SEP 1 0 1988

WEST VALLEY/2

MEMORANDUM FOR: Joseph O. Bunting, Chief
Engineering and CNWRA Branch

John J. Linehan, Acting Chief
Project Management and Quality Assurance Branch

FROM: Rick Weller, Section Leader
Engineering Section
Engineering and CNWRA Branch

Wayne Walker, Project Manager
Special Analysis Section
Project Management and Quality Assurance Branch

SUBJECT: SUMMARY OF STAFF VISIT TO THE WEST VALLEY DEMONSTRATION PROJECT

On September 7, 1988, NRC staff representatives from the Division of High-Level Waste Management (W. Walker and R. Weller) and Division of Industrial and Medical Nuclear Safety (D. Hurt and J. Price, NRC contractor) met with DOE representatives from the West Valley Demonstration Project (WVDP), Defense Waste Processing Facility (DWPF) at the Savannah River Plant, and Office of Civilian Radioactive Waste Management (OCRWM). Representatives from the State of New York, State of Nevada, and West Valley Nuclear Services (Westinghouse contractor to WVDP) were also in attendance at the meeting. The purpose of the visit was to obtain information concerning the schedules for future submittals of formal DOE documents pertaining to the Waste Acceptance Process (WAP) and the planned schedule for the initiation of high-level waste glassmaking operations at West Valley. The DOE documents pertaining to the WAP include the Waste Acceptance Preliminary Specifications (WAPS), the Waste Compliance Plan (WCP) and the Waste Qualification Report (WQR). These documents will be provided by DOE for NRC staff review and comment prior to initiation of waste glass operations, currently scheduled to begin in October 1992. A list of attendees at the meeting is given in Enclosure 1.

The NRC staff was briefed by DOE's on-site contractor (i.e., WVNS) on the vitrification process, the ongoing and planned testing related to waste glass, the schedules for preparation and submittal of documents pertaining to the WAP and the overall strategy used to ensure acceptance of the HLW product produced at West Valley. During the presentations, discussions were held concerning how WAP document submittals and reviews should be conducted. The staff made clear that all document submittals which support the WAP must come via OCRWM, our established licensing interface. This does not preclude technical conversations between NRC staff and DOE project staff but it was decided that OCRWM and the NRC project manager for the WAP should be made aware of any conversations and included in them if substantive issues are being discussed.

Following the discussion of the WAP, a brief summary was given of the Quality Assurance Program being implemented by the WVDP. The West Valley QA manager indicated that they are following NQA-1 quality assurance requirements for the WVDP and current work in the areas of testing and development are also controlled to meet these requirements. The meeting ended with a brief tour of the facility.

During the meeting, the staff noted that there remained a number of open issues, including QA items, from prior correspondence and technical exchange meetings on the WAP between NRC and DOE. Recognizing that both agencies need to have a common understanding of the issues in need of resolution, the following commitments were made to enable the DOE and NRC to establish a baseline for further interaction on the WAP:

1. In the next several weeks, NRC and DOE staff will review the existing record of correspondence and technical exchange meeting summaries on the WAP, identify the open issues resulting from these interactions, and exchange lists of open items on October 3, 1988.

2. Following review and discussion of the open item lists, a common list will be developed and this will form the basis for establishing an approach and schedule for subsequent meetings to resolve open items.

3. DOE agreed to provide NRC with a list and schedule of planned QA audits of both WVDP and DWPF onsite and offsite programs so that, if desirable, the staff can plan for appropriate observation audits.

During the discussions which led to the agreements identified above, the staff made the following observations:

- In addition to the WAP documents identified above (i.e., the WAPS, WCP and WQP), the staff expressed an interest in reviewing the Process Control Program (PCP) for each glass waste producer (i.e., WVDP and DWPF).

- Inasmuch as performance allocation has been assigned to the glass waste form in the Yucca Mountain Consultation Draft Site Characterization Plan (CDSCP), the specification for radionuclide release from the glass waste form in the WAPS (Specification 1.3) needs to be consistent with the allocation assigned in the CDSCP.

- The NRC position regarding the verification of the qualities and properties of waste glass products is that the WVDP and DWPF vitrification system design must include the capability to sample glass waste products. The frequency of sampling during production operations is an open issue which DOE must address. The staff also noted that leach testing of waste glass samples would be expected as a part of the program to verify the performance of waste glass products.

SEP 16 198

WEST VALLEY/?

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Engineering and CNWRA Branch

John J. Linehan, Acting Chief
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- The staff does not disagree with the DOE policy decision to stabilize and immobilize (i.e., vitrify) the existing inventories of high-level liquid wastes currently housed in storage tanks at West Valley and Savannah River Plant prior to the completion of site characterization activities at Yucca Mountain and the finalization of the waste package design. The DOE recognizes that there is some element of risk associated with the commitment and schedule for glass making operations but indicated that, if necessary, special overpacks or canisters will be provided for the glass waste forms to address any identified problems.

- The end result or closure mechanism related to the staff's review of all the documents related to the WAP (i.e., WAPS, WCP, WQR and PCP) and resolution of identified open issues should be a letter (Division or Office level signature) which indicates that the NRC does not object to the initiation of waste glass production. The DOE, for their part, will have to demonstrate by the WAP that the waste glass they produce can be reasonably expected to satisfy the requirements of 10 CFR 60.135 (criteria for the waste package and its components) and perform in accordance with the allocation assigned to the waste form in the SCP.

- The staff indicated that on-site experiments with full scale prototypical waste packages, similar to experiments being conducted at DOE's Waste Isolation Pilot Plant (WIPP) in New Mexico, would be desirable. No such experiments are currently planned by the DOE.

- The staff advised the meeting participants that all high-level waste open issues, including those related to the glass waste form and the WAP, would be tracked in an "open item tracking system" pending satisfactory resolution. This "open item tracking system" would be made available to the DOE.

In addition to the above information, the schedule for start-up of hot (i.e., radioactive glass) operations at West Valley and Savannah River was discussed. West Valley is scheduled to start hot operations in October 1992 and Savannah River in October 1991. There will be more extensive discussions of the schedule and future document submittals for the Savannah River Project at the next technical exchange meeting scheduled for September 29 and 30, 1988 at the DOE Forrestal Building.

Based on the information presented and the tour of the West Valley facility, the staff was pleased with the progress made and feels the groundwork has been laid to ensure that future interactions with DOE on the WAP will be meaningful.

Enclosure 2 contains copies of the handouts provided by DOE at the meeting.

/S/
Rick Weller, Section Leader
Engineering Section
Engineering and CNWRA Branch

/S/
Wayne Walker, Project Manager
Special Analysis Section
Project Management & Quality Assurance Branch

Enclosures:
As stated

cc: E. Regnier, DOE-OCRWM
P. Spiegler, State of Nevada

DISTRIBUTION

Central Files	REBrowning, HLWM	BJYoungblood, HLWM	RLBallard, HLTR
JOBunting, HLSE	JLinehan, HLOB	HLTR r/f	NMSS r/f
RWeller, HLTR	WWalker, HLOB	PDR & LPDR	LSS

OFC	HLTR	HLOB				
NAME	RWeller/ll/cj	WWalker				
DATE	9/16/88	9/16/88				

WVDP/OCRWM/NRC MEETING
SEPTEMBER 7, 1988

NAME	ORGANIZATION	PHONE NUMBER
Joseph J. Buggy	WVNS	716-942-4200
Richard A. Humphrey	WVNS	716-942-4400
James M. Pope	WVNS	716-942-4275
David L. Shugars	WVNS - QA	716-942-4821
Alvin Nixby	DOE-WV	716-942-4312
Edward Regnier	DOE-OCRWM	202-586-4590
Richard G. Spaunburgh	NYSERDA-WV	716-942-4378
Peter Spiegler	State of Nevada	702-885-3744
W. T. (Sonny) Goldston	DOE-SR (DWPF)	803-725-5532
John Plodinec	SRL-DWPF	803-725-2170
Joseph D. Price	SAIC	703-827-4803
Davis Hurt	NRC	301-492-0694
Wayne Walker	NRC-DHLWM	301-492-0447
Rick Weller	NRC-DHLWM	301-492-3458

GEW1789:VP52

GD:88:0245

Revised Presentation Agenda
for
NRC Visitors
Conference Room B
September 7, 1988

8:15 - 8:30 a.m.	Review agenda Expectations of the meeting	W. Dixby
8:30 - 10:15 a.m.	Vitrification overview	R. Humphrey
10:15 - 11:30 p.m.	HLW canistered glass quality	J. Pope
11:30 - 12:30 p.m.	Lunch on site	
12:30 - 1:30 p.m.	Vitrification test program	P. Kianian
1:30 - 2:00 p.m.	HLW QA	D. Shugars
2:00 - 3:00 p.m.	Open issues and future interaction and resolutions	W. Bixby/ R. Humphrey
3:00 - 4:30 p.m.	Tour - STS/Vitrification	

GEW1784:VP51

R.A. Humphrey

Vitrification Project Manager

CS400W/DCS

West Valley History

1962	NFS Reached Agreement with AEC and New York State to Construct Reprocessing Plant
1966	Construction Completed
1966-1972	NFS In Operation (640 Metric Tons of Spent Fuel Reprocessed)
1972	Plant Shut Down for Modifications
1973-1975	Received Spent Fuel In Preparation for Resuming Production

West Valley History (Cont'd)

1976	NFS Decided to Withdraw from Reprocessing Business and Turn Over Responsibility to New York State
1978	DOE Study Resulted in Allocation of Responsibilities Between New York State and DOE
1980	Congress authorized DOE to carry out High-Level Nuclear Waste Management Demonstration
1981	Westinghouse Selected as Operating Contractor of West Valley Demonstration Project
Feb. 25, 1982	DOE and WVNS Assumed Operational Control of the Site

Objective

Demonstrate Solidification and Preparation of High-Level Waste for Permanent Disposal

Authority

Public Law 96-368, West Valley Domonstration Project Act

Scope

- Solidify Liquid High-Level Waste
- Develop Containers
- Transport To Federal Repository
- Dispose of Low-Level and Transuranic Waste
- Decontaminate and Decommission Facilities Used

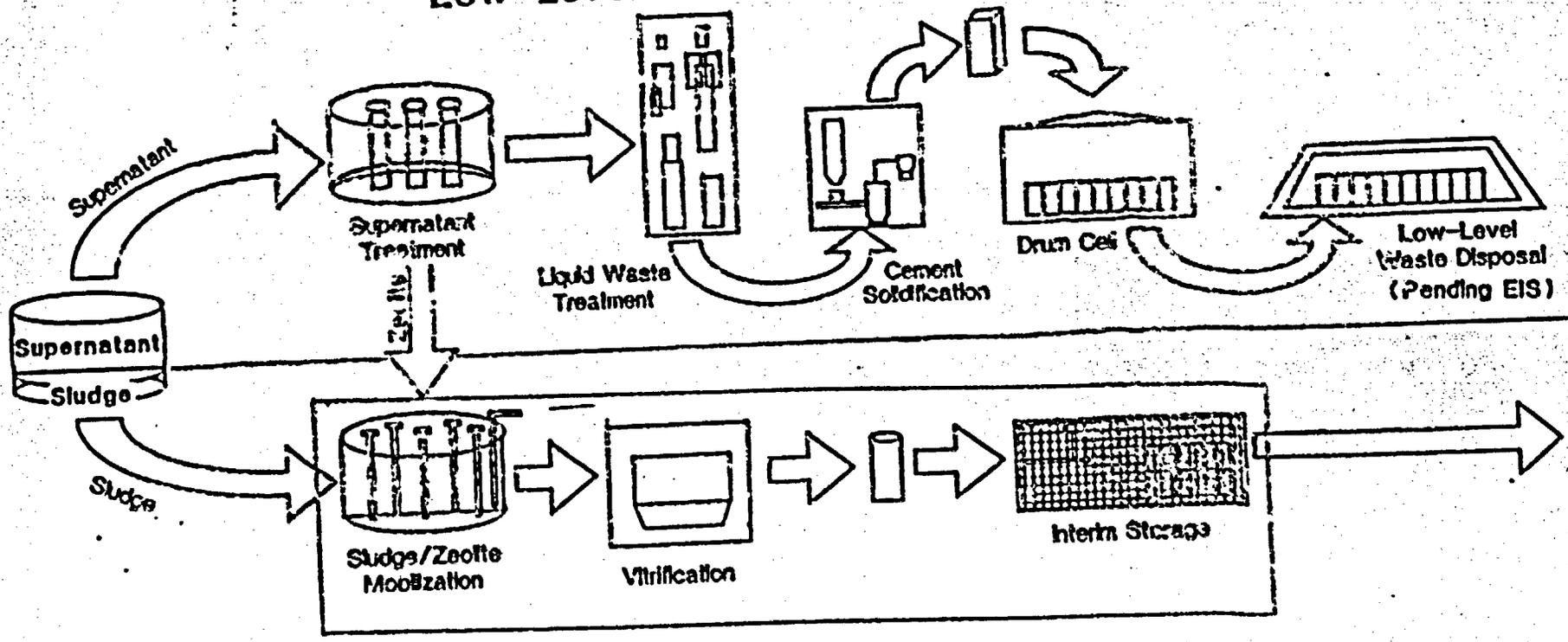
NRC Memorandum of Understanding (MOU)

- Mandated by Public Law No. 96-368
- DOE/NRC Review and Consultation - Informal
- To be of Assistance to DOE Concerning Pubilc Health and Safety
- DOE-WV to Submit to NRC a Plan for
  - Solidification of the HLW
  - Removal of Waste
  - Decontamination of Facilities
- DOE-WV to Provide a Description and Analysis of the Extent to which the Final Waste Form and Container Complies with any NRC Technical Regulations or Proposed Regulation(s) for HLRW in Geologic Repositories
- All SARs Submitted for Independent NRC Review

