

***DOE Project Management
Career Development
Program Gap Analysis***



Project Management Career Development Program

**U.S. Department of Energy
Office of Engineering and
Construction Management**

January 31, 2002

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ACRONYMS

AL	Albuquerque Operations Office
AMCI	Atlantic Management Centers, Inc.
CAP	Capital Asset Projects
CHRIS	Corporate Human Resource Information System
COTR	Contracting Officer's Technical Representative
DOE	U.S. Department of Energy
EM	Office of Environmental Management
FE	Fernald
GS	General Schedule
HQ	Headquarters
HR	Human Resources
ID	Idaho Operations Office
IPT	Integrated Project Team
KSA	Knowledge, Skills and Abilities
LA	Los Alamos Area Office
LPSO	Lead Program Secretarial Office
ME	Office of Management, Budget, and Evaluation
MO	Mound Field Office
NNSA	National Nuclear Security Administration
NRC	National Research Council
NV	Nevada Operations Office
OAK	Oakland Operations Office
OECDM	Office of Engineering and Construction Management
OH	Ohio Operations Office
OPM	Office of Personnel Management
OR	Oak Ridge Operations Office
ORP	Office of River Protection
PGM	Program Manager
PGMIT	Program Manager In Training
PM	Project Manager
PMBOK	Project Management Body of Knowledge
PMCDP	Project Management Career Development Program
PMI	Project Management Institute
PMIT	Project Managers in Training
PMP	Project Management Professional
PSO	Program Secretarial Office
RL	Richland Operations Office
SEB	Source Evaluation Board
SR	Savannah River Operations Office
TQM	Total Quality Management
USDA	U.S. Department of Agriculture

EXECUTIVE SUMMARY

The National Research Council (NRC) released a study of project management at the U.S. Department of Energy (DOE) entitled *Improving Project Management in the U.S. Department of Energy* (1999). The study recommended that DOE develop a department-wide training program, establish criteria and standards for selecting and assigning project managers, and require all project managers to be trained and certified.

In response to the NRC study, the Deputy Secretary of Energy established the Project Management Career Development Program (PMCDP) Task Force within the Office of Engineering and Construction Management (OECM). The purpose of the Task Force is to develop and implement a DOE PMCDP to include:

- Project managers' knowledge, skills, and abilities;
- Project managers' experience and training requirements;
- Project management career development tracking system; and
- Project manager certification program.

The intent of this Gap Analysis is to assist DOE in meeting the recommendations of the NRC in developing the PMCDP, by determining what is needed in education, experience, and training for DOE project managers to maintain required capabilities and skills. The results of the analysis will be used to identify and prioritize components of project manager training and development needed to establish a DOE-wide PMCDP.

Approach and Methodology

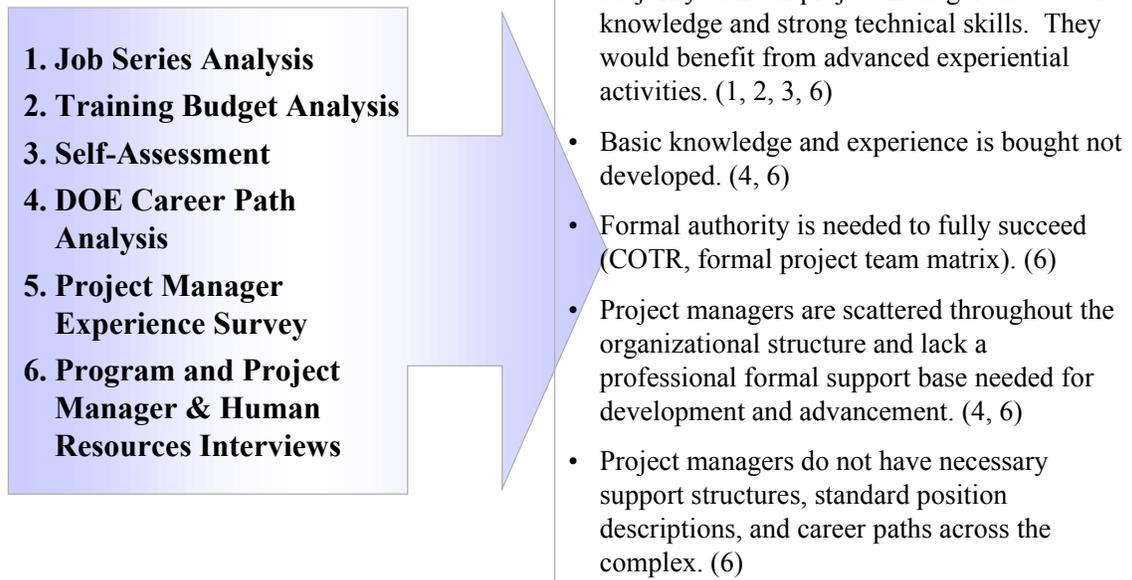
The PMCDP Gap Analysis requires a comprehensive approach to collect data across a number of areas. This Gap Analysis is part of a multi-faceted approach applied by OECM to ascertain the difference between the current DOE workforce knowledge, skills and abilities and the desired state of capability in the DOE project manager workforce. The components of this multi-faceted approach are designed to mutually reinforce each other in the data gathered. Multiple data points allow for an analysis that will cover the breadth and depth required for creation of a robust development system. This will result in significant improvements in the way that DOE runs programs and projects. The components of this Gap Analysis are:

- Job Series Analysis
- Training Budget Analysis
- *PMAppraise*^{®1} Self-Assessment
- DOE Career Path Analysis
- Project Manager Experience Survey
- Project and Program Manager and Human Resources Interviews

¹ *ESI International PM Appraise: A Knowledge and Skills Assessment* administered to DOE as part of the Project Management Career Development Program Task Force activities, 2001.

Figure 1 shows the major findings of the components of the Gap Analysis. The numbers in parentheses relate to the number assigned to the components listed on the left.

Figure 1. Major Findings of Components of the Gap Analysis



Recommendations

The overall recommendations of this Gap Analysis are to:

- Focus on high-level experiential development activities such as rotational assignments, shadow assignments, temporary assignments, and personnel exchanges, including interpersonal and business skills.
- Delegate formal authorities to project managers, such as:
 - Contracting Officer's Technical Representative (COTR); and
 - Project Team Leadership.
- Develop a homeroom system for project managers.
- Develop standard position descriptions for project managers.
- Develop a hybrid DOE certification system that includes a structural competency model with standards and a defined career path.
- Track DOE project managers to effectively utilize its workforce and continually improve the system.

1.0 INTRODUCTION

This Department of Energy (DOE) Project Management Career Development Program Gap Analysis (Gap Analysis) uses a multi-faceted approach to define the difference between the desired state of capability and the actual state of capability in the DOE project manager workforce. This Gap Analysis is structured to assess the current background of DOE project managers in comparison to profession-wide standards of knowledge, skills, and abilities. The results of this analysis will be used to formulate recommendations for a DOE-wide Project Management Career Development Program (PMCDP).

The components of this multi-faceted approach are designed to mutually reinforce each other in the data gathered. Multiple data points allow for an analysis that will cover the breadth and depth required for creation of a robust developmental system. This will result in significant improvements in the way DOE runs programs and projects. The components of this Gap Analysis are:

- The *Job Series Analysis*, which uses data from the Office of Engineering and Construction Management (OECM) Project and Program Manager List, the DOE Information System, and the Lead Program Secretarial Offices (LPSO) to indicate where project manager expertise is centered in the Department.
- The *Training Budget Analysis*, which uses data from the Office of Management, Budget, and Evaluation (ME) Report, *Professional Skills Training Project Management Series Recurring Deliveries*; the *DOE Information System Individual Development Report*; the *OECM PMCDP Gap Analysis Project Manager Experience Survey*; and the *USDA Winter Term Course Manual* to analyze training resource utilization for DOE project managers.
- The *Self-Assessment*, which identifies the level of project manager knowledge and specific gaps against defined standards.
- The *DOE Career Path Analysis* looks at project manager career progression through the organization and provides a snapshot of career patterns.
- The *Project Manager Experience Survey*, which addresses the project management experience, past responsibilities, educational level, training history, and career progression.
- The *Project and Program Manager and Human Resources Interviews*, which identifies skills importance, skills level, origin of skills, current status of career development processes, work environment factors impacting skills development and maintenance, technical tools availability and use, and specific suggestions for improvement.

The following sources have been utilized in completing this Gap Analysis and are referred to throughout this report:

- The *DOE Benchmarking Study of Project Management Career Development Best Practices (DOE Benchmarking Study)* was conducted to identify common project management career development practices and processes, benchmarking standards of organizations that possess successful project management career development programs, and career development program best practices.
- Dr. Harold Kerzner's study, *In Search of Excellence in Project Management*, Van Nostrand Reinhold, NY, NY, 1998, is used to reinforce the results of the various analyses.

DOE initiated development of a PMCDP in response to a 1999 National Research Council (NRC) study entitled *Improving Project Management in the U.S. Department of Energy* (1999). The study specifically recommended that DOE address the following elements for improved project management career development:

- Establish a department-wide training program for project managers;
- Establish criteria and standards for selecting and assigning project managers; and
- Require all project managers to be trained and certified.

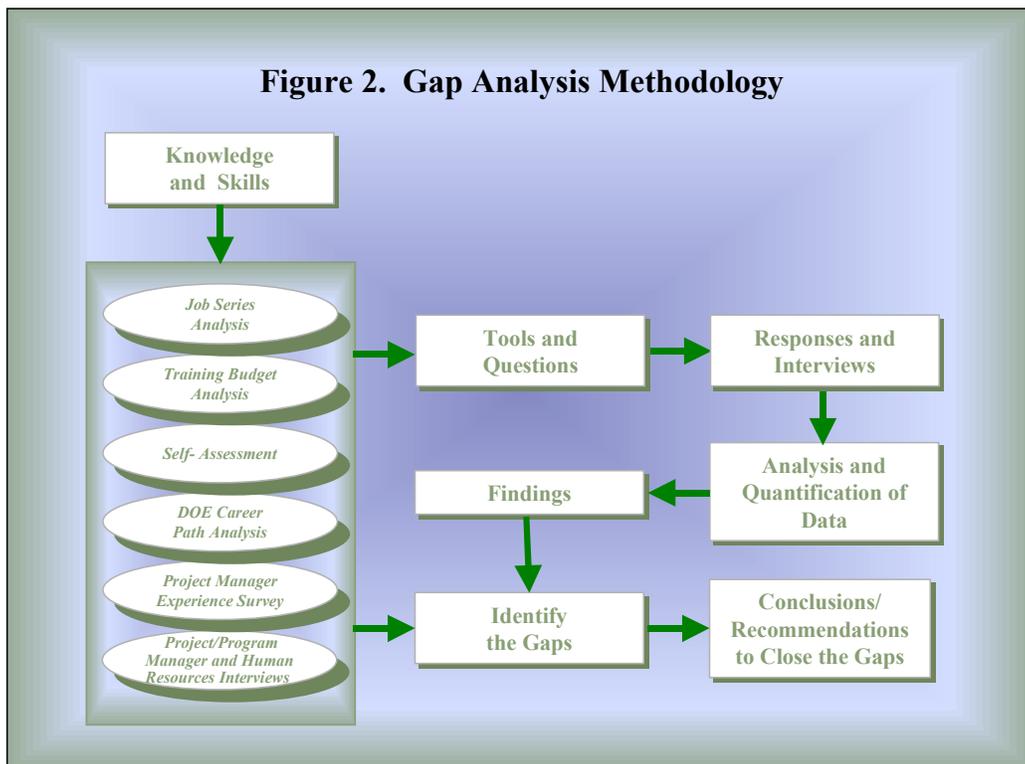
The intent of this Gap Analysis is to assist DOE in meeting the recommendations of the NRC study in developing the PMCDP, and to determine what is needed in education, experience, and training to improve DOE project manager capabilities and skills.

2.0 PURPOSE AND METHODOLOGY

The purpose of the PMCDP Gap Analysis is to measure the difference between the desired state of capability and the actual state of capability in the DOE project and program manager workforce. In order to achieve this purpose, the following objectives will be met:

- Validate the *Draft DOE PMCDP Knowledge Diagram* (see Appendix A).
- Measure the project and program manager workforce against the necessary knowledge and skills (see Appendix B for the list of project and program managers used as the basis for the population sample throughout this analysis).
- Identify the gap between the project and program manager workforce and the proposed PMCDP (see Appendix C).

The PMCDP Gap Analysis uses a comprehensive approach that collects both qualitative and quantitative data in six subject areas. The six subject areas (components) were chosen because they have direct input into the development of the PMCDP. The data were analyzed to determine the gap for each individual component. The identified gap results and conclusions in each section were reviewed and analyzed for relationships and connections. This information was then fused to generate major conclusions and overall recommendations. Figure 2 shows a graphic depiction of the methodology used.



This overall approach was designed to create an improvement strategy that applies workforce and career development principles and practices to increase individual and organizational effectiveness in project management. This process of structured systematic improvement attempts to make DOE better able to achieve organizational objectives.

3.0 ANALYSES

3.1 Job Series Analysis

The first component of the Gap Analysis is a survey and analysis of which job series each Federal DOE project manager currently holds. The purpose of the Job Series Analysis was to obtain the current job series from the Federal classification system for use in determining whether a new job series will be required for the Federal project manager to support career development.

3.1.1 Methodology

As with all components in this analysis, the list of Federal project managers with responsibility for managing DOE Capital Asset Projects (CAPs) was used as the field of study (Appendix B). In order to determine the job series, the DOE Information System and the DOE Directory were queried. The information contained in these systems was validated through telephone confirmation and during the on-site interviews (Section 3.6). Once the information was obtained and validated, it was sorted by job series.

Concurrent with the survey of DOE Federal project managers, specialists from other Federal agencies were contacted to determine:

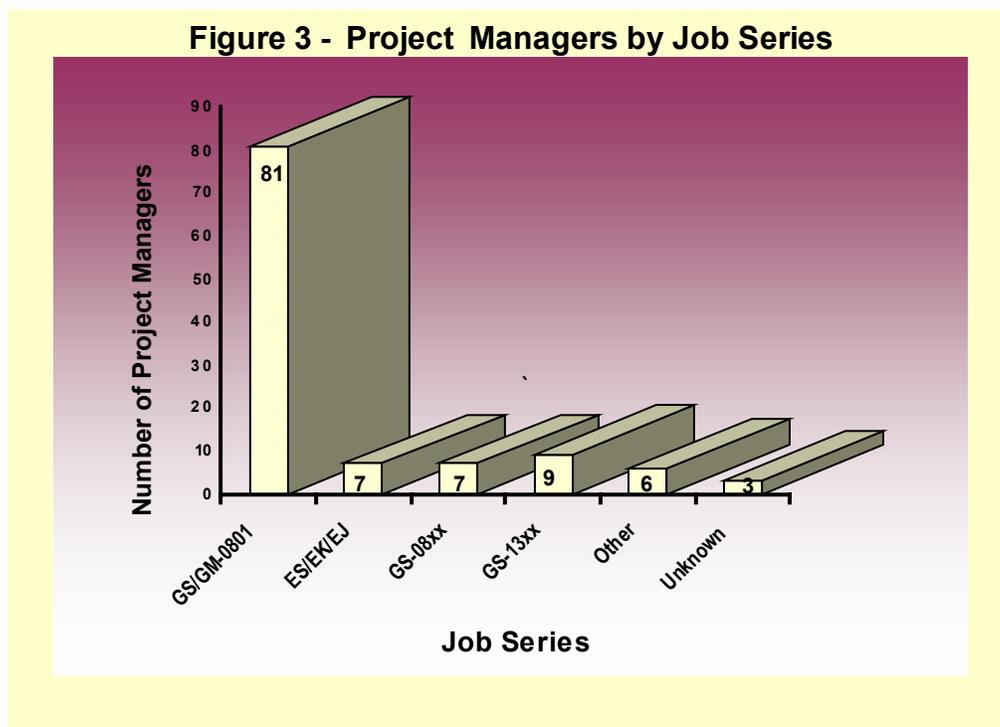
- The process, complexity and success rate for creating a project manager job series;
- The pros and cons of creating a new series; and
- Potential support from other government agencies.

Members of the PMCDP Task Force met with representatives of the U.S. Army Corps of Engineers (USACE) and the Federal Aviation Administration (FAA). An inquiry was also made to the Office of Personnel Management (OPM). The USACE informally indicated that most of their project managers currently occupy the 340 Series, Program Analyst, and that they could not support a multi-agency effort to create a new job series for project managers. The FAA reported their experience with attempting to re-classify their project managers from the 801 Series, General Engineer, to the 340 Series. The FAA did, in fact, attempt this reclassification and ended up reversing it because of salary issues. Because of this adverse experience, the FAA strongly recommended that DOE not attempt to move all project managers into one job series. Also, the FAA indicated that they would be unlikely to support a multi-agency effort to create a new job series for project managers.

3.1.2 Results

The job series that DOE Federal project managers are currently holding are shown in Figure 3. Ninety-seven of the 113 project managers are engineers or scientists.

Additionally, telephone and on-site interviews with the project managers revealed that many individuals in the ES/EK/EJ grouping possess engineering or science backgrounds.



OPM indicated that the creation of a new job series for project managers would be a multi-year effort requiring multi-agency support. OPM makes an annual call to Federal agencies for all new personnel initiatives requiring their support. This call usually commences at the beginning of the fiscal year. DOE officials from the Office of Human Resources Management (ME-50) indicated that the creation of a new job series was possible, but would require significant justification and analysis, in addition to multi-agency support. The potential benefits in creating a new job series were:

- To facilitate the tracking of project and program manager positions; and
- To facilitate new incentives and/or special rates for project and program managers.

Through discussion with ME-50, it was concluded that these benefits could be achieved through other means, such as the Corporate Human Resources Information System (CHRIS), and that the substantial effort required to create a new job series could not be justified. The PMCDP Advisory Council endorsed this decision at their July 2001 meeting.

3.1.3 Conclusions

As a result of merging the current status of DOE Federal project managers with the information obtained from OPM, USACE and the FAA, the following conclusions were reached:

- DOE possesses a solid technical knowledge base in their project managers. This conclusion is supported by the high percentage of engineers and scientists working in project management. Additional support for this conclusion can be found in the results of Section 3.3, Self-Assessment.
- DOE can support the development of its project managers within current available job series. It is not recommended that DOE pursue creating a job series for project managers because of the high percentage of engineers and scientists, combined with the lack of support from other Federal agencies.

3.2 Training Budget Analysis

3.2.1 Methodology

A training budget analysis was conducted as part of this Gap Analysis. The purpose of the analysis was to determine the quantity, types and cost of project management training that DOE Federal project and program managers receive in an average year. The quality of training was not addressed. This information, in correlation with the project management career path certification requirements, can be used to help identify the gaps in the types and quantity of training needed.

A list of project and program managers generated jointly with the Program Secretarial Offices (PSOs) (Appendix B) was utilized to identify participants for the analysis. The training records of these project and program managers were extracted from the *DOE Information Systems Individual Development* Report where available. Training records provided by the individuals obtained in the Project Manager Experience Survey (Section 3.5) were used to augment the information systems. From a combination of these two sources, the training records of 47 of the 113 project managers and 34 of the 49 program managers were reviewed.

Training records were reviewed manually to extract only project management related training and the associated costs and man-hours. Training in many job-related areas such as ethics training, safeguard and security training, and workforce diversity were not included. Training records were reviewed for a 2½ year period so that the training used for the analysis would be more representative of typical training years. Actual training man-hours were well documented.

Costs for training were applied to specific classes. Actual costs were used where available. Many of the costs/values of the training received were not specifically

documented in the DOE information databases. Where costs were not specified, they were estimated utilizing the following cost references and rates:

- ME-50 Report, *Professional Skills Training Project Management Series Recurring Deliveries*, July 1, 2000 through June 30, 2001.
- USDA Graduate School Evening & Weekend Courses, Winter Term 2001, January 16 to April 2.
- Applied value of \$300 per day per student.
- Applied value of \$50 per one-half day for on-line learning.²

After unit costs were applied, the average yearly costs per person and average yearly hours per person of project management training were calculated. Yearly training costs and man-hours were extrapolated for the 113 project managers and 49 program managers identified.

3.2.2 Results

Three general categories of training sources are currently used to train Federal project and program managers in the Department.

- Contractual in-house recurring deliveries contract³
- Other in-house training
- External sources

□ Contractual In-House Training

Professional skills training for project management procured by DOE under a recurring deliveries contract averaged approximately \$560,000 per year. Many subject areas are covered by this contract and training is offered to any employee interested in the subject area. Only the project management series is included in this analysis. Project management training in this area focused on functional training and includes, but is not limited to, the following:

- Risk Analysis and Management
- Cost and Schedule Control Estimation and Analysis
- Life Cycle Cost Estimating
- Introduction to Systems Engineering
- Facilities Maintenance Management

² Actual on-line learning costs to the DOE are significantly lower than this rate and students are not charged for the on-line learning usage.

³ Recurring deliveries project management training series is offered under a DOE contract with Atlantic Management Centers, Inc.

- Project Planning for DOE Project Management
- Acquisition Management for Technical Personnel
- Program Management Overview

Approximately 625 persons per year attend these training sessions. These freestanding curriculum sessions offered by the Department are available to all employees. The Federal project managers in this study utilize less than three percent of this average yearly expenditure and the Federal program managers expend approximately 0.5 percent of these monies.

□ Other In-House Training

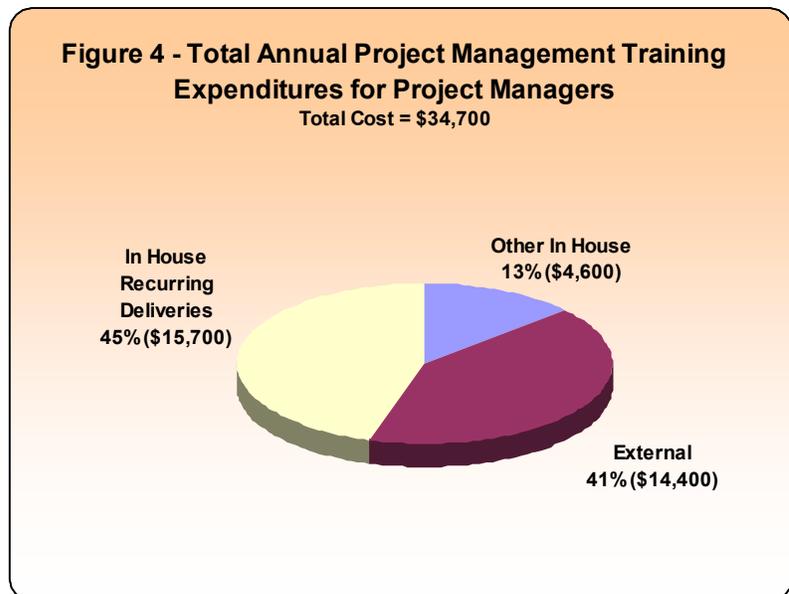
Federal project and program managers also attend training from other in-house training resources including:

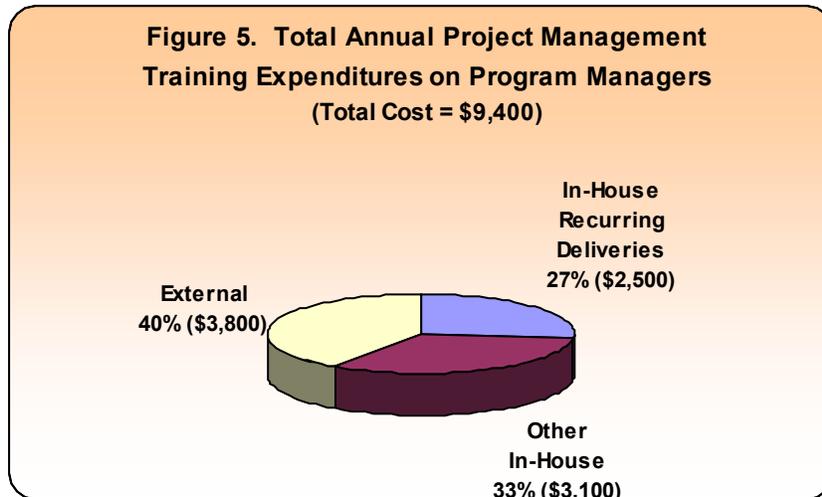
- On-line learning;
- Local and national project management workshops;
- DOE on-site operating contractor training; and
- DOE on-site laboratory offered training.

While training obtained from other in-house sources does include some general functional training, it is often more job and Department-specific than what is included in the recurring deliveries contract. Examples of other in-house training classes are:

- M&O Contracting Officer’s Technical Representative;
- DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Asset Projects*, and Processes; and
- Integrated Safety Management.

Training from these in-house resources account for approximately 13 percent of the total annual project management training received by Federal project managers and 33 percent for program managers. See Figures 4 and 5.





□ External Training:

The third training source category analyzed was from training professionals outside the Department. These include:

- Colleges and universities
- Vendors
- Professional organizations
- Other government sponsored training

Training from outside sources is the preferred source for project management related leadership and management training. This includes functional training. Examples of external source training are:

- Communications
- Integration management
- Managing technical information
- Interpersonal communications
- Leadership for team results
- Legis Fellow

Training from outside sources constitutes 41 percent of the total training for project managers and 40 percent for program managers.

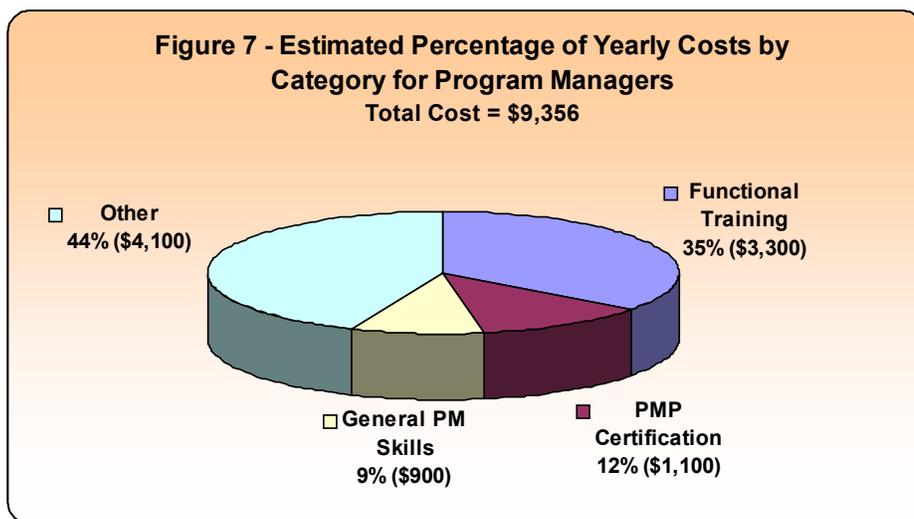
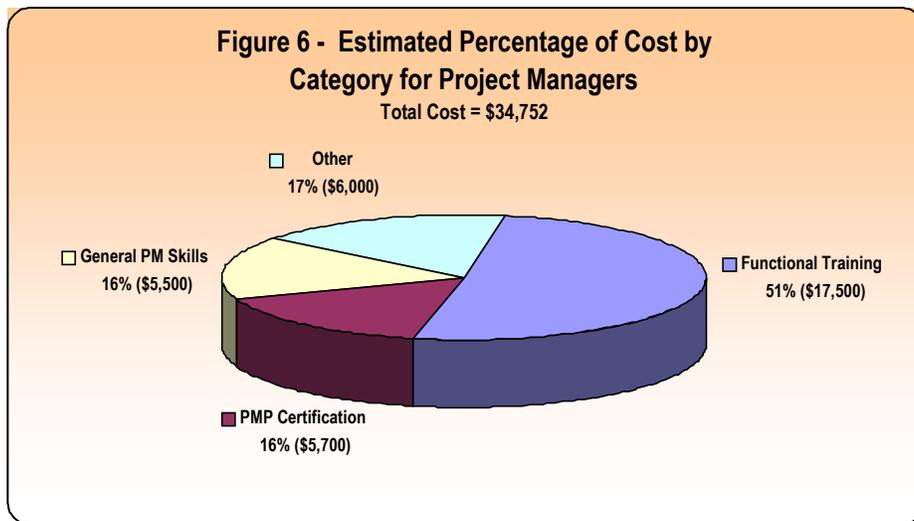
□ Overall:

Both project and program managers included in this review had received a broad range of project management training. The training was spread over a range of general skills

which includes management, leadership, and team building; DOE and Federal project environment; and functional and certification related training. See Figures 6 and 7.

The analysis showed that the average DOE Federal project manager receives training costing an average of \$307.00 per year and spends an average of 11.4 hours per year on project management related training from all sources. Program managers expend even less. The amount of project management related training for program managers is \$190.00 per year for an average of 8.6 hours per year.

The majority of training received can be mapped directly to the *Draft DOE PMCDP Knowledge Diagram* (Appendix A) and to the nine knowledge domains contained in the Project Management Body of Knowledge (PMBOK®). There was significantly less training in management, communication and leadership, and none for managing matrix organizations. This is significant because the project manager is the leader of the Federal Integrated Project Team (IPT), a matrix organization.



3.2.3 Conclusions

Most project and program managers do not take advantage of the recurring deliveries project management training offered in-house. These classes are offered multiple times a year in several DOE locations as freestanding curriculum. Numerous employees attend these class sessions; however, few of those attending are project or program managers. Both project and program managers perceive that these classes are too basic for their needs and are not kept current with DOE policy changes. Because this is the main avenue for functional project management training in the Department, these classes should be refocused to meet the needs of the target audience, the project and program managers.

According to the *ASTD 2001 State-of-the-Industry* report, employers spend on average \$677 per year per person on training and 26.3 man-hours per person per year. In comparison, project managers do not receive adequate training to maintain their knowledge, skills and certifications. Professional certification often requires continuing education and experience and/or developmental activities to maintain the credential. Total average expenditures of \$307.00 per person per year and 11.4 man-hours per person per year are not sufficient to maintain knowledge and skills at a state-of-the-art level. Program managers receive even less support to maintain project management skills. Time and dollars need to be allocated and used for the project and program managers to keep and improve the skills required to maximize their effectiveness.

As project and program managers progress up the career path to Level 3 and Level 4, their knowledge and skill focus changes. More emphasis is placed on the integration function, management, communication, leadership and a comprehensive understanding of operating within the Federal project environment. With the exception of isolated instances of persons attending long-term government training such as the Legis Fellow program, there is currently little formal training being attended in these areas for project managers. Program managers receive a greater percentage of the training in these areas but do not receive a significant amount overall. As DOE project managers progress through the career path the training focus should change to allow for more formal and experiential training in these areas.

Use of workshops indicates that there is some ongoing interactive training. These workshops are localized at only a small number of field sites. Interactive training tailored to project-specific activities of the Federal DOE project environment needs to be developed and increased in frequency. It is also important when developing the PMCDP acquisition strategy to look at current and potential future sources for training and developmental activities.

3.3 Self-Assessment

3.3.1 Methodology

The third element of the Gap Analysis is a self-assessment using ESI International's PM Appraise: A Knowledge and Skills Assessment (*PMAppraise*[®]). The *PMAppraise*[®] measures an individual's knowledge against the nine domain areas contained in the Project Management Institute's (PMI) *Project Managers Body of Knowledge* (PMBOK[®])⁴. The purpose of *PMAppraise*[®] is to identify needs for education and development in the nine areas of the PMBOK[®], and to prioritize curriculum for a well-rounded project management education (<http://e-training.esi-intl.com>).

The *PMAppraise*[®] was selected for use in the PMCDP Gap Analysis study for the following reasons:

- The tool is web-based and is efficiently distributed and self-administered. The results are collected and returned to the individual for their information through electronic media.
- The *PMAppraise*[®] tool is widely recognized and used by industry. This allows for benchmark comparisons of DOE project manager knowledge against industry results.
- The assessment mirrors the knowledge domains in the PMBOK[®], which allows participants who seek Project Management Professional (PMP) certification⁵ the opportunity to gauge their knowledge prior to certification testing. Thus ensuring that the survey topics and questions are of interest, concern and value to the participants.
- The assessment aligns with the *Draft DOE PMCDP Knowledge Diagram* (Appendix A), which allows for cumulative results of the assessment to be used to validate the diagram.
- The assessment ensures consistency by applying a standard tool to all personnel and collecting data that is measured against the same standard.
- The assessment was designed to ensure anonymity by assigning each participant a random number independent of personal information. Participation in the assessment was voluntary, anonymous and confidential.

On June 2, 2001, initial distribution of the assessment was made to 90 DOE Federal project managers and their supervisors and 49 DOE Federal program managers through electronic media (Appendix D). Major General Gill (retired), Director, OECM, signed

⁴ *ESI International PM Appraise: A Knowledge and Skills Assessment* administered to DOE as part of the Project Management Career Development Program Task Force activities, 2001.

