DEMONSTRATION AND DEPLOYMENT OF A NON-TRADITIONAL *IN SITU* VITRIFICATION (NTISV) PROCESS

at

LOS ALAMOS NATIONAL LABORATORY

PROGRAM PLAN

MSE Technology Applications, Inc.
Los Alamos National Laboratory
Geosafe Corp.

NOVEMBER 1998

10508

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DEMONSTRATION AND DEPLOYMENT OF A NON-TRADITIONAL *IN SITU* VITRIFICATION (NTISV) PROCESS

I. BACKGROUND

The composition, form, and environmental conditions of buried waste vary significantly throughout the Department of Energy (DOE) complex. This waste, which must ultimately be treated, includes heavy metals, radionuclides and organic materials that can be found near the surface or at depth in hot spots, tanks, cribs, landfills, ponds, and French drains. A variety of climatic conditions and geology will also be encountered, making it necessary to process various soil types under saturated or unsaturated conditions. It is intended that the demonstrations/deployments verify the potential of NTISV to extend the capabilities of in-situ vitrification beyond those of conventional systems, thereby broadening the DOE's options for cost effective remediation of buried wastes.

There are many sites in the DOE complex which are contaminated with radionuclides and mixed wastes, posing risks to human health and the environment that are unacceptable. The traditional methods for dealing with remediation are ex-situ stabilization and disposal at a permitted facility. There is a need to develop and demonstrate environmentally sound, safe and cost effective solutions to treat and permanently stabilize soils contaminated with radionuclides and mixed waste. One proposed technical solution is *in situ* stabilization by vitrification.

Although vitrification as a concept has been around for a number of years, traditionally, it has been a" top-down" approach, rather than the "bottom-up" approach that will be demonstrated during this project.

This alternative approach to traditional *in situ* vitrification is achieved by use of a high temperature thermal source initially placed near the bottom of a vertical pipe previously emplaced in contaminated soils.

An arc melter provides heat for combustion and melting of wastes in the soil, starting at depth and moving upward until the contaminated zone has been vitrified. Planar melting, the technique being demonstrated at the Los Alamos site, involves seeding of an area between electrodes to create two or more melt "planes." These planes grow

towards each other until they meet, completely enveloping buried wastes and associated materials. The entire waste volume is thereby incorporated into the melt, creating a stable monolithic final waste form. An off-gas system generally will be required to contain and control products of combustion, volatiles, and other emissions generated by the ISV process.

The site selected for this demonstration/deployment project, which is sponsored by the Environmental Management Office of Science and Technology's Subsurface Contamination Focus Area (SCFA), is located at Los Alamos National Laboratory's LANL)Technical Area 21, and consists of Material Disposal Area (MDA) V. The demonstration/deployment is expected to take place in FY 1999.

MDA-V, located at TA-21, across the canyon from Los Alamos Airport (fig. 1) contains three absorption beds which received effluent from a nuclear laundry which operated at TA-21 from 1945 until 1961. In addition, for a short period of time, it also received waste from industrial waste treatment research operations. The site is contaminated with various radionuclides and heavy metals.

The approach to the demonstration is to field a "cold" test in an uncontaminated area as close to MDA-V as is practically possible, in or about January, 1999. The area to be vitrified measures about 10 ft by 15 ft. If the "cold" test is declared a success, the "hot" deployment will vitrify a section of the northernmost absorption bed, going to a depth of approximately 25 ft and a width of approximately 30 ft. Various tests will be done after the vitrification is complete to assure containment of all contaminants, and integrity of the monolith.

II. PURPOSE

The demonstration/deployment is intended to provide data suitable for supporting a CERCLA Treatability Study designed to indicate the viability and applicability of NTISV technology for immobilizing buried radioactive and hazardous wastes.

The major objectives of this demonstration/deployment project are to:

- Identify technologies that are mature enough for deployment to remediate DOE Complex sites
- Demonstrate a technology that has the potential to reduce risk, cost and schedule and can be used at other Los Alamos sites and DOE sites

- Establish partnerships with regulatory community
- Demonstrate effectiveness of technology for final waste disposition.

The project will be structured for success in that MSE Technology Applications, Inc., LANL, and Geosafe Corporation established a "Project Team" that will have joint responsibility for establishing credible success criteria for the cold and hot demonstrations, and for the overall outcome of the project.

III. WORK SCOPE SUMMARY

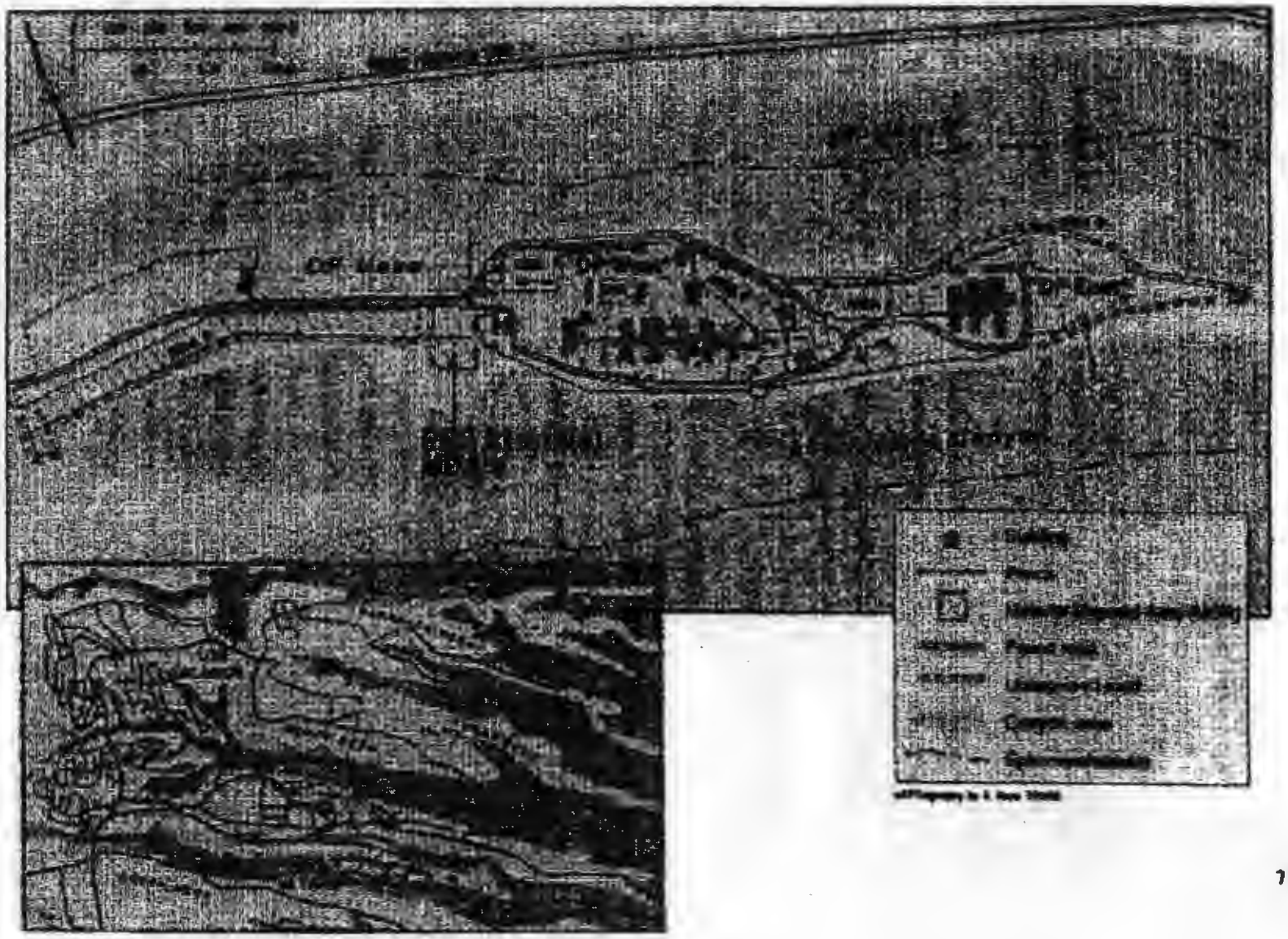
The project work scope identifies the essential elements as follows:

- Design and fabricate process equipment
- Verify the effectiveness of NTISV to immobilize contaminants
- Demonstrate NTISV technology
- Furnish data to support a CERCLA Treatability Study
- If NTISV technology proves viable, facilitate its follow-on use and commercialization

The goal of this demonstration/deployment is to successfully demonstrate capabilities of NTISV technology in two sequential tests. Tests will be conducted by Geosafe Corporation under a subcontract to MSE Technology Applications, Inc.

The "cold" demonstration is currently scheduled for January 1999; if successful it will be followed by a "hot" deployment using the same equipment. The deployment is currently scheduled for August 1999.

A "cold" test bed near MDA V will be provided for "dry-run" testing of the process and equipment in preparation for a "hot" deployment. The hot deployment will process a 30 x 25 ft area of MDA V's northernmost bed to a depth of 22 feet. From process knowledge and limited sampling, the beds are known to contain plutonium process wastes and heavy metals. The depth of contamination ranges from approximately 4 to 22 feet.



LANL will provide the demonstration/deployment sites, develop and obtain approval of required health, safety, work control, regulatory, and NEPA documents, deliver basic utilities, and provide required health, safety, and quality oversight personnel. LANL and MSE-TA project personnel will develop the performance criteria, review and approve the technology evaluation and test control documents, evaluate go/no-go criteria, provide technical and program oversight, and prepare the final project assessment.

Geosafe Corporation, in concert with MSE-TA, LANL and other involved participants, will design, fabricate, and test the NTISV system, develop technology evaluation and test control documents, perform the "cold" demonstration and "hot" deployment, provide technical information as needed for documentation, and compile and analyze data from the demonstrations. MSE will lead the verification effort, and prepare the final required documentation, with input and support from LANL and Geosafe Corporation.

IV. PROJECT PHASES

The project will be conducted in three phases:

1. Prepare all design and regulatory documentation, evaluate the project by the go/no-go criteria, and complete the operational assessment for a cold demonstration;

2. Perform and evaluate the cold demonstration, prepare design and regulatory documentation for the hot demonstration, evaluate the project by the go/no-go criteria, and complete the operational assessment for the hot deployment, and;

3. Perform and evaluate the hot demonstration and prepare the final project assessment.

This project will require a closely integrated effort by the Project Team, the regulatory community, and stakeholders. To help illustrate the nature of this integration, the principal tasks for each of the participants are indicated in the following summary description of each Project Phase; a detailed work breakdown is in Appendix I.

