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Project Management Plan for the INEL Technology Logic Diagrams

Mark J. Rudin

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Idaho National Engineering Laboratory
EG&G Idaho, Inc.
Idaho Falls, Idaho 83415

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Reviewed by:

James S. Ferguson
Project Manager
EG&G Idaho, Inc.

10/15/92
Date

Kenneth G. Koller
Unit Manager
EG&G Idaho, Inc.

10/15/92
Date

Edwin Martinez
DOE-ID Project Manager

10/16/92
Date

ABSTRACT

This Project Management Plan (PjMP) describes the elements of project planning and control that apply to activities outlined in Technical Task Plan (TTP) ID-121117, "Technology Logic Diagrams For The INEL." The work on this project will be conducted by personnel in EG&G Idaho, Inc.'s Waste Technology Development Program. Technology logic diagrams represent a formal methodology to identify technology gaps or needs within Environmental Restoration/Waste Management Operations, which will focus on Office of Environmental Restoration and Waste Management (EM-50) research and development, demonstration, test, and evaluation efforts throughout the U.S. Department of Energy complex. This PjMP describes the objectives, organization, roles and responsibilities, workscope and processes for implementing and managing the technology logic diagram for the Idaho National Engineering Laboratory project.

SUMMARY

This Project Management Plan describes the elements of project planning and control that apply to the technology logic diagrams for the Idaho National Engineering Laboratory (INEL) project according to INEL and EG&G Idaho, Inc. procedures and requirements. The management processes, programmatic and technical objectives, schedules, and other key elements in project management are addressed. Key functions in support of project management such as cost estimates, reporting, configuration management, regulatory coordination, and health and safety considerations are presented.

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CONTENTS

ABSTRACT iii

SUMMARY v

ACKNOWLEDGEMENTS vii

ACRONYMS xiii

1. INTRODUCTION 1

2. OBJECTIVES 2

3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES 3

3.1 External INEL Organization and Responsibilities 3

3.2 Internal INEL Organization and Responsibilities 4

3.2.1 Technical Program Manager 4
3.2.2 Project Manager 4
3.2.3 Senior Advisory Group 5
3.2.4 Planning, Oversight, and Coordination Committee 5
3.2.5 Principal Investigator 5
3.2.6 Technical Contributors 5
3.2.7 INEL Roadmap Interface 5
3.2.8 Computer Support 5
3.2.9 Technical Team Leaders 6
3.2.10 Technical Team Members 6

4. WORK SCOPE 7

4.1 Description 7

4.2 Filter Portion of Technology Logic Diagrams 7

4.3 Technology Portion of Technology Logic Diagrams 9

4.4 Technology Logic Diagrams 10

4.5 Deliver Technology Logic Diagram Report 11

4.6 ER and WMO Roadmap Support/Integration 11

5. WORK BREAKDOWN STRUCTURE AND RESPONSIBILITY ASSIGNMENT 12

5.1 Project Work Breakdown Structure 12

6. SCHEDULE 14

7. LOGIC DIAGRAMS 20

8. PERFORMANCE CRITERIA 21

9. COST AND MANPOWER ESTIMATES 22

10. PROJECT FUNCTIONAL SUPPORT REQUIREMENTS 23

11. PROJECT MANAGEMENT, MEASUREMENTS, AND PLANNING AND CONTROL SYSTEMS 24

12. INFORMATION AND REPORTING 25

12.1 Reporting Requirements 25

12.2 Weekly and Monthly Reports 25

13. SYSTEM ENGINEERING MANAGEMENT PLAN 26

14. CONFIGURATION MANAGEMENT 27

15. CONTINGENCY PLANNING 28

16. QUALITY ASSURANCE 29

17. UTILITY SERVICES 30

18. DECISION RESPONSIBILITY MATRIX 31

19. ENVIRONMENTAL PLAN 32

20. HEALTH AND SAFETY PLAN 33

21. SECURITY PLAN 34

22. TECHNOLOGY TRANSFER 35

23. DATA QUALITY PLAN 36

24. ACQUISITION AND ASSISTANCE PLAN 37

25. TEST AND EVALUATION PLAN 38

26. REFERENCES 39

Appendix A–Portion of ORNL K-25 Technology Logic Diagram A-1

Appendix B–Technology Logic Diagram Data Sheet Example B-1

FIGURES

1. INEL TLD external organizational chart 3

2. INEL TLD internal organization chart 4

3. WBS for INEL TLD project 13

TABLES

1. Complete filter portion of TDLs 15

2. Complete technology portion of TLDs 16

3. Deliver assembled TLDs 17

4. Deliver INEL TLD report 18

5. INEL ER and WMO roadmapping support 19

6. INEL TLD project cost estimates ($K) 22

7. INEL TLD project labor estimates (full-time equivalent) 22

ACRONYMS

CAPS	Cost and Planning System
CCB	Change Control Board
DOE-HQ	U.S. Department of Energy Headquarters
DOE-ID	U.S. Department of Energy Idaho Field Office
EM	Office of Environmental Restoration and Waste Management
EPA	Environmental Protection Agency
ER	Environmental Restoration
FFACO	Federal Facility and Consent Order
INEL	Idaho National Engineering Laboratory
NEPA	National Environmental Policy Act
ORNL	Oak Ridge National Laboratory
OTD	Office of Technology Development
OU	Operable Unit
PD	Program Directive
PMB	Performance Measurement Baseline
PjMP	Project Management Plan
RI/FS	Remedial Investigation/Feasibility Study
TD	Technology Development
TLD	Technology Logic Diagram
TPM	Technical Program Manager
TPO	Technical Program Officer
TTP	Technical Task Plan

WAG	Waste Area Group
WBS	Work Breakdown Structure
WMO	Waste Management Operations
WTD	Waste Technology Development
WTDP	Waste Technology Development Programs

Project Management Plan for the INEL Technology Logic Diagrams

1. INTRODUCTION

The Office of Technology Development (OTD) adopted a needs-driven approach to identify and develop technologies for their successful implementation into Office of Environmental Restoration and Waste Management, EM-30 and EM-40 activities. In FY 1991, the Office of Environmental Management selected the Hanford Site to utilize a technology logic diagram (TLD) process that identified and characterized links between U.S. Department of Energy (DOE) EM needs and research activities. The Hanford effort resulted in the publication of a report, *The Hanford Model: Environment Cleanup Problems, Science, and Technology Needs, and Facility Requirements*,[1] which serves as a preliminary model to help other DOE sites define their research, development, and demonstration needs in the area of Environmental Restoration (ER) and Waste Management Operations (WMO). Oak Ridge National Laboratory (ORNL) modified the TLD approach used at Hanford and applied the methodology to identify Decontamination and Decommissioning (D&D) technology gaps or needs at its K-25 site during FY 1992.

