02.08-09/01/96-00122

CLOSEOUT REPORT

PCB SOIL REMOVAL ACTION, SITE 16
AT
NAVAL AMPHIBIOUS BASE - LITTLE CREEK
NORFOLK, VIRGINIA
Contract No. N62470-93-B-3122

Prepared For:
Naval Facilities Engineering Command
Atlantic Division
Installation Restoration Branch, Code 1822
Norfolk, Virginia

Prepared By:
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 414
Norfolk, Virginia

Final

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1.0 Introduction

The clean-up of polychlorinated biphenyl (PCB) contaminated soil at Site 16, Little Creek Naval Amphibious Base has been successfully completed. This cleanup action was performed by Navy Public Works Center - Norfolk Virginia. Contract No. N62470-93-B-3122 was the driving document for the work.

The intent of this report is to provide a comprehensive summary of the sequence of work activities, modifications from the specifications, and a summary of data and information used in support of the decision-making processes. This document is intended to provide a sufficient amount of information to support future site activities, including use as a record of construction, verification of the extent of cleanup for regulatory and future site use considerations, as a reference for health and safety impacts during site operations and demonstration of compliance to 29 Code of Federal Regulations (CFR) 1910.120, and as a summary of the final disposition of removed materials. Original copies of the Vehicle Inspection Log (Appendix D), Transportation and Disposal Log (Appendix E), Waste Shipment Documentation (Appendix F) are held by NAB Little Creek Base Civil Engineer Department, Environmental Quality Division, Norfolk, Virginia. A copy of the preceding documents is provided in the appendices at the end of the report.

This report is organized into sections that include the following information: summary of the removal action, final Health and Safety (H&S) report, summary of changes and modifications, final drawing, summary of chemical testing, off-site disposition of materials, and quality control (QC) summary report.

2.0 Summary of Action

Navy Public Works Center - Norfolk, Virginia performed the project in four phases: Note that the first three phases have overlap on their timeframes of occurrence.

The first phase included development and negotiation of the cost estimate, preparation of the prework submittals, and the preconstruction conference. This phase occurred from November 1993 to February 1995.

The second phase included the site investigation for possible dioxin contamination. This included regulatory review of dioxin limits on-site along with determination of possible derivatives of the dioxin compound. This phase occurred from June 1994 to January 1995.

The third phase of work included the removal and disposal of approximately 100 tons of PCB contaminated soil and construction debris (utility pole, fencing, and trees/vegetation), along with backfill, grading, and re-vegetation of the site. This phase occurred from March 1995 to July 1995.

The fourth phase concerned the writing and development of the closeout report. This report primarily includes information concerning Phase Three of the overall project, however, some information concerning Phase One, Two, and Four has been included for completeness

2.1 Phase One - Planning and Preparation

The initial establishment of a partnership between Navy Public Works Center (PWC) - Norfolk, Virginia and NAVFACENGCOM, Atlantic Division (LANTOPS) was designated by Memorandum on 10 November 1993 between LANTOPS Code 052E and PWC PO Code 30. This memorandum determined the basic tasks and functions that would occur to complete work at Site 16, Little Creek Naval Amphibious Base.

The final version of the specification for the job was issued by LANTOPS the first week of February 1994 and dated 25 January 1994. It provided the details and requirements for execution of the PCB contaminated soil removal action.

An estimate for the job was developed and negotiated to agreement between February and March of 1994. Funding (DERA appropriation) for the project was provided to PWC - Norfolk the end of March 1994. A final project cost of $175,000 was negotiated and agreed upon.

Development of the prework submittals started immediately upon funding and progressed towards a draft version. The submittals included the Environmental Conditions Report, Work Plan, Quality Control Plan, Environmental Protection Plan, Health and Safety Plan, and the Sampling and Analysis Plans. These draft version submittals were presented for review to LANTOPS and BCE-Environmental Little Creek by July 1994. Upon receiving all the comments by the middle of February 1995, a final draft version was complete by the end of February 1995. No further comments were made.

The preconstruction conference took place the end of January 1995. An estimated start date for the end of February 1995 was proposed. Actual start date occurred by the middle of March 1995.

2.2 Phase Two - Dioxin Investigation

The question of a possible dioxin contamination in the projects' soil was raised by the EPA Region III and Virginia Department of Environmental Quality (VDEQ) to LANTOPS in June 1994. A decision by LANTOPS was made by September 1994 to have PWC Norfolk sample the PCB hot spots for dioxins using a screening analysis (positive or negative answer without any quantitative analysis). Initially, seven (7) samples were collected and submitted for laboratory dioxin screening analysis, EPA Method 625. Two (2) of the samples were found to be positive for dioxin 2,3,7,8-TCDD. The dioxin sample location plan and laboratory analysis reports are contained in Appendix A.

LANTOPS contracted Baker Environmental to resample the sight for dioxins, also using a screening procedure. These results also showed a confirmed positive for dioxins. In order to confirm or deny the presence of dioxins, Baker Environmental was contracted to sample the same areas and have the soil quantitatively analyzed for the specific amount and type of dioxins. Three soil samples were collected around the utility pole at pre-determined locations. The samples were collected from 0" - 6". The samples were split in the field and sent to three selected laboratories for duplicate analysis. The reports from these laboratories indicate no detection of dioxin in the submitted soil samples. These reports are provided in Appendix A. The analysis results from the three laboratories were provided to the VDEQ. Discussion between LANTOPS and the State found the type of dioxin initially detected at the project to be a minor derivative of the more toxic/hazardous other forms of dioxins. Through proper disposal means as determined by PCB regulations, the soil contaminated with a minor dioxin derivative would be handled and disposed of as a standard PCB containing waste. This was consistent with the original work plan and required no alterations to the planned activities or processes. The decision to continue on as previously planned was released by LANTOPS for the end of January 1995.

2.3 Phase Three - Removal Action

PWC Norfolk's' work crews were mobilized for the second week of March 1995 to establish the project set-up on site. A trailer which acted as an office and a storage facility and a heavy equipment piece (Grade-All) was brought on site. All safety fencing and boundary/warning tape and signs were established. The decontamination area and work areas were prepared and several practice runs were performed to become familiar with the site parameters and required operations. Specific on-site field training for safety and health considerations was conducted for all site workers.

Throughout the construction phase of the project, 12 and 20 cubic yard (CY) roll-off container boxes (dumpsters) were utilized to hold excavated contaminated soil and construction debris. One (1) 55 gallon drum was utilized to hold and dispose of the decontamination water generated on-site. The transportation and disposal of the PCB contaminated waste was handled by a contract through the Defense Reutilization and Marketing Office (DRMO) contract (No. SP4400-94-D-0072). The contracted transporter of the dumpsters was HazMat Environmental Group, Inc. out of Buffalo, New York. All waste was disposed of at a Toxic Substance Control Act (TSCA) approved landfill in Model City, NY operated by CWM Chemical Services, Inc. Lab analysis for the amount of PCB contamination for each of the dumpsters and drums, along with the certification for the clean fill, was performed by the lab at PWC Norfolk, Virginia. This laboratory is certified by the VDEQ.

The actual soil removal activities started the third week of March 1995, with the last dumpster of contaminated soil being picked up the last week of May 1995. Table 1 (Appendix B) contains the results of the laboratory analysis performed to characterize the contents of each dumpster prior to shipment. The site was excavated slightly larger and deeper than that shown on the specifications. Several trees were removed that were in way of removal activities and a threat to the safety and welfare of the site workers. The majority of the excavation was handled by the Grade-All. Digging by hand was accomplished by the workers around the high voltage utility line, telephone lines, water line, and concrete steam line support that ran through the site. When digging by hand around the high voltage utility line, an electrical crew was present to provide required support.

Due to the surrounding landscape of trees and vegetation, and the need to preserve this environment, along with the frequent rainy days, actual removal activities progressed slower than anticipated. The site parameters also constrained the use of several dumpsters at one time. This situation was known and agreed upon during the planning phase of the project as a limiting constraint. A contributing factor to the inability to change out the dumpsters can be attributed to the extended analytical time necessary to characterize the excavated material for transport and disposal.

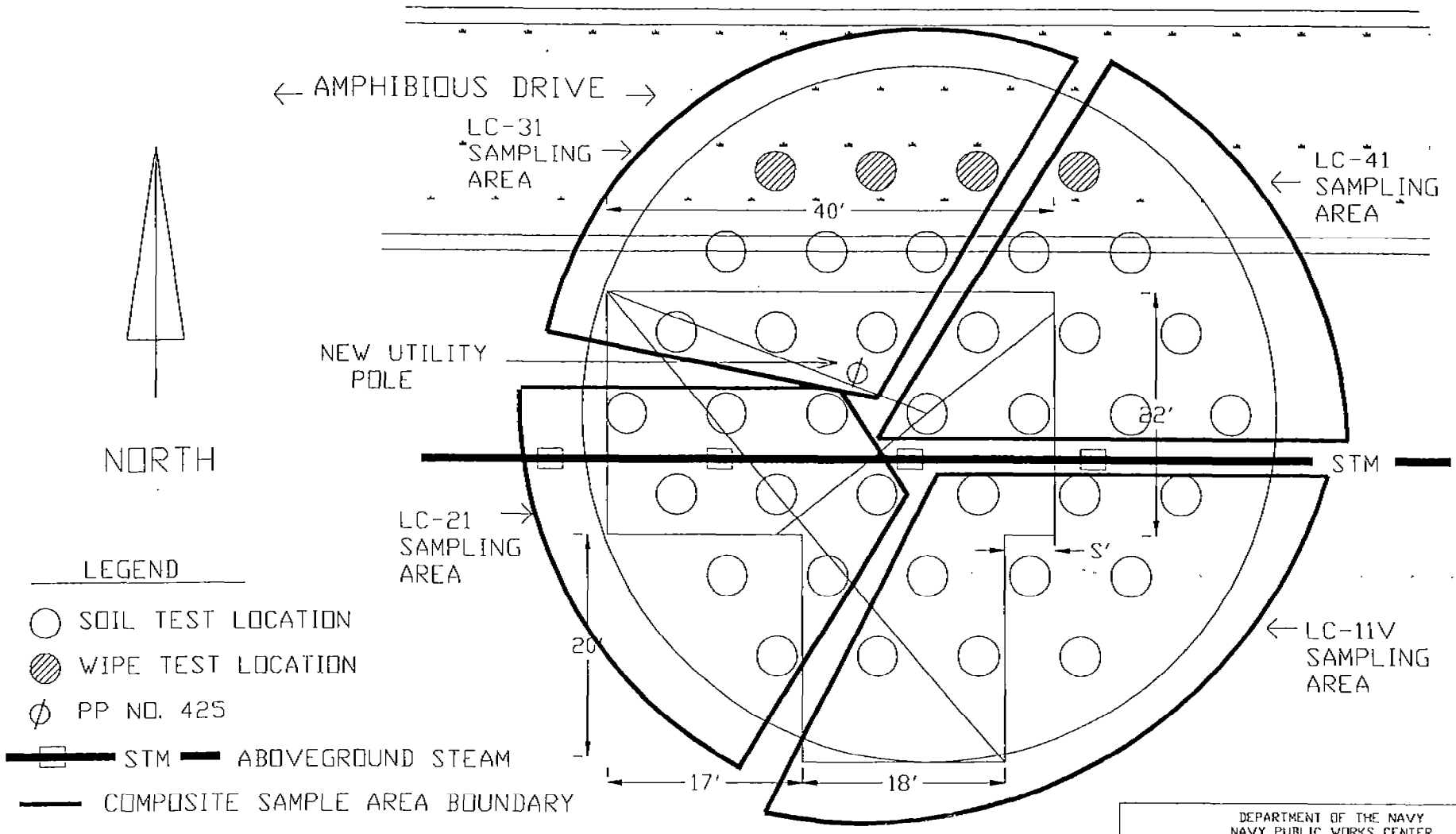
The clearance sampling grid, in accordance with "USEPA Verification of PCB Spill Cleanup by Sampling and Analysis" (see Figure 1), was established on the site the second week of May 1995. Samples were taken and sent to the lab for analysis. Field screening was not utilized due to the certainty in the excavation process and the small size of the site. The lab results were processed and received back the last week of May 1995. A clean-up level of ten (10) ppm was established in the work specifications. Table 2 (Appendix C) contains a summary of the results for the site clearance testing. Review of this data shows all values to be below the ten (10) ppm clean up level. Consult Figure 1 to see a pictorial for the location of the samples and composites used for clearance.

A total of 60 tons of contaminated soil, construction debris (utility pole, fencing, trees, excavation framing), and decontamination water were transported off-site and disposed. The clean backfill and topsoil was taken from two separate sites off of the Naval Station at Norfolk, Virginia. The backfill was obtained from the Willoughby Bay Spit area and the topsoil was taken from an area near the Navy Exchange complex. A complete TCLP and TPH analysis were performed on samples from both areas to certify the fill materials as non hazardous and acceptable for use.

The backfill, grading, and re-vegetation of the excavation zone was performed by the last week of June 1995. The site was filled, compacted, and graded to match the existing landscape and environmental conditions. PWC Little Creek and Fort Story were then tasked to replaced the utility pole located on the site. The dumpster containing site construction debris and drum containing decontamination water were picked-up, transported off-site, and disposed the last week of August 1995. PWC then demobilized from the site and returned it to NAB Little Creek.

2.4 Phase Four - Closeout Report

The last phase of this project was the writing and completion of the closeout report. A summary of what is contained in this report is provided in section 1.0.



LEGEND

- SOIL TEST LOCATION
- WIPE TEST LOCATION
- PP NO. 425
- STM — ABOVEGROUND STEAM
- COMPOSITE SAMPLE AREA BOUNDARY

NOTES: 1. ACTUAL CORE SAMPLES WERE TAKEN 0-6"
2. LC-5: BLANK / BACKGROUND SAMPLE
3. STEAM PIPING SUPPORTS WERE WIRE BRUSHED CLEAN.

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
ENERGY AND ENVIRONMENTAL ENGINEERING BRANCH
NORFOLK, VIRGINIA

NAB SITE 16 LITTLE CREEK

NORFOLK, VA

FIGURE 1

DRAWN BY: M. K. WALDEN	DATE: 11/15/95	
NOT TO SCALE	FILE: NAB16LC.DWG	SHEET 1 OF 1

3.0 Final Health and Safety Report

3.1 Introduction

The project was successfully conducted complying with the health and safety requirements. There were no adverse incidents such as Occupational Safety and Health reportable injuries during the project. All project participants performed project activities in accordance with approved procedures and applicable federal, state, and local regulations as outlined in the contract submittals.

3.2 Respirator Program

The use of respirators was implemented on a full-time basis for all site workers during excavation activities. Based on discussions with an EPA Region III representative and a Naval Industrial Hygienist, the use of a real time air monitoring program was not deemed necessary. The slow nature of the excavation process and the moisture content of the soil being removed minimized any volatilization or airborne contamination.

3.3 Hearing Conservation

Ear protection was utilized during any excavation activities involving the use of any heavy equipment and machinery.

3.4 Decontamination

Site decontamination activities were divided into two categories: personnel decontamination and equipment decontamination. There were no variances by PWC Norfolk personnel from the decontamination policies and procedures initiated prior to site activities.

3.4.1 Personnel Decontamination

A personnel decontamination area was constructed on site to minimize the chance of employees coming in contact with hazardous substances. It also eliminated the possible transfer of harmful materials into clean areas and protected the surrounding community by preventing transport of contamination from the site. The area included a three stage wash and rinse process, locker facilities for personal clothing, and disposal containers for Personnel Protective Equipment (PPE). Also, an adequate supply of soap, shampoo, and dry towels were made available for employee use. Used PPE was placed in 6 mm polyethylene bags, sealed with duct tape, and integrated and transported with other contaminated construction debris.

3.4.2 Equipment Decontamination

The only part of the heavy equipment machine (Grade-All) that came into contact with the contaminated soil and debris was the bucket or digging scoop. The use of plywood under the tires of the machine was utilized as a means to keep them from being cross contaminated when the machine had to enter the excavation or hot zone. The machine was keep on site the entire time with a sheet of 6 mm polyethylene placed under the bucket during inoperative times. A four-sided open box type structure was constructed for use in decontamination of the bucket. The bucket was placed within this structure. All loose dirt was scraped and brushed off. It was then triple washed and rinsed with all waste being contained. The surfaces were then wipe tested to confirm the effectiveness of the decontamination process using a field analysis kit, PCB RISc™ Test Kit. The results of the wipe test can be found in Section 5.

4.0 Summary of Record Documents, Field Changes, and Contract Modifications from Record Documents

4.1 Changes Recorded in Construction Quality Control Reports and Field Activity Daily Logs, Contract Modifications, and Field Work Modifications (FWMs)

- 03/21/95 - 03/24/95 - Five (5) trees removed due to constraints imposed on the heavy equipment operation and personnel safety.

- 03/28/95 - Personnel decontamination area was required to be moved from the interior side of the excavation zone to the street side to facilitate street-side excavation activities.

- 04/11/95 - Dumpsters placed on both sides of the street-side excavation to speed up excavation process.

- 03/21/95 - 05/30/95 - Ten (10) dumpsters were required for containment, transportation, and disposal of the contaminated soil and construction debris versus planned five (5) dumpsters. This was due to extra weight of the dumpsters and tractor trailer alone, limiting the usable weight in order to meet the over the road regulations.

- 05/10/95 - Site excavation clearance samples were sent for lab analysis versus preliminary field screening due to certainty of clean-up level being reached and small amount of samples required to prove clearance.

- 06/16/95 - Backfill and topsoil not tested for geotechnical characteristics, compaction and moisture content requirements due to acceptability of soil texture and site usage constraints. No structural requirements imposed on site parameters. Drainage has not been affected and existing terrain landscape has been maintained.

5.0 Summary of Chemical and Geotechnical Testing

Samples were collected during site operations to confirm or identify specific chemicals and components and their concentrations. Specifically, samples were collected and analyzed to verify the extent of excavation, determine disposal considerations, to verify cleanliness of source material, and to determine the constituents of decontamination water collected during site operations.

It was originally planned to utilize field screening (using Ensys EPA 4020) to determine the vertical and lateral extent of the excavation as required by the specifications. This was not conducted due to the certainty of the excavation in obtaining the required clean-up levels and the small size of the excavation zone. Laboratory sample analysis confirmation was utilized.

The results of the chemical testing are presented in summary tables referenced in subsequent subsections. The laboratory testing procedures used resulted in the delivery of considerably more detail than presented herein. The original laboratory analysis data is contained in the original copy of this report provided to LANTOPS. All chemical testing was performed by PWC Norfolk Environmental Laboratory, Code 900.

5.1 Laboratory Testing of Soil Samples for PCB's During Excavation Activities

A total of ten (10) dumpsters were used to contain the contaminated soil and construction debris for transportation purposes. To dispose of the soil and construction debris, the contents of each dumpster (12 or 20 CY) required characterization for the type and concentration of any PCB present. In order to characterize the waste in each dumpster, two (2) composite samples were taken. Each composite was composed of ten (10) discrete samples. Each composite sample includes a grid layout of soil borings from various layers, randomly scattered throughout each dumpster. The higher of the two resulting analyses was utilized to characterize the waste. Appendix B contains the laboratory analysis for each of the contaminated soil shipments.

A total of four (4) composite samples (with nine (9) subsamples each) were laboratory analyzed for PCB's in support of the confirmation of an adequate extent of excavation (confirmatory sampling). The design of the grids and use of compositing within each grid provide a very high level of confidence that the ten (10) parts per million clean up level was achieved. This verification process was based upon the EPA guidance document "Verification of PCB Spill Cleanup by Sampling and Analysis" EPA 560/5-85-025 dated August 1985. These sample results have been compiled and tabulated in Appendix C. Table 2 presents the results of the confirmatory sampling performed after completion of the excavation. All results are below the 10 ppm (<0.17, 8.52, 5.51, and 7.33 ppm existing with a background sample result of <0.17 ppm).

Laboratory Quality Control (QC) information for soil samples is presented in Table 3 and Table 4. QC information has been organized to indicate the date samples were received in the laboratory (validated time of sample receipt [VTSR]), the date of sample preparation, date of analysis, associated laboratory method blank, associated matrix spike (MS) and MS duplicate (MSD) samples, surrogate standard recovery, MS recovery (accuracy), and MSD Relative Percent Difference (precision). Overall, data quality was very good and completeness for these samples exceeded the completeness goals.

5.2 Laboratory Testing of Materials Using the Toxicity Characteristic Leaching for Clean Fill Certification

Two (2) soil samples required chemical testing for hazardous waste categorization using the toxicity characteristic leaching procedure (TCLP) (Final Rule, Federal Register, Volume 55, June 29, 1990). This was performed on samples Nos. WB-01 and CD1-02 collected for backfill and topsoil material, respectively. They were collected from the Willoughby Bay Spit area and behind the Navy Exchange area, respectively. Results of these analyses are discussed below and summarized in Tables 5, 6, and 7 of Appendix C. Analysis of the TCLP extract included compounds and elements regulated as hazardous waste.

Sample results indicate that no regulated compounds were present in the leachate at concentrations in excess of the regulatory action levels.

QC information including an analysis and extraction date summary and TCLP blank summary are presented in Tables 6 and 7 of Appendix C.

5.3 Laboratory Testing of Wipe Samples for Equipment Decontamination

Two (2) wipe samples were collected . Sample Nos. Wipe-1 and Wipe-2 were collected from decontamination of the heavy equipment.

Analytical results are summarized in Tables 8 and 9 of Appendix C. As per regulatory guidance documentation, the concentration of PCB's in the wipe samples are reported as micrograms per 100 square centimeters (ug/100 cm2). Guidance for acceptability of reported levels was taken from EPA-540/G-90/007: "Guidance on Remedial Actions for Superfund Sites with PCB Contamination"; August 1990. Section 2.6.3 of this document indicates a "clean" criteria of 100 ug/cm2 for low contact areas on outdoor surfaces in industrial areas. The low contact criteria was selected based on the areas of the equipment where wipe tests were collected (bucket). All of the wipe sample results were lower than the low contact criteria.

Matrix spike and matrix spike duplicate samples were not prepared and analyzed for wipe tests. These internal QC checks were not performed on wipe samples because splitting of the sample for spike recovery analysis would decrease the level of detectability (increase the detection limits).

5.4 Laboratory Testing of Decontamination Water

A sample of decontamination water was collected for PCB analysis to characterize the waste for disposal. These results are included in Appendix C. Table 10 presents the water sample laboratory analysis data. The QC summary and blank summary are included in Table 11 and Table 12, respectively.

5.5 Geotechnical Sample Analysis

No geotechnical testing was accomplished on the backfill and topsoil material. The excavation zone was backfilled with material equal in nature to what currently exists at the site. Also, the existing drainage and runoff has not been affected. There is no planned structural buildings or components to be placed near the excavation zone requiring geotechnical testing.

6.0 Off-Site Disposition of Materials

All contaminated materials removed or generated during site operations were transported (utilizing a contractor) off the job site to a permitted (TSCA approved) facility.

6.1 Transportation and Disposal of Contaminated Soils, Decontamination Water, and Construction Debris

Contaminated soil, decontamination water, and construction debris were transported and disposed of at Chemical Waste Management's (CWM) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/TSCA permitted, secure landfill located in Model City, New York. Permits for the Model City Facility are located in Appendix D. All original documents (Vehicle Inspection Log, Transportation and Disposal Log, Waste Shipment and Material, and Acceptance Documentation) are maintained by BCE-Environmental at Little Creek Naval Amphibious Base, Norfolk, Virginia. A copy of the Vehicle Inspection Log (Appendix E), Transportation and Disposal Log (Appendix F), and Waste Shipment Documentation (Appendix G) are included in each of the specified appendices.

Prior to loadout, an on-site inspection of each truck was conducted by DRMO and BCE-Environmental Little Creek to verify compliance with licensing, permits, insurance, and equipment requirements. After discharging the load of soil or construction debris at the disposal facility, each truck was decontaminated by pressure washing, in accordance with paragraph (m) of the New York State Chemical Waste Management (CWM), Model City, New York, Part "B" permit requirements.

7.0 QC Summary Report

7.1 Summary of QC Activities

Program work activities included the following:

- Surface Sampling
- Subsurface Sampling
- Excavation, Stockpiling, and Containment
- Transportation and Disposal
- Site Restoration

The quality objectives during this project included ensuring that materials, workmanship, and construction conformed to contract specifications and requirements. These objectives were monitored through inspection, testing, and review. There was no non-conformance identified during the course of work.

7.2 Field Documentation and Quality Control Meetings

Progress reports were prepared and submitted to LANTOPS and BCE-Environmental Little Creek to provide a line of communication to the project. These reports identified the workforce make up, the description of work performed, and any changes to the project plan that occurred. These reports were prepared by the PWC Norfolk Project Managers. In addition, these reports included weather conditions and temperatures, inspection and/or testing performed for the day, location(s) of work, results of inspection/testing, location and description of deficiencies, deficiencies corrected, the date of the report, and comments on the review of the corresponding daily report. This report was submitted to the specified Activity.

Quality control meetings were held approximately every Friday during the course of the project. These meetings were held to discuss project progress, changes, budgets, schedules, and any other concerns which might have been expressed during the meeting or course of work. The Project Managers, Site Superintendent, and Workers were the typical personnel in attendance for the QC meetings.

Appendix A

Dioxin Investigation

Memorandum

PWC NORVA Code 414

To: Scott Park, RPM

From: Craig Mayer

Date: 6 October, 1994

Subject: PCB Soil Removal Action - Site 16, NAB Little Creek. Dioxin Sampling

CC: J.P. Messier

1. PWC NORVA Code 414 had seven samples taken and screen analyzed for Dioxins. The samples were taken on two separate days using the same personnel and procedures. Of the seven samples, two samples tested positive for the Dioxin screen. Please see enclosed drawing for sample locations.

2. The samples were analyzed at Microbac Laboratories, Inc., Newport News, VA. The point of contact at Microbac is Marie Twigg, Contract Manager (825-1000). Please see enclosed lab reports.

3. The screen test for Dioxins give little information about the actual Dioxin condition at the site.

4. We recommend that further quantitative Dioxin sampling be undertaken to determine the extent and level of Dioxin contamination at the site.

5. As per our previous discussion, Please discuss this with your Chemist, Sherri Eng, and call me at 445-4885/6 so that we can discuss this further.

Craig

Microbac Laboratories, Inc.

Microbac

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CERTIFICATE OF ANALYSIS

Navy Public Works Center
Environmental Department
Bldg. Z140
Norfolk, VA 23511-6098

Attn.: Merrill Ashcraft
Contract #: N62470-90-B-4695

DATE: FEBRUARY 3,1994
ANALYSIS: Dioxin Screen
METHOD #: 8240
ANALYST: Steve Krynak
DATE/TIME ANALYZED: 09/30/94 @ 1200

LOCATION	DATE/TIME RECEIVED	DATE/TIME SAMPLED	LAB ID#	SAMPLE NUMBER	RESULT (mg/L)
D-11	09/09/94 @ 1020	09/07/94 @ N/P	N0994 009	18347	Negative
D-12	09/09/94 @ 1020	09/07/94 @ N/P	N0994 010	18348	Negative
D-13	09/09/94 @ 1020	09/07/94 @ N/P	N0994 011	18349	Negative
D-14	09/09/94 1020	09/07/94 N/P	N0994 012	18350	Negative

Respectfully Submitted,

Marie B. Twigg

Marie B. Twigg
Contract Manager

RECEIVED OCT 0 6 1994

The data and other information contained on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes without written approval from the laboratory.

Microbac Laboratories, Inc.
Mid-Atlantic Division
504 Morris Drive
Newport News, VA 23605
Telephone #: (804) 825-1000 Fax #: (804) 825-1200

Microbac

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CERTIFICATE OF ANALYSIS

Navy Public Works Center
Environmental Department
Bldg. Z140
Norfolk, VA 23511-6098

Attn.: Merrill Ashcraft
Contract #: N62470-90-B-4695

DATE: SEPTEMBER 8 1994
ANALYSIS: DIOXIN SCRREN
METHOD #:
ANALYST: SAR
DATE/TIME ANALYZED: 09/07/94

LOCATION	DATE/TIME RECEIVED	DATE/TIME SAMPLED	LAB ID#	SAMPLE NUMBER	PERMIT LIMITS	MDL	RESULT
D-1	09/01/94 @ 1120	08/31/94 @ 0740	N0994002	18297	XXXX		2,3,7,8 TCDD
D-2	09/01/94 @ 1120	08/31/94 @ 0743	N0994003	18298	XXXX		2,3,7,8 TCDD
D-3	09/01/94 @ 1120	08/31/94 @ 0745	N0994004	18299	XXXX		negative

Respectfully Submitted,

Marie B. Twigg
Contract Manager

090994

RECEIVED SEP 9 1994

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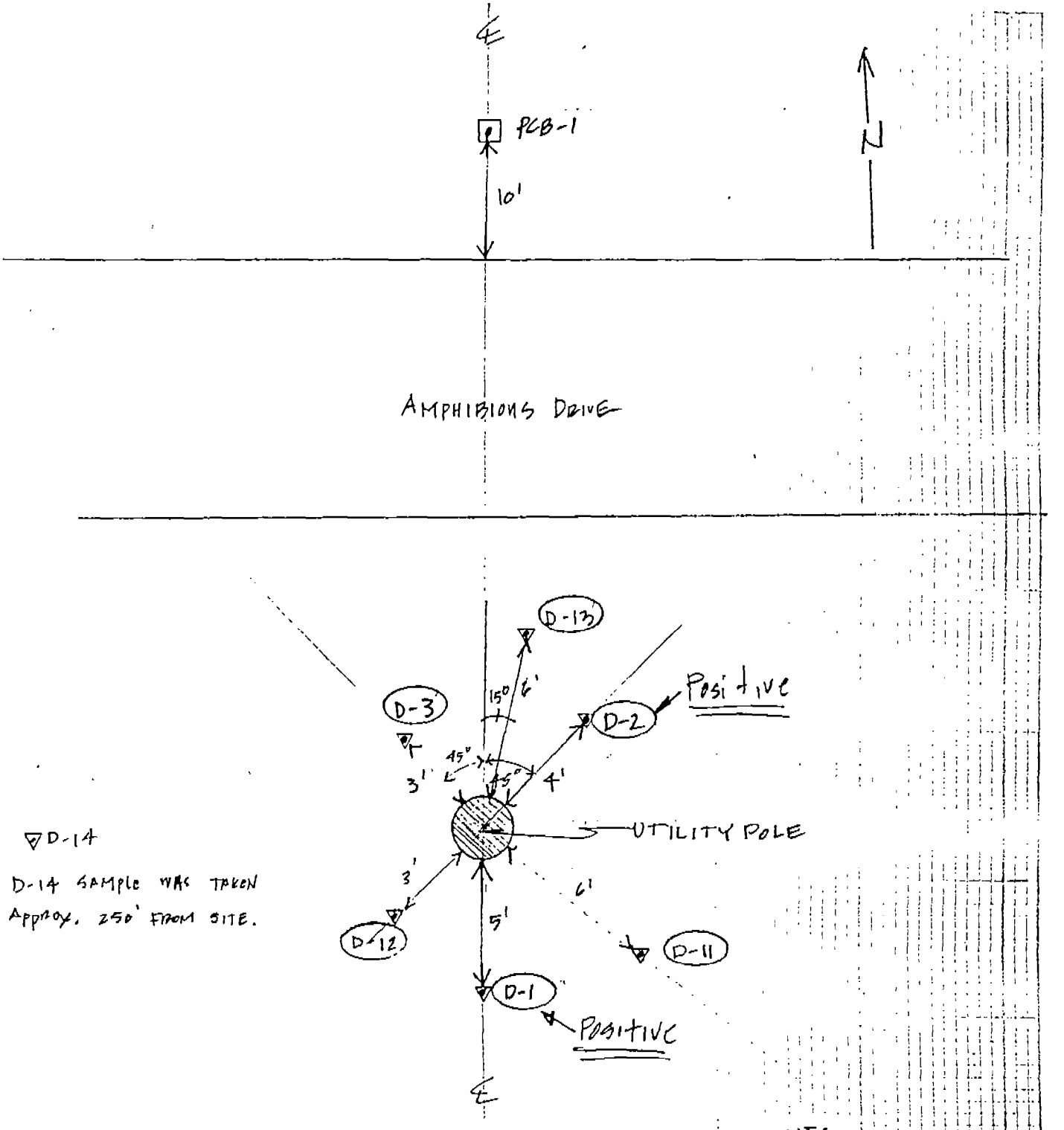
PWC NORFOLK

ENGINEERING DEPARTMENT

TITLE: PCB/DIOXIN SAMPLE LOCATION PLAN

BLDG: SITE 16 L.C. NOB J.O.# 1374014 PAGE: 1 OF 1

BY: CTM DATE: 10/06/94 CHKD: DATE:



September 7, 1994

SUBMITTED BY:

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
Norfolk, VA 23511

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Sample Received: 09/02/94 @ 11:15
Sample Collected: 08/31/94 @ 07:35
RE: Contract No. N62470-94-D-8308
J.O. #: 1374P14
Line Item #: 0007
PWC Sample Number: 18296
Sample ID/Location: PCB-1
JRA ID No.: 94-9449

PCB-1

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs				
1016/1242	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29
1221	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29
1232	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29
1248	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29
1254	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29
1260	8080	0.17	<0.17	CLH/CDN-09/03/94 @ 11:29

Respectfully,

for Carol Isenhour
Vice President

JRA:jla

Atlantic Division
Naval Facilities Engineering Command
Environmental Quality Division

FACSIMILE TRANSMISSION

TOTAL NO OF PAGES: 3 (including cover)

TO: BAKER

NAME: Tom Fuller

PHONE #: 800-553-1153

FAX #: 412-269-2002

DATE: 26 October 1994

FROM: Scott Park

PHONE #: 804-445-4803

AUTOVON: 565-4803

FAX #: 804-445-6662

OPERATOR #: 804-445-7336*

* For immediate pickup, please call above number.

NOTE:

Tom,

Attached are the Scope and Site Plan for dioxin sampling at Little Creek Site 16. As discussed, this work should be accomplished as a field change to CTO 247. Ollie would like you to send her a concurrence letter (like the one you sent for fact sheets for Sites 11 and 16). If you have any technical questions, call Sherri Eng (804-322-4787) or me. If you have contractural questions, call Ollie. Thanks for your support.

Scott

FIELD CHANGE FOR CTO 247

In order to confirm or deny the presence of dioxins at Site 16, the following work shall be conducted under CTO-247. Three laboratories, with appropriate certification, will be contracted to analyze soil samples for dioxin. One of the three selected laboratories, trained in dioxin sampling techniques, will acquire the soil samples from the site. A total of three soil samples will be collected from around the pole at locations provided on the attached site plan. These locations are designated as D-1, D-2, and D-12. (D-12 is the same location as sample 16SS103 taken during the last Site Inspection.) The samples will be collected from 0" - 6". The samples will be split in the field and sent to the three selected laboratories for duplicate analysis. Sufficient sample volume should be collected to enable to laboratory to run both a screen and a quantatative analysis for dioxin. The laboratory should initially screen the samples for dioxin using EPA Method 625. If a positive response is detected, EPA SW-846 Method 8280 shall be run to quantify the amount. If Method 8280 is used, Level D data validation shall be required. All samples should be run with a 14 day turnaround time.

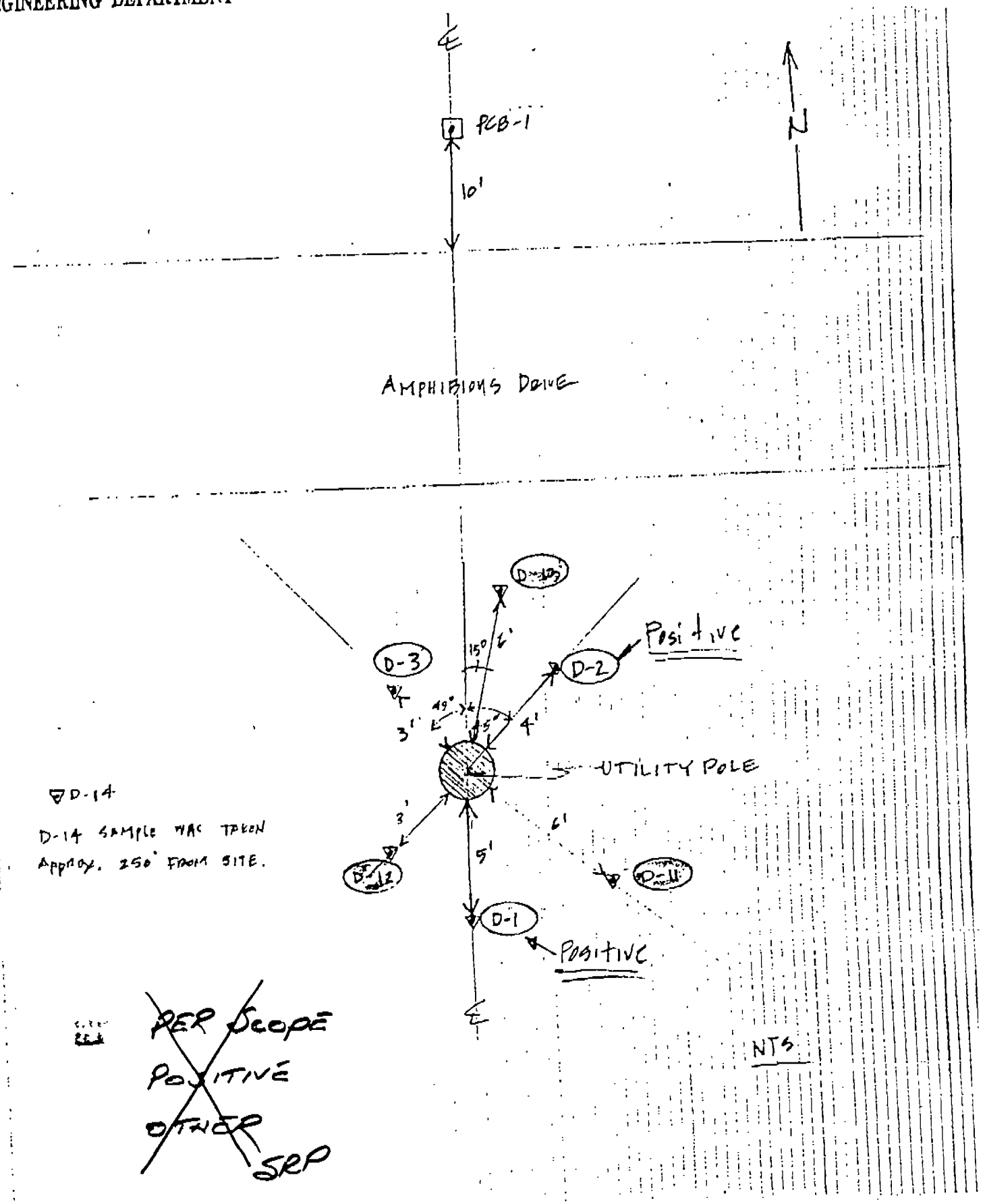
PWC NORFOLK

ENGINEERING DEPARTMENT

TITLE: PCB/DIOXIN SAMPLE LOCATION PLAN

BLDG: SITE 16 L.C. NOB J.O.# 1374014 PAGE: 1 OF 1

BY: CTM DATE: 10/06/94 CHKD: DATE:



Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

November 29, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, Virginia 23511-2699

Attention: Mr. Scott Park
Code 1822

Subject: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0247
NAB Little Creek RFI, SMP and Design Documents
Supplemental Dioxin Sampling Results

Dear Mr. Park:

Transmitted under the cover of this letter are the results of the dioxin analyses conducted by two of the laboratories. Results from the third laboratory are still pending and will be forwarded as soon as they are received. A brief scan of the two reports indicated that there were no detections of dioxin.

Please call me at (412) 269-2065 if you have any questions.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Thomas C. Fuller
Project Manager

TCF/ldq

Attachments

cc: Mr. Richard Stryker - NAB Little Creek (w/ attachments)

Dioxin Results
Quanterra Environment Services

Quanterra Environmental Services

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

November 23, 1994
QUANTERRA INCORPORATED PROJECT NUMBER: 078746
PO/CONTRACT: B0A19001-43-SRN-21,D0247-6200

John Lovely
Baker Environmental
420 Rouser Road
Hewlett Packard Office Park #3
Coraopolis, PA 15108

Dear Mr. Lovely:

This report contains the analytical results for the three soil samples which were received under chain of custody by Quanterra Incorporated on 11 November 1994.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4433.

Sincerely,

Robert Hrabak
Project Manager
Low Resolution Dioxin Services

RH/ne

Quanterra
Environmental Services

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 078746

Case Narrative

Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

2,3,7,8-TCDD
Includes Samples: 0001 through 0003
- Method Blank Data Sheet
- Sample Data Sheets
- Matrix Specific QC Summary
- Laboratory Control Sample (SCS)

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 078746

There were no anomalies associated with this report.

ANALYTE RESULTS

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

* (under EDL)= EMPC (i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's)

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	0	0	ERR	0.65-0.89	--	240	0.0	0.04	U

QUANTERRA INCORPORATED QUALITY ASSURANCE PROGRAM

Quanterra Incorporated has implemented an extensive Quality Assurance (QA) program to ensure the production of scientifically sound, legally defensible data of known documentable quality. A key element of this program is Quanterra's Laboratory Control Sample (LCS) system. Controlling lab operations with LCS (as opposed to matrix spike/matrix spike duplicate samples), allows the lab to differentiate between bias as a result of procedural errors versus bias due to matrix effects. The analyst can then identify and implement the appropriate corrective actions at the bench level, without waiting for extensive senior level review or costly and time-consuming sample re-analyses. The LCS program also provides our client with information to assess batch, and overall laboratory performance.

Laboratory Control Samples - (LCS)

Laboratory Control Samples (LCS) are well-characterized, laboratory generated samples used to monitor the laboratory's day-to-day performance of routine analytical methods. The results of the LCS are compared to well-defined laboratory acceptance criteria to determine whether the laboratory system is "in control". Three types of LCS are routinely analyzed: Duplicate Control Samples (DCS), Single Control Samples (SCS), and method blanks. Each of these LCS are described below.

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand, sodium sulfate or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS.

Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
Baker Environmental

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
078746-0001-MB	Method Blank	SOIL			11 NOV 94
078746-0001-SA	AB-01	SOIL	10 NOV 94	09:41	11 NOV 94
078746-0001-MS	AB-01 (M.S.)	SOIL	10 NOV 94	09:41	11 NOV 94
078746-0001-SD	AB-01 (M.S.D.)	SOIL	10 NOV 94	09:41	11 NOV 94
078746-0002-SA	AB-04	SOIL	10 NOV 94	10:00	11 NOV 94
078746-0003-SA	AB-09	SOIL	10 NOV 94	10:20	11 NOV 94

Enseco
A Corning Company

CHAIN OF CUSTODY RECORD ENS-1145-A

☒ 2544 Industrial Ave., West Sacramento, CA. 95691-3435 (916) 372-1393
☐ 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-6370
☐ 18501 East Gale Ave., City of Industry, CA. 91748-1321 (818) 965-1006
☐ Mobile Labs, 1 (800) ENSECO-8

DATE: 11·10·94
LAB NUMBER:
CHAIN OF CUSTODY NUMBER: 15729
Page 1 of 1

CLIENT: BAKER ENV
ADDRESS: 420 Rouser Rd - A/P OFC PK #3
CITY: Coraopolis
STATE: PA
ZIP CODE: 15108
PROJECT NAME:
PROJECT MANAGER:
TELEPHONE NUMBER (AREA CODE):
SITE CONTACT: Bruce Salta
TELEPHONE NUMBER (AREA CODE): 804 473-9729
CONTRACT/PURCHASE ORDER/QUOTE NO.: 62470·247-0000-0700.0

ANALYSES: Proximal 8260 TCLP

SAMPLE NO./IDENTIFICATION	DATE	TIME	LAB/SAMPLE NUMBER	SAMPLE TYPE LIQ.	AIR	SOLID	NO. OF CONTAINERS	Proximal 8260 TCLP	Sample Condition/ REMARKS
AB·01	11·10·94	0910*				✓	1		good
AB·04		1000				✓	1		
AB·09		1020				✓	1		
									* label reads 09:4 RJB 11/11/94

DO THE SAMPLE(S) POSE ANY POTENTIAL HAZARD(S)? IF YES, PLEASE EXPLAIN

SAMPLERS (SIGNATURE)	RELINQUISHED BY (SIGNATURE)		RELINQUISHED BY (SIGNATURE)		DATE	TIME
Bruce Salta						
RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)		DATE	TIME
RECEIVED FOR LABORATORY BY: RJBonally	RECEIVED	DATE: 111194	TIME: 1145	ACCEPTED	DATE: 111194	TIME: 1145

METHOD OF SHIPMENT:

SPECIAL INSTRUCTIONS:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the **Enseco** Terms and Conditions, unless a contract or purchase order has been executed and is sited above.

SAMPLE DESPOSITION:
1. Storage time requested: _____ days (Samples will be stored for thirty (30) days without additional charge; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: ☐ Yes ☐ No (**Enseco** will dispose of unreturned samples for a charge of $15.00. Disposal will be by Incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: WHITE - With Report; CANARY - To **ENSECO**; PINK - To Courier; GOLDENROD - To Sample Control

2,3,7,8-TCDD

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Special Services - Low Resolution Mass Spectrometry

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
078746-0001-MB	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A
078746-0001-SA	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A
078746-0001-MS	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A
078746-0001-SD	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A
078746-0002-SA	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A
078746-0003-SA	SOLID	TCDD-S	11 NOV 94-A	11 NOV 94-A

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Special Services - Low Resolution Mass Spectrometry
Project: 078746

Category: TCDD-S 2,3,7,8-TCDD - by Low Resolution MS
Matrix: SOLID
QC Lot: 11 NOV 94-A QC Run: 11 NOV 94-A
Concentration Units: ng/sample

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
2,3,7,8-TCDD	10.0	10.9	109	0-0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Ticket Report
Quanterra, Inc. - Sacramento -
880 Riverside Parkway

West Sacramento, California 95605
(916) 373-5600

CALLAB-078746

Date Received : 11 NOV 94 11:45

Mr. Mike Lovely
Baker Environmental -
420 Rouser Road
Hewlett Packer Office Park #3
Coraopolis, Pennsylvania
15108

( ) -

Project ID,
EPA Case, RMA Lot : BAEPA02 PO:62470247000007
00 SOIL ISODXNFUR 111194
P.O. Number : 6247024700000700

Delivered By :

Storage Location :

Logged in by : RBONALY

Three soil samples received under Chain-of-Custody in good condition.
Delivered by Emery.

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
078746-0001-MB	346603	Method Blank		Method Blank
078746-0001-SA	346604	AB-01	10 NOV 94 09:41	250CGJ
078746-0001-MS	346927	AB-01 (M.S.)	10 NOV 94 09:41	Matrix Spike
078746-0001-SD	346928	AB-01 (M.S.D.)	10 NOV 94 09:41	Matrix Spike Duplica
078746-0002-SA	346605	AB-04	10 NOV 94 10:00	250CGJ
078746-0003-SA	346606	AB-09	10 NOV 94 10:20	250CGJ

Samples not destroyed in testing are retained a maximum
of thirty (30) days unless otherwise requested.

Client Manager: Ron Bobel

Enseco
A Corning Company

CHAIN OF CUSTODY RECORD ENS-1145-A

☒ 2544 Industrial Ave., West Sacramento, CA. 95691-3435 (916) 372-1393
☐ 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-6370
☐ 16501 East Gale Ave., City of Industry, CA. 91748-1321 (818) 965-1006
☐ Mobile Labs, 1 (800) ENSECO-8

DATE: 11·10·94
LAB NUMBER:
CHAIN OF CUSTODY NUMBER: 15729
Page 1 of 1

CLIENT: BAKER ENV.
ADDRESS: 420 Rouser Rd - A/P OFC PK #3
CITY: Coraopolis STATE: PA ZIP CODE: 15108
PROJECT NAME:
CONTRACT/PURCHASE ORDER/QUOTE NO.: 62470-247-0000-07000
PROJECT MANAGER:
TELEPHONE NUMBER (AREA CODE):
SITE CONTACT: Bruce Salta
TELEPHONE NUMBER (AREA CODE): 804 473-9729

ANALYSES: DIOXIN 8290 TCDD

SAMPLE NO./IDENTIFICATION	DATE	TIME	LAB/SAMPLE NUMBER	SAMPLE TYPE LIQ.	AIR	SOLID	NO. OF CONTAINERS	Sample Condition/ REMARKS
HB-01	11/10/94	0940*				✓	1	good
HB-04		1000				✓	1	
HB-09		1020				✓	1	
								* label read: 09:4 RJB 11/11/94

DO THE SAMPLE(S) POSE ANY POTENTIAL HAZARD(S)? IF YES, PLEASE EXPLAIN

SAMPLERS (SIGNATURE)	RELINQUISHED BY (SIGNATURE)		RELINQUISHED BY (SIGNATURE)		DATE	TIME
Bruce Salta						
RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)		DATE	TIME
RECEIVED FOR LABORATORY BY: RJBonally	RECEIVED	DATE 111194	TIME 1145	ACCEPTED	DATE 111194	TIME 1145

METHOD OF SHIPMENT:

SPECIAL INSTRUCTIONS:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the **Enseco** Terms and Conditions, unless a contract or purchase order has been executed and is sited above.

SAMPLE DESPOSITION:

1. Storage time requested: _____ days (Samples will be stored for thirty (30) days without additional charge; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: ☐ Yes ☐ No (**Enseco** will dispose of unreturned samples for a charge of $15.00. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: WHITE - With Report; CANARY - To **ENSECO**; PINK - To Courier; GOLDENROD - To Sample Control

Dioxin Results
Roy F. Weston, Inc.

Roy F. Weston, Inc.
208 Welsh Pool Road
Lionville, Pennsylvania 19341-1333
610-701-6100 • Fax 610-701-6140

23 November 1994

Mr. John Lovely
Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Subject: Prime Contract No. N62470-89-D-4818
Little Creek Project - Analytical Results

Dear Mr. Lovely:

Please find enclosed a Level D data package for TCDD analysis on 3 soil samples received 11 November 1994. Because no TCDD was detected in the samples, the report contains results for TCDD only.

Please do not hesitate to contact me at (610) 701–6100, if you have any questions.

Very truly yours,

ROY F. WESTON, INC.

Gail E. DeRuzzo
Sr. Project Manager

cc: M. Farmer (WESTON)

Roy F. Weston, Inc. - Lionville Laboratory
TDFC ANALYTICAL DATA PACKAGE FOR
BAKER ENVIRONMENTAL

DATE RECEIVED: 11/11/94 RFW LOT # :9411L982

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AB03	001	S	94LS0105	11/10/94	11/14/94	11/21/94
AB03	001 REP	S	94LS0105	11/10/94	11/14/94	11/21/94
AB08	002	S	94LS0105	11/10/94	11/14/94	11/21/94
AB05	003	S	94LS0105	11/10/94	11/14/94	11/21/94
LAB QC:						
BLK	MB1	S	94LS0105	N/A	11/14/94	11/19/94
BLK	MB1 BS	S	94LS0105	N/A	11/14/94	11/20/94

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B. Matrix Spike/Matrix Spike Duplicate (if applicable)
C. Method Blank Summary (if applicable)

V. Sample Data Package..... 13

A. Sample Data in Increasing RFW# Order

1. Tabulated Results
2. Mass Chromatograms/Quantitation Report

VI. Standards Data Package..... 34

A. System Performance Check Analysis

B. Analysis Run Log

C. Initial Calibration Summary & Mass Chromatograms

D. Continuing Calibration Summary & Mass Chromatograms

VII. Raw QC Data Package.....114

A. Method Blank Data

1. Tabulated Results (Form 1)

2. Mass Chromatograms/quantitation Report

B. Matrix Spike Data

1. Tabulated Results (if applicable)

2. Mass Chromatograms/Quantitation Report

C. Matrix Spike Duplicate Data (if applicable)

1. Tabulated Results

2. Mass Chromatograms/Quantitation

I. CHAIN OF CUSTODY

WESTON Analytics Use Only
9411L982

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Baker Environmental
Est. Final Proj. Sampling Date: NA
Work Order #: 06629-001-048
Project Contact/Phone #: B. Salta 804 473-9729
AD Project Manager: Gail DeLuzio
QC: SW846 Del: CLP TAT: 14 days
Date Rec'd: 11-11-94 Date Due: 11/25/94
Account #: BAKER ENVIR

Refrigerator #				6															
#/Type Container	Liquid																		
	Solid			1oz															
Volume	Liquid																		
	Solid			250															
Preservatives	None			—															
ANALYSES REQUESTED →				ORGANIC										INORG					
				VOA	BNA	Pest/PCB	Herb							Metal	CN				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only: OTDFC (TCDD only)	TCDD (full list)	8270									
S - Soil	001	AB03			soil	11-10-94	0943			✓									
SE - Sediment	002	AB03B2			soil	11-10-94	1020			✓									
SO - Solid	003	AB05			soil	11-10-94	1000			✓									
SL - Sludge																			
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

temp 6.6°c

DATE/REVISIONS:
1. OTDFC = TCDD only
2. If hit of TCDD, report full list
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
B. Salta		11-10-94					
Emery	I. Bernio	11-11-94					

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

II. DATA SUMMARY

III. CASE NARRATIVE

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: BAKER ENVIRONMENTAL
RFW #: 9411L982

W.O. #: 06629-001-048-9999-00
Date Received: 11-11-94

DIOXIN

The set of samples consisted of three (3) soil samples collected on 11-10-94.