PROCESS OVERVIEW

1990 — 1995

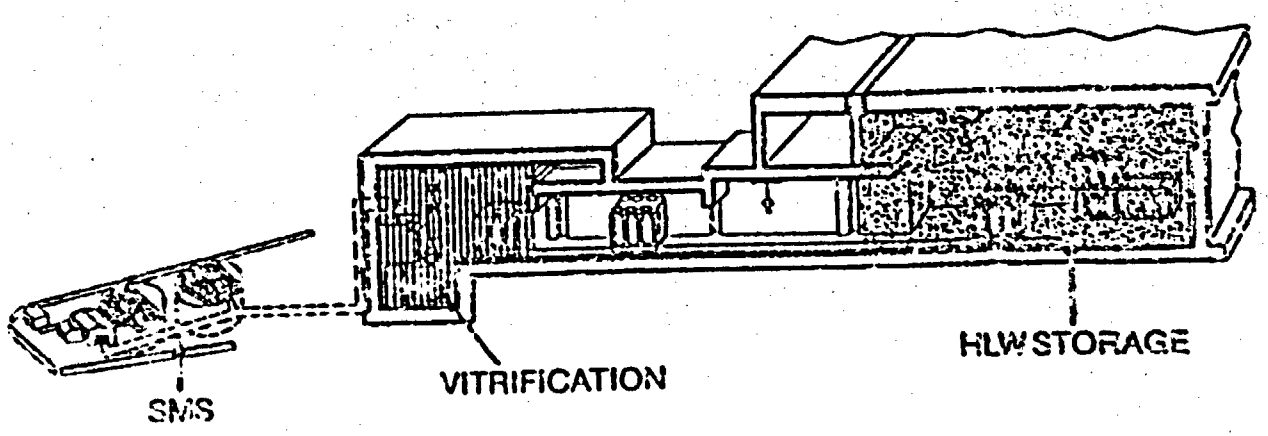
Low-Level Waste Processing Cycle



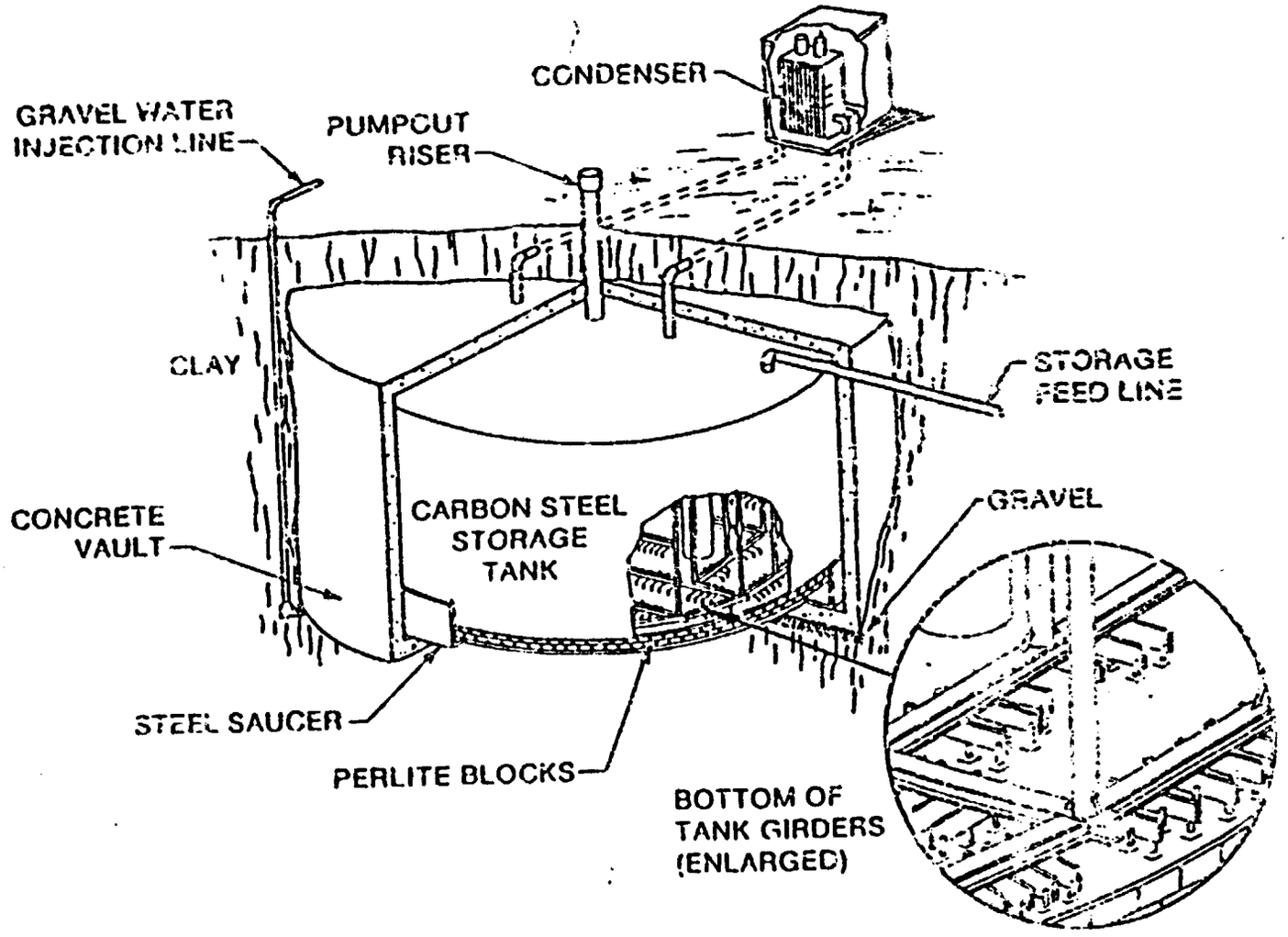
High-Level Waste Processing Cycle

C3315WV015

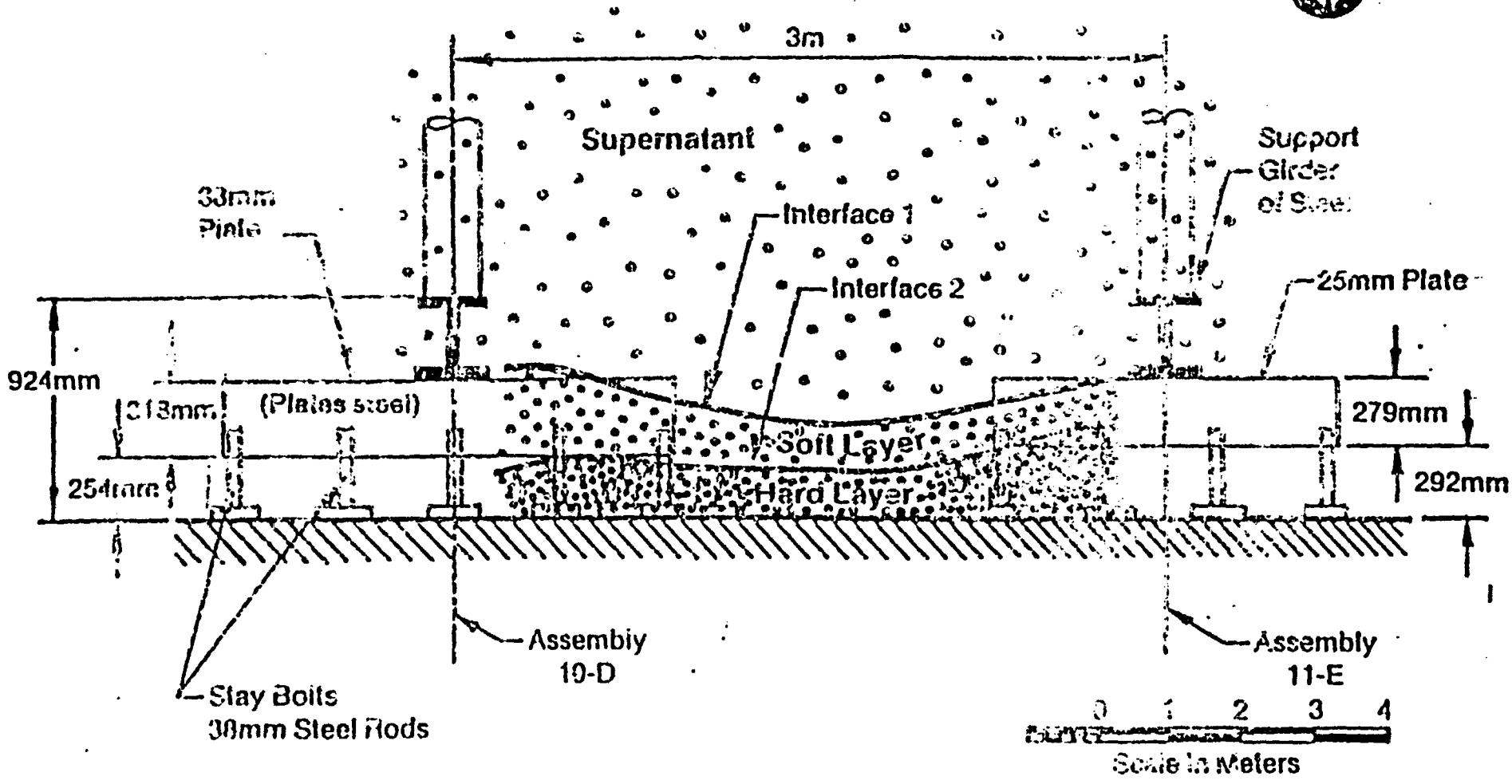
HLW PROCESSING



HIGH-LEVEL LIQUID WASTE TANK

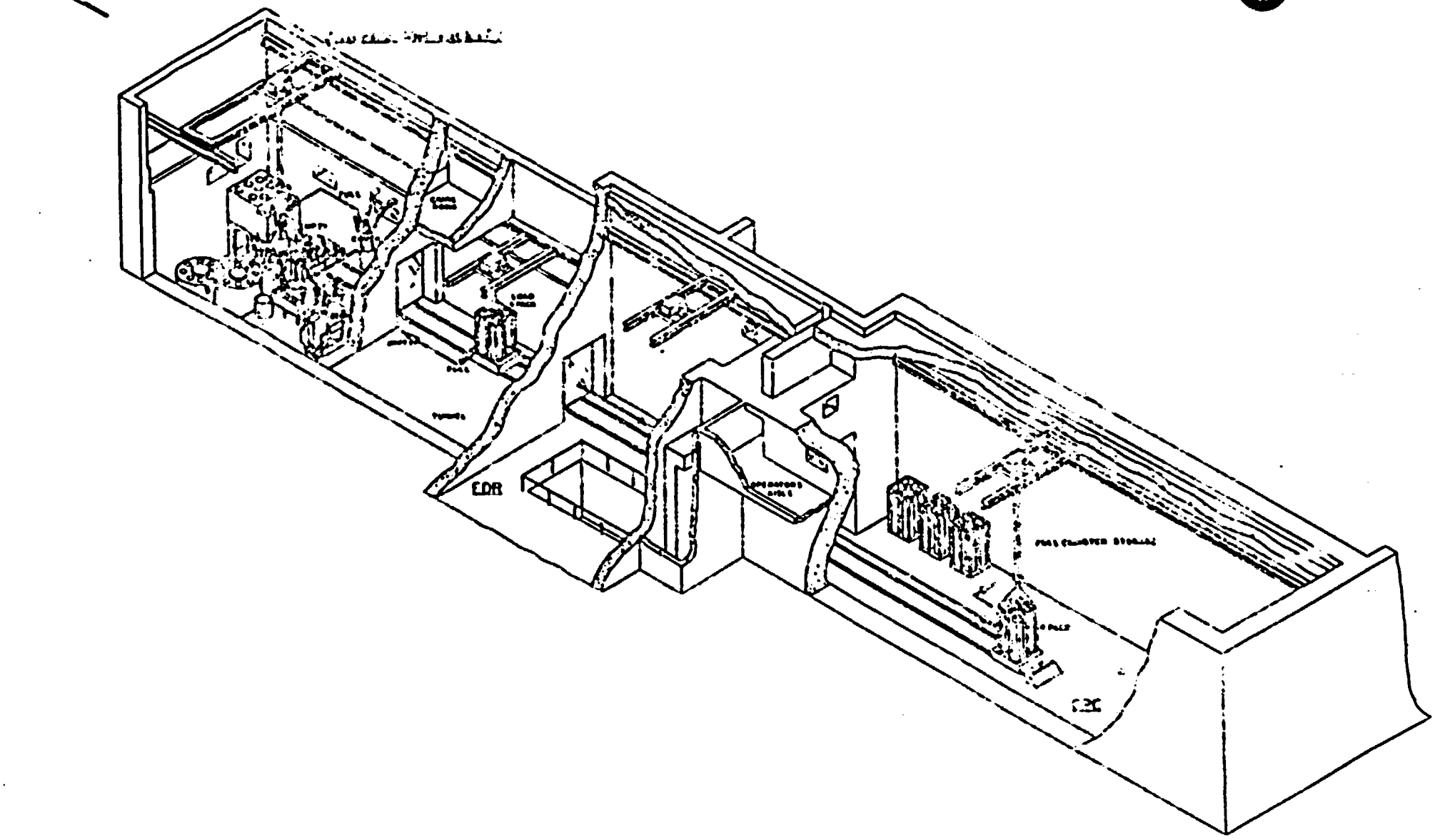


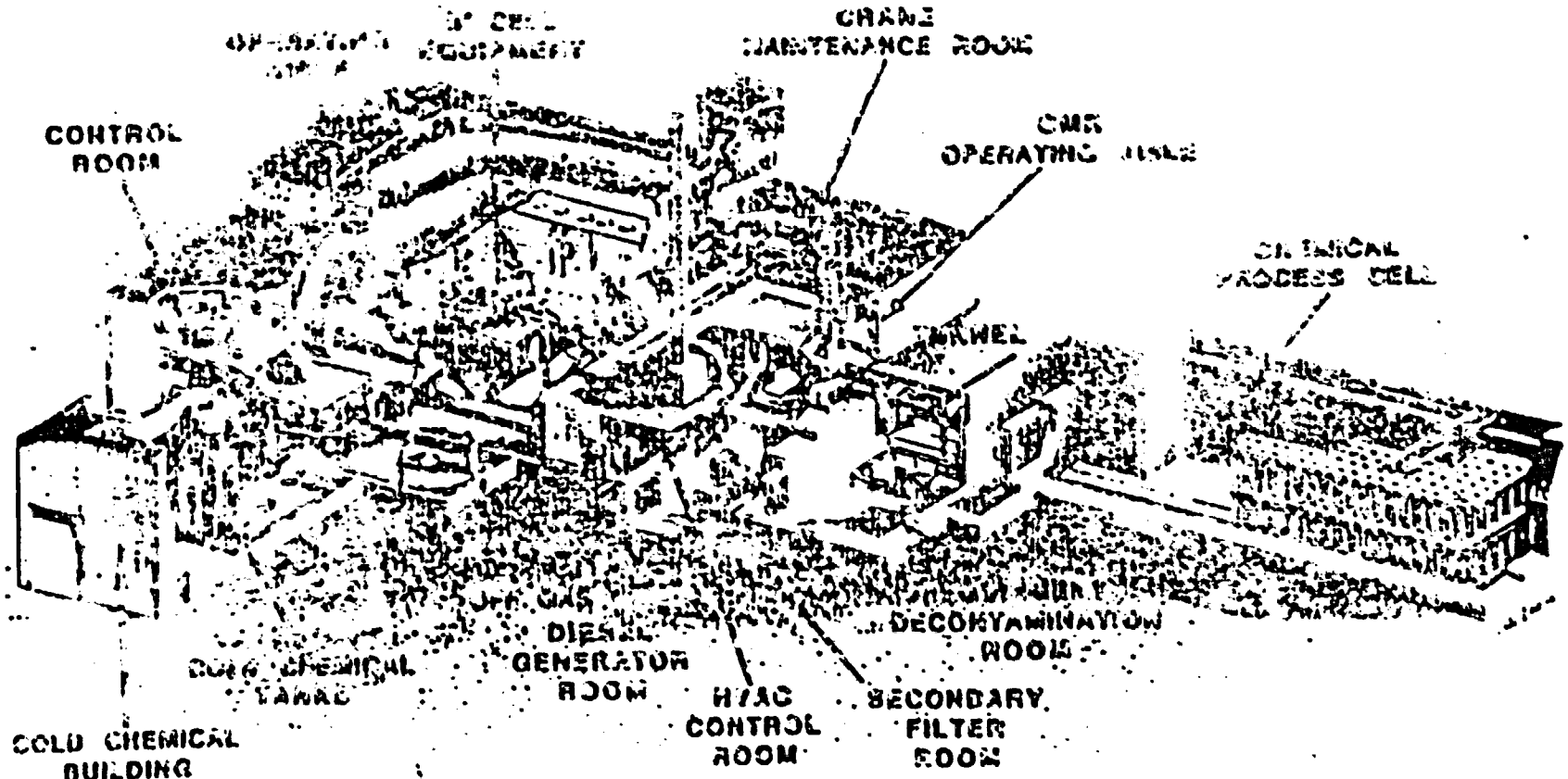
TANK 8D-2 SLUDGE LAYERING SECTIONAL VIEW



M1402 WV103

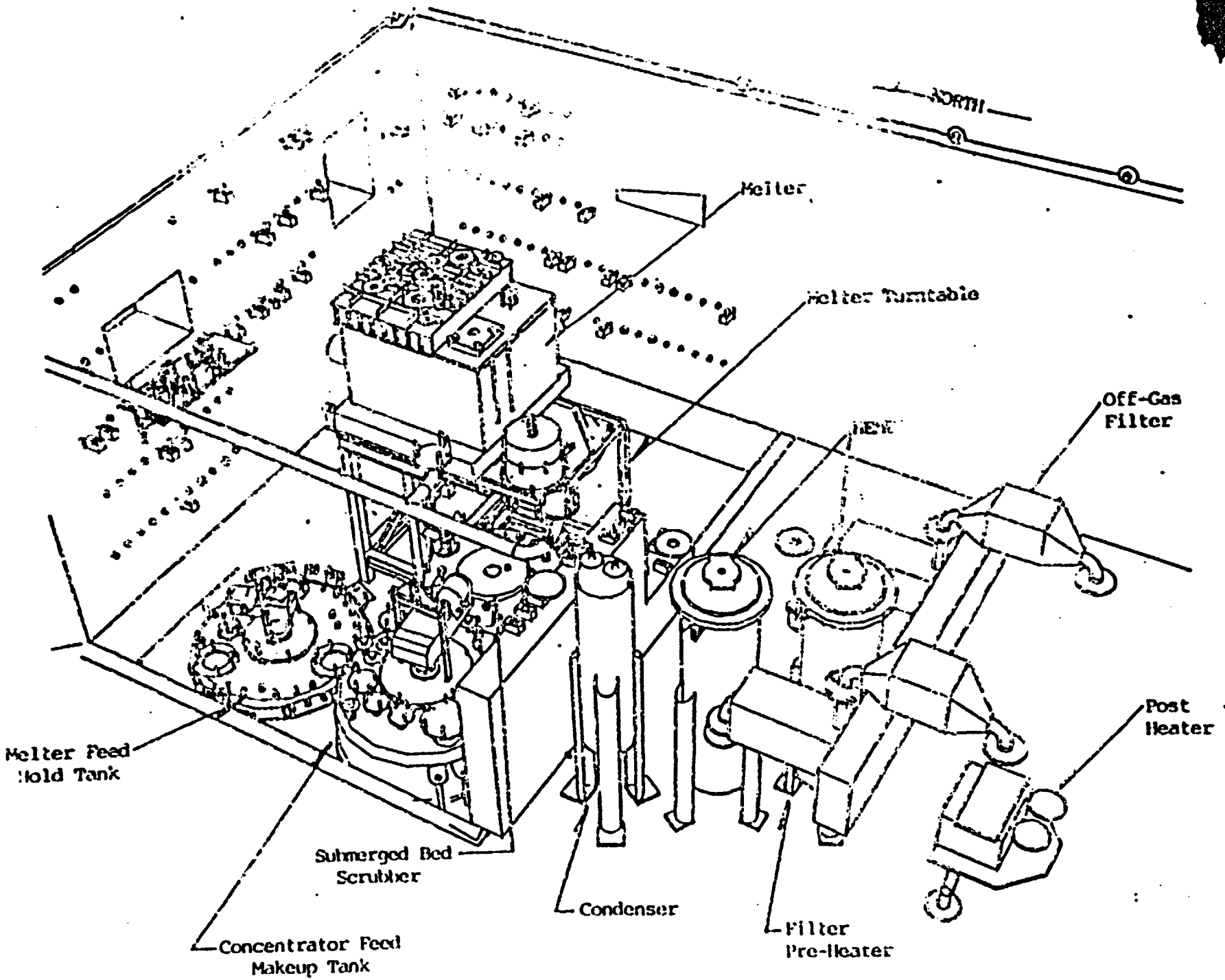
WEST VALLEY DEMONSTRATION PROJECT



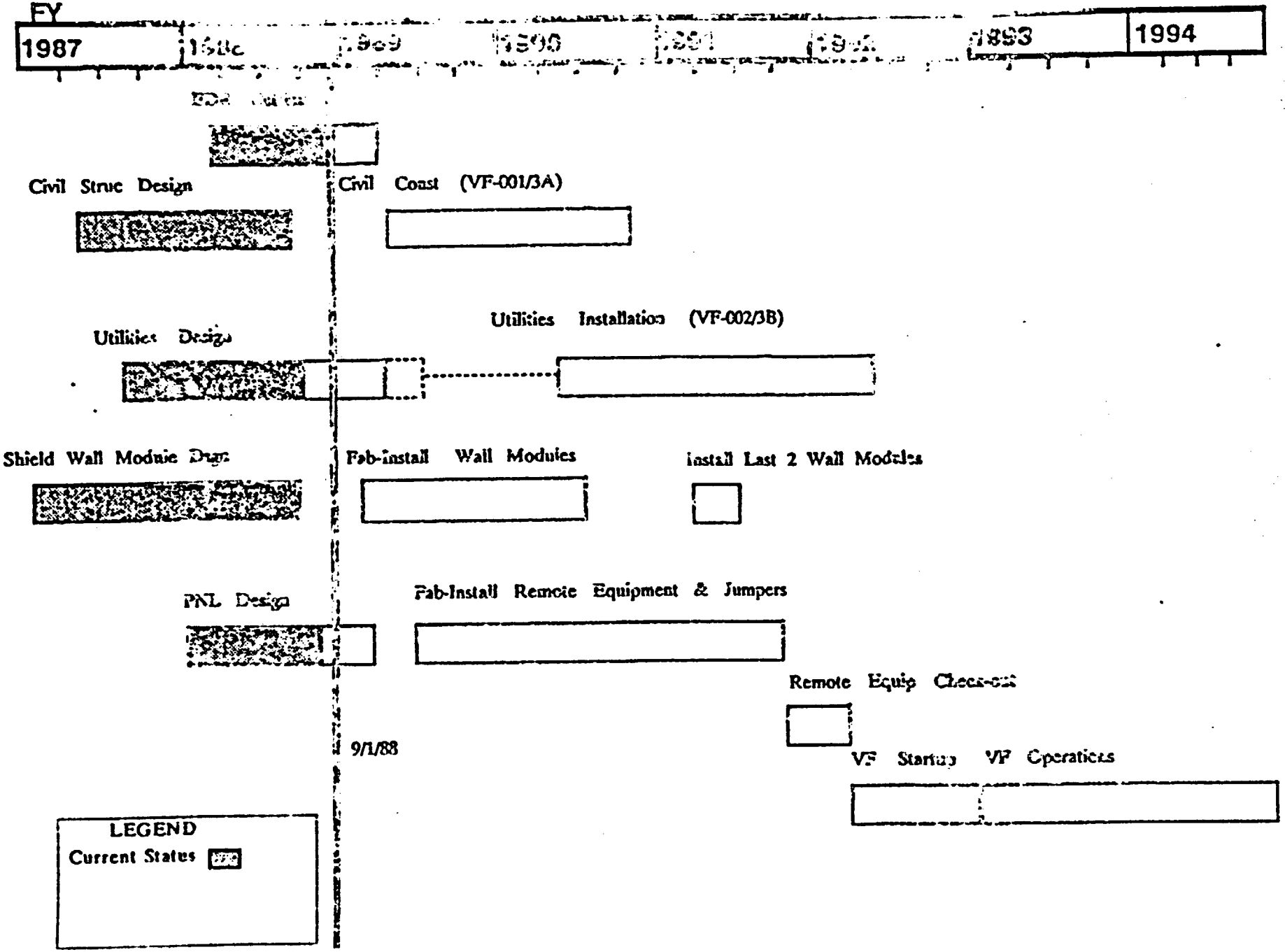


VITRIFICATION FACILITY

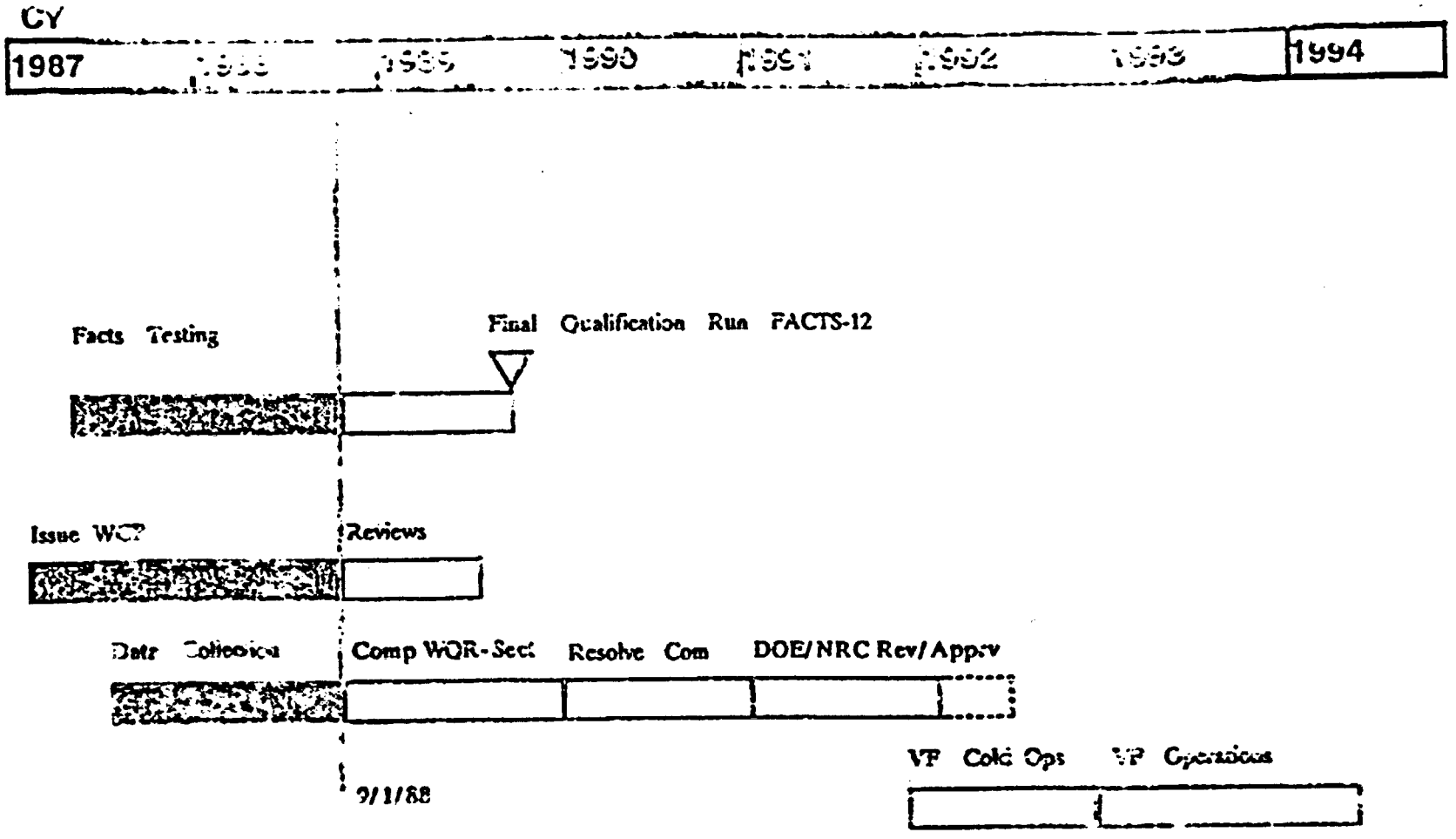
38801-158


NORTH
Melter
Melter Turntable
Off-Gas Filter
Post Heater
Melter Feed Hold Tank
Submerged Bed Scrubber
Condenser
Filter Pre-Heater
Concentrator Feed Makeup Tank

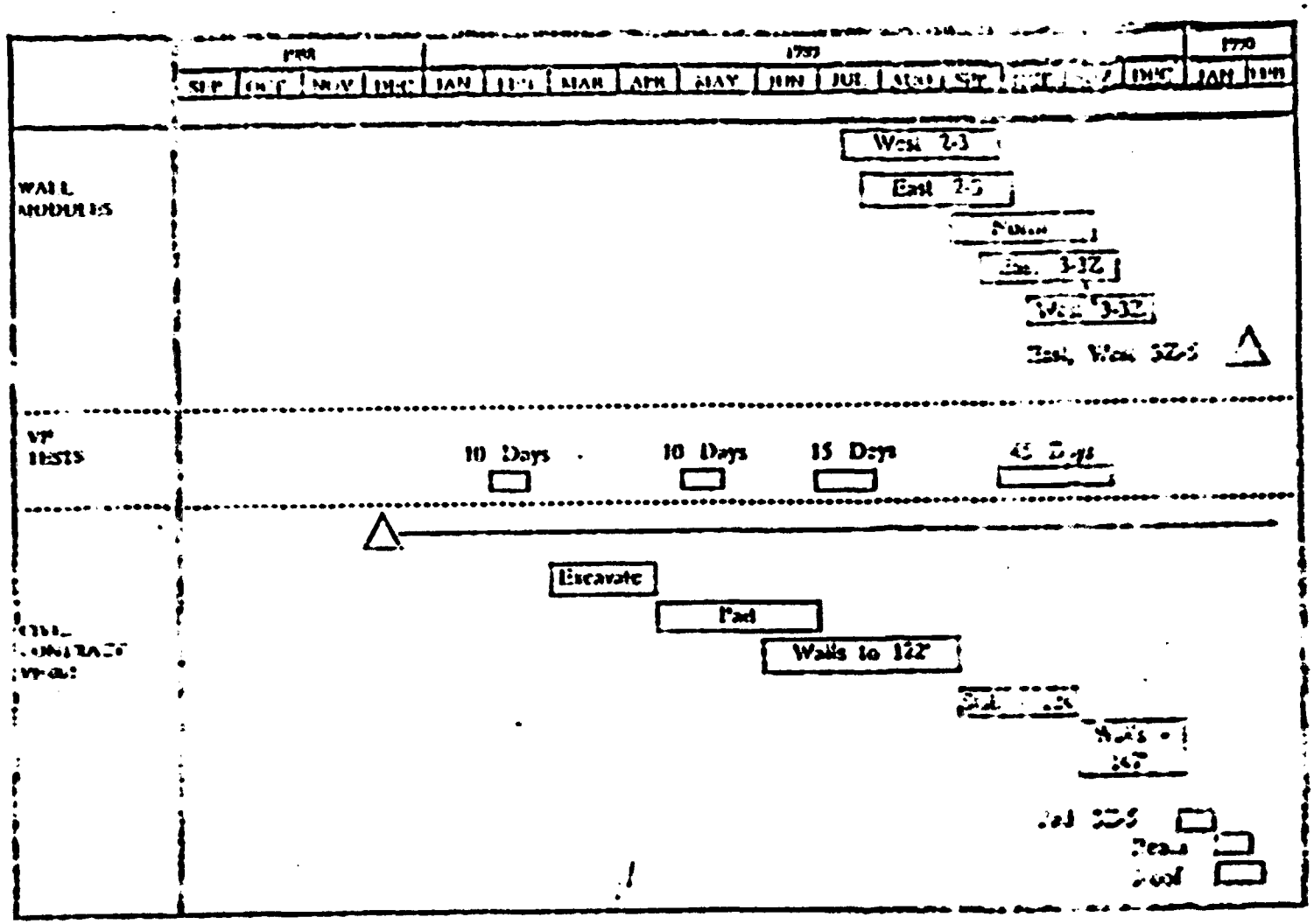
Summary Level Schedule: Ventilation Facility (VF)



Summary Level Schedule / F Testing



Vitrification ... Construction and Testing



Institutional [illegible] for Initial Hot Operation

FY '87	[illegible]	FY '90	[illegible]	FY '93	FY '94

[redacted] SAR - not Ops

1. Prepare PSAR - Complete
2. Issue Draft FSAR for DOE comment - 6/90.
3. Resolve comment - 12/90.
4. Issue FSAR for use - 11/91.
5. NRC to issue SER - 9/91.
6. Incorporate OSRs into procedures - 11/91.

Start Hot Ops

[redacted]

[illegible]

LEGEND

Critical Activities

Path

Operational [illegible]

FY '87	[illegible]	[illegible]	FY '90	[illegible]	[illegible]	FY '93	FY '94

ORRB

1. Form and train ORR Team - 12/90.
2. Develop Mort - 11/91.
3. Develop and complete checklist present to ORRB - 4/92.
4. Final presentation - 5/92.
5. ORRB recommend Startup - 7/92.
6. DOE-WV request approval for Startup - 8/92.
7. DOE-ID approval to Startup - 9/92.

Start Hot Ops

[redacted]

LEGEND

Plan

J. M. POPE

PROCESS TECHNOLOGY AND TESTING MANAGER

HLW CANISTERED GLASS QUALITY

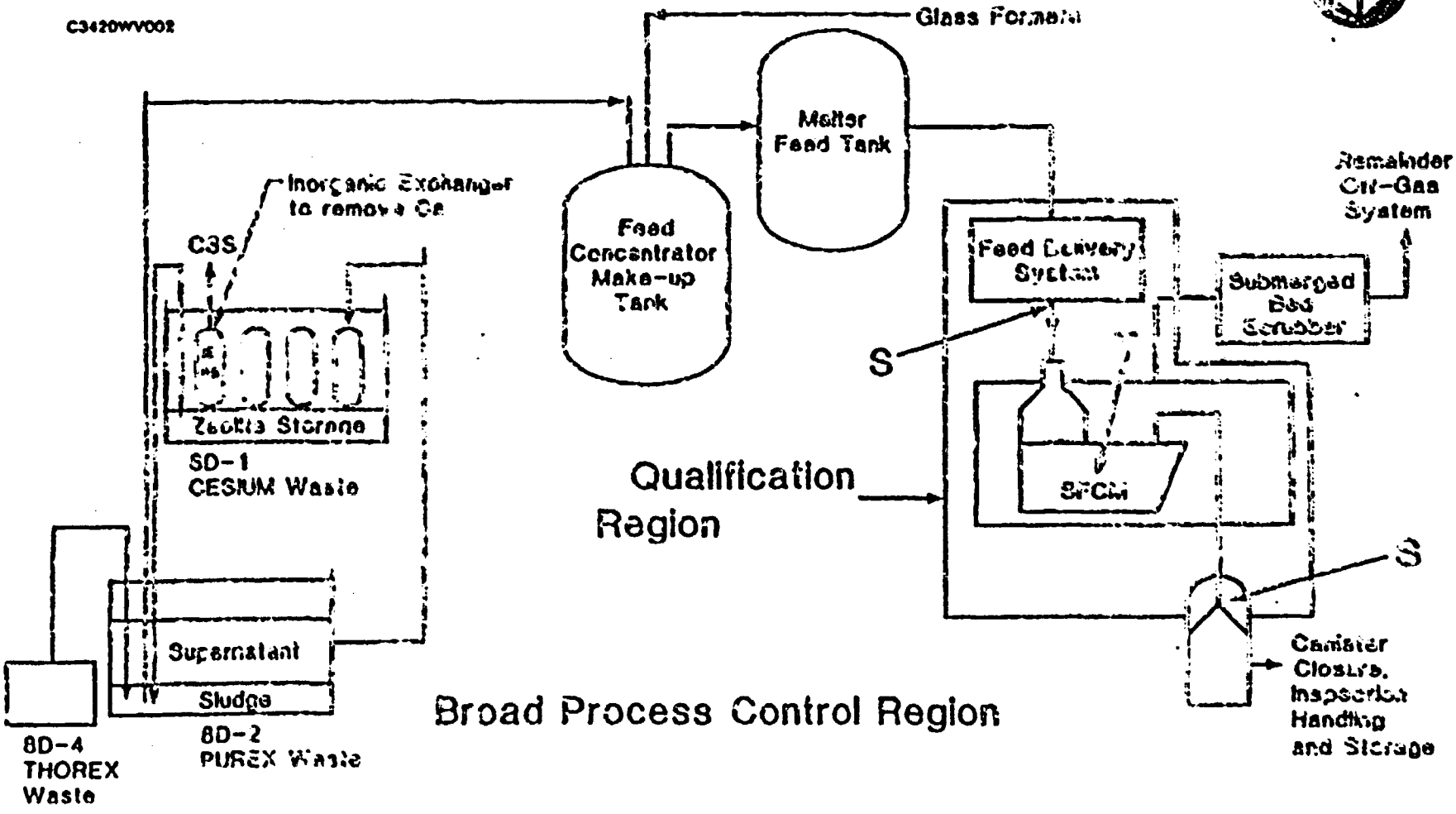
NRC PRESENTATION AGENDA

SEPTEMBER 7, 1988

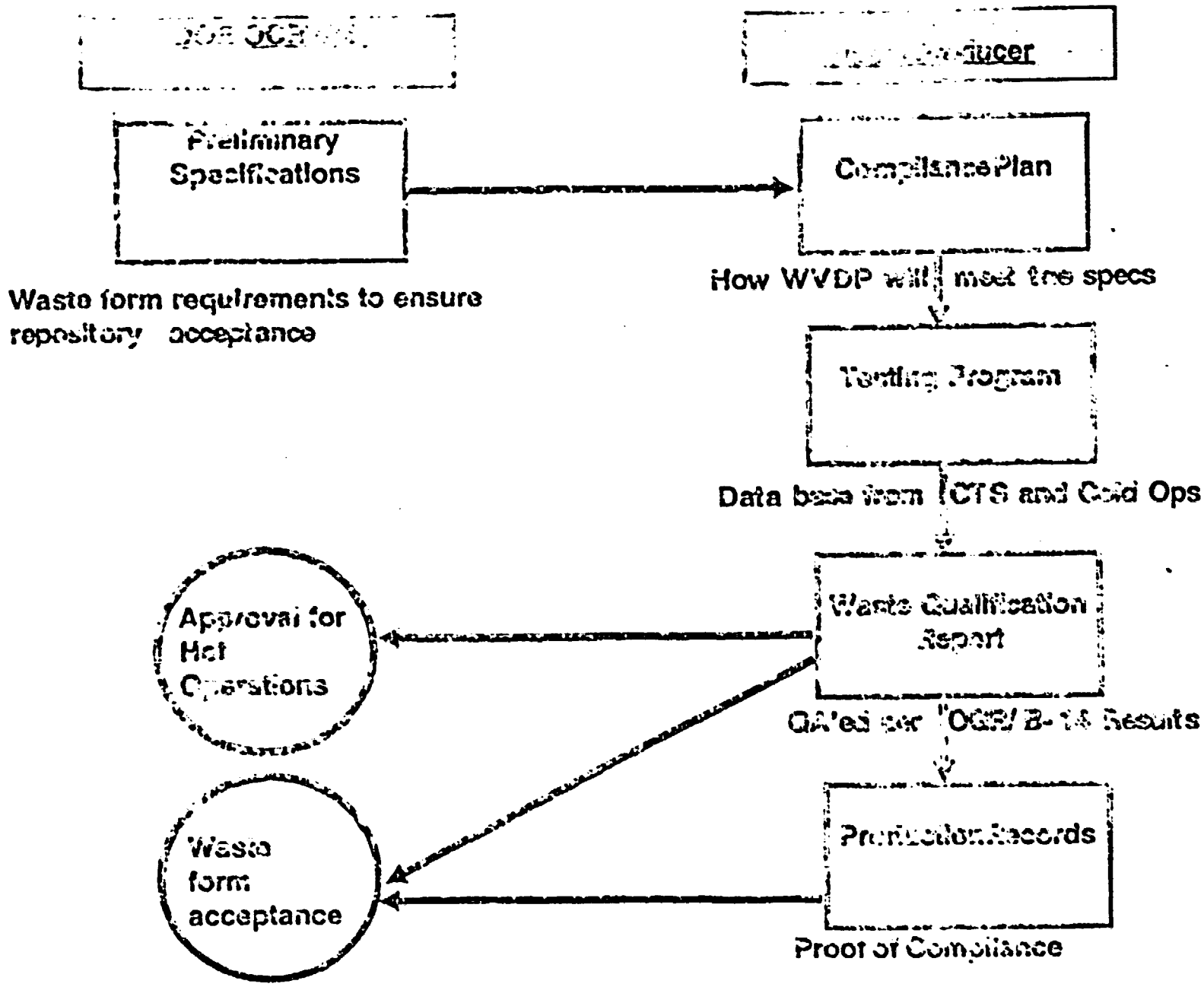
VITRIFICATION TECHNICAL APPROACH

- USE SLURRY-FED CERAMIC MELTER
- ADAPT BOROSILICATE GLASS WASTE FORM
- PRODUCE ≤ 300 CANISTERS HAVING LOW HEAT OF ≤ 330 WATTS
- ESTABLISHING PERFORMANCE IN FULL-SIZE COMPONENT TEST STAND
  - USES SAME EQUIPMENT FOR RADIOACTIVE OPERATIONS
  - PROVIDES OPERATOR TRAINING EXTENSIVE
  - ENABLES PROCESS CHARACTERIZATION TO DETERMINE CONTROLLING PARAMETERS AND TO VERIFY PRODUCT ACCEPTABILITY
- ADD INDIVIDUAL CHEMICALS TO OBTAIN TARGET COMPOSITION/ACCEPTABLE RANGE

