



Review Policy Evolution

Current and upcoming upgrades to independent review policies and processes

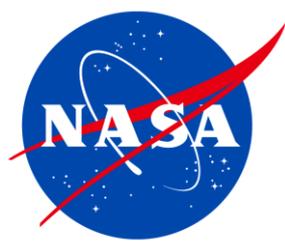


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Introduction



- The Independent Program Assessment Office (IPAO) manages the independent review of the Agency's Programs and projects at life-cycle milestones to ensure the highest probability of mission success.
- This presentation provides an overview of the Agency's policy changes to improve the effectiveness and efficiency of the Agency Review Processes.
- The bulk of these changes are being considered as part of the upcoming revision to NPR 7120.5 (the "E" version).



Outline



- **Agency policy context**
- **Change Areas**
 - **Standard TOR**
 - **Lifecycle Review Timelines (1-step; 2-step)**
 - **Lifecycle Products**
 - **Review Criteria**
 - **Maturity Tables**
 - **Team Composition and Balance**
 - **Convening Authorities**
 - **Readiness Assessment**
 - **Decision Memos**
 - **Changes to Lifecycle Reviews**
- **Summary**



Agency Policy Context for Independent Review



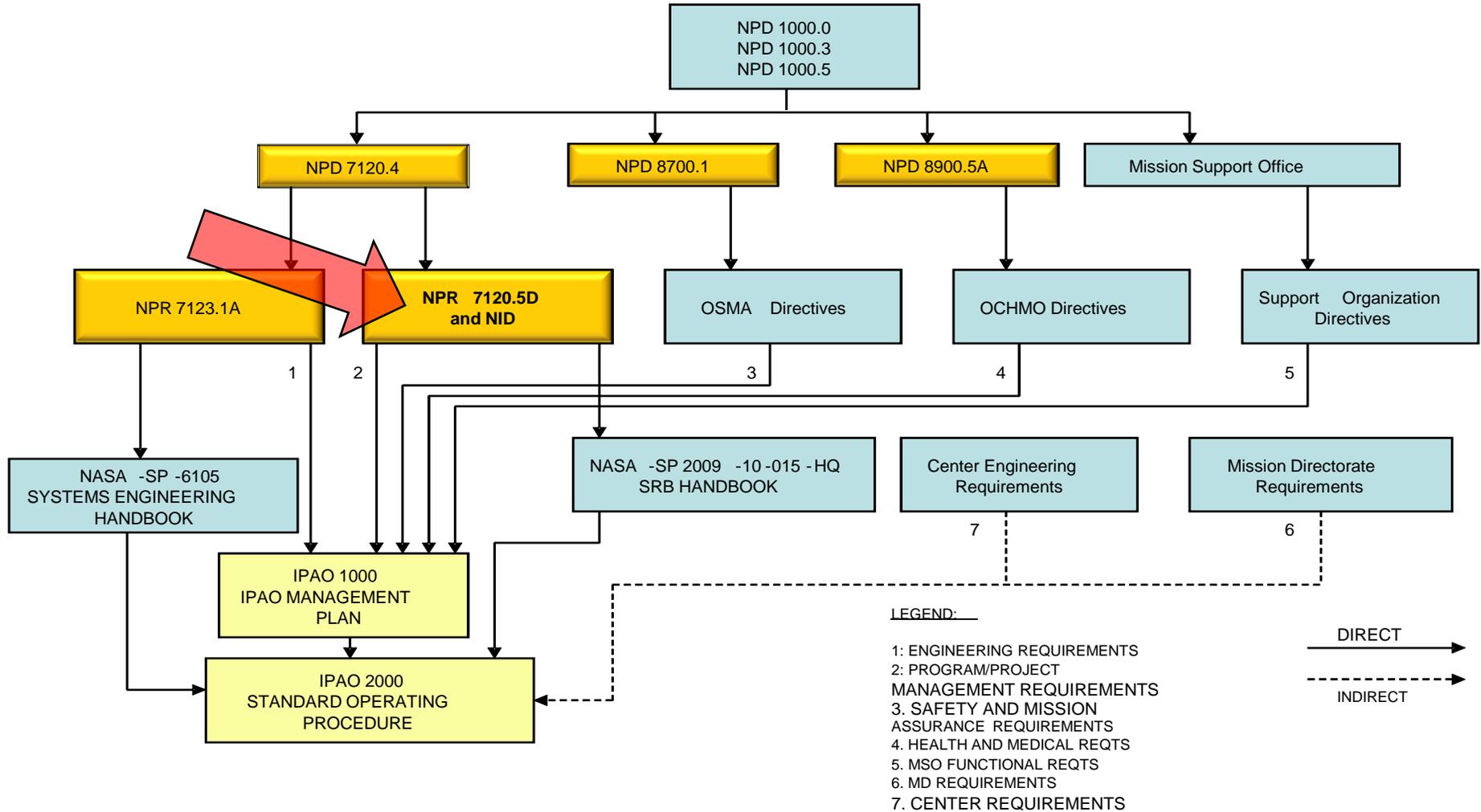
Independent Review Policy Context



- **Agency policy context**
 - **The “Why”**
 - » **NPD 1000.0; NPD 1000.5**
 - **The “What”**
 - » **NPR 7120.5; NPR 7123.1**
 - **The “How”**
 - » **SRB Handbook**
 - » **IPAO System Operating Procedures**



Policy Flow-down





The Governance and Strategic Management Handbook (NPD 1000.0A)



- NPD 1000.0A
 - sets forth NASA's governance framework with which the Agency manages mission, roles, and responsibilities
- Governance principles include Checks and Balances:
 - **Independent Life-cycle Review**
 - Requirements tailoring
 - Dissenting Opinion process
- Benefits of successful Independent Life-cycle Reviews:
 - Agency receives independent assurance that they are on-track
 - NASA senior management receives:
 - Independent validation at key decision points of the Program/project's readiness to proceed into the next phase of its life-cycle
 - Examination of externally-imposed impediments to Program/project success to be removed
