

**INFORMATION  
ONLY**

**RF/ER-95-0018**



**ROCKY FLATS**

**SCIENTIFIC NOTEBOOK PLAN**

**TANK INVESTIGATION  
FOR RCRA FACILITY  
INVESTIGATION/CERCLA  
REMEDIAL INVESTIGATION**



**FEBRUARY 1995**

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**A-0009-000172**

# **Scientific Notebook Plan**

**for**

## **TANK INVESTIGATION FOR RCRA FACILITY INVESTIGATION/CERCLA REMEDIAL INVESTIGATION**

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**Title:** TANK INVESTIGATION FOR RCRA FACILITY INVESTIGATION/CERCLA  
REMEDIAL INVESTIGATION

**1.0 Description:**

- **Notebook Plan Title:** TANK INVESTIGATION FOR RCRA FACILITY INVESTIGATION/CERCLA REMEDIAL INVESTIGATION
- **Governing Work Plan No.:** 21100-WP-OU-09 01
- **Governing Work Plan Title:** Rocky Flats Plant Phase I RFI/FI Work Plan for Operable Unit 9 Original Process Waste Lines
- **Scientific Notebook Plan purpose and objective:**

Purpose

Currently, no procedure exists which adequately prescribes the remedial investigation of tanks. Because the processes involved with investigating tanks has not been procedurally developed, a certain amount of professional judgement and the use of trial-and-error methods, not normally encountered in well developed procedures, is necessary in developing this investigatory methodology. Hence, the need for a Scientific Notebook Plan.

The Scientific Notebook System allows for deviation from the Scientific Notebook Plan Summary Section of this plan. However, the instructions provided by the Summary are to be used to the extent practical to implement the activities described herein.

Objective

The objective of this document is to describe the steps to be used at Rocky Flats Environmental Technology Site (RFETS) for investigating tanks under the Resource Conservation and Recovery Act (RCRA) Facility Investigations (RFI)/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigations (RI).

















TABLE 1

Applicable Waste Management RFP References  
Tank Investigations  
Rocky Flats

Waste Description	RF Reference(s)	Applicable Section No.
Hazardous Waste	Hazardous Waste Requirements Manual 1-10000-HWR	All
Radioactive Waste	Radioactive Waste Packaging Requirements, WO-4034	60 - 80
	Solid Radioactive Waste Packaging Inside the PA, WO-1100	70
	Solid Radioactive Waste Packaging Outside the PA, WO-1101	60
	Waste/Residue Travelers Instructions, WO-1102	All
Low Level Specific Waste	Low Level Waste Management Plan, 1-10000-EWQA, Section 1 1	All
Transuranic Specific Waste	Transuranic (TRU) Waste Management Plan, 1-10000-EWQA, Section 1 2	All
	Rocky Flats Compliance Plan for TRUPACT-II Authorized Methods for Payload Control, WP-1900	All
Non-Radioactive Waste	Non-Radioactive Waste Packaging, WP-1027 Waste/Residue Traveler Instructions, WO-1102	All All

3 3 2 Tank Scrape Sampling

Scrape sampling can be performed for tanks that have not been cleaned and painted after being removed from service and contain residues

**NOTE:** *Duplicate samples are obtained by simply splitting the material collected in each scoopful between the original and duplicate sample jars so that the jars are filled simultaneously. The frequency of duplicate sampling is defined in the applicable FSP or the Quality Assurance Addendum (QAA). Duplicate sampling is documented on the data collection form.*

**Field Team Member**

- [1] **IF** no residue is present or if the residue present is not sufficient to meet required sample volumes, **THEN** collect one radiological wipe sample from the interior surface of the tank near the base of the tank or a pipeline connection in accordance with 5-21000-FO 16, Section 6 2 1 3, Monitoring with a Small Area Wipe (Smear)
- [2] Select a certified clean, unused sample container
- [3] Label the sample container and initiate the Chain of Custody in accordance with 5-21000-FO 13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples
- [4] If confined space permit is required, review the confined space permit instructions and plan for gaining access to the interior of the tank
- [5] Wear necessary protective clothing and gear and observe required sampling precautions as described in the site-specific HSP

