



**Subject: Project and Task Review Procedural Requirements**

**Responsible Office: Office of the Director**

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## **Preface**

### ***P.1 Purpose***

a. This Langley Procedural Requirements (LPR) document establishes Langley Research Center (LaRC) requirements for performing various periodic and event-driven project and task reviews. This document should be used in conjunction with LPR 7120.5, "Space Flight Project Practices Handbook", LPR 7123.1, "LaRC Systems Engineering Processes and Requirements", and LPR 7120.7, "Space Flight Independent Life Cycle Review Procedural Requirements."

### ***P.2 Applicability***

- a. The requirements of this LPR apply to all technical programs, projects or tasks performed or managed by Langley Research Center. For vocabulary consistency, all projects, subprojects, and tasks discussed in this document will be called projects/tasks.
- b. The authority to waive the requirements of this document is the Langley Research Center Office of the Director.

### ***P.3 Authority***

- a. National Aeronautics and Space Act, 51 USC 20101 et seq.

### ***P.4 Applicable Documents and Forms***

- a. NPR 7120.5, "NASA Space Flight Program and Project Management Requirements"
- b. NPR 7120.7, "NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements"
- c. NPR 7120.8, "NASA Research and Technology Program and Project Management Requirements"
- d. NPR 7123.1, "NASA Systems Engineering Processes and Requirements"
- e. LPR 7120.5, "Space Flight Project Practices Handbook"
- f. LPR 7120.7, "Space Flight Independent Life Cycle Review Procedural Requirements"
- g. LPR 7123.1, "LaRC Systems Engineering Processes and Requirements"

- h. LAPD 1150.2, "Councils, Boards, Panels, Committees, Teams, and Groups"

### ***P.5 Measurement/Verification***

Compliance with this document is verified by forum/review completion email or memo, Technical Quality Review (TQR) report, or review report.

### ***P.6 Cancellation***

LPR 7130, dated October 17, 2013

*Original signed on file*

David E. Bowles  
Associate Director

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## 1. Background

- a. Many different types of projects and project tasks are implemented at Langley Research Center (LaRC). As a general principle, all work done at LaRC will be reviewed in some manner. The extent of the review, the formality of the review, and the level of management involvement all need to be tailored to the needs of the specific work involved. This document provides broad center-wide requirements on the types of reviews and under what circumstances they would apply.
- b. The imperative, “shall” is used sparingly in this document and it highlights requirements levied on particular individuals or groups of individuals. Various forms of the verb “to be” (e.g., is, are, will) are used to describe descriptive material and expectations. The word “should” is used where the statement is recommended, but not required. The word “may” is used to give permission, but the statement is not required. The detailed structures of the items in the examples are not required, but provide guidance and should be tailored to the needs of the project/task. When “project(s)/task(s)” is used as the subject of an action, it indicates that the project manager or task lead (or designee) is responsible for execution of the action.
- c. The LaRC Chief Engineer develops and maintains various review-related documents that may be of assistance to those planning and conducting reviews. These documents are available on NX (OCIO documentation management system) in: <https://nx.larc.nasa.gov/dsweb/View/Collection-6872>  
Individuals needing access should contact the LaRC Chief Engineer.
- d. A table of records generated by the various reviews is provided in Appendix B.

## 2. Periodic Reviews

Periodic reviews are those that occur with regular frequency. Periodic reviews are generally attended by appropriate LaRC technical and programmatic staff and senior management. The agenda at the periodic reviews is controlled by the hosting organization. An overview of the principal periodic reviews held at LaRC is shown in Figure 1 where the arrows indicate potential paths through which critical project information may be conveyed on a regular basis.

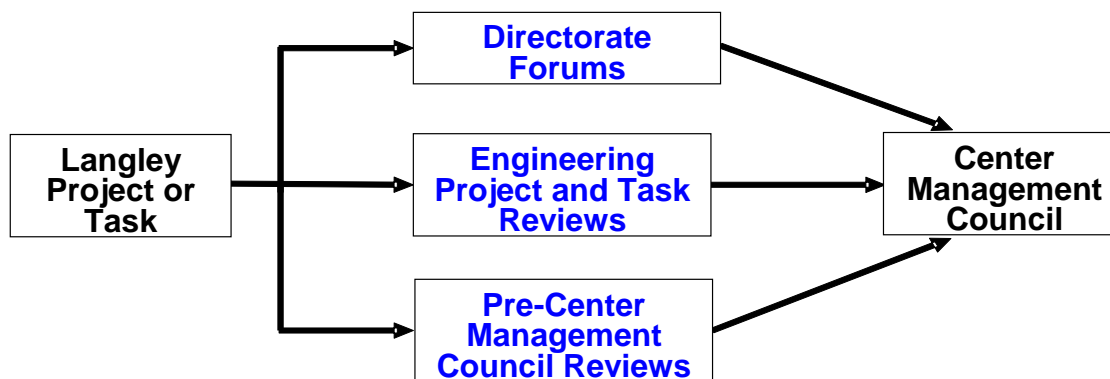


Figure 1. – Periodic Reviews

### 2.1 Directorate Forums

a. All technical and programmatic directorates at LaRC shall hold regularly scheduled forums. The purpose is to ensure that directorate heads are fully aware of the work performed in their organizations. This enables them to facilitate information exchange within their directorates, to share relevant information across directorate lines, and to report appropriate information to the Center Management Council (CMC). Although the programmatic directorates report monthly to CMC on their respective project portfolios, information or issues discussed at any directorate forum (including those held by the technical directorates) may be brought forward by those Directors to the CMC as required. A key management expectation of these forums is that the technical quality of the work is reviewed at greater depth than is seen at other, more generic reviews. Directorate forums are regularly held by the respective directorates at LaRC. For technical directorates, the focus is on technical status and accomplishments. For programmatic organizations, the emphasis is on programmatic status and accomplishments, but technical issues are also included. Directorate forums are led by the Directors of the relevant organizations or their designee. The forum typically involves a presentation of project/task accomplishments and status from an individual or

small team perspective. Generally, the presentations rotate through the branches or offices in the Directorate or through the Directorate activities, so that over time, all of the major activities in the Directorate have been presented.