The samples were extracted on 11-14-94 and analyzed according to criteria set forth in SW 846 Method 8280 (as specified in applicable WESTON SOPs) for the target compound 2,3,7,8-TCDD on 11-19,20,21-94.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All internal standard recoveries were within SW 846 limits (SW 846 Method 8280, Rev. 0, September, 1986).

2. The blank spike recovery was within EPA QC limits.

3. All results were reported on a wet-weight basis.

for J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11.23.94
Date

sma/dix/11-982.dix

GC/MS SPECIAL PROJECTS DATA FLAGS

B = Compound was detected in the associated method blank.

D = Indicates compounds that were quantitated from an analysis at a secondary dilution factor. Also used to indicate that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

E = Indicates an estimated value. Used in cases where a target analyte is detected at a level greater than the upper quantification limit of instrument calibration.

H = Peak height (instead of peak area) was used to calculate the isotopic or confirmation/quantitation ion ratio and to quantitate the analyte. Peak must meet all other identification criteria.

I = Accurate quantitation was prevented due to interference.

J = Indicates an estimated value. Used in cases where a target analyte is detected at a level less than the lower quantification limit of instrument calibration.

S = Signal-to-noise ratio of the confirmation ion (M-COCl+ for PCDD/PCDF) does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.

U = Indicates that the compound was analyzed for but not detected. The estimated detection limit for the sample (EDL; not the method detection limit) is reported with the U.

X = Isotope ratio criteria are not met using either peak height or peak area (used for EMPC only).

Y = Lab-defined (can change with each data package).

Z = Lab-defined (can change with each data package).

mmz/flags/dix/01-94

ABBREVIATIONS

BS	=	Blank Spike
BSD	=	Blank Spike Duplicate
CONC	=	Concentration
DF	=	Dilution Factor
DL	=	Dilution
EDL	=	Estimated Detection Limit
EMPC	=	Estimated Maximum Possible Concentration (peak was observed that did not meet identification criteria)
FL	=	Flag
MS	=	Matrix Spike
MSD	=	Matrix Spike Duplicate
NA	=	Not Applicable
NR	=	Not Required
R	=	Replicate
S	=	Spike (used in RFW #)
SP	=	Spike Compound
T	=	Spike Duplicate (used in RFW #)

mmz/abbrev/01-94

IV. QC SUMMARY

A. Surrogate Recovery
(if applicable)

B. Matrix Spike/Matrix Spike Duplicate
(if applicable)

C. Method Blank Summary
(if applicable)

2D

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6629-01-48

Case No.: BAKER ENVIRONMENTAL Level: (low/med) LOW

RFW Lot No.: 9411L982

	CLIENT SAMPLE NO.	S1 (TCD) #	S2 (TCF) #	S3 (HXD) #	S4 (HPF) #	S5 (OCD) #	S6 ( ) #	OTHER	TOT OUT
01	AB03	91	U	U	U	U			0
02	AB03REP	61	U	U	U	U			0
03	AB08	90	U	U	U	U			0
04	AB05	92	U	U	U	U			0
05	BLKLS0105-MB1	87							0
06	BLKLS0105-MB1 BS	93							0

		QC LIMITS
S1 (TCD)	= 13C-2378-TCDD	(40-120)
S2 (TCF)	= 13C-2378-TCDF	(40-120)
S3 (HXD)	= 13C-123678-HxCDD	(40-120)
S4 (HPF)	= 13C-1234678-HpCDF	(40-120)
S5 (OCD)	= 13C-OCDD	(40-120)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

PCDD/PCDF SOIL BLANK SPIKE RECOVERY

LAB NAME: ROY F. WESTON, INC. -- LIONVILLE WORK ORDER NO.: 06620-001-048-9999-0

CLIENT: BAKER ENV. RFW LOT NO.: 9411L982

CLIENT ID: SOIL BLANK SPIKE 94LS0105-MB1S SPIKE MULTIPLIER: 1

COMPOUND	AMOUNT SPIKED (ng)	BLANK WEIGHT (g)	FINAL SPIKE CONC. (ng/g)	BLANK CONCENTRATION (ng/g)	BS CONCENTRATION (ng/g)	BS % REC	REC QC LIMITS
2378-TCDD	25.0	10.0	2.5	0.0	2.3	92	50-150%
TCDD (TOTAL)	25.0	10.0	2.5	0.0	2.3	92	50-150%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6629-01-48

Case No.: BAKER ENVIRONMENTAL

Lab File ID: Z111833 Lab Sample ID: 94LS0105-MB1

Date Extracted: 11/14/94 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/19/94 Time Analyzed: ~~08~~ 0719 11/21/94

Matrix: (Soil/Water) SOIL Level: (low/med) LOW

Instrument ID: 4600Z

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BLKLS0105-MB1 BS	94LS0105-MB1S	Z111931	11/20/94
02	AB03	9411L982-001	Z112104	11/21/94
03	AB08	9411L982-002	Z112106	11/21/94
04	AB05	9411L982-003	Z112107	11/21/94
05	AB03REP	9411L982-001R	Z112108	11/21/94

COMMENTS:

V. SAMPLE DATA PACKAGE

A. Sample Data in increasing RFW# order
   1. tabulated results
   2. mass chromatograms/quantitation report

ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

CLIENT: Baker Environmental

RFW NUMBER: 9411L982-001

SAMPLE ID: AB03

GC/MS FILENAME: 2112104

DATE ANALYZED: 11/21/94

C-13 TCDD RECOVERY: 91 %

MATRIX: Soil

SAMPLE AMOUNT: 10.0 g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		0.04	U

4/21/94

0116

PCDD/PCDF DATA ANALYSIS

RFW #: 9411L982-001 ✓ TEST: OTDFC

FILENAME: Z112104 ✓ WEIGHT: 10.0 G ✓

ANALYSIS DATE: 11/21/94 ✓ CPC/WINDOW: Z112101

ANALYSIS TIME: 1028 ✓ DILUTION FACTOR: 1.000

ANALYST: JDL # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7 UNITS: NG/G
1.0 to 20 for C1-8

*** INTERNAL STANDARD DATA ***

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	183853 ✓	0.83 ✓	0.65-0.89	50 NG				
		334	NA	221762 ✓							
C13 2378-TCDD	(IS #1)	332	--	193744 ✓	0.84 ✓	0.65-0.89	1.152	50	5.0	4.5	91 %
		334	67856 ✓	231412 ✓							

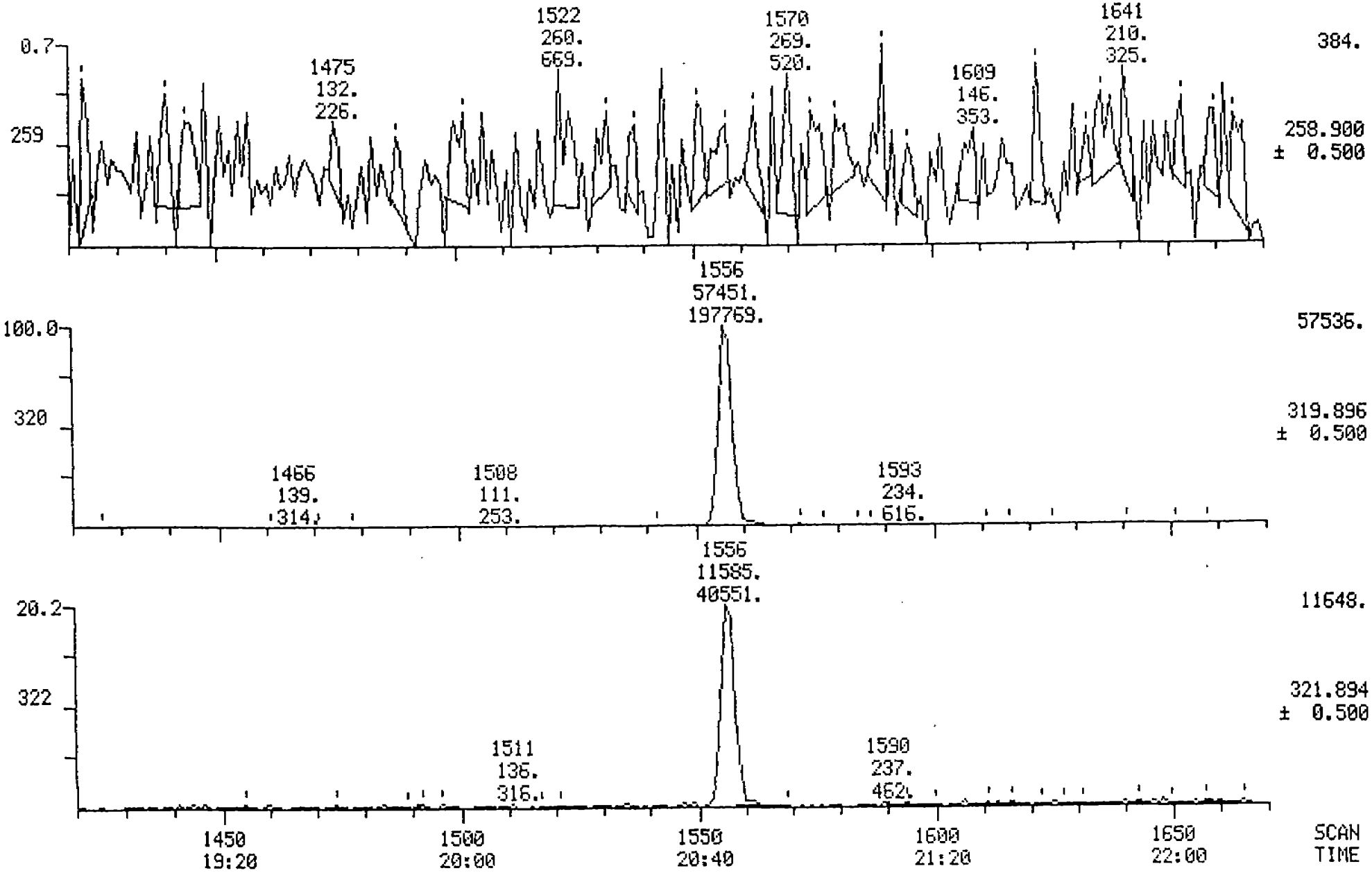
			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

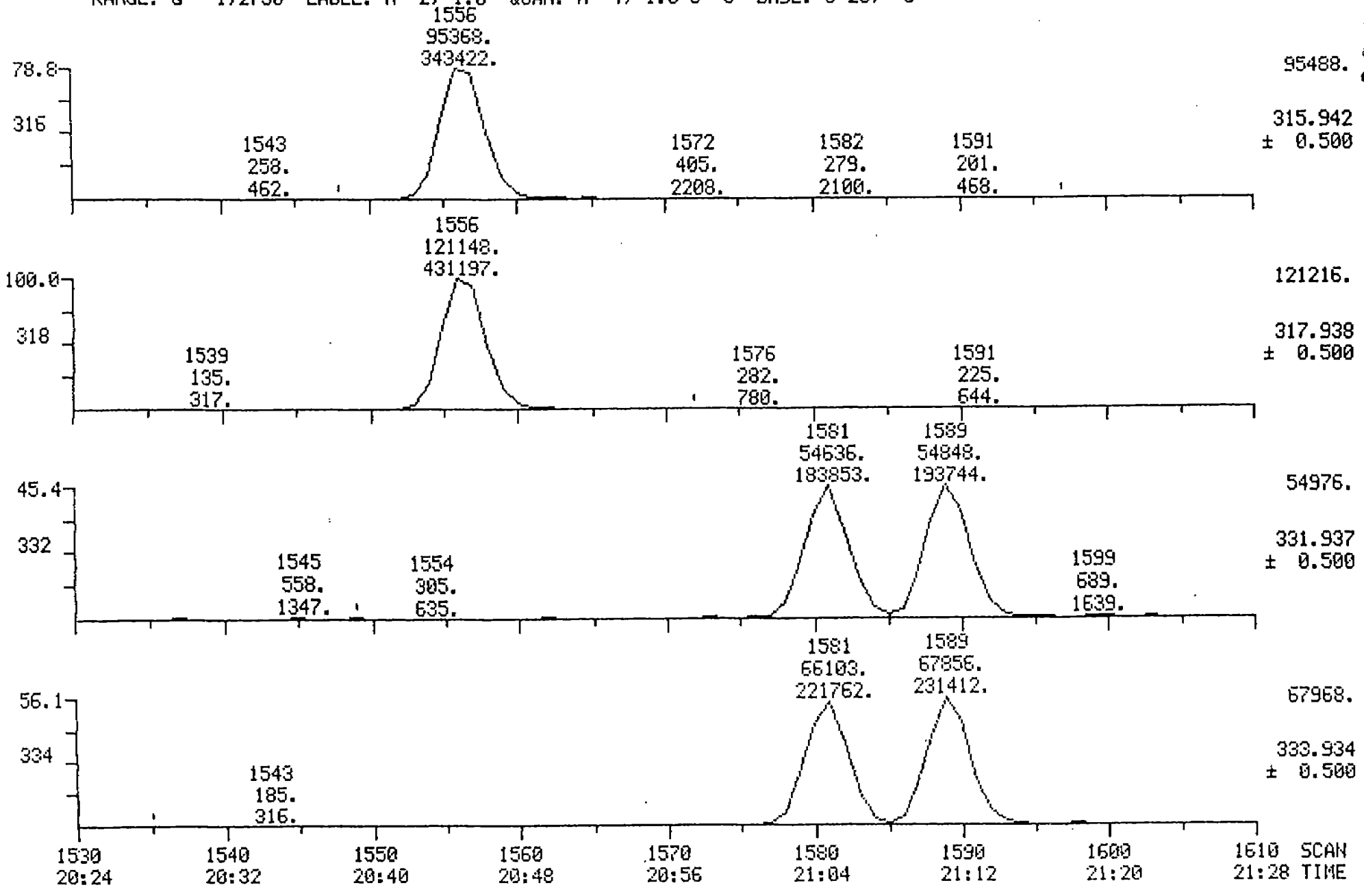
0015

11/21

MIDMASS CHROMATOGRAMS DATA: Z112104 #1 SCANS 1420 TO 1670
11/21/94 10:28:00 CALI: Z112104 #1
SAMPLE: 9411L982-001 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



MIDMASS CHROMATOGRAMS DATA: Z112104 #1 SCANS 1530 TO 1610
11/21/94 10:28:00 CALI: Z112104 #1
SAMPLE: 9411L982-001 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

CLIENT: Baker Environmental

RFW NUMBER: 9411L982-001 R

SAMPLE ID: AB03 Replicate

GC/MS FILENAME: Z112108

DATE ANALYZED: 11/21/94

C-13 TCDD RECOVERY: 61%

MATRIX: Soil

SAMPLE AMOUNT: 10.0g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		0.14	U

11/21/94

0015

PCDD/PCDF DATA ANALYSIS

RFW #: 9411L982-001 ✓ TEST: OTDFCR ✓

FILENAME: Z112108 ✓ WEIGHT: 10.0 G

ANALYSIS DATE: 11/21/94 ✓ CPC/WINDOW: Z112101 ✓

ANALYSIS TIME: 1317 ✓ DILUTION FACTOR: 1.000

ANALYST: JDL # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7 UNITS: NG/G
1.0 to 20 for C1-8

INTERNAL STANDARD DATA

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	100008 ✓	0.89 ✓	0.65-0.89	50 NG				
		334	NA	112580 ✓							
C13 2378-TCDD	(IS #1)	332	--	66247 ✓	0.79 ✓	0.65-0.89	1.152	50	5.0	3.1	61 %
		334	24990 ✓	84310 ✓							

			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

11/21/94

ANALYTE RESULTS

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

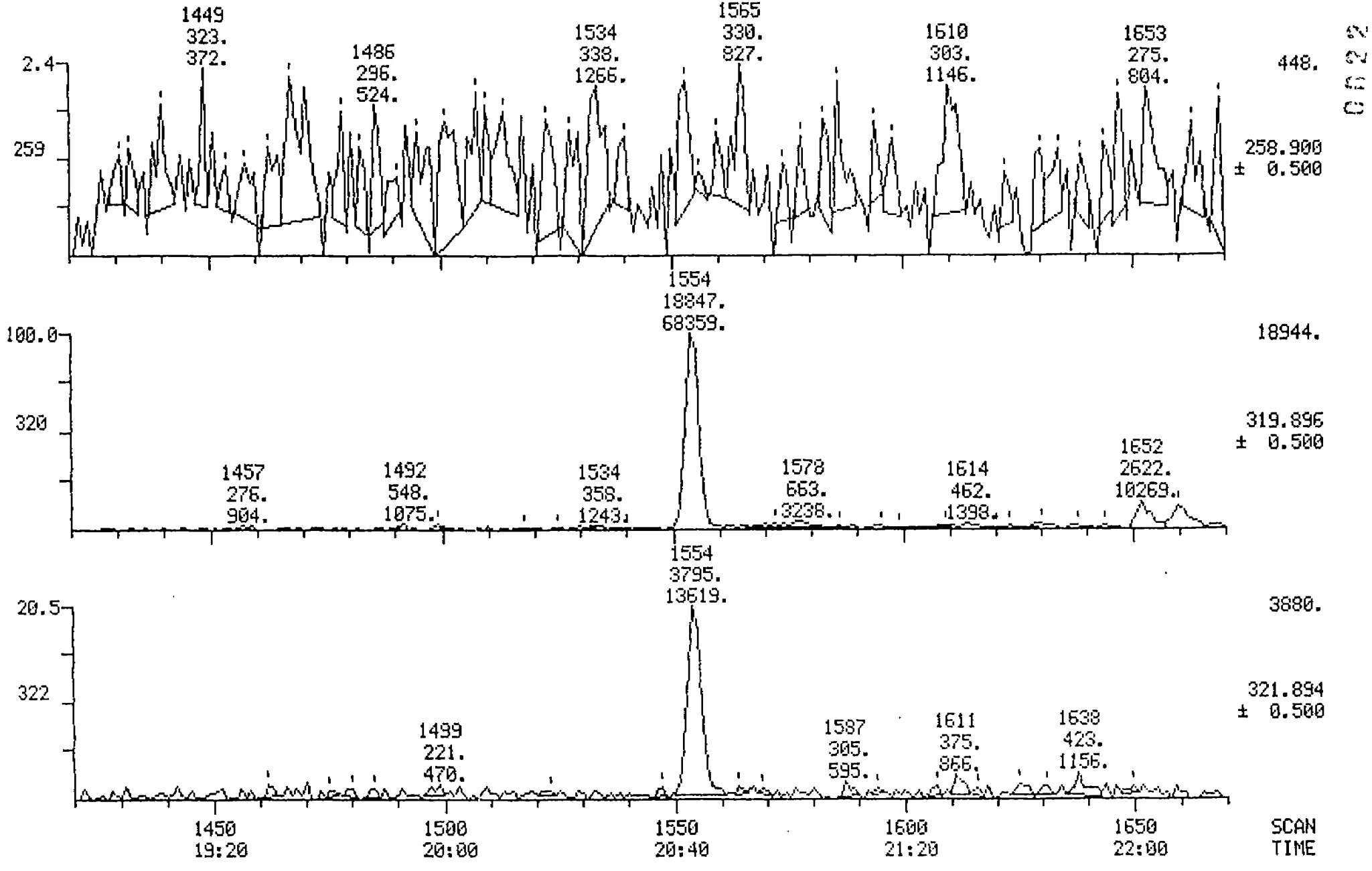
$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

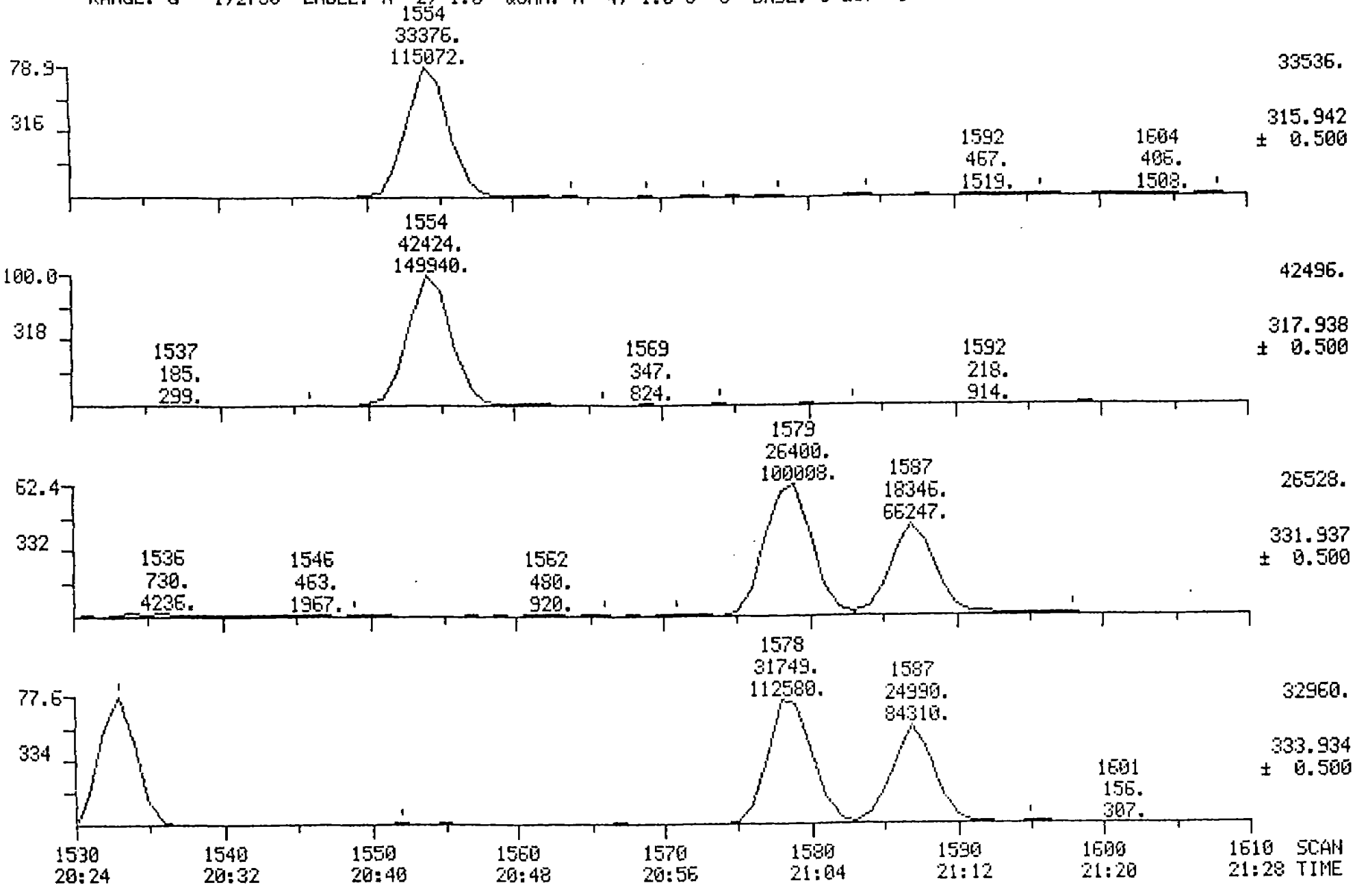
* (under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	0	0	ERR	0.65-0.89	--	300	0.0	0.14	U

MIDMASS CHROMATOGRAMS DATA: Z112108 #1 SCANS 1420 TO 1670
11/21/94 13:17:00 CALI: Z112108 #1
SAMPLE: 9411L982-001R BE
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



MIDMASS CHROMATOGRAMS DATA: Z112108 #1 SCANS 1530 TO 1610
11/21/94 13:17:00 CALI: Z112108 #1
SAMPLE: 9411L982-001R BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

CLIENT: Baker Environmental RFW NUMBER: 9411L982-002

SAMPLE ID: AB08 GC/MS FILENAME: Z112106

DATE ANALYZED: 11/21/94 C-13 TCDD RECOVERY: 90%

MATRIX: Soil

SAMPLE AMOUNT: 10.0g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		0.06	U

11/21/94

PCDD/PCDF DATA ANALYSIS

RFW #: 9411L982-002 | TEST: OTDFC

FILENAME: Z112106 | WEIGHT: 10.0 G

ANALYSIS DATE: 11/21/94 | CPC/WINDOW: Z112101

ANALYSIS TIME: 1153 | DILUTION FACTOR: 1.000

ANALYST: JDL | # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z | % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for Cl-4 through Cl-7 | UNITS: NG/G
1.0 to 20 for Cl-8

*** INTERNAL STANDARD DATA ***

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	218243	0.82	0.65-0.89	50 NG				
		334	NA	265365							
C13 2378-TCDD	(IS #1)	332	--	223811	0.80	0.65-0.89	1.152	50	5.0	4.5	90 %
		334	75749	278463							

			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

11/21/94

‡‡‡ ANALYTE RESULTS ‡‡‡

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

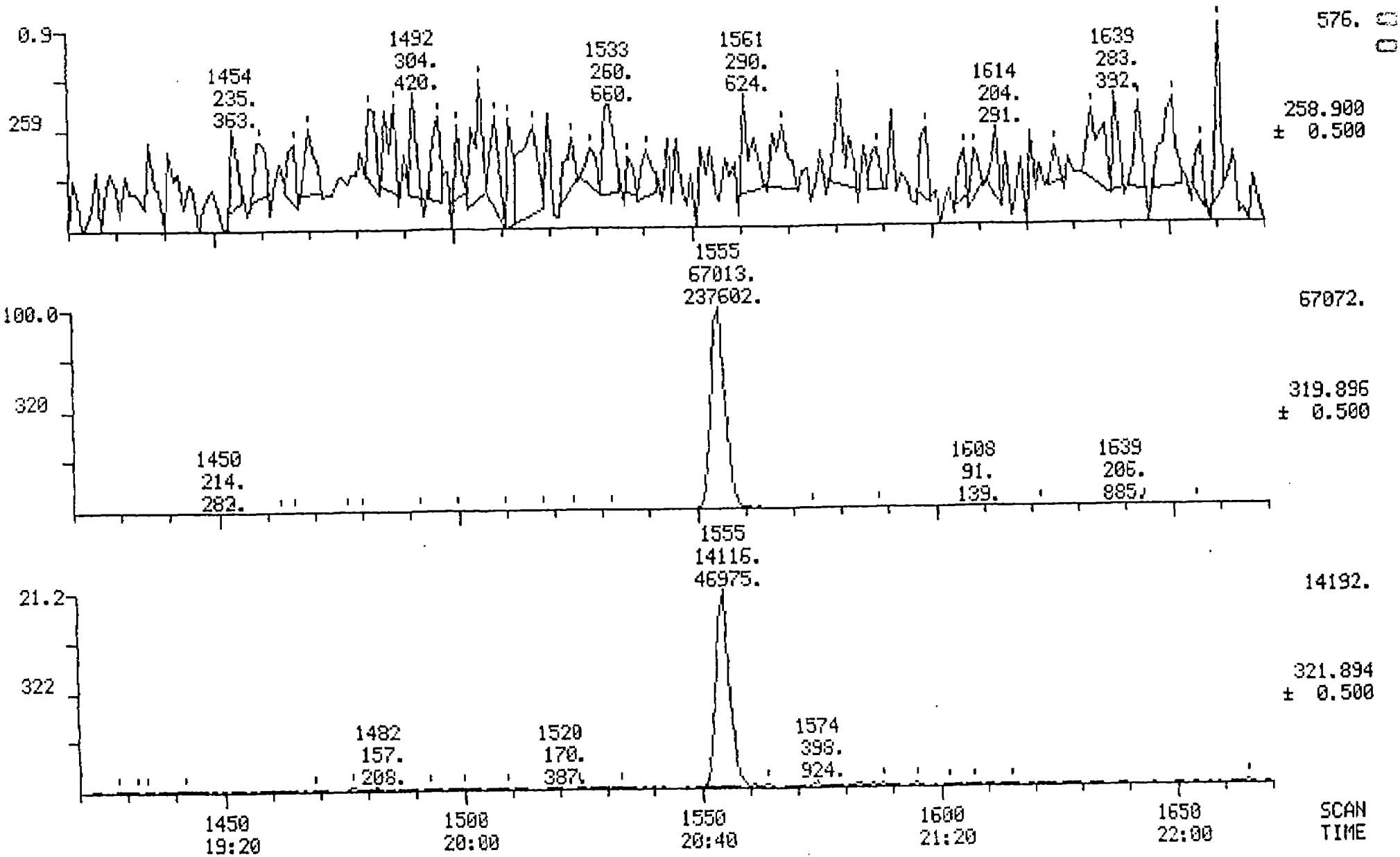
\# (under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	0	0	ERR	0.65-0.89	--	400	0.0	0.06	U

MIDMASS CHROMATOGRAMS
11/21/94 11:53:00
SAMPLE: 9411L982-002 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112106 #1
CALI: Z112106 #1

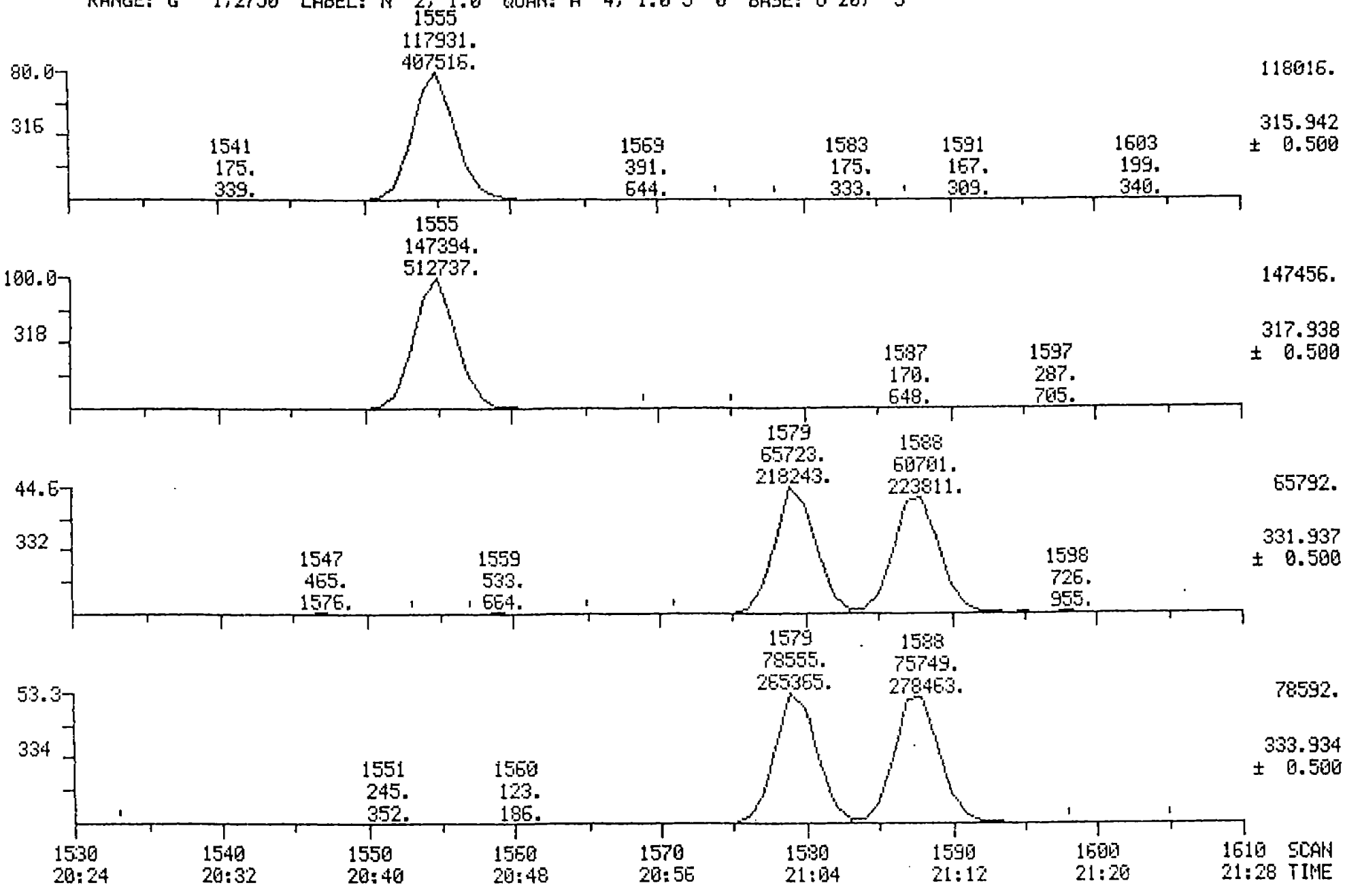
SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS
11/21/94 11:53:00
SAMPLE: 9411L982-002 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112106 #1
CALI: Z112106 #1

SCANS 1530 TO 1610



ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

CLIENT: Baker Environmental RFW NUMBER: 9411L982-003

SAMPLE ID: AB05 GC/MS FILENAME: Z112107

DATE ANALYZED: 11/21/94 C-13 TCDD RECOVERY: 92 %

MATRIX: Soil

SAMPLE AMOUNT: 10.0g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		0.04	U

11/21/94

PCDD/PCDF DATA ANALYSIS

RFW #: 9411L982-003 | TEST: OTDFC

FILENAME: Z112107 | WEIGHT: 10.0 G

ANALYSIS DATE: 11/21/94 | CPC/WINDOW: Z112101

ANALYSIS TIME: 1235 | DILUTION FACTOR: 1.000

ANALYST: JDL | # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z | % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for Cl-4 through Cl-7 | UNITS: NG/G
1.0 to 20 for Cl-8

*** INTERNAL STANDARD DATA ***

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	253316	0.83	0.65-0.89	50 NG				
		334	NA	303469							
C13 2378-TCDD	(IS #1)	332	--	258182	0.78	0.65-0.89	1.152	50	5.0	4.6	92 %
		334	94153	329590							

			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

11/21/94

‡‡‡ ANALYTE RESULTS ‡‡‡

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\text{\% SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

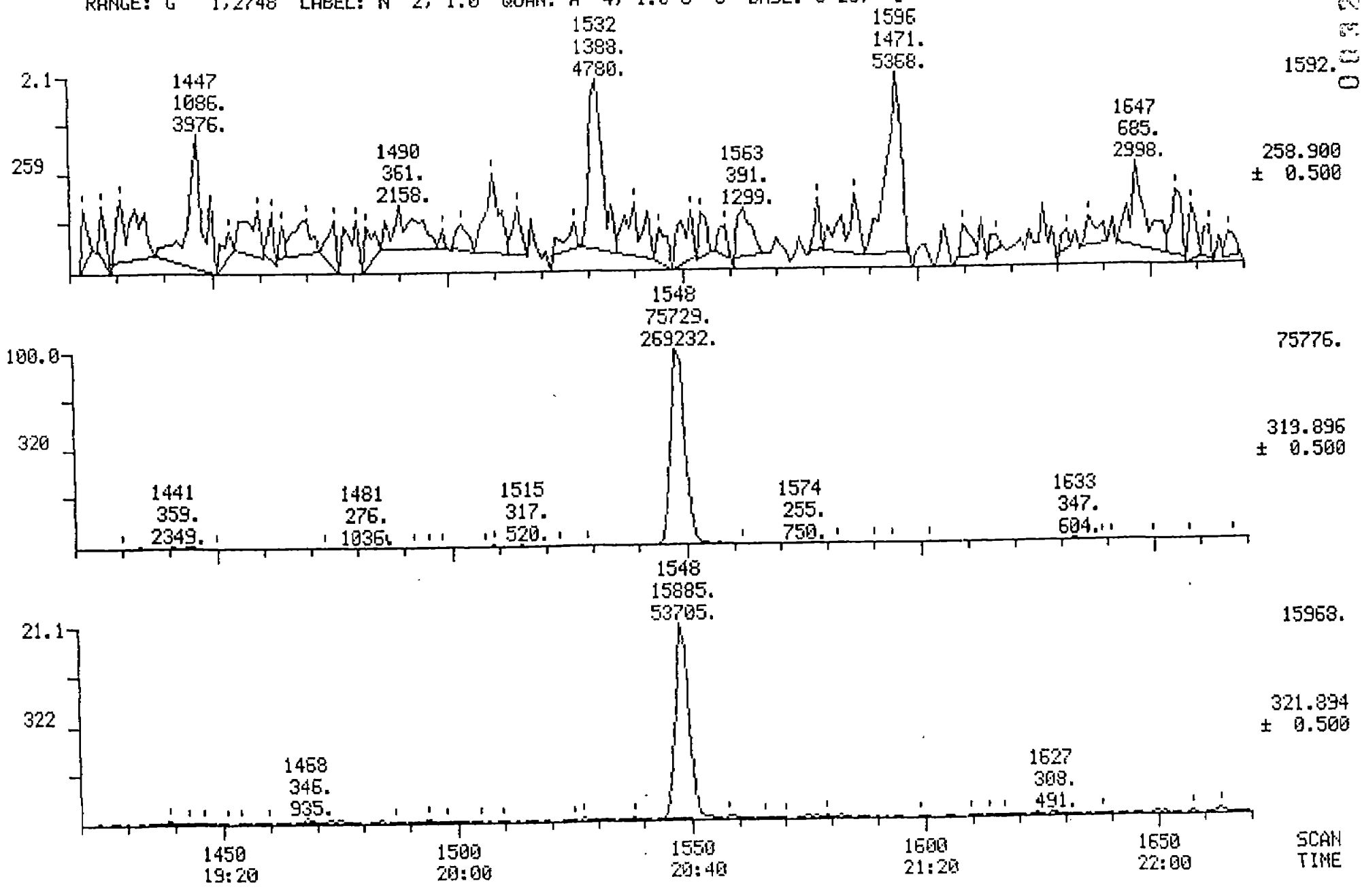
(under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	0	0	ERR	0.65-0.89	--	310	0.0	0.04	U

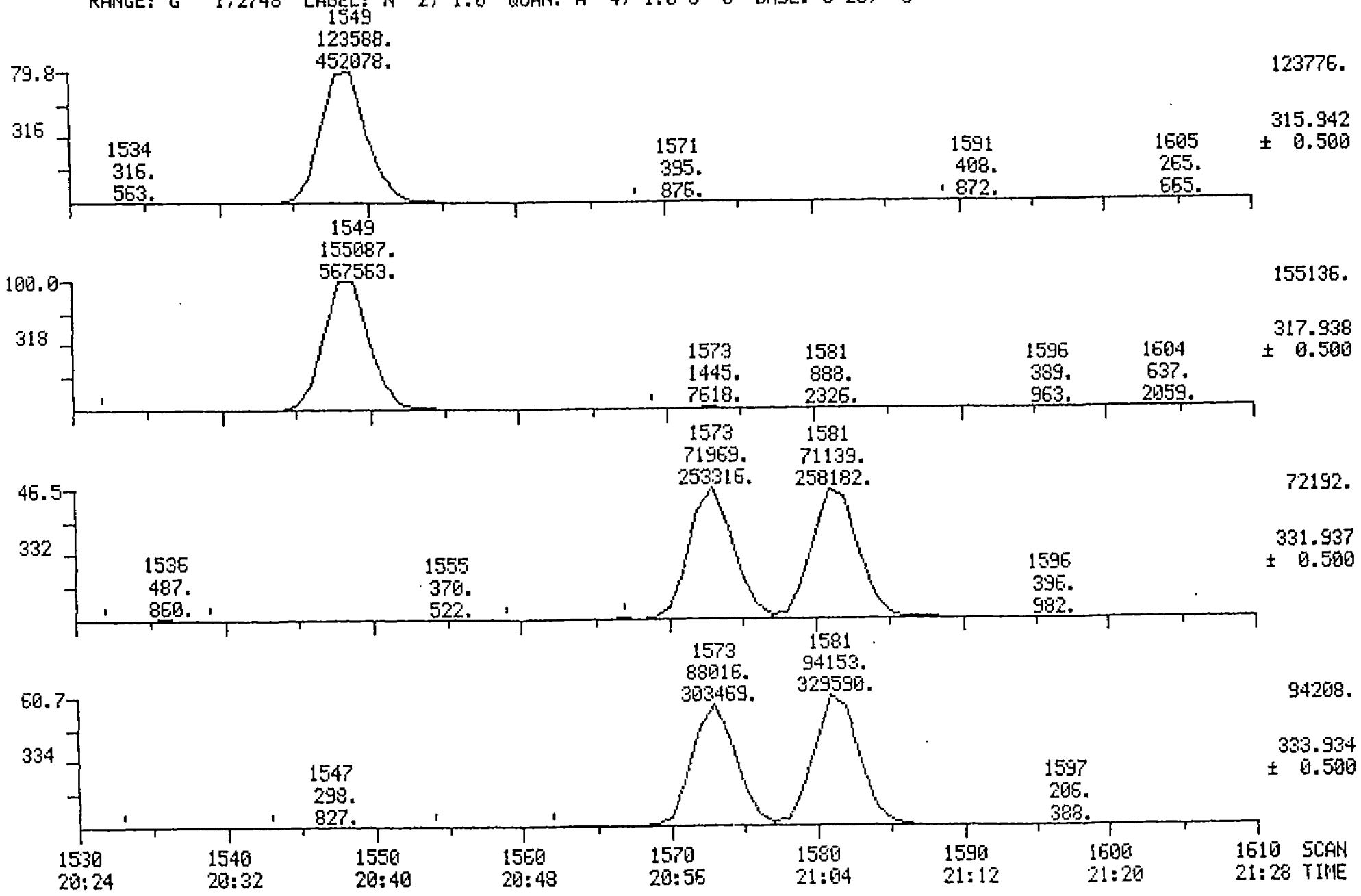
MIDMASS CHROMATOGRAMS
11/21/94 12:35:00
SAMPLE: 9411L982-003 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2748 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112107 #1
CALI: Z112107 #1

SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS DATA: Z112107 #1 SCANS 1530 TO 1610
11/21/94 12:35:00 CALI: Z112107 #1
SAMPLE: 9411L982-003 BE
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2748 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



VI. STANDARDS DATA PACKAGE

A. System Performance Check Analysis

B. Analysis Run Log

C. Initial Calibration Summary & Mass Chromatograms

D. Continuing Calibration Summary & Mass Chromatograms

6DFD

METHOD 8280 PCDD/PCDF INITIAL CALIBRATION

Lab Name: Roy F. Weston, Inc. - Lionville Contract:06629-001-048-9999-00

Client: BAKER ENVIRONMENTAL RFW Lot: 9411L982

GC Column: 60m x 0.32mm ID x 0.25um DB-5 Instrument ID: 4600Z

Init. Calib. Dates: 09/21/94 & 09/22/94

STANDARD: CC1

COMPOUND NAME	FILENAMES Z092108	Z092109	Z092202	DEVIATION	MEAN	%RSD
2378-TCDD	1.319	1.312	1.327	0.0075	1.3193	0.6
2378-TCDF	1.370	1.328	1.353	0.0211	1.3503	1.6
12378-PeCDF	1.062	1.050	1.032	0.0151	1.0480	1.4
12378-PeCDD	1.045	1.016	0.965	0.0405	1.0087	4.0
23478-PeCDF	1.075	1.049	1.027	0.0240	1.0503	2.3
123478-HxCDF	1.180	1.156	1.177	0.0131	1.1710	1.1
123678-HxCDF	1.318	1.267	1.330	0.0335	1.3050	2.6
123478-HxCDD	1.132	1.136	1.126	0.0050	1.1313	0.4
123678-HxCDD	1.395	1.355	1.301	0.0472	1.3503	3.5
123789-HxCDD	1.353	1.322	1.313	0.0210	1.3293	1.6
234678-HxCDF	1.167	1.118	1.184	0.0343	1.1563	3.0
123789-HxCDF	1.072	1.051	1.044	0.0146	1.0557	1.4
1234678-HpCDF	1.303	1.302	1.298	0.0026	1.3010	0.2
1234678-HpCDD	1.195	1.195	1.149	0.0266	1.1797	2.3
1234789-HpCDF	1.039	1.021	0.999	0.0200	1.0197	2.0
OCDD	1.376	1.367	1.335	0.0215	1.3593	1.6
OCDF	1.349	1.338	1.283	0.0354	1.3233	2.7
13C-2378-TCDD	1.149	1.128	1.133	0.0110	1.1367	1.0
13C-2378-TCDF	1.680	1.670	1.672	0.0053	1.6740	0.3
13C-123678-HxCDD	0.931	0.924	0.943	0.0096	0.9327	1.0
13C-1234678-HpCDF	1.447	1.465	1.434	0.0156	1.4487	1.1
13C-OCDD	1.079	1.082	1.055	0.0148	1.0720	1.4

QC Limit: %RSD must be less than or equal to 15.0%

6DFE

Init. Calib. Dates: 09/21/94 & 09/22/94

STANDARD: CC2

COMPOUND NAME	FILENAMES Z092105	Z092110	Z092203	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.141	1.173	1.105	0.0340	1.1397	3.0
2378-TCDF	1.152	1.171	1.154	0.0104	1.1590	0.9
12378-PeCDF	0.906	0.918	0.904	0.0076	0.9093	0.8
12378-PeCDD	0.897	0.917	0.879	0.0190	0.8977	2.1
23478-PeCDF	0.935	0.964	0.921	0.0219	0.9400	2.3
123478-HxCDF	1.036	1.027	1.049	0.0111	1.0373	1.1
123678-HxCDF	1.133	1.127	1.183	0.0307	1.1477	2.7
123478-HxCDD	0.969	1.009	0.970	0.0228	0.9827	2.3
123678-HxCDD	1.167	1.113	1.163	0.0301	1.1477	2.6
123789-HxCDD	1.138	1.138	1.167	0.0167	1.1477	1.5
234678-HxCDF	1.001	1.009	1.015	0.0070	1.0083	0.7
123789-HxCDF	0.928	0.921	0.926	0.0036	0.9250	0.4
1234678-HpCDF	1.131	1.106	1.145	0.0198	1.1273	1.8
1234678-HpCDD	1.059	1.036	1.010	0.0245	1.0350	2.4
1234789-HpCDF	0.898	0.917	0.895	0.0119	0.9033	1.3
OCDD	1.170	1.164	1.169	0.0032	1.1677	0.3
OCDF	1.196	1.166	1.150	0.0234	1.1707	2.0
13C-2378-TCDD	1.135	1.124	1.133	0.0059	1.1307	0.5
13C-2378-TCDF	1.678	1.670	1.670	0.0046	1.6727	0.3
13C-123678-HxCDD	0.931	0.945	0.944	0.0078	0.9400	0.8
13C-1234678-HpCDF	1.444	1.453	1.432	0.0105	1.4430	0.7
13C-OCDD	1.082	1.099	1.050	0.0249	1.0770	2.3

STANDARD: CC3

COMPOUND NAME	FILENAMES Z092103	Z092111	Z092204	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.042	1.054	1.057	0.0079	1.0510	0.8
2378-TCDF	1.088	1.094	1.089	0.0032	1.0903	0.3
12378-PeCDF	0.874	0.873	0.858	0.0090	0.8683	1.0
12378-PeCDD	0.823	0.844	0.828	0.0110	0.8317	1.3
23478-PeCDF	0.880	0.887	0.869	0.0091	0.8787	1.0
123478-HxCDF	0.996	0.973	1.011	0.0191	0.9933	1.9
123678-HxCDF	1.048	1.066	1.088	0.0200	1.0673	1.9
123478-HxCDD	0.925	0.898	0.927	0.0162	0.9167	1.8
123678-HxCDD	1.083	1.104	1.104	0.0121	1.0970	1.1
123789-HxCDD	1.075	1.069	1.070	0.0032	1.0713	0.3
234678-HxCDF	0.940	0.948	0.953	0.0066	0.9470	0.7
123789-HxCDF	0.874	0.881	0.885	0.0056	0.8800	0.6
1234678-HpCDF	1.034	1.062	1.047	0.0140	1.0477	1.3
1234678-HpCDD	0.977	1.005	0.964	0.0210	0.9820	2.1
1234789-HpCDF	0.864	0.876	0.843	0.0167	0.8610	1.9
OCDD	1.099	1.086	1.064	0.0177	1.0830	1.6
OCDF	1.088	1.079	1.059	0.0148	1.0753	1.4
13C-2378-TCDD	1.172	1.141	1.139	0.0185	1.1507	1.6
13C-2378-TCDF	1.711	1.681	1.692	0.0152	1.6947	0.9
13C-123678-HxCDD	0.938	0.949	0.940	0.0059	0.9423	0.6
13C-1234678-HpCDF	1.439	1.454	1.435	0.0100	1.4427	0.7
13C-OCDD	1.085	1.118	1.068	0.0254	1.0903	2.3

QC Limit: %RSD must be less than or equal to 15.0%

6DFF

Init. Calib. Dates: 09/21/94 & 09/22/94

STANDARD: CC4

COMPOUND NAME	FILENAMES Z092106	Z092112	Z092205	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.009	1.001	0.998	0.0057	1.0027	0.6
2378-TCDF	1.042	1.034	1.034	0.0046	1.0367	0.4
12378-PeCDF	0.840	0.850	0.857	0.0085	0.8490	1.0
12378-PeCDD	0.820	0.823	0.813	0.0051	0.8187	0.6
23478-PeCDF	0.870	0.862	0.868	0.0042	0.8667	0.5
123478-HxCDF	0.959	0.978	0.992	0.0166	0.9763	1.7
123678-HxCDF	1.030	1.048	1.078	0.0242	1.0520	2.3
123478-HxCDD	0.917	0.886	0.888	0.0173	0.8970	1.9
123678-HxCDD	1.024	1.037	1.023	0.0078	1.0280	0.8
123789-HxCDD	1.032	1.030	1.020	0.0064	1.0273	0.6
234678-HxCDF	0.916	0.946	0.938	0.0155	0.9333	1.7
123789-HxCDF	0.860	0.876	0.871	0.0082	0.8690	0.9
1234678-HpCDF	0.971	1.004	1.025	0.0272	1.0000	2.7
1234678-HpCDD	0.964	0.975	0.959	0.0082	0.9660	0.8
1234789-HpCDF	0.854	0.883	0.842	0.0211	0.8597	2.5
OCDD	1.026	1.027	1.029	0.0015	1.0273	0.1
OCDF	1.055	1.068	1.069	0.0078	1.0640	0.7
13C-2378-TCDD	1.140	1.162	1.158	0.0117	1.1533	1.0
13C-2378-TCDF	1.693	1.723	1.696	0.0165	1.7040	1.0
13C-123678-HxCDD	0.945	0.933	0.947	0.0076	0.9417	0.8
13C-1234678-HpCDF	1.464	1.407	1.406	0.0332	1.4257	2.3
13C-OCDD	1.149	1.104	1.075	0.0373	1.1093	3.4

STANDARD: CC5

COMPOUND NAME	FILENAMES Z092107	Z092113	Z092206	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	0.999	0.996	0.984	0.0079	0.9930	0.8
2378-TCDF	1.038	1.035	1.036	0.0015	1.0363	0.1
12378-PeCDF	0.863	0.855	0.858	0.0040	0.8587	0.5
12378-PeCDD	0.834	0.825	0.807	0.0137	0.8220	1.7
23478-PeCDF	0.886	0.879	0.863	0.0118	0.8760	1.3
123478-HxCDF	0.968	0.998	0.994	0.0163	0.9867	1.7
123678-HxCDF	1.071	1.066	1.071	0.0029	1.0693	0.3
123478-HxCDD	0.939	0.911	0.899	0.0205	0.9163	2.2
123678-HxCDD	0.995	1.019	1.013	0.0125	1.0090	1.2
123789-HxCDD	1.017	1.008	1.022	0.0071	1.0157	0.7
234678-HxCDF	0.946	0.953	0.951	0.0036	0.9500	0.4
123789-HxCDF	0.898	0.898	0.884	0.0081	0.8933	0.9
1234678-HpCDF	0.997	1.001	0.972	0.0157	0.9900	1.6
1234678-HpCDD	0.996	0.995	0.974	0.0124	0.9883	1.3
1234789-HpCDF	0.885	0.887	0.848	0.0220	0.8733	2.5
OCDD	1.051	1.037	1.028	0.0116	1.0387	1.1
OCDF	1.103	1.062	1.087	0.0207	1.0840	1.9
13C-2378-TCDD	1.177	1.190	1.194	0.0089	1.1870	0.7
13C-2378-TCDF	1.723	1.727	1.726	0.0021	1.7253	0.1
13C-123678-HxCDD	0.929	0.935	0.946	0.0086	0.9367	0.9
13C-1234678-HpCDF	1.391	1.390	1.421	0.0176	1.4007	1.3
13C-OCDD	1.097	1.120	1.071	0.0245	1.0960	2.2