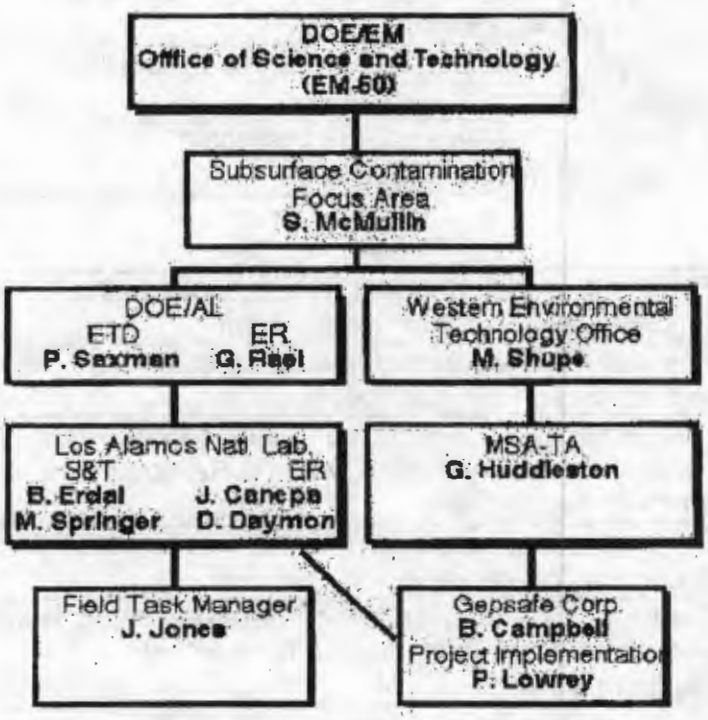
Task	Description	Responsibility
Phase 1		
1.1	Complete design for "cold" demonstration	Geosafe
1.2	Prepare test plan for "cold" demonstration	Geosafe, LANL, MSE-TA
1.3	Provide technical information and operational requirements to support the demonstration.	Geosafe
1.4	Develop and integrate project documents for detailed schedule and cost estimates to successfully complete project	LANL, MSE-TA, Geosafe
1.5	Participate in readiness review. At this point the 90% design and 90% test plan will be reviewed and evaluated. A decision will be made whether or not to continue with the "cold" demonstration	Geosafe, LANL, MSE-TA
1.6	Order materials and equipment, fabricate NTISV system, complete system operational tests	Geosafe
1.7	Prepare "cold" demonstration site	. LANL, Geosafe, MSE-TA
1.8	Obtain approval of required health, safety, work control, regulatory, and NEPA documents. Provide basic utilities. Provide required health, safety, and quality oversight personnel and functions	LANL
1.9	Participate in field readiness review for "cold" demonstration	LANL, Geosafe, MSE-TA
Phase 2		
2.1	Mobilize for "cold" demonstration	Geosafe, MSE-TA, LANL
2.2	Perform "cold" demonstration of NTISV	Geosafe
	Participate in destructive analysis, verification and imaging of "cold" demonstration	MSE-TA, Geosafe, LANL
2.4	Prepare and review draft report and results	Geosafe, MSE-TA, LANL
2.5	Prepare as-built drawings and documentation of system design for "cold" demonstration	Geosafe
2.6	Prepare design of NTISV system for "hot"	Geosafe

	deployment	
2.7	Prepare and review test plan for "hot" deployment	Geosafe, MSE, LANL
2.8	Prepare and review required health, safety, work control, regulatory, NEPA, and RCRA documents for "hot" deployment	LANL, Geosafe, MSE
2.9	Participate in the evaluation criteria for the "hot" deployment	MSE, LANL, Geosafe
2.10	Prepare, review and submit final "cold" demonstration evaluation report	. (Geosafe, MSE, LANL

Phase 3		
3.1	Fabricate, install, and test modifications to the NTISV system for "hot" deployment	Geosafe
3.2	Prepare As-Built drawings and documentation of system design for "hot "deployment	Geosafe
3.3	Obtain approval of required health, safety, work control, regulatory, NEPA, and RCRA documents for "hot" deployment	Geosafe, LANL
3.4	Conduct readiness review for "hot" deployment. The go/no go decision will be made	MSE-TA, LANL, Geosafe
3.5	Participate in mobilization of materials, equipment, and personnel in preparation for the "hot" deployment	MSE, Geosafe, LANL
3.6	"Hot" deployment of NTISV at MDA V. The minimum amount of waste to be treated during this "hot" deployment is 450 cubic yards	Geosafe, LANL
3.7	Participate in initial verification and monitoring activities for "hot" deployment	MSE, Geosafe, LANL
3.8	Prepare, review and submit the final test report and results	Geosafe, MSE, LANL
3.9	Prepare, review and issue final project assessment	MSE, LANL, EM-40, EM-50

Appendix I shows a summary-level schedule for these tasks. Appendix II gives a detailed schedule broken down to individual work elements.

V. PROJECT RESPONSIBILITIES AND KEY PERSONNEL



A. Responsibilities

1. MSE-Technology Applications, Inc.

- Facilitates the NTISV demonstration/deployment
- Issues the RFP
- Awards the subcontract
- Oversees subcontractor design, demonstration and deployment activities
- Performs verification tests, and
- Prepares interim and final project reports.

2. Los Alamos National Laboratory

- Provides the host site for the demonstration/deployment
- Performs all landlord functions to ensure the demonstration/deployment is performed in a manner consistent with Laboratory, DOE and regulatory requirements
- Plays a support role in completing the demonstration/deployment .

3. Geosafe Corporation

- Collaborates with MSE-TA and LANL to finalize the demonstration plan
- Implements and completes the demonstration and deployment and prepares the final report(s).

B. Key Personnel

1. Los Alamos National Laboratory

Bruce Erdal, Program Manager, Integrated Science and Technology Program; his responsibility is to oversee implementation and completion of DOE/EM/OST innovative technology demonstration. Overall site manager.

Marja Springer, Programmatic Project Leader, Environmental Management Integrated Science and Technology Program; her responsibility is to manage the programmatic activities required by EM-50 and act as the coordinator between EM-50 and EM-40 activities. In addition, she will coordinate all stakeholder interactions with the Environmental Restoration Project public involvement staff. She is the project's single point of contact.

Deba Daymon, Focus Area Leader for MDAs, Environmental Restoration Project, Los Alamos National Laboratory; her responsibility in this project is to oversee and complete all ER required activities.

Jayne Jones, Field Task Manager, Environmental Restoration Project; her responsibility is to coordinate all field issues and requirements between Geosafe, Environmental Restoration Project personnel and the Environmental Management Integrated Science and Technology Program.

Gary McMath, Environmental Restoration project; Team Leader for TA-21, and the site technical expert. He will responsible for resolving possible technical issues at the site.

Tony Grieggs, Environmental Restoration Project; his responsibility is regulatory issues and interactions. He will work with Jack Ellvinger, ESH-19, and Jody Plum (DOE-LAAO) to interact with the New Mexico Environment Department.

Oliver Wilton, Environmental Restoration Project; his responsibility will be to review and implement all health and safety requirements for a successful demonstration at TA-21, MDA V.

2. MSE-TA, Inc.

Gordon Huddleston as the principal investigator, has the overall responsibility for managing activities related to the successful demonstration and deployment of NTISV technology.

Bob Balhiser is the project engineer responsible for subcontractor oversight and for coordinating operational and reporting activities to facilitate a smooth, efficient, and timely flow of work

Dave Reichart is the geotechnical specialist responsible for creating images of the vitrified monolith to verify its extent and integrity by means of non-destructive subsurface imaging techniques.

3. Geosafe, Corp.

Brett Campbell is the assigned project manager responsible for successfully demonstrating Geosafe's NTISV technology at LANL.

Pat Lowery is the deputy program manager responsible for project technical design, data acquisition, and performance evaluation.

C. Contact Information

Org.	Person	Telephone	Fax	E-mail
LANL	Bruce Erdal	(505) 667-9814	(505) 665-8118	Erdal@lanl.gov
	Marja Springer	(505) 665-7112	(505) 665-8118	Marja@lanl.gov
	Deba Daymon	(505) 667-9021	(505) 665-4747	Deba@fimad.lanl.gov
	Jayne Jones	(505) 665-5342	(505) 665-4747	Jaynej@fimad.lanl.gov
MSE-TA	Gordon Huddleston	(406) 494-7382	(406) 494-7230	Hudgj@mse-ta.com
	Bob Balhiser	(406) 494-7282	(406) 494-7230	Bobcb@mse-ta.com
Geosafe	Brett Campbell	(509) 375-0710	(509) 375-7721	Brett.campbell@pnl.com

VI. PROJECT REQUIREMENTS AND DELIVERABLES

This section details requirements relating to the performance, content and requisites for the deliverables and the development of the project.

A. Project Implementation

1. Design and As-Built: The design of the NTISV system for "cold" demonstration and "hot" deployment includes preparation of all design, system check out, safety, maintenance, and related documents. The as-built for the cold and hot demonstrations includes detailed drawings and specifications of the actual operating NTISV system. The as-built package will be delivered to MSE upon completion.

2. Test Plans: The test plans will be the overall guiding documents which will define the project. The applied technology and the other elements tier up to support the end objectives of the project.

3. Data quality Objectives (DQOs): This identifies the quality of the data being collected. DQOs can be qualitative or quantitative measures and are stated in units of precision, accuracy, representativeness, completeness, and comparability. All test objectives shall have established DQOs for the data collected that address the test objective.

B. Go/No-Go Criteria for "Cold" Demonstration

The go/no go decision for the "cold" demonstration shall be based upon completion of all required design and technical information. The field operations assessment review including design and technical information will support a high probability for successfully meeting the go/no go criteria for the "hot" deployment.

C. Go/No-Go Criteria for "Hot" Deployment

Successful implementation of the "cold" demonstration, approval from MSE and LANL, and the availability of funds are the defining criteria for proceeding with the "hot" deployment.

The criteria for the "hot" deployment, based upon the successful completion of the "cold" demonstration, will consist of the following:

- All samples of treated waste shall be demonstrated to be within leaching or other test limits specified by site, State, and Federal regulations.
- Effluent from the off-gas processing system shall meet all applicable site, State, and Federal discharge limits.
- If any secondary waste is generated (including waste generated from decontamination and decommissioning of equipment from hot demonstration) it shall be in a form deemed disposable by applicable site, State, and Federal regulations.
- The data from the cold demonstration shall reasonably establish that the system is capable of treating 450 cubic yards minimum as anticipated for the hot demonstration.
- Target cost for implementing a large scale version of the hot demonstration should be less than $800 per ton.
- The system shall be capable of completing a minimum volume equivalent to 30 x 25 x 22 feet without any planned system maintenance.

