

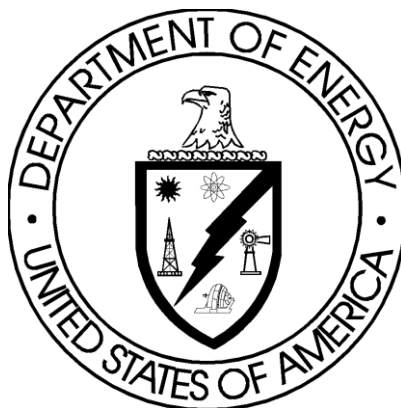


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DOE G 413.3-18A
2-3-2012

INTEGRATED PROJECT TEAM Guide for Formation and Implementation

[This Guide is a complement to DOE Order 413.3B for the purpose of documenting the non-mandatory processes and procedures recommended to be followed in the proper formation and implementation of an Integrated Project Team, as prescribed in O 413.3B. It should be noted that Guides are not requirements documents and are not to be construed as requirements in any audit or appraisal for compliance with the parent Policy, Order or Notice.]



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FOREWORD

The Department of Energy (DOE) Directive, DOE O 413.3B (Order), became effective November 29, 2010. It identifies requirements that are mandatory for all DOE Elements involved with capital asset projects having a Total Project Cost (TPC) greater than or equal to \$50 million, or if so ordered by the Deputy Secretary on a case-specific basis, to those capital asset projects having a TPC greater than or equal to \$20 million.

This revision to DOE G 413.3-18 (Guide) provides detailed guidance of the preferred processes to form and implement an Integrated Project Team (IPT) in support of proper project execution as prescribed in the Order. Appendix D of this Guide presents a comprehensive listing of the IPT requirements contained in DOE O 413.3B. Item #13 on page B-9 of Appendix B (Responsibilities) of the Order lists the high level responsibilities guiding the activities of an IPT. In addition, item # 7 on page C-11 of Appendix C (Topical Areas) of the Order lists high level parameters guiding the implementation of an IPT by its membership.

As a complement to DOE O 413.3B, this Guide is an integral component of effective compliance with IPT requirements for capital asset projects covered by the Order. *[In the event of any conflict in this Guide with the Order, the language contained in DOE O 413.3B takes precedence. This Guide is not meant to establish requirements nor substitute for the requirements in the Order.]*

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1.0 INTRODUCTION

1.1 Objective

The objective of this revision to DOE G 413.3-18 (Guide) is to provide Department of Energy (DOE) Federal Project Directors (FPD) and their respective Contracting Officers (CO) with information needed to support the successful implementation of the requirements of DOE O 413.3B (Order) related to the use of an Integrated Project Team (IPT) and the value of an IPT in the support of proper project execution. The Order is intended to achieve improved project outcomes and efficiency within DOE. The information presented in this Guide complements information presented in other DOE Guides, referenced in this document, that have also been developed to assist successful implementation of the Order.

Studies indicate a positive correlation between the level of performance of an IPT and the degree of success in project execution. This is especially true for large, complex, and technically challenging projects that involve multiple stakeholders, tight budgets and schedules. In all cases, DOE capital asset projects have a much better chance of succeeding when an FPD works together with a competent and committed IPT.

1.2 Applicability

This Guide is applicable to all DOE Elements, including the National Nuclear Security Administration (NNSA), that are involved with capital asset acquisition projects required to comply with DOE O 413.3B. Appendix D of this Guide presents a listing of requirements in the Order pertaining to IPTs. The focus of this Guide is all DOE capital asset projects. The Departments nuclear projects have additional considerations related to IPTs that are presented in Appendix F: Additional Considerations For Nuclear Projects.

This Guide has been developed to be especially helpful across all certification levels of FPDs in relation to DOE's Project Management Career Development Program (PMCDP). In addition, the Guide is meant to assist organizations under contract to DOE who are supporting Department IPTs on capital asset acquisition projects relevant to their contracts.

1.3 Sources

This Guide primarily receives its direction from DOE O 413.3B and its focus on formation and implementation of the IPT (see Appendix D). Requirement statements and procedures are taken directly from the Order. In this Guide, the word 'shall' or 'must' denotes a direct quote of the requirements from DOE O 413.3B. Where statements are conveyed as a 'should', 'expected' or 'recommend', the assumption is that this Guide provide additional guidance to achieve the intent of the Order.

This Guide also makes use of a variety of additional information sources from both within and outside of DOE. These include: other relevant DOE directives or program office documents; best practices from elsewhere in the federal government and the private sector; the Office of Management and Budget (OMB) Capital Programming Guide (CPG); select Government

Accountability Office (GAO) reports; Defense Nuclear Facilities Safety Board (DNFSB) publications and presentations; National Research Council (NRC) findings and recommendations pertaining to DOE; as well as lessons learned from past IPT project implementations. All of the source material cited has been cross checked to ensure its validity and applicability to DOE IPTs.

OMB recommendations as documented in their Capital Programming Guide should be given particular attention since their views are derived from government-wide studies of project management problems, including implementation and utilization of IPTs and have been extensively field tested. Further, DOE specifically recognizes OMB direction and guidance in Project and Program Management as part of the Departments overall focus on project execution excellence.

1.4 Structure

This Guide is structured to be of practical use to FPDs at any level of PMCDP certification. It is expected to be of particular use to Level 1 or new FPDs, as well as those new to IPT memberships, as part of their introduction and orientation into what DOE expects from its IPTs.

Early sections of the Guide describe key elements or aspects of IPTs, including roles, responsibilities, and relevant IPT processes. Subsequent sections of the Guide provide information on forming and organizing an IPT as set forth in the Order; followed by suggestions on operating an effective IPT through the various Critical Decision (CD) points defined in the Order.

In addition, the Guide discusses measuring the performance of an IPT, including methods for self-assessment, continuous improvement and documenting lessons learned from operating an IPT. Finally, appendices in the Guide provide a variety of useful information that supplements material referenced in the body of the Guide.

2.0 ELEMENTS OF THE IPT PROCESS

2.1 Basis

An IPT is the primary entity that brings together for a project the various organizations, disciplines, professions, and levels of management that can assist the FPD in delivering a defined project outcome. An IPT as envisioned in DOE O 413.3B is project driven; neither program focused nor established to support multiple projects. An IPT is focused on supporting the FPD. Yet the Order does support Program Managers and/or Heads of Field Organizations in establishing an initial IPT before an FPD is selected.

However, the core basis of an IPT is that it is meant to support the leadership of the FPD. Under the leadership of a FPD, a successful IPT combines elements to form a unit that can effectively share pertinent information, balance conflicting priorities, and jointly plan and support the FPDs leadership on the project. Thus, an IPT is a multidisciplinary group of people who are

collectively accountable for supporting the FPD to succeed on a project by effective planning, execution, and implementation of decisions impacting the project.

DOE O 413.3B states: “The FPD shall organize and lead an IPT. The IPT is an element in DOE’s acquisition process and is involved in all phases of a project. This IPT consists of professionals representing diverse disciplines with the specific knowledge, skills, and abilities to support the FPD in successfully executing a project. The IPT size and membership may change as a project progresses from CD-0 to CD-4 to ensure that the necessary skills are always represented to meet project needs. IPT membership may be full or part-time, depending upon the scope and complexity of a project and the activities underway. However, the identified personnel must be available to dedicate an amount of time sufficient to contribute to the IPT’s success.”¹

2.2 Size and Structure

The size and structure of an IPT should be established based on activities the project requires and whether a direct member of the DOE project team, contractor support to the IPT or a member of the contractor team executing the project will be performing certain functions. The IPT’s size and structure is also impacted by the size and complexity of the corresponding project. For smaller projects, there may be just a single IPT, while for larger projects, there may be a primary (or core) IPT and one or more subordinate, specialized IPTs at the discretion of the FPD (and CO) interpretation of project needs.

The process of forming the IPT should begin by:

- Identifying all functional areas and disciplines needed to accomplish a project’s activities (see Appendix F: Additional Considerations For Nuclear Projects)
- Identifying a set of individuals representing these functional areas and disciplines,
- Defining appropriate goals, tasks, and responsibilities for the IPT, and
- Providing training and orientation for members in how to function effectively in an IPT.

Section 3 of this Guide provides details on how to accomplish the activities listed above, while Section 3.4.3 provides recommendations on the training and orientation that is necessary. DOE Guide 413.3-19 provides some guidance for the FPD on determining staffing resources for project management.²

One of the most important responsibilities of the FPD is to determine the needed organizational involvements for the project and the numbers, types, and necessary skills sets of the IPT team members, for each phase of the project. The timely and accurate oversight and review/approval of contractor processes and deliverables is a key factor in maintaining the schedule, cost, and quality level of the project. If not detected early, the cost of not finding and correcting a problem, deficiency or defect will only escalate as the project further matures. Therefore

¹ O 413.3B, Appendix C7

² G 413.3-19

determining and having in place in a timely manner, adequate numbers of IPT staff with the correct skill sets is an important key to project success.

Once members and activities of an IPT are defined, the processes by which the IPT will function should be established, including communication and operation procedures. It is important to agree on a procedure for recording IPT activities and decisions, along with how to access that information, to establish a solid foundation for efficient IPT operations.

As the project moves forward, and the IPT functions appropriately, the FPD (and CO) may revisit the possibility of forming one or more subordinate, specialized IPTs for additional support to the project.

2.3 High Performance

IPTs that routinely operate under a best practice framework are considered ‘high performance’. IPT members are individually empowered to make decisions on behalf of the FPD (within defined bounds); and are individually yet mutually accountable to the FPD for executing the project within allocated resources. Decisions are more often project-optimized and involve affected disciplines in advance. In summary, high performance IPTs demonstrate the following best practices:

- Alignment of Goals – The IPTs goals and objectives are explicitly aligned with the goals and objectives of the project.
- Open Discussions –Discussions within the IPT are generally open, because each IPT member brings unique and needed expertise; and because each person’s views are important in the overall development of a successful project. However, members should be attuned to needed sensitivities relative to such ‘need-to-know’ topics as contractor proprietary or proposal/bid information and how to appropriately handle any dissemination. This may necessitate a ‘closed’ component to allow for proper oversight discussion. (See Section 3.4.5 for further discussion).
- Empowered, Qualified Members – All IPT members should be empowered by their leadership and able to speak for their superiors in the decision-making process; empowerment is critical to making and keeping agreements essential to an effective IPT.
- Dedicated/Committed Proactive Participation –Members participate proactively in the work of the IPT and are committed to the success of the project.
- Issues Raised and Resolved Early –Members openly raise and discuss issues at the earliest possible opportunity, so they can be addressed and resolved within the IPT, seeking additional functional expertise when necessary.