0 0227

QC Limit: %RSD must be less than or equal to 15.0%

6DFG

Init. Calib. Dates: 09/21/94 & 09/22/94

COMPOUND NAME	CC1	MEANS CC2	CC3	CC4	CC5	AVERAGE RRF
2378-TCDD	1.3193	1.1397	1.0510	1.0027	0.9930	1.101
2378-TCDF	1.3503	1.1590	1.0903	1.0367	1.0363	1.135
12378-PeCDF	1.0480	0.9093	0.8683	0.8490	0.8587	0.907
12378-PeCDD	1.0087	0.8977	0.8317	0.8187	0.8220	0.876
23478-PeCDF	1.0503	0.9400	0.8787	0.8667	0.8760	0.922
123478-HxCDF	1.1710	1.0373	0.9933	0.9763	0.9867	1.033
123678-HxCDF	1.3050	1.1477	1.0673	1.0520	1.0693	1.128
123478-HxCDD	1.1313	0.9827	0.9167	0.8970	0.9163	0.969
123678-HxCDD	1.3503	1.1477	1.0970	1.0280	1.0090	1.126
123789-HxCDD	1.3293	1.1477	1.0713	1.0273	1.0157	1.118
234678-HxCDF	1.1563	1.0083	0.9470	0.9333	0.9500	0.999
123789-HxCDF	1.0557	0.9250	0.8800	0.8690	0.8933	0.925
1234678-HpCDF	1.3010	1.1273	1.0477	1.0000	0.9900	1.093
1234678-HpCDD	1.1797	1.0350	0.9820	0.9660	0.9883	1.030
1234789-HpCDF	1.0197	0.9033	0.8610	0.8597	0.8733	0.903
OCDD	1.3593	1.1677	1.0830	1.0273	1.0387	1.135
OCDF	1.3233	1.1707	1.0753	1.0640	1.0840	1.143
13C-2378-TCDD	1.1367	1.1307	1.1507	1.1533	1.1870	1.152
13C-2378-TCDF	1.6740	1.6727	1.6947	1.7040	1.7253	1.694
13C-123678-HxCDD	0.9327	0.9400	0.9423	0.9417	0.9367	0.939
13C-1234678-HpCDF	1.4487	1.4430	1.4427	1.4257	1.4007	1.432
13C-OCDD	1.0720	1.0770	1.0903	1.1093	1.0960	1.089

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z092102
End Lab File ID : Z092114
Date Analyzed : 09/21/94
Date Analyzed : 09/21/94
Time Analized : 11:37:00
Time Analyzed : 20:31:00
Analyst (1) : JDL
Analyst (2) : RLS

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.76	0.76	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.78	0.77	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.77	0.77	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.77	0.79	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.65	0.66	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.63	0.65	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.80	0.79	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.80	0.79	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.84	0.84	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.84	0.84	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.98	0.97	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.94	0.96	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.88	0.86	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.90	0.90	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z092102
End Lab File ID : Z092114
Date Analyzed : 09/21/94
Date Analyzed : 09/21/94
Time Analized : 11:37:00
Time Analyzed : 20:31:00
Analyst (1) : JDL
Analyst (2) : RLS

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.77	0.76	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.76	0.75	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.84	0.84	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.68	0.67	0.55 - 0.75
1,2,3,8,9-Penta CDF	342 / 340	0.67	0.68	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.82	0.79	0.69 - 0.93
1,2,3,4,8,9-Hexa CDF	376 / 374	0.80	0.80	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.97	0.97	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.96	0.97	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.94	0.97	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.94	0.94	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/DF ICAL	PCDD/PCDF CC3	Z092103	09/21/94	12:19:00
	PCDD/PCDF CC2	Z092105	09/21/94	13:48:00
	PCDD/PCDF CC4	Z092106	09/21/94	14:31:00
	PCDD/PCDF CC5	Z092107	09/21/94	15:17:00
	PCDD/PCDF CC1	Z092108	09/21/94	16:00:00
	PCDD/PCDF CC1	Z092109	09/21/94	16:49:00
	PCDD/PCDF CC2	Z092110	09/21/94	17:32:00
	PCDD/PCDF CC3	Z092111	09/21/94	18:17:00
	PCDD/PCDF CC4	Z092112	09/21/94	19:02:00
	PCDD/PCDF CC5	Z092113	09/21/94	19:46:00

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z092201
End Lab File ID : Z092207
Date Analyzed : 09/22/94
Date Analyzed : 09/22/94
Time Analized : 6:59:00
Time Analyzed : 11:42:00
Analyst (1) : RGC
Analyst (2) : RGC

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.76	0.77	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.79	0.75	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.78	0.78	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.78	0.78	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.66	0.66	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.65	0.65	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.80	0.79	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.78	0.80	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.84	0.84	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.84	0.83	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.97	0.98	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.98	0.95	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.87	0.86	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.90	0.92	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z092201
End Lab File ID : Z092207
Date Analyzed : 09/22/94
Date Analyzed : 09/22/94
Time Analized : 6:59:00
Time Analyzed : 11:42:00
Analyst (1) : RGC
Analyst (2) : RGC

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.77	0.76	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.77	0.77	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.84	0.85	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.69	0.68	0.55 - 0.75
1,2,3,8,9-Penta CDF	342 / 340	0.67	0.70	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.80	0.80	0.69 - 0.93
1,2,3,4,8,9-Hexa CDF	376 / 374	0.80	0.79	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.97	0.96	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.98	0.98	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.96	0.97	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.93	0.93	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/DF ICAL	PCDD/PCDF CC1	Z092202	09/22/94	7:44:00
	PCDD/PCDF CC2	Z092203	09/22/94	8:29:00
	PCDD/PCDF CC3	Z092204	09/22/94	9:12:00
	PCDD/PCDF CC4	Z092205	09/22/94	10:13:00
	PCDD/PCDF CC5	Z092206	09/22/94	10:58:00

6DFA

PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Roy F. Weston, Inc, Lionville W.O. # : 06629 001 048 - 9999-

Client: Baker RFW Lot: 9411L82

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/21/94

CC1: Z092108 CC2: Z092105 CC3: Z092103 CC4: Z092106 CC5: Z092107

NATIVE ANALYTES VS. INTERNAL STDS.	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
2378-TCDD	1.319	1.141	1.042	1.009	0.999	1.102	12.1
2378-TCDF	1.370	1.152	1.088	1.042	1.038	1.138	12.1
12378-PeCDF	1.062	0.906	0.874	0.840	0.863	0.909	9.8
13478-PeCDD	1.045	0.897	0.823	0.820	0.834	0.884	10.8
23478-PeCDF	1.075	0.935	0.880	0.870	0.886	0.929	9.2
123478-HxCDF	1.180	1.036	0.996	0.959	0.968	1.028	8.8
123678-HxCDF	1.318	1.133	1.048	1.030	1.071	1.120	10.5
123478-HxCDD	1.132	0.969	0.925	0.917	0.939	0.976	9.1
123678-HxCDD	1.395	1.167	1.083	1.024	0.995	1.133	14.2
123789-HxCDD	1.353	1.138	1.075	1.032	1.017	1.123	12.2
234678-HxCDF	1.167	1.001	0.940	0.916	0.946	0.994	10.2
123789-HxCDF	1.072	0.928	0.874	0.860	0.898	0.926	9.3
1234678-HpCDF	1.303	1.131	1.034	0.971	0.997	1.087	12.4
1234678-HpCDD	1.195	1.059	0.977	0.964	0.996	1.038	9.1
1234789-HpCDF	1.039	0.898	0.864	0.854	0.885	0.908	8.3
OCDD	1.376	1.170	1.099	1.026	1.051	1.144	12.3
OCDF	1.349	1.196	1.088	1.055	1.103	1.158	10.3
INTERNAL STANDARDS VS. RECOVERY STDS.							
13C-2378-TCDD	1.149	1.135	1.172	1.140	1.177	1.155	1.6
13C-2378-TCDF	1.680	1.678	1.711	1.693	1.723	1.697	1.1
13C-123678-HxCDD	0.931	0.931	0.938	0.945	0.929	0.935	0.7
13C-1234678-HpCDF	1.447	1.444	1.439	1.464	1.391	1.437	1.9
13C-OCDD	1.079	1.082	1.085	1.149	1.097	1.098	2.7

QC Limits: %RSD must be less than or equal to 15.0%

6DFB

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-7777-00

Client: Baker RFW Lot: 9411C882

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/21/94

CC1: Z092108 CC2: Z092105 CC3: Z092103 CC4: Z092106 CC5: Z092107

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
2378-TCDD	320/322	0.75	0.79	0.76	0.77	0.76		0.65-0.89
2378-TCDF	304/306	0.77	0.78	0.77	0.76	0.77		0.65-0.89
12378-PeCDF	342/340	0.70	0.67	0.66	0.68	0.68		0.55-0.75
12378-PeCDD	358/356	0.64	0.64	0.64	0.65	0.64		0.55-0.75
23478-PeCDF	342/340	0.69	0.69	0.68	0.69	0.68		0.55-0.75
123478-HxCDF	376/374	0.79	0.81	0.80	0.80	0.79		0.69-0.93
123678-HxCDF	376/374	0.81	0.82	0.79	0.81	0.79		0.69-0.93
123478-HxCDD	392/390	0.78	0.81	0.80	0.79	0.79		0.69-0.93
123678-HxCDD	392/390	0.79	0.79	0.78	0.79	0.79		0.69-0.93
123789-HxCDD	392/390	0.81	0.78	0.80	0.81	0.80		0.69-0.93
234678-HxCDF	376/374	0.81	0.78	0.79	0.80	0.79		0.69-0.93
123789-HxCDF	376/374	0.80	0.79	0.80	0.78	0.79		0.69-0.93
1234678-HpCDF	410/408	0.96	0.95	0.98	0.97	0.97		0.83-1.12
1234678-HpCDD	426/424	0.95	0.95	0.95	0.98	0.98		0.83-1.12
1234789-HpCDF	410/408	0.95	0.96	0.98	0.99	0.97		0.83-1.12
OCDD	458/460	0.85	0.87	0.88	0.87	0.88		0.75-1.01
OCDF	442/444	0.93	0.96	0.95	0.93	0.94		0.75-1.01
INTERNAL STANDARDS								
13C-2378-TCDD	332/334	0.78	0.78	0.78	0.78	0.78		0.65-0.89
13C-2378-TCDF	316/318	0.84	0.84	0.84	0.85	0.85		0.65-0.89
13C-123678-HxCDD	404/402	0.84	0.84	0.84	0.85	0.84		0.69-0.93
13C-123678-HpCDF	422/420	0.96	0.96	0.96	0.96	0.95		0.83-1.12
13C-OCDD	470/472	0.91	0.90	0.91	0.90	0.91		0.75-1.01
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	0.78	0.79	0.78	0.79	0.79		0.65-0.89
13C-123789-HxCDD	404/402	0.84	0.83	0.84	0.84	0.85		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

6DFA

PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-9999-0

Client: Baker RFW Lot: 94116982

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/21/94

CC1: Z092109 CC2: Z092110 CC3: Z092111 CC4: Z092112 CC5: Z092113

NATIVE ANALYTES VS. INTERNAL STDS.	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
2378-TCDD	1.312	1.173	1.054	1.001	0.996	1.107	12.2
2378-TCDF	1.328	1.171	1.094	1.034	1.035	1.132	10.8
12378-PeCDF	1.050	0.918	0.873	0.850	0.855	0.909	9.2
13478-PeCDD	1.016	0.917	0.844	0.823	0.825	0.885	9.3
23478-PeCDF	1.049	0.964	0.887	0.862	0.879	0.928	8.4
123478-HxCDF	1.156	1.027	0.973	0.978	0.998	1.026	7.4
123678-HxCDF	1.267	1.127	1.066	1.048	1.066	1.115	8.1
123478-HxCDD	1.136	1.009	0.898	0.886	0.911	0.968	10.9
123678-HxCDD	1.355	1.113	1.104	1.037	1.019	1.126	11.9
123789-HxCDD	1.322	1.138	1.069	1.030	1.008	1.113	11.4
234678-HxCDF	1.118	1.009	0.948	0.946	0.953	0.995	7.4
123789-HxCDF	1.051	0.921	0.881	0.876	0.898	0.926	7.8
1234678-HpCDF	1.302	1.106	1.062	1.004	1.001	1.095	11.3
1234678-HpCDD	1.195	1.036	1.005	0.975	0.995	1.041	8.5
1234789-HpCDF	1.021	0.917	0.876	0.883	0.887	0.917	6.6
OCDD	1.367	1.164	1.086	1.027	1.037	1.136	12.3
OCDF	1.338	1.166	1.079	1.068	1.062	1.143	10.2
INTERNAL STANDARDS VS. RECOVERY STDS.							
13C-2378-TCDD	1.128	1.124	1.141	1.162	1.190	1.149	2.4
13C-2378-TCDF	1.670	1.670	1.681	1.723	1.727	1.694	1.7
13C-123678-HxCDD	0.924	0.945	0.949	0.933	0.935	0.937	1.1
13C-1234678-HpCDF	1.465	1.453	1.454	1.407	1.390	1.434	2.3
13C-OCDD	1.082	1.099	1.118	1.104	1.120	1.105	1.4

QC Limits: %RSD must be less than or equal to 15.0%

6DFB

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-9999-00

Client: 94119 Baker Transcription error 11/21/94 RFW Lot: 94110882

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/21/94

CC1: Z092109 CC2: Z092110 CC3: Z092111 CC4: Z092112 CC5: Z092113

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
2378-TCDD	320/322	0.77	0.78	0.76	0.77	0.77		0.65-0.89
2378-TCDF	304/306	0.77	0.77	0.76	0.77	0.77		0.65-0.89
12378-PeCDF	342/340	0.68	0.66	0.67	0.68	0.68		0.55-0.75
12378-PeCDD	358/356	0.60	0.62	0.64	0.65	0.65		0.55-0.75
23478-PeCDF	342/340	0.71	0.68	0.68	0.68	0.69		0.55-0.75
123478-HxCDF	376/374	0.81	0.79	0.78	0.79	0.80		0.69-0.93
123678-HxCDF	376/374	0.80	0.79	0.81	0.78	0.79		0.69-0.93
123478-HxCDD	392/390	0.78	0.81	0.78	0.80	0.79		0.69-0.93
123678-HxCDD	392/390	0.78	0.79	0.80	0.80	0.80		0.69-0.93
123789-HxCDD	392/390	0.82	0.79	0.78	0.79	0.79		0.69-0.93
234678-HxCDF	376/374	0.81	0.82	0.79	0.80	0.80		0.69-0.93
123789-HxCDF	376/374	0.78	0.79	0.79	0.80	0.78		0.69-0.93
1234678-HpCDF	410/408	0.98	0.96	0.98	0.97	0.97		0.83-1.12
1234678-HpCDD	426/424	0.96	1.00	0.98	0.97	0.98		0.83-1.12
1234789-HpCDF	410/408	0.96	0.92	0.98	0.98	0.96		0.83-1.12
OCDD	458/460	0.87	0.86	0.86	0.86	0.86		0.75-1.01
OCDF	442/444	0.93	0.94	0.95	0.93	0.93		0.75-1.01
INTERNAL STANDARDS								
13C-2378-TCDD	332/334	0.77	0.79	0.79	0.78	0.79		0.65-0.89
13C-2378-TCDF	316/318	0.84	0.84	0.84	0.86	0.85		0.65-0.89
13C-123678-HxCDD	404/402	0.85	0.84	0.84	0.86	0.84		0.69-0.93
13C-123678-HpCDF	422/420	0.96	0.96	0.97	0.96	0.96		0.83-1.12
13C-OCDD	470/472	0.90	0.90	0.91	0.91	0.92		0.75-1.01
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	0.79	0.79	0.79	0.79	0.78		0.65-0.89
13C-123789-HxCDD	404/402	0.84	0.85	0.84	0.84	0.85		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

6DFA

PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-9999-00

Client: Baker RFW Lot: 94/1C 282

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/22/94

CC1: Z092202 CC2: Z092203 CC3: Z092204 CC4: Z092205 CC5: Z092206

NATIVE ANALYTES VS. INTERNAL STDS.	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
2378-TCDD	1.327	1.105	1.057	0.998	0.984	1.094	12.7
2378-TCDF	1.353	1.154	1.089	1.034	1.036	1.133	11.7
12378-PeCDF	1.032	0.904	0.858	0.857	0.858	0.902	8.4
13478-PeCDD	0.965	0.879	0.828	0.813	0.807	0.858	7.7
23478-PeCDF	1.027	0.921	0.869	0.868	0.863	0.909	7.7
123478-HxCDF	1.177	1.049	1.011	0.992	0.994	1.045	7.4
123678-HxCDF	1.330	1.183	1.088	1.078	1.071	1.150	9.6
123478-HxCDD	1.126	0.970	0.927	0.888	0.899	0.962	10.1
123678-HxCDD	1.301	1.163	1.104	1.023	1.013	1.121	10.5
123789-HxCDD	1.313	1.167	1.070	1.020	1.022	1.118	11.1
234678-HxCDF	1.184	1.015	0.953	0.938	0.951	1.008	10.2
123789-HxCDF	1.044	0.926	0.885	0.871	0.884	0.922	7.7
1234678-HpCDF	1.298	1.145	1.047	1.025	0.972	1.097	11.7
1234678-HpCDD	1.149	1.010	0.964	0.959	0.974	1.011	7.9
1234789-HpCDF	0.999	0.895	0.843	0.842	0.848	0.885	7.6
OCDD	1.335	1.169	1.064	1.029	1.028	1.125	11.6
OCDF	1.283	1.150	1.059	1.069	1.087	1.130	8.2
INTERNAL STANDARDS VS. RECOVERY STDS.							
13C-2378-TCDD	1.133	1.133	1.139	1.158	1.194	1.151	2.3
13C-2378-TCDF	1.672	1.670	1.692	1.696	1.726	1.691	1.3
13C-123678-HxCDD	0.943	0.944	0.940	0.947	0.946	0.944	0.3
13C-1234678-HpCDF	1.434	1.432	1.435	1.406	1.421	1.426	0.9
13C-OCDD	1.055	1.050	1.068	1.075	1.071	1.064	1.0

QC Limits: %RSD must be less than or equal to 15.0%

6DFB

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-9999-00

Client: Baker RFW Lot: 9411L98

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 09/22/94

CC1: Z092202 CC2: Z092203 CC3: Z092204 CC4: Z092205 CC5: Z092206

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
2378-TCDD	320/322	0.78	0.76	0.78	0.76	0.76		0.65-0.89
2378-TCDF	304/306	0.79	0.76	0.75	0.76	0.77		0.65-0.89
12378-PeCDF	342/340	0.65	0.67	0.68	0.69	0.68		0.55-0.75
12378-PeCDD	358/356	0.62	0.62	0.63	0.65	0.65		0.55-0.75
23478-PeCDF	342/340	0.70	0.67	0.69	0.69	0.69		0.55-0.75
123478-HxCDF	376/374	0.81	0.81	0.80	0.80	0.79		0.69-0.93
123678-HxCDF	376/374	0.79	0.80	0.79	0.80	0.79		0.69-0.93
123478-HxCDD	392/390	0.79	0.87	0.80	0.80	0.79		0.69-0.93
123678-HxCDD	392/390	0.76	0.74	0.79	0.80	0.80		0.69-0.93
123789-HxCDD	392/390	0.77	0.77	0.80	0.79	0.78		0.69-0.93
234678-HxCDF	376/374	0.83	0.80	0.78	0.80	0.80		0.69-0.93
123789-HxCDF	376/374	0.81	0.78	0.80	0.79	0.79		0.69-0.93
1234678-HpCDF	410/408	0.97	0.96	0.97	0.97	0.98		0.83-1.12
1234678-HpCDD	426/424	0.98	0.93	0.96	0.98	0.98		0.83-1.12
1234789-HpCDF	410/408	0.96	0.97	0.98	0.98	0.97		0.83-1.12
OCDD	458/460	0.87	0.88	0.85	0.86	0.86		0.75-1.01
OCDF	442/444	0.94	0.95	0.95	0.94	0.93		0.75-1.01
INTERNAL STANDARDS								
13C-2378-TCDD	332/334	0.78	0.78	0.77	0.77	0.78		0.65-0.89
13C-2378-TCDF	316/318	0.85	0.84	0.84	0.84	0.83		0.65-0.89
13C-123678-HxCDD	404/402	0.84	0.84	0.83	0.85	0.84		0.69-0.93
13C-123678-HpCDF	422/420	0.95	0.95	0.96	0.95	0.96		0.83-1.12
13C-OCDD	470/472	0.90	0.90	0.90	0.91	0.90		0.75-1.01
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	0.78	0.78	0.79	0.78	0.78		0.65-0.89
13C-123789-HxCDD	404/402	0.84	0.84	0.84	0.85	0.84		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

6DFC
COMPOSITION OF INITIAL CALIBRATION SOLUTIONS
FOR MODIFIED METHOD 8280

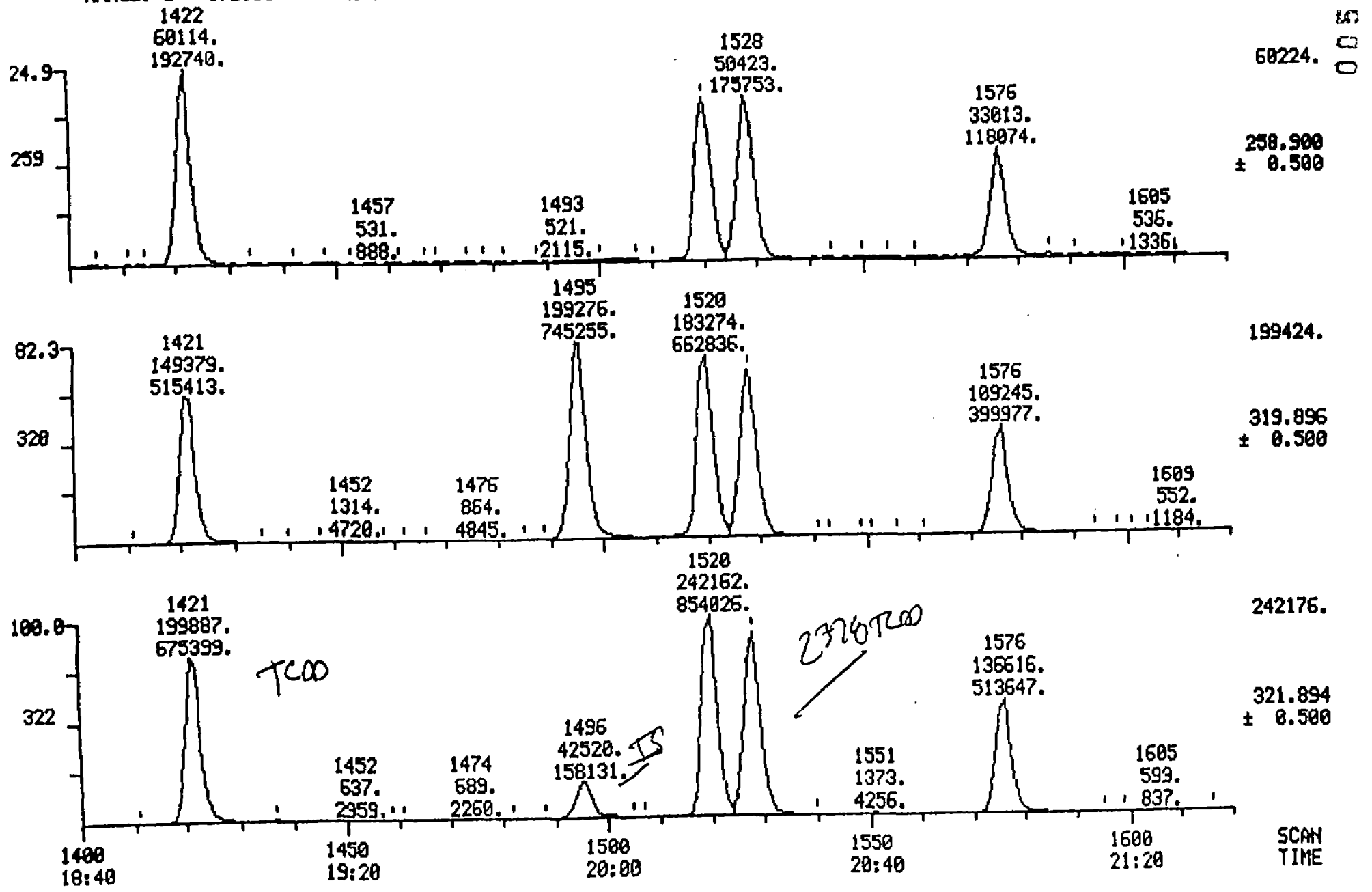
COMPOUND		QUAN REF#	CONCENTRATIONS (µg/mL)				
Unlabeled Analytes			CC1	CC2	CC3	CC4	CC5
2,3,7,8-TCDD		3	0.05	0.1	0.2	0.5	1.0
2,3,7,8-TCDF		4	0.05	0.1	0.2	0.5	1.0
1,2,3,7,8-PeCDF		4	0.05	0.1	0.2	0.5	1.0
1,2,3,7,8-PeCDD		3	0.05	0.1	0.2	0.5	1.0
2,3,4,7,8-PeCDF		4	0.05	0.1	0.2	0.5	1.0
1,2,3,4,7,8-HxCDF		6	0.05	0.1	0.2	0.5	1.0
1,2,3,6,7,8-HxCDF		6	0.05	0.1	0.2	0.5	1.0
1,2,3,4,7,8-HxCDD		5	0.05	0.1	0.2	0.5	1.0
1,2,3,6,7,8-HxCDD		5	0.05	0.1	0.2	0.5	1.0
1,2,3,7,8,9-HxCDD		5	0.05	0.1	0.2	0.5	1.0
2,3,4,6,7,8-HxCDF		6	0.05	0.1	0.2	0.5	1.0
1,2,3,7,8,9-HxCDF		6	0.05	0.1	0.2	0.5	1.0
1,2,3,4,6,7,8-HpCDF		6	0.05	0.1	0.2	0.5	1.0
1,2,3,4,6,7,8-HpCDD		5	0.05	0.1	0.2	0.5	1.0
1,2,3,4,7,8,9-HpCDF		6	0.05	0.1	0.2	0.5	1.0
OCDD		7	0.10	0.2	0.4	1.0	2.0
OCDF		7	0.10	0.2	0.4	1.0	2.0
#	Internal Standards						
3	$^{13}C_{12}$-2,3,7,8-TCDD	1	0.5	0.5	0.5	0.5	0.5
4	$^{13}C_{12}$-2,3,7,8-TCDF	1	0.5	0.5	0.5	0.5	0.5
5	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	2	0.5	0.5	0.5	0.5	0.5
6	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	2	1.0	1.0	1.0	1.0	1.0
7	$^{13}C_{12}$-OCDD	2	1.0	1.0	1.0	1.0	1.0
#	Recovery Standards						
1	$^{13}C_{12}$-1,2,3,4-TCDD	NA	0.5	0.5	0.5	0.5	0.5
2	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	NA	0.5	0.5	0.5	0.5	0.5

QUAN. REF.#: The compound used as the internal standard for the purpose of quantitation.

MIDMASS CHROMATOGRAMS
09/21/94 11:37:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 46002, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092102 #1
CALI: Z092102 #3

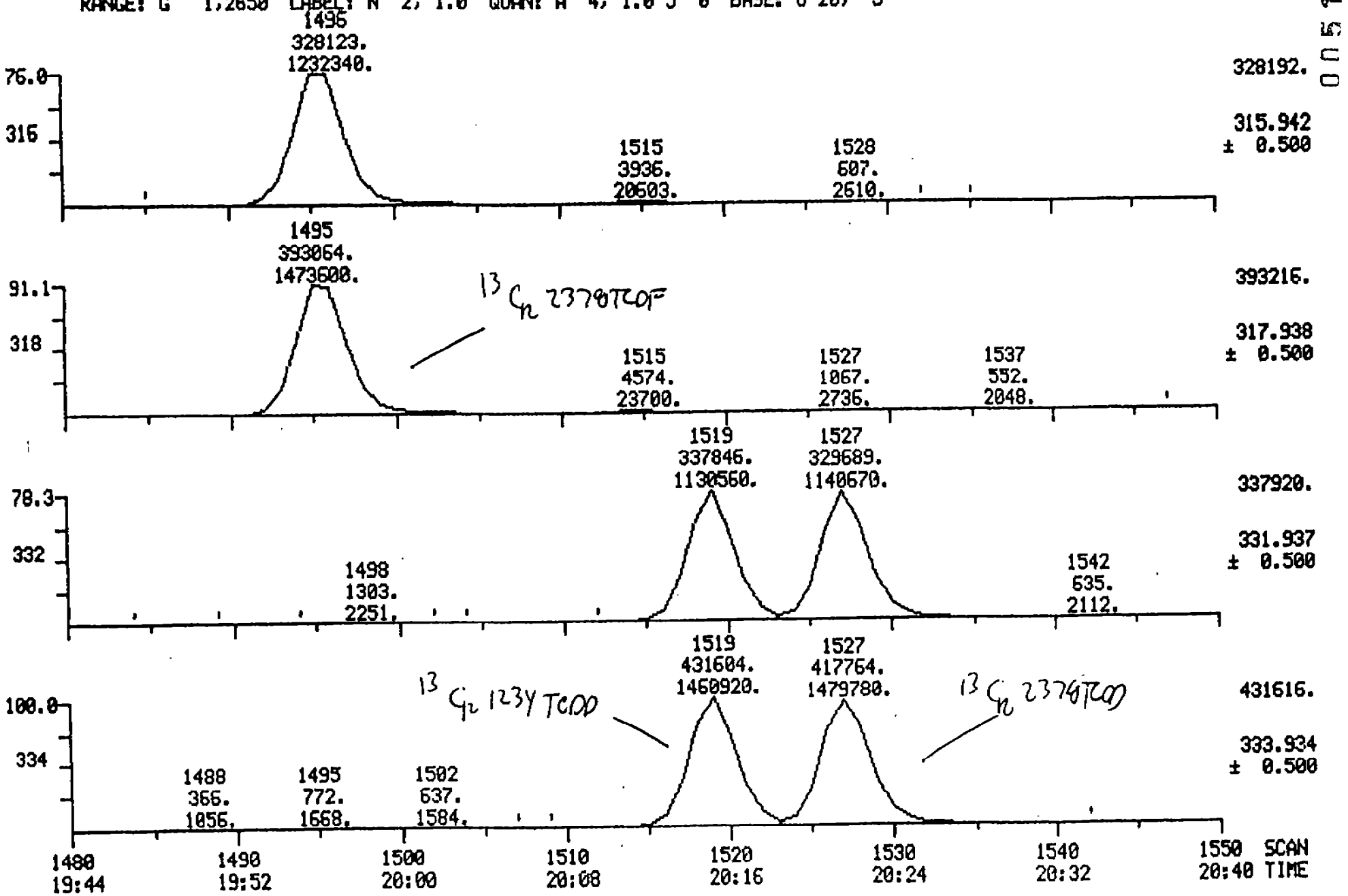
SCANS 1400 TO 1620



MIDMASS CHROMATOGRAMS
09/21/94 11:37:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092102 #1
CALI: Z092102 #3

SCANS 1480 TO 1550



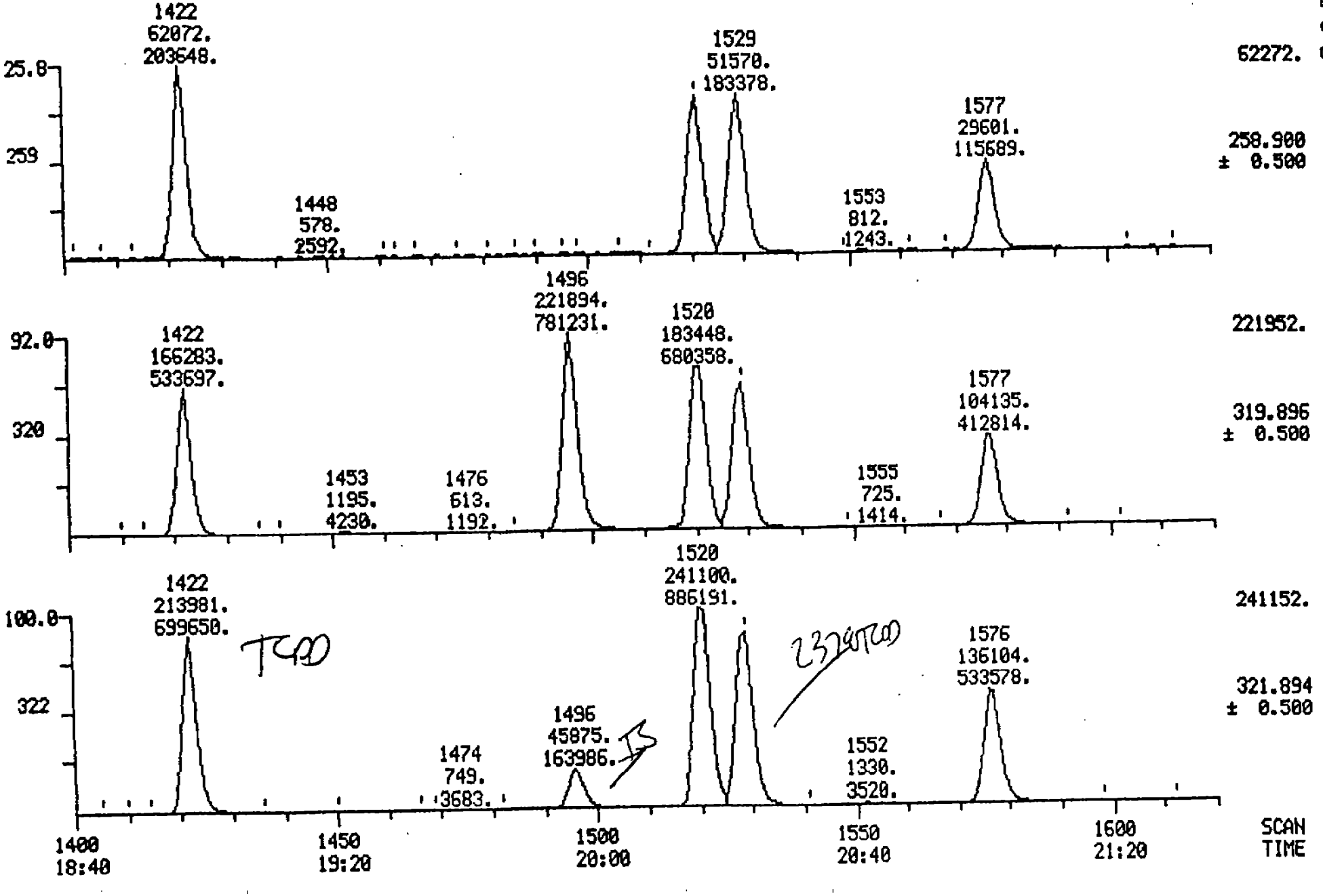
00591

MIDMASS CHROMATOGRAMS
09/21/94 20:31:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 46002, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

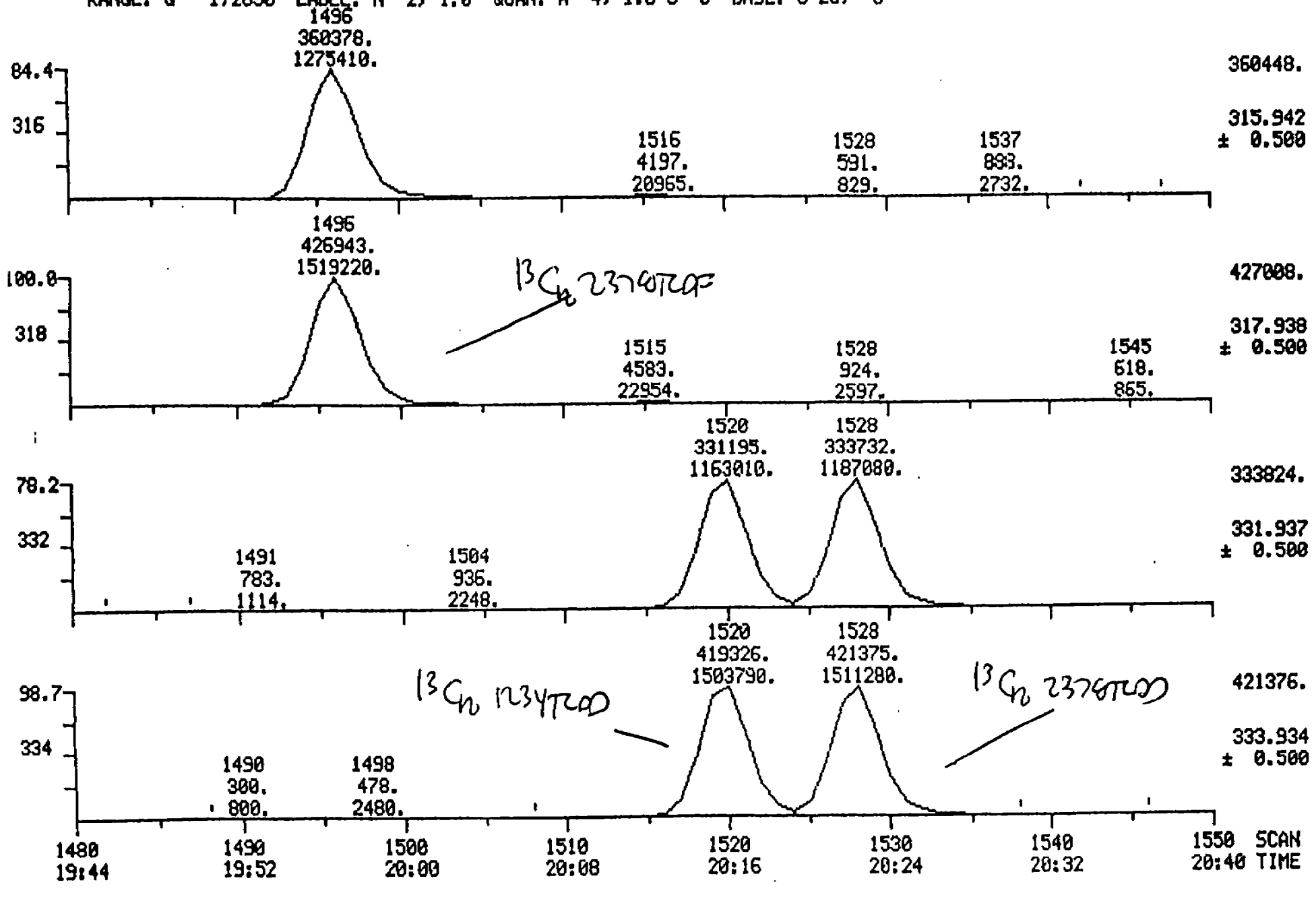
DATA: Z092114 #1
CALI: Z092114 #3

SCANS 1400 TO 1620

0052



MIDMASS CHROMATOGRAMS DATA: Z092114 #1 SCANS 1480 TO 1550
09/21/94 20:31:00 CALI: Z092114 #3
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

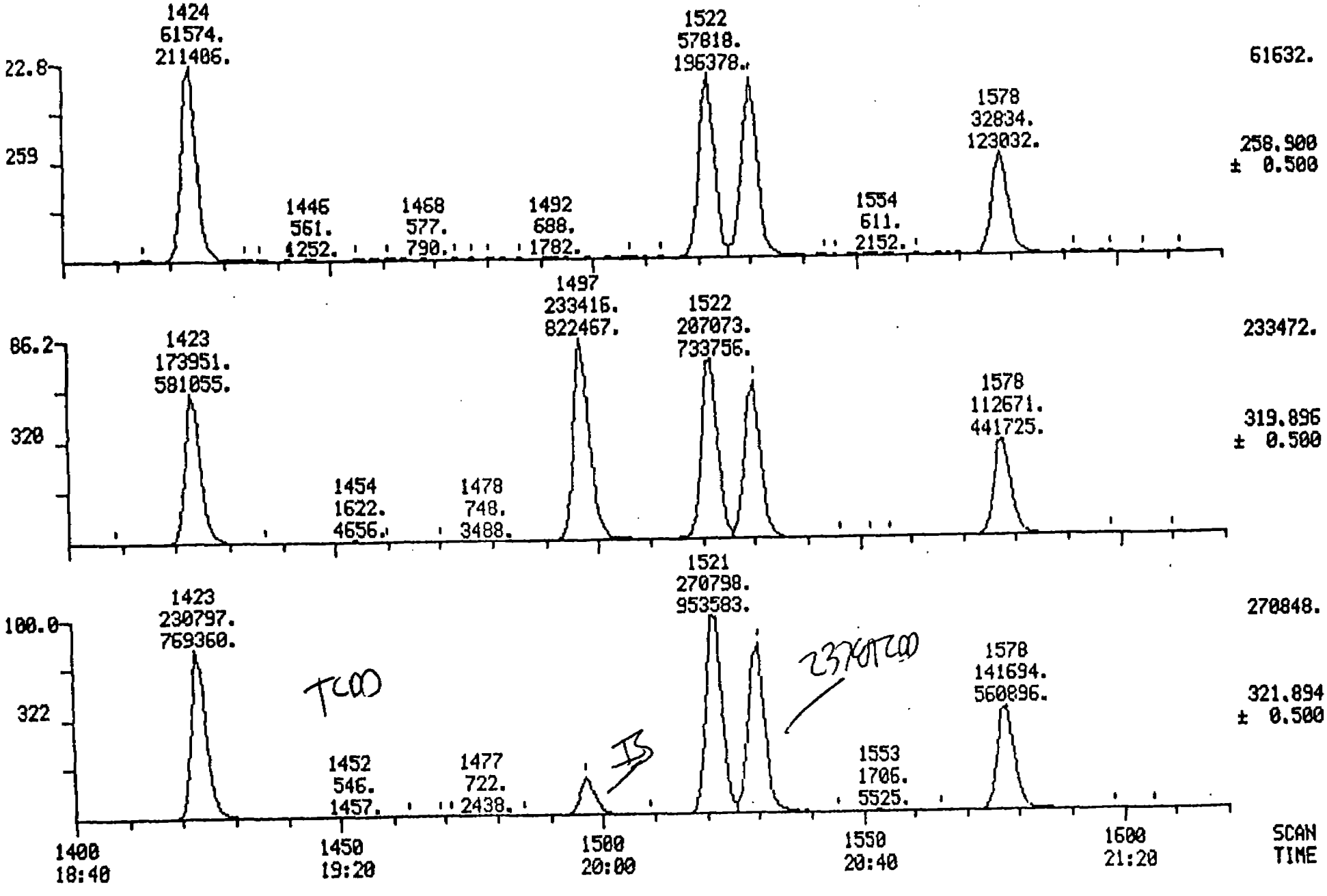


003

MIDMASS CHROMATOGRAMS
09/22/94 6:59:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

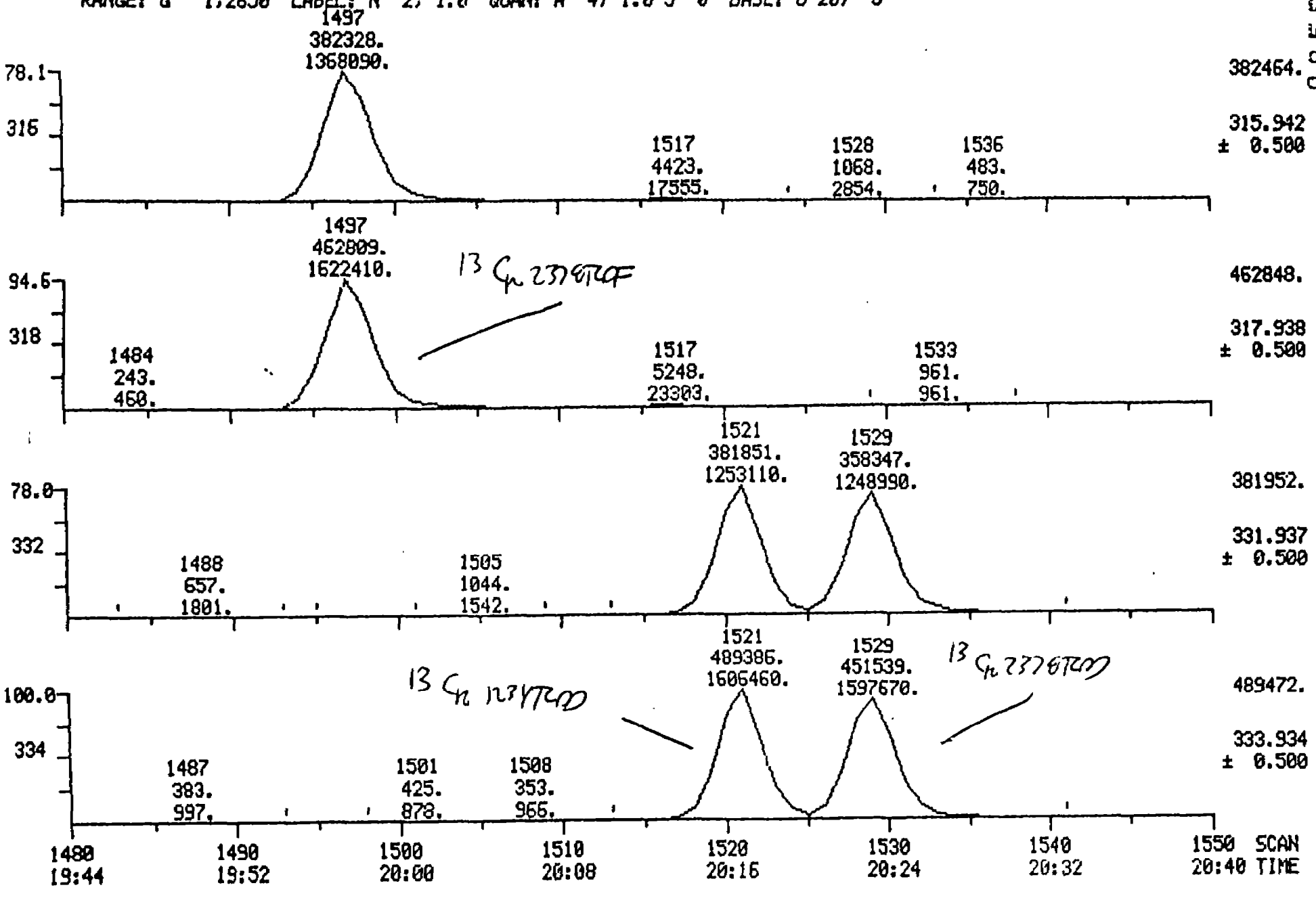
DATA: Z092201 #1
CALI: Z092201 #3

SCANS 1400 TO 1620



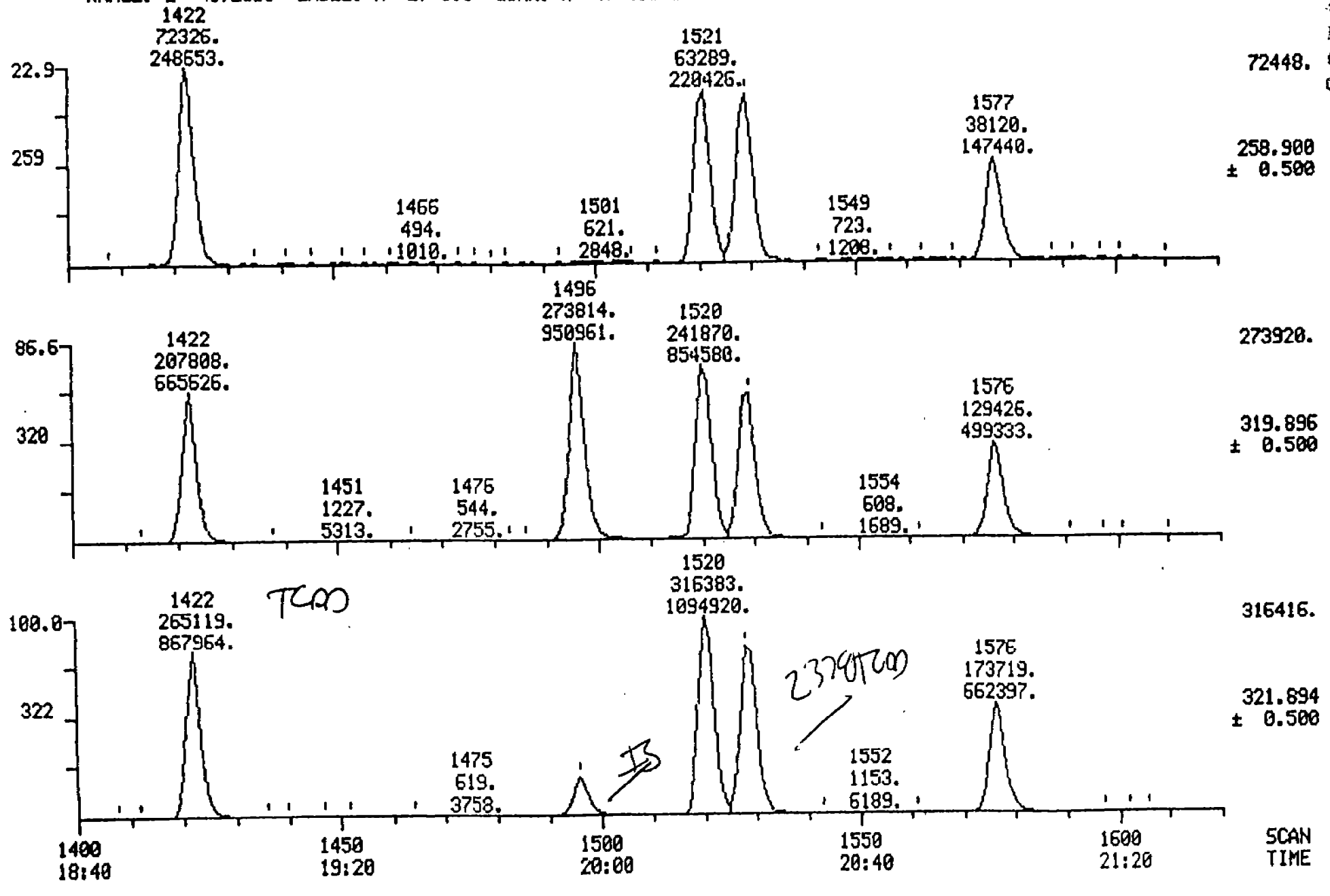
7600

MIDMASS CHROMATOGRAMS DATA: Z092201 #1 SCANS 1480 TO 1550
09/22/94 6:59:00 CALI: Z092201 #3
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

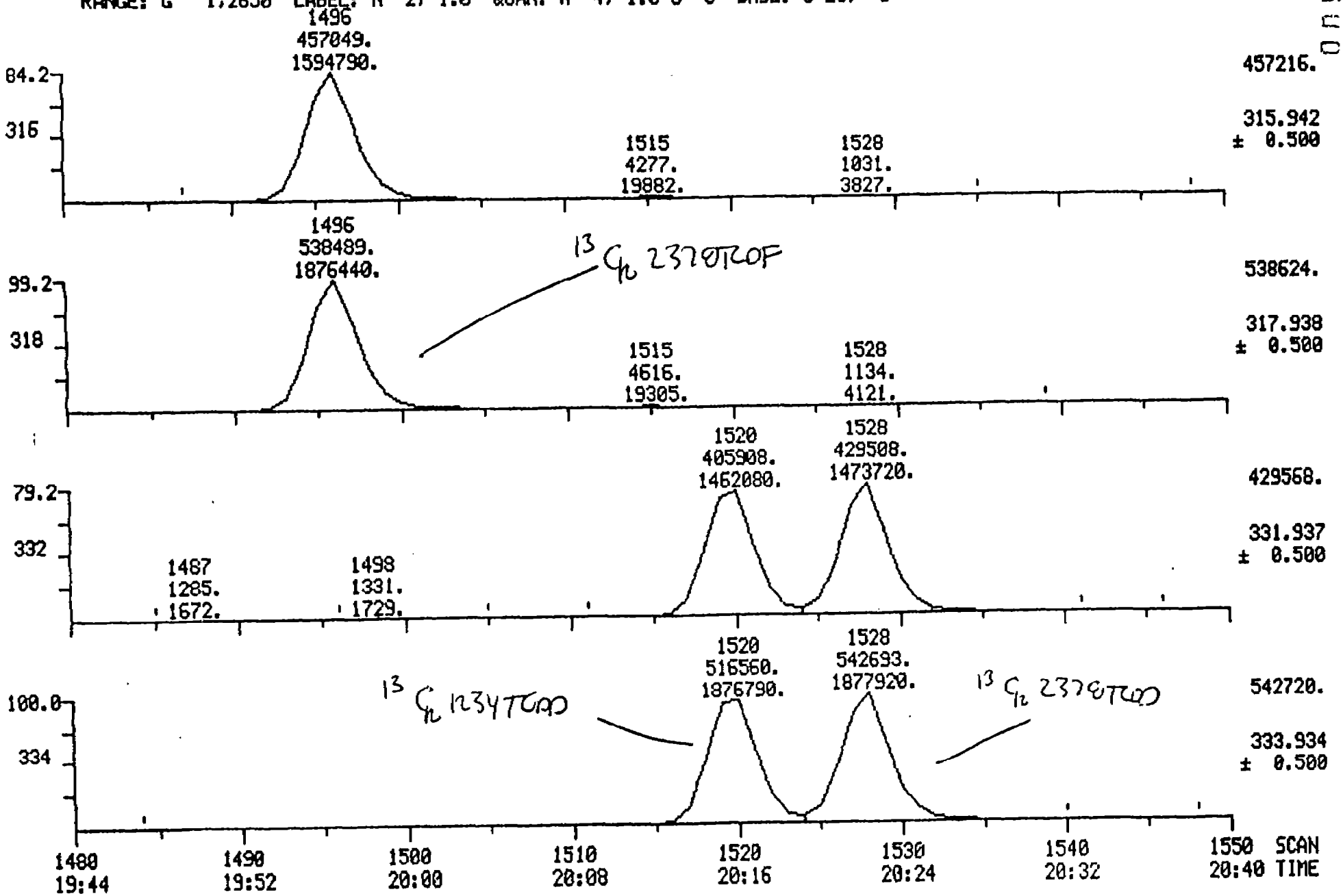


0055

MIDMASS CHROMATOGRAMS DATA: Z092207 #1 SCANS 1400 TO 1620
09/22/94 11:42:00 CALI: Z092207 #3
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