⁵ Project Management Professional certification as administered by the Project Management Institute is an external PM certification standard widely recognized throughout the profession.

and distributed the self-assessment via e-mail message. The electronic cover letter explained:

- The purpose of the assessment and its value to the participant;
- How the information would be used;
- How the assessment fits into the overall development of the project manager career path;
- Assurance of the confidentiality and anonymity; and
- How to register for and complete the assessment as well as a general estimate of the participants' time commitment.

Participants were selected for the initial distribution because they were either a project or program manager identified by the PSOs as having responsibility for managing CAPs across the complex and at Headquarters. Utilizing the CAP project manager lists ensured adequate representation from the DOE major program areas and complex-wide field offices and sites.

Distribution was increased over the months of June and July 2001 as additional program and project managers were identified by the PSOs. Additionally, members of the PMCDP Task Force, project managers and program managers in training (PMITs), project professionals from OECM, and project managers from outside the agency were added to the distribution. These individuals were identified based on their responsibilities as DOE project management policy makers and technical advisors. Approximately 180 individuals were asked to participate in the assessment. By using this method, all project and program managers were given the opportunity to participate.

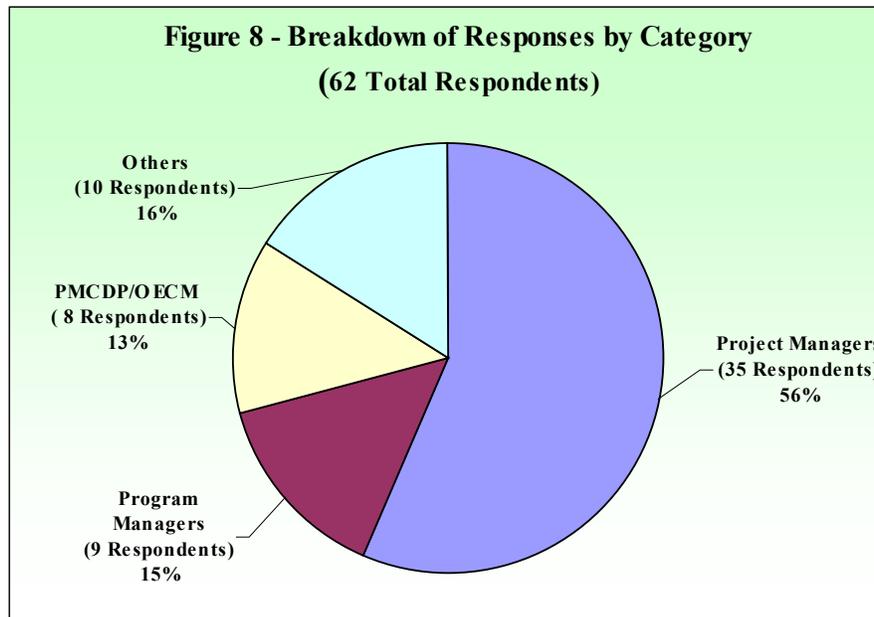
The program and project managers identified for the assessment also served as a guide to identify target subjects for the other elements of this Gap Analysis. These individuals and their successors have been identified as potential benefactors of a project management career path and training program.⁶

3.3.2 Results

Response rates through the month of July were approximately 19 percent. This was considered to be too low to perform viable analysis to be used as a basis for conclusions and recommendations. Therefore senior management set a target response rate goal of 33 percent. In order to achieve this goal, the initial electronic distribution package was followed with e-mail reminders, personal telephone calls and recruitment of on-site project management points-of-contact. Throughout the on-site interview phase of this analysis, project managers were encouraged by Headquarters individuals visiting the site

⁶ National Research Council, *Improving Project Management in the Department of Energy*, National Academy Press, Washington, D.C., 1999, recommends establishing a department-wide training program for project managers.

to participate in the assessment. These efforts resulted in a final response rate of approximately 35 percent. Figure 8 shows the final assessment result rate by category. Although response rate data is not kept for the *PMAppraise*[®] Self-Assessment⁷ the response rate is considered to be acceptable to perform the required analysis.



The self-assessment individual results were calculated immediately and presented back to the user in the form of a summary report. Each user was assigned an identification number upon initial log-in. The individual results summary report identified through the randomly assigned identification number was forwarded to the DOE assessment coordinator and also to the ESI International usenergy database. A summary matrix showing the results of the Project Management Knowledge and Skills Assessment was generated at the close of the assessment and utilized as one basis for the knowledge and skills analysis. (See Appendix E)

The results of the knowledge and skills assessment are illustrated in Figures 9 through 13. Results are displayed by knowledge domain and as a comprehensive average of the nine domains. The knowledge domains are as follows:

- Integration Management
- Scope Management
- Time Management
- Cost Management
- Quality Management
- Human Resource Management
- Communications Management

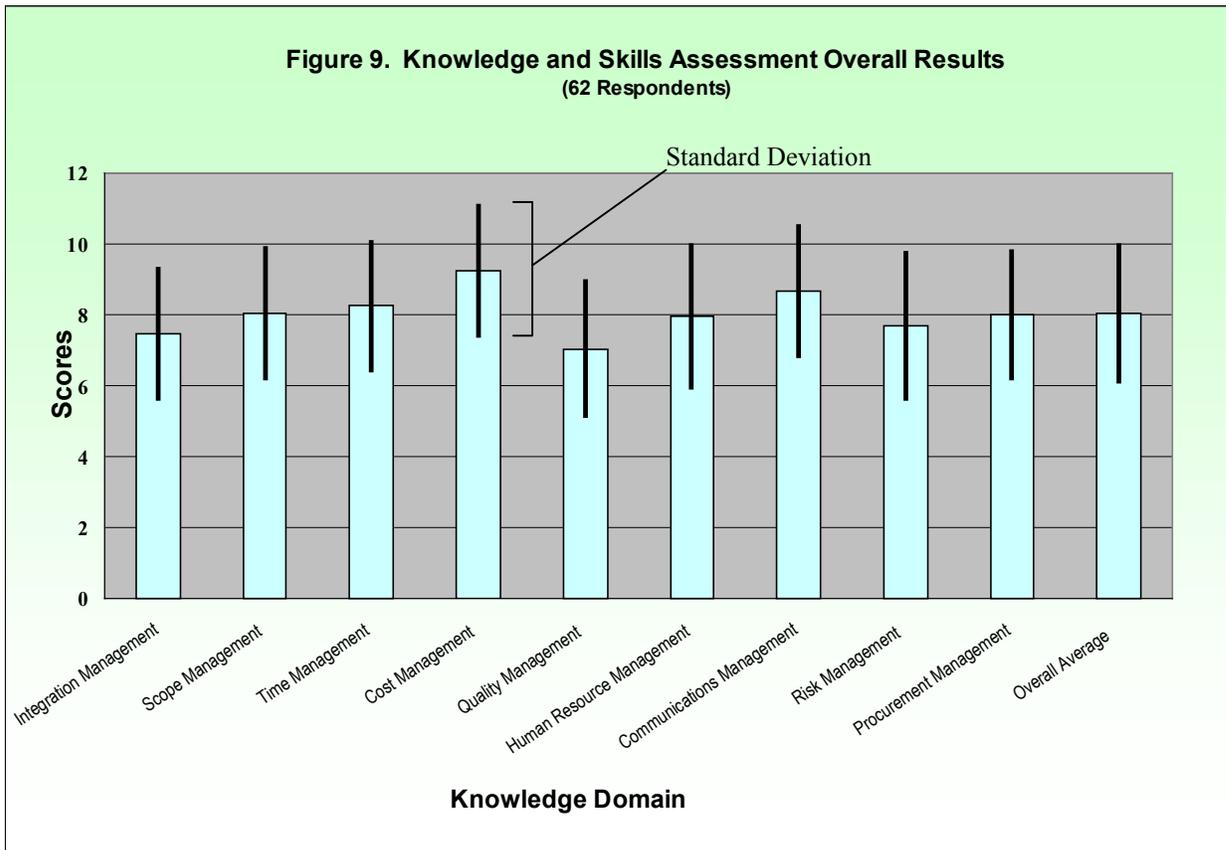
⁷ As per ESI International records as of October 16, 2001.

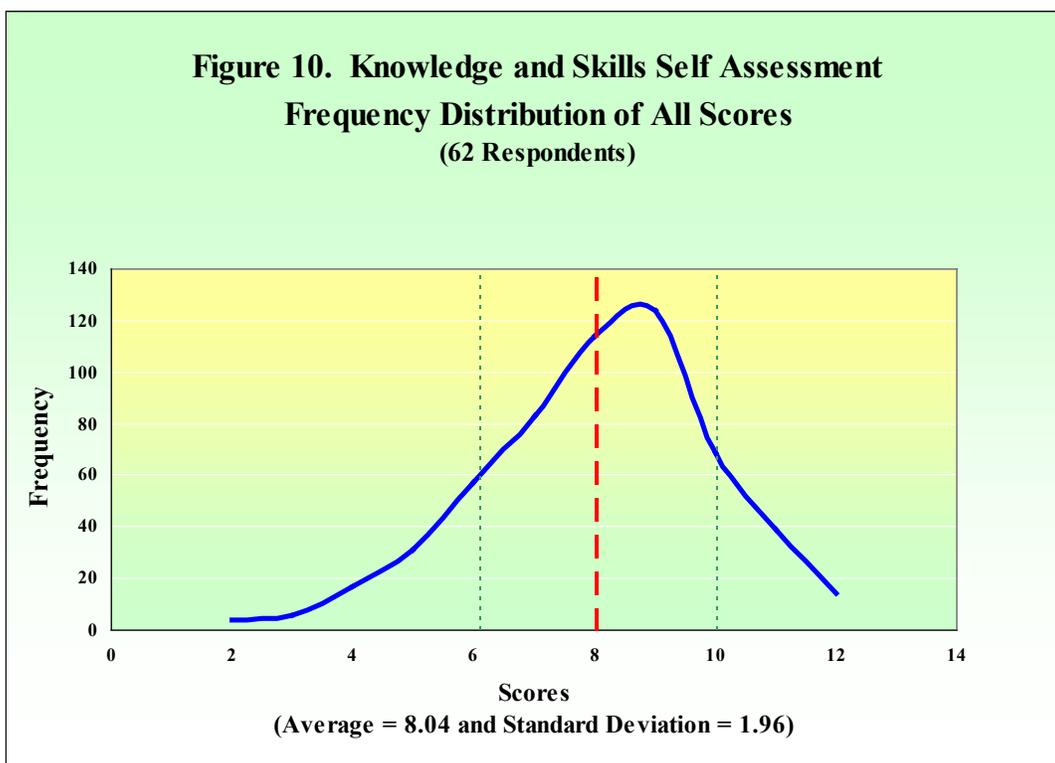
- Risk Management
- Procurement Management

Figures 9 and 10 show the overall results of the assessment. Figure 9 shows the average number of correct responses out of a possible score of 12. The whisker is used to show standard deviation. Figure 10 shows the frequency distribution for all respondents over the nine knowledge domains. Standard deviation was calculated using the formula:

$$\sqrt{\sum x^2 - (\sum x)^2 / n(n-1)}$$

which assumes the use of a representative sample population.





Similar charts have been generated for the following segments of the self-assessment participants as well as these overall result charts and are included in Appendix F:

- Project Managers Results
 - Overall Results (Figures F-1 and F-2)
 - Level 1 Project Managers (Figure F-3)
 - Level 2 Project Managers (Figure F-4)
 - Level 3 Project Managers (Figure F-5)
 - Level 4 Project Managers (Figure F-6)
- Program Managers Results (Figure F-7)
- PMCDP Task Force and OECM Results (Figure F-8)
- Others Results (Figure F-9)
- Office of Environmental Management Results (Figure F-10)
- National Nuclear Security Administration Program Office Results (Figure F-11)
- Office of Science Results (Figure F-12)

All charts show results by knowledge domain and the cumulative average with standard deviation.

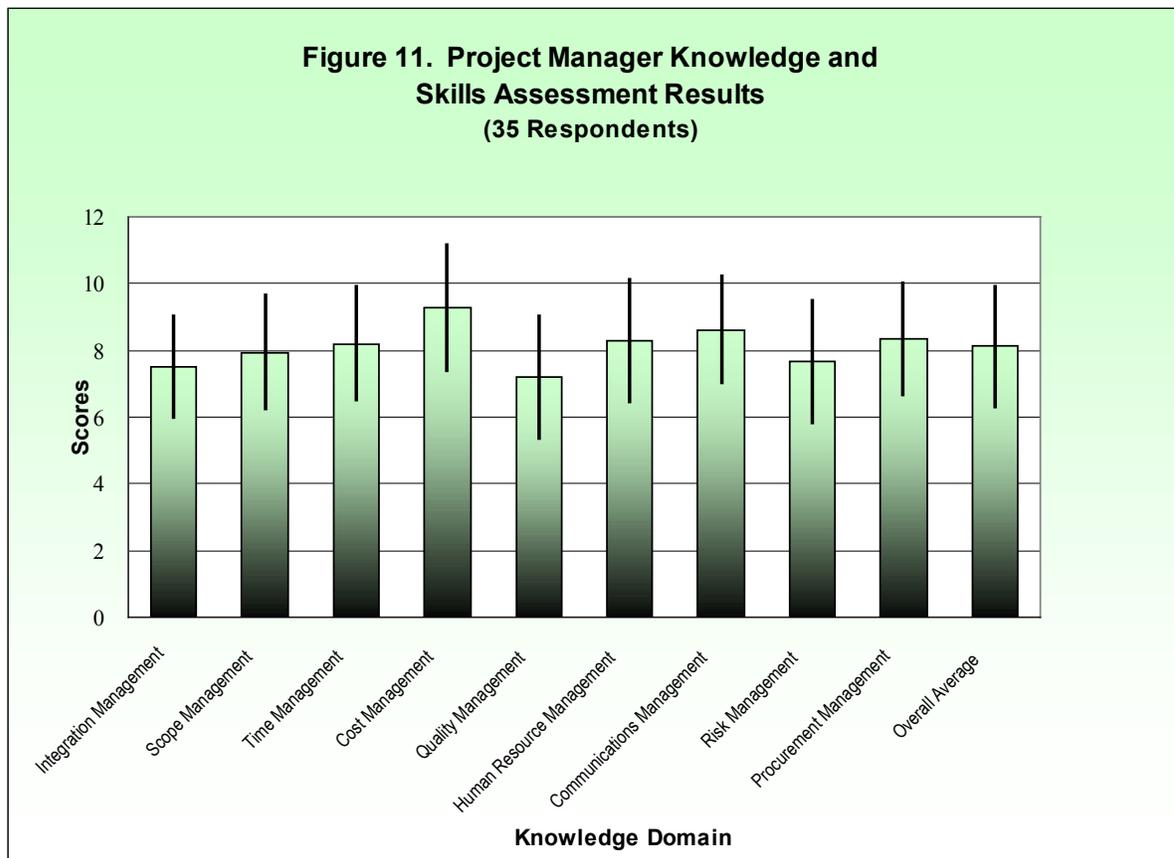
ESI International has administered this instrument to project managers and persons in related disciplines in the information technology, finance, insurance, petrochemical, and pharmaceutical industries. The average assessment score of all individuals who have taken the *PMAppraise*[®] falls approximately between 50 and 60 percent regardless of the

respective industry.⁸ Out of the population kept in the ESI International database, the following averages are shown for comparison across industries:

- Insurance (58 percent)
- Finance (58 percent)
- Petrochemical (58 percent)
- Information Technology (61 percent)
- Pharmaceuticals (52 percent)

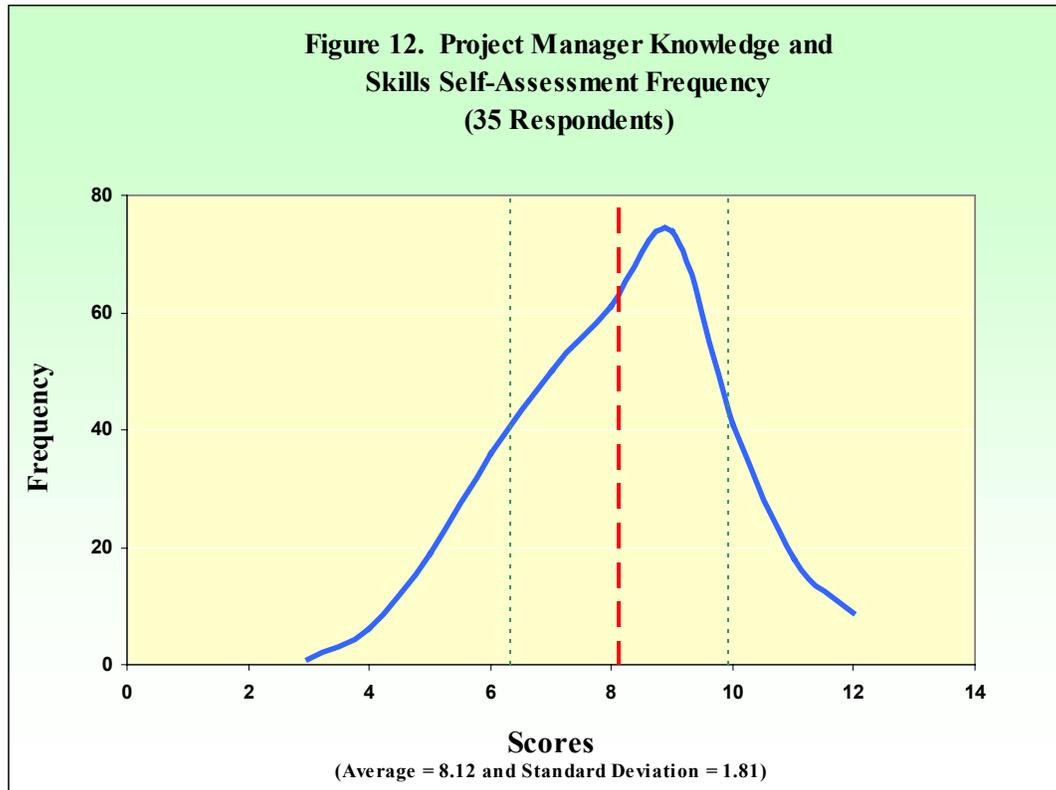
The overall average score for the 62 users in the usenergy data sample is 8.02 or 67 percent. As indicated previously, the maximum possible score is 12. However, it should be noted that the standard deviation in each of the nine knowledge domains, as well as the cumulative average standard deviation is significant.

While detailed analysis has been performed on the results of the assessment, analysis on the overall results and the results for DOE Federal project managers who participated in the assessment are presented below (Figures 11 and 12).



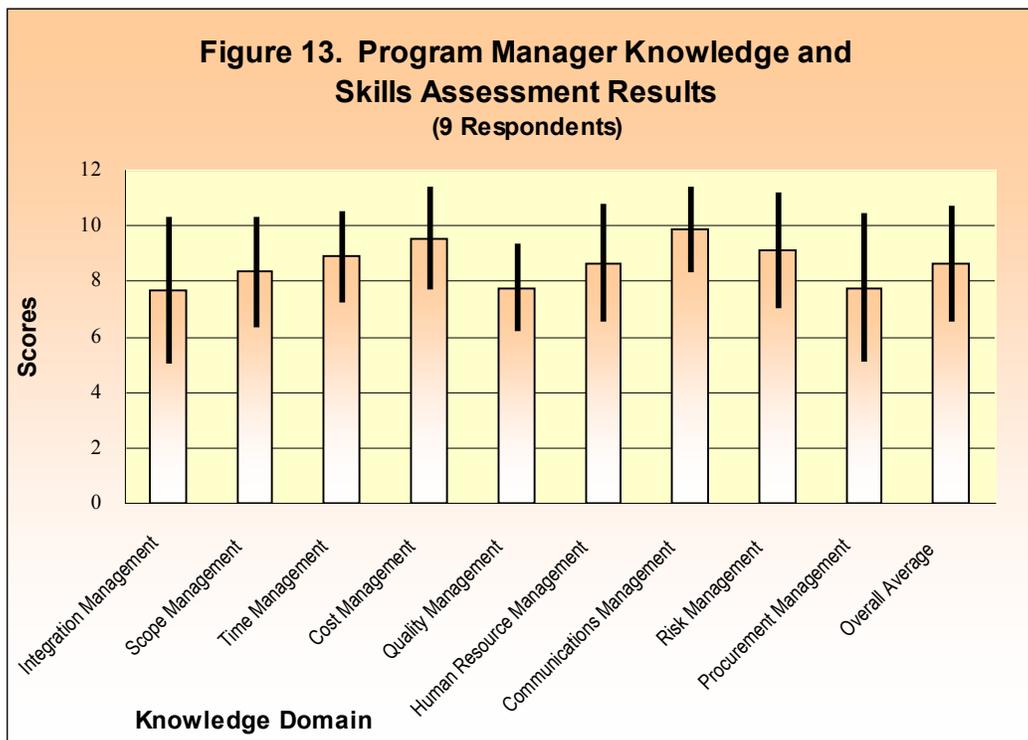
⁸ ESI International Memorandum, September 15, 2000, which states that “This is based on conversations and discussions with many clients that have taken the *PMAppraise*®. No numerical hard number has been provided from clients for many of the *PMAppraise*® due to confidentiality issues.”

Integration management and quality management were the weakest knowledge domains in both the overall results and the results of the project managers. A review of the data collected reveals that significant numbers of respondents (approximately 32 percent) did not achieve scores of over 50 percent in these areas. This indicates that basic knowledge training and additional experience is required in these two domains.



Scope management and risk management ranked next in the need for knowledge base improvement among project managers. Program managers showed better performance in risk management and scope management (Figure 13). Basic training and experience in the areas of scope and risk should be focused on the project managers.

Results in the areas of time management, human resource management, communications management and procurement management showed that knowledge in these domains is generally adequate for project and program managers. However, significant standard deviations exist over all nine knowledge domains. This indicates that while many individuals have sufficient knowledge, there are individual improvement needs in these areas.



The overall results, as well as the results for DOE Federal project and program managers, indicate that a high degree of knowledge exists in the area of cost management (9.26 and 9.29 respectively). The standard deviations of 1.8 and 1.9 appear to be significant initially but only four overall scores are six or below and two of the project manager's scores are five each. If these scores are eliminated from the database, the overall cost management averages rise to 9.55 and 9.57 with standard deviations of 1.6 and 1.4. In this knowledge domain, 30 out of the 62 participants answered 10 or more questions correctly. This indicates that basic training in the area of cost is sufficient.

3.3.3 Conclusions

Basic training is needed in all but one project management knowledge domain. Basic training is not required for cost management. Basic training and skill development activities would serve to reduce the standard deviation in all areas, thus achieving overall excellence among project management professionals across the complex. However, in order to optimize the allocation of resources in developing the training segment of a project manager career path, consideration should be given to prioritizing available resources to target areas where there is opportunity for the most improvement.

Developing and identifying integration management and quality management training and skills development techniques is needed across the complex. All levels of this type of training are needed (basic skills and knowledge development through advanced applications and simulation workshops). Analysis indicates that integration management should be viewed as a top priority for needed improvement.

Scope and risk management training and skills development workshops are needed for project managers. Training and career development activities in these areas need to be focused more to the individual projects than the programs. Individuals would benefit from all levels of training and development in time management, human resources management, communications management, and procurement management, thus adding to the organization's successes.

Individuals entering the project management career path in the future should either have basic cost training or individual development planning should identify available in-place resources for the attainment of basic knowledge. Development and identification of training in the cost management area should focus on application of this basic knowledge for a DOE program-specific project. Applications must consider environmental factors and both internal and external factors that influence project success.

With the large number of individuals across the complex whose score in numerous knowledge domains was 83 percent or above, consideration should be given to advanced training and development. This mature workforce would benefit from non-traditional training techniques such as cross-fertilization with industry, developmental assignments and acting in formal mentoring programs.

3.4 DOE Career Path Analysis

3.4.1 Methodology

In support of the goal to assess the background of the current project managers, a sampling of project and program managers were surveyed concerning their career paths. The survey was designed to assist in determining the critical elements in career progression. All DOE project and program managers were not surveyed for this analysis due to time constraints. Seventy-six managers were chosen by the PMCDP Task Force as representative of the mix within DOE.

- Thirty-four SES/GS-15 senior managers at Savannah River (SR) were targeted because SR has a large mix of program, project and support/functional personnel and the PMCDP Task Force had personal contacts among the management (who assisted in this effort). This group of managers will be referred to as SR managers.
- All forty-two middle (GS-13/14), upper (GS-14/15), and senior (GS-15/SES) managers of the 113 program and project managers identified by the PSOs as having responsibility for managing Level 3 and Level 4 (>\$100M) CAPs (see Appendix B) were also contacted. This group of managers will be referred to as the Complex-wide managers.

The objectives of the Career Path Analysis were two-fold:

1. To determine how the Level 3 and Level 4 program managers were able to progress to their current positions, and
2. To assess whether program managers had to leave the project management career field in order to advance to senior management (SES, GS-15).

A template career path diagram (see Figure 14) was supplied to the managers. The managers were contacted via electronic mail, telephone and face-to-face interviews. They were asked to track their career from their entry into the workforce up to their current position, via arrows from one level/position to the next. The number of years at each level and a position title were also requested.

DOE work experience was broken into five levels of classification (A through E) based upon job classifications ("GS" levels), not upon the levels identified in the *Draft DOE PMCDP Knowledge Diagram* (see Appendix A). The Knowledge Diagram stratification is based upon the dollar value of the project managed. A crosswalk of the two breakdowns is shown in Table 1.

- Classification Level A – Entry GS-7/12
- Classification Level B – Staff GS-12
- Classification Level C – Middle Management GS-13/14
- Classification Level D – Upper Management GS-14/15
- Classification Level E – Senior Management GS-15/SES

Experience outside of DOE was broken into two categories:

- Experience in program/project organizations, including staff/functional support.
- Experience in non-program/project/support areas (such as legal, budget, sales/marketing, human resources, operations, contracts, business management, services, etc.).

Table 1. Crosswalk of *Draft DOE PMCDP Knowledge Diagram* Levels to Career Path Analysis Classification Levels

Knowledge Diagram			Career Path Survey	
	GS	TPC (in millions)	Classification Level	GS
Level 4	15-SES	>\$400M	Level E - Senior Management	15-SES
Level 3	14-15	<=\$400M	Level D - Upper Management	14-15
Level 2	13-14	<=\$100M	Level C - Middle Management	13-14
Level 1	13	<=\$20M		
			Level B - Staff	12
			Level A - Entry	7-12

Figure 14. Typical Project Management Career Path

Senior Mgmt
GS-15/SES

Non-DOE Program/Project Organization to include Staff/Functional Support

YEARS

- Project management
- Project advocacy
- Personnel management
- Assign, review project tasks
- Establish policy
- Chair committee
- Project support planning
- Technical development support
- Resource management
- Branch supervision
- Division point-of-contact
- Support task order review, evaluation
- Assure technical adequacy of project
- Budget Development
- Distribute assignments to sections
- Establish design requirements
- Problem-solving
- System development & testing
- System/subsystem oversight
- Review/assess contractor work
- Personnel management, internal relations
- Contract management
- Staffing
- Program/project planning, advocacy
- Department interface
- Analysis
- Testing
- Planning
- Project Support
- Systems engineering
- Support for launch activities
- Configuration engineering
- Design/review
- Requirements definition
- Cost estimating
- Technical assessments, coordination, direction & management
- Contract interface, oversight management
- System design analysis, integration & test
- Construction Design
- Marketing Support
- Business Mgt
- Legal Support
- Financial Support
- HR Support

Vice President
Program Manager
Project Manager
Division Chief
Division Director
Branch Head
Program Support Manager
Chief Eng/Scientist
General Counsel
Functional Manager
Systems Engineer
Office Director
Office Manager
Assistant General Counsel
Engineering Manager
Technical Contract Manager
Branch Manager
Division Manager
Lead Engineer
Team Leader
Section Head
Design Engineer
Research Engineer
Project Technical Support Staff
Manager for Project Support Operations

Upper Mgmt
GS/GM-14/15

Middle Management
GS-13/14

Staff
GS-13

Entry Level
GS-7/12

Other Non-DOE Experience (non-Program/Project/Support Experience)

YEARS

- Sales/Marketing
- Human Resources
- Operations
- Legal
- Contracts
- Business Management
- Services
- Etc.

DOE Project Organization

Program Manager (Field) **YEARS**
Deputy Program Manager
Assistant Manager
Office Director

- Budget & program development and planning
- Program/Project planning
- Project advocacy
- Stakeholder/Congressional
- Scheduling
- Personnel supervisor
- Policy & strategy
- Technical direction
- Contract management
- Lifecycle management
- Time management

Senior Project Manager **YEARS**
Senior Project Engineer
Division Director
Lead Engineer
Office Director

- Define plans, goals, objectives
- Program/project planning, advocacy
- Programmatic responsibility
- Contract management
- Budget management
- Time management
- Personnel management
- Science requirements definition
- Verification requirements definition
- Scheduling
- Stakeholder/Congressional

Project Manager/Engineer **YEARS**
Deputy Project/Program Mgr
Systems Manager
Branch Chief
Team Leader

- Project planning
- Time Management
- Scheduling
- Budget & contracts
- Personnel management
- Coordinate, resolve, schedule tech issues
- Program development
- Lifecycle management
- Stakeholder/Congressional
- Advocacy
- Budgeting
- Advising
- Staffing

Project Manager **YEARS**
Deputy Project Manager
Senior Project Engineer
Systems Manager
Senior Engineer/Scientist
Team Leader

- Project planning
- Budgeting
- Advising
- Staffing
- Contract management
- Coordinating integration activities
- Multiple project development
- Lifecycle management
- Cost estimating
- Progress reporting
- Technical management
- Cost & schedule management
- Systems management
- Liaison
- Systems development and testing
- Personnel management
- Time management

Project Engineer **YEARS**
Engineer
Team Member
Project Coordinator

- Project Planning
- Advocacy
- Resources management
- Design/review
- System engineering
- Lifecycle management
- New concept creation, project formulation, system definition
- Coordinate & resolve schedule & tech issues
- Establish Functional & technical rats
- Oversee contract performance
- Time management
- Conduct design reviews

DOE Program Organization

Headquarters	Field	YEARS
Deputy Asst Sec Assoc Deputy Asst Secretary	Asst Mgr Program Mgr	

- Budget development
- Internal, external advocacy (project, program)
- Strategy development
- Establish program priorities
- Stakeholder/Congressional interaction
- Operations Mgt
- Site Mgt

Headquarters	Field	YEARS
Office Director Team Leader	Area Manager Operations Mgr Facilities Rep Div Director	

- Budget development
- Program management
- DOE team lead
- Personnel management
- Negotiations
- Congressional/Stakeholder interface
- Contract management
- Advanced strategic planning
- Site program manager/advocate
- Field Liaison
- Operations Mgt

Headquarters	Field	YEARS
Team Member Program Mgr	Branch Chief Team Leader	

- Project/program advocacy
- Strategy development, planning
- Budgeting, scheduling
- Program control, planning
- Conceptual design
- Cost analysis
- Chairing DOE committees
- Budget formulation
- Site advocate/point of contact
- Operations Mgt
- Infrastructure Mgt

Field	YEARS
Team Member Construction Office Mgr Program Manager	

- Project/program advocacy
- Strategy development, planning
- Budgeting, scheduling
- Program control, planning
- Conceptual design
- Cost analysis
- Chairing DOE committees
- Budget formulation
- Site advocate/point of contact
- Operations Mgt
- Infrastructure Mgt

DOE Support/Functional

Deputy Assistant Sec **YEARS**
Assoc Deputy Asst Sec
Field Office Asst Mgr
Office Director

- Project support planning
- Project advocacy
- Personnel management
- Budget formulation
- Legal support
- Environmental, Safety & Health
- Contract management
- Policy Development

Division Director **YEARS**
Area Manager

- Resource management
- Personnel management
- Legal support
- Environmental, Safety & Health
- Budget support
- Administrative support
- Contract management
- Staffing
- Customer Interface
- Policy Development

Team Leader **YEARS**
Facility Manager
Branch Chief

- Resource management
- Personnel management
- Legal support
- Environmental, Safety & Health
- Budget support
- Administrative Support
- Training
- Contract management
- Supervision
- Workload Mgt

Team Member **YEARS**

- Technical assistance
- Contract interface, oversight mgmt
- Team members
- Personnel management
- Staffing support
- Training
- Budget support
- Administrative support
- Environmental, Safety & Health

3.4.2 Results

Thirty-seven (49 percent) managers responded to the survey.