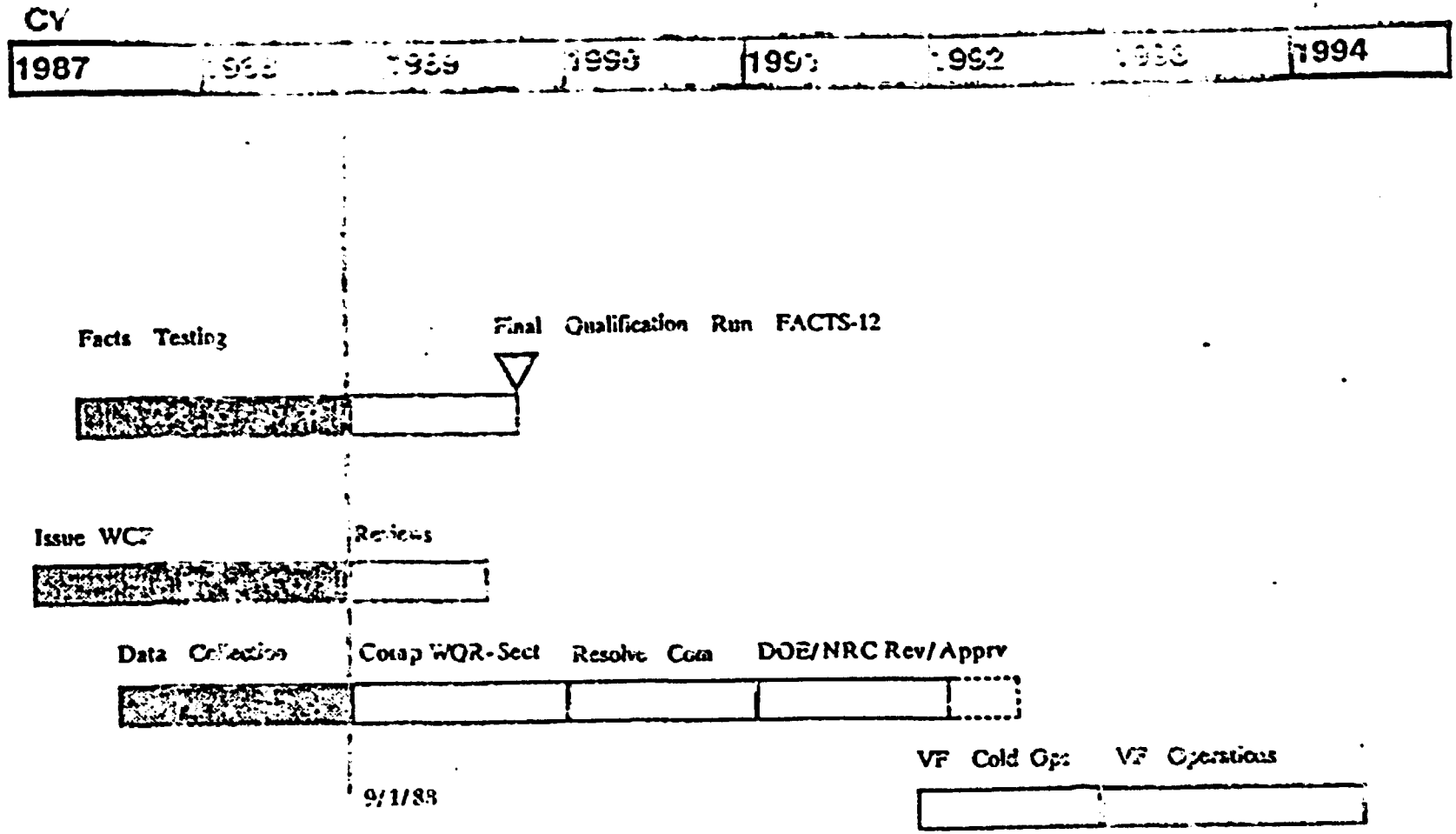
WEST VALLEY PROJECT
PROCESS/PRODUCT ACCEPTANCE STRATEGY



WASTE ACCEPTANCE PROCESS



Summary Level Schedule / F Testing



WAP-PROPOSED SCHEDULES

SPECIFICATIONS

FIRST ISSUE	4/87
REVISED FOR SINGLE REPOSITORY	6/88 (DWPF)

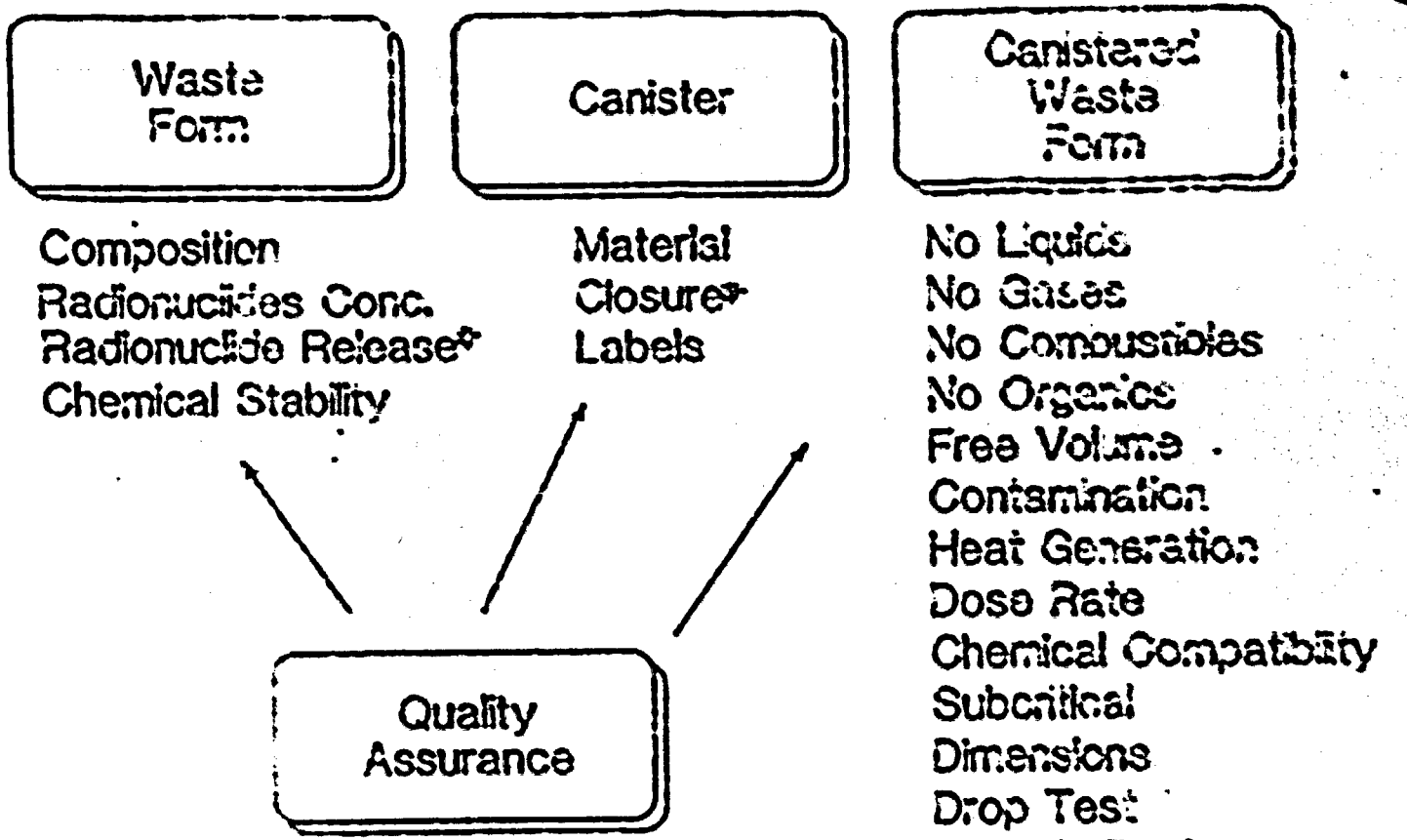
COMPLIANCE PLAN

PRELIMINARY DRAFT ISSUED	5/87 (WAC) 4/88
WVDP UPDATES WCP INCLUDING QA	9/88
RETURN TO RW	10/88
RW ISSUES WCP AS DRAFT FOR REVIEW	12/88
WVDP/NE REVISES AND ISSUES WCP AS PRELIMINARY DRAFT FOR CONCURRENCE	2/89
RW OBTAINS NRC REVIEW/COMMENT	4/89
WVDP/NE ISSUES DRAFT FOR CONCURRENCE	6/89 (DWPF ABOUT 11/88)

WASTE QUALIFICATION REPORT

INITIAL CHAPTERS 4/93
COLD OPERATIONS DATA IN WQR 4/93

WASTE ACCEPTANCE SPECIFICATIONS



1.3 RADIONUCLIDE RELEASE SPECIFICATION

- B, Si, Na, Cs, U EACH LEVEL $\leq$ 1 g/m^2-d USING MCC-1 TEST FOR 28 DAYS AT 90°C IN DI H_2O
- ANOTHER SAMPLING METHOD OR LEACH TEST ACCEPTABLE IF THEY CAN BE RELATED TO THE SPECIFIED TEST
- CERTIFY TO 95-CONFIDENCE LEVEL THAT 95 PERCENT OF PRODUCT IS ACCEPTABLE*

*SPECIFICATION 1.1 REQUIRES COMPOSITION ANALYSES

WVDP APPROACH TO RADIONUCLIDE RELEASE ACCEPTANCE

- MCC-1 RESULTS DEPEND UNIQUELY ON COMPOSITION (EVERYTHING ELSE BEING EQUAL)
- CENTRAL AXIOM: GLASSES OF THE SAME COMPOSITION HAVE THE SAME RADIONUCLIDE RELEASE CHARACTERISTICS
- THUS, CONTROL OF COMPOSITION DURING HOT OPERATIONS WILL CONTROL RADIONUCLIDE RELEASE

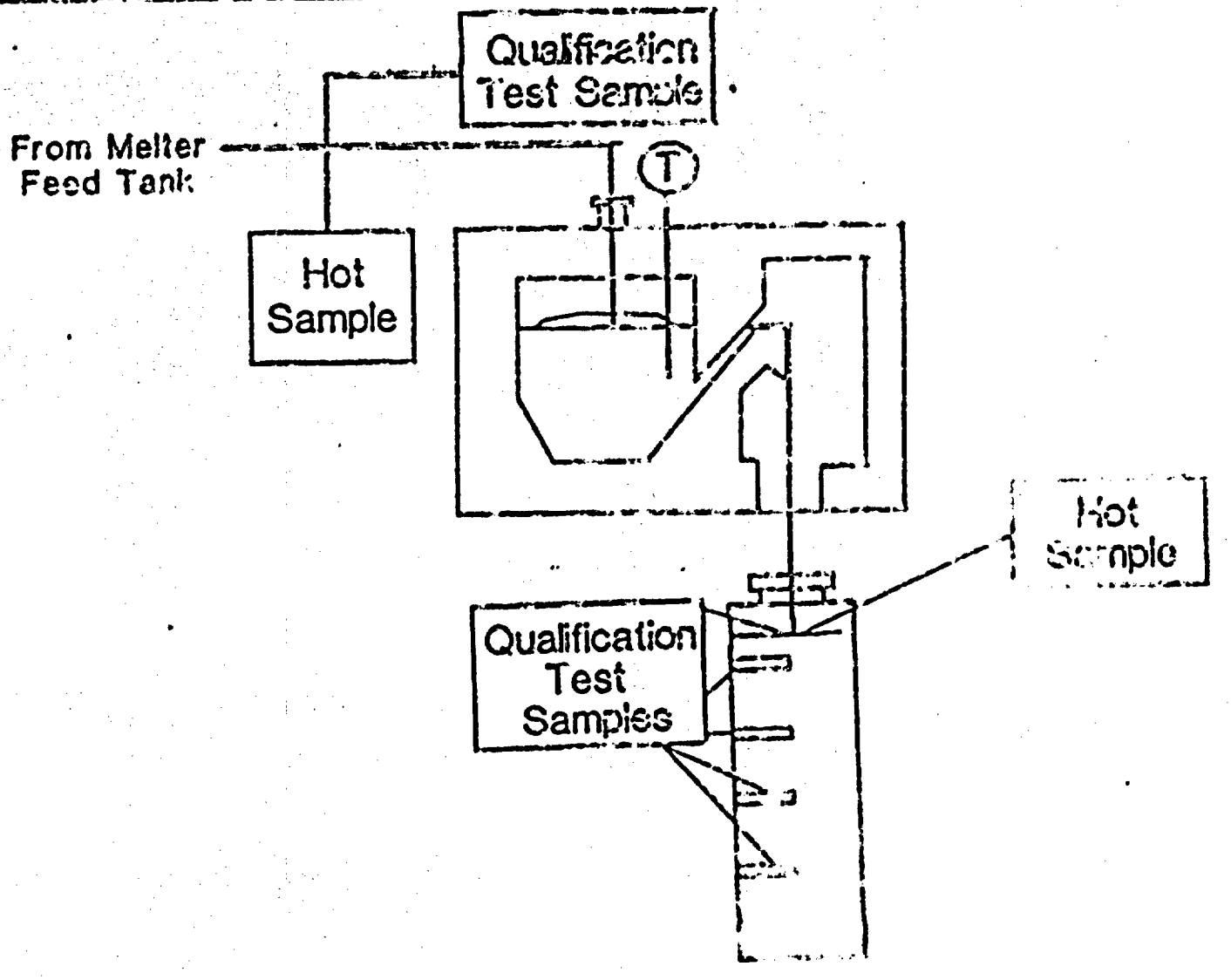
WVDP APPROACH FOR PRODUCTION ACCEPTANCE

- SAMPLE MELTER SLURRY FEED;* IF NOT ON TARGET, RECYCLE
- MAINTAIN BULK GLASS TEMPERATURE GREATER THAN 50°C ABOVE THE LIQUIDUS TEMPERATURE
- VERIFY PRODUCTION OF AN ACCEPTABLE, PREDICTED GLASS BY EXTRACTING GLASS SHARDS FROM THE CANISTERS*

(MASS BALANCE MODEL SHOWING MELTER IS WELL-MIXED TANK, ETC.)

*FREQUENCY OF SAMPLES TO BE TAKEN IN RADIOACTIVE OPERATIONS IS BEING DETERMINED DURING "COLD" TESTING

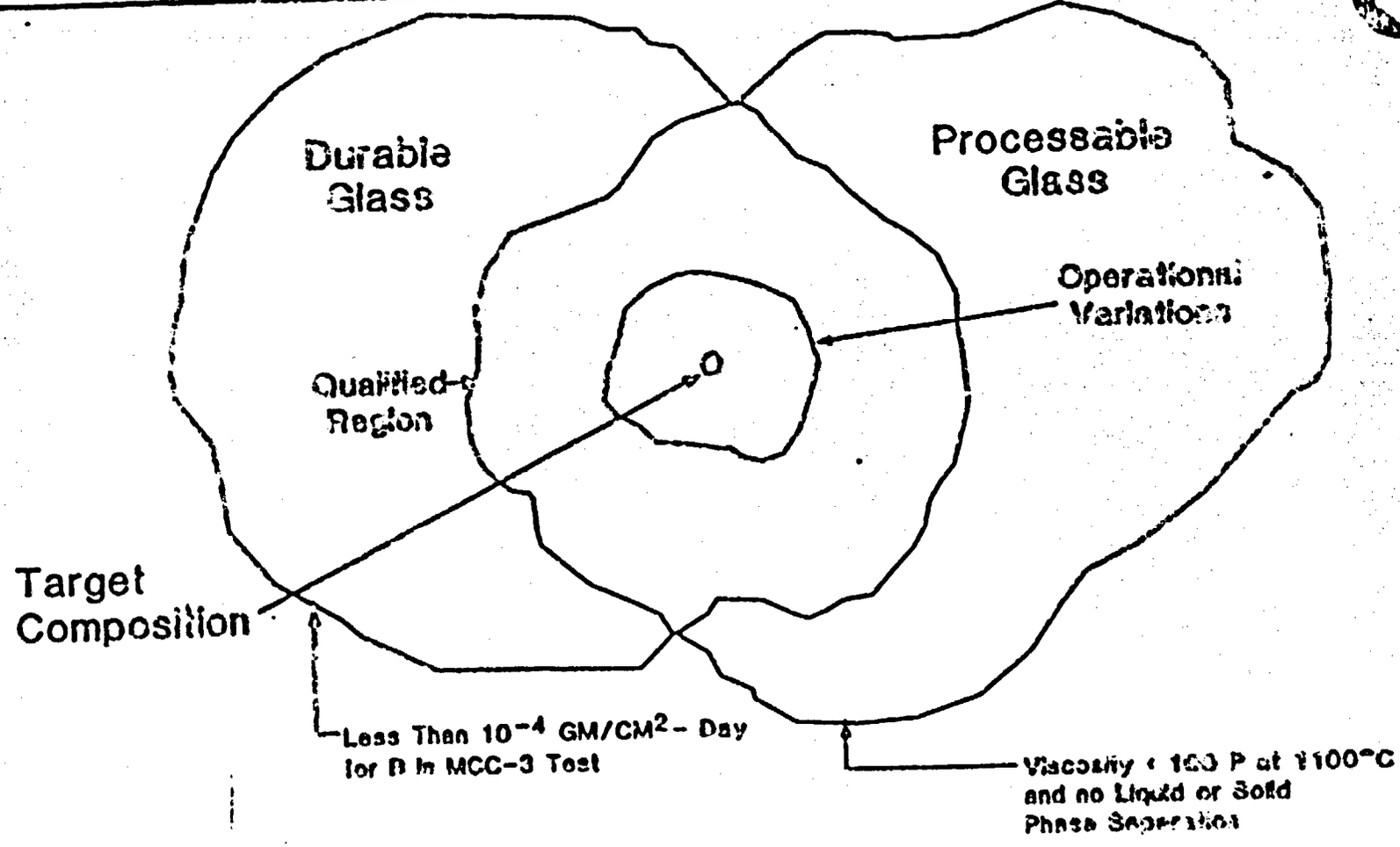
PROPOSED QUALIFICATION AND HOT SAMPLING LOCATIONS

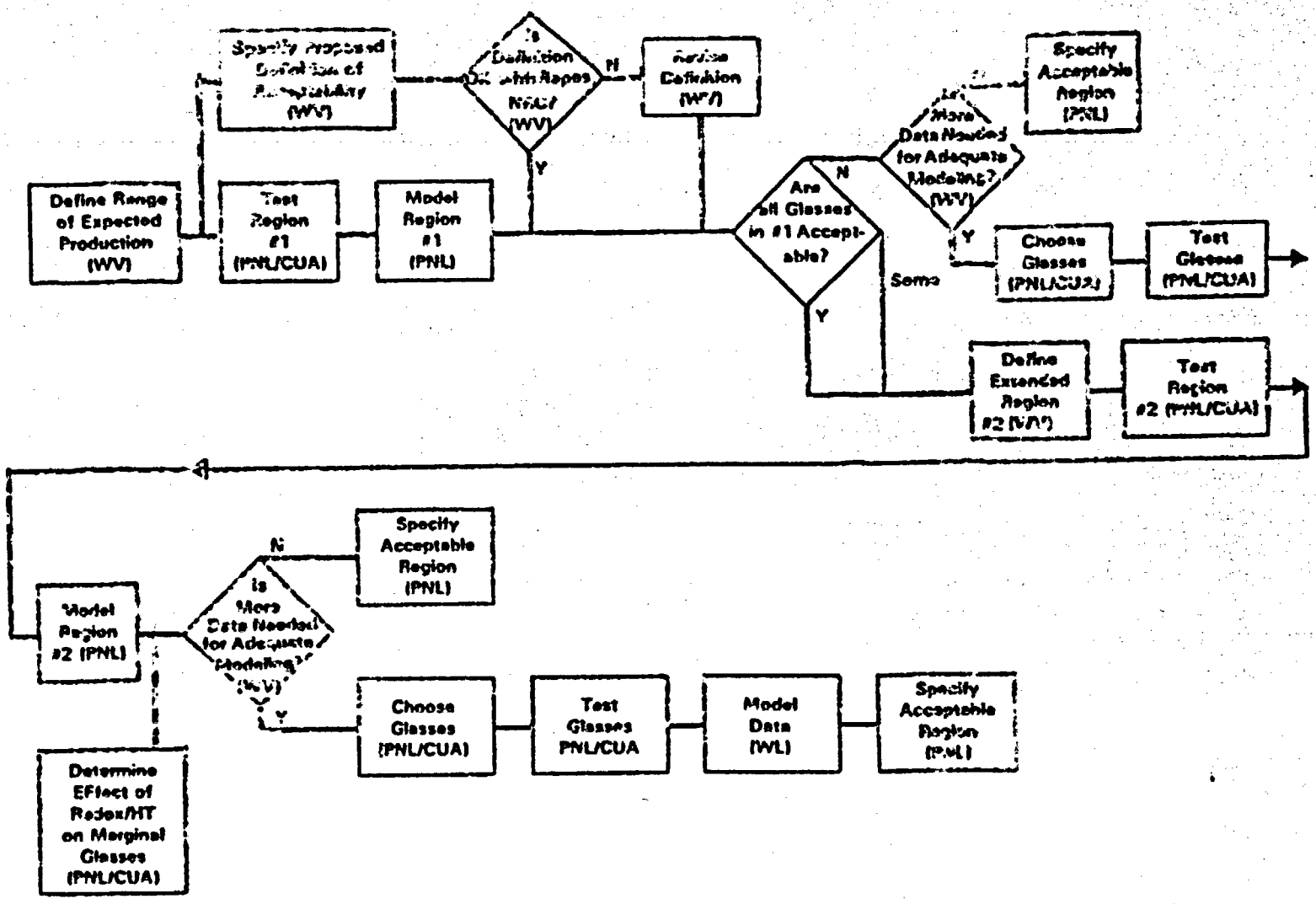


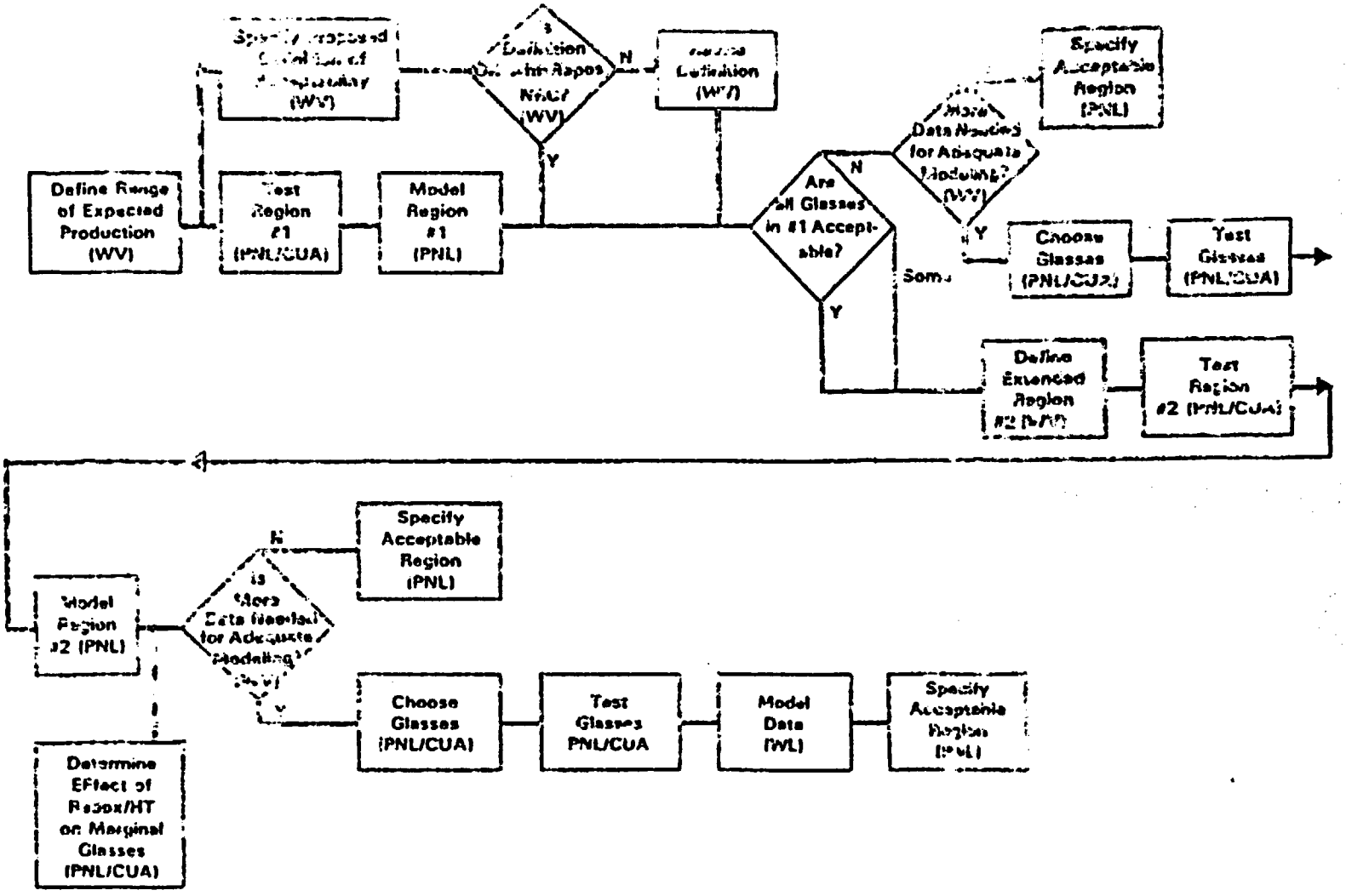
WVDP APPROACH (CONTINUED)