MIDMASS CHROMATOGRAMS DATA: Z092207 #1 SCANS 1480 TO 1550
09/22/94 11:42:00 CALI: Z092207 #3
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4500Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



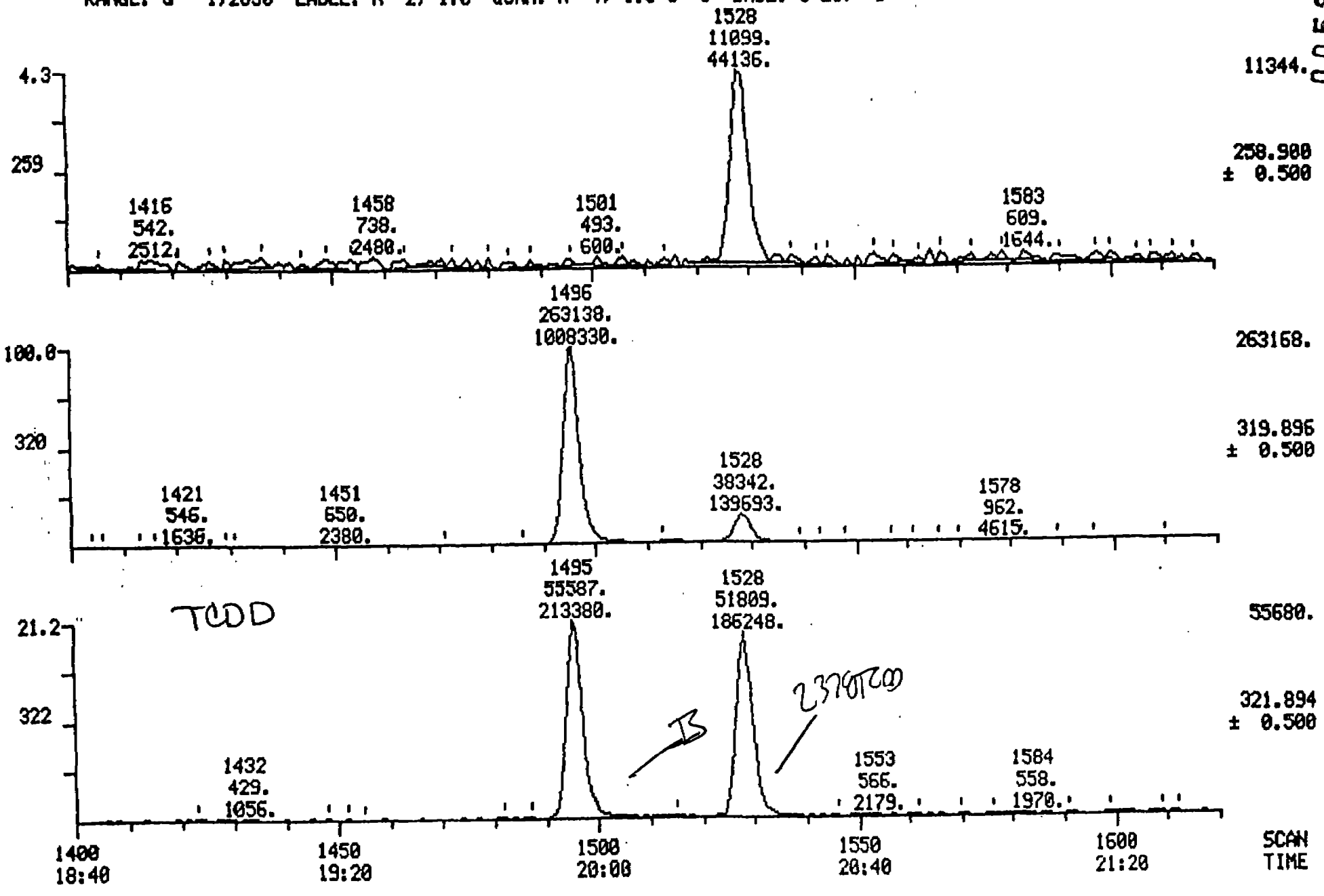
0057

MIDMASS CHROMATOGRAMS
09/21/94 16:00:00
SAMPLE: PCDD/PCDF CC1
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092108 #1
CALI: Z092108 #3

SCANS 1400 TO 1620

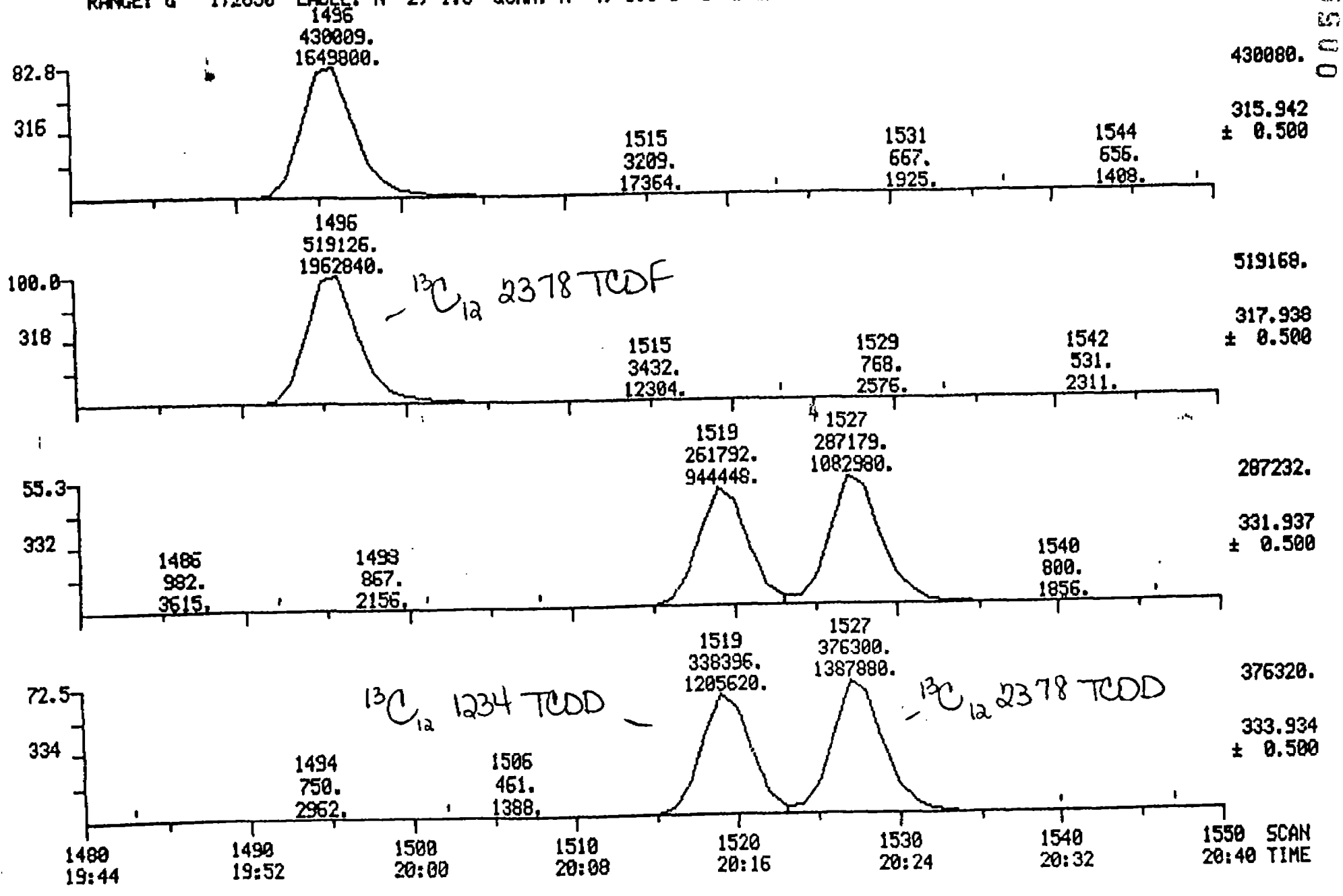
0058



MIDMASS CHROMATOGRAMS
09/21/94 16:00:00
SAMPLE: PCDD/PCDF CC1
CONDS.: 46002, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

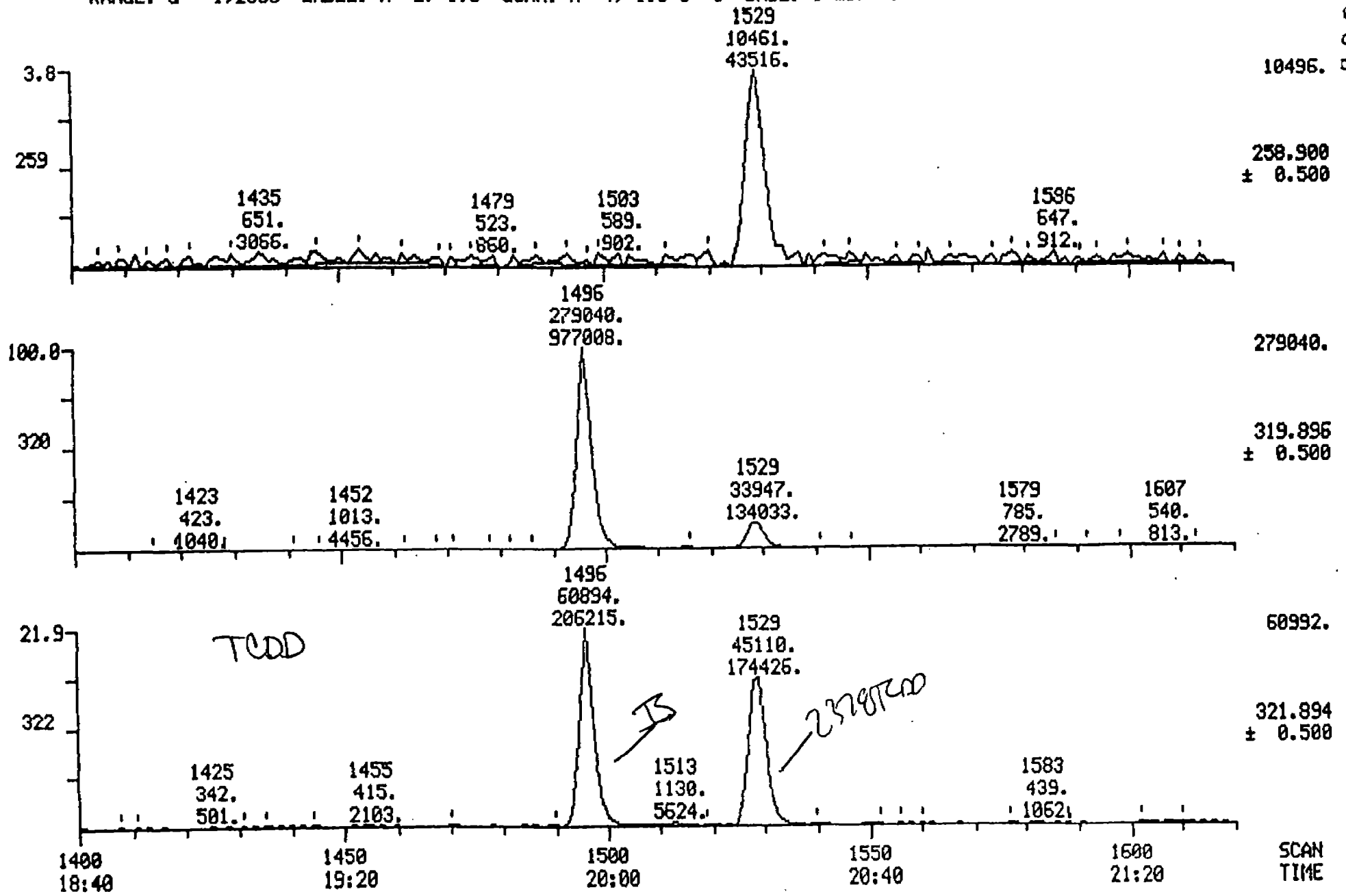
DATA: Z092108 #1
CALI: Z092108 #3

SCANS 1480 TO 1550



0059

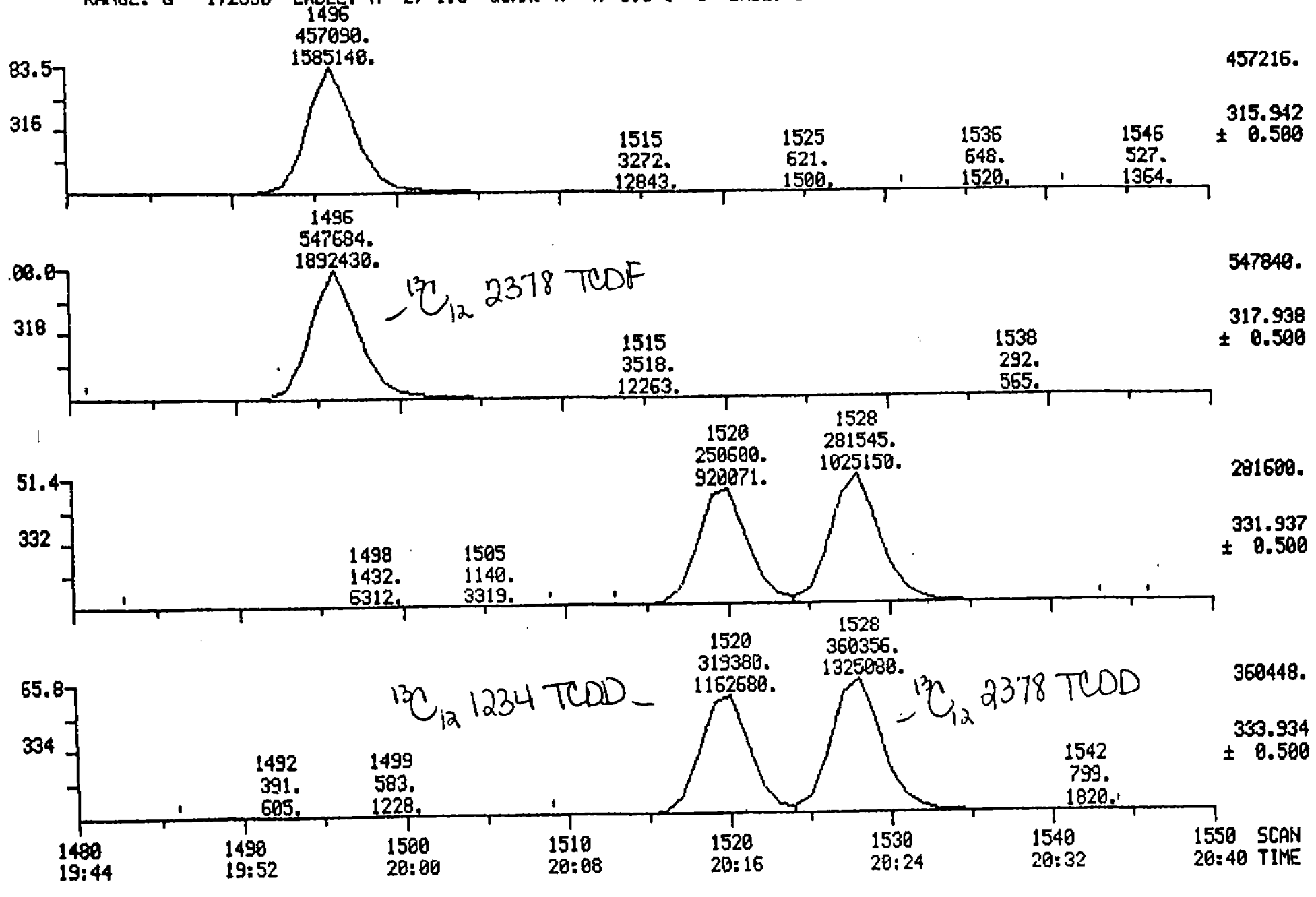
MIDMASS CHROMATOGRAMS DATA: Z092109 #1 SCANS 1400 TO 1620
09/21/94 16:49:00 CALI: Z092109 #3
SAMPLE: PCDD/PCDF CC1
CONDS.: 4600Z, GCZ1, DTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



MIDMASS CHROMATOGRAMS
09/21/94 16:49:00
SAMPLE: PCDD/PCDF CC1
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092109 #1
CAL1: Z092109 #3

SCANS 1480 TO 1550



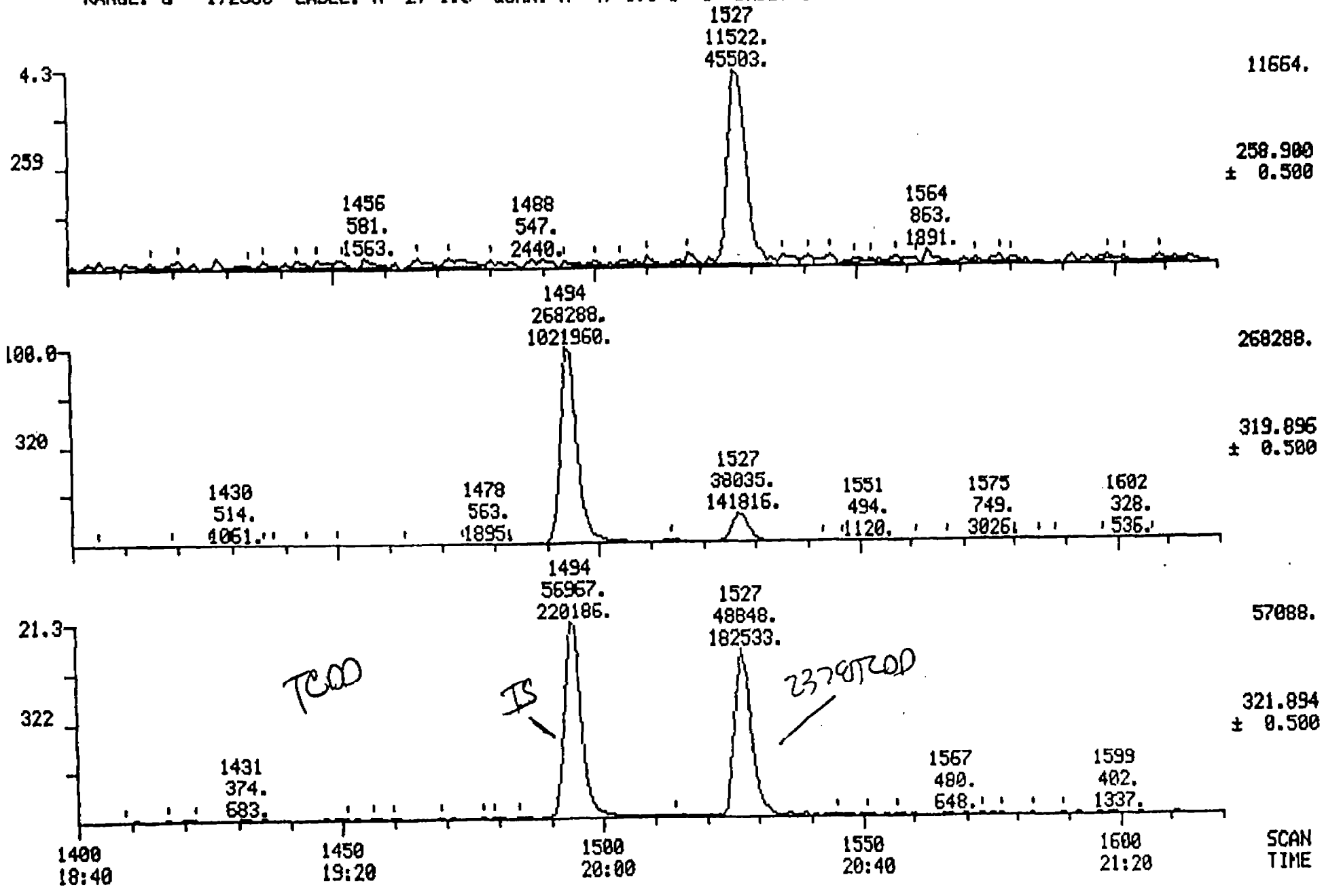
0061

MIDMASS CHROMATOGRAMS
09/22/94 7:44:00
SAMPLE: PCDD/PCDF CC1
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092202 #1
CALI: Z092202 #3

SCANS 1400 TO 1620

0062

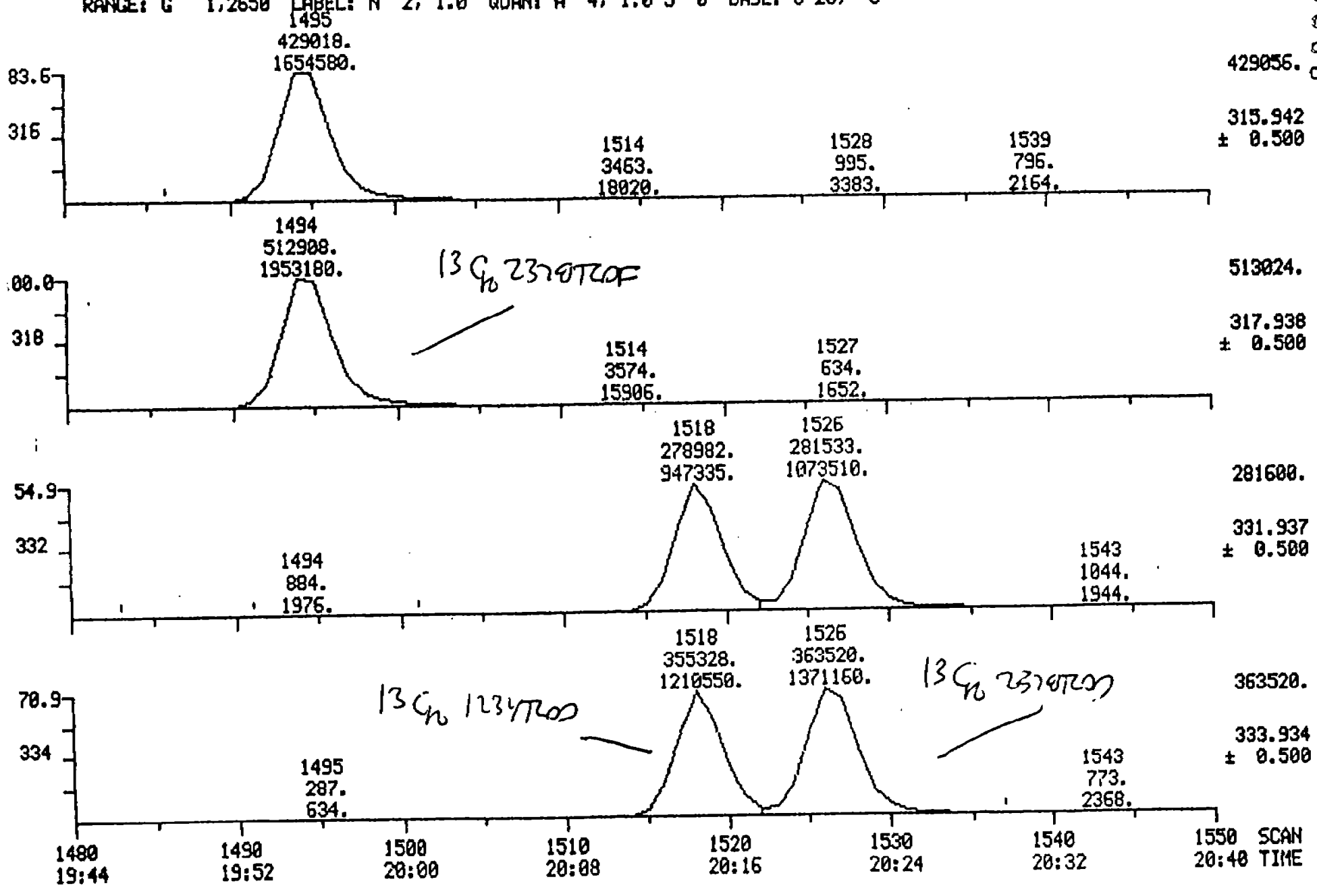


MIDMASS CHROMATOGRAMS
09/22/94 7:44:00
SAMPLE: PCDD/PCDF CC1
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

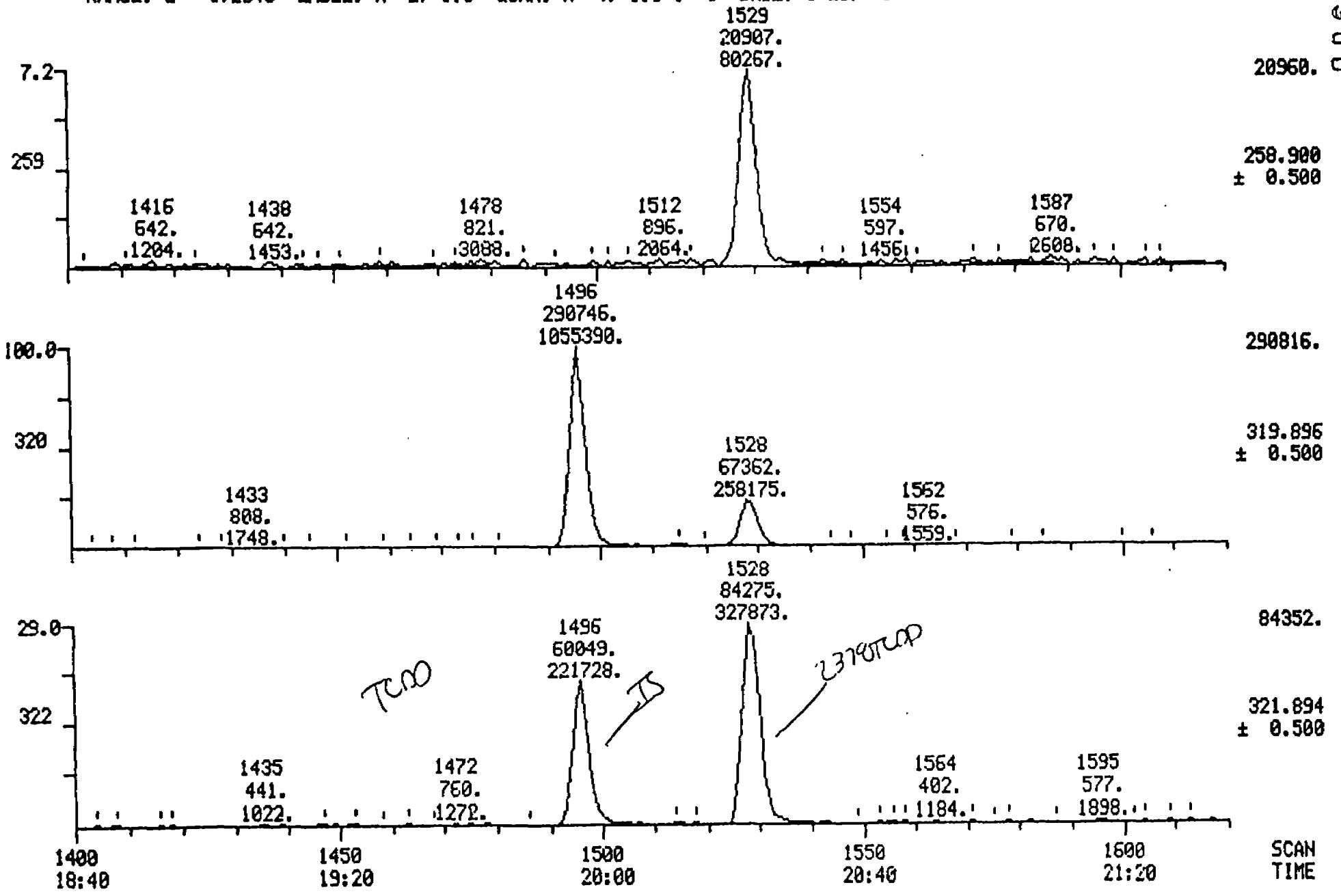
DATA: Z092202 #1
CALI: Z092202 #3

SCANS 1480 TO 1550

0063



MIDMASS CHROMATOGRAMS DATA: Z092105 #1 SCANS 1400 TO 1620
09/21/94 13:48:00 CALI: Z092105 #3
SAMPLE: PCDD/PCDF CC2
CONDS.: 4600Z, GCZ1, OTDFH1 (AS)
RANGE: G 1,2648 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

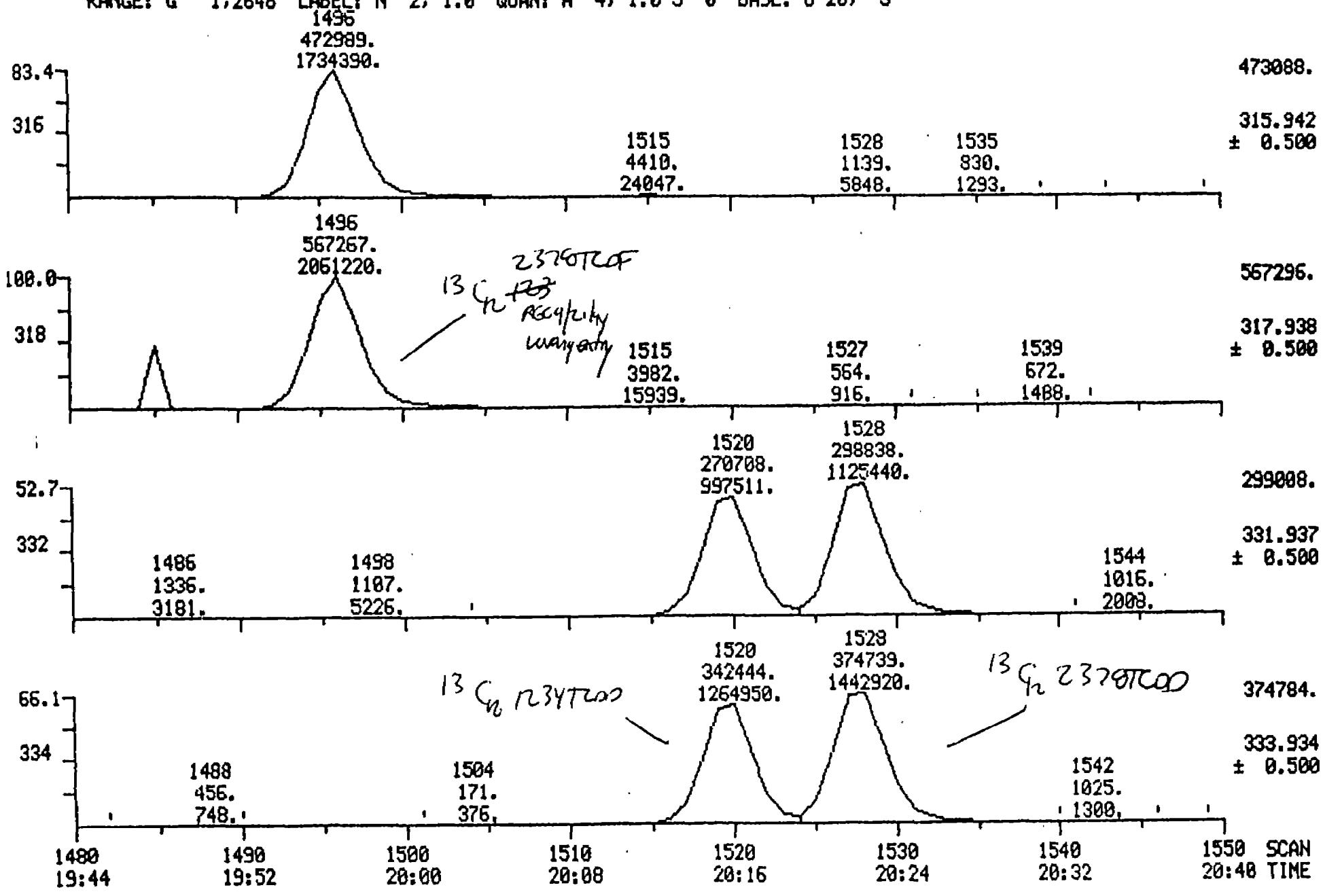


0064

MIDMASS CHROMATOGRAMS
09/21/94 13:48:00
SAMPLE: PCDD/PCDF CC2
CONDS.: 46002, GC21, OTDFN1 (A5)
RANGE: G 1,2648 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092105 #1
CALI: Z092105 #3

SCANS 1480 TO 1550



2378TCDF

$^{13}C_{12}$ ~~123~~ Recovery marker

$^{13}C_{12}$ 1234TCDD

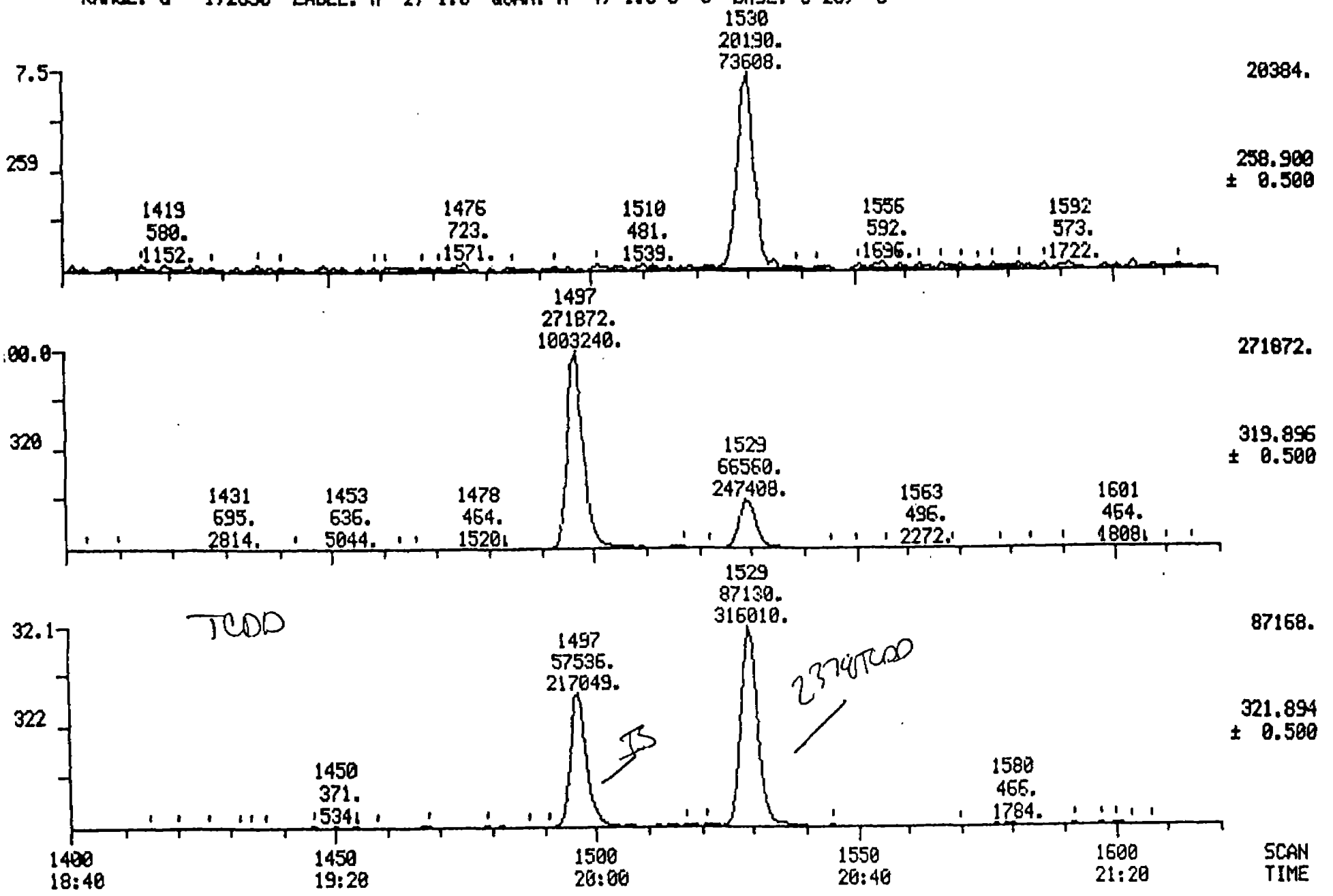
$^{13}C_{12}$ 2378TCDD

0065

MIDMASS CHROMATOGRAMS
09/21/94 17:32:00
SAMPLE: PCDD/PCDF CC2
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

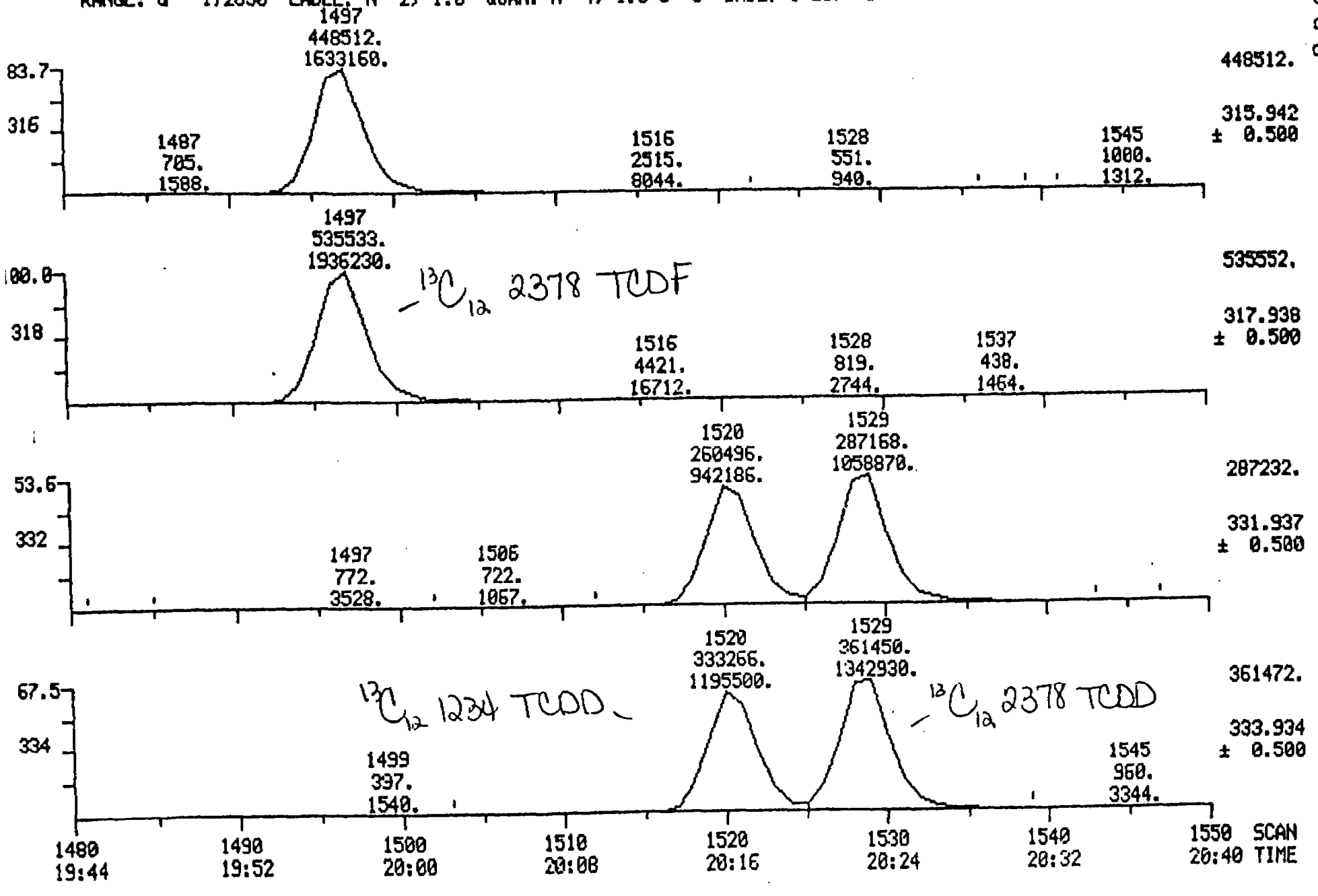
DATA: Z092110 #1
CALI: Z092110 #3

SCANS 1400 TO 1620



0066

MIDMASS CHROMATOGRAMS DATA: Z092110 #1 SCANS 1480 TO 1550
09/21/94 17:32:00 CALI: Z092110 #3
SAMPLE: PCDD/PCDF CC2
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

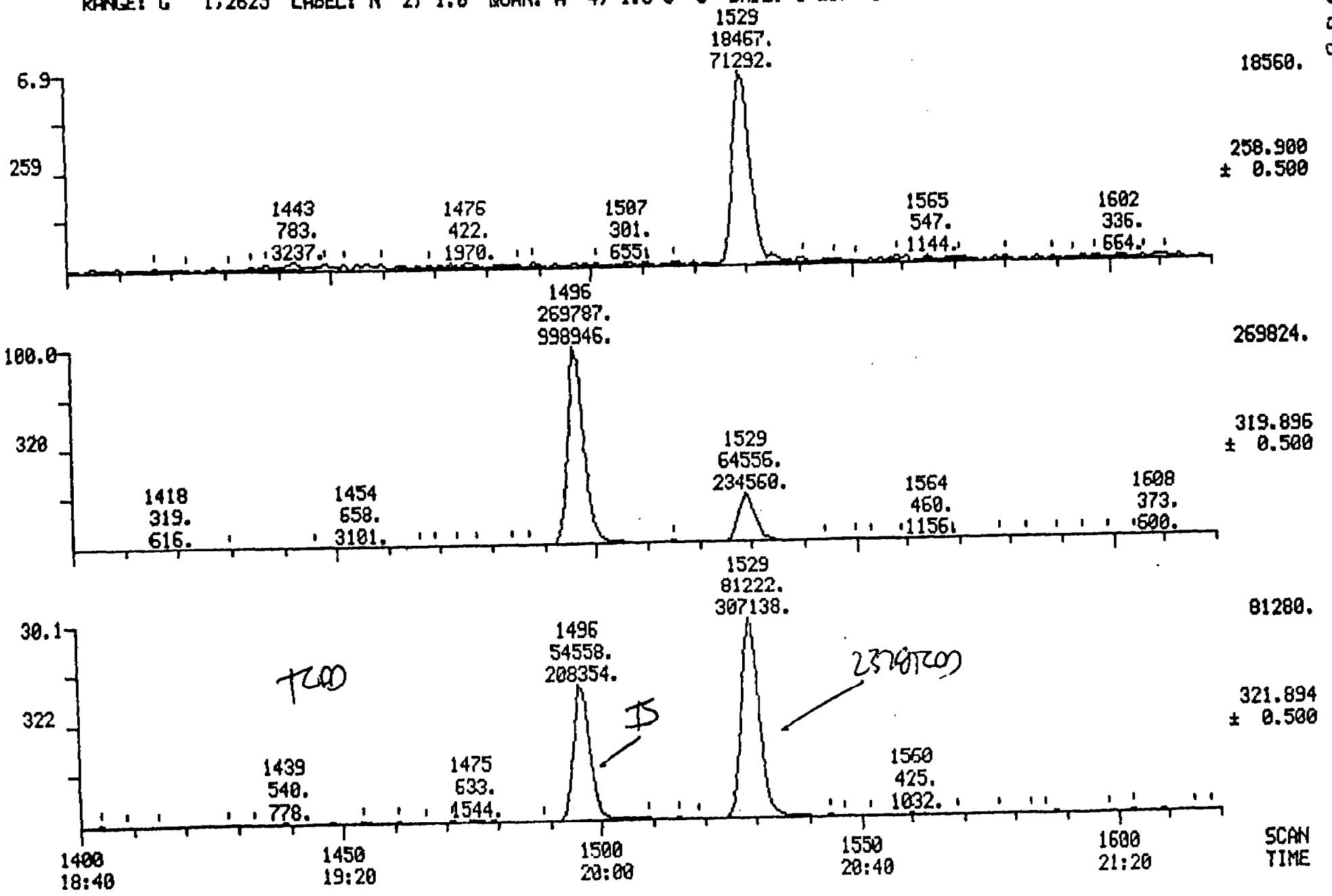


0067

MIDMASS CHROMATOGRAMS
09/22/94 8:29:00
SAMPLE: PCDD/PCDF CC2
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2625 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092203 #1
CALI: Z092203 #3

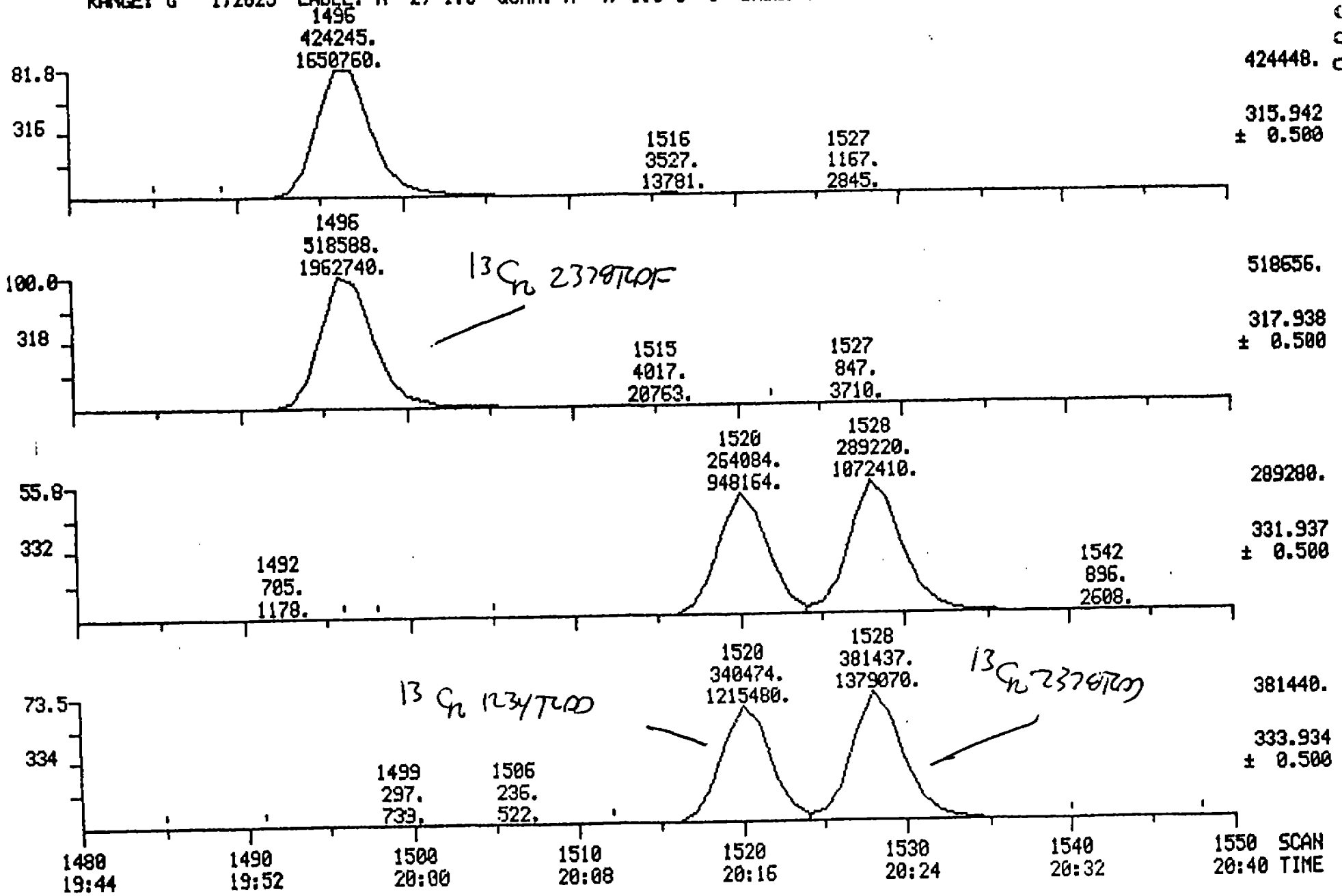
SCANS 1400 TO 1620



MIDMASS CHROMATOGRAMS
09/22/94 8:29:00
SAMPLE: PCDD/PCDF CC2
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2625 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092203 #1
CALI: Z092203 #3

SCANS 1480 TO 1550

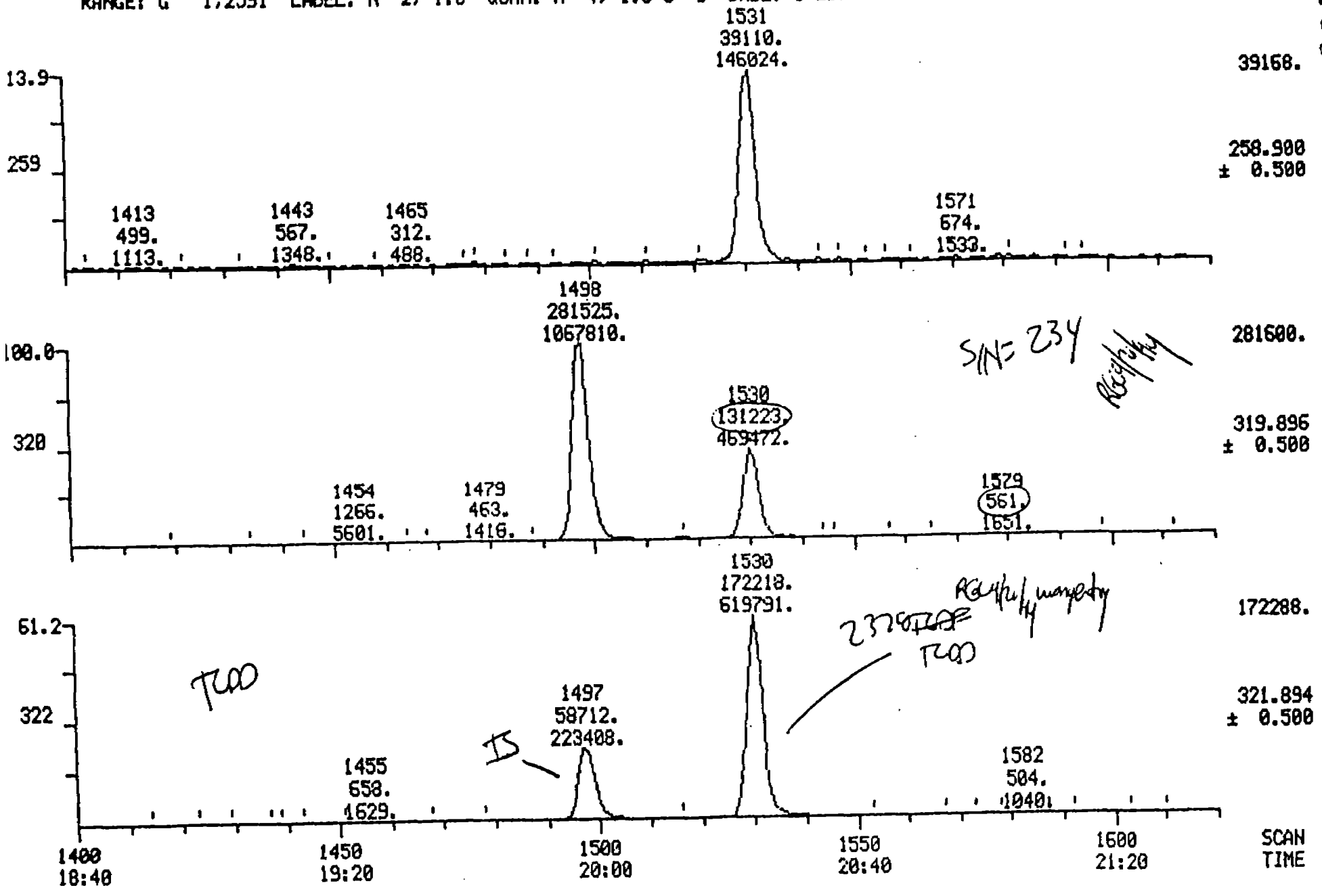


0069

MIDMASS CHROMATOGRAMS
09/21/94 12:19:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2591 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092103 #1
CALI: Z092103 #3