- b. Each directorate shall establish what record(s) are generated that provide evidence that their Directorate Forums were held.

## **2.2 Engineering Project and Task Review**

- a. The LaRC Chief Engineer shall organize and run Engineering Project and Task Reviews (EPTRs). The purpose of this review is to identify project and task technical issues in a cross-disciplinary / cross-organizational forum; its objective is to resolve the collective issues with a view towards LaRC organization-wide optimization. This periodic review is held monthly and focuses on the technical aspects of the various projects and tasks being executed at LaRC. The EPTR is a formal venue for the heads of the technical directorates to assess the technical progress of the work being performed at LaRC. This consolidated review facilitates the identification and resolution of systemic issues associated with the performance of LaRC's engineering and technical activities. In addition, the EPTR provides the Project Chief Engineers with an opportunity to identify and request assistance in resolving both technical and organizational issues. The meetings are led and organized by the heads of the engineering directorates and the LaRC Chief Engineer. The heads of the engineering directorates, the Directorate Chief Engineers and the LaRC Chief Engineer select the projects/tasks to be reviewed each month using the guidance indicated in the flowchart of Appendix C. Typically, the Project Chief Engineer presents the work of the project/task. Attendance at the EPTR is encouraged from the heads of the programmatic directorates, and the Safety and Mission Assurance Office (SMAO). Attendance is also open to participation from members of the projects/tasks being reviewed, program office managers, project/task managers, and branch heads. Presentation materials are maintained on NX at the following link:

<https://nx.larc.nasa.gov/dsweb/View/Collection-4634>

Access to the site is controlled. Those interested in having regular access to the presentations should contact the LaRC Chief Engineer for authorization.

- b. The LaRC Chief Engineer shall maintain the agenda, presentations, and action items as records of each EPTR.

## **2.3 Pre-Center Management Council Review**

- a. The purposes of the Pre-Center Management Council (PCMC) reviews are to identify project and task issues and to map approaches for resolving those issues prior to the CMC review. The PCMC is the forum where the programmatic directorates exercise their oversight and concurrence of the management details of the project. Programmatic directorates shall organize and run PCMC reviews. PCMCs are generally held monthly by directorates that manage projects/tasks that report to the Center Management Council. Multiple directorates may hold joint PCMCs. The meetings are led by the heads of the programmatic directorates or their designees. The focus of the

PCMC review is overall project performance. It is imperative that both the technical and programmatic aspects be integrated at these reviews so that the review provides for a preliminary assessment of project/task progress, risks, plans, and issues. The PCMC also provides the heads of the programmatic directorates an opportunity to identify and correct Center-wide issues that adversely impact LaRC's ability to manage the projects and tasks at the center. Attendance at the PCMC Review is encouraged from the heads of the engineering directorates, the LaRC Chief Engineer, and the SMAO. Attendance is also open to participation from members of the projects/tasks being reviewed, program office managers, project/task managers, branch heads, and representatives from the Office of the Chief Financial Officer and the Office of Procurement.

b. The Directorate running the PCMC shall maintain the agenda and presentations as a record of each PCMC.

## **2.4 Center Management Council Review**

a. The purpose of the CMC review is to enable LaRC senior management to oversee projects and tasks performed at the center by providing them with insight into project/task progress towards meeting center commitments. The CMC also provides a forum for senior leadership to address systemic issues that affect multiple projects/tasks.

b. The LaRC CMC is authorized in LAPD 1150.2, "Councils, Boards, Panels, Committees, Teams, and Groups".

c. The CMC review is held monthly and focuses on all aspects of performance for the projects/tasks assigned to the center. In addition, special purpose review meetings of the CMC may be called to address issues with specific projects. The CMC review is chaired by the Deputy Center Director or delegate. The membership of the CMC comprises senior LaRC leadership, as specified in LAPD 1150.2, "Councils, Boards, Panels, Committees, Teams, and Groups." Generally, projects/tasks with high visibility or those that are at high risk report each month and those with medium visibility or risk report quarterly. Projects/tasks with low visibility or risk are generally included in summary briefings by their programmatic directorate.

d. The CMC review serves as a consolidation of the directorate forums, the EPTR, and the PCMC reviews. At the CMC review, the LaRC Chief Engineer or designee summarizes important issues from the month's EPTR. The various directorate heads may also present relevant information they have obtained through the directorate forums and other means. The main portion of the CMC involves the review of individual projects/tasks. Generally the project manager or his/her designee gives the presentation except for consolidated summaries, which are usually presented by the head of the appropriate program directorate or his/her designee.

e. Information related to the CMC can be found on [NX](https://nx.larc.nasa.gov/dsweb/View/Collection-6768) at:  
<https://nx.larc.nasa.gov/dsweb/View/Collection-6768>