**CAUTION**

**If tank contents are suspected as flammable, use non-sparking equipment as applicable.**

- [6] Attach the scoop or laboratory spoon to the telescoping pole at a right angle to the pole with the hose clamps See Figure 1 for illustration
- [7] Ensure the pole and scoop or spoon are decontaminated and dry
- [8] Lower the scoop or spoon into the tank to the surface of the residue
  - [A] Move the scoop or spoon into the residue and collect a reasonable amount of sample
- [9] Raise the scoop or spoon, collapsing the pole as the sample is raised
- [10] Open the sample container and place on plastic sheeting

- [11] Place the edge of the scoop or spoon near the lip of the sample container and carefully pour the sample into the container
- [A] **IF** the sample material adheres to the scoop or spoon, **THEN** use the spatula to help place the sample into the container
- [12] Close the container
- [13] Repeat steps [8] through [12] until the sample container is full
- [14] **IF** there is any sample material left in the scoop or spoon, **THEN** place the material back into the tank
- [15] Complete the Sample Collection Form
- [16] Document sample data in the Field Log Book including
- sampling time
  - sample number
  - sample location
  - sample type and condition
  - site conditions
  - any other pertinent information that may affect sample collection or analysis
- [17] Transfer the samples to the sample manager in accordance with 5-21000-FO 13
- [18] Decontaminate the equipment in accordance with 5-21000-FO 3, General Equipment Decontamination