SCANS 1400 TO 1620



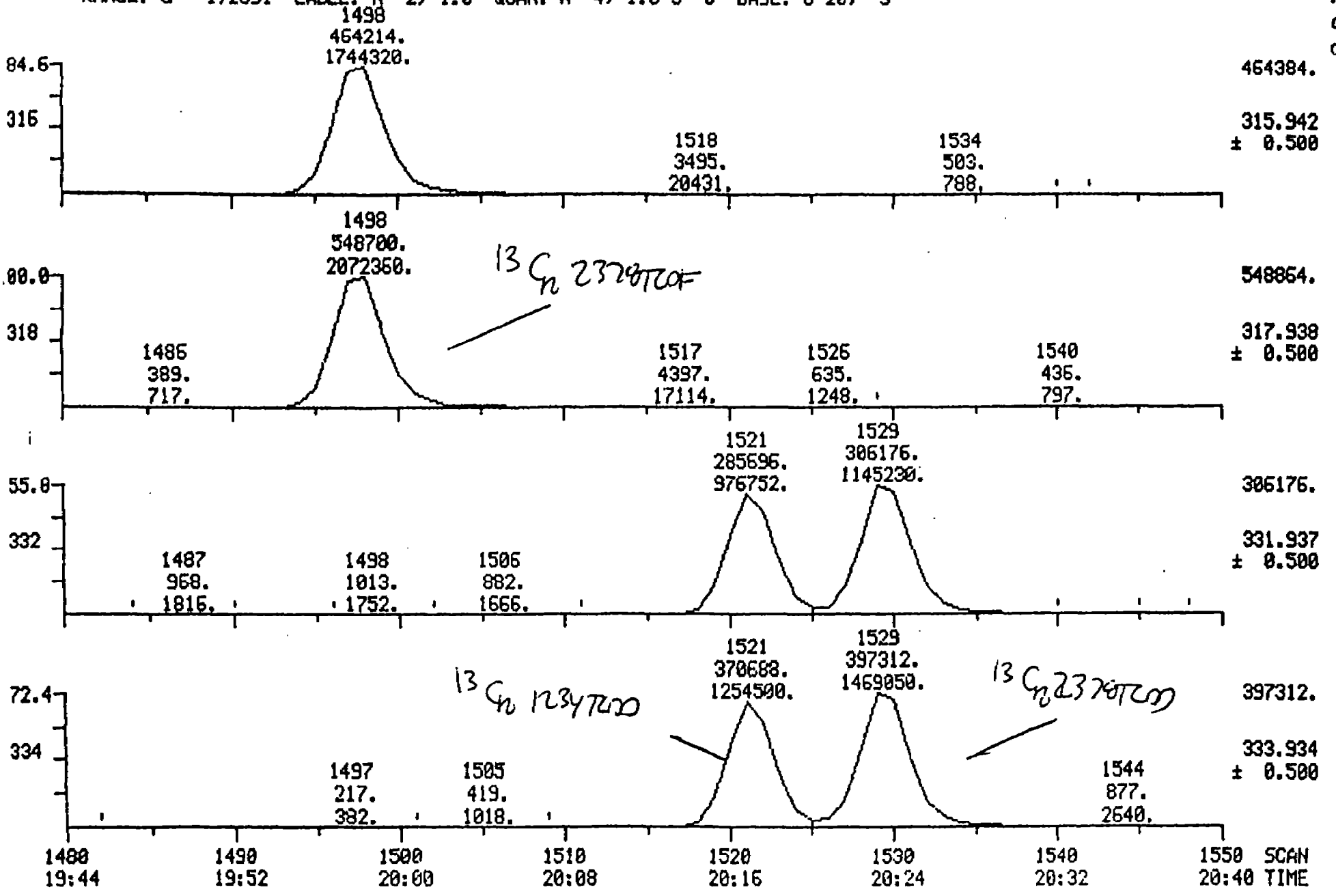
0070

MIDMASS CHROMATOGRAMS
09/21/94 12:19:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2591 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092103 #1
CALI: Z092103 #3

SCANS 1480 TO 1550

0071

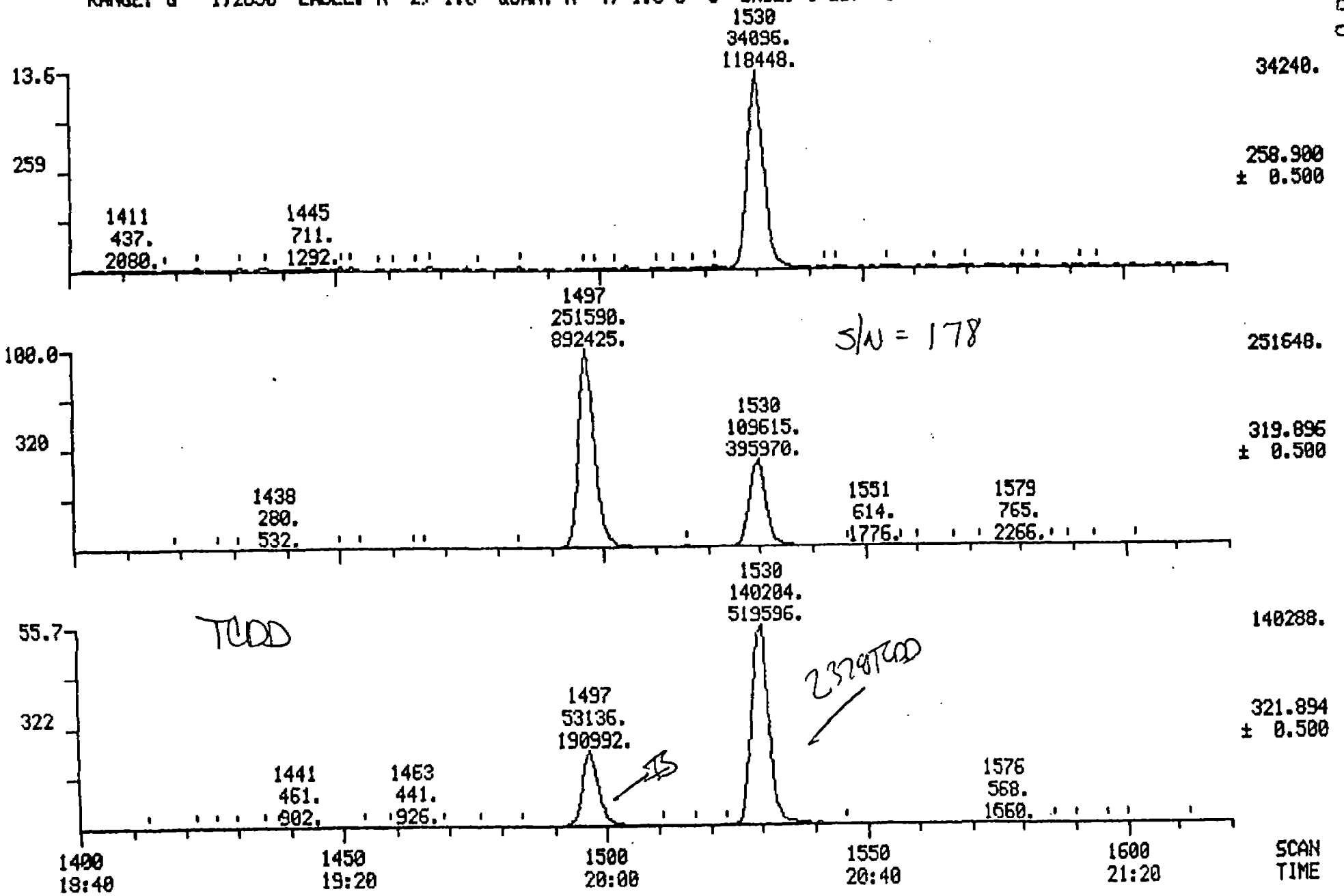


MIDMASS CHROMATOGRAMS
09/21/94 18:17:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZ1, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092111 #1
CALI: Z092111 #3

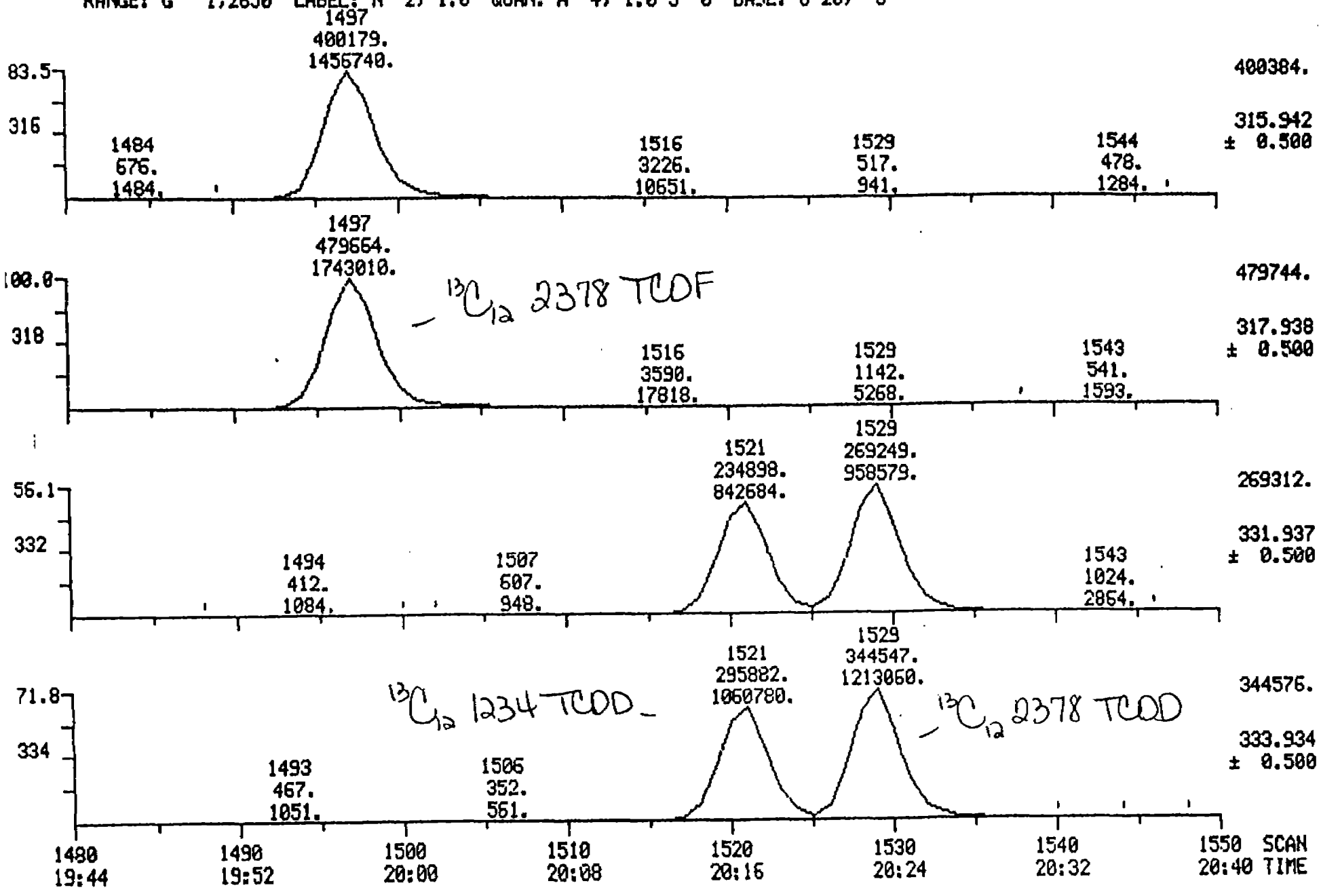
SCANS 1400 TO 1620

0072



MIDMASS CHROMATOGRAMS DATA: Z092111 #1 SCANS 1480 TO 1550
09/21/94 18:17:08 CALI: Z092111 #3
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

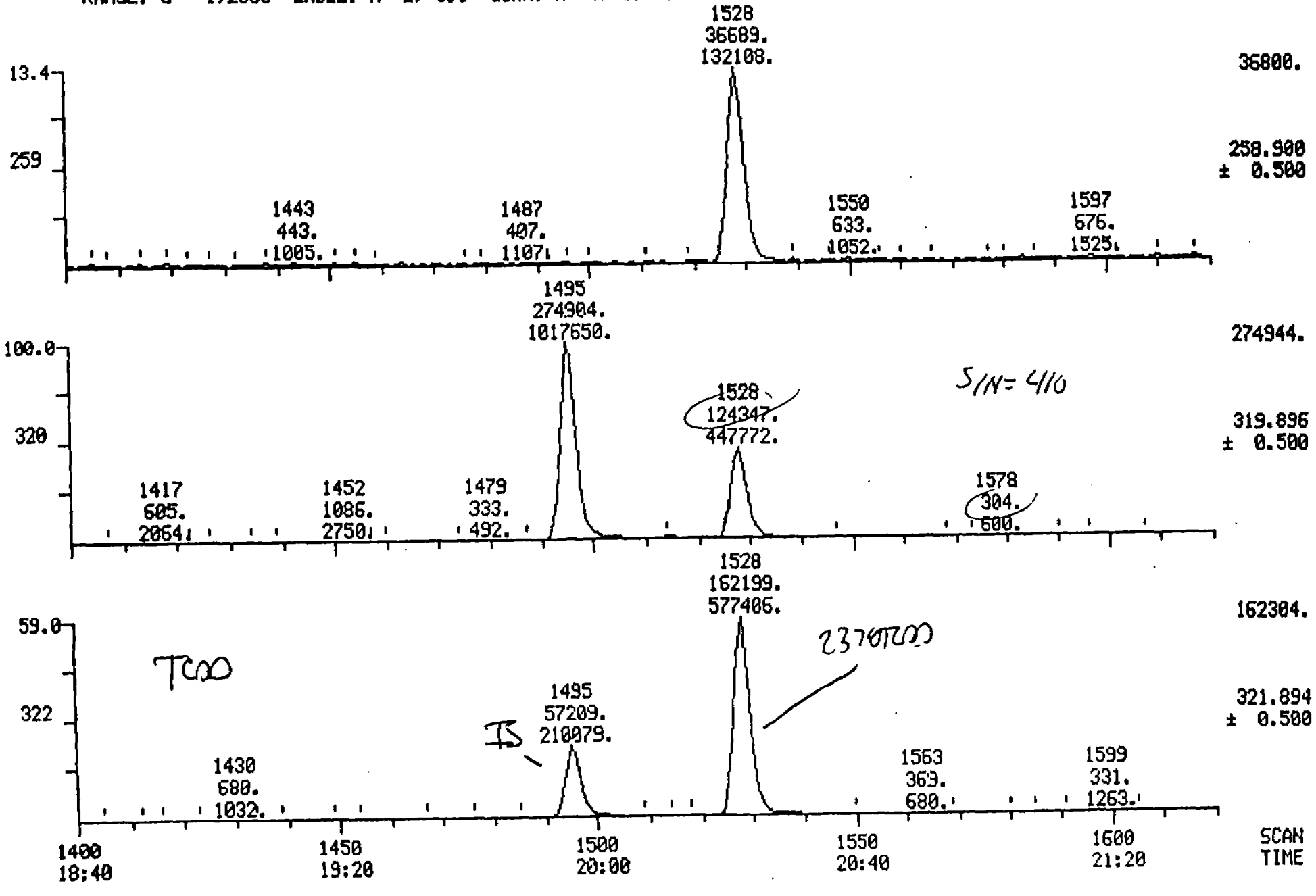
0073



MIDMASS CHROMATOGRAMS
09/22/94 9:12:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

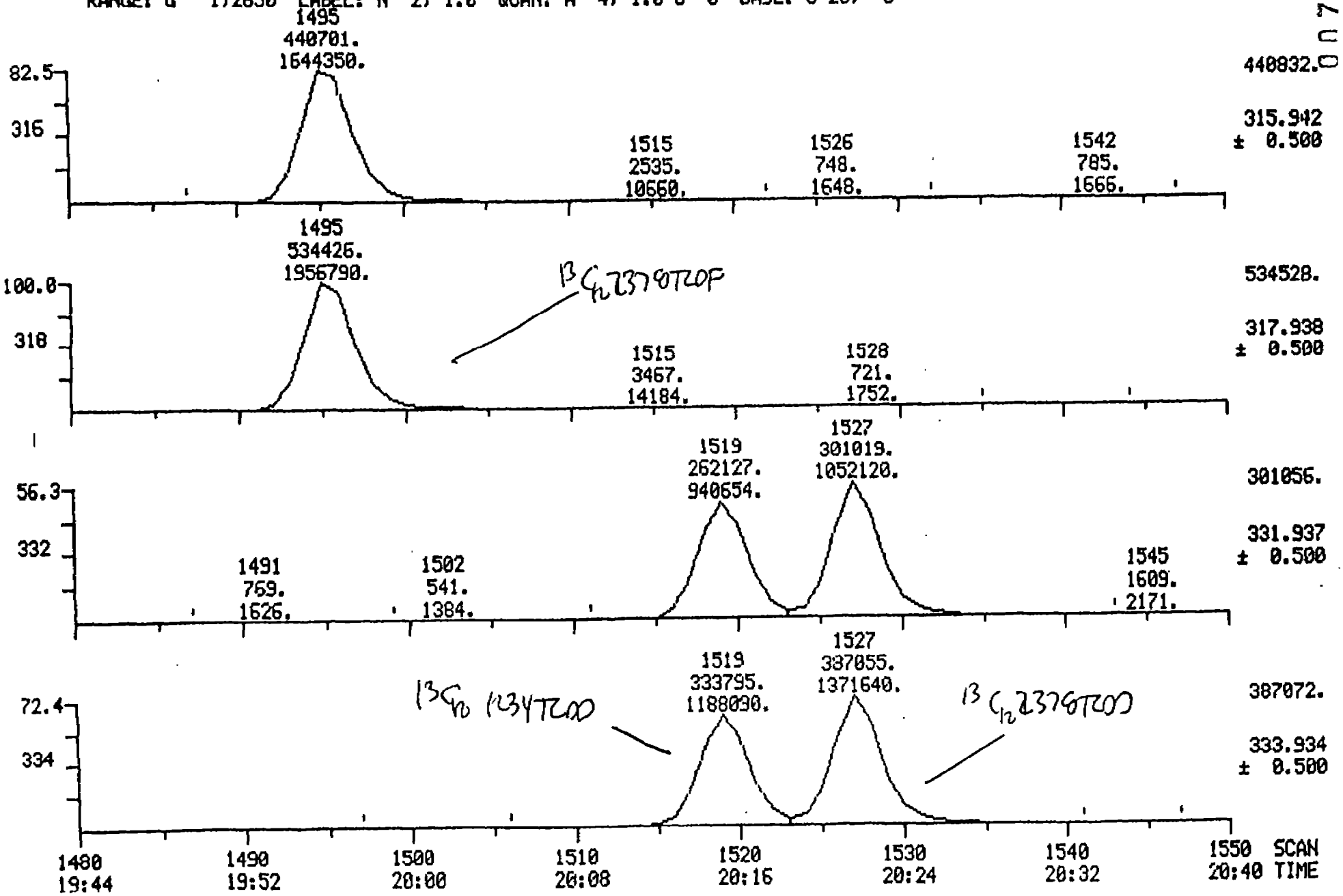
DATA: Z092204 #1
CALI: Z092204 #3

SCANS 1400 TO 1620



0074

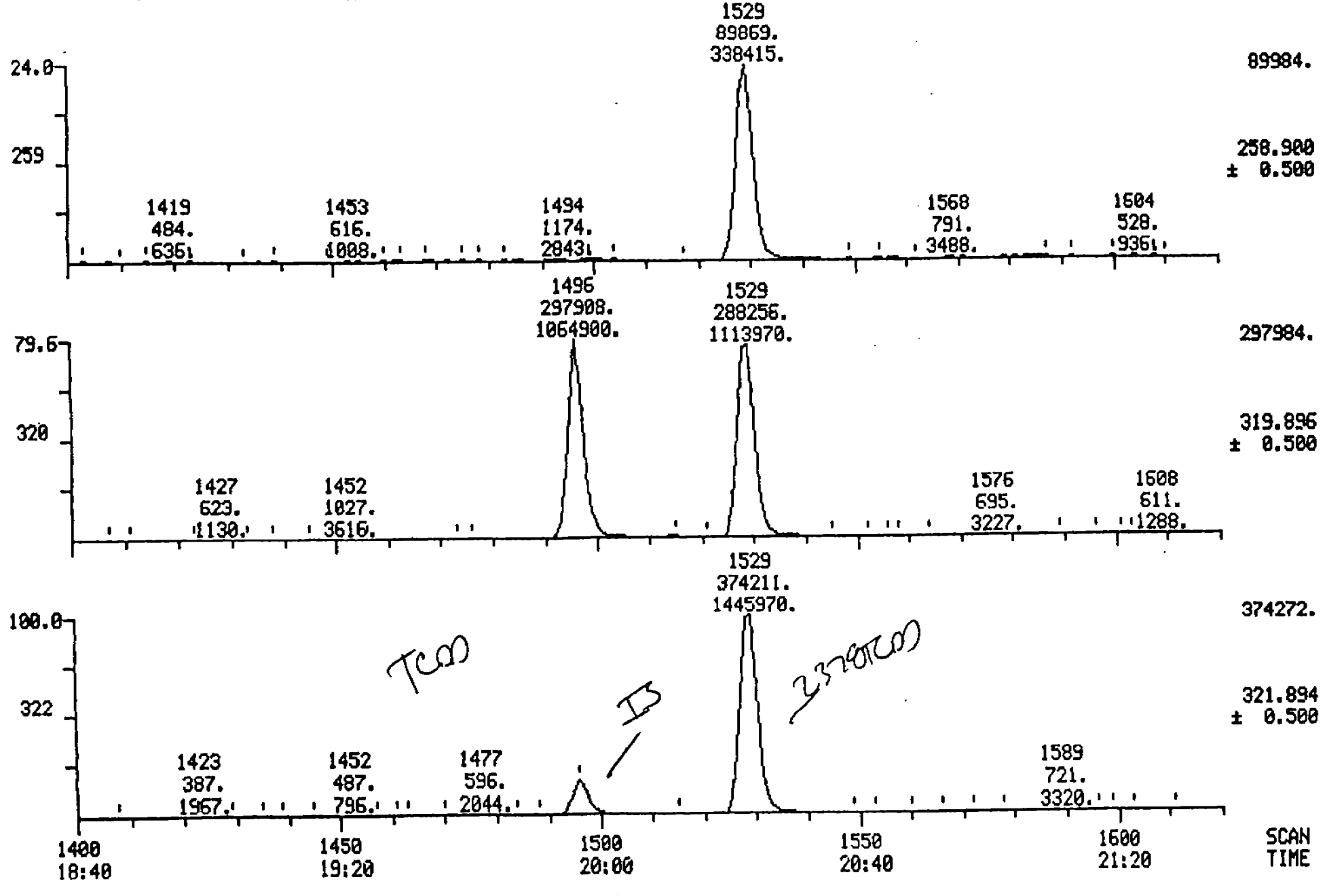
MIDMASS CHROMATOGRAMS DATA: Z092204 #1 SCANS 1480 TO 1550
09/22/94 9:12:00 CALI: Z092204 #3
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GC21, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



0075

MIDMASS CHROMATOGRAMS DATA: Z092106 #1 SCANS 1400 TO 1620
09/21/94 14:31:00 CALI: Z092106 #3
SAMPLE: PCD/PCDF CC4
CONDS.: 46002, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

0076

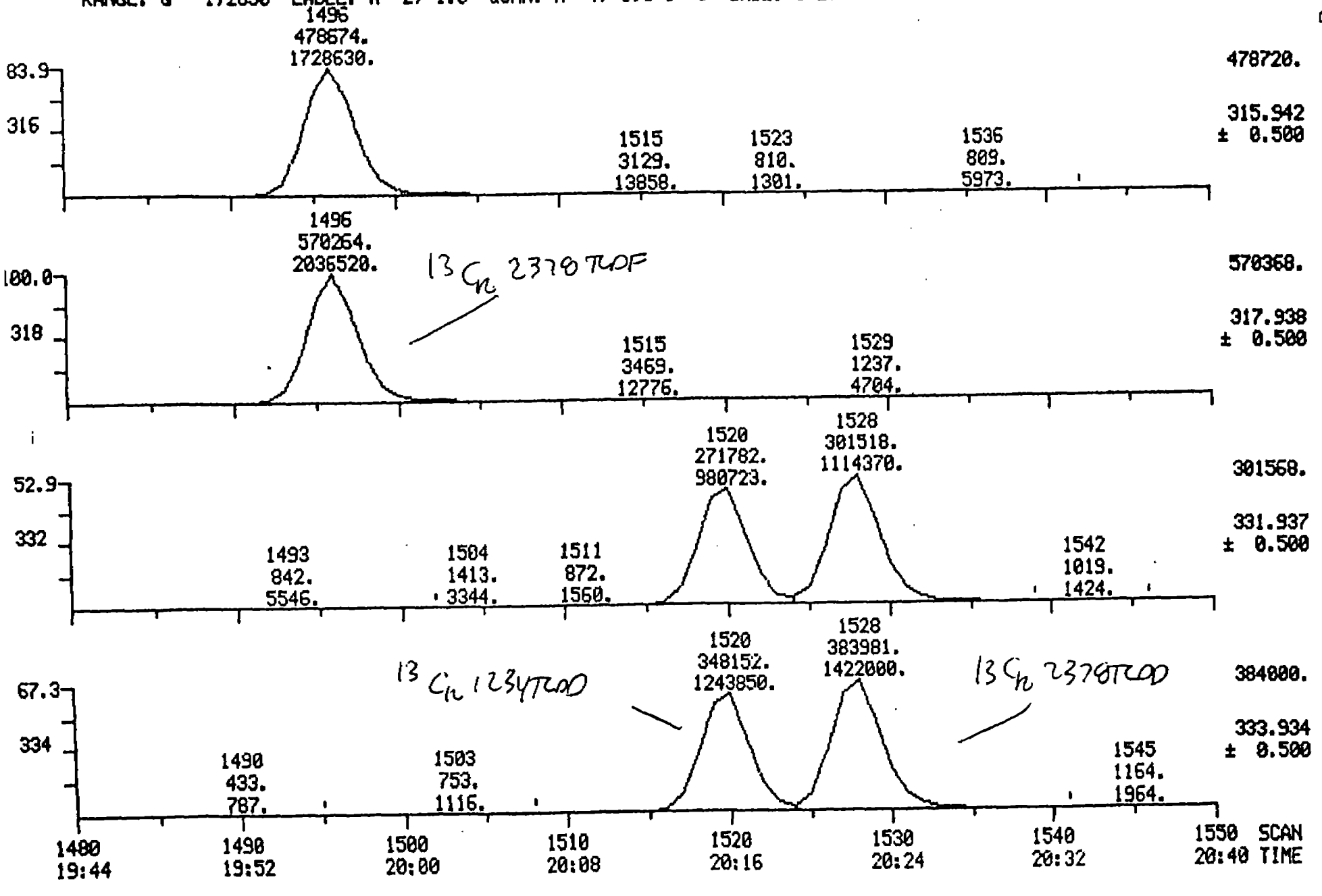


MIDMASS CHROMATOGRAMS
09/21/94 14:31:00
SAMPLE: PCD/PCDF CC4
CONDS.: 4600Z, GC21, OTDFN1 (A5)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092106 #1
CALI: Z092106 #3

SCANS 1480 TO 1550

0077

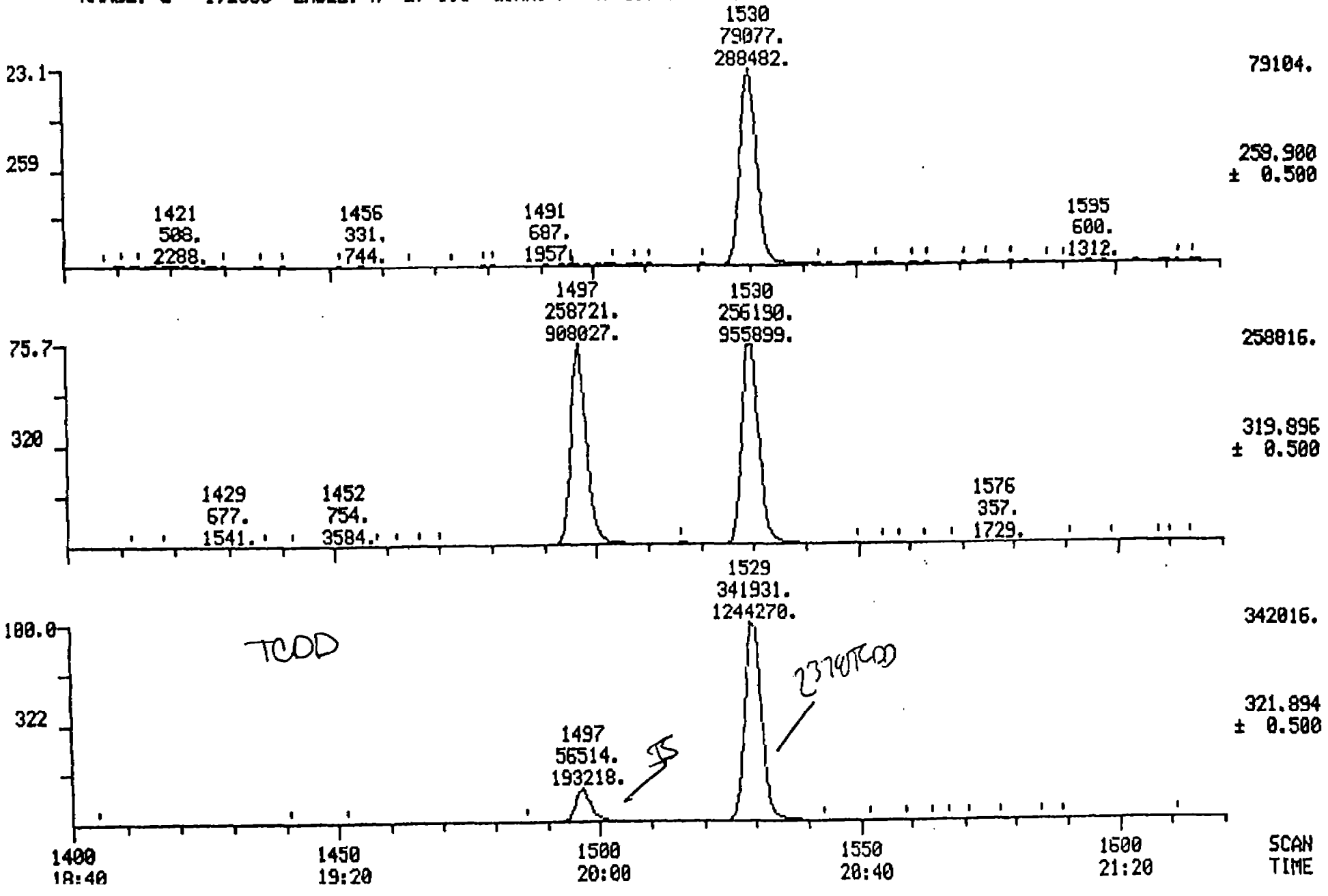


MIDMASS CHROMATOGRAMS
09/21/94 19:02:00
SAMPLE: PCDD/PCDF CC4
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092112 #1
CALI: Z092112 #3

SCANS 1400 TO 1620

0078

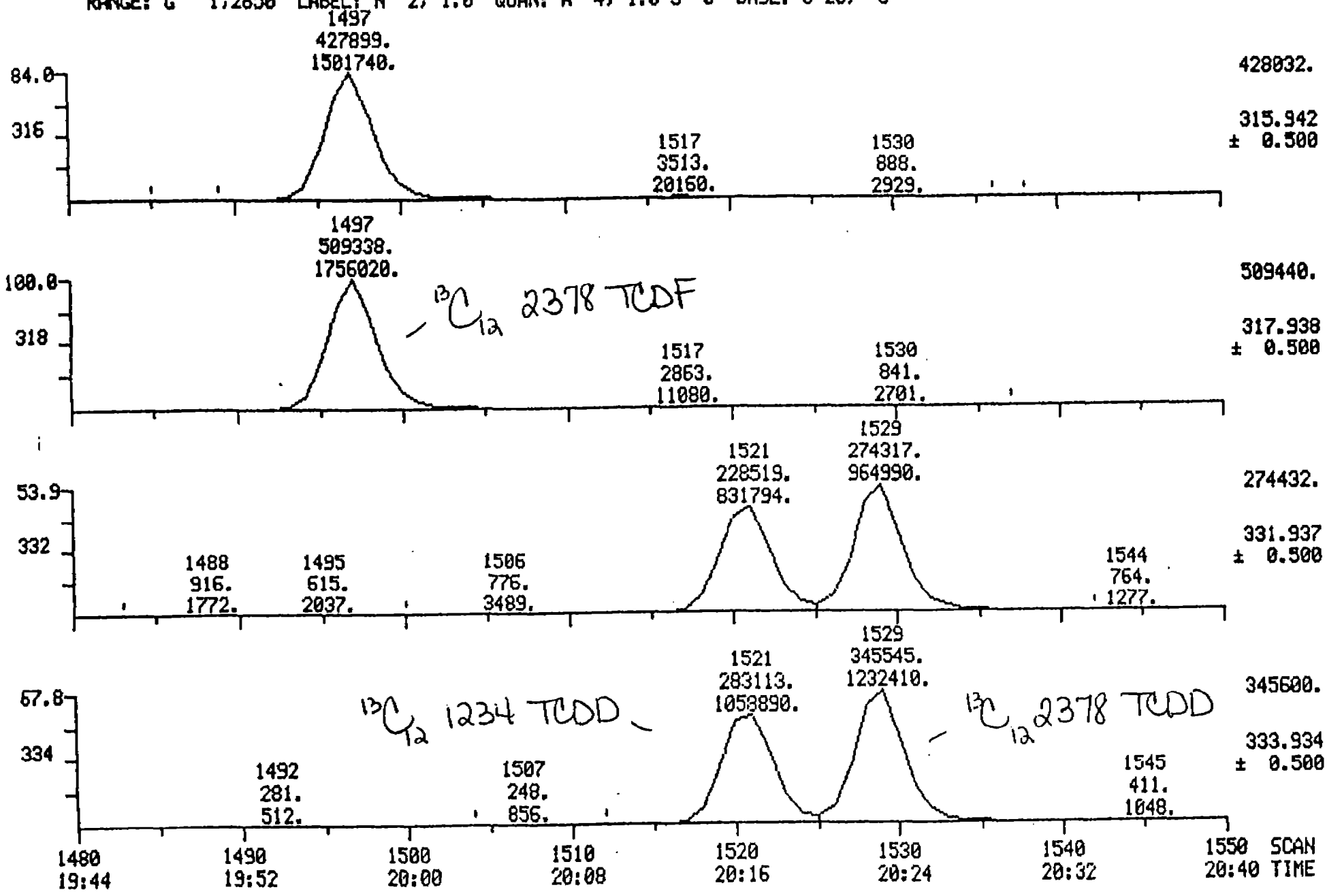


MIDMASS CHROMATOGRAMS
09/21/94 19:02:00
SAMPLE: PCDD/PCDF CC4
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092112 #1
CALI: Z092112 #3

SCANS 1480 TO 1550

0079

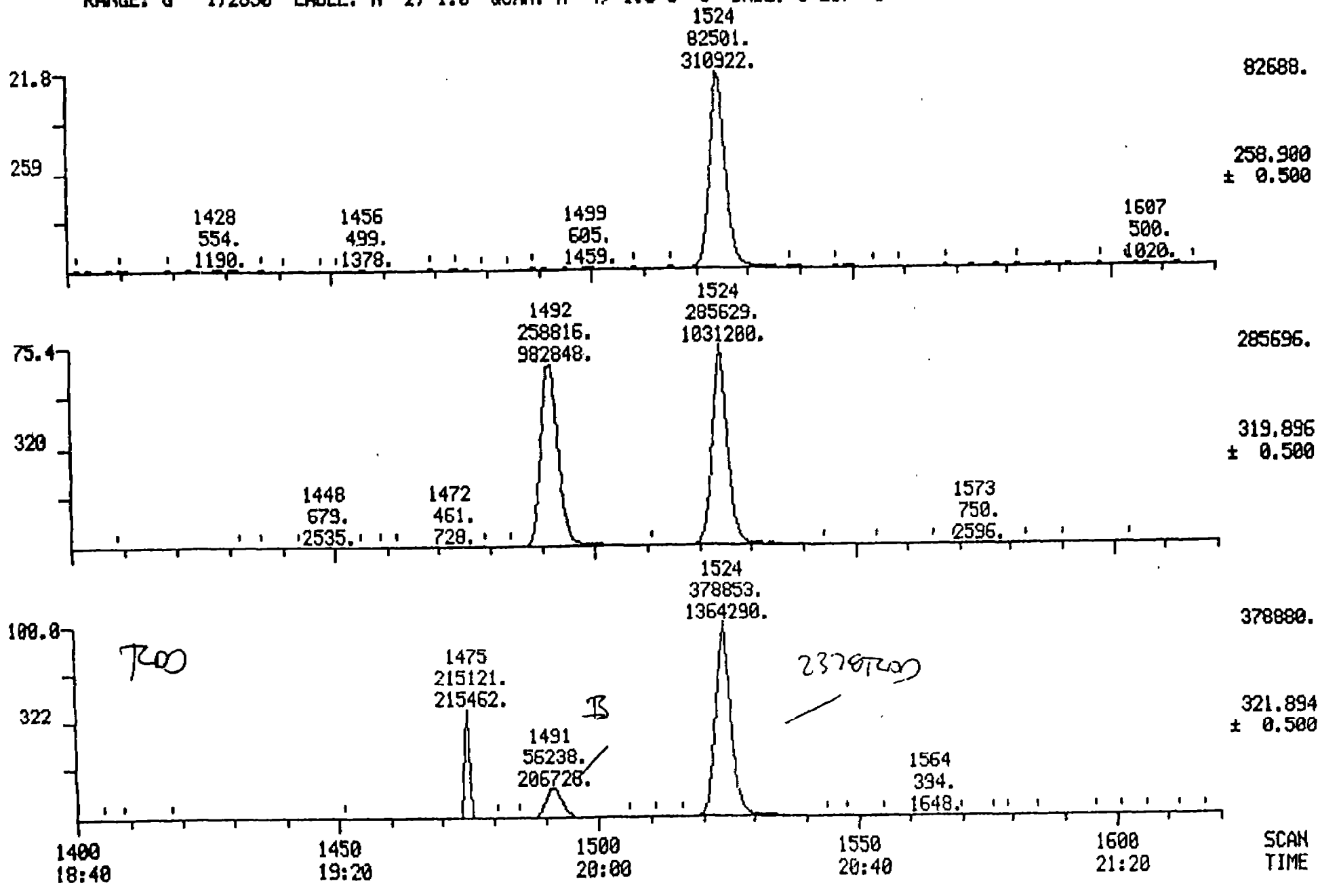


MIDMASS CHROMATOGRAMS
09/22/94 10:13:00
SAMPLE: PCDD/PCDF CC4
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092205 #1
CALI: Z092205 #3

SCANS 1400 TO 1620

0000

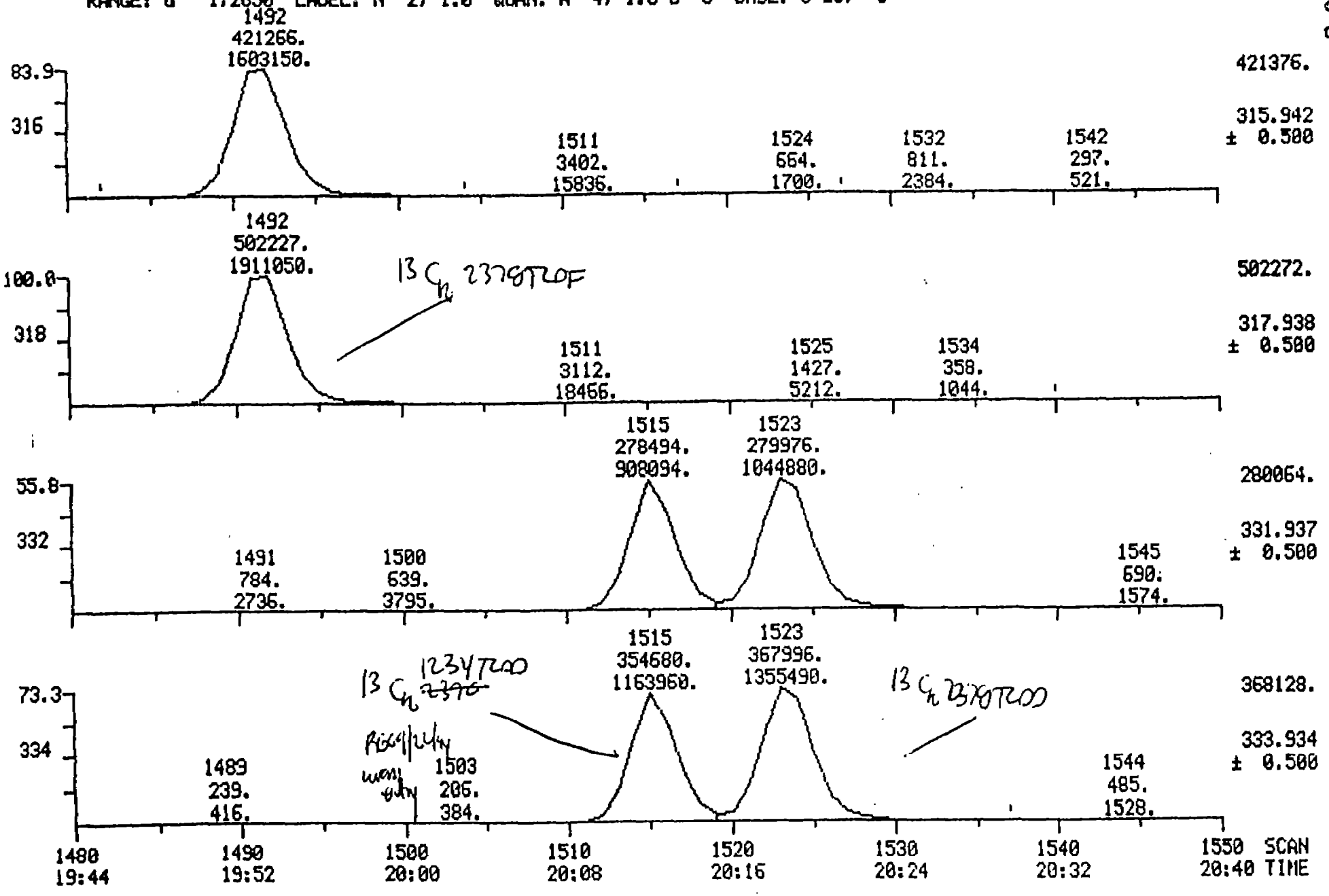


MIDMASS CHROMATOGRAMS
09/22/94 10:13:00
SAMPLE: PCDD/PCDF CC4
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1.2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092205 #1
CALI: Z092205 #3

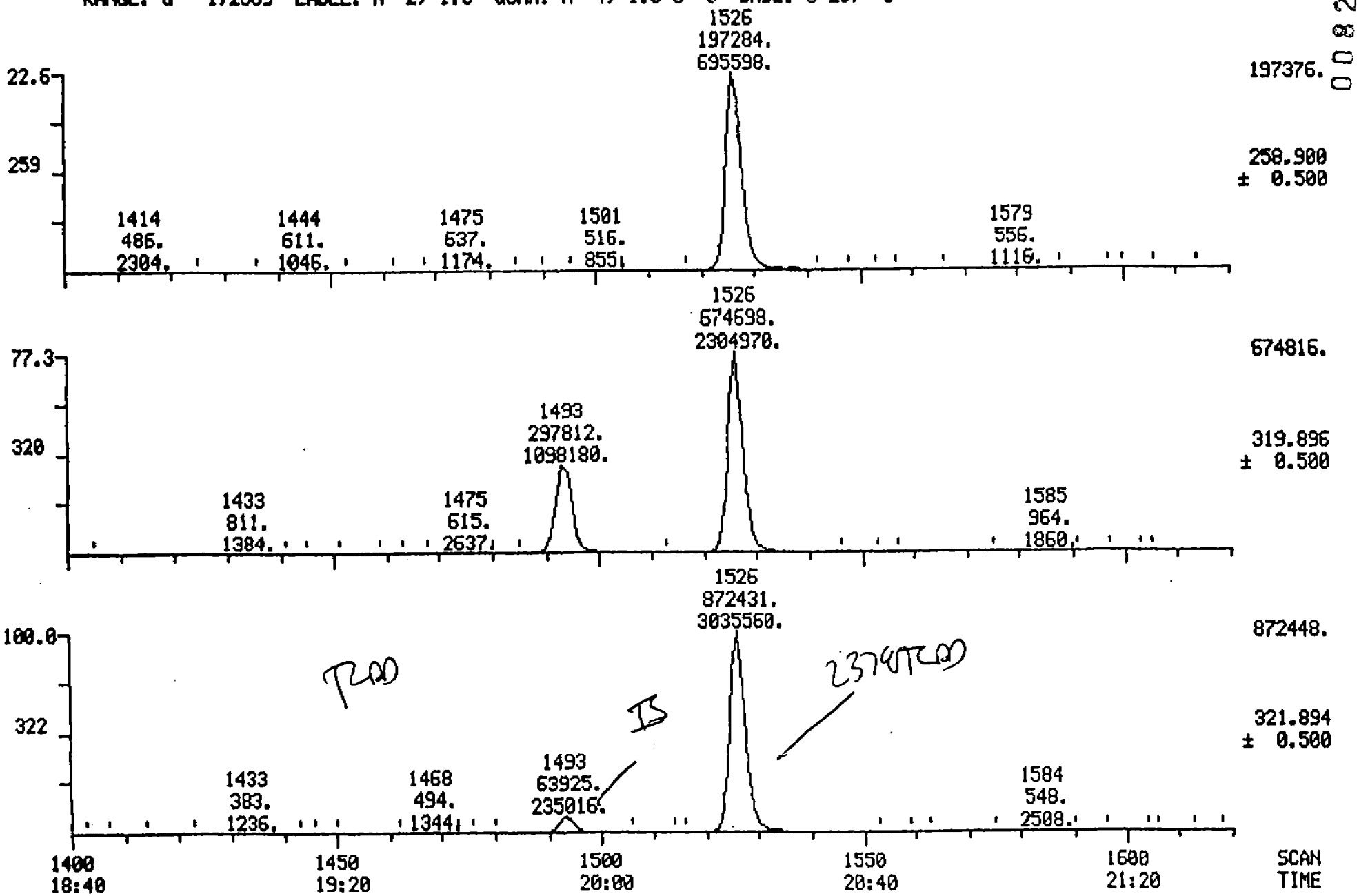
SCANS 1480 TO 1550

0081

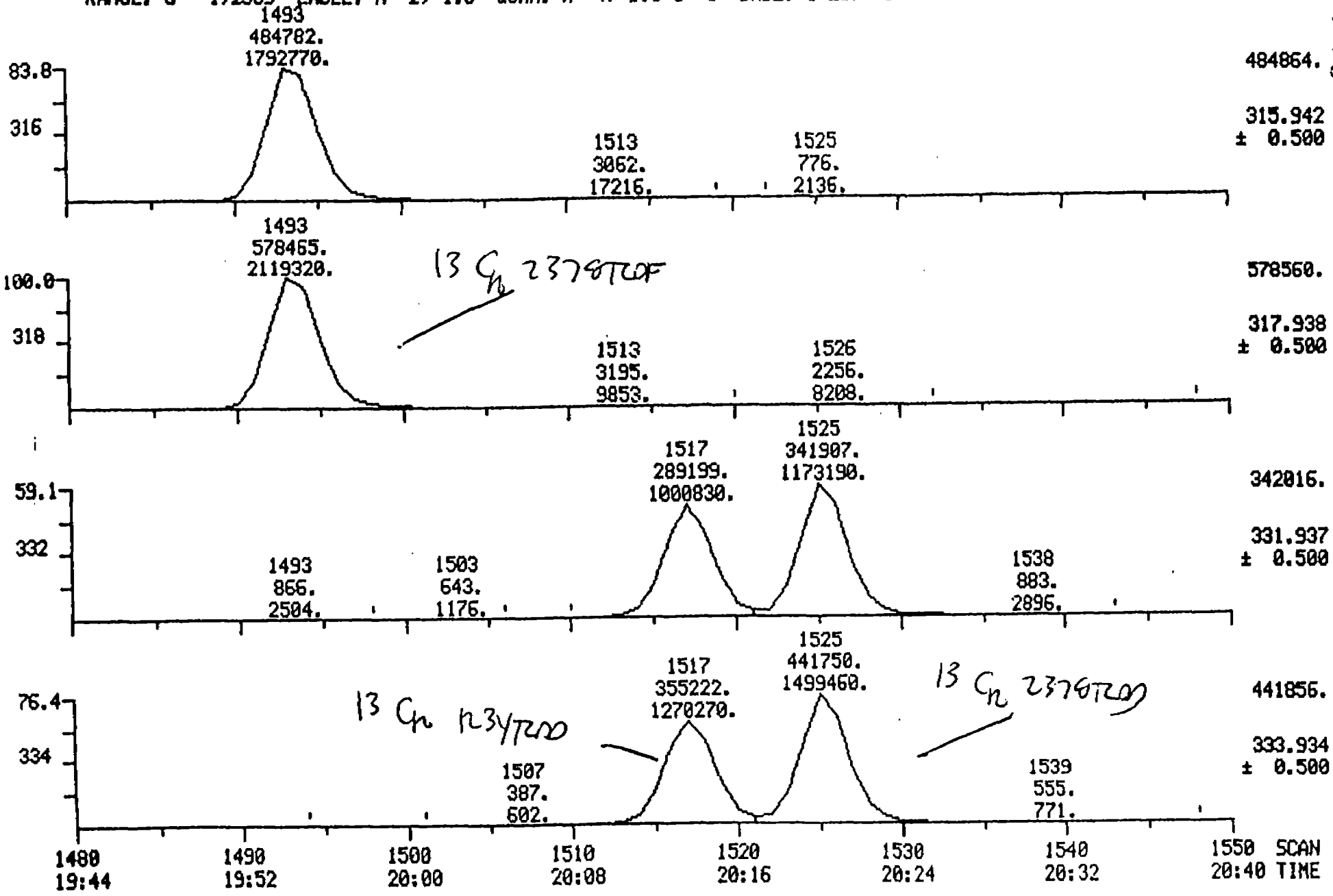


MIDMASS CHROMATOGRAMS DATA: Z092107 #1 SCANS 1400 TO 1620
09/21/94 15:17:00 CALI: Z092107 #3
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GC21, OTDFN1 (A5)
RANGE: G 1,2589 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

