



## Department of Energy

Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

DEC 6 1995

95-CHD-095

Mr. John T. Conway, Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W., Suite 700  
Washington D.C. 20004

Dear Mr. Conway:

TRANSMITTAL OF CHARACTERIZATION DIVISION, SEPTEMBER 1995 MONTHLY REPORT, IN ACCORDANCE WITH THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE (RL), IMPLEMENTATION PLAN FOR BOARD RECOMMENDATION 93-5

The enclosed Characterization Division September Monthly Report is being submitted to you to provide information and status of actions associated with the 93-5 Implementation Plan.

### Significant Accomplishments:

Westinghouse Hanford Company (WHC) submitted an acceptance test report for an X-ray sample imaging device that measures sample recovery. The development of the X-ray imaging device supports completion of DNFSB Commitment 3.18, "Develop Means for Measuring Complete Sample Recovery". The report will be forwarded to the DNFSB after RL has performed its review and found the document and associated activities acceptable.

RL submitted the required items and requested closure of the following 14 DNFSB 93-5 commitments during the month of September:

Commitment 1.16,	"Complete Historical Tank Layering Models"
Commitment 1.21.1,	"Ferrocyanide Safety Issue Data Quality Objectives"
Commitment 1.21.2,	"C-103 Vapor DQO Draft Report"
Commitment 1.21.3,	"C-103 Dip Sample DQO"
Commitment 1.21.5,	"Organic Safety Issue DQO Report (PNL)"
Commitment 1.21.7,	"Waste Compatibility DQO Report"
Commitment 1.21.9,	"Vapor Rotary Core DQO Final Draft Report"
Commitment 1.21.10,	"Hydrogen Generating DQO Final Report"
Commitment 1.21.11,	"Pretreatment DQO Draft Report"
Commitment 1.21.12,	"High-Level Waste Immobilization DQO Draft Report"
Commitment 1.21.13,	"Low-Level Waste Immobilization DQO Draft Report"
Commitment 2.1,	"DQO's for All Six Safety Issues"
Commitment 2.2,	"Safety Screening Module DQO Report"

DEC 5 1995

WHC submitted the following letters to RL with the intent to meet DNFSB commitments:

Letter 9555033 "... field procedures and Conduct of Operations Review" DNFSB Commitment 3.02, "Review Characterization Field Procedures/DOE Conduct of Operations."

Letter 9555144 "Documentation of Qualifications for Two Additional Core Sample Crews" DNFSB Commitment 3.10, "Complete Qualification of Two Additional Core Sampling Crews."

The letters will be reviewed by RL and once the associated activities are found to be acceptable the letters will be forwarded to the DNFSB.

If you have any questions, you may contact me at (509) 376-7395 or your staff may contact Mr. Jackson Kinzer, Assistant Manager for Tank Waste Remediation System, at (509) 376-7591.

Sincerely,

  
John D. Wagoner  
Manager

CHD:CAB

Enclosure

cc w/encl:  
R. Guimond, EM-2  
M. A. Hunemuller, EM-30  
K. T. Lang, EM-36  
S. L. Trine, RL DNFSB Liaison  
J. C. Tseng, EM-30  
M. B. Whitaker, EH-9

**CHARACTERIZATION PROJECT  
BIWEEKLY REPORT FOR THE PERIOD  
ENDING SEPTEMBER 15, 1995**

**SIGNIFICANT ACCOMPLISHMENTS**

Westinghouse Hanford Company (WHC) letter 9554924 was submitted to the U.S. Department of Energy, Richland Operations Office (RL), on September 14, 1995, transmitting an acceptance test report for an X-ray sample imaging device. The original means for measuring sample recovery was envisioned to be an instrumented sample receiver to replace the existing receiver; however, the alternate concept of using the X-ray imaging device proved to be more successful. This transmittal met Defense Nuclear Facilities Safety Board (DNFSB) commitment 3.18, "Develop Means for Measuring Complete Sample Recovery" of the core sample systems, and WHC milestone T2D-95-153.

The following eight DNFSB 93-5 commitment items, previously submitted to RL, were forwarded to the DNFSB:

- Commitment 1.21.1, "Ferrocyanide Safety Issue Data Quality Objective (DQO)"
- Commitment 1.21.2, "C-103 Vapor DQO Draft Report"
- Commitment 1.21.3, "C-103 Dip Sample DQO"
- Commitment 1.21.5, "Organic Safety Issue DQO Report [Pacific Northwest Laboratory (PNL)]"
- Commitment 1.21.10, "Hydrogen Generating DQO Final Report"
- Commitment 2.1, "DQO's for All Six Safety Issues"
- Commitment 2.2, "Safety Screening Module DQO Report."

**PROBLEMS/ISSUES**

None to report.

**DETAILED WORK ACTIVITIES**

**TECHNICAL INTEGRATION AND PLANNING (WBS 1.1.1.2.4.1)**

None to report.

**TECHNICAL DEVELOPMENT AND APPLIED ENGINEERING (WBS 1.1.1.2.4.2)**

None to report.

### FIELD SAMPLING AND MEASUREMENT (WBS 1.1.1.2.4.3)

Inspection of drill string sections, performed by Characterization Equipment Development engineers on September 7, revealed that the internal diameter of the drill string was below specification requirements. It is believed that this reduced dimension is the reason that the remote latching unit is sticking during drilling operations. Future drill string sections will be inspected prior to use, and followup measures are being taken with the drill string manufacturer.

An engineering change notice is being developed to utilize Diamond Drill rod with o-ring groove. This change will result in a significant cost savings over using a similar rod from Longyear.

An engineering change notice and work package were completed to fabricate four drill string Camlok adapters with a sample port. This change will enable sampling of single-shell flammable gas tanks without using fresh air all the time.

Comments from the 30% design review, as well as from the acceptance test procedure for the prototype cone penetrometer moisture probe, are being dispositioned. The test is scheduled for the week of September 18 at the Science Applications International Corporation facility in San Diego, California.

#### Push Sampling

Push mode core sampling was completed for the first core in tank 241-S-107 using rotary mode core sampling (RMCS) truck #1 after the grapple hoist problem was resolved.

#### Rotary Sampling

Rotary core sampling, using truck #2, yielded five pushed segments from tank 241-BY-110, core 109. Recovery was poor. Plans are to pull the remaining segment from the drill string and install a new drill string with a push bit. The unit will be rotated to a new position over the waste within the same riser. Setup and preparations have begun.

Rotary mode truck #3 is located at the RMCS Test Site for training and new bit testing.

Using rotary mode truck #4, six segments of Core 108 were obtained for tank 241-BY-105. Plans are to change the bit from a rotary to a push bit to improve sample recovery, because segment #2 (rotary mode) had less than 13% recovery and segment #3 (push mode with bumping) had 45% recovery. Tank 241-BY-105 has not been classified flammable gas; however, certain requirements and limits were placed on this sampling activity.

The video camera and X-ray imager are both undergoing maintenance.

Auger Sampling

Auger sampling for the first of three cores in tank 241-SX-108 was completed.

Vapor Sampling

All vapor sampling scheduled for FY 1995 has been completed and preparations are underway for FY 1996.

Vapor sampling of tank 241-U-108 was cancelled after it was determined not to be required based on evaluation by Safety of the existing data.

Setup, work package preparation, and mockup training are in progress for sampling tank 241-C-301, a miscellaneous underground storage tank. Sampling in this tank will be a "first" for this type of tank.

Grab Sampling

Grab sampling was completed for tank 241-AN-101. Due to insufficient supernatant to support a successful grab sample, no samples were obtained from tanks 241-AN-103, AN-105, or AY-102.

**ANALYTICAL INTEGRATION (WBS 1.1.1.2.4.4)**

222-S Laboratory

The following samples were extruded at the Laboratory:

<u>Date</u>	<u>Tank #</u>	<u>Type</u>	<u>Core</u>	<u>Riser #</u>	<u>Sample #</u>	<u>Qty Recovered Solid/Liquid</u>
9-01-95	241-BY-110	Rotary	107/5	7	95-192	199.6g/--
9-01-95	241-BY-110	Rotary	107/6	7	95-193	353.9g/--
9-01-95	241-BY-110	Rotary	107/7	7	95-194	346.8g/--
9-05-95	241-BY-110	Rotary	107/8	7	95-195	266.4g/--
9-05-95	241-BY-110	Rotary	107/9	7	95-196	460.5g/--
9-06-95	241-BY-110	Rotary	101/6A	7	95-147A	130.0g/--
9-08-95	241-BY-110	Rotary	101/7	7	95-148	437.8g/--
9-08-95	241-BY-110	Rotary	101/8	7	95-149	419.5g/--
9-08-95	241-BY-110	Rotary	101/9	7	95-150	523.2g/--
9-11-95	241-BY-105	Rotary	108/1	12A	95-197	56.2g/123.0g
9-11-95	241-BY-105	Rotary	108/1A	12A	95-197A	51.5g/50.8g
9-11-95	241-BY-105	Rotary	108/1B	12A	95-197B	72.1g/--
9-11-95	241-BY-105	Rotary	108/1C	12A	95-197C	No sample

Laboratory Reports completed:

<u>Tank #</u>	<u>Report (Days)</u>	<u>Scheduled Due Date</u>	<u>Completion Date</u>	<u>Performance</u>
241-BX-103	90	08/39/95	08/30/95	On schedule

*WHC-SD-WM-DP-135, Rev. 1, 90-Day Safety Screen Results and Final Report for Tank 241-BX-103, Push Mode, Cores 86 and 87.*

**DATA EVALUATION AND REPORTING (WBS 1.1.1.2.4.5)**

None to report.

Attachment 2 to 9453193.31

**DNFSB 93-5 COMMITMENTS STATUS, Pages 1-3  
As of September 15, 1995**

Please contact Larry Pennington on (509) 376-1863,  
if you have any questions.

## DNFSB 93-5 COMMITMENTS STATUS

As of September 15, 1995

<u>Number</u>	<u>Description</u>	<u>Due Date</u>	<u>Submitted to DOE-RL</u>	<u>Submitted to DNFSB</u>
1.01	Enhance WHC Characterization Program Management Staff	28Feb94	28Feb94	27Jun94
1.02	Reduce Management Layers in WHC TWRS	31Mar94	24Mar94	30Jun94
1.03	Improve RL Oversight	31May94	31May94	31May94
1.04	Plan to Improve Char. Prog. Tech. Staff Competencies	30Apr94	29Apr94	29Apr94
1.05	Implement Plan to Improve Tech Staff Competencies	31May95		
1.06	Define Resp of Key Characterization Managers	31Mar94	31Mar94	12Jul94
1.07	Streamline DQO Process	31Jan94	31Dec93	26May94
1.08	Issue TWRS Characterization Quality Assurance Plan	28Feb94	28Feb94	26May94
1.09	Plan for Blind Samples	31May94	24May94	01Jun94
1.10.41	Issue Quarterly Progress Reports	30Apr94	03May94	03May94
1.10.42	Issue Quarterly Progress Reports	30Jul94	25Jul94	25Jul94
1.10.43	Issue Quarterly Progress Reports	30Oct94	20Oct94	20Oct94
1.10.44	Issue Quarterly Progress Reports	31Jan95	20Jan95	20Jan95
1.10.51	Issue Quarterly Progress Reports	30Apr95	21Apr95	10May95
1.10.52	Issue Quarterly Progress Reports	31Jul95	25Jul95	08Aug95
1.10.53	Issue Quarterly Progress Reports	20Oct95		
1.10.54	Issue Quarterly Progress Reports	19Jan96		
1.10.61	Issue Quarterly Progress Reports	19Apr96		
1.10.62	Issue Quarterly Progress Reports	19Jul96		
1.10.63	Issue Quarterly Progress Reports	18Oct96		
1.11	Field Schedule for Sampling All Activities FY95 & 96	30Jun94	30Sep94	
1.12	Management Staff Complete System Eng Training	31May94	15Feb94	25May94
1.13	Charact. Functions/Requirements in Functional Analysis	31Jan94	28Apr94	01Jun94
1.14	Charact. Part of Initial Systems Eng Analysis Results	30Jun94	30Jun94	30Jun94
1.15	Integrate Vapor Sample Prog into Charact. Program	31Oct94	03Nov94	03Dec94
1.16	Complete Historical Tank Layering Models	30Sep94	18May95	
1.17	Historical Tank Content Est Reports NE/SW	30Jun94	29Jun94	30Jun94
1.18	Historical Tank Content Est Reports NW/SE	31Mar95	30Jul95	24Aug95
1.19	Develop Statistical Tools for Samples Needed	30Dec94	29Dec94	08Aug95
1.20	TWRS Risk Acceptance Criteria	31Aug94	19May95	
1.21.01	Ferrocyanide Safety Issue DQO	15Dec93	01May95	12Sep95
1.21.02	C-103 Vapor DQO Draft Report	31Jan94	25Mar94	12Sep95
1.21.03	C-103 Dip Sample DQO	16Dec94	25Mar94	12Sep95
1.21.04	C-106 High Heat DQO Final Report	20Dec94	19Jan94	12Sep95
1.21.05	Organic Safety Issue DQO Report (PNL)	31Jan94	01May95	12Sep95
1.21.06	Safety Screening Module DQO	31Jan94	01May95	
1.21.07	Waste Compatibility DQO Report	28Feb94	01May95	
1.21.08	In-tank Generic Vapor DQO Final	03Mar94	01May95	
1.21.09	Vapor Rotary Core DQO Final Draft Report	20Jan94		



## DNFSB 93-5 COMMITMENTS STATUS

As of September 15, 1995

<u>Number</u>	<u>Description</u>	<u>Due Date</u>	<u>Submitted to DOE-RL</u>	<u>Submitted to DNFSB</u>
1.21.10	Hydrogen Generating DQO Final Report	29Apr94	01May95	12Sep95
1.21.11	Pretreatment DQO Draft Report	22Aug94	29Jun95	04Nov94
1.21.12	HLW Immobilization DQO Draft Report	06Sep94	29Jun95	
1.21.13	LLW Immobilization DQO Draft Report	21Sep94	29Jun95	
1.22	Update FY94 Field Sched to Incorporate New Tech. Approach	28Feb94	08Feb94	27Jun94
1.23	Identify 'Bounding Tanks' for Disposal	30Nov94	29Jun95	
2.01	DQOs for all Six Safety Issues	29Apr94	01May95	12Sep95
2.02	Safety Screening Module DQO Report	31Jan94	01May95	12Sep95
2.03	Complete Sampling & Analysis of All Watch List Tanks	31Oct95		
3.01	Initiate Const. of 2nd & 3rd Rotary Core Sample Trucks	30Nov93	01Nov93	15Nov93
3.02	Review Char. Field Proc's/DOE Conduct of Ops	31Jan94		
3.03	Complete Qualif. of 1st Push Mode Crew	28Feb94	26Jan94	30Jun94
3.04	Redeploy Push Mode Core Sampling	31Mar94	30Mar94	30Jun94
3.05	Complete Training & Quals for Sampling Cog Eng	28Feb94	24Feb94	11Aug94
3.06	Restore Rotary Mode Sampling (TPA)	31Mar94	26Oct94	02Nov94
3.07	Complete Qual 1st Rotary Mode Crew	31Mar94	31Mar94	30Jun94
3.09	Detailed Plans for Acquiring/Training Add'l Crews	30Apr94	29Apr94	30Jun94
3.10	Qual of 2 Additional Crews/Push & Rotary Trucks	30Jun94		
3.11	Additional Rotary Mode Core Systems	30Sep94	30Jun95	
3.12	Hire/Train/Qualify 4 Add'l Rotary Mode Crews	31Oct94		
3.13	Deploy Prototype Cone Penetrometer	31May95		
3.14	Installation of Flammable Gas Monitors	30Apr95	24Apr95	23Jun95
3.15	Eng Eval for In Situ Moisture Monitoring	30Jun94	28Jun94	30Jun94
3.16	Direct Drill Bit Temperature Monitoring	31Jan95		
3.17	Review Procedures with Outside Drilling Experts	30Jun94	30Jun94	02Aug94
3.18	Dev. Means for Measuring Complete Sample Recovery	31Jan95	14Sep95	
3.19	Eng Eval of New Risers on SSTs	31Aug94	31Aug94	12Sep94
4.01	Issue Approved Broad Based Environmental Assessment	28Feb94	10Feb94	25Feb94
4.02	DOE-RL submit Delegation of Authority request to HQ	31Jan94	10Jan94	10Jan94
4.03	Obtain Delegation of Authority for DOE-RL	30Apr94	10Jan94	28Jul94
5.01	Install Core Scanning in Hot Cell	30Sep94	01Sep94	02Aug95
5.02	Complete Renovation of 325 'A' Hot Cell	30Sep95		
5.03	Letter Assessing Operability of New Extruder	31Mar94	28Mar94	26Oct94
5.04	Cyanide Speciation Tech Transfer (PNL)	30Sep94	01Sep94	02Aug95
5.05	Issue Results of Sampler Exchange Phase II	31Mar94	31Mar94	30Jun94
5.06	Evaluate Laboratory Staff Training	30Jun94	30Jun94	13Jul94

## DNFSB 93-5 COMMITMENTS STATUS

As of September 15, 1995

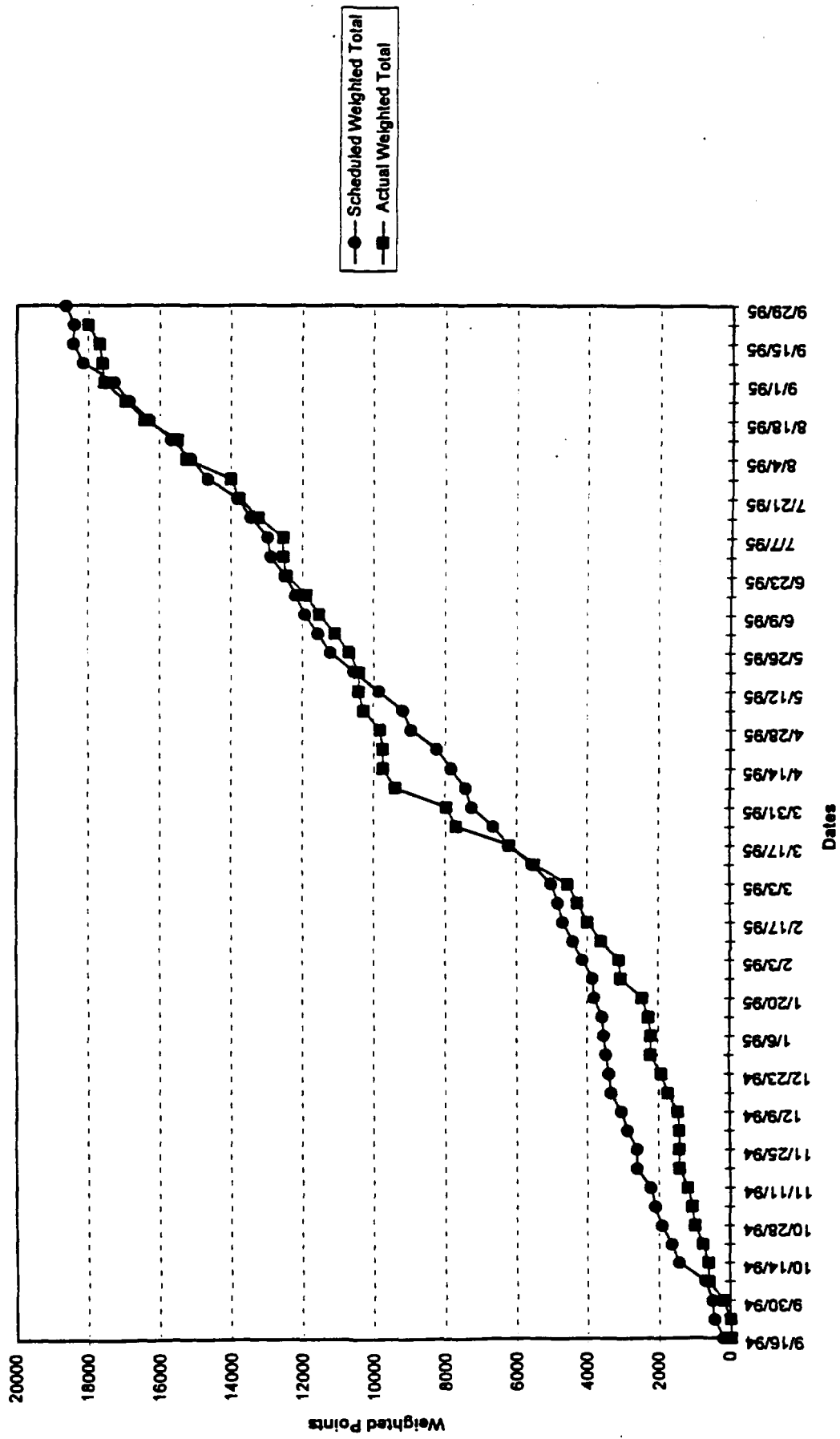
<u>Number</u>	<u>Description</u>	<u>Due Date</u>	<u>Submitted to DOE-RL</u>	<u>Submitted to DNFSB</u>
5.07	Develop & Implement Training for Laboratory Staff	31Aug94	30Jun94	13Jul94
5.08	Procure & Receive 2 PAS-1 Casks	30Sep94	18Aug94	25Aug94
5.09	Plan to Upgrade INEL Lab	31Jan94	08Feb94	28Jun94
5.10	Plan to Upgrade LANL Lab	29Mar94	28Mar94	30Jun94
5.11	Develop Min/Max Lab Capacity Strategy	28Feb94	28Feb94	30Jun94
5.12	Upgrade INEL Lab to Ready to Serve Mode	31Oct94	31Oct94	04Nov94
5.13	Upgrade LANL Lab to Ready To Serve Mode	28Feb95	06Feb95	10Apr95
5.14	Two PAS-1 Casks will be ready for use Jan. 1995	31Jan95		
6.01	Prepare a Customer Needs Analysis (data)	30Apr94	02May94	23Jun94
6.02	Issue a Data Mgmt Improvement Plan	31May94	01May94	26May94
6.03	Initial On-Line Capability for LABCORE-1	31Jan94	31Jan94	23Jun94
6.04	Demonstrate Off-Site Access to Tank Charact. Database	31Jan94	28Jan94	12Jul94
6.05	Complete data Loading of 20 Tanks into Database	30Sep94	30Sep94	25Oct94
6.06	Evaluate 12 Validated Data Reports for Safety	31Jan94	25Apr94	30Jun94
7.01	Formally Submit Changes to Commitments			
7.02	Address Changes to Milestones in Quarterly			

**Attachment 3 to 9453193.31**

**FIELD SAMPLING CHART, Page 1 of 1,  
As of September 18, 1995**

**This chart is an Excel, version 5.0 file.  
If you want a copy of Attachment 3, please contact  
Patsy Culver on (509) 373-3002.**

# FY95 SAMPLING SCHEDULE



Weighted Points : Auger = 73.5, Rotary = 381, Push = 219, Vapor = 87.7, and Grab = 46.2

**Attachment 4 to 9453193.31**

**SAMPLING STATUS SUMMARY, Page 1 of 1,  
As of September 15, 1995**

# Characterization Program Tank Sampling Status Summary

October 1, 1994 to September 15, 1995

	<b>Tanks Scheduled/Completed</b>	<b>Samples Scheduled/Completed</b>
<b>Auger</b>	<b>22/22</b>	<b>46/44</b>
<b>Push</b>	<b>13/13</b>	<b>29/27</b>
<b>Rotary</b>	<b>1.5/1.5</b>	<b>9/9</b>
<b>Vapor</b>	<b>40/40</b>	<b>40/40</b>
<b>Grab</b>	<b>31/31</b>	<b>31/31</b>

**Notes:**

Tank samples are counted as follows: Rotary, Push, and Auger 1 sample per riser/  
average 2 risers per tank.

