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March 12, 1992

Meeting Minutes Transmittal/Approval
General Topics Unit Managers Meeting
450 Hills St., Room 47, Richland, Washington
February 26, 1992

From/ Appvl.: Robert K. Stewart Date: 3/25/92
Robert K. Stewart, R.I. Coordinator, RL (A6-95)

Appvl.: Douglas K. Sherwood Date: 3/25/92
Douglas K. Sherwood, Representative, EPA (B5-01)

Appvl.: Charles S. Levine for LG Date 3/25/92
Larry Goldstein, CERCLA Unit Supervisor, Washington Dept. of Ecology

The purpose of this meeting was to discuss general topics which are common to all past practices operable units.

Meeting Minutes are attached. Minutes are comprised of the following:

- Attachment #1 - Summary of Meeting and Commitments and Agreements
- Attachment #2 - Agenda for the Meeting
- Attachment #3 - Attendance List
- Attachment #4 - Action Item Status List
- Attachment #5 - Analytical Services Status
- Attachment #6 - Update on Hanford Well Surveying
- Attachment #7 - Update of the Hanford Environmental Information System
- Attachment #8 - In Situ Vitrification (ISV)
- Attachment #9 - Technology Update

Prepared by: Suzanne E. Clarke Date: March 25 1992
SWEC, ASSC

Concurrence by: [Signature] Date: 3/25/92
WHC

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Attachment #1

Summary of Meeting and Commitments and Agreements

General Topics Unit Manager's Meeting
February 26, 1992

Introductions

1. Bob Stewart (RL) introduced Laurie Davies from Ecology.

Approval of Minutes

2. Modifications to the November draft UMM meeting minutes were reviewed and approved.
3. Bill McClung (SWEC) stated that two sets of minutes, the 100 and 200 Area minutes for December were not returned after being distributed for signature during the February UMM meeting.

Update on Laboratory Status

4. Joan Kessner (WHC) gave a presentation covering the status of work related to the analytical laboratories (see attachment #5) and stated that WHC is presently working on the procurement of additional analytical services from outside contractors.
5. J. Kessner stated that two of the original eight analytical laboratories bidding for a contract with WHC have been formally removed from the bidders list. The second round of clarifications, questions and letters were issued to the six remaining laboratories with responses due Tuesday. The evaluations of the second round of proposals should be completed by the end of March, and the assessment of the laboratories for contract awards completed by the end of April.
6. The problems associated with EcoTec utilizing a complete sample to do rad chem analysis is being resolved. WHC will also be sending in their QA plan the first part of next week.
7. RL awarded a contract to the Oneida Indian Tribes ^{ORTEK (see C)} ~~Otech~~ laboratory on February 25, 1992 to do non-radioactive analyses. An assessment of their facilities was completed the week of 3/16/92. WHC will be working with ~~Otech~~ ^{ORTEK (see C)} to correct deficiencies found in their laboratory.
8. The 222-S laboratory analytical results for the first quarter of 1992 covering organic and inorganic materials were considered deficient. This problem is being resolved with WHC technical staff.

Action Item #GT.128 Provide information on the date when CLP versus SW 846 information will be provided to Ecology and EPA. Action: Eric Goller

9. J. Jacobson (USACE) provided an update on the status of survey activities (see Attachment #6). The first task to be undertaken

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consists of surveying the primary and secondary control networks that encompass the high-order work for elevations, and locations that need to be established along all road ways on the Hanford site. The National Geodetic Survey will no longer perform this field work, although they will perform oversight activities. The field survey should begin in June and will be completed by August, with contractor data validation being concluded by the end of September 1992.

10. The second task of the program consists of surveying the wells and boreholes throughout the Hanford Site, with those in the 300 and 1100 areas being completed first. Survey results of the wells and boreholes should be available in November. Once the data report is published it will be formatted in to Autocad and ASCII formats and downloaded directly into the HEIS system. The second phase will involve the 200 Areas and the 100 Aggregate Areas.
11. W. Staubitz (USGS) ask if there had been progress in obtaining a Site-Wide base map on which to plot all of the survey information being gathered. J. Jacobson stated that a single site-wide base map does not presently exist, but WHC is currently working to provide one. All well coordinates will be provided in an ASCII format so that they can be entered directly into the Autocad program for plotting and downloading into the HEIS system.

Action Item #GT.129: Provide information regarding RL plans for development of site base maps. Action: Bob Stewart

12. ^{Bob sec} ~~George~~ Henckel (WHC) provided an update covering the HEIS system (see Attachment #7). Data entry continues to be the major focus for the HEIS system as it represents the key to how quickly data can be employed. Some incompatibility has been noted with the use of software and data entry forms in regard to the manner personnel are entering data and information.
13. Regarding the site maps, the deliverables received from the mapping group did not serve the purpose for GIS from the flyovers, as problems exist with overlaps. Work is continuing to correct these situations, and discussions concerning this problem and possible solutions are taking place with Ecology, USGS, USACE and the Department of Natural Resources.
14. The data entry from the ground water monitoring program is being performed by the Geoscience Department on the RCRA side. This activity is being carried out in conjunction with HEIS personnel. Completed data packages for the 1100-EM-1 surface samples taken from Horn Rapids Land Fill, have been delivered to the data entry staff.

Quick Status Items

15. Bob Stewart stated that there continues to be activity on NEPA. A draft notice of intent was prepared and sent to headquarters for evaluation and approval. In the interim, approval has been given to proceed with

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work on the programmatic EIS. On the third of February RL sent a letter to EPA and Ecology with the latest strategy and EII 4.3. EPA requested approval of that document and is asking Ecology for comments regarding plans to re-enter the negotiations on the strategy and EII 4.3. At this time RL believes the next step is up to both EPA and Ecology.

16. Julie Erickson (RL) stated that the EMO study is a result of the 1100-EM-1 dispute last fall, at which time a conflict of interest arose concerning the contractors being employed and the work involved. EMO and the RL Procurement Office are resolving the items of concern with work expected to begin in March. At this time EMO will be contacting WHC, the regulators and RL in preparing their schedule to do the analyses of issues. EMO will be employing interviewing methods to determine where the issues are in regards to their task, and providing resolution to improve the issues.

17. Laurie Davies (Ecology) reported that little had changed concerning the contamination policy since the last UMM meeting. Although Ecology's assistant director had performed an area of contamination policy study, the program manager, Roger Stanley, does not want to implement the policy as he does not agree with the manner in which it was prepared. They are working the details out at a management level and hope to have the problem resolved in the next couple months.

Laurie Davies has not concurred for Ecology see

18. F. Ruck (WHC) presented the site background study and stated that two reports are due, M-28-03, covering soils, and M-28-04, involving background data. M-28-03 is a milestone ~~request~~ to move the milestone date from the end of February to the end of April. The preliminary background data and interpretations look promising in regards to establishing a site-wide background data base. Additionally, the statistical evaluations of data gathered have provided positive results. A preliminary report covering M-28-04 (soils) will be issued by the end of April, and will provide recommendations concerning the use of existing data at the Hanford site.

Although WHC is continuing to look at organics, inorganics and ground water, an action item to look at radionuclides and develop a working team made up of EPA, Ecology, etc., has not occurred. The action item referenced states: " A working group shall be formed to identify parameters for radionuclides background determination, and the regulators shall appoint representatives to the group and provide names to F. Ruck."

Action Item #GT.130: This action will be revisited in May 1992. Action: Fred Ruck

19. Eric Goller reported that there is no update to be provided at this time regarding the inspection protocol. E. Goller also stated that Randy Krekel is no longer the contact within RL. The new contact at RL is Alex Teimouri and his phone number is 376-6222. The inspection protocol is being handled under the Policy and Permits office within Bob Holt's policy branch.

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C. Ruud (Ecology) stated that he wants everyone to understand that Ecology has had numerous problems with access to the site and records related to the inspection protocol, and that Ecology would like to avoid these problems in the future.

Action Item #GT.131: Next UMM meeting provide up-to-date status with people responsible for getting protocol procedure in place. Action: Julie Erickson.