0082

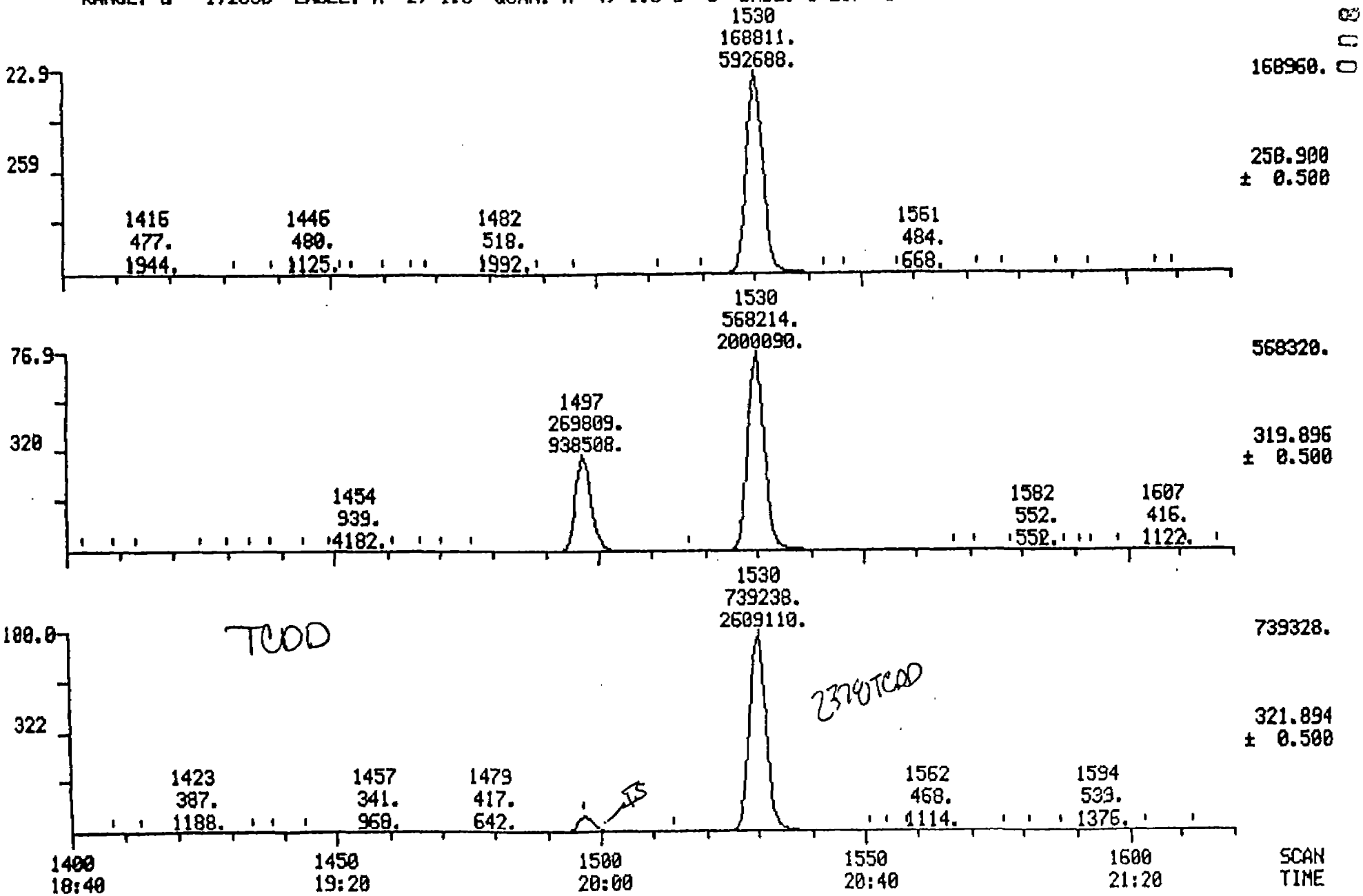


MIDMASS CHROMATOGRAMS DATA: Z092107 #1 SCANS 1480 TO 1550
09/21/94 15:17:00 CALI: Z092107 #3
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2589 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



0083

MIDMASS CHROMATOGRAMS DATA: Z092113 #1 SCANS 1400 TO 1620
09/21/94 19:46:00 CALI: Z092113 #3
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

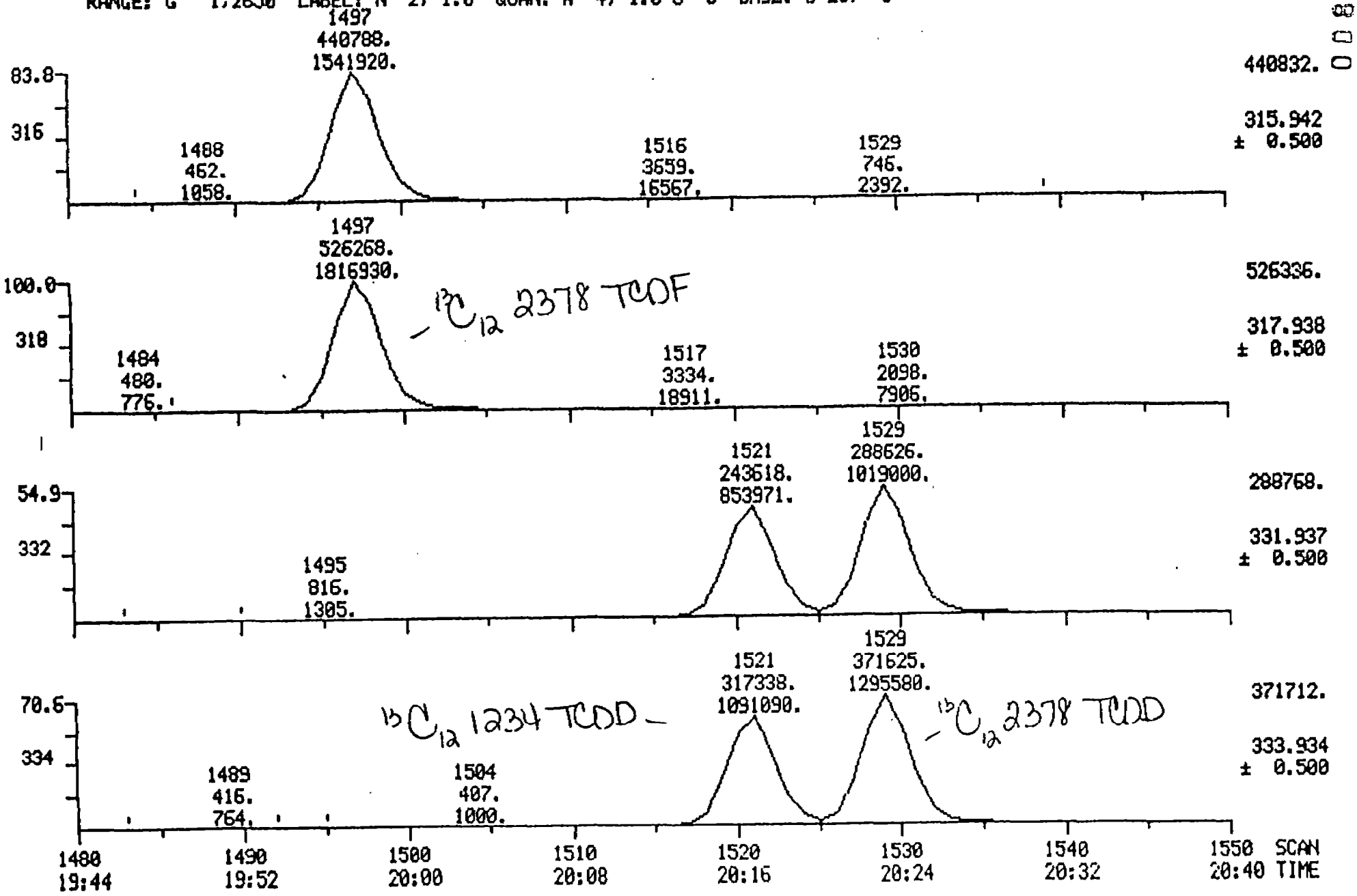


0084

MIDMASS CHROMATOGRAMS
09/21/94 19:46:00
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2650 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092113 #1
CALI: Z092113 #3

SCANS 1480 TO 1550



$^{13}C_{12}$ 2378 TCDF

$^{13}C_{12}$ 1234 TCDD

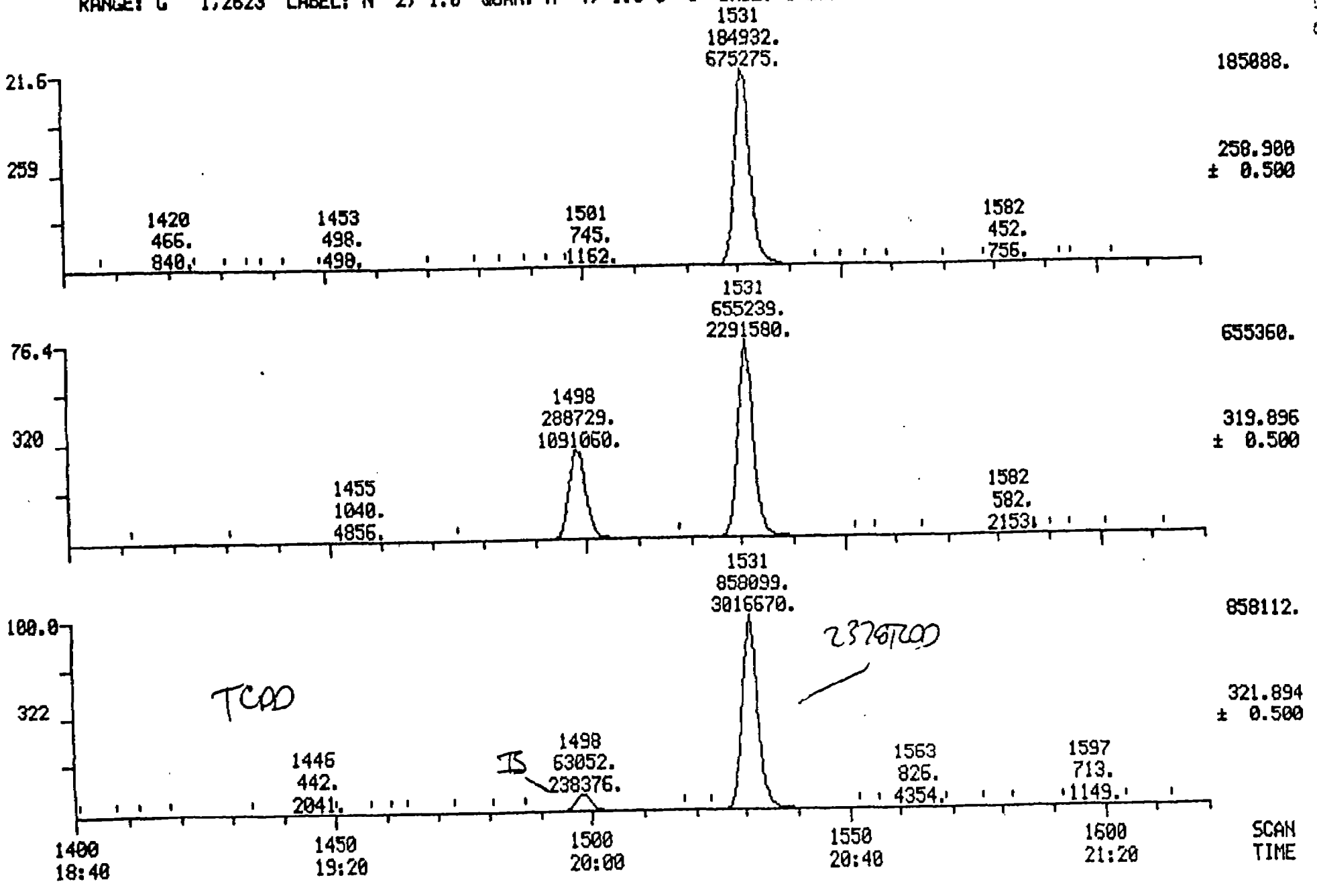
$^{13}C_{12}$ 2378 TCDD

0085

MIDMASS CHROMATOGRAMS
09/22/94 10:58:00
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZ1, OTOFN1 (AS)
RANGE: G 1,2623 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092206 #1
CALI: Z092206 #3

SCANS 1400 TO 1620



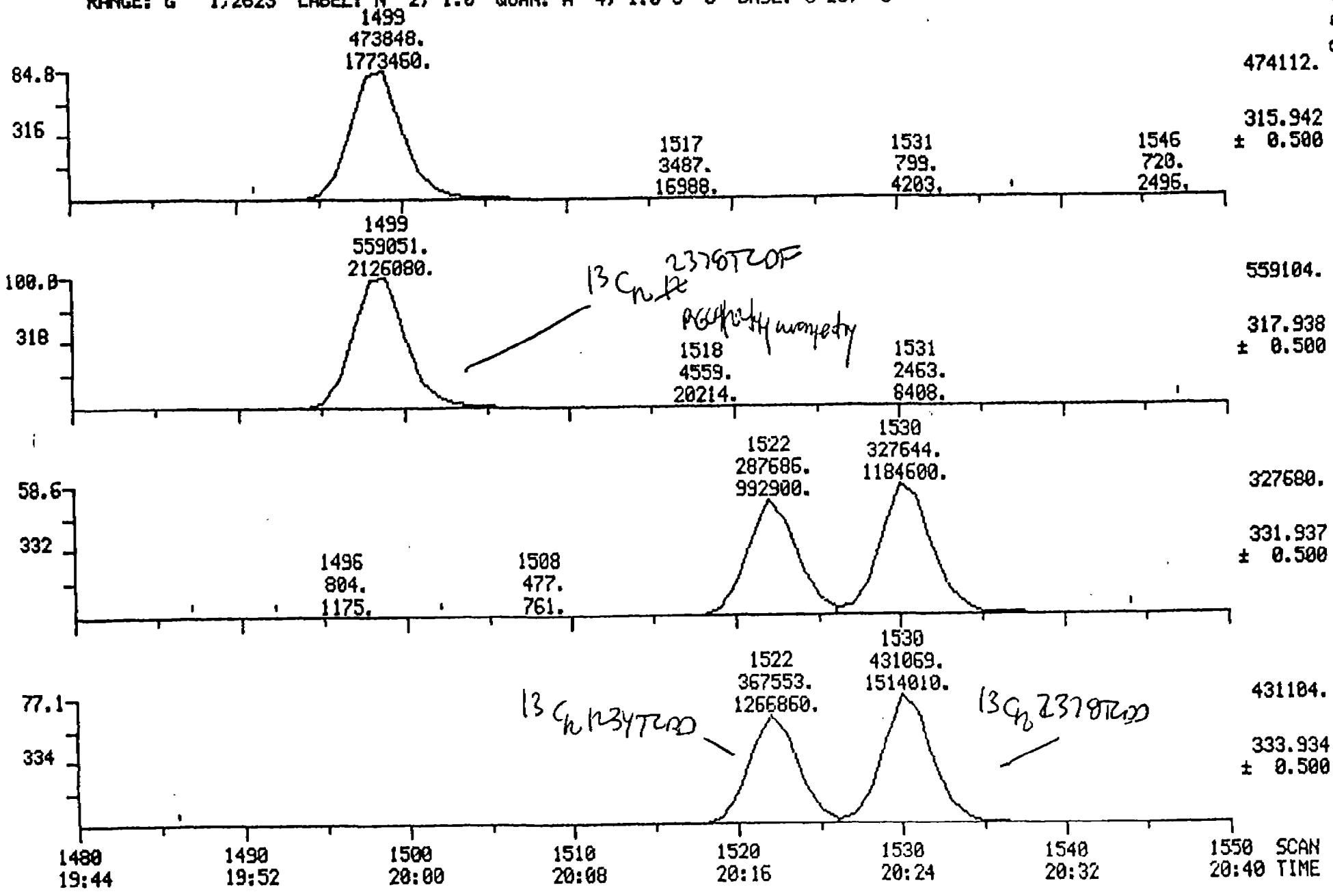
0086

MIDMASS CHROMATOGRAMS
09/22/94 10:58:00
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZ1, OTDFN1 (AS)
RANGE: G 1,2623 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z092206 #1
CALI: Z092206 #3

SCANS 1480 TO 1550

0087



5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z111828
End Lab File ID : Z111901
Date Analyzed : 11/19/94
Date Analyzed : 11/19/94
Time Analized : 3:50:00
Time Analyzed : 14:58:00
Analyst (1) : JDL
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.80	0.77	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.80	0.76	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.80	0.79	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.79	0.80	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.63	0.63	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.63	0.62	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.81	0.79	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.81	0.79	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.78	0.78	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.79	0.78	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.96	0.96	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.97	0.98	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.99	0.96	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.88	0.86	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z111828
End Lab File ID : Z111901
Date Analyzed : 11/19/94
Date Analyzed : 11/19/94
Time Analized : 3:50:00
Time Analyzed : 14:58:00
Analyst (1) : JDL
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.75	0.75	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.73	0.77	0.65 - 0.89
13C12-2.3,7,8-Tetra CDF	316 / 318	0.79	0.79	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.65	0.70	0.55 - 0.75
1,2,3.8.9-Penta CDF	342 / 340	0.64	0.62	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.81	0.79	0.69 - 0.93
1,2,3,4,8.9-Hexa CDF	376 / 374	0.79	0.77	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.94	0.87	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.90	0.91	0.83 - 1.12
13C12-1.2.3.4,6,7,8-Hepta CDF	422 / 420	0.94	0.92	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.89	0.88	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/PCDF CCC	PCDD/PCDF CC3	Z111830	11/19/94	5:14:00
Soil Blank	94LS0105-MB1	Z111833	11/19/94	7:19:00

7DFA
PCDD/PCDF CONTINUING CALIBRATION SUMMARY

Lab Name: Roy F. Weston, Inc, Lionville W.O. # : 06629-001-048-9999-00

Client: BAKER ENVIRONMENTAL RFW Lot: 9411L982

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Date Analyzed: 11/19/94 Time Analyzed: 5:14:00

CCL Lab File ID: Z111830 Init. Calib. Date(s): 09/21/94 09/22/94

NATIVE ANALYTES	SELECTED IONS	RRF	MEAN RRF	%D	RRF FLAG	ION RATIO	ION FLAG	QC LIMITS
2378-TCDD	320/322	1.055	1.101	4.2		0.79		0.65-0.89
2378-TCDF	304/306	1.032	1.135	9.1		0.73		0.65-0.89
12378-PeCDF	342/340	0.864	0.907	4.8		0.64		0.55-0.75
12378-PeCDD	358/356	0.812	0.876	7.3		0.65		0.55-0.75
23478-PeCDF	342/340	0.891	0.922	3.4		0.65		0.55-0.75
123478-HxCDF	376/374	1.137	1.033	-10.0		0.81		0.69-0.93
123678-HxCDF	376/374	1.213	1.128	-7.5		0.80		0.69-0.93
123478-HxCDD	392/390	0.965	0.969	0.4		0.77		0.69-0.93
123678-HxCDD	392/390	1.038	1.126	7.8		0.79		0.69-0.93
123789-HxCDD	392/390	1.044	1.118	6.6		0.80		0.69-0.93
234678-HxCDF	376/374	1.097	0.999	-9.8		0.80		0.69-0.93
123789-HxCDF	376/374	1.031	0.925	-11.4		0.79		0.69-0.93
1234678-HpCDF	410/408	1.025	1.093	6.2		0.92		0.83-1.12
1234678-HpCDD	426/424	0.925	1.030	10.2		0.98		0.83-1.12
1234789-HpCDF	410/408	0.923	0.903	-2.2		0.90		0.83-1.12
OCDD	458/460	1.098	1.135	3.3		1.00		0.75-1.01
OCDF	442/444	1.301	1.143	-13.8		0.89		0.75-1.01
INTERNAL STANDARDS vs. RECOVERY STDS.								
13C-2378-TCDD	332/334	1.110	1.152	3.6		0.79		0.65-0.89
13C-2378-TCDF	316/318	1.650	1.694	2.6		0.79		0.65-0.89
13C-123678-HxCDD	404/402	0.922	0.939	1.8		0.80		0.69-0.93
13C-1234678-HpCDF	422/420	1.220	1.432	14.8		0.94		0.83-1.12
13C-OCDD	470/472	0.806	1.089	26.0		0.85		0.75-1.01
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.80		0.65-0.89
13C-123789-HxCDD	404/402	NA	NA	NA	NA	0.80		0.69-0.93

QC limits shown are for ion abundance ratios.

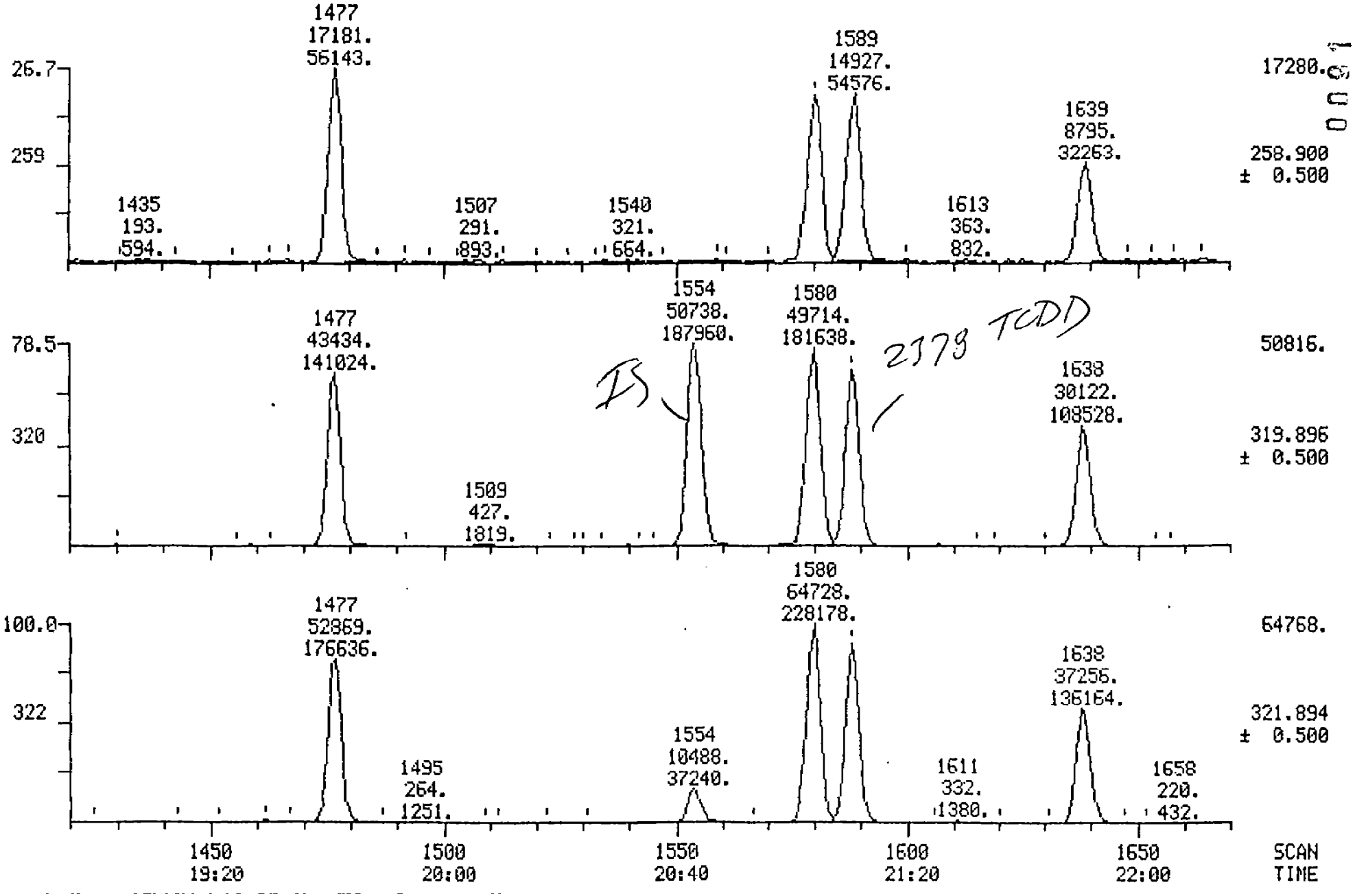
Maximun %D for RRF is +/- 30.0%

The laboratory must flag any analyte which does not meet criteria for %D or ion abundance ratio by placing an asterisk in the appropriate flag column.

MIDMASS CHROMATOGRAMS
11/19/94 3:50:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111828 #1
CALI: Z111828 #3

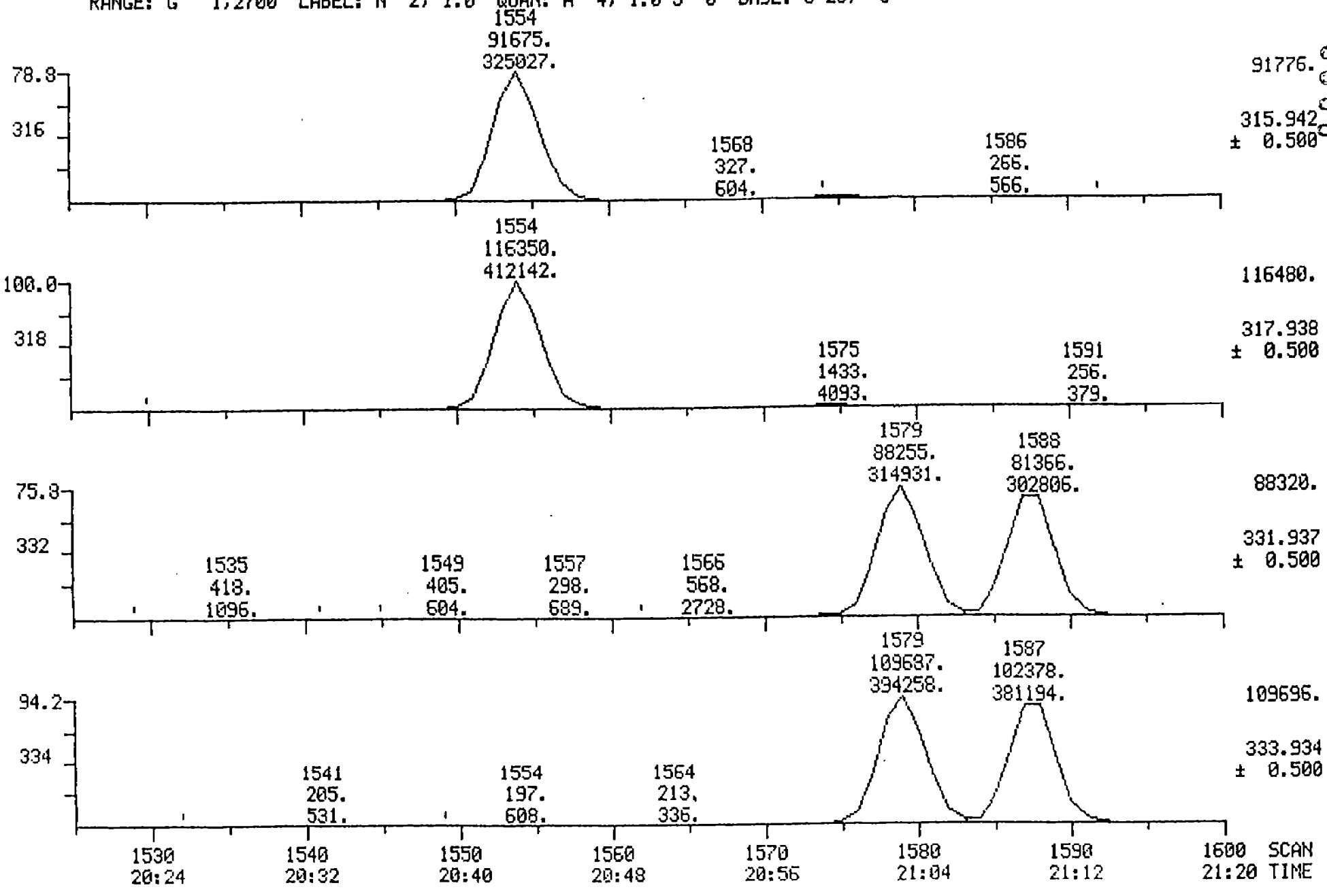
SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS
11/19/94 3:50:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

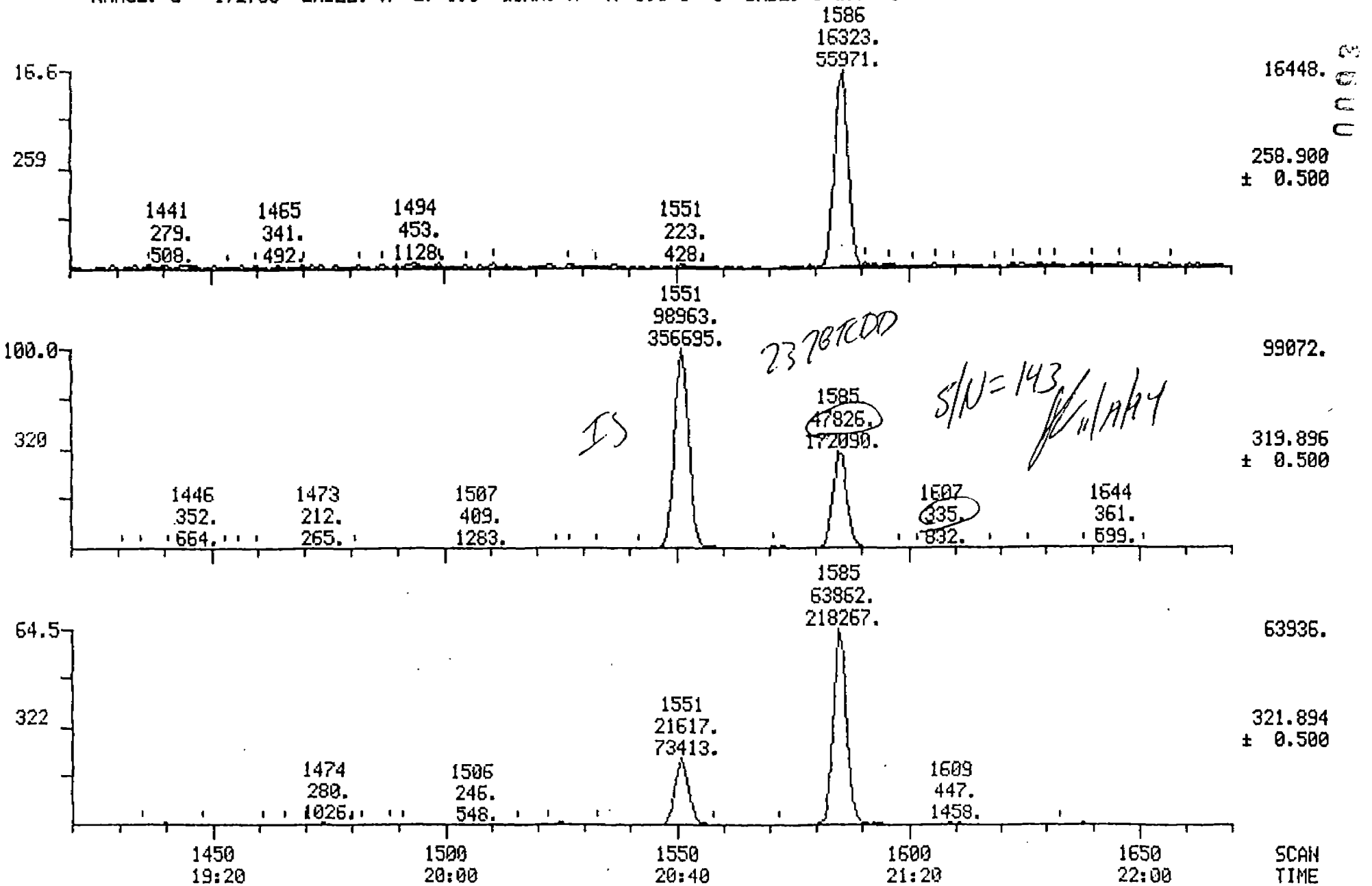
DATA: Z111828 #1
CALI: Z111828 #3

SCANS 1525 TO 1600



0082

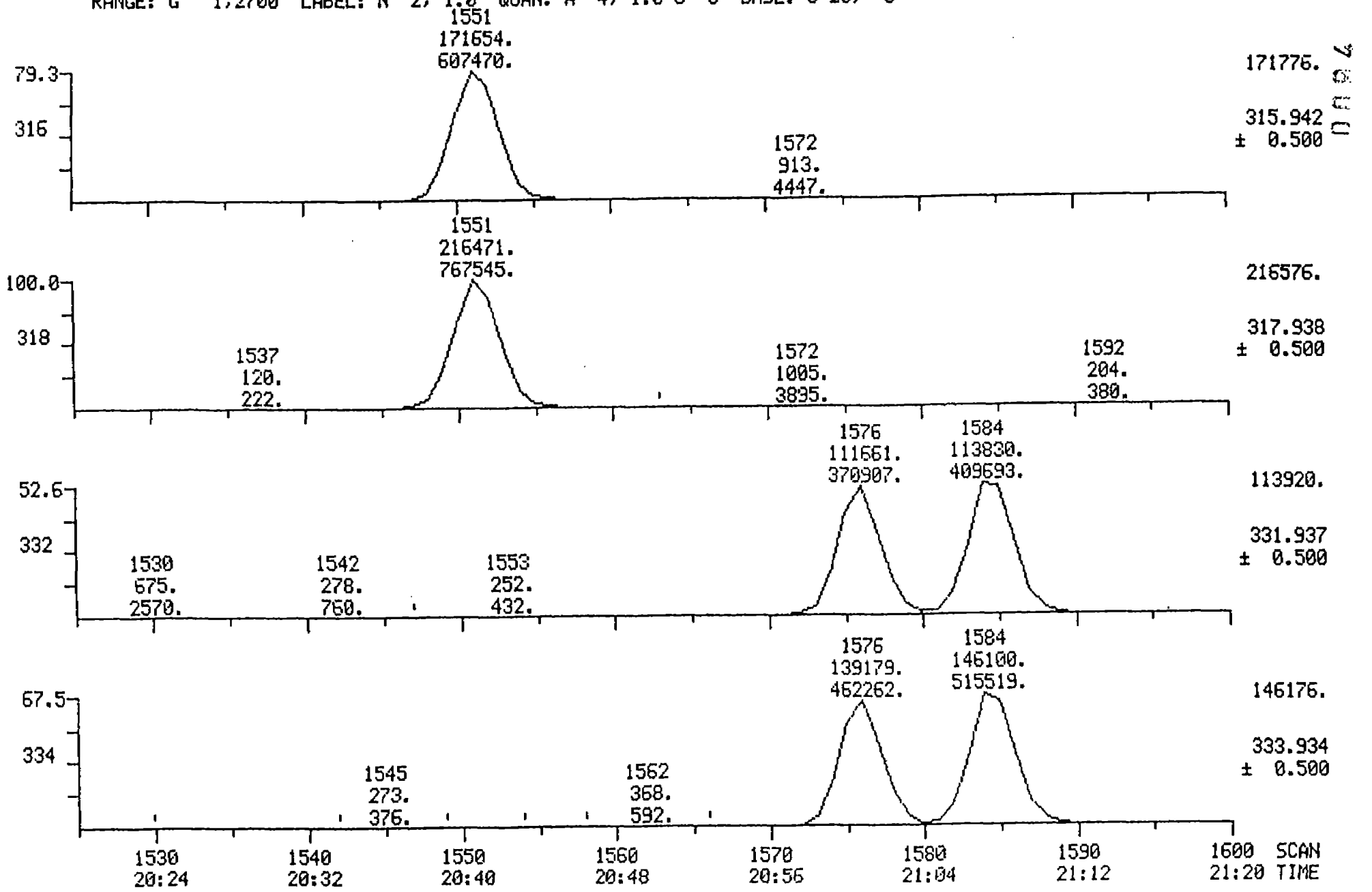
MIDMASS CHROMATOGRAMS DATA: Z111830 #1 SCANS 1420 TO 1670
11/19/94 5:14:00 CALI: Z111830 #3
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



MIDMASS CHROMATOGRAMS
11/19/94 5:14:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111830 #1
CALI: Z111830 #3

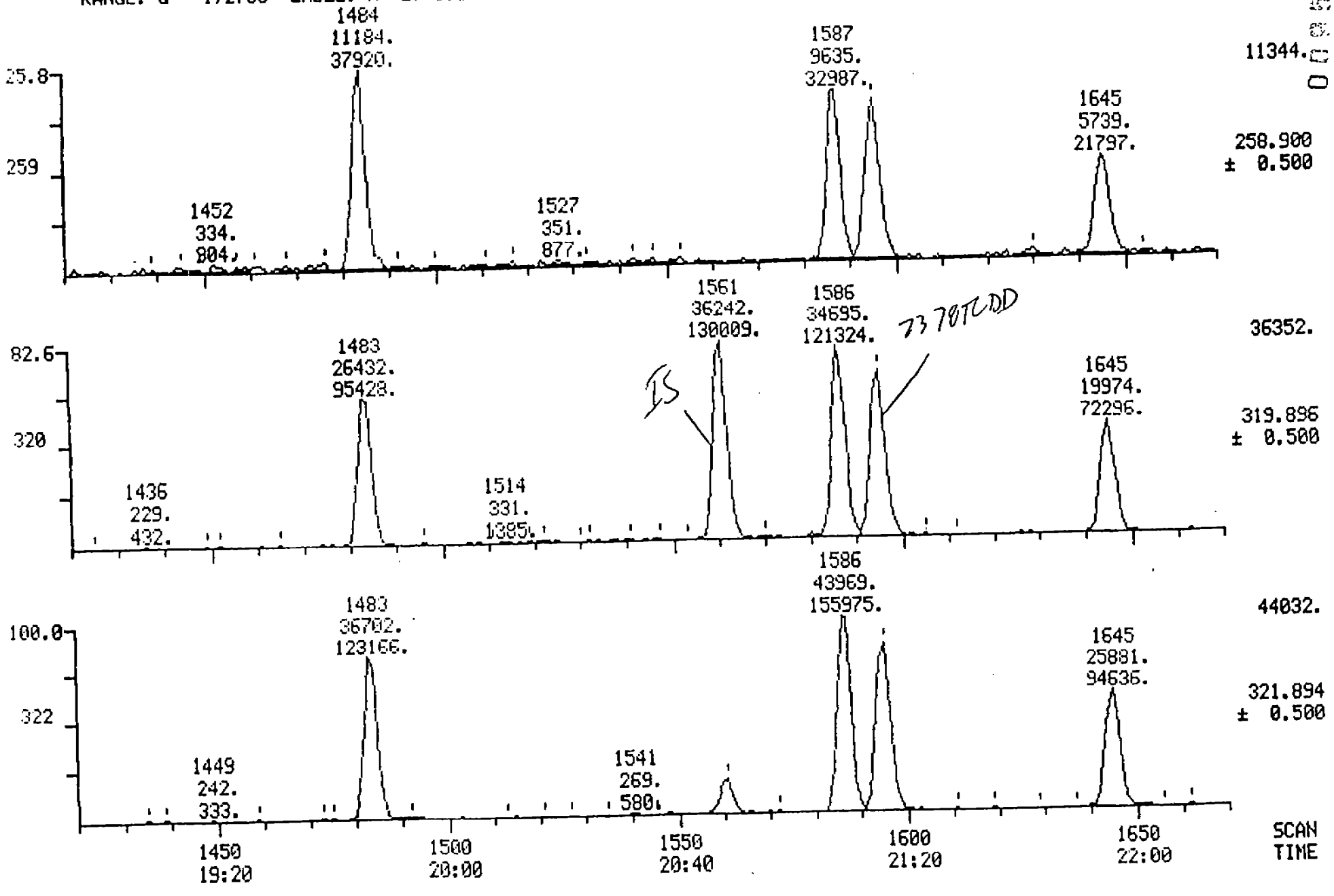
SCANS 1525 TO 1600



MIDMASS CHROMATOGRAMS
11/19/94 14:58:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111901 #1
CALI: Z111901 #3

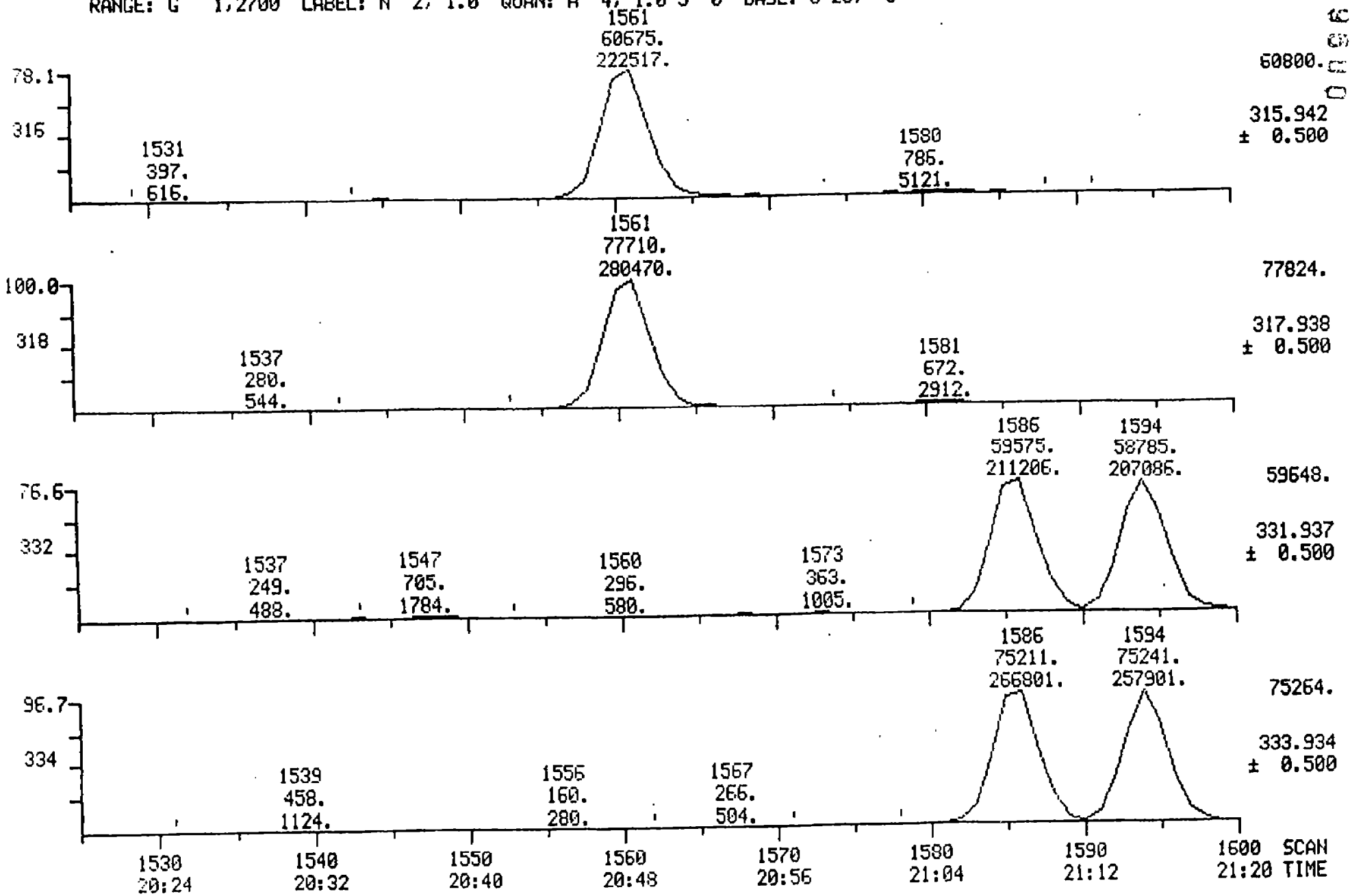
SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS
11/19/94 14:58:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111901 #1
CALI: Z111901 #3

SCANS 1525 TO 1600



5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z111916
End Lab File ID : Z111932
Date Analyzed : 11/20/94
Date Analyzed : 11/20/94
Time Analized : 1:34:00
Time Analyzed : 12:50:00
Analyst (1) : JDL
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.78	0.77	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.76	0.77	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.81	0.82	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.80	0.81	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.63	0.60	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.59	0.57	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.79	0.79	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.79	0.79	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.80	0.78	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.81	0.78	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.94	0.94	0.83 - 1.12
1,2,3,4,6,7:8-Hepta CDD	426 / 424	0.96	0.95	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.85	0.83	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.91	0.89	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z111916
End Lab File ID : Z111932
Date Analyzed : 11/20/94
Date Analyzed : 11/20/94
Time Analized : 1:34:00
Time Analyzed : 12:50:00
Analyst (1) : JDL
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.77	0.75	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.77	0.78	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.79	0.82	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.62	0.67	0.55 - 0.75
1,2,3,8,9-Penta CDF	342 / 340	0.64	0.62	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.77	0.78	0.69 - 0.93
1,2,3,4,8,9-Hexa CDF	376 / 374	0.78	0.78	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.97	0.97	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.94	0.93	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.93	0.94	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.93	0.93	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/PCDF CCC	PCDD/PCDF CC3	Z111918	11/20/94	2:59:00
Soil Blank Spike	94LS0105-MB1S	Z111931	11/20/94	12:08:00

7DFA

PCDD/PCDF CONTINUING CALIBRATION SUMMARY

Lab Name: Roy F. Weston, Inc, Lionville W.O. # : 06629-001-048-9999-00

Client: BAKER ENVIRONMENTAL RFW Lot: 9411L982

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Date Analyzed: 11/20/94 Time Analyzed: 2:59:00

CCL Lab File ID: Z111918 Init. Calib. Date(s): 09/21/94 09/22/94

NATIVE ANALYTES	SELECTED IONS	RRF	MEAN RRF	%D	RRF FLAG	ION RATIO	ION FLAG	QC LIMITS
2378-TCDD	320/322	1.101	1.101	-0.0		0.77		0.65-0.89
2378-TCDF	304/306	1.080	1.135	4.8		0.78		0.65-0.89
12378-PeCDF	342/340	0.811	0.907	10.6		0.66		0.55-0.75
12378-PeCDD	358/356	0.834	0.876	4.8		0.59		0.55-0.75
23478-PeCDF	342/340	0.827	0.922	10.3		0.63		0.55-0.75
123478-HxCDF	376/374	1.131	1.033	-9.5		0.80		0.69-0.93
123678-HxCDF	376/374	1.224	1.128	-8.5		0.80		0.69-0.93
123478-HxCDD	392/390	0.958	0.969	1.1		0.78		0.69-0.93
123678-HxCDD	392/390	1.072	1.126	4.8		0.77		0.69-0.93
123789-HxCDD	392/390	1.080	1.118	3.4		0.78		0.69-0.93
234678-HxCDF	376/374	1.098	0.999	-9.9		0.78		0.69-0.93
123789-HxCDF	376/374	1.033	0.925	-11.7		0.79		0.69-0.93
1234678-HpCDF	410/408	1.047	1.093	4.2		0.96		0.83-1.12
1234678-HpCDD	426/424	0.983	1.030	4.5		0.98		0.83-1.12
1234789-HpCDF	410/408	0.948	0.903	-5.0		0.96		0.83-1.12
OCDD	458/460	1.041	1.135	8.3		0.83		0.75-1.01
OCDF	442/444	1.139	1.143	0.4		0.95		0.75-1.01
INTERNAL STANDARDS vs. RECOVERY STDS.								
13C-2378-TCDD	332/334	1.112	1.152	3.5		0.79		0.65-0.89
13C-2378-TCDF	316/318	1.760	1.694	-3.9		0.80		0.65-0.89
13C-123678-HxCDD	404/402	0.926	0.939	1.4		0.80		0.69-0.93
13C-1234678-HpCDF	422/420	1.258	1.432	12.2		0.94		0.83-1.12
13C-OCDD	470/472	0.975	1.089	10.5		0.91		0.75-1.01
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.81		0.65-0.89
13C-123789-HxCDD	404/402	NA	NA	NA	NA	0.80		0.69-0.93

QC limits shown are for ion abundance ratios.

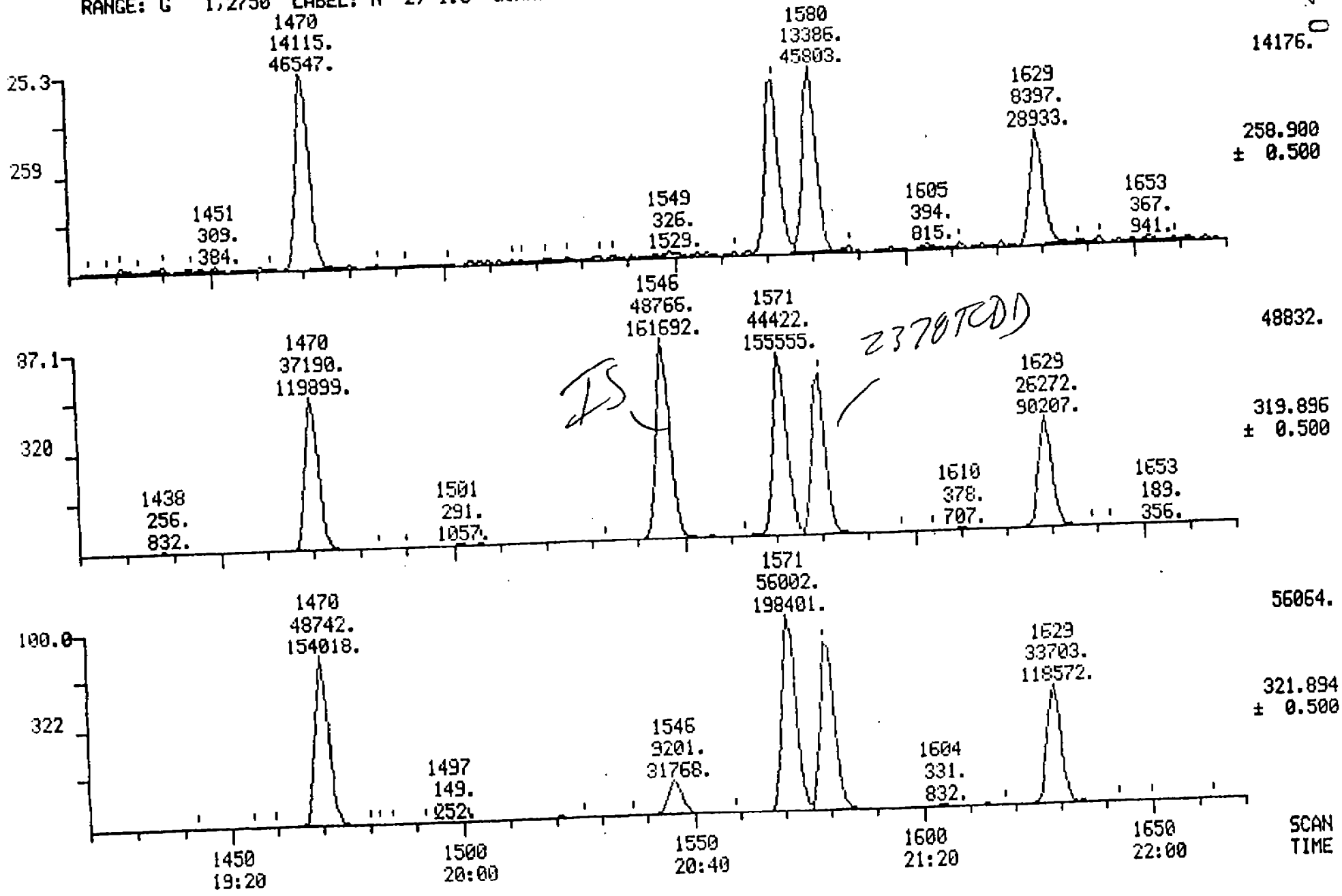
Maximun %D for RRF is +/- 30.0%

The laboratory must flag any analyte which does not meet criteria for %D or ion abundance ratio by placing an asterisk in the appropriate flag column.