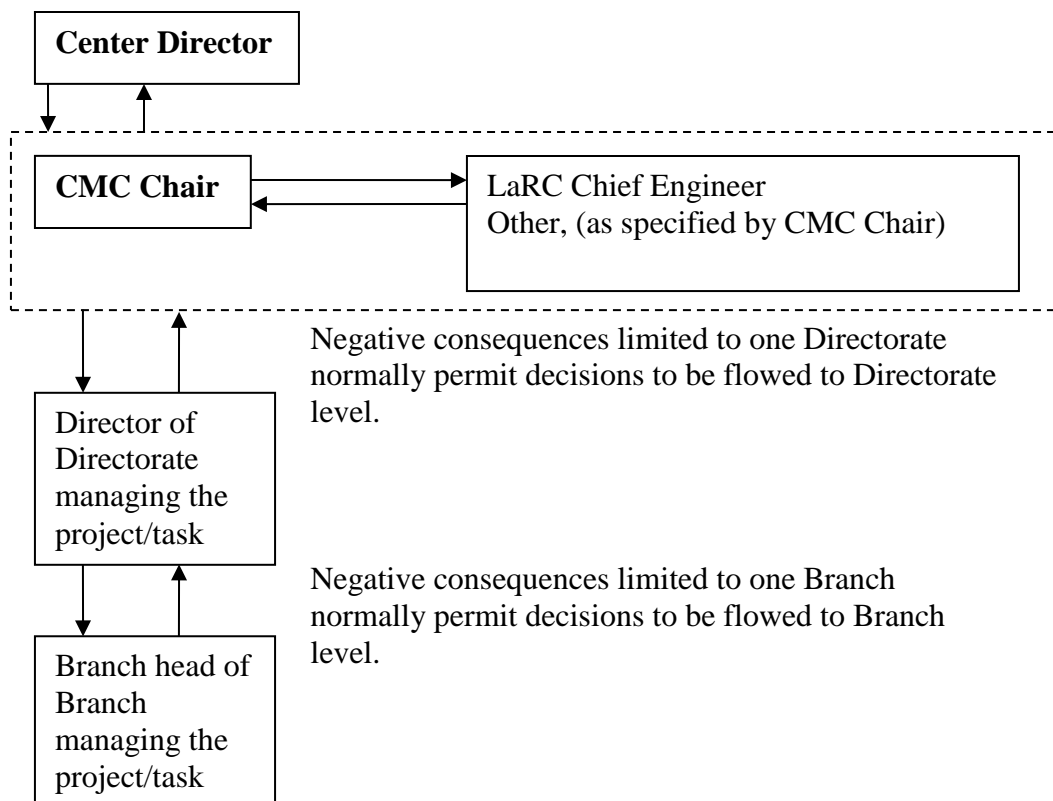
Individuals needing regular access to such information should contact the CMC Executive Secretary to be granted access permission.

f. The LaRC Chief Engineer shall maintain the agenda, action items, minutes, and presentations as records of the meeting.



### 3. Event-Driven Reviews

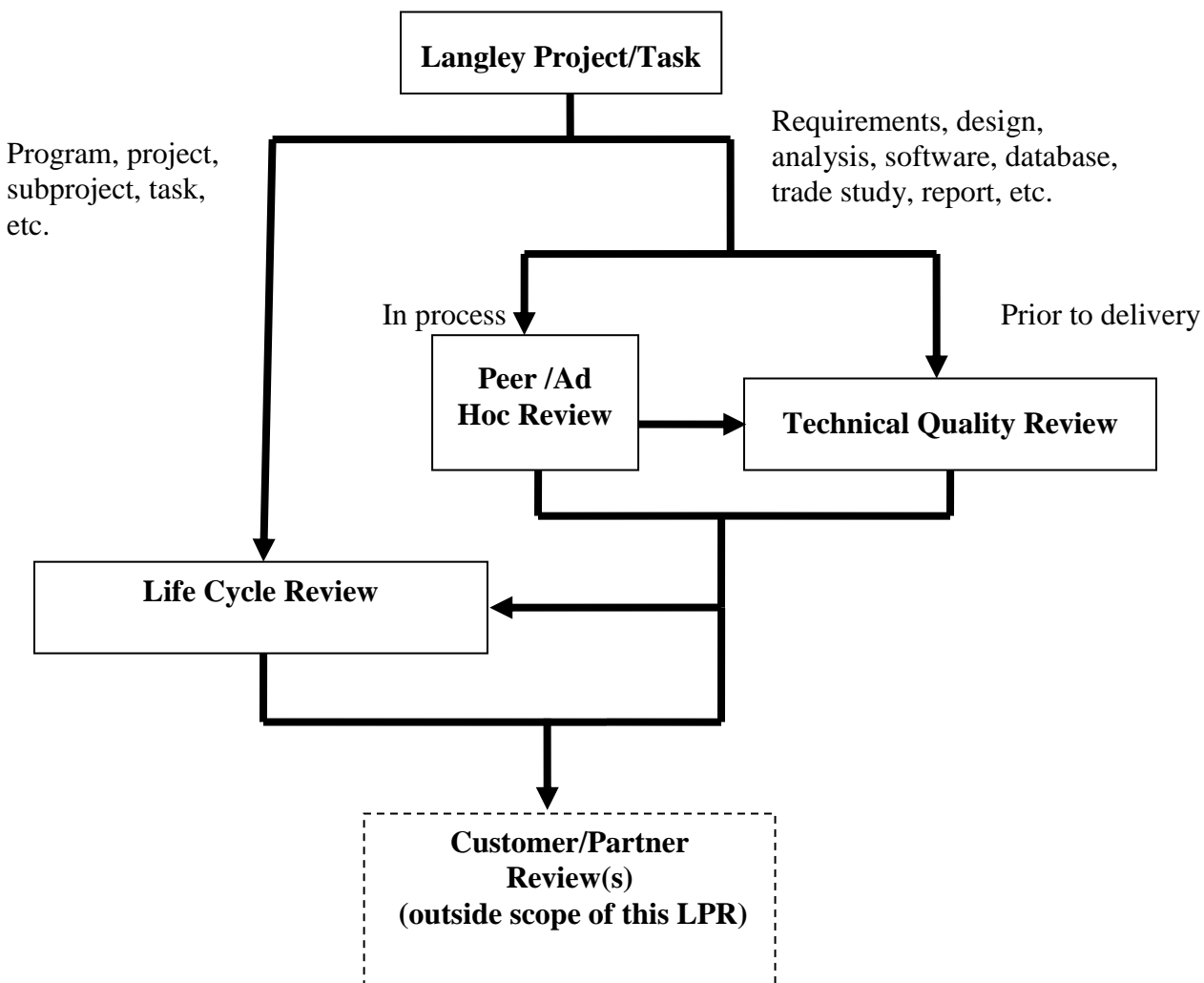
- a. Event-driven reviews are those that occur when a specified event is reached or when a deliverable is ready to be delivered.
- b. Facility projects/tasks subject to other LMS review requirements are out of scope of the event-driven review requirements described below.
- c. Within the constraints imposed by agency requirements, contractual obligations, and expectations of LaRC customers, Figure 2 shows the authority and communication flow for determining the applicability of event-driven reviews to specific projects/tasks. The Center Director has ultimate authority for such determinations and rules on any conflicts stemming from decisions made at lower authority levels.
- d. Unless the Center Director specifically invokes the authority of Section 3, paragraph c, the CMC Chair makes determinations regarding the applicability of event-driven reviews to specific projects/tasks and rules on any conflicts made at lower authority levels. The CMC Chair may delegate this authority (e.g., to the LaRC Chief Engineer). The extent of such delegation may vary. For instance, it may extend to specific projects for an indefinite time period or may extend to all projects for a specifically defined time period. Preferably, such delegations are in writing or are recorded as part of the minutes of the CMC. The CMC Chair may revoke or limit any such delegations at any time. The CMC Chair should inform the LaRC Chief Engineer of any such delegations or revocations so that the LaRC Chief Engineer can maintain a list of all active delegations. All relevant decisions made by the CMC Chair, the LaRC Chief Engineer, and other individual(s) with such delegated authority (i.e., those named in the dashed-line box in Figure 2) are to be timely communicated to the others (in the dashed-line box). The CMC chair is responsible for communicating a summary of all such decisions to the Center Director on a regular basis.
- e. If a Director of a Directorate managing a project/task concludes that the effects of any negative consequences of a specific project/task are limited to that Directorate, the Director may make determinations regarding the applicability of event-driven reviews to that specific project/task. That Director is responsible for communicating such decisions to the CMC Chair and those to whom the CMC Chair has delegated such decision authority. The CMC Chair, or those with appropriate delegations, may override the decision of the Director.
- f. If a Branch Head of a Branch managing a project/task concludes that the effects of any negative consequences of a specific project/task are limited to that Branch, the Branch Head may make determinations regarding the applicability of event-driven reviews to that specific project/task. The Branch Head is responsible for communicating such decisions to the Director of the Directorate of which the Branch is a part. The Director may override the decision of the Branch Head.