Grab and Vapor 1 sample per tank

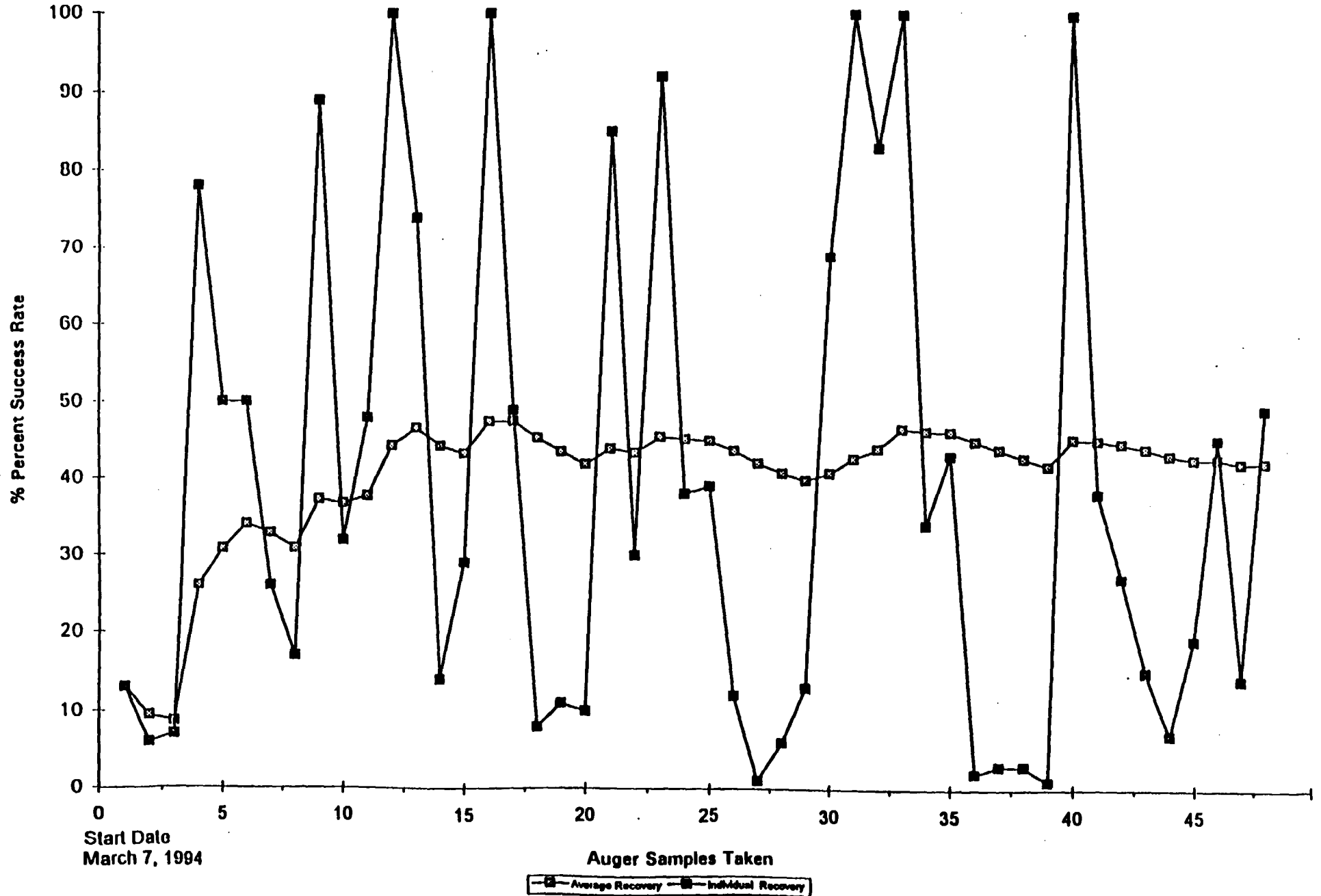
**Rev 4.4 schedule is approved. All rotary cores from BY-108 and 110 are being counted in both  
scheduled and completed columns.**

**Attachment 5 to 9453193.31**

**SAMPLE RECOVERY CHARTS, Pages 1-5,  
As of September 18, 1995**

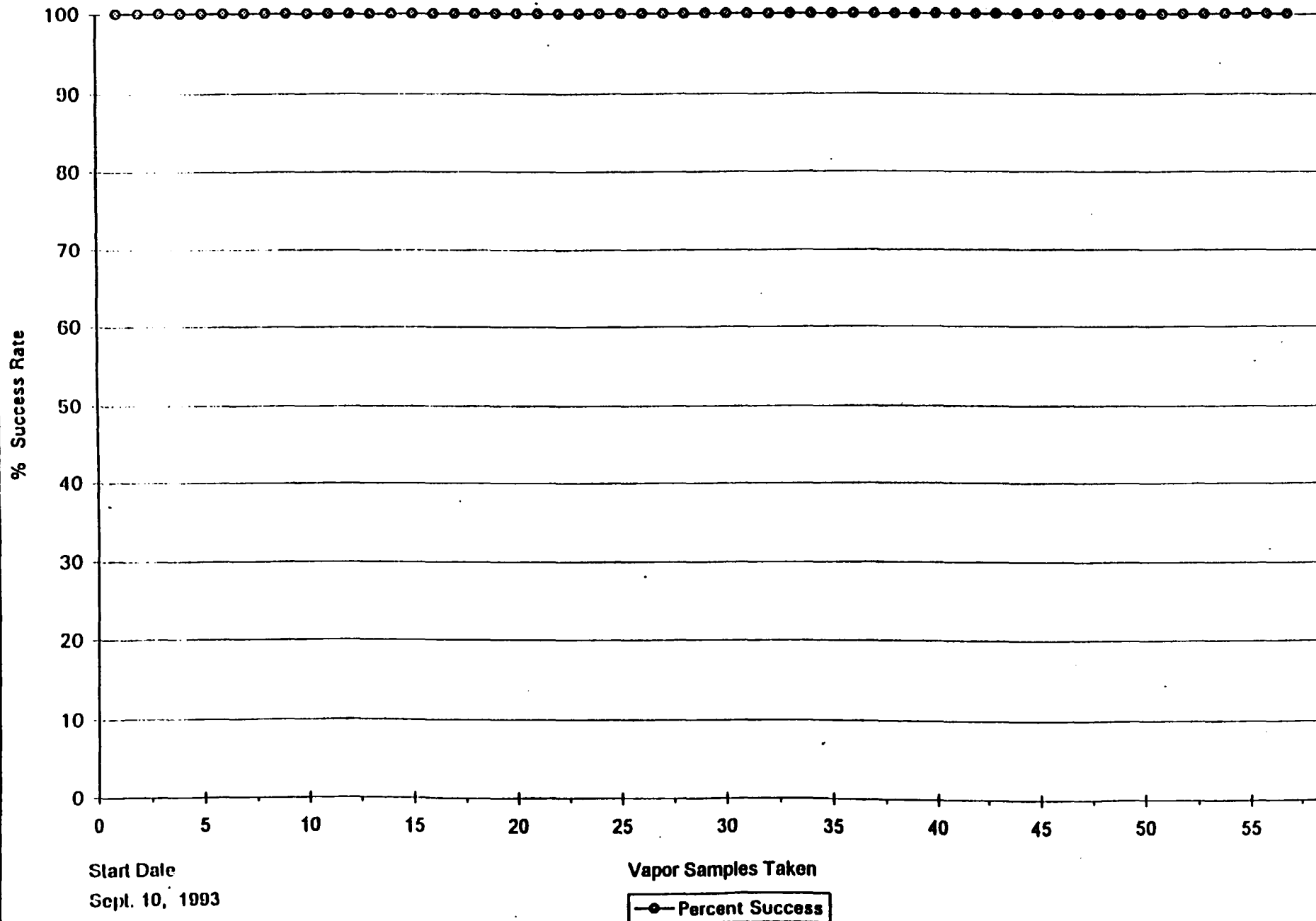
These charts are Excel, version 5.0 files.  
If you want a copy of Attachment 5, please contact  
Patsy Culver on (509) 373-3002.

# Auger Sample Recovery Percentage





# Vapor Sample Percentage Success Rate



Start Date  
Sept. 10, 1993

Vapor Samples Taken

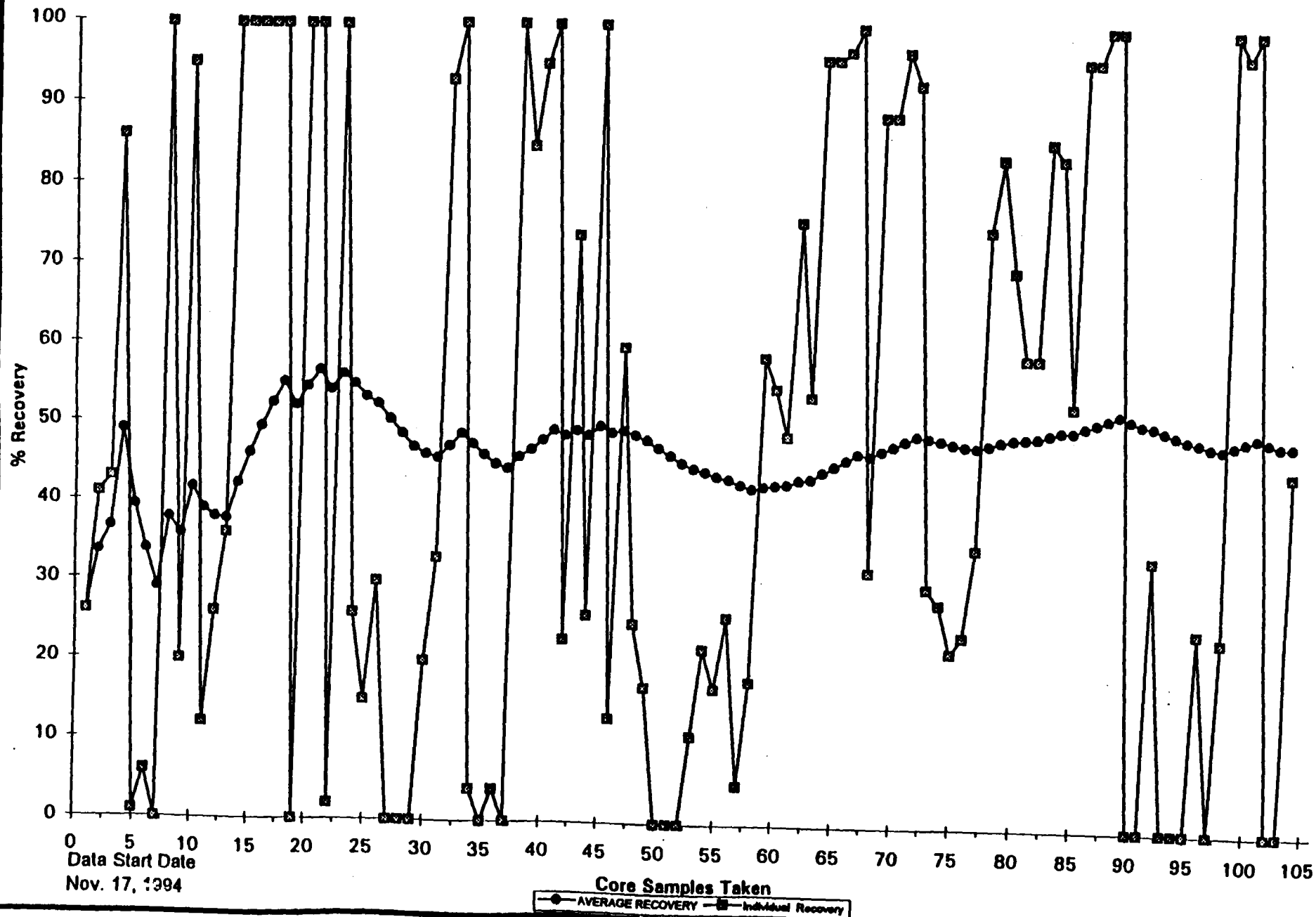
—●— Percent Success

NOTE: Although high recovery is shown for 8 of the next 10 (BY-106) sample after Segment #14, data are suspect since the samples were mostly liquid.

# RECOVERY USING TRUCKS #2 AND #4

(EXCLUDES TRUCK #2 PUSH SAMPLES IN MAR.-APR. 1995)

Restart Segment #27  
on 07/11/95



**Attachment 6 to 9453193.31**

**CHARACTERIZATION PROJECT  
PERFORMANCE INDICATORS  
AUGUST 1995  
Pages 1-12**

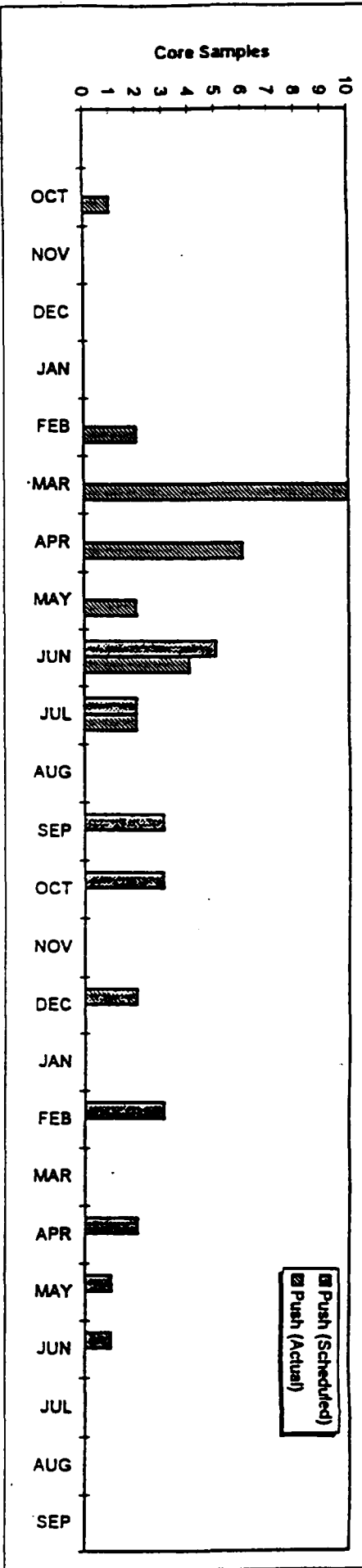
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Patsy Culver on (509) 373-3002.



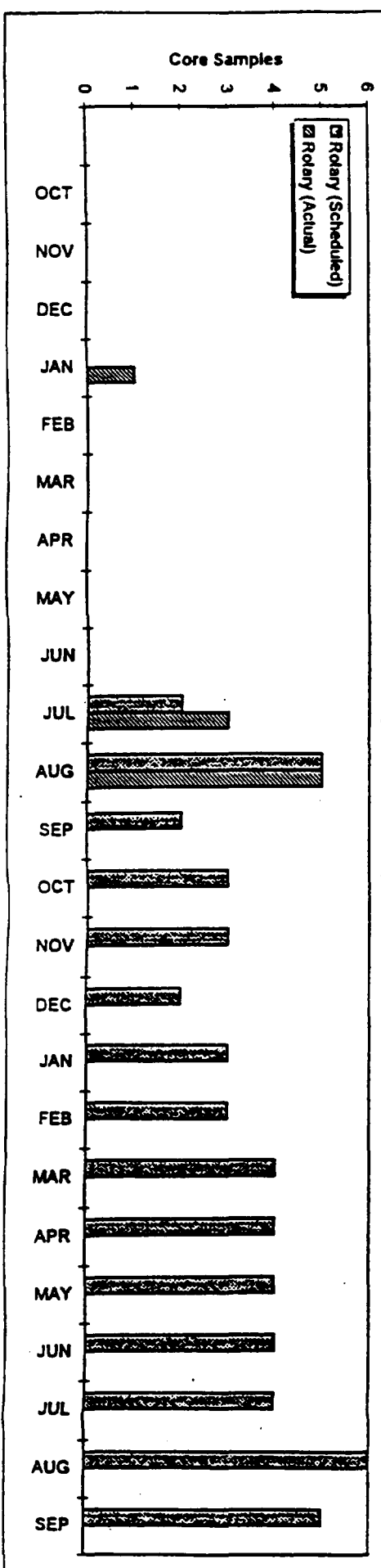
# Characterization

## Push and Rotary Sampling

Push Mode Sampling



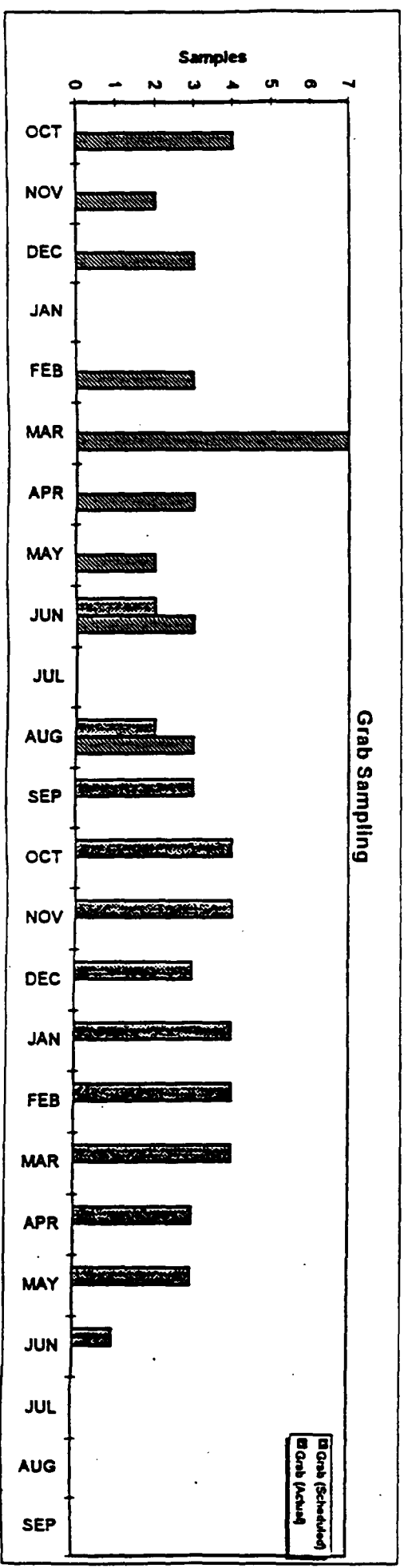
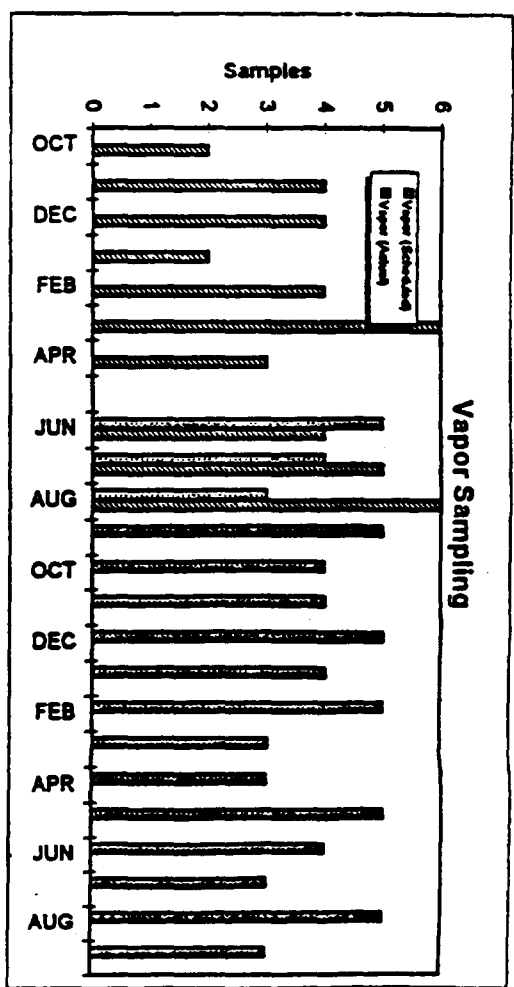
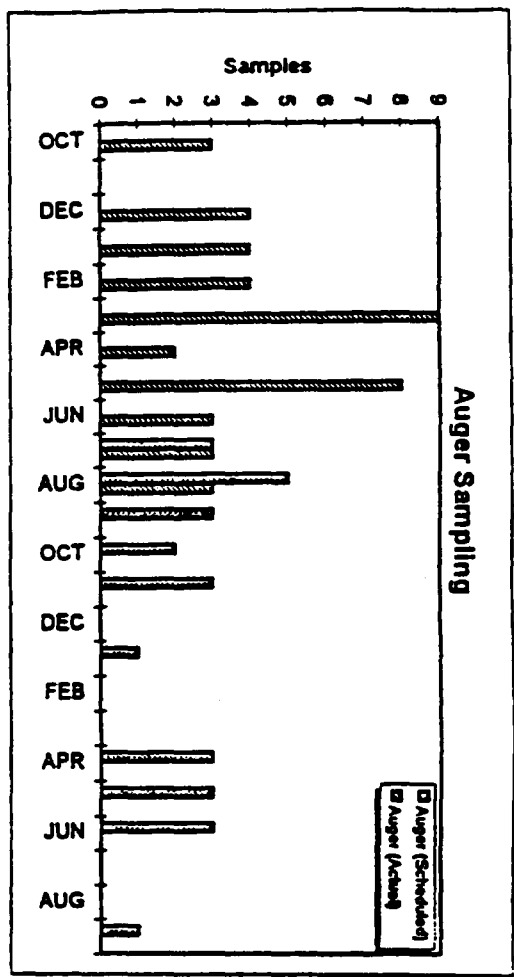
Rotary Mode Sampling