20. Bob Stewart provided an update on the last item in the quick status section dealing with the policy issue on cleanup requirements. B. Stewart stated there are still a number of items being discussed including the MTCA requirements for soil and water. At this time there is little more to present as the subject is still under discussion.

In Situ Vitrification (ISV)

21. Jim Buelt (PNL) gave a presentation covering the In-Situ Vitrification (ISV) integrated program (see Attachment #8). A major problem has been a cut in funding for the program. A second problem is the inability to go beyond approximately 17 feet to reach the majority of the near surface contamination. At Hanford it is necessary to go to at least 30 or more feet in the 200 area. Virtually all fission products are processible with this technology as well as inorganic chemicals. Certain inorganic chemicals such as mercury volatilize during the process.

At this time, the program is simply not ready to deal with underground containers like sealed 55 gallon drums or even five gallon containers. Anomalies have occurred during processing of sealed containers and underground tanks and it is felt that further evaluation is needed before sealed containers can be included in the process.

STREAMLINING THE MEETING

22. During the streamlining portion of the UMM meeting it was agreed to stop issuing a flash report of the action items. It was also agreed as a matter of policy that the revised minutes will no longer be issued prior to meetings. If there is a need for any group to look at a revised version of the minutes prior to the meeting, they may be obtained from Stone & Webster. The contact at Stone & Webster is Suzanne Clarke who can be reached at 372-0630.

Ecology questions advisability of deleting revised minutes. This will be discussed at 11:15 meeting.

UMM Schedule Through March 1992

March	25 and 26, 1992
April	22 and 23, 1992
May	27 and 28, 1992
June	24 and 25, 1992

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Attachment #2

Agenda

Unit Managers Meeting
February 26, 1992

General Topics

Approval of November General Topics Meeting Minutes

Update on Laboratory Status - Joan Kessner

Update on Site Surveying Task - John Jacobson

Update on HEIS - Bob Henckel

Quick Status Items:

- . Status of NEPA
- . Investigation Derived Waste - Bob Stewart
- . Inspection Protocols - Eric Goller
- . EMO Schedule Optimization Study - Julie Erickson
- . Area of Contamination Policy - Laurie Davies
- . Site Background Study - Fred Ruck
- . Issue--Policy on Site Cleanup Requirements - Discussion

Update on ISV Program - Jim Buelte

Action Item Status

Agenda Items for March General Topics Unit Managers Meeting

Operable Units

200 AAMS Activities - Curt Wittreich

- . Status of AAMSRs
- . Status of Field Programs
 - o Groundwater Well Sampling
 - o Geophysical Logging
- . Status of 200-UP-2 Work Plan
- . Discussion of Regulator Comments/Disposition of U-Plant AAMSR

200-BP-1 - Mark Buckmaster

- . Status of RI Activities
- . Results of Large Scale Aquifer Test
- . Change Request Regarding Management Organization in Work Plan
- . HWVP Site Excavation - Chuck Augustine

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1100-EM-1

- Status of RI/FS - John Stewart
- Status of Field Work - Wendell Greenwald
 - o Lab Data Package Validation
 - o Gross Beta Identification - Bruce Prentice
- Status of Combined RI/FS Report Activities
 - o Vadose Zone
 - o Groundwater Fate and Transport
- Status of Sieman Nuclear Power Corp. - Chuck Malody
- Outstanding Issues
 - o Post Report Groundwater Sampling

Presentation on Technetium in the Environment - Suzanne Clarke (S&W)

FEBRUARY 27, 1992

300-FF-1 - George Henckel

- Status of RI Activities
- Change Request Regarding Operable Unit Boundary
- Change Request Regarding Asparagus Sampling
- Change Request Regarding Field Screening Lab

300-FF-5 - Larry Hulstrom

- Status of RI Activities
- Phased Approach to Aquatic Biota
- Approach for Second Quarter Groundwater Sampling

100 Area RI Status - Merl Lauterbach

- Work Plans - Alan Krug/Roberta Day
- Field Activities - Alan Krug/Roberta Day
- Descriptions of Work - Alan Krug/Roberta Day
- Spring & Seeps Sampling/Aquifer Interaction - Bob Peterson
- 100 Area FS Presentation - Jerry Chiaramonte
- N-Reactor Retention Pond - Dave Watson

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Attachment #3

Attendance List

General Topics Unit Managers Meeting
February 26, 1992

Name	Org.	O.U. Role	Phone
Sprecher, Jon	B & C	Ecology Support	(503) 244-7005
Erickson, Julie	DOE-RL	Br. Chief - Env.	(509) 376-3603
Goodenough, Jim	DOE-RL	100-A	(376) 376-7087
Goller, Eric	DOE-RL	RCRA Prog. Manager	(509) 376-7326
Pak, P.M.	DOE-RL	ERD	(509) 372-4798
Stewart, Robert K.	DOE-RL	Gen. Top. Meet. Chair	(509) 376-6192
Thompson, Michael K	DOE-EM	Env. Assurance	(509) 376-6421
Treichel, Lisa Chetnik	DOE-HQ		(301) 903-8177
Werdel, Nancy	DOE-RL	Unit Manager	(509) 376-5500
Cline, Chuck	Ecology	Geohydrology	(206) 438-7556
Ruud, Casey	Ecology		(509) 546-2997
Hibbard, Richard	Ecology	Unit Support	(206) 493-9367
Mauss, Billie	Ecology	CERCLA	(509) 546-2993
Davies, Laurie	Ecology		(206) 438-7765
Teel, Darci	Ecology	CERCLA	(509) 545-2312
Einan, Dave	EPA	Unit Manager	(509) 376-3883
Faulk, Dennis	EPA	Unit Manager	(509) 376-8631
Innis, Pamela	EPA	Unit Manager	(509) 376-4919
Patt, Ralph	Oregon (WR)	Observer	(503) 378-8455
Lacombe, Donna	PAC	EPA Contractor	(206) 624-2692
King, Joe	SWEC	GSSC to DOE-RL	(509) 376-8189
Fryer, Bill	SWEC	GSSC to DOE/RL	(509) 376-9707
McClung, Bill	SWEC	GSSC to DOE/RL	(509) 376-1853
Baehre, Mike	USACE		(509) 376-1275
Cannon, Dennis	USACE		(509) 376-9487
Jacobson, John	USACE	Survey	(509) 376-1250
Lias, Raimo	USACE	Enn. Engineering	(509) 522-6924
Staubitz, Ward	USGS	EPA Support	(206) 593-6510
Carlson, R.A.	WHC	Env. Eng.	(509) 376-9027
Downey, H.D.	WHC	Program Office	(509) 376-5539
Henckel, Robert P.	WHC	Env. Eng., OU Support	(509) 376-2091
Kessner, Joan	WHC	Laboratories	(509) 373-3507
Mix, P.D.	WHC	General Topics	(509) 376-1543
Patterson, Jim	WHC	ER Program Office	(509) 376-0568

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Attendance
General Topics Unit Managers Meeting
February 1992