2.4 Roles and Responsibilities

DOE O 413.3B identifies the responsibilities of an IPT and for the FPDs leadership of the IPT (see Appendix D). Of particular note is the inference for close alignment by the members of the IPT with the FPD and the Contracting Officer (CO). Together they pursue a focus on supporting the successful execution of the project. This support focuses on empowerment both by the FPD

to other members of the IPT and the IPT members themselves in acting as an extension of the FPD across needed activities.

The FPD serves as the lead IPT point of contact across all project staff (DOE and Contractor) and provides ongoing decision-making leadership and operational direction to members of the IPT. This includes the Charter (see Appendix C). The FPD delegates as appropriate yet serves as the primary source of interaction and communication with DOE site, program, and support management. The FPD monitors all activities of the IPT to ensure they are consistent with the Project Execution Plan (PEP). In coordination with the Contracting Officer, the FPD ensures the activities and interactions by the IPT members are aligned with the projects targets and provisions of the governing contract.

The CO for the project is an expected member of any IPT. The CO is also the one member so closely aligned with the FPD that many of the provisions of the project acquisition strategy and acquisition plan become the basis for many of the activities in which the CO works with others in the IPT to execute. As a result, there is the need for close interaction and support by the IPT members to the CO, second only to the FPD.

The following sections of 2.4 expand more on specific roles and responsibilities that have a unique importance to the success of the project through the IPT.

2.4.1 FPD Support

The first expectation of an IPT is to support the FPD by providing individual expertise and capabilities in the various project disciplines. Each IPT member acts as liaison between the IPT and their functional organizations. They should be supported to act on behalf of the FPD. The FPD will formally delineate the limits of authority and accountability for each member, based upon their function in the IPT and their experience. Delegation, properly employed, reduces the burden on the FPD while better utilizing the capabilities of the individual members of the IPT.

2.4.2 Acquisition Planning

DOE O 413.3B sets the requirement that the IPT work with the CO to develop a project Acquisition Strategy (AS) or Acquisition Plan (AP), as applicable.³ The CO also works with the IPT to develop solicitations to evaluate and award mission-oriented contracts.⁴ The Order also requires that an AS be prepared as a pre-requisite for CD-1 and that an updated AS be approved prior to CD-2, if there is any major change to the acquisition approach.

The OMB CPG offers additional suggestions for an IPT to consider that are meant to utilize input from the private sector. These suggestions supplement project and acquisition planning activities expected by the FPD and/or the CO with others in the IPT.

The OMB CPG recommends that the IPT take ownership of supporting the planning process and determine what is available in the private sector and whether there are items that could be used

³ O 413.3B, Appendix B13b

⁴ O 413.3B, Appendix B10c and Appendix C2

as-is or modified to satisfy the needs of the project. (Note: these activities assume that an IPT be formed soon after CD-0, Approve Mission Need.) Specifically, OMB recommends that the IPT perform studies as follows:

- After CD-0 approval, [DOE] management should provide the IPT with an estimate of the range of funds that may be available for the project. The IPT should then conduct surveys to determine if the private sector can provide requirements for the project that will satisfy the mission need within the funding constraint. Emphasis should be placed on generating innovation and competition and the use of existing items to satisfy the mission need. The IPT should determine: 1) availability, 2) affordability, 3) cost and benefits, 4) sustainable design principles, and 5) risk. (see also Appendix F)
- In conducting its surveys, the IPT should seek information by reviewing published information, talking with other agencies that have conducted similar investigations, or by directly approaching the private sector for information.
- The IPT should be empowered to engage potential suppliers as advisors. The government [DOE] can provide a general description of the mission need and invite potential offerors to submit information. (see Appendix F for Nuclear Safety QA issues)
- The IPT should keep abreast of the latest capabilities and performance through professional associations, trade journals, advertisements, sales brochures, and the like. The IPT should be heavily involved in ensuring that the published requirements accurately reflect what is desired and should participate in determining the contract incentives.

2.4.3 Environmental, Safety, and Health: Security; and Quality Assurance

The extent of the duration of an IPTs involvement in environmental, safety, and health (ES&H); security; and quality assurance depends upon the nature of the project (e.g. scope, complexity, nuclear, etc.) but should be included, even at minimum representation at certain stages. While this involvement extends in various capacities over the length of the project, the identification and definition of requirements expect significant IPT involvement in the period between CD-0 and CD-1. If the requirements are not defined early, the result can be costly downstream rework and delay.

The strong implementation of a Quality Assurance Program (QAP) greatly enhances the successful execution of a project. Conversely, a poorly implemented QAP significantly increases project risk and the potential for ES&H consequences. DOE Guide 413.3-2, Quality Assurance Guide for Project Management, provides detailed guidance for IPT roles in implementing an effective QAP for projects. Guide 413.3-2 additionally provides information for an IPT to address the critical Quality Assurance issues for nuclear projects. The IPT will determine the Quality Assurance (QA) requirements for a project and monitor compliance with those requirements as the project progresses. See Appendix F for Nuclear Project expectations of QA. QA decisions can involve tradeoffs. The OMB CPG recommends that “if a commercial

or non-developmental item is procured, the IPT should consider using commercial quality standards or the contractor's quality system to ensure acceptability.”⁵

2.4.4 Other Planning

DOE O 413.3B does not specify the IPT's roles and responsibilities for developing the project execution and risk management plans; it assigns that responsibility to the FPD. However, the IPT should be involved in support of the FPD in developing both of these plans. The IPT should also be directly leading the development of other project documentation such as the Integrated Safety Management Plan (ISMP), the Preliminary Hazards Analysis (PHA), as well as components of the QA Program.

2.4.5 Defining Key Parameters

DOE O 413.3B requires the IPT to identify and define appropriate and adequate project technical scope, schedule, and cost parameters.⁶

- The technical scope should define what the project is to accomplish. If processes are involved, the scope should define the state of the process output, the input requirements and parameters, and the throughput.
- Schedule parameters should include how long the project will take. Various amounts of schedule detail may be provided at this time. The IPT needs to recognize the link between the length of the schedule and the availability of money—a longer funding profile will lead to a longer schedule.
- Cost parameters should include TPC, contingency, and estimate of management reserve. The IPT should recognize the link between total cost and funding profile. A longer funding profile will generally lead to a larger TPC because of inefficiencies and load [occasionally, DOE units refer to this as the ‘hotel’ load]. The cost parameters should also include an allowance for any subject matter experts (SME) and federal project staff augmentation.

The Order requires the IPT to establish by CD-2 minimum Key Performance Parameters (KPP) that reflect the key technical, schedule, and cost parameters for the project.⁷ Additionally, for NNSA projects, KPPs also need to be identified in the Program Requirements Document (PRD). KPPs are developed as the result of an analysis that leads the IPT to conclude that a particular project concept is the appropriate solution capable of meeting the required mission need. Details concerning the application of KPPs can be found in DOE G 413.3-5A.

The OMB CPG also reiterates that:

⁵OMB Capital Programming Guide, paragraph II.10, page 51

⁶ O 413.3B, Appendix B13e

⁷ O 413.3B, Appendix B9

- “It is incumbent upon the agency IPT to clearly define the performance requirements and estimated costs for major acquisitions before RFPs are issued.”⁸
- “The IPT must also develop sound cost estimates.”⁹
- “The IPT must ensure that the proposals and in-house estimates clearly recognize the amount and impact of risk on cost, schedule and technical effort.”¹⁰

Thus, the IPT is responsible for identifying the functional and operational requirements for a project, alternative approaches, level of resources required, and the optimal path forward.

The IPT also has a responsibility to assure that the technology is ready to support the project. DOE O 413.3B states: “For Major System Projects where new critical technologies are being deployed, the IPT shall complete a [Technical Readiness Assessment] TRA and Technology Maturation Plan, as appropriate. These assessments are also encouraged for lower cost projects where new technologies may exist.”¹¹

2.4.6 Managing Interfaces

The Order assigns the IPT the responsibility to “ensure project interfaces are identified, defined, and managed to completion.”¹² DOE G 413.3-1, *Managing Design and Construction Using Systems Engineering*, provides detailed information relating to this responsibility.

2.4.7 Overseeing Project Performance

DOE O 413.3B requires the IPT to oversee project performance by participating and performing a variety of reviews, specifically:¹³

- “Perform periodic reviews and assessments of project performance and status against established performance parameters, baselines, milestones, and deliverables.
- Plan and participate in project reviews, audits, and appraisals as necessary.
- Participate, as required, in operational readiness reviews or readiness assessments.”

DOE senior leadership directed that “peer reviews be conducted at least once a year for large (i.e., Total Project Cost of \$100M or greater) or high visibility projects, and more frequently for more complex projects or those experiencing performance challenges.”¹⁴ DOE leadership went on to state that “project management professional development and departmental knowledge management is the ultimate result; enhancements to project execution performance over time is the by-product.” When the IPTs performance oversight responsibilities are viewed in total, it is clear that the IPT serves as a primary tool for tracking and controlling project progress, and that

⁸ OMB Capital Programming Guide, paragraph II.4, page 44

⁹ OMB Capital Programming Guide, paragraph I.2.1, page 9

¹⁰ OMB Capital Programming Guide, paragraph II, page 31

¹¹ O 413.3B, Appendix C18c4

¹² O 413.3B, Appendix B13c

¹³ O 413.3B, Appendix B13f

¹⁴ Poneman Memo, April 12, 2011

the members of the IPT should be skilled in recognizing the early warning signs of any emerging performance problems. Additional guidance into the project management skills expected within an IPT membership is addressed in Section 3 of this Guide.

2.4.8 Change Requests

DOE O 413.3B requires the IPT to review change requests, as appropriate, and support change control boards as requested.¹⁵ Proper Change Control procedure, as defined in the PEP and related project documentation should guide the IPT. The IPT should prepare an analysis of the estimated changes in cost, schedule, and performance goals if the existing goals will not be achieved and determine the reasons for cost, schedule or performance deviations and evaluate whether the corrective actions are likely to be effective. The IPT should prepare an analysis of the estimated changes in cost, schedule, and performance deviations that exceed the existing goals (i.e. faster, less expensive or greater scope) although more to assess proper project delivery than assess needed corrective actions.

