members of SRBs, each member and his/her company must also be considered in the context of organizational conflicts of interest in relation to the program or project being independently reviewed as set forth in the FAR and the NFS.

Information obtained from the "*Background Information and Confidential Conflict Of Interest Disclosure*" forms (or OGE 450/SF 278 as appropriate) and from confidential SRB discussions of SRB composition, balance and conflict of interest at the initial SRB meeting and annually thereafter, will be used by the responsible officials in addressing and resolving questions of conflict of interest (both personal and organizational). No individual can be appointed to serve (or continue to serve) on an SRB if NASA determines a personal conflict of interest exists that is significant enough to raise questions about that individual's ability to provide unbiased advice and recommendations. A written determination that the need for the individual's expertise outweighs their conflict of interest will be made and approved by the Decision Authorities or Administrator as part of the nomination process in cases where an individual has a personal conflict of interest.

The responsible independent review office will manage the determination and maintenance of the SRB member independence. In accomplishing this task, contractors who provide proposed non-Federal members to the SRB will initiate the process of completing the "*Background Information and Confidential Conflict Of Interest Disclosure*" forms and will make an initial determination as to whether any OCI exists. In these cases, the support contractor will work with the responsible independent review office and the appropriate contracting officer to determine the degree of conflict and to devise appropriate mitigation plans. An assessment and determination will also be made on the existence of personal conflicts of interest and whether they can be eliminated or special approval obtained. Additionally, any mitigation plans or OCI waivers that are necessary for an individual's participation on an SRB must be completed prior to a final recommendation of SRB membership to the Convening Authority.

The responsible independent review office will review and analyze all relevant information; will finalize recommendations for SRB member participation and will submit a letter of nomination for the proposed SRB members defining the rationale for each member's nomination. Such letter will include the disposition of any conflict of interest waivers or mitigation plans, and no member shall be recommended without appropriate resolution of any conflicts. This letter will be directed to the CAs for their approval. When changes occur that affect previous determinations of conflicts of interest and independence, the same process will be followed leading to approval or removal of SRB members.

# Appendix D SRB Membership Background Information, Confidential Conflict of Interest Disclosure, and Non-Disclosure Agreement

## *The National Aeronautics and Space Administration*

### BACKGROUND INFORMATION AND CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE

NAME: \_\_\_\_\_ TELEPHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

CURRENT EMPLOYER: \_\_\_\_\_

PROGRAM/PROJECT SRB: \_\_\_\_\_

There are three parts to this form, Part I Background Information, Part II Confidential Conflict of Interest Disclosure, and Part III, Certification. Complete all parts, sign and date this form on the last page, and return the form to \_\_\_\_\_. Retain a copy for your records.

#### PART I BACKGROUND INFORMATION

##### INSTRUCTIONS

Please provide a curriculum/resume that identifies your relevant experience, organizational affiliations, government service, etc. to this SRB activity. In addition, please specifically respond to the 3 specific areas identified below to facilitate an overall assessment of any biases that may exist relative to this SRB activity.

I. ORGANIZATIONAL AFFILIATIONS. Report your relevant current business relationships (e.g., as an employee, owner, officer, director, consultant) and your relevant current remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups).

II. OTHER SUPPORT. Report relevant information regarding both public and private sources of current support (other than your present employer), including sources of funding, equipment, facilities.

III. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the assigned task of the SRB or panel on which you have been invited to serve, and therefore might constitute an actual or potential conflict of interest or source of bias, please describe them briefly. This could include your relationships with individuals (rather than organizations) involved in the subject of the SRB activity.

SPECIFIC AFFILIATIONS, SUPPORT AND OTHER INFORMATION:

PART II CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE

INSTRUCTIONS

It is essential that the work of SRBs not be compromised by any significant conflict of interest. For this purpose, the term "conflict of interest" means any financial or other interest which conflicts with the individual's service on an SRB because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization. Additional information regarding potential biases and conflicts of interest are provided in the *NASA Policy on Standing Review Board (SRB) Composition, Balance and Conflicts Of Interest*

1. **RELATIONSHIPS TO THE PROGRAM/PROJECT(S) BEING EVALUATED.** Taking into account your interests and the interests of other individuals with whom you share substantial common financial interests (e.g., spouse, close research colleagues and collaborators, business partners) and considering the below prime contractors, major subcontractors, and partners involved in the Programs/projects:

Program/Project Prime Contractors, Major Subcontractors, and Partners

List those involved

(a) Do you or such others receive current *financial support* (e.g., research and/or development grants or contracts, procurement contracts, consulting contracts, other grant support) from the program/project(s) being evaluated?