Name	Org.	O.U. Role	Phone
✓ Bill Fryer	SWEC	GSSC	(509) 376-7830
✓ Bill McCullough	SWEC	GSSC	(509) 376-1853
MIKE BAENGE	USACE		(509) 376-1175
DENNIS CANNON	USACE		(509) 376-9487
P. D. Mix	WHC-Prog	General Topic	(509) 376-1543
John H. Jacobson	USACE	Survey	(509) 376-1250
K. Michael Thompson	DOE-RL	Env. Assurance	(509) 376-6421
RP HENCKEL	WHC	ENV ENGR	(509) 376-2091
RA Carlson	WHC	ENV ENGR	(509) 376-9027
P.M. Pak	DOE-RL	ERD	(509) 376-4798
Wendy Staubitz	USGS	EPA Support	(206) 593-6510
Donna Lacombe	PRC	EPA Contract	(206) 624-2692
Julie Erickson	DOE	Br. Chief - Env. Plan.	(509) 376-3603
Dennis Faulk	EPA	Unit Mgr	(509) 376-2677
Billie Mauss	Ecology	CEQA	(509) 546-2993
Ralph Pate	OREGON	OSWATER	(503) 378-8055
Jim Goodenough	DOE-RL	OU Manager	(509) 376-7087
Rich Hibbard	Ecology		(206) 493-9367
Jonny Spuechler	B&C	Ecology Support	(503) 244-7005
Hal Downing	WHC	Program Office	(509) 376-1139
Danni Tepl	Ecology	CEQA	(509) 546-2312
Laurie Davies	Ecology		(206) 438-7765
Chuck Oline	"	D.O. manager	(206) 438-7556
PAMELA INNIS	EPA	UNIT MANAGER	(509) 376-4019
Nancy Werdell	DOE	Unit Manager	(509) 376-5500
Jim PATERSON	WHC	ER Program	(509) 376-0568
Bob Stewart	DOE-RL	GT Coordinator	(509) 376-6132
Dave Finan	EPA	Unit Mgr	(509) 376-3883
Eric Goller	DOE-RL	OU Manager	(509) 376-7226
Lisa Chetnik Treichel	DOE-HQ		(301) 903-8177
Casey O. Rued	Ecology		(509) 546-2997
Raimo A. Liira	USACE	Br. Chief, Env. Engr.	(509) 522-6924

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Attachment #4

Action Item Status List
General Topics Unit Managers Meeting
February 26, 1992

Item No.	Action/Source of Action	Status
GT.38	If possible, at the May Unit Managers Meeting a presentation on the approved, preferred alternative method for disposal of the reactors will be given. Action: Jim Goodenough (4/18/90, GT-UMM)	Open The EIS will be reviewed by Admiral Watkins' office and Nuclear Safety (4/16/91). The RL program at DOE/HQ has written a letter to EH urging EH to quickly approve the final EIS and allow it to be published (6/19/91). Waiting for action from headquarters (8/8/91). Waiting for status (11/20/91). Jim Goodenough to give an update on status at February 1992 UMM (2/25/92).
GT.76A	RL is to respond to the comments that were provided by Ecology and EPA on revised EIIs 4.2 and 5.4. The EIIs are related to the handling of drilling decontamination fluids. Action: Bob Stewart (7/17/91)	Open An updated draft strategy was provided to EPA and Ecology. (10/16/91). Waiting for completion of EII 4.3 (11/20/91). Waiting for approval from EPA of EII 4.3 for use on EPA lead OUs; waiting for comments from Ecology (2/21/92).
GT.108	Protocols are to be developed to facilitate conduct of regulatory inspections and site visits at past practice sites. Action: Eric Goller (RL) (6/19/91)	Open The unofficial draft was provided to the regulators on 10/16/91 (10/16/91). Internal comment resolution in process (2/24/92).

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- 92125020092
- GT.113 Provide an explanation of how information, including supplementary documents, on new sites and on sites that have been cleaned up is included in WIDS. Examples will be provided for illustration. The explanation is to be provided by the first week of October. Action: Nancy Werdel (9/18/91)
- Open
Dick Fox (WHC) provided the information on WIDS to Nancy Werdel on the 8th of October (10/16/91). Awaiting an update from Nancy Werdel (11/20/91).
- GT.114 Determine where the macro engineering study is in the approval process of RL. A presentation will be contingent on RL management approval. Action: Allan Harris (9/18/91)
- Closed
WHC gave a presentation to RL at the unit manager level, then to upper management (Mr. Bixby and Mr. Little) on 10/10/91. A presentation to DOE-HQ will be scheduled before it is given to EPA and Ecology. The document is currently under RL review (10/16/91). Need to present to project managers, possibly December or January (11/20/91). (2/26/92)
- GT.116A Ecology is to keep RL informed of the development of their "Area of Contamination" policy. Arrangements are to be made for Laurie Davies of Ecology to make a presentation on this subject at the next General Topics UMM. Action: Rich Hibbard (11/20/91)
- Open. Presentation to be made at the February UMM (2/21/92).
- GT.117 A working group shall be formed to identify parameters for the groundwater and radionuclides background determination. The regulators shall appoint representatives to a working group and provide the names to Fred Ruck, who will be the coordinator. Action: Fred Ruck (11/20/91)
- Open. Deferred to May. (2/26/92)

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- GT.118 A committee is to be formed to review the barrier development program. Membership will include Jerry Cammann (WHC) as Chair, Jim Goodenough (RL), Rich Hibbard (Ecology), Pam Innis (EPA). Action: Jim Goodenough (11/20/91) Closed. ISV barrier to be discussed at February UMM as far as formalizing a committee (2/19/92).
- GT.118A A technology coordination group is to be formed. Action: Paul Pak, Doug Sherwood, Rich Hibbard and Joan Woolard (2/26/92) Open.
- GT.119 RL will develop a formal schedule to provide the inspection protocol documents to the regulators. Action: Bob Stewart (1/22/92) Open.
- GT.121 The regulators are to develop a proposal to streamline the UMM meetings. In particular, the general topics will be addressed. Action: EPA and Ecology. (1/22/92) Open. It was decided to no longer to send out the flash report or the revised minutes before the meetings (2/26/92)
- GT.122 A list of individuals or organizations that need the attachments to the UMM minutes is to be generated. Action: Hal Downey and Bob Stewart. (1/22/92) Open.
- GT.123 All regulators are to provide an update of the names of their unit managers to RL. Action: All regulators. (1/22/92) Open.
- GT.124 GSSC is to update the status of the General Topics action items prior to each General Topics meeting. Action: GSSC. (1/22/92) Open. GSSC is providing the required statusing prior to each meeting (2/26/92)
- GT.125 A schedule of the peer review on Action Item GT.114 is to be provided to the regulators. Action: Bob Stewart. (1/22/92) Open.
- GT.127 USACE will set up a briefing on technetium. Action: Raimo Liias. (1/22/92) Closed. The briefing was given on 2/26/92 by Suzanne Clarke of SWEC.

- GT.128 Provide information on the date when CLP versus SW 846 information will be provided to Ecology and EPA. Action: Eric Goller. (2/26/92) Open.
- GT.129 Provide information regarding RL plans for development of site base maps. Action: Bob Stewart. (2/26/92) Open.
- GT.130 This action will be revised in May 1992. Action: Fred Ruck. (2/26/92) Open.
- GT.131 Next UMM meeting provide up-to-date status with people responsible for getting the protocol procedure in place. Action: Julie Erickson. (2/26/92) Open.

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ANALYTICAL SERVICES STATUS

**Joan Kessner
February 26, 1992**

RFP STATUS

- Two Offerors have been removed.
- Second round of clarification letters issued to six remaining Offerors.
 - Response due March 3, 1992.

COMMERCIAL CONTRACTS

- DataChem Laboratories and Thermo Analytical, Incorporated were recently visited by the Office of Sample Management personnel and Processing and Analytical Laboratories management.
- EcoTek sample volume issues being resolved.
- Westinghouse Hanford Company continues to emphasize need for improved performance and increased capacity.
- Four contracts in process of being extended through March 1993.

ORTEK

- Facility Assessment performed February 20 and 21, 1992.
- Department of Energy plans to award 8A contract this week.
- Corrective action resolution and follow-up assessments must occur prior to initiation of work.

ON-SITE LABORATORIES

- Pacific Northwest Laboratory has restarted work on Single-Shell Tanks.
- The 222-S Laboratory received (1st quarter 1992) Environmental Protection Agency Performance Evaluation sample results.
 - Problems observed with both organics and inorganics analyses.

UPDATE ON HANFORD WELL SURVEYING

Nancy Werdel - Unit Manager - DOE-RL

John Jacobson - Project Manager - USACE

Arthur Bennett - Technical Manager - USACE

26 February 1992

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PRIMARY AND SECONDARY CONTROL NETWORK

- USACE authorized to start work 05 February 1992.
- National Geodetic Survey (NGS) no longer available to perform field survey work, but will oversight work. USACE negotiating with contractor capable of performing work.
- Contractor procedures developed, reviewed, and approved by May 1992.
- Contractor field survey work starts June 1992 and completes by August 1992.
- Contractor data validation available by September 1992.