# Characterization

## Auger, Vapor, and Grab Sampling



INDICATE XLS

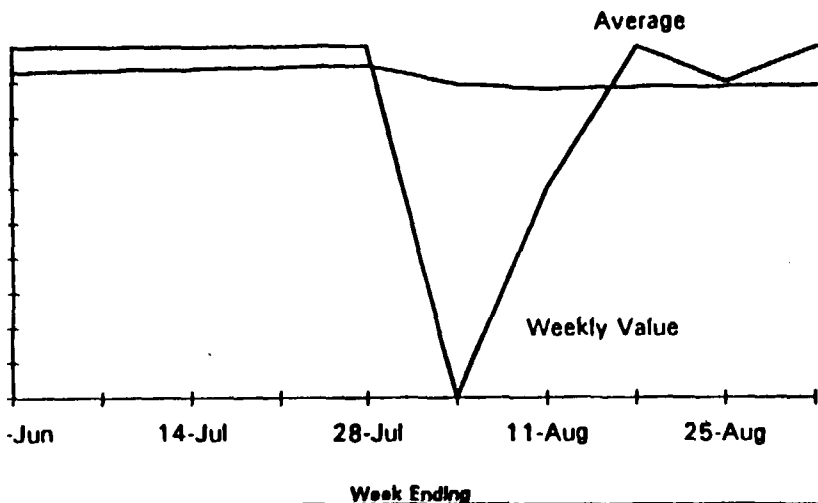
07/29/95 10:30 AM



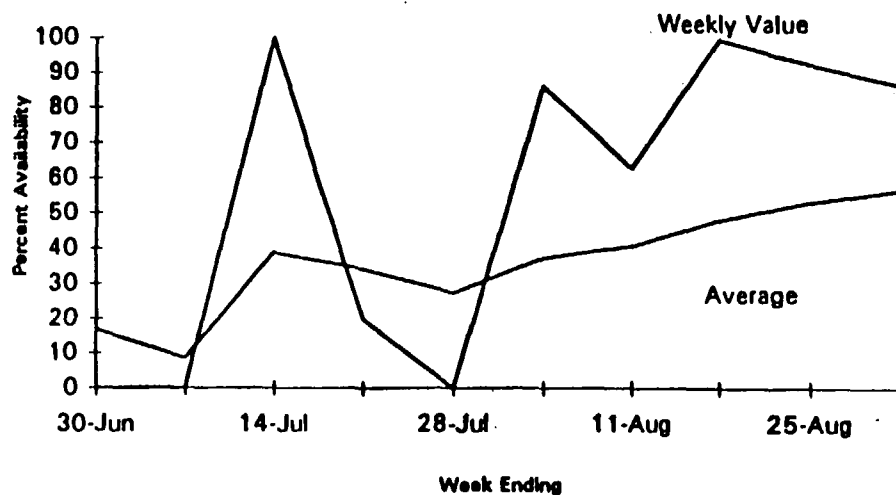
# Characterization

## ooling Equipment Availability

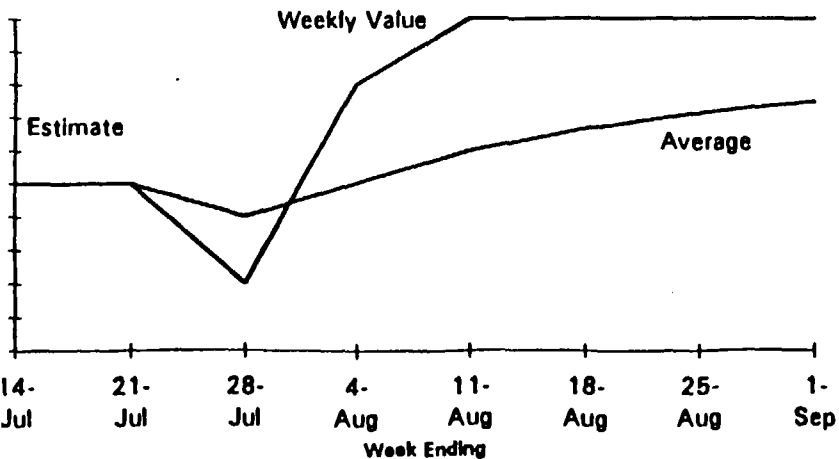
### Push Availability



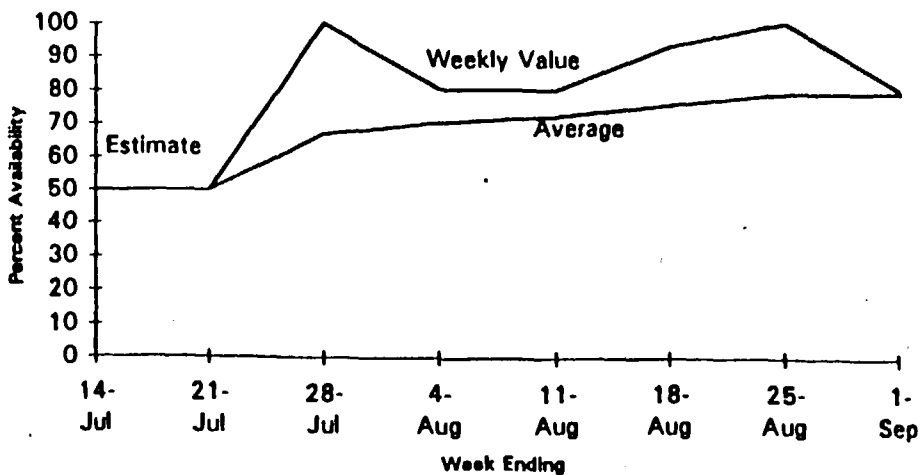
### RMCS #2 Availability



### RMCS #3 Availability



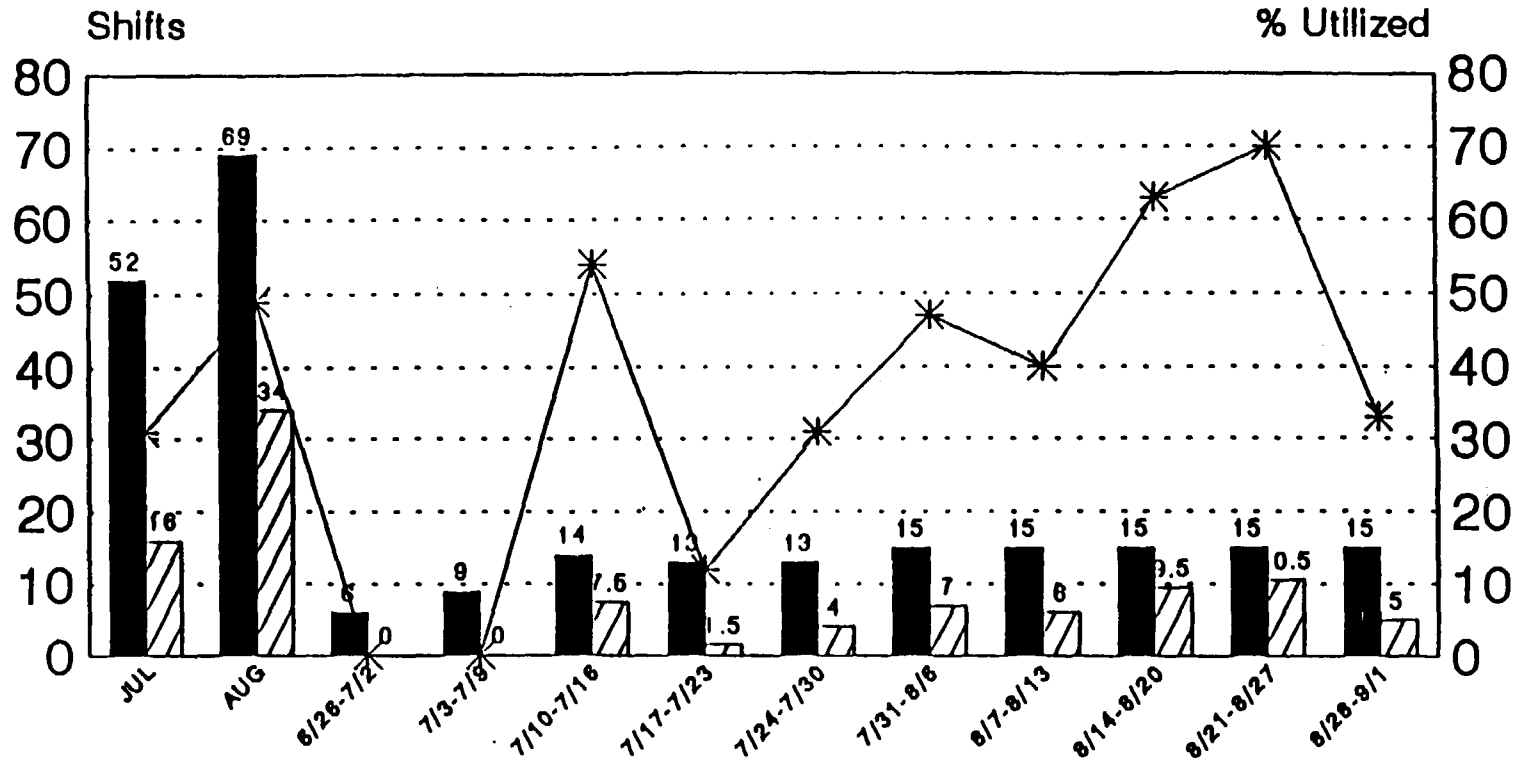
### RMCS #4 Availability





# Characterization

## ROTARY SAMPLING UTILIZATION

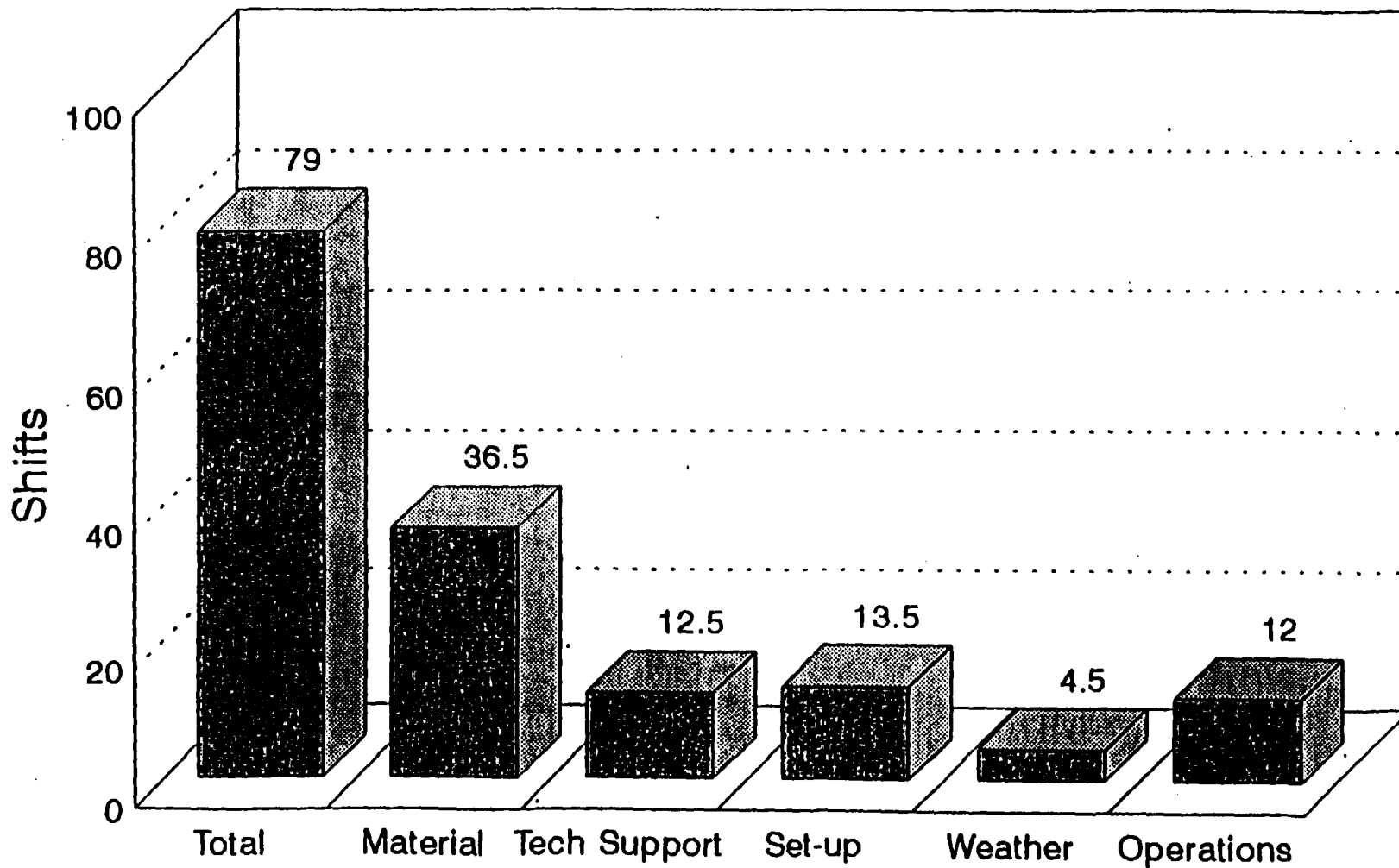


Shifts Available	■	52	69	6	9	14	13	13	15	15	15	15	15
Shifts Worked	▨	16	34	0	0	7.5	1.5	4	7	6	9.5	10.5	5
# Segments		19	43	0	0	7	3	5	9	4	14	14	6
# Cores		3.5	4.5	0	0	1	0.5	1	1.5	0.5	2	1	0.5