D. Cold Test Report

The test report will include operating and sampling data collected during the test, laboratory analysis results, changes in operating or sampling procedures, an assessment of the performance of the test, areas requiring technical and operational improvement and a strategy for addressing and implementing those improvements.

Assessment of the test shall include the following :

1. Technical Performance of the Treatment System.

- Quantify the fate and partitioning of metals, radionuclides, and hazardous materials among the melt, surrounding soil, and off-gas.
- Provide imaging and mineralogical analysis of the treated material as a function of position.
- Verify the magnitude and composition of the off-gas stream.
- Verify the position and duration of the thermal gradients (vapor phase, surface, sub-surface) associated with the waste treatment process.
- Demonstrate control of the geometry of the treated region.
- Characterize the homogeneity and leach resistance of the treated material.
- Establish the safe-operating parameters for the hot demonstration

2. Economic Performance of the Treatment System for Processing Mixed Waste

- Quantify the rate of waste treatment.
- Quantify the energy required per ton of treated waste.
- Estimate the capital equipment and operating costs of the system.
- Estimate the maintenance costs and percent down-time associated with operating the system.
- Estimate the costs associated with secondary waste treatment and disposal.
- Verify and/or revise cost estimate for the "hot" deployment.

3. Risk Performance of the Treatment System

- Estimate risks (emissions, secondary wastes, routine operation and maintenance, mechanical failures, process excursions) to workers, public, and environment associated with performing the treatment.
- Estimate the reduction of risk to workers, public, and the environment achieved with the treated waste compared to untreated waste.

E. Quality Assurance Project Plan

As an integral part of the test plan a quality assurance plan will be provided to define the aspects of the project that will be employed to maintain a level of integrity consistent with the end objectives of the project. In particular it is essential to ensure that the data collected meets the objectives defined in each test element and is of known accuracy and precision. This plan will include the following:

- Abbreviated Project Description
- Data Quality Objectives
- Sampling and Analytical Procedures
- Approach to Quality Assurance/Quality Control
- References

F. Test Report

At the completion of all test activity, a summary test report will be prepared by Geosafe to document the entire test program. This will be issued initially in draft form for review and comment by MSE. A final test report will be prepared and issued after this review and comment process. MSE will submit the final test report with a stand alone, separate final project assessment.

VII. TECHNICAL PERFORMANCE MEASURES AND SUCCESS CRITERIA

It is important that the project meet certain technical performance measures in order to be considered for further deployment at the DOE complex. These technical performance measures are the following:

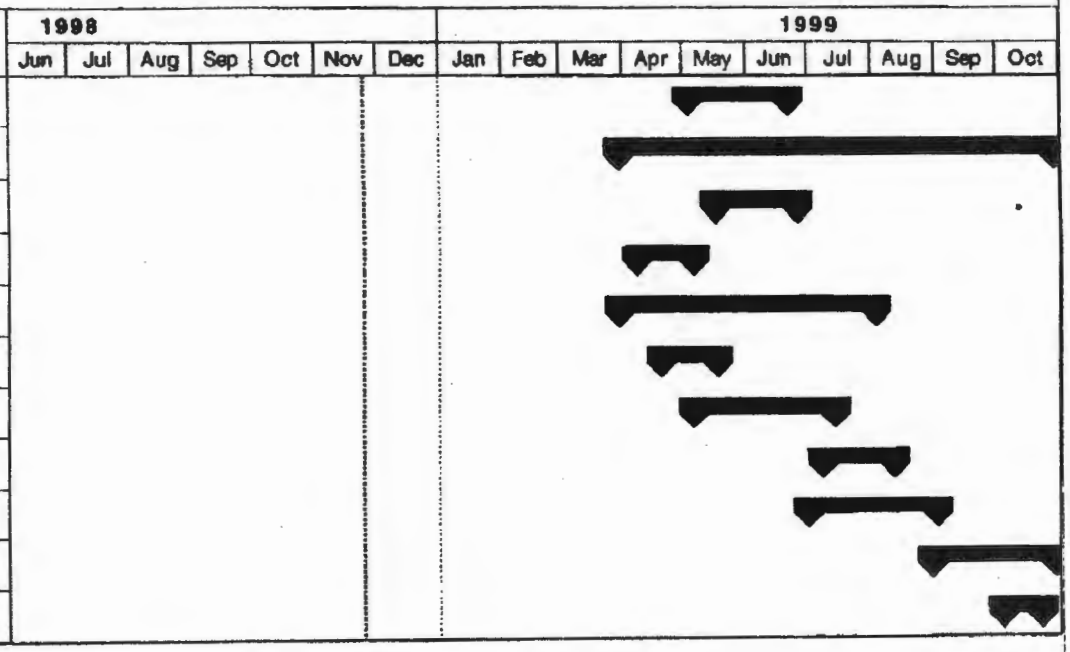
- Quantify the fate and partitioning of metals, radionuclides, and hazardous materials among the melt, surrounding soil, and off-gas.
- Provide imaging and mineralogical analysis of the treated material as a function of position.
- Verify the magnitude and composition of the off-gas stream.
- Verify the position and duration of the thermal gradients (vapor phase, surface, sub-surface) associated with the waste treatment process.

- Demonstrate control of the geometry of the treated region.
- Characterize the homogeneity and leach resistance of the treated material.
- Costs savings (based on excavation, transportation and storage of mixed waste at a licensed facility) for implementing a large scale version of the hot demonstration should be less than $800 per ton
- Capability of treating 450 cubic yards minimum as anticipated for the hot demonstration
- The system shall be capable of completing a minimum volume equivalent to 30 x 25 x 22 feet without any planned system maintenance
- All samples of treated waste shall be demonstrated to be within leaching or other test limits specified by site, State, and Federal regulations
- Effluent from the off-gas processing system shall meet all applicable site, State, and Federal discharge limits
- If any secondary waste is generated (including waste generated from decontamination and decommissioning of equipment from hot demonstration) it shall be in a form deemed disposable by applicable site, State, and Federal regulations.

Appendix I

Summary-Level Schedule

ID	Task Name	Duration	Start
96	Task 2.10	35d	Tue 5/4/99
101	PHASE 3 – "Hot" Deployment	154d	Tue 3/30/99
102	Task 3.1	30d	Mon 5/17/99
106	Task 3.2	20d	Thu 4/8/99
108	Task 3.3	90d	Tue 3/30/99
114	Task 3.4	20d	Tue 4/20/99
118	Task 3.5	49d	Thu 5/6/99
121	Task 3.6	25d	Thu 7/8/99
124	Task 3.7	45d	Thu 7/1/99
134	Task 3.8	45d	Mon 8/30/99
138	Task 3.9	15d	Mon 10/4/99



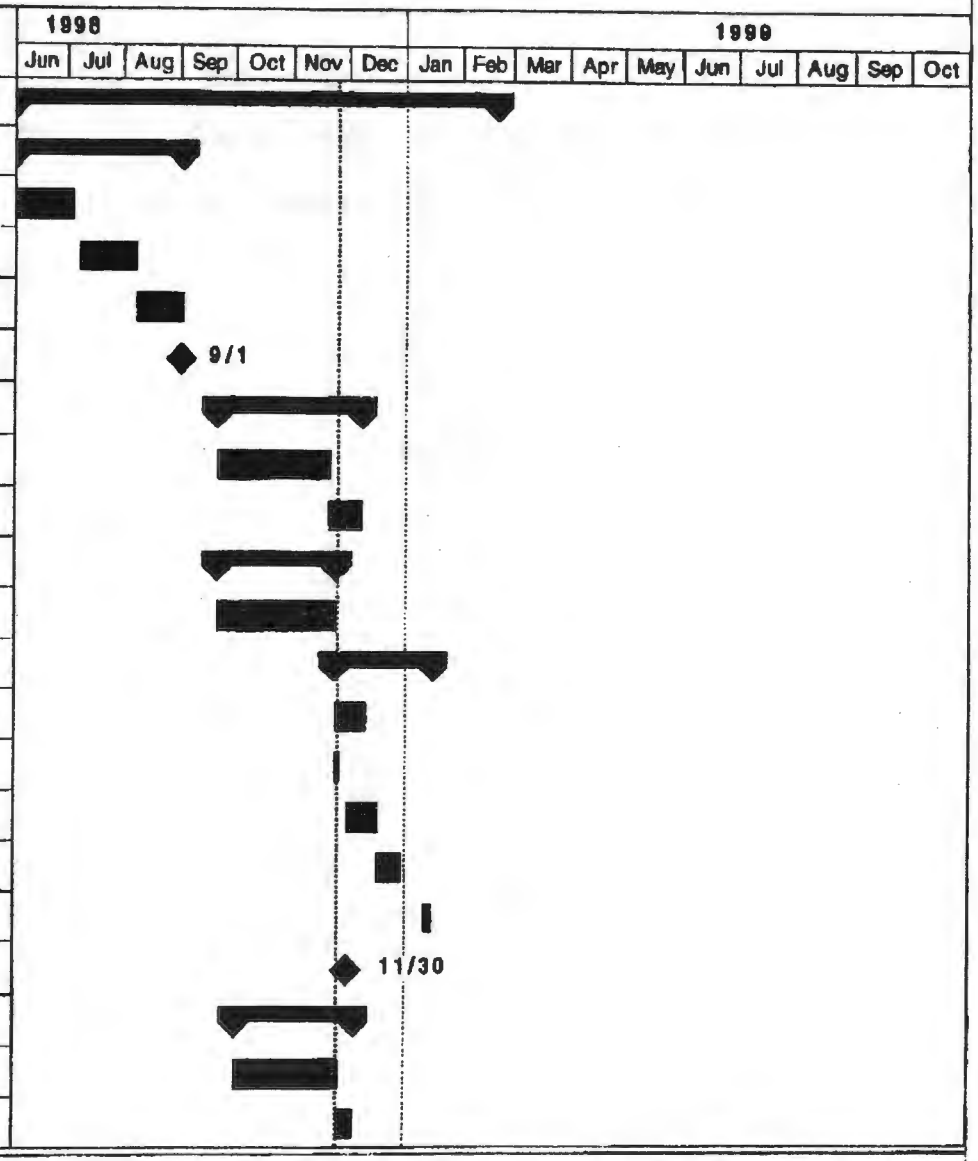
Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