2.4.9 Project Deliverables

DOE O 413.3B also assigns the IPT responsibility for reviewing, and in some instances, recommending approval (or disapproval) of key project deliverables.¹⁶

“The IPT must:

- Review all CD packages and recommend approval/disapproval.
- Review and comment on project deliverables (e.g., drawings, specifications, procurement, and construction packages).
- Support preparation, review, and approval of project completion and closeout documentation.”

It is important to appreciate the effort required to prepare for and perform these actions and not underestimate the time and personnel needed to perform each review. One way to minimize the effort required is to adequately prepare for the review. For some situations, this goes well beyond planning for the review proper. It involves steps that will help ensure that the items being reviewed have met the specifications and prerequisites before they are delivered.

One approach is for the IPT to utilize a “rolling wave” concept where, for example, in a design review, prior to proceeding with a design, the IPT should ensure that:

- All system and component level functional and operating requirements have been identified, checked and approved;
- Full design criteria for the structures, systems, and components (including all applicable codes and standards) have similarly been identified, checked and approved; and

¹⁵ O 413.3B, Appendix B13

¹⁶ O 413.3B, Appendix B13

- Criteria for the deliverables have been developed and agreed to by the IPT.

Another approach is to involve more of the contractor in the design/design review process, in addition to the role of the IPT members. The IPT should ensure the proper activities are controlled through procedures and verify performance through the contractor assurance system but the staffing supplement offered by the contractor may prove beneficial.

However, IPT members should neither be permitted to formally review their own work nor review the work of others in their own functional organization. Also, the CO is expected to remain vigilant to enforce performance terms of the contract, especially so if more of the contractor staffing are involved.

2.5 Important Processes

The IPT is involved in a number of important processes, as discussed below:

2.5.1 Contractor Oversight

It is an essential part of the responsibility of DOE staff to exercise oversight of the contractor regardless of what type of contract is in place on a project. While the degree of oversight can vary from project to project, experience has shown that contractor oversight by an IPT is critical.

Members of an IPT should also participate in periodic, in-depth design reviews of their project and conduct appropriate follow-up on findings to ensure the recommendations have been properly acted upon by the contractor for the project.

2.5.2 Innovation

New ideas, processes, tools, techniques, methods, and relationships can all help an IPT reduce project costs, eliminate waste, shorten cycle time, and improve performance. Teams can either work harder or work smarter. Innovation, like everything that is new, brings some uncertainty that inherently carries risk with it. The focus here is on the ability of an IPT to be innovative in creating new and more effective ways of managing a project. Innovation means the creation of new ideas and the transformation of those ideas into useful applications. Both are needed to get results. Both are difficult and each assumes its own process for success.

The FPD and senior DOE management have significant influence on the development and effectiveness of innovation within an IPT. The IPT has a tendency to follow its leaders approach to risk taking. If the FPD supports new ideas and is willing to take prudent risks, so will the IPT. Senior management can also encourage innovation. By follow-up actions such as accepting reasonable mistakes and not rejecting new ideas, they demonstrate the acceptability and importance of IPTs investigating, evaluating and proposing creative solutions to problems. Consistency of senior management support helps give IPTs the confidence and incentive for taking risks through innovation.

2.5.3 Subject Matter Experts

An IPT should have an effective and timely means to access an appropriate level of SME support to evaluate or assist with the development, validation, and implementation of the technology selected for their project, including resolution of technical issues. An SME can provide a different perspective on the problem and potential solutions that may not be obvious to the main IPT members, resulting in improved decision making and improved project performance.

An SME may also be used to supplement the workforce of an IPT when special expertise or more depth in the skill base is needed. On an annual basis, the FPD, or in conjunction with appropriate IPT involvement, should develop SME support plans for the coming year based on identified needs and anticipated problems that need to be addressed early. This plan would identify the particular SME, their expected work, the anticipated timeframe for their work and an estimate for that work. The plan could also include the method (contract, task or other mechanism) that will be used to acquire the SME services. The needs could then be rolled up and included in the project annual budget.

2.6 Tailoring

The IPT is often formed in support of an FPD on smaller projects (e.g. less than \$20 million) or for a General Plant Project (GPP) where the benefits and value of IPT support outweigh factors of scalability and reduction in scope. Although this Guide is driven by the thresholds found in DOE O 413.3B and as such focused on capital asset projects above \$20 million (and generally above \$50 million in Total Project Cost) a case can be made for looking at areas in this Guide for “tailoring” to accommodate the smaller or GPP project work. Appendix A in this Guide makes reference to DOE G 413.3-15, Guide for PEP for additional supporting details for tailoring overall.

Appendix C of the DOE O 413.3B clearly states that it is the FPD who identifies those areas that would be appropriate for tailoring to the specific requirements of a project. Of most importance is that any effort for tailoring of a capital asset project that falls under the requirements of the Order remain in full compliance. Further, tailoring an IPT approach for smaller work alone is not to be construed as reason to absolve an FPD and their IPT from complying with the Order. That is why this section is focused on those projects desirous of an IPT yet falling ‘outside’ of DOE O413.3B applicability; e.g. those projects that are not capital asset projects considered in the Order, such as small projects under a \$20M total project cost (TPC) and GPP projects.

Further, the Order goes on to reinforce that tailoring is different for nuclear projects where a more ‘graded’ approach is prescribed (see 10 CFR Part 830, Nuclear Safety Management for further details). Appendix F in this Guide provides additional supporting references for this graded approach on nuclear projects, especially for the 3000 series of DOE Technical standards and DOE Technical Standard 1189. Additionally, DOE Guide 413.3-2, *Quality Assurance Guide for Project Management*, contains guidance on a graded approach.

Rather than develop a tailored approach for each and every component of value from an IPT, this Guide wishes to point out those areas in forming and operating an IPT that the FPD may wish to

modify or tailor to accommodate the project size and scope, while providing value to the overall project performance. Such areas to take into consideration would include:

- The FPD should identify as early into the project planning process as possible and tailor this Guide to suit the complexity, cost, safety, security, schedule and risk of the smaller project.
- Consider modification to normal roles and responsibilities given for acquisition authority, contractual administration, team member size and composition (generally less than 6 in total) and phasing of the critical decision process, as followed.
- Of particular note will be IPT member composition and count. Many projects (small and/or GPP) are executed by a site maintenance & operations (M&O) contractor versus a contractor under direct contract to DOE. Therefore, consideration should be given to compose the IPT with a representative selection of M&O personnel who may be more suited to the schedule and scoping complexities found in small projects than a traditional Fed-only IPT.
- Of critical importance to a ‘tailored’ IPT formed to support a small and/or GPP project is to adhere as much as possible to the Best Practices found in this Guide, Appendix E. Appendix E is meant to support many criteria that apply to IPTs regardless of size or complexity and scope of a project.

3.0 FORMING AN IPT

3.1 Timing

DOE O 413.3B requires the FPD to be appointed and the IPT to be established and chartered all prior to CD-1.¹⁷ This timing underscores the importance of the IPT as an essential element in DOE's acquisition process and an available tool for the FPD. The initial drafts of several key project documents are developed leading up to CD-1, and it is highly desirable for the FPD and IPT to play key roles in preparing these documents, which include the Acquisition Strategy, PEP, Charter, and Risk Management Plan (RMP). The IPT can even be formed shortly after CD-0 if needed (see section 2.4.2) however, early appointment of the FPD to drive formulation of the IPT will contribute to a more focused responsibility, producing a sense of ownership regarding the technology selected, and introducing a greater level of rigor in areas such as risk assessment and needed technology development.

The OMB CPG also endorses the establishment of the IPT at the initiation of major acquisitions and indicates that the IPT should define the performance requirements to be achieved and the Work Breakdown Structure (WBS) during the earliest stage of the planning phase.

¹⁷ O 413.3B, Appendix A Table 2-1

3.2 Initial Management Plan

To facilitate early operation of an IPT, an Initial Management Plan (IMP) should be developed to guide its formation. This document will be a precursor to the IPT Charter and will define an early plan of action for the IPT, including key objectives, responsibilities, milestones, expected IPT activities, personnel needs, and deliverables.

More of an outline than a composed document like the IPT Charter, the IMP will be useful to forming and organizing the IPT prior to preparation and approval of a formal IPT Charter and should include milestones that provide a detailed early understanding of key IPT activities, target dates, and deliverables. It is a preliminary management tool that feeds the Charter and clearly and graphically communicates critical IPT objectives and the processes that will be used to achieve them. Together, preparing a plan of action, chartering an IPT, and then providing training to the participants provide a solid foundation on which an IPT is successfully launched by the FPD.

3.3 Selecting Members

Securing the appropriate membership for an IPT is critical to its ultimate success, and the FPD typically plays a key role in this process. Members of an IPT should be selected based on their ability to:

- Take ownership of the IPT's charter, goals, and objectives,
- Work effectively with the project contractor,
- Effectively support project cost, performance, schedule, and quality objectives,
- Identify and meet project commitments, and
- Maintain effective communication with their respective functional managers.

Certain members of the IPT should be encouraged to remain with the project FPD and CO from the formation of the IPT through CD-4 regardless of any current activity or need. Otherwise, regular members of the IPT should be dedicated to the project and accountable to the FPD for the duration of their assignment to the IPT. Where services of IPT members are not needed on a full-time basis, support to the IPT should still take priority over non project related duties. This is necessary to maintain the continuity for good management and IPT accountability.

3.3.1 Member Qualifications

It is important to ensure that IPT members have the education, experience, and training necessary to meet specific project demands and demonstrate "competence commensurate with responsibility." Useful project-specific knowledge that qualified IPT members should possess includes:

- Projects mission and how the mission relates to the overall program,
- Applicable DOE project management directives,

- Other directives that could impact the project,
- Technical capabilities, risks, and maturity of the technology (or technologies) being implemented on their project, and
- Sufficient technical experience to ensure the quality of the engineering design being developed, as well as its implementation.