# Characterization

## MCS CREW UTILIZATION DELAYS



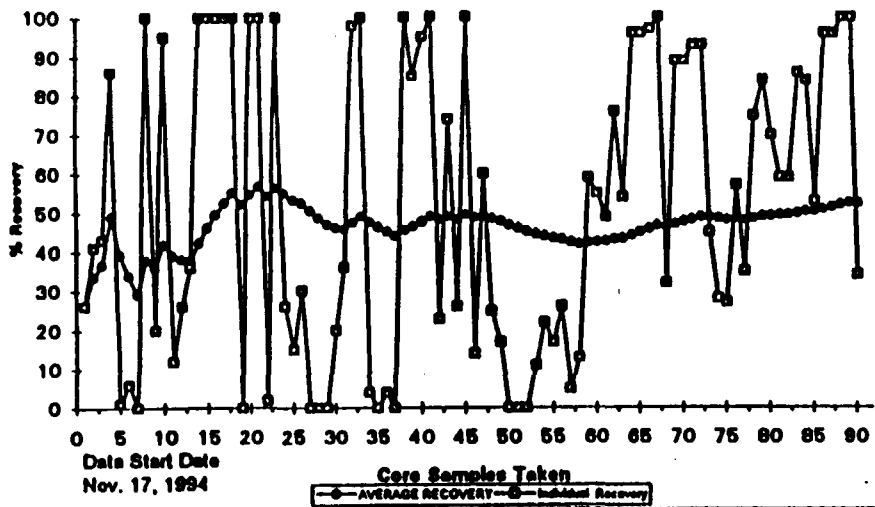
June 26\* thru September 1, 1995

\*Restart of RMCS Sampling

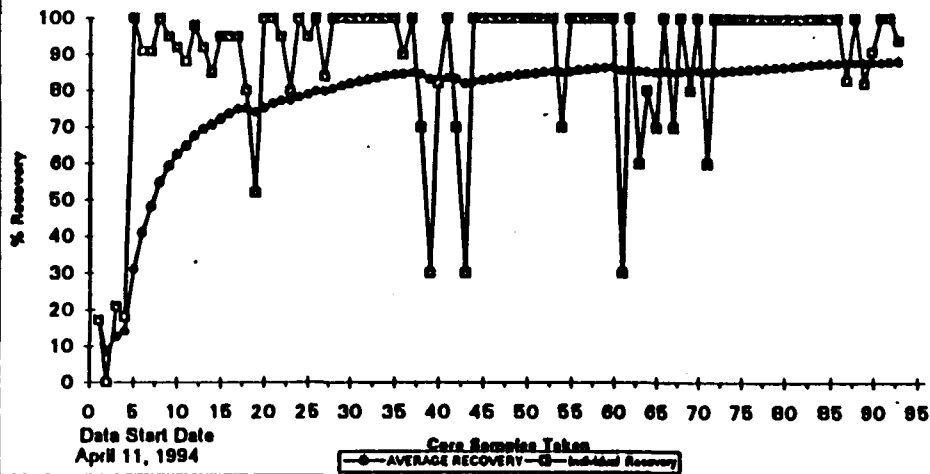


**Sample Recovery**

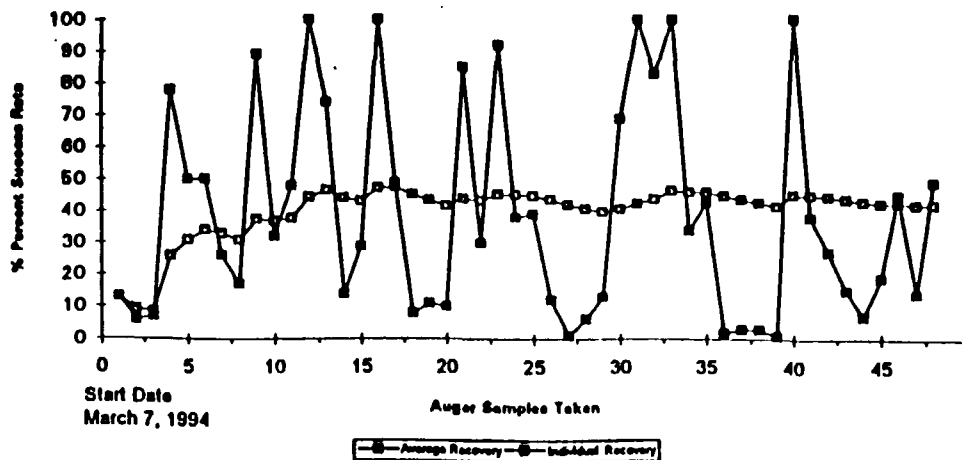
**RECOVERY USING TRUCKS #2 AND #4**



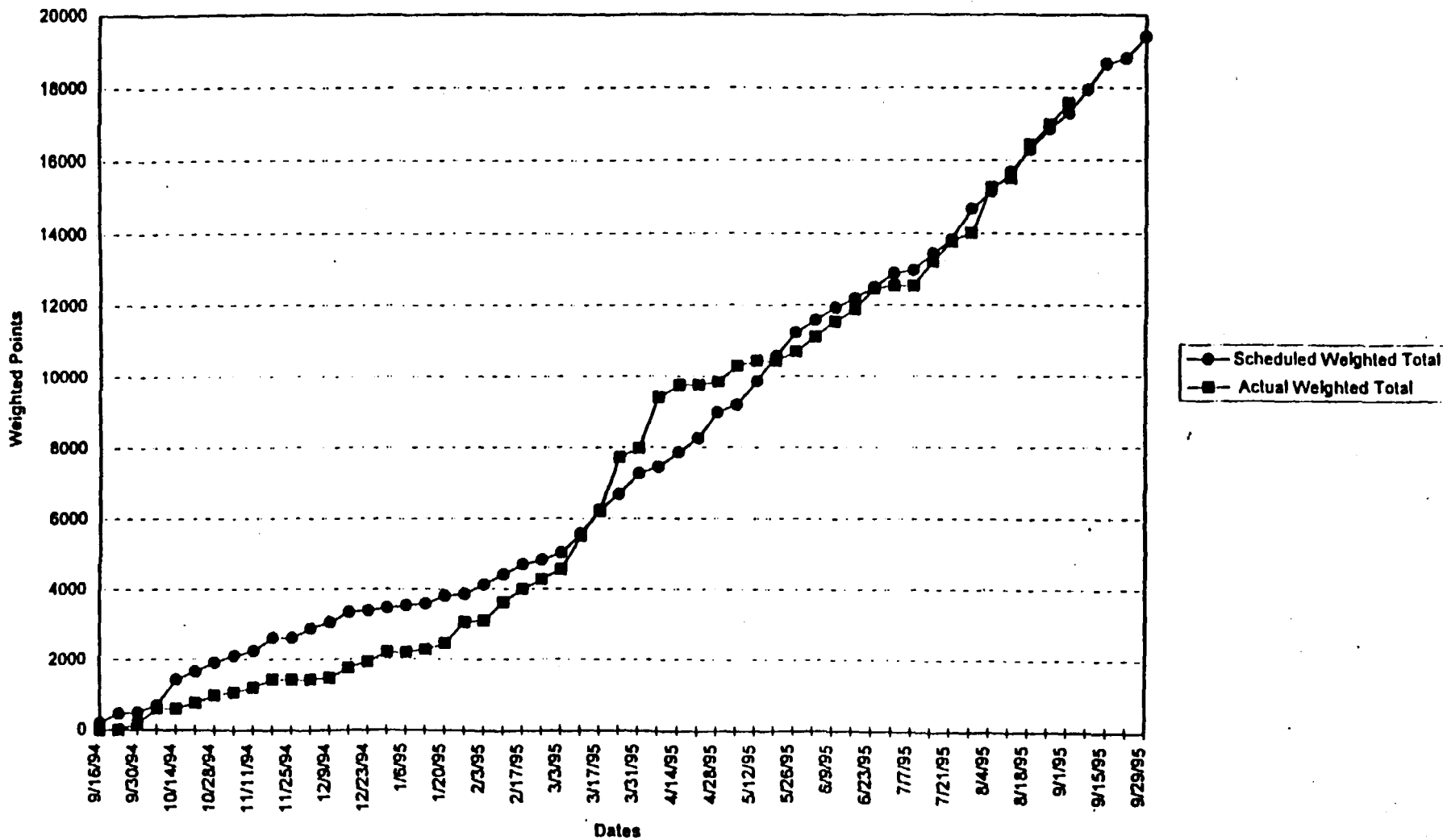
**RECOVERY USING TRUCK #1**



**Auger Sample Recovery Percentage**



## FY95 SAMPLING SCHEDULE

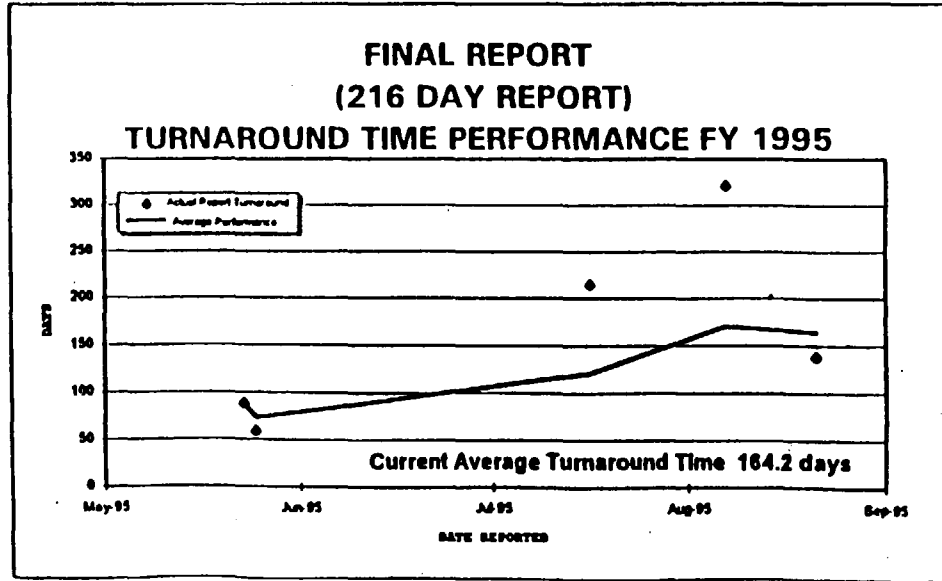
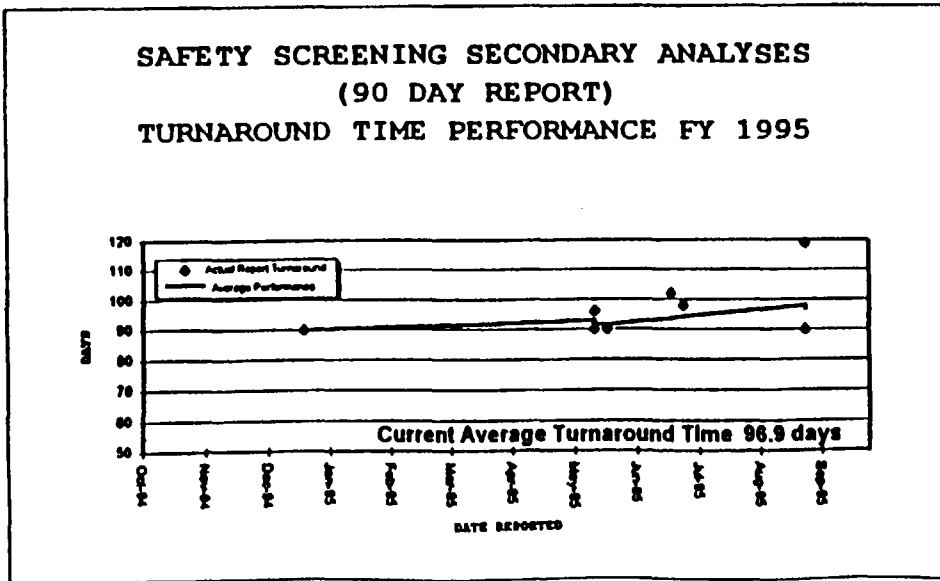
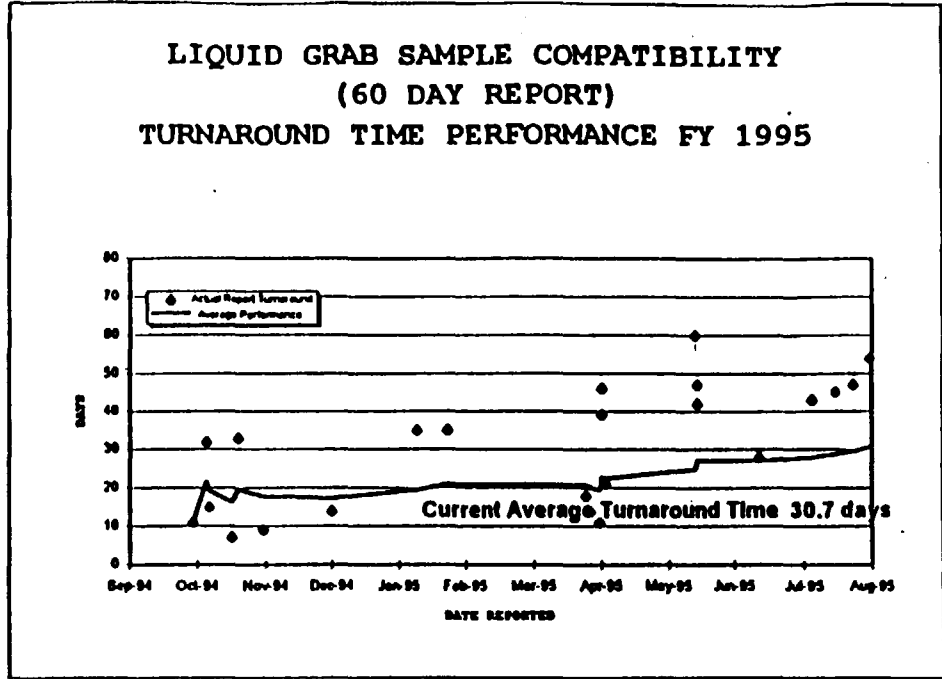
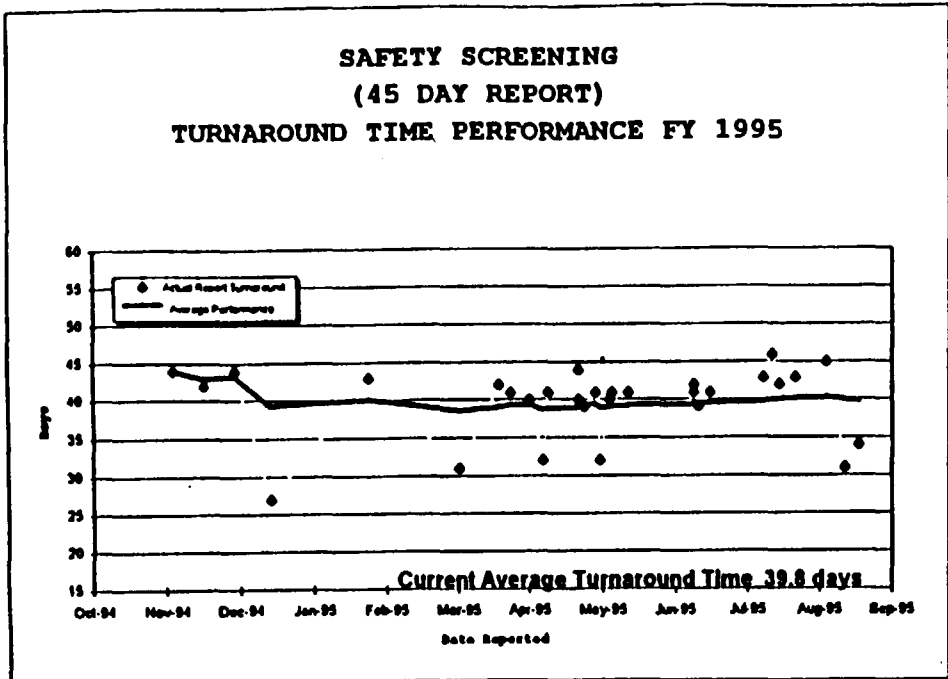


Weighted Points : Auger = 73.5, Rotary = 381, Push = 219, Vapor = 87.7, and Grab = 46.2



# Characterization

## Analysis Reporting

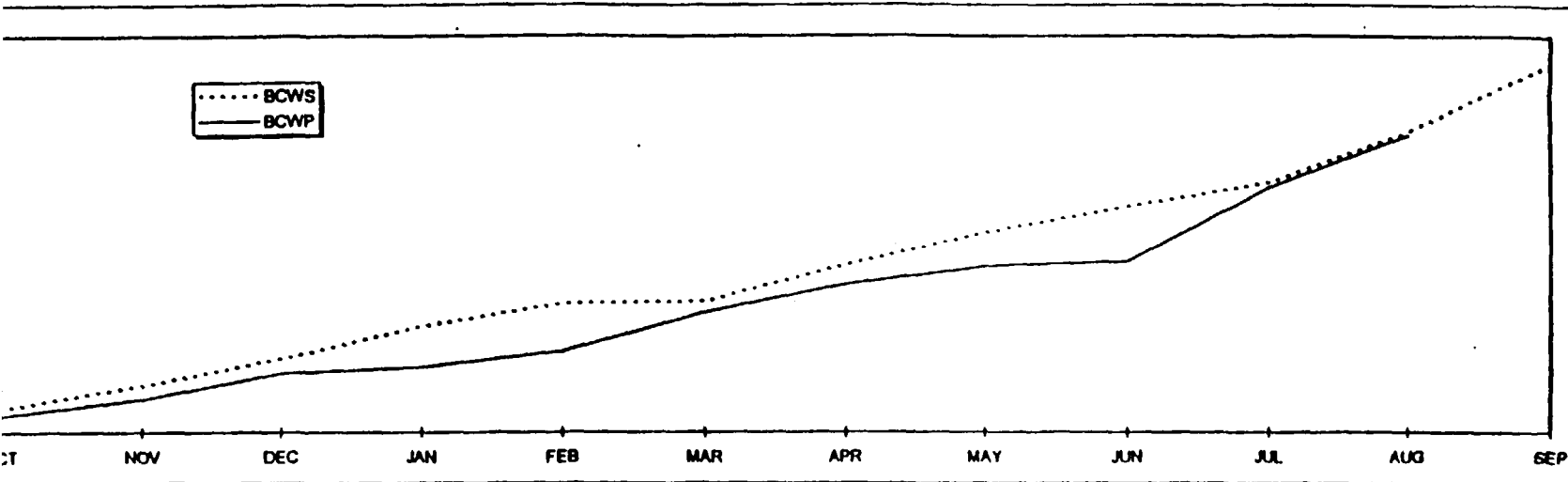




# Characterization

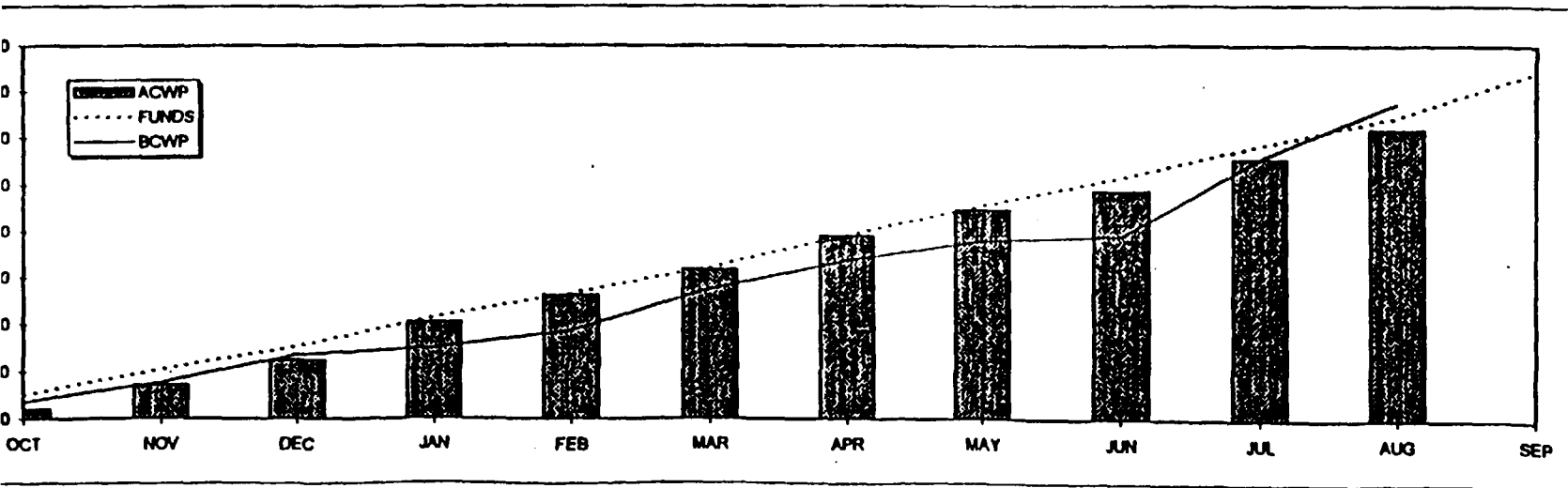
## and Schedule Performance

### Cost Variance



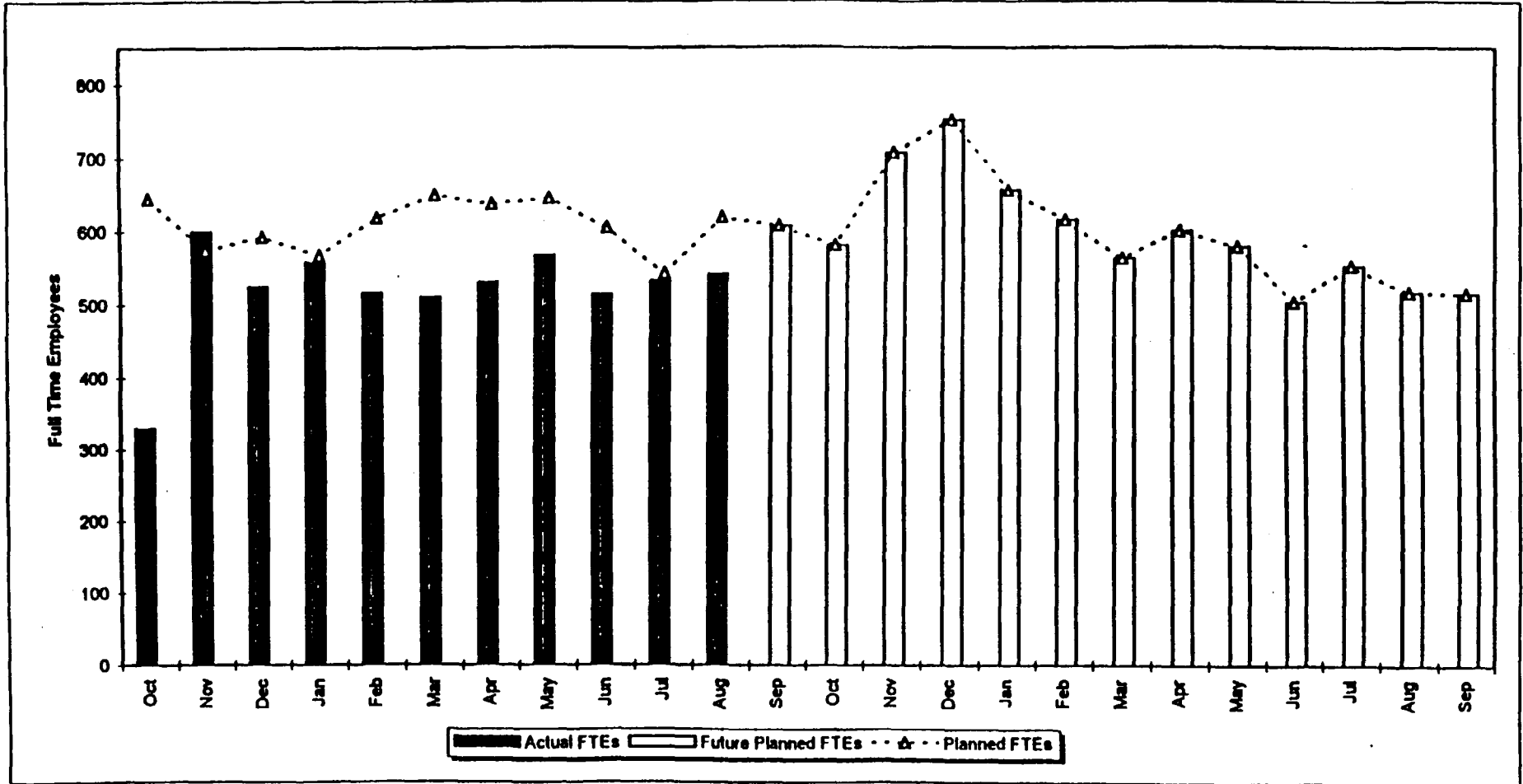
OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5.4	10.9	17	24.4	29.7	30.1	36.3	45.7	51.6	57.0	68.4	83.7
3.7	7.7	13.6	15.1	18.7	27.6	33.6	38.1	39.2	55.9	67.7	

### Cost Variance



OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5.2	10.4	15.4	21.5	28.7	32.3	39.4	45.8	51.8	58.6	64.7	74.3
2.1	7.1	12.5	20.5	26.3	32	39.2	44.9	48.9	55.7	62.1	
3.7	7.7	13.6	15.1	18.7	27.6	33.6	38.1	39.2	55.9	67.7	

## Resource Requirements



	FY 95												FY 96											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Actual FTEs	329	600	525	558	517	511	531	568	515	533	541													
Planned FTEs	645	575	592	568	618	649	638	645	605	544	618	606	580	706	750	654	614	562	599	577	502	551	514	513

- Note: 1. FTE data includes FTEs associated with laboratory work which is billed on a per unit basis.  
 2. FY 95 FTEs were normalized based on Change Request TWR-95-101.  
 3. FTEs in FY 96 for Other Contractors and PO Contracts are estimates based on FY 95 rates.

**Attachment 7 to 9453193.31**

**SITE MANAGEMENT SYSTEM  
FINANCIAL DATA  
AUGUST 1995  
Pages 1-3**

**If you want a copy of Attachment 7, please contact  
Patsy Culver on (509) 373-3002.**

SITE MANAGEMENT SYSTEM	WESTINGHOUSE HANFORD COMPANY 1.1 TANK WASTE REMEDIATION SYSTEM	AUGUST 1995
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**EXPENSE COST PERFORMANCE**  
(Dollars in Millions)

09/15/95 08:08 AM

WBS / TITLE	FY TO DATE					AT COMPLETION (FY)					COMMENTS
	BUDGET COST		ACTUAL COST	VARIANCE		BAC	EAC	FYSF	EXPT'D FUNDS FY95 ***	PROJ'D C/O SCOPE (EAC-FY95F)	
	WORK SCHED	WORK PERF	WORK PERF	SCHED	COST			*			
<b>(1130-0) CHARACTERIZATION</b>											
<b>- WESTINGHOUSE HANFORD COMPANY</b>											
1.1.2.4.1 Tech. Integration & Planning	6.3	6.3	4.5	0.0	1.8	8.8	8.1	8.1	7.7	0.0	\$2 M YEAREND COMMITMENT
1.1.2.4.2 Tech Developm't & Appl Engr	2.9	2.8	2.6	(0.1)	0.2	3.5	3.1	3.1	3.1	0.0	
1.1.2.4.3 Field Sampl'g & Measurem't	27.7	27.9	26.7	0.2	1.2	32.5	28.8	28.8	28.8	0.0	
1.1.2.4.4 Analytical Integration	15.3	14.7	14.5	(0.6)	0.2	18.6	16.0	15.8	16.0	0.2	
1.1.2.4.5 Data Eval'n & Reporting	6.7	6.7	5.9	0.0	0.8	8.6	7.6	7.6	7.6	0.0	
<b>TOTAL - W.H.C.</b>	<b>58.9</b>	<b>58.4</b>	<b>54.2</b>	<b>(0.5)</b>	<b>4.2</b>	<b>72.0</b>	<b>63.6</b>	<b>63.4</b>	<b>63.2</b>	<b>0.2</b>	
<b>- P.N.L.</b>											
1.1.2.4.1 Tech. Integration & Planning	0.5	0.5	0.3	0.0	0.2	0.5	0.4	0.4	0.4	0.0	
1.1.2.4.2 Tech Developm't & Appl Engr	0.9	0.8	0.8	(0.1)	0.0	1.0	0.8	0.8	0.8	0.0	
1.1.2.4.3 Field Sampl'g & Measurem't	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	
1.1.2.4.4 Analytical Integration	4.6	4.5	3.8	(0.1)	0.7	6.6	6.6	6.6	6.6	0.0	
1.1.2.4.5 Data Eval'n & Reporting	1.1	1.1	0.9	0.0	0.2	1.1	1.0	1.0	1.0	0.0	
1.1.2.4.6 EH Mentoring	0.2	0.2	0.2	0.0	0.0	0.3	0.3	0.3	0.3	0.0	
<b>TOTAL - P.N.L.</b>	<b>7.4</b>	<b>7.2</b>	<b>6.1</b>	<b>(0.2)</b>	<b>1.1</b>	<b>9.6</b>	<b>9.2</b>	<b>9.2</b>	<b>9.2</b>	<b>0.0</b>	
<b>- U.S.A.C.E.</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	
<b>- O.R.N.L.</b>											
1.1.2.4.4 Analytical Integration	0.4	0.4	0.4	0.0	0.0	0.4	0.4	0.4	0.4	0.0	

NOTE: Performance data (BCWS / BCWP) as reported in FDS may be adjusted to ensure the accuracy of schedule status.

\* Negotiated Directed Changes in process to remain within Funds Ceiling

\*\*\* Expected Funds is defined as total funding guidance expected at fiscal year end (includes anticipated approval of change requests, carryover, reprogramming actions, and reserve holdbacks).

**EXPENSE COST PERFORMANCE**

(Dollars in Millions)

09/15/95 08:08 AM

WBS / TITLE	FY TO DATE					AT COMPLETION (FY)					COMMENTS
	BUDGET COST		ACTUAL COST	VARIANCE		BAC	EAC	FYSF	EXPT'D FUNDS FY95 ***	PROJ'D C/O SCOPE (EAC-FYSF)	
	WORK SCHED	WORK PERF	WORK PERF	SCHED	COST						
<b><u>CHARACTERIZATION (CONT'D)</u></b>											
<b><u>-L.A.N.L.</u></b>											
1.1.2.4.2 Tech Developm't & Appl Engr	0.2	0.2	0.2	0.0	0.0	0.2	0.1	0.1	0.1	0.0	
1.1.2.4.5 Data Eval'n & Reporting	1.0	1.0	0.8	0.0	0.2	0.9	0.9	0.9	0.9	0.0	
<b>TOTAL - L.A.N.L.</b>	<b>1.2</b>	<b>1.2</b>	<b>1.0</b>	<b>0.0</b>	<b>0.2</b>	<b>1.1</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.0</b>	
<b><u>-S.N.L.</u></b>											
1.1.2.4.2 Tech Developm't & Appl Engr	0.5	0.5	0.4	0.0	0.1	0.6	0.4	0.4	0.4	0.0	
<b>TOTAL 1.1.2.4 (1130)</b>	<b>68.4</b>	<b>67.7</b>	<b>62.1</b>	<b>(0.7)</b>	<b>5.6</b>	<b>83.7</b>	<b>74.7</b>	<b>74.5</b>	<b>74.3</b>	<b>0.2</b>	

NOTE: Performance data (BCWS / BCWP) as reported in FDS may be adjusted to ensure the accuracy of schedule status.