The Idaho National Engineering Laboratory (INEL) and ORNL have been selected by EM-54 to generate TLDs at their respective sites during FY 1993. The INEL will generate TLDs for its ER Waste Area Groups (WAGs) 1 through 7 and 10, and ORNL will develop TLDs for its X-10 site. The ultimate purpose of this U.S. Department of Energy Headquarters (DOE-HQ) driven initiative is to identify ER and WMO cradle-to-grave technology needs or gaps at the two sites and to focus on EM-50 research and development activities throughout the DOE complex that can be integrated with the INEL ER/WMO roadmapping efforts to meet the overall INEL cleanup mission.

This Project Management Plan (PjMP) identifies the management processes and administrative controls required to perform activities outlined in Technical Task Plan (TTP) ID-121117[2], "Technology Logic Diagrams For The INEL." This activity is referred to as the "project" in the remainder of this document. The processes of project management addressed in this PjMP are in accordance with the EG&G Idaho, Inc. *Company Procedures Manual*, Vol. III Section 20.9, and in accordance with the intent of DOE Order 4700.1, "Project Management System," 2250.1C, "Cost and Schedule Control Systems Criteria," and DOE Order 5480.19, "Conduct of Operations."

2. OBJECTIVES

The INEL will generate TLDs for its ER Technology Development (TD) WAGs 1 through 7 and 10. TLDs will provide the mechanism to (a) identify and prioritize programmatic and institutional drivers that may affect INEL ER and WMO needs and/or TD activities, (b) identify specific INEL ER and WMO technology gaps, (c) assess if existing state-of-the-art technologies from the private sector, DOE complex, and other Federal agencies can potentially meet those needs, (d) identify ER and WMO TD needs, and (e) provide input to developing a long-term TD strategy that can be integrated with the INEL ER and WMO roadmapping efforts and issue resolution activities to meet the overall INEL cleanup mission.

The terms technology gap and TD need hold distinct definitions within this project. A technology gap is defined as the inability to meet a particular ER and WMO problem without significantly modifying currently available technologies. A TD need is defined as the developmental work (e.g., research and development, and/or demonstration) required to fill a technology gap.

3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

3.1 External INEL Organization and Responsibilities

Personnel in EG&G Idaho's Waste Technology Development Program (WTDP) will assume responsibility for performing activities outlined in TTP ID-121117 and described in this PjMP. Mechanisms for these personnel to interface with DOE-HQ OTD, U.S. Department of Energy Idaho Field Office (DOE-ID), other DOE field offices, and internal and external INEL organizations are provided by the EG&G Idaho Technical Program Manager (TPM). Program guidance for this project is directed from OTD (EM-54) through the DOE-ID Technical Program Officer (TPO), DOE-ID project manager, and TPM to the project manager (see Figure 1).

A TLD Steering Group has been assembled by DOE-HQ OTD to provide management oversight into TLD efforts conducted throughout the DOE complex, including those at the INEL and the ORNL. The TLD Steering Group reports to the DOE-HQ Program Manager, EM-54. Group members include representatives from Kaiser Engineering, Hanford, EG&G Corporate, Argonne National Laboratory, and EG&G Idaho. The INEL TLD project manager will schedule periodic presentations to the TLD Steering Group to facilitate their feedback and input to project progress.

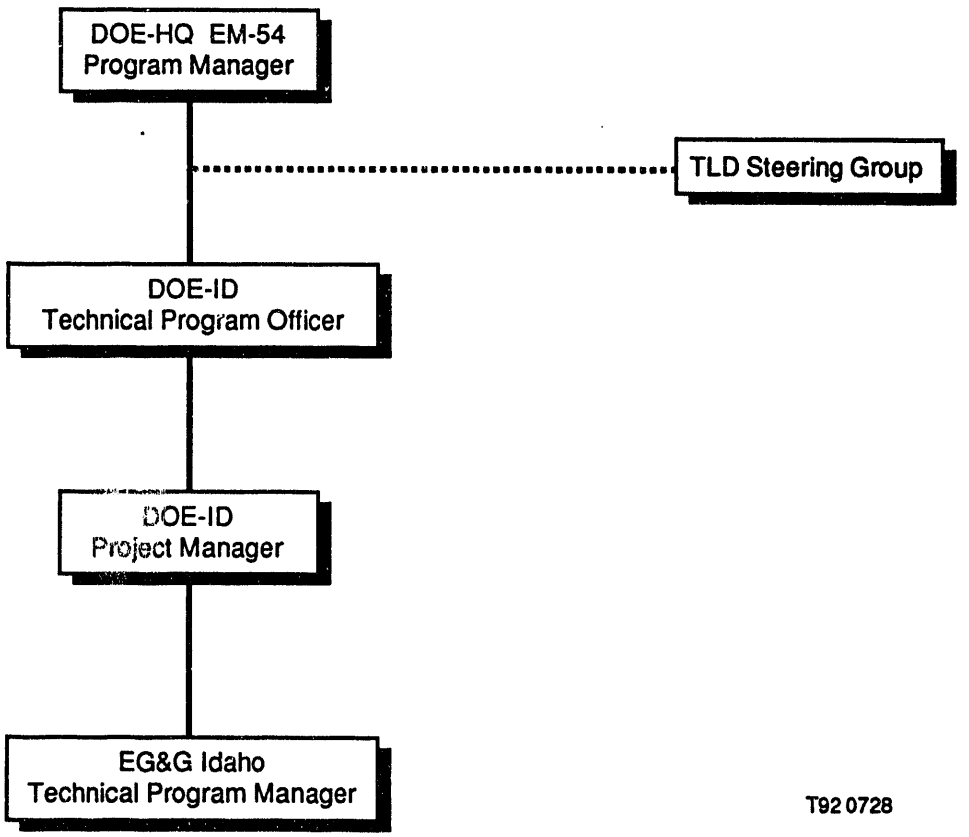


Figure 1. INEL TLD external organizational chart.

3.2 Internal INEL Organization and Responsibilities

The internal organizational structure, elements, and responsibilities for this project are as follows (see Figure 2):

3.2.1 Technical Program Manager

The Technical Program Manager (TPM) is responsible for ensuring that deliverables, project cost control, and reporting are consistent with the directives and guidance given by the TPO. The TPM is responsible for maintaining line management accountability to ensure that the activities and tasks defined as set forth in the approved TTP meet customer and programmatic requirements.

3.2.2 Project Manager

The project manager is responsible for the programmatic integrity of the project. The project manager is responsible for managing the technical work scope, cost, and schedule performance in accordance with TTP ID-121117. The project manager reports to the responsible program manager assigned to the project. On programmatic progress, the TPM makes recommendations affecting budgets and schedules, and suggests corrective actions as appropriate. In addition, the project manager must establish direct communication interfaces with INEL WAG managers to facilitate the transfer of information between ER and TD.