**Figure 2. – Authority and communication flow for applicability of event-driven reviews.**  
**Authorities flow down; communications flow up.**

g. An overview of the relationships between the various event-driven reviews held at LaRC is shown in Figure 3. Peer Reviews and Technical Quality Reviews focus on the technical quality of specific work products. Life Cycle Reviews evaluate the programmatic and technical state of the project/task. A project/task will often have Peer Reviews, Technical Quality Reviews, and Life Cycle Reviews.

h. LaRC project/task teams are expected to internally review their programmatic and technical products prior to the conduct of independent reviews. Projects/tasks use Peer Reviews, as appropriate, to internally review their products prior to Technical Quality Reviews and Life Cycle Reviews. The extent and conduct of additional project internal reviews depend upon the circumstances and explicit requirements contained in LMS or NPR documents.



**Figure 3. – Relationships and subject matter of event-driven reviews.**

i. Project/task leads are responsible for defining and planning their event-driven reviews in a review plan. Review planning is expected to be presented at the project/task 60-Day Review (see LPR 7120.5 and LPR 7120.7). If a 60-Day Review is not held for a project/task, review planning is expected to be presented at the highest level upcoming periodic review to which the project reports (where CMC is higher than PCMC review, which is higher than directorate forum). A review plan is expected prior to the project's entry into phase A (see LPR 7120.5). Significant changes to the review plan are expected to be reported at subsequent periodic reviews and Life Cycle reviews.

j. The review plan and changes thereto are to be approved by the LaRC individual determining the applicability of event-driven reviews to specific projects/tasks (as described in paragraphs 3 c-h and Figure 2). At a minimum, the review plan includes: identification of relevant stakeholders, description of the various reviews planned by the project/task, and a review schedule showing the inter-relationships between the reviews. A template for a stand-alone review plan is available in the NX collection:

<https://nx.larc.nasa.gov/dsweb/View/Collection-9766>

Individuals needing access should contact the LaRC Chief Engineer. The review plan may be part of another document, for instance a Project Implementation Plan, as long as the section containing the review plan includes the required elements and the document is approved by the relevant LaRC individual.

k. A summary of the review plan including a description of the review strategy and key reviews that require customer involvement are to have customer approval as well as approval from the relevant LaRC individual as described above. The approval may be of a stand-alone review plan summary document or part of a more comprehensive document that includes the review plan summary.

### **3.1 Peer/Ad Hoc Reviews**

a. Peer reviews are the in-process technical examination of work products by technical peers (typically drawn from individuals working prior or subsequent project phases and/or other sides of interfaces) for the purpose of finding and eliminating defects early in the product development cycle. The project/task shall document a strategy for peer reviews to be performed by the project in the review plan.

b. Ad Hoc reviews (including Tiger Teams – groups of experts tasked with addressing a specific limited-scope issue) provide examination and consultation by technical experts on analysis and resolution of anomalies, non-conformances, and failures.

c. Peer/Ad Hoc reviews are performed following defined procedures covering the preparation, conduct, documentation, and reporting of the review.

d. The project being reviewed shall maintain the review report as a record of the review.