\* Negotiated DOE Directed Changes in process to remain within Funds Ceiling

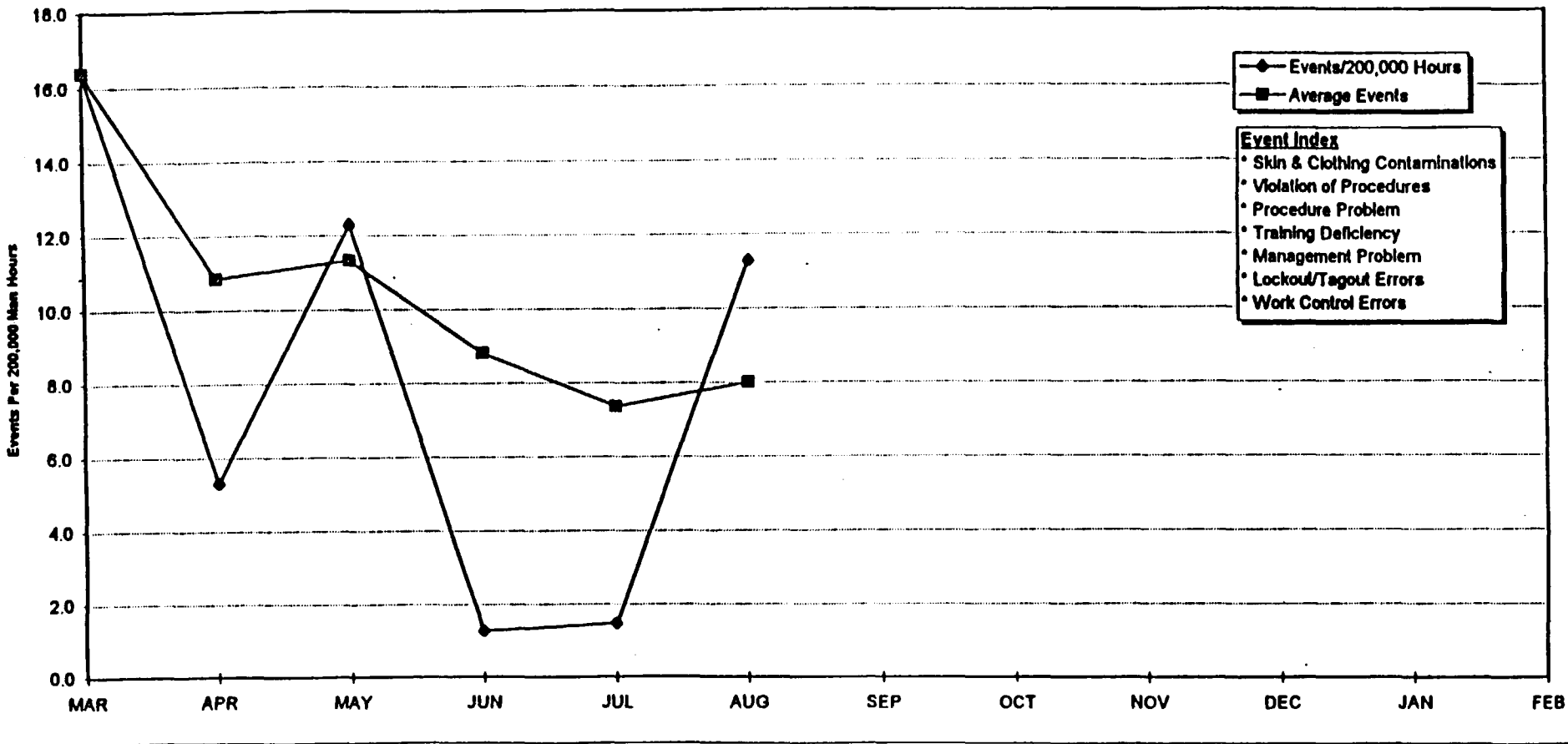
\*\*\* Expected Funds is defined as total funding guidance expected at fiscal year end (includes anticipated approval of change requests, carryover,





# Characterization

## Conduct of Operations Event Index



- Event Index**
- Skin & Clothing Contaminations
  - Violation of Procedures
  - Procedure Problem
  - Training Deficiency
  - Management Problem
  - Lockout/Tagout Errors
  - Work Control Errors

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Operations Events	4	2	2	1	0	2						
Laboratory Events	4	1	4	0	1	4						
Total Events	8	3	6	1	1	6						
Hours	97,805	113,006	97,550	157,115	135,725	106,360						
Events/200,000 Hours	16.4	5.3	12.3	1.3	1.5	11.3						
Average Events	16.4	10.9	11.3	8.8	7.3	8.0						

**CENRTC COST PERFORMANCE**

(\$ In Millions)

WBS (ADS)	PROJECT TO DATE					TOTAL B/A	PROJECT-TO-DATE			COMMENTS	
	BUDGETED COST		ACTUAL COST		VARIANCE		ACTUAL (ACWP)	COMMIT'D (P/O,W/O)	UNCOMIT'D		
	WORK SCHED	WORK PERF	WORK PERF	SCHED	COST						
<b>1.1.2.4 (1130) CHARACTERIZATION PRG.</b>											
<b>- W.H.C</b>											
Activity for Curr. Year Funded Equip.	5.9	5.8	4.7	(0.1)	1.1	6.1	4.7	1.0	0.4		
Activity for Prior Years Funded Equip.	12.4	10.8	10.8	(1.6)	0.0	12.6	10.8	0.8	1.2		
S/T	18.3	16.6	15.5	(1.7)	1.1	18.7	15.5	1.6	1.6		
<b>- P.N.L</b>											
Activity for Curr. Year Funded Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Activity for Prior Years Funded Equip.	3.1	3.3	2.8	0.2	0.5	3.7	2.8	0.8	0.1		
S/T	3.1	3.3	2.8	0.2	0.5	3.7	2.8	0.8	0.1		
<b>TOTAL 1.1.2.4</b>	21.4	19.9	18.3	(1.5)	1.6	22.4	18.3	2.4	1.7		
<b>1.1.2.5 (1210) WASTE RETRIEVAL</b>											
<b>- W.H.C</b>											
Activity for Curr. Year Funded Equip.	0.9	0.9	0.9	0.0	0.0	2.7	0.9	0.3	1.5	- Req's In process(W-	
Activity for Prior Years Funded Equip.	2.8	2.8	2.6	0.0	0.2	2.9	2.6	0.2	0.1		
S/T	3.7	3.7	3.5	0.0	0.2	5.6	3.5	0.5	1.6		
<b>- P.N.L</b>											
Activity for Curr. Year Funded Equip.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Activity for Prior Years Funded Equip.	0.2	0.2	0.2	0.0	0.0	0.3	0.2	0.0	0.1	- FIN PLAN TO BE	
S/T	0.2	0.2	0.2	0.0	0.0	0.3	0.2	0.0	0.1	REMOVED TO RETU	
<b>TOTAL 1.1.2.4</b>	3.9	3.9	3.7	0.0	0.2	5.9	3.7	0.5	1.7	UNCOMMITTED BALANCE TO WHC	

NOTE: Performance data (BCWS / BCWP) as reported in FDS may be adjusted to ensure the accuracy of schedule status.

**Characterization Project Highlight Report  
for the Period Ending  
September 30, 1995**

**Consisting of 32 Pages,  
including Coversheet**

**CHARACTERIZATION PROJECT  
BIWEEKLY REPORT FOR THE PERIOD  
ENDING SEPTEMBER 30, 1995**

**SIGNIFICANT ACCOMPLISHMENTS**

Westinghouse Hanford Company (WHC) submitted letter 9555033 to the U.S. Department of Energy, Richland Operations Office (RL), on September 20, 1995, transmitting information identified for field procedures and Conduct of Operations review. This transmittal met Defense Nuclear Facilities Safety Board (DNFSB) commitment 3.02, "Review Characterization Field Procedures/DOE Conduct of Operations."

WHC submitted letter 9555144 to RL on September 27, 1995, documenting the qualification for two additional core sample crews. This transmittal met DNFSB commitment 3.10, "Complete Qualification of Two Additional Core Sampling Crews."

A total of 42 waste tank headspace gas and vapor characterization reports (WHC letter 9552955.1), as well as a summary report, WHC-SD-WM-ER-514, Rev. 0, of all gas and vapor results to date were issued to RL on September 28, 1995. Submittal of these reports, and a previously submitted report for tank 241-C-103, completes the sampling and characterization of the vapor headspaces of 34 suspect tanks. The gas and vapor characterization reports include qualification of all pertinent data to caveat all previously identified quality assurance (QA) related concerns. This transmittal was requisite for completion of performance-based incentive milestone 95-011e (Secretarial Safety Initiative 2o, revision 5) to "sample and characterize remaining suspect tanks (Group A by June 1995 and Group B by November 1995) by October 1995," (WHC letter 9553008.1) and Hanford Federal Facility Agreement and Consent Order Tri-Party Agreement (TPA) milestones M-40-03 to "perform vapor characterization for all ferrocyanide Watch List tanks," and M-40-08 to "perform vapor characterization for all organic Watch List tanks" (WHC letter 9503553B R2).

WHC submitted letter 9555316 to RL on September 29, 1995, transmitting the Characterization Project laboratory data reports required for FY 1995. This transmittal met the following WHC milestones:

- Milestone T2D-95-122, "Transmit a 45-Day Report for All Sampling Events Based on Safety Screening Data Quality Objectives (DQOs) (i.e., samples received by the Laboratory by August 15, 1995) as Identified in the Tank-Specific Tank Characterization Plans."
- Milestone T2D-95-124, "Transmit 216-Day Data Report For All Sampling Events Based on Safety Resolution DQOs (i.e., samples received by the Laboratory by February 15, 1995) as Identified in the Tank-Specific Tank Characterization Plans."

- Milestone T2D-95-126, "Transmit 136-Day Analytical Data Packages From Each Sampling Event Within 136 Days (i.e., samples received by the Laboratory by May 15, 1995) Specific to the Compatibility DQO."
- Milestone T2D-95-127, "Transmit 172-Day Data Reports From Each Sampling Event (i.e., samples received by the Laboratory by April 15, 1995) Specific to Operation-Related DQOs."

The following six DNFSB 93-5 commitment items, previously submitted to RL, were forwarded to the DNFSB:

Commitment 1.16, "Complete Historical Tank Layering Models"  
Commitment 1.21.7, "Waste Compatibility DQO Report"  
Commitment 1.21.9, "Vapor Rotary Core DQO Final Draft Report"  
Commitment 1.21.11, "Pretreatment DQO Draft Report"  
Commitment 1.21.12, "High-Level Waste Immobilization DQO Draft Report"  
Commitment 1.21.13, "Low-Level Waste Immobilization DQO Draft Report"

#### **PROBLEMS/ISSUES**

None to report.

#### **DETAILED WORK ACTIVITIES**

##### **TECHNICAL INTEGRATION AND PLANNING (WBS 1.1.1.2.4.1)**

Fiscal year end financial processing for FY 1995 was a success. Year end expenditures were \$73,240,000 of the authorized funding level of \$74,300,000. In addition, a Productivity Challenge of 14.3% was accomplished.

Work plans for FY 1996 were initiated: Charge codes for all work were defined; External work orders for Contract Services were completed; and Purchase orders for external advisory support were implemented [Apex Environmental, Inc. for EH mentoring; Northwest Instrument Systems, Inc. for cost-loaded schedules; Technical Resources International, Inc. for technical and management support; and for representatives on the Tank Sampling Assistance Panel (TSAP)]. Contract arrangements are being finalized for Management Strategies, Inc. for technical support; Sonalysts, Inc. for Characterization Program Review; and for representatives on the Tank Characterization Advisory Panel (TCAP).

##### **TECHNICAL DEVELOPMENT AND APPLIED ENGINEERING (WBS 1.1.1.2.4.2)**

Prototype acceptance tests were performed for a cone penetrometer. The prototype has been accepted.

Mitigation turnover of a mixer pump and data acquisition and control system was completed September 29, 1995. Post-turnover items will continue to be worked.

## **FIELD SAMPLING AND MEASUREMENT (WBS 1.1.1.2.4.3)**

The core sample X-ray system was taken out of the field for service after three "error" messages occurred while the system was being warmed up. Inspection of the system revealed that the high-voltage cable was the source of the problem. Repairs to the X-ray imaging unit were completed, and the unit was returned to the field.

### **Push-mode Sampling**

#### **RMCS #1**

Push-mode core sampling was completed for a total of three cores (105, 110, and 111) from tank 241-S-107, risers 11, 16, and 2, using rotary-mode core sampling (RMCS) truck #1. The X-ray imager was not available to provide immediate sample recovery values. The following recovery rates for the first seven push mode segments of tank 241-S-107, Core 110 were: segment 1, 100%; segment 2, 78%; segment 3, 100%; segment 4, 84%; segment 5, 89%; segment 6, 89%; and segment 7, 89%.

During sampling, a shaft failure was experienced in connection with the remote latching unit (RLU) motor and relay. The relay may have caused overdriving the RLU past the design stop point, leading to shaft failure. The motor and the K3 relay located in the latching control panel were replaced and tested.

### **Rotary-mode Sampling**

#### **RMCS #2**

Rotary-mode core sampling, using RMCS truck #2 with a push bit, was completed for one core from tank 241-BY-110, riser 12B. Recovery rates from the first three segments were: segment 1, 80%; segment 2, 52%; and segment 3, 62% per the X-ray imager unit.

During sampling of segment 4, the drill string failed. Inspection with the in-tank video camera, located in an adjacent riser, revealed mechanical failure of a portion of the drill string at a threaded joint. Characterization Field Engineering and Characterization Equipment Design are in the process of preparing equipment and plans for the retrieval of the failed (bent) drill string. The selected approach to retrieve the drill string will use a device fed down the inside bore of the failed section. The principle of operation involves a set of wedges that will be expanded against the inside drill string, anchoring it against the wall, then pulled up with an attached cable. The device is a modification of a similar fabricated item recently used to successfully retrieve a thermocouple tree from a tank. The retrieval operation will be monitored live by an in-tank video camera. Contingency plans are being developed for backup methods to retrieve the drill string in the event a problem develops with the primary method.

An investigation of the structural integrity of RMCS truck #2's shielded receiver lifting frame revealed that the frame has a safety factor of approximately 1. This safety factor is less than desired; therefore, use of the truck was temporarily suspended. The truck will be released for limited use after completion of interim compensatory measures. A replacement shielded receiver frame is being designed. The new frame will be installed during the next scheduled maintenance outage.

### RMCS #3

RMCS truck #3 is located at the RMCS test site for training and new bit testing.

### RMCS #4

RMCS truck #4 is located at tank 241-BY-105, riser 12A in preparation for sampling activities. A management decision was made to impose flammable gas Watch List restrictions on this tank. All sampling activities have been halted and before any activities can resume, a new procedure and work package must be generated that includes the additional requirements imposed by the flammable gas Watch List restrictions.

### Auger Sampling

Auger sampling for the second and third cores in tank 241-SX-108 was completed. Equipment breakdown and cleanup were initiated. The next auger sampling is scheduled for tank 241-BX-110.

The flammable gas tank auger procedure, TO-080-008, was approved by the Administrative Review Team committee.

### Vapor Sampling

Vapor sampling of inactive miscellaneous underground storage tank 241-C-301 using the Vapor Sampling System was completed on September 29, 1995.

A field walkdown of tank 241-TX-111 has been conducted. Work packages have been started for vapor sampling of tanks 241-A-103, BX-107, and BY-102.

The Flammable Gas Program Manager approved fabrication of three new heated vapor probes to replace the three "donated" probes that were installed in BY-Farm. In addition, 14 offset adapters will be ordered from the shop to support FY 1996 riser preparation.

### Grab Sampling

Grab sampling was completed for tank 241-AY-102, fulfilling the fiscal year 1995 scheduled commitment for obtaining a total of 32 grab samples. Total number of samples pulled to date is 133.



**ANALYTICAL INTEGRATION (WBS 1.1.1.2.4.4)**

Forty-two waste tank headspace gas and vapor characterization reports will be forwarded by RL to the Washington State Department of Ecology and the U.S. Environmental Protection Agency (EPA) to meet the Tri-Party Agreement M-40-08 milestone. Quality assurance concerns were primarily a result of the past developmental nature of the vapor analytical program as well as concerns from more recent QA assessment items. Quality assurance assessments were recently conducted at the two laboratories that supported the vapor program this past year (Oak Ridge National Laboratory [ORNL] and Pacific Northwest Laboratory [PNL]). All previously identified QA issues were successfully closed (although five new items were identified at PNL relating to recent technology transfer workscope from ORNL). Additional actions are being implemented to improve the overall quality of the program, including establishment of a vapor program technical basis to support revision of the existing generic vapor DQO, revision of the vapor project QA plan, and implementation of Hanford Analytical Services Quality Assurance Plan protocol in supporting laboratories.

222-S Laboratory

The following samples were extruded at the Laboratory:

<u>Date</u>	<u>Tank #</u>	<u>Type</u>	<u>Core</u>	<u>Riser #</u>	<u>Sample #</u>	<u>Qty Recovered Solid/Liquid</u>
9-18-95	241-BY-110	Rotary	109/1R	12B	95-205R	97.9g/--
9-18-95	241-BY-110	Rotary	109/1AR	12B	95-205AR	*
9-18-95	241-BY-110	Rotary	109/2	12B	95-206	*
9-19-95	241-BY-110	Rotary	109/2A	12B	95-206A	*
9-19-95	241-BY-110	Rotary	109/3	12B	95-207	56.6g/37.8g
9-20-95	241-BY-110	Rotary	109/4	12B	95-208	*
9-20-95	241-SX-108	Auger		16	95-AUG-042	81.3g/--
9-20-95	241-S-107	Push	105/1	11	95-171	--/62.1g
9-20-95	241-S-107	Push	105/2	11	95-172	147.8g/145.3g
9-20-95	241-BY-105	Rotary	108/2	12A	95-198	18.5g/--
9-21-95	241-BY-105	Rotary	108/3	12A	95-199	43.0g/--
9-22-95	241-S-107	Push	105/3	11	95-173	357.6g/--
9-22-95	241-S-107	Push	105/4	11	95-174	476.3g/--
9-22-95	241-S-107	Push	105/5	11	95-175	455.4g/--
9-22-95	241-S-107	Push	105/6	11	95-176	483.3g/--
9-22-95	241-S-107	Push	105/7	11	95-177	541.7g/--
9-22-95	241-S-107	Push	105/8	11	95-178	361.5g/--
9-25-95	241-S-107	Push	110/1	16	95-209	--/77.7g
9-25-95	241-S-107	Push	110/2	16	95-210	210.0g/103.6g
9-25-95	241-S-107	Push	110/3	16	95-211	425.9g/--
9-25-95	241-SX-108	Auger		16	95-AUG-043	144.1g/--
9-26-95	241-S-107	Push	110	16	Field Blank	--/--
9-26-95	241-S-107	Push	110/3A	16	95-211A	345.0g/--
9-26-95	241-S-107	Push	110/4	16	95-212	435.3g/--
9-26-95	241-S-107	Push	110/5	16	95-213	478.0g/--
9-26-95	241-S-107	Push	110/6	16	95-214	483.5g/--
9-26-95	241-S-107	Push	110/7	16	95-215	542.5g/--

<u>Date</u>	<u>Tank #</u>	<u>Type</u>	<u>Core</u>	<u>Riser #</u>	<u>Sample #</u>	<u>Qty Recovered Solid/Liquid</u>
9-28-95	241-S-107	Push	110/8	16	95-216	449.5g/--
9-28-95	241-SX-108	Auger		17	95-AUG-044	*
9-28-95	241-BY-110	Rotary	96/1	12B	95-121	76.0g/--
9-28-95	241-BY-110	Rotary	96/2	12B	95-122	193.4g/--
9-29-95	241-BY-110	Rotary	96/3	12B	95-123	208.6g/--
9-29-95	241-S-107	Push	111/1	2	95-217	--/218.1g
9-29-95	241-S-107	Push	111/2	2	95-218	262.2g/79.9g
9-29-95	241-S-107	Push	111/3	2	95-219	339.1g/--
9-29-95	241-S-107	Push	111/4	2	95-220	421.0g/--
9-29-95	241-S-107	Push	111/5	2	95-221	481.2g/--
9-29-95	241-S-107	Push	111/6	2	95-222	474.0g/--

\*No sample observed or collected.

Laboratory Reports completed:

<u>Tank #</u>	<u>Report (Days)</u>	<u>Scheduled Due Date</u>	<u>Completion Date</u>	<u>Performance</u>
241-T-106	45	09/25/95	09/20/95	+5 days ahead
241-B-101	90	09/24/95	09/26/95	-2 days behind
241-T-109	45	10/06/95	09/29/95	+7 days ahead
241-C-103	Final	09/13/95	09/29/95	-16 days behind

WHC-SD-WM-DP-143, Rev. 0, 45-Day Safety Screen Results for Tank 241-T-106, Auger Samples 95-AUG-038 and 95-AUG-039.

WHC-SD-WM-DP-139, Rev. 0-A, 90-Day Safety Screening Results for Tank 241-B-101, Push Mode Cores 90 and 91.

WHC-SD-WM-DP-144, 45-Day Safety Screen Results for Tank 241-T-109, Auger Samples 95-AUG-040 and 95-AUG-041.

WHC-SD-WM-DP-099, Rev. 1, Final Report for Tank 241-C-103, Push Mode Sample, Cores 63 and 66.

#### DATA EVALUATION AND REPORTING (WBS 1.1.1.2.4.5)

The DQO process was initiated for the tank disposal privatization effort. The process will document the data requirements to support the first phase of privatization of waste disposal.

A preliminary version of a sampling system bias document was provided for internal review. This document addresses sources of bias and variability within the sampling and analysis process. It includes recommendations for future testing and evaluation of bias.

The final copies of the Southeast Quadrant Historical Tank Content Estimate (HTCE) Reports for 6 double-shell tank farms (AN, AP, AW, AY, AZ and SY) were transmitted by ICF Kaiser Company to WHC. This transmittal completes the first phase of the historical tank characterization effort.

WHC-SD-WM-TSAP-040, Rev. 0, *Tank 241-BY-104, Rotary Core Sampling and Analysis Plan*, was submitted to Configuration Documentation on September 14, 1995. This sampling and analysis plan (SAP) identifies characterization objectives pertaining to sample collection, laboratory analytical evaluation, and reporting requirements for sampling tank 241-BY-104. Vapor samples and two rotary-mode core samples will be taken to address program issues: safety screening DQOs, ferrocyanide DQOs, organic DQOs, organic test plan, historical model, and Pretreatment Program requirements.

A draft Systems Engineering Implementation Plan for Characterization was developed and is in approval routing.

A definition of the "minimum acceptable tank characterization report" was negotiated and a letter was transmitted from RL to WHC to document this action. The minimum is defined as a report that "contains sufficient information to fully satisfy the decision makers' information needs based on the current tank safety screening DQO."

Los Alamos Technical Associates delivered the first draft of the tank 241-C-108 tank characterization report (TCR) to WHC on September 18, 1995. Copies of the draft were distributed for simultaneous peer and functional review. Issuance of this TCR will support a Ferrocyanide Program milestone.

A review of the priority tanks was requested based on the determination that many priority tanks cannot be rotary sampled until flammable gas issues are resolved. A list of priority tanks that have a high probability of success through push mode sampling was provided. A prioritized list of additional tanks that can be rotary mode sampled (no flammable gas concerns) was also provided.

A draft work plan for development of the official tank contents inventory was submitted for review.

Technical Baseline Integration staff met with Tank Waste Safety Program staff to review roles and responsibilities in the upcoming year for DQO development. The discussion included the required teaming between Characterization and Process Engineering.

Technical Baseline Integration staff and other Characterization staff are meeting with Los Alamos National Laboratory to review the historical data development task. The review will cover all recent data results.

The Core Sampling Information Summary table was updated to include all core sample information from June 1987 through August 1995.

The DQO procedure, WHC-IP-1216, for the development and release of DQO documents, was released. This procedure is based on EPA guidance for developing DQOs, and provides specific instructions for Tank Waste Remediation System use.

The report, *Historical Tank Content Estimate and Sampling Estimate Comparisons*, was provided to WHC by PNL on September 29, 1995. This report provides initial results of the comparison of predicted waste content with observed sample results. A continuation of this work, combined with other methods of evaluating model prediction quality, will lead to the determination of the confidence that may be placed in the historic model predictions.