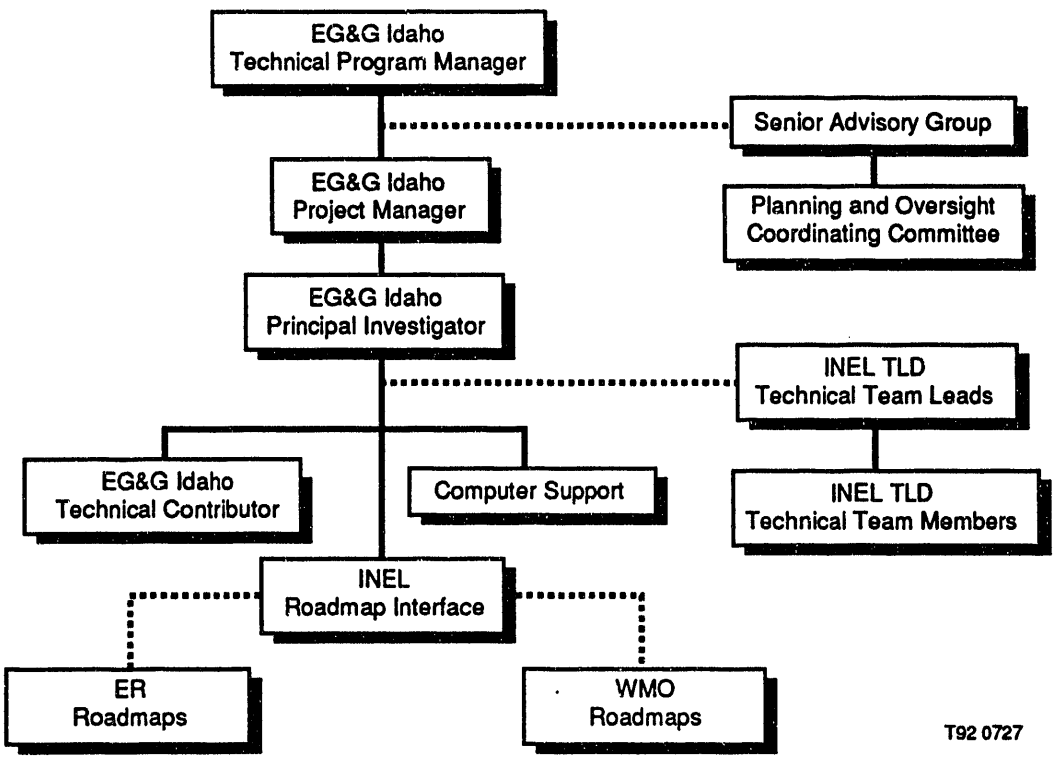


Figure 2. INEL TLD internal organization chart.

3.2.3 Senior Advisory Group

The INEL TLD Senior Advisory Group participants provide oversight to the progress of the project and review the status of its deliverables. To accomplish this, group members will meet periodically. The Senior Advisory Group consists of individuals from EG&G Idaho, DOE-ID, DOE-HQ, other DOE sites, and the private sector.

3.2.4 Planning, Oversight, and Coordination Committee

The INEL TLD Planning, Oversight, and Coordination Committee participants provide guidance and recommendations to the INEL TLD project. Committee members are called upon to meet periodically to serve these functions. The committee consists of individuals from EG&G Idaho, including representatives from the ER and WMO roadmapping teams.

3.2.5 Principal Investigator

Principal investigators (PIs) are responsible for developing technically sound deliverables that meet project milestones outlined in TTP ID-121117, reporting project progress to both line-management and the project manager, ensuring compliance of relevant regulatory and programmatic requirements, maintaining project coordination with project objectives, coordinating the activities of INEL TLD technical teams, and contributing to the generation of the INEL TLDs. In addition, the PI interfaces directly with INEL WAG managers to facilitate the transfer of information between the ER and WM Department and TD.

3.2.6 Technical Contributors

Technical contributors are responsible for providing specific technical expertise to support the PI in developing technically sound deliverables that meet project milestones outlined in TTP ID-121117 and contribute to the generation of the INEL TLDs. In addition, the technical contributors must interface directly with INEL WAG managers to facilitate the transfer of information between ER and TD.

3.2.7 INEL Roadmap Interface

The INEL ER roadmap interface is assigned to support the INEL ER and WMO roadmapping teams for two reasons: (1) to gain an understanding of the technical and institutional technology needs, and (2) to communicate information obtained from the INEL TLD for integration into the INEL ER and WMO roadmaps to facilitate long-term TD planning.

3.2.8 Computer Support

Computer support personnel are responsible for inputing TLD data into project spreadsheet software (e.g., QUARK or MacFlow) and maintaining the software during the duration of the project.

3.2.9 Technical Team Leaders

Technical team leaders will be identified for each subelement within the TLDs (e.g., characterization, treatment, etc.). Subelements, and therefore the number of team leaders, will be identified at a later date as the TLDs are developed. The responsibility of the team leaders is to (a) form and organize teams, (b) identify as many diverse contributors as possible (private sector, universities, etc.) to fill out technology data sheets, (c) serve as point of contact for all team members and contributors, (d) distribute, collect, and organize data sheets, (e) hold meetings with team members to provide collective evaluation and feedback on logic and objectivity, (f) contribute to the written TLD report, and (g) present project status to DOE-OTD.

3.2.10 Technical Team Members

The responsibility of the technical team members is to (a) fill out technology data sheets on an as-needed basis, (b) attend technical team meetings to obtain feedback on TD sheets, and (c) contribute to the written TLD report.

4. WORK SCOPE

4.1 Description

The INEL will generate TLDs for its ER WAGs 1 through 7 and 10 to identify programmatic and institutional drivers that may affect INEL ER/WMO needs identification, identify specific INEL ER/WMO technology needs, assess if existing state-of-the-art technologies from the private sector, DOE complex, and other Federal agencies can potentially meet those needs, identify ER/WMO technology gaps, and provide input to developing a long-term TD strategy that can be integrated with the INEL ER/WMO roadmapping efforts to meet the overall INEL cleanup mission.

The work scope in this PjMP is based upon the work scope outlined in TTP ID-121117.[2] The TTP identifies five main tasks to be accomplished in FY 1993. The five tasks are

1. Complete filter portion of TLDs
2. Complete technology portion of TLDs
3. Assemble TLDs
4. Deliver TLD report
5. ER and WMO roadmap support/integration.

4.2 Filter Portion of Technology Logic Diagrams

The identification of INEL ER and WMO technology needs and gaps and development of technological solutions are driven by a variety of programmatic and institutional constraints. Although a technology may offer promise from a technical standpoint to meet a particular need, it is possible that the development or integration of the technology may not meet customer requirements (e.g., regulatory, schedules, cost, etc.). Therefore, the identification and understanding of these constraints and/or requirements are crucial prior to developing TD strategies to meet the needs or gaps.

Hanford and ORNL developed a technology filter as part of their TLDs that serves to identify and screen technology needs and their potential solutions against programmatic and institutional constraints. The filter portion of the TLD is located at the front end of a TLD. An example of an ORNL TLD is illustrated in Appendix A. The filter portion of the TLD is the first five columns—EM Goals, EM Problems, Site Problems, Problem Area/Constituents, and Reference Requirements. The INEL TLD filter will differ slightly from the K-25 TLD filter because of different site problems, contaminants, and programmatic and institutional drivers.