Both federal and contractor IPT members should possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities yet populate the IPT with the needed diversity of backgrounds and skill sets to ensure the successful execution of the IPT Charter and support to the FPD. The specific experience, knowledge, skills, and abilities that both DOE and contractor members should have are broader than typically realized. For example, the following DOE 450-series directives on Integrated Safety Management are good resources for understanding certain additional qualifications concepts:

- DOE P 450.4, *Integrated Safety Management Policy*, dated 4-25-11.
- DOE O 450.2, *Integrated Safety Management*, dated 4-25-11.
- DOE G 450.4-1C, *Integrated Safety Management System Guide useful for implementing (DOE P 450.4A, and DOE O 450. 2)*; dated 9-29-11.

Any highly specialized expertise needed is often best provided to the IPT by matrix-support personnel or SMEs. All new IPT members should receive orientation and training on how to function effectively in an IPT (see Section 3.4.3 of this Guide).

3.3.2 Member Count

Sufficient qualified staff (DOE, support contractors and project contractors) should be available to accomplish all of the expected, and many of the desired, tasks expected of the IPT. It is unlikely that enough qualified federal employees will be available to fill all federal project staff positions, which is the basic source of IPT members. The FPD should still have a plan to obtain support contractor personnel to fill positions for which federal personnel are not available. To assist this determination of the needed membership count, regardless of source, FPDs should consider using the staffing algorithm developed by DOE and defined in DOE G 413.3-19. Use of the personnel matrix established in DOE Guide G413.3-19 *Staffing Guide for Project Management* defines ten broad categories. They are:

- Acquisition and Contract Management
- Project Planning, Control and Management
- Science, Engineering and Design Support
- Construction Oversight and Management
- Environment, Safety and Health
- Quality Assurance
- Finance and Administration
- Safeguards and Security
- Startup/Commissioning/Operations Oversight

- Public Affairs and Stakeholder Relations

DOE G 413.3-19 discusses appropriate project staffing and provides needed details for use of the algorithm which does produce a more quantitative recommendation for an appropriate IPT size. However, it does not specifically address the detailed staffing mix of an IPT. Because of the importance of knowing and having the correct IPT staffing levels with correct skill sets, the FPD is encouraged to perform detailed project and phase-specific staffing requirement calculations whenever possible.

3.3.3 Staffing Mix

The OMB CPG recommends that an IPT include:¹⁸

- “A qualified Program Manager and CO;
- Personnel with relevant expertise in architecture, budget, capital planning, contract oversight, cost estimating, financial controls, earned-value management, project management, procurement, risk management, sustainability, scheduling, security, technology, information resources, and value management; and
- Personnel who will use the project after it is completed.”

The types of expertise that should be considered within DOE for IPT membership on complex or nuclear projects goes well beyond the OMB CPG recommendations and should include:

- Design disciplines (civil, structural, electrical, instrumentation, etc.)
- Safety, accident, or risk analysts
- Process and equipment research and development specialist
- Process chemistry
- Industrial safety
- Fire protection
- Emergency preparedness
- Environmental protection and waste management
- Quality assurance
- Human factors
- Interfacing system representatives
- Seismic/geotechnical

Other functional disciplines that may need to be included are:

- Safeguards and security (see also Appendix F)
- High performance sustainable building experience
- Configuration management
- Classification authority (see also Appendix F)

¹⁸ OMB Capital Programming Guide, paragraph I.2.1, page 9

- Human resources
- Document control
- Legal
- Communications
- Permitting
- Transportation safety
- Emergency protection
- Startup testing
- System design descriptions
- Conduct of operations
- Maintenance
- Operational readiness
- Equipment lay-up
- Commissioning
- Counterintelligence and intelligence (see also Appendix F)

Functional disciplines represented on the IPT should be determined based on project requirements. (see Appendix F: Additional Considerations For Nuclear Projects)

Consideration should also be given to including a peer representative of another project at the same site or from the relevant DOE program or prime contractor organization as a member of the IPT. The purpose of the peer representative would be to provide additional ideas from other projects or programs that are relevant but not normally available or in the area of easy utilization for a project.

3.4 Organizing the IPT

3.4.1 Organization

The need to integrate many different functional disciplines, organizations, and stakeholder views and knowledge creates a significant organizational problem for the IPT. Having more people on the IPT means a broader and deeper pool of knowledge, but it also means more opinions to reconcile, increased time spent distributing information, and an increased likelihood that not all of the members will be heard. While taking into account stakeholder views is important to all DOE projects, these views are typically expressed through the Site Office rather than directly to the IPT, and they are conveyed to the IPT from that source. An IPT normally ranges from 6 to 10 total participants and becomes ineffective, even on Major Systems Projects (TPC greater than \$750M) if it is made up of more than 25 members. This problem can be eased slightly by finding members with multi-discipline functional knowledge and skills. However, this does not provide a complete solution.

3.4.2 Variables

The membership size and mix of an IPT are dependent on many variables, such as:

- Size, cost, and complexity,
- Number of organizations involved and their geographical separation,
- Presence or absence of a management and operating contractor,
- Number of organizational approvals needed,
- Degree of organizational independence,
- Type of the contractual relationships between organizations,
- Whether the different organizations and functional disciplines share a similar objective,
- Level of technical challenge,
- Uniqueness of the design and construction,
- FPD range and depth of knowledge,
- FPD level of the authority,
- Political and market conditions,
- Existence of a systems engineering office and/or a lead systems integrator,
- Budgetary and schedule constraints,
- Stakeholder involvement,
- Number and variety of operations performed in the facility,
- Types and quantities of material processed in the facility,
- Security classification,
- Whether the project is a “green field” undertaking or a modification,
- Phase of development,
- Degree of consensus on methodology and what is an acceptable end product,
- Awareness and commitment of organization top management, and
- Risk to the public, workers and the environment.

A greater number of functional disciplines will be needed on large or technically challenging projects, as compared with smaller, less technically challenging projects. Larger projects almost always involve more customers/users and more subcontractors and vendors that should be represented on the IPT.

Nuclear projects with accompanying security concerns presume more IPT members with higher skill and knowledge levels than would be needed for conventional projects. Additionally, security concerns may require the classification knowledge of Derivative Classifiers. (see also Appendix F).

3.4.3 Orientation and Training

IPT members need to understand and fulfill their individual roles and responsibilities as suggested in DOE O 413.3B and supporting Guides mentioned in this Order. Providing some orientation and training of new IPT members contributes significantly to the IPT success. While some participants may have extensive experience with IPTs, others may be participating on an

IPT for the first time. Training that focuses on the principles and recommendations reflected in this Guide establishes a common understanding of how an IPT should function, how the members should behave, and what operating mechanisms are likely to be most successful. IPT orientation and training should be conducted for all IPT members (DOE and contractor) and should cover such areas as:

- Roles, responsibilities, and operating procedures of an effective IPT,
- Organizing and operating an effective IPT, and
- Evolving and improving the performance of an effective IPT.

The process of forming an IPT, including the importance of orientation and training, is also covered in Section 2.2 of this Guide. The importance of having an effective, functioning IPT is stated in DOE O 413.3B as follows: “Three objectives regarding roles and responsibilities that are necessary to achieve defined project objectives, as well as the objectives of this Order, are:

- Strengthening line management accountability for successful project management results;
- Clearly defining the roles, responsibilities, authority, and accountability of the federal Project Management Team relative to the contractor Project Management Team; and
- Developing effective IPTs to assist the FPD in planning, programming, budgeting, and successfully acquiring capital assets.”¹⁹

3.4.4 Evolution over the CD phases of a Project

The membership of an IPT should not be viewed as something static but rather as something that should change as a project evolves. The FPD should be prepared to alter the composition of an IPT whenever the needs of the project change, in order to maintain alignment between the capabilities and experience of the IPT members and what is needed for the project.

In addition, the IPT Charter should be updated and reissued at each CD phase of the project, or more frequently if otherwise indicated. During each revision, the FPD should identify the specific challenges and issues the IPT should focus on during the upcoming phase. This will provide valuable insight into the types of IPT members that will be needed for the upcoming phase. The FPD should then re-structure the IPT accordingly.

As an example, the FPD should anticipate future staffing needs. Bringing in some of these skill sets early, such as construction oversight personnel, may prove beneficial to improving the constructability of the design. Similarly, operations oversight personnel may prove helpful to improving the operability aspects of the design as well. Conversely, holding over select IPT personnel once their phase is completed may also prove helpful such as design oversight personnel for quickly and correctly resolving field change-order issues during the construction phase.

¹⁹ DOE O 413.3B Appendix B

3.4.5 Contractor Participation

Industry Best Practices suggest an IPT should consist of a cross-project integrated membership (i.e., including DOE and the project contractor). Yet this integration should still allow the conduct of proprietary business by each organization without the other. As such, a significant amount of open communication and trust is needed for an IPT to work successfully at the project level. Every member of the IPT needs to work from the same set of information and toward the same overall project goals.

Involvement of the contractor in an IPT who is also executing the project can range from providing requested advice to the IPT to active membership and participation in helping to generate potential solutions. The appropriate role of any contractor participants needs to be established at project initiation and include definition for each stage of the project. At the very least, the IPT should include the contractors' project manager and a senior member of the design team. While they should be excluded from some duties that can only be performed by the federal members, direct federal and contractor collaboration is desirable on the bulk of the IPTs roles and responsibilities.

A trend in both the private sector as well as DOD is beginning to make its way into project IPTs at other Federal agencies. IPTs are also including from the project key subcontractors and suppliers that are under contract to the prime contractor to the agency. Although not common yet on DOE project IPTs, it does represent an additional advantage to a projects execution, especially if targeted participants can be engaged early in the design process. A caveat is that this expanded approach to subcontractor participation is generally only appropriate in select cases and therefore needs to be kept in reasonable balance. Above all is the expectation that any subcontractor or supplier involvement be in an advisory manner only to 'their' prime; so as to maintain a proper contractual chain-of-command and direction by the FPD and the CO. It should also be done within the bounds of the procurement regulations and with full knowledge and support of the CO. This would support representatives avoiding any unfair competitive advantage on other acquisition plans.

3.4.6 IPT Co-Location

Co-location involves physically locating key members of the contractors Project Team in office space in close proximity to the FPD and other DOE IPT members. To the extent practical, members should be co-located (or near-located) to facilitate effective communications within the IPT. While co-location (or near-location) is considered a Best Practice, it is recognized there may be practical limits to co-location, such as available space, communication tools, and breadth of IPT membership, task duration, security needs, and facility access.

Further, current DOE practice is to promote a 'green' space utilization policy depicting square footage, technology and power usages. As relevant to the project site, this 'green factor' needs to be accommodated as well and should be included in the initial planning for establishment of the IPT. When co-location is not possible, extra effort is expected to maintain good communications between the members.