 - Agency provides external stakeholders assurance we can deliver to our commitments
 - Preparation for a life-cycle review milestone allows for a holistic examination by the Program/project and the review team.



Change Areas for Independent Review



New ToR Concept



- **ToR and the SRB nominations will be combined into a single document**
 - Intent is to streamline process for both
- **ToR will no longer contain a long list of roles and responsibilities**
 - Document will basically refer to 7120.5, 7123.1, and 1000.5 for guidance
- **All appendices and plans for all ILCRs for a P/p will be completed up front**
 - Schedules will be determined in terms of delta from a review rather than absolute dates
 - Once signed, ToR only needs to be addressed again for major changes to P/p or issues surrounding the review
- **A “3-step” timeline for delivery of programmatic product to support the reviews (refer to next page)**

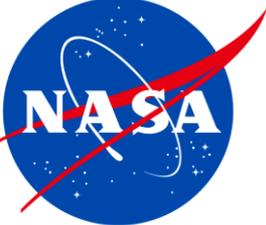


Programmatic Deliveries



- **Cost and schedule information in support of Independent Lifecycle Reviews (ILCRs) are delivered to the SRB in three progressive deliveries as outlined below**

| Table I-2 LCR Deliverables | | |
|---|--|------------------------|
| <i>(The content will be revised prior to finalizaing this template)</i> | | |
| Item | Content | Timeline |
| Data Delivery 1 | Existing Project Management Data including working technical baseline descripton, risk list/matrix; WBS, WBS dictionary, Master Equipment List; Power Equipment List; schedule, Planning Budget by year and phase: and special facilities/resources required | 100 days prior to LCR* |
| Data Delivery 2 | Preliminary delivery of data formally required for the review, including Basis of Estimates, 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; updated risk list matrix | 20 days prior to LCR* |



One Step PDR Life Cycle Review Overview



KDP-B

KDP-C

PDR Readiness Assessment⁽²⁾
(30- 90 days)

PDR-LCR

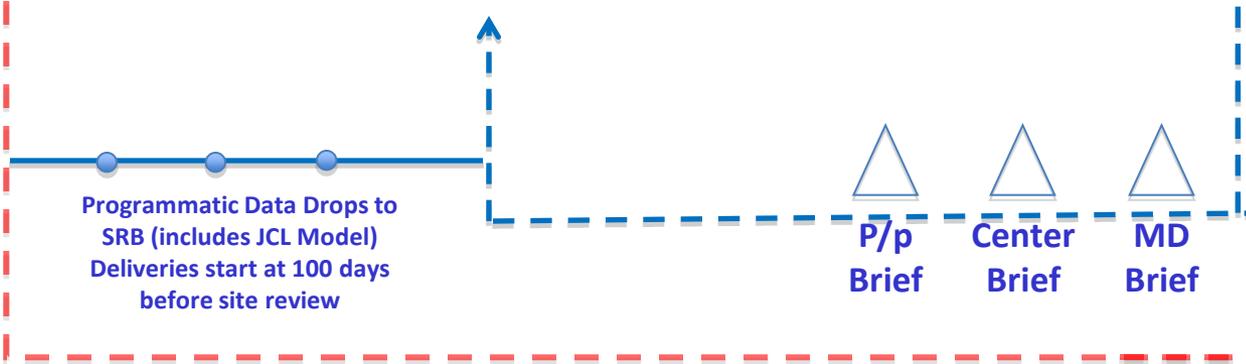
Quick Look Report⁽²⁾

(30 Days)