The following tank characterization plans (TCPs), tank characterization reports (TCRs), and sampling and analysis plans (SAPs), first issue or recent revision, were released during this reporting period:

Tank	Document	Document Number, Revision	Date Transmitted
241-BY-104	<i>Tank 241-BY-104 Rotary Core Sampling and Analysis Plan</i>	WHC-SD-WM-TSAP-040, Revision 0	9/14/95
241-SX-108	<i>Tank 241-SX-108 Auger Sampling and Analysis Plan</i>	WHC-SD-WM-TSAP-007, Revision 0	9/15/95
N/A	<i>Compatibility Grab Sampling and Analysis Plan</i>	WHC-SD-WM-TSAP-037, Revision 1-A	9/18/95
241-AX-102	<i>Tank Characterization Report for Single-Shell Tank 241-AX-102</i>	WHC-SD-WM-ER-472, Revision 0-B	9/20/95
241-B-103	<i>Tank Characterization Report for Single-Shell Tank 241-B-103</i>	WHC-SD-WM-ER-488, Revision 0-A	9/20/95
241-B-112	<i>Tank Characterization Report for Single-Shell Tank 241-B-112</i>	WHC-SD-WM-ER-466, Revision 0-B	9/20/95
241-BX-101	<i>Tank Characterization Report for Single-Shell Tank 241-BX-101</i>	WHC-SD-WM-ER-408, Revision 0-B	9/20/95
241-BX-105	<i>Tank Characterization Report for Single-Shell Tank 241-BX-105</i>	WHC-SD-WM-ER-406, Revision 0-B	9/20/95
241-BX-108	<i>Tank Characterization Report for Single-Shell Tank 241-BX-108</i>	WHC-SD-WM-ER-407, Revision 0-B	9/20/95
241-C-101	<i>Tank Characterization Report for Single-Shell Tank 241-C-101</i>	WHC-SD-WM-ER-473, Revision 0-B	9/20/95
241-C-105	<i>Tank Characterization Report for Single-Shell Tank 241-C-105</i>	WHC-SD-WM-ER-489, Revision 0-B	9/20/95

Tank	Document	Document Number, Revision	Date Transmitted
241-C-107	<i>Tank Characterization Report for Single-Shell Tank 241-C-107</i>	WHC-SD-WM-ER-474, Revision 0-B	9/20/95
241-C-111	<i>Tank Characterization Report for Single-Shell Tank 241-C-111</i>	WHC-SD-WM-ER-475, Revision 0-B	9/20/95
241-C-201	<i>Tank Characterization Report for Single-Shell Tank 241-C-201</i>	WHC-SD-WM-ER-476, Revision 0-B	9/20/95
241-C-202	<i>Tank Characterization Report for Single-Shell Tank 241-C-202</i>	WHC-SD-WM-ER-477, Revision 0-B	9/20/95
241-C-203	<i>Tank Characterization Report for Single-Shell Tank 241-C-203</i>	WHC-SD-WM-ER-478, Revision 0-B	9/20/95
241-SX-113	<i>Tank Characterization Report for Single-Shell Tank 241-SX-113</i>	WHC-SD-WM-ER-480, Revision 0-B	9/20/95
241-TY-104	<i>Tank Characterization Report for Single-Shell Tank 241-TY-104</i>	WHC-SD-WM-ER-481, Revision 0-A	9/20/95
241-TY-106	<i>Tank Characterization Report for Single-Shell Tank 241-TY-106</i>	WHC-SD-WM-ER-482, Revision 0-B	9/20/95
241-U-201	<i>Tank Characterization Report for Single-Shell Tank 241-U-201</i>	WHC-SD-WM-ER-483, Revision 0-B	9/20/95
241-U-202	<i>Tank Characterization Report for Single-Shell Tank 241-U-202</i>	WHC-SD-WM-ER-484, Revision 0-B	9/20/95
241-U-203	<i>Tank Characterization Report for Single-Shell Tank 241-U-203</i>	WHC-SD-WM-ER-485, Revision 0-B	9/20/95
241-U-204	<i>Tank Characterization Report for Single-Shell Tank 241-U-204</i>	WHC-SD-WM-ER-486, Revision 0-B	9/20/95

**Attachment 2 to 9453193.32**

**DNFSB 93-5 COMMITMENTS STATUS, Pages 1-3  
As of October 3, 1995**

**Please contact Larry Pennington on (509) 376-1863,  
if you have any questions.**

## DNFSB 93-5 COMMITMENTS STATUS

As of October 3, 1995

<u>Number</u>	<u>Description</u>	<u>Due Date</u>	<u>Submitted to DOE-RL</u>	<u>Submitted to DNFSB</u>
1.01	Enhance WHC Characterization Program Management Staff	2/28/94	2/28/94	6/27/94
1.02	Reduce Management Layers in WHC TWRS	3/31/94	3/24/94	6/30/94
1.03	Improve RL Oversight	5/31/94	5/31/94	5/31/94
1.04	Plan to Improve Char. Prog. Tech. Staff Competencies	4/30/94	4/29/94	4/29/94
1.05	Implement Plan to Improve Tech Staff Competencies	5/31/95		
1.06	Define Resp of Key Characterization Managers	3/31/94	3/31/94	7/12/94
1.07	Streamline DQO Process	1/31/94	12/31/93	5/26/94
1.08	Issue TWRS Characterization Quality Assurance Plan	2/28/94	2/28/94	5/26/94
1.09	Plan for Blind Samples	5/31/94	5/24/94	6/1/94
1.10.41	Issue Quarterly Progress Reports	4/30/94	5/3/94	5/3/94
1.10.42	Issue Quarterly Progress Reports	7/30/94	7/25/94	7/25/94
1.10.43	Issue Quarterly Progress Reports	10/30/94	10/20/94	10/20/94
1.10.44	Issue Quarterly Progress Reports	1/31/95	1/20/95	1/20/95
1.10.51	Issue Quarterly Progress Reports	4/30/95	4/21/95	5/10/95
1.10.52	Issue Quarterly Progress Reports	7/31/95	7/25/95	8/8/95
1.10.53	Issue Quarterly Progress Reports	10/20/95		
1.10.54	Issue Quarterly Progress Reports	1/19/96		
1.10.61	Issue Quarterly Progress Reports	4/19/96		
1.10.62	Issue Quarterly Progress Reports	7/19/96		
1.10.63	Issue Quarterly Progress Reports	10/18/96		
1.11	Field Schedule for Sampling All Activities FY95 & 96	6/30/94	9/30/94	
1.12	Management Staff Complete System Eng Training	5/31/94	2/15/94	5/25/94
1.13	Charact. Functions/Requirements in Functional Analysis	1/31/94	4/28/94	6/1/94
1.14	Charact. Part of Initial Systems Eng Analysis Results	6/30/94	6/30/94	6/30/94
1.15	Integrate Vapor Sample Prog into Charact. Program	10/31/94	11/3/94	12/3/94
1.16	Complete Historical Tank Layering Models	9/30/94	5/18/95	9/18/95
1.17	Historical Tank Content Est Reports NE/SW	6/30/94	6/29/94	6/30/94
1.18	Historical Tank Content Est Reports NW/SE	3/31/95	7/30/95	8/24/95
1.19	Develop Statistical Tools for Samples Needed	12/30/94	12/29/94	8/8/95
1.20	TWRS Risk Acceptance Criteria	8/31/94	5/19/95	
1.21.01	Ferrocyanide Safety Issue DQO	12/15/93	5/1/95	9/12/95
1.21.02	C-103 Vapor DQO Draft Report	1/31/94	3/25/94	9/12/95
1.21.03	C-103 Dip Sample DQO	12/16/94	3/25/94	9/12/95
1.21.04	C-106 High Heat DQO Final Report	12/20/94	1/19/94	9/12/95
1.21.05	Organic Safety Issue DQO Report (PNL)	1/31/94	5/1/95	9/12/95
1.21.06	Safety Screening Module DQO	1/31/94	5/1/95	9/12/95
1.21.07	Waste Compatibility DQO Report	2/28/94	5/1/95	9/18/95
1.21.08	In-tank Generic Vapor DQO Final	3/3/94	5/1/95	
1.21.09	Vapor Rotary Core DQO Final Draft Report	1/20/94	3/25/94	9/18/95
1.21.10	Hydrogen Generating DQO Final Report	4/29/94	5/1/95	9/12/95

## DNFSB 93-5 COMMITMENTS STATUS

As of October 3, 1995

<u>Number</u>	<u>Description</u>	<u>Due Date</u>	<u>Submitted to DOE-RL</u>	<u>Submitted to DNFSB</u>
1.21.11	Pretreatment DQO Draft Report	8/22/94	6/29/95	9/18/95
1.21.12	HLW Immobilization DQO Draft Report	9/6/94	6/29/95	9/18/95
1.21.13	LLW Immobilization DQO Draft Report	9/21/94	6/29/95	9/18/95
1.22	Update FY94 Field Sched to Incorp New Tech. Approach	2/28/94	2/8/94	6/27/94
1.23	Identify 'Bounding Tanks' for Disposal	11/30/94	6/29/95	
2.01	DQOs for all Six Safety Issues	4/29/94	5/1/95	9/12/95
2.02	Safety Screening Module DQO Report	1/31/94	5/1/95	9/12/95
2.03	Complete Sampling & Analysis of All Watch List Tanks	10/31/95		
3.01	Initiate Const. of 2nd & 3rd Rotary Core Sample Trucks	11/30/93	11/1/93	11/15/93
3.02	Review Char. Field Proc's/DOE Conduct of Ops	1/31/94	9/20/95	
3.03	Complete Qualif. of 1st Push Mode Crew	2/28/94	1/26/94	6/30/94
3.04	Redeploy Push Mode Core Sampling	3/31/94	3/30/94	6/30/94
3.05	Complete Training & Quals for Sampling Cog Eng's	2/28/94	2/24/94	8/11/94
3.06	Restore Rotary Mode Sampling (TPA)	3/31/94	10/26/94	11/2/94
3.07	Complete Qual 1st Rotary Mode Crew	3/31/94	3/31/94	6/30/94
3.09	Detailed Plans for Acquiring/Training Add'l Crews	4/30/94	4/29/94	6/30/94
3.10	Qual of 2 Additional Crews/Push & Rotary Trucks	6/30/94	9/27/95	
3.11	Additional Rotary Mode Core Systems	9/30/94	6/30/95	
3.12	Hire/Train/Qualify 4 Add'l Rotary Mode Crews	10/31/94		
3.13	Deploy Prototype Cone Penetrometer	5/31/95		
3.14	Installation of Flammable Gas Monitors	4/30/95	4/24/95	6/23/95
3.15	Eng Eval for In Situ Moisture Monitoring	6/30/94	6/28/94	6/30/94
3.16	Direct Drill Bit Temperature Monitoring	1/31/95		
3.17	Review Procedures with Outside Drilling Experts	6/30/94	6/30/94	8/2/94
3.18	Dev. Means for Measuring Complete Sample Recovery	1/31/95	9/14/95	
3.19	Eng Eval of New Risers on SSTs	8/31/94	8/31/94	9/12/94
4.01	Issue Approved Broad Based Environmental Assessment	2/28/94	2/10/94	2/25/94
4.02	DOE-RL submit Delegation of Authority request to HQ	1/31/94	1/10/94	1/10/94
4.03	Obtain Delegation of Authority for DOE-RL	4/30/94	1/10/94	7/28/94
5.01	Install Core Scanning in Hot Cell	9/30/94	9/1/94	8/2/95
5.02	Complete Renovation of 325 'A' Hot Cell	9/30/95		
5.03	Letter Assessing Operability of New Extruder	3/31/94	3/28/94	10/26/94
5.04	Cyanide Speciation Tech Transfer (PNL)	9/30/94	9/1/94	8/2/95
5.05	Issue Results of Sampler Exchange Phase II	3/31/94	3/31/94	6/30/94
5.06	Evaluate Laboratory Staff Training	6/30/94	6/30/94	7/13/94
5.07	Develop & Implement Training for Laboratory Staff	8/31/94	6/30/94	7/13/94
5.08	Procure & Receive 2 PAS-1 Casks	9/30/94	8/18/94	8/25/94
5.09	Plan to Upgrade INEL Lab	1/31/94	2/8/94	6/28/94
5.10	Plan to Upgrade LANL Lab	3/29/94	3/28/94	6/30/94



**DNFSB 93-5 COMMITMENTS STATUS**

As of October 3, 1995

<b>Number</b>	<b>Description</b>	<b>Due Date</b>	<b>Submitted to DOE-RL</b>	<b>Submitted to DNFSB</b>
5.11	Develop Min/Max Lab Capacity Strategy	2/28/94	2/28/94	6/30/94
5.12	Upgrade INEL Lab to Ready to Serve Mode	10/31/94	10/31/94	11/4/94
5.13	Upgrade LANL Lab to Ready To Serve Mode	2/28/95	2/6/95	4/10/95
5.14	Two PAS-1 Casks will be ready for use Jan. 1995	1/31/95		
6.01	Prepare a Customer Needs Analysis (data)	4/30/94	5/2/94	6/23/94
6.02	Issue a Data Mgmt Improvement Plan	5/31/94	5/1/94	5/26/94
6.03	Initial On-Line Capability for LABCORE-1	1/31/94	1/31/94	6/23/94
6.04	Demonstrate Off-Site Access to Tank Charact. Database	1/31/94	1/28/94	7/12/94
6.05	Complete data Loading of 20 Tanks into Database	9/30/94	9/30/94	10/25/94
6.06	Evaluate 12 Validated Data Reports for Safety	1/31/94	4/25/94	6/30/94
7.01	Formally Submit Changes to Commitments			
7.02	Address Changes to Milestones in Quarterly			

**Attachment 3 to 9453193.32**

**SAMPLING STATUS SUMMARY, Page 1 of 1,  
As of September 30, 1995**

# Characterization Program Tank Sampling Status Summary

October 1, 1994 to September 30, 1995

	Tanks Scheduled/Completed	Samples Scheduled/Completed
Auger	23/23	46/45
Push	14/14	30/30
Rotary	2.5/1.5	9/9
Vapor	40/40	40/40
Grab	32/32	32/32

**Notes:**

Tank samples are counted as follows: Rotary, Push, and Auger - 1 sample per riser/average 2 risers per tank.  
Grab and Vapor - 1 sample per tank

**Draft Rev. 4.4 schedule is used. All rotary cores from tanks 241-BY-108 and BY-110 are being counted in both scheduled and completed columns.**

**Attachment 4 to 9453193.32**

**PERFORMANCE INDICATOR CHARTS, Pages 1-14,  
As of September 30, 1995**

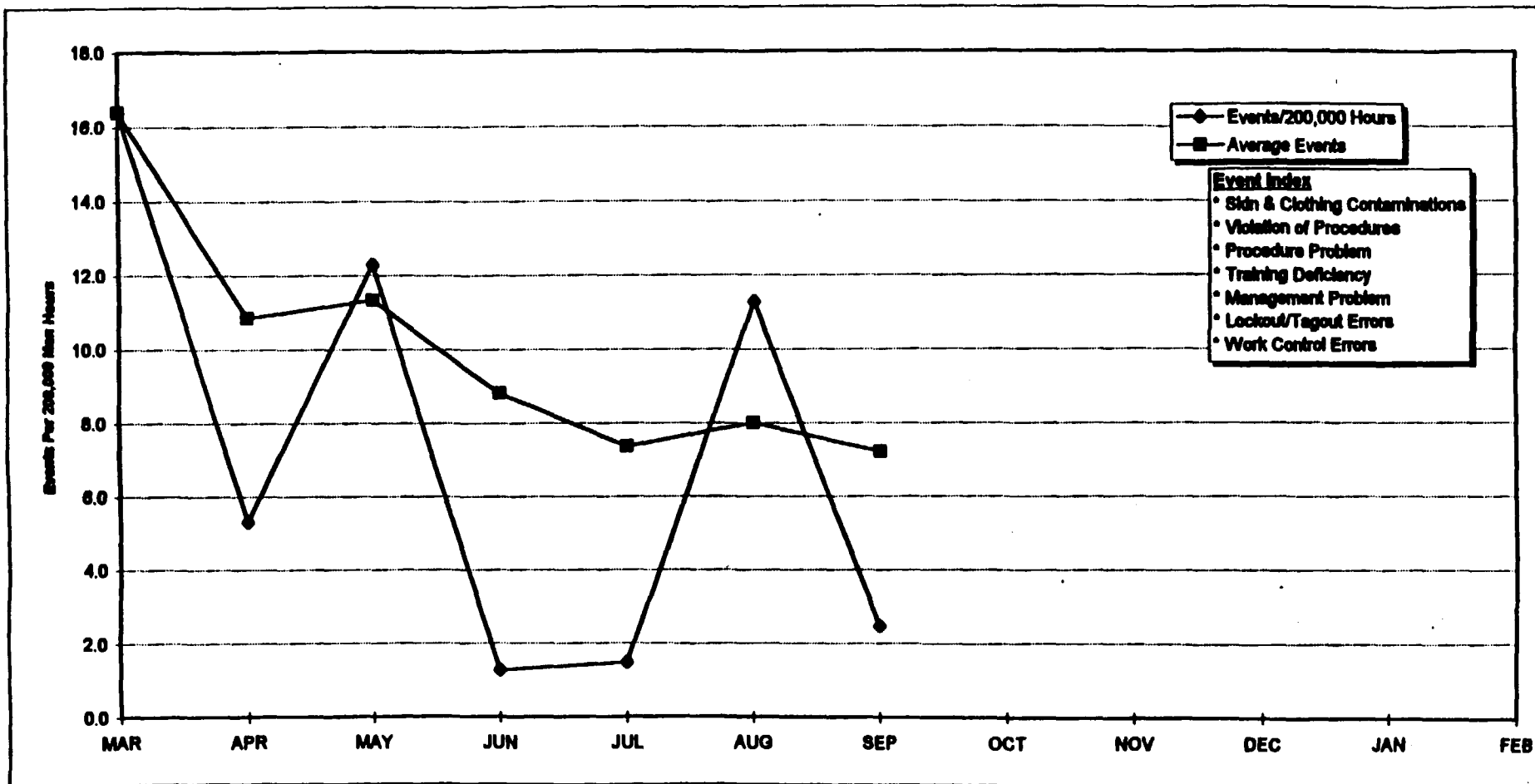
**If you want a copy of Attachment 4, please contact  
Patsy Culver on (509) 373-3002.**





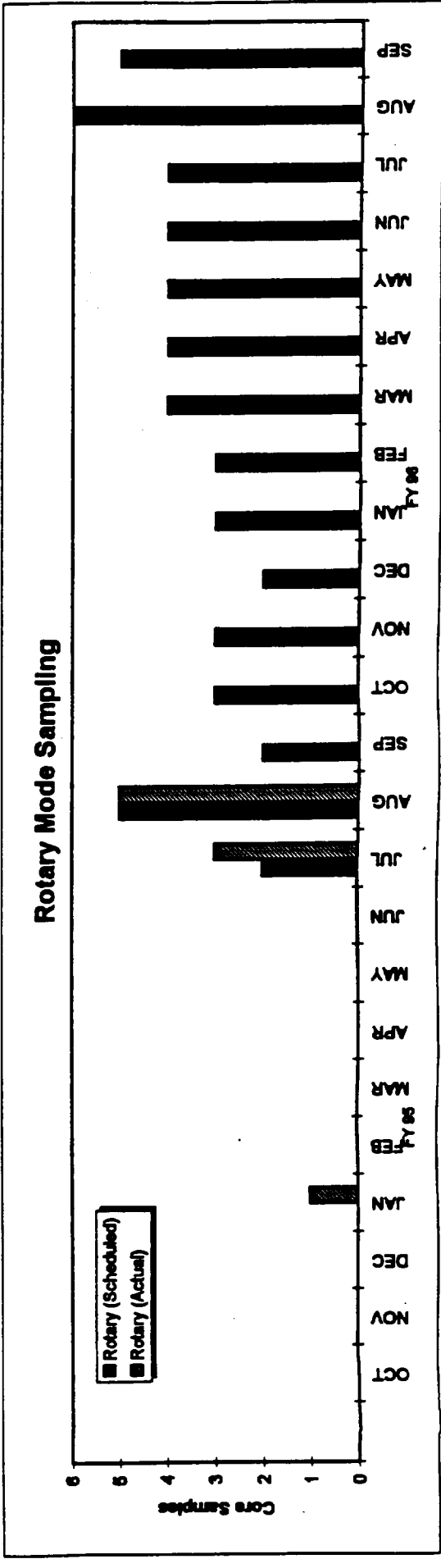
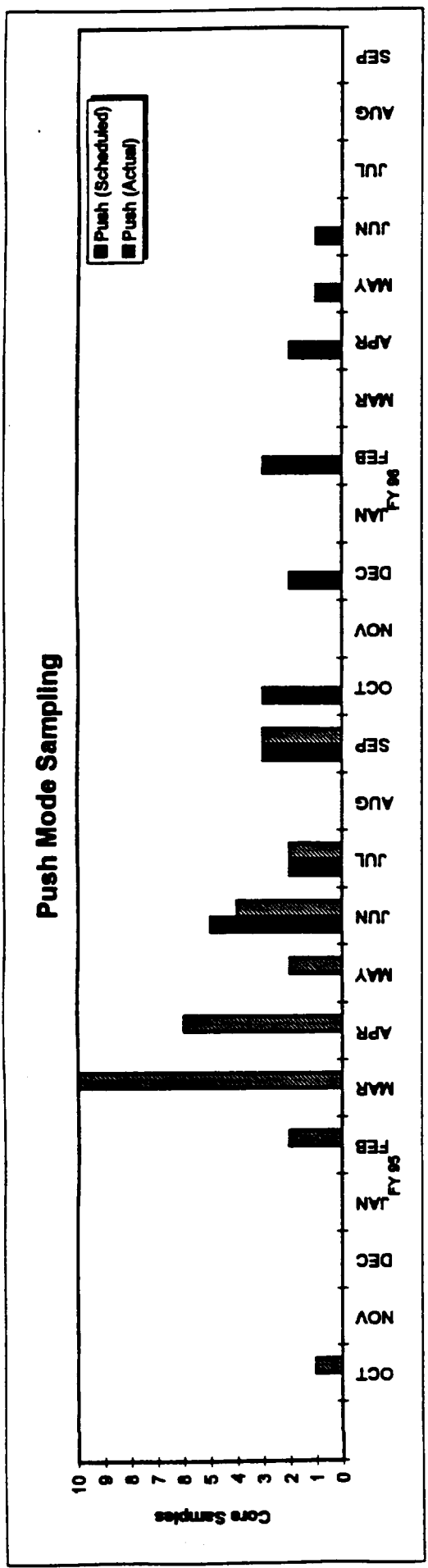
# Characterization

## Conduct of Operations Event Index



	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Operator Events	4	2	2	1	0	2	0					
Mandatory Events	4	1	4	0	1	4	1					
Total Events	8	3	6	1	1	6	1					
Hours	97,605	113,006	97,550	157,115	135,725	106,360	80,718					
Events/200,000 Hours	16.4	5.3	12.3	1.3	1.5	11.3	2.5					
Average Events	16.4	10.9	11.3	8.8	7.3	8.0	7.2					