- TO ESTABLISH THE COMPOSITIONAL RANGE GIVING ACCEPTABLE DURABILITY, WHILE ADDRESSING EXTENDED TIME BEHAVIOR, A POWDER LEACH TEST (OR PRODUCT CONSISTENCY TEST) HAS BEEN EMPLOYED
- A RELATIONSHIP BETWEEN PCT AND MCC-1 IS BEING ESTABLISHED

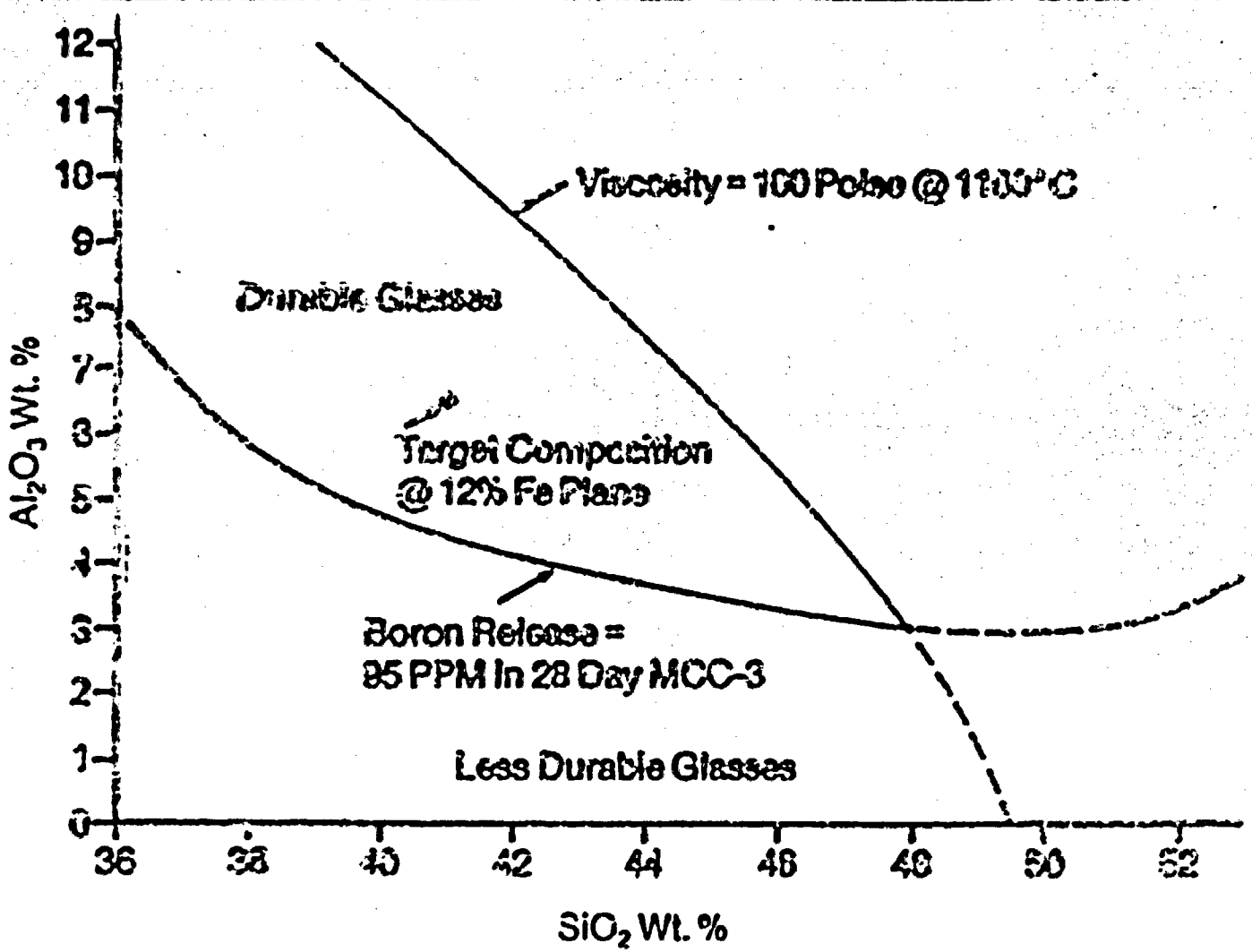
SCHEMATIC OF PROCESS AND PRODUCT QUALIFICATION




Define Range of Expected Production (WV)
Test Region #1 (PNL/CUA)
Model Region #1 (PNL)
Is Definition OK with Regas NG? (WV)
N
Revise Definition (WV)
Y
Are all Glasses in #1 Acceptable?
N
More Data Needed for Adequate Modeling? (WV)
Y
Specify Acceptable Region (PNL)
Some
Choose Glasses (PNL/CUA)
Test Glasses (PNL/CUA)
Y
Define Extended Region #2 (WV)
Test Region #2 (PNL/CUA)
Model Region #2 (PNL)
Is More Data Needed for Adequate Modeling? (WV)
N
Specify Acceptable Region (PNL)
Y
Choose Glasses (PNL/CUA)
Test Glasses PNL/CUA
Model Data (WL)
Specify Acceptable Region (PNL)
Determine Effect of Redox/HT on Marginal Glasses (PNL/CUA)


Define Range of Expected Production (WV)
Test Region #1 (PNL/CUA)
Model Region #1 (PNL)
Is Definition Adequate? (WV)
N
Y
Revise Definition (WV)
Are all Glasses in #1 Acceptable?
N
Some
Y
More Data Needed for Adequate Modeling? (WV)
N
Y
Specify Acceptable Region (PNL)
Choose Glasses (PNL/CUA)
Test Glasses (PNL/CUA)
Define Extended Region #2 (WV)
Test Region #2 (PNL/CUA)
Model Region #2 (PNL)
Is More Data Needed for Adequate Modeling? (WV)
N
Y
Specify Acceptable Region (PNL)
Choose Glasses (PNL/CUA)
Test Glasses PNL/CUA
Model Data (WL)
Specify Acceptable Region (PNL)
Determine Effect of Redox/HT on Marginal Glasses (PNL/CUA)

DURABLE PROCESSABLE GLASSES



WV-8801 TESTING

COMPOSITIONAL FIELD

COMPONENT	SINGLE COMPONENT CONSTRAINTS LOWER BOUND	UPPER BOUND
Al_2O_3	4.5	10.0
B_2O_3	6.0	13.0
$BaO + CaO + MgO$	0.5	2.5
Fe_2O_3	10.0	16.0
$K_2O + Li_2O + Na_2O$	12.0	21.0
MnO_2	0.1	2.0
P_2O_5	0.5	4.0
SiO_2	38.0	45.0
ThO_2	2.0	5.0
UO_2	0.1	2.0
Others	1.0	3.0

	MULTIPLE COMPONENT CONSTRAINTS LOWER BOUND	UPPER BOUND
$SiO_2 + Al_2O_3$	45.0	52.0
Alkalis + B_2O_3	23.0	29.0
$(SiO_2 + Al_2O_3)$/Alkalis	2.6	4.3
$(SiO_2 + Al_2O_3)/B_2O_3$	4.0	5.5
SiO_2/Al_2O_3	3.8	9.0

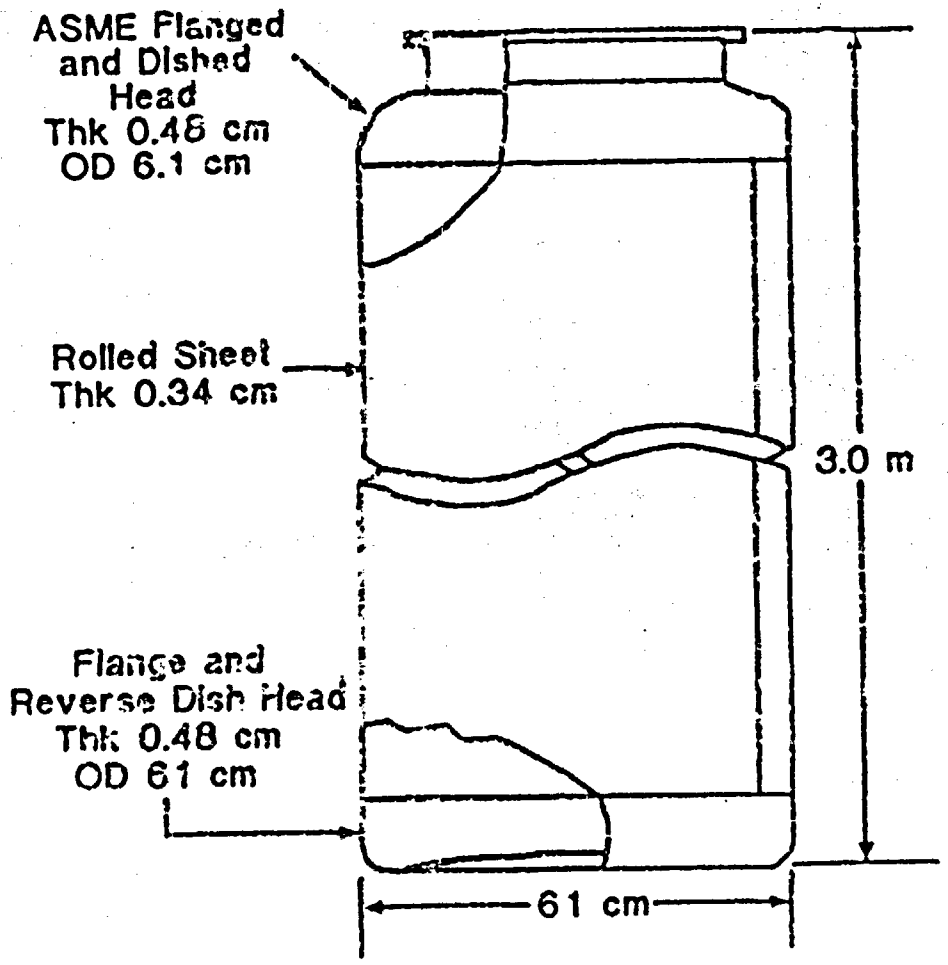
RADIOACTIVE RELEASE STATUS

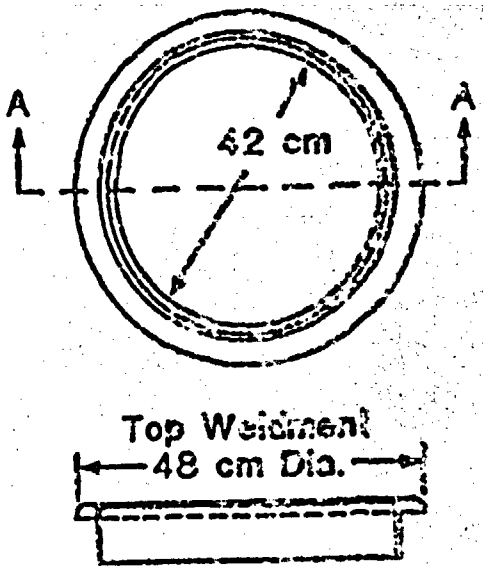
- PROCESS UNCERTAINTIES OF TANK HOMOGENEITY; SAMPLING AND CHEMICAL ANALYSES APPEAR QUANTITATIVELY SMALL ENOUGH TO ALLOW RELEASE RATE ACCEPTANCE BASED ON COMPOSITION
- UNPLANNED RECOURSE WOULD BE:
  - MORE SOPHISTICATED ANALYTICAL METHODS
  - LEACH PRODUCTION GLASS

CANISTER FABRICATION AND CLOSURE SPECIFICATION STATUS

- CLOSURE WELD LEAK TIGHTNESS OF 10^{-7} ATM/-CC/SEC
  - REFERENCE CASE IS TEMPORARY CLOSURE FOLLOWED BY DECONTAMINATION TO REMOVE OXIDIZED SURFACE; FINAL WELD TO SPECIFICATION PRIOR TO SHIPOUT; DEMONSTRATED LEAK TIGHTNESS IN CANISTERS DROP TESTS
  - INVESTIGATING ADVANCING FINAL WELD TO TIME OF OPERATIONS

WEST VALLEY CANISTER





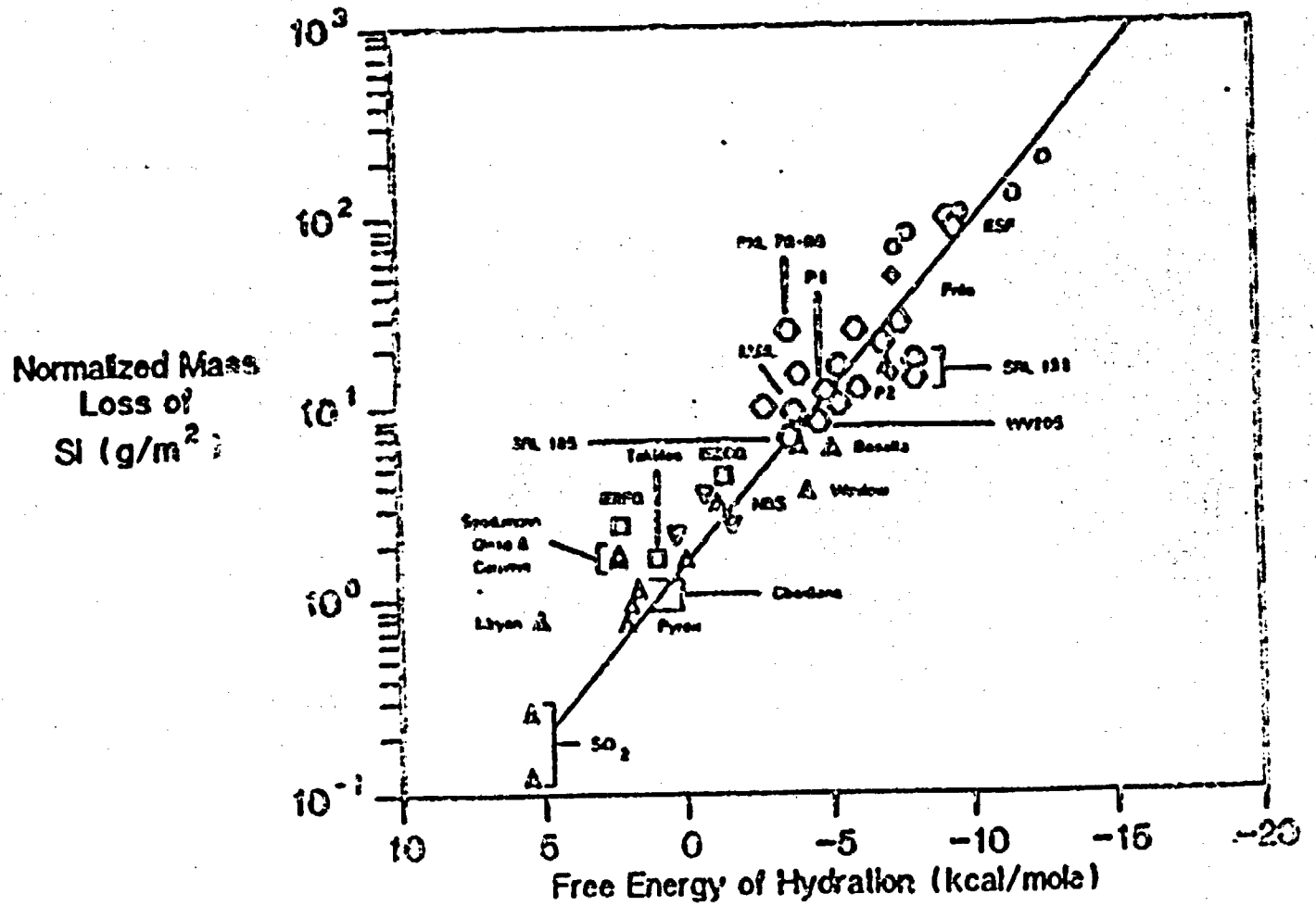
Section A–A

C3145WV003

RADIONUCLIDE RELEASE STATUS

- LONG-TERM BEHAVIOR
  - POWDER TESTS AS WELL AS REPLACEMENT FLOW TESTS REPRESENTING ACCELERATED AND REPOSITORY RELEVANT LEACHING ARE BEING PERFORMED AT INCREASING TIMES
  - SAMPLES UNDER TEST BY MULTIPLE ORGANIZATIONS INCLUDING ANL FOR NNWSI
  - ACTIVELY PARTICIPATING WITH NRC IN ASTM MEETINGS
  - CORRELATING TO NATURAL ANALOGS
  - COUPLING TO SRL's DATA BASE INCLUDING IN-SITU TESTS

WASTE FORM PERFORMANCE MODEL



C4503WV007

TECHNICAL SUPPORT PROGRAMS

- o WVNC
  - DEFINE GLASS COMPOSITION FOR FULL-SIZE PROCESS
  - ESTABLISH TEST SPECIMEN CONDITIONS: REDOX, ETC.
  - SPECIFY TEST: PCT, ETC.
  - RELATE PRODUCT TEST RESULTS TO PROCESS

- o PNL
  - STATISTICAL CHEMICAL DURABILITY OF COMPOSITION REGION
  - COMPLEMENTARY WITH VSL: GROUNDWATERS, REDOX, HEAT TREATMENTS, ETC.
  - CANISTER IMPACT TESTING

- o MCC
  - ATM SAMPLE PREPARATIONS
  - CHEMICAL DURABILITY TESTING
  - COMPREHENSIVE DATA BASE
  - ANALYTICAL METHODS ROUND ROBIN
  - ACTUAL HIGH-LEVEL WASTE SLUDGE/THOREX GLASS

- o VSL
  - EMPHASIZING SINGLE COMPONENT VARIATIONS
  - VITRIFICATION PROCESS CHARACTERISTICS: VARIABILITY, ETC.
  - PRODUCT LEACHING MODELS: REPOSITORY RELEVANT, ACCELERATED TESTS
  - GLASS DURABILITY RELATIONSHIP IN PROCESS/PRODUCT MODEL

- AU
  - PHYSICAL PROPERTY TESTING: η, ρ, LIQUIDUS, TRANSITION TEMP.
  - PHASE STABILITY, MICRO-CHARACTERIZATION
  - T-T-T
  - CO-OP PROGRAM

- CPAC
  - COMPUTERS LINKED
  - DATA DRIVEN PROCESS MODEL
  - PRINCIPAL COMPONENT ANALYSES OF OPERATING DATA: VARIANCE ASSIGNED
  - PLS, ETC.

- VPI
  - PROCESS REDOX (SCHREIBER)

- CASE WESTERN
  - VISCOSITY MODEL (HRMA/SRL)

- CORNING
  - ON-SITE SAMPLING ASSISTANCE
  - CHEMICAL AND REDOX ANALYSES
  - STANDARD GLASSES PREPARATION
- VITRIFICATION REVIEW GROUP (RECENTLY ORGANIZED)
  - IN-DEPTH TECHNICAL REVIEW
  - CHARTER/MEMBER CURRENTLY BEING ESTABLISHED

COMPREHENSIVE DATA BASE

OBJECTIVE

GENERAL

COMBINE ALL OF THE EXISTING DATA, BOTH U.S. AND FOREIGN, INTO ONE DATA BASE IN ORDER TO MAKE IT MORE ACCESSIBLE TO USERS

- PROPERTY PREDICTIONS
- MODELING OF DATA

SPECIFIC

TO DEMONSTRATE THAT THE PROPERTIES OF THE WEST VALLEY GLASS ARE CONSISTENT WITH WHAT WOULD BE EXPECTED BASED ON EXISTING DATA FOR OTHER GLASSES - WEST VALLEY GLASS IN NOT "DIFFERENT"

Properties That Are Being Included in the Data Base

- Leaching performance
  - Radionuclides/glass components
  - Radiation effects
- Thermal stability
  - Phase changes/devitrification
  - Volatility
- Chemical compatibility with canister/filler material
- Physical properties
  - Compressive strength
  - Density
- Thermal and processing properties
  - Thermal and electrical conductivity
  - Specific heat
  - Thermal expansion
  - Viscosity
- Canister corrosion

SUMMARY OF PNL ACTIVITIES PRODUCT QUALIFICATION

- GLASS QUALIFICATION TESTING
  - GLASS COMPOSITIONS STATISTICALLY SELECTED, TESTED, AND ANALYZED
  - ALL GLASSES LEACH AT RATES LESS THAN THE NNWSI PROPOSED LIMIT
  - STATISTICAL MODEL INDICATES ALL GLASSES WITHIN PROPOSED PROCESS RANGE WILL BE ACCEPTABLE
  - EMPHASIS IN FY 89 WILL BE ON CHARACTERIZATION OF GLASSES PRODUCED FROM WVDP ACTUAL HIGH-LEVEL WASTES
- IMPACT TESTING
  - FIVE POTENTIAL CANISTER DESIGNS IMPACTED AND ANALYZED
  - ALL MET CRITERIA FOR LEAK TIGHTNESS FOLLOWING IMPACT TESTING

SUMMARY

- FULL-SCALE WVDP VITRIFICATION PROCESS IS BEING CHARACTERIZED FOR PERFORMANCE TO WAPS
  - PERFORMANCE BEING QUANTIFIED FOR EQUIPMENT, SAMPLING, AND ANALYSES
- ACCEPTABLE COMPOSITION RANGE BEING ESTABLISHED AND APPEARS SUFFICIENTLY BROAD FOR PRODUCT RELEASE-RATE ACCEPTANCE BASED UPON PROCESS CONTROL OF COMPOSITION
- PLANNING CONTINUAL ACTIVE INTERCHANGES WITH DOE/WM, REPOSITORY, NRC, ETC.
  - COMMENTS ON WVDP WCP TO SUPPORT TESTING (M/S) AND STARTUP SCHEDULES (10/92)
  - SAMPLES FOR LEACHING, ETC, PROVIDED
- MULTIPLE ORGANIZATIONS INTEGRATED INTO WVDP TEST PLAN AND RESULTING DATA BASE FOR ACCEPTANCE

