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Overall, RIG updates have increased my understanding of what is required for the components and subcomponents of the project execution plan. The breakdown of the components, their subcomponents, documents, and products are very helpful.

The descriptions, rationale, “how to guidance”, good practices and practical considerations are immensely helpful. Below are some comments that may be useful in further refining the document. Thank you for your work on this document!

Section 3.0 RESEARCH INFRASTRUCTURE LIFE CYCLE PLANNING

3.4 Design Stage Planning. Formulates the DEP detailing tasks. Major Facilities undergo submission for the Conceptual Design Review and Preliminary Design Review in preparation for the Final Design Phase. The Mid-scale RI DEP is reviewed as per the funding announcement.

- Tailoring: The process of selecting an appropriate framework to define and organize the scope, management, organization, schedule, cost detail, and performance measurement methods.
- Scaling: The process of adjusting the level of detail, degree of formality, tools, and management processes to the characteristics of the planned work and the performance processes.

Level of Detail. Simple projects or programs might only develop the Work Breakdown Schedule (WBS) to Level 3, which is considered the minimum by industry good practices. In contrast, large construction projects may extend to WBS Level 10 in some areas to capture the work packages in the appropriate detail for cost estimating and monitoring performance

Management Processes. Performance management processes also have varying degrees of formality. For example, NSF oversight requires a Major Facility to have an EVM system that is verified, accepted, and has periodic surveillance reviews during construction. In contrast, a Mid-scale RI project electing traditional waterfall methods can use a system to monitor progress against the plan using its own institutional standards or something as simple as weighted-milestone tracking (see Section 4.5 Monitoring Progress Against Plan). For operations, the management process may be handled through routine activity status reporting to NSF with actual costs against the proposed budgets for each operational WBS element

3.4.1 Design Execution Plan

NSF Requirement Major Facilities and Mid-scale RI projects must create a PEP, including all components and subcomponents, tailored and scaled appropriately for the Construction Stage or implementation.

Figure 3.5-1 PEP Overview Map

Table 3.5.1-1

Project Overview Subcomponents, Products, and Documents with References to Future Material and Related Topics.

Project Mission Statement should be in accordance with the award instrument used.

3.5.7.2 PEP Subcomponent 7.2 – Performance Measurement and Management Plans

This subcomponent presents the project PMM tools and methods that describe how the project will be managed and controlled during execution using information from quantitative comparisons of status to the planned project. There are two major processes in a PMM Plan that need to be addressed, as shown in the PMM and Status Input boxes in Figure 3.5.7.1-1 above:

- Performance Measurement. Comparing and analyzing collected Status Inputs against the plans in the Total Project Definition.
- Performance Management. Making management decisions on actions to pursue based on the comparison analysis.

The selection of Project Controls tools depends upon the chosen PMM method, which should be tailored and scaled to meet project needs. For example, Major Facilities construction projects **must** use verified Earned Value Management (EVM) as the PMM method, which entails the use of tools such as EVM software applications and involves adherence to NSF Earned Value Management System (EVMS) guidelines. Simpler projects may find that scaled, non-verification EVM, or even simple spreadsheet comparisons of cost versus actual expenditures and milestone tracking, are adequate methods for comparison of plan to actual status. Further guidance on creating a tailored and scaled PMM Plan is given in Section 4.5 Monitoring Progress Against Plan.