The first project activity for FY 1993 is to develop the filter portion of the INEL TLDs for INEL ER WAGs 1 through 7 and 10:

1. EM Goals. High-level EM goals for the cleanup of the entire DOE complex can be found in the ER and WM FY 1992–1996 Five-Year Plan.[3] Additional sources of EM Goals include DOE-HQ EM personnel, DOE-ID EM personnel, and representatives from the K-25 TLD work at ORNL.

2. EM Problems. High-level EM problems throughout the DOE complex will be identified. Resources utilized to gain an understanding of EM problems include DOE-HQ EM personnel, DOE-ID EM personnel, Integrated Programs/Integrated Demonstrations Programs, and representatives other DOE field offices.

3. INEL Site Problems. Many of the operable units (OUs) at the INEL have been designated as no actions and should not be included in the INEL TLDs. Project personnel will meet with ER representatives to gain a perspective of which OUs will most likely undergo remedial actions, and therefore, will be included in the INEL TLDs. The OUs with the greatest likelihood of requiring remediation include those designated in the Environmental Protection Agency (EPA), State of Idaho, DOE Federal Facility Agreement and Consent Order (FFACO)[4] as Track 2, Interim Actions, or Remedial Investigation/Feasibility Studies (RI/FS). Once OUs that will be included in the INEL TLDs are identified, specific site problems/conditions will be categorized accordingly. Examples of categories include evaporation ponds, injection wells, large-area surface contamination of soils, etc.

4. Problem Area/Constituents. Project personnel will meet with targeted INEL ER WAG and OU managers to determine what constituents contaminate each of the OUs that make up the site problem areas. The following information will be obtained for each OU within the selected site problem: a list of chemicals and contaminants, media contaminated (e.g., metal concrete, soil, etc.), configuration in which the contamination and the media exist, and the extent of the problem, such as volume, area, concentration, criticality, etc. The INEL ER and WMO roadmaps provide a useful starting point for identifying ER and WMO problems and will be utilized in this project. Participants in this study will work in concert with INEL ER roadmap and ER waste stream tracking personnel to identify items such as ER and WMO planning assumptions, issues, schedules, regulatory requirements, etc. that are ancillary information in identifying problems. Every effort will be taken to ensure that problem statements are as comprehensive and quantitative as possible in accordance with ER needs. A rigorous problem assessment at this stage will facilitate the subsequent identification and statusing of technologies.

5. Identify Reference Requirements. Institutional and programmatic documents identify regulatory drivers (e.g., remediation schedules), applicable regulatory requirements, and end state requirements for each problem area listed. Examples of documents include the FFACO, DOE orders, and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The project manager, PI, and technical contributors will assume the responsibility to complete the filter portion of the INEL TLDs. The front-end filter of each TLD (WAGs 1 through 7 and 10) will be completed and submitted to INEL ER and WMO, ORNL X-10 project, and TLD Steering Group for review and subsequent guidance.

4.3 Technology Portion of Technology Logic Diagrams

Completing the second half of a TLD involves gathering and evaluating information on state-of-the-art technologies that could be used to remediate the various site problems. The remaining columns on the TLD (see Appendix A) include Subelements, Alternatives, Technologies, Status, Science Technology Needs, and Implementation Needs. Some of this information may be gathered from the previously mentioned Hanford document[1] and from the K-25 and X-10 site TLD work performed at ORNL.

1. Subelements. The subelements proposed are discrete remediation steps needed to remediate a problem area. Examples of subelements include characterization, retrieval, and in situ and ex situ treatments. A team leader and technical team will be formed for each INEL TLD subelement.

2. Alternatives. Options or generic approaches are proposed that are subsets of the subelements required to correct each site problem. For example, for the subelement characterization, alternatives may include in situ characterization, geophysical characterization, or analytical laboratory characterization. Project personnel will interview WAG and OU personnel to understand current outyear budgeting assumptions that may drive the type of remediation currently planned for a particular site problem.

3. Technologies. Suitable technologies are proposed with the likelihood of solving problems within the identified technical restraints (site problems), programmatic constraints (subelements, alternatives), and institutional constraints (reference requirements).

4. Technology Status. Technologies are categorized based on their maturity level in the following manner:

    - Existing—Technology accepted by industry and/or regulators and the demonstrated technology exists for use at the INEL.

    - Demonstrated—Technology available but not demonstrated and/or accepted at the INEL.

    - Predemonstration—Technology currently under laboratory, bench, or pilot scale testing.

    - Evolving Technology—Status at a conceptual, preconceptual, or problem definition stage such as:

        - Conceptual—Knowledge base exists.

        - Preconceptual—Basis of technology does not exist; only a partial knowledge base exists.

        - Problem definition—Functional requirements of a technology are not defined, i.e., defining what the technology is required to do.

In addition, the following will be addressed in the explanation of each technology:

- Is the technology likely to work and how well? What are its recognized limitations? For characterization goals, for example, numeric ranges or limits that the technology can achieve in routine practice will be indicated.

- Nature and quantity or relative quantity of waste generated.

5. Science and Technology Needs. Specific science needs are defined for those technologies in the evolving or predemonstration phases. TD needs are identified for those technologies in the predemonstration or demonstration phases. Finally, technology improvement needs are identified for those technologies that have been previously demonstrated or accepted.

6. Implementation Needs. Prerequisites to successful TD or improvement before it is demonstrated or accepted are identified. Status of implementation needs in the process of being implemented are also identified. The following items are examples of items considered under this column: cost and cost benefit potential, resources (financial, personnel, demonstration, procurement, etc.), hardware needs (equipment, computers, etc.), software needs (models, procedures, etc.), facility needs (labs, shops, buildings, etc.), educational needs (classes, degreed graduates with defined majors, etc.), and reference requirements (additions or modifications necessary to deploy the technology successfully).

The INEL TLD technical teams will be requested to complete the technology portion of the INEL TLDs based upon information contained in the filter portion of the TLD. ORNL has developed a TLD Data Sheet (see Appendix B) that aids in the collection of information required in a TLD. The Data Sheet asks for the same information as identified in the columns of a TLD, except in a user-friendly format. Therefore, the technical teams do not have to be concerned with transforming data into the TLD format. The completed filter portion of the TLD Data Sheet (the first five column headings of a TLD) will facilitate the completion of the remainder of the form by the technical teams.

Several areas of the TLD Data Sheets, and therefore, the TLDs will require documentation to support conclusions or document assumptions. Documentation may range from "personal opinion assuming the following; "personal communication from..."; calculation based upon..."; to a report, open literature reference, or commercial information publication.

The technology portion of each TLD (WAGs 1 through 7 and 10) will be completed and submitted to INEL ER and WMO, ORNL X-10 project, and TLD Steering Group for review.

4.4 Technology Logic Diagrams

ORNL has experience in constructing TLDs, and they have experience using the QUARK software package to transfer information from TLD Data Sheets into TLDs. INEL will collaborate with ORNL and use the QUARK or a similar software to assemble the INEL TLDs. The project manager will solicit support from the private sector with computer experts to input data and construct, modify, and maintain the TLDs.

