

Independent Life-Cycle Review Process FAQ's

1. What Is the Independent Life-Cycle Review Process?

Answer

The review of programs and projects at each life cycle milestone by competent individuals who are not dependent on or affiliated with the program/project to objectively assess:

- The adequacy and credibility of the technical approach. (including but not limited to: requirements, architecture, and design),
- Schedule,
- Resources,
- Cost,
- Risk, and
- Management approach;
- Progress against the Program/Project Plan;
- Readiness to proceed to the next phase; and
- Compliance with NPR 7120.5 and 7123.1 requirements.

2. Why do we have an Independent Life Cycle Review Process? (Part 1)

Answer

NASA's success, as well as a program or project's success, is supported by:

The proper balance of power between organizational elements and

A robust check and balance system based on the principle that "No one can grade their own work".

The Agency's governance structure which separates Programmatic Authority and Institutional Authority (includes the Technical Authorities) and the independent assessment process work together to provide the healthy tension that ensures decisions have the benefit of different points of view and are not made in isolation.

3. Why do we have an Independent Life Cycle Review Process? (Part 2)

Answer

There are three reasons for conducting Independent Life Cycle Reviews. We want to provide:

1. The program/project with a credible, objective assessment of how they are doing,
2. NASA senior management with an understanding of whether the program/project is on the right track, is performing according to plan, and externally-imposed impediments to the program/project's success are being removed, and
3. A credible basis for a decision to proceed into the next phase.

These formal reviews provide an independent assessment of emerging designs against plans, processes and requirements to ensure an objective assessment of the design and development plans. By having independent experts conduct these reviews, we (all of us) are provided a unique view that we may have overlooked as a consequence of our close involvement with the ongoing program/project work.

The independent review also provides additional assurance to external stakeholders that NASA's basis for proceeding is sound.

A significant additional benefit to the program/project is that the preparation for the milestone review requires the program/project to examine its progress holistically against specific criteria for each milestone. This permits both the development team as well as the independent review team to see how well the work holds together and to examine the assumptions and analyses that support the conclusion the program/project has reached regarding its maturity and readiness to proceed.

4. What are the key elements of the Independent Review Process?

Answer

- Convening of the Review and developing the review Terms of Reference
- Assembling the Standing Review Board members
- Conducting the Review
- Issuing the Board Report (Findings and Recommendations)
- Program/project dispositioning of the report
- Center Management Council reporting its assessment
- Governing PMC reporting its assessment and providing a recommendation to the Decision Authority
- The Decision Authority making the readiness decision
- Capturing and archiving the review outcomes

5. Who convenes the Independent Life Cycle Review?

Answer

The Office of the Administrator, the MDAA, the Technical Authority Programmatic Authority, and PA&E are involved in convening the Standing Review Board (SRB) for life cycle reviews. This is summarized in the table below from NPR 7120.5D.

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

* Only for Category 2 projects that are \$250M or above.

Table 2-3 Standing Review Board Protocols

In addition to the life cycle reviews, the Office of the Administrator, MDAA, or a Technical Authority may also convene special reviews they determine to be needed. In these cases, the MDAA or the Technical Authority forms a special review team composed of relevant members of the SRB and additional outside expert members, as needed. The MDAA or the Technical Authority provides the chair of the review with the Terms of Reference (ToR) for the special review. The process followed for these reviews is the same as for other reviews. The special review team is dissolved following resolution of the issues that triggered its formation.

6. What is a Standing Review Board?

Answer

The Standing Review Board (SRB) is the independent advisory board *that makes independent Life-Cycle reviews*. It does not have authority over any program/project content. When appropriate, the SRB may offer recommendations to improve performance and/or reduce risk.

The goal is that the SRB remains intact having the same core membership for the duration of the program/project, although it may be augmented over time with specialized reviewers as needed.

The SRB provides the program/project and NASA senior management with an assessment of the technical and programmatic approach, risk posture, and progress against the program/project baseline at the life cycle milestones specified in NPR 7120.5D

		Decision Authority		Technical Authority		Associate Administrator, PA&E
		NASA AA	MDAA	NASA CE	Center Director	
Establish SRB, Develop ToR, Approve Chairperson, RM, and Other Board Members	Programs	Approve	Approve	Approve		Approve
	Category 1 Projects	Approve	Approve	Concur	Approve	Approve
	Category 2 Projects		Approve		Approve	Approve*
	Category 3 Projects		Approve		Approve	

* Only for Category 2 projects that are \$250M or above.