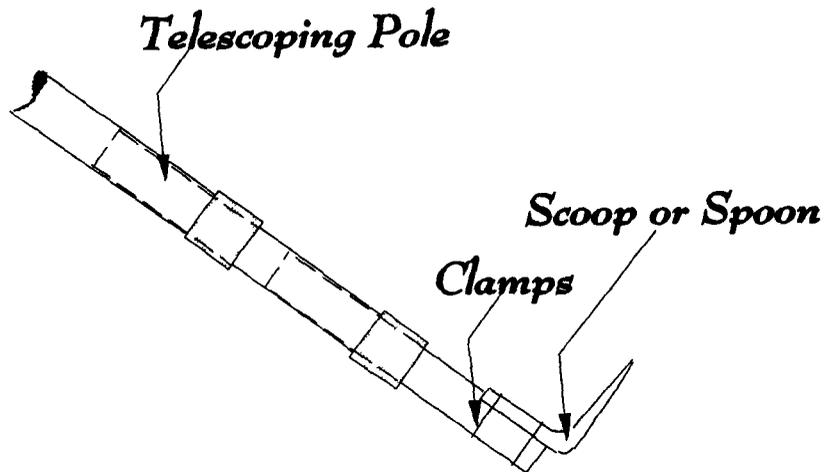


FIGURE-1 SCRAPE SAMPLING DEVICE

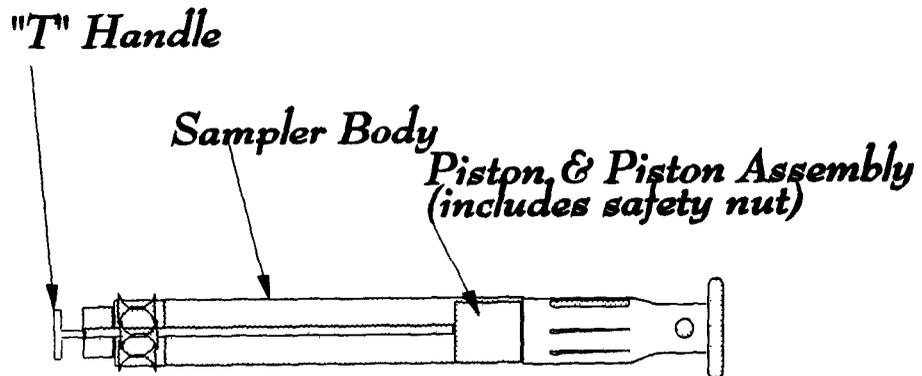


FIGURE-2 SUCTION SAMPLER







- [6] Position the sampler open by placing the stopper rod handle in the T-position and pushing the rod down until the handle is against the sampler's locking block
- NOTE:** *Lower the sampler at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid inside the sample tube is lower than the level outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample. In the event an opaque tube is used, comparing liquid levels outside and inside the tube may not be possible. As a general rule, use no more than 8 inches per second.*
- [7] Slowly lower the sampler into the liquid waste perpendicular to the surface of the liquid
- [8] When the sampler stopper hits the bottom of the waste container, push the sampler tube downward against the stopper or pull the stopper rod up to close the sampler. Lock the sampler in the closed position by turning the T handle until it is upright and one end rests tightly on the locking block
- [9] Briskly withdraw the sampler from the waste container perpendicular to the surface of the liquid with one hand, while wiping the sampler tube with a disposable cloth or rag with the other hand
- [10] Place open sample container on the plastic sheeting
- [11] Carefully discharge the sampler into the sample container by slowly pulling the lower end of the T handle away from the locking block while the lower end of the sampler is positioned in a sample container. Stabilize the container when transferring the sample volume
- [12] Close the sample container
- [13] Repeat steps [6] through [12] until the sample container is full
- [14] Unscrew the T handle of the sampler and disengage the locking block. Clean sampler onsite or store the contaminated parts of the sampler in a plastic storage tube for subsequent cleaning. Store used rags in plastic bags for subsequent disposal. See Section 3.6 for general decontamination procedures



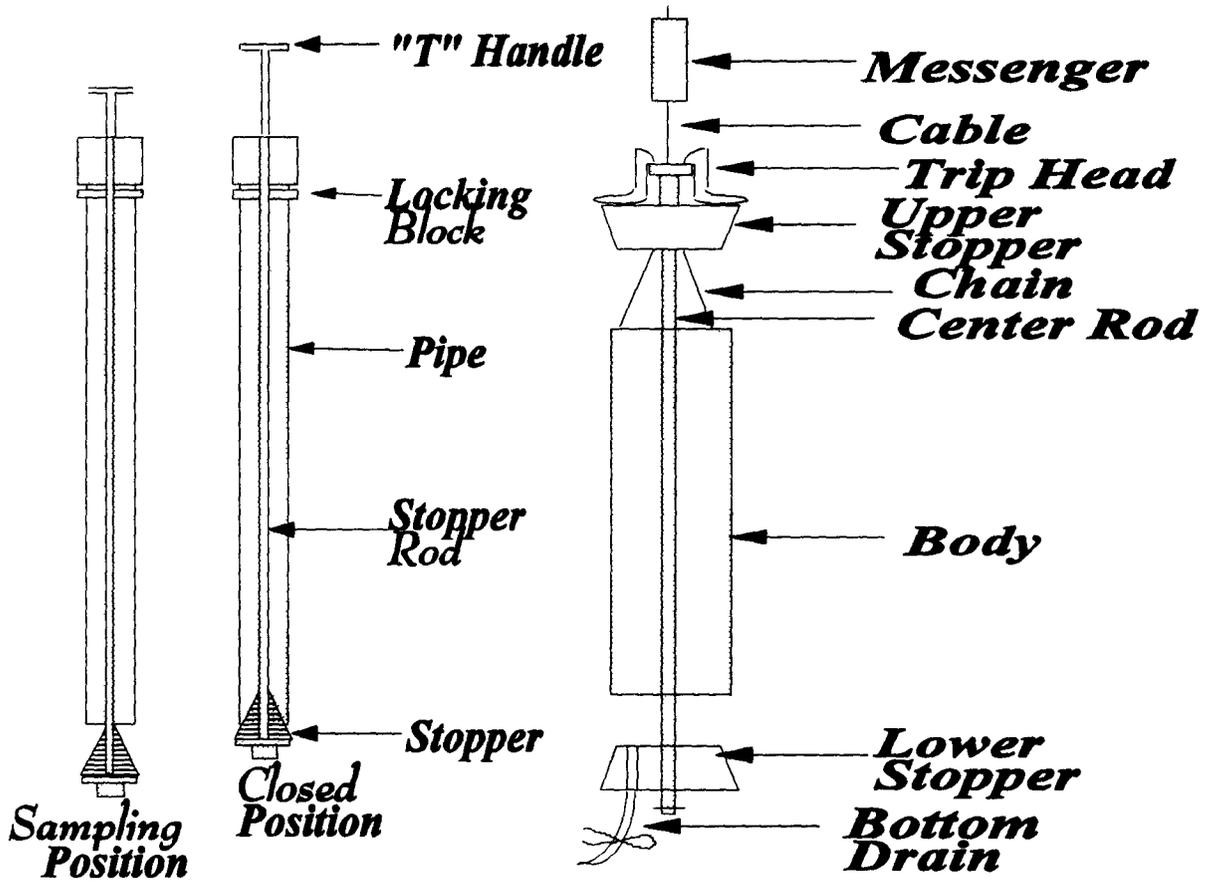


FIGURE-3 COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE-4 KEMMERER BOTTLE