Appendix II

Detailed Schedule

ID	Task Name	Duration	Start
1	**PHASE 1 – Setup**	**190d**	**Mon 6/1/98**
2	**Completed**	**67d**	**Mon 6/1/98**
3	Write RFQ with MSE-TA	25d	Mon 6/1/98
4	Contractor Review of RFQ	23d	Tue 7/7/98
5	Review of Contractor Awards	18d	Fri 8/7/98
6	Phase 1 Contract Award to Geosafe	0d	Tue 9/1/98
7	**Task 1.1**	**56d**	**Mon 9/21/98**
8	Complete Cold Demonstration Desig	45d	Mon 9/21/98
9	Design Approval	12d	Fri 11/20/98
10	**Task 1.2**	**46d**	**Mon 9/21/98**
11	Complete Test Plan	46d	Mon 9/21/98
12	**Task 1.3**	**40d**	**Mon 11/23/98**
13	Revise Test & Program Plan	13d	Mon 11/23/98
14	Write SAP	3d	Mon 11/23/98
15	Integrate SAP with Program Plan	13d	Mon 11/30/98
16	SAP Team Review	10d	Wed 12/16/98
17	Incorporate Team Review Comments	5d	Mon 1/11/99
18	*Provide Tech & Op Req to LANL*	0d	Mon 11/30/98
19	**Task 1.4**	**46d**	**Thu 10/1/98**
20	Write Program Plan	40d	Thu 10/1/98
21	Revise Program Plan	7d	Wed 11/25/98



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress

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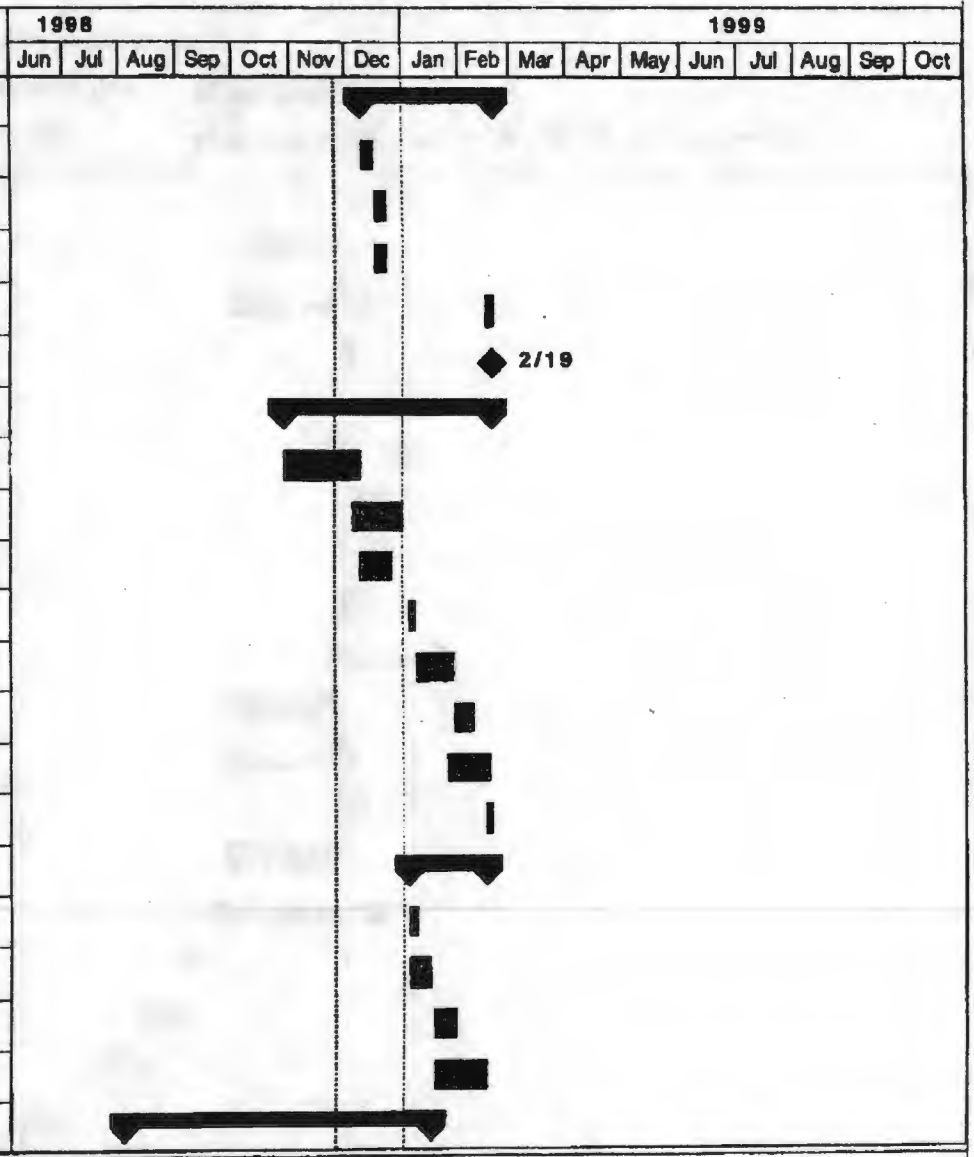
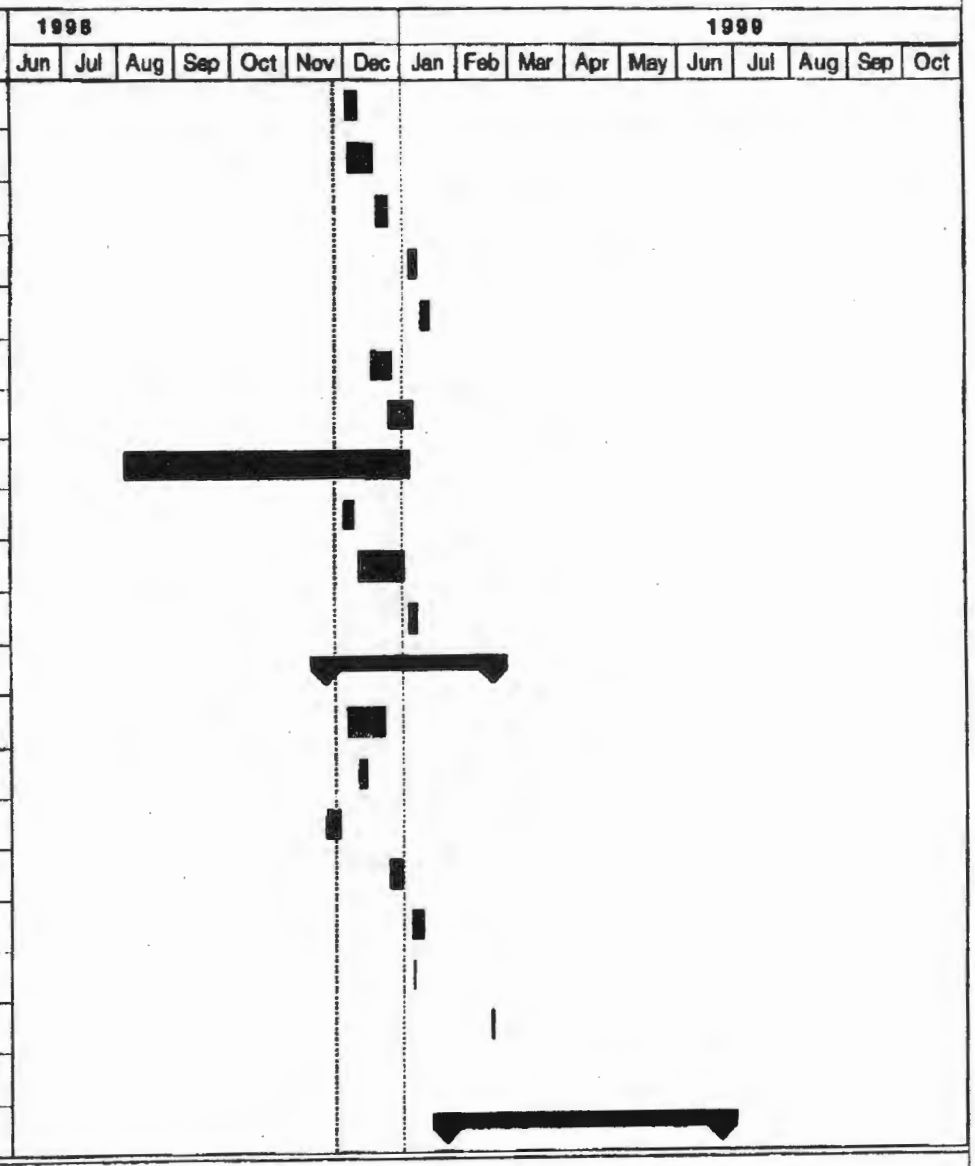
ID	Task Name	Duration	Start
22	**Task 1.5**	**53d**	**Wed 12/9/98**
23	Incorporate All Review Comments	5d	Wed 12/9/98
24	Go/No Go Evaluation	5d	Wed 12/16/98
25	*Readiness Review*	5d	Wed 12/16/98
26	Operational Assessment	5d	Mon 2/15/99
27	Go/NoGo Decision	0d	Fri 2/19/99
28	**Task 1.6**	**82d**	**Wed 10/28/98**
29	*System Modification/Fabrication*	30d	Wed 10/28/98
30	*Transport Pre-filter from ORNL site*	20d	Fri 12/4/98
31	Determine & Acquire Field Supplies	14d	Tue 12/8/98
32	Sample Soil (Baseline)	4d	Mon 1/4/99
33	Analyze Samples	15d	Fri 1/8/99
34	Review & QA Sample Data	7d	Fri 1/29/99
35	*NTISV System Assay and Test*	18d	Mon 1/25/99
36	*System Check-out*	4d	Mon 2/15/99
37	**Task 1.7**	**31d**	**Mon 1/4/99**
38	Install Utilities	5d	Mon 1/4/99
39	Excavate & Construct Test Trench	10d	Mon 1/4/99
40	Complete Site Preparation	10d	Mon 1/18/99
41	*Perform Starter Path Injection*	21d	Mon 1/18/99
42	**Task 1.8**	**120d**	**Mon 8/3/98**



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress

ID	Task Name	Duration	Start
43	Complete ES&H Questionnaire	5d	Tue 12/1/98
44	Review Geosafe HASP	10d	Wed 12/2/98
45	Incorporate SSHASP	5d	Thu 12/17/98
46	ES&H Review of SSHASP	5d	Mon 1/4/99
47	Incorporate SSHASP Review Comme	5d	Mon 1/11/99
48	Write WCSF	10d	Mon 12/14/98
49	WCSF Review	10d	Thu 12/24/98
50	Regulatory Interactions	111d	Mon 8/3/98
51	Write Utilities Request	5d	Mon 11/30/98
52	Utilities Request Review	20d	Mon 12/7/98
53	Perform BMP (Storm Water)	5d	Mon 1/4/99
54	**Task 1.9**	**65d**	**Fri 11/20/98**
55	ES&H Questionnaire Review	15d	Tue 12/1/98
56	Technical Team Review	5d	Mon 12/7/98
57	Initiate Excavation Permit	5d	Fri 11/20/98
58	Excavation Permit Review	5d	Thu 12/24/98
59	Establish Waste Storage Area	5d	Tue 1/5/99
60	Conduct Readiness Review	1d	Wed 1/6/99
61	On Site Briefing - Complete Team	1d	Thu 2/18/99
62			
63	**PHASE 2 – "Cold" Demonstration**	**106d**	**Mon 1/25/99**