(b) Do you or such others receive substantial current *non-financial support* (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel), from the program/project(s) being evaluated?

(c) Do you or such others have *any other current financial interest* (e.g., patent rights, interests in partnerships and commercial ventures) obtained from or through the program/project(s) being evaluated?

**If the answer to all of the above questions under RELATIONSHIPS TO THE PROGRAM/PROJECT(S) being evaluated is either "no" or "not applicable," check here \_\_\_\_ (NO).**

**If the answer to any of the above questions under RELATIONSHIPS TO THE PROGRAM/PROJECT(S) being evaluated is "yes," check here \_\_\_\_ (YES), and briefly describe the circumstances on the last page of this form.**

2. **INVESTMENT INTERESTS.** Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interest valued at less than \$15,000) --

(a) Do you or your spouse or minor children own directly or indirectly (e.g., through a trust or an individual account in a pension or profit-sharing plan) any stocks, bonds or other financial instruments or investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the program/project being evaluated?

(b) Do you have any other financial investments or interests such as commercial business interests (e.g., sole proprietorships), investment interests (e.g., stock options), or investment relationships (e.g., involving parents or grandchildren) that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the program/project being evaluated?

**If the answer to all of the above questions under INVESTMENT INTERESTS is either "no" or "not applicable," check here \_\_\_\_ (NO).**

**If the answer to any of the above questions under INVESTMENT INTERESTS is "yes," check here \_\_\_\_ (YES), and briefly describe the circumstances on the last page of this form.**

3. **PROPERTY INTERESTS.** Taking into account real estate and other tangible property interests, as well as intellectual property interests (e.g., patents, copyrights) --

(a) Do you or your spouse or minor children own directly or indirectly any such property interests that could be directly affected by the program/project being evaluated?

(b) To the best of your knowledge, do any others with whom you have substantial common financial interests (e.g., employer, business partners, relatives) own directly or indirectly any such property interests that could be directly affected by the program/project being evaluated?

**If the answer to all of the above questions under PROPERTY INTERESTS is either "no" or "not applicable," check here \_\_\_\_\_ (NO).**

**If the answer to any of the above questions under PROPERTY INTERESTS is "yes," check here \_\_\_\_\_ (YES), and briefly describe the circumstances on the last page of this form.**

4. **OTHER INTERESTS.**

(a) Could your current employment or self-employment (or your spouse's current employment or self-employment) be directly affected by the program/project being evaluated?

(b) To the best of your knowledge, could any financial interests of your (or your spouse's) employer or, if self-employed, your (or your spouse's) significant clients and/or business partners be directly affected by the program/project being evaluated?

(c) If you are an officer, director or trustee of any corporation or other legal entity, could the financial interests of that corporation or legal entity be directly affected by the program/project being evaluated?

(d) If you are a consultant (whether full-time or part-time), could there be a direct effect on any of your current consulting relationships by the program/project being evaluated?

(e) Do you have a consulting relationship with a sponsor, grantee, or contractor of the program/project being reviewed and evaluated that is directly related to the subject matter of the program/project review and evaluation for which this disclosure form is being prepared (e.g., a consulting relationship to provide assistance to the sponsor, grantee, or contractor with respect to the program/project review and evaluation)?

(f) Is a central purpose of the program/project review and evaluation a critical review and evaluation of your own work or that of your employer?

(g) Are you an official or employee of an agency or organization, which is a sponsor of the program/project that is being reviewed and evaluated and/or a sponsor of this program/project review and evaluation SRB activity?

(h) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the functions to be performed in this SRB activity?

(i) If you have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal ethics restrictions that may be applicable to your service in connection with this SRB activity?

**If the answer to all of the above questions under OTHER INTERESTS is either "no" or "not applicable," check here \_\_\_\_\_ (NO).**

**If the answer to any of the above questions under OTHER INTERESTS is "yes," check here \_\_\_\_\_ (YES), and briefly describe the circumstances below.**

EXPLANATION OF "YES" RESPONSES (attach additional pages as necessary):

**PART III CERTIFICATION**

*If, during my period of service in connection with the activity for which this form is being completed, there is any change in the information I reported, or any new information that I have not reported, which needs to be reported, I shall report it promptly by written or electronic communication to the Review Manager.*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**PART IV VERIFICATION**

The SRB RM reviewed the OCI/PCI documents archived in the official IPAO archiving system.