WELLS AND BOREHOLES

- FY92 Lists and Priorities - 300-FF-5	46	
300-FF-1	8	
1100-EM-1	40	
200-BP-1	49	
100 Aggregate Area	256	
ERA (200 West)	70	

	467	
- FY93/94 Lists and Priorities - RCRA and Operational Wells	294	
Oversight Program PNL	162	
Vadose Zone Logging and Monitoring	1,423	
Other 200 East Area	78	
Other 200 West Area	112	

	2,069	

FY92 WELLS AND BOREHOLES

- 300 and 1100 Areas:

- Contractor procedures developed and approved May 1992.
- Contractor field survey work starts June 1992 and completes by August 1992.
- Contractor data validation, plan view plots, and final report issued mid-November 1992.

- 200E, 100 Aggregate, and 200W Areas:

- Contractor field survey work starts July 1992 and completes by September 1992.
- Contractor data validation, plan view plots, and final report issued mid-January 1993.

UPDATE OF THE

HANFORD ENVIRONMENTAL INFORMATION SYSTEM (HEIS)

**ROBERT P. HENCKEL
ENVIRONMENTAL ENGINEERING GROUP
TECHNICAL BASELINE SECTION**

**UNIT MANAGERS MEETING
FEBRUARY 26, 1992**

DATA ENTRY CONTINUES TO BE THE MAJOR FOCUS OF FY 1992

- o CONTINUING TO LOOK AT WAYS TO STREAMLINE THE DATA ENTRY PROCESS**
 - RECEIVE DISKETTES FROM OSM AS SOON AS THEY ARRIVE**
 - ELECTRONIC ENTRY OF FIELD INFORMATION**
 - GENERATE AWARENESS FOR GETTING FIELD INFORMATION TO DATA PACKAGE PREPARER PROMPTLY**
 - STANDARDIZE FORMS FOR DATA COLLECTION AND HEIS**

- o PROGRESS IS SLOW DUE TO SOFTWARE/DATA ENTRY INCOMPATIBILITIES**
 - LITHOGRAPHY SECTION OF GEOLOGIC DATA PACKAGES**

STATUS OF COMPLETED DATA PACKAGES

UPLOADED PACKAGES:

1100-EM-1	GROUNDWATER ROUNDS 1-4
300-FF-1	BIOTA (ASPARAGUS)
100 AREA	BIOTA

PACKAGES IN PROCESS:

100 AREA: 3 NON-INTRUSIVE PACKAGES (I.E., PCBs AND SEPTIC TANK)

STATUS OF COMPLETED DATA PACKAGES (CONTINUED)

PACKAGES IN DATA ENTRY:

1100-EM-1:

SURFACE SAMPLES (PCBs)

SURVEY

GEOLOGIC (WELLS)

PACKAGES IN PROCESS:

1100-EM-1:

GROUNDWATER ROUNDS 5-7

HRL TRENCHES

STATUS OF COMPLETED DATA PACKAGES (CONTINUED)

300 AREA:

300-FF-2 SURFACE SOIL (618-9)

300-FF-1 ASH PIT/FILTER POND

300-FF-1 SITE 316-1 & 2 (BOREHOLES)

300-FF-1 SITE 316-1 & 2 (TEST PITS)

300-FF-1 SITE 316-5 (PROCESS TRENCH

PACKAGES IN PROCESS:

300 AREA:

300-FF-1 TEST PITS

STATUS OF COMPLETED DATA PACKAGES (CONTINUED)

PACKAGES IN DATA ENTRY:

200 AREA:

200-BP-1 GROUNDWATER (ROUNDS 1 & 2)
200-BP-1 GEOLOGIC (WELLS)
200-BP-1 SURFACE SOIL
200-BP-11 GEOLOGIC (B-POND)
200-SS-1 GEOLOGIC (2101-M)
200-BP-9 SURFACE SOIL (HWVP)

PACKAGES IN PROCESS:

200 AREA:

GROUNDWATER ROUND 3

200-BP-1 CRIBS

GIS CONTINUES TO MAKE PROGRESS

- o PHASE I SOFTWARE WAS DELIVERED ON SCHEDULE**
- o TESTING OF PHASE I COMPLETED WITH NO MAJOR INCIDENTS**
- o DRAFT USER'S MANUAL CURRENTLY UNDER REVIEW**
- o PHASE I SHOULD BE FINALIZED BY APRIL 1992**
- o PROGRESS IS BEING MADE ON PHASE II ENHANCEMENTS**
 - EDITING CAPABILITIES**
 - ENHANCED BUFFER CAPABILITIES**
 - ASCII DATA TRANSFERS**
 - STATISTIC PACKAGE INCLUSION**

MAPS

- o **PROBLEMS STILL EXIST IN MAP CONVERSIONS TO THE GIS;**
- o **DISCUSSIONS TO DETERMINE EXTENT OF PROBLEM AND SOLUTIONS ARE ONGOING**
 - **ECOLOGY**
 - **USGS**
 - **ACOE**
 - **DEPARTMENT OF NATURAL RESOURCES**
 - **VENDORS**
- o **CURRENTLY LOOKING TO USE THE ORIGINAL FLYOVERS AND REBUILT THE COVERAGES**
- o **THE OLD 200 AREA MAPS ARE IN THE GIS AND CAN BE USED BY DO NOT HAVE A PEDIGREE**

Current Focus of In Situ Vitrification Integrated Program

- **Transfer technology for implementation within current limits**
- **Resolve issues necessary for application to soils beyond current limits**
- **Resolve issues common to both advanced applications and soils**

CURRENT ISV APPLICABILITY

- **Soil Properties**
 - **All Textures**
 - **Broad Chemical Compositions (minimum amount of Na or K required)**
 - **Depths of 5 Meters**
 - **Varying Moisture Content (exclusive of permeable aquifers)**
- **Contaminants**
 - **Transuranics (up to established criticality limits)**
 - **Fission Products**
 - **Inorganic Chemicals (volatile chemical treatment required)**
 - **Organic Chemicals (limited field experience)**

CURRENT ISV APPLICABILITY (Contd.)

- **Soil Inclusions**
 - **Metals (with Electrode Feeding)**
 - **Concrete and Rubble (Mixed with Soil)**
 - **Solid Combustibles (Limited Experience)**
 - **Not Ready for Underground Containers**