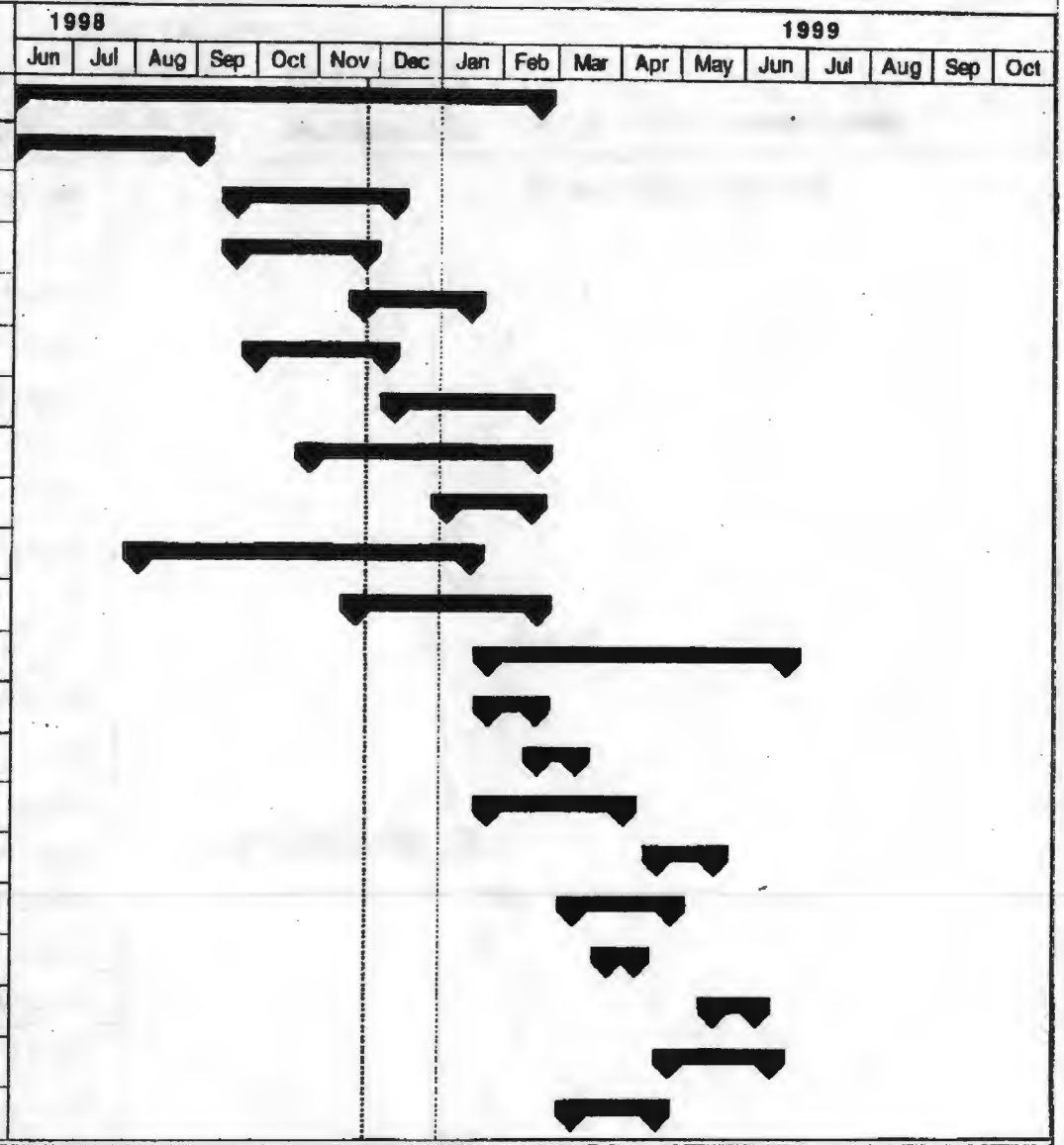


Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

;5056658118 # 25/ 32

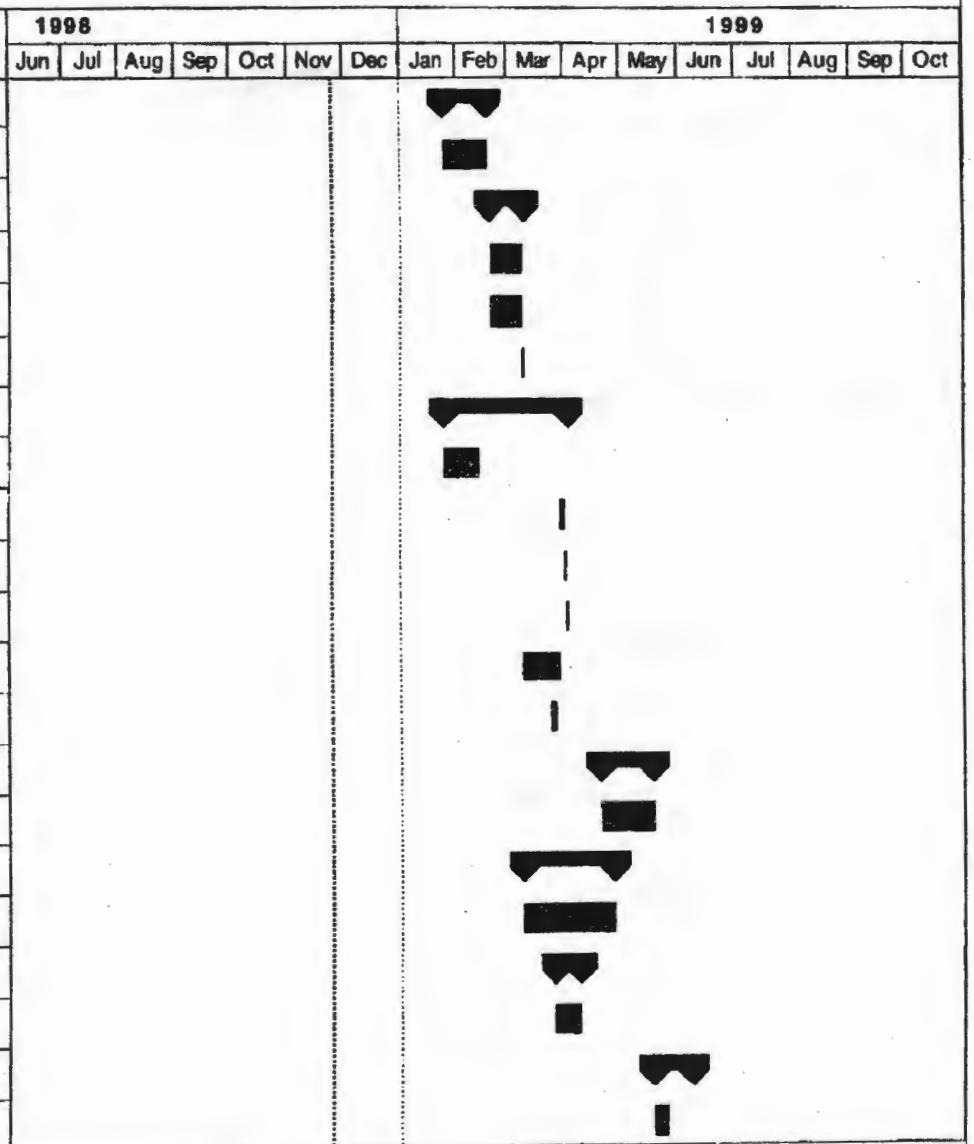
ID	Task Name	Duration	Start
1	PHASE 1 – Setup	190d	Mon 6/1/98
2	Completed	67d	Mon 6/1/98
7	Task 1.1	56d	Mon 9/21/98
10	Task 1.2	46d	Mon 9/21/98
12	Task 1.3	40d	Mon 11/23/98
19	Task 1.4	46d	Thu 10/1/98
22	Task 1.5	53d	Wed 12/9/98
28	Task 1.6	82d	Wed 10/28/98
37	Task 1.7	31d	Mon 1/4/99
42	Task 1.8	120d	Mon 8/3/98
54	Task 1.9	65d	Fri 11/20/98
63	PHASE 2 – "Cold" Demonstration	106d	Mon 1/25/99
64	Task 2.1	18d	Mon 1/25/99
66	Task 2.2	13d	Fri 2/19/99
70	Task 2.3	50d	Mon 1/25/99
77	Task 2.4	20d	Tue 4/20/99
79	Task 2.5	35d	Tue 3/9/99
81	Task 2.6	10d	Fri 3/26/99
83	Task 2.7	15d	Tue 5/18/99
87	Task 2.8	36d	Mon 4/26/99
93	Task 2.9	30d	Tue 3/9/99