MIDMASS CHROMATOGRAMS
11/20/94 1:34:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111916 #1
CALI: Z111916 #1

SCANS 1420 TO 1670

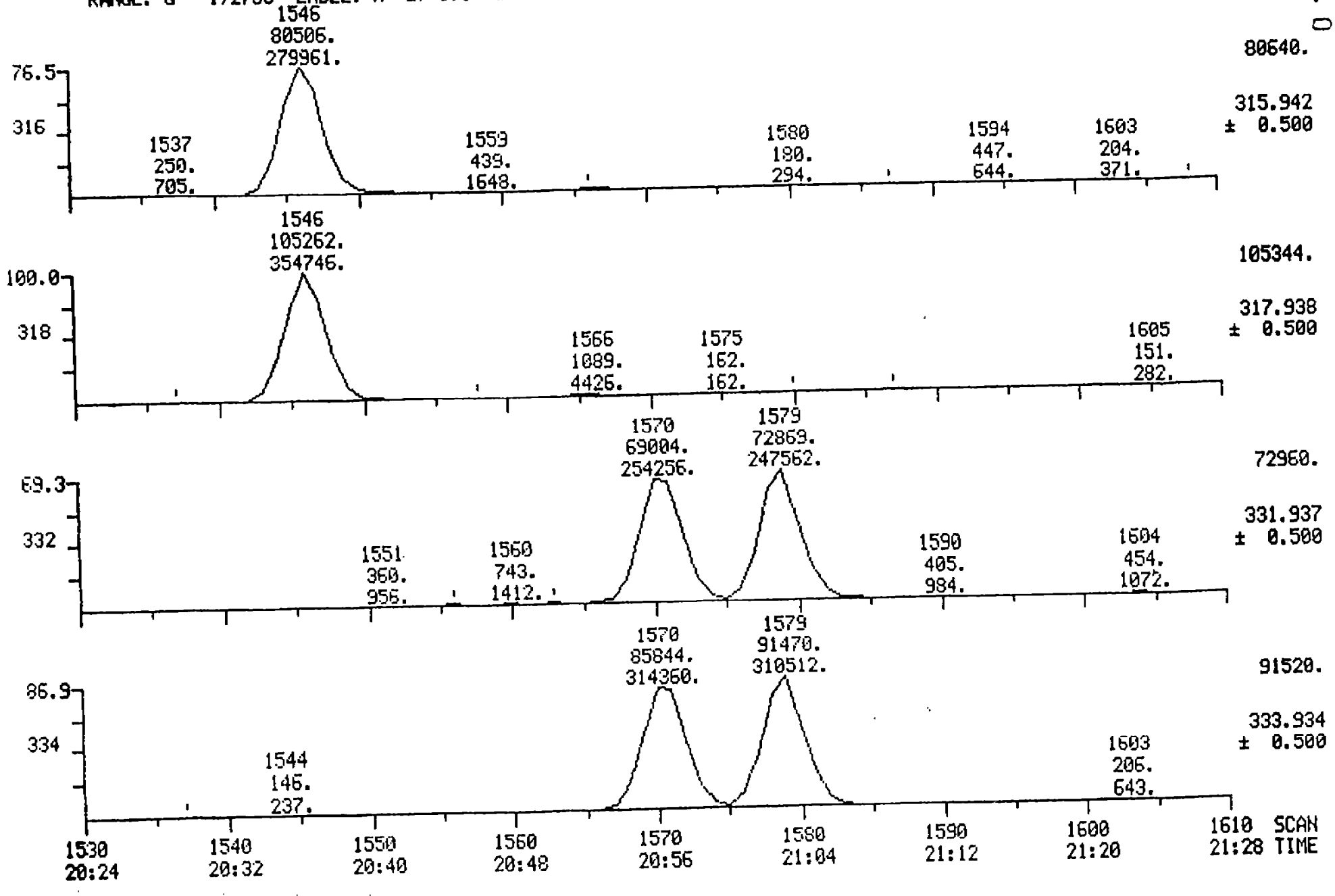


MIDMASS CHROMATOGRAMS
11/20/94 1:34:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111916 #1
CALI: Z111916 #1

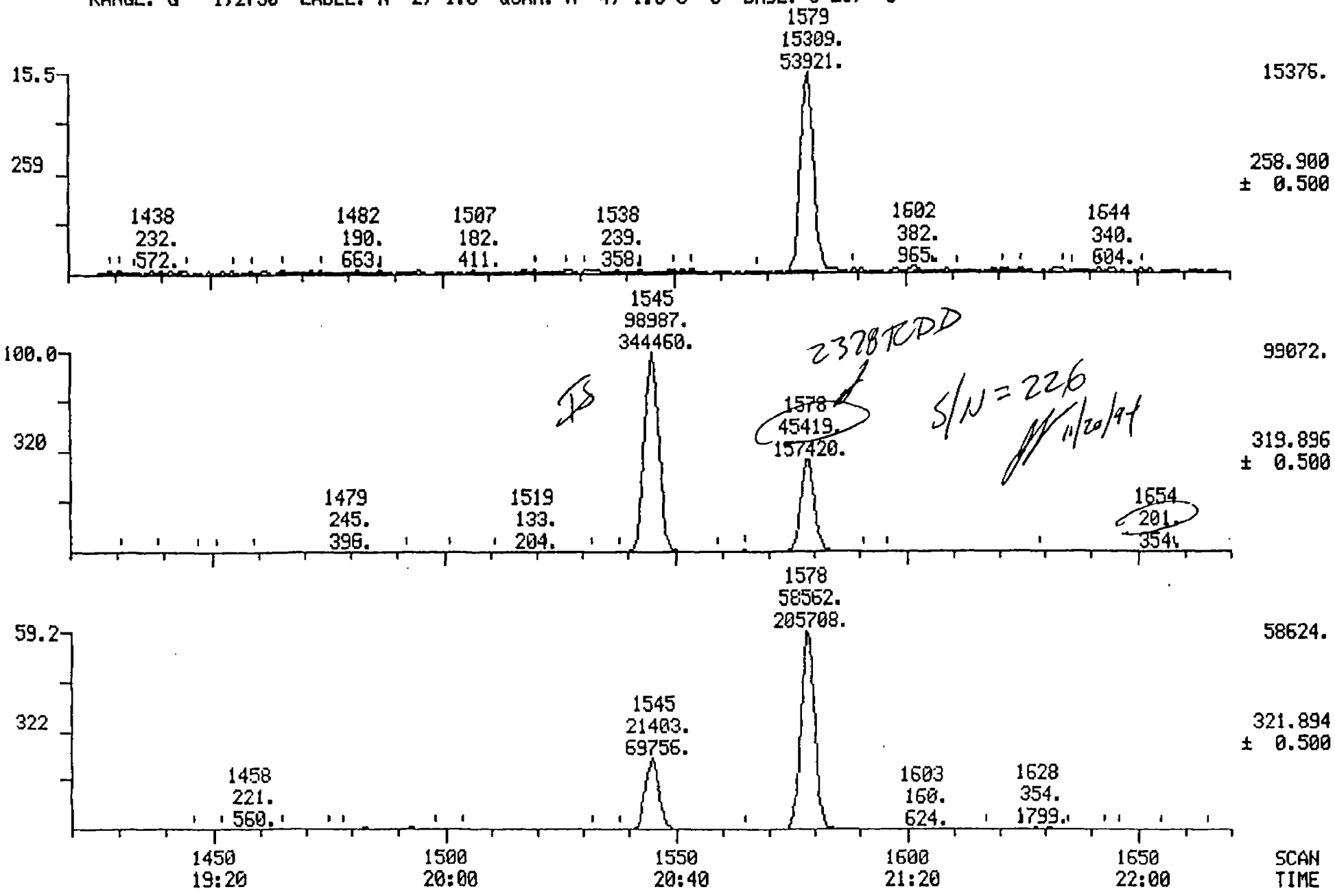
SCANS 1530 TO 1610

0101



MIDMASS CHROMATOGRAMS DATA: Z111918 #1 SCANS 1420 TO 1670
11/20/94 2:59:00 CALI: Z111918 #1
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

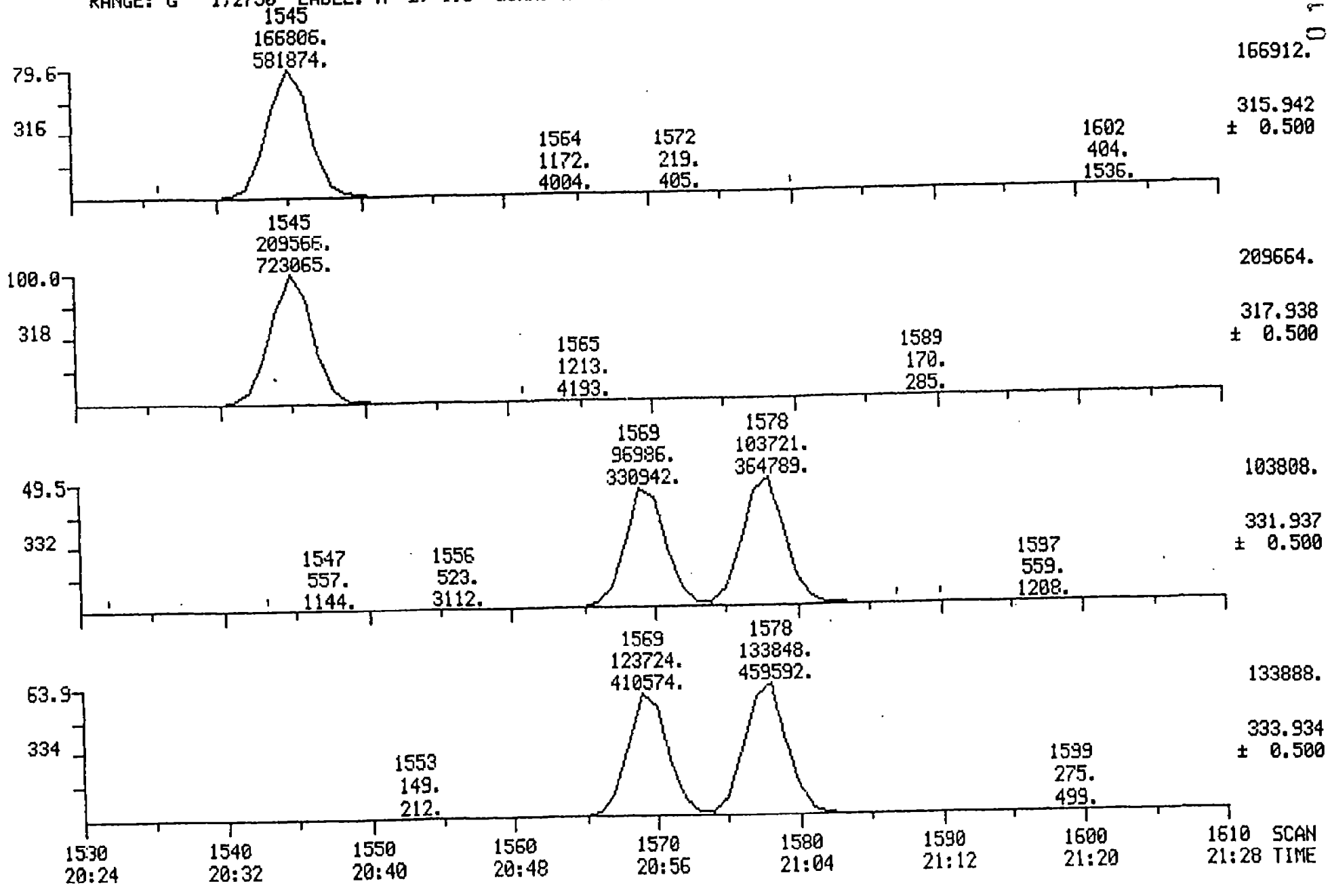
0102



MIDMASS CHROMATOGRAMS
11/20/94 2:59:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111918 #1
CALI: Z111918 #1

SCANS 1530 TO 1610

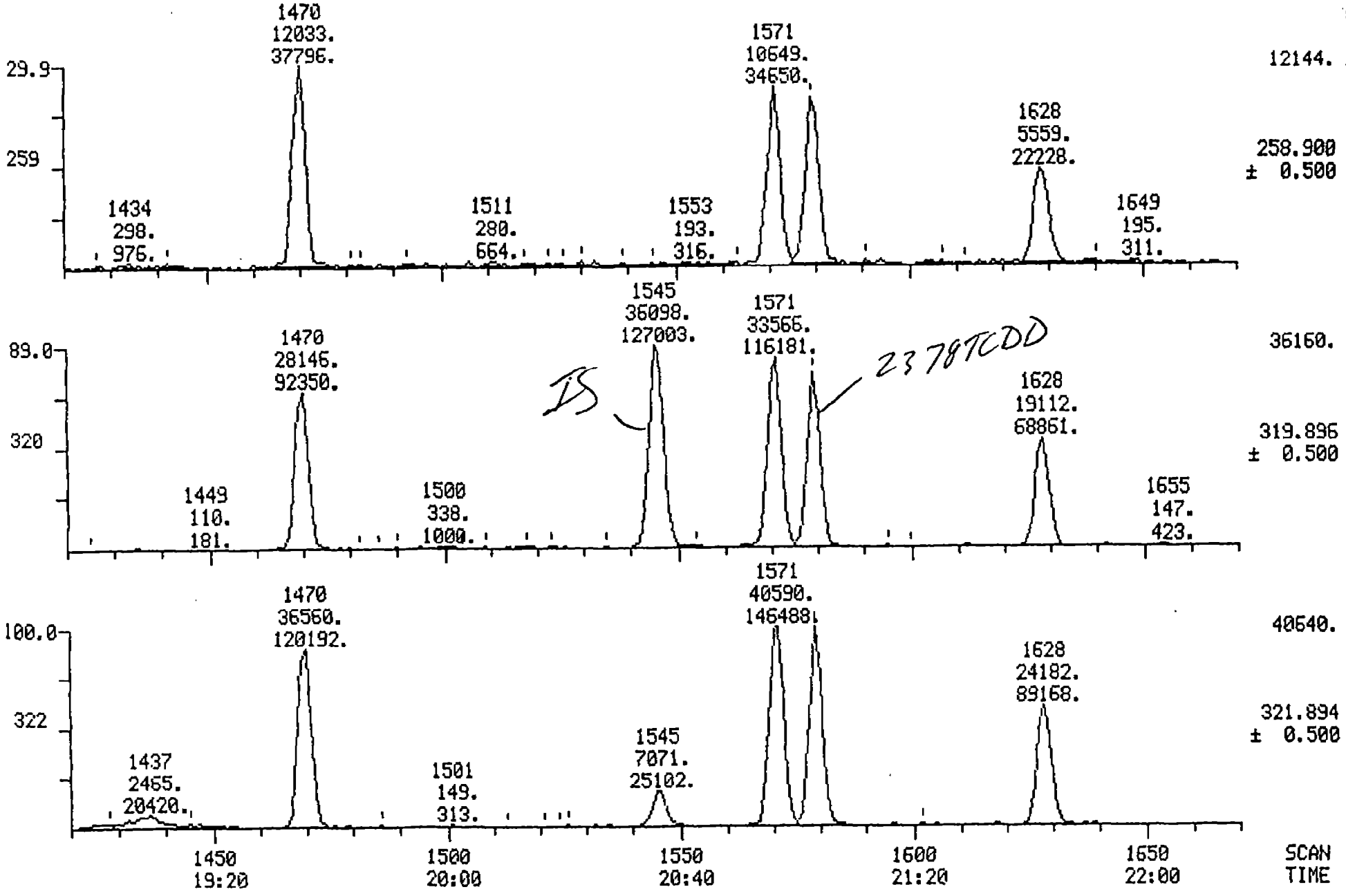


0103

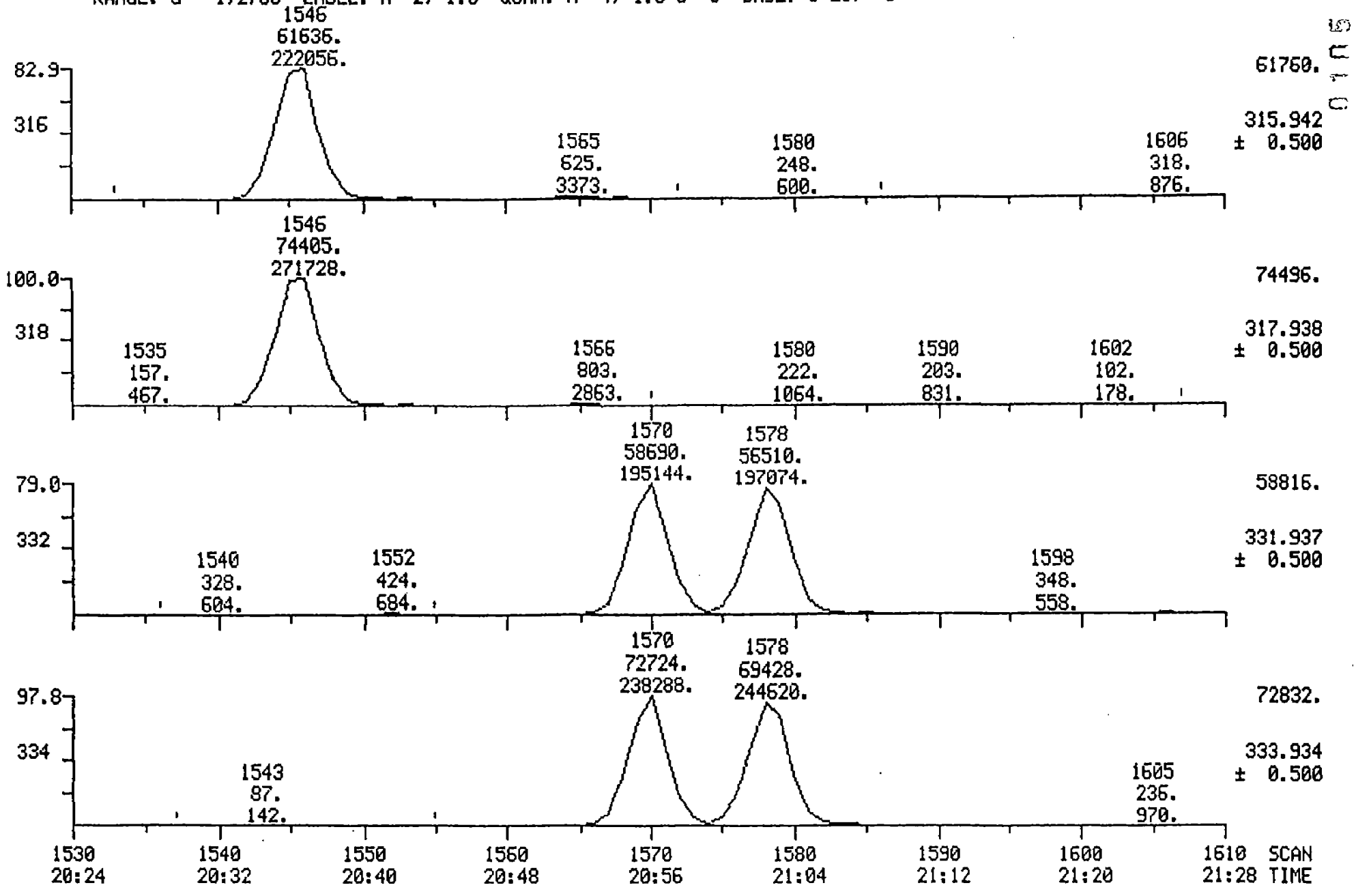
MIDMASS CHROMATOGRAMS
11/20/94 12:50:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111932 #1
CALI: Z111932 #1

SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS DATA: Z111932 #1 SCANS 1530 TO 1610
11/20/94 12:50:00 CALI: Z111932 #1
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z112101
End Lab File ID : Z112115
Date Analyzed : 11/21/94
Date Analyzed : 11/21/94
Time Analized : 8:09:00
Time Analyzed : 19:21:00
Analyst (1) : RGC
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.77	0.75	0.65 - 0.89
1.2,8,9-Tetra CDD	320 / 322	0.76	0.77	0.65 - 0.89
13C12-1.2.3,4-Tetra CDD	332 / 334	0.81	0.80	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.81	0.79	0.65 - 0.89
1.2,4,6.8/1,2,4.7,9-Penta CDD	358 / 356	0.62	0.62	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.59	0.62	0.55 - 0.75
1,2,4,6.7,9/1,2,4,6.8,9-Hexa CDD	392 / 390	0.80	0.81	0.69 - 0.93
1.2.3.4.6.7-Hexa CDD	392 / 390	0.77	0.83	0.69 - 0.93
13C12-1.2.3.6,7,8-Hexa CDD	404 / 402	0.80	0.80	0.69 - 0.93
13C12-1.2,3,7,8,9-Hexa CDD	404 / 402	0.79	0.78	0.69 - 0.93
1.2.3.4.6,7,9-Hepta CDD	426 / 424	0.97	0.98	0.83 - 1.12
1,2.3.4.6.7.8-Hepta CDD	426 / 424	1.00	0.91	0.83 - 1.12
1.2.3.4.6.7.8.9-Octa CDD	458 / 460	0.85	0.91	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.93	0.90	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville
W.O. # : 06629-001-048-9999-00
Client : BAKER ENVIRONMENTAL
Instrument ID: 4600Z
Beginning Lab File ID : Z112101
End Lab File ID : Z112115
Date Analyzed : 11/21/94
Date Analyzed : 11/21/94
Time Analized : 8:09:00
Time Analyzed : 19:21:00
Analyst (1) : RGC
Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.76	0.75	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.75	0.77	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.81	0.81	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.63	0.63	0.55 - 0.75
1,2,3,8,9-Penta CDF	342 / 340	0.64	0.61	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.81	0.80	0.69 - 0.93
1,2,3,4,8,9-Hexa CDF	376 / 374	0.81	0.82	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.97	0.95	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.93	0.95	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.96	0.94	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.95	0.94	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/PCDF CCL	PCDD/PCDF CC3	Z112102	11/21/94	8:52:00
AB03	9411L982-001	Z112104	11/21/94	10:28:00
AB08	9411L982-002	Z112106	11/21/94	11:53:00
AB05	9411L982-003	Z112107	11/21/94	12:35:00
AB03 Replicate	9411L982-001R	Z112108	11/21/94	13:17:00

7DFA

PCDD/PCDF CONTINUING CALIBRATION SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 06629-001-048-9999-00

Client: BAKER ENVIRONMENTAL RFW Lot: 9411L982

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Date Analyzed: 11/21/94 Time Analyzed: 8:52:00

CCL Lab File ID: Z112102 Init. Calib. Date(s): 09/21/94 09/22/94

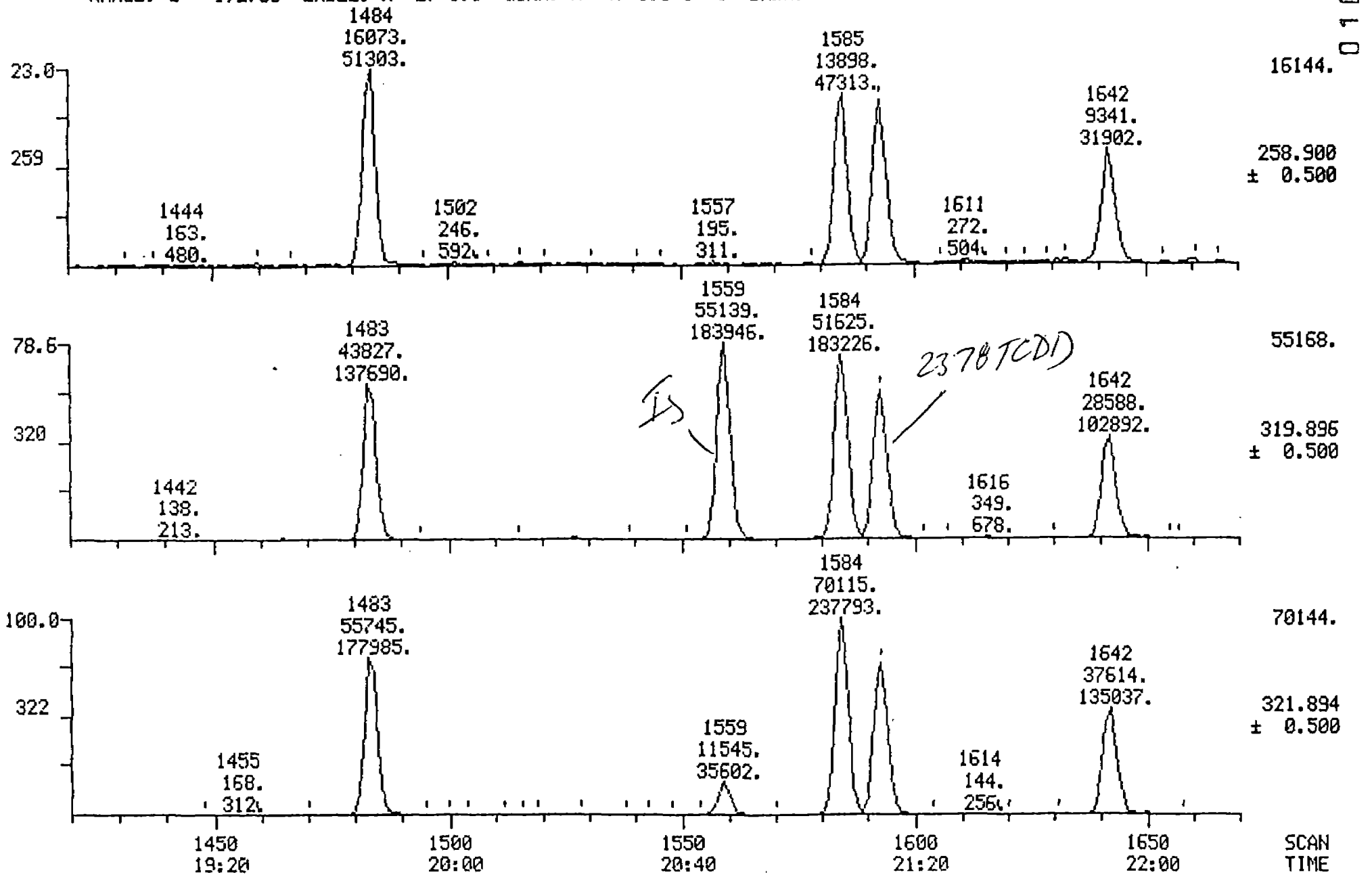
NATIVE ANALYTES	SELECTED IONS	RRF	MEAN RRF	%D	RRF FLAG	ION RATIO	ION FLAG	QC LIMITS
2378-TCDD	320/322	1.095	1.101	0.6		0.77		0.65-0.89
2378-TCDF	304/306	1.016	1.135	10.5		0.77		0.65-0.89
12378-PeCDF	342/340	0.823	0.907	9.3		0.61		0.55-0.75
12378-PeCDD	358/356	0.801	0.876	8.6		0.63		0.55-0.75
23478-PeCDF	342/340	0.824	0.922	10.7		0.64		0.55-0.75
123478-HxCDF	376/374	1.051	1.033	-1.7		0.82		0.69-0.93
123678-HxCDF	376/374	1.148	1.128	-1.8		0.81		0.69-0.93
123478-HxCDD	392/390	0.928	0.969	4.3		0.80		0.69-0.93
123678-HxCDD	392/390	1.025	1.126	9.0		0.80		0.69-0.93
123789-HxCDD	392/390	1.032	1.118	7.7		0.81		0.69-0.93
234678-HxCDF	376/374	1.013	0.999	-1.4		0.81		0.69-0.93
123789-HxCDF	376/374	0.930	0.925	-0.6		0.81		0.69-0.93
1234678-HpCDF	410/408	1.030	1.093	5.8		0.97		0.83-1.12
1234678-HpCDD	426/424	0.862	1.030	16.3		0.95		0.83-1.12
1234789-HpCDF	410/408	0.887	0.903	1.7		0.96		0.83-1.12
OCDD	458/460	1.084	1.135	4.5		0.86		0.75-1.01
OCDF	442/444	1.205	1.143	-5.4		0.93		0.75-1.01
INTERNAL STANDARDS vs. RECOVERY STDS.								
13C-2378-TCDD	332/334	1.123	1.152	2.5		0.79		0.65-0.8
13C-2378-TCDF	316/318	1.730	1.694	-2.1		0.79		0.65-0.8
13C-123678-HxCDD	404/402	0.935	0.939	0.5		0.80		0.69-0.9
13C-1234678-HpCDF	422/420	1.244	1.432	13.1		0.94		0.83-1.1
13C-OCDD	470/472	0.803	1.089	26.2		0.91		0.75-1.0
RECOVERY STANDARDS								
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.83		0.65-0.8
13C-123789-HxCDD	404/402	NA	NA	NA	NA	0.80		0.69-0.9

QC limits shown are for ion abundance ratios.

Maximun %D for RRF is +/- 30.0%

The laboratory must flag any analyte which does not meet criteria for %D or ion abundance ratio by placing an asterisk in the appropriate flag column.

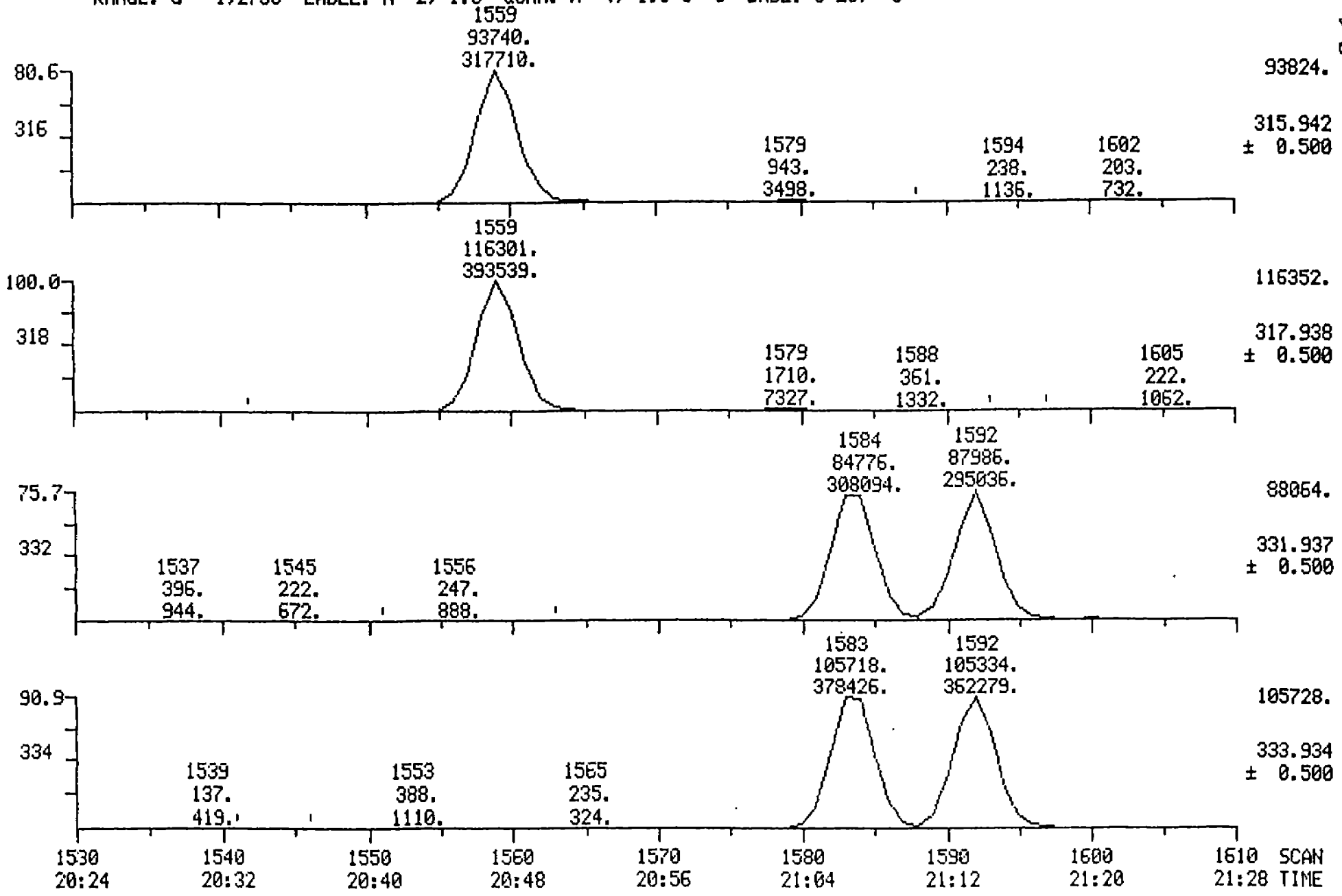
MIDMASS CHROMATOGRAMS DATA: Z112101 #1 SCANS 1420 TO 1670
11/21/94 8:09:00 CALI: Z112101 #1
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3



0109

MIDMASS CHROMATOGRAMS DATA: Z112101 #1 SCANS 1530 TO 1610
11/21/94 8:09:00 CALI: Z112101 #1
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

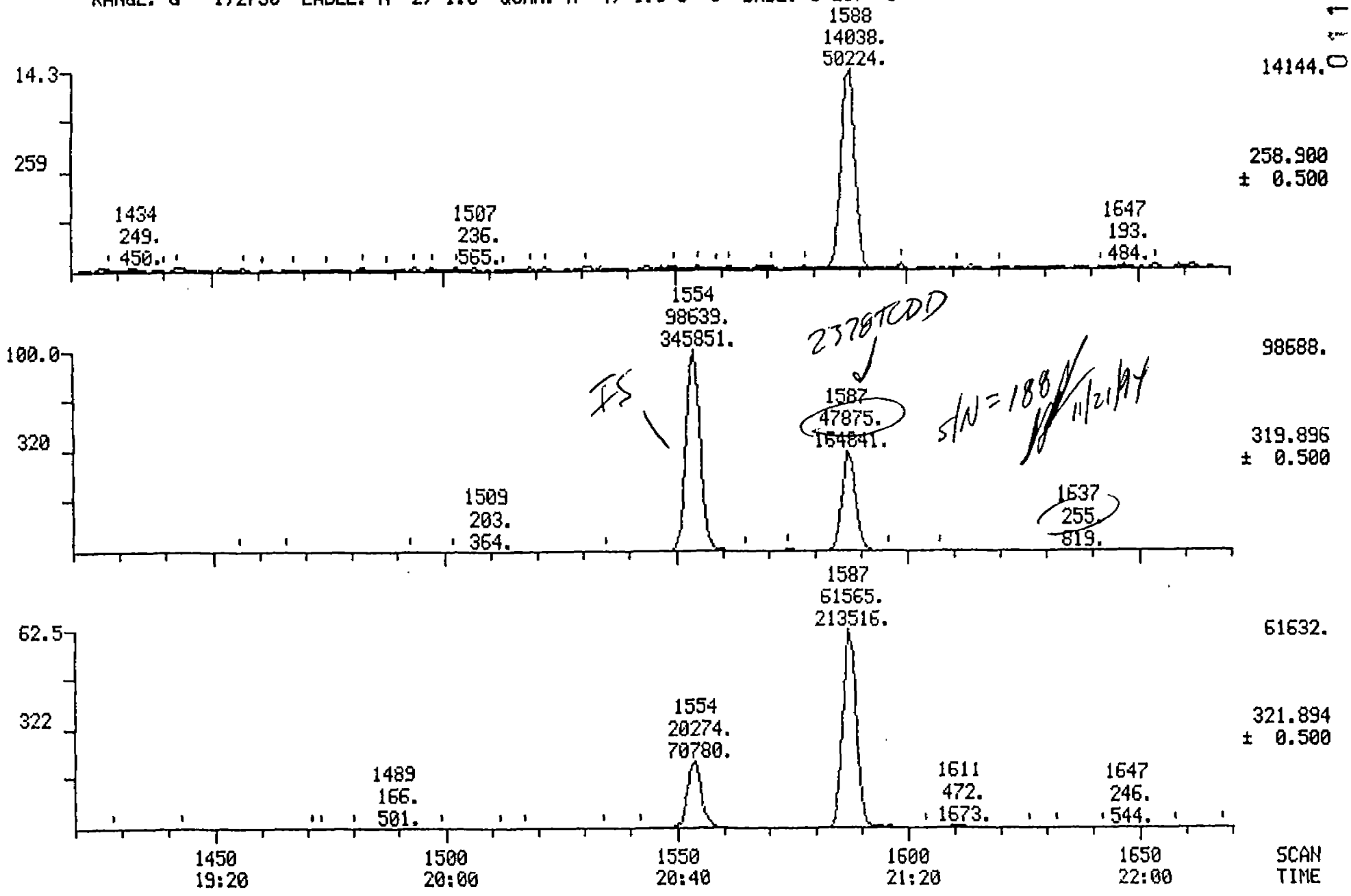
0110



MIDMASS CHROMATOGRAMS
11/21/94 8:52:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112102 #1
CALI: Z112102 #1

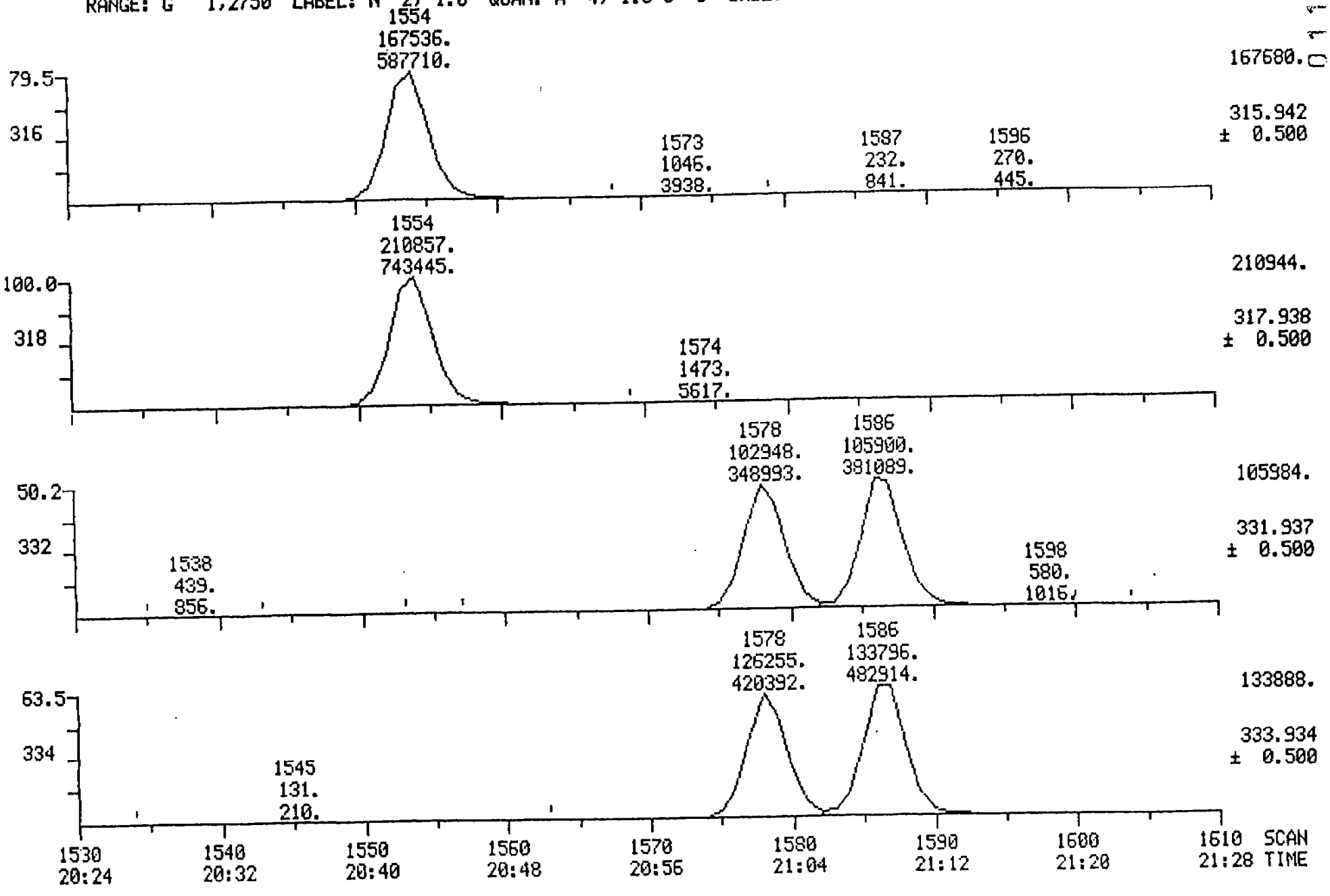
SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS
11/21/94 8:52:00
SAMPLE: PCDD/PCDF CC3
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112102 #1
CALI: Z112102 #1

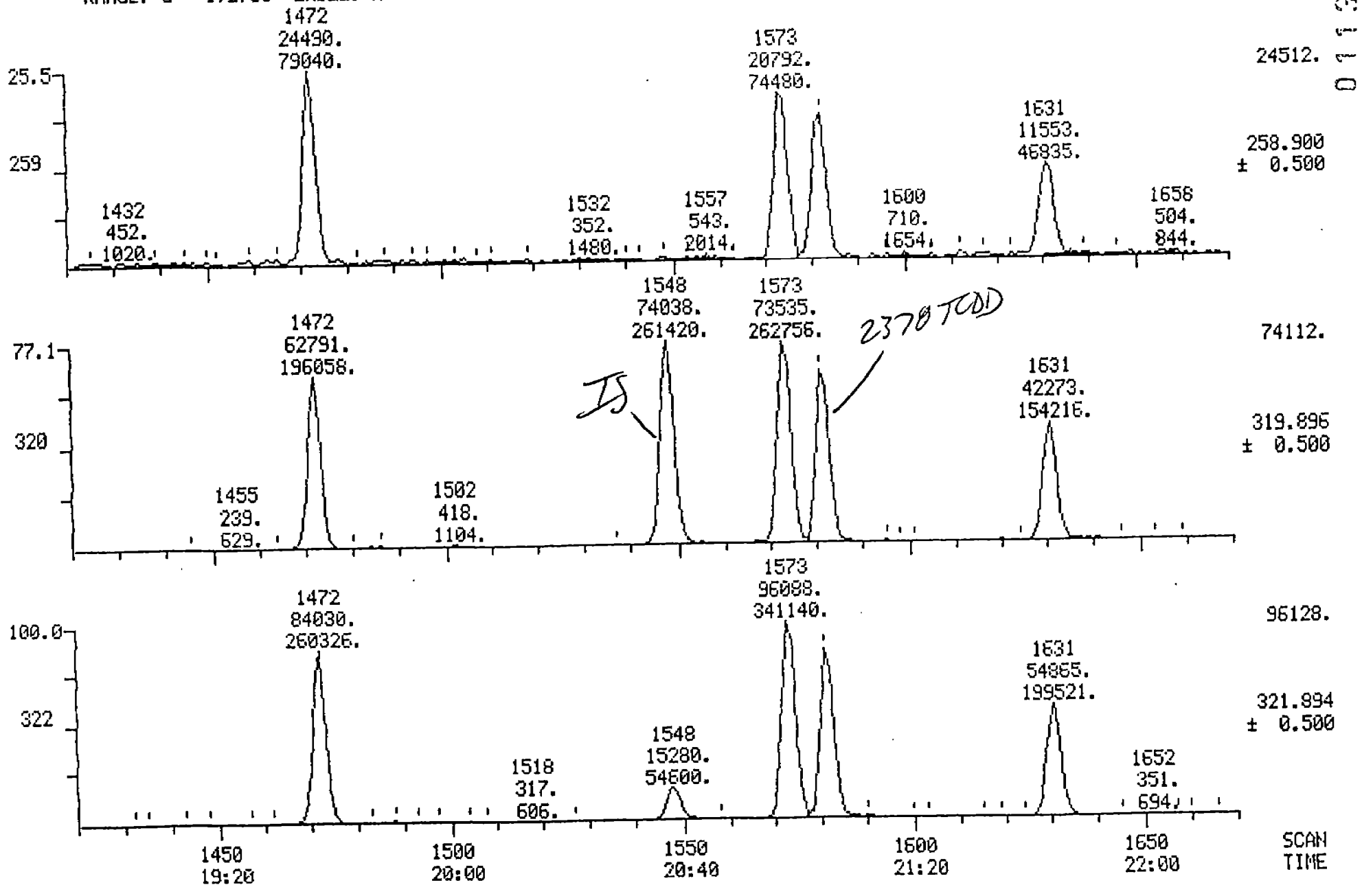
SCANS 1530 TO 1610



MIDMASS CHROMATOGRAMS
11/21/94 19:21:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112115 #1
CALI: Z112115 #1

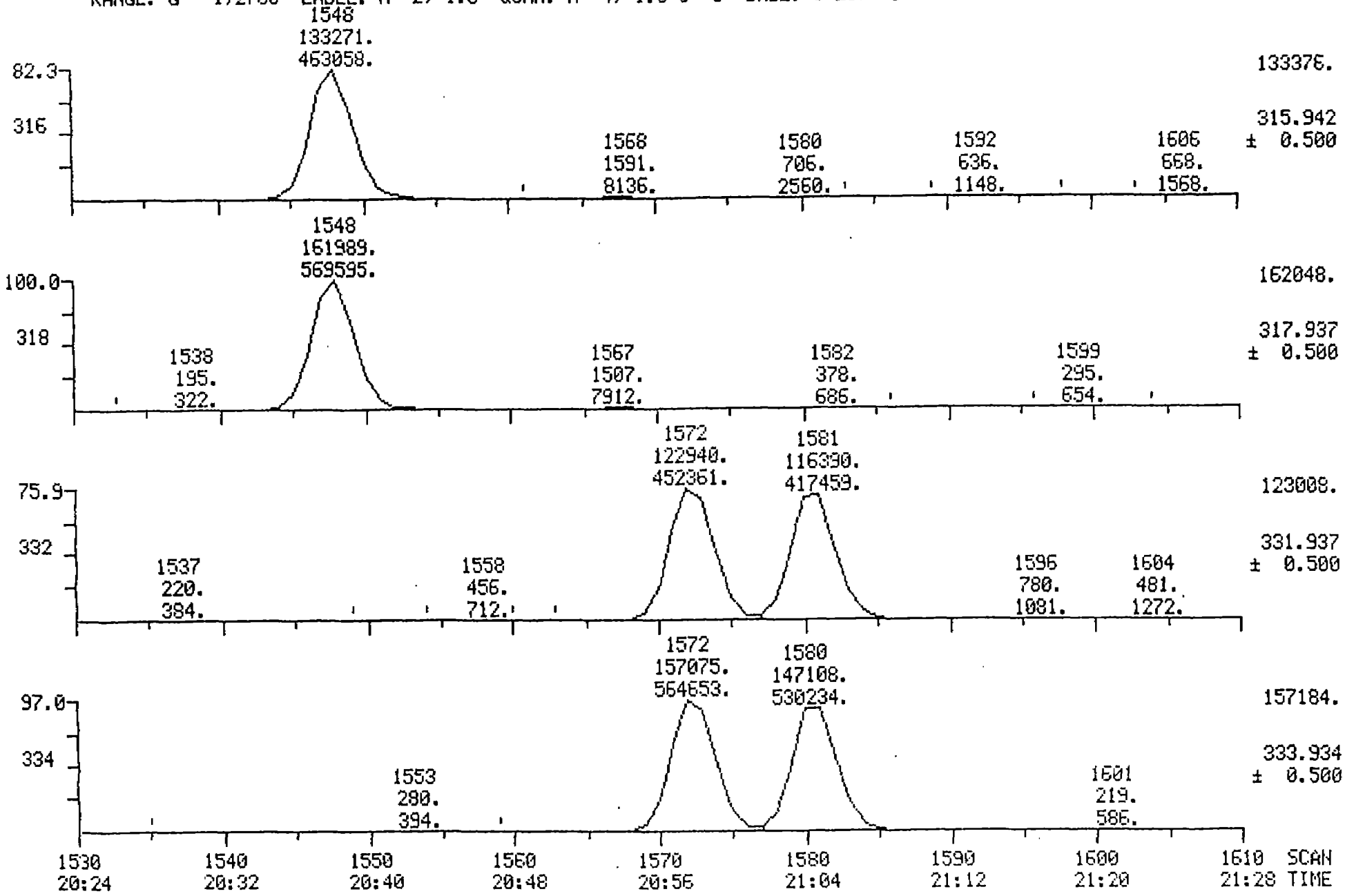
SCANS 1420 TO 1670



MIDMASS CHROMATOGRAMS
11/21/94 19:21:00
SAMPLE: PCDD/PCDF WINDOW
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z112115 #1
CALI: Z112115 #1

SCANS 1530 TO 1610



VII. RAW QC DATA PACKAGE

A. Method Blank Data
   1. tabulated results (form 1)
   2. mass chromatograms/quantitation report

B. Matrix Spike Data
   1. tabulated results (if applicable)
   2. mass chromatograms/quantitation report

C. Matrix Spike Duplicate Data (if applicable)
   1. tabulated results
   2. mass chromatograms/quantitation

ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

wrong entry 11/21/94

CLIENT: Baker Environmental RFW NUMBER: 94XLS0105-MB1

SAMPLE ID: Soil Blank GC/MS FILENAME: Z111833

DATE ANALYZED: 11/19/94 C-13 TCDD RECOVERY: 87 %

MATRIX: Soil

SAMPLE AMOUNT: 10.0g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		0.05	U

PCDD/PCDF DATA ANALYSIS

RFW #: 94LS0105-MB1 ✓ TEST: OTDFS

FILENAME: Z111833 ✓ WEIGHT: 10.0 G

ANALYSIS DATE: 11/19/94 ✓ CPC/WINDOW: Z111828

ANALYSIS TIME: 0719 ✓ DILUTION FACTOR: 1.000

ANALYST: JDL # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7 UNITS: NG/G
1.0 to 20 for C1-8

INTERNAL STANDARD DATA

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	221601 ✓	0.81 ✓	0.65-0.89	50 NG				
		334	NA	273183 ✓							
C13 2378-TCDD	(IS #1)	332	--	219674 ✓	0.79 ✓	0.65-0.89	1.152	50	5.0	4.4	87 %
		334	77178 ✓	278877 ✓							

			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

0116

11/2

‡‡‡ ANALYTE RESULTS ‡‡‡

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\%\ \text{SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\%\ \text{SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

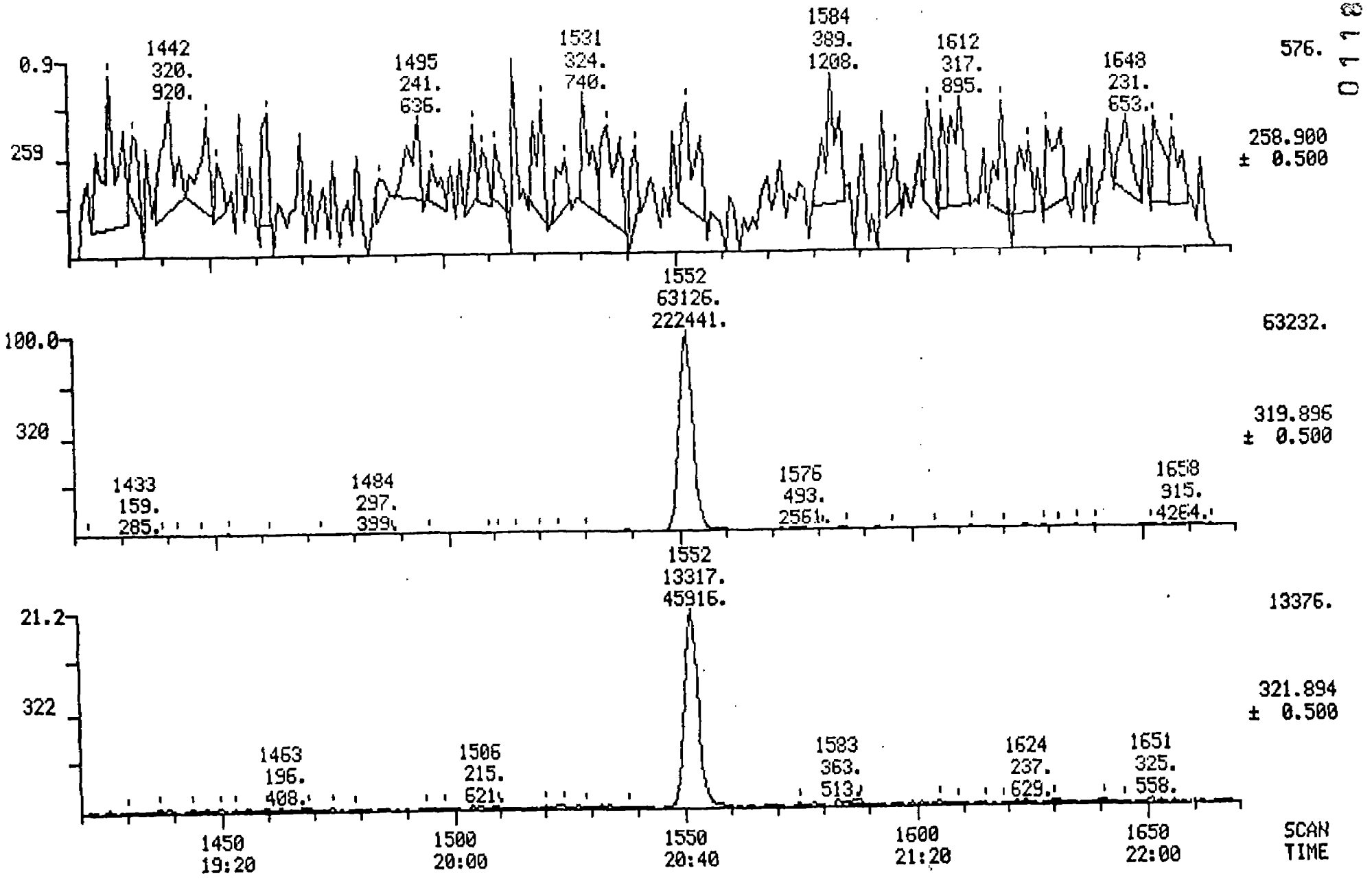
* (under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	0	0	ERR	0.65-0.89	--	360	0.0	0.05	U

MIDMASS CHROMATOGRAMS
11/19/94 7:19:00
SAMPLE: 94LS0105-MB1
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111833 #1
CALI: Z111833 #3

SCANS 1420 TO 1670

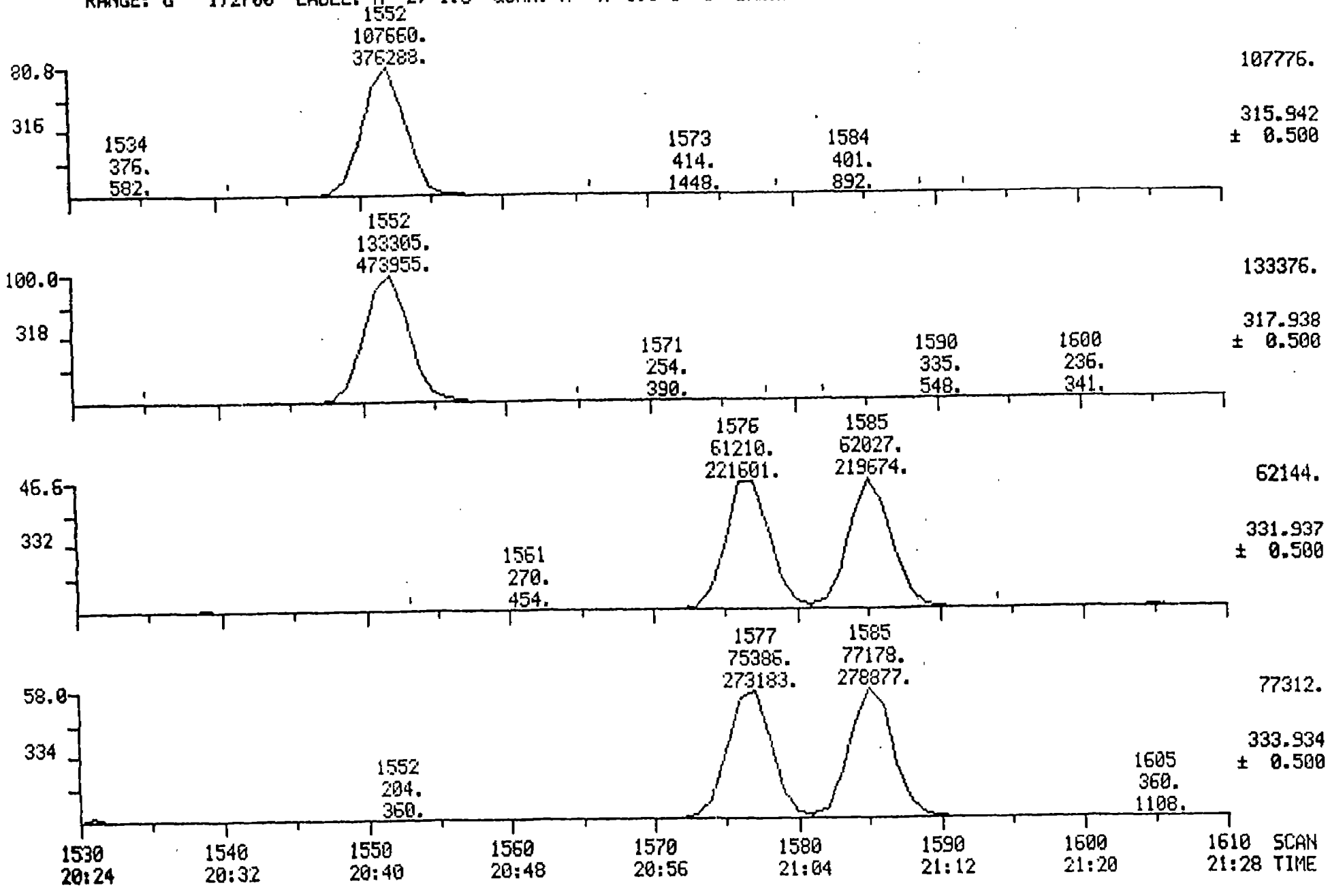


0118

MIDMASS CHROMATOGRAMS
11/19/94 7:19:00
SAMPLE: 94LS0105-MB1
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111833 #1
CALI: Z111833 #3

SCANS 1530 TO 1610



0119

ROY F. WESTON, INC.