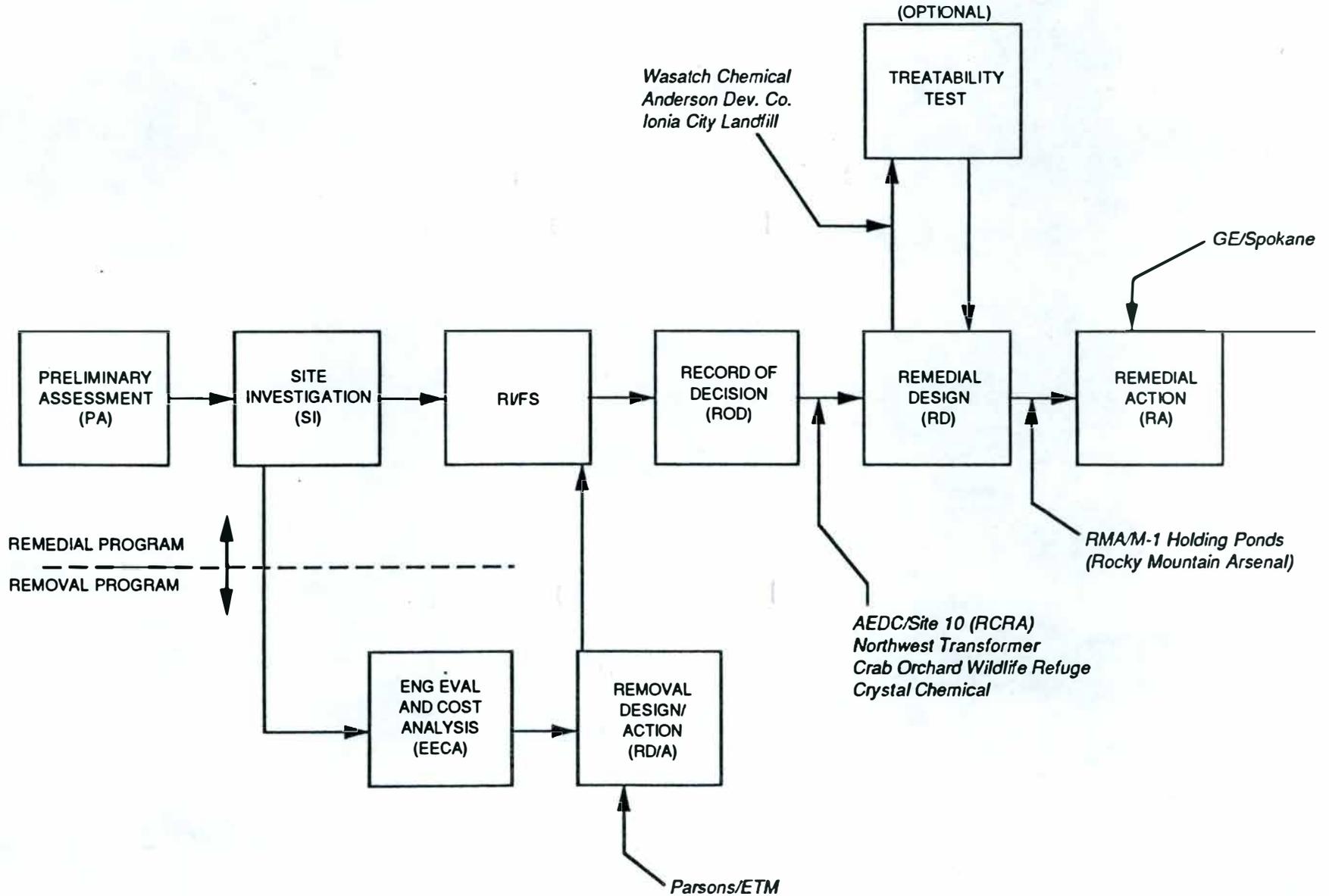
RECENT TECHNICAL ACHIEVEMENTS - CONTAMINATED SOILS

- **Radioactive Pilot Scale Project at ORNL**
 - **10 mCi of Cs¹³⁷ Waste Vitrified**
 - **Data Provided Decision to Proceed with Remediation of Pits and Trenches**
 - **Engineering Methods Prevent Mixed Secondary Liquid Waste**
 - **Hazardous Secondary Liquid Waste Minimized (<2% of Original Soil Volume)**
 - **Feasibility of Real-Time Monitoring of Melt Progress Demonstrated**

RECENT TECHNICAL ACHIEVEMENTS - CONTAMINATED SOILS (Contd.)

- **116-B-6A Demonstration Project at Hanford**
 - **Conducted as Treatability Test on Mixed Waste with Full Regulatory Support**
 - **Demonstrated Treatability of Large Monolithic Combustible Inclusions (Wooden Timber Crib)**
 - **Demonstrated Void Volume Fill**
 - **Identified Depth and Melt Shape as Key Issue**

GEOSAFE ISV PROJECT STATUS VS. CERCLA PROCESS



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In Situ Vitrification (ISV)

CONDITIONS OF SITES THAT HAVE SELECTED ISV IN RECORD OF DECISION

SITE	PARSONS	GE/ SPOKANE	ARNOLD AFB	CRAB ORCHARD	CRYSTAL CHEMICAL	WASATCH CHEMICAL	ROCKY MTN ARSENAL	ANDERSON DEV. CO.	IONIA CITY LANDFILL	NORTH- WEST TRANS- FORMER
Contaminants	Pesticides Hg, PCDD	PCBs	Heavy metals Organics (JP-4)	PCBs, Pb	As	Pesticides PCDD	As, Hg, Pesticides, Herbicides	MBOCA (aromatic amine)	Heavy metals, Organics	PCBs
Configuration	Staged	Staged	In Situ/ Staged		In Situ	In Situ/ Staged	In Situ	In Situ/ Staged	In Situ	In Situ
Depth	16 ft	20 ft	7 ft	<20 ft	12 ft	9 ft	11 ft	6 ft/ <15 ft	<15 ft	Shallow <10 ft
Size	4,000 tons	3,500 tons	8,000 tons	40,000 tons	17,000 tons	8,000 tons	15,000 tons	4,000 tons	6,000 tons	<1,000 tons
Regulatory Driver	Superfund Removal	TSCA	DOD IRP	Superfund Remedial	Superfund Remedial	Superfund Remedial	DOD IRP	Superfund Remedial	Superfund Remedial	Superfund Remedial
State	MI	WA	TN	IL	TX	UT	CO	MI	MI	WA