### **3.2 Technical Quality Reviews (TQRs)**

a. Project/task leads shall plan for TQRs for all of their appropriate deliverables. Project/task leads shall ensure that planned TQRs are completed prior to delivering the subject of the review.

b. TQRs focus on the technical quality of specific deliverables. Some possible examples of subject matter for a TQR include: a technical or programmatic recommendation, an analysis, a trade study, a technical report, and an engineering database. The level of scrutiny varies with the risk incurred through the use of the deliverable. Three broad classes of deliverables and their associated review structure are defined below. However, hybrid reviews may be appropriate for deliverables that straddle these classes.

- c. TQRs generally fall into one of three classes: minor deliverables; major deliverables; and key deliverables. Characteristics and examples of each class are provided in Table 1.
- d. Project/task leads negotiate with the Director of the organization managing the project/task to determine what deliverables are subject to TQRs and what the corresponding class is for each deliverable. Project/task leads and the Director balance the added value of each TQR with the burden imposed by the TQR. The expected level of scrutiny that a particular deliverable is to receive at a Life Cycle Review may also be considered in determining the necessity for a TQR. Requests for additional TQRs or changes to the selected class for a TQR may be made by the LaRC Chief Engineer or the Director of an organization in which the work is being performed. Project/task concerns with any such request are raised to the Director of the organization managing the project/task. If the Director cannot resolve the issue with the requester, the CMC Chair decides the issue. Further appeals may be made to the Center Director.
- e. Requirements for TQRs are discussed in secs. 3.2.1-3.2.4 below. Additional guidance can be found in Appendix D.

**Table 1. Technical Quality Review Classes**

<b>Class Name</b>	<b>Characteristics</b>	<b>Examples</b>
Minor Deliverables	Interim or time-limited, or if final, any resulting decisions or impacts are within the scope of the LaRC project team. Minor deliverables are generally expected to be superseded by subsequent or consolidated deliverables in the near future.	Minor releases, minor updates, interim or preliminary data reports, computational fluid dynamics code calibration/checkout, component engineering reports, trade-study sub-elements, system engineering reports
Major Deliverables	Long, but finite lifetime, impact/drive local decisions, may impact minor customer decisions or require explicit customer awareness	Major database releases, system/subsystem engineering reports, trade studies, analyses
Key Deliverables	Archival quality, intended for long-term use, significantly impact/drive customer decisions or require customer approval	Project recommendations and their supporting trade studies and analyses, final releases of databases, databooks for customer Life Cycle Reviews

### 3.2.1 TQR Planning

a. In general, each project/task team should develop a review plan that includes TQRs. In particular, the plan should indicate which deliverables are subject to which class of review and how the reviews fit into the overall schedule. Inclusion of a TQR planning table similar to the notional one shown in Figure 4, “Example Technical Quality Review Planning Table”, may help achieve this goal. In the notional TQR planning table, the ID number is a project/task assigned number to aid the project/task in tracking its deliverable reviews. The schedule ID corresponds to the same-numbered item in the project schedule. The entries in the notional TQR planning table are for example purposes only.

b. To limit overhead, reviews of related products may be grouped together and reviewed either collectively or individually, by the same review panel. The project/task has the responsibility of providing the review materials to the reviewers and ensuring that all the reviewers and approvers are aware of delivery due dates for all products undergoing review. The review plan sets out how the TQRs of the various deliverables are to be performed. In cases where a common meeting place is required, the project/task team is responsible for the logistics of the review.

Technical Quality Review Planning Table						
ID No.	Schedule ID	Deliverable	Level of Review	Approver Level	Technical Review Date	Delivery Date
043	4650	Separation Dynamics Software Package	Key	Directorate	2/8/20XX	2/18/20XX
044	4652	Separation Dynamics Calibration Report	Minor	Branch or Project	3/17/20XX	3/25/20XX
045	4655	Separation Dynamics Analyses	Major	Branch	5/8/20XX	5/14/20XX
046	4656	Separation Dynamics Final Report	Key	Directorate	7/19/20XX	7/29/20XX
047	5501	Separation Mechanism Conceptual Design	Minor	Branch or Project	5/25/20XX	6/1/20XX
048	5503	Separation Mechanism Conceptual Computer Aided Design Models	Minor	Branch or Project	6/5/20XX	6/12/20XX
049	5505	Separation Mechanism Conceptual Design Analyses	Minor	Branch or Project	7/4/20XX	7/10/20XX
050	5145	Seals Critical Function Performance Test Plan	Minor	Branch or Project	12/29/20XX	1/7/20XY
051	5504	Design Analysis Cycle 1 Report	Major	Branch	5/23/20XY	6/1/20XY
052	5146	Seals Critical Function Performance Test Report	Minor	Branch or Project	8/29/20XY	9/3/20XY
053	4923	Seals System Arc Jet Test Plan	Minor	Branch or Project	6/26/20XY	7/2/20XY
054	4924	Arc Jet Test Coupons	Minor	Branch or Project	7/25/20XY	8/1/20XY
055	1216	Final Design Analysis Report	Key	Directorate	12/26/20XY	1/15/20XZ
056	4925	Seals System Arc Jet Test Report	Major	Branch	9/28/20XY	10/3/20XY

Figure 4. – Example Technical Quality Review Planning Table

### 3.2.2 Conducting TQRs

a. The time frames discussed below for completion of the various TQRs refer only to the calendar time between the receipt of the deliverable by the review panel and the completion of the review (including the review report). The reviews themselves are not expected to occupy all of the intervening time. To achieve the required turnaround, the review panel must be selected and prepared prior to the scheduled availability of the deliverable for review.