4.5 Deliver Technology Logic Diagram Report

A report will be generated that presents the INEL TLDs and all supporting information. The report will be a valuable resource and will serve to (a) define ER and WMO technology needs or gaps that are representative of arid DOE sites, (b) status the ability of currently available technologies to meet those needs, (c) characterize the link between DOE-EM needs and EM-50 research activities, (d) characterize the link between EM long-term strategic planning and current ER and WMO roadmapping efforts, and (e) leverage DOE resources within Integrated Programs/Integrated Demonstration Programs to meet EM technology needs or gaps.

After an INEL ER and WMO review, the report will be distributed to all Integrated Programs/Integrated Demonstration Programs as input for FY 1994 "Call For Proposals." In addition, results from the report will be presented at an Industrial Workshop to be held at the INEL, tentatively scheduled for August FY 1993. The workshop will be used as a forum to disseminate information on INEL ER and WMO technology needs or gaps to the private sector to encourage and facilitate future industrial participation at the INEL and other DOE sites. The INEL will work with the ORNL X-10 project to develop a standardized data base containing INEL and eventually INEL and ORNL TLD results. Interested parties within and outside the DOE complex would have access to the data base.

4.6 ER and WMO Roadmap Support/Integration

Draft INEL ER and WMO roadmaps have identified regulatory drivers, issues, and programmatic assumptions affecting the environmental restoration and proper management of wastes at the INEL. Enhancements to the INEL ER and WMO roadmaps in the area of TD have been proposed by DOE-HQ. An individual will be assigned from the project to support the INEL ER and/or WMO roadmapping team for two reasons: (1) to participate in WAG and Waste Stream Manager roadmap interviews to understand the technical (waste volumes, contaminant concentrations, etc.) and institutional (regulatory considerations, remediation schedules, budgeting constraints, etc.) aspects of technology needs, and (2) to integrate information obtained from the TLD task into the INEL ER and WMO roadmaps to facilitate long-term TD planning. This individual will also dedicate an appropriate amount of time to the INEL TLD project.

5. WORK BREAKDOWN STRUCTURE AND RESPONSIBILITY ASSIGNMENT

5.1 Project Work Breakdown Structure

The Work Breakdown Structure (WBS) for the project (TTP ID-121117) is shown in Figure 3. The major elements of the project WBS are described in Section 4. Logic diagrams implementing activities to produce deliverables are shown in Section 7. A responsibility matrix was not generated since the project manager will have the responsibility for delegating work to others. WBS Element 1.0, Project Management, is described in several sections of this PjMP but is addressed below for continuity.

Element 1.0—Project Management. The project will operate, as applicable, in accordance with the intent of DOE Orders 4700.1 and DOE Order 2250.1C, as implemented by EG&G Idaho *Company Procedures Manual*, Volume IV, Section 20. Appropriate management and control systems will be implemented for each work element of the WBS to comply with the requirements of the applicable procedures.

WBS Element 1.1—Environmental Checklist. Project activities will be evaluated for environmental compliance as specified in DOE/ID 10166. This will be done by completing an Environmental Checklist (DOE Form IDF 5440.1a). An evaluation of the checklist by EG&G Idaho Environmental Technical Support will recommend what further action is necessary. DOE-EH-1 will determine the level of National Environmental Policy Act (NEPA) documentation required.

WBS Element 1.2—Reporting. This project has reporting requirements to effectively monitor and document programmatic activities. Monthly reporting (**WBS Element 1.2.1**) will take place at the TTP level, providing status relative to the established performance measurement baseline (PMB). Cost or schedule variance reports of $\pm$10% or $\pm$50K will require analysis of cause impact and corrective action. Weekly (**WBS Element 1.2.2**) and monthly reports will be transmitted to DOE-HQ through DOE-ID. Content will include weekly highlight reports, consisting of significant accomplishments and programmatic issues, from the PI and project manager. Reporting requirements will be included in Work Releases or Task Baseline Agreements with functional support staff from other organizations within the Company.

WBS Element 1.3—Project Documentation. This WBS element describes the preparation of documentation for establishing work scope, schedule, and cost baselines for the project. This includes preparation of project's TTPs (**WBS Element 1.3.1**), work packages (**WBS Element 1.3.2**), and PjMP (**WBS Element 1.3.3**).

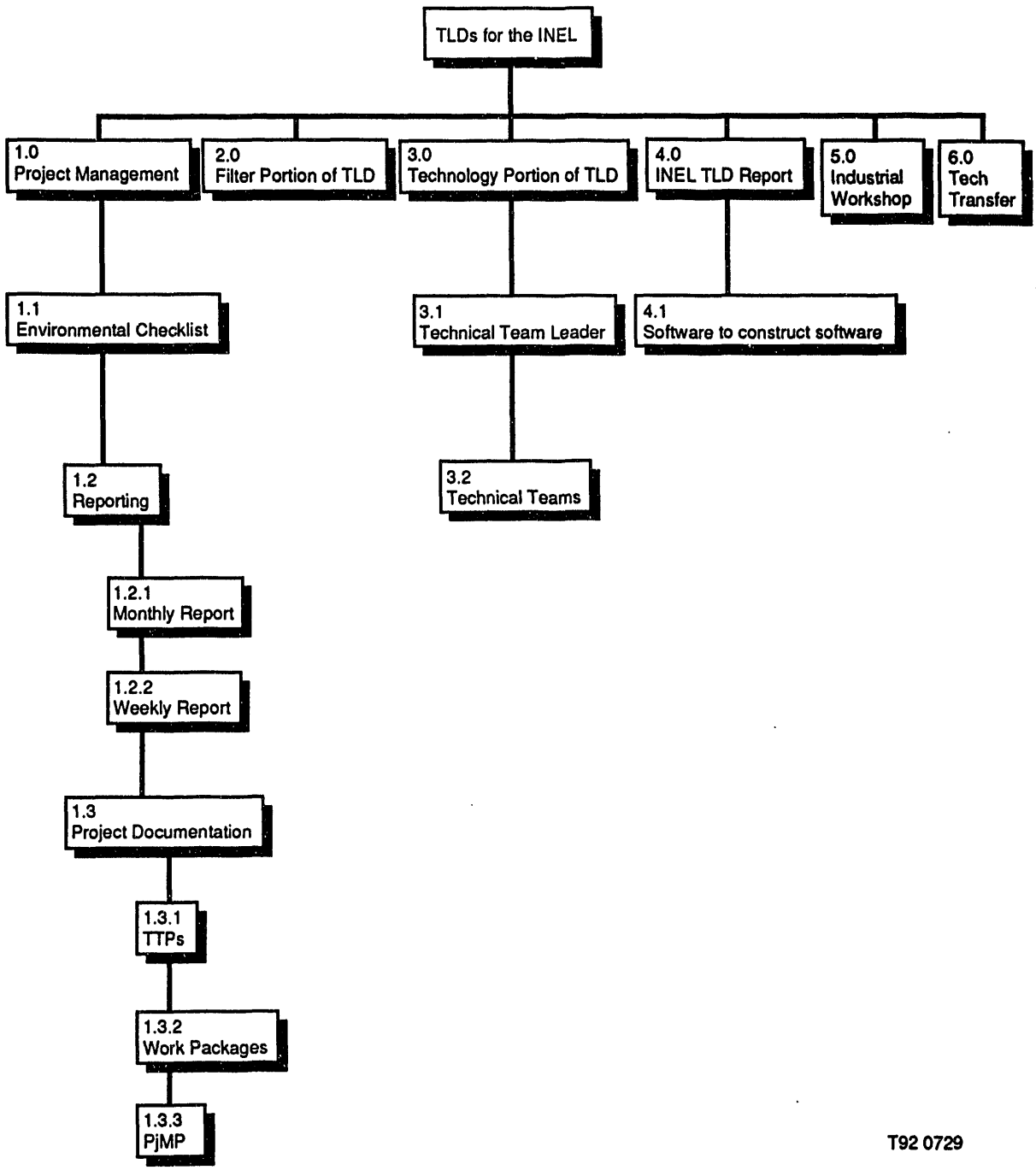


Figure 3. WBS for INEL TLD project.