\_\_\_\_\_  
Signature  
SRB Review Manager

\_\_\_\_\_  
Date

# NON-DISCLOSURE AGREEMENT

As a participant on a NASA Standing Review Board (SRB), I recognize that I may have access to information that is not available to the public. To the extent NASA shares such nonpublic information with me during the course of SRB activities, I agree as follows:

1. "RESTRICTED INFORMATION," as used herein, means information to which I have access as a member of a NASA SRB that is not available to the public, including, but not limited to, information developed at private expense embodying trade secrets or comprising commercial or financial information that is privileged or confidential; and information determined by NASA to be restricted, such as Sensitive but Unclassified (SBU) information as defined in NASA Procedural Requirement (NPR) 1600.1.
2. With respect to RESTRICTED INFORMATION, I agree that I will:
  - (a) Use, disclose, or reproduce RESTRICTED INFORMATION only to the extent necessary to perform my duties and fulfilling my responsibilities as a member of a NASA SRB;
  - (b) Safeguard RESTRICTED INFORMATION from unauthorized use, disclosure, or reproduction;
  - (c) Discuss or reveal RESTRICTED INFORMATION or any information concerning SRB proceedings only to individuals who are participating in the same SRB proceedings, and then only to the extent such information is required in connection with such proceedings on a need-to-know basis;
  - (d) Return or dispose of RESTRICTED INFORMATION, as NASA may direct, when the RESTRICTED INFORMATION is no longer needed by me for SRB activities.
3. Notwithstanding any restriction on use, disclosure, or reproduction of RESTRICTED INFORMATION provided in this Agreement, I will not be restricted in the use, disclosure, or reproduction of RESTRICTED INFORMATION that is:
  - (a) Publicly available at the time of disclosure or thereafter becomes publicly available without breach of this Agreement;
  - (b) Known to, in the possession of, or developed by me independent of carrying out my SRB responsibilities and independent of any disclosure of, or without reference to, RESTRICTED INFORMATION;
  - (c) Received from a third party having the right to disclose such information without restriction; or
  - (d) Required to be produced or released by me pursuant to a court order or other legal requirement.
4. If I believe that any of the events or conditions that remove restrictions on the use, disclosure, or reproduction of the RESTRICTED INFORMATION apply, I will promptly notify NASA of such belief prior to acting on such belief, and, in any event, will notify NASA prior to an unrestricted use, disclosure, or reproduction of such information.
5. I understand that failure to abide by these provisions may constitute grounds for termination of my participation in the SRB, administrative action, and/or civil or criminal prosecution.

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YOUR SIGNATURE

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DATE

## Appendix E Acceptable SRB Structures for a Life-Cycle Review

**Table E-1 Structure determined on the needs of the P/p and is documented in the Terms of Reference (ToR)**

Option	CS	CS2	NC
Description	Civil Service (CS) Consensus Board – No Expert Support	Civil Service Consensus Board with Expert Support	Non-Consensus Mixed Board
SRB Chair	CS	CS	Either CS or non-CS
SRB Review Manager	CS or JPL*	CS or JPL*	CS or JPL
SRB Composition	CS Only	CS Only; Experts provide analyses to SRB	Either CS or non-CS
SRB Product	SRB produces a report and briefings with findings of fact and recommendations; RFAs (or equivalent) from individual members**; Chair briefs report.	SRB produces report and briefings with findings of fact and recommendations; RFAs (or equivalent) from any individual**; reports from individual experts**; Chair briefs SRB report.	Review manager assists the Chair in assembling the report based on inputs and RFAs from all individuals**; Chair briefs personal findings and recommendations.
Minority Report	Minority reports documented in SRB report and in RFAs.	Minority reports documented in SRB report and RFAs.	No minority report.***
SRB Interaction	For CS and CS2 boards, as noted: Consensus is reached by the Civil Service board members under the civil service consensus (CS) and the civil service with consult support (CS2) SRB configurations. Consultants (non-board members) supporting CS2 boards may interact with the projects or programs on behalf of the SRB members to gather information used to support SRB non-deliberative discussions. For all board options: All board members can participate in open discussion with the project and within the SRB. Everyone can openly discuss individual points of view.		
Independence	Normal CS ethics rules apply.	Experts providing support are not on the SRB. Apply independence standards to experts. CS ethics rules apply.	Apply independence standards to experts but allow some impairments, if approved.
<p>* JPL review managers are not members and do not have a vote.  ** Reports and RFAs can contain individual recommendations.  *** The minority report requirements do not abridge NASA's Dissenting Opinion process per NPD 1000.0.</p>			