- At Savannah River, 14 out of 34 senior management individuals (41 percent) responded.
- Complex-Wide, 23 out of 42 Level 3 and Level 4 project managers (55 percent) responded.

Quantitative data was generated, including the number of years of experience before entering DOE, the number of years of experience in each level, and the number of career path moves.

Findings

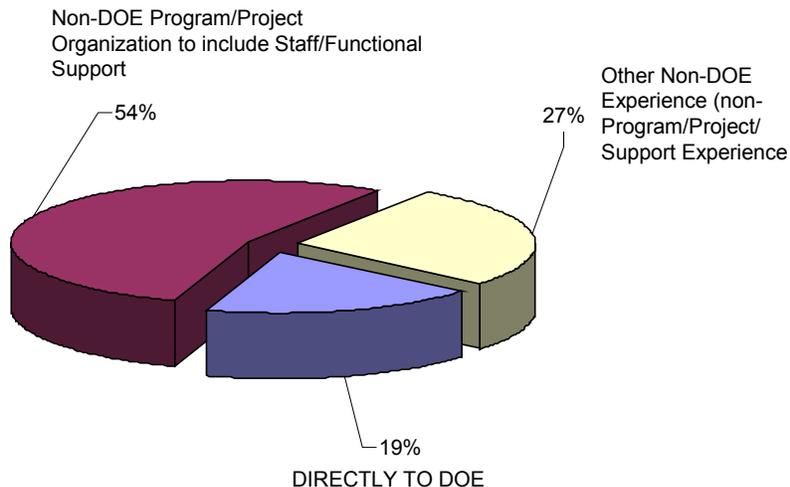
Most of the respondents started their career outside of DOE. Other than that, there was no clear career path among the respondents.

Entry of All Project/Program Managers to DOE

Eighty-one percent of all respondents started their career outside of DOE and entered DOE with an average of nine years experience (see Figure 15). DOE is "buying" talent into the agency.

DOE hired one-third of its managers directly into middle management. This is the same as the numbers entering into the lowest entry positions (Entry, Staff). Appendix G contains summary diagrams of the typical entry paths for all the survey participants, as well as the Savannah River participants, and the 23 Complex-wide participants.

Figure 15. Career Entry Path into DOE



The levels into which individuals enter DOE varied between the Savannah River and the Complex-wide managers (see Table 2). Ninety percent of the managers (33 out of the 37 respondents) entered DOE between an entry level and middle management. Only four managers entered DOE at upper/senior levels (all at Savannah River).

Table 2. Entry Levels Into DOE

Site	Entry GS-7/12	Staff GS-12	Middle Management GS-13/14	Upper Management GS-14/15	Senior Management
Savannah River	29%	7%	36%	21%	7%
Complex-wide	35%	30%	35%	0	0

Career Path

There was no clear career path among the respondents. All individuals made between one and five career moves into and out of project, programs and/or support/functional management positions, as well as leaving and rejoining DOE. Only three individuals left DOE and returned to advance to a better position (one at Savannah River [went from project to program management] and two complex-wide [stayed in project management]). Figure 16 depicts the non-uniform career paths inside DOE, based upon all respondents.

Appendix G also contains combined career path moves for the 14 Savannah River participants and the 23 Complex-wide participants. Some observations can be made:

- Almost 50 percent of the 23 Complex-wide respondents had their career paths exclusively in project management, while at Savannah River, no one had his or her career path exclusively in project management.
- Nine percent of the 23 Complex-wide respondents had support/functional management positions in their career path, while at Savannah River, 50 percent had support/functional management experience.

Figure 16. Typical Project Management Career Path

CAREER PATH INSIDE DOE

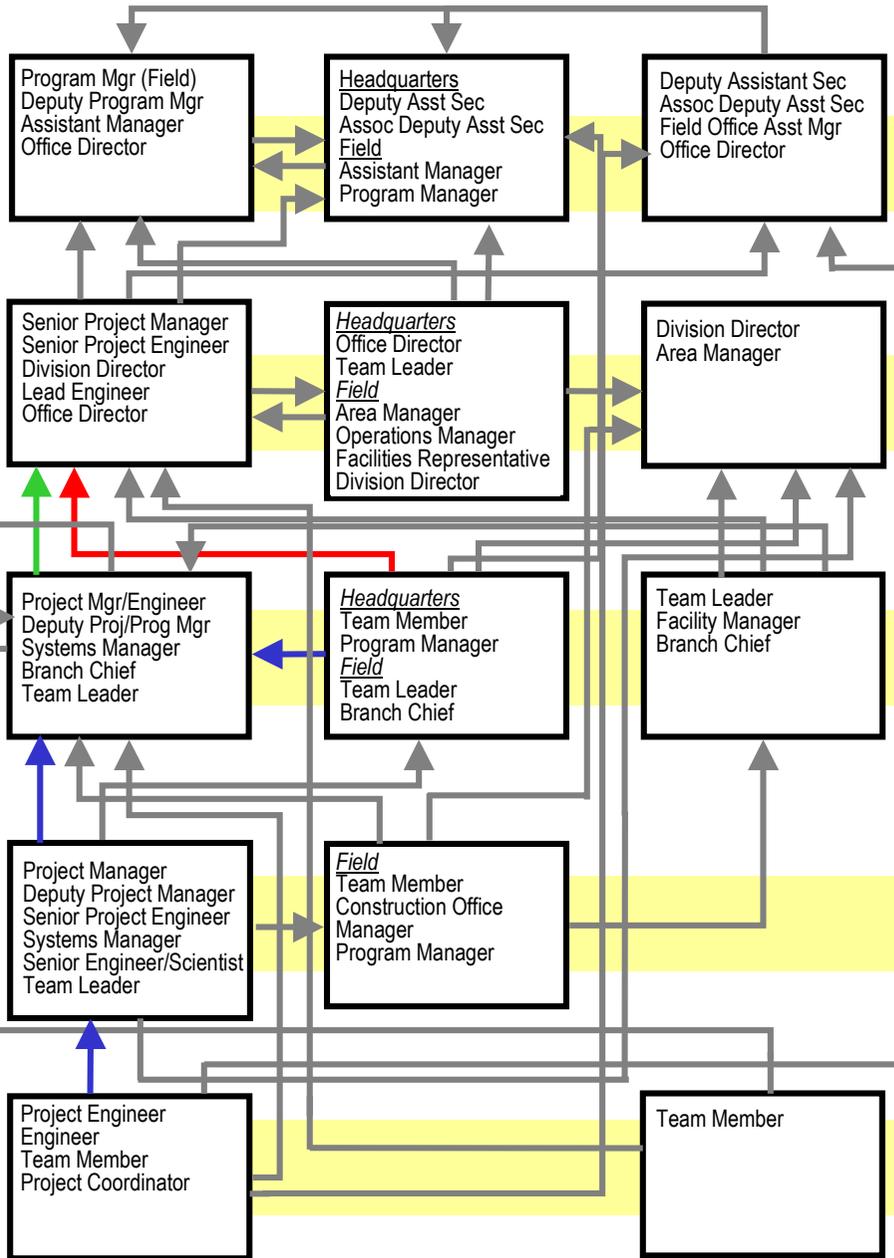
ALL 37 RESPONDENTS

CLASSIFICATION

DOE Project Organization

DOE Program Organization

DOE Support/Functional



- Non-DOE Program/Project Organization to include Staff/Functional Support**
- Vice President
 - Program Manager
 - Project Manager
 - Division Chief
 - Division Director
 - Branch Head
 - Program Support Manager
 - Chief Eng/Scientist
 - General Counsel
 - Functional Manager
 - Systems Engineer
 - Office Director
 - Office Manager
 - Assistant General Counsel
 - Engineering Manager
 - Technical Contract Manager
 - Branch Manager
 - Division Manager
 - Lead Engineer
 - Team Leader
 - Section Head
 - Design Engineer
 - Research Engineer
 - Project Technical Support Staff
 - Manager for Project Support Operations

- Other Non-DOE Experience (non-Program/Project/Support Experience)**

- 31-50%
- 20-30%
- 10-19%
- 3-9%

Promotions to Upper Level and Senior Management

Only three out of the 37 respondents "stovepiped" their careers in project management and came directly into DOE with no previous work experience (these were among the 23 Complex-wide respondents). These individuals all advanced to upper level management.

The advancement with the most commonality was that 68 percent of the respondents were promoted out of DOE middle management positions. The remaining respondents were promoted directly into upper/senior management from outside the agency or were promoted out of lower level job classifications (see Appendix G).

Forty-six percent of the 37 respondents made a career move from middle management in projects or programs to upper project management (see Figure 16).

Four out of 14 senior managers at Savannah River advanced through project middle management. Of the three senior managers Complex-wide that responded, two advanced through program middle management.

3.4.3 Conclusions

Based upon this assessment, DOE managers are moving into all levels of management through multiple avenues, inside and outside of DOE. Sixty-eight percent of the managers move through an assignment in middle management, but it is not a prerequisite for advancement. Career paths have little to no commonality when viewed as a whole.

DOE would benefit from defining a project management career path with advancement opportunities for project managers. This does not preclude project managers being detailed to program or support/functional areas for experience. Project managers should not have to look outside the project arena for career advancement. Experience can be gained in other areas through details to industry or other DOE organizations, internships, developmental assignments and acting in formal mentoring programs.

The summary effect of these actions will reduce the turnover of project managers throughout the life cycle of a project and institutionalize a progressive career path, from entry level to senior level.

3.5 Project Manager Experience Survey

3.5.1 Methodology

This component of the Gap Analysis was developed to document the training and experience history of the project manager workforce within DOE. The quantitative data and information contained in the experience survey was meant to augment the qualitative information received during the on-site interviews.

A résumé format (see Appendix H) was developed to document project manager experience and training. The completed questionnaires establish a baseline of project management background and experience in DOE. Using this format allows the PMCDP Task Force to correlate project manager skills mix, experience, training and certifications to the four levels identified in the draft PMCDP proposed career path diagram. This survey will help to further ensure that DOE's developing project managers have the necessary experiences to be successful in the future.

The draft survey was distributed electronically to the Federal DOE project and program managers identified in Appendix B. The electronic distribution package included a cover message explaining the purpose and use of the survey, the questionnaire, and a completed example. A phased approach was used to correspond with scheduled site visits in conducting the face-to-face interviews. The phased approach encouraged interviewees to review their own career history before participating in the actual interview.

3.5.2 Results

The response rate to the initial electronic distribution package was low. Many of the recipients indicated that the format was cumbersome and that much of the data requested was available through existing DOE information systems. The PMCDP Task Force requested a pilot group of project/program managers to review and respond to the survey. Information obtained from the pilot group was used to verify and augment training records utilized in the training budget analysis component of this study. Based on comments received from the pilot group, the survey was approved for use in the remaining interviews.

In addition to verifying information in existing DOE corporate databases, supplementary data elements needed to track the careers of Federal project managers were identified. Suggested uses of the data elements include:

- Correlating the project managers' training and experience histories with the project manager progression requirements in the Draft PMCDP Proposed Career Path Diagram; and
- Using the foundation to build a PMCDP panel interview structure.

3.5.3 Conclusions

The DOE Project Manager Experience Survey was a pilot instrument developed by the PMCDP Task Force to gather data on experience and training history of the DOE project manager workforce. The individual data received was integrated into the Training Budget Analysis, and the components of the instrument were validated for use in developing the proposed Corporate Human Resources Information System (CHRIS) Data Dictionary and for use by interview panels in the future DOE project manager certification process.

The responses received reinforced the view that the project manager workforce is mature and highly experienced. The knowledge and skills of the DOE Federal project manager are directly related to education, training, experience and certification. However, the progression and preparedness for entering the PMCDP proposed career path will require tracking and training of individuals.

3.6 Project/Program Manager and Human Resources Interviews

The project and program manager and human resources interviews were conducted at 10 field sites and Headquarters to:

- Evaluate/validate the knowledge and skills contained in the *Draft DOE PMCDP Knowledge Diagram*;
- Ascertain developmental needs (training and experience); and
- Identify other systems/process-oriented issues in DOE project manager development.

3.6.1 Methodology

This element of the Gap Analysis consisted of a Federal and contractor team visiting 10 DOE field sites and the Headquarter PSOs to collect data on the state of knowledge and skills of DOE project and program managers. Sites visited were representative of DOE PSOs, types and dollar size of projects managed, and number of program and project managers.

Interview questions were developed for each competency domain by the levels shown in the *Draft DOE PMCDP Knowledge Diagram* (see Appendix A), the *Draft DOE Project Management Roles and Responsibilities*, and the previously completed *DOE Benchmarking Study of Project Management Career Development Practices*. Questions were structured to extract information from the respondents over multiple dimensions (see Appendix I for the list of questions). The percent of respondents in agreement, the applicable *Draft DOE PMCDP Knowledge Diagram* domain, and a summary write-up of comments based upon the interviews are shown for each question. A total of 48 questions were prepared, eight applied to all the domains. See Appendix J for a matrix of the questions containing percentages of agreement and comments.

For each dimension of question development, the progression of the questions reflects an increase in capability that is expected to occur as a project manager gains experience in the organization. Details of each level are given in the *Draft DOE PMCDP Knowledge Diagram* (Appendix A). Generally, this increase in capability covers the following expectations:

- Level 1 covers a basic knowledge of subject matter, where to find information and how it fits into DOE business processes.
- Level 2 adds the ability to apply the knowledge to DOE projects, and how this implementation leads to accomplishment of DOE project objectives.
- Level 3 adds the ability to analyze and discriminate, using experience to adjust to novel situations and build original solutions to project issues in complex projects and programs.
- Level 4 adds the ability to synthesize and evaluate novel solutions to complex projects and programs.

Another dimension to question development was the progression addressing the required skills. The questions covered the elements of:

- How important is the skill?
- How was the skill achieved?
- What is the best way to develop the skill? and
- Did someone serve as a mentor for you, or do you serve as a mentor for someone in developing this skill?

Interviews

The administration of the interviews was coordinated through OECM over a two-month period. A team of Federal and contractor representatives conducted the interviews. The interviews were conducted on-site in focus groups to lessen the impact on work activities, encourage larger participation, allow for appropriate prompting to gain further insight, and put the participants at ease in answering questions in familiar surroundings. On-site groups were separated into peer groups and management groups to promote candid responses. Groups were given the option to have the Federal representative leave the interview room if they felt uncomfortable. Confidentiality of responses was guaranteed prior to the start of the interviews. Names of individuals were not attributed to responses throughout the interview process.

A similar interview approach was taken with the human resources personnel at the sites. Additional information relative to training courses, position descriptions, education, experience, and qualification requirements for new positions or promotions was obtained through a series of questions. The questions asked are in Appendix K and a summary of the results is given in Subsection 3.6.2.2 of this report.

Following the interviews, the results were tabulated into the following categories:

- Total head-count, management personnel, project personnel, and human resources personnel.
- Personnel answering questions in terms of agreement or disagreement, and suggestions for improvement. Personnel that did not verbally comment on questions were assumed to agree on the question. Nonverbal communication, such as nodding of head affirmatively or negatively, was noted and included or followed-up to confirm response.
- Interviewers achieved consensus on responses through discussion and agreement on response totals and format.

Table 3. Interview Participants

Site	Project/Program Managers	Managers/ Supervisors	HR/Training Personnel
Albuquerque Operations Office			
Los Alamos	4	1	
Sandia National Laboratory	3	1	
Pantex Site	4	1	
Headquarters			
National Nuclear Security Administration	5	4	
Defense Programs	7	3	
Idaho Operations Office	9	5	1
Nevada Operations Office			
Environmental Management	3	4	2
Defense Programs	9	3	
Oakland Operations Office			
Lawrence Livermore National Laboratory	4	1	
Oak Ridge Operations Office	9	5	3
Ohio Field Office			
Fernald Area Office	7	1	
Mound Area Office	2	2	3
Richland Operations Office	2	1	
Office of River Protection	4	3	
Savannah River Operations Office	8	5	1
Total Participants	80	40	10

The interviewees rated the skill areas contained in the *Draft DOE PMCDP Knowledge Diagram* based upon the categories of *Not Important* or *Important/Critical*. Based on the consensus of the group, the answer to the question was given one of the adjective ratings. No attempt was made to determine a numeric distribution of the interviewee answers for the questions, i.e., the group interviewed agreed upon which of the categories above applied to the answer. An example of tabulating the results is given in Table 4, which shows the number of participants from each site along with the consensus percent agreement for the question.

Site	Supervisors/ Managers	Project Managers	Program Managers
Albuquerque – Los Alamos	1	4	0
Albuquerque – Sandia	1	3	0
Albuquerque – Pantex	1	4	0
Headquarters – NNSA	4	0	5
Headquarters – Defense Programs	3	0	7
Idaho	4	9	0
Nevada – Environmental Management	4	3	0
Nevada – Defense Programs	3	9	0
Oakland – LLNL	1	4	0
Oak Ridge	4	9	0
Ohio – Fernald	1	7	0
Ohio – Mound	2	2	0
Richland	1	2	0
Richland – Office of River Protection	3	4	0
Savannah River	4	8	0
Percent	93%	100%	100%

The results of the internal interviews are summarized in Appendix J.

Meetings were held with available site human resources and training personnel. The interviewees were asked to rank their view of six areas in question as having Critical Importance “C,” Moderate Importance “M,” or as Optional “O.” See Appendix K for the list of questions.

Documents used as the basis for interpretation of the data from the site and Headquarters interviews are as follows.

- *DOE Benchmarking Study of Project Management Career Development Practices (2001)*.
- Dr. Harold Kerzner’s research of over 200 of the world’s most prominent corporations, *In Search of Excellence in Project Management: Successful Practices in High Performance Organizations (1998)*.
- Project Management Institute’s *Project Management Body of Knowledge (PMBOK®)*.

3.6.2 Results

The response to the questions from the Headquarters and field project and program managers reflects an overall validation of the 10 domains within the *Draft DOE PMCDP Knowledge Diagram*.

The questions were sorted by their relevance to each domain (see Appendix L for a list of the questions and responses sorted by domain). All project/program managers and the managers/supervisors responses to the questions were averaged within each domain (the eight questions that applied to all domains were included in each of the domain averages). Table 5 lists the domains and the average percentages of interviewees in agreement for each of the two groups. Both sets of individuals are in close agreement with the questions regarding the knowledge and skills necessary for a DOE project manager.

Table 5. Average Agreement within Each Domain

Domains	Average % Program/ Project Managers in Agreement	Average % Managers/ Supervisors in Agreement
Project Management General	80	79
Leadership/Team Building	85	85
Scope Management	79	78
Communications Management	84	85
Quality Safety Management	87	85
Cost Management	86	86
Time Management	76	75
Risk Management	86	85
Contract Management	80	78
Integration Management	78	78
Overall Average	82	81

There were two general issues identified through the project/program manager and human resources interviews that impact project management efficiency and effectiveness:

- Overall negative perceptions concerning DOE organizational support, such as the lack of clearly-defined career paths and project management job descriptions; insufficient promotion opportunities; inadequate definition of lines of authority, roles and responsibilities; and promotion rules and procedures. The Job Series Analysis, the DOE Career Path Analysis, the *DOE Benchmarking Study*, and the Kerzner Study back this importance.
- Perceptions that the DOE organization does not support adequate development of project managers. The Training Budget Analysis, the Kerzner Study, and the *DOE Benchmarking Study* address this.

Several specific critical gaps were uncovered in the area of organization support and structure. These gaps included:

- Lack of evaluation of and access to project management tools and techniques, to include lessons learned structures and project management software. The Kerzner Study and the *DOE Benchmarking Study* also support this.
- Need for delegation of COTR responsibility, where appropriate, to DOE project managers to increase responsibility and accountability in Federal projects. The Kerzner Study supports this.
- Need for supporting organizational mechanisms that encourages and rewards project leadership behavior and team accomplishments. The Kerzner Study supports this.

3.6.2.1 Project/Program Manager Interviews

A summary of the results of the project and program manager interviews follows, separated into the relevant domains reflected in the *Draft DOE PMCDP Knowledge Diagram*.

Overall Results

Career development of DOE project managers is not in place as an integrated strategy and process at any of the sites visited, but is viewed as important. Grade equivalencies, position descriptions, minimal levels of training and experience, and ongoing professional development are all topics that are recognized as important. These are being addressed individually by the human resources organizations at each site. The *DOE Benchmarking Study* specifies that the best project management career development programs possess an integrated strategy with the human resources systems.

There is 90 percent agreement that technology tools are rated as important for tracking and analyzing project data, but the majority are owned and used by DOE contractors, and DOE project managers must go to the contractors to obtain use of the more sophisticated tools. Advanced training is seen as needed for these tools and techniques as applied in a DOE project setting, since DOE project managers are being briefed through reports generated by these advanced tools, yet are unaware of how the data used in the reports is being generated. One site had developed a tool for managing the project definition and overall organization, and was moving toward adoption of the software as a standard project management tool across the site. The *DOE Benchmarking Study* cautions against over-reliance on tools in developing project managers. Kerzner (1998) also cautions against substituting project management tools in place of effective planning and project leadership.

Project Management General

DOE project managers need to possess knowledge in many areas pertaining to general project management. Over 50 percent of the questions were relevant to this domain. The knowledge of project management includes an understanding of general engineering, construction principles, value engineering, project planning processes and methodologies,

IPT roles and responsibilities, environmental policies and regulations, systems engineering, and performance metrics, to name a few.

Ninety-five percent of those interviewed responded that there is no formal project management career path and that DOE is impaired concerning career development of project managers. Additionally, less than 30 percent agreed that project management is seen as an important skill.

External project manager certification processes were not seen as important. Certification, such as the PMI[®] Project Management Professional (PMP) program were viewed as desirable but not sufficient for DOE project manager development. This parallels the finding in the *DOE Benchmarking Study* that external certifications were used as part of an overall project management career development strategy in the benchmarked organizations, but not as the total program. These external certifications were recognized as valuable for portability in career development recognition outside of DOE, especially for closure sites. Interviewees preferred a hybrid DOE project management process encompassing both internal and external certification.

Possessing a strong technical background is considered important among all those interviewed. Ninety-four percent of the project managers said that a technical understanding of projects is necessary in order to manage them effectively. For example, a technical background allows for a better understanding of the boundaries that systems must operate within to succeed. Technical skill requirements are found in Levels 1 and 2 of the PMCDP proposed career path.

Almost all of those interviewed agree that the current experiential training opportunities are limited for DOE project and program managers, even though project management is an experience-based activity. The same number agreed that mentoring is important, but there are no formal systems in place.

Eighty-three percent agree that a centralized project management support structure is not available to DOE project managers. This correlates to the 89 percent who agree that a comprehensive project management career development system is important for DOE project managers. In addition, only 21 percent of those interviewed feel that current recruiting and retention processes are adequate.

The development of a structured project management career path and redesigning of position descriptions was seen as important towards improving project manager career development. Interviewees emphasized that the lack of specified lines of authority, responsibility, and career paths. Merit promotion rules and procedures appeared to be emphasized as more important than additional training and development. The human resources interviews did not reveal any effort towards creation of a separate career path, but did indicate several efforts in designing more accurate job descriptions that accounted for project management capability. Example position descriptions are provided in Appendix M. Kerzner (1998) emphasizes the importance of integrating management

processes to define levels of authority, responsibility, and accountability in successful high performance organizations.

In the formulation of a PMCDP, the recruitment and retention issues must be addressed as key elements. Project managers at DOE closure sites represent a unique challenge for recruitment and retention. DOE policies for post closure job assignments, relocations and incentives need to be reviewed and revised as needed. There are no current formal mechanisms to ensure transfer of institutional knowledge to new hires. Also, project managers find it difficult to transfer between projects at sites with multiple Secretarial Office programs. The DOE Career Path Analysis and the *DOE Benchmarking Study* confirm this assessment.

A clear delineation of activities for programs and projects was a concern for the participants. The majority of employees felt that the roles and responsibilities for Federal project and program managers were not clearly defined, thus the capabilities required for these roles could not be illustrated for the organization. Because of this lack of definition of roles and responsibilities, careers of project and program managers commingled at high levels. Despite this lack of definition, differences could be seen between project managers and program managers in strategic skills and relationship management skills. General Motors improved their competitive advantage by defining program managers as integrators and project managers as responsible for functional deliverables.

Informal “homerooms” for the exchange of ideas, networking, mentoring with other project managers and subject matter experts are currently in place at several sites. This concept can easily be adopted for use complex-wide with minimum budget and personnel impacts.

Leadership/Team Building

Knowledge of various techniques in leadership and team building are required at all levels of project management. Those listed in the *Draft DOE PMCDP Knowledge Diagram* include an understanding of team building methods, interpersonal communications, levels of authority, mentoring, labor agreements, congressional issues and processes, as well as techniques in interviewing, delegation, motivation, management, leadership principles, negotiating strategies and performance assessment.

Public relations and interpersonal communications skills were identified as important but under-emphasized in many instances. Many interviewees have received prior formal training in dealing with the public and specified that the primary method for learning these skills is through experience. Interviewees emphasized the importance of being able to tailor the message to their audience, and that being a good teacher is imperative in dealing with customers and stakeholders, as well as the public and other government agencies. According to the human resources personnel interviewed, formal training is available in these areas.

The project manager's role as Integrated Project Team (IPT) Lead requires knowledge and skills in organizational leadership, problem solving, listening, observation, and conflict management. Ninety-five percent of those interviewed responded that organizational leadership is important but is not practiced adequately within DOE. In addition, 99 percent agreed that current training to develop personality, attitude, and style skills is inadequate. The project manager's role as the leader of the IPT needs to be formalized. Project managers interviewed feel that the IPT should undergo team-building activities as a unit. Seventy percent of the interviewees agree that team collocation does not occur formally in DOE; while 67 percent agree that DOE processes for intact team training is inadequate. These capabilities in particular were singled out as best when taught in an interactive environment allowing extensive practice. Interviews with human resources personnel revealed that this type of training is not widely available for project teams at the majority of sites. This gap is reinforced by Kerzner's (1998) emphasis on behavioral skills as being critical for project success.

A basic understanding of the strategic planning process is considered to be valuable for project managers at Levels 3 and 4. Many Level 1 and 2 project managers can not see a connection between corporate strategy and their projects. Project managers feel that the best way to close this gap is through mentoring. However, almost all agree that there is no formal mentoring system in place. Senior managers often do not involve project managers in corporate planning activities, resulting in a lack of understanding at the project level.

Project managers and supervisors agree that strategic analysis knowledge and skills are important for project managers, but that project managers do not normally engage in this activity in their daily work. Kerzner (1998) clearly indicates that strategic analysis is a critical activity, and that senior organizational leaders convey strategic elements of the business plan to project managers. This is closely related to responses to other questions about the strategic planning process within DOE, where the majority of project managers and supervisors clearly indicate that the process of strategic planning and involvement of project managers in the process is a critical activity and is not currently sufficient. The skills are not viewed as important, but the process of analysis and involvement are perceived to be separate and important.

Project managers and supervisors view skills in labor agreements as unimportant. Labor agreements are in the required set of project management competencies, and are necessary, especially considering the increased use of mixed Federal/contractor teams in the DOE project environment.

Seventy-seven percent of project managers and supervisors indicate that skills in dealing with Congress are important. They feel that many of the skills required in dealing with Congress are addressed indirectly through knowledge of the budget process, public speaking, public relations, and other skill areas. However, as a project manager moves up in the organization, this skill becomes increasingly important.

There is a lack of individual and team performance award procedures. Kerzner's Study addresses the value of this issue to project management.

All the interviewees universally agreed there was a need for user-friendly project lessons learned processes at all sites.

Scope Management

The knowledge required of project managers in the area of scope management includes a detailed understanding of external and internal project environments, project objectives, project alternatives, contracted scope of work, WBS development, functional design criteria, project mission need, strategic plans, corrective actions and work planning approaches and processes.

Management processes that result in better definitions of scope, requirements, roles and responsibilities were judged as an important gap. Project charter documents, outlining key project business process relationships are not used regularly by the project manager, but these documents are increasingly used as a way for senior managers to integrate projects.

Lack of controls for reducing the impact of external factors on projects and reducing budget turbulence, and a need for including project managers in strategic planning activities were also identified by the managers as important for effective project management. This is addressed in Kerzner's Study.

Project managers and supervisors indicate that skills in creating high-level objectives are not important because project objectives are usually defined when the project manager is assigned. This can be related to the strategic analysis process. Project managers want to be more involved in the creation of high-level objectives. Involvement in the process is seen as more important than improved basic training in how to create project objectives. Basic project management skills seem to be in place, but the processes are not taking advantage of this adequately developed workforce skill.

Communications Management

Knowledge of media relations techniques, inter-agency representation protocols, effective briefing and public hearing techniques, and methods to identify and communicate with all stakeholders are considered necessary for DOE project managers. The *Draft DOE PMCDP Knowledge Diagram* lists an understanding of these areas as well as the basic business and technical writing techniques, lines of communication and effective communication techniques.

As mentioned in the section on Leadership/Team Building, public relations and interpersonal communications skills were identified as important but underrated in many instances. Many interviewees have received prior formal training in dealing with the public and specified experience as the primary method for learning these skills.

Participants emphasized the importance of being able to tailor the message to their audience, and that being a good teacher was imperative in dealing with customers and stakeholders, as well as the public and other government agencies. Training is available in these capabilities according to the human resources interviews.

Project Managers and supervisors rate experiential learning processes as important, particularly learning through presentations and conducting project review processes. Review processes are seen as valuable but most often neglected. The experiential aspect of learning ties into other responses addressing advanced training, and validates the need for training that more accurately meets the need of an experienced and highly technical project management workforce. The employment of effective review processes is key in balancing technical capability against sound business practices.

Inter-agency representation and Federal/contractor communication is rated as important among the persons interviewed. This is attributed to the perception that this skill is addressed indirectly through interpersonal skills and team skills that account for success in teams that consist of multi-agency representation. Also, most DOE project managers and supervisors feel comfortable in their knowledge of and advocacy for DOE in inter-agency situations.

Quality/Safety Management

At all levels of project management, DOE project managers are required to have knowledge of organizational safety and quality assurance structures, occurrence reporting processes, and safety and quality requirements. At the more basic levels, quality/safety management knowledge includes an understanding of ISM, Operational Readiness Review (ORR) requirements, test planning techniques, turnover/start-up processes, procedures and performance criteria, as well as quality assurance/quality control testing processes, Total Quality Management (TQM), functional business areas, design review techniques, ES&H policies and procedures and acceptance criteria.

The self-assessment scores revealed that one of the weakest areas for DOE project managers was in the area of quality management. Of those interviewed, 85 percent feel that the project managers' scope, roles and responsibilities and requirements in quality management are not currently well defined.

Similarly, 85 percent of the interviewees feel that the safety management scope, roles and responsibilities are not well defined for project managers. Ninety-three percent of the respondents agree that the current definition of DOE Federal project manager roles and responsibilities are inadequate. This is in sharp contrast to the Department-wide implementation of an Integrated Safety Management System (ISMS) and the multi-year process of producing and implementing the *DOE Functions, Roles and Responsibilities Manual* (FRAM).

Cost Management

Knowledge of various techniques is required of the Level 1 project manager in the area of cost management. An understanding of contingency estimating, estimating, budget management, forecasting, modeling, and cost estimate verification and validation techniques are included in the *Draft DOE PMCDP Knowledge Diagram*. Other areas of understanding in this domain include cost benefit analysis, the Federal budget process, determining funding requirements, funding methods, and procurement guidelines and regulations.

Understanding the Federal budget process was identified as an important element of knowledge. Ninety-seven percent of those interviewed agree that understanding the budget process is important, and that there is a lack of training opportunities for this knowledge. The interviews revealed that fluctuating funding profiles were identified as a major cause of DOE project failure. Current developmental opportunities are seen as inadequate. Interviews with human resources personnel showed a lack of alternatives in obtaining training in the budget process that address DOE-specific issues and alternatives as they relate to budget formulation, implementation, and execution.

Time Management

Project managers need to have an understanding of scheduling, resource leveling, tracking and monitoring, resource analysis and planning, and resource and allocation techniques. Allocation of resources, methods to determine project activity duration, integrating and sequencing activities, resource skill categories and scheduling software are all important time management skills necessary for project managers to be effective.

Ninety-four percent of the project managers and supervisors rate the importance of managing competing priorities, time management, assigning resources across competing priorities, and scheduling skills as not important for development not because these skills are not important for a project manager to possess, but because the workforce possesses adequate skills in this area. Programs for entry level project managers should include these skills.

Risk Management

Evaluating project risk alternatives is required for Levels 3 and 4 project managers. The *Draft DOE PMCDP Knowledge Diagram* includes other areas of risk management that are necessary for project managers at Levels 1 and 2. These consist of an understanding of techniques to determine maturity and risks of technology development; external and internal project risk environments; project risk identification, quantification, and analysis techniques; risk control techniques; and risk planning and management processes and techniques.