6. SCHEDULE

The following schedules (see Tables 1 through 5) identify interim project deliverables to support planned and key milestones in TTP ID-121117[2].

Table 1. Complete filter portion of TDLs.

Task	October	November	December	January	February	March	April	May
Defining EM goals and problems (October 15, 1992)	-------*							
Identify and categorize site problems (November 6, 1992)	----------	---*						
Identify problem area constituents (November 27, 1992)	----------	---------*						
Identify reference reqs. of selected problems (November 27, 1992)	----------	---------*						
Review of site problems (INEL ER and WMO, Senior Advisory Group) (December 21, 1992)			----------*					
Develop electronic copies of TLD Technical Data Sheets (December 11, 1992)			----------*					
Fill-in filter portion of TLD Data Sheets (January 5, 1993)			----------	----*	(Planned	Milestone)		

Table 2. Complete technology portion of TLDs.

Task	October	November	December	January	February	March	April	May
Form Senior Advisory Group and Planning/Oversight and Coordination Committee (October 16, 1992)	------*							
Define TLD Subelements and INEL TLD technical team leaders (January 11, 1993)				------*				
Identify INEL TLD technical team members (January 18, 1993)					----*			
Complete technology portion of TLD Technical Data Sheets (February 24, 1992)					----------*			
Review and finalize TLD Technical Data Sheets (March 5, 1993)						----------*	(Planned	Milestone)

Table 3. Deliver assembled TLDs.

Task	October	November	December	January	February	March	April	May
Purchase TLD spreadsheet software and train computer support (January 5, 1993)	----------	----------	----------	-----*				
Input filter portion of TLD Technical Data Sheets into TLD (January 29, 1993)				----------*				
Input technology portion of Technical Data Sheets into TLD format (March 26, 1993)					----------	----------*		
Review and finalize TLDs (April 21, 1993)						----------	----------*	(Planned Milestone)

Table 4. Deliver INEL TLD report.

Task	January	February	March	April	May	June	July	August
Complete outline of report (January 19, 1993)	-----*							
Complete text (except TLDs) and technical editing of text (including Electronic Publications) (February 24, 1993)	----------*							
Incorporate TLDs and supplements text into the report (April 29, 1993)				----*				
Review of draft INEL TLD report (May 7, 1993)					-------*			
Finalize INEL TLD report (May 11, 1993)					----* (Key Milestone)			
Present INEL TLD results at industrial workshop (mid-August 1993)					----------	----------	----------	-------*

Table 5. INEL ER and WMO roadmapping support.

Task	October	November	December	January	February	March	April	May	June	July	August	September
Support to INEL ER and WMO Roadmaps and to INEL TLD project (May 11, 1993)	----------		----------		----------		----------	*				
Use INEL TLD results to enhance INEL ER roadmaps								-------	----------		----------	*

7. LOGIC DIAGRAMS

Logic diagrams provide a mechanism to track the progress of major tasks, deliverables, and planned and key milestones for this project. Logic diagrams for this project can be found in project work packages prepared in accordance with TTP ID-121117.

8. PERFORMANCE CRITERIA

The ultimate measurement of success for this project will be the integration and/or implementation of technologies by EM-50 to meet technology gaps or needs in support of EM-30 and EM-40. Results from the INEL TLD project will focus PIs, throughout the DOE complex, to develop and demonstrate technologies (within Integrated Program/Integrated Demonstration Program) for eventual use within EM-30 and EM-40. In addition, results will indicate those technologies, currently existing in the private sector that are ready for implementation into EM-30 and EM-40 activities.

9. COST AND MANPOWER ESTIMATES

Tables 6 and 7 depict cost and manpower estimates based on TTP ID-121117.

Table 6. INEL TLD project cost estimates ($K).

FY 1992	FY 1993	FY 1994	FY 1995	FY 1996
$50K	$610K	0	0	0

Table 7. INEL TLD project labor estimates (full-time equivalent).

FY 1992	FY 1993	FY 1994	FY 1995	FY 1996
.05	3.0	0	0	0

10. PROJECT FUNCTIONAL SUPPORT REQUIREMENTS

The TLD for the INEL project (TTP ID-121117) is funded by DOE OTD. This PjMP addresses functional support requirements of TTP ID-121117 only. Project direct staff includes the project manager, a PI, technical contributors, and additional administrative and support staff to perform specific project functions.

Additional support within EG&G Idaho will be defined in the project work packages and is obtained by a matrix management arrangement with other departments to conduct various technical and project specific support tasks. A Task Baseline Agreement or Work Release is required for all work performed by support organizations. Specific requirements of the Task Baseline Agreement or Work Release are included in the WTD Program Management Plan and Program Directive 2.3, "Project Management Requirements and Restraints."

11. PROJECT MANAGEMENT, MEASUREMENTS, AND PLANNING AND CONTROL SYSTEMS

The project will operate, as applicable, in accordance with the intent of DOE Order 4700.1, and DOE Order 2250.1C, as implemented by EG&G Idaho *Company Procedures Manual*, Volume IV, Section 20. Appropriate management and control systems will be implemented by the project team for each work element on the WBS to comply with the requirements of the applicable procedures. This applies to whether the work element is performed at the INEL or at other DOE sites. The project manager has the authority and responsibility to develop and maintain management planning, performance measurement, and control criteria and applicable procedures.

This PjMP is the administrative baseline document for this project and is modified only through the formal change control process. Technical scope baselines, WBSs, costs, schedules, change processes, and management control systems are enacted by the PjMP, TTP, and work packages. General project management responsibilities are defined for this project in the WTD Program Directive 2.3.

A DOE-ID approved financial plan, which authorizes funds for a project, must be in place before initiation and authorization of any work to be performed. Work packages must also be in place and approved by the Change Control Board (CCB) before any work begins. Monitoring of the project work packages will be performed using the following tools and processes:

- Cost and Planning System (CAPS) labor hours and distribution report to document actual hours spent weekly
- Projected and expended cost comparison curves (PMS-IV) to display work packages cost-to-schedule performance
- Weekly monitoring of actual costs and understanding commitments
- Biweekly status of work package and WBS activities to show progress to completion.