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

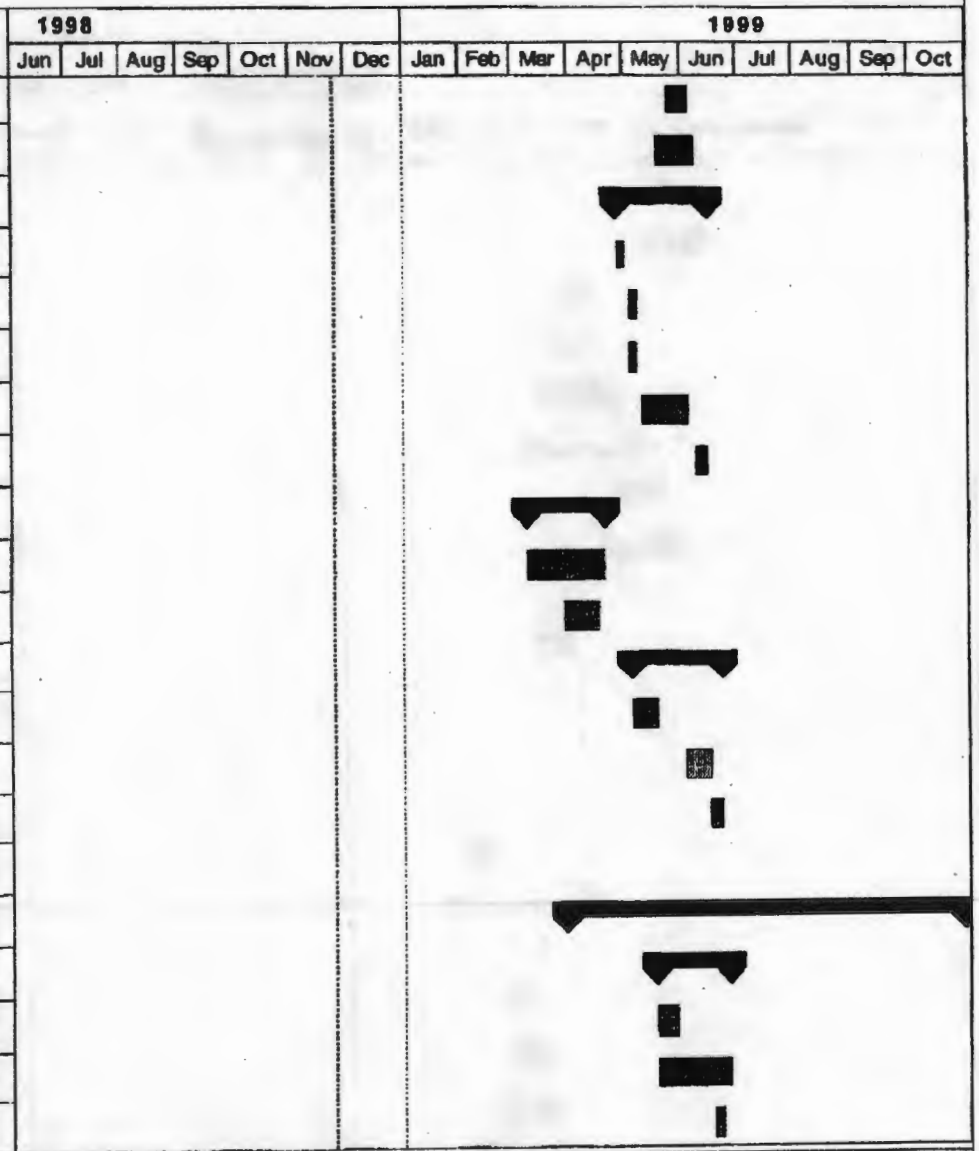
ID	Task Name	Duration	Start
64	**Task 2.1**	**18d**	**Mon 1/25/99**
65	*NTISV System Mobilization & Set-up*	18d	Mon 1/25/99
66	**Task 2.2**	**13d**	**Fri 2/19/99**
67	Electrical Power Usage	12d	Fri 2/19/99
68	Perform Cold Demonstration	12d	Fri 2/19/99
69	*Partially Demobilize*	1d	Tue 3/9/99
70	**Task 2.3**	**50d**	**Mon 1/25/99**
71	*Allow Vitrified Product to Cool*	15d	Mon 1/25/99
72	Sample Cold Demonstration Melt	3d	Mon 3/29/99
73	Restore Site	1d	Thu 4/1/99
74	Site Demobilize	1d	Fri 4/2/99
75	*Analyze & QA Melt Samples*	15d	Tue 3/9/99
76	*Excavate Vitrified Product*	3d	Wed 3/24/99
77	**Task 2.4**	**20d**	**Tue 4/20/99**
78	*Prepare Draft Report of Results*	20d	Tue 4/20/99
79	**Task 2.5**	**35d**	**Tue 3/9/99**
80	Prepare As-Built Documentation	35d	Tue 3/9/99
81	**Task 2.6**	**10d**	**Fri 3/26/99**
82	Evaluate Hot Demonstration Site	10d	Fri 3/26/99
83	**Task 2.7**	**15d**	**Tue 5/18/99**
84	Modify Hot Test Plan	5d	Tue 5/18/99



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress

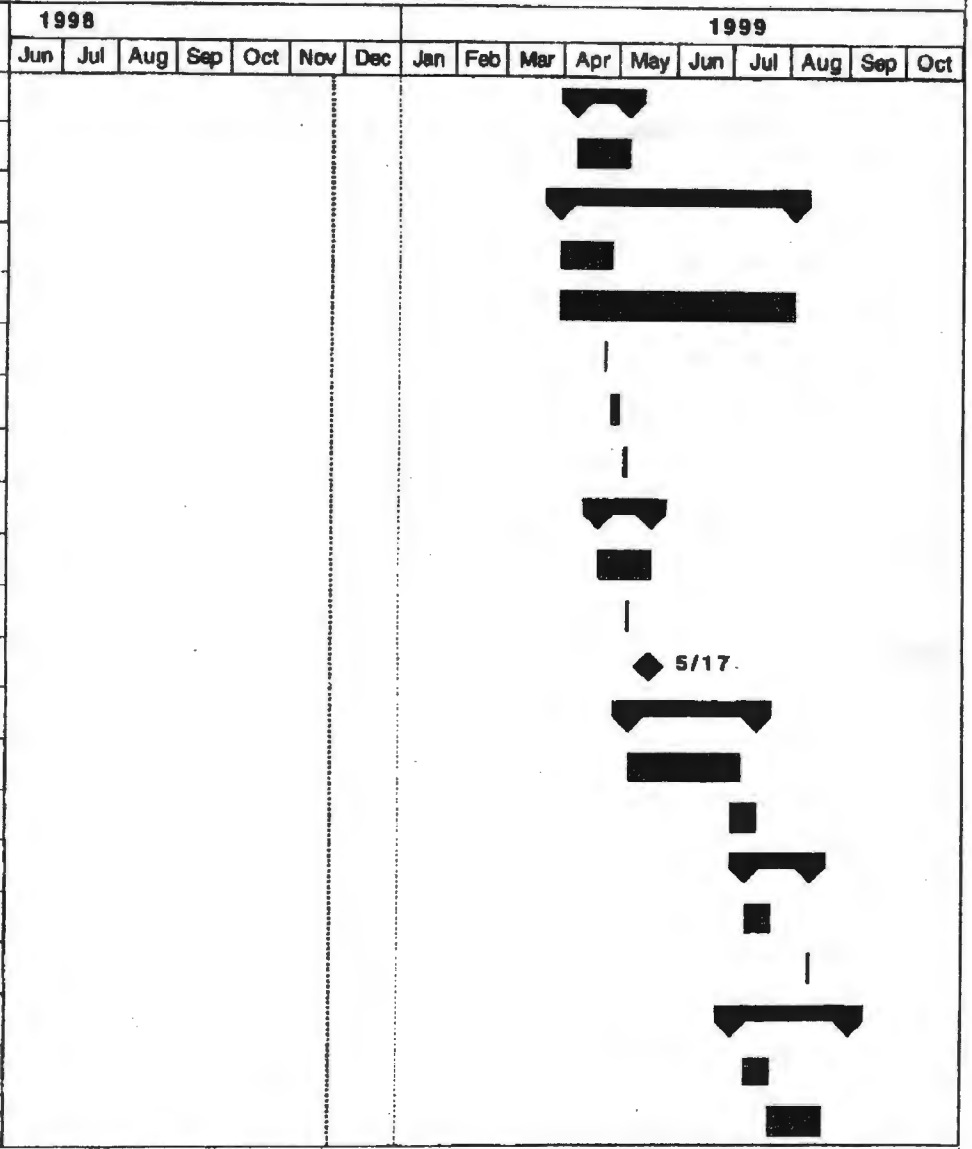
ID	Task Name	Duration	Start
85	Review & App. Hot Test Plan (as appropr	10d	Mon 5/24/99
86	*Prepare Hot Demo Test Plan/Docs*	15d	Tue 5/18/99
87	**Task 2.8**	**36d**	**Mon 4/26/99**
88	Initiate Excavation Permit	5d	Mon 4/26/99
89	Excavation Permit Review	5d	Mon 5/3/99
90	Write Utilities Request	5d	Mon 5/3/99
91	Utilities Request Review	20d	Mon 5/10/99
92	Install Utilities	5d	Tue 6/8/99
93	**Task 2.9**	**30d**	**Tue 3/9/99**
94	*Perform Operational Data Evaluation*	30d	Tue 3/9/99
95	*Evaluate Block Dimensions & Quality*	15d	Mon 3/29/99
96	**Task 2.10**	**35d**	**Tue 5/4/99**
97	Review & Edit Cold Demo Report	10d	Tue 5/4/99
98	*Write Final Cold Demonstration Repo*	10d	Wed 6/2/99
99	*Issue Final Cold Demonstration Repo*	5d	Tue 6/15/99
100			
101	**PHASE 3 – "Hot" Deployment**	**154d**	**Tue 3/30/99**
102	**Task 3.1**	**30d**	**Mon 5/17/99**
103	*Remobilize Operations Staff*	10d	Mon 5/17/99
104	*Remobilize for Starter Path Injection*	30d	Mon 5/17/99
105	*Perform System Check-out*	3d	Thu 6/17/99