**This is Table 2-5 of the PM Handbook**

## Appendix F Terms of Reference Template

*Copied from PM Handbook dated August 16, 2011*

### **APPENDIX K Terms of Reference Template**

#### **Notes to Users of this Template:**

1. In addition to specifying the terms of reference for reviews, this template is also used as final approval for the SRB selection. (See Paragraph 4.1.)
2. This template is designed with sufficient generality to be used for both programs and projects.
3. It may be adapted to fit the special circumstances of the program or project.
4. Statements in curly bracketed and italicized *{italics}* are explanatory notes and are not intended to be a part of the template.
5. Statements in straight brackets italicized *[italics]* are fields to be filled in.
6. For tightly coupled programs and their projects, separate ToRs are not required for each project. The projects may be listed with the program under the description/governance section. The program ToR may include the projects' life cycle reviews.
7. For tightly coupled programs and their projects, separate SRBs may be structured for the program and each of the projects so the applicable sections of the template would need to be expanded to accommodate this. However, separate SRBs for each project are not required. There can be one SRB for a tightly coupled program and its projects.
8. For loosely coupled or uncoupled programs, the projects under the program typically have separate ToRs.
9. For single-project programs, there will be a single ToR.
10. A PIR annex is added to the initial ToR when the Decision Authority determines that a periodic PIR is required.
11. The program or project will determine, in coordination with the responsible Center and Mission Directorate, if reviews will be conducted using the one- or two-step review process. When a two-step review is selected, it is specified whether the first step is chaired by the program or project, the SRB chair, or a representative of a Center organization. This review approach is specified in the project review plan and documented in the ToR.
12. Use common sense to adapt the template for programs or projects to satisfy the intent. For example, project "category" is not generally applicable to programs, and statements such as these should be eliminated.

# Terms of Reference for the Life Cycle Reviews of the *[Project or Program Name]*



*[Revision #]*  
*[Date]*

## Approved by:

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*[Name] {Programs & Category 1 Projects only}*  
Associate Administrator  
NASA Headquarters

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*[Name] {Program & Category 1 Projects only}*  
Chief Engineer  
NASA Headquarters

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*[Name] {Programs & Category 1 & 2 Projects only}*  
Associate Administrator  
Office of Independent Program & Cost Evaluation  
NASA Headquarters

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*[Name]*  
Associate Administrator  
*[Mission Directorate]*  
NASA Headquarters

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*[Name]*  
Director  
*[Center]*

### Document Change Log

Document Version	Date	Prepared by	Change Summary
Initial Release			

REV A DRAFT

## **1.0 Introduction**

### 1.1 Purpose

- 1.1.1 This Terms of Reference (ToR) describes the agreed-upon terms for the NASA life cycle reviews of the *[project or program name]*, that are identified in Section 6.0, Table K-1. The *[project/program name]* life cycle reviews are conducted to meet the intent of Agency and Center review processes as documented in NPR 7120.5, *NASA Space Flight Program and Project Management Requirements*; NPR 7123.1, and *NASA Systems Engineering Processes and Requirements*; and the *SRB Handbook*.
- 1.1.2 In case of a conflict between the SRB Handbook and this ToR, the ToR takes precedence.

### 1.2 Scope

- 1.2.1 This ToR is intended to cover all SRB reviews for the entire life cycle. Revisions to the ToR will be generated if necessary. Appendices are used as necessary to detail the reviews to be conducted by the SRB. *{In particular, these appendices may provide the details not part of NPR 7120.5 and/or NPR 7123.1.}*

### 1.3 Applicable Documents (update versions and/or dates as required)

1. NPR 7120.5, *NASA Space Flight Program and Management Requirements* (TBD date)
2. NPR 7123.1, *NASA Systems Engineering Processes and Requirements*, (March 26, 2007).
3. NPD 1000.5, *Policy for NASA Acquisition* (January 15, 2009).

### 1.4 Reference Documents

1. *SRB Handbook*.
2. [Insert list of reference documents, e.g., *Jet Propulsion Laboratory Institutional Project Review Plan*; or *Goddard Space Flight Center Review Plan*; or *Marshall Space Flight Center Review Plan*; or *Ames Research Center Review Plan*; or cost and schedule handbooks, etc.]