Table 2-3 Standing Review Board Protocols

7. How are Standing Review Board members chosen?

Answer

Board members must be competent, current, and independent (not dependent on or affiliated with the program/project) and some members must be independent of the program/project's participating Centers. (Note- The order of competent, current, and independent is intentional.)

Board members are chosen based on their management, technical, safety and mission assurance expertise, their objectivity, and their ability to make a broad assessment of the implementation of the program or project that employs numerous engineering and other disciplines. Board members responsible for the Independent Cost Analysis (ICA) of programs and Category 1 and 2 projects are provided by the IPAO. For Category 3 projects, board members responsible for the ICE may be provided by the IPAO, the Center Systems Management Office (SMO), or Center systems management function, as appropriate.

Board members responsible for the Independent Cost Analysis (ICA) of programs and Category 1 and 2 projects are provided by the Independent Program Assessment Office (IPAO). For Category 3 projects, board members responsible for the Independent Cost Estimate (ICE) may be provided by the IPAO, the Center Systems Management Office (SMO), or Center systems management function, as appropriate.

The goal is that the SRB remains intact having the same core membership for the duration of the program/project, although it may be augmented over time with specialized reviewers as needed.

8. Can personnel from the centre doing the program/project work participate on SRBs?

Answer

Independence does not mean that personnel from the Center doing the program/project work cannot participate on SRBs. Center personnel are encouraged to participate in these important assessments. The chair of the Standing Review Board can come from the Center where the program/project is implemented. The only restriction is that the chosen personnel cannot be dependent on or affiliated with the program/project. As a general rule, not more than 50% of the SRB may come from the center doing the work.

9. Can the chair of the Standing Review Board come from the Center where the program or project is implemented?

Answer

Yes, the chair of the Standing Review Board can come from the Center where the program/project is implemented. The only restriction is that the chosen person cannot be dependent on or affiliated with the program/project. Paragraph 1.2.1.d defines "Independent" as outside the advocacy chain of the program or project. However, this practice will usually be on an exception basis when a competent chair cannot be found external to the Center.

10. How Is The Scope Of The Review Established?

Answer

The Terms of Reference (ToR) specifies the nature, scope, schedule, and ground rules for the independent review.

NPRs 7120.5 and 7123.1 provide a general description of what should be covered in a milestone review. This includes the gate products that must be submitted for the key decision point being reviewed. The convening authorities include any specific review objectives or requirements in the ToR.

As an example, the Mission Directorate (one of the convening authorities for a life cycle review) may need an additional area evaluated or may chose to deemphasize a given area as determined by the specific characteristics of the program/project being reviewed. This would be included in the ToR.

The Programmatic Authority assessment includes the accomplishments in fulfillment of programmatic requirements as well as program/project designs, interfaces, interactions, and processes.

The Institutional Authority Assessment includes Center support and whether the proper technical standards, processes, and practices are being applied. The assessment also includes whether the Technical Authorities have properly evaluated and dispositioned waivers, applied the correct standards, provided the needed support to maximize the likelihood of success, etc.

11. What Determines The Depth Of The Independent Life Cycle Review?

Answer

The depth of the review is determined by:

The Terms of Reference (ToR), and

The depth at which the SRB can tell that the entire design holds together adequately, and that the analyses, development work, systems engineering and programmatic plans (e.g., cost, schedule, etc.) support the design and the decisions that were made. Typically, this requires evaluation of the work at the system level (e.g., propulsion), at least. For critical or complicated systems, the SRB may look at lower levels (e.g., parachutes).

The ultimate decision on depth is the responsibility of the SRB. The depth must be sufficient to support the SRB providing NASA senior management with an accurate and objective assessment of the readiness of the program/ project to proceed to the next phase. In the case of a special review, the depth must be sufficient to fulfill the task given.

12. What is done with the SRB report?

Answer

The SRB report contains findings and recommended actions and documentation of Dissenting Opinions. It is sent to the relevant individuals (e.g., Decision Authority, MDAA, Program Manager, Project Manager, Technical Authorities, Associate Administrator for PA&E, and participating Center Directors). The findings and recommendations are dispositioned by the program/project. Once the program/project internal reviews and the SRB independent life cycle review are complete, the life cycle review milestone is considered complete.