12. INFORMATION AND REPORTING

12.1 Reporting Requirements

The project will operate in accordance with DOE Order 1332.1A, "Uniform Reporting System," EG&G Idaho *Resource Manual*, Section 10, "Documentation Systems," WTD Program Management Plan, Section 7, "Reporting and Change Control," WTD PD 1.5, "Document Preparation, Review, Approval, Publication, Management and Change Control," and WTD PD 5.3, "Preparation and Control of WTD Monthly Status Report." These documents control processing of status reports; internal, informal, and formal reports; and formal and informal communications.

12.2 Weekly and Monthly Reports

This project has additional reporting requirements to effectively monitor and document programmatic activities. Monthly reporting will take place at the TTP (Cost Account) level and will provide status relative to established project costs, schedules, and technical baselines. Cost or schedule variance reports of $\pm$10% or $\pm$50K will require analysis of cause impact and corrective action.

Weekly and monthly reports will be transmitted to DOE-HQ through DOE-ID. Content will include weekly highlight reports from the PI and project manager. Reporting requirements will be included in Work Releases or Task Baseline Agreements with functional support staff from other organizations within the Company.

13. SYSTEM ENGINEERING MANAGEMENT PLAN

This project is not a Major System Acquisitions or a Major Project, therefore this section does not apply.

14. CONFIGURATION MANAGEMENT

Configuration management for this project will be implemented in accordance with Waste Technology Development (WTD) Directive 3.3, "Configuration Management." Change control within the INEL is provided by means of a CCB, which has been established by a draft WTD Program Management Plan. The purpose of the CCB is to control changes to the EG&G Idaho WTD's baseline (customer-directed and/or agreed upon changes to the project effort), document internal changes to the performance measurement baseline, and prohibit retroactive changes to records pertaining to work performed.

15. CONTINGENCY PLANNING

This element addresses the formal and informal assessment of risk in each project activity and the associated contingency planning to cover the elements/activities perceived as high risk. There is no contingency funding identified for this project.

16. QUALITY ASSURANCE

The project will adhere to the WTD Quality Program Plan QPP-337 "Quality Program Plan for the Waste Technology Development Department" dated November 12, 1991. Work performed elsewhere will be required to show that an equivalent level of quality will be implemented and maintained.

17. UTILITY SERVICES

No additional utility services or modifications to the existing services are required for this project.

18. DECISION RESPONSIBILITY MATRIX

Because of the small size and number of individuals involved in this project, it was determined that a responsibility assignment matrix would not be cost effective.

19. ENVIRONMENTAL PLAN

Project activities will be evaluated for environmental compliance as specified in DOE/ID 10166. This will be done by completion of an Environmental Checklist (DOE Form IDF 5440.1a). An evaluation of the checklist by EG&G Idaho Environmental Technical Support will recommend what further action is necessary. DOE-EH-1 will determine the level of NEPA documentation required.

20. HEALTH AND SAFETY PLAN

The EG&G Idaho Inc. *Safety Manual* shall be used for this project. Existing health and safety plans at facilities performing work shall be used if such plans exist. All safety plans shall include observance of the Occupational Safety and Health Administration (OSHA) standards and requirements and all Federal, state, and local codes. If no safety plan exists, the EG&G Idaho *Safety Manual* shall be used as the basis for a plan that will be written.

21. SECURITY PLAN

The Security Plan shall follow the guidelines outlined in the EG&G Idaho *Safeguards and Security Manual.* At each facility where work is to be performed, security shall follow the plan that is currently in place for that facility. Where no plan exists, or it does not cover the specifics of the work to be performed, a Facility Security Plan or a Project Security Procedure will be written and included as a part of this PjMP. These will be issued before starting the work, in accordance with the EG&G Idaho *Safeguards and Security Manual.*

22. TECHNOLOGY TRANSFER

It is the responsibility of every project manager to plan for the eventual transfer of technology. Only the TLD methodology developed during the course of this project is information that has potential for technology transfer to benefit private industry. It is more likely that the methodology would be transferred to other Federal agencies and DOE field offices. The project manager will work closely with DOE-ID and the Office of Research and Technology Applications to facilitate any potential technology transfer initiatives.

23. DATA QUALITY PLAN

The project manager has oversight responsibility for data quality management. This includes the establishing an adequate data management system. Data quality will be ensured by specifying requirements for data in terms of precision, accuracy, representativeness, completeness, and comparability. Detailed information related to data quality is discussed in the EPA, OSWER 9355.0-7B, "DQOs for Remedial Response Activities." Guidelines for ensuring auditability, traceability, and data integrity may be found in OWSER 935.3-01, "Guidance for Conducting RI/FS Under CERCLA." Data control will be implemented in accordance to INEL ER Directives 1.8, "Administrative Record," 1.9 "Records Management," and 2.4, "Characterization Process in the Environmental Restoration Program."

Documents generated will be controlled in accordance with WTD Program Directives 1.4, "WTD Records Management Plan," 1.5, "Document, Preparation, Review, Approval, Management and Change Control," and 1.6 "Engineering Design File."

24. ACQUISITION AND ASSISTANCE PLAN

The process by which the project identifies material needs, performs the acquisition of materials, and performs the handling and control of material will be consistent with EG&G Idaho procurement processes. The project manager/PI will submit requisition, and EG&G Idaho procurement is then responsible for issuing and managing subcontracts and purchase orders.

25. TEST AND EVALUATION PLAN

A Test and Evaluation Plan will not be developed for this project. All project deliverables and activities will be evaluated by appointed review groups for completeness and technical soundness. Letter reports to the DOE-ID project manager describing the results from the independent reviews will be generated.

26. REFERENCES

1. Westinghouse Hanford Company, *The Hanford Model: Environmental Cleanup Problems, Science, and Technology Needs and Facility Requirements*, PNL-7807/WHC-MR-0282.