## **2.0 [Project or Program] Description and Governance**

- 2.1 The *[project/program name]* project is an *[assigned mission or Announcement of Opportunity]* *[project or program]* within the *[program name]* *{if this ToR is written for a program, provide Center, division, and Mission Directorate information}*, which is managed by *[program name]* Program Office at *[Center name]* for the *[division name]* Division of the *[directorate name]* Mission Directorate *[xxMD]* of NASA.

- 2.2 The *[program/project name]* is hosted for NASA by the *[Center name]*. *[Project name's]* primary goal is *[key objectives of the mission: also brief description of project/program]*.
- 2.3 The *[project name]* has been designated a Category *[1, 2 or 3]* project by NASA. The governing PMC is the *[APMC for Category 1,MDPMC for Category 2 & 3]*. The *[project name]* project has been designated a Class *[A, B, C, or D]* mission in accordance with NPR 8705.4.
- 2.4 Prior to the Readiness Assessment, the program or project will determine if the review will be a one- or two-step review and whether it will be chaired by the program or project, the SRB chair, or a representative from a Center organization. The agenda for any SRB-led life cycle review will be mutually agreed to by the project or program manager and the SRB chair and documented by the IPAO director's letter described in Section 4.4 of this ToR template. The project or program manager ensures coordination with the proper Technical Authorities and the Center. Differences will be adjudicated by the Convening Authorities This does not preclude any special requirements specified by the Convening Authority or Decision Authority identified in Section 5.0 of this document.
- 2.5 For a one-step review or for step two of a two-step review, the review is conducted by the SRB.

### **3.0 Life Cycle Review Conduct**

- 3.1 The LCRs for the *[program/project name]* will be conducted in accordance with NPR 7120.5, NPR 7123.1, NPD 1000.5, Center practices, the *SRB Handbook*, and special requirements in this ToR. (See Section 5.0.) Approved waivers and deviations to NPR 7120.5 will be identified in Section 9.0.
- 3.2 The SRB will perform its assessment against LCR objectives and Expected Maturity States defined in Tables L-1, L-2, or L-3 and Chapter 4 of NPR 7120.5 and NPR 7123.1, Appendix G or as modified in the approved Program or project plan.
- 3.3 Special LCR requirements from the convening authorities or the program/project are identified in Section 5.0.

### **4.1 SRB Team Nomination/Approval and SRB Operations**

- 4.2 SRB nominations are conducted in accordance with NPR 7120.5 (Section 2.6.10) and the *SRB Handbook*.
- 4.3 The resulting nomination for the *[program/project name]* SRB chair is *[insert chair nominee]*. The review manager and the SRB team are provided in Attachment 1. This is a complete list of individuals approved to sit on any review associated with the *[insert program/project name]* by the signing of this ToR.

- 4.4 In accordance with procedures for determining SRB member suitability for service, the following actions have been taken: civil servants have been vetted for personal conflict of interest (PCI) and institutional conflict of interest (COI) and no conflicts were identified, contractors acting as consultants to the SRB have been vetted for both Organizational Conflict of Interest (OCI) and PCI by their respective contracting officers or have an approved/existing waiver and have been certified as being free from conflict by these entities. Consultants have signed nondisclosure agreements. Based on the composition of the proposed SRB, the review process will be conducted as a *[insert board type, i.e., CS, CS2 of NC]*.
- 4.5 SRB operations will be conducted in accordance with NPR 7120.5 Sections 2.6.7 through 2.6.12 and the *NASA Standing Review Board Handbook*. Standard life cycle review products required for programmatic assessment are given in Section 7.0, Table K-2 below, along with nominal timelines for provision of these products to the SRB.
- 4.6 SRB products are specified in NPR 7120.5 (Chapter 4, for the appropriate review), and in the *NASA Standing Review Board Handbook*.
- 4.6.1 After the readiness assessment and prior to individual LCRs, the director of the Independent Program Assessment Office (IPAO) circulates a letter or an e-mail, following coordination with the SRB chair, TA, Center, and program, detailing the following:
- a. Results of the readiness assessment.
  - b. Agenda of the upcoming review.
  - c. Review timeline.
  - d. SRB members' participation.

## **5.0 Special/Additional Requirements and Success Criteria**

- 5.1 General additions (entrance criteria, success criteria, etc.) by the conveying authorities.
- 5.2 Any additions documented in the program/project review plans.

## **6.0 Life Cycle Reviews Planning**

The SRB conducts reviews at the life cycle milestones defined in NPR 7120.5 and NPR 7123.1 according to this ToR and any epoch-unique details in its appendices.