- [9] Place messenger on sample line and release
- [10] Retrieve the sampler Hold the sampler by the center stem to prevent accidental opening of bottom stopper
- [11] Rinse or wipe off the exterior of the sampler body
- [12] Recover the sample by grasping the lower stopper and sampler body with one hand (gloved) and transferring the sample by either
  - Lifting the top stopper with the other hand and carefully pouring contents into sample bottles
  - Holding the drain valve (if present) over sample bottle and opening the valve
- [13] Place an open, unused sample container on plastic sheeting
- [14] Allow the sample to flow slowly down the side of the sample bottle with minimal disturbance
- [15] Close the sample container
- [16] Repeat Steps [7] through [15] until the sample container is full
- [17] Decontaminate the sampler and messenger or place them in plastic bag for later decontamination See Section 7 for general decontamination procedures
- [18] Document sample data in the Field Log Book including
  - sampling time
  - sample number
  - sample location
  - sample type and condition
  - site conditions
  - any other pertinent information that may affect sample collection or analysis
- [19] Transfer the samples to the sample manager in accordance with 5-210000-FO 13
- [20] Repeat the sampling procedure for duplicate sample locations

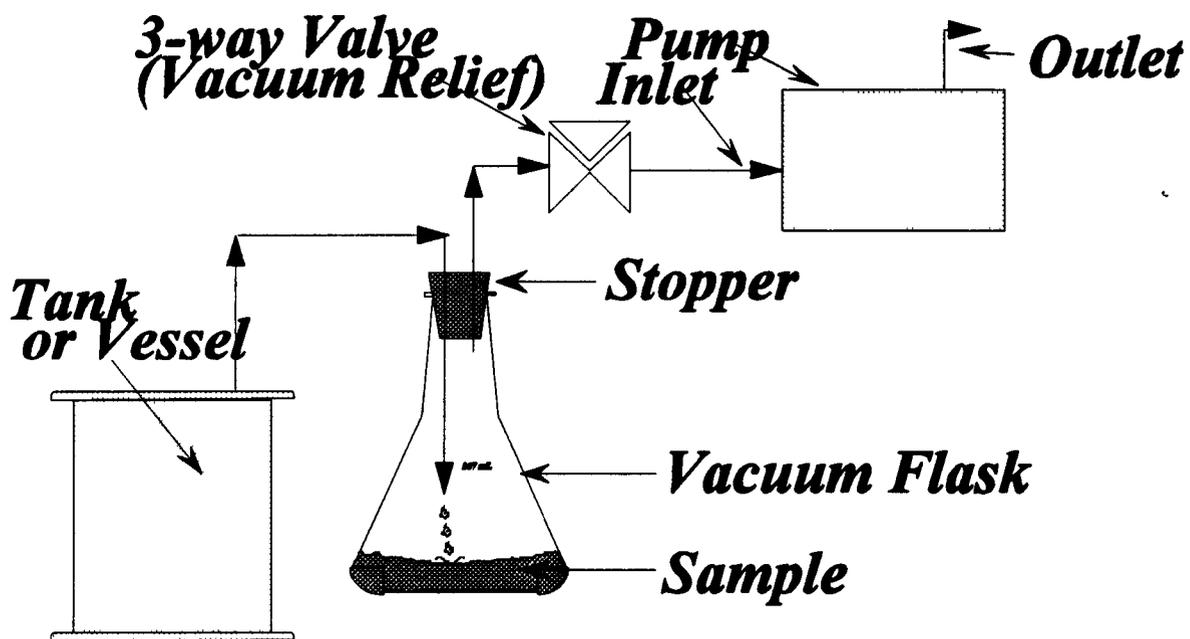


FIGURE-5 VACUUM SAMPLING SYSTEM





### 3.6 Decontamination

#### Field Team Member

- [1] Decontaminate excavation equipment before excavating each trench or test pit in accordance with 5-21000-FO 03, General Equipment Decontamination, and 5-21000-FO 4, Heavy Equipment Decontamination
- [2] Decontaminate sampling equipment before collecting each sample in accordance with 5-21000-FO 3
- [3] Decontaminate field equipment between uses, to minimize the potential spread of contaminants
- [4] Monitor all equipment for radiological contamination