- Required prior to LCR
- Report to DA for life cycle reviews preceding KDP B&C and during any major replan or rebaseline ⁽³⁾

Technical Baseline with C/S/R and Integrated Assessment of Technical and Programmatic Baseline

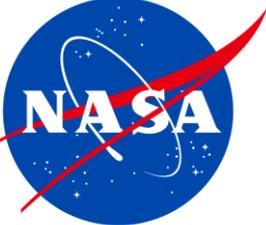
Not To Scale



★ CheckPoint⁽²⁾ if needed.

FOOTNOTES:

1. A One Step Review may be used for any LCR
2. Appendix I provides information on the readiness assessment, quick-look reports and checkpoints associated with life cycle reviews
3. For all other life cycle reviews report to Chief Engineer if significant unresolvable disagreements



Two Step PDR Life Cycle Review Overview



PDR LCR

PDR Readiness Assessment⁽²⁾

(30-90 days)

PDR

(1-6 months)

Independent Integrated PDR Assessment

Quick Look Report⁽²⁾

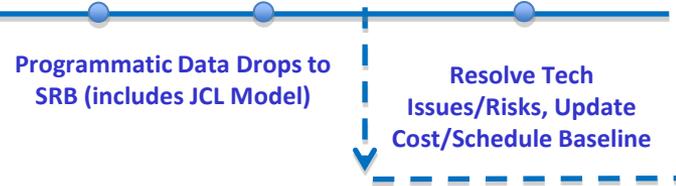
(30 Days)

- Required prior to LCR
- Report to DA for life cycle reviews preceding KDP B&C and during any major replan or rebaseline⁽³⁾

Technical Baseline with Cost, Schedule, and Risk Information

Integrated Assessment of Technical and Programmatic Baseline

Not To Scale

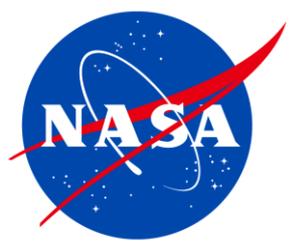


★ CheckPoint⁽²⁾ if needed.

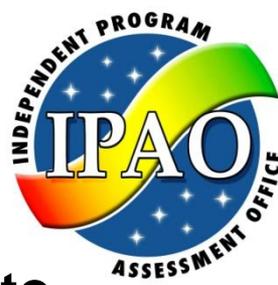
Periodic SRB Involvement as Appropriate

FOOTNOTES:

1. A Two Step Review may be used for any LCR
2. Appendix I provides information on the readiness assessment, quick-look reports and checkpoints associated with life cycle reviews
3. For all other life cycle reviews report to Chief Engineer if significant unresolvable disagreements



Lifecycle Products



Chapter 4 of the new version of 7120.5 goes to great length to describe the products expected during each phase of a flight project, the following text is pulled from the draft (August, 2010) as an example:

4.5.1 Purpose: During Phase B, the project team completes its preliminary design and technology development and establishes the associated schedule and life cycle cost for the project.

4.5.2 Requirements: During Phase B, the project manager and the project team shall:

-- Enumerates 32 specific items that must be addressed leading up to KDP-C, including detailed description of technical baseline and the cost and schedule estimates that match the design.



Updated LCR Criteria



- **Alignment with and contribution to Agency strategic goals and adequacy of requirements flow down from those**
 - Scope includes alignment of program/project requirements/designs with Agency strategic goals, program requirements, and constraints, mission needs and success criteria; allocation of program requirements to projects; and proactive management of changes in program/project scope and shortfalls.
- **Adequacy of management approach**
 - Scope includes program/project authorization, management framework and plans, acquisition strategies, and internal and external agreements.
- **Adequacy of technical approach, as defined by NPR 7123.1 entrance and success criteria**
 - Scope includes flow down of project requirements to systems/subsystems; architecture and design; and operations concepts that respond to and satisfy imposed requirements and mission needs.