3.5 Essential Documentation

DOE O 413.3B defines the essential documents that are expected to be prepared by an IPT prior to CD-1.²⁰ At a minimum, this includes an IPT Charter (which may be included in the PEP). Additionally, the extent of the IPTs roles and responsibilities for environmental, health, and safety depends upon the overall safety risks. The IPT should identify, define, and manage environmental, safety, health, security, and QA on all projects. While these roles extend over the length of a project, the identification and definition of requirements should include IPT involvement in the period prior to CD-1. Failure to define requirements at this point in a project can result in costly downstream rework and schedule delays.

3.5.1 Charter

The Charter defines the level of decision-making authority to be delegated to the IPT, which will depend on both the Projects phase and IPT performance factors. Therefore, it is a Best Practice to update and reissue the Charter at each CD point. This allows the Charter to identify both the specific challenges and issues that the IPT will focus on during the upcoming phase and the level of decisional authority they will have. The FPD will need input from the core IPT members to accurately identify the challenges and issues and any accompanying requirements for new staff.

DOE O 413.3B states that the FPD is responsible for preparing and maintaining the IPT Charter and operating guidance with IPT support.²¹ The FPD approves the IPT Charter for non-Major System Projects. The Program Secretarial Officer or Deputy Administrator/Associate Administrators (NNSA) approves the IPT Charter for Major System Projects.²² The IPT Charter documents the mission and work product of the IPT and establishes the timeframe over which the effort is to be completed. The Charter should be drafted by the FPD, ratified by the membership at the outset of the IPT, and approved by the responsible executive leader.

Appendix C of this Guide provides a general outline and checklist for the contents of an IPT Charter. To ensure its quality and usefulness, an IPT Charter should:

- Incorporate the role, responsibilities, authorities, and accountabilities of each IPT member,
- Be kept up-to-date, including Federal and contractor membership changes,
- Be reviewed and revised as necessary, including identifying members needed for each major phase of the project,
- Define or reference (to the PEP, for example) any needed IPT operating procedures, and
- Be fully communicated to all IPT members.

3.5.2 Other Documentation

Because of the importance of the PEP to executing, monitoring, and controlling a project, DOE

²⁰ O 413.3B, Appendix A, Table 2-1

²¹ O 413.3B, Appendix B7

²² O 413.3B, Appendix B3i and B7f

G 413.3-15 has been developed to assist in preparing the PEP. Similarly, because of the need for effective risk management processes on a project, DOE G 413.3-7A has been developed to assist in the preparation of a RMP.

A highly integrated IPT effort should be employed to execute environmental, safety, and health responsibilities. Many of these matters should be addressed simultaneously to avoid having a solution in one area conflicting with another. Thus, the IPT should also be involved in the development of other project documents, including the Integrated Safety Management Plan, Safeguards and Security Plan, and QA Plan.

Technology Readiness Assessments (TRA) and Technology Maturation Plans (TMP) are also important project documents requiring IPT participation on some projects. IPT members should have confidence that the technology selected for their project can perform as needed based on previous development and testing, or that a development program exists (including alternative technologies) that will yield a suitable technology supporting the project's cost, schedule and performance objectives.

4.0 OPERATING AN IPT

4.1 Operating Principles

DOE O 413.3B requires the FPD to lead the IPT, provide broad project guidance, and prepare IPT operating guidance.²³ The operating principles adopted by an IPT can have a significant impact on the IPT's value to a project. These principles should reflect the following characteristics:

- Effective leadership and decision-making,
- Open communications,
- Committed, qualified members empowered to act in the name of the project,
- Effective and timely resolution of project issues, and
- Continuous improvement.

An effective, integrated IPT creates a “win-win” situation for both the contractor and DOE. IPT members need to understand what a win-win situation is for each party. If an IPT does not possess the characteristics mentioned above, its value to the project will likely be greatly diminished. Elaboration on key operating principles is presented in Appendix E and below.

4.1.1 Commitment

The commitment of IPT members is one of the keys to project success. Ideally, IPT members should view the IPT as one of their primary duties. However, within the DOE environment, an

²³ O 413.3B, Appendix B7e

IPT is a matrix organization, and members have other responsibilities or may serve on multiple IPTs. In such cases, it is not realistic for members to view their service on a particular IPT as their primary function. As an example, contractors are motivated by profit and by the desire to do a good job, since their ability to get future contracts with DOE depends on how well they perform on current contracts. It is, nevertheless, important for these members to devote the time needed to each IPT, and if they are overcommitted, to inform the FPD.

4.1.2 Communications

Open communications among IPT members is extremely important. The IPT should operate in a clear and open atmosphere directed by the FPD. The FPD should not dominate the IPTs but leverage its support for project management's activities. The FPD should appreciate that some IPT members have more forceful personalities than others yet ensure that the more forceful members do not dominate the dialogue.

4.1.3 Empowerment

DOE O 413.3B requires the FPD to delegate appropriate decision-making authority to the IPT members.²⁴ IPT members are the FPDs principal assets for managing and executing a project. They often interact with other IPT members, with other members of the federal project staff, as well as with the contractor. To be effective, the IPT member should be credible and empowered, including having credibility with the FPD, other members of the IPT, members of the project staff, and the contractor. An empowered IPT member typically feels a greater sense of commitment to the project than one who has no authority, and also is more readily accepted by their peers and the contractor. Empowerment does not mean that the FPD has 'given away the store.' Empowerment also does not mean the IPT supersedes the authority of the FPD, nor the CO on contractual matters. Empowerment relates more to a feeling of ownership and accountability for work efforts and execution of roles and responsibilities. As clearly defined in DOE O 413.3B, the FPD retains final authority.

4.1.4 Meetings

IPT meetings should be somewhat formal and not *ad-hoc*. To meet this goal, meetings should be held on a regular schedule, at an interval appropriate to the phase of the Project. Special meetings can be called, but these should be the exception rather than the rule. Agendas should be developed early enough so that the IPT members can be prepared for the topics to be discussed. Attendance is not voluntary; the FPD should expect attendance by all IPT members. Minutes should be taken, edited, and distributed to all IPT members and others as appropriate. Finally, action items should be developed, and placed on a Corrective Action List. This list should be reviewed frequently, and due dates met.

4.2 Project Workload

The FPD, supported by their IPT, together have major responsibility for contributing to the

²⁴ O 413.3B, Appendix B7e

success of a project. The way the assigned workload of the IPT is managed is a key factor in achieving this success. The IPT manages cost, schedule, and technical performance for assigned work areas. In so doing, it strives for what is best for the project in total as opposed to what may be best for individual functional areas. A successful IPT forges strong internal partnerships, based on trust, and develops the competencies to make this work. In planning and managing schedules, an IPT needs to maintain the proper balance between optimism and achievability. The importance of monitoring and maintaining schedules is stressed.

Teamwork and focus toward a common goal that results in a win-win situation for DOE and the project is imperative. It is important, however, to maintain the distinction between IPT tasks and responsibilities and those of non IPT project members and the execution contractor. Points to be considered are:

- Federal IPT members should strike a balance between managing the IPT workload and the contractors' execution of project activities. The contractor is paid to accomplish a task, and DOE should monitor cost and schedule progress, as well as adherence to technical requirements. However, many DOE projects are complex and first-of-a-kind, and they need more oversight than a simple, straightforward project. In those cases, the IPT and other project staff have to routinely interact with the contractor as the technology and design evolve.
- Contractors who are having difficulty performing need more Fed oversight than those who are meeting the cost, schedule, and technical requirements.
- IPT members are not expected to direct the contractor. That is the role of the CO.
- The IPT should ensure that the operational systems of the government and contractor are compatible. This is particularly true when multiple contractors are involved.
- The IPT should function as a resource for the contractor as well as serving the oversight role. Prompt attention to appropriate questions and information requests is mandatory.
- The IPT should promptly address design and contract changes proposed by a contractor.
- The federal IPT should ensure that contract changes are adjudicated expeditiously. Not only is this fair to the contractor, but if the contract status does not match the current plan, it becomes impossible to accurately measure cost and schedule performance.

It is the responsibility of the FPD to establish the degree and type of oversight of the contractor that is appropriate for a given project. It is incumbent upon the IPT to recommend either increasing or reducing oversight as the project moves forward.

4.3 Project Reviews and Assessments

DOE O 413.3B requires a variety of project reviews.²⁵ Generally, the IPT is involved in planning, conducting, and/or monitoring those reviews. Specific references in the Order relative to IPTs regarding reviews are presented in Appendix D of this Guide.

²⁵ O 413.3B, Appendix B13g and Appendix C18

An IPT is involved with at least four types of project reviews:

- Routine, internally imposed reviews,
- Non-routine, internally imposed reviews,
- Reviews for upper DOE management, and
- Non-routine or externally imposed reviews.

Each type of project review presumes different involvement from the IPT.

4.3.1 Routine Internal Reviews

All projects have reporting systems that include financial and schedule data and other information as defined by the contract. In addition to these routine reports, most projects also have periodic formal reviews of the contractor that involve project status, trends, quality assurance, and design and construction progress. These reviews may be conducted monthly, quarterly, or less frequently.

4.3.2 Non-Routine Internal Reviews

These reviews include:

- Areas of special concern/risk-driven reviews
- Status reviews
- Design reviews
- Other technical reviews

4.3.3 Upper Management Reviews

DOE upper management expects projects to provide periodic status reviews. It is the responsibility of the IPT to prepare and present the review. Usually, the format and information requirements are dictated to the project. However, the IPT should also evaluate what the information needs of management are and should either suggest changes or additions to the format to meet their information needs.

4.3.4 Externally Imposed Reviews

Each project will be subject to a number of non-routine, externally imposed reviews, which can include:

- Event-driven reviews imposed by DOE management,
- Decision point reviews required by DOE O 413.3B, and
- Reviews by organizations outside DOE, such as the NRC, DNFSB, and GAO.

4.3.5 Technology Readiness Assessment and Technology Maturation Plan

As stated in the Order: “For Major System Projects where new critical technologies are being deployed, the IPT shall complete a TRA and TMP, as appropriate. These assessments are also encouraged for lower cost projects where new technologies may exist.”