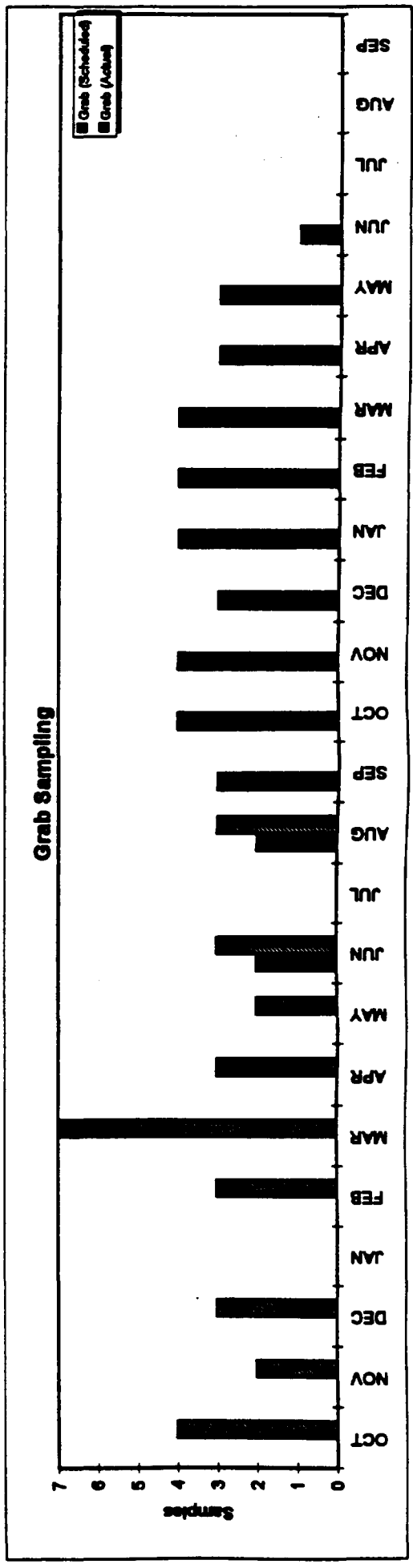
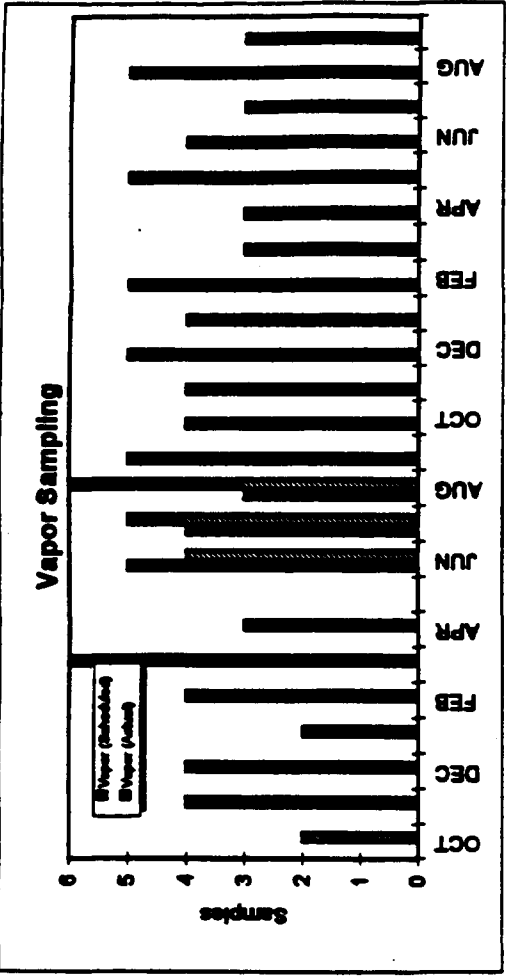
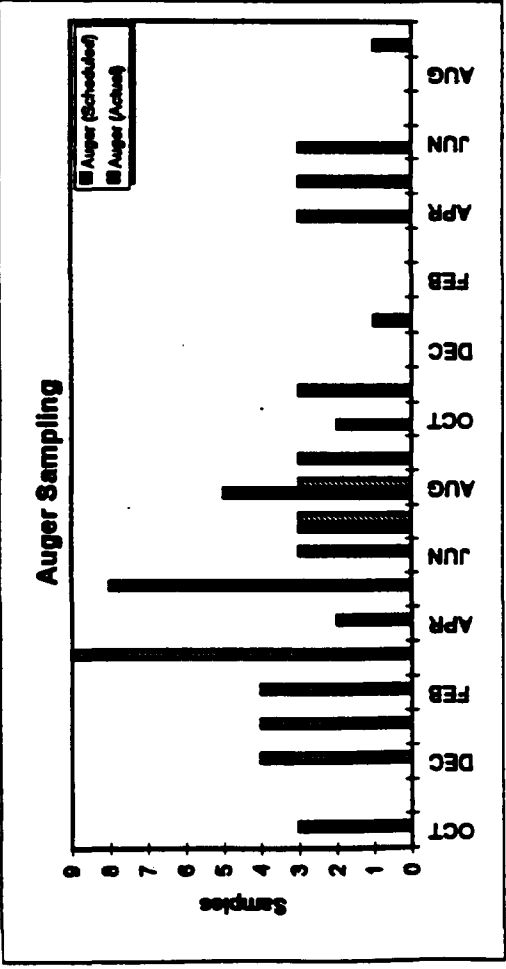
**Push and Rotary Sampling**





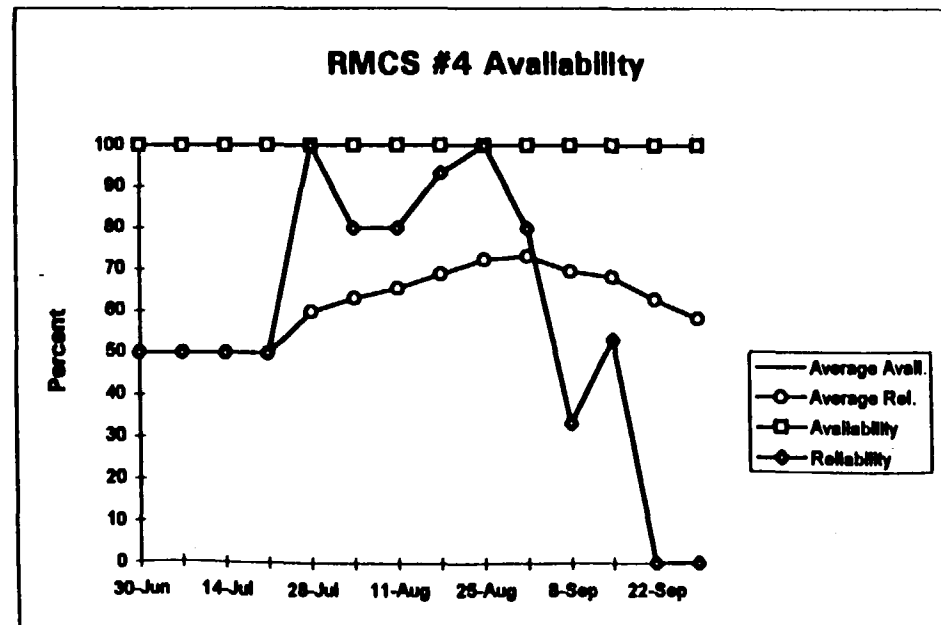
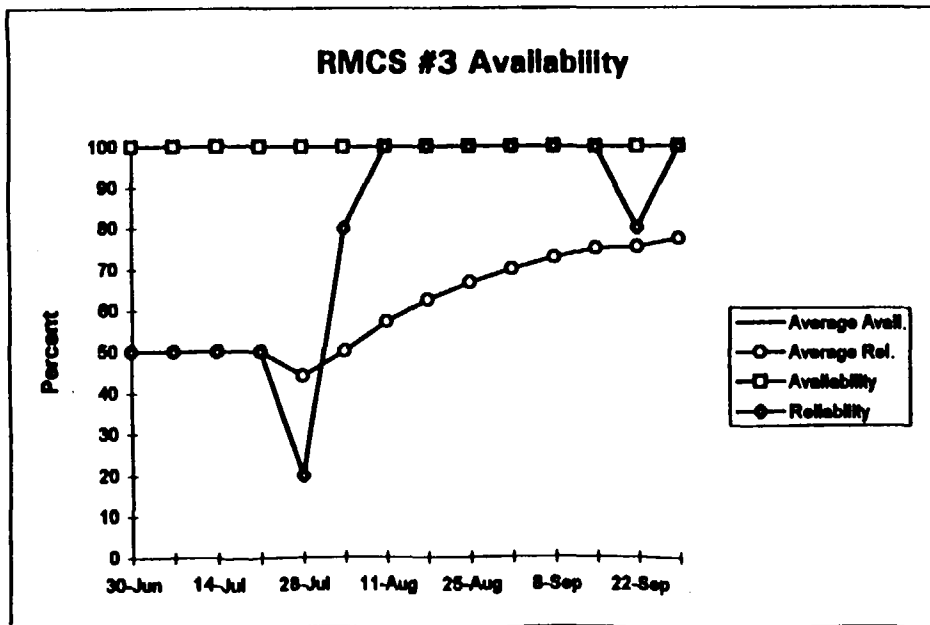
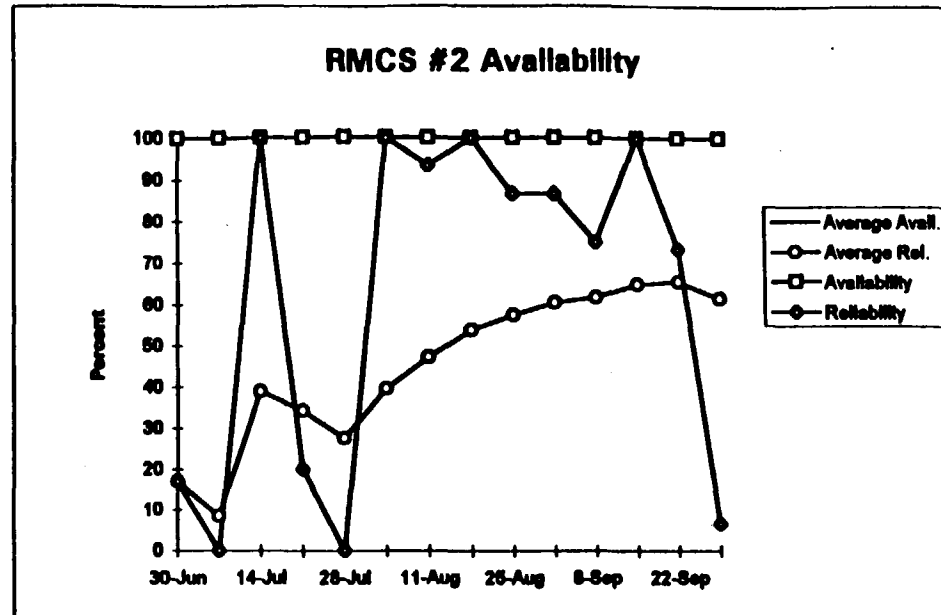
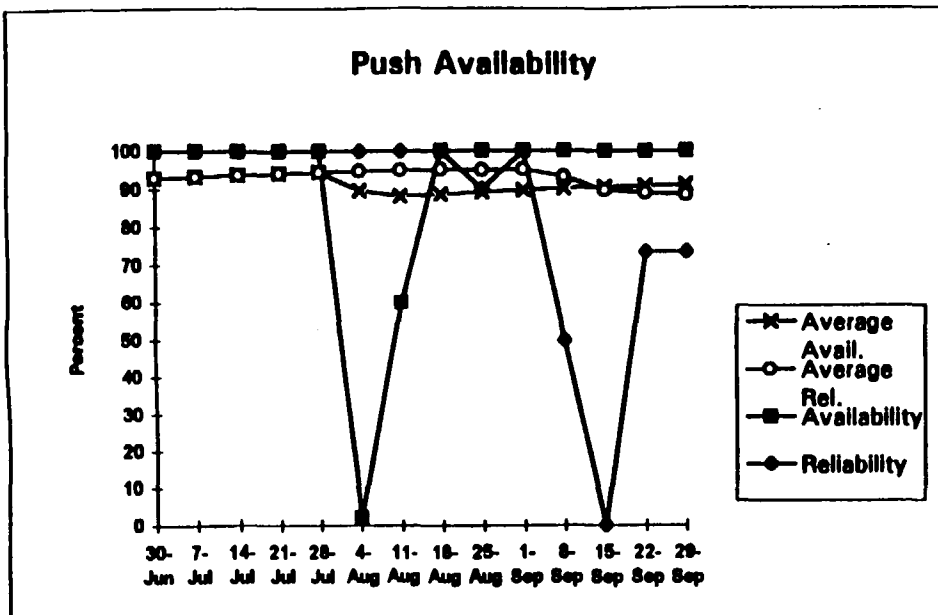
# Characterization

## Auger, Vapor, and Grab Sampling



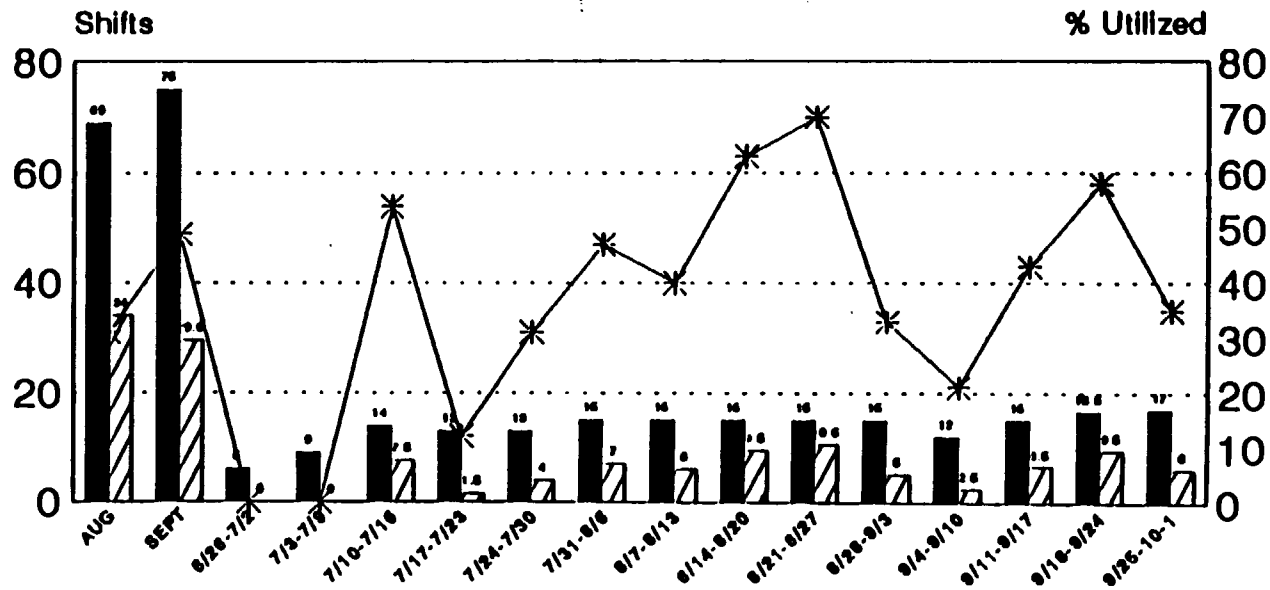


## Sampling Equipment Availability



## ROTARY SAMPLING UTILIZATION

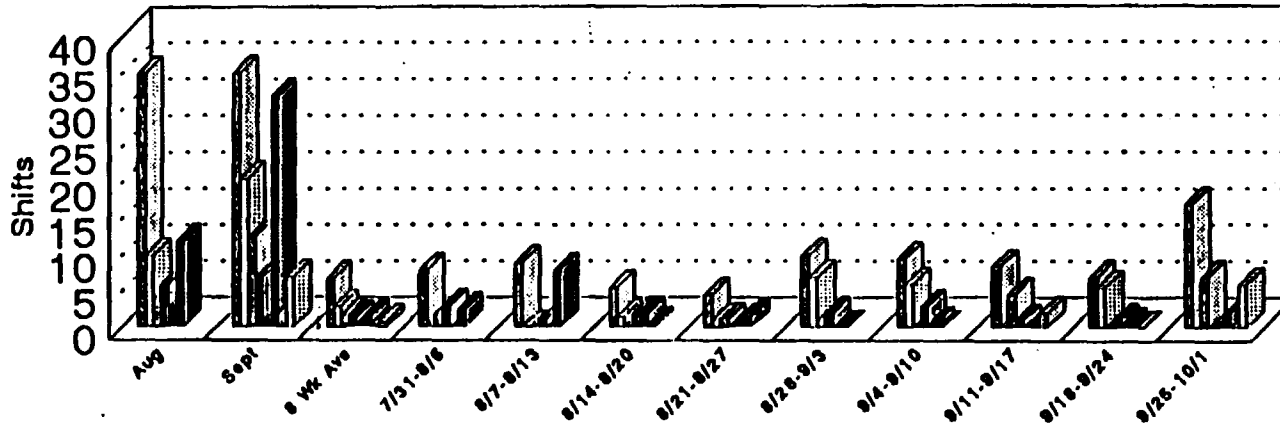
### Characterization Project Operations



Shifts Available	69	75	6	9	14	13	13	15	15	15	15	15	12	15	16.5	17
Shifts Worked	34	29.5	0	0	7.5	1.5	4	7	6	9.5	10.5	5	2.5	6.5	9.5	6
# Segments	43	41	0	0	7	3	5	9	4	14	14	6	1	6	16	6
# Cores	4.5	4.5	0	0	1	0.5	1	1.5	0.5	2	1	0.5	0	0.5	2.5	1

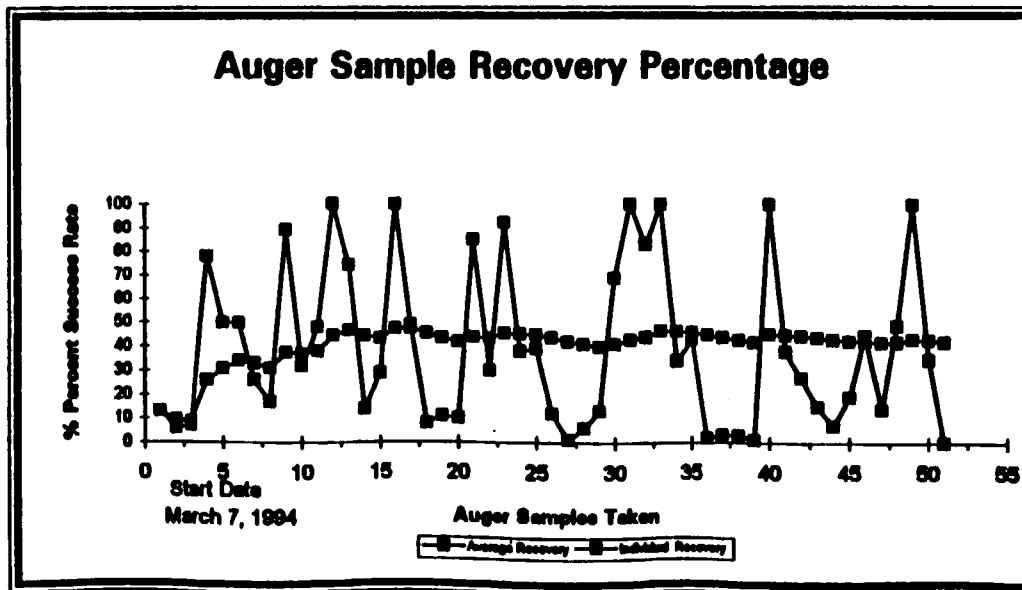
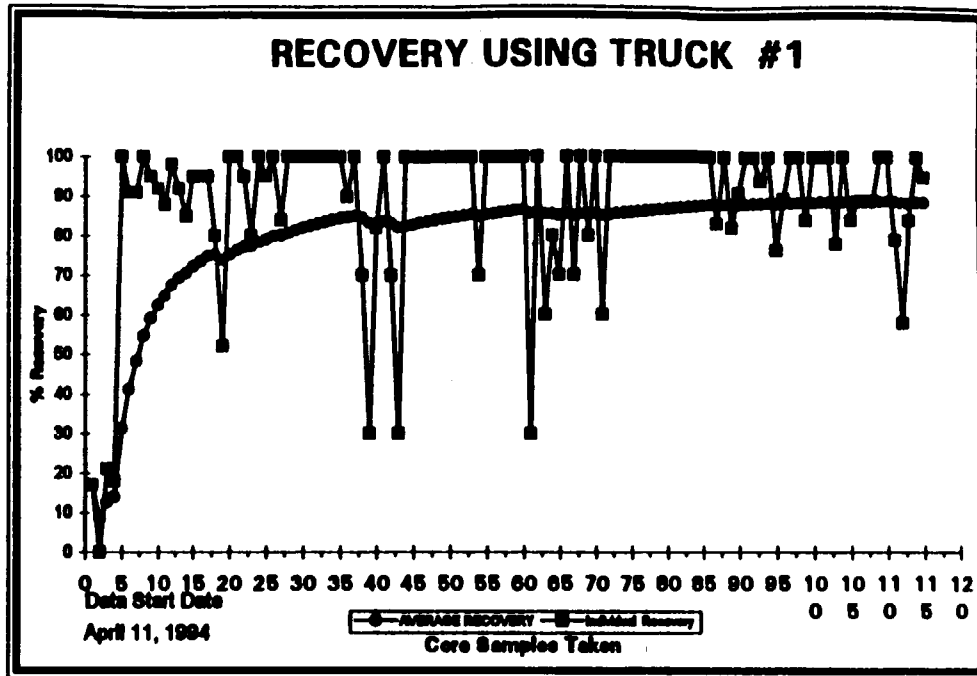
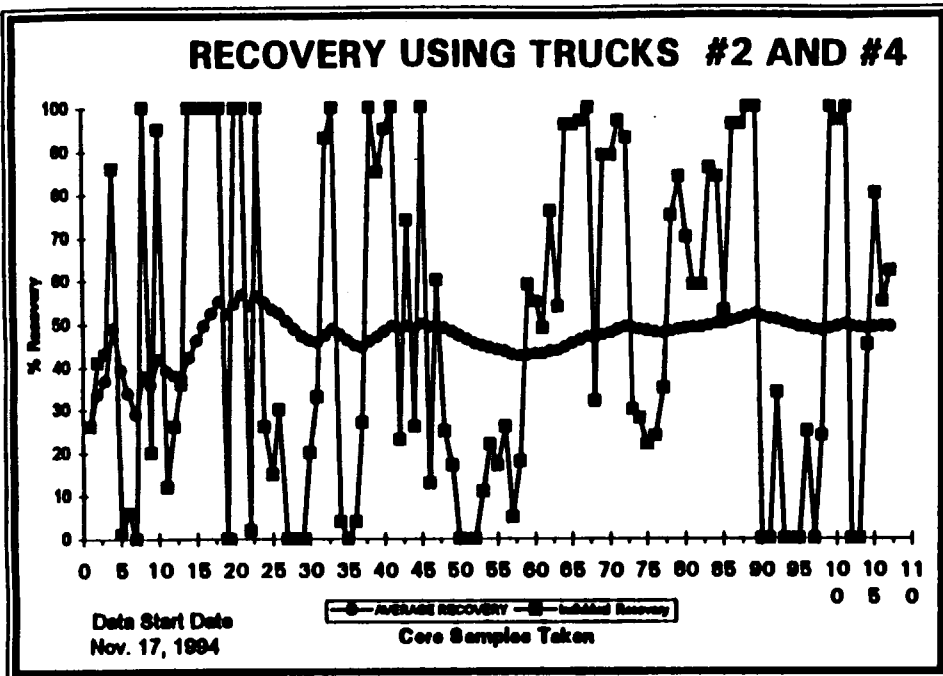
## RMCS UTILIZATION DELAYS