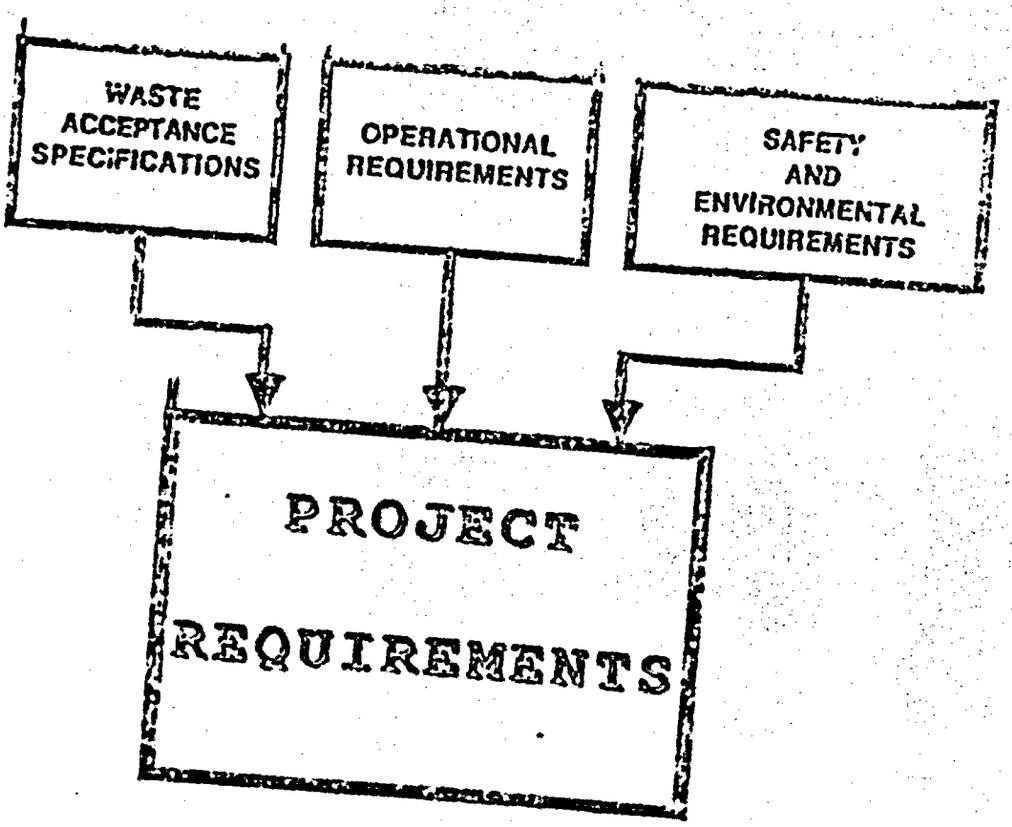
J. M. POPE

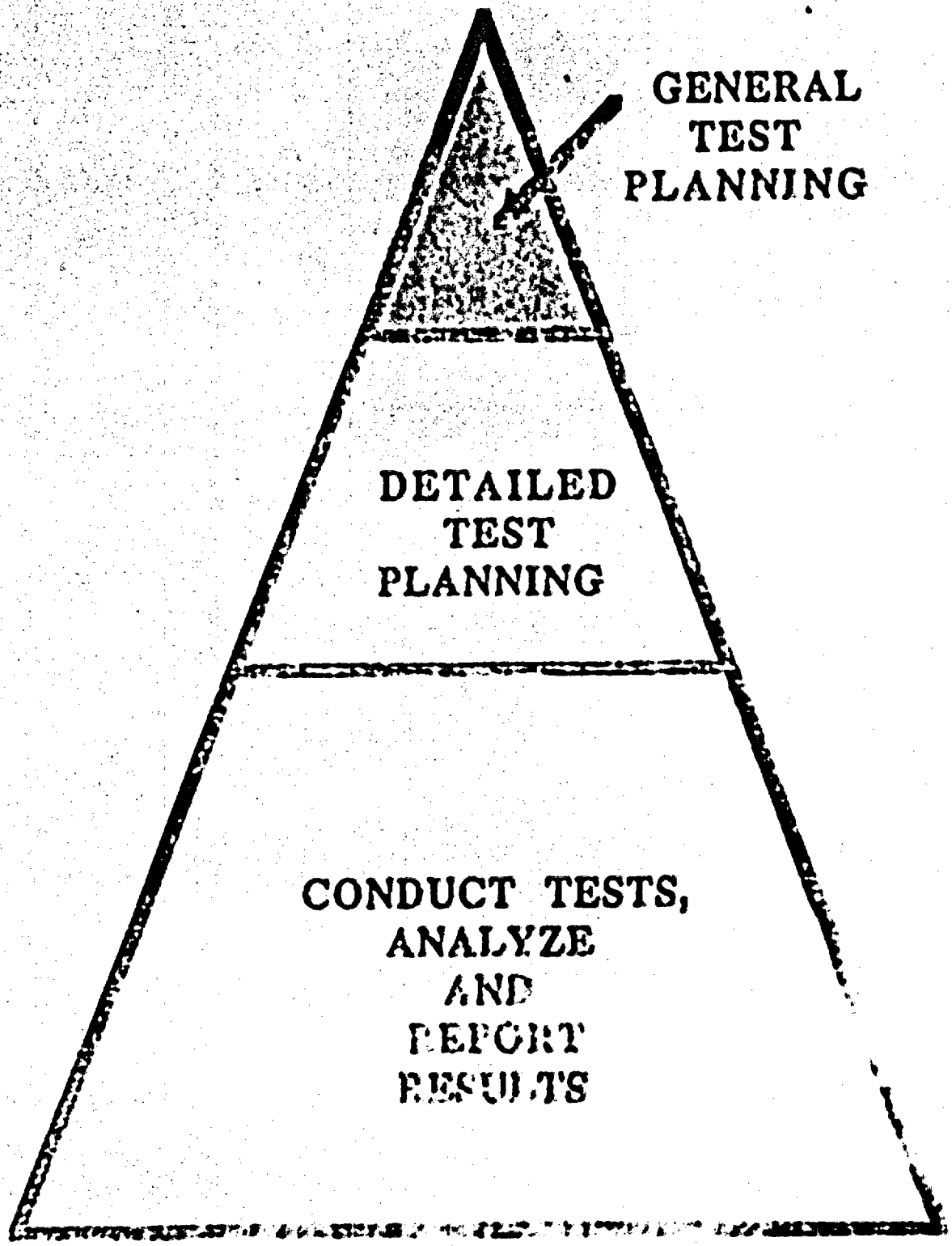
PROCESS TECHNOLOGY AND TESTING MANAGER

VITRIFICATION TEST PROGRAM

NRC PRESENTATION AGENDA

SEPTEMBER 7. 1988


WASTE ACCEPTANCE SPECIFICATIONS
OPERATIONAL REQUIREMENTS
SAFETY AND ENVIRONMENTAL REQUIREMENTS
PROJECT REQUIREMENTS



TOTAL TESTING PROGRAM

VITRIFICATION TEST GROUP

TESTING METHODOLOGY

CHARTER: SUPPORT PROCESS QUALIFICATION AND EQUIPMENT CHECKOUT

- I. UTILIZATION OF APPROVED PROCEDURES
- II. DETAILED WORK PLANNING AND SCHEDULING
- III. TEST PERFORMANCE AND TRACKING

VITRIFICATION TEST GROUP TESTING METHODOLOGY

I. UTILIZATION OF APPROVED PROCEDURES

- PROCEDURE FOR CONDUCTING FACTS TESTS
- TEST REQUESTS AND TEST PROCEDURES
- ACCEPTANCE CRITERIA SPECIFIED
- CONTROLLED DISTRIBUTION AND PEER REVIEW
- MANAGEMENT APPROVAL
- DETAILED TEST OBJECTIVES AND OPERATING INSTRUCTIONS
- CONTROL OF DATA AND RECORDS MANAGEMENT
- QA SURVEILLANCE AND REQUIRED HOLD POINTS
- FOLLOW-UP OF OPEN ACTION ITEMS

VITRIFICATION TEST GROUP

TESTING METHODOLOGY

II. DETAILED WORK PLANNING AND SCHEDULING

- DEDICATED PLANNING STAFF ON-BOARD
- COMPUTERIZED SCHEDULING PROGRAM UTILIZED
- INTEGRATED ACTION ITEMS FOR EACH FACTS EVOLUTION
- RESCURCE LOADED
- PROVIDES FIRST-LEVEL MANAGEMENT WORKING TOOL

VITRIFICATION TEST GROUP TESTING METHODOLOGY

III. TEST PERFORMANCE AND TRACKING

- POST-RUN REPORTS REFLECT TEST RESULTS
- POST-RUN BRIEFING HELD AT ALL LEVELS
- OPEN ITEMS TRACKED
- FEEDBACK TO DESIGN GROUP

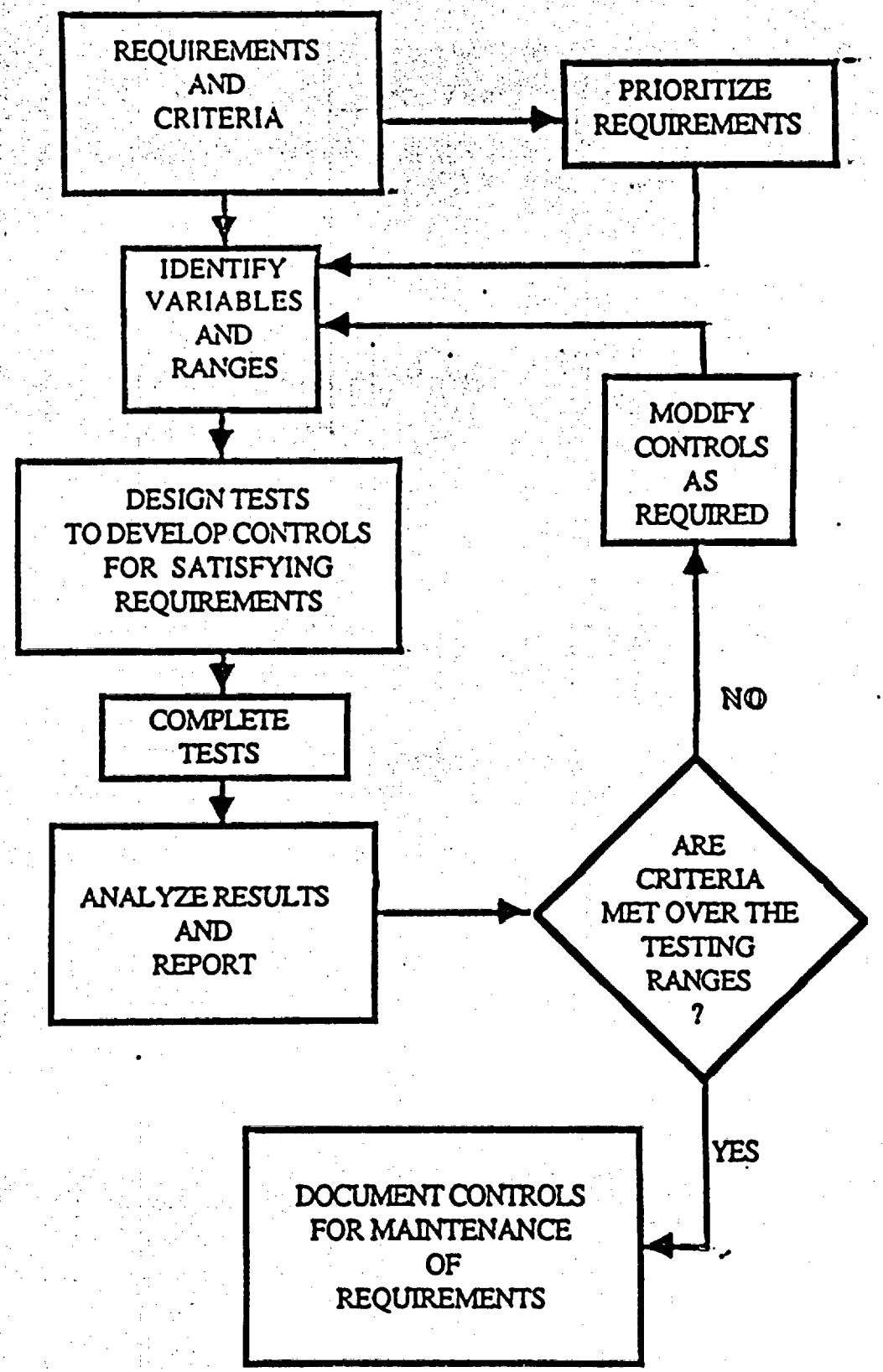
VITRIFICATION PROCESS SCHEDULE

HOT START OCTOBER 1992

- LEVEL I: CMS
- LEVEL II: VITRIFICATION PROCESS AND FACILITY
- LEVEL III: PROCESS TESTING (KLANIAN)
- LEVEL IV: EACH MELTER RUN: 10, 10A..., 12, ETC.
- LEVEL III: PROCESS DEVELOPMENT (BARNES)
- LEVEL IV:
  - MINI-MELTER AND GLASS LAB
  - WASTE QUALIFICATION EFFORT (WCP, WQR)
  - PROCESS CONTROL SYSTEM/MODELS

ALL ABOVE ARTEMIS GENERATED AND RESOURCE LOADED

FRAMEWORK FOR WEST VALLEY TESTING



STRATEGIES FOR MINIMIZING REQUIRED TESTING

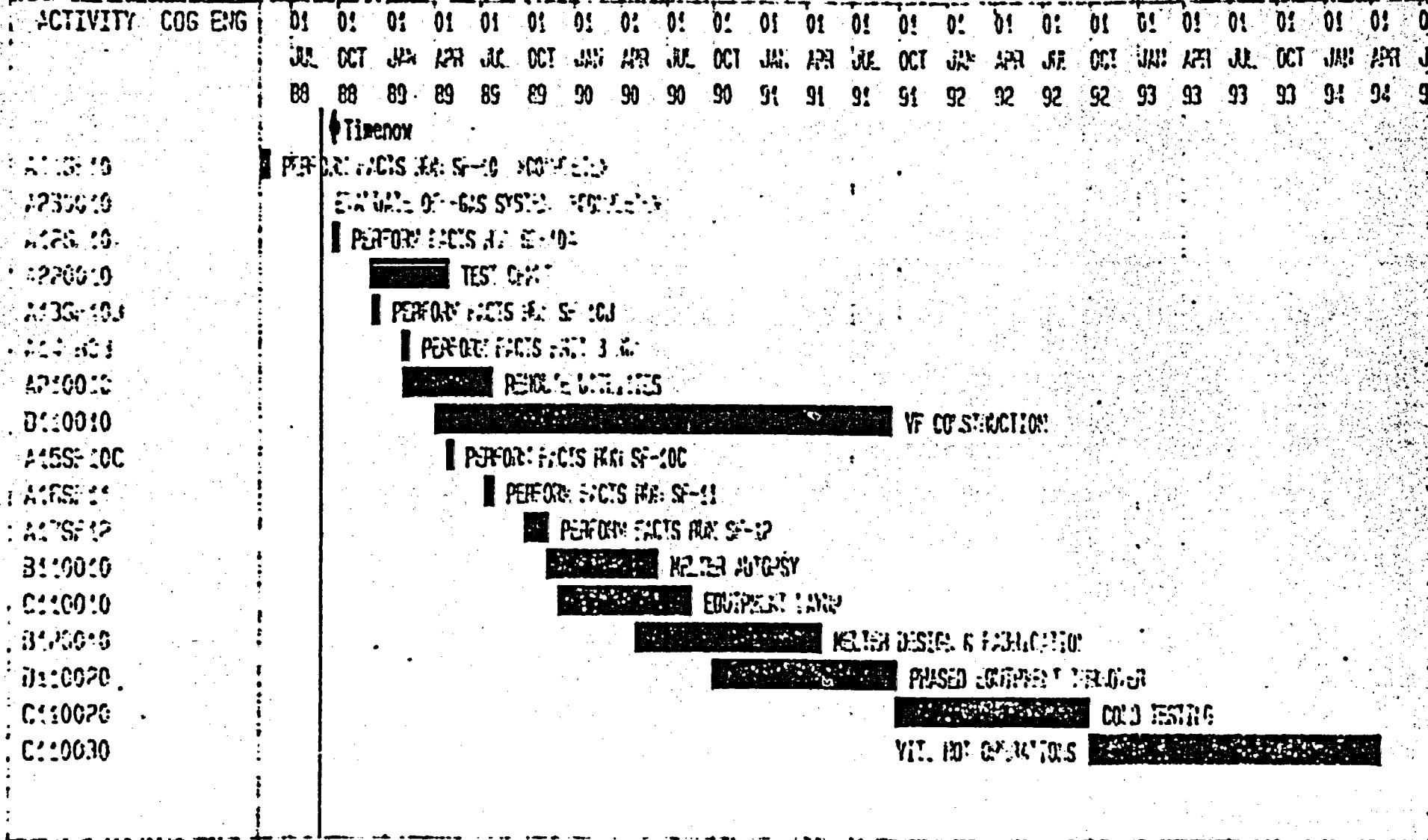
- USE PAST TESTING DATA AND EXPERIENCE
- APPLY STATISTICAL METHODS FOR MINIMIZING THE NUMBER OF TESTS
- USE COMPUTER SIMULATION AND PHYSICAL MODELING AND OTHER SCALED DOWN APPROACHES

OPEN PLAN (tm)

Report: NOFLOAT
Project: FTLEV2
Time Now: 29AUG88
Date: 06SEP88
Time: 14:37:36
Page: 1

FACTS TESTING LEVEL II SCHEDULE

WEST VALLEY NUCLEAR SERVICES



Legend
-In progress
-Planned
-Critical

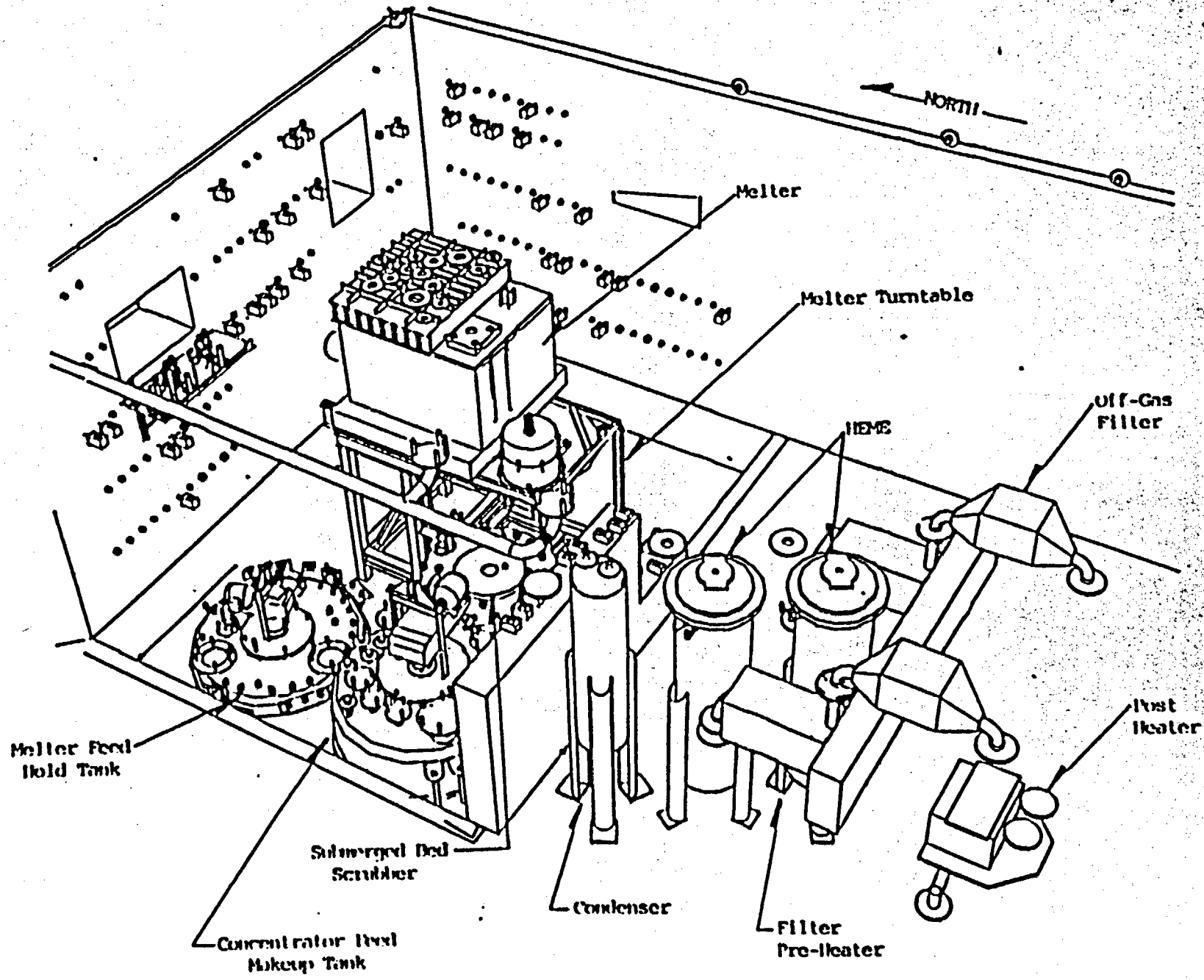
Bar Chart Key:

All characters represent 18 time unit(s)

Signatures

Prep: _____

Appv: _____


NORTH
Melter
Melter Turntable
Off-Gas Filter
HEME
Melter Feed Hold Tank
Submerged Bed Scrubber
Condenser
Concentrator Feed Makeup Tank
Filter Pre-Heater
Post Heater

GLASS-FORMING SYSTEM

MUST TOLERATE VARIATIONS

PROCESS/PRODUCT QUALIFICATION

- VITRIFICATION PROCESS FLEXIBILITY
- CONSIDERABLE REGION OF ACCEPTABLE GLASS COMPOSITIONS
- MELTER TEMPERATURE, OPERATION, AND DESIGN
- COLD CHEMICAL SYSTEM
- GLASS FORMERS
- GRINDER FOR WASTE STREAM
- MULTIPLE RECYCLE STREAMS
- SYSTEM IS PRESENTLY OPERATING

INTEGRATED FACTS RUNS ACCEPTANCE ACTIVITIES

- DEMONSTRATE ABILITY TO SAMPLE AND ANALYZE MELTER FEED
- DEMONSTRATE GLASS SAMPLING TECHNIQUE
- VERIFY STRATEGY FOR DETERMINING GLASS COMPOSITION
- DEMONSTRATE ABILITY TO VERIFY CONTROL OF PRODUCT QUALITY
- VALIDATE PROCESS MODEL
- DETERMINE RELATIONSHIP BETWEEN GLASS SAMPLE AND CANISTER CONTENTS
- DEMONSTRATE ABILITY TO DETERMINE GLASS LEVEL
- DETERMINE GLASS TEMPERATURES DURING FILLING AND COOLDOWN

WASTE FEED SAMPLING SCENARIO

- TANK FARM BLENDING INCLUDING GRINDING
- TRANSFER WASTE TO CFMUT
- REMOVE SAMPLES AND ANALYZE
- CONCENTRATE SLURRY
- ADD GLASS FORMERS
- REMOVE ADDITIONAL SAMPLES AND ANALYZE
- ADJUST AS NECESSARY/SAMPLE
- TRANSFER TO MELTER FEED HOLD TANK/SAMPLE

NOTE: CAN RETURN TO TANK FARM OF UNACCEPTABLE

MELTER FEED MAKE UP TIME CYCLE

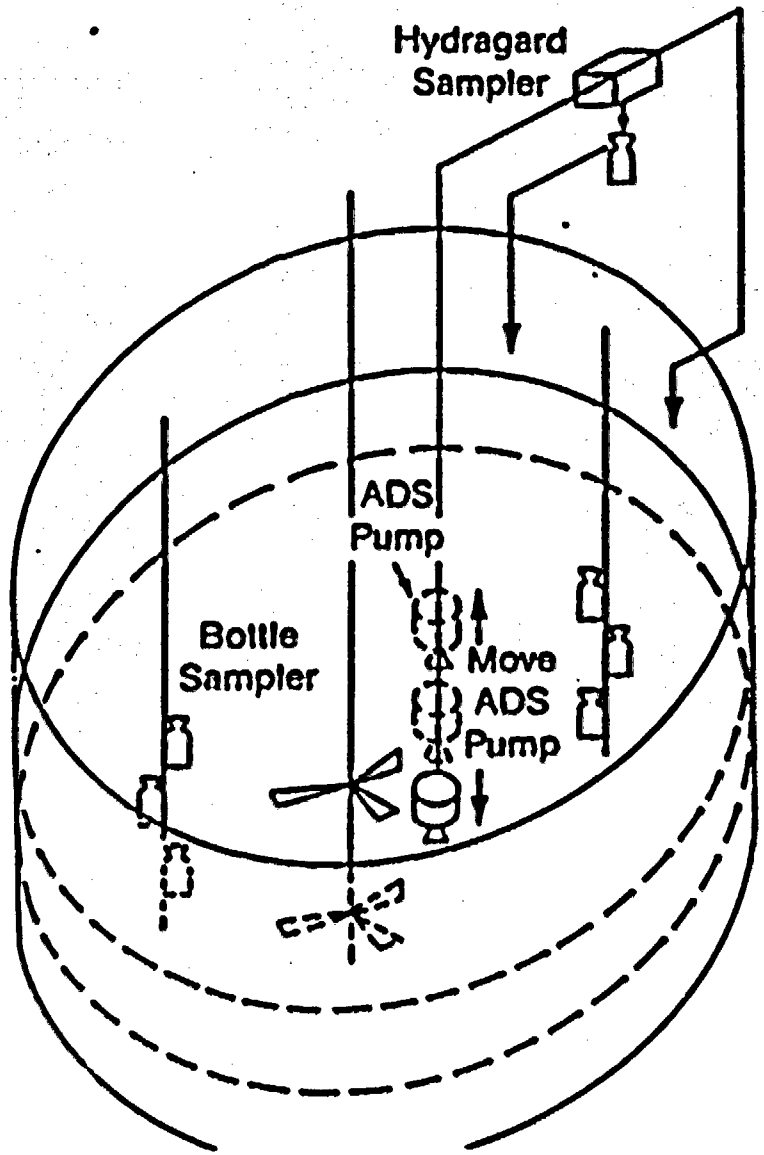
(8D-2 SLUDGE WASHED, COMBINED WITH ZEOLITE FROM 8D-1 AND THOREX FROM 8D-4)

PROCESS STEPS	TIME (MINUTES)
• PUMP 3675 GALLONS AT 60 GPM TO CFMUT	62
• JET ~840 GALLONS FROM SBS AT 50 GPM TO CFMUT	17
• SAMPLE/ANALYZE	1440
• HEAT CONTENTS PLUS 980 GALLON HEEL TO BOILING	86
• EVAPORATE 2957 GALLONS	706
• COOL CONTENTS TO 104°F	370
• COLD CHEMICAL FEED MAKEUP; SAMPLE/ANALYZE (4 HOURS); 10 HOURS ALLOWED FOR MISCELLANEOUS, E.G., RESAMPLING	1132
• TRANSFER TO CFMUT AT 100 GPM	13
• FINAL CHEMICAL ADJUSTMENTS; RESAMPLE/ANALYZE	120
• JET TO MFHT AT 60 GPM	54
	4720 MINUTES ~79 HOURS
• LAG TIME	~ 21 HOURS