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

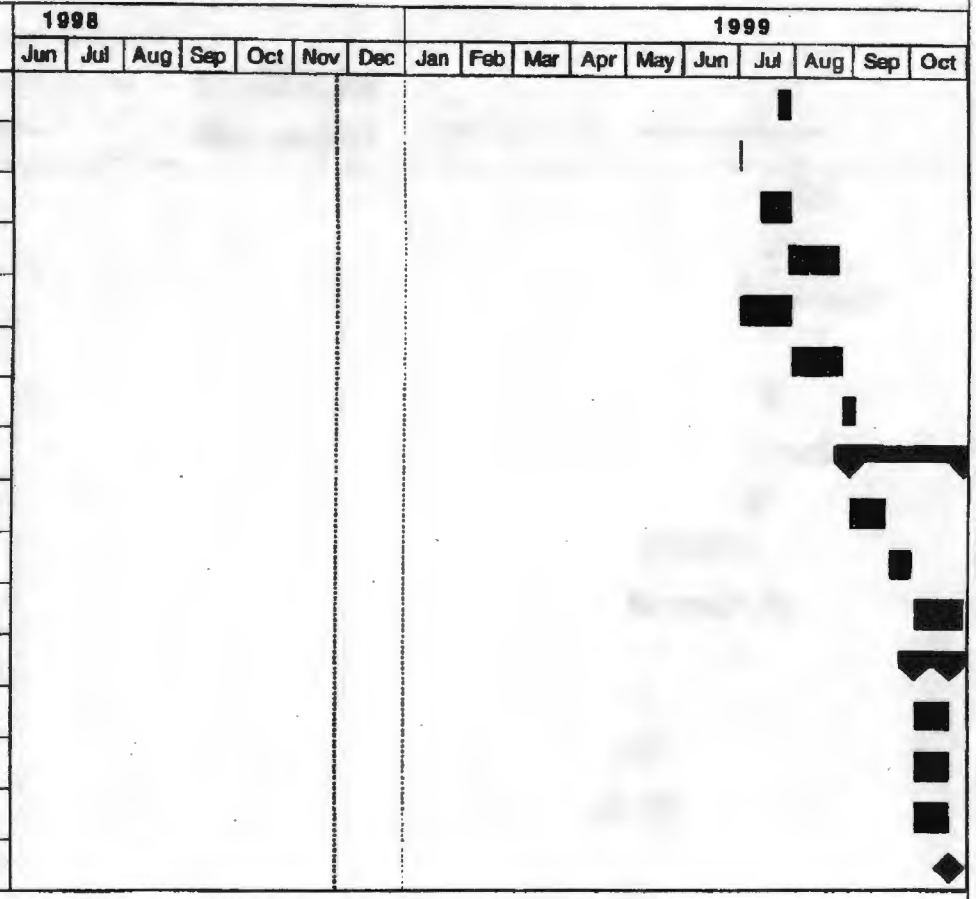
ID	Task Name	Duration	Start
106	**Task 3.2**	**20d**	**Thu 4/8/99**
107	*Prepare As-Built Drawings*	20d	Thu 4/8/99
108	**Task 3.3**	**90d**	**Tue 3/30/99**
109	Health & Safety Approval	20d	Tue 3/30/99
110	Regulatory Prep. - Interim Measure	90d	Tue 3/30/99
111	Go/No Go Criteria Evaluation	1d	Fri 4/23/99
112	Write RWP	5d	Mon 4/26/99
113	Review RWP	2d	Mon 5/3/99
114	**Task 3.4**	**20d**	**Tue 4/20/99**
115	Perform Operational Assessment	20d	Tue 4/20/99
116	Conduct Readiness Review	1d	Wed 5/5/99
117	Go/No-Go Decision for Hot Deploy	0d	Mon 5/17/99
118	**Task 3.5**	**49d**	**Thu 5/6/99**
119	Mobilize to Field for Hot Deployment	43d	Thu 5/6/99
120	*Decon. Equipment (if needed)*	10d	Wed 6/30/99
121	**Task 3.6**	**25d**	**Thu 7/8/99**
122	Perform Hot Deployment	10d	Thu 7/8/99
123	Waste Disposal	1d	Wed 8/11/99
124	**Task 3.7**	**45d**	**Thu 7/1/99**
125	*Monitor Performance of Hot Demo*	10d	Thu 7/8/99
126	*Allow Vitrified Product to Cool*	21d	Wed 7/21/99



Project: NTISV Demonstration & D
Date: Wed 11/25/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

ID	Task Name	Duration	Start
127	*Sample Hot Demonstration Melt*	5d	Thu 7/22/99
128	*Decon Equipment*	1d	Thu 7/1/99
129	*Demobilize & Restore Site*	13d	Mon 7/12/99
130	*Analyze Hot Demonstration Melt*	20d	Tue 7/27/99
131	*Perform Operational Data Evaluation*	20d	Thu 7/1/99
132	*Analyze Samples*	20d	Thu 7/29/99
133	*Evaluate Sampling Results*	5d	Thu 8/26/99
134	**Task 3.8**	**45d**	**Mon 8/30/99**
135	*Write Draft Final Test Report & Resu*	15d	Mon 8/30/99
136	*Review Draft Test Report*	10d	Mon 9/20/99
137	*Prepare & Issue Final Report*	20d	Mon 10/4/99
138	**Task 3.9**	**15d**	**Mon 10/4/99**
139	Prepare Draft Project Final Report	15d	Mon 10/4/99
140	Prepare ITSR	15d	Mon 10/4/99
141	Prepare IM Report for NMED	15d	Mon 10/4/99
142	Issue Final Project Assessment	0d	Fri 10/22/99



Project: NTISV Demonstration & D
Date: Wed 11/25/98

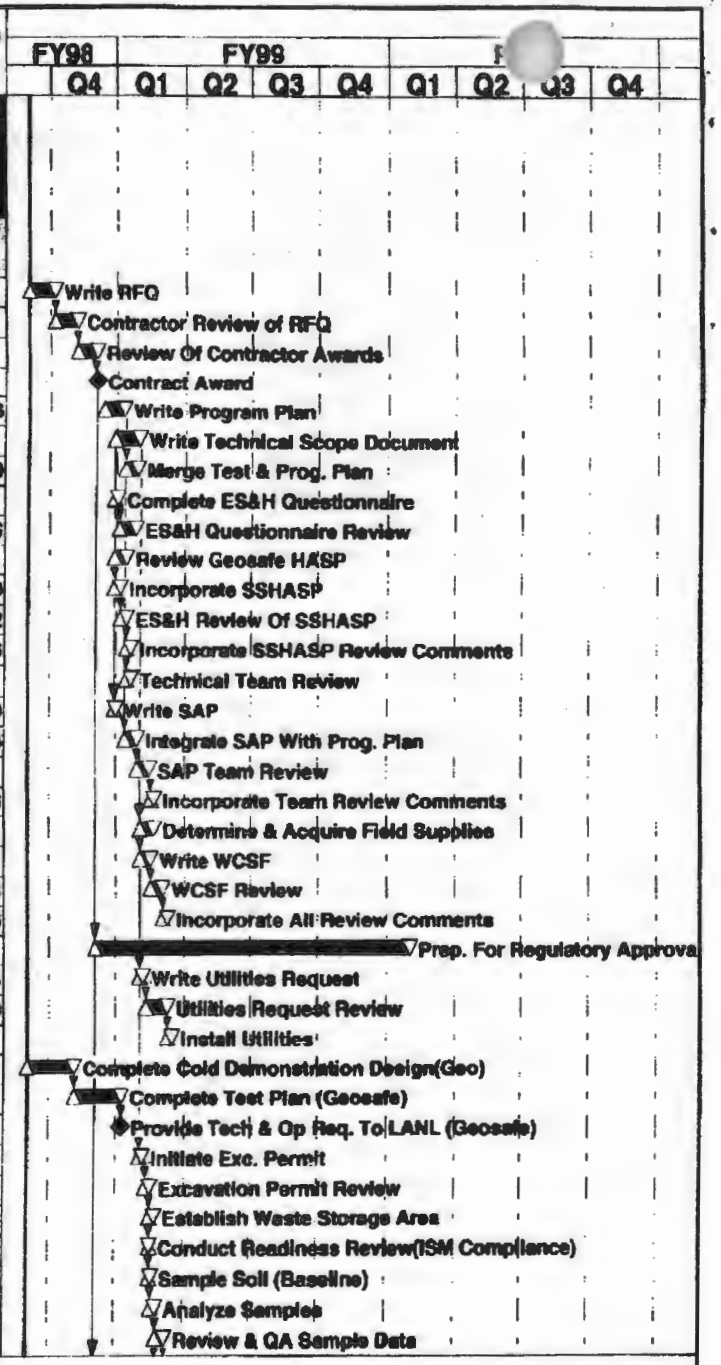
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

1 ISV Demonstration Project

1.1 Cold Demonstration

1.1.1 Phase I

Activity ID	Activity Description	Early start	Early finish	DUR	Budgeted Cost	Leveraged Cost
VT1110001	Write RFQ	01JUN98	06JUL98	25	15,058.80	
VT1110002	Contractor Review of RFQ	07JUL98	06AUG98	23	15,058.80	
VT1110003	Review Of Contractor Awards	07AUG98	01SEP98	18	15,058.80	
VT1110004	Contract Award		01SEP98	0	0.00	
VT1110005	Write Program Plan	14SEP98*	09OCT98	20	0.00	6,222.16
VT1110007	Write Technical Scope Document	28SEP98*	30OCT98	24	6,756.10	
VT1110009	Merge Test & Prog. Plan	13OCT98	29OCT98	13	0.00	3,210.40
VT1110010	Complete ES&H Questionnaire	28SEP98*	02OCT98	5	1,989.55	
VT1110020	ES&H Questionnaire Review	05OCT98	26OCT98	15	0.00	4,469.16
VT1110030	Review Geosafe HASP	29SEP98*	13OCT98	10	3,368.24	
VT1110040	Incorporate SSHASP	29SEP98	05OCT98	5	0.00	7,188.79
VT1110045	ES&H Review Of SSHASP	06OCT98	13OCT98	5	0.00	2,147.52
VT1110050	Incorporate SSHASP Review Comments	14OCT98	20OCT98	5	0.00	1,284.16
VT1110060	Technical Team Review	14OCT98	20OCT98	5	329.55	
VT1110065	Write SAP	28SEP98	30SEP98	3	0.00	1,938.00
VT1110070	Integrate SAP With Prog. Plan	13OCT98	29OCT98	13	0.00	3,941.76
VT1110080	SAP Team Review	30OCT98	13NOV98	10	659.10	
VT1110090	Incorporate Team Review Comments	16NOV98	20NOV98	5	0.00	1,284.16
VT1110092	Determine & Acquire Field Supplies	02NOV98	20NOV98	14	2,715.52	
VT1110100	Write WCSF	02NOV98	16NOV98	10	3,394.40	
VT1110110	WCSF Review	17NOV98	02DEC98	10	0.00	475.28
VT1110160	Incorporate All Review Comments	03DEC98	09DEC98	5	0.00	1,284.16
VT1110202	Prep. For Regulatory Approval & Visits	02SEP98	01NOV99	287	33,201.65	
VT1110210	Write Utilities Request	02NOV98	06NOV98	5	0.00	642.08
VT1110220	Utilities Request Review	10NOV98	09DEC98	20	0.00	2,751.20
VT1110230	Install Utilities	10DEC98	16DEC98	5	15,156.39	
VT1110240	Complete Cold Demonstration Design(Geo)	01JUN98	03AUG98	45	0.00	
VT1110250	Complete Test Plan (Geosafe)	04AUG98	07OCT98	46	0.00	
VT1110260	Provide Tech & Op Req. To LANL (Geosafe)		07OCT98	0	0.00	
VT1110270	Initiate Exc. Permit	02NOV98	06NOV98	5	0.00	642.08
VT1110280	Excavation Permit Review	10NOV98	16NOV98	5	0.00	1,130.72
VT1110281	Establish Waste Storage Area	17NOV98	23NOV98	5	0.00	642.08
VT1110282	Conduct Readiness Review(ISM Compliance)	17NOV98	17NOV98	1	0.00	5,841.48
VT1110283	Sample Soil (Baseline)	18NOV98	18NOV98	1	0.00	1,655.84
VT1110284	Analyze Samples	19NOV98	24NOV98	4	0.00	5,000.00
VT1110285	Review & QA Sample Data	25NOV98	07DEC98	7	0.00	2,015.52