Eighty percent of the project/program managers consider risk management as important. The perception is that basic risk management skills need to be developed. Advanced

training in this area will be welcomed by the workforce if tailored to DOE and applied in an intact project team setting.

The results of the self-assessment showed that the knowledge level in the area of risk management was in need of improvement. Basic training in this area is required.

Contract Management

The area of Contract Management requires knowledge of COTR roles and responsibilities, acquisition strategies across multiple programs, determining and negotiating award fee and contract performance incentives, and SEB and Source Selection Board (SSB) processes at all levels of DOE project management.

Being able to tailor activities to the project type and the dollar amount managed was considered important, with personnel viewing current training as inadequate to meet this requirement. Contract administration training needs to focus on contract specifics. Project managers need to be able to understand the difference between firm fixed-price, management and operations, and management and integration contracts to coincide with delegating COTR authority to the project manager. Additionally, training specific to the awarded contract is needed for the entire IPT.

Contractual and relationship development and maintenance KSAs were emphasized by interviewees as important for project success. This is consistent with the emphasis on oversight responsibilities in response to other interview questions, and with studies indicating the importance of business-related skills and behavioral skills in modern project environments. As a project manager matures in DOE, these skill sets become more important as the dollar value and complexity of responsibility increases. Human resources personnel interviews reinforced the need for increased applied training in these areas.

Serving on SEBs was rated as important and contributed to perceived capability in contract and acquisition management. Discussions reveal that there needs to be more opportunities to participate in this activity. This is a good example of training that occurs in an organizational environment and yields valuable real-world experience for application to other projects. Interviews with human resources personnel revealed no formal plans to utilize these types of training opportunities.

Delegating project managers COTR authority is deemed important to managing projects effectively within DOE. Delegation of COTR authority to the project managers was not the norm across the complex but was granted at one of the DOE sites. Kerzner (1998) specifies that successful project-driven organizations give profit and loss responsibility directly to project managers.

Ninety-six percent agree that contractual and relationship development and maintenance skills are important, and that current training is inadequate.

Almost 80 percent agree that service as a COTR and on SEBs is important, and that there are inadequate opportunities to obtain this experience. In addition, 85 percent felt that COTR responsibility is important for a project manager but is not practiced in DOE. However, at one of the DOE sites, senior project managers have COTR responsibility.

Integration Management

The *Draft PMCDP Knowledge Diagram* lists DOE project managers as possessing knowledge of project interactions with site infrastructure, change control and configuration management, methods to integrate technology development activities with design, organizational policies, and performance criteria and measurement in the competency area of Integration Management.

The self-assessment scores revealed that the weakest areas for DOE were the areas of Integration Management and Quality Management, both important systems-related management capabilities. Interviews with human resources personnel showed that advanced classes were available, but an integrated approach was not evident. The Training Budget Analysis revealed that project management courses were not being used to address this gap.

Advanced skills in integration, portfolio project management, risk management, project start-up and pre-planning were rated as important by interviewees, along with the ability to construct performance metrics to handle the increase in performance-based contracting activities.

3.6.2.2 Human Resources Interviews

The responses to the six areas of inquiry in the human resources interviews were grouped into 15 overarching issues that tie directly to the PMCDP. Table 6 shows the responses from each site matrixed against the issue areas.

Table 6. Human Resources Interview Responses

Overarching Issue	AL	HQ NN	ID	NV EM	OAK	OR	OH	RL	ORP	SR
PM Knowledge Areas	C	C	C	C	C	C	C	C	C	C
Eligibility Requirements	C	C	C	C	C	C	C	C	C	C
PM Competency Requirements	C	C	C	C	C	C	C	C	C	C
Standards at Each Level	C	C	C	C	C	C	C	C	C	C
Training Requirements	C	C	C	C	C	C	C	C	C	C
General Education Requirements	C	C	C	C	C	C	C	C	C	C
Developmental Experience Requirements	C	C	C	C	C	C	C	C	C	C
PM Career Path	C	C	C	C	C	C	C	C	C	C
Internal Certification Requirements	C	C	C	C	C	C	C	C	C	C
External Certification Requirements	M	M	M	M	M	M	M	M	M	M
PM Recruiting	M	M	M	M	M	M	O	M	M	M
PM Retention	M	M	M	M	M	M	O	M	M	M
Rewards and Incentives	C	C	C	C	C	C	C	C	C	C
Performance Metrics	C	C	C	C	C	C	C	C	C	C
PM Position Descriptions	M	M	M	M	M	M	M	M	M	M
C = Critical	M = Moderate				O = Optional					

Eleven of the 15 issue areas were unanimously identified as Critical to project management career development and tie directly to the affirmative responses to the questions asked of the project and program managers discussed previously.

Having project-specific internal certification and competency requirements were identified as critical. This parallels the program and project manager replies that each project is unique and as such has project-specific needs and requirements for successful management. However, having a program of external certification requirements (such as the PMI) was only seen as moderately important. This is juxtaposed to the 89 percent approval rating given by the project and program managers, that a comprehensive project management career development system is important for DOE. DOE does not have a system in place to compensate managers who become PMI certified. Presently, there is no economic or career benefit to the managers to obtain and keep such a certification within DOE.

Position descriptions were only evaluated as moderately important to a career development program. Human resources personnel at all sites reiterated that a project manager's position is almost impossible to describe en toto. The breadth of the jobs and the variety of the work defy any one comprehensive position description.

There was no clearly defined career path for project managers across the complex. Without a path, project managers often find themselves competing for positions outside their career field to advance. Project manager positions were not viewed as being valued on their own merits at the senior levels. Many senior project managers (Level 4) listed in Appendix B have collateral duties other than project management.

Only two areas of inquiry were considered to be Optional, Project Manager Retention and Project Manager Recruiting. Additionally, these were only identified at the Ohio Closure Sites (Fernald and Mound Plant). The managers and supervisors made it clear that their positions were unique, working at a site soon to be closed. There was not an issue with recruiting and retention.

Interviews with the human resources personnel revealed budget cuts and limited funds greatly impacted training and career development opportunities for project and program managers. The current DOE contract with Atlantic Management Centers, Inc. (AMCI) to provide training to DOE personnel limited the sites and organizations' ability to procure their own training courses. Project and program managers and human resources personnel considered the courses offered by AMCI to be too basic for the level of experience held by the majority of DOE project and program managers. Courses offered were general and not specific to the needs of the project and program managers. Sites were giving priority for training to Facility Representatives in an effort to meet the new requirements for this classification. Nevada Operations Office presented the most effective personnel and training program. Efforts by the human resources manager to obtain additional funding for training and personnel development activities assisted the Nevada program. Because of the lack of funding and career development opportunities across the DOE complex, only a few sites had interns or entry level positions.

Vacancy announcements and position descriptions at nearly all the sites were written for the classification series, such as a General Engineer or Physical Scientist. Program management and project management were terms used in the Duties or Responsibilities section of the vacancy announcement or position description. Success in providing training and career development opportunities for the employees depended on the individual supervisor's: 1) knowledge of the DOE personnel system, 2) creative thinking, and 3) perseverance in exerting the necessary effort to work within the system.

Based upon the human resources interviews, most of the sites do not have plans in place or have addressed the overarching issues given in Table 6. Table 7 gives the percentage of the 10 sites visited that are addressing the issues. For example, only 10 percent of the sites are addressing Developmental Experience Requirements.

Table 7. Overarching Issues Addressed at Sites

Percent of Sites with Plans in Place or Addressing the Issue				
0%	10%	20%	30%	50%
<ul style="list-style-type: none"> ➤ Standards at each level ➤ PM Career Path ➤ Internal Certification Requirements ➤ External Certification Requirements ➤ Performance Metrics 	<ul style="list-style-type: none"> ➤ Developmental Experience Requirements 	<ul style="list-style-type: none"> ➤ Eligibility Requirements ➤ PM Retention 	<ul style="list-style-type: none"> ➤ Rewards and Incentives ➤ PM Knowledge Areas ➤ PM Competency Requirement 	<ul style="list-style-type: none"> ➤ Training Requirements ➤ General Position Descriptions

None of the 10 sites have addressed over 50 percent of the key overarching issues for a PMCDP. However, it is noted that the PMCDP task force is taking the lead on addressing many of these issues.

3.6.3 Conclusions

The various mission differences between the sites were significant in some instances, such as an organization targeted for closure versus an organization expanding their responsibilities. Each site had certain elements that highlighted their specific circumstances. All sites possessed project management issues and trends that impact DOE as an organization, regardless of location.

Regardless of the high level of overall expertise of this mature workforce, general issues in several major areas concerning project management career development emerged through the interview responses:

- A defined career path for project management needs to be developed and implemented, and maintained DOE-wide. Project managers often find themselves competing for positions outside their career field to advance. Project manager

positions were not viewed as being valued, and project managers do not have adequate authority, continuing training development and senior management support. This is also reflected in the finding of the DOE Career Path Analysis that there is no clearly defined career path for project managers across the complex that allows for organized and efficient career advancement.

- Preparing for the future exists as a critical gap. Development and advancement opportunities are limited. New personnel have not been hired in any significant numbers in recent years as validated through the human resources interviews. This current highly experienced group has not been able to mentor and train new personnel. Mentoring and coaching skills will need significant improvement and emphasis when DOE hires new personnel.
- The current DOE project management curriculum is a critical gap. The offerings are too basic, concentrating on fundamental project manager skills that are well developed, or presenting material that is not appropriately exercised through simulations, role-play, and practical application. Advanced skills in value engineering, systems engineering, risk, integration, project start-up and pre-planning, and managing project portfolios were specified as specific needs. This is backed by data from the Training Budget Analysis, the Job Series Analysis, and the *PMAppraise*[®] Self-Assessment. The human resources interviews reveal a curriculum of traditional offerings that do not emphasize experiential learning activities.
- Skill in leading and formalizing an IPT is a critical gap. Personality, attitude, relationship development and management, negotiation, interpersonal communications, conflict management, and style issues related to advanced team leadership skills in IPTs are critical in working as mixed government/contractor teams and need significant improvement, as shown by the need for improvement in integration management and quality management through the *PMAppraise*[®] Self-Assessment scores.
- Skills in understanding and implementing project oversight activities are a critical gap. Contractual skills and experience, experience gained by serving on SEBs and as a COTR, as well as training in the roles, responsibilities, and performance metrics involved in DOE project oversight activities is needed to close this gap.
- Advanced project management training in general needs to be made available. This training is most effective in experiential learning formats, such as rotational assignments, shadowing assignments, and assignments with industry and other Federal agencies. Supporting analyses are the *PMAppraise*[®] Self-Assessment, and the Training Budget Analysis, the *DOE Benchmarking Study*, and the Kerzner Study.
- Training in current DOE policies, roles, and responsibilities, such as DOE Order 413.3, is needed to promulgate senior management guidance on how to implement project management in DOE. Supporting analyses are the *DOE Benchmarking Study* and the Kerzner Study.

- Individual and team leadership, attitude, style, and interpersonal skills training is needed to improve the ability of DOE project managers in creating and maintaining project relationships in an oversight role. Supporting analyses are the *PMAppraise*[®] Self-Assessment and the Kerzner Study.
- Contract specific management, the Federal budget process, and business management skills are needed to improve DOE project manager abilities in managing complex contracting processes. Supporting analyses are the *PMAppraise*[®] Self-Assessment, and the Kerzner Study.
- Correlation between project manager competency levels and the DOE GS position levels are inconsistent at the sites visited.
- When developing a certification process, external project manager certification standards need to be integrated with DOE-specific requirements.
- There is a lack of reward systems for individuals and teams.
- Management processes that impact on project management career development are creating difficulties. This is addressed in the project and program manager interviews, the Kerzner Study, and the *DOE Benchmarking Study*. This includes:
 - Devaluation of project management skills by some managers.
 - Externally generated change directives that disrupt project operations, unplanned additional requirements from headquarters elements, and budget turbulence.
 - Lack of involvement of project managers in strategic decision-making activities.
- Implementation processes for project management exhibit deficiencies. This is addressed in the project and program manager interviews and the Kerzner Study. This includes:
 - Applicability and tailoring of DOE Order 413.3 to project types and dollar amounts.
 - Inadequate definition of DOE project manager authority and lack of COTR authority delegation.
 - A lack of user-friendly lessons learned systems for project management.
 - Lack of emphasis in appropriate presentations and review processes for projects.

4.0 RECOMMENDATIONS

Based on the findings and conclusions of the job series analysis, training budget analysis, self-assessment, career path analysis, experience survey, and the project and program manager and human resources interviews, the overarching recommendation is that an integrated comprehensive PMCDP should be created, covering the entire life cycle of career management for DOE project managers.

The DOE project management workforce is highly experienced, but requires additional tools and developmental activities to maximize their effectiveness. This effort is easier said than done, since it addresses recruiting, development, retention, promotion, and continuing education of project managers in a complex organization with multiple missions and political issues.

There are many elements of a career development program that need to be tailored to the particular culture of DOE, and the follow-through on such an undertaking is critical for a successful program. The integration of this approach into existing human resources and personnel organizations, policies, and procedures is critical.

The following recommendations are made:

- Conduct a comprehensive developmental activity review using the following guidance:
 - Identify and use advanced topics in project management that will challenge and motivate experienced DOE project managers, including DOE Order 413.3, managing contracts, business management and systems engineering.
 - Conduct developmental activities in an applied project team site-specific setting that will encourage creative and critical thinking skills as well as result in practical training that will directly impact particular ongoing programs and projects.
 - Develop and apply an integrated approach that builds specific desired capabilities in a structured and progressive fashion for project managers in the DOE environment. This includes a structured competency model with standards, requirements, and success metrics, and a defined career path.
 - Emphasize real-world experiential stretch assignments (rotational assignments, shadow assignments, short-term visits, temporary assignments, and personnel exchanges) that result in measurable increases in capability and include opportunities to serve as a COTR and a SEB participant.
 - Experiential-based training courses utilizing various media, such as classroom, web-based, computer based, individual portfolio, etc.

- Identify partnerships with world-class organizations for established programs that can be tailored to the DOE project environment and use these partnerships across the entire organization.
- Emphasize interpersonal skills, relationship development and management skills, and personality awareness that allow Federal project managers to exert increased influence and authority under conditions of oversight.
- Leverage existing project manager certification industry standards as an additional element for increasing DOE project manager capability, and encourage participation in wider project manager communities of practice.
- Develop a formal mentoring process that tracks institutional resources and makes them available to project managers.
- Develop a rollout program for the comprehensive career development approach comprising informational presentations that officially kick-off the program and specify the vision, mission, goals and objectives of the PMCDP for each level of DOE, to include supervisors and senior management.
- Develop and specify project management business processes that address the following issues:
 - Tailoring project activities according to type and dollar amount, allowing for intelligent application of DOE Order 413.3.
 - Lessening the impact of politically-based changes on project activities by encouraging free exchange of information and increasing awareness of project issues at strategic levels so that decisions are not perceived as arbitrary.
 - Better defining the scope, roles, responsibilities, authorities, requirements, and activities of Federal project managers performing oversight of projects.
 - Defining and implementing an effective individual and team rewards system that is tied to performance.
 - Defining and implementing a project-based best practices system that encourages personnel to use and trade lessons learned across the organization.
- Develop or improve structure and technologies to support the following elements:
 - Integrate project management career development into human resources documents and processes so that it is clearly valued and differentiated to include career path and position descriptions.

- Defining and implementing a homeroom initiative for project managers, which provides an opportunity for mentoring, networking, and discussion of current and new project management issues and approaches.
- Inventory current automated project management tools and techniques and match requirements to best-in-class tools and techniques. This includes automated availability of project lessons learned. Make these widely available to DOE project managers.
- Adjust organization to support DOE project managers with increased financial responsibility and authority for their projects, and increase organizational leadership responsibility and authority as appropriate.
- Institute processes and procedures for DOE hybrid certification that includes both internal and external elements.
- Track project managers throughout their careers and career path to effectively utilize workforce and validate and improve the PMCDP.

Appendices

Appendix A
Draft DOE PMCDP Knowledge Diagram

Appendix B

Project and Program Manager List

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Project Manager Worksheet																
2	Project Manager	Location	Lead PSO	Projects	TPC (\$)	Total TPC	Title (Series)	Phone #	E-Mail	Supervisor	Location	PM Supervised	PM	TPC Sup.	Title (Series)	Phone #	E-Mail
3					Millions	Millions											
4	Office of Science																
5	Creg Pitonak	PPPL	SC	National Cor	65	65	GS-0801	609-243-3713	Gptonak@pppl.gov	Faul, Jerry W.	PPPL	Creg Pitonak		65	GM-00340	609-243-3706	jfaul@pppl.gov
6	Chad Henderson	PNNL	SC	Laboratory S	9.6	9.6	GS-0801	509-372-4675	chad_s_henderson@rl.gov	Christensen, Roger F	RL	Chad Henderson		9.6	GS-0801	509-372-4900	Roger_F_Christensen@rl.gov
7	Eric Rohlfing	GTN	SC	LCLS	200	200	GS-1320	301-903-8165	eric.rohlfing@science.doe.gov	William Millman	GTN	Eric Rohlfing		200	ES-01320	301-903-5805	WILLIAM.MILLMAN@science.doe.gov
8	Chicago																
9	Jim Yeck	Fermi	SC	LHC	531	531	GM-0801	630-840-2530	Jim.Yeck@ch.doe.gov	Monhart, Jane L.	Fermi	Jim Yeck		784.4	ES-00340	630-840-3281	Jane.Monhart@ch.doe.gov
10	Ron Lutha	Fermi	SC	NuMI	138.6	138.6	Lead 00801	630-840-8130	Ronald.Lutha@ch.doe.gov			Ron Lutha					
11	Paul Philp	Fermi	SC	D-Zero	57.9	114.8	GS-00801-	630-840-4481	Paul.Philp@CH.DOE.GOV			Paul Philp					
12				CDF	56.9							Stephen Webster					
13	Pepin Cardan	Fermi	SC					630-840-2727	Pepin.Cardan@ch.doe.gov								
14	Stephen Webster	Fermi	SC				GM-00801-	630-840-2130	Stephen.Webster@ch.doe.gov								
15	Roxanne Purucker	Ames	SC	GPP			GS-01301	630-252-2096	roxanne.purucker@ch.doe.gov	Wunderlich, Robert C	ARGONNE	Roxanne Purucker		14.2	ES-00340	630-252-2366	Robert.Wunderlich@ch.doe.gov
16	George Paliulionis	ANL-E	SC	Central Suppl	5.9	5.9	GS-00801-	630-252-2724	jurgis.paliulionis@ch.doe.gov			George Paliulionis					
17	Tom Balamut	ANL-E	SC	Fire Safety In	8.3	8.3	GM-00801-	630-252-2287	Thomas.balamut@ch.doe.gov			Thomas Balamut					
18	Joe Eng	BNL	SC	Electrical Sys	6.8	6.8	GS-00801-	631-344-7982	Jeng@BNL.gov	Holland, Michael D.	BROOKHAVEN	Joe Eng		36.8	ES-00340-	631-344-3424	MHOLLAND@BNL.GOV
19	Nand Narain	BNL	SC	User Resear	15	15	GM-01301-	631-344-5435	Narain@bnl.gov			Nand Narain					
20	Mike Butler	BNL	SC	User Resear	15	15	GS-00801-	631-344-3430	Butler1@bnl.gov			Mike Butler					
21	Oakland																
22	Kathy Johnescu	LBNL	SC	Research Suj	23.2	23.2	GS-00801-	510-486-6342	Katherine.johnescu@oak.doe.gov	Nolan, Richard H.	BERKELEY	Kathy Johnescu		30.8	GM-00340-	510-486-4345	rholan@lbl.gov
23	Donna Spencer	LBNL	SC	Molecular En	7.6	7.6	GS-00819-	510-486-4363	donna.spencer@oak.doe.gov			Donna Spencer					
24	Evaristo Valle	SLAC	SC	GLAST	35	35	GS-00801-	650-926-4552	EV.Valle@oak.doe.gov	Muhlestein, John S.	STANFORD	Evaristo Valle		210	GM-01301-	650-926-3208	john.muhlestein@oak.doe.gov
25	Hanley Lee	SLAC	SC	Linac Cohere	175	175	GS-00801-	650-926-3207	Hanley.Lee@oak.doe.gov			Hanley Lee					
26	Barry Savnik	LBNL	SC	Molecular Fo	58.9	58.9	GS-00801-	510-637-1700	barry.savnik@oak.doe.gov	Gonzales, John L.	OAKLAND	Barry Savnik		58.9	GM-00801-	510-637-1689	john.gonzales@oak.doe.gov
27	Oak Ridge																
28	Les Price	ORO	SC	SNS	1,400	1400	EJ-00301-	865-576-0730	PriceLK@oro.doe.gov	George Malosh	ORO	Les Price		1,400.00	ES-00340	865-576-4523	MaloshG@ornl.gov
29	Harold Clark	ORO	SC	Quasi-Poloid	13.9	13.9	GS-00801-	865-576-0823	clarkhe@ornl.gov								
30	David Arakawa	ORO	SC	Center for Ne	54.8	54.8	GS-00801-	865-576-6811	arakawad@ornl.gov								
31	Stan Frey	ORO	SC				GS-00801-	865-576-0136	FreySD@ornl.gov								
32	NN																
33	Bill Danker	FORS	NN	01-D-142	TBD	TBD	GS-0801	202-586-5624	William.Danker@hq.doe.gov	Andre Cygelman	FORS	Bill Danker		TBD	ES-0801	202-586-8814	Andre.Cygelman@hq.doe.gov
34	Damian Peko	FORS	NN	99-D-141	TBD	TBD	GS-0801	202-586-7524	Damian.Peko@hq.doe.gov			Damian Peko		TBD			
35	Dean Tousley	FORS	NN	01-D-407	TBD	TBD	GS-028	202-586-0217	dean.tousley@hq.doe.gov	Dave Nulton	FORS	Dean Tousley		TBD	ES-0840	202-586-4513	David.Nulton@hq.doe.gov
36	Patrick Rhoads	FORS	NN	99-D-143	TBD	TBD	GS-0801	202-586-7859	PATRICK.RHOADS@hq.doe.gov			Patrick Rhoads		TBD			
37	Primarily Defense Programs																
38	Ron Ooten	ORO	DP	88-D-122-27	59.1	238.9	GS-0801	865-576-8146	OotenRT@oro.doe.gov	Daniel Hoag	ORO Y-12	Ron Ooten		546.3	GS-0801	865-576-0511	Hoagd@oro.doe.gov
39				93-D-122	35.8							Harry Peters					
40				01-D-124	144												
41	Harry Peters	ORO Y-12	DP	88-D-122-42	15	307.4	GS-0801	865-576-6812	PetersHE@oro.doe.gov	Hoag, Daniel Keith	FEDBLDG	Harry Peters			GS-00801-	865-576-0511	Hoagd@oro.doe.gov
42				98-D-124	25.8												
43				01-D-103-02	266.6												
44	Amarillo																
45	Charles Phillips	AMARILLO	DP	88-D-122-38	16.3	41	GS-00803-	806-477-5336		Johnson, Jerry S.	AMARILLO	Charles Phillips		235.29	GS-00801-	806-477-3125	
46				88-D-122-39	4.2							Terry Zimmerman					
47				88-D-124	7							Johnnie Guelker					
48				94-D-127	6.4												
49				94-D-128	7.1												
50	Terry Zimmerman	AMARILLO	DP	88-D-123	143.6	176.39	GS-00801-	806-477-4906	tzimmerm@pantex.com								
51				90-D-124	19.99												
52				96-D-122	12.8												
53	Johnnie Guelker	AMARILLO	DP	99-D-128	17.9	17.9	GS-00801-	806-477-3183									
54	Jim Allensworth			88-D-125	38.57	38.57	GS-00343-	505-845-5543	JALLENSTWORTH@DOEAL.GOV	Russell, Lyle D.	AL	Jim Allensworth		38.57	GM-00343-	505-845-5260	LRUSSELL@DOEAL.GOV
55	AL																
56	Frank White	AL	DP	93-D-123	198.1	228	GS-0801	505-845-4877	FWHITE@DOEAL.GOV	Higgins Jr, Patrick J.	AL	Frank White		228	GM-00801-	505-845-5194	phiggins@doeal.gov
57				99-D-122	29.9												
58	LANL																
59	Everett Trollinger	AL/LANL	DP	95-D-102	128.6	128.6	GS-00801-	505-667-0281	ETROLLINGER@DOEAL.GOV	Ledoux, Herman C.	LOS ALAMOS	Everett Trollinger		396.8	GM-00801-	505-667-9875	HLEDOUX@DOEAL.GOV
60	Steve Fong	AL/LANL	DP	96-D-102-01	17.2	83.6	GS-00801-	505-665-5534	SFONG@DOEAL.GOV			Steve Fong					
61				96-D-102-02	17.5							Lloyd Smith					
62				96-D-103	48.9							Jesus Amezcuita					
63	Lloyd Smith	AL/LANL	DP	99-D-105	4.2	4.2	GS-00801-	505-667-4235	LSMITH@DOEAL.GOV			Mike Fulford					
64	Jesus Amezcuita	AL/LANL	DP	99-D-132	73.9	73.9	GS-00801-	505-677-2268	JAMEZQUITA@DOEAL.GOV								
65	Mike Fulford	AL/LANL	DP	00-D-105	106.5	106.5	GS-00801-	505-677-3863	MFULFORD@DOEAL.GOV								
66	Warren Hall	GTN/LANL	DP	01-D-103-03			EK-00801	301-903-3443	WARREN.HALL@nnsa.doe.gov	Levedahl, William K.	FORS	Warren Hall			EJ-01310	202-586-1276	kirk.levedahl@nnsa.doe.gov
67	Jack Tillman	AL/LANL	DP	XX-D-XXX	15.9	15.9	EK-00801-	505-845-4114	JTILLMAN@DOEAL.GOV	Whiteman, Albert E.	ALBUQUERQUE	Jack Tillman			ES-00801-	505-845-6038	AWHITEMAN@DOEAL.GOV
68	Robert Hamby	GTN/LANL	DP	97-D-102	269.8	269.8	GS-00801-	301-903-3607	ROBERT.HAMBY@nnsa.doe.gov	Miotla, Dennis M.	GTN	Robert Hamby		269.8	ES-00340-	301-903-5427	DENNIS.MIOTLA@nnsa.doe.gov
69	John Metzler	FORS/LANL	DP	98-D-126	696	696	GS-00801-	202-586-0190	ohn.metzler@nnsa.doe.gov	Sohinki, Stephen M.	FORS	John Metzler		696	ES-00340-	202-586-0838	STEPHEN.SOHINKI@nnsa.doe.gov

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Project Manager Worksheet																
2	Project Manager	Location	Lead PSO	Projects	TPC (\$)	Total TPC	Title (Series)	Phone #	E-Mail	Supervisor	Location	PM Supervised	PM	TPC Sup.	Title (Series)	Phone #	E-Mail
142	RL																
143	Larry D. Romine	RL	EM	Pu Stab.	48.9	48.9	GS-0801	509-376-4747	larry_d_romine@rl.gov								
144	Beth Bilson	RL	EM	River Rest.	2,900.00	2900	ES-0801	509-376-6628	Helen_E_Beth_Bilson@rl.gov								
145	ORP																
146	T. R. Hoertkorn	ORP	EM	94-D-407/W-	601.4	985.70	GS-0801	509-376-7412	thomas_r_hoertkorn@rl.gov	William Taylor	ORP	Thomas Hoertkorn		5,385.70	EJ-1301	509-372-3864	William_J_Taylor@rl.gov
147		ORP	EM	97-D-402/W-	285.3							Mark L Ramsay					
148		ORP	EM	01-D-403/W-	99												
149	Mark L Ramsay	ORP	EM	01-D-416/W-	4,400.00	4,400.00	GS-0801	509-376-7924	Mark_L_Ramsay@rl.gov								
150	CH/BNL																
151	M Parsons	BNL	EM	BGRR	47	47.00	GS-0801	631-344-7978	PARSONS@BNL.GOV								
152	L. Nelson	BNL	EM	HFBR	106	106.00	GS-0840	631-344-5225	LNELSON@BNL.GOV								
153	NV																
154	J. Wing	NV	EM	RMAD	6.7	6.70											
155	OAK																
156	D. Sutherland	OAK	EM	ETEC Facility	16	16.00	GS-1301	925-423-6790	Donna.Sutherland@oak.doe.gov	De Graca, Henry M		D. Sutherland		16.00	GS-1301	510-637-1617	henry.degraca@oak.doe.gov
157	OHIO																
158	McCracken	FEMP	EM	Silos	327.3	327.3	ES-00340	513-648-3101	Stephen.McCracken@Fernald.g	Craig Jr, Jack R.		S. McCracken		327.3	ES-0340	937-865-5133	jack.craig@ohio.doe.gov
159	Provencher	MEMP	EM	PRS-66	24.8	24.80	ES-00340	937-865-3252	richard.b.provencher@ohio.doe.gov	Brechbill, Susan R.	OH	Baillieu		28.30	ES-0340	937-865-3977	susan.brechbill@ohio.doe.gov
160	Baillieu	CEMP	EM	JN-3	3.5	3.50	GM-01301	614-760-7372	thomas.a.baillieu@ohio.doe.gov								
161	T. Williams	AEMP/ID	EM	Extrusion Pla	6.4	6.40	GS-0801	208-526-2460	WILLIATE@ID.DOE.GOV								
162	A. Williams	WVDP/NY	EM	Remote Hanc	70.8	70.80	ES-00340	716-942-4312	alice.c.williams@ww.doe.gov								
163	RF																
164	J. Springer	RF	EM	B771/774	95	95.00	GS-0801	303-966-4076	joe.springer@rf.doe.gov								
165	S. Tower	RF	EM	400 Area	96	96.00	GS-0801	303-966-2133	steven.tower@rf.doe.gov								
166	ORO																
167	J. Kopotic	OR	EM	K1070	16.8	274.80	GS-0401	865-576-9441	KopoticJD@oro.doe.gov	Donna Perez	ORO	J. Kopotic		274.80	GS-0801	865-576-8625	perzdm@oro.doe.gov
168				K25/27	258												
169	J. Ford	OR	EM	SWSA4	26.6	26.60	GS-0801	865-576-0623	FordJS@oro.doe.gov	Bill Seay	ORO	J. Ford		174.60	GS-0801	865-576-1830	seaywm@oro.doe.gov
170	M. Jugan	OR	EM	Salt Removal	15.5	15.50	GS-0801	865-576-0169	JuganMR@oro.doe.gov			M. Jugan					
171	b. Cahill	OR	EM	EMWVF	132.5	132.50	GS-1301	865-241-4830	cahillwj@oro.doe.gov			W. Cahill					
172	G. Bodenstein	OR	EM	Paducah GW	7.5	7.50	GS-1301	502-441-6831	bodensteingw@oro.doe.gov	Don Seaborg	KY	G. Bodenstein		7.50	GS-0801	270-441-6806	seaborgwd@oro.doe.gov
173	K. Wiehle	OR	EM	Ports Quad	30.9	30.90	GS-0028	740-897-5020	gpq@cosmail4.ctd.ornl.gov	Sharon Robinson	OH	K. Wiehle		30.90	GS-1301	740-897-2001	robinsons@oro.doe.gov
174	J. Howard	OR	EM	K29/31/33	244	244.00	GS-0801	865-576-5982	HowardJL@oro.doe.gov	Brown III, Robert J.		J. Howard		244.00	ES-0801	865-576-2599	BrownRJ@oro.doe.gov
175	G. Riner	OR	EM	Tru Waste Tr	76.2	76.20	GS-0819	865-241-3498	RinerG@oro.doe.gov	Sleeman, Robert	ORO	G. Riner		76.20	GS-0801	865-576-0715	sleemanrc@oro.doe.gov
176	M. Reeves	OR	EM	DUF6	1,100	1,100.00	GS-0801	865-241-1659	ReevesMA@oro.doe.gov	Dennis Boggs	ORO	M. Reeves		1,100.00		865-576-1845	boggsld@oro.doe.gov
177	AL/LANL																
178	Mathew Johansen	AL/LANL	EM	Rendija Cany	12	25.1	GS-0801	505-665-5046	MJOHANSEN@DOEAL.GOV	Vozella, Joseph C.	LANL	Matt Johansen		25.1	GS-0801	505-665-5027	JVozella@DOEAL.GOV
179			EM	Landfill IM	13.1												
180	Unassigned Projects																
181		LANL	DP	01-D-701	27.9	100.10											
182		LANL	DP	01-D-702	22.4												
183		LANL	DP	01-D-703	31.4												
184		LANL	DP	01-D-704	10												
185		LANL	DP	01-D-705	8.4												
186	Federal Program Managers																
187	Environmental Management																
188	Percy Fountain	GTN	EM	92-D-140	75.6	205	GS-0801	301-903-2493	percy.fountain@em.doe.gov	Smith, Barry Alan	GTN	Percy Fountain		4169	ES-0801	301-903-3782	BARRY.SMITH@em.doe.gov
189			EM	96 EXP	129.4							Jeff McMillan					
190	Jeff McMillan	GTN	EM	96-D-471	54.7	790.8	GS-0801	301-903-7701	jeffrey.mcmillan@em.doe.gov			Kurt Fisher					
191				Steam System	55							Ken Lang					
192				Reconfigurati	600							Gale Turi					
193			EM	02-D-406	36.1							Larry Wolford					
194			EM	Security Upg	45							John Scolah					
195	Kurt Fischer	GTN	EM	99-D-402	24	1654.8	GS-0801	301-903-7412	kurt.fischer@em.doe.gov			Jerry Payer					
196			EM	93-D-187	1,551.00							Hap Thron					
197			EM	Class Waste	79.8												
198	Ken Lang	GTN	EM	02-D-401	599	599	GS-1320	301-903-7453	ken.lang@em.doe.gov								
199	Gale Turi	GTN	EM	02-D-409	22.5	83.2	GS-0801	301-903-8118	gale.turi@em.doe.gov								
200			EM	99 EXP	15.7												
201			EM	Restoration c	45												
202	Larry Wolford	GTN	EM	01-D-414	250	250	GS-0801	301-903-9859	larry.wolford@em.doe.gov								
203	John Scolah	GTN	EM	Treatment an	240	240	GS-0801	301-903-3201	john.scolah@em.doe.gov								
204	Jerry Payer	GTN	EM	Tru Waste Tr	300	336	GS-0028	301-903-7434	joseph.payer@em.doe.gov								
205			EM	Intermediate	36												
206	Hap Thron	EM	EM	731-6A	10.2	10.2	GS-1301	301-903-8153	harry.thron@em.doe.gov								
207	Paul Strider	GTN	EM	Consolidated	240	543.5	GS-0028	301-903-8140	Paul.strider@em.doe.gov	Robison, Sally A.	GTN	Paul Strider		2724.1	ES-1301	301-903-3626	sally.robison@em.doe.gov
208			EM	Infrastructure	56							Anthony Kluk					
209			EM	Rad Sc Lab	26							Rod Cummings					
210			EM	99-D-404	13.8							Mike Worley					
211			EM	96-D-461	11.7							Virgil Lowery					
212			EM	Geosc. Lab	170							George Dixon					

Appendix C

Proposed PMCDP

Appendix D

Initial E-mail Request Message

-----Original Message-----

From: PMCDP-Clair Gill [<mailto:PMCDP-Clair.Gill@hq.doe.gov>]
Sent: Wednesday, January 16, 2002 9:46 AM
To: saralyn.bunch@em.doe.gov; amanfre@legin.com
Subject:

The Deputy Secretary established the Project Management Career Development Task Force within the Office of Engineering and Construction Management (OECM) for the purpose of developing a PM Career Development Program (PMCDP).