Pacific Northwest
Laboratory

8 1 1 0 2 0 5 2 1 2 6

REASONS FOR ISV SELECTION

**Permanence and
Reduction of Toxicity**

- 4-10 times more durable than HLW forms

Compliance with ARARS

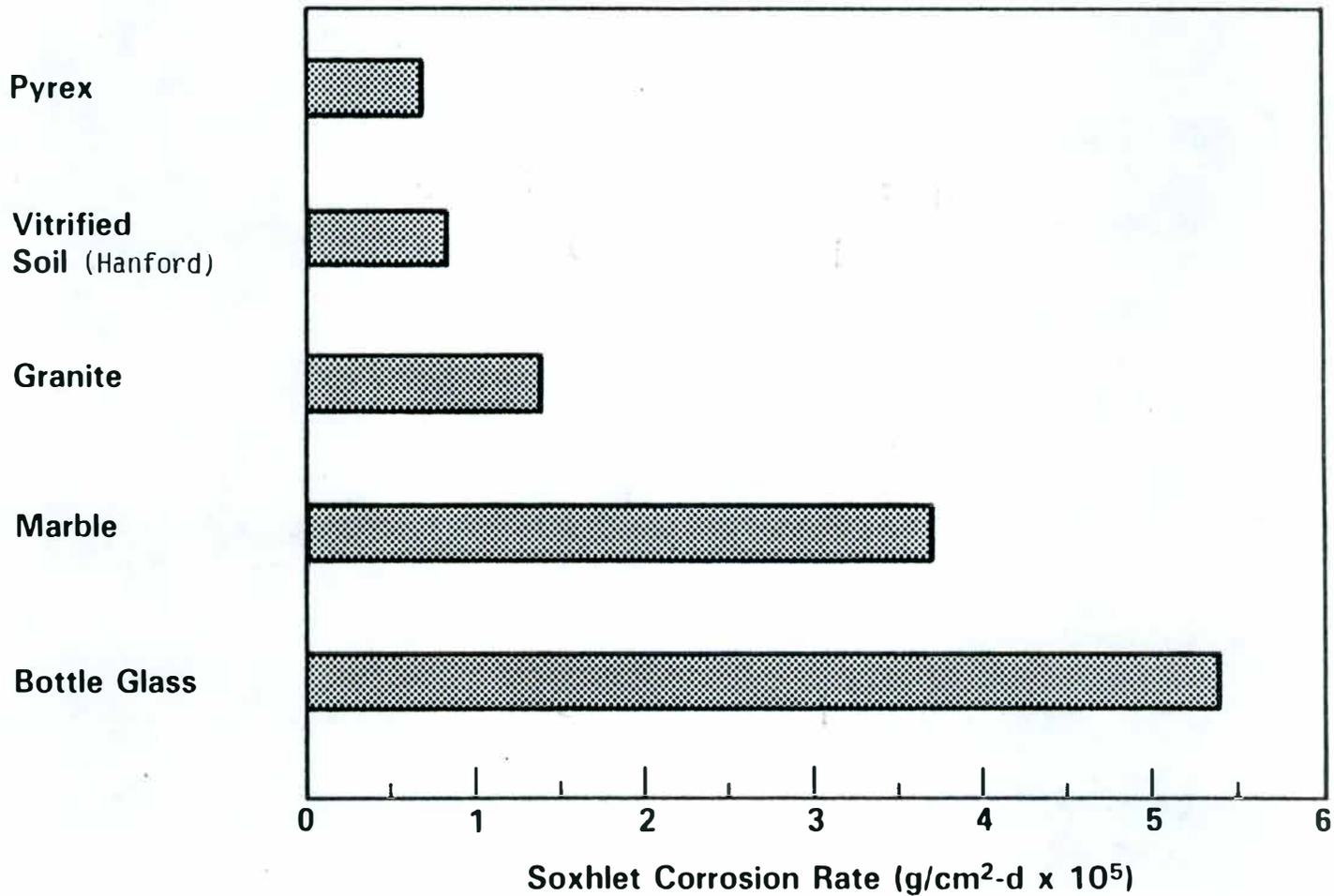
- Meets TCLP by > 1 order of magnitude

Cost

- \$200-350/ton

ISV Product Durability

Soxhlet Leach Rate $< 1 \times 10^{-5} \text{g/cm}^2/\text{day}$



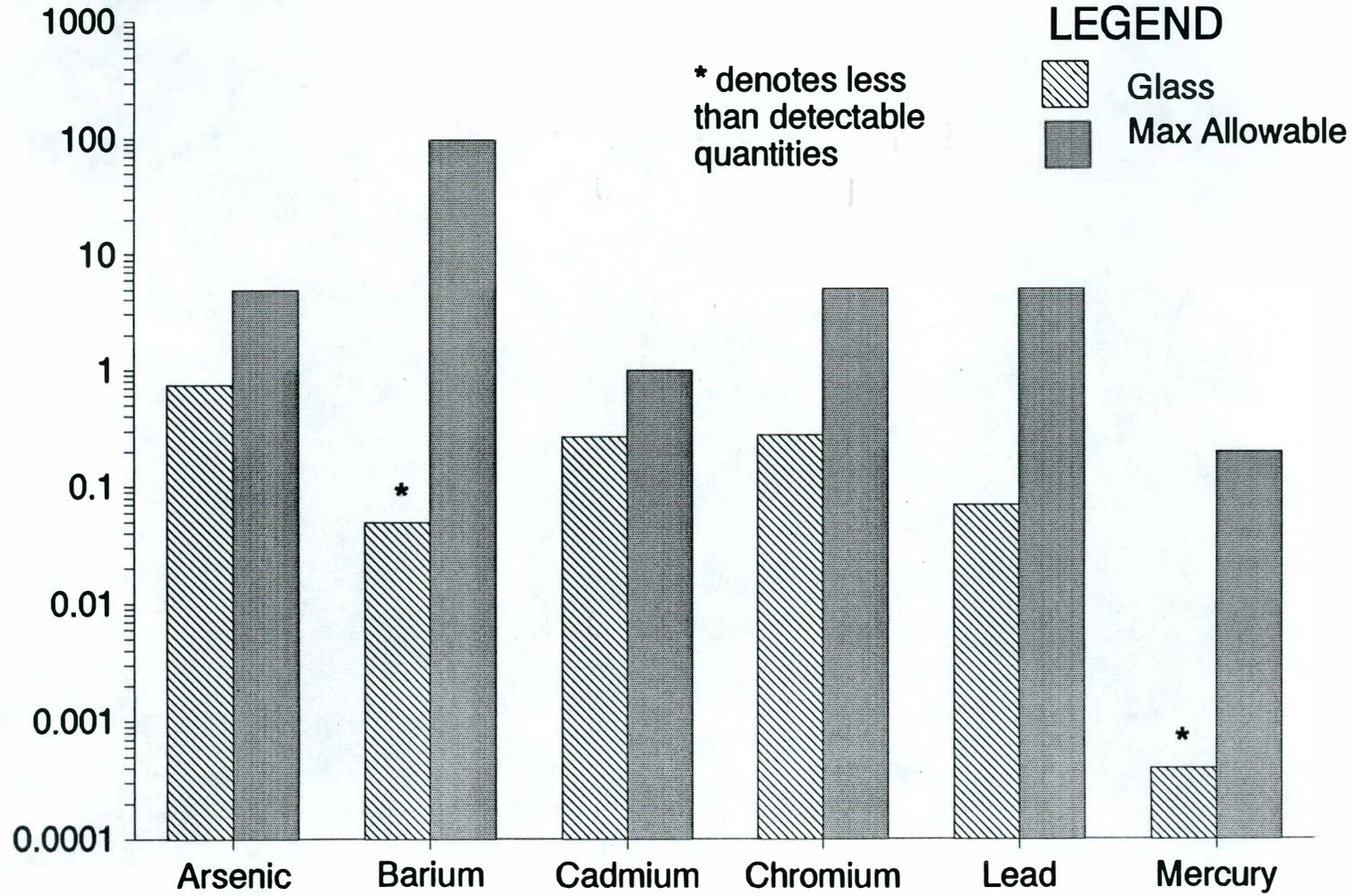
MCC-1 Test
Weathering
Fracture

$< 2 \times 10^{-7} \text{g Pu/cm}^2/\text{day}$
 $< 1\text{mm}/10,000 \text{ years}$
Conchoidal

9 2 1 2 5 0 2 0 1 2 0

TCLP RESULTS OF VITRIFIED PRODUCT

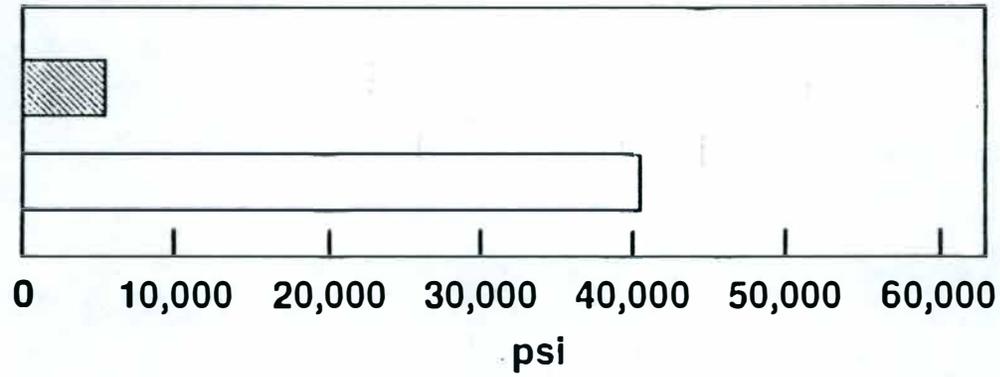
Concentration, mg/L



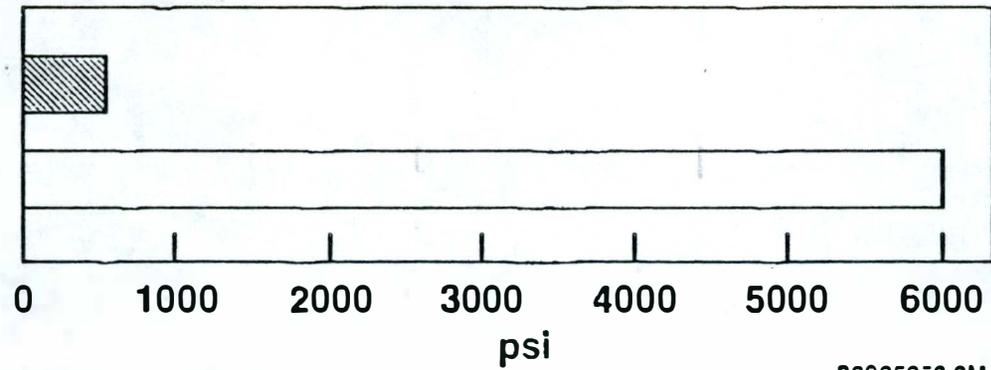
9 2 1 2 5 0 2 0 1 2 1

Strength Comparison

Compressive Strength



Splitting Tensile Strength



 Unreinforced Concrete
 Vitrified Soil

38905053.2M

REASONS FOR ISV SELECTION

**Permanence and
Reduction of Toxicity**

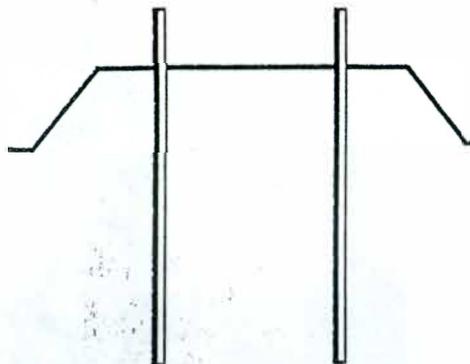
- 4-10 times more durable than HLW forms