4.3.6 Project Definition Rating Index

The project IPT will perform comprehensive front-end project planning to an appropriate level before establishing a Performance Baseline (PB) at CD-2. The PDRI model assists the IPT in identifying key engineering and design elements critical to project scope definition.

4.4 Deliverables

Over the course of the project, the IPT is responsible for producing a number of deliverables for use by the FPD and others. A partial list of these deliverables includes:

- IPT meeting minutes and action tracking lists
- Reports of performance reviews and audits of the project and its elements
- Presentation materials and reports for periodic and ad-hoc project reviews
- Approved or disapproved change requests
- PARS II inputs
- Acquisition Strategy
- Project operating procedures
- Approval of scope/schedule/cost parameters
- Lessons learned
- Critical Decision packages
- Review comments on contract deliverables

5.0 MEASURING PERFORMANCE

Previous Sections have described the formation and operation of an effective IPT. This Section discusses how to measure an IPT's performance and achieve continuous improvement.

5.1 Performance Factors

5.1.1 Staffing

GAO and internal DOE reviews of IPTs consistently reveal a shortage of vital federal members

with appropriate skill levels. It is important that federal IPT staffs be augmented with contractor support, where appropriate, and the project budget should provide for this versus staying with a DOE fed-only mentality.

5.1.2 Personnel Utilization

Projects often find that some matrixed members are “phantoms” who may attend a few meetings and then drift away because of time issues, competing work demands, unclear work assignments, lack of authority or lack of support from the FPD. It is the FPDs responsibility, with support from the program organization, to ensure these situations do not occur.

An IPT is successful only when members are given clear roles to perform and authority commensurate with these roles. The FPD should develop a set of requirements for each IPT member, to include duties, expectations, authority, and an estimate of the amount of time the member is expected to spend on the project. The FPD should obtain formal concurrence from the IPT members’ functional manager, and should provide a copy to the member with feedback to the functional manager regarding performance.

5.1.3 FPD Leadership

DOE O 413.3B tasks the FPD to lead the IPT.²⁶ However, assigning people to a cross-functional /cross-organizational group does not automatically create a well-functioning IPT. Each IPT member comes with their own values, biases, and priorities. The FPD should not wait passively for collaboration to occur but actively ensure members are aware of their inter-dependencies and collective interests; how each member contributes to the projects mission; the importance of that mission; and the strengths of each member.

5.2 Performance Measurement

Ultimately, there is only one measure of success for an IPT: Has the mission need been met by the project as a result of delivering a product that meets the specifications (which, in turn, were correct to meet the mission need) on time and within the approved budget? It is not sufficient, however, to wait until the end of the project to assess the performance of an IPT. Its performance should be measured periodically using outside reviews and self-assessment. When measuring performance, answering the following will reveal helpful insight:

- Is there a sense of urgency among the IPT members?
- Are the roles, responsibilities, accountabilities, and authorities of the FPD clearly stated, and does the FPD have cross-functional DOE leadership commitment and support?
- Is the IPT working as a team with proper direction and cohesion? Has the IPT been trained? Is it involved in project planning?
- Are the IPT members committed, qualified, and empowered?

²⁶ O 413.3B, Appendix B7e

5.3 Internal Assessment

An IPT should periodically assess and act on its own operation and effectiveness as it strives for continuous improvement. Differing levels of internal assessment can be defined for an IPT based upon size of the IPT, expectations of the Charter and complexity of its project. For an internal assessment at a basic level, members support a common vision or goal; their efforts are aligned so no one is working at cross purposes; and the IPT can draw upon the unique perspective of each member or organization involved. For an internal assessment at the highest level, some indicators of operational effectiveness are:

- Members attend meetings regularly, participate, and display positive energy on their role,
- Members like what they are doing and like other members of the IPT,
- There is an absence of personality conflicts and open communication between members,
- Communication is directed toward creating a common understanding, not advocating a particular members personal views and priorities,
- There is alignment relating to project requirements, priorities, strategies, etc.
- Members display ownership of assigned and unassigned tasks, and
- The IPT has identified barriers to success and focused their efforts on eliminating them.

While there are relatively few ways to foresee an IPTs potential to reach the highest level of operational effectiveness early in the project lifecycle, there is a highly reliable indicator that can be utilized. That indicator is the individual IPT members' willingness to seek out and utilize lessons learned from other projects. Members unwilling to learn from similar projects are unlikely to listen to, and learn from, their fellow IPT members and probably not contribute to the maximum effectiveness of supporting the projects needs.

The self-assessment is best conducted during an IPT meeting, with all members participating and prepared for the session. After the self-assessment, a corrective action or continuous improvement plan should be developed and pursued. Additional guidance on IPTs approaching Management or Independent Assessments can be found within DOE O 414.1D, Quality Assurance.

5.4 Lessons Learned

DOE O 413.3B requires that projects develop and submit Lessons Learned.²⁷ The IPT should manage the Lessons Learned effort for the project, while the local DOE Field Office may manage the Lessons Learned program for the site. Lessons Learned and Best Practices should be captured throughout the continuum of a project. As directed in the Order: "Within 90 days of CD-3 approval, up-front project planning and design Lessons Learned shall be submitted to the OECM. Likewise, project execution and facility start-up Lessons Learned shall be submitted within 90 days of CD-4 approval."

²⁷ O 413.3B, Appendix C 10

Lessons Learned should include both what went wrong and what went well. An effective Lessons Learned program will help improve project performance, both for the specific project as well as for other DOE projects. Lessons Learned reporting allows the exchange of information among DOE users in the context of project management.

APPENDIX A

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APPENDIX B

GLOSSARY OF TERMS

AP	Acquisition Plan
AS	Acquisition Strategy
CCB	Change Control Board
CPG	OMB A-11, Part 7, supplement: Capital Planning Guide
CD	Critical Decision
CO	Contracting Officer
DNFSB	Defense Nuclear Facilities Safety Board
DOD	Department of Defense
DOE	Department of Energy
EIR	External Independent Review
ES&H	Environmental, Safety and Health
FPD	Federal Project Director
GAO	Governmental Accountability Office
Guide	DOE Guide 413.3-18A (this Guide)
GPP	General Plant Project
IPR	Independent Project Review
IPT	Integrated Project Team
ISMS	Integrated Safety Management System
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
NRC	National Research Council
OMB	Office of Management and Budget
Order	DOE Order 413.3B
ORR	Operational Readiness Review
QA	Quality Assurance
PB	Performance Baseline
PDRI	Project Definition Rating Index
PRD	Program Requirements Document
PSO	Program Secretarial Officer
PEP	Project Execution Plan
PMCDP	Project Management Career Development Program
RA	Readiness Assessment

RMP	Risk Management Plan
SME	Subject Matter Expert
TIPR	Technical Independent Project Review
TMP	Technology Maturation Plan
TPC	Total Project Cost
TRA	Technology Readiness Assessment
WBS	Work Breakdown Structure

APPENDIX C

SUGGESTED CONTENTS OF AN IPT CHARTER

DOE O 413.3B states that “The FPD and the IPT will prepare and maintain an IPT Charter that describes:

- Membership (include the Contracting Officer);
- Responsibilities and authority;
- Leads (as appropriate);
- Meetings;
- Reporting; and
- Operating guidance.”

The following is a general outline for an IPT Charter. Depending upon the size and complexity of the IPT, more sections may be added.

General Outline

1. Brief Description of Project
2. IPT Mission and Membership
3. Roles and Responsibilities
 - A. Federal Project Director (FPD)
 - B. IPT Members
 - C. EPC Contractor
 - D. M&O Contractor (if applicable)
 - E. Matrixed Disciplines
4. IPT Communication Procedures
5. Meetings and Meeting Procedures
6. Reporting Procedures

The following table provides a checklist for suggested topics to be included in an IPT Charter.

Checklist – Suggested Topics for an IPT Charter	
✓	State the mission, including the specific purpose and objectives of the IPT
✓	Describe the work products, processes, or services to be provided by the IPT
✓	Identify the customer or recipient of the IPTs work products, processes, or services
✓	Indicate the timeframe over which the work products are to be produced, the process completed, or the service provided
✓	Identify the membership of the IPT, including all cross-functional disciplines necessary to achieve the objectives of the IPT and produce the work products, complete the processes, or provide the services
✓	Identify any need for training of IPT members, particularly new ones, how it will be obtained
✓	Address membership performance objectives to be employed that characterize high-performance IPTs

✓	Indicate work product ownership and membership accountabilities and responsibilities
✓	Address the use of metrics as a means to create and maintain IPT focus
✓	Indicate how membership coordination and communication will be accomplished
✓	Recognize that IPT composition may change over time, while maintaining a necessary core composition
✓	Provide for performance feedback to cross-functional members' supervisors
✓	Provide for a member recognition program
✓	Provide for periodic review of the Charter for adequacy, currency, or rescission
✓	Provide for review and approval by the appropriate authority

APPENDIX D

LIST OF IPT REQUIREMENTS IN DOE O 413.3B

DOE O 413.3B requires the formation and use of an IPT for specified capital asset acquisition projects, and there are references to IPTs throughout the Order. This Appendix provides a compendium of these specific references to IPTs from the Order citing the Appendix, number, and letter locators found in the Order. (*Quotation marks excluded due to all references in this Appendix D being direct from DOE O 413.3B*).

Appendix A, Requirements

Table 2-1, CD-1 Requirements

Establish and charter an IPT to include a responsibility assignment matrix. The Charter may be included in the PEP. (Refer to DOE G 413.3-18[A].)	PSO \geq \$750M FPD $<$ \$750M
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Appendix B, Responsibilities

3. Program Secretarial Officers and Deputy Administrators/Associate Administrators for the NNSA.
 - i. Approve the IPT Charter for Major System Projects.
5. Program Managers and Heads of Field Organizations.
 - c. Establish the initial IPT in advance of the designation of a FPD.
7. Federal Project Director.
 - c. Prepare and maintain the IPT Charter and operating guidance with IPT support and ensure that the IPT is properly staffed. Define and oversee the roles and responsibilities of each IPT member.
 - e. Lead the IPT and provide broad project guidance. Delegate appropriate decision-making authority to the IPT members.
 - f. Approve the IPT Charter for non-Major System Projects.

10. Contracting Officer.

The Contracting Officer is the only member of the IPT delegated authority to enter into, administer, modify, change, and/or terminate contracts.

- c. Work with the IPT to develop solicitations and evaluate and award mission-oriented contracts.
- e. Work with the IPT to ensure alignment between the PEP and the Contract Management Plan.