WVNS PROCESS CHARACTERIZATION AND VALIDATION

- SLURRY FEED SYSTEM CHARACTERIZATION
- CFMUT AND MFHT HOMOGENEITY ASSESSMENT
- R, THETA, AND Z
- REFERENCE SAMPLER SYSTEM
- CHEMICAL TRACER VERIFICATION

TANK HOMOGENEITY STUDY



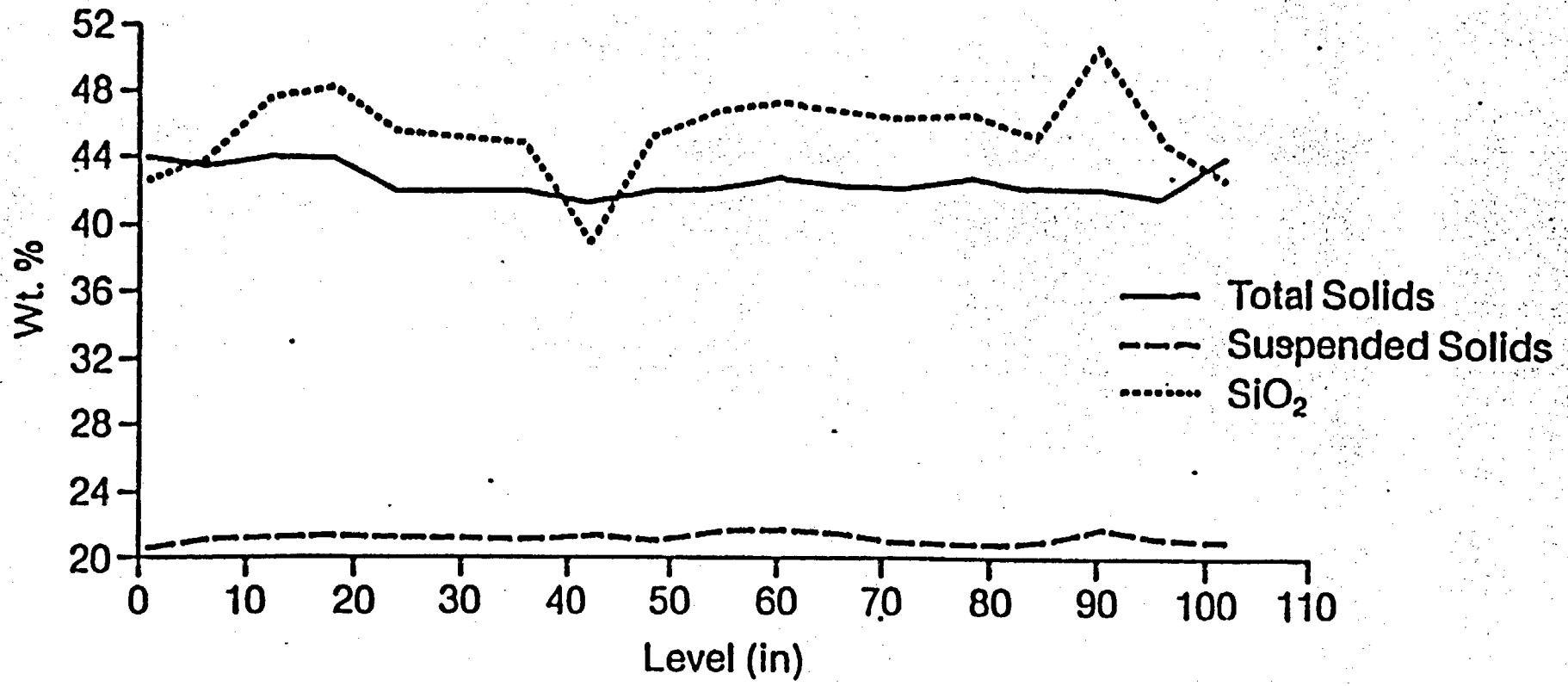
Vertical Homogeneity

Test Complete Data Being Analyzed

- Move ADS Pump Vertically
- Take 21 Samples Every 6" (Randomized)
- for V = 1000 Gal — 84 Samples
- V = 2000 Gal — 147 Samples
- V = 3000 Gal — 231 Samples
- V = 4000 Gal — 294 Samples
- V = 5000 Gal — 378 Samples

1134 Samples

SOLIDS IN 5000 GALLON VOLUME MFHT



MFHT HOMOGENEITY TEST 1 RESULTS

Component	Maximum Standard Deviation
Al_2O_3	0.7%
B_2O_3	0.6%
Fe_2O_3	0.7%
Li_2O_3	0.5%
Suspended Solids	0.5%

PNL FINDINGS OF RECENT MFHT MIXING STUDY

- TANK IS HOMOGENEOUS FOR THE SLURRIES TESTED
- 15 HP AGITATION (155 rpm) IS ADEQUATE
- AFTER 4 DAYS OF SETTLING; LESS THAN 2 HOURS REQUIRED TO RESUSPEND AND UNIFORMLY MIX
- Re # WERE 10 - 100 TIMES GREATER THAN DEFINED VALUE FOR TURBULENT MIXING; THEREFORE, REDUCE AGITATOR SPEED
- MAJOR SOURCE AFFECTING ACCURACY OF RESULTS IN THE VARIABILITY (1.4 - 7.8%) IN REPLICATE ANALYTICAL MEASUREMENTS; DUE TO LONG-TERM EFFECTS OF CALIBRATION PROCEDURE, ETC.

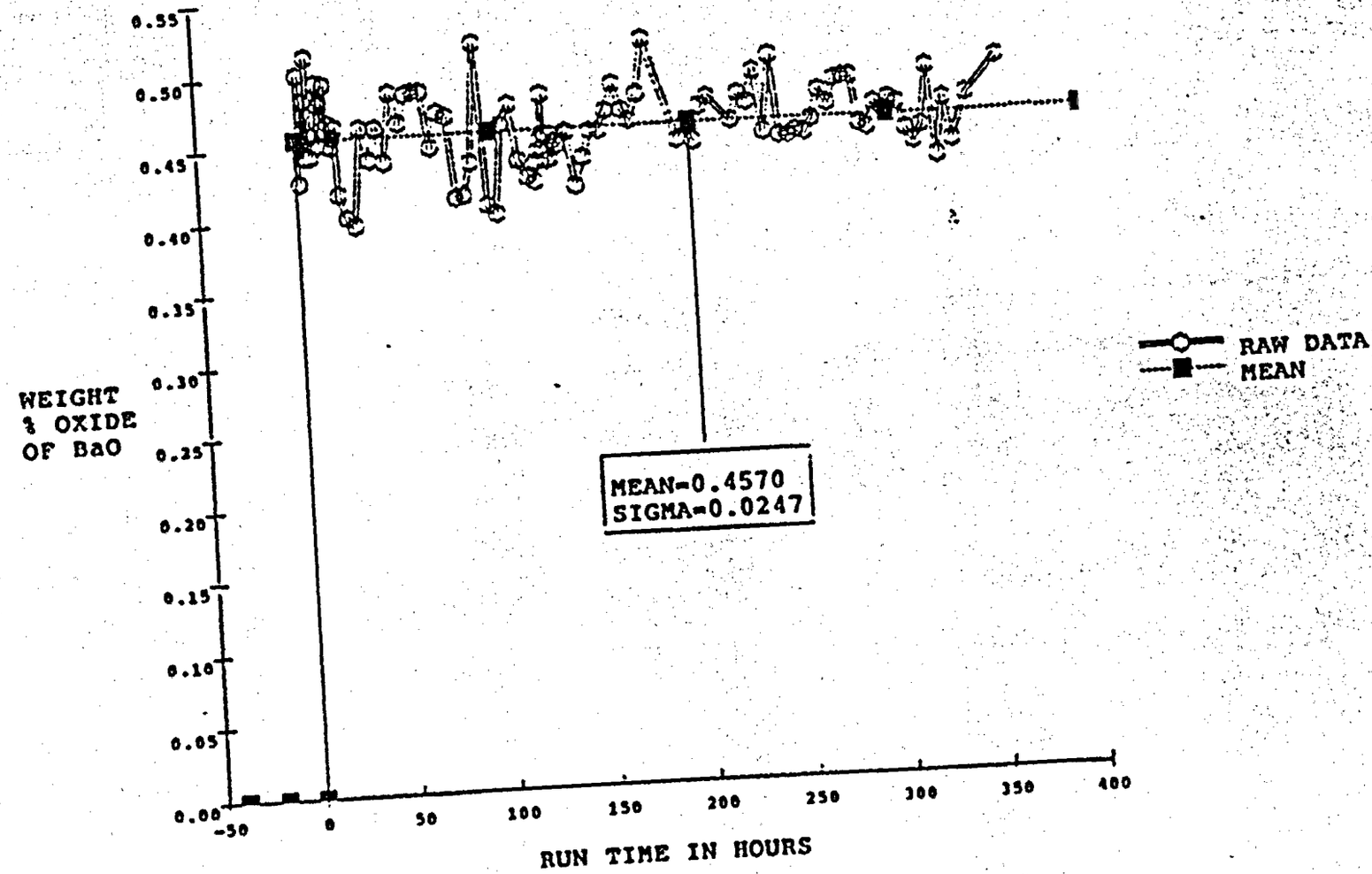


FIGURE 6.2-BaO TRACER IN THE MELTER INPUT STREAM

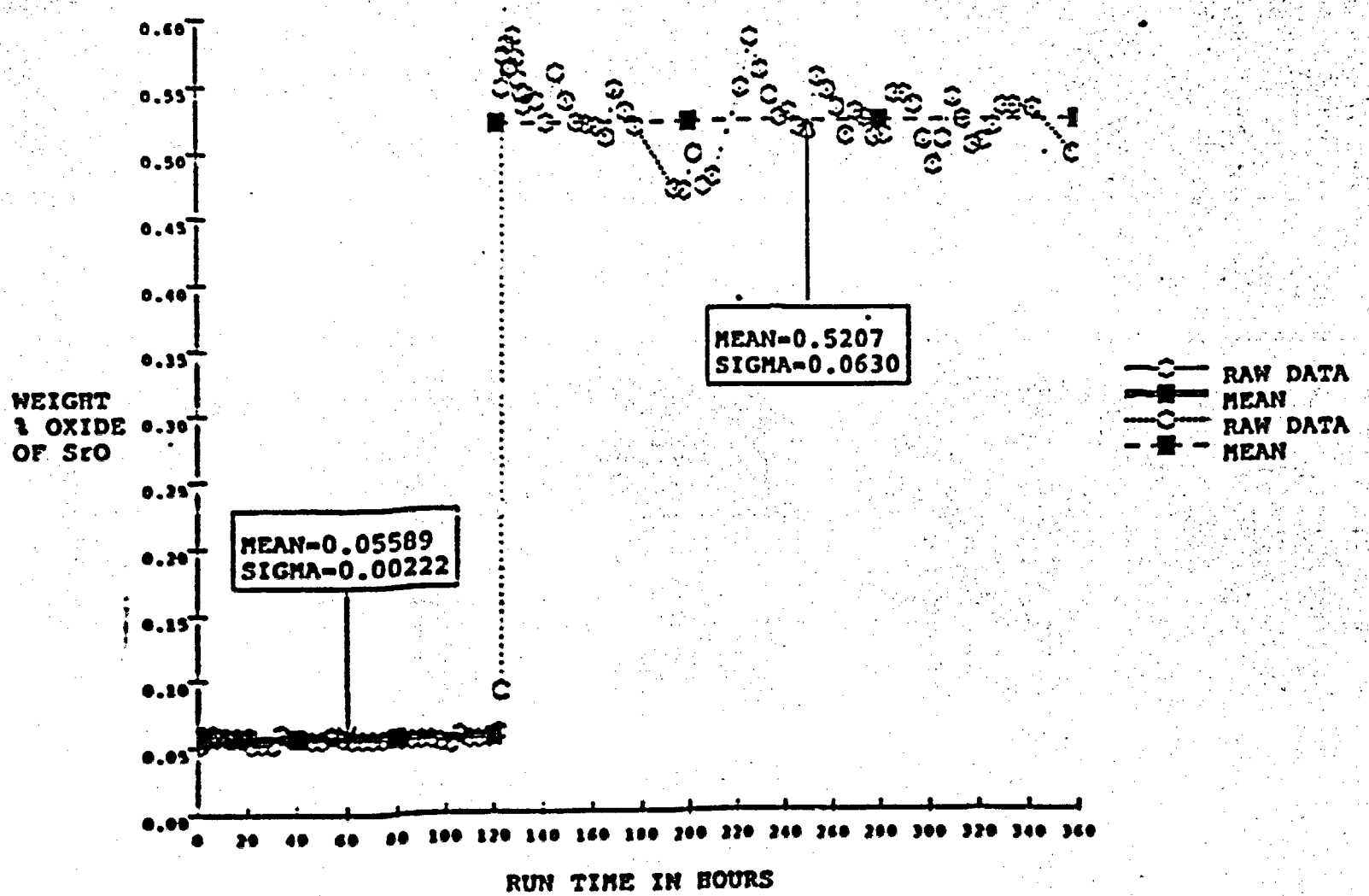


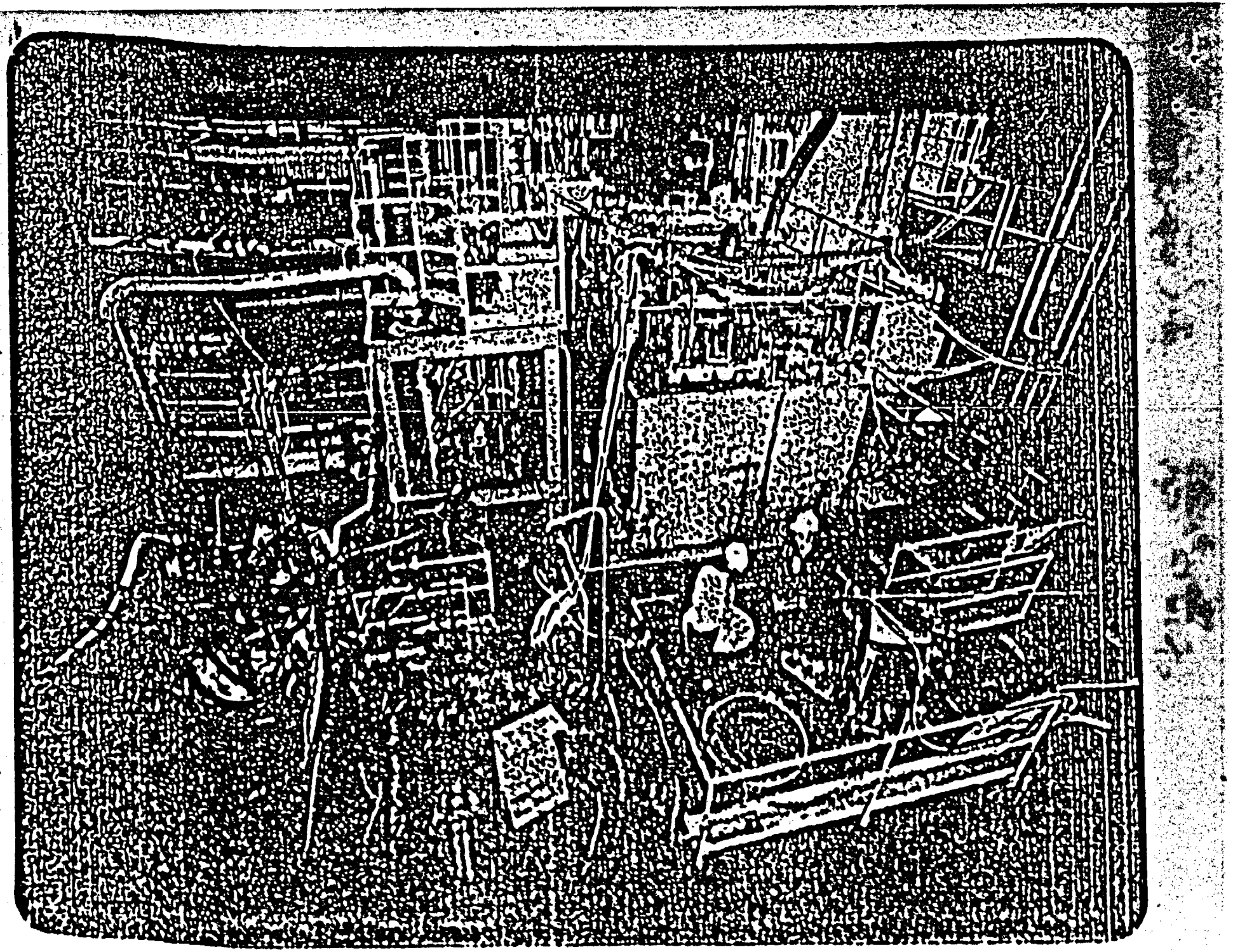
FIGURE 8.1-SrO TRACER IN THE MELTER INPUT STREAM

VITRIFICATION SYSTEM PERFORMANCE

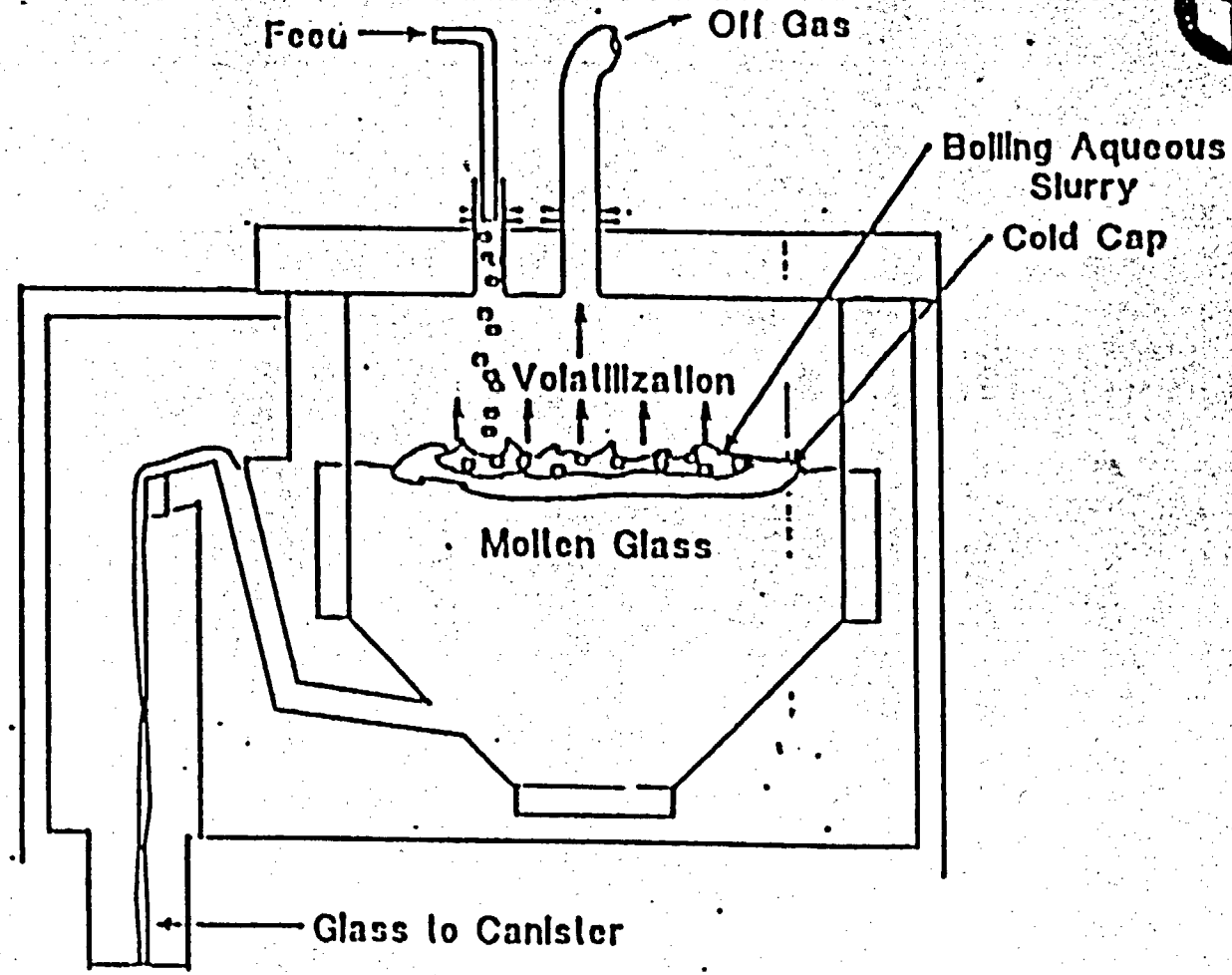
- MELTER AT TEMPERATURE CONTINUOUSLY (1150^{o}C) SINCE DECEMBER 1984
- ABOUT 150 DAYS OF FEEDING WHICH HAS YIELDED NEARLY 90,000 kg GLASS

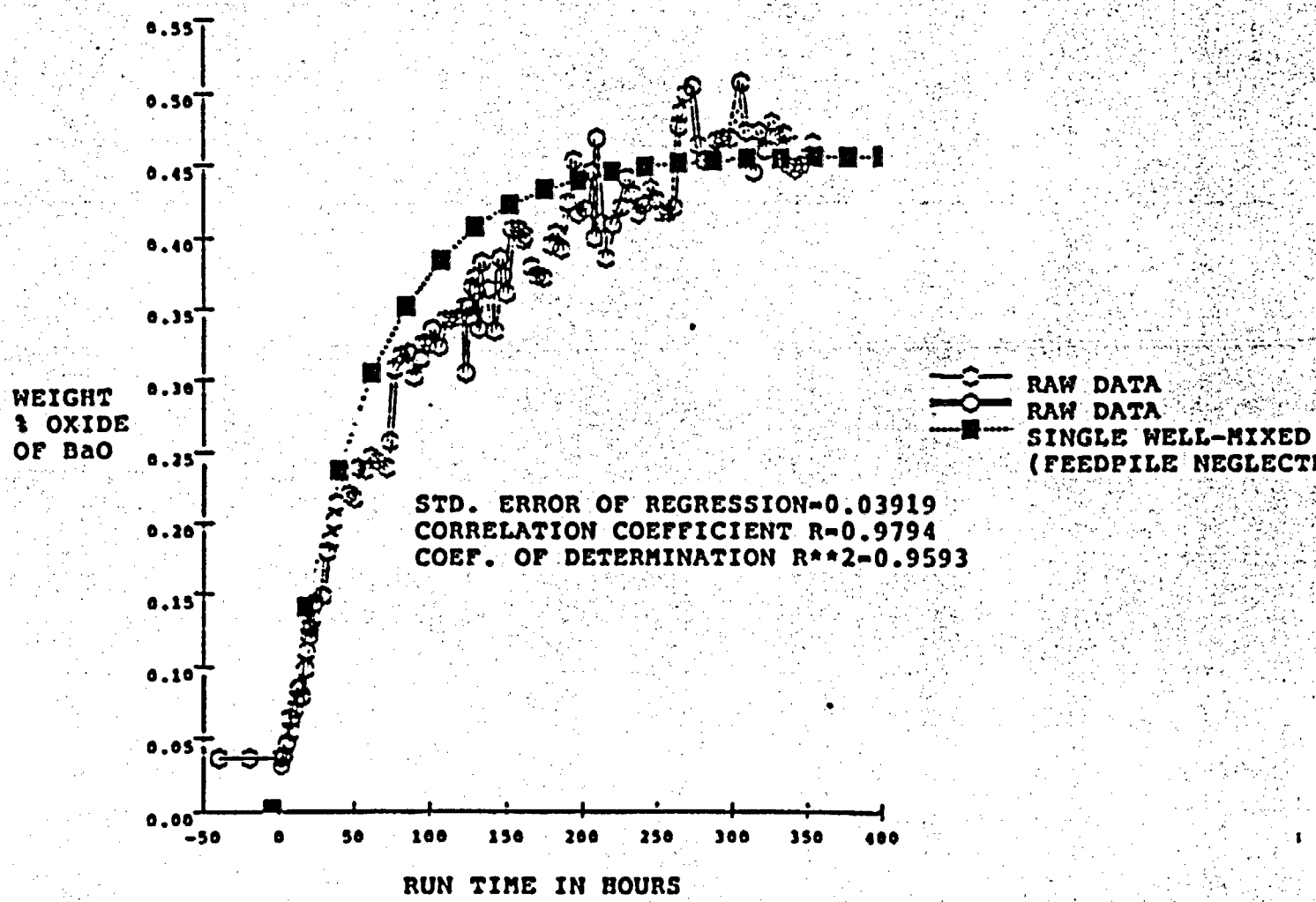
FULL-SCALE MELTER AND PROCESS

- GIVES PRODUCT QUALITY QUALIFICATION CONFIDENCE
  - HOMOGENEITY
  - COMPOSITION
  - CRYSTALLIZATION
- RESOLVES SCALE-UP ISSUES
- PROVIDES REAL-TIME PROCESS CHEMISTRY TO REDUCE FLOWSHEET RISK
  - AVOIDS MORE COSTLY SCHEDULE IMPACT LATER
- YIELDS REPRESENTATIVE OFF-GAS INFORMATION (E.G., DF) WITH REAL PLENUM FILM COOLER, ETC.
- VERIFIES DESIGN BASIS THROUGHPUT (SCHEDULE ATTAINMENT)
- ALLOW PRACTICAL TRAINING AND EARLY EQUIPMENT DEBUGGING