Updated LCR Criteria



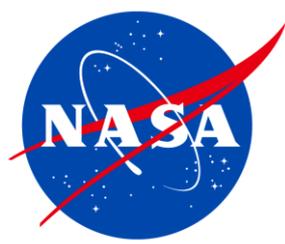
- **Adequacy of the integrated cost and schedule estimate and funding strategy in accordance with NPD 1000.5**
 - Scope includes cost and schedule control plans; cost and schedule baselines that are consistent with the program/project requirements, assumptions, risks, and margins; basis of estimate; JCL (when required); and alignment with planned budgets.
- **Adequacy and availability of resources other than budget**
 - Scope includes planning, availability, competency and stability of staffing, and infrastructure requirements.
- **Adequacy of the risk management approach and risk identification and mitigation per NPR 8000.4**
 - Scope includes risk management control plans, open and accepted risks, risk assessments, risk mitigation plans, and resources for managing/mitigating risks.



New Concept in 7120.5E



| KDP Review | Associated Lifecycle Review | LCR Objectives | Expected Maturity State by Review Element | | | | | | Overall Expected Maturity State @ Next KDP |
|------------|-----------------------------|---|--|--|---|---|---|--|--|
| | | | Agency Strategic Goals & Outcomes | Management Approach | Technical Approach | Budget and Schedule | Resources Other Than Budget | Risk Management | |
| KDP A | MCR | To evaluate the feasibility of the proposed mission concept and its fulfillment of the Program's needs and objectives to determine whether the maturity of the concept and associated planning are sufficient to begin Phase A. | The proposed Project has merit, is within the Agency/Program scope, and initial objectives and requirements are appropriate. | The Project FAD has been approved and the management framework is in place; key interfaces and partnerships have been identified and appropriate plans for Phase A are in place. | One or more technical concepts that respond to mission needs are identified and appear feasible. | Credible risk informed options exist that fit with undesired schedule and available funding profile. | Infrastructure and unique resource needs, such as special skills or rare materials, have been identified and are likely available. | Driving risks and mitigation options have been identified and are manageable; the approach for managing these risks is adequate. | Overall KDP A Expected Maturity: Project addresses critical NASA need and can likely be achieved as conceived. |
| KDP B | SRR | To evaluate whether the functional and performance requirements defined for the system are responsive to the Program's requirements on the project and represent achievable capabilities. | Preliminary requirements incorporate program requirements and constraints, and are responsive to mission needs. | Preliminary Project Plan is appropriately mature to support conceptual design phase and preliminary acquisition strategy is defined. | Functional and performance requirements have been defined, and the requirements will satisfy the mission. | Credible preliminary cost/schedule estimates are supported by a documented BOE and are consistent w/ driving assumptions, risks, system requirements, design options, and available funding and schedule profile. | Preliminary staffing and essential infrastructure requirements have been identified and documented; preliminary sources have been identified. | Significant mission technical, cost and schedule risks have been identified; viable mitigation strategies have been defined; a preliminary process and resources exist to effectively manage or mitigate them. | Overall KDP B Expected State: Proposed systems are feasible within available resources with acceptable risk. |
| | MDR | To evaluate the credibility and responsiveness of the proposed mission/system architecture to the program requirements and constraints, including available resources to determine. | Mission/System requirements, design approaches, and conceptual design incorporate program requirements and constraints, and will fulfill the mission needs and success criteria. | Preliminary Project Plan is appropriately mature to support preliminary design phase, technology development plans are adequate, and acquisition strategy is approved and initiated. | Driving requirements have been defined, and credible system architectures and operating concepts respond to them. | Credible cost/schedule estimates are supported by a documented BOE and are consistent with driving assumptions, risks, system requirements, conceptual design | Availability, competency and stability of staffing essential infrastructure and additional resources are adequate for remaining lifecycle phases. | Significant mission development, cost, schedule and safety risks are identified and assessed; mitigation plans have been defined; a process and resources exist to effectively manage or mitigate them. | |



SRB Composition and Balance



- **SRB teams need to be balanced along three dimensions:**
 - Competency
 - Currency (includes current knowledge of Agency PM policies)
 - Independence
- **In addition, SRBs need to meet the independence assessment needs of the following:**
 - Center (including TA responsibilities)
 - Mission Directorate (expected technical, cost and schedule performance)
 - Agency (overall readiness to proceed)
- **The SRB team balance fits the particular situation of each project and thus is not prescribed.**
- **SRB team balance is arrived via a collaborative, iterative; nomination and approval process (see next chart)**