13. Integrated Project Team.

- a. Support the FPD.
- b. Work with the Contracting Officer to develop a project AS and AP, as applicable.
- c. Ensure that project interfaces are identified, defined and managed to completion.
- d. Identify, define and manage to completion the project environmental, safety, health, security, risk and QA requirements.
- e. Identify and define appropriate and adequate project technical scope, schedule and cost parameters.
- f. Perform periodic reviews and assessments of project performance and status against established performance parameters, baselines, milestones and deliverables.
- g. Plan and participate in project review, audits, and appraisals, as necessary.
- h. Review all CD packages and recommend approval/disapproval.
- i. Review and comment on project deliverables (e.g., drawings, specifications, procurement, and construction packages).
- j. Review change requests, as appropriate, and support CCBs as requested.
- k. Participate, as required, in ORRs or RAs.
- l. Support preparation, review and approval of project completion and closeout documentation.
- m. Ensure safety is effectively integrated into design and construction as applicable to each team member's respective functional area for design and construction of Hazard Category 1, 2, and 3 nuclear facilities.

15. Chief of Defense Nuclear Safety and Chief of Nuclear Safety.

- c. Ensure that TIPRs and IPRs, as appropriate, evaluate: 1) the qualifications of IPT members having nuclear safety-related responsibilities...

Appendix C, Topical Areas

2. Acquisition Strategy.

An AS is a key activity formulated by the IPT leading up to CD-1. The AS is the FPDs overall plan for satisfying the mission need in the most effective, economical and timely manner. --- The early formulation of an IPT (including the assignment of a contracting officer), the balance in its composition, and continuity in the membership is critical to the integration and alignment of the AS and acquisition planning processes...

4. Design Maturity.

All aspects of a project should be carefully studied to employ an economic and functional design that is closely tailored to the requirements. Particular attention shall be directed to advancing design maturity to a sufficient level prior to establishing the project baseline. --- The determination of a design completion percentage for reporting purposes will be made by the Architect-Engineer as well as by subsystem designers contracted to do the work, and/or other IPT members...

7. Integrated Project Team.

The FPD shall organize and lead the IPT. The IPT is an essential element in DOE's acquisition process and is involved in all phases of a project. This team consists of professionals representing diverse disciplines with the specific knowledge, skills and abilities to support the FPD in successfully executing a project. The team size and membership may change as a project progresses from CD-0 to CD-4 to ensure that the necessary skills are always represented to meet project needs. Team membership may be full or part time, depending upon the scope and complexity of a project and the activities underway. However, the identified personnel must be available to dedicate an amount of time sufficient to contribute to the IPT's success. Refer to DOE G 413.3-18[A] for further clarification.

Qualified staff (including contractors) must be available in sufficient numbers to accomplish all contract and project management functions. Project staffing requirements should be based on a variety of factors, including project size and complexity, as well as the management experience and expertise of the project staff. Programs must use a methodology to determine the appropriate project team size and required skill sets. One such algorithm is detailed in DOE G 413.3-19. Regardless of the methodology used, once

the appropriate staff size has been determined, programs should plan and budget accordingly.

The FPD and the team will prepare and maintain an IPT Charter that describes:

- Membership (must include the Contracting Officer);
- Responsibilities and authority;
- Leads (as appropriate);
- Meetings;
- Reporting; and
- Operating guidance.

13. Project Definition Rating Index.

The project team will perform comprehensive front-end project planning to an appropriate level before establishing a PB at CD-2. The PDRI model assists the IPT in identifying key engineering and design elements critical to project scope definition...

16. Project Reporting, Assessments and Progress Reviews.

- b. Project performance assessments shall be determined through quantitative and qualitative methods. Elements to be reviewed include, but are not limited to EVMS data, contractor's monthly reports, acquisition management practices, risk management status, EIR/IPR/TIPR/Project Peer Reviews, site visits, staffing assessments, budget submittals, as well as discussions with the IPT members.

18. Reviews.

b. (2) Independent Project Review.

Prior to CD-1, for Hazard Category 1, 2, and 3, nuclear facilities, the PSO will conduct an Independent Project Review. The review must: ... 3) validate that the IPT charter has identified appropriate functions, roles and responsibilities for members needed to support nuclear safety, and that the IPT members supporting nuclear safety are appropriately qualified, and have the availability to meet their responsibilities...

c. (1) Technical Independent Project Review.

Prior to CD-2, for Hazard Category 1, 2, and 3 nuclear facilities, a TIPR will be performed to ensure that safety is effectively integrated into design and construction. The TIPR must: ... 2) evaluate the IPT to ensure that appropriate team member functions to support nuclear safety during final design have been established, and appropriately qualified team members have been selected and have needed availability to address nuclear safety-related matters during final

design.

c. (2) Performance Baseline Validation Review.

Prior to CD-2, a Performance Baseline Validation Review is required to provide reasonable assurance that the project can be successfully executed. --- Findings resulting from project reviews must be addressed by the IPT in their corrective action plan and expeditiously resolved...

c. (4) Technology Readiness Assessment.

Prior to CD-2, for Major System Projects where new critical technologies are being deployed, the IPT shall complete a TRA and Technology Maturation Plan, as appropriate. These assessments are also encouraged for lower cost projects where new technologies may exist.

19. Risk Management.

Risk Management is an essential element of every project and must be analytical, forward looking, structured and continuous. ...Risks and their associated confidence levels are dependent on multiple factors such as complexity, technology readiness and strength of the IPT...

22. Tailoring.

For design-build projects:

d. (2) Since the requirements are well-defined early in the process and much of the cost and schedule information and key design criteria are known, CD-1, CD-2 and/or even CD-3 may be accomplished simultaneously. Essentially, in requesting a simultaneous approval, CD-1/2, CD-1/2/3 or CD-2/3, the IPT is asserting that:

- There is no advantage to the Department of further evaluation of alternatives;
- The project functions and requirements are well known; and
- A cost and schedule baseline can be established.

APPENDIX E

BEST PRACTICES CHECKLISTS

E.1 IPT CHARTER AND INITIATION

DO	DON'T
<p>Charter:</p> <ul style="list-style-type: none">☑ Obtain Senior Management agreement on Charter objectives☑ Ensure that adequate resources are available (money, time, and people)☑ Ensure that Charter goals, objectives, and schedules are realistic <p>Initiation:</p> <ul style="list-style-type: none">☑ Organize the IPT as soon as possible following Charter sign-off☑ Ensure that IPT members understand and agree with the Charter☑ Ensure that IPT members are trained on IPT processes	<p>Charter:</p> <ul style="list-style-type: none">☐ Proceed without having a written Charter and resources established☐ Make the Charter too complicated <p>Initiation:</p> <ul style="list-style-type: none">☐ Allow the IPT process to become cumbersome and unfocused☐ Discourage IPT member participation

E.2 EMPOWERED, QUALIFIED IPT MEMBERS

DO	DON'T
<p>FPDs:</p> <ul style="list-style-type: none">☑ Ensure IPT members are well-versed in the mission and organization of the functional areas they represent☑ Provide guidance, direction, and extent of authority to the members☑ Provide professional education and training on a regular basis to ensure individuals are qualified members <p>IPT members:</p> <ul style="list-style-type: none">☑ Should be trained in the operation of effective IPTs☑ Should communicate on a regular basis with their principal☑ Should inform the IPT of any limitations on their authority (empowerment) or on their ability to support the IPTs effort	<p>All:</p> <ul style="list-style-type: none">☐ Conduct a briefing cycle separate from the overall IPT process☐ Overturn decisions made by empowered IPT members when those members acted within their delegated authority

E.3 DEDICATED/COMMITTED PROACTIVE PARTICIPATION BY IPT MEMBERS

DO	DON'T
<p>All:</p> <ul style="list-style-type: none"> ☑ Commit to the objectives of the IPT ☑ Represent your functional area without bias ☑ Actively seek and receive input of others ☑ Come to IPT meetings prepared <p>FPDs:</p> <ul style="list-style-type: none"> ☑ Develop approach(s) to provide feedback to IPT members and their home organizations ☑ Communicate this approach to the IPT and consistently apply ☑ Recognize contributions of IPT members 	<p>All:</p> <ul style="list-style-type: none"> ⊗ Bring a personal agenda/negative attitude to the IPT ⊗ Bring additional support staff ⊗ Skip IPT meetings <p>FPDs:</p> <ul style="list-style-type: none"> ⊗ Ignore sub-par performance ⊗ Ignore misalignment of goals

E.4 OPEN AND HONEST DISCUSSIONS

DO	DON'T
<ul style="list-style-type: none"> ☑ Engage all members in the IPT process by soliciting inputs and applying active listening skills ☑ Know IPT members' preferred methods of communication, and thoroughly understand their organizational roles and operating environments ☑ Trust and accept each person's expertise and advice ☑ State the extent of your authority/empowerment, and immediately identify issues which are beyond established limits ☑ Establish and stick to the meeting agenda. Establish operating procedures that allow any IPT member to redirect side issues to other forums ☑ Take the necessary time to prepare for 	<p>All:</p> <ul style="list-style-type: none"> ⊗ Personalize organizational positions ⊗ Isolate people. IPTs are only effective when all members are participating ⊗ Leave issues unaddressed. Unaddressed issues tend to resurface at higher levels and often drive major rework ⊗ Forget to document actions/decisions. Documentation provides IPT members an opportunity to clarify issues and a historical record of decision ⊗ Divulge proprietary or restrictive information to non-intended audiences. Be attuned to 'need-to-know' when appropriate

<p>the meeting in advance. Conduct research, and pre-meeting coordination necessary to optimize the time used in a group session</p> <p><input checked="" type="checkbox"/> State individual positions. Openly discuss, resolve and, when required, elevate issues</p>	
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E.5 ISSUES RAISED AND RESOLVED EARLY

DO	DON'T
<p>All:</p> <p><input checked="" type="checkbox"/> Ensure structure is in place to identify issues (e.g., dedicate a portion of each meeting to raising / discussing issues)</p> <p><input checked="" type="checkbox"/> Attempt to resolve issues within the IPT. When issues cannot be resolved, provide a complete description of the pros and cons of unresolved issues to decision makers</p> <p><input checked="" type="checkbox"/> Quickly elevate unresolved issues that are impeding progress</p> <p><input checked="" type="checkbox"/> Ensure necessary functional responsibilities are represented and issues are raised and discussed</p>	<p>All:</p> <p><input type="checkbox"/> Raise issues outside the IPT process (i.e., no end runs)</p>