**Table K-1. Listing of Life Cycle Reviews**

<b>Review</b>	<b>Notional Review Dates *</b>
Mission Concept Review (MCR)**(Assigned Missions)	
System Requirements Review (SRR) (Assigned Missions)***	
Mission Definition Review (MDR)** (Assigned Missions)***	
Preliminary Design Review (PDR)**	
Critical Design Review (CDR)	
System Integration Review (SIR)**	
Operations Readiness Review (ORR)	
Flight Readiness Review (FRR)**	

- \* Actual dates will be maintained by the SRB and the project/program as mutually agreed to.
- \*\* Indicates review with KDP.
- \*\*\* These reviews may be combined. If so, the objectives, scopes, and success criteria will be combined.

**7.0 Standard LCR Programmatic Deliverables to SRB and Timeline (Table 2)**

7.1 The cost, schedule, technical and risk data required to support an SRB programmatic assessment is required in three deliveries as shown in Table 2. The first delivery is for the program/project to provide existing data to the SRB to help inform and educate the SRB members. This initial delivery will enable the SRB to provide early feedback on the health of the schedule and cost data, which allows the program/project an opportunity to correct any potential problems areas before the site review. The second delivery is the preliminary data required for the SRB assessment including the delivery of any applicable preliminary models. The third delivery is the final set of data for the SRB assessment before the site review. The data requested is intended to be that used by the program/project in doing their planning and implementation and should not necessitate developing separate, new deliverables for the SRB.

**Table K-2. LCR Programmatic Deliverables**

<b>Item</b>	<b>Content**</b>	<b>Timeline</b>
Data Delivery 1	Existing project management data including working technical baseline description; risk list/matrix; WBS, WBS dictionary; Master Equipment List; Power Equipment List; schedule; planning budget by year and phase; workforce estimate; and special facilities/resources required.	100 days prior to LCR*
Data Delivery 2	Preliminary delivery of data formally required for the review, including BOEs, a functional JCL model and supporting data (as applicable), and available cost/schedule performance data	60 days prior to LCR*
Data Delivery 3	Final JCL results and/or budget (if no JCL) and supporting data and updated risk list matrix.	20 days prior to LCR*

\* For two-step LCRs, the timeline is with respect to the second step of the LCR.

\*\* The list of the programmatic cost and schedule data for each review is found in the *Standing Review Board Handbook*.

**8.0 Contact List (Table K-3)**

**Table K-3. Points of Contact**

<b>Representing</b>	<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Telephone</b>	<b>Email</b>
Standing Review Board		SRB Chairperson			
Standing Review Board		Review Manager			
Program Office		Program Manager			
Program Office		Program Executive			
Project		Project Manager			
Engineering Technical Authority		Engineering Technical Authority			
Health and Medical Technical Authority		Health and Medical Technical Authority			
Safety and Mission Assurance Technical Authority		Safety and Mission Assurance Technical Authority			

SRB Point of Contact		Program/ Project Office			
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**9.0 Approved Waivers and Deviations** *[List in this section any waivers to NPR 7120.5 and attach copies.]{Changes in listings and /or attachments do not constitute a change to this ToR and do not require approval or signatures.}*

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## Attachment 1—SRB Membership and Link to Biographies

### SRB Nominees

The following are nominees to serve on the SRB for the *[project name]*. The nominees are confirmed with the signing of this ToR.

Upon approval of the ToR, the following list of candidates becomes the source from which members are selected to support *[project name]* SRB reviews. Candidates can be added to the list through future revisions to the ToR or through joint approval by the convening authorities through email exchange with the appropriate representatives from each organization included in the distribution. Any additional individuals who are approved will be added to the established NASA-approved list of candidates from which review-specific SRB members are selected by the *[project name]* SRB chair. The final selected members for any upcoming review will be published in an appointment letter prepared by the IPAO director to the members of the *[project name]* convening authority at least two weeks in advance of the review.

<i>[Name]</i> (Chair)	<i>[Organization]</i>	<i>[Specialty]</i>
<i>[Name]</i> (Review Manager)	IPAO	<i>[Specialty, if any]</i>
<i>[Name]</i> (PAG Rep)	IPAO	Program Analysis
<i>[Nominee name]</i>	<i>[Organization]</i>	<i>[Specialty]</i>
:	:	:
:	:	:
<i>[Nominee name]</i>	<i>[Organization]</i>	<i>[Specialty]</i>

### SRB Members Biographies –found in NSCKN *[provide link]*

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National Aeronautics and Space Administration

**NASA Headquarters**

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Washington, DC 20546

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**[www.nasa.gov](http://www.nasa.gov)**