Over the last several months the task force has been working toward the goal of developing a draft PMCDP to include the project manager's knowledge, skills, ability and training requirements; a PM career development tracking system; and a project manager certification program by December 1, 2001. To this end, a gap analysis geared at assessing the current background of PM's to manage projects identified as meeting the definition of a project in DOE Order 413.3 is being performed.

I envision this gap analysis will be conducted over the next four months using a three-pronged approach; 1) Project and program managers and supervisors will be asked to assess their own knowledge against the Project Management Body of Knowledge (PMBOK); 2) Project and program managers will be asked to complete a short survey designed to verify background and experience information; and finally 3) Project and program managers, supervisors and training managers will be interviewed on-site to assess the current status of career development.

The results of this analysis will be used to identify components of project manager training and development needed to make DOE project managers "Best in Class."

Attached you will find the first and the most time consuming (approximately two hours) element of the assessment, the ESI International self-assessment tool (Step 1 above). This tool assesses your individual knowledge against the PMBOK. This tool does not assess your capability to perform as a project manager.

We will receive your assessment results in the PMAppraise knowledge/skill area summary matrix. Information which comes to the PMCDP task force will contain a randomly assigned ID number ensuring your anonymity. We are not interested in individual results. We are trying to determine where we stand collectively as a Department. This assessment is being sent to approximately 150-200 DOE Federal employees. Individual results will be anonymous and will not be released. Only aggregate results will be used. You will receive your individual scores which you can compare against the national average for persons who have self-assessed using this tool. In addition to supporting the Department's initiative, the ESI self-assessment helps you to prepare for Project Management Institute (PMI) certification by identifying individual strengths and weaknesses against the PMBOK.

Please take the time to complete the self-assessment by June 23, 2001. Your participation is voluntary. However it is to your benefit to participate in the Department's effort to develop your career plan. It is very important to us as the DOE body of Project Managers that we know where we stand collectively when compared to established profession-wide knowledge standards. Once we establish where we are, we can determine what we need to do as an organization to allow our program and project managers to improve their capabilities and skills.

Thank you for the great work you do every day in managing DOE projects and helping to ensure their successful completion. And, thanks for taking the time to participate in this assessment.



ESI International has administered this instrument to project managers and persons in related disciplines in the information technology, finance, insurance, petrochemical, and pharmaceutical industries. We feel that the average assessment score of all individuals who have taken the PM Appraise falls between fifty (50) and sixty (60) percent regardless of the respective industry. This is based on conversations and discussions with many clients that have taken the PM Appraise. No numerical hard number has been provided from clients for many of the PM Appraise due to confidentiality issues. However, out of the population that was kept in our database, the following averages are shown for comparison across industries:

Average Assessment Scores by Industry

Insurance 58%

Finance 58%

Petrochemical 58%

Information Technology 61%

Pharmaceuticals 52%

However, remember that in order to pass the PMI Project Management Professional certification examination, project managers must achieve a score of 70% or better in *each* of the nine areas.

-----Original Message-----

From: PMCDP-Clair Gill [<mailto:PMCDP-Clair.Gill@hq.doe.gov>]
Sent: Wednesday, January 16, 2002 9:48 AM
To: amanfre@legin.com
Cc: PMCDP.Bunch@hq.doe.gov
Subject: Streamlining the registration process

Since the sending of my original message on June 1, 2001 my staff has been working to streamline the first element of the gap analysis, the ESI International self assessment tool. Attached you will find PMApraise memo-Department of Energy which streamlines the registration and login process for the project manager self assessment.

If you have any questions feel free to contact Ms. Saralyn Bunch of my staff at 202-586-8125 or electronically at pmcdp.bunch@hq.doe.gov.

Thank you once again for participating in the self assessment.

Memorandum

To: U.S. Department of Energy
From: Linda Nowak, ESI International
Subject: PMApraise: A Knowledge and Skills Assessment®
Date: June 6, 2001

The assessment generally takes from 2-4 hours to complete depending on the user's level of project management knowledge. After recording a response choice for question 108, the PM will be given a chance to go back and change other responses. When ready, the PM should click the "lock" button; the results will be calculated immediately and presented back to the PM with a summary report, which can be printed from their internet browser. This summary does not contain the actual questions or the correct responses; and these cannot be sent at any later time, per ESI policy.

How to Register:

Each PM should register with the following procedure:

- point internet browser to **www.esi-intl.com/pmksa**
- enter a valid **work e-mail** address (please review for accuracy)
- enter your **full name**
- select **U.S. Dept of Energy** (from the drop down company name list)
- enter **usenergy300** for the BatchID (enter as written — with no capitalization)
- enter a **password** of choice
- enter a daytime **phone number** (will only be used as an alternate method of contact)
- enter **city** of your office location

After PMApraise registration, the PM will immediately be taken to the main page to select and begin the assessment via the "click here to go to the assessment question menu." Questions may be responded to in any order, but the "record" button must be clicked for each response before moving on to another question.

How to Re-Login:

Re-login to the assessment as follows:

- point your browser to **www.esi-intl.com/pmksa**
- enter same work **e-mail address** used for registration
- enter **password** created during registration

If you have further questions feel free to contact me at +1 703-558-4184 or lnowak@esi-intl.com.

Appendix E

Project Manager Knowledge and Skills Assessment

Summary Matrix Project Management Knowledge and Skills Assessment

User Name	ID Number Location	INT	SCO	TIM	CST	QLT	HR	COM	RSK	PRO	Compre- hensive	Done Date	Random Number	Analysis Category
		3	4	7	9	4	4	4	2	4	4.56	9/5/2001	3990	OTHER
		5	8	9	9	7	9	6	7	10	7.78	6/29/2001	3846	PM/EM
		7	10	6	9	5	6	8	5	8	7.11	6/14/2001	3795	
		10	8	9	8	6	9	9	9	6	8.22	10/6/2001	4096	PM/DP
		8	9	11	11	8	10	12	7	8	9.33	7/8/2001		PM/EM
		7	9	9	9	4	8	10	6	7	7.67	8/28/2001	3901	OTHER
		9	12	8	12	9	10	8	8	8	9.33	9/10/2001	4001	PM/SC
		6	6	6	5	4	6	10	6	7	6.22	7/26/2001	3907	PM/DP
		6	9	11	8	7	6	8	8	9	8.00	6/14/2001	3787	PMP/CR
		7	8	10	9	8	8	9	9	10	8.67	8/7/2001	3903	PM/DP
		8	6	10	10	8	7	8	9	7	8.11	6/26/2001	3831	PM/EM
		8	7	8	10	8	8	9	11	9	8.67	6/12/2001	3784	PGM/NNSA
		6	7	7	9	6	6	9	10	7	7.44	5/31/2001		PMP/CR
		5	9	8	10	9	8	7	10	7	8.11	6/27/2001	3799	PMP/CR
		6	7	9	8	6	8	8	7	9	7.56	6/29/2001	3847	PM/EM
		8	6	7	9	7	7	7	6	10	7.44	8/15/2001	3959	PM/DP
		6	5	7	7	4	8	5	6	9	6.33	6/29/2001	3848	PM/EM
		6	8	7	7	5	7	7	5	7	6.56	8/2/2001	3931	PM/EM
		7	9	9	11	9	10	8	9	9	9.00	6/27/2001	3780	PM/EM
		5	6	9	10	8	6	10	5	7	7.33	6/15/2001	3798	PM/EM
		9	7	6	12	7	8	9	7	9	8.22	9/10/2001	3995	PM/SC
		8	9	7	9	6	8	8	5	9	7.67	6/22/2001	3825	OTHER
		9	5	8	8	9	5	9	9	7	7.67	9/10/2001	3963	PM/SC
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		6	7	7	8	4	8	10	7	11	7.56	9/11/2001	3985	PM/SC
		6	8	7	10	7	9	8	11	10	8.44	7/27/2001	3912	PM/SC
		9	9	9	11	10	8	6	7	5	8.22	6/29/2001	3807	PM/EM
		10	9	10	10	9	9	9	10	11	9.67	6/8/2001		PM/DP
		8	8	9	10	9	9	10	7	8	8.67	6/25/2001	3832	OTHER
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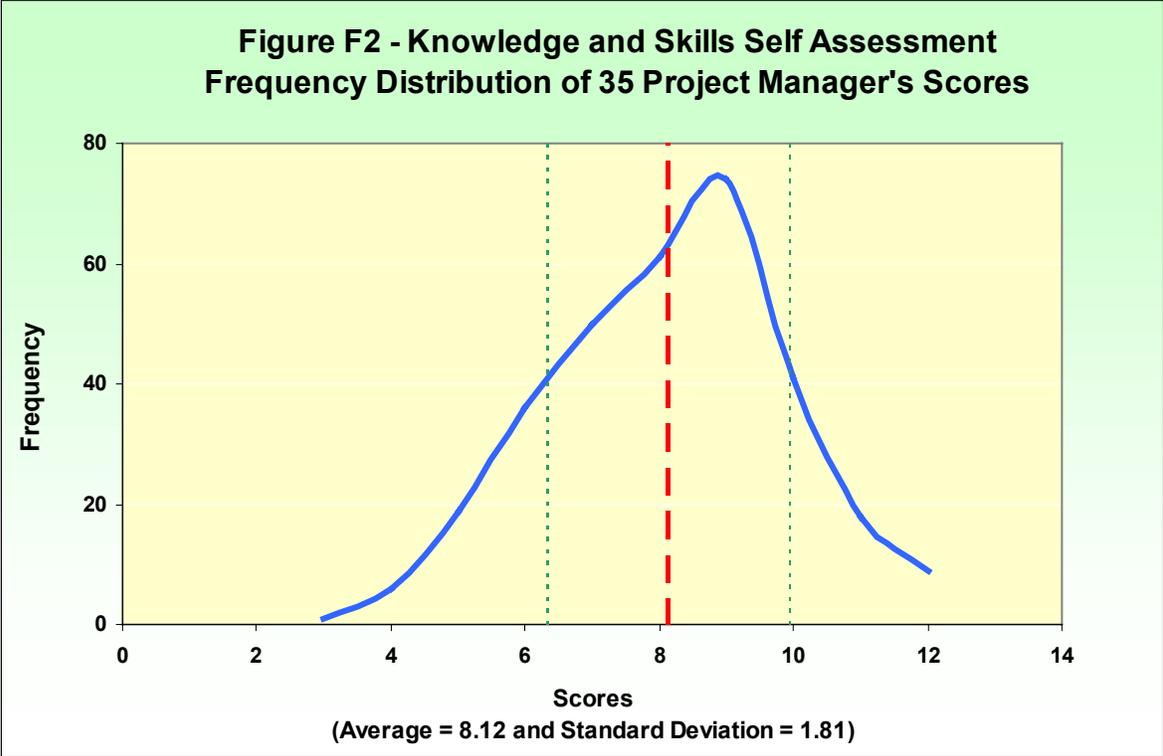
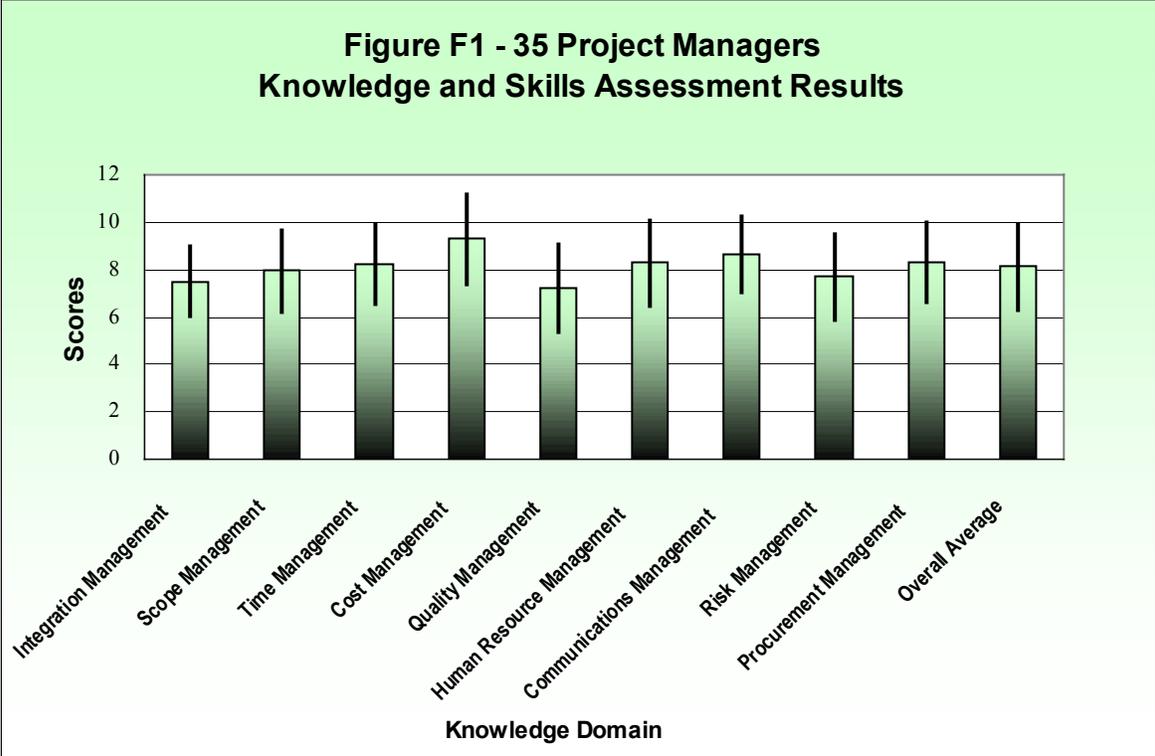
Summary Matrix Project Management Knowledge and Skills Assessment

User Name	ID Number Location	INT	SCO	TIM	CST	QLT	HR	COM	RSK	PRO	Compre- hensive	Done Date	Random Number	Analysis Category
		10	11	9	10	8	8	12	9	11	9.78	6/20/2001		PGM/NN
		8	5	11	11	6	10	12	11	11	9.44	10/5/2001	4109	PGM/EM
		5	9	8	8	10	11	9	8	5	8.11	6/6/2001		PGM/EM
		6	11	6	7	4	6	7	4	11	6.89	6/18/2001	3803	PM/DP
		9	9	9	12	9	11	10	9	9	9.67	7/5/2001	3863	PM/EM
		9	7	8	8	4	6	9	6	8	7.22	9/17/2001	3740	PMP/CR
		9	7	9	9	9	10	8	12	7	8.89	6/14/2001	3790	PM/EM
		11	10	9	12	8	7	11	8	7	9.22	9/25/2001	4029	PMP/CR
		8	10	8	9	6	10	11	8	10	8.89	8/7/2001	3885	PM/DP
		6	7	9	6	7	7	9	9	9	7.67	9/28/2001	4075	PGM/NNNSA
		11	10	11	10	10	12	11	11	8	10.44	6/18/2001	3801	PGM/NNNSA
		9	11	12	11	9	9	10	10	10	10.11	6/14/2001	3786	PM/DP
		8	8	5	7	8	9	11	7	8	7.89	8/10/2001		PM/EM
		10	8	8	12	8	10	10	9	9	9.33	7/13/2001	3878	PM/EM
		9	11	10	10	8	9	11	10	8	9.56	8/15/2001	3854	PMP/EM
		7	7	8	10	8	3	9	8	6	7.33	6/28/2001	3845	PM/EM
		8	9	8	10	5	9	10	8	10	8.56	6/25/2001	3830	PM/EM
		9	9	10	9	7	11	7	8	10	8.89	5/16/2001		PMP/EM
		7	9	9	11	7	9	10	9	5	8.44	6/12/2001	3782	PM/EM
		9	8	12	11	9	10	7	8	9	9.22	6/19/2001	3744	PM/EM
		5	8	6	9	6	7	10	5	4	6.67	6/19/2001		PGM/NN
		5	8	9	12	8	6	8	8	5	7.67	6/14/2001	3797	PGM/EM
		7	6	9	8	8	11	10	9	6	8.22	6/4/2001		PM/EM
		6	10	11	9	4	5	8	7	5	7.22	6/4/2001		OTHER
Company Averages		7.45	8.03	8.26	9.26	7.03	7.97	8.66	7.71	8.00	8.04			
Completes Total <62 users>														
PM Standard Deviation		1.82	1.83	1.80	1.83	1.88	1.99	1.83	2.04	1.79	1.90			

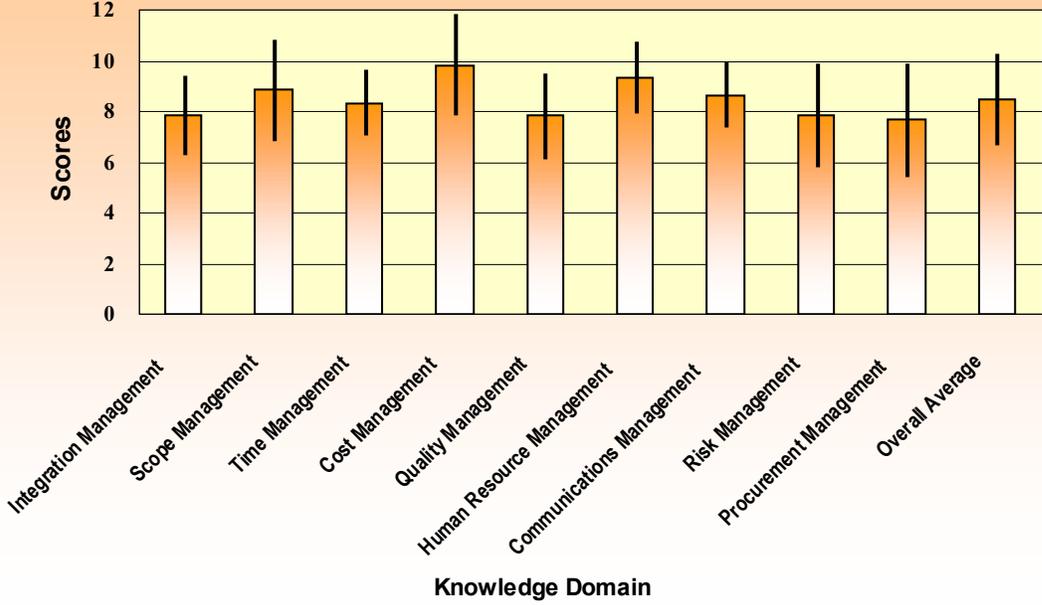
Appendix F

Assessment Results Figures

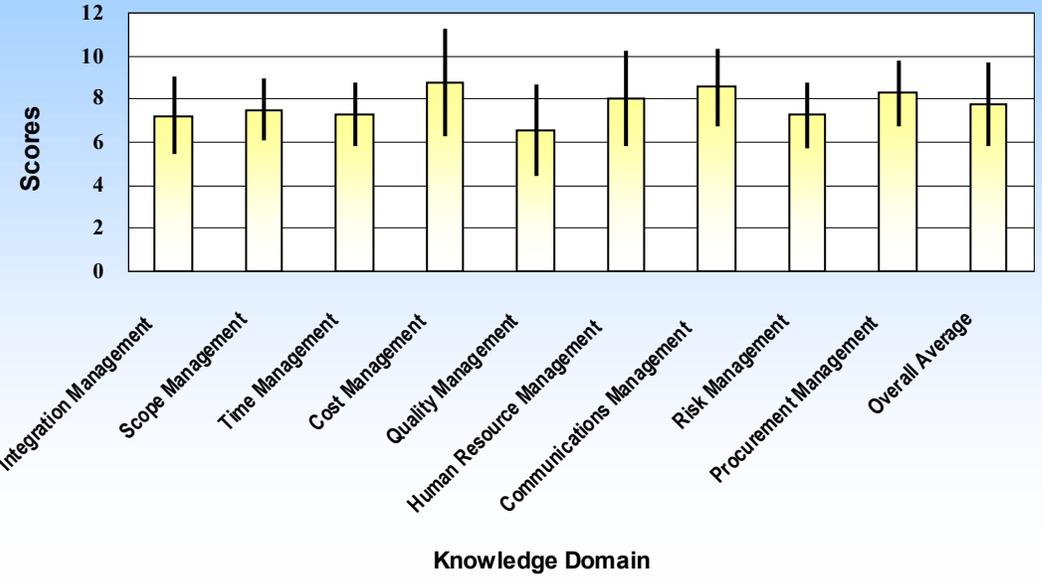
APPENDIX F – Assessment Results Figures



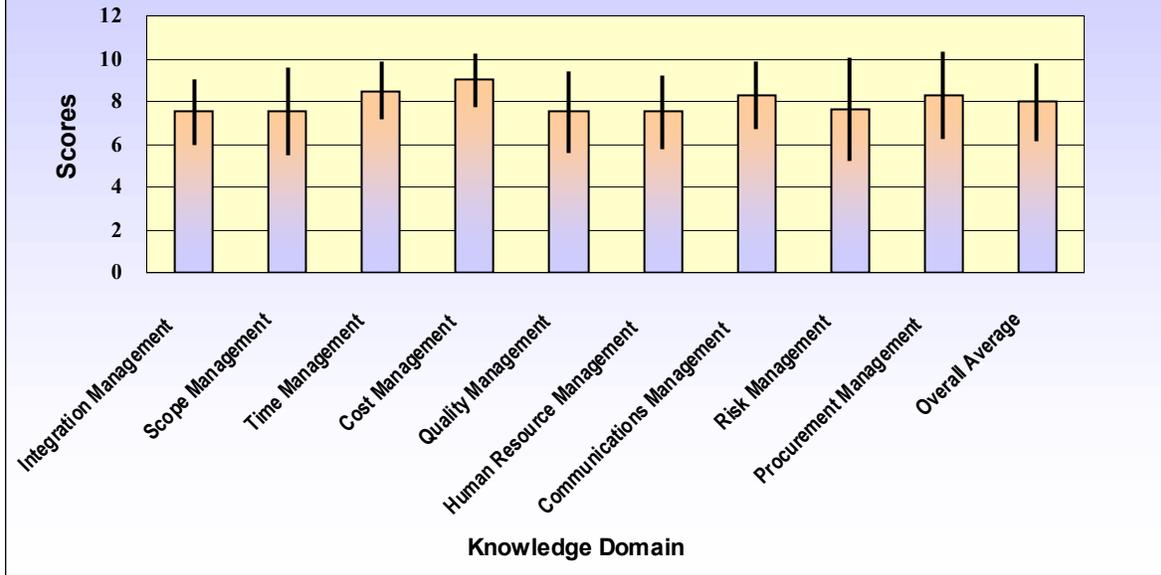
**Figure F3 - Level 1
PMs Knowledge and Skills Assessment Overall Results**



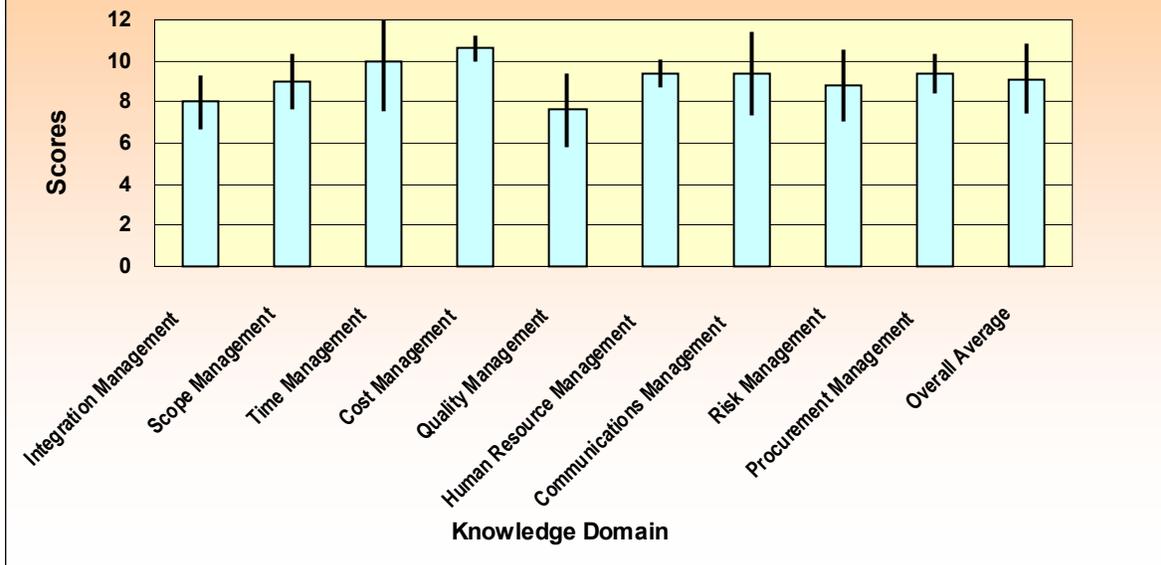
**Figure F4 - Level 2
PMs Knowledge and Skills Assessment Results**



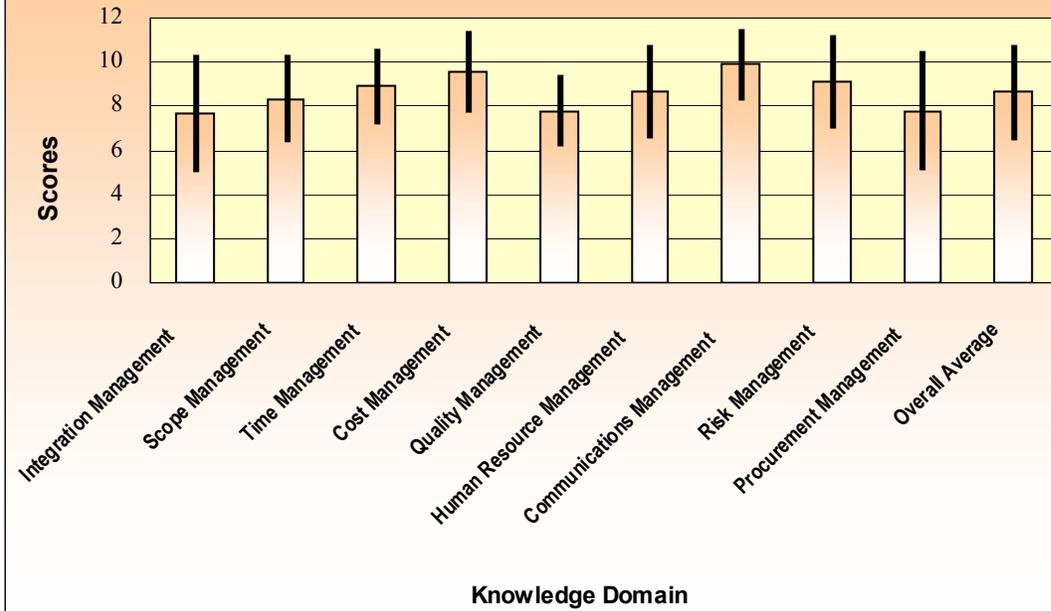
**Figure F5 - Level 3
PMs Knowledge and Skills Assessment Results**