Compliance with ARARS

- Meets TCLP by > 1 order of magnitude

Cost

- \$200-350/ton



Inside This Issue:

- Geosafe's Testing Incident O&A
- New Geosafe President
- Killing the Myth of Vapor Retard
- DOE's Remedial Action Program

Welcome to In Situ Vitrification Technology Update

You are reading the premier issue of this publication, which is directed to providing current information regarding the development and commercialization of the In Situ Vitrification (ISV) remediation technology. Since the ISV technology is being developed by only a few organizations, and is being commercialized only by Geosafe Corporation, it has proven difficult for interested parties to access current information on this rapidly developing technology. One objective of this publication is to provide broad distribution of current information that is important to those organizations evaluating the possible use of the technology for onsite remediation of Superfund, RCRA Corrective Action, and TSCA sites. It is our initial plan to issue this update quarterly. Geosafe welcomes your inquiry and input regarding articles.

Testing Incident

Q&A

In March of last year Geosafe suffered an incident while operating its large scale ISV equipment during a test. The incident resulted in fire damage to a portion of the equipment. The incident has also caused a delay in Geosafe's commercialization of the ISV technology. Following are answers to the most commonly asked questions about the incident and Geosafe's recovery plan.

What was the incident?

The incident involved the unexpected displacement of molten soil during one of Geosafe's large-scale operational acceptance tests. Some of the molten soil contacted the interior surfaces of the composite fabric off-gas collection hood, causing its exterior silicone coating to burn off over about one-half of the hood surface. The short duration fire (few minutes) resulted in damage to the collection fabric and a few of the hood structural members.

Why did it happen?

The hood surface fire was caused by overheating of the silicone coating, which in turn was caused by molten soil contacting the interior fabric surface. The exposure of the fabric to molten soil is believed to have resulted from an excessive level of water vapor bubbling through the ISV melt.

What site did it happen?

The test was being performed at Geosafe's test site in Richland, Washington (see photo next page). No hazardous materials were involved in the test. Geosafe was performing a series of operational acceptance tests as a normal part of qualifying the capabilities of its new equipment and for operator training. Contrary to some media reports, the incident did not happen at either the Department of Energy's Hanford site or at any EPA Superfund site.

Was the molten soil displacement like a volcanic eruption or steam explosion?

No, although the incident occurred within 250 miles of Washington's Mt. Saint Helens, the ISV process does not involve the conditions and amounts of energy found in such events. Rather, water vapor, which is the predominant vapor formed during ISV, rises to the surface of the treatment zone either through the melt or in the narrow (6-12 inch thick) dry zone adjacent to the melt. Water vapor does not move significantly into the adjacent soil because of the very low gas-phase permeability of the adjacent "wet" soil compared to the dry zone.

This movement of water vapor to the surface results in bubbling through the melt. The molten soil melt is fairly viscous (e.g., similar to pancake syrup at room temperature); and when bubbles burst through it, they typically break up such a way that they throw small amounts of molten material throughout the immediate area. If the level of bubbling increases, it is possible for the level of melt to rise because of the volume taken up by the water vapor bubbles (similar to food boiling over on a stove).

It is believed that the level of bubbling activity during this test became high that it resulted in overflow and displacement of molten soil sufficient to contact the interior hood surface.

(Continued on next page)

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More Q&A on the Testing Incident

No, such an incident had never been observed in the more than 120 ISV tests at various scales that have been performed prior to this test. That is why the incident was unexpected. It is noted also, however, that the conditions employed in this test represented some of the most aggressive ever tested. Therefore, the test served to identify factors that must be considered when planning ISV operations at specific sites to ensure that they can be performed without similar incident.

Damage to the ISV equipment was limited to portions of the off-gas collection hood.

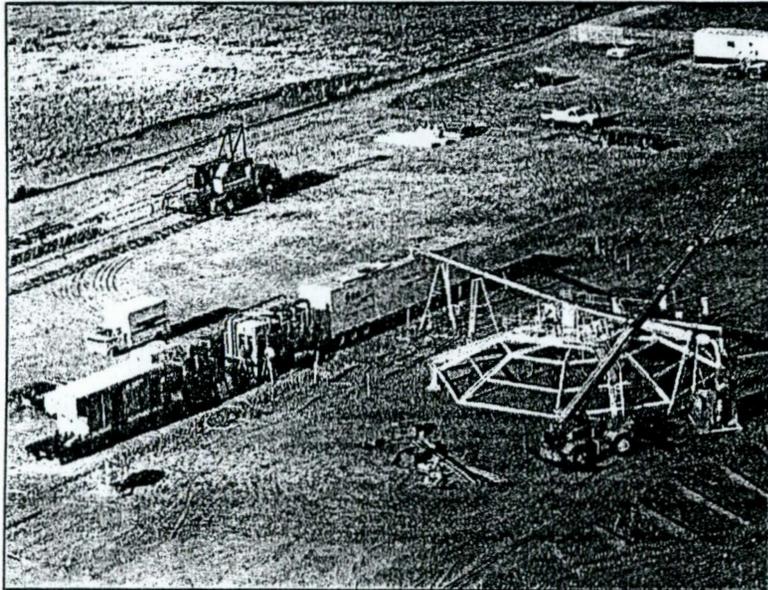
There were no personnel injuries or harm to the environment. Geosafe has not released any public estimates of the dollar value of the physical equipment damage.

Why was the hood being used?

The typical off-gas collection hoods employed in the ISV development and demonstration programs have been primarily of metal construction. The composite fabric material utilized in Geosafe's hood was employed in an effort to reduce total hood weight, thus allowing less costly transport and setup of the hood, and minimizing the costs associated with movement of the hood between settings during a remediation project. The fabric hood concept was considered developmental in nature. The incident and other difficulties associated with the manufacture of the fabric material have resulted

in Geosafe's decision to return to an all metal hood. The conceptual design for the hood has already been completed.

Geosafe immediately launched an investigation into the incident to determine its cause(s). An investigation team was formed of Geosafe and U.S. Department of Energy (DOE) contractors familiar with the ISV technology. Geosafe also placed



an indefinite suspension on its large-scale field operations until such time that the investigation could be concluded and safe operations could be assured. That investigation is nearing completion.

It is feasible to consider that a metal hood could be designed to withstand the displacement of molten soil that occurred in this incident. However, Geosafe does not consider it socially responsible to simply build a bigger and better hood without also ensuring that a complete understanding is attained regarding ISV conditions that can result in the displacement of molten soil. Thus, final hood design and fabrication will not be performed until the investigation into the incident is completed.

The investigation has involved three phases: 1) documentation of test conditions prior to the incident, 2) complete excavation and examination of the melt zone and the adjacent soil, and 3) performance of small-scale tests and modelling and analytical work to allow interpretation of various physical observations. Initial findings from these efforts are discussed below.

The investigation has focused on the occurrence of molten soil displacement from the treatment zone. Many factors are believed to have contributed to the displacement, including the particular test setting design, the presence of sealed drums containing super saturated soil, the particularly aggressive melting conditions employed in the test, and other technical factors.

The overall result of these factors was a condition wherein water vapor generation rate within and below the treatment zone reached a point where it caused agitation of the melt sufficient to displace the molten soil, thus causing the event. The specific contribution of the various factors to the displacement are still under investigation and will be defined more completely later.

Is there a chance that a fundamental flaw has been found in the ISV technology?

No, there is no technical basis for such a conclusion. Geosafe and others involved with development of the ISV technology believe that the incident will be satisfactorily understood in scientific terms, and that engineering solutions will be adapted to ensure safe application of the technology.