E.6 MEETING MANAGEMENT CHECKLIST

<p>Meeting Preparation <i>To what extent are:</i></p> <p><input checked="" type="checkbox"/> Inputs solicited for topics</p> <p><input checked="" type="checkbox"/> Agendas established</p> <p><input checked="" type="checkbox"/> Information packages sent in advance</p> <p>Opening the Meeting <i>To what extent does the Principal:</i></p> <p><input checked="" type="checkbox"/> Establish meeting's purpose</p> <p><input checked="" type="checkbox"/> Assign a recorder</p> <p><input checked="" type="checkbox"/> Set ground rules</p> <p><input checked="" type="checkbox"/> Establish desired outcome(s)</p>	<p>Conducting the Meeting <i>To what extent does the FPD:</i></p> <p><input checked="" type="checkbox"/> Apply Do's and Don'ts</p> <p>Concluding the Meeting <i>To what extent does the FPD:</i></p> <p><input checked="" type="checkbox"/> Summarize Actions</p> <p><input checked="" type="checkbox"/> Assign Suspense Dates/Disposition</p> <p><input checked="" type="checkbox"/> Agree on an outline of meeting summary</p> <p><input checked="" type="checkbox"/> Pre-set issues for next meeting</p>
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E.7 EVALUATING A MEETING

<p><i>To what extent do IPT members:</i></p> <ul style="list-style-type: none"> ☑ Fully and freely participate in IPTs ☑ Engage in open, frank, and forthright discussions ☑ Come prepared ☑ Leave the meeting ready to discuss/address the results with their organizations <p><i>Ask to what extent:</i></p> <ul style="list-style-type: none"> ☑ There is consistent IPT participation by primary functional area members ☑ Member positions on issues are known ☑ Positions are revised by a functional area superior 	<p><i>Ask to what extent are:</i></p> <ul style="list-style-type: none"> ☑ IPT member performances assessed? Potential Metric: Trend analysis of functional area issue resolution and IPT member performance through action item records/meeting minutes ☑ Consistent representation from functional areas available Potential Metric: Record attendance <p><i>To what extent do:</i></p> <ul style="list-style-type: none"> ☑ Surprises arise from upper level management ☑ Issues get resolved at the IPT level ☑ Issues get elevated beyond the IPT ☑ Unresolved issues affect the Plan of Action and milestones
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E.8 COMMON CHARACTERISTICS OF SUCCESSFUL IPTS

<ul style="list-style-type: none"> ☑ IPT has clearly defined roles and responsibilities, product interfaces, decision authority, and resources to execute its task ☑ IPT has established appropriate metrics and measures progress accordingly ☑ A process for conflict resolution has been established and contentious issues are raised and addressed early ☑ Members respect the views and contributions of others, and accomplish their objectives through continuous team building ☑ IPT members are well-trained and experienced technical experts empowered to represent their respective competencies 	<ul style="list-style-type: none"> ☑ Using their expertise, members recognize that they are collectively and individually accountable for their products (as opposed to simply expending effort or enforcing compliance with processes or standards) ☑ Internal and external reporting relationships and processes are established to keep all involved stakeholders and customers informed of status, progress, and issues ☑ The key to achieving a high-performance IPT is thorough planning, proper allocation of resources, availability of efficient processes, and most of all, training of IPT members
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APPENDIX F

ADDITIONAL CONSIDERATIONS FOR NUCLEAR PROJECTS

There are several specific requirements from DOE O 413.3B that apply to an FPD or IPT for nuclear projects. These requirements are presented in this Appendix and are referenced to the Appendix and numerical section in the Order where they can be found. They should be added to the appropriate section of any IPT Charter or other organizational documents.

Integrated Project Team, Appendix B13.m – This is in addition to the Roles and Responsibilities listed in Section 2.4 of this Guide.

- m. “Ensure safety is effectively integrated into design and construction as applicable to each team members respective functional area for design and construction of Hazard Category 1, 2, and 3 nuclear facilities.”

Federal Project Director, Appendix B7.m – This is in addition to section 2.4 2 of this Guide.

- m. “Ensure that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.”

Chief of Defense Nuclear Safety and Chief of Nuclear Safety, Appendix B15.c – This requirement is to be considered when conducting a TIPR or IPR.

- c. “Ensure that TIPRs and IPRs, as appropriate, evaluate: 1) the qualification of IPT members having nuclear safety-related responsibilities, and ...”

Integrated Project Team, Appendix C7 – This requirement is to be added to sections 2.4 and 3.3 1 of this Guide.

“Nuclear safety experts on a nuclear facility project should include personnel in functional areas which relate to nuclear safety aspects of the facility. Disciplines within these functional areas can include: design disciplines (civil, structural, mechanical, electrical, instrumentation); health physics and radiological protection; safety, accident, hazard, or risk analysis; criticality safety; process chemistry; fire protection; configuration management; startup testing; conduct of operations; maintenance; operational readiness; commissioning; quality assurance. This does not preclude personnel from other disciplines providing that they have relevant and appropriate nuclear safety experience for the functional area for which they are responsible.”

Reviews, Appendix C18 – These additional requirements are to be considered when planning an IPR or TIPR.

b. (2) Independent Project Reviews.

Prior to CD-1, “for Hazard Category 1, 2, and 3 nuclear facilities, the PSO will conduct an IPR to ensure early integration of safety into the design phase. The Review must: ...3) validate that the IPT charter has identified appropriate functions, roles and responsibilities for members needed to support nuclear safety, and that the IPT members supporting nuclear safety are appropriately qualified, and have the availability to meet their responsibilities.”

c. (1) Technical Independent Project Review.

Prior to CD-2, “for Hazard Category 1, 2, and 3 nuclear facilities, a TIPR will be performed to ensure that safety is effectively integrated into design and construction. The TIPR must: ...2) evaluate the IPT to ensure that appropriate team member functions to support nuclear safety during final design have been established, and appropriately qualified team members have been selected and have needed availability to address nuclear safety-related matters during final design.”

Classification Authority as a Needed Skillset

Nuclear projects with accompanying security concerns require more IPT members with higher skill and knowledge levels than would be needed for conventional projects and may require individuals who have been certified as Derivative Classifiers in accordance with DOE O 475.2 A, Identifying Classified Information. If the nuclear project has the potential to generate a large volume of information that has the potential to be classified, a team member with classification review authority should officiate any required classification review.

Quality Assurance

In all cases of nuclear facility construction projects, the IPT is expected to include a QA SME.

In the case of nuclear construction projects for which 10CFR830 Subpart A (Quality Assurance) applies, all applicable regulatory requirements are mandatory unless the need to apply them has been exempted through an approved exemption process consistent with regulatory requirements. It is essential that the IPT for nuclear construction projects identify the Quality Assurance requirements affecting the siting, foundation, structure and safety systems in order to ensure the design fully account for these requirements from the very start of preliminary design efforts.

QA and Acquisition Planning

As stated in section 2.4.2 relative to Acquisition Planning, after CD-0 approval, [DOE] management should provide the IPT with an estimate of the range of funds that may be available for the project. The IPT should then conduct surveys to determine if the private sector

can provide requirements for the project that will satisfy the mission need within the funding constraint. Emphasis should be placed on generating innovation and competition and the use of existing items to satisfy the mission need. Therefore it is essential that all nuclear QA requirements for the siting, foundation, structure and safety systems be identified and made known to potential offerors in order to ensure the cost of these high quality items is properly accounted for as early as possible in the project life cycle.

DOE O 414.1D requires that all new nuclear construction projects use ASME NQA-1 2008 with 2009 Addenda or later edition or equivalent standard. In the case of nuclear facility construction projects, the IPT is expected to review the contract scope, including subcontracts with vendors and fabricators, to ascertain that a clear flow-down of the appropriate NQA-1 requirements is established, from the appropriate M&O contractor to all affected subcontractors for all phases of the project. This includes determining if potential vendors are approved for nuclear procurement or are capable of becoming approved in the required timeframe to support timely planning. It is essential that potential suppliers are either certified ASME NQA-1 suppliers or the IPT is expected to obtain M&O contractor assistance in evaluating that particular potential supplier to determine if that entity is capable of becoming qualified as an ASME NQA-1 supplier.

A Graded Approach for Nuclear Projects

As stated in DOE O 413.3B (Appendix C, C-22): “Tailoring does not apply to nuclear safety requirements, which use a ‘graded approach’ as prescribed in 10 CFR Part 830, Nuclear Safety Management. Details on developing a [graded] tailoring approach that could be applied are provided in DOE G 413.3 15.” For nuclear projects, additional references concerning the graded approach are provided as follows:

Nuclear Project Standards

DOE Technical Standard (DOE-STD) 1189, *Integration of Safety into the Design Process*. (March 2008)

<http://www.hss.doe.gov/nuclearsafety/techstds/docs/standard/DOE-STD-1189-2008.pdf>

DOE Standard 1189 has been developed to show how project management, engineering design, and safety analyses can interact to successfully implement DOE expectations. These interactions are a fundamental element necessary in the integration of safety throughout the DOE Acquisition Management System. They are keys to the timely identification, evaluation, and adjudication of Safety-in-Design issues early in project life.

The graded approach for nuclear projects is also discussed in STD 1189. STD 1189 also discusses specific products and activities for Hazard Category 1, 2, and 3 facilities and timetables for delivery are defined.

Additional Nuclear Project Standards that may assist in the graded approach by IPTs for Nuclear Projects include but are not limited to:

DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews* (June 2000),
<http://www.hss.doe.gov/nuclearsafety/techstds/docs/standard/doe-std-3006-2010.pdf>

DOE-STD-3007-2007 *Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities* (February 2007),
<http://www.hss.doe.gov/nuclearsafety/techstds/docs/standard/doe-std-3007-2007.pdf>

DOE-STD-3009-94 *Change Notice 3 Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis* (March 2006),
http://www.hss.doe.gov/nuclearsafety/techstds/docs/standard/doe-std-3009-94_cn3_3-30-06.pdf

DOE-STD-3024-2011 *Content of System Design Descriptions* (August 2011),
<http://www.hss.doe.gov/nuclearsafety/techstds/docs/standard/DOE-STD-3024-2011.pdf>