SRB Nomination Procedures



- **SRB Chair and Review Manager (RM) are nominated first**
 - Program SRBs: Chair nominations initiated by the Mission Directorate
 - Project SRBs: Chair nominations initiated by the Center
 - Review Manager nominations initiated by IPAO
 - Nominations are socialized with all affected parties including the Program and Projects
- **SRB Chair and RM nomination concurred by the Convening Authorities (CAs) and approved by the Decision Authority (DA)**
- **SRB Team**
 - Chair and RM are responsible for facilitating the nomination and approval of SRB team members working closely with the Centers and the Mission Directorates
 - Nominated SRB team members have to be justified for appropriate balance of currency, competency and independence
 - Nominated team members have to be vetted for Organizational and Personal Conflict of Interests (OCI/PCI) by the Legal and Procurement Offices
 - SRB teams are concurred by the CAs and approved by the DA.



Convening Authorities



Table 2-5 NASA Convening Authorities for Standing Review Board

| | | Decision Authority | | Technical Authority* | | Associate Administrator, IPCE |
|--|---------------------|--------------------|---------|----------------------|--------------------|-------------------------------|
| | | NASA AA | MDAA | NASA CE | Center Director*** | |
| Establish SRB, Approve ToR. Approve Chairperson, RM, and Other Board Members | Programs | Approve | Approve | Approve | Approve | Approve |
| | Category 1 Projects | Approve | Approve | Concur | Approve | Approve |
| | Category 2 Projects | | Approve | | Approve | Approve** |
| | Category 3 Projects | | Approve | | Approve | |

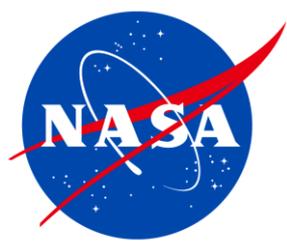
Center Directors are now a Convening Authority at the Program Level.



Readiness to Proceed Meeting



- **Present NASA Policy requires the SRB Chair to meet with the P/p manager prior to any Site Visit to determine the projects readiness to proceed to the review**
- **This meeting should generally have the following characteristics:**
 - **It is an informal dialogue between the parties not a “review”**
 - **Intent is to determine if the project will be ready at the time of the review, not at the time of the meeting**
 - **Deliverables are discussed in terms of the project’s progress towards completion**
 - **Programmatic data delivery should be discussed**
 - **Result of meeting is an email to the Director of IPAO, who then forwards comments to OCE and the Convening Authorities**
- **It should be held ~45 days prior to the planned review date to allow for course correction as need be**



Decision Memos



- **Associate Administrator request that Program internal and external commitment decisions made by GPMCs (A/DPMCs) be documented in real time at the governing board**
- **Have a record so that all involved parties have a common understanding of project decisions and commitments vs. historically having varying recall of commitments**
- **Used to support external reporting requirements**
- **Establish a process whereby management commits to the Decision Authority decisions from the GPMC**
- **Quickly document the GPMC Decision Authority decisions at the conclusion of GPMCs or soon thereafter**



Changes to SRB-Chaired LCRs



- **Participate-In and/or Conduct clarified One- or Two-Step Reviews**
 - Change - PLARs and CERRs are not required to be conducted by the SRB unless requested in the project plan
- **NEW – Perform LCR Readiness Assessment**
 - Use clarified LCR maturity state, i.e., entrance criteria
- **Use clarified LCR requirements by phase, i.e., success criteria, in the conduct of reviews.**
- **Deliver clarified Quick-Look Reports**
- **NEW – Conduct Checkpoints between ILCR and KDP as necessary**
- **Assess Directorate, Program or Project developed confidence level estimating & budgeting (as opposed to performing “antagonistic” independent estimates). May use adjusted P/p risks or SRB unique risks.**
 - Phase B - range of cost & schedule estimates w/ associated confidence levels
 - Phase C/D - 70 percent joint cost and schedule confidence level (JCL)
- **Provide specific inputs to KDP Decision Memorandum that may include Management Agreement and Agency Plan/Agency Baseline Commitment (Note: These nomenclatures were still evolving at the last review)**
- **NEW – Use “Terms of Reference” Template**



Summary



- **The independent life cycle review process is an integral part of the Agency's check and balances built into the NASA governance structure and complements the programmatic and technical lines of command and authority.**
- **The independent lifecycle review process is encoded as part of NASA policy direction; its requirements are stipulated in policy requirements; and guidance to reviews team and implementing personnel is provided in handbooks and operating procedures.**
- **Its processes are continuously assessed for improvement by IPAO and its stakeholders. Changes are incorporated in policy and procedure.**
- **The independent lifecycle review process helps ensure the highest probability of success of the Agency's program and projects.**