The Governing Program Management Council (PMG) evaluates the SRB Report, the program's/project's proposed disposition of SRB findings and recommendations, the Center Management Council (CMC) assessment, and other inputs (e.g., input from the Technical Authorities). The PMC then recommends to the Decision Authority whether the program/project has fulfilled the required gate products and should proceed into the next phase.

All these results are documented as an Appendix to the final SRB report so that the findings and decisions are captured in a single place ensuring that the complete story for each given milestone is maintained.

13. Who is the Decision Authority?

Answer

The Decision Authority is the Agency's responsible individual who authorizes the transition of a program/project to the next life cycle phase.

The Decision Authority for Programs and Category 1 projects Authority is the NASA Associate Administrator. For Category 2 and 3 projects it is the responsible Mission Directorate Associate Administrator.

14. What is the relationship among the Standing Review Board, the Programmatic Authority, and Institutional Authorities (including the Technical Authorities)?

Answer

As noted in other FAQ's, the SRB has the responsibility to independently assess the program/project as a whole including the relevant programmatic and institutional authority elements as the program/project prepares to meet its life cycle milestone requirements. The SRB review includes assessing the programmatic side including accomplishments in fulfillment of programmatic requirements as well as program/project designs, interfaces, interactions, and processes. It also includes assessing the adequacy of the institutional side's support including the Center support and whether the proper technical standards, processes, and practices are being applied.

The Mission Directorate Associate Administrator is the Programmatic Authority for the programs and projects under his/her purview. In this role, the Mission Directorate and the Mission Directorate Program Management Council have the responsibility of periodically evaluating the cost, schedule, risk, technical performance, and content of the program/project. The evaluation focuses on whether the program/project is meeting its commitments to the Agency.

The Center Director (as the head Institutional Authority includes being the head Technical Authority for projects at his/her Center) has the responsibility to know and understand the work hosted at his/her Center and to ensure that it is being performed in accordance with the agreed-upon standards applicable to it.

In brief, both the Mission Director and the Center Director need to know that good engineering practices are being employed, good technical decisions are being made, sound requirements are being established, risks are adequately characterized and addressed, plans are reasonable, etc. Since the Technical Authorities are involved in the development of the program/project, they too are subject to review by the SRB. In this case, the assessment would include determining whether the Technical Authorities have properly evaluated and dispositioned waivers, applied the correct standards, provided the needed support to maximize the likelihood of success, etc. Similarly, for the programmatic side the SRB will evaluate the cost performance, team leadership, etc.

15. What can be done to make the SRB process efficient and to minimize redundant briefings?

Answer

At least one program intends to include in their milestone review Kickoff meetings sufficient information on the design and its rationale so that both the project personnel and the SRB can see the whole story to ensure that the work leading up to the final Project Board meetings is informed by this view. If approached in this manner, a typical agenda for a milestone Kickoff review might be as follows:

- Purpose of review & charge to SRB by the Convening Authorities
- Project overview & status
- System engineering & status
 - Requirements & V&V plans
 - Trade studies
 - Technical margins
- WBS-level 2 design state & status for each area
 - System design
 - Key requirements
 - Trade studies
 - Technology readiness
 - Acquisition strategy & long lead
 - Logistics & facilities
 - Challenges & risks
- Integrated system (e.g. power) state & status for each area
- I & T
- S&MA
- Human rating
- Risk
- Schedule
- Cost
- Wrap up

Depending on the depth of the Kickoff presentations, additional SRB briefing(s) may be needed to address the changes in the design and/or requirements as a result of decisions made by the project as it closes its work for the milestone. These could be included as part of the Project's Board meeting or could follow the Project's Board, as appropriate to the situation.

The work of the SRB can be made more efficient if supported by and integrated with the Program, Projects, Mission Directorates, and Center's internal evaluations noted above. If lower-level assessments of the work being performed (e.g., internal review of the parachute design, thermal design, etc.), the results of these assessments can be flowed up to the SRB or the SRB can be invited to participate in them. Many of the system/discipline level topics above might be satisfied by this approach, although the SRB will need to review how well these areas hold together at the top level.