**Figure F6 - Level 4
PMs Knowledge and Skills Assessment Results**



**Figure F7 - Program Managers
Knowledge and Skills Assessment Results**



**Figure F8 - PMCDP Task Force and OECM
Knowledge and Skills Assessment Results**

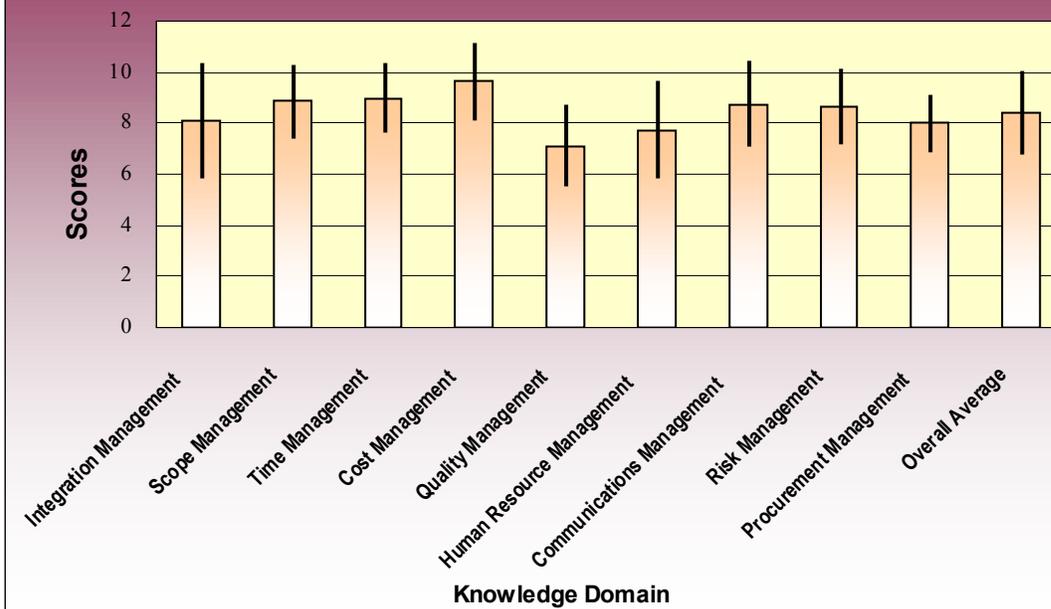


Figure F9 - Others
Knowledge and Skills Assessment Results

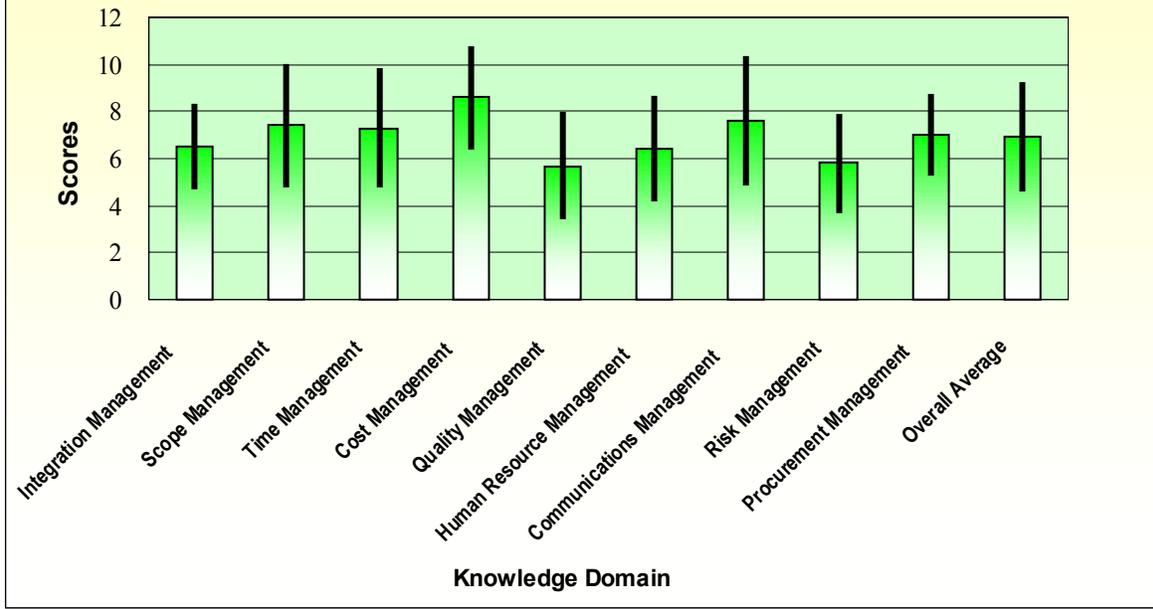
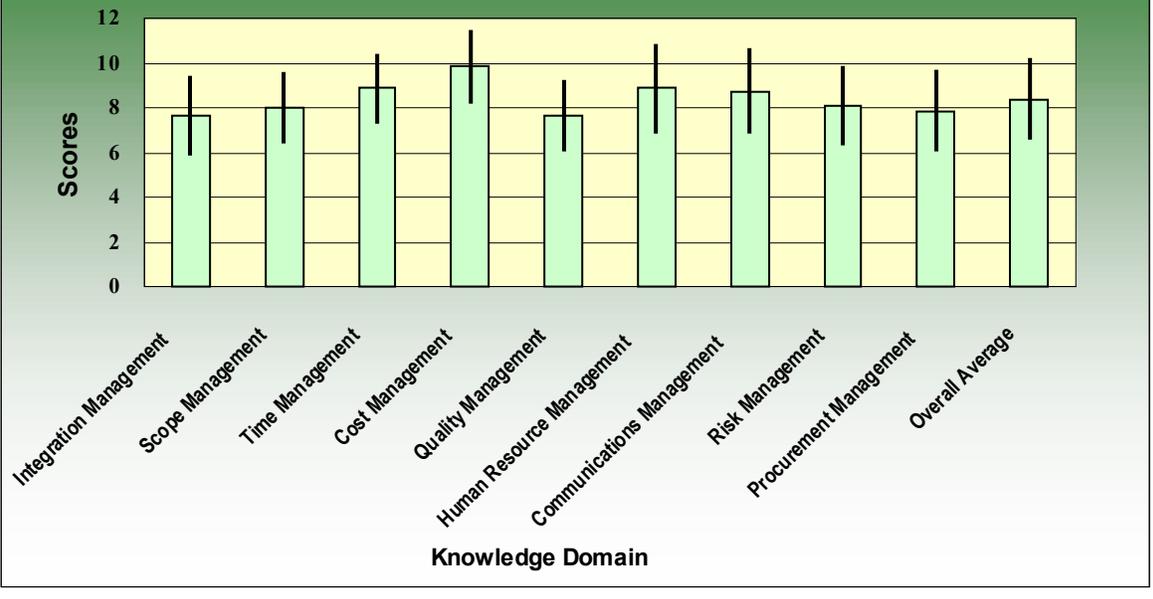
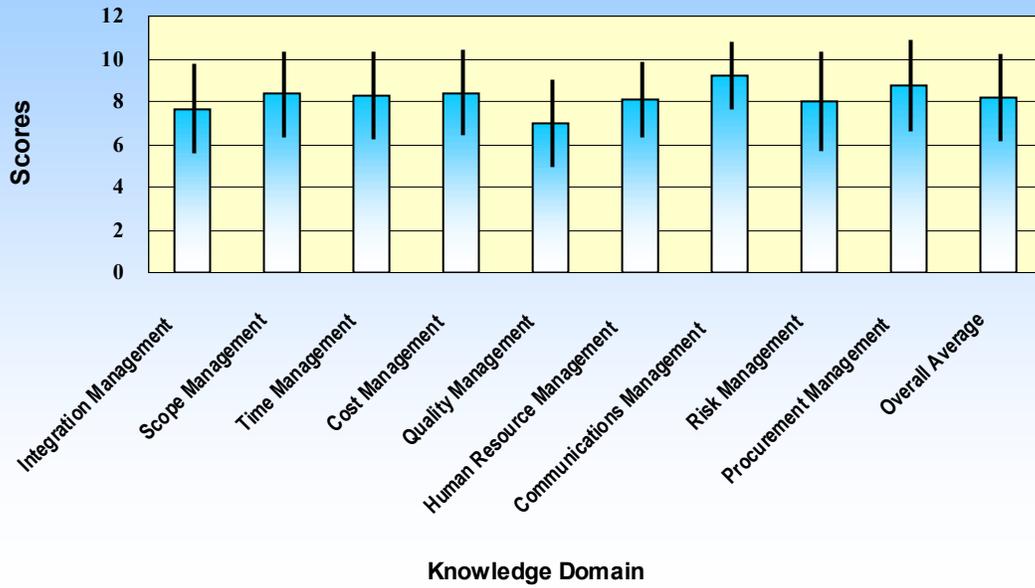


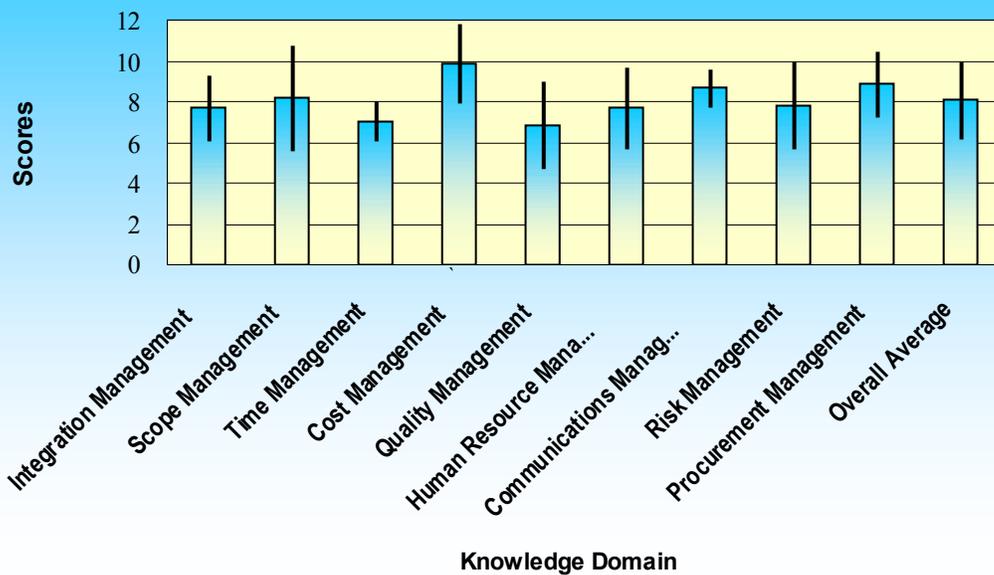
Figure F10 - EM Program Office
PMs Knowledge and Skills Assessment Results



**Figure F11 - NNSA Program Office
PMs Knowledge and Skills Assessment Results**



**Figure F12 - Science Program Office
PMs Knowledge and Skills Assessment Results**



Appendix G

Career Path Diagrams

Appendix G

ENTRY PATH INTO DOE

ALL 37 RESPONDENTS

CLASSIFICATION

DOE Project Organization

DOE Program Organization

DOE Support/Functional

E

Senior Mgmt
GS-15/SES

Program Mgr (Field)
Deputy Program Mgr
Assistant Manager
Office Director

Headquarters
Deputy Asst Sec
Assoc Deputy Asst Sec
Field
Assistant Manager
Program Manager

Deputy Assistant Sec
Assoc Deputy Asst Sec
Field Office Asst Mgr
Office Director

D

Upper Mgmt
GS/GM-14/15

Senior Project Manager
Senior Project Engineer
Division Director
Lead Engineer
Office Director

Headquarters
Office Director
Team Leader
Field
Area Manager
Operations Manager
Facilities Representative
Division Director

Division Director
Area Manager

C

Middle Mgmt
GS-13/14

Project Mgr/Engineer
Deputy Proj/Prog Mgr
Systems Manager
Branch Chief
Team Leader

Headquarters
Team Member
Program Manager
Field
Team Leader
Branch Chief

Team Leader
Facility Manager
Branch Chief

B

Staff
GS-12

Project Manager
Deputy Project Manager
Senior Project Engineer
Systems Manager
Senior Engineer/Scientist
Team Leader

Field
Team Member
Construction Office
Manager
Program Manager

A

Entry Level
GS-7/12

Project Engineer
Engineer
Team Member
Project Coordinator

Team Member

31-50% →

20-30% →

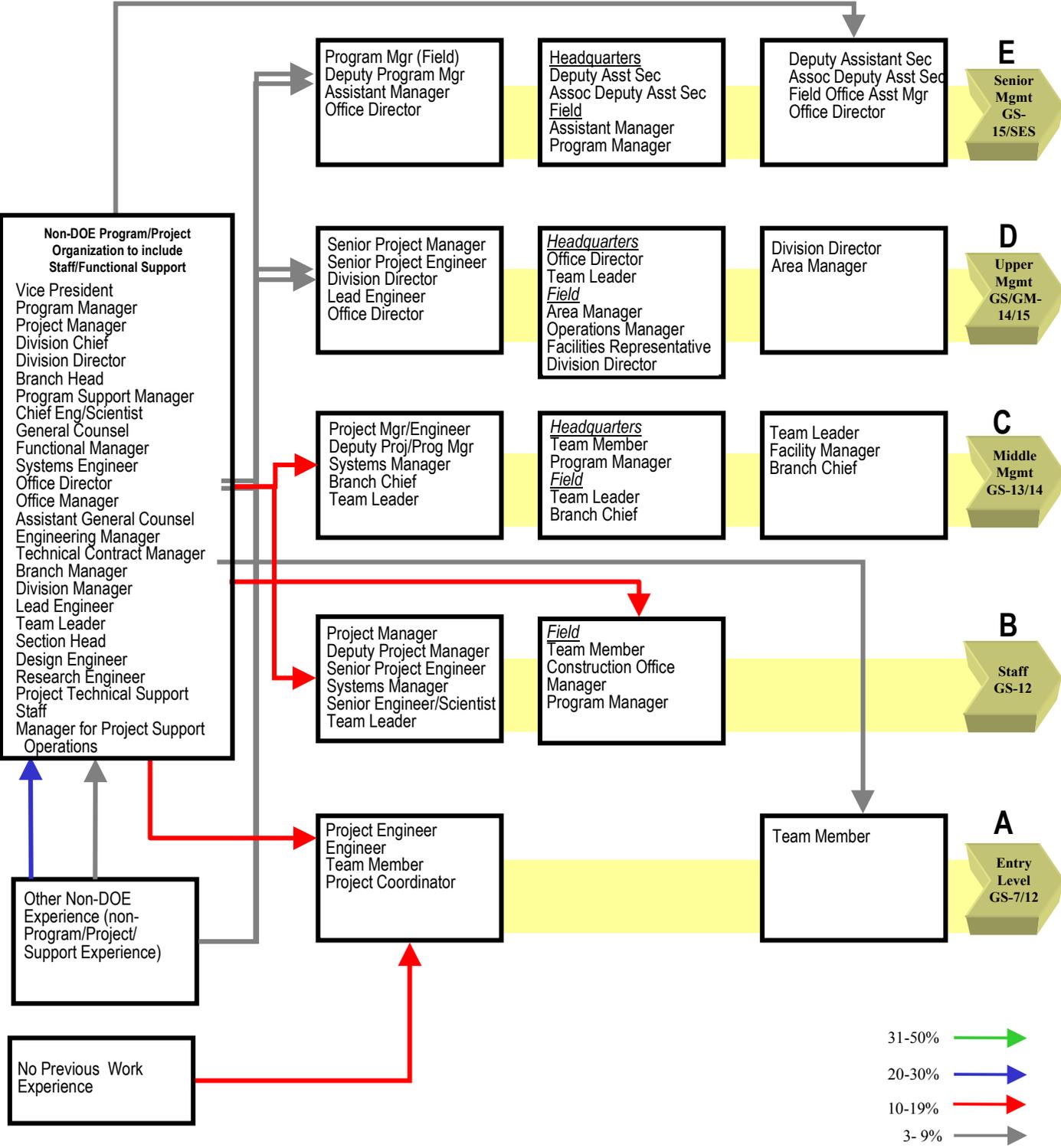
10-19% →

3- 9% →

Non-DOE Program/Project Organization to include Staff/Functional Support
Vice President
Program Manager
Project Manager
Division Chief
Division Director
Branch Head
Program Support Manager
Chief Eng/Scientist
General Counsel
Functional Manager
Systems Engineer
Office Director
Office Manager
Assistant General Counsel
Engineering Manager
Technical Contract Manager
Branch Manager
Division Manager
Lead Engineer
Team Leader
Section Head
Design Engineer
Research Engineer
Project Technical Support
Staff
Manager for Project Support Operations

Other Non-DOE Experience (non-Program/Project/Support Experience)

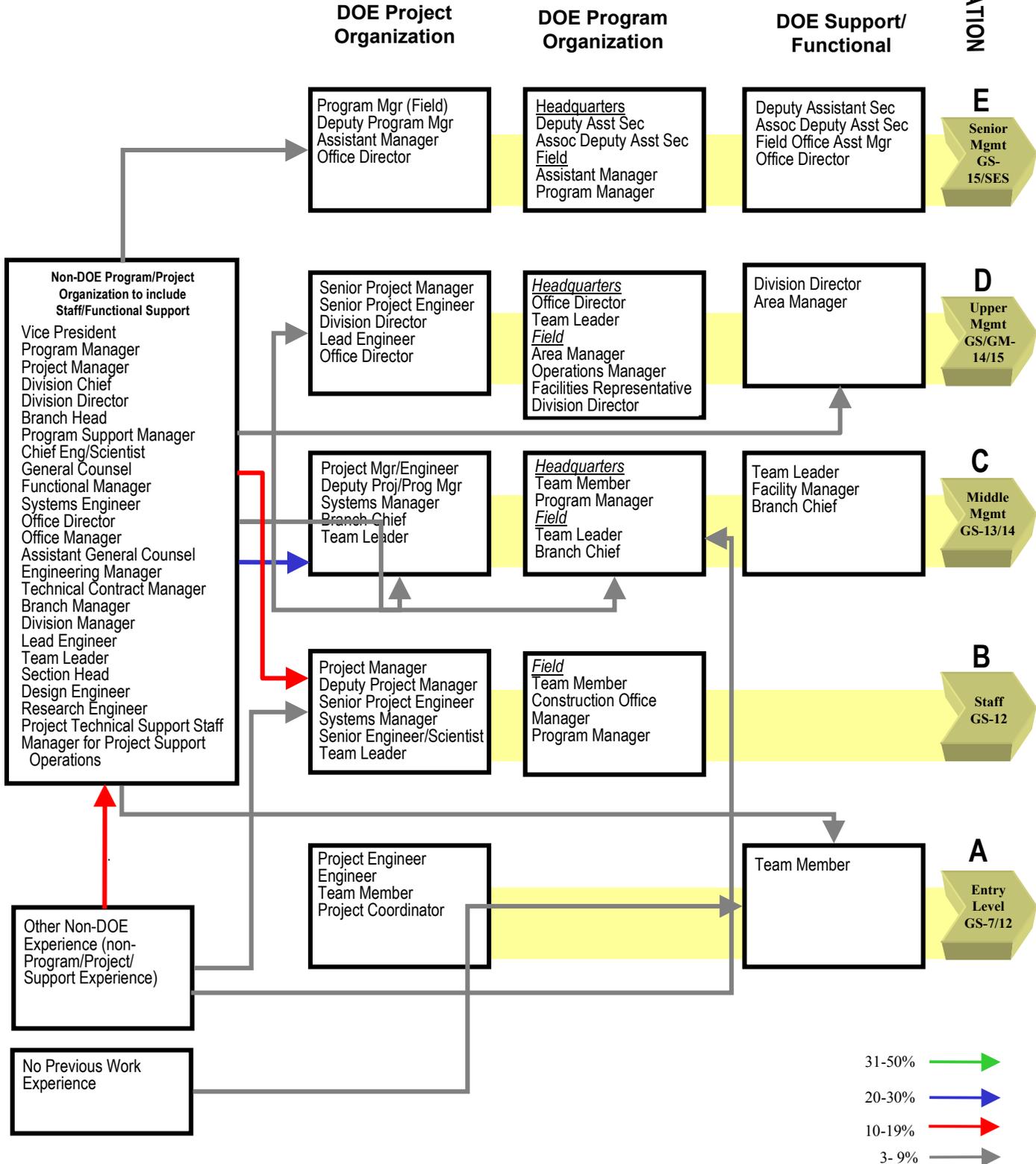
No Previous Work Experience



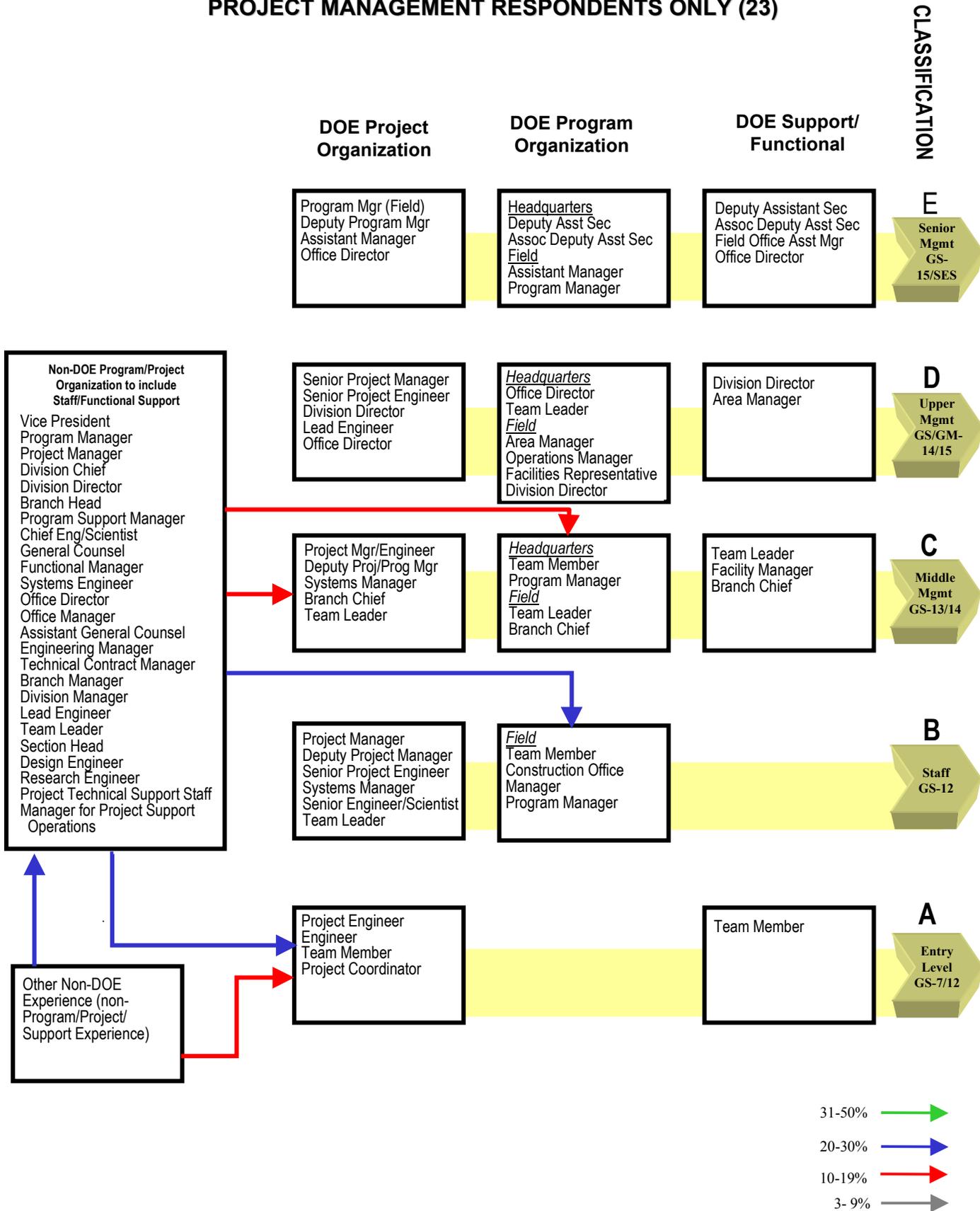
ENTRY PATH INTO DOE

SAVANNAH RIVER RESPONDENTS ONLY (14)

CLASSIFICATION



ENTRY PATH INTO DOE LEVEL 3 AND LEVEL 4 PROJECT MANAGEMENT RESPONDENTS ONLY (23)

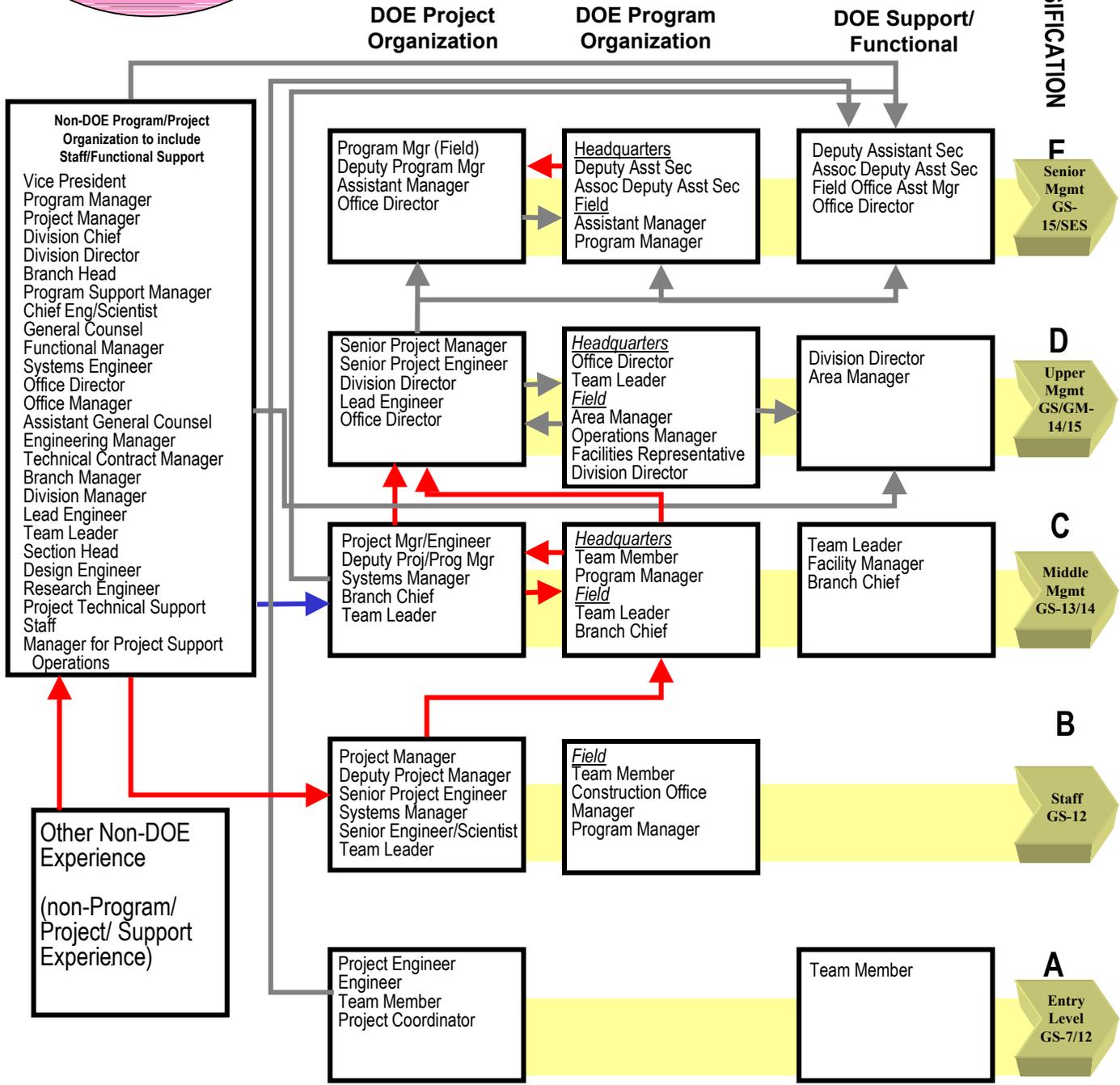


TYPICAL PROJECT MANAGEMENT CAREER PATH

TYPICAL CAREER PATH

SAVANNAH RIVER RESPONDENTS ONLY (14)

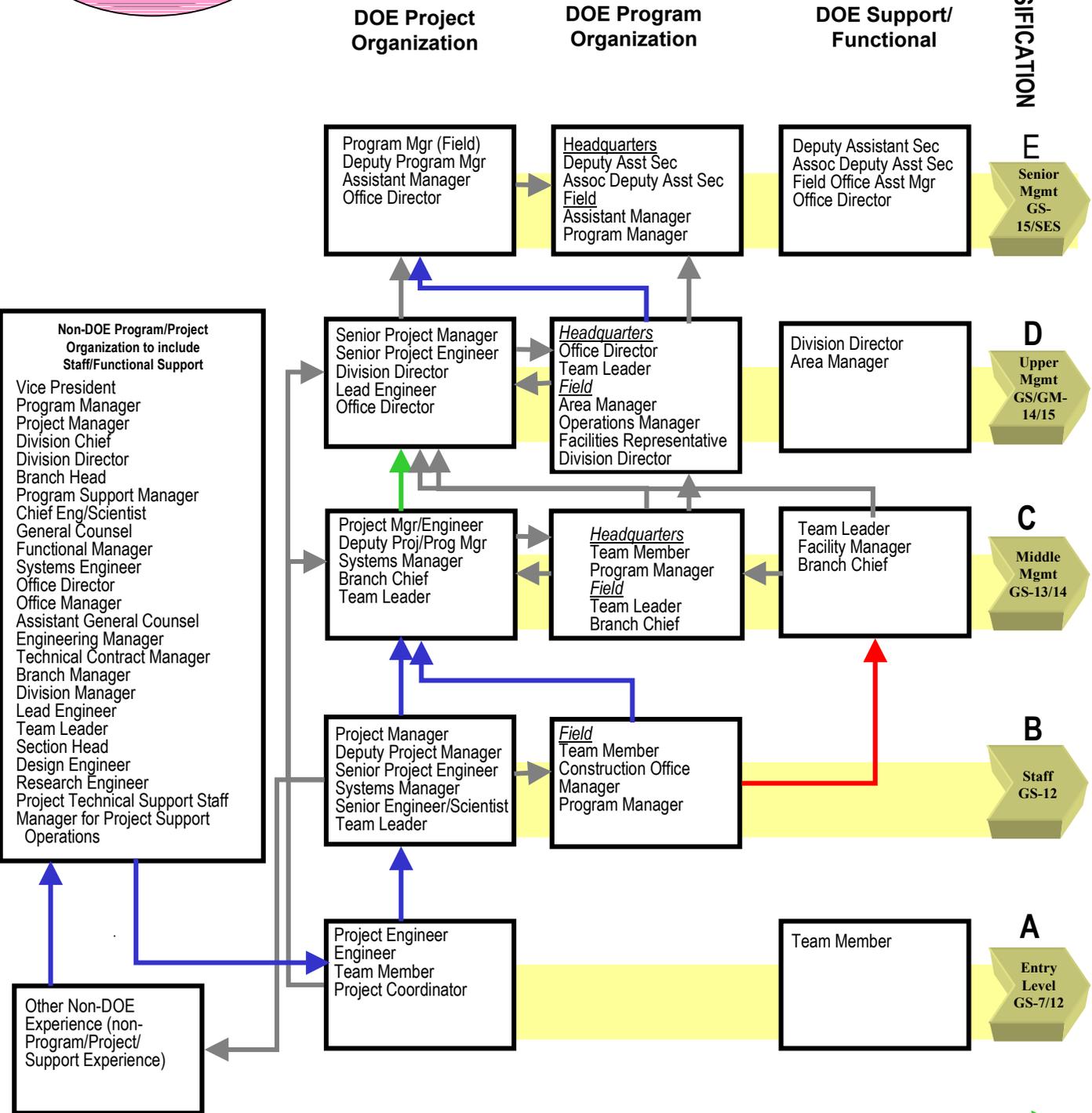
CLASSIFICATION



TYPICAL CAREER PATH LEVEL 3 AND LEVEL 4 PROJECT MANAGEMENT RESPONDENTS ONLY (23)



CLASSIFICATION



- 31-50% →
- 20-30% →
- 10-19% →
- 3-9% →

Appendix H

Project Manager Experience Survey

Appendix H. DOE Project Manager Experience Survey

1. Name:	John Doe
2. Duty Station:	DOE Albuquerque
3. Years at DOE:	11
4. Years Experience at Non-DOE Federal / State Agencies / Private Sector Companies:	26
5. DOE Job Series Classification(s) Held and Job Title (from SF-52s; e.g. 801; General Engineer):	0810/Civil Engineer 0801/General Engineer
6. DOE Grade Level – Current (e.g. GM-14)	GM-14
7. Education – (for each degree):	M.S./Civil Engineering/1984/University of New Mexico
• Degree(s) (B.S.; M.S.)	B.S./Civil Engineering/1975/ University of New Mexico
• Discipline(s) (Civil Engineering)	
• Date of Degree(s) (1975; 1984)	
• Institution(s)	
8. Professional License(s) – (Registered Professional Engineer, etc):	Registered Professional Engineer/1981/New Mexico
• License Designation	
• License #	
• Date of Issuance	
9. Professional Certification(s) – (Project Management Professional, Certified Cost Engineer, Certified Value Engineer, etc.):	None
• Certification Designation	
• License #	
• Date of Issuance	
10. Professional Affiliations – (National Society of Professional Engineers, American Geophysical Union, American Society of Civil Engineers, etc.)	American Society of Civil Engineers
• Organization Name	
11. Training Courses (for each course): Note – Attaching an IDP or CHRIS reference is an alternate method of completing this category:	

Training Year	Course Title	Training Hours	Certificate Date	Training Provider
1999	Risk Analysis	40	6/21/99	AMCI
1999	Integrated Safety Management	40	8/12/99	DOE
1998	Nuclear Criticality Safety	40	3/12/98	DOE
	Cumulative Training Hours	120		

12. DOE Project Management Experience

- **Title / Role / Responsibility (PM, Deputy PM, Project Controls Officer, Project Engineer, Integrated Project Team Member, etc)/ Duration of Designation (years, months)**

DOE/Federal Project Manager Experience Table:

Project Title	Project Responsibility	Duration of Designation	Location(s)	Program Sponsor	Total Project Cost	Project Duration
Rapid Reactivation	Project Manager	3/97 – present	LANL	DP	\$29 M	1997-present
Non-Nuclear Reconfiguration	Deputy PM	5/95-2/97	SNL	DP	\$270 M	1995-1997

13. Non-DOE Project Management Experience Summary Table

- Title/Role/Responsibility (PM, Deputy PM, Project Controls Officer, Project Engineer, Integrated Project Team Member, etc.)**
Duration of Designation (years, months)

Non-DOE Project Manager Experience Table:

Project Title	Project Responsibility	Duration of Designation	Location(s)	Program Sponsor	Total Project Cost	Project Duration
X5492	Team Member	6/90-4/93	Kansas City, MO	State	\$6M	1990-93

Submit Form to: pmcdp-claire.gill@hq.doe.gov

Appendix I

Project and Program Manager Interview Questions

Appendix I

Project/Program Manager Interview Questions

Level 0 – PM in Training

Project Management General

- Do you regularly apply your engineering and construction knowledge and skills in your daily work? How do you apply this knowledge and skill set?
- What orders, policies, manuals, regulations, and documentation (relating to project management) do you apply in your daily work?
- How do you determine internal and external stakeholders, their roles and responsibilities, and manage their expectations?
- Do you participate in work activities in team setting involving government employees and contractors? How do you facilitate these processes such as meetings, and how do you resolve conflicts and disputes?
- Give an example of how you go about identifying problems, collect data, analyze data, present information, recommend courses of action and alternatives, and measure progress. Do you perform these activities, or do you perform oversight of the contractor?
- How do you set up a project baseline? If a project is going off-course, how do you take corrective actions? Do you manage the development of the baseline, or do you perform oversight of the contractor who is developing the baseline?
- Do you participate in inspections and walk-downs? What is your role?
- Do you perform a Value Engineering Study of your project? At what stage of the project Life cycle is it performed?