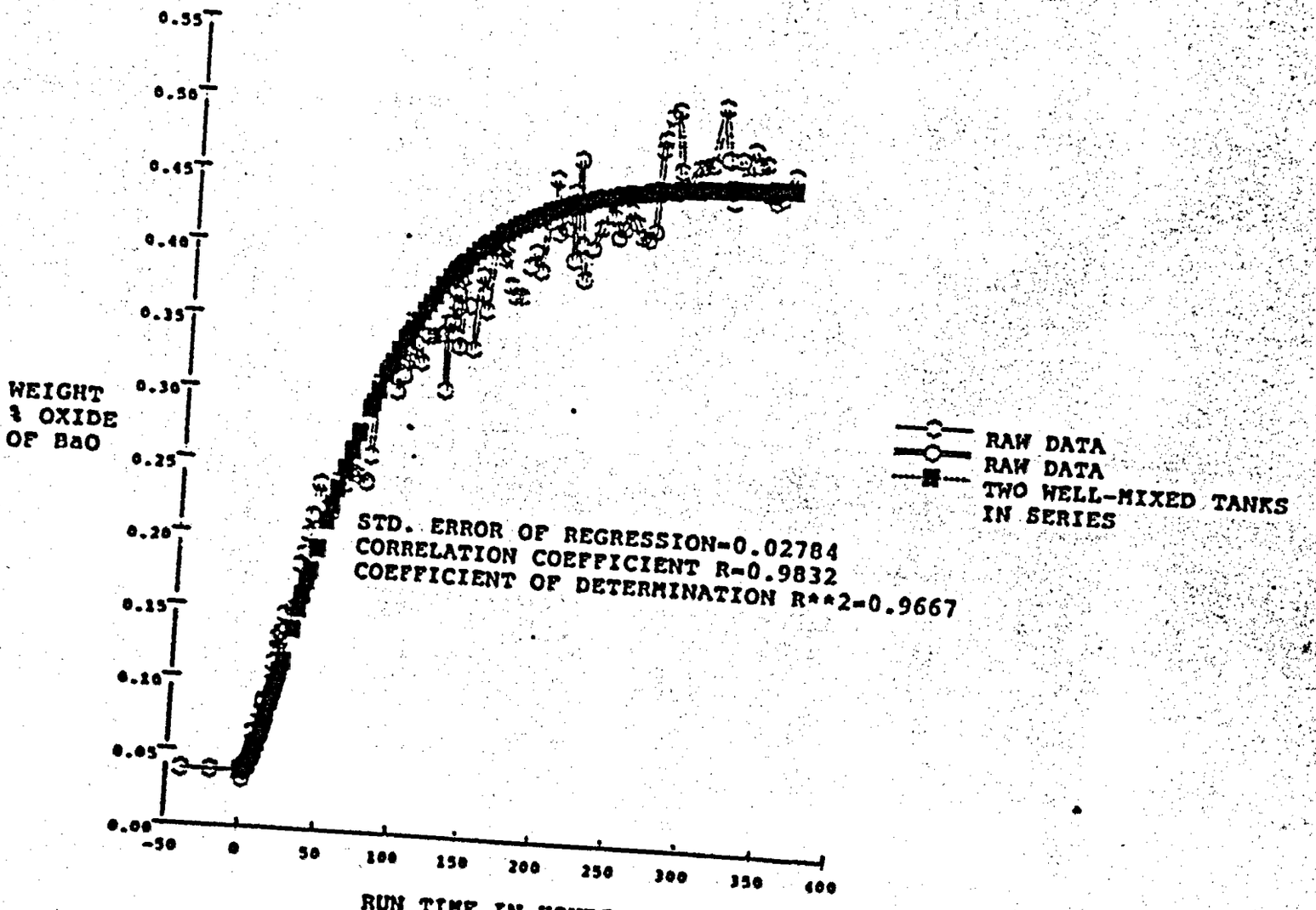


SFCM SCHEMATIC

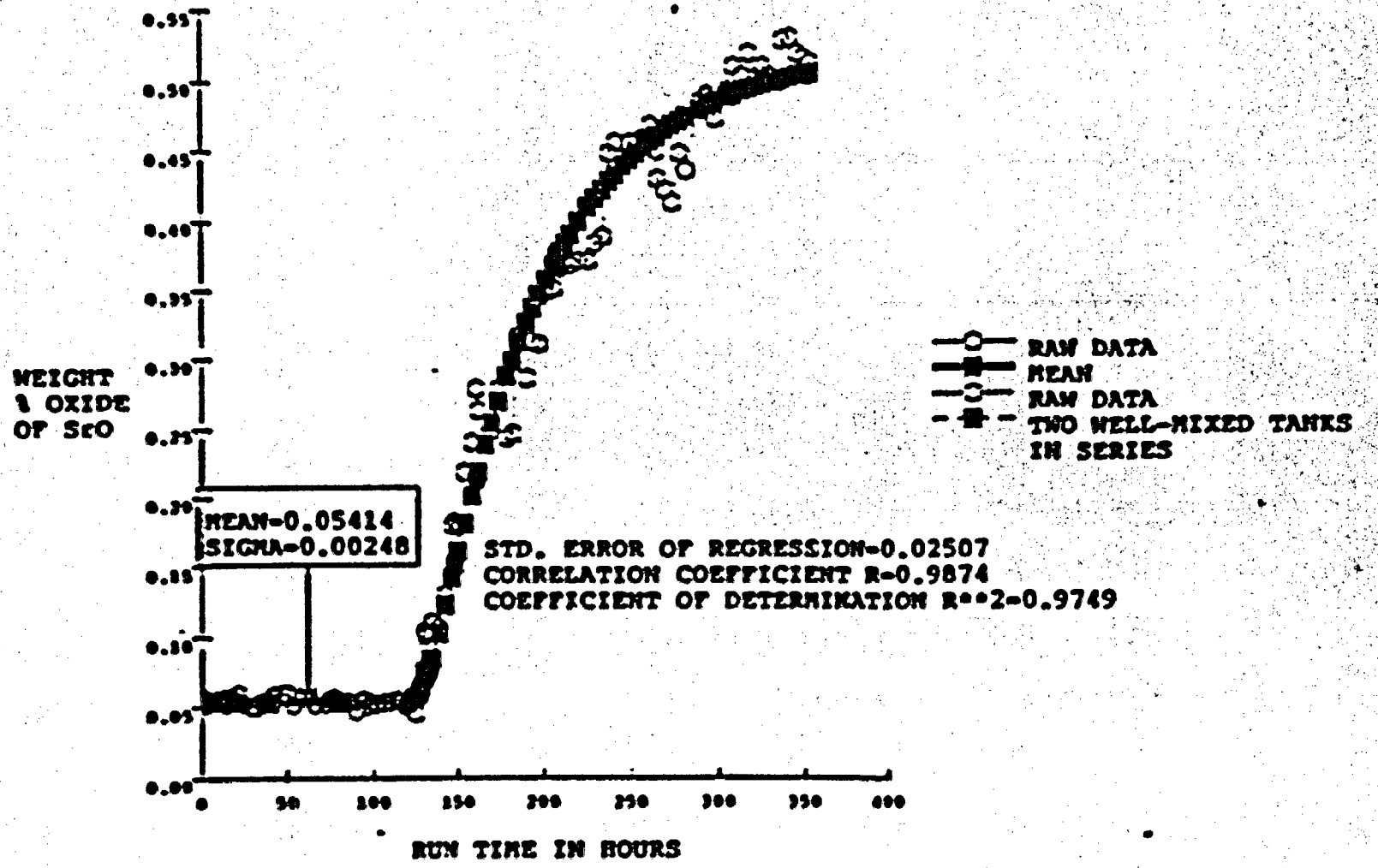




BAO TRACER IN THE MELTER OUTPUT STREAM COMPARED TO A SINGLE, WELL-MIXED TANK MODEL



BaO TRACER IN THE MELTER OUTPUT STREAM COMPARED TO A MODEL OF TWO WELL-MIXED TANKS IN SERIES

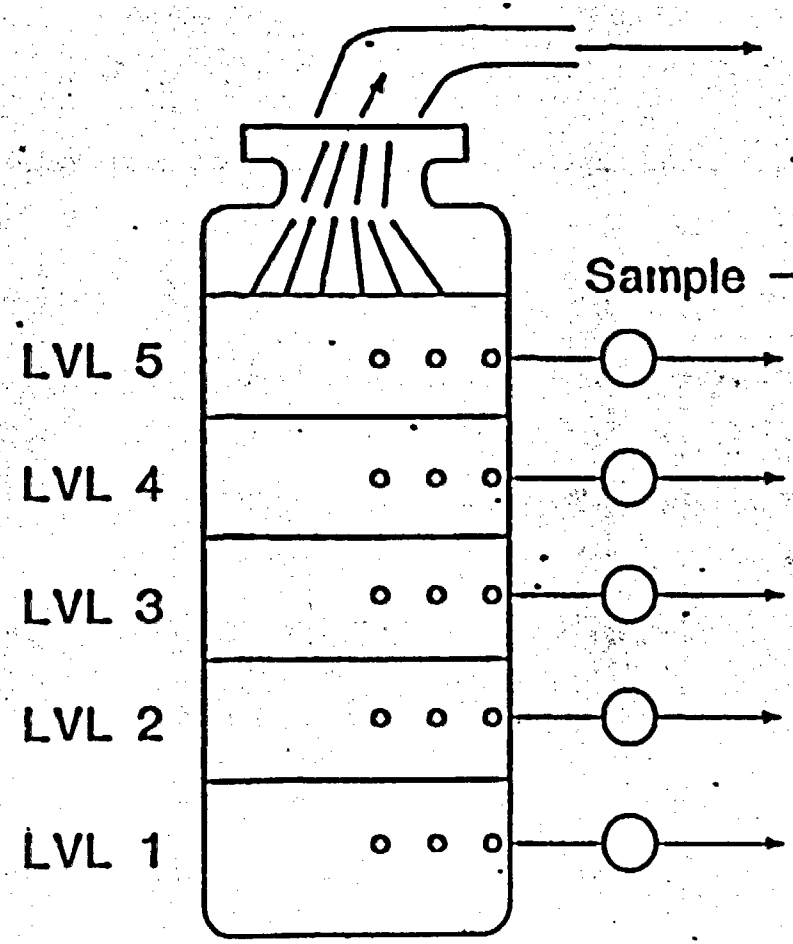


SrO TRACER IN THE MELTER OUTPUT STREAM COMPARED TO A MODEL OF TWO, WELL-MIXED TANKS IN SERIES

CONCLUSIONS

- SFCM CAN BE CLOSELY MODELED AS TWO, WELL-MIXED TANKS IN SERIES FOR THESE OPERATING CONDITIONS
- GLASS POOL IS A WELL-MIXED REGION WITH MASS OF 1786 KG
- CRUST LAYER OF THE FEEDPILE IS ROUGHLY WELL-MIXED WITH A MASS OF 354.1 KG
- GROWTH OF FEEDPILE FROM IDLING TO STEADY-STATE CANNOT BE DETECTED FROM THIS RUN
- TOTAL MEAN RESIDENCE TIME IN ALL MELTER REGIONS IS 74 HOURS
- MEAN RESIDENCE TIME IN CRUST LAYER OF FEEDPILE IS 12.1 HOURS
- MEAN RESIDENCE TIME IN THE GLASS POOL IS 61.5 HOURS

SHARD VS. BULK GLASS STUDY



Vacuum Shards 16 Cans → Analyze 16 Shard Samples

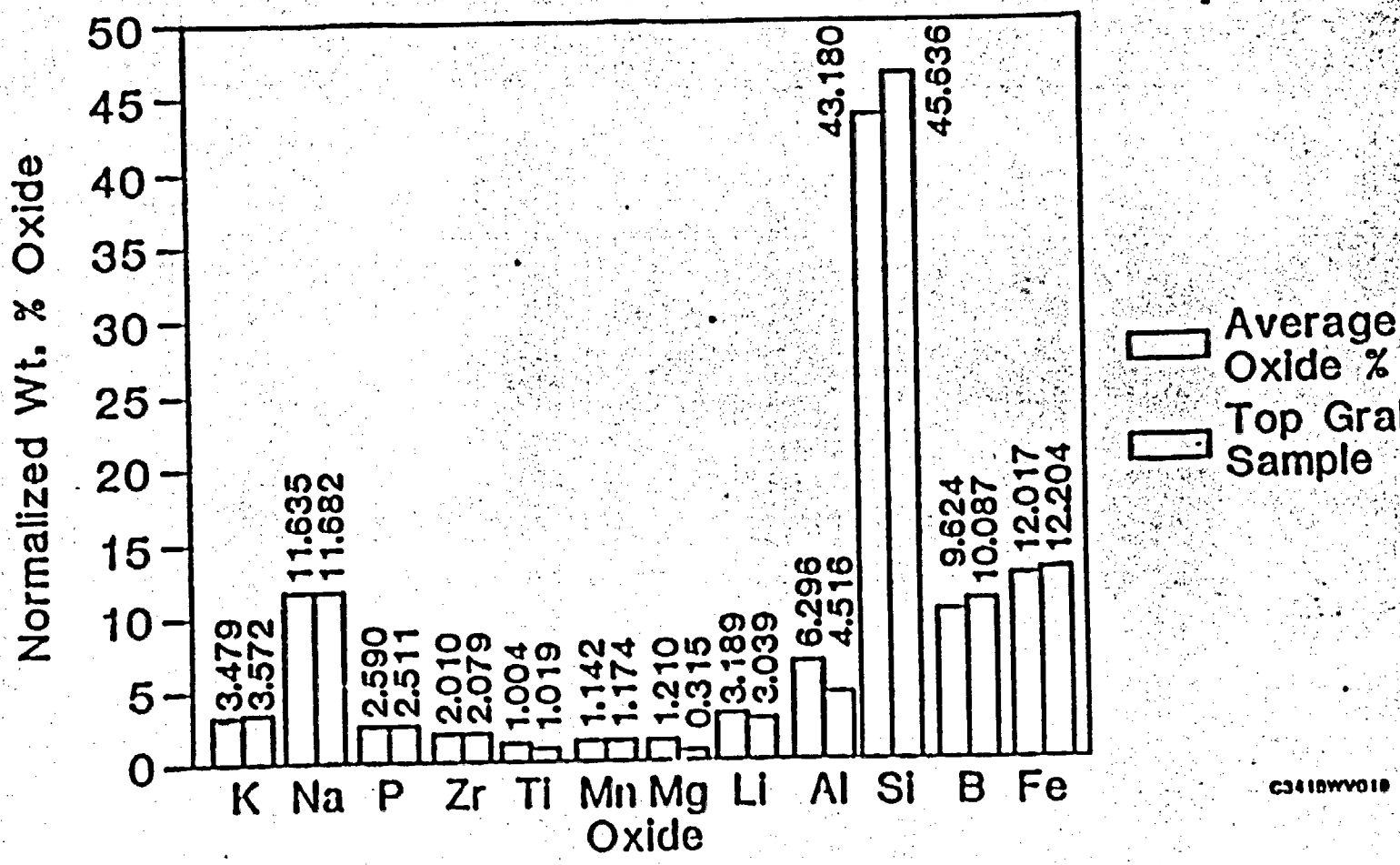
Sample → Analyze

3 Samples/Level
X5 Levels/Can
X16 Cans
= 240 Analyses for Bulk Glass

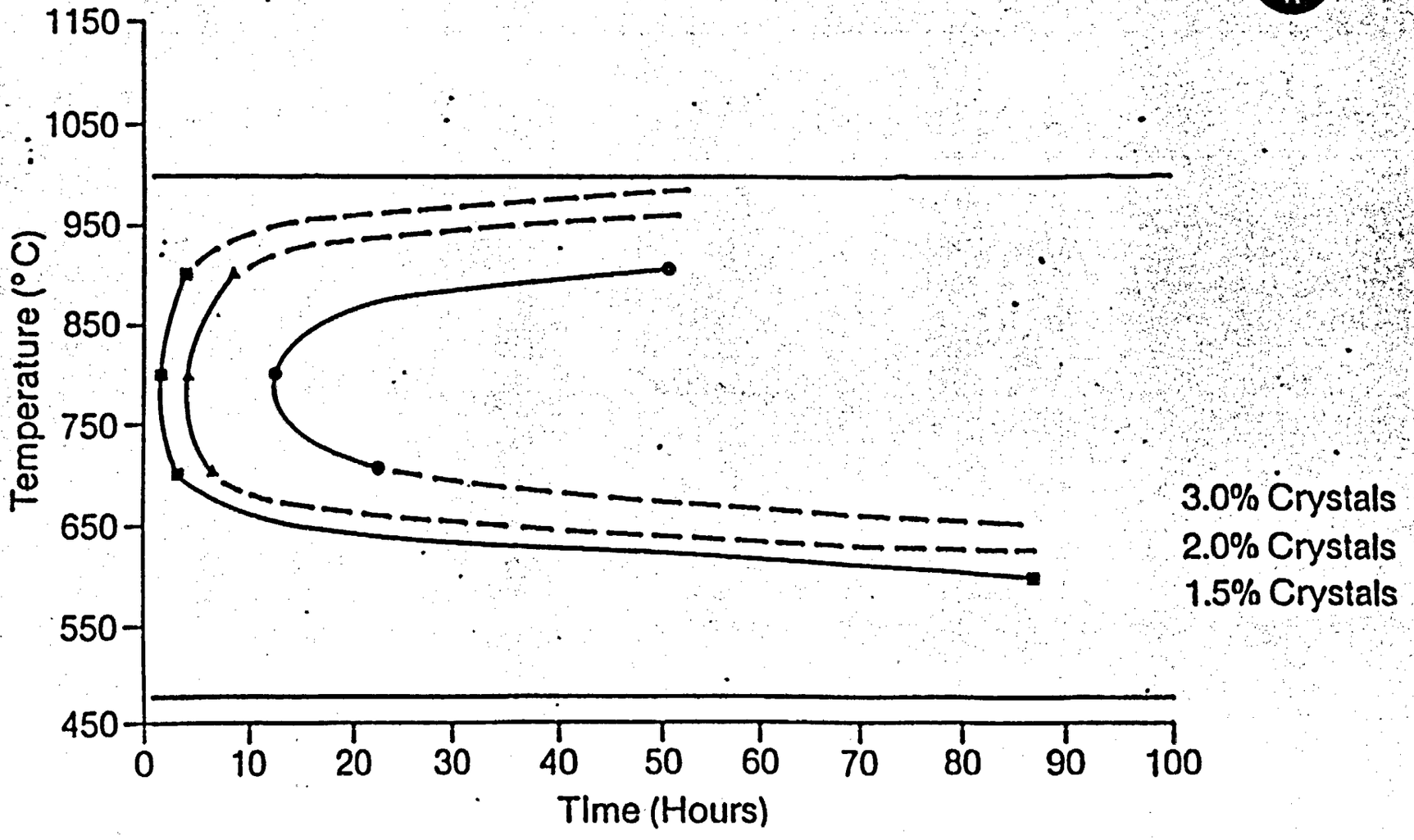
$\overline{X}$ 16 Bulk − $\overline{X}$ 16 Shard

C3410WV018

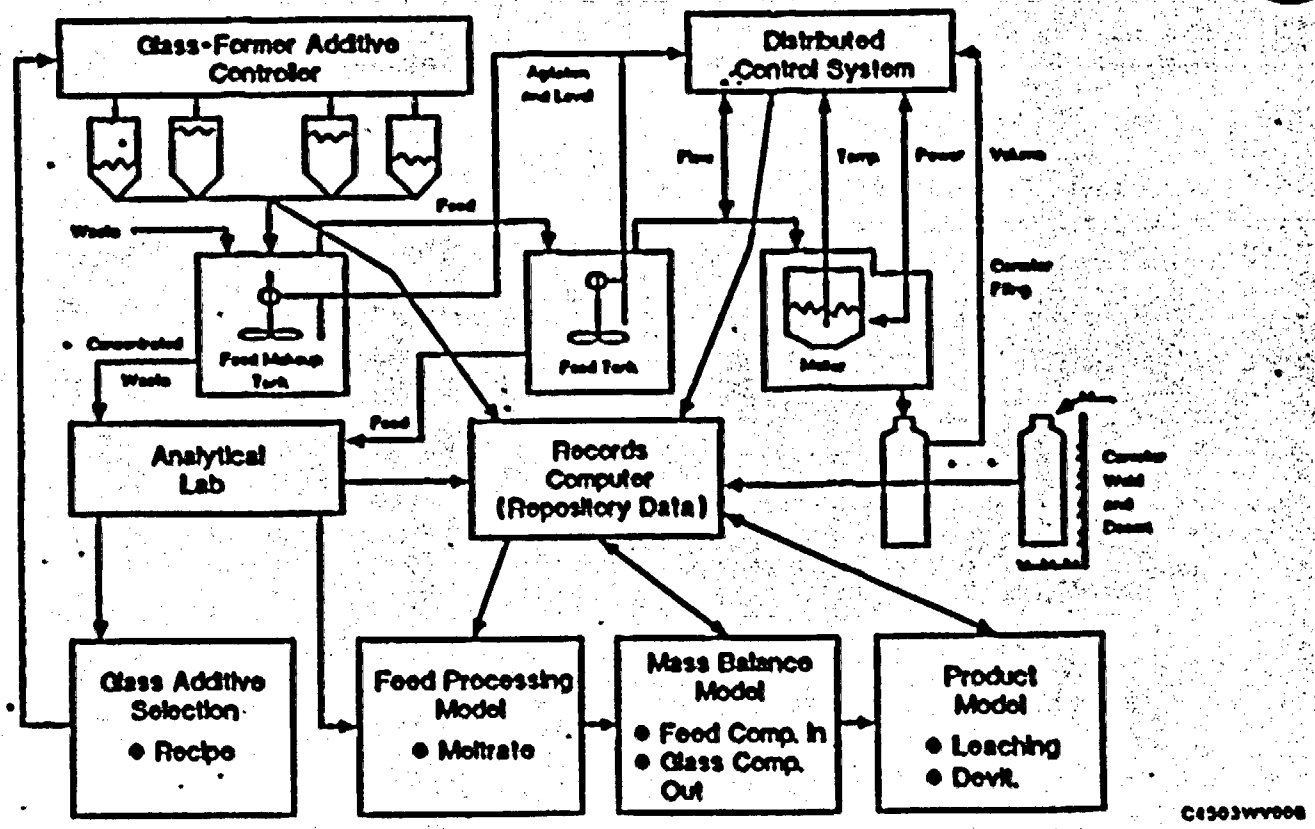
COMPOSITIONAL COMPARISON BETWEEN THE AVERAGE OXIDE % OF THE CANISTERIZED GLASS TO A TOP GRAB SAMPLE FOR TEST CANISTER 27. RUN SF-9



TTT DIAGRAM FOR WVCUO GLASS



WEST VALLEY PROCESS CONTROL SYSTEM



VITRIFICATION RUN SF-10 SUMMARY

- ACHIEVED STEADY-STATE OPERATION TO ESTABLISH:
  - MELTING RATE WITH FEED COMPOSITION MEETING WASTE ACCEPTANCE SPECIFICATIONS
  - PLENUM TEMPERATURE
- ADDED TRACERS (Ba, Sr) TO BEGIN VERIFICATION OF THE PROCESS MODELS IN TERMS OF:
  - MIXING BEHAVIOR OF THE MELTER
  - MEAN RESIDENCE TIME OF THE WASTE-GLASS CONSTITUENTS
  - MIXING BEHAVIOR OF THE MFHT WITH A FALLING LIQUID LEVEL WHEN COUPLED TO THE ADS PUMP AND HYDRAGARD SAMPLER

CONTINUED

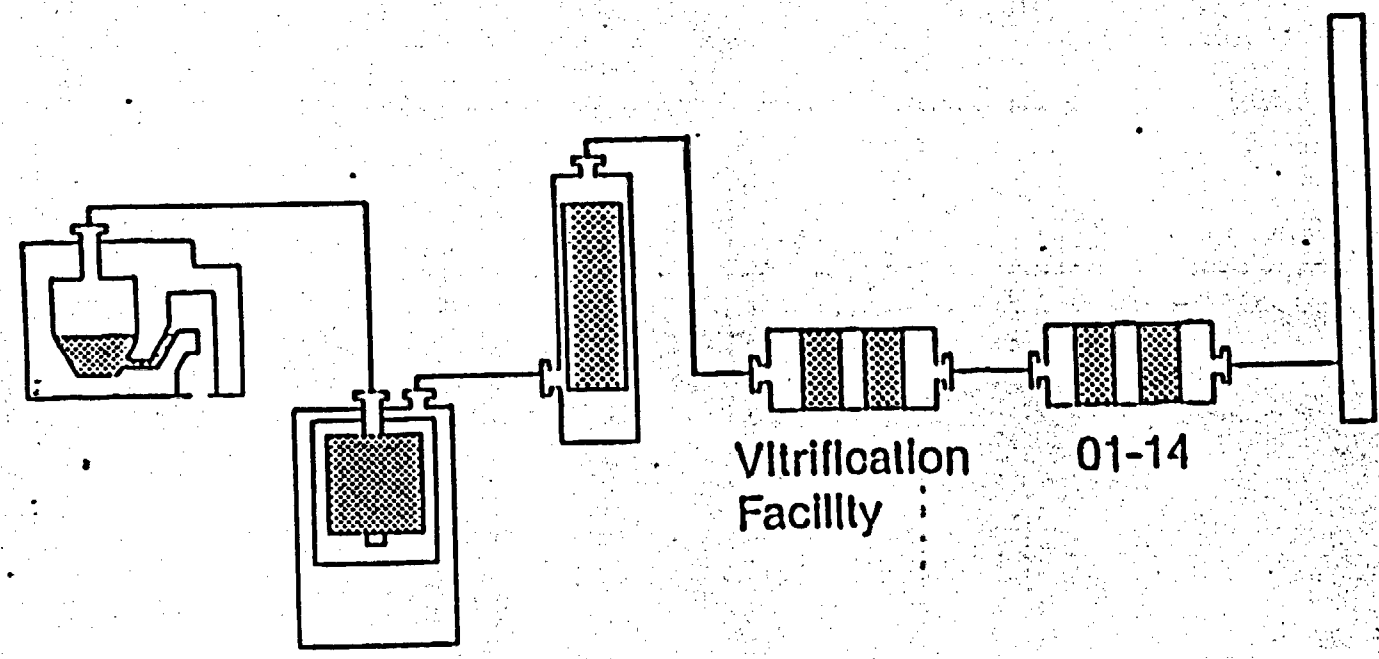
- COMPREHENSIVE MATERIAL BALANCE MEASUREMENTS INCLUDING FEED, MELTER, AND CANISTER LEVELS WERE OBTAINED CONTINUOUSLY TO FURTHER VALIDATE PROCESS MODELS
- CRYSTALLINITY DATA WAS FURTHER DETAILED TO SUPPORT WASTE ACCEPTANCE

OFF-GAS SYSTEM EXPERIENCE

- Off-Gas System D.F. Performance, from a Mass Balance Standpoint, is Conservatively Exceeding the Site Requirements by an Order of Magnitude. Further, Element Specific, Testing is Continuing.

- NOx Destruction by Reaction with Ammonia in a Catalyst Bed has Demonstrated Greater than 90% NOx Removal from the Melter Off-Gas.