### 3.7 Data Quality Objectives

#### **Principal Investigator**

- [1] Ensure data quality objectives are established in accordance with 21100-WP-OU9 01, Final Phase 1 RFI/RI Work Plan for Operable Unit 9 Original Process Waste Lines
- [2] Ensure data management is accomplished in accordance with RFP/ER-TM1-93-OU9 2, EG&G-RFP Operable Unit 9 Technical Memorandum No 1, and 5-21000-OPS-FO 14, Field Data Management

### 3.8 Records

Management of all records is to be accomplished in accordance with 1-77000-RM-001, Records Management Guidance for Records Systems

#### **Project Manager**

- [1] Ensure that the original and one copy of the following quality related records are forwarded to the ERPD Project File Center in accordance with 3-21000-ADM-17 01
  - Tank System Form (Form SNB A)
  - Sample Collection Form (Form SNB B)
  - Chain-of-Custody documentation for all samples



## 5.0 Equipment

### Field Team Member

[1] Ensure the following equipment is available for all tank characterizations

- sample containers
- sample labels
- wash and rinse tubs
- cleaning brushes
- phosphate-free laboratory grade detergent
- distilled water
- plastic sheeting
- logbook
- chain of custody forms
- cooler with ice or ice packs
- appropriate health and safety equipment

[A] Ensure the following equipment is available for tank scrape sampling

### Equipment

- stainless-steel telescoping pole
- stainless-steel scoop
- stainless-steel laboratory spoon
- stainless-steel hose clamps
- stainless-steel spatula
- stainless-steel funnel (optional)

No calibration is required of any of this equipment

[B] Ensure that the following equipment is available for tank suction sampling

### Equipment

- High suction syringe tube sampler (Teflon®)
- stainless-steel funnel (optional)

No calibration is required of any of this equipment



# INFORMATION ONLY

Rocky Flats Environmental ERPD Scientific Notebook  
Technology Site Plan

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Prepared by Robert M Nilsson  
Date: February 9, 1995

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## 6.0 Limitations

- [1] Tank sampling and analysis for radiological and explosive hazards must be accomplished accurately to ensure the health and safety of workers
- [2] The use of non-sparking, cold cutting equipment for piping and tanks with potentially explosive environments is necessary to ensure the health and safety of workers

## 7.0 Quantitative/Qualitative Criteria

- [1] Accomplishment of Scientific Notebook Plan as applicable and practical

## 8.0 Impacts on Other Activities

- [1] As applicable, clear all work activities with the appropriate Shift Supervisor

## 9.0 Approval

Craig Combs 2/9/95  
Principal Investigator Date

Craig Combs 2/9/95  
Project Manager Date

James F. [Signature] 2/9/95  
Technical reviewer Date

[Signature] 2/9/95  
QAPM Date

Effective Date 2/22/95

**APPENDIX 1**  
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**FORMS**

**U.S. DEPARTMENT OF ENERGY ROCKY FLATS**

**Tank System Inspection Form**

**Form SNB.A**

<b>A</b>	Tank System Description
	Name
	Location
	Narrative Description
	1    Dimensions
	2    Materials of Construction
	3    Structural Integrity
	4    Corrosion Protection
	5    Foundation
	6    Regulatory Status permitted, interim status, etc
	7    Containment
	Tank Capacity
	Rainfall Volume
	Volume Required
	Containment Integrity
	Containment Area
	Containment Height
	Containment Volume
	Surrounding Soil Characterization
	8    Ancillary Equipment



APPENDIX 1  
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U S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

Sample Collection Form

Form SNB.B

Project Number		Type
Sample Number		
Contractor		
Station Code		
Collection Date	Quarter	Disposition
Collection Time	Purpose	
Sample Location (include Tank No or pipeline segment)		
Composite	(Y/N)	
Composite Desc		
QC Type	Partner	
Collection Method		
Sample Team Leader		
Member		
Member		
Volume Collected	Units	
Prepared By		

Tank and Pipeline Residuals Sample Form

Depth to Residuals		Ft
Depth of Tanks		Inches
Comments		

Sample Crew Member		
	Print Name	
	Signature	Date