Leadership and Team-Building

- How do you help a team to work better? How can you improve their ability to solve problems?
- How are you and your team rewarded for superior performance?
- Explain how you communicate with your peers, superiors and contractors.
- Do you participate in a formal mentoring program at the site? How do you identify potential future leaders? Are there specific traits you look for? Do these qualities include education/certifications/outside of work activities?
- Is there a formal program to develop potential future project managers at the site?
- How do you motivate your team and build team unity?
- How do you track and monitor individual team members' performance?
- How do you handle conflicts between team members?

Scope Management

- In developing scope, explain how you develop requirements and objectives and develop a baseline.
- Do you perform Project Design reviews? At 30/60/90?
- Do you participate/lead public participation efforts?
- Do you prepare documentation for the scope decision documents such as the ROD/EA/EIS etc?
- Do you work with a WBS in your projects? How are they used as a management tool?
- Do you face internal and external requirements and obstacles, such as legal, cultural, operational, and geographic? How do you handle these?
- Describe considerations in your project pre-planning and planning techniques.

Communication Management

- What types of oral and written project reports, technical documentation and memoranda do you prepare? What documents do you review and/or provide input into?
- Describe techniques you apply in reviewing designs.
- Describe the USQ identification and resolution process?
- Do you prepare/review a formal communications plan?
- Do you prepare/review the public participation Plan? How do you participate in this process?
- What criteria do you apply for project performance in functional business areas
- What methods do you use to communicate within the project team?
- What methods do you use to communicate project information upward (to management, headquarters, congress etc.)?
- At what level do you communicate (brief senior management, brief congress, provide written input to headquarters, communicate with contractor project manager, communicate with contractor senior staff, communicate project elements with professional organizations, academia, etc)?

Quality and Safety Management

- What are the QA/QC, ES&H, S&S, O&M, Safety policies and procedures, and Safety Orders that you must work with for your projects?
- Do you participate in IPTs? Explain how you contribute in developing safety documentation.
- Explain how you develop and review acceptance criteria, standards, and metrics.
- How do you implement Integrated Safety Management on your project?

Cost Management

- Do you participate in estimating costs for your projects? Describe the process you apply in estimating costs, and the techniques/documentation used.
- Describe the Federal budget process(as applied to your project). Do you participate in budget formulation? Budget execution? What budget-related documents do you prepare? Review? How do you determine funding and resource requirements for your project?
- Describe the pricing process and how it is applied.
- How do you track costs?
- Do you use earned value analysis as a performance measure?
- How do you control project costs?
- What method do you use to validate your project baseline?
- What types of estimates do you employ to validate your project during the various phases of the project Life Cycle?
- Do you or your contractor perform a closeout report at the completion of your project?
- Describe your techniques for scheduling and resource leveling, and resource analysis and allocation.

Time Management

- For the tasks and activities in your projects, how do you estimate durations, integrating and sequencing tasks and activities, and tracking and monitoring tasks and activities? How are these reported?
- Do you develop corrective action plans when the critical path is adversely impacted?
- How often do you update your schedule? Who provides the update input? How are the updates used? Do you verify the update data? How?
- What scheduling software do you use in your projects?

Risk Management

- What types of risks do you deal with in your projects?
- Do you develop the risk management plan? What is your role in the plan's development?
- Is the process for developing the risk management plan a standard process at the site? Do you know of a site handbook for this process?
- How do you manage risk? Do you update the risk management plan similar to monthly schedule updates?
- What risk mitigation techniques do you use?
- How do you include risk as a contingency factor?

Contract Management

- How do you analyze bids and prices?
- Do you work with or perform as a COTR? Explain the role and responsibilities.
- Do you work with contracts? What types? Do you understand your/DOE's obligation as it applies to the different types of contracts? Explain. What are the activities and methods that you apply? What documents do you use?
- Do you participate in source selection?
- Do you develop the acquisition plan? What is your role in the acquisition planning?
- Do you develop the Project Execution Plan (PEP)? What is your role in the development of the PEP?
- What is your closeout process? Are you directly involved?
- Do you document contractor quality? How do you perform quality control?

Integration Management

- How do you manage change in your projects? Is there a formal process at the site for managing/reporting/tracking baseline changes?
- What methods do you apply in integrating technology development activities?
- How do you measure project performance?
- What tools do you use in managing your projects?

Levels 1-2 Project Manager

Project Management General

- Do you regularly apply systems engineering knowledge and skills in your daily work? How do you apply this knowledge and skill set?
- What orders, policies, manuals, regulations, and documentation do you apply in your daily work?
- How do you determine internal and external stakeholders, their roles and responsibilities, and manage their expectations?
- Give an example of how you go about identifying issues and resolving them through selection of appropriate corrective actions.
- Explain how you determine information inconsistencies and identify critical success factors.
- How do you set up a project baseline and champion that baseline?
- Discuss the integration and interrelationship between programs (SC, DP, EM).

Leadership and Team-Building

- What are some leadership and management principles and techniques that work for you in DOE? How are these applied in a multi-disciplined environment, including redeploying resources?
- Describe your negotiating techniques.

- How do you assess performance as a supervisor?
- How do you develop subordinates?
- Are you a mentor, or have you served as a mentor? Were you officially designated as a mentor?
- How do you sell your project?

Scope Management

- How do you determine scope, and align with the DOE Strategic Plan? How are multiple Program Mission needs handled?
- Describe how you plan work.
- How are baselines developed for multiple and/or integrated projects?
- Do you write project objectives and specifications, define deliverables, decompose WBS and functional requirements, verify, and accept deliverables? What guidance do you follow for these actions?
- Describe project alignment techniques.

Communication Management

- Describe your methods in communicating with stakeholders, to include formal presentation and written communications.
- How are these methods applied in an inter-Agency environment?
- Are you involved in public hearings? How are these conducted?
- How are lessons-learned handled?
- How do you communicate to senior-level DOE staff?

Quality and Safety Management

- Describe your test planning techniques and QA/QC testing processes.
- Describe the USQ identification and resolution process.
- How are hazards analyzed?
- How do you implement integrated safety management in your project?
- Describe your application of ES&H, S&S, PSARs/FSARs, and ORR policies, procedures and requirements.

Cost Management

- How do you develop and manage your project budget?
- Describe forecasting techniques.
- What do you use for guidance in procurement activities?
- What is the process for funding your project activities?
- How do you verify and validate your cost estimates? What databases are used for these activities?
- Do you develop cost status reports? What are the critical components of this report?
- Describe trend analysis and how you do this activity?
- Describe how you integrate and sequence project activities, and how resources are orchestrated.
- How do you defend and justify your project budget?

Time Management

- Describe how to allocate and control resources.
- How do you verify and validate schedules and manage time?
- How do you get the materials and people you need for your projects?
- Describe how you know the work is being done to specification?

- Describe your methods for managing schedule uncertainty and contingency.

Risk Management

- What types of risks do you deal with in your projects? How are they identified, quantified, analyzed, and controlled? Describe differences between internal and external project risk environments.
- How are risk and safety interrelated?
- How do you determine maturity and risks in technology development?
- Do you use risk assessment software? What programs do you use? How has this use helped your projects?

Contract Management

- Have you performed as a COTR? What were your responsibilities?
- Have you served on SEBs/SSBs? Have you led these activities? What are the critical success factors in these activities?
- How do you determine and negotiate reward fees and develop contract performance incentives? How do you develop an acquisition strategy for a project or program? How is one developed across multiple programs?

Integration Management

- How do you manage and plan your project activities and control these activities?
- What software programs do you use in managing your project?
- Describe how you apply Earned Value.
- How do you develop performance criteria and report project performance?
- How is change managed?
- Describe how to transition a project from design to construction to operations.
- How are project interfaces defined?

Levels 3-4 Project Manager

Project Management General

- How do you analyze a portfolio of projects and allocate resources among them?
- How do you capture, develop, analyze, and transmit lessons-learned?

Leadership and Team-Building

- What is your process for conducting strategic analysis?
- Do you work with labor agreements? Give some examples.
- How do you develop leaders for large and complex organizations? Do you engage in mentoring activities?
- Outline your experience and processes in dealing with Congress, to include serving as a liaison, the appropriation process, championing DOE projects, and participation and preparation for Congressional hearings.

Scope Management

- Describe how you develop high-level project objectives.
- How do you manage and meet internal and external stakeholder requirements?

- How do you determine mission needs?

Communication Management

- Describe your experience in media relations.
- What are important considerations in inter-agency representation?
- What are the elements of successful interaction with external stakeholders, to include Congressional, state, and local political officials?

Quality and Safety Management

- Describe organizational safety and QA structures important for your projects.
- How does the Occurrence Reporting Process work?

Cost Management

- How do you manage finite resources for multiple project objectives?
- What are the departmental priorities and budget for your current project?

Time Management

- Describe your process for analyzing and integrating schedules, prioritizing and optimizing resources, and managing competing priorities.

Risk Management

- How do you identify, evaluate, and mitigate risk pertaining to stakeholders and regulations?

Contract Management

- Explain the role and responsibilities of a COTR.
- Do you do performance-based contracting? How is it different than other contracting methods?
- How do you manage large or very complex contracts?

Integration Management

- How do you manage change in your projects? Is there a formal process at the site for managing/reporting/tracking baseline changes?
- What tools do you use in managing your projects?

Appendix J
Matrix of Project/Program Manager Questions with
Comments (Sorted by Overall Ranking)

Appendix J
Matrix of Project/Program Manager Interview Questions with Comments
(Sorted by Overall Ranking)

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
1	Project management is a technical experience-based activity.	100	93	All Domains	The DOE project management workforce is an experienced group of personnel as shown by the overall DOE score on the <i>PMAppraise®</i> self-assessment, the human resources site interviews, the pilot Project Manager Experience Survey and the Gap Analysis interviews (the team spoke with only one person at Levels 0-2). All sites indicated a desire for advanced concepts and developmental activities across all of the competency categories of the Project Management Career Development Program (PMCDP) that would expand and refine their experience base to improve their performance. Real-world project experience was considered important by both supervisors and project managers. At all sites, it was evident that DOE program and project managers possess extensive technical experience through previous Federal project experience and current DOE project responsibilities.
2	Personality, attitude, and style skills are important and current training is inadequate.	98	100	Leadership/Team Building	Leadership and team building skills were viewed as important in their impact on capability and performance. Included in this category are attitude, flexibility, interpersonal communications, and advanced education. Supervisors, managers, and program/project managers expressed a strong desire for developmental activities that increase understanding of these variables in real-world settings. During discussions, interviewees described situations that reinforced the view that project managers with strong interpersonal skills who understood how to motivate project organizations would be more likely to succeed, but that this is perhaps the most difficult skill to develop. This corresponds with the characteristics of high performance project organizations where situational leadership and behavioral skills are important for project success. Interviews with Human Resources personnel did not reveal any significant efforts to increase these capabilities.
3	Team-related skills are important, and that there are inadequate opportunities to obtain this experience.	98	98	Leadership/Team Building; Communications Management	The project manager's role as Integrated Project Team Lead requires knowledge and skills in problem solving, listening, observation, and conflict management. The project manager's role as the leader of the IPT needs to be formalized. Project managers interviewed felt that the IPT should undergo team-building activities as a unit. These capabilities in particular were singled out as best when taught in an interactive environment allowing extensive practice. HR interviews revealed that this type of training for these skills was not widely available for project teams at the majority of sites. This gap is reinforced by Kerzner's (1998) emphasis on behavioral skills as being important for project success. These capabilities are validated in the PMCDP under the categories of Leadership/Team Building and Communication Management.
4	Mentoring is important and that there are no formal systems in place.	98	95	Project Management General; Leadership/Team Building	Both employees and supervisors emphasized the importance of a strong mentoring system that stresses the primacy of technical and business capability. This is an important existing gap within DOE, since no formal mentoring or coaching process was discovered during the HR site interviews. It is important for all project manager levels of experience and maturity to participate in a formal mentoring system.
5	Managing competing priorities, time management, assigning resources across competing priorities, and scheduling skills are not important for DOE project managers for additional development.	98	90	Time Management	Project managers and supervisors rated the importance of managing competing priorities, time management, assigning resources across competing priorities, and scheduling skills as not important for development because the workforce possesses adequate skills in this area, and not because these skills are not important for a project manager to possess.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
6	Experiential-based development activities are important and current experiential training opportunities are limited.	96	98	All Domains	Rotational assignments, Interagency Personnel Agreements, personnel exchanges, mentoring assignments, and other experiential-based developmental activities were stressed as important for increasing the capability of DOE PMs. This finding is similar to other findings that reflect the needs of a mature population of project managers who are searching for activities that allow them to apply what their knowledge and to learn from their peers in other settings. The advantage of gaining more experience in a real project environment, providing an opportunity to refine management skills was specifically addressed.
7	Understanding the budget process is important, and that there are a lack of training opportunities for this knowledge.	96	98	Cost Management;	Understanding the Federal budget process was identified as an important element of knowledge. The interviews revealed that fluctuating funding profiles were identified as a major cause of DOE project failure. Current training opportunities were seen as inadequate. Interviews with HR personnel showed a lack of alternatives in obtaining training in the budget process that address DOE-specific issues and alternatives as they relate to budget formulation, implementation, and execution. This capability is included in the PMCDP under the category of Cost Management.
8	Contractual and relationship development and maintenance skills are important, and that current training is inadequate.	95	98	Contract Management; Cost Management; Leadership/Team Building	Contractual and relationship development and maintenance Knowledge, Skills and Abilities (KSAs) were emphasized by interviewees as important for project success. This is consistent with the emphasis on oversight responsibilities in response to other interview questions, and with studies indicating the importance of business-related skills and behavioral skills in modern project environments. The findings validate the Leadership/Team Building and Communication Management categories of the PMCDP. As a project manager matures in DOE, these skill sets become even more important as the dollar value and complexity of responsibility increases. HR personnel interviews reinforced the need for increased applied training in these areas, and several sites offered training in these skills.
9	There is no formal project management career path.	95	98	Project Management General	DOE personnel at all levels rated a clear PM career path as important, and agreed that a DOE PM career path is not available. This was a key element identified in successful PM career development models in the <i>DOE Benchmarking Study</i> . ¹ Interviews with HR personnel at each site showed that there were no formal career paths in place for project managers at any DOE site. The argument can be made that making a career path for DOE PMs reflects the value that senior managers place on project management activities within the Department.
10	Organizational leadership is important but not practiced adequately in DOE.	95	95	Project Management General; Leadership/Team Building	The leadership role and expectations were rated as an important issue, if defined in advance and applied consistently, allowing project managers to exert authority and gain responsibility to the level they desired, regardless of any perceived boundaries by DOE management or contractor management. Human resources interviews revealed that current leadership offerings do not emphasize application of situational leadership skills in a DOE-specific project environment. This is also consistent with the Training Budget Analysis that shows current training is not targeted to the project manager workforce.
11	Skills in creating high-level project objectives are not important.	95	93	Project Management General; Scope Management; Integration Management	Project managers and supervisors indicate that skills in creating high-level objectives are not important because project objectives are usually defined when the project manager is assigned. This can be related to the strategic analysis process, as it can be seen that project managers want to be more involved in the creation of high-level objectives. Involvement in the process is seen as more important than improved basic training in how to create project objectives. Basic skills seem to be in place, but the processes are not taking advantage of this adequately developed workforce skill.
12	DOE Order 413.3 needs to be tailored to projects by type and value.	94	95	Project Management General	The critical process gap is seen at the definition of expectations between programs and projects, and how these project activities are tailored to the driving forces behind that project.

¹ U.S. Department of Energy, Office of Engineering and Construction Management, *DOE Benchmarking Study of Project Management Career Development Best Practices*, 2001.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
13	Lessons learned processes are important to project management career development, but that current processes are inadequate.	94	95	All Domains	Lessons learned processes in place are adequate, however, project managers generally do not have input into existing systems. Because most of the information in existing systems is not relevant to their situation, project managers typically do not use the system. Current Department lessons learned systems were seen as cumbersome. Procedures did not exist to apply lessons learned in a training environment except in the area of safety, which is one of the key competency areas of the PMCDP. The concept of lessons learned was embraced through strong informal systems in the majority of sites visited, but these informal systems did not allow for portability of these lessons in any consistent fashion across projects and organizations.
14	A good technical background is important for DOE Federal project managers.	94	93	Project Management General	Possessing a strong technical background was considered important. Experienced project managers said a PM needs a technical understanding of projects in order to manage them. For example, a technical background allows for a better understanding of the boundaries that systems must operate within to succeed. Technical skill requirements are found in Levels 1 and 2 of the PMCDP career path.
15	Leadership skills and attitude are important, and that there are inadequate training opportunities to improve this skill.	94	93	Leadership/Team Building; Communications Management	Leadership evaluation is needed to identify project managers at higher levels of responsibility. Leadership skills were considered important in achieving project success in the DOE project environment. Interviewees said that leadership skills should include instilling a sense of urgency and purpose, adjusting to the appropriate level of oversight and insight against overall team capability, and defining and executing actions based on accountability. These responses validate the PMCDP categories of Leadership/Team Building and Communication Management. HR organizations were offering training in these areas, but the Training Budget Analysis reveals under-utilization of these resources.
16	DOE is dysfunctional concerning career development of project managers.	94	93	Project Management General	There was no clearly defined career path for project managers across the complex. Without a path, project managers often times find themselves competing for positions outside their career field to advance. Project manager positions were not viewed as being valued on their own merits at the senior levels. Many senior project managers (Level 4) listed in Appendix B have collateral duties other than project management.
17	Occurrence reporting and safety/QA processes are important.	94	93	Project Management General; Quality/Safety Management	The occurrence reporting and safety/quality assurance processes are seen as important by supervisors and project managers. The perception is that set procedures and processes in these areas are dictated by DOE headquarters without much input on design from field sites. The current processes need to be reviewed and modified as required for more efficient and effective project management.
18	Current project management training offerings are too basic.	94	88	All Domains	The current training options that cover topics reflected in the PMCDP were perceived as too basic by supervisors, managers, and program/project managers, and were considered important by an average of 91 percent of the entire group of interviewees. Interviewees stated that current and past classes often provided theoretical foundations but did not address the application of these PM skills to DOE project situations, and often focused on tools rather than application. This suggests that the level of training being offered does not meet the requirements of experienced project managers. The <i>DOE Benchmarking Study</i> cautions against an over-reliance on project tools, and Kerzner (1998) ² emphasizes the importance of planning skills and project leadership skills over project tools, both emphasizing an integration of more complex behaviors.
19	Defining roles and responsibilities of DOE Federal project managers is important, and current definitions are inadequate.	93	93	Project Management General; Scope Management	Delineation of roles, responsibilities and authorities was rated important. Currently, project managers' position descriptions do not reflect their changing roles in a mixed Federal/contractor team. Clear descriptions of the project managers' position and authority in relation to the project team need to be defined in a formal matrix structure. See Appendix K for sample HR interview position descriptions.

² Kerzner, H. (1998). *In Search Of Excellence in Project Management*. Van Nostrand Reinhold, NY, NY.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
20	Public speaking, public relations, and interpersonal skills are important, and that there are inadequate training opportunities to develop this skill.	91	95	Communications Management; Leadership/Team Building	Public relations and interpersonal communications skills were identified as important but neglected in many instances. Many interviewees have received prior formal training in dealing with the public and specified experience as the primary method for learning these skills. Participants emphasized the importance of being able to tailor the message to their audience, and that being a good teacher was imperative in dealing with customers and stakeholders, as well as the public and other government agencies. Training is available in these capabilities according to the HR interviews.
21	Strategic planning processes are important and need to include project managers.	91	90	Project Management General; Scope Management; Leadership/Team Building	A basic understanding of the strategic planning process is considered to be valuable for project managers at Levels 3 and 4. Many Levels 1 and 2 project managers could not see a connection between corporate strategy projects. Project managers felt that the best way to close this gap is through mentoring. Senior managers often do not involve project managers in planning activities, resulting in a lack of cognition at the project level.
22	Automated project management tools are important but not readily available.	90	85	Integration Management	Technology tools were rated as important for tracking and analyzing project data. The majority of these tools were owned by DOE contractors and DOE project managers had to go to the contractors to use these tools. Advanced training is needed to apply these tools and techniques in a DOE project setting. DOE project managers received project performance updates through reports generated by these advanced tools yet were unaware of how the data was being generated. One site was developing a tool for managing the project requirements and organization resources, and was moving toward adoption of the software as a standard project management tool across the site. Project management tools, while important, should not be used as a replacement for project planning and leadership.
23	COTR responsibility is important for a project manager and is not practiced in DOE.	90	80	Cost Management; Contract Management	Delegating project managers COTR authority was deemed important to managing projects effectively within DOE. Delegation of COTR authority to the project managers was not the norm across the complex but was granted. The Self-Assessment suggests that DOE project managers possess adequate knowledge and skills for Contract Management, but need further training in Cost Management. ³ Kerzner (1998) specifies that successful project-driven organizations give profit and loss responsibility directly to project managers. ⁴
24	Advanced project manager skills in integration, portfolio management, risk management, project start-up/pre-planning systems engineering, and performance metrics are important.	89	98	Integration Management; Risk Management; Communications Management	Advanced skills in integration, portfolio project management, risk management, project start-up and pre-planning were rated as important, along with the ability to construct performance metrics to handle the increase in performance-based contracting activities. The <i>PMAppraise@</i> Self-Assessment scores revealed that the weakest areas for DOE were the areas of Integration Management and Quality Management, both important systems-related management capabilities. Interviews with HR personnel showed that advanced classes were available, but an integrated approach was not evident. The Training Budget Analysis revealed that PM courses were not being used to address this gap. Most of the participants did not see the performance correlation between project performance and DOE strategic performance. Portfolio management and performance-based contracting need to be separate. Most project managers need performance-based contracting experience rather than portfolio management at the lower project management levels.

³ ESI International *PMAppraise: A Knowledge and Skills Assessment* administered to DOE as part of the Project Management Career Development Program Task Force activities, 2001.

⁴ Kerzner, H. (1998). *In Search of Excellence in Project Management*. Van Nostrand Reinhold, NY, NY.

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25	Redesigning of position descriptions in all knowledge levels from matrix files is important for DOE.	89	88	Project Management General	The development of a structured project management career path and redesigning of position descriptions was seen as important towards improving project manager career development. Interviewees emphasized that the lack of specified lines of authority, responsibility, career paths, and merit promotion rules and procedures were emphasized as more important than additional training and development. The Human Resources interviews did not reveal any effort towards creation of a separate career path, but did indicate several efforts in designing more accurate job descriptions that accounted for project management capability. Example Position Descriptions are provided in Appendix M. Kerzner (1998) emphasizes the importance of integrating management processes to define levels of authority, responsibility, and accountability in successful high performance organizations.
26	Lessons learned systems are important but not adequate.	89	88	All Domains	Lessons learned processes in place are adequate, however, project managers generally do not have input into existing systems. Because most of the information in existing systems is not relevant to their situation, project managers typically do not use the system. Current Department lessons learned systems were seen as cumbersome. Procedures did not exist to apply lessons learned in a training environment except in the area of safety, which is one of the key competency areas of the PMCDP. The concept of lessons learned was embraced through strong informal systems in the majority of sites visited, but these informal systems did not allow for portability of these lessons in any consistent fashion across projects and organizations.
27	Skills in labor agreements are not important.	88	93	Project Management General; Contract Management; Leadership/Team Building	Project managers and supervisors rated skills in labor agreements as not important. Labor agreements were not included in any of the research resources as a specific skill, but it seems that at some level, labor agreements may be a consideration in a set of project management competencies, especially considering the increased use of mixed Federal/contractor teams in the DOE project environment.
28	Contract management is a more accurate description of DOE activities than project management.	86	85	Contract Management; Project Management General	Personnel felt that it was important to recognize contractual differences in contract management with emphasis on problem identification and performance management rather than traditional project management activities. This important gap in shifting to contract management skills further validates the Contract Management competency category in the PMCDP model. It also aligns with the increased emphasis on process integration and business skills needed by project managers.
29	A centralized project management support structure is important but not available.	86	80	Project Management General	A centralized project management office in the organizational structure was deemed important but not critical at the DOE sites visited. Personnel reported that the organizational structures existed in the past, but were eliminated with reorganizations. Project managers decentralized within the organization are normally assigned to other activities within a functional office when a project is completed rather than being assigned to a new project. A homeroom system for project managers was well received as an alternative to project offices.
30	Strategic analysis skills are important for project managers.	84	88	Project Management General; Leadership/Team Building	Project managers and supervisors agreed that strategic analysis knowledge and skills were important for project managers, but that project managers did not normally engage in this activity in their daily work. Kerzner (1998) clearly indicates that strategic analysis is an important activity, but that senior organizational leaders convey strategic elements of the business plan to project managers. This is closely related to the question about the strategic planning process within DOE, where the majority of project managers and supervisors clearly indicate that the process of strategic planning and involvement of project managers in the process was an important activity and is not currently sufficient. The skills are not viewed as important, but the process of analysis and involvement are perceived to be separate and important.
31	Differentiation between program and project definitions and activities is important but not defined.	84	78	Project Management General	A clear delineation of activities for programs versus projects was a concern for the participants. The majority of employees felt that the roles and responsibilities between program and project managers were not clearly defined, thus the capabilities required for these roles could not be illustrated for the organization. Because of this lack of definition of roles and responsibilities, careers of project and program managers commingled at high levels. Despite this lack of definition differences could be seen between project managers and program managers in strategic skills and relationship management skills. General Motors improved their competitive advantage through definition of program managers as integrators and project managers as responsible for functional deliverables.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
32	Defining scope, roles, responsibilities, and requirements are important, and that they are not currently well defined.	81	88	Scope Management; Project Management General	Management processes that result in better definitions of scope, requirements, roles, and responsibilities were judged as an important gap. Project charter documents, outlining key project business process relationships, were not used regularly, but these documents are increasingly used as a way for executives to tie into projects.
33	Learning through presentations and conducting reviews is important, and that DOE currently does not do this well.	81	85	All Domains	Project Managers and supervisors rated experiential learning processes as important, particularly learning through presentations and conducting project review processes. Design review processes (covering designability, constructability, and operability) were seen as valuable but neglected. The experiential aspect of learning ties into other responses addressing advanced training, and validates the need for training that more accurately meets the need of an experienced and highly technical project management workforce. The employment of effective review processes is key in balancing technical capability against sound business practices.
34	Tailoring project activities to project type and dollar amount is important, and current training is inadequate.	81	73	Contract Management; Scope Management	Being able to tailor activities to the project type and the dollar amount managed was considered important, with personnel viewing current training as inadequate to meet this requirement. Contract administration training needs to focus on contract specifics. Project managers need to be able to understand the difference between firm fixed-price, Management and Operations (M&O), and Management and Integration (M&I) contracts to coincide with delegating COTR authority to the project manager. Additionally, training specific to the awarded contract is needed for the entire Integrated Project Team (IPT).
35	Risk management is important for project managers.	80	78	Risk Management; Quality/Safety Management	Basic skills in risk management are seen as important. The perception is that basic risk management skills are already adequate in the workforce. Advanced training in this area may be welcomed by the workforce if tailored to DOE and applied in an intact project team setting.
36	A comprehensive project management career development system is important for DOE.	80	73	Project Management General	Career development of DOE project managers is not in place as an integrated strategy and process at any of the sites visited, but is viewed as important. Grade equivalencies, position descriptions, minimal levels of training and experience, and ongoing professional development are all topics that are recognized as important. These are being addressed individually by the HR organizations at each site. <i>The DOE Benchmarking Study</i> specifies that the best PM career development programs possess an integrated strategy with the HR systems.
37	Current recruiting and retention processes are inadequate.	79	78	Project Management General; Leadership/Team Building	Retention and recruiting processes are in place but not used during the past Federal hiring freezes and this is seen as an important issue. Managers see good experienced DOE people leaving because there is no opportunity for development or advancement beyond the boundaries of the current job for a project manager. The ineffectiveness of these processes may be tied to the lack of a defined and integrated structure for recruiting, training, rewarding, challenging, promoting, and retaining experienced DOE PMs, as seen in the interviews with HR personnel. Processes in place were traditional recruiting and retention processes related to Office of Personnel Management (OPM) standards.
38	Individual and team rewards are important to project management, but that current reward processes are inadequate.	78	68	Leadership/Team Building	Reward programs for individuals and teams were identified as a desirable process and were seen as ill-defined and did not present any significant motivation for significantly improved performance. Formal reward systems did not present adequate incentives for PMs to save significant costs or to achieve project goals and objectives in an improved fashion. Interviews with HR personnel at the DOE sites revealed inadequate and inconsistent reward processes for project personnel. Kerzner (1998) specifies that shared rewards, as opposed to individual rewards, are the key to successful project organizations.
39	Skills in interagency representation are important.	76	85	Leadership/Team Building; Communications Management	Inter-agency representation was rated as important. This is attributed to the perception that this skill is addressed indirectly through interpersonal skills and team skills that account for success in teams that consist of multi-agency representation. Also, most DOE project managers and supervisors feel comfortable in their knowledge of and advocacy for DOE in inter-agency situations.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
40	Skills in dealing with Congress are important.	76	78	Leadership/Team Building; Cost Management	The majority of project managers and supervisors indicate that skills in dealing with Congress are important. They feel that many of the skills required in dealing with Congress are addressed indirectly through knowledge of the budget process, public speaking, public relations, and other skill areas. However, the argument could be made that as a project manager moves up in the organization, this skill becomes increasingly important.
41	Service as COTR and on SEB's is important, and that there are inadequate opportunities to obtain this experience.	74	85	Contract Management; Cost Management	Serving as a Contracting Officer's Technical Representative (COTR) and on Source Evaluation Boards (SEBs) were rated as important, and contributed to perceived capability in contract management and keeping projects out of trouble. Discussions revealed a need for more opportunities to participate in these SEBs for career exposure and development. COTR was viewed as important to get the job done. These developmental activities are reflected in the Contract Management category of the PMCDP. Interviews with HR personnel revealed no formal plans to utilize these types of training opportunities.
42	Change directives and political issues impede project success.	74	75	Scope Management; Communications Management	Personnel rated Change Directives from DOE Headquarters that delay the success of projects rather than supporting them as an important issue. Management issues were seen across all levels as causing project delay and failure rather than project manager capability. This is supported by the overall <i>PMAppraise</i> [®] results demonstrating a stronger average correct response rate for project management knowledge and skills than industry (67 percent). The interference and random additional requirements from Headquarters elements were seen as a serious impediment to project progress, revealing a critical gap in information flow and inclusion between projects and programs in communicating stakeholder expectations throughout the organization. Kerzner specifies that this involves developing trust through effective project sponsorship activities, and including project managers as part of the overall strategic planning process. These procedures were not defined at the DOE sites.
43	Team collocation is important but does not occur formally in DOE.	71	70	All Domains	Collocation of project team members was seen as important. Collocation allows for better coordination and communications between project team members. It provides for effective project management when combined with regular team meetings. There can be significant advantages in collocating project teams as demonstrated by NASA's success through collocation of their Mars Lander project team at the Jet Propulsion Laboratory.
44	Intact team training is important and DOE processes are inadequate.	71	63	All Domains	Training as intact or integrated project teams (IPTs) was recognized as an important process, but not formally employed at any of the sites. DOE sites recognize the value of training a mixed Federal/contractor team, but were concerned over regulations that prevented government training of contractor personnel. The importance of IPT processes was discussed, but was not consistently applied across DOE sites due to differences in contracts, missions, contractor processes, and team expertise levels. Project managers need input into performance evaluations of team members. Human resources interviews at the DOE sites did not reveal any policies addressing intact team training.
45	Project management is not seen as an important skill.	70	73	Project Management General; Communications Management; Leadership/Team Building	The view was expressed by a majority that it is important for project management to be considered as a meaningful skill. The current perception by senior level managers is that anyone can be a project manager. This was a job-specific concern by project managers at DOE sites, and is a result of how the project management infrastructure and processes currently exist within DOE, containing a lack of formal expectations and requirements. <i>The DOE Benchmarking Study</i> revealed that a formal project management career development process directly addresses this issue by setting standards of performance, clear career paths, and timely rewards and incentives.
46	Integration management topics are important and current training does not cover these topics adequately.	69	78	Integration Management; Project Management General	Integration management, which includes change management, systems engineering, concurrent engineering, and value engineering was viewed as an important element by 69 percent of program and project managers. Subject matter experts with detailed knowledge in these areas should be available through the IPT. Basic skills should be developed during Levels 1 and 2 in career development. Available in-house training was perceived to be inadequate to develop skills in these areas.