- b. Although some TQRs may require the panel members to meet face-to-face and discuss issues, most TQRs are expected to involve only electronic or telephonic communication between the panel members.
- c. Differences in the review classes are reflected in the time spent on the review, the content of the review panel, and the approver level required for sending the deliverable off the center.
- d. During a TQR, one or more panel members may recommend that a product should be reviewed at a higher level. If this occurs, the panel Review Lead/Chair notifies the LaRC Chief Engineer, the heads of the relevant directorates and the project/task manager so that the issue can be resolved at the appropriate level. However, because TQRs typically involve tight time schedules, the reviewers should continue with the review at their level. If it is later determined that a higher level of review is warranted, the technical quality review done at the lower level will be used to feed the review at the higher level.
- e. An appropriate level of review for software releases for producing major and key deliverables should be coordinated with the designated engineering technical authority (ETA) to ensure compliance with NASA policy and procedures. LPR 7150.2 provides details on determining the ETA for software releases.

### **3.2.2.1 TQRs for Minor Deliverables**

TQRs for minor deliverables typically have small review boards, perhaps just a single person not involved in the specific deliverable. For items such as Project Systems Engineering Reports (SERs), the review may be completed by the Project Chief Engineer. For items released by a branch, the Branch Head decides if a Branch Head review or a more extensive review is sufficient. Minor deliverables do not require a review report; documented reviewer approval of the deliverable is sufficient.

### **3.2.2.2 TQRs for Major Deliverables**

The major deliverable review panel typically consists of a small number of reviewers including one or more Branch Heads/Subject Matter Experts (SMEs), one of whom typically acts as the Review Lead/Chair, and possibly a Directorate Chief Engineer, and/or a Project Chief Engineer. Upon completion of the review and the review report, the reviewed major deliverables may be released for delivery to the customer with the approval of the Review Lead/Chair.

### **3.2.2.3 TQRs for Key Deliverables**

The key deliverable review panel typically consists of a modest number of reviewers including a Branch Head or Directorate Chief Engineer as the Review



Lead/Chair, one or more additional SMEs, head(s) of appropriate directorate offices or their designees, a Directorate Chief Engineer, and a Project Chief Engineer. Upon completion of the review and the review report, and prior to the release of the deliverable, the project shall obtain the approval of a directorate head (or designee) involved in, or cognizant of the review of the deliverable.

### **3.2.3 Review Report**

- a. For major and key deliverables, the output of a TQR is a review report generated and signed by the Review Lead/Chair. The purpose of the review report is to provide a documented basis for the approver to release the deliverable. Hence, the level of detail expected in the review report varies with the class of the deliverable. In general, the review report summarizes the findings and recommendations of the review panel, including any unresolved alternate opinions. The Review Lead/Chair provides a copy of the written report to the LaRC Chief Engineer, the responsible Director, the Directorate Chief Engineer, and the lead for the project/task. The report can include project/task team comments on the findings and recommendations.
- b. The project/task team is responsible for placing the review report under project/task configuration management as part of or linked to the reviewed item.

### **3.2.4 Deliverable Approval**

- a. The deliverable approval is the formal approval that the project needs to release a major or key deliverable to the customer. The format of an approval is intended to be flexible for all classes of technical quality review. The approval may be on paper, electronic, or other archival format. A valid approval clearly identifies the approver and his/her position; references the deliverable, and clearly indicates that the approver believes the product is ready to deliver to the customer. The deliverable approval is typically based on the approver considering the review report and possibly other material. In cases where other standardized forms serve the same purpose, a copy of the completed, signed form may be considered as the deliverable approval. For other cases, an example completed approval document that may be used for a key deliverable is provided in the NX collection:

<https://nx.larc.nasa.gov/dsweb/View/Collection-9441>

Individuals needing access should contact the LaRC Chief Engineer.

- b. Deliverable approvals are maintained by the project. Copies sent to the LaRC Chief Engineer are for reference only.

## **3.3 Life Cycle Reviews**

- a. Life Cycle Reviews assess the readiness of a program/project/task to proceed. NASA requirements and recommendations for Life Cycle Reviews can be found in NPR 7120.5, "NASA Space Flight Program and Project Management Requirements," NPR 7120.8, "NASA Research and Technology Program and Project Management

Requirements,” NPR 7120.7, “NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements,” and NPR 7123.1, “NASA Systems Engineering Processes and Requirements.”

- b. Depending upon organizational structure and project/task complexity, both a parent program/project/task and a child project/task may have their own 60-Day and independent Life Cycle Reviews.
- c. Infrastructure programs, projects, or tasks follow their governing LaRC requirements documents.
- d. Additional information for Life Cycle Reviews for space-flight and ground system programs and projects are described in LPR 7120.7. The LaRC Project Tailoring Tool may be used to guide the tailoring of the project structure and reviews. The LaRC Project Tailoring Tool is found at: <https://nx.larc.nasa.gov/dsweb/View/Collection-110774>
- e. Non-space-flight and ground system programs, projects, or tasks may use LPR 7120.7 and the LaRC Project Tailoring Tool as guides for developing their project lifecycle review approach.
- f. If necessary, the LaRC Chief Engineer will assist in obtaining appropriate approvals for tailored reviews. Sufficient time should be set aside for obtaining the approvals.
- g. In general, the review plan describes the project’s planned Life Cycle Reviews
- h. The project shall maintain the Terms of Reference, the presentation materials, and post-review briefings and reports for each project life cycle review.