### Characterization Project Operations

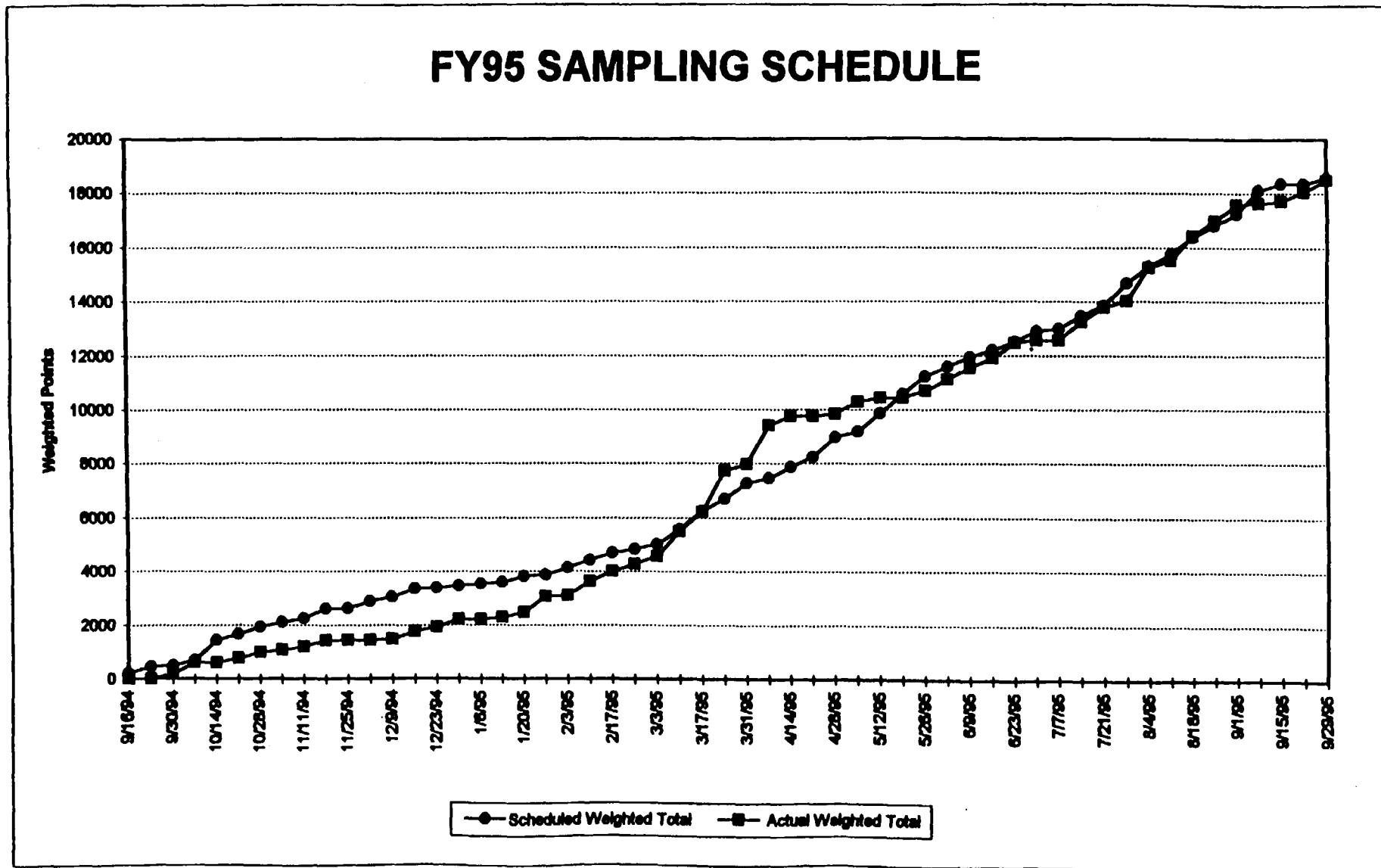


Total	35	35	6.8	8	9	5.5	4.5	10	9.5	6.5	7	17
Material	10	20.5	2.9	0.5	0	1.5	1	7	6	0	5.5	2
Tech Support	4	12.5	1.7	2	0	0	1	1	0	4.5	0	7
Set-up	6	7	1.3	3	1	2	0	2	3	1	1	0
Weather	3	1	0.5	0	0	2	1	0	0.5	0	0.5	0
Operations	12	32	1.6	2.5	8	0.5	1.5	0	0	1	0	2
Admin/Training		2	0.3							2	0	0
Work		7	0.8									6

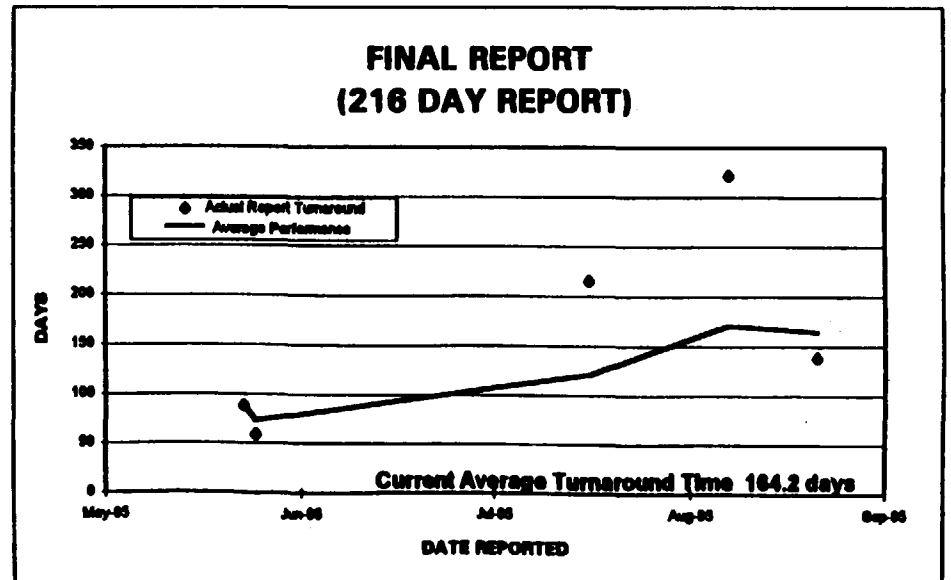
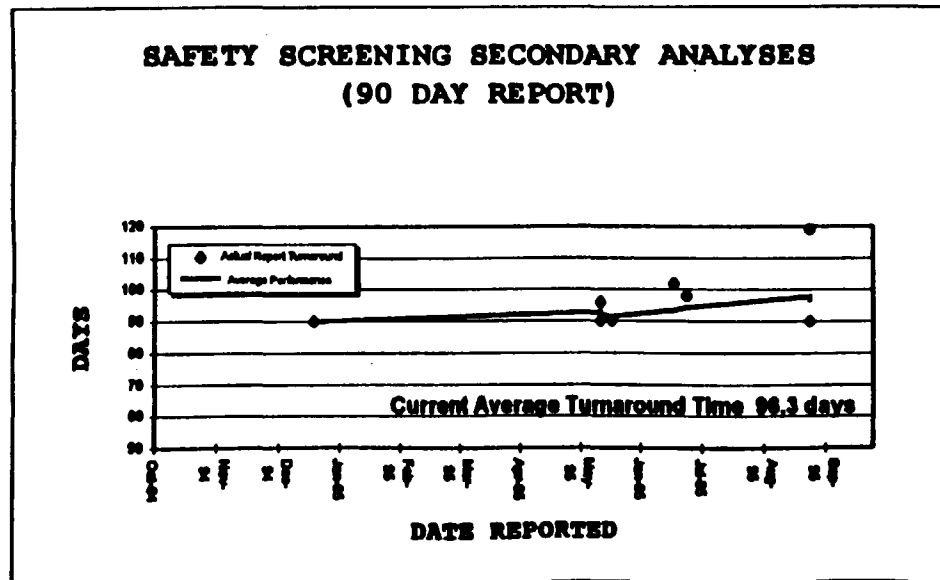
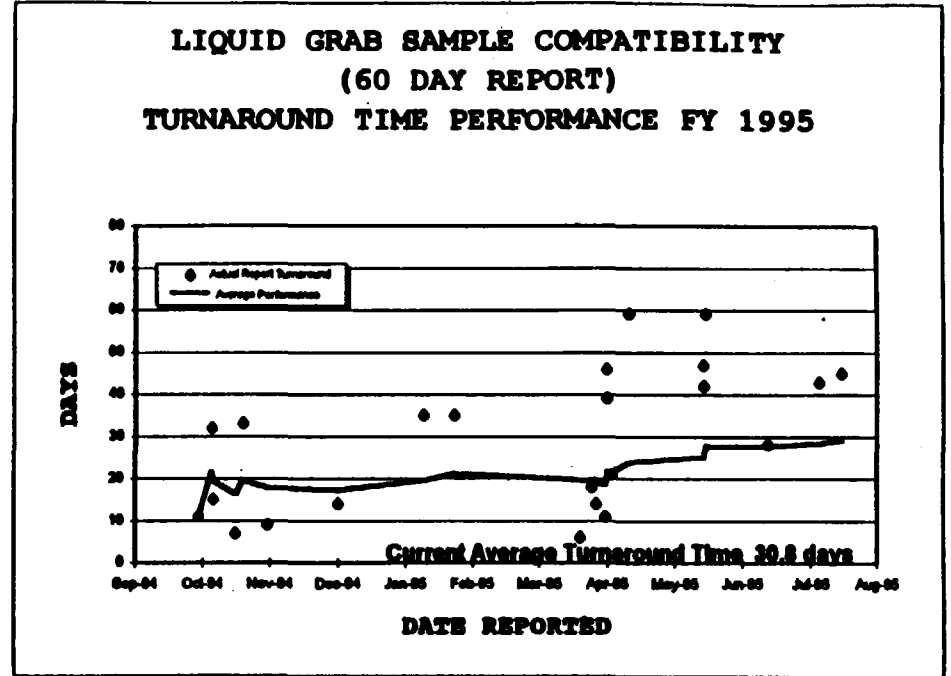
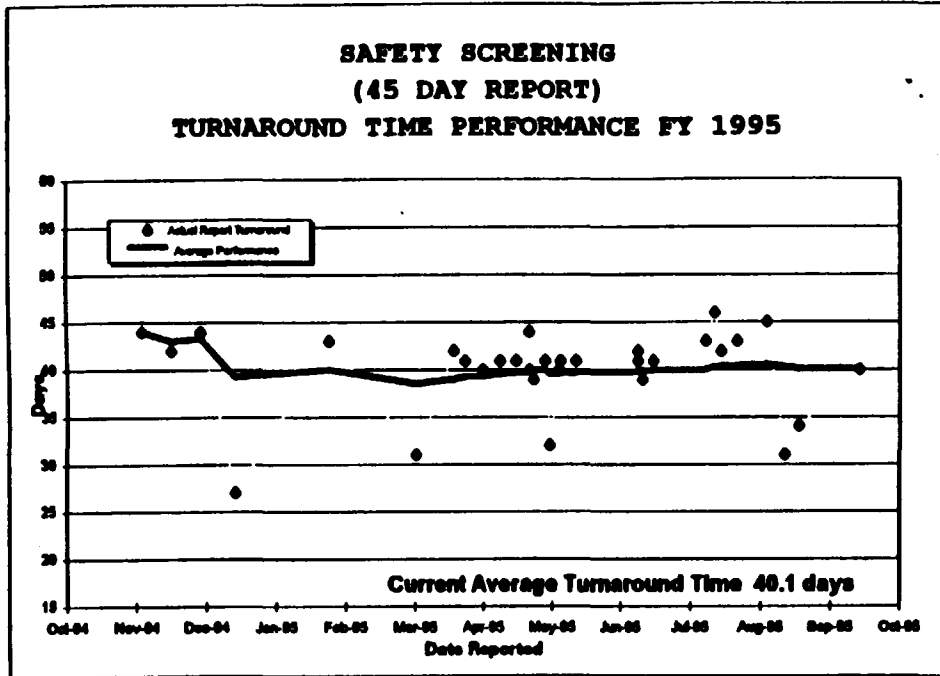
Sample Recovery



## Sampling Schedule



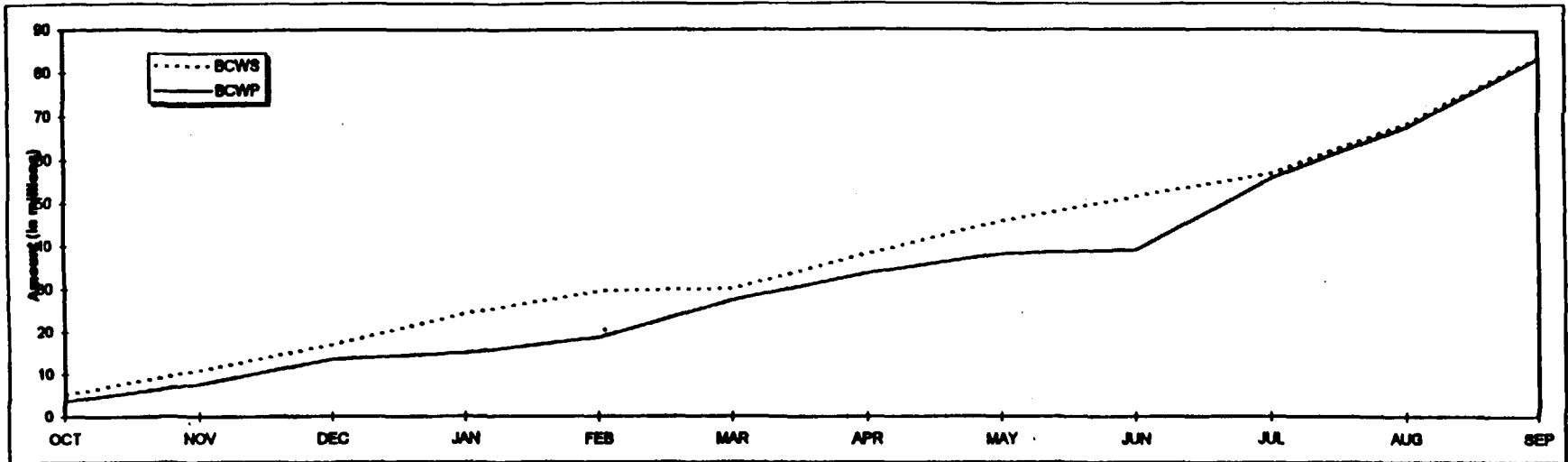
## Analysis Reporting



# T.W.R.S. Characterization

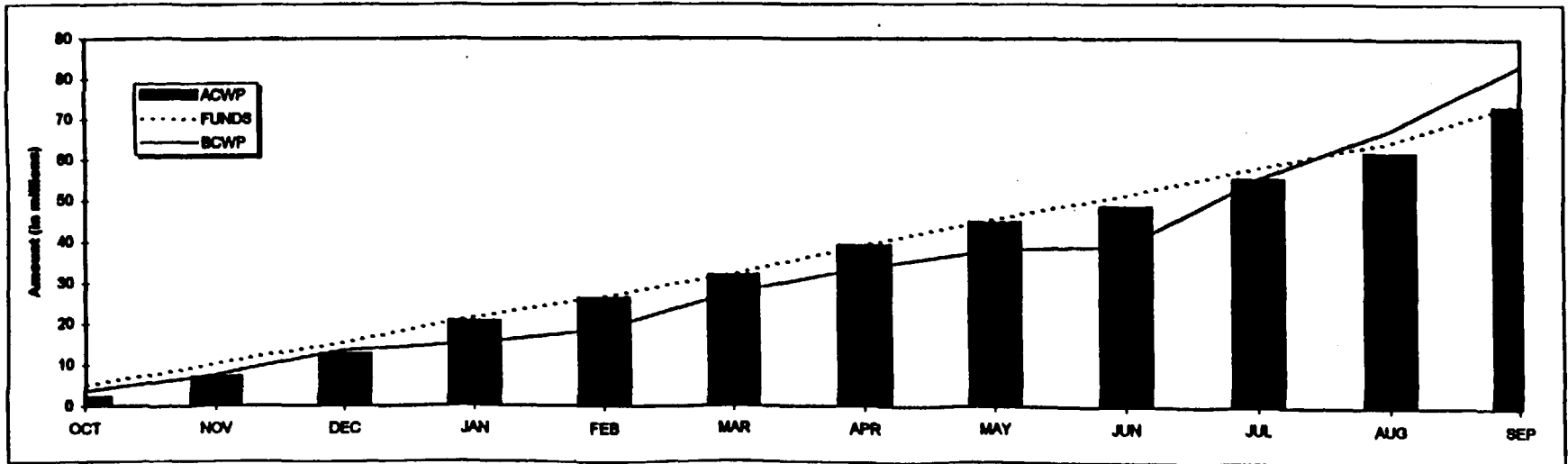
## Cost and Schedule Performance

### Schedule Variance



Month	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
BCWS	5.4	10.0	17.0	24.4	28.7	30.1	38.3	45.7	51.0	57.0	66.4	83.7
BCWP	3.7	7.7	13.0	15.1	18.7	27.0	38.1	39.2	55.0	62.1	67.7	83.4

### Cost Variance

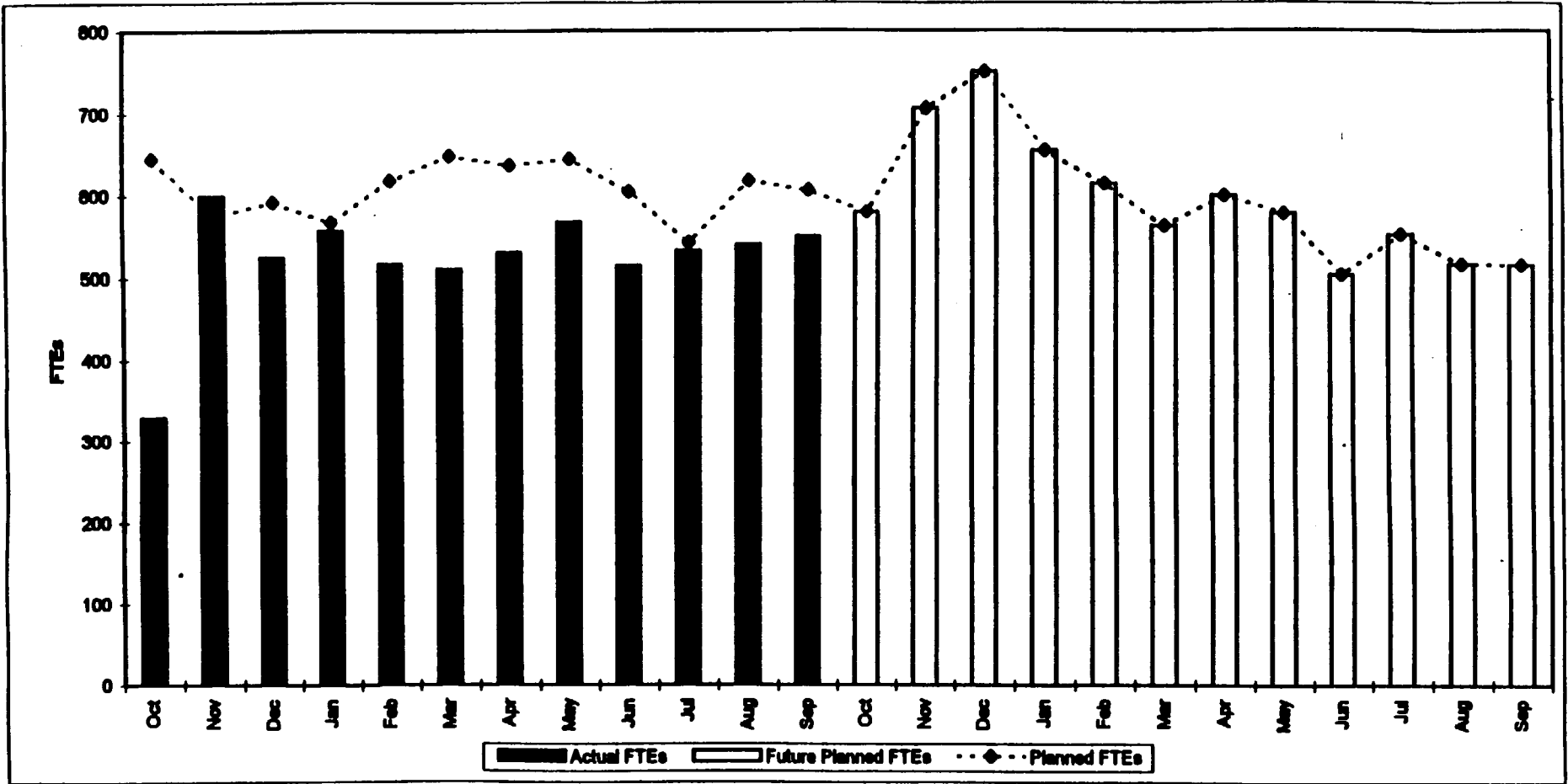


Month	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
FUNDS	5.2	10.4	15.4	21.5	26.7	32.3	38.4	45.0	51.0	57.0	66.4	74.3
ACWP	2.1	7.1	12.5	20.5	26.3	32.0	39.2	44.9	55.7	62.1	67.7	74.3
BCWP	3.7	7.7	13.0	15.1	18.7	27.0	38.1	39.2	55.0	62.1	67.7	83.4

\* Sept. figures are based on preliminary data.

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## Resource Requirements



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Actual FTEs	329	600	525	558	517	511	531	568	515	533	541	550													
Future Planned FTEs	645	575	592	568	618	649	638	645	605	544	618	608	580	580	708	750	654	814	562	599	577	502	551	514	513

- Note: 1. FTE data includes FTEs associated with laboratory work which is billed on a per unit basis.
- 2. FY 95 FTEs were normalized based on Change Request TWR-95-101.
- 3. FTEs in FY 96 for Other Contractors and PO Contracts are estimates based on FY 95 rates.
- 4. Sept. figures are based on preliminary data.



**EXPENSE COST PERFORMANCE**

(Dollars in Millions)

WBS/TITLE	FY TO DATE					AT COMPLETION (FY)					COMMENTS
	BUDGET COST		ACTUAL COST	VARIANCE		BAC	EAC	FYSF	EXPT'D FUNDS FY95 ***	PROJ'D C/O SCOPE (EAC-FYSF)	
	WORK SCHED	WORK PERF	WORK PERF	SCHED	COST						
<b>(1130-0) CHARACTERIZATION</b>											
WHC	72.0	71.9	62.3	-0.1	9.6	72.0	62.3	62.3	63.3	0.0	
PNL	9.6	9.4	9.2	-0.2	0.2	9.6	9.2	9.2	9.2	0.0	
LANL	1.1	1.1	1.0	0.0	0.1	1.1	1.0	1.0	1.0	0.0	
SNL	0.6	0.6	0.4	0.0	0.2	0.6	0.4	0.4	0.4	0.0	
ORNL	0.4	0.4	0.4	0.0	0.0	0.4	0.4	0.4	0.4	0.0	
<b>TOTAL 1.1.2.4. (1130)</b>	<b>83.7</b>	<b>83.4</b>	<b>73.3</b>	<b>-0.3</b>	<b>10.1</b>	<b>83.7</b>	<b>73.3</b>	<b>73.3</b>	<b>74.3</b>	<b>0.0</b>	

\* Sept. figures are based on preliminary data.

**CENRTC COST PERFORMANCE**  
(Dollars in Millions)

WBS/TITLE	PROJECT TO DATE					TOTAL B/A	PROJECT TO DATE				COMMENTS
	BUDGET COST		ACTUAL COST	VARIANCE			ACTUAL (ACWP)	COMMIT' (P/O,W/O)	PLANNE	UNCOM'TD	
	WORK SCHED	WORK PERF	WORK PERF	SCHED	COST						
<b>(1130-0) CHARACTERIZATION</b>											
<b>WHC</b>											
Activity for Curr Year Funded Equip	5.9	5.8	4.9	-0.1	0.9	6.1	4.9	0.8	0.4	0.0	
Activity for Prior Years Funded Equip	<u>12.4</u>	<u>10.9</u>	<u>10.9</u>	<u>-1.5</u>	<u>0.0</u>	<u>12.6</u>	<u>10.9</u>	<u>0.5</u>	<u>1.2</u>	<u>0.0</u>	
S/T	18.3	16.7	15.8	-1.6	0.9	18.7	15.8	1.3	1.6	0.0	
<b>PNL</b>											
Activity for Curr Year Funded Equip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Activity for Prior Years Funded Equip	<u>3.1</u>	<u>3.3</u>	<u>2.9</u>	<u>0.2</u>	<u>0.4</u>	<u>3.7</u>	<u>2.9</u>	<u>0.7</u>	<u>0.1</u>	<u>0.0</u>	
S/T	3.1	3.3	2.9	0.2	0.4	3.7	2.9	0.7	0.1	0.0	
<b>TOTAL 1.1.2.4. (1130)</b>	<b>21.4</b>	<b>20.0</b>	<b>18.7</b>	<b>-1.4</b>	<b>1.3</b>	<b>22.4</b>	<b>18.7</b>	<b>2.0</b>	<b>1.7</b>	<b>0.0</b>	

\* Sept. figures are based on preliminary data.

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