2. Technical Task Plan, ID121117, Revision 0, EG&G Idaho, Inc., "Technology Logic Diagrams For The INEL," 1992.

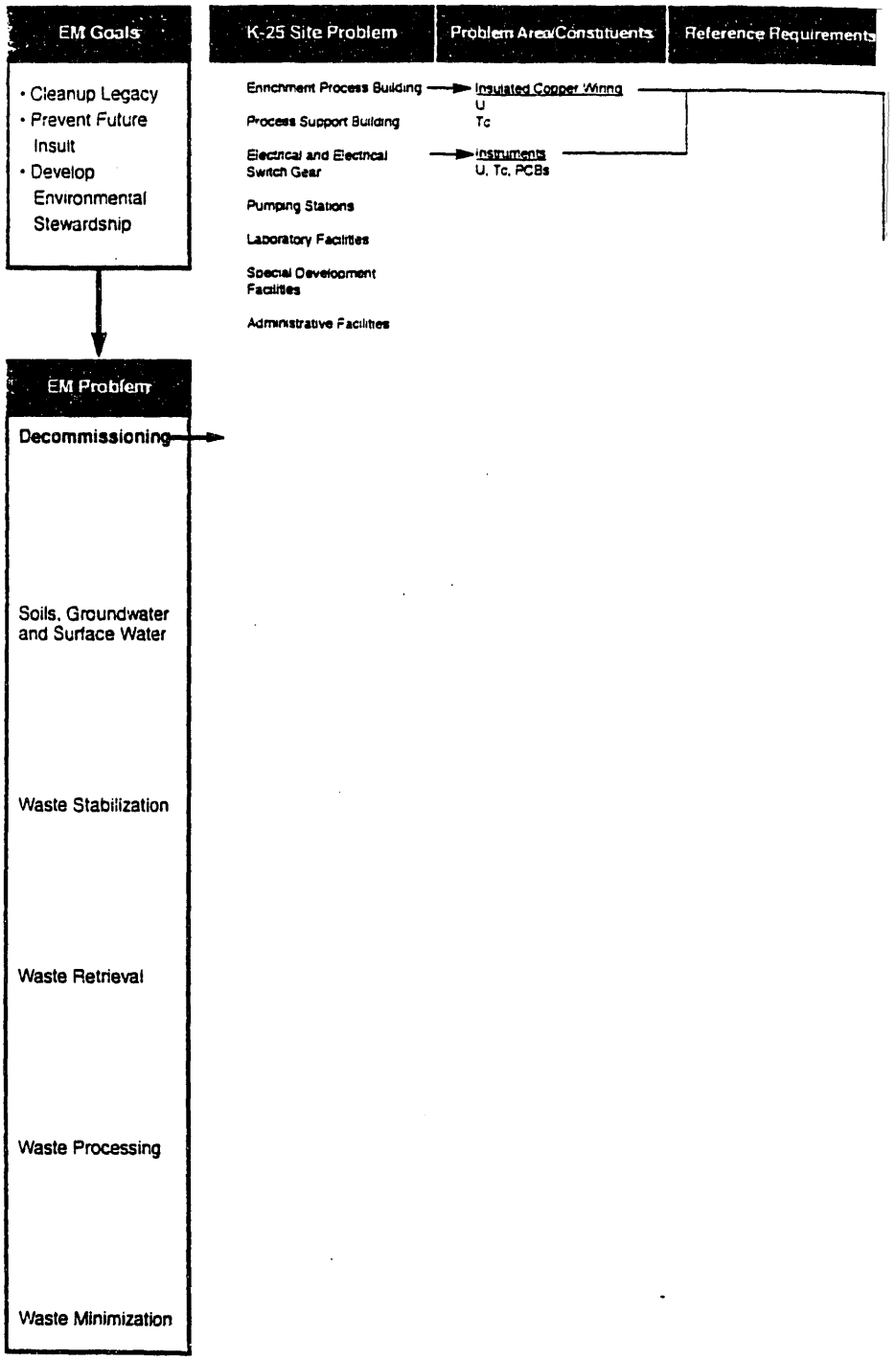
3. U.S. Department of Energy, *Environmental Restoration and Waste Management Five-Year Plan*, FY 1993-1997, August 1991.

4. Idaho National Engineering Laboratory, *Federal Facility Agreement and Consent Order*, ADN: 1088-06-29-120, May 1991.

Appendix A

Portion of ORNL K-25 Technology Logic Diagram

Technol


EM Goals
• Cleanup Legacy
• Prevent Future Insult
• Develop Environmental Stewardship
EM Problem
Decommissioning
Soils, Groundwater and Surface Water
Waste Stabilization
Waste Retrieval
Waste Processing
Waste Minimization
K-25 Site Problem
Problem Area/Constituents
Reference Requirements
Enrichment Process Building
Process Support Building
Electrical and Electrical Switch Gear
Pumping Stations
Laboratory Facilities
Special Development Facilities
Administrative Facilities
Insulated Copper Wiring
U
Tc
Instruments
U, Tc, PCBs

gy Logic Diagram

Decontamination

Working Draft

Sub Elements	Alternatives	Technologies	Status	Science Technology Needs	Implementation Needs
Decontamination	Mechanical Surface Removal	Supercritical CO_2 (MS-7)	Predemonstration Being developed by FLOW International Corp. effectiveness remains to be demonstrated; waste will be prefilters and HEPA filters filled with contaminant's	Development - Evaluate the Effect of operating parameters on the removal of various contaminants from different substrates Improvement - Containment and vacuum recovery system	Normal implementation needs Development costs: $250K - $1000k Capital cost: $500 K/machine Operating cost: ~ $ 2/ft^2
	Thermal surface Removal	Laser (TS-3)	Demonstration Currently being evaluated by Air Force as a method for removing organic coatings from metal; current systems are capable of removing 2-mil thick coatings at the rate of 100 ft 2/hr.; waste will be prefilters and HEPA filters filled with contaminant's	Development - Demonstration of Decon. Capability of existing lasers	Normal implementation needs. Development costs: $2 M + Capital cost: $1-10 M/machine Operating cost: ~ $ 2/ft^2
	Surface Cleaning	Strippable Coatings (SC-11)	Accepted Technology has been used for decontamination applications involving hazardous and radioactive contaminant's. Decontamination factors of one to several hundred can be expected with two applications. Waste is a solid polymer (volume = 1 mm x surface area decontaminated) containing the removed contaminant's.	None	Normal implementation needs. Capital costs: Negligible Operating cost: $ 1 to 1 40/ft^2
	Chemical Surface Cleaning	Biological (CS-10)	Evolving technology - pre conceptual Organisms that destroy PCB's have been identified. Method is unlikely to decon. U&Tc. Waste would be a sludge containing remains of bactena + PCB's and inorganic contaminant's. Methane is a likely gaseous product.	Science - Find culture techniques that provide successful decon on a lab scale. Development - Develop techniques that successfuly decon on large scale. Develop equipment cost and decon rate and cost information.	A bioreactor for continuously growing new bactena on a large scale would be needed. Insufficient information exists to project even order of magnitude capital or operating costs. Development costs: $3 - 10M
		Laser Light Activation (CS-11)	Evolving technology Acceleration of reaction rates for selected reactions is proven. Small scale decon has been demonstrated. Waste would be prefilters and HEPA filters filled with removed contaminant's.	Development - Demonstration of vacuum systems capable of collecting removed contaminant's.	Normal implementation needs. Development costs: $2 M + Capital cost: $1-10 M/machine Operating cost: Unknown

Appendix B

Technology Logic Diagram Data Sheet Example

Appendix B

Technology Logic Diagram Data Sheet Example

Name _____ May 18, 1992
Organization _____ Phone No. _____
Address _____ FAX No. _____
Team Leader _____ E-Mail _____

TECHNOLOGY LOGIC DIAGRAM INPUT DOCUMENT
Waste --------

EM PROBLEM: Waste --------

PROBLEM AREA/TARGET CONSTITUENTS/MEDIA:

REFERENCE REQUIREMENTS: Document!

SUBELEMENT: Waste ———
GENERIC TECHNOLOGY:

SPECIFIC TECHNOLOGY:

TECHNOLOGY STATUS: Document!

SCIENCE/TECHNOLOGY NEEDS: Document!

IMPLEMENTATION NEEDS: Document!

END

DATE
FILMED
3/23/93