## Appendix A - List of acronyms

Acronym	Meaning
CMC	Center Management Council
CP	Center Procedure
EPTR	Engineering and Project Task Review
LAPD	Langley Policy Directive
LaRC	Langley Research Center
LPR	Langley Procedural Requirements
NPR	NASA Procedural Requirements
NX	Office of the Chief Information Officer documentation management system
PCMC	Pre-Center Management Council
QA	Quality Assurance
SER	Systems Engineering Report
SMAO	Safety and Mission Assurance Office
SME	Subject Matter Expert
ToR	Terms of Reference
TQR	Technical Quality Review

## Appendix B –Table of Records Generated

<b>Review or Meeting</b>	<b>Section</b>	<b>Record(s) Generated</b>	<b>Party Responsible for Maintaining Records</b>
Directorate Forum	2.1.b	Directorate dependent (but some document providing evidence that the meeting was held is expected)	Directorate holding forum
EPTR	2.2.b	Agenda, Action Items, Presentations	LaRC Chief Engineer
PCMC	2.3.b	Agenda, Presentations	Directorate running the meeting
CMC	2.4.f	Agenda, Action Items, Minutes, Presentations (	LaRC Chief Engineer
	3.j, 3.k, 3.l, 3.3g	Review Plan	Project being reviewed
	3.k, 3.l	Review Plan Approvals	Project being reviewed
Peer Review	3.1.d	Review Report	Project being reviewed
TQR	3.2.3.b	Review Report	Project whose work is being reviewed
TQR	3.2.4.b	Deliverable Approval	Project whose work is being reviewed
Project Life Cycle Review	3.3.h	Terms of Reference, Presentation Materials, Review Briefings and Reports	Project being reviewed

## **Appendix C – EPTR Project Selection Guidance**

Notes refer to flow chart below

**NOTE 1:**

CMC presentation requirements are determined by the LaRC Chief Engineer.

**NOTE 2:**

For the purposes of this decision, an operational project is one for which the hardware/software has been previously developed and the project is in data-collection mode. Developmental projects are not operational

**NOTE 3:**

Airborne Project may be flying on a sounding rocket, helicopter, airplane, or other flight vehicle.

Because of the coordination required with other organizations, these type projects should report to the EPTR unless they have flown before.

**NOTE 4:**

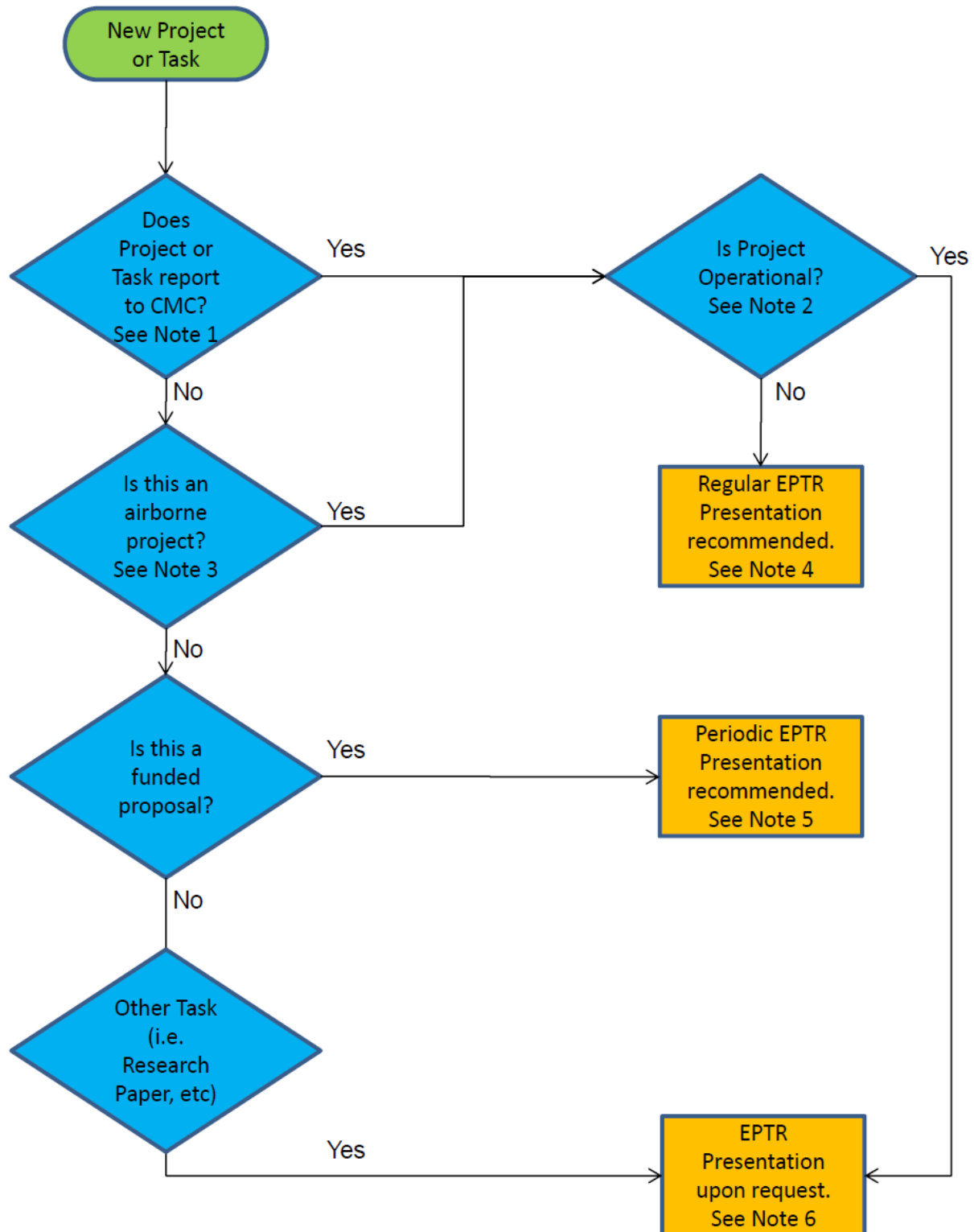
Frequency of regular EPTR presentations is at the discretion of the LaRC Chief Engineer with input from the Project, responsible Director, and Directorate Chief Engineers.