MELTER OFF-GAS SYSTEM



SF-10 Decontamination Factors (Total Mass Basis)

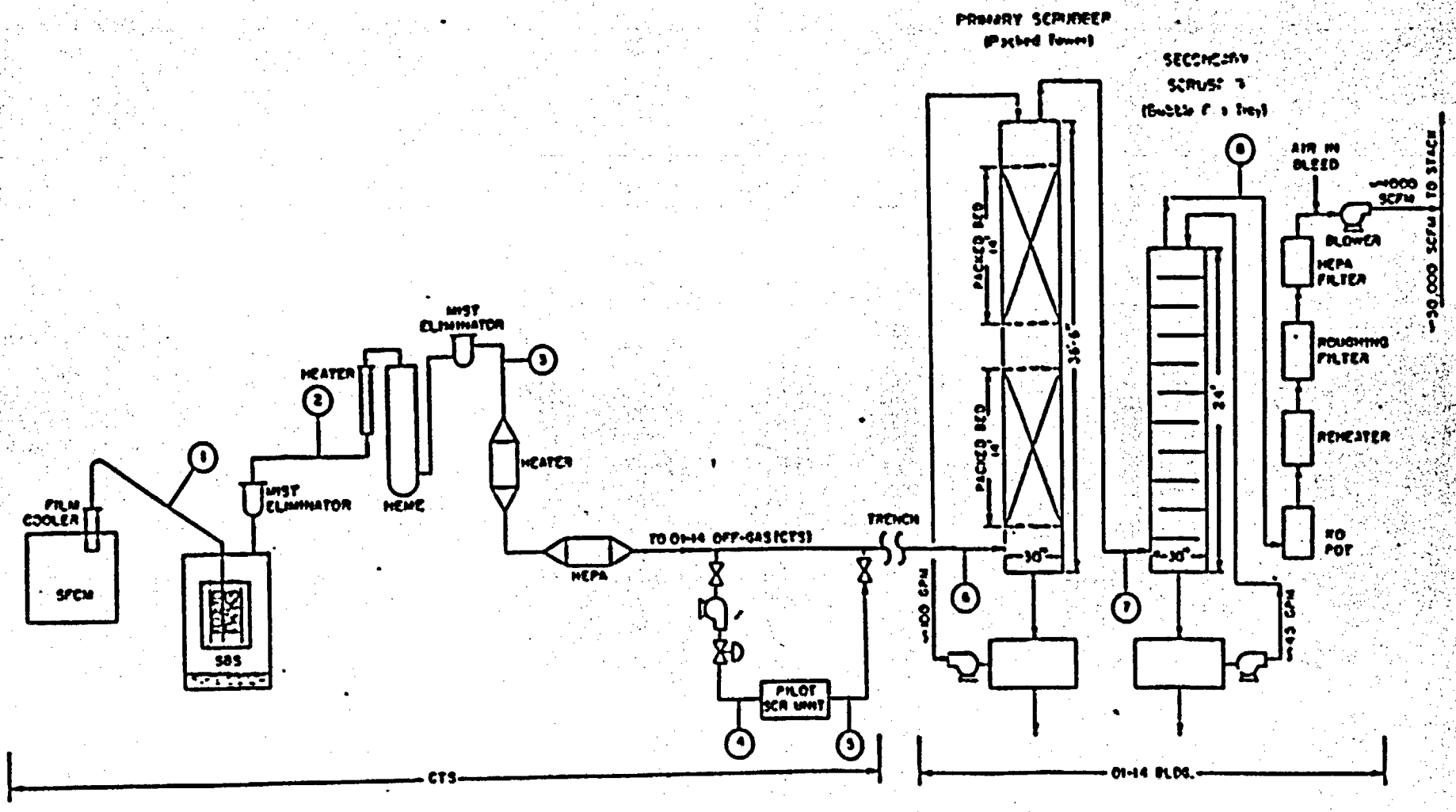
500 | 1000 | 1000 * | 100 * ---> 5 x 10^10

* Assumed Conservative HEPA Filter DF Performance Data

WVDP SITE OFF-GAS DECONTAMINATION FACTOR REQUIREMENTS

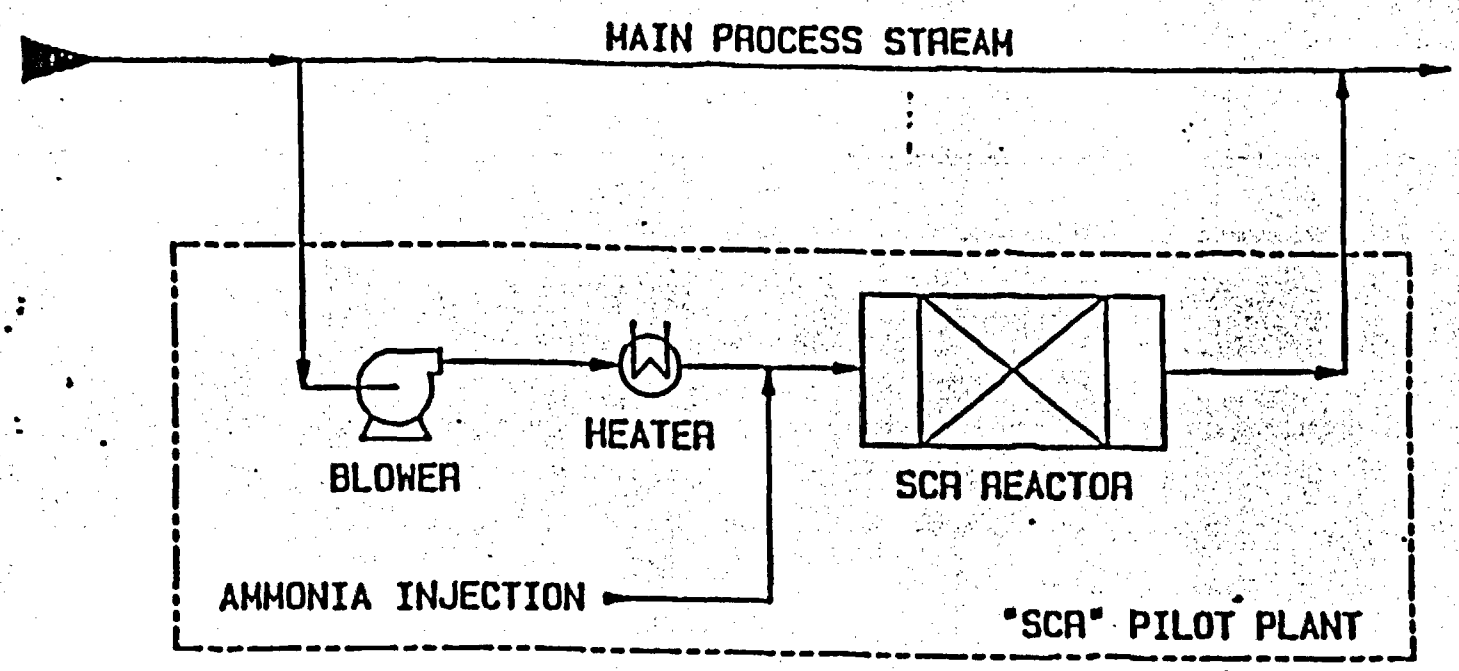
Element	DF	Element	DF
H	< 1	Sn	400
C	< 1	I	10
Fe	9	Cs	2 x 10^7
Ni	3 x 10^3	Ba	2 x 10^5
Co	2 x 10^3	Ce	1
Se	4	Pr	< 1
Sr	2 x 10^8	Pm	4 x 10^4
Y	2 x 10^6	Sm	1 x 10^5
Zr	60	Eu	9 x 10^5
Nb	60	Th	2 x 10^3
Tc	8	U	3 x 10^3
Ru	20	Np	1 x 10^5
Rh	< 1	Pu	4 x 10^8
Pd	10	Am	4 x 10^8
Sb	1 x 10^3	Cm	7 x 10^7
Te	70		

(10/92 BASIS; 50,000 SCFM; 10,898 HR CAMPAIGN)



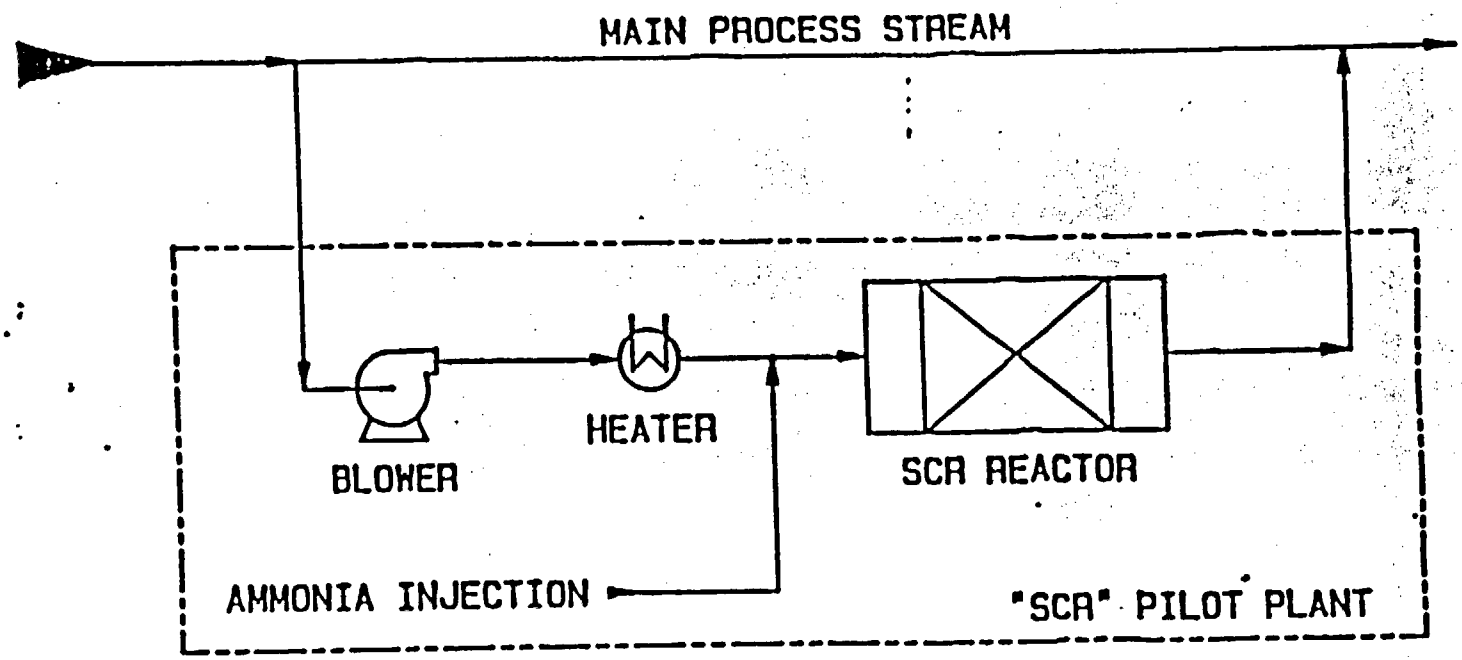
VITRIFICATION PROCESS OFF-GAS FLOWSHEET

CATALYTIC NOx DESTRUCTION SYSTEM SCHEMATIC



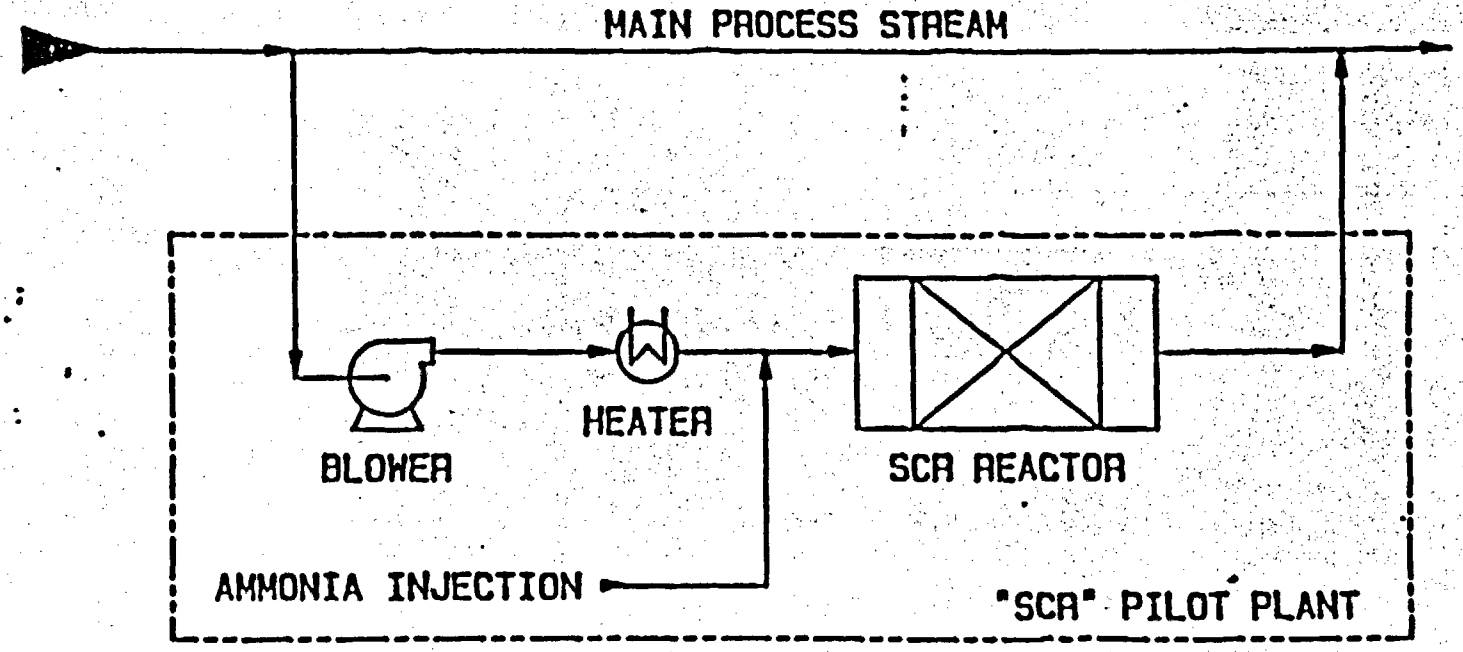
REACTION: NOx + NH3 + (O2) ---> N2 + H20 + (O2)

CATALYTIC NOx DESTRUCTION SYSTEM SCHEMATIC



REACTIÓN: NOx + NH3 + (O2) ---> N2 + H20 + (O2)

CATALYTIC NOx DESTRUCTION SYSTEM SCHEMATIC



REACTION: $NO_x + NH_3 + (O_2) \longrightarrow N_2 + H_2O + (O_2)$

NOx SCRUBBING SYSTEMS EFFICIENCY COMPARISON

Component	Existing System NOx Removal, %	Catalytic System NOx Removal, %
SBS	40	40
Aqueous Scrubbers		
Primary	60	--
Secondary	10	--
Catalytic Destructor	--	> 90
TOTAL SYSTEM NOx REMOVAL EFFICIENCY	78	> 94

(> 91% REQUIRED BY NYSDEC)

CONCLUSIONS

- FULL-SCALE INTEGRATED WVDP VITRIFICATION EQUIPMENT IS BEING CHARACTERIZED AND USED FOR QUALIFICATION TESTING
- HOMOGENEITY ASSESSMENT OF THE MFHT INDICATES SMALL STANDARD DEVIATIONS OF KEY FEED COMPONENTS
- THE PREPONDERANCE OF DATA INDICATES THE PRODUCT WILL MEET THE ACCEPTANCE REQUIREMENTS; HOWEVER, QUANTIFICATION OF PROCESS "ERROR BARS" REMAINS THE CONTINUED EMPHASIS IN OUR TEST PROGRAM
- THE REPRESENTATION OF THE PROCESS WITH OUR MODEL IS EXCELLENT; VALIDATION IS CONTINUING
- TESTING IS DEFINING AN OPERATING COMPOSITION RANGE FOR VITRIFICATION PROCESS

CONCLUSIONS

- PERFORMANCE OF VITRIFICATION FACILITY AND LABORATORY GLASSES OF THE SAME COMPOSITION ARE INDISTINGUISHABLE
- NO SIGNIFICANT MELTER DESIGN MODIFICATIONS ARE PLANNED FOR THE SECOND GENERATION MELTER
- COMPOSITION WILL BE CONFIRMED DURING HOT OPERATIONS BY FEED AND SHARD SAMPLING
- CANISTER COOLING TYPICALLY YIELDS 3 PERCENT CRYSTALS WHICH HAVE NOT AFFECTED THE PRODUCT QUALITY
- PRELIMINARY OFF-GAS PERFORMANCE DATA INDICATE THAT THE REGULATORY REQUIREMENTS WILL BE ACHIEVED
- GLASS SHARDS REPRESENT THE BULK CANISTER GLASS
- OBTAINED PERFORMANCE DATA ON CATALYTIC NOx REMOVAL SYSTEM; GREATER THAN 90-PERCENT EFFICIENCY REALIZED

Quality Assurance

D. L. Shugars

Manager

Quality Assurance

Quality Assurance Requirements For High-level Waste Form Production

Quality Assurance Program

- DOE Order 5700.6B
- NQA-1
- 18 Point Program
- Selective Application

Basic Requirements

OGR B-14, "Quality Assurance Requirements For High-Level Waste Form Production"

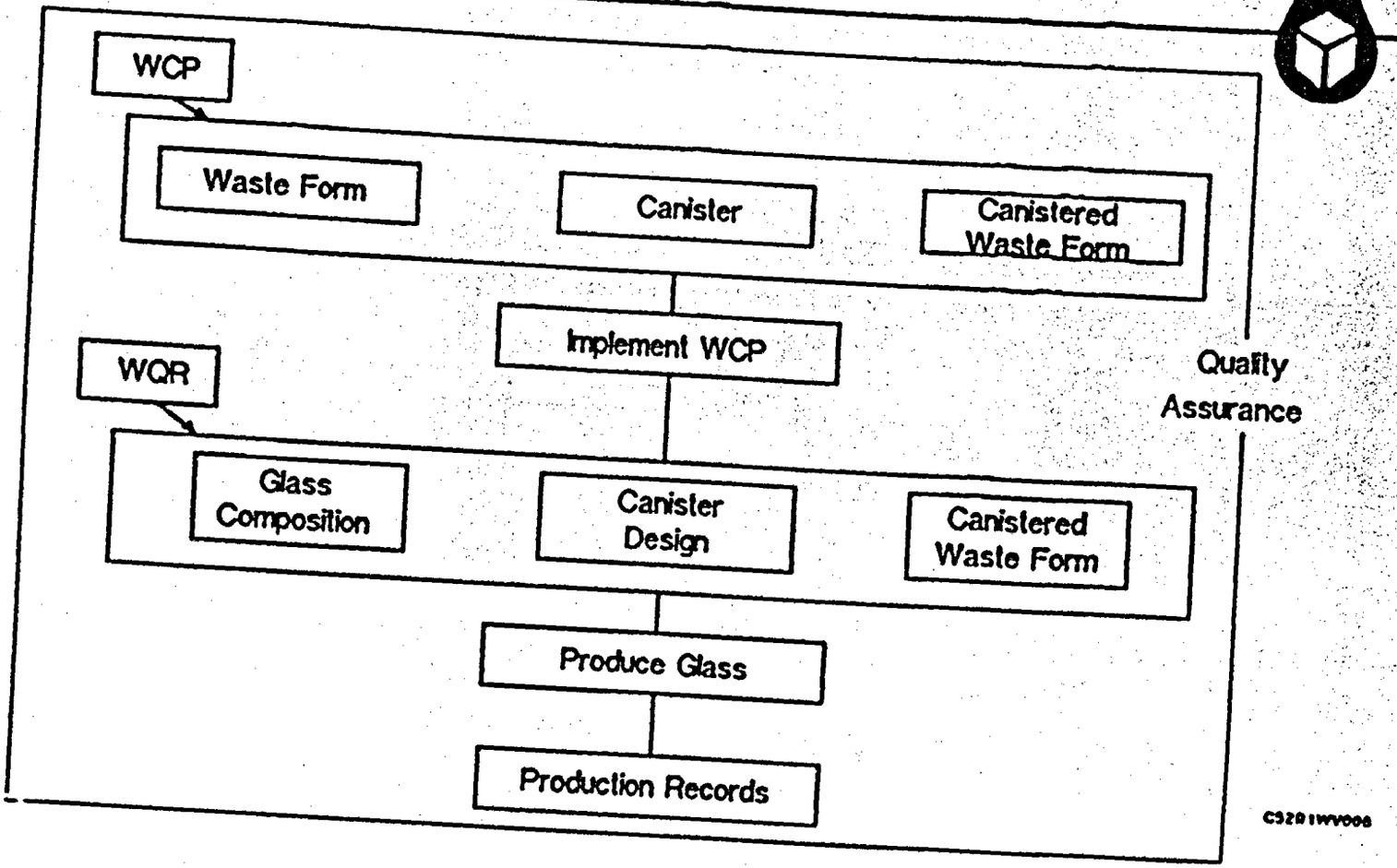
Includes

- NQA-1 Quality Assurance Program Requirements For Nuclear Facilities, Including Supplements
- DOE 5000.3, "Unusual Occurrence Reporting System"
- DOE 5700.6, "Quality Assurance"
- Guidelines For Application Of Readiness Reviews To Department Of Energy Activities

Applicability

- R&D For Waste Form Qualification
- Control of Materials, Equipment, and Facilities Essential For Certification of Canistered Waste Form
- Control of Processing Operations That Are Essential To The Certification of the Canistered Waste Form

WVNS QUALITY ASSURANCE FOR HLW



Supplemental Requirements

- Control of Software
- Peer Review
- Control of Development Activities
- Qualification of Data
- Archival Samples
- Process Control
- Product Certification
- Readiness Reviews
- Quality Levels
- Training and Indoctrination
- Overview of Quality Assurance
- Quality Records
- Modification Control (Change Control)
- Effectiveness Evaluation

Quality Assurance Program Description

- To Cover Basic and Supplementary Requirements
- Composite of All Major Participants in Waste Production
- Prepared Per NRC Type Instructions
- Made a Part of Waste Compliance Plan (WCP)
- Approved and Maintained Per DOE Requirements

Logic of Quality Assurance Program For Waste Acceptance Activities

- Purpose of Quality Assurance Program: To Provide Means To Insure That Quality of the Conistered Waste Form Delivered To the Repository is Controlled
- Scope:
  - All Waste Acceptance Task Laid Out In WCP or Its Revisions
  - All Other Activities Which Directly Support Those Tasks
    Examples Are Purchasing, Standards Labs
    Intend to Merely Reference Existing Quality Assurance Procedures For These Activities, As Appropriate
- Quality Assurance Program Describes Methods and Responcibilities For:
  - Defining Requirements For Tasks
  - Defining Programs To Meet Requirements
  - Assuring That Programs Can Meet Requirements
  - Assuring That Programs Have Been Carried Out Properly
  - Assuring That Results Meet Requirements
  - Changes

Current Status of High Level Waste Quality Assurance Program

- Now Have Quality Assurance Program For High Level Waste For NQA–1 Basic and Supplementary.
- Quality Assurance Program Description To Meet the Additional Requirements of Enhanced Quality Assurance is Complete
- The Quality Assurance Program and Procedures For Implementation for the WVPO is in the Review Cycle
- Current Work in the Areas of Testing and Development Are Controlled to High Level Waste Quality Assurance Program Requirements, Where Appropriate
  - Test Control
  - Laboratory Control

Test Control

- Testing Is Controlled By Engineering Procedure — EP—11—003
- Requires Test Plans
- Requires Test Procedures
- Requires Test Reports
- Requires Quality Involvement, As Appropriate

TEST PERFORMANCE

- Qualified Test Performers
- Qualified Operators
- Qualified and Independent Inspectors
- Documented Operating Procedures

CS291WV025

TEST REVIEW

- Peer/Team
- Checklist
- Final Acceptance
- Record of Closeout

C5291WV002

TEST REPORT

- Summary
- Data Results
- Evaluations
- Open Items

C328 IWV003

Quality Assurance Involvement in Facts Testing

- Quality Engineering Reviews/Approves Test Procedures/Plans
- Inspection Services Performs Surveillance of Ongoing Test Activities
- Quality Engineering Reviews and Approves Test Reports

Major Development Work

- At Alfred and Catholic Universities, PNL, MCC
- All Are Required to Have, and Work To, An Established Quality Assurance Program
- All Are Monitored By WVNS Quality Assurance
- All Are Audited By WVNS Quality Assurance
  - Qualification of Personnel
  - Documentation of Work
  - Results Reporting and Documentation
  - Log Books are Complete
  - Collection and Maintenance of Records
  - Procedure Performance

Quality Assurance At Catholic University

- Quality Assurance Plan Approved
- Implementing Quality Assurance Procedures in Place
- Quality Assurance Training on Procedure Implementation in Place
- Analytical Work Done To Approved Procedures
- Hot (Radioactive) Melter Runs Done To Approved Procedures
- Quality Assurance Surveillances Are Being Performed By an Independent Catholic University Quality Assurance Representative
- WVNS Performing Periodic Surveillances of All Work
- WVNS Audits Annually

SUMMARY

Vitrification System Design and Supporting Safety Analysis

- Proposed Time Tables

  - NRC to provide comments on VF PSAR (Issued 1/87) by Nov/1988
  - Detailed working meeting on Facility Criteria and Barrier Identification including Design features, Safety features and Secondary Barrier, JAN '89
  - Working meeting on Confinement Barriers Analysis e.g., Failure Modes, Scenarios, safety factors and consequence of failure, MAY '89
  - Construction Review and Final Presentation on Seismic Civil/Structural, Construction Tour, NOV '89

Review and Acceptance of Canistered HLW Glass Qualification

- Proposed timing to support both DOE-RW and NRC involvement prior to two final full scale qualification runs [(July 1988) 89]
  - WCP reissued by WVDP to DOE-RW for Review comment and resolution of comments and Issuance to NRC [Feb/1989]
  - WVDP/DOE-RW/NRC HLW Glass Technical Exchange [Feb /1989]
  - Comment and Discussion of NRC comments [May 1989]