(Continued on next page)

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More Q&A on the Testing Incident

How will Geosafe ensure that such an incident doesn't happen at hazardous waste sites?

Geosafe will establish operating conditions for specific applications that will limit water vapor generation rates to levels that are well within the capabilities of the melt and dry zone to pass the vapor without excessive melt agitation. In addition, Geosafe will employ an off-gas collection hood that will be qualified to withstand reasonable amounts of inadvertent molten soil exposure without suffering damage.

If the incident had happened at a hazardous waste site, would the infants have been released to the environment?

Geosafe does not believe that this incident would have resulted in a significant release of contaminants even had it occurred at a hazardous waste site. That is because during ISV processing, nearly all organic contaminants are destroyed by pyrolysis within the treatment zone which is located below the ground surface, and heavy metal contaminants are typically incorporated into the molten mass. Therefore, the predominant materials leaving the treatment zone and entering the off-gas collection hood are water vapor, resultant combustion products resulting from thermal decomposition of the organics present, and some particulate, or dust, from the soil being treated. Thus, it is likely that the atmosphere within the collection hood approaches non-hazardous conditions even when ISV is being applied at a hazardous site.

Geosafe also recognizes the great importance of ensuring protection of human health and the environment during remediation activities. Thus, for assurance of environmental safety, Geosafe employs an off-gas collection hood and treatment system to ensure that all emissions from the treatment zone are

safe for release to the environment. That treatment system employs two levels of cleanup treatment: 1) a scrubbing system, and 2) a filtering and activated carbon system. In addition, Geosafe employs a diesel-powered backup treatment system to ensure off-gas containment during a total power outage.

We do not expect significant changes in the ISV application guidelines for contaminated soil sites. However, while there are many parties holding hope that ISV will become qualified for use on very difficult sites involving sealed drums containing liquids, the investigation's preliminary conclusions are that the technology is not yet ready for reliable processing of such sealed containers. It is anticipated that further development work will be performed for such treatment applications and that they will become a future reality.

When will the available commercial images be available?

Geosafe's current plans project completion of the investigation during the first quarter of 1992. Thereafter the new hood design will be completed and the hood fabricated. We anticipate being ready to commence additional operational acceptance testing during the last half of 1992. The extent of such testing will depend on satisfactory performance compared to expectations of Geosafe's Board, pertinent clients, regulators, and insurers. Thus, Geosafe's current estimate is that commercial field operations may commence late in 1992 or early in 1993.

What measures can be taken to speed up the recovery schedule?

Geosafe has seriously considered options for accelerating the recovery process, and has discussed these with EPA relative to sites where ISV has been selected as the, or a, preferred remedy. The

conclusion has been reached that the current recovery schedule is realistic, and that it would be unwise to force a quicker return to field operations if any compromise in the objectives of full understanding and safe operations would be required.

Have previous ISV preferred remedy selections been changed because of the incident or the delay?

No, we are not aware of any Records of Decision (RODs) or other decision documents being changed because of the incident or the delay. Geosafe is certainly aware of the difficulties this situation has caused our clients and the regulatory community; however, we have also noted very strong support relative to overcoming it. It is obvious that the ISV technology is considered to be an important and promising solution for some of the most difficult sites needing cleanup. And we hope that it is likewise obvious that Geosafe remains committed to the successful commercialization of ISV.

Is EPA still considering ISV for use at additional Superfund and RCRA Corrective Action Sites?

Yes, ISV is still being considered for use at many sites. Relative to the Superfund remedy selection process, EPA continues to consider ISV to be an "innovative" technology which warrants support as mandated by SARA. The incident and resulting delay are primarily impacting the "implementability" criterion of the FS evaluation process.

ISV Offerings

Geosafe offers the following ISV services: 1) applicability analyses and cost estimates, 2) treatability testing, 3) remedial design and related technical services, and 4) onsite remediation.

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Atterbury Named Geosafe President

Thomas J. Atterbury has been named Geosafe Corporation's new President and CEO, succeeding Bruce W. Johnson, the Company's startup CEO who has returned to retirement after completion of



his 3-yr. contract with the Company. Atterbury, a mechanical engineer who has served on Geosafe's Board since the inception of the

Company, has 35 years experience in the development and commercialization of new technologies. He also serves as President of Battelle Development Corporation, and as Chairman of the Board for Information Dimensions Incorporated, both Columbus, Ohio based firms.

For More Information

Persons desiring more information about any of the articles presented herein, or other specific information regarding the ISV technology, may contact either of the Geosafe locations below.

401 Parkplace, Suite 209
Kirkland, WA 98033
(206) 822-4000

FAX (206) 827-6608
Attention: James E. Hansen,
Director, Sales and Marketing
(Note: this is a change of suite number for Mr. Hansen)

2000 Logston Avenue
Richland, WA 99352
(509) 375-3268

FAX (509) 375-4838
Attention: Craig L.
Timmerman, Manager,
Technology Development

DOE ISV Development Program

The U.S. Department of Energy (DOE) continues to explore and develop ISV for several potential applications of specific interest to DOE sites. The primary focus of the DOE ISV program is on deployment of the technology for use on contaminated soil sites. DOE sites with active ISV programs include Hanford (Pacific Northwest Laboratory ... or PNL, operated by Battelle Memorial Institute at Richland, WA), the Idaho National Engineering Laboratory (INEL, operated by EG&G Idaho, Inc. at Idaho Falls, ID), and Oak Ridge National Laboratory (ORNL, operated by Martin Marietta at Oak Ridge, TN).

There are several characteristics of the ISV technology that offer attractive benefits to DOE applications. First, the in situ nature of ISV treatment offers particular advantage for radioactive sites in that the airborne release pathway associated with excavation can be eliminated/minimized. Secondly, the ability of ISV to simultaneously process mixtures of radioactive and hazardous chemical-contaminated soil also offers significant cost advantages for some sites compared to alternatives involving complex treatment trains made up of several technologies. Lastly, the superior physical and chemical leaching properties of the glassy residual ISV product is very important for the safe, permanent immobilization of radioactive materials.

PNL, which initially invented the technology and has performed most of its development, serves as DOE's "reference laboratory" for both melter-based and ISV vitrification technologies. As the ISV program has been expanded to be performed at several sites, PNL continues to serve in the role as national coordinator of the ISV Integrated Program. The Integrated Program focuses chiefly on implementing the technology on a schedule consistent with DOE's Environmental Restoration timelines while continuing to develop the technology for advanced applications. Mr. James L. Buelt, PNL, serves as the Program's Contractor Technical Coordinator.

The Myth of Vapor Retreat

A recent treatability test involving independent technical oversight has put one more nail into the "coffin" of the "Myth of Vapor Retreat". Ever since a competitor of Geosafe's invented the term several years ago, there has been considerable interest within the regulatory community to prove or disprove the competitor's claims. Those claims held that materials vaporized within the treatment zone during ISV, whether they be contaminants or water, would "retreat" into the adjacent and underneath soil rather than being destroyed, removed, or immobilized by the ISV treatment.

Geosafe and other developers of the ISV technology have consistently and doggedly denied the claims as being very flawed technically, and being in direct conflict with actual observations made in many ISV tests involving water, organics

and other contaminants.

The regulatory community has desired "independent" data to ascertain whether or not vapor-phase contaminant migration may occur during ISV. Such independent data was obtained from a recent treatability test performed on PCB contaminated soils, wherein EPA participated in preparation of the test Work Plan, which required sufficient number of samples, extremely sensitive and accurate analytical procedures, and independent audit, observation, and data validation services. All test results came back "non-detect", indicating that no measurable contaminant migration had occurred. Geosafe is now preparing to perform a similarly qualified test for a Superfund site involving a broad range of organics, including herbicides, pesticides, dioxin, VOCs, and SVOCs.

Distribution

General Topics Unit Managers Meeting
February 26, 1992

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 Pam Innis, EPA (B5-01)
 Doug Sherwood, EPA (B5-01)
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 Dave Nylander, WDOE (Kennewick)
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