#	Question	% Program/ Project Managers in Agreement	% Managers/ Supervisors in Agreement	Applicable Domain	Comments
47	Required external PM certification processes are important for DOE and should be used.	38	35	Project Management General	External PM certification processes were not seen as important. Certification, such as the PMI® Project Management Professional (PMP) program were viewed as desirable but not sufficient for DOE project manager development. This parallels the finding in the <i>DOE Benchmarking Study</i> that external certifications were used as part of an overall PM career development strategy in the benchmarked organizations, but not as the total program. These external certifications were recognized as valuable for portability in career development recognition outside of DOE, especially for closure sites. Interviewees preferred a hybrid DOE project management process encompassing both internal and external certification.
48	Basic skills such as task-level design and quality control are important.	33	45	All Domains	Basic skills such as design and quality control at task level were rated as important by 39 percent of the project managers. This was the perception because contractors accomplish the majority of the project work with the government providing oversight, but the <i>PMAppraise@</i> self-assessment suggests that basic skill training is needed in all competency categories except Cost Management. An emphasis, however, may be needed on business-related and behavioral skills in a mixed-team setting as emphasized by Kerzner (1998), since the government oversight role continues to expand for DOE. Responses concerning technical skills and the concern that current project management developmental offerings were too basic to reinforce this response, but DOE may need to consider expanding the role of business-related and behavioral skills while improving the basic skills curriculum.

Appendix K

Human Resources Interview Questions

Appendix K – Human Resources Interview Questions

DOE Project Management Development Questions

1. Describe the organizational PM development process, to include the following topics:
 - a. Brief history of process development and implementation, to include partnerships
 - b. Structure/levels of the process
 - c. Functional/knowledge areas
 - d. Eligibility requirements, competency requirements, standards at each level
 - e. Grade equivalencies and guidance
 - f. Training requirements
 - g. General education requirements
 - h. Developmental experience requirements
 - i. Typical paths of project management careers (for Federal partners, interest in creating a designated PM job series)
 - j. Current position descriptions
 - k. Certification procedures
 - l. Technologies that support PM content and business processes
 - m. Mentoring program and process
2. How is the project management development process integrated into other business processes, such as:
 - a. Recruiting (announcement and selection), including any preference in series for advertising, and government advertising templates
 - b. Retention
 - c. Skills and career development
 - d. Rewards and incentives
 - e. Performance metrics
3. What are the benefits of developing project managers and what are the metrics in terms of:
 - a. Human resources, career development and culture (input and buy-in at all organizational levels)
 - b. Business practices
 - c. Business strategy
 - d. Gains in efficiency and effectiveness
 - e. Bottom-line accomplishment of project goals
4. What are the problems that project management development presents in terms of:
 - a. Human resources, career development, and organizational culture (achieving input and buy-in at all organizational levels)
 - b. Business practices
 - c. Business strategy
 - d. Gains in efficiency and effectiveness
 - e. Bottom-line accomplishment of project goals
5. What would you do differently in developing project managers in light of the history of the process to this point?
6. What would you recommend in considering the development and implementation of a PM development process for DOE?

Appendix L
Matrix of Project/Program Manager Interview
Questions Sorted by Domain

Appendix L

Matrix of Project/Program Manager Interview Questions Sorted by Domain

#	Question	Percent Program/ Project Managers in Agreement	Percent Managers/ Supervisors in Agreement	Domain
38	Lessons learned systems are important but not adequate.	89	88	All Domains
34	Team collocation is important but does not occur formally in DOE.	71	70	All Domains
3	Experiential-based development activities are important and current experiential training opportunities are limited.	96	98	All Domains
1	Project management is an experience-based activity.	100	93	All Domains
2	Current project management training offerings are too basic.	94	88	All Domains
9	Basic skills such as task-level design and quality control are important.	33	45	All Domains
28	Lessons learned processes are important to project management career development, but that current processes are inadequate.	94	95	All Domains
24	Learning through presentations and conducting reviews is important, and that DOE currently does not do this well.	81	85	All Domains
29	Intact team training is important and that DOE processes are inadequate.	71	63	All Domains
16	Public speaking, public relations, and interpersonal skills are important, and that there are inadequate training opportunities to develop this skill.	91	95	Communications Management; Leadership/Team Building
11	Service as COTR and on SEB's is important, and that there are inadequate opportunities to obtain this experience.	74	85	Contract Management; Cost Management
10	Contractual and relationship development and maintenance skills are important, and that current training is inadequate.	95	98	Contract Management; Cost Management; Leadership/Team Building
22	Contract management is a more accurate description of DOE activities than project management.	86	85	Contract Management; Project Management General
15	Understanding the budget process is important, and that there are a lack of training opportunities for this knowledge.	96	98	Cost Management; Communications Management
40	COTR responsibility is important for a project manager and is not practiced in DOE.	90	80	Cost Management; Contract Management
37	Automated project management tools are important but not readily available.	90	85	Integration Management
12	Advanced project manager skills in integration, portfolio management, risk management, project start-up/pre-planning systems engineering, and performance metrics are important.	89	98	Integration Management; Risk Management; Communications Management
4	Personality, attitude, and style skills are important and current training is inadequate.	98	100	Leadership/Team Building
25	Individual and team rewards are important to project management, but that current reward processes are inadequate.	78	68	Leadership/Team Building
14	Team-related skills are important, and that there are inadequate opportunities to obtain this experience.	98	98	Leadership/Team Building; Communications Management
13	Leadership skills and attitude are important, and that there are inadequate training opportunities to improve this skill.	94	93	Leadership/Team Building; Communications Management
47	Skills in interagency representation are important.	76	85	Leadership/Team Building; Communications Management
43	Skills in dealing with Congress are important.	76	78	Leadership/Team Building; Cost Management

#	Question	Percent Program/ Project Managers in Agreement	Percent Managers/ Supervisors in Agreement	Domain
32	DOE is dysfunctional concerning career development of project managers.	94	93	Project Management General
33	A separate career path with related position descriptions for project managers is important for DOE.	89	88	Project Management General
35	A centralized project management support structure is important but not available.	86	80	Project Management General
36	Differentiation between program and project definitions and activities is important but not defined.	84	78	Project Management General
8	A good technical background is important for DOE Federal project managers.	94	93	Project Management General
17	There is no formal project management career path.	95	98	Project Management General
21	DOE Order 413.3 needs to be tailored to projects by type and value.	94	95	Project Management General
31	Comprehensive project management career development system is important for DOE.	80	73	Project Management General
30	Required external PM certification processes are important for DOE and should be used.	38	35	Project Management General
18	Project management is not seen as an important skill.	70	73	Project Management General; Communications Management; Leadership/Team Building
42	Skills in labor agreements are not important.	88	93	Project Management General; Contract Management; Leadership/Team Building
6	Advanced engineering topics are important and current training does not cover these topics adequately.	69	78	Project Management General; Integration Management
39	Organizational leadership is important but not practiced adequately in DOE.	95	95	Project Management General; Leadership/Team Building
41	Strategic analysis skills are important for project managers.	84	88	Project Management General; Leadership/Team Building
19	Mentoring is important and that there are no formal systems in place.	98	95	Project Management General; Leadership/Team Building
26	Current recruiting and retention processes are inadequate.	79	78	Project Management General; Leadership/Team Building
46	Occurrence reporting and safety/QA processes are important.	94	93	Project Management General; Quality/Safety Management
7	Defining roles and responsibilities of DOE Federal project managers is important, and that current definitions are inadequate.	93	93	Project Management General; Scope Management
44	Skills in creating high-level project objectives are not important.	95	93	Project Management General; Scope Management; Integration Management
27	Strategic planning processes are important and need to include project managers.	91	90	Project Management General; Scope Management; Leadership/Team Building
48	Risk management is important for project managers.	80	78	Risk Management; Quality/Safety Management
20	Change directives and political issues impede project success.	74	75	Scope Management; Communications Management
5	Tailoring project activities to project type and dollar amount is important, and current training is inadequate.	81	73	Scope Management; Contract Management

#	Question	Percent Program/ Project Managers in Agreement	Percent Managers/ Supervisors in Agreement	Domain
23	Defining scope, roles, responsibilities, and requirements are important, and that they are not currently well defined.	81	88	Scope Management; Project Management General
45	Managing competing priorities, time management, assigning resources across competing priorities, and scheduling skills are not important for DOE project managers for additional development.	98	90	Time Management

Appendix M
Standard Position Description Examples
Project Manager GS-13
Project Manager GS-14

Appendix M – Project Manager Position Description, GS-13

SR 345#
SRM 300.1.1A
Chapter 4

Position Description Cover Sheet

1. PD No.
2001-0057

2. Reason for Submission <input type="checkbox"/> Redescription <input type="checkbox"/> Reestablishment <input checked="" type="checkbox"/> New <input type="checkbox"/> Other		Explanation (Show Any Positions Replaced)			
3. Service <input type="checkbox"/> HQ <input checked="" type="checkbox"/> Field		4. Employing Office/Location		5. Duty Station DOE-(site)	
7. FLSA <input checked="" type="checkbox"/> Exempt <input type="checkbox"/> Nonexempt		8. Financial Statement Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		9. Security Clearance Level <input type="checkbox"/> 1-None <input type="checkbox"/> 2-L <input checked="" type="checkbox"/> 3-Q	
10. Position Status <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Excepted (Specify in Remarks) <input type="checkbox"/> SES (General) <input type="checkbox"/> SES (CR)		11. Position <input type="checkbox"/> Supervisory <input type="checkbox"/> Managerial <input type="checkbox"/> Team Lead <input checked="" type="checkbox"/> Other		12. Sensitivity <input type="checkbox"/> 1-Non Sensitive <input type="checkbox"/> 2-Noncritical Sensitive <input checked="" type="checkbox"/> 3-Critical Sensitive <input type="checkbox"/> 4-Special Sensitive	
14a. Technical Qualification Program <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		14b. TQP Functional Area Project Management			
15a. Critical Technical Capability <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		15b. CTC Functional Area Project Manager			
16. Position Classification		a. Official Title of Position GENERAL ENGINEER		b. Pay Plan GS	c. Occupational Code 0801
17. Organizational Title of Position (if different from official title) PROJECT MANAGER		18. Org Code			
19. Department, Agency, or Establishment DEPARTMENT OF ENERGY		c. Third Subdivision			
a. First Subdivision		d. Fourth Subdivision			
b. Second Subdivision		e. Fifth Subdivision			
20. Supervisory Certification: I certify that this is an accurate statement of the major duties and responsibilities of this position and its organizational relationships, and that the position is necessary to carry out Government functions for which I am responsible. This certification is made with the knowledge that this information is to be used for statutory purposes relating to appointment and payment of public funds, and that false or misleading statements may constitute violations of such statutes or their implementing regulations.					
_____ a. Typed Name and Title of Immediate Supervisor			_____ b. Typed Name and Title of Higher-Level Supervisor or Manager		
_____ Signature			_____ Signature		
_____ Date			_____ Date		
21. Classification/Job Grading Certification: I certify that this position has been classified/graded as required by Title 5, U.S. Code, in conformance with standards published by the U.S. Office of Personnel Management or, if no published standards apply, consistently with the most applicable published standards. Personnel Management Specialist a. Typed Name and Title of Official Taking Action			22. Position Classification Standards Used in Classifying/Grading Position General Grade Evaluation Guide For Nonsupervisory Professional Engineering Positions, GS-800, 6/71, TS-6; OPM PCS Civil Engineering Series, GS-0810, 12/1964, TS-54 Information for Employees: The standards and information on your applications are available in the Personnel Office. The classification of the position may be reviewed and corrected by the Agency or the U.S. Office of Personnel Management. Information on classification/job grading appeals and complaints on exemption from FLSA is available from the Personnel Office or the U.S. Office of Personnel Management.		
_____ Signature			_____ Signature		
_____ Date			_____ Date		
23. Position Review					
	Initials	Date	Initials	Date	Initials
a. Employee (Optional)					
b. Supervisor					
c. Classifier					
24. Remarks This position is identical to PD#2001-0065 except that an "Q" Clearance is required due to characteristics of information and/or areas/facilities accessed.					
25. Functional Class Code 23		26. Full Performance Level 13		27. LMR Code 8	

GENERAL ENGINEER
GS-0801-13
2001-0057

SUMMARY OF DUTIES

The incumbent is responsible for the oversight of the design and construction phases of all assigned capital and cost projects. Responsible for analyzing, evaluating and monitoring the administration of contractor (s) major activities in the execution of assigned Line Items, Capital Equipment, General Plant Projects and Cost Projects. Develops and implements the acquisition plan and project execution plan.

MAJOR DUTIES

Responsible for project accountability, assessing design, procurement and construction progress, and formulating conclusions with regard to adequacy of the contractor's project management activities. Prepare/review acquisition plan and project execution plan.

Reviews assigned capital and cost projects, analyzing such features as compatibility with existing facilities, design problems inherent in location of existing production areas, association with existing or other proposed facilities, adequacy of estimate of cost in light of anticipated problems. Draws heavily on knowledge of existing facilities; design, construction and operational problems previously encountered; and local manpower availability in assessing the problems.

Reviews assigned capital and cost projects to assure that the design, procurement and construction satisfies the DOE requirements for safety and health, security, safeguards, quality assurance and environmental protection, and performs surveillance as necessary to oversee the implementation of these requirements

Participates in the project planning and validation process for assigned capital and cost projects. Ensures that design, procurement and construction schedules, milestones and costs are compatible with DOE programmatic objectives, budgetary requirements, and satisfy the DOE design criteria.

Assists in the overall management of projects, with emphasis in the areas of facility definition and design, construction and operation, production requirements, technical feasibility studies and general support.

Monitors the priorities and progress of assigned project tasks and provides technical and project guidance to contractors based upon review and evaluation of that progress to assure meeting programmatic requirements and project milestones and cost goals.

Provides coordination and direction for matrix support from other DOE organizations in the analysis and resolution of problems or issues that may arise in project activity.

As necessary, provides leadership and direction to project participants to assure that contractor and government staffs work effectively towards timely completion of assigned projects.

Keeps site management and DOE Headquarters informed of status of engineering design, procurement and construction activities by oral and written reports prepared on a periodic basis. Reports include data concerning the status of design, procurement and construction schedules and costs which may affect programmatic requirements. Prepares and delivers briefings to all levels of management.

Maintains records as required by DOE Orders for Project Management and documents results of his/her actions, prepares special reports, analyses, opinions and written evaluations. This includes appraisal reports of various functions of the contractor and/or various departments of the contractor's organization.

Reviews and analyzes project cost estimates to establish reasonableness and adequacy. This includes consideration of such items as labor and material costs, adequacy of equipment and overhead. Recommends changes to reduce construction costs or to develop a more workable solution for a particular project.

This position requires participation in the Technical Qualification Program (TQP). The incumbent is required to complete the qualification program within 18 months of entering the program. Completion of the TQP includes completion of the General Technical Base Qualification Standard, an appropriate functional area qualification standard, and if required, site/facility-specific qualification standard. The TQP participant is responsible for achieving and maintaining competence within the assigned qualification program functional area.

Performs other duties as assigned.

FACTOR 1. COMPETENCIES REQUIRED BY THE POSITION

SITE-GENERIC:

Ability to clearly convey appropriate information orally to individuals or groups. (Working Level)

Ability to cooperate with others through give and take, obtain information, and accomplish goals. (Working Level)

Ability to effectively use and/or administer available resources. (Working Level)

Ability to express facts and ideas in writing in a clear, concise, accurate, and grammatically correct manner. (Working Level)

Ability to produce quality results by addressing customer needs, analyzing and resolving problems, and maintaining accountability for achieving milestones. (Working Level)

Ability to set work-related goals and objectives and apply innovative solutions to accomplish assigned work. (Working Level)

Ability to value cultural diversity and other individual differences in the workplace, foster teamwork, and constructively respond to feedback and conflict. (Working Level)

Knowledge of established physical, computer, and information security regulations and procedures. (Familiarity Level)

Knowledge of the principles and concepts of the Integrated Safety Management System (ISMS) as they relate to the discharging of organizational responsibilities delineated in the SITE Human Resources Program Management Manual. (Working Level)

Knowledge, Skill, or Ability as identified in Technical Qualification Program General Technical Base, Functional Area, and if required, Site/Facility-Specific Qualification Standards.

SERIES-SPECIFIC

Professional knowledge of the concepts and principles of at least two of the following engineering disciplines, such as ceramic, chemical, civil, electrical, environmental, mechanical, nuclear, and/or structural, sufficient to function as a recognized expert capable of applying experimental theories, new developments, and experienced judgment to solve difficult problems (Expert Level)

ORGANIZATION-SPECIFIC

Knowledge of, and the ability to apply, project management principles, methods and techniques to ensure effective and timely achievement of project goals and objectives. (Expert Level)

Knowledge of government and agency contractual and funding policies, rules, regulations, relationships and administrative processes sufficient to develop and procure services and studies, serve as the site coordinator on active and proposed project work to be contracted out and to develop and justify operating and capital funding requirements. (Expert Level)

FACTOR 2. SUPERVISORY CONTROLS

The supervisor sets the overall objectives and, in consultation with employee, determines timeframes and possible shifts in staff or other resources. The employee independently plans and carries out projects and analyses of the organization's requirements; interprets policies, procedures, and regulations in conformance with established mission objectives; integrates and coordinates the work of others as necessary; and resolves most conflicts that arise. The employee keeps the supervisor informed about progress, potentially controversial matters, or far-reaching implications. Completed work is reviewed from an overall standpoint of feasibility, compatibility with other work, and effectiveness in meeting requirements or achieving expected results.

FACTOR 3. GUIDELINES

Guidelines include DOE Orders and policies, industry-wide technical and regulatory standards and guidelines, technical literature, and contractor documents. Employee independently selects techniques, criteria, and adaptations or extensions of guidelines and exercises judgment in planning and carrying out reviews of contractor performance, providing guidance to contractors and recommending further consideration of proposals. Guidelines include DOE Orders and policies, industry-wide technical and regulatory standards and guidelines, technical literature, and contractor documents. Employee independently selects techniques, criteria, and adaptations or extensions of guidelines and exercises judgment in planning and carrying out reviews of contractor performance, providing guidance to contractors and recommending further consideration of proposals.

FACTOR 4. COMPLEXITY

Incumbent independently devises and conducts surveys, analyses, evaluations, and presentations of highly specialized, technical material for management of assigned projects. Consultations with contractor personnel require the ability to evaluate and solve novel problems, to modify and extend standard techniques, and to develop new approaches. Work often requires projecting assumptions or deriving judgments from limited or variable data, as well as resolving major conflicts between engineering and production program management criteria. Recommendations on program and project management are routinely made to DOE-HQ and contractors.

FACTOR 5. SCOPE AND EFFECT

The purpose of the work is to provide program direction and guidance to contractors to ensure that the projects are properly developed including conceptual design and final design efforts, and that construction and production schedules are met. The work thus contributes to the success of programs that will support DOE/NNSA requirements nationwide.

FACTOR 6. PERSONAL CONTACTS

Contacts are with site personnel of all levels, including supervisory and management officials of the site, DOE-HQ, other DOE field offices, site contractor and subcontractor organizations and with third party organizations (i.e., external stakeholders, local, State and Federal officials, regulatory agencies, and individual citizens.)

FACTOR 7. PURPOSE OF CONTACTS

The purpose of contacts are to discuss technical and project requirements, resolve questions and problems, provide guidance, and cooperatively reach agreement on goals and milestones. Contacts with HQ are to assure that guidance received is coordinated to achieve HQ requirements.

FACTOR 8. PHYSICAL DEMANDS

The work is sedentary. However, there may be some walking, standing, bending, or carrying of light items. No special physical demands are required to perform the work.

FACTOR 9. WORK ENVIRONMENT

The work involves moderate risks or discomforts that require normal safety precautions typical of such places as offices. The work area is adequately lighted, heated, and ventilated.

Appendix M – Project Manager Position Description, GS-14

SR 345#
SRM 300.1.1A
Chapter 4

Position Description Cover Sheet

1. PD No.
2001-0058

2. Reason for Submission <input type="checkbox"/> Redescription <input type="checkbox"/> Reestablishment <input checked="" type="checkbox"/> New <input type="checkbox"/> Other		Explanation (Show Any Positions Replaced)										
3. Service <input type="checkbox"/> HQ <input checked="" type="checkbox"/> Field			4. Employing Office/Location				5. Duty Station DOE-(site)			6. Drug Designated <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
7. FLSA <input checked="" type="checkbox"/> Exempt <input type="checkbox"/> Nonexempt			8. Financial Statement Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				9. Security Clearance Level <input type="checkbox"/> 1-None <input type="checkbox"/> 2-L <input checked="" type="checkbox"/> 3-Q					
10. Position Status <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Excepted (Specify in Remarks) <input type="checkbox"/> SES (General) <input type="checkbox"/> SES (CR)			11. Position <input type="checkbox"/> Supervisory <input type="checkbox"/> Managerial <input type="checkbox"/> Team Lead <input checked="" type="checkbox"/> Other				12. Sensitivity <input type="checkbox"/> 1-Non Sensitive <input type="checkbox"/> 2-Noncritical Sensitive <input checked="" type="checkbox"/> 3-Critical Sensitive <input type="checkbox"/> 4-Special Sensitive			13. Competitive Level Code 526		
14a. Technical Qualification Program <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			14b. TQP Functional Area Project Management									
15a. Critical Technical Capability <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			15b. CTC Functional Area Project Manager									
16. Position Classification		a. Official Title of Position GENERAL ENGINEER					b. Pay Plan GS		c. Occupational Code 0801		d. Grade 14	
17. Organizational Title of Position (if different from official title) PROJECT MANAGER						18. Org Code						
19. Department, Agency, or Establishment DEPARTMENT OF ENERGY						c. Third Subdivision						
a. First Subdivision						d. Fourth Subdivision						
b. Second Subdivision						e. Fifth Subdivision						
20. Supervisory Certification: I certify that this is an accurate statement of the major duties and responsibilities of this position and its organizational relationships, and that the position is necessary to carry out Government functions for which I am responsible. This certification is made with the knowledge that this information is to be used for statutory purposes relating to appointment and payment of public funds, and that false or misleading statements may constitute violations of such statutes or their implementing regulations.												
_____						_____						
a. Typed Name and Title of Immediate Supervisor						b. Typed Name and Title of Higher-Level Supervisor or Manager						
_____						_____						
Signature						Signature						
_____						_____						
Date						Date						
21. Classification/Job Grading Certification: I certify that this position has been classified/graded as required by Title 5, U.S. Code, in conformance with standards published by the U.S. Office of Personnel Management or, if no published standards apply, consistently with the most applicable published standards. Personnel Management Specialist a. Typed Name and Title of Official Taking Action						22. Position Classification Standards Used in Classifying/Grading Position General Grade Evaluation Guide For Nonsupervisory Professional Engineering Positions, GS-800, 6/71, TS-6; Nuclear Engineering Series, GS-840, 2/82, TS-60 Information for Employees: The standards and information on your applications are available in the Personnel Office. The classification of the position may be reviewed and corrected by the Agency or the U.S. Office of Personnel Management. Information on classification/job grading appeals and complaints on exemption from FLSA is available from the Personnel Office or the U.S. Office of Personnel Management.						
_____						_____						
Signature						Signature						
_____						_____						
Date						Date						
23. Position Review		Initials	Date	Initials	Date	Initials	Date	Initials	Date	Initials	Date	
a. Employee (Optional)												
b. Supervisor												
c. Classifier												
24. Remarks This position is identical to PD#2001-0064 except that an "Q" Clearance is required due to characteristics of information and/or areas/facilities accessed.												
25. Functional Class Code 23				26. Full Performance Level 14				27. LMR Code 8				

GENERAL ENGINEER
GS-0801-14
2001-0058

SUMMARY OF DUTIES

As Senior Project Manager, the incumbent is responsible for the oversight of the design and construction phases of all assigned capital and cost projects. Responsible and accountable for planning, implementing, and completing a project using a system approach. Develops and implements the acquisition plan and project execution plan. Defines project objectives, scope, cost, and schedule. Allocates project funding and authorizes work activities. Serves as the single point of contact between Federal and contractor staff for all matters relating to the project and its execution. Prepares and presents project reports and briefings on the status of projects.

MAJOR DUTIES

Provides overall technical management and coordination of site-wide design and construction activities for line item and cost projects. Performs project management responsibilities required by regulation for proposed and ongoing site line item and cost projects. Plans work to be accomplished, interprets policies and procedures and establishes priorities. Sets or implements standards to meet those goals and assures that contractor and government staffs work effectively to complete projects.

Provides capital program management, including proper budget requests, scheduling, prioritizing, and monitoring of contractor performance in these areas for assigned projects. Reviews and approves project plans and ensures proper execution. Validates project budget requirements and budget documentation. Oversees monitoring of the overall status of assigned projects. Ensures that corrective actions are taken when variances are detected. Reviews project cost to ensure proper use of funds. Controls the Total Estimated Cost baselines for projects. Ensures that the project baselines are maintained.

Manages planning, research, and development aspects of assigned projects. Evaluates new technologies for potential application in assigned projects. Ensures that adequate consideration is given to standards and regulatory requirements applicable to safe and environmentally sound nuclear and/or non-nuclear facilities in the course of planning, developing and managing assigned projects.

Oversees and directs the design and construction of assigned projects to ensure that projects are fashioned to design bases and constructed in accordance with approved designs as well as with DOE and commercial standards applicable to nuclear and non-nuclear facility construction. Coordinates SARs and the preparation of appropriate NEPA documentation. Reviews and evaluates design and construction progress in accordance with established milestone costs and technical requirements.

Serves as an expert on assigned design and construction projects. Applies comprehensive knowledge of engineering concepts and practices applicable to nuclear and/or non-nuclear facilities, frequently involving new advanced technology for which no standards or guidelines exist. Advises the Manager and Assistant Manager for Engineering and Projects, often through the Division Director, on all aspects of projects assigned. Ensures appropriate coordination with other site directors and program officials on matters of mutual concern. Maintains contact with DOE/NNSA Headquarters counterparts to ensure that site project management requirements and actions are consistent with DOE/NNSA policy. Prepares and presents project reports and briefings for site management and DOE/NNSA Headquarters staff on the status of projects, problems, recommendations and related matters.

Maintains and improves individual technical and professional competencies required to satisfactorily perform the duties of the position. In addition, completion of the Technical Qualification Program, other DOE required certification or professional certification such as Professional Engineer, Certified

Professional Secretary or Certified Public Accountant may be required or encouraged to enhance competence.

This position requires participation in the Technical Qualification Program (TQP). The incumbent is required to complete the qualification program within 18 months of entering the program. Completion of the TQP includes completion of the General Technical Base Qualification Standard, an appropriate functional area qualification standard, and if required, site/facility-specific qualification standard. The TQP participant is responsible for achieving and maintaining competence within the assigned qualification program functional area.

Performs other duties as assigned.

FACTOR 1. COMPETENCIES REQUIRED BY THE POSITION

SITE-GENERIC:

Ability to clearly convey appropriate information orally to individuals or groups. (Working Level)

Ability to cooperate with others through give and take, obtain information, and accomplish goals. (Working Level)

Ability to effectively use and/or administer available resources. (Working Level)

Ability to express facts and ideas in writing in a clear, concise, accurate, and grammatically correct manner. (Working Level)

Ability to produce quality results by addressing customer needs, analyzing and resolving problems, and maintaining accountability for achieving milestones. (Working Level)

Ability to set work-related goals and objectives and apply innovative solutions to accomplish assigned work. (Working Level)

Ability to value cultural diversity and other individual differences in the workplace, foster teamwork, and constructively respond to feedback and conflict. (Working Level)

Knowledge of established physical, computer, and information security regulations and procedures. (Familiarity Level)

Knowledge of the principles and concepts of the Integrated Safety Management System (ISMS) as they relate to the discharging of organizational responsibilities delineated in the site Human Resources Program Management Manual. (Working Level)

Knowledge, Skill, or Ability as identified in Technical Qualification Program General Technical Base, Functional Area, and if required, Site/Facility-Specific Qualification Standards.

SERIES-SPECIFIC

Professional knowledge of the concepts and principles of at least two of the following engineering disciplines, such as ceramic, chemical, civil, electrical, environmental, mechanical, nuclear, and/or structural, sufficient to function as a recognized expert capable of applying experimental theories, new developments, and experienced judgment to solve difficult problems. (Expert Level)

ORGANIZATION-SPECIFIC

Knowledge of, and the ability to apply, project management principles, methods and techniques to ensure effective and timely achievement of project goals and objectives. (Expert Level)

Knowledge of all phases of a construction effort including new equipment/process startup. (Expert Level)

Knowledge of design and construction methods and practices in order to assure projects are managed in an efficient, cost-effective manner with applicable controls. (Expert Level)

Knowledge of different nuclear and non-nuclear processes at the site to enhance integration of segmented construction and startup activities into facility operating schedules. (Working Level)

Ability to assess the audience and prepare and deliver presentations that enable understanding and result in acceptance and/or concurrence. (Expert Level)

FACTOR 2. SUPERVISORY CONTROLS

Incumbent reports administratively to the Division Director. The Senior Project Manager independently plans and carries out his activities, resolves conflicts that arise and coordinates the work with contractors, outside experts, Headquarters personnel, etc. Incumbent encounters and resolves major objectives and developments and fulfillment of projects. Recommendations to higher authority are considered authoritative and accepted without significant change. The work is reviewed for compliance with broad directives and policy and for compatibility with other work.

FACTOR 3. GUIDELINES

Guidelines include DOE/NNSA directives, site supplements, industry-wide standards and guidelines, technical literature, environmental laws and regulations and contractor documents. As an expert in project management, the incumbent actively establishes authoritative criteria for carrying out review and monitoring activities, and exercises personal judgment and discretion with latitude for interpreting and applying guidelines for operations. The incumbent is often required to adjust existing guides and develop new approaches not documented in the Department in order to fulfill his/her assignments.

FACTOR 4. COMPLEXITY

Incumbent independently devises and conducts surveys, analyses, evaluations and presentations of highly specialized, technical material. Consultations with contractor personnel require the ability to evaluate and solve novel problems, to modify and extend standard techniques and to develop new approaches. Work often requires projection, assumptions or deriving judgments from limited or variable data, as well as resolving major conflicts between engineering and production program management criteria. Recommendations on program and project management are routinely made to DOE/NNSA-HQ and contractors. In addition, complexity is derived from incumbent having to deal with one of a kind, multimillion dollar projects in testing on research and development phases, i.e., domestic water, environmental modifications, HP Calibration Facility, high level waste management, mixed-waste treatment, etc. Incumbent must develop and correlate research activities, perform technology forecasting for massive projects requiring years to complete and test before becoming operational. Coordination of installation activities provides for another complex adage as new equipment and/or systems become outdated or upgraded. This requires relating future program plans to projected requirements and resources.

FACTOR 5. SCOPE AND EFFECT

The purpose of the work is to provide overall technical project management direction and guidance to contractors to ensure that the projects are properly developed including conceptual design, preliminary design and final design efforts, and that construction and production schedules are met. The work thus contributes to the success of the program that will support DOE/NNSA requirements nationwide.

FACTOR 6. PERSONAL CONTACTS

Contacts are with managers, engineers and key officials at DOE/NNSA HQ, DOE and throughout the site contractor and subcontractor organizations as well as with third party organizations such as members of Congressional staffs, and other Federal and state regulatory agencies.

FACTOR 7. PURPOSE OF CONTACTS

Contacts are to discuss technical and programmatic requirements, provide technical project management expertise to resolve questions and problems, provide guidance and cooperatively reach agreement on goals and milestones. Contacts with HQ are to assure that guidance received is coordinated to achieve HQ requirements. Contact is also made with the private sector and National Laboratories to discuss contract requirements or developments.

FACTOR 8. PHYSICAL DEMANDS

The work is sedentary. However, there may be some walking, standing, bending, or carrying of light items. No special physical demands are required to perform the work.

FACTOR 9. WORK ENVIRONMENT

The work involves moderate risks or discomforts that require normal safety precautions typical of such places as offices. The work area is adequately lighted, heated, and ventilated.