**NOTE 5:**

Directorate Chief Engineer will determine if a funded proposal has sufficient engineering element requiring budget and schedule oversight that will require EPTR reporting. Those selected do an introductory EPTR at the start of the project. Then one month prior to the required Program Office Review, present to the EPTR to give the center the opportunity to help with issues or concerns. EPTR presentations may be requested in between to address issues or concerns.

**NOTE 6:**

EPTR Presentations may be requested at any time by the Project, LaRC Chief Engineer, the responsible Director, the Directorate Chief Engineers, or Branch Management.



## Appendix D – Guidance for TQRs

The guidance herein applies only to Technical Quality Reviews for key, major and minor deliverables (as described in Table 1, Technical Quality Review Classes) including data, hardware and software. It does not apply to ad hoc reviews that may be requested by the project to address particular technical issues of concern.

The guidance covers both the panel conducting the reviews and the project/task team whose products are under review. Although LPR 7130 contains the procedural requirements, this appendix does not. Its purpose is to ensure that the expectations for TQRs are understood by the panel and the project/task team.

### Review Criteria

As stressed in the LPR, **“TQRs focus on the technical quality of specific deliverables.”** This is interpreted to mean that the technical aspects of the deliverables meet the customer’s expectations.

The primary criteria for assessing whether the technical quality is acceptable are:

1. Does the deliverable meet its technical requirements?
2. Were the appropriate technical practices followed in producing the deliverable?
3. Are all technical caveats and concerns about the deliverable pertinent to its intended use identified and prominently attached to the deliverable?

### Requirements

The project/task team should present the formal or derived requirements for their deliverable, with clear traceability of derived requirements to the relevant formal requirements.

If any derived requirements have not been communicated to and/or approved by the customer, then the panel should comment on the appropriateness of these unapproved, derived requirements.

### Practices

The project/task team should identify the applicable institutional standards (e.g., NASA standards, NASA-approved standards, NPRs, and LPRs) for their work. If there are no applicable standards, then the project/task team should discuss the heritage of the practices that they followed (e.g., individual or team judgment, undocumented practices for the branch/directorate/center, documented practices for the branch/directorate/center, NASA handbooks, and other documented industry or technical community practices).

The project/task team should describe the reviews and independent activities used to verify the deliverables (e.g., verification of transformations of data from one format to another, and peer review of models and simulations).

The panel should assess the project/task team's compliance with the relevant practices and the impacts upon the deliverable of any deviations from the relevant practices. The panel should note any instances wherein the relevant practices are inadequate for meeting the technical requirements. The panel should assess the acceptability of the verification activities.

## **Caveats and Concerns**

The project/task team should discuss their own caveats and concerns about the deliverable and the manner in which these are conveyed to the customer.

The panel should assess the gravity of these concerns and the effectiveness of the manner by which they are conveyed to the customer. The panel should identify any additional caveats and concerns that should be conveyed to the customer.

## **Review Format**

The review should place as small a burden as necessary on the project/task team. Per sec. 3.2.2 of LPR 7130, the review should require a face-to-face meeting only when necessary for an effective review by the panel or for efficient discussion of the deliverable by the project/task team.

The project/task team is not expected to prepare a formal presentation with polished charts for the review. They may use whatever format or media is best suited to discussing the deliverable.

## **Panel Report**

As stated in LPR 7130, the panel report should summarize the findings and recommendations of the panel. The report should be organized in such a fashion that the findings and recommendations of the panel as a whole (as well as any alternate opinions of the panelists) are clearly delineated. Additional information, such as individual comments from panel members, may be included in the report as backup information.

The findings should include the panel's assessment of all the review criteria described above. The most prominent recommendation should be whether the panel approves or recommends approval for the (in the case of key deliverables for which the panel is making a recommendation to the approving officials) release of the deliverable.



## Appendix E – Requirements List for this Document

Below is a table of the requirements explicitly spelled out in this document.

Section Reference	Requirement
2.1.a	All technical and programmatic directorates at LaRC shall hold regularly scheduled forums.
2.1.b	Each directorate shall establish what record(s) are generated that provide evidence that their Directorate Forums were held.
2.2.a	The LaRC Chief Engineer shall organize and run Engineering Project and Task Reviews (EPTRs).
2.2.b	The LaRC Chief Engineer shall maintain the agenda, presentations, and action items as records of each EPTR.
2.3.a	Programmatic directorates shall organize and run PCMC reviews.
2.3.b	The Directorate running the PCMC shall maintain the agenda and presentations as a record of each PCMC.
2.4.f	The LaRC Chief Engineer shall maintain the agenda, action items, minutes, and presentations as records of the meeting.
3.1.a	The project/task shall document a strategy for peer reviews to be performed by the project in the review plan
3.1.d	The project being reviewed shall maintain the review report as a record of the review.
3.2.a	Project/task leads shall plan for technical quality reviews (TQRs) for all of their appropriate deliverables
3.2.a	Project/task leads shall ensure that planned TQRs are completed prior to delivering the subject of the review.
3.2.2.3	Prior to the release of the [key] deliverable, the project shall obtain the approval of a directorate head (or designee) involved in, or cognizant of the review of the deliverable.
3.3.h	The project shall maintain the Terms of Reference, the presentation materials, and the review report for each project life cycle review.