Project Start 01JUN98
Project Finish 01NOV99
Data Date 01JUN98
Run Date 08NOV98

Early Bar
Progress Bar
Critical Activity

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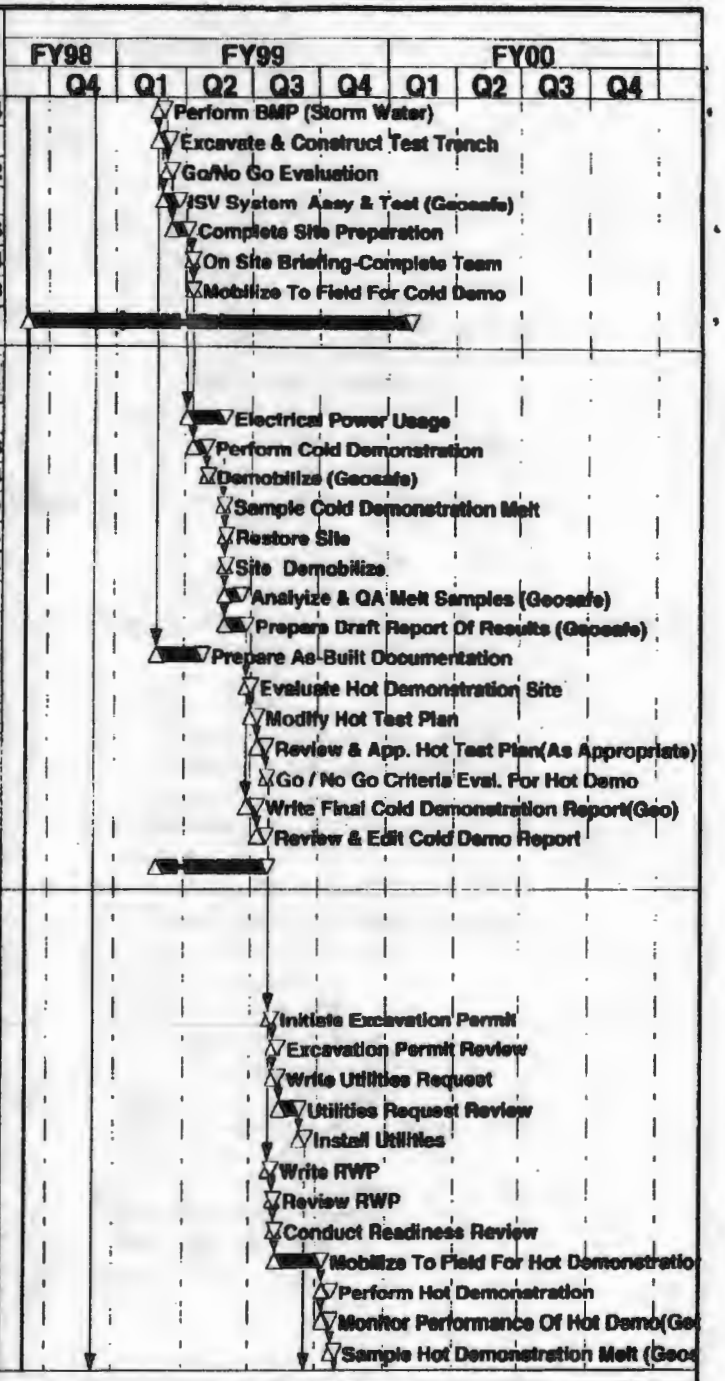
ISVN

Sheet 1 of 3

LOS ALAMOS NATIONAL LABORATORY
ISV DEMONSTRATION PROJECT
MATERIAL DISPOSAL AREA-V

Activity ID	Activity Description	Early start	Early finish	ORG DUR	Budgeted Cost	Leveraged Cost
VT1110285	Perform BMP (Storm Water)	25NOV98	03DEC98	5	0.00	5,773.44
VT1110287	Excavate & Construct Test Trench	25NOV98	10DEC98	10	25,260.65	
VT1110290	Go/No Go Evaluation	08DEC98	14DEC98	5	0.00	4,077.92
VT1110300	ISV System Assy & Test (Geosafe)	01DEC98	24DEC98	18	0.00	
VT1110310	Complete Site Preparation	15DEC98	05JAN99	10	0.00	8,926.16
VT1110320	On Site Briefing-Complete Team	11JAN99	11JAN99	1	0.00	2,315.24
VT1110330	Mobilize To Field For Cold Demo	12JAN99	12JAN99	1	0.00	1,924.48
Subtotal		01JUN98	01NOV99	353	138,007.55	
1.1.2 Phase 2						
VT1120000	Electrical Power Usage	04JAN99	25FEB99	37	25,260.65	
VT1120003	Perform Cold Demonstration	13JAN99	29JAN99	12	0.00	11,273.76
VT1120005	Demobilize (Geosafe)	01FEB99	01FEB99	1	0.00	1,252.64
VT1120010	Sample Cold Demonstration Melt	23FEB99	25FEB99	3	0.00	984.00
VT1120011	Restore Site	26FEB99	26FEB99	1	0.00	2,553.84
VT1120015	Site Demobilize	26FEB99	26FEB99	1	0.00	1,252.64
VT1120020	Analyize & QA Melt Samples (Geosafe)	26FEB99	18MAR99	15	0.00	
VT1120030	Prepare Draft Report Of Results (Geosafe)	26FEB99	25MAR99	20	0.00	
VT1120040	Prepare As-Built Documentation	25NOV98	25JAN99	35	0.00	3,941.76
VT1120050	Evaluate Hot Demonstration Site	26MAR99	01APR99	5	5,041.40	
VT1120060	Modify Hot Test Plan	02APR99	08APR99	5	9,661.76	9,561.92
VT1120070	Review & App. Hot Test Plan(As Appropriate)	09APR99	22APR99	10	2,604.56	2,577.60
VT1120080	Go / No Go Criteria Eval. For Hot Demo	23APR99	23APR99	1	0.00	4,077.92
VT1120090	Write Final Cold Demonstration Report(Geo)	26MAR99	08APR99	10	0.00	
VT1120091	Review & Edit Cold Demo Report	09APR99	22APR99	10	0.00	5,236.96
Subtotal		25NOV98	23APR99	98	42,588.37	
1.2 Hot Demonstration						
1.2.1 Phase 3						
VT1210041	Initiate Excavation Permit	26APR99	30APR99	5	0.00	642.08
VT1210042	Excavation Permit Review	03MAY99	07MAY99	5	0.00	1,130.72
VT1210043	Write Utilities Request	03MAY99	07MAY99	5	0.00	642.08
VT1210044	Utilities Request Review	10MAY99	07JUN99	20	0.00	2,751.20
VT1210046	Install Utilities	08JUN99	14JUN99	5	15,156.39	
VT1210047	Write RWP	26APR99	30APR99	5	0.00	569.92
VT1210048	Review RWP	03MAY99	04MAY99	2	0.00	715.84
VT1210049	Conduct Readiness Review	05MAY99	05MAY99	1	0.00	5,841.48
VT1210050	Mobilize To Field For Hot Demonstration	06MAY99	07JUL99	43	0.00	1,924.48
VT1210060	Perform Hot Demonstration	08JUL99	19JUL99	8	0.00	41,598.72
VT1210070	Monitor Performance Of Hot Demo(Geo)	08JUL99	19JUL99	8	0.00	
VT1210080	Sample Hot Demonstration Melt (Geosafe)	20JUL99	26JUL99	5	0.00	3,932.40



Project Start 01JUN98
Project Finish 01NOV99
Data Date 01JUN99
Run Date 00NOV99

Early Bar
Progress Bar
Critical Activity

ISW

Sheet 2 of 3

LOS ALAMOS NATIONAL LABORATORY
ISV DEMONSTRATION PROJECT
MATER DISPOSAL AREA-V

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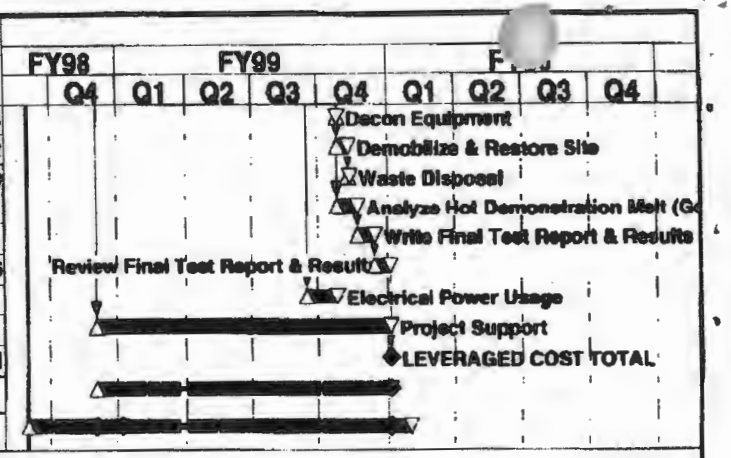
Act ID	Activity Description	Early start	Early finish	DUR	Budgeted Cost	Leveraged Cost
VT1210081	Decon Equipment	27JUL99	27JUL99	1	0.00	1,220.08
VT1210082	Demobilize & Restore Site	28JUL99	10AUG99	10	0.00	7,469.52
VT1210083	Waste Disposal	11AUG99	11AUG99	1	0.00	3,210.00
VT1210090	Analyze Hot Demonstration Melt (Geosafe)	27JUL99	23AUG99	20	0.00	
VT1210100	Write Final Test Report & Results (Geosafe)	24AUG99	14SEP99	15	0.00	
VT1210110	Review Final Test Report & Results	15SEP99	05OCT99	15	0.00	17,106.56
VT1210120	Electrical Power Usage	15JUN99	26JUL99	29	55,573.43	
VT1210130	Project Support	02SEP98	05OCT99	269	94,739.55	
VT1210140	LEVERAGED COST TOTAL		05OCT99	0	0.00	208,251.91
Subtotal		02SEP98	05OCT99	269	165,469.37	
Subtotal		01JUN98	01NOV99	353	346,045.29	



Project Start 01JUN98
Project Finish 01NOV99
Data Date 01JUN99
Run Date 08NOV99

Early Bar
Progress Bar
Critical Activity

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ISVR

Sheet 3 of 3

LOS ALAMOS NATIONAL LABORATORY
ISV DEMONSTRATION PROJECT
MATERIAL DISPOSAL AREA-V

11-30-98;12:00PM;LANL ;5056658118 # 32/ 32