2,3,7,8-TCDD DATA SUMMARY

CLIENT: Baker Environmental RFW NUMBER: 94LS0105-MBLS

SAMPLE ID: Soil Blank Spike GC/MS FILENAME: Z111931

DATE ANALYZED: 11/20/94 C-13 TCDD RECOVERY: 93%

MATRIX: Soil

SAMPLE AMOUNT: 10.0g

UNITS: ng/g

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD	92%	0.07	

PCDD/PCDF DATA ANALYSIS

RFW #: 94LS0105-MB1 ✓ TEST: OTDFCS ✓

FILENAME: Z111931 ✓ WEIGHT: 10.0 G ✓

ANALYSIS DATE: 11/20/94 ✓ CPC/WINDOW: Z111916 ✓

ANALYSIS TIME: 1208 ✓ DILUTION FACTOR: 1.000

ANALYST: JDL # OF DILUTION STEPS: 1

INSTRUMENT: 4600Z % SOLIDS: 100.00 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7 UNITS: NG/G
1.0 to 20 for C1-8

*** INTERNAL STANDARD DATA ***

STANDARD		M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF	(IS #2)	316	--	X	ERR	0.65-0.89	1.694	50	5.0	0.0	0 %
		318	X	X							
			HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD	(RS #1)	332	NA	236055 ✓	0.82 ✓	0.65-0.89	50 NG				
		334	NA	288840 ✓							
C13 2378-TCDD	(IS #1)	332	--	250426 ✓	0.81 ✓	0.65-0.89	1.152	50	5.0	4.6	93 %
		334	87870 ✓	309244 ✓							

			HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD	(IS #3)	402	X	X	ERR	0.69-0.93	0.939	50	5.0	ERR	ERR %
		404	--	X							
C13 123789-HxCDD	(RS #2)	402	NA	X	ERR	0.69-0.93	50 NG				
		404	NA	X							
			HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF	(IS #4)	420	X	X	ERR	0.83-1.12	1.432	100	10.0	ERR	ERR %
		422	--	X							
			HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD	(IS #5)	470	--	X	ERR	0.75-1.01	1.089	100	10.0	ERR	ERR %
		472	X	X							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

‡‡‡ ANALYTE RESULTS ‡‡‡

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\%\ \text{SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

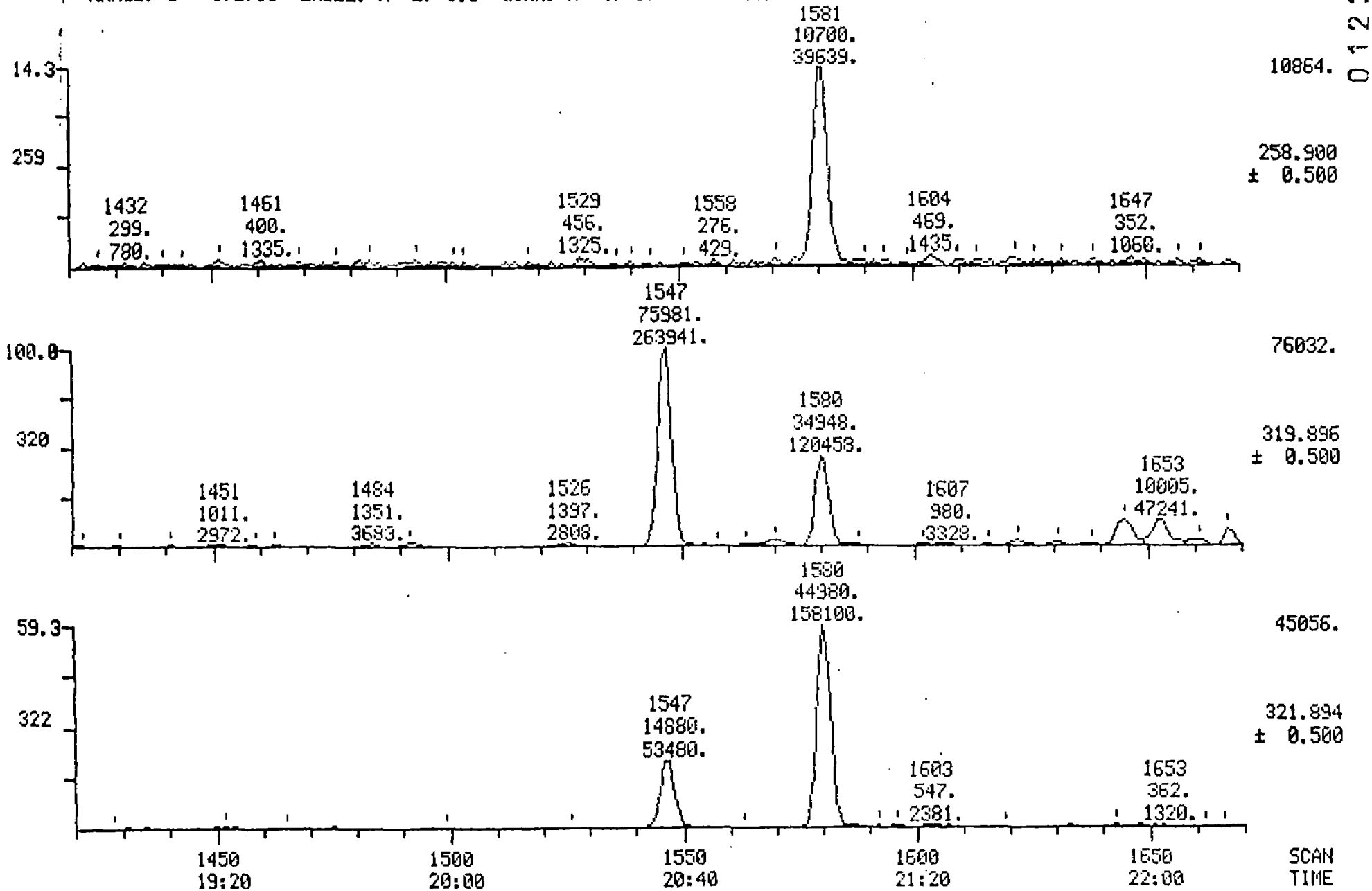
$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\%\ \text{SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

(under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	1.101	120458	158100	0.76	0.65-0.89	--	550	2.3	0.07	

MIDMASS CHROMATOGRAMS DATA: Z111931 #1 SCANS 1420 TO 1670
11/20/94 12:08:00 CALI: Z111931 #1
SAMPLE: 94LS0105-MB1S
CONDS.: 4600Z, GCZZ, OTDFN1 (A5)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

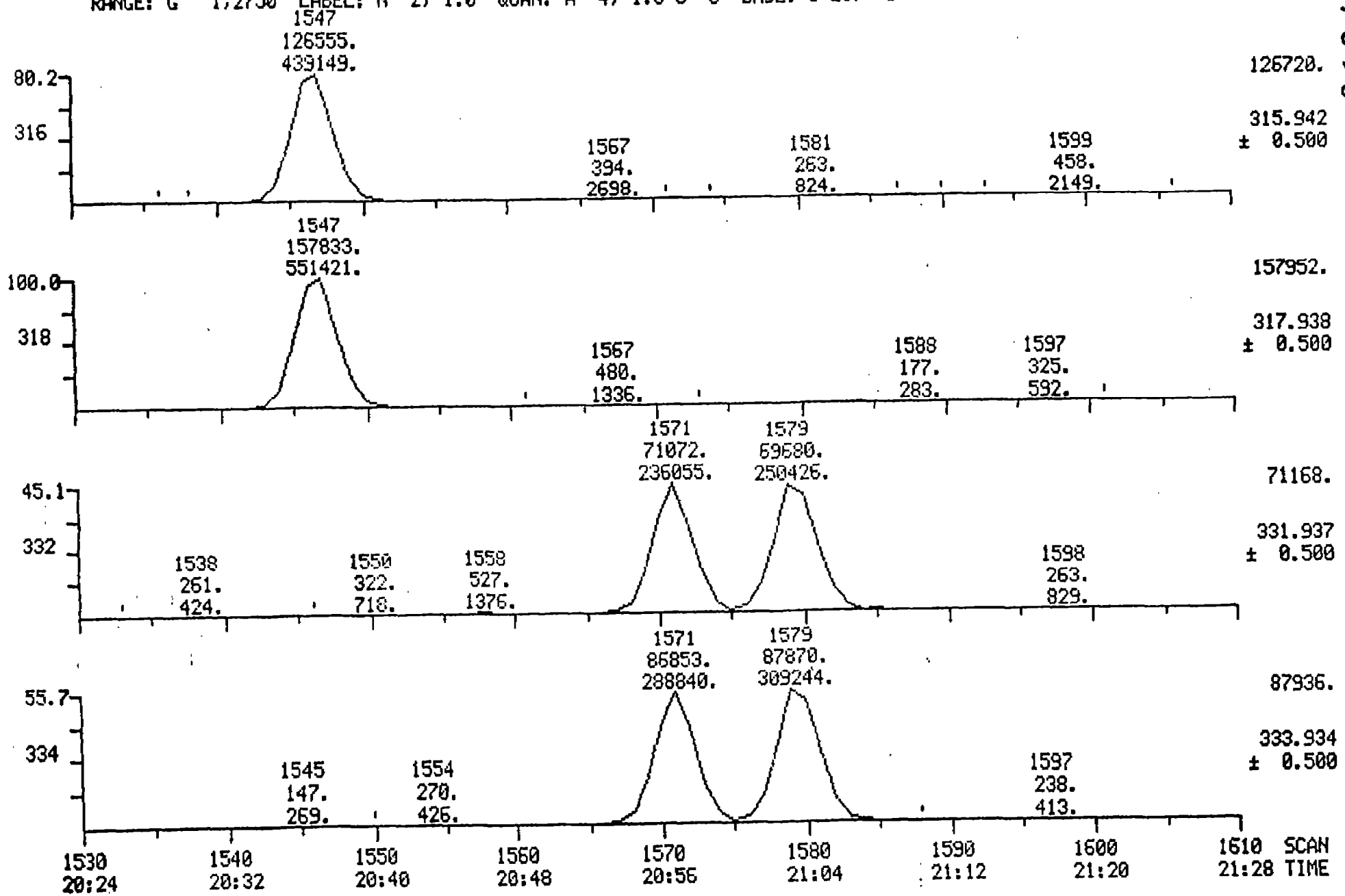


0123

MIDMASS CHROMATOGRAMS
11/20/94 12:08:00
SAMPLE: 94LS0105-MB15
CONDS.: 4600Z, GCZZ, OTDFN1 (AS)
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z111931 #1
CALI: Z111931 #1

SCANS 1530 TO 1610



0124

END OF DATA PACKAGE

HEARTLAND ENVIRONMENTAL SERVICES, INC.
6716 MEXICO ROAD • ST. PETERS, MO 63376
(314) 928-9533 • (314) 278-1828 • FAX (314) 278-2709

Data Validation Report

December 13, 1994

Prepared for

BAKER ENVIRONMENTAL, INC.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

This Data Validation Report is a review of the analytical results of sampling conducted November 10, 1994 in support of Baker Environmental, Inc. There were three (3) field soil samples which were received and analyzed by Southwest Laboratory of Oklahoma, Inc. (SWOK), **SDG# 20608.**

Heartland ESI personnel have reviewed the data presented for the Samples listed on the following page for the Analytical Fractions indicated. The Dioxin/Furan fraction has been validated utilizing: the "Laboratory Data Validation Functional Guidelines For Evaluating Organics Analysis, June, 1991, where applicable; specific method requirements in SW-846, Method 8280; Level D requirements; and good professional judgement.

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatogram, etc., for each sample have been carefully reviewed. The end-user is urged to review the **Specific Findings** and associated **Data Qualifications** presented in this report. Annotated Form Is for all samples reviewed are included after the **Narratives.** Form Is for MS/MSD samples are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Eugene M. Watson, VP

Eugene M. Watson, Vice President Heartland ESI

12-13-94
Date

HEARTLAND ENVIRONMENTAL
SERVICES, INC.

SDG 20608

SAMPLES AND FRACTIONS REVIEWED

Sample Identifications			Analytical Fractions
BAKER ID	SWOK ID	Matrix	D/F
9411302-1	20608.01	SOIL	X
9411302-2	20608.02	SOIL	X
9411302-3	20608.03	SOIL	X

Total Billable Samples (Water/Soil) 0/3

MS - Matrix Spike MSD - Matrix Spike Duplicate D - Duplicate

Individual fractions were reviewed as follows:

		Primary	Secondary
D/F -	Method 8280 Dioxin/Furans	Gene Watson	Dan Heil

DATA ASSESSMENT NARRATIVE

DIOXIN/FURAN 8280 ORGANICS

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, internal standard recovery standards, recovery standards, matrix spike recoveries, GC/MS performance, calibration results and mass resolution results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the U.S. SW-846 Method 8280,; the National Functional Guidelines for Organic Data Review, where applicable, and NEESA Level D. All comments made within this report should be considered when examining the analytical results (Form I's).

SDG 20608

Holding Times

The holding times for all of the samples were met per the method. No qualifications are required.

Mass Resolution

The mass resolution between 1,2,3,4-TCDD and 2,3,7,8-TCDD was less than 25% in all of the mass resolution checks analyzed prior to mass calibration and sample analyses. No qualifications are required.

Window Defining Mixtures

The window defining mixtures analyzed at the beginning of each analytical sequence were acceptable. No qualifications are required.

Initial Calibrations

The initial calibration analyzed by the laboratory for these samples was acceptable for all congener %RSDs. In addition, all of the isotopic ratios were acceptable. No qualifications are required.

Routine Calibrations

The routine calibrations (CC3) analyzed at the beginning of the analytical sequences were acceptable. In addition, the routine calibrations (CC1) analyzed at the end of the analytical sequences were acceptable. No qualifications are required.

Method Blanks

The method blank did not exhibit positive results for any of the PCDD or PCDF congeners. No qualifications are required.

Rinseate Blanks

A rinseate blank was not identified in this SDG.

Field Blanks

A field blank was not identified in this SDG.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A MS/MSD was not analyzed with this SDG.

Laboratory Control Sample (LCS)

The LCS/LCSD exhibited acceptable percent recoveries and RPDs. No qualifications are required.

Field Duplicate

A field duplicate pair was not identified in this SDG.

Internal Standard Recovery Standards

All of the internal standards exhibited percent recoveries within the recovery limits. No qualifications are required.

Compound Identification/Quantitation

All of the results, reported on a "wet weight, as is" basis, are acceptable without qualifications.

System Performance and Overall Assessment

The overall system performance was very good. The data is reported as is without qualifications or rejections.

GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

NJ = Presumptive evidence for the presence of the material at an estimated value

K = Result is biased high

L = Result is biased low

METHOD BLANK QUALIFICATION CODES

CRQL = The sample result for the blank contaminant is less than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that analyte is reported.

U = The sample result for the blank contaminant is greater than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is qualified as non detected at the analyte value reported.

No Action = The sample result for the blank contaminant is greater than the sample CRQL and is greater than 10X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

The specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.

SUMMARY OF DATA QUALIFICATIONS

SAMPLE ID	ANALYTE ID	DL	QL	SPECIFIC FINDINGS

No qualifications are required.

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

GL720D
GL720F

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.
9411302-1

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL720D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322			ND	U	.21
2378-TCDF	304/306			ND	U	.14
12378-PeCDF	342/340			ND	U	.12
12378-PeCDD	358/356			ND	U	.11
23478-PeCDF	342/340			ND	U	.12
123478-HxCDF	376/374			ND	U	.39
123678-HxCDF	376/374			ND	U	.20
123478-HXCDD	392/390			ND	U	.52
123678-HxCDD	392/390			ND	U	.38
123789-HxCDD	392/390			ND	U	.31
234678-HxCDF	376/374			ND	U	.41
123789-HxCDF	376/374			ND	U	.15
1234678-HpCDF	410/408			ND	U	.22
1234678-HpCDD	426/424			ND	U	.63
1234789-HpCDF	410/408			ND	U	.47
OCDD	458/460	34.06	.912	6.109		
OCDF	442/444			ND	U	.40

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.17	.794	0.65-0.89	63	40-120
13C-2378-TCDD	332/334	23.54	.834	0.65-0.89	58	40-120
13C-123678-HxCDD	402/404	28.06	.790	0.69-0.93	72	40-120
13C-1234678-HpCDF	420/422	29.83	.927	0.83-1.12	74	40-120
13C-OCDD	470/472	34.02	.885	0.75-1.01	62	40-120
37Cl-2378-TCDD	328/NA	23.54	N/A	N/A	110	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

12/28/94

GL720D
GL720F

1DFB

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

9411302-1

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL720D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	ND	x	1.0	=	.000
2378-TCDF	ND	x	0.1	=	.000
12378-PeCDF	ND	x	0.05	=	.000
12378-PeCDD	ND	x	0.5	=	.000
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	ND	x	0.1	=	.000
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	ND	x	0.1	=	.000
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	ND	x	0.01	=	.000
1234678-HpCDD	ND	x	0.01	=	.000
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	6.1	x	0.001	=	.006
OCDF	ND	x	0.001	=	.000
			TOTAL	=	.006

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL720D
GL720F

2DF

PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

9411302-1

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL720D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD		.0	U	.21
Total PeCDD		.0	U	.11
Total HxCDD		.0	U	.31
Total HpCDD		.0	U	.63
FURANS				
Total TCDF		.0	U	.14
Total PeCDF		.0	U	.12
Total HxCDF		.0	U	.15
Total HpCDF		.0	U	.22

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis.
The total congener concentrations do not affect the TEF calculations.

12/3/94

GL721D
GL721F

1DFA

PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

9411302-2

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: IEA SAS No.: SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.02

Sample wt/vol: 10 (g/ml) g Lab File ID: GL721D

Water Sample Prep: (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 84 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322			ND	U	.14
2378-TCDF	304/306			ND	U	.13
12378-PeCDF	342/340			ND	U	.20
12378-PeCDD	358/356			ND	U	.17
23478-PeCDF	342/340			ND	U	.20
123478-HxCDF	376/374			ND	U	.16
123678-HxCDF	376/374			ND	U	.20
123478-HXCDD	392/390			ND	U	.21
123678-HxCDD	392/390			ND	U	.32
123789-HxCDD	392/390			ND	U	.31
234678-HxCDF	376/374			ND	U	.36
123789-HxCDF	376/374			ND	U	.19
1234678-HpCDF	410/408			ND	U	.39
1234678-HpCDD	426/424			ND	U	2.09
1234789-HpCDF	410/408			ND	U	.42
OCDD	458/460	34.05	.953	9.271		
OCDF	442/444			ND	U	.44

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.17	.787	0.65-0.89	65	40-120
13C-2378-TCDD	332/334	23.53	.783	0.65-0.89	61	40-120
13C-123678-HxCDD	402/404	28.07	.867	0.69-0.93	66	40-120
13C-1234678-HpCDF	420/422	29.84	.908	0.83-1.12	65	40-120
13C-OCDD	470/472	34.05	.867	0.75-1.01	56	40-120
37Cl-2378-TCDD	328/NA	23.55	N/A	N/A	106	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

12/13/94

008

GL721D
GL721F

1DFB

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

9411302-2

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608.02

Sample wt/vol: 10 (g/ml) g Lab File ID: GL721D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 84 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	ND	x	1.0	=	.000
2378-TCDF	ND	x	0.1	=	.000
12378-PeCDF	ND	x	0.05	=	.000
12378-PeCDD	ND	x	0.5	=	.000
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	ND	x	0.1	=	.000
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	ND	x	0.1	=	.000
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	ND	x	0.01	=	.000
1234678-HpCDD	ND	x	0.01	=	.000
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	9.3	x	0.001	=	.009
OCDF	ND	x	0.001	=	.000
			TOTAL	=	.009

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

12/26/94

GL721D
GL721F

2DF

PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

9411302-2

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: IEA SAS No.: SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.02

Sample wt/vol: 10 (g/ml) g Lab File ID: GL721D

Water Sample Prep: (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 84 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD		.0	U	.14
Total PeCDD		.0	U	.17
Total HxCDD		.0	U	.21
Total HpCDD		.0	U	2.09
FURANS				
Total TCDF		.0	U	.13
Total PeCDF		.0	U	.20
Total HxCDF		.0	U	.16
Total HpCDF		.0	U	.39

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis.
The total congener concentrations do not affect the TEF calculations.

12/3/94

GL722D
GL722F

1DFA

PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

9411302-3

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.03

Sample wt/vol: 10 (g/ml) g Lab File ID: GL722D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 89 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322			ND	U	.06
2378-TCDF	304/306			ND	U	.08
12378-PeCDF	342/340			ND	U	.05
12378-PeCDD	358/356			ND	U	.25
23478-PeCDF	342/340			ND	U	.09
123478-HxCDF	376/374			ND	U	.21
123678-HxCDF	376/374			ND	U	.18
123478-HXCDD	392/390			ND	U	.33
123678-HxCDD	392/390			ND	U	.45
123789-HxCDD	392/390			ND	U	.20
234678-HxCDF	376/374			ND	U	.11
123789-HxCDF	376/374			ND	U	.09
1234678-HpCDF	410/408			ND	U	.09
1234678-HpCDD	426/424			ND	U	.54
1234789-HpCDF	410/408			ND	U	.16
OCDD	458/460	34.03	.868	17.087		
OCDF	442/444			ND	U	.23

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.17	.798	0.65-0.89	69	40-120
13C-2378-TCDD	332/334	23.53	.759	0.65-0.89	70	40-120
13C-123678-HxCDD	402/404	28.07	.827	0.69-0.93	66	40-120
13C-1234678-HpCDF	420/422	29.84	.919	0.83-1.12	70	40-120
13C-OCDD	470/472	34.03	.945	0.75-1.01	67	40-120
37Cl-2378-TCDD	328/NA	23.53	N/A	N/A	107	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

Gw 121394

GL722D
GL722F

1DFB

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

9411302-3

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608.03

Sample wt/vol: 10 (g/ml) g Lab File ID: GL722D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 89 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	ND	x	1.0	=	.000
2378-TCDF	ND	x	0.1	=	.000
12378-PeCDF	ND	x	0.05	=	.000
12378-PeCDD	ND	x	0.5	=	.000
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	ND	x	0.1	=	.000
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	ND	x	0.1	=	.000
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	ND	x	0.01	=	.000
1234678-HpCDD	ND	x	0.01	=	.000
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	17.1	x	0.001	=	.017
OCDF	ND	x	0.001	=	.000
			TOTAL	=	.017

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL722D
GL722F

2DF

PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

9411302-3

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: IEA SAS No.: SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.03

Sample wt/vol: 10 (g/ml) g Lab File ID: GL722D

Water Sample Prep: (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 89 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD		.0	U	.06
Total PeCDD		.0	U	.25
Total HxCDD		.0	U	.20
Total HpCDD		.0	U	.54
FURANS				
Total TCDF		.0	U	.08
Total PeCDF		.0	U	.05
Total HxCDF		.0	U	.09
Total HpCDF		.0	U	.09

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis. The total congener concentrations do not affect the TEF calculations.

121394

DIOXIN/FURAN SAMPLE/EXTRACT HOLDING TIMES

QA/QC LEVEL

- ☐ NEESA C
- ☑ NEESA D
- ☐ DQO LEVEL III
- ☐ DQO LEVEL IV
- ☐ _____

CASE NUMBER: 20608
LABORATORY: SWOK
PROJECT: BAKER
REVIEWER: EW
DATE: 12.8.94
ANALYSIS MODIFICATIONS: None

DIOXIN/FURAN HOLDING TIMES

1. Were the holding times met for the dioxin/furan extractions and/~~or~~ analysis? Yes (No)

If no, complete the following form for all samples that exceeded holding times.

EPA SAMPLE NO.	MATRIX	VTSR	DATE OF EXTRACT.	DA	ACTION

EPA SAMPLE NO.	MATRIX	VTSR	DATE OF ANALYSIS	DA	ACTION

EW 12.8.94

Note: DA = The number of days extraction holding time is exceeded or the number of days holding time is exceeded.

Requirements: Extraction: 30 days from collection

Analysis: 45 days from collection

Rev. 11/93

GC/MS INITIAL MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

Associated Samples and Blanks: None

I. **Column Performance Check Mixture**

Injection Date: 11/18/94 Injection Time: 12:01

Instrument ID: G File ID: GL667

Column ID: DB-5

1. Is there overlap of between the late-eluting tetra-isomers and the early eluting penta-isomers?

   Yes (No)

2. Did the laboratory analyze the column performance check mixture on a column that can resolve the TCDD isomer?

   (Yes) No 12/2/94

3. If the answer to #2 is no, did the laboratory reanalyze the samples containing positive results for TCDD isomers on a column that can resolve the TCDD isomers?

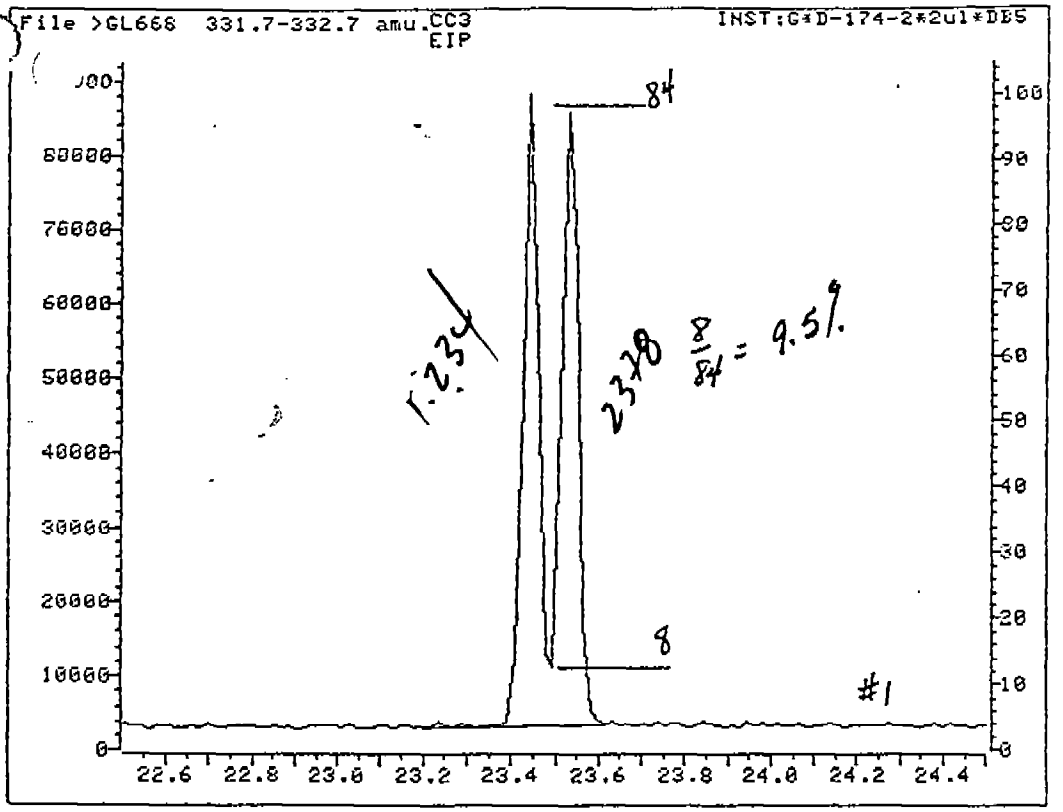
   Yes No (NA)

4. Is the chromatographic separation between 2,3,7,8-TCDD and 1,2,3,4-TCDD resolved with a valley $\leq$ 25%?

   (Yes) No

Show calculation:

$\frac{8}{84} \times 100 = 9.5\%$



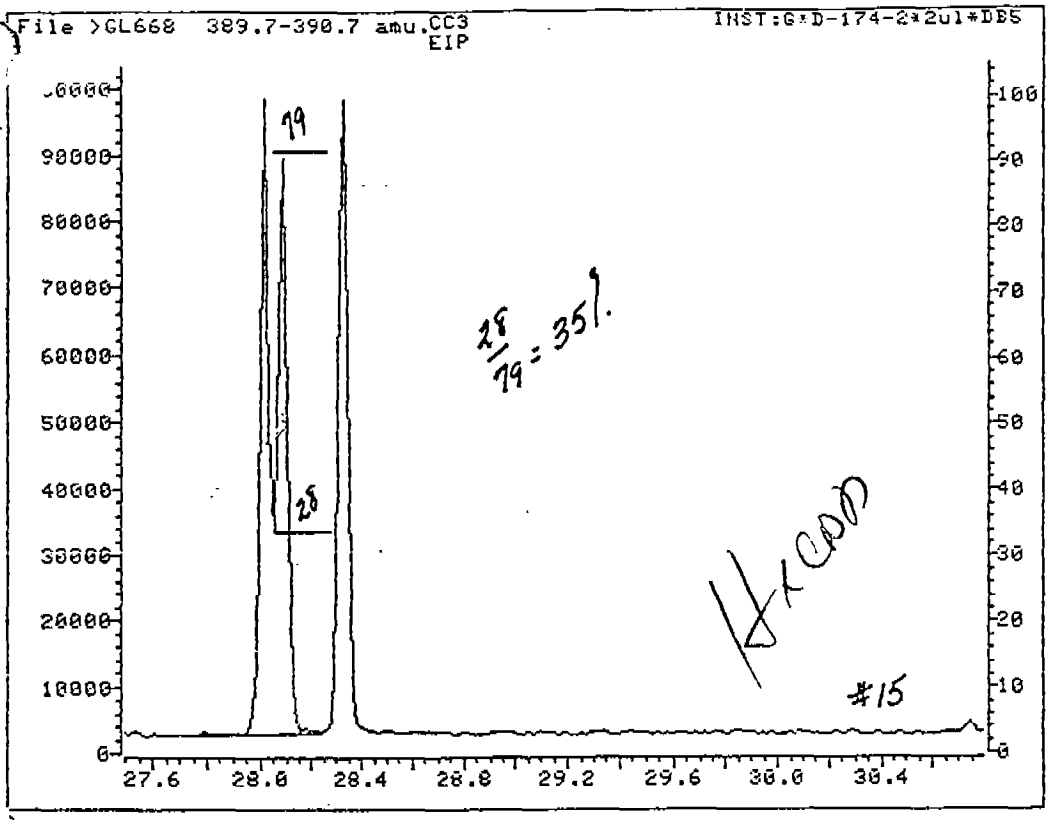
data file header from : >GL668::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/18/94 12:38
Misc : INST:G*D-174-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

SKG 11/18/94

189K016



S data file header from : >GL668::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/18/94 12:38
Misc : INST:G*D-174-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

SKG 11/18/94

189017

GC/MS INITIAL MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

II. Initial Calibration

Injection Date: 11/18/94 Instrument ID: G

File IDs: GL672
GL671
GL668
GL670
GL669

1. Briefly explain the method of calibration utilized by the laboratory. (If the requested 8280 method is for isomer/class dioxin/furans, explain the calculation of the %RSDs and note all modifications to the methodology)

5 pt calibration - isomer specific

2. Is the isotopic ratio criteria in the specified range for each calibration compound in each isomer class?

	Ions(m/z)	Range	Ions(m/z)	Range	Yes	No
PCDDs						
Tetra	320/322	0.65-0.89	322/320	1.12-1.54	Yes	No
Penta	358/356	0.55-0.75	356/358	1.33-1.82	Yes	No
Hexa	392/390	0.69-0.93	390/392	1.08-1.45	Yes	No
Hepta	426/424	0.83-1.12	424/426	0.89-1.20	Yes	No
Octa	458/460	0.75-1.01	460/458	0.99-1.33	Yes	No
PCDFs						
Tetra	304/306	0.65-0.89	306/304	1.12-1.54	Yes	No
Penta	342/340	0.55-0.75	340/342	1.33-1.82	Yes	No
Hexa	376/374	0.69-0.93	374/376	1.08-1.45	Yes	No
Hepta	410/408	0.83-1.12	408/410	0.89-1.20	Yes	No
Octa	442/444	0.75-1.01	444/442	0.99-1.33	Yes	No

GC/MS INITIAL MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

3. Were any samples analyzed after the initial calibration without an intermediate continuing calibration?

Yes No

If yes, were all samples analyzed within 12 hours of the first calibration injection?

Yes No N/A

If no, list samples and required action(s):

12/29/4

5. Are all of the %RSDs within the 15% RSD criteria?

Yes No

If no, list congeners and/or class(es) that exceeds the %RSD criteria and any actions that may be required:

%RSD: 2.3.7.8. TCDD = 6.2%

SD= 0.060 $\frac{0.060}{0.965} \times 100 = 6.2\%$

$\bar{x}$= 0.965

OCDD: 0.617 (GL671 - RF 0.25)

$\frac{98490 \times 1}{127671 \times 1.25} = 0.617$

Rev. 11/93

Calibration Report

Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN(.32X60)
Calibrated: 941118 17:04

Compound	Files: >GL672 RF .100	>GL671 RF .250	>GL668 RF .500	>GL670 RF 1.00	>GL669 RF 2.00	$\overline{RRT}$	$\overline{RF}$	% RSD	
2378 TETRA DIOXIN C13	1.10637	1.11227	1.00229	1.15378	1.08299	1.004	1.09154	5.134	(Conc=.500,.500,.500,.500,.500)
2378 TETRA FURAN C13	2.00061	1.77483	1.92221	2.02352	2.03527	.998	1.95129	5.537	(Conc=.500,.500,.500,.500,.500)
37 CL4 2378 TCDD	-	-	1.63953	-	-	1.004	1.63953	-	(Conc=,,.250,,)
123678 HEXA DIOXIN C13	1.03763	.92016	.93557	.84072	.90853	.991	.92852	7.641	(Conc=.500,.500,.500,.500,.500)
OCTA DIOXIN C13	.40114	.52351	.51163	.53470	.54367	1.202	.50293	11.563	(Conc=1.00,1.00,1.00,1.00,1.00)
1234678 HEPTA FURAN C13	.94584	.92997	.93281	.87365	.90793	1.054	.91804	3.094	(Conc=1.00,1.00,1.00,1.00,1.00)
2378 TCDD	1.01174	.94197	1.04175	.89745	.93398	1.001	.96538	6.157	
12378 PENTA DIOXIN	.58787	.49653	.58844	.48465	.51136	1.101	.53377	9.468	
123478 HEXA DIOXIN	-	-	.94505	-	-	.998	.94505	-	(Conc=,,1.25,,)
123678 HEXA DIOXIN	.97907	.95746	.81313	.92026	.88574	1.000	.91113	7.175	(Conc=.250,.625,1.25,2.50,5.00)
123789 HEXA DIOXIN	-	-	.94183	-	-	1.009	.94183	-	(Conc=,,1.25,,)
1234678 HEPTA DIOXIN	.58928	.61157	.57124	.64445	.60126	1.095	.60356	4.530	(Conc=.250,.625,1.25,2.50,5.00)
2378 TETRA FURAN	.87740	.92705	.82521	.76430	.75212	1.001	.82922	8.957	
12378 PENTA FURAN	.52085	.50263	.46516	.44276	.41701	1.092	.46968	9.048	
23478 PENTA FURAN	-	-	.63216	-	-	1.109	.63216	-	(Conc=,,.500,,)
123478 HEXA FURAN	-	-	1.68917	-	-	.922	1.68917	-	(Conc=,,1.25,,)
123678 HEXA FURAN	1.69140	1.68982	1.57101	1.65049	1.62870	.924	1.64628	3.025	(Conc=.250,.625,1.25,2.50,5.00)
234678 HEXA FURAN	-	-	1.55462	-	-	.936	1.55462	-	(Conc=,,1.25,,)
123789 HEXA FURAN	-	-	1.43147	-	-	.956	1.43147	-	(Conc=,,1.25,,)
1234678 HEPTA FURAN	1.09007	1.10919	1.08647	1.09776	1.07308	1.000	1.09131	1.228	(Conc=.250,.625,1.25,2.50,5.00)
1234789 HEPTA FURAN	-	-	.98178	-	-	1.044	.98178	-	(Conc=,,1.25,,)
OCTA DIOXIN	.73147	.61713	.65804	.58549	.55944	1.000	.63031	10.704	(Conc=.500,1.25,2.50,5.00,10.0)
OCTA FURAN	1.28212	1.02815	1.08917	.96947	.92952	1.005	1.05969	13.044	(Conc=.500,1.25,2.50,5.00,10.0)

11/18/94 PA 11/22/94

RF - Response Factor (Subscript is amount in NG/UL)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

189 020

QUANT REPORT

Operator ID: SANDY Quant Rev: 7 Quant Time: 941118 15:33
Output File: XGL671::D2 Injected at: 941118 14:41
Data File: >GL671::D7 Dilution Factor: 1.00000
Name: CC2 Instrument ID: G
Misc: INST:G*D-068-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 5

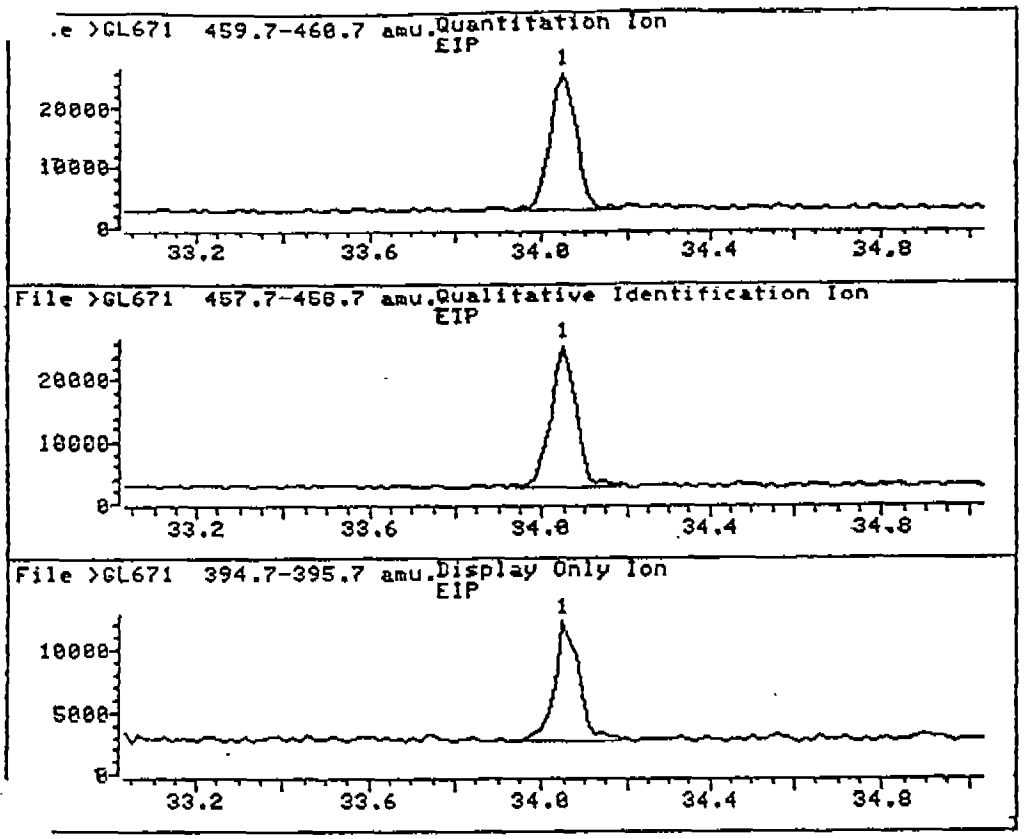
ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 940408 17:05 Last Qcal Time: 941118 12:39

Reg 11/18/94

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1234 TETRA DIOXIN C13	23.45	230	310821	.500	NG/UL	96
2)	2378 TETRA DIOXIN C13	23.53	235	345717	.521	NG/UL	94
3)	2378 TETRA FURAN C13	23.17	214	551653	.539	NG/UL	96
5)	*123789 HEXA DIOXIN C13	28.32	511	121941	.500	NG/UL	93
6)	123678 HEXA DIOXIN C13	28.08	497	112205	.502	NG/UL	97
7)	OCTA DIOXIN C13	34.03	853	127675	.970	NG/UL	94
8)	1234678 HEPTA FURAN C13	29.84	599	226804	.877	NG/UL	95
9)	*2378 TETRA DIOXIN C13	23.53	235	345717	.500	NG/UL	94
	2378 TCDD	23.55	236	162828	.232	NG/UL	98
	12378 PENTA DIOXIN	25.91	372	85829	.134	NG/UL	97
14)	*123678 HEXA DIOXIN C13	28.08	497	112205	.500	NG/UL	97
16)	123678 HEXA DIOXIN	28.09	498	134290	.602	NG/UL	98
19)	1234678 HEPTA DIOXIN	30.75	651	85777	.460	NG/UL	93
21)	*2378 TETRA FURAN C13	23.17	214	549931	.500	NG/UL	95
22)	2378 TETRA FURAN	23.19	215	254907	.237	NG/UL	96
24)	12378 PENTA FURAN	25.30	337	138207	.143	NG/UL	97
27)	*1234678 HEPTA FURAN C13	29.84	599	226680	1.00	NG/UL	95
29)	123678 HEXA FURAN	27.57	468	239405	.681	NG/UL	99
33)	1234678 HEPTA FURAN	29.84	599	157145	.664	NG/UL	96
36)	*12346789 OCTA DIOXIN C13	34.03	853	127675	1.00	NG/UL	94
37)	OCTA DIOXIN	34.05	854	98490	1.03	NG/UL	92
38)	OCTA FURAN	34.22	865	164087	1.08	NG/UL	95

* Compound is ISTD

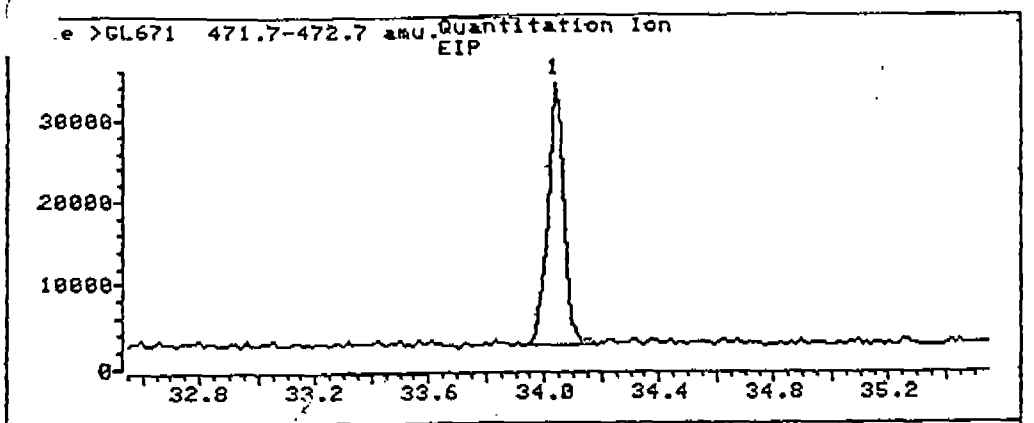
11/22/94

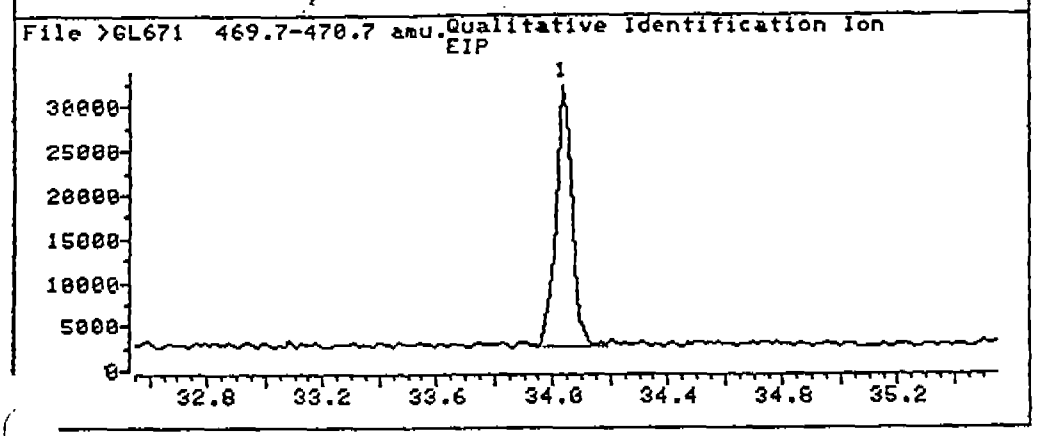


Data File: >GL671::D7 Quant Output File: XGL671::D2
Name: CC2 Instrument ID: G
Misc: INST:G*D-068-2*2u1*DB5 COLUMN (.32mmX60m) BTL# 5
Quant Time: 941118 15:33 Quant ID File: I_B280::TE
Injected at: 941118 14:41 Last Calibration: 940408 17:05
Last Qcal Time: 941118 12:39

Compound No : 37
Compound Name: OCTA DIOXIN
Quant Ion : 460.0

Hit #	R.T. Scan#	Conc Area	Units	q	Areas and Ratios 460.0	458.0	395.0		
1	34.05	1.03	NG/UL	92	98490	94253	38679		
	854	98490			1.000	.957	.393		





Data File: >GL671::D7 Quant Output File: XGL671::D2
Name: CC2 Instrument ID: G
Misc: INST:G*D-068-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 5
Quant Time: 941118 15:33 Quant ID File: I_8280::TE
Injected at: 941118 14:41 Last Calibration: 940408 17:05
Last Qcal Time: 941118 12:39

Compound No : 36 (ISTD)
Compound Name: 12346789 OCTA DIOXIN C13
Quant Ion : 472.0

Hit #	R.T. Scan#	Conc Area	Units	q	Areas and Ratios 472.0	470.0
1	34.03	1.00	NG/UL	94	127675	120167
	853	127675			1.000	.941

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

Associated Samples and Blanks: DfBlk, 9411302-1, -2, -3

I. **Column Performance Check Mixture**

Injection Date: 11/21/94 Injection Time: 11:56

Instrument ID: G File ID: GL717

Column ID: DB-5

1. Is there overlap of between the late-eluting tetra-isomers and the early eluting penta-isomers?

   Yes (No)

2. Did the laboratory analyze the column performance check mixture on a column that can resolve the TCDD isomer?

   (Yes) No

3. If the answer to #2 is no, did the laboratory reanalyze the samples containing positive results for TCDD isomers on a column that can resolve the TCDD isomers?

   Yes No (NA)

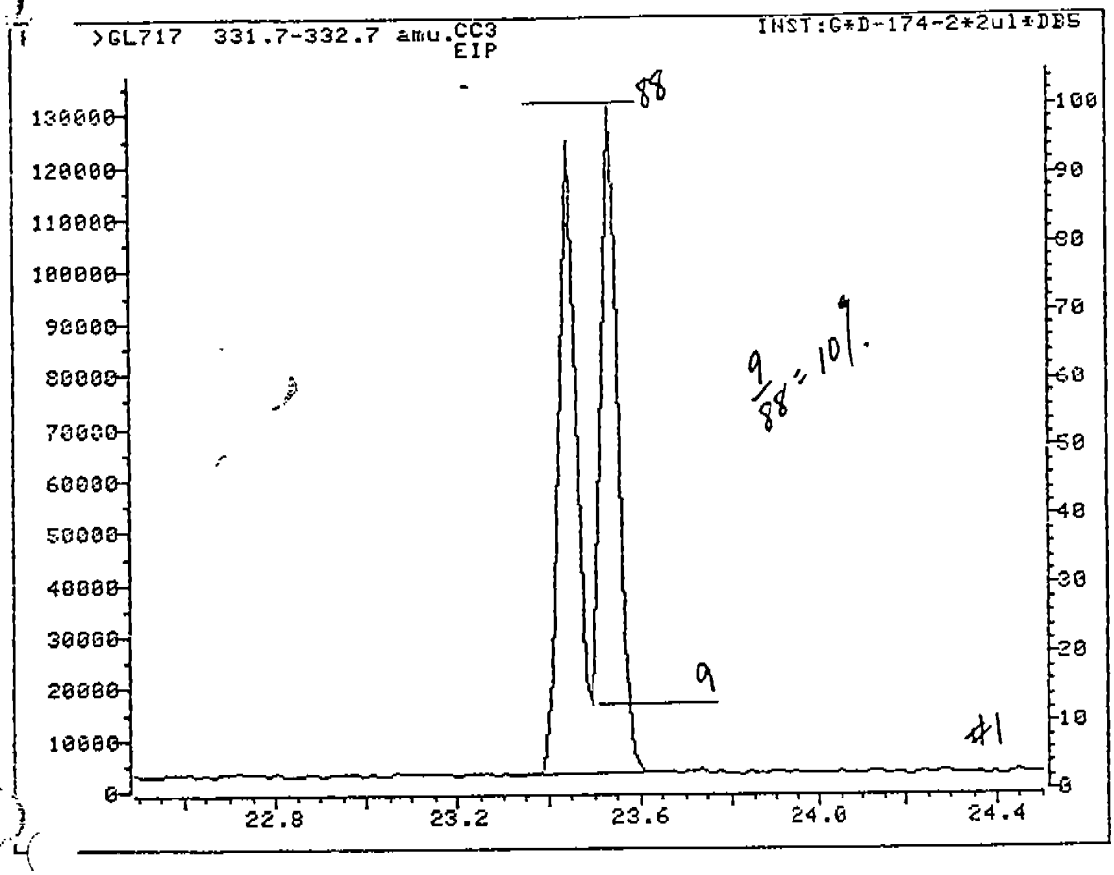
4. Is the chromatographic separation between 2,3,7,8-TCDD and 1,2,3,4-TCDD resolved with a valley $\leq$ 25%?

   (Yes) No

Show calculation:

$$\frac{9}{88} \times 100 = 10\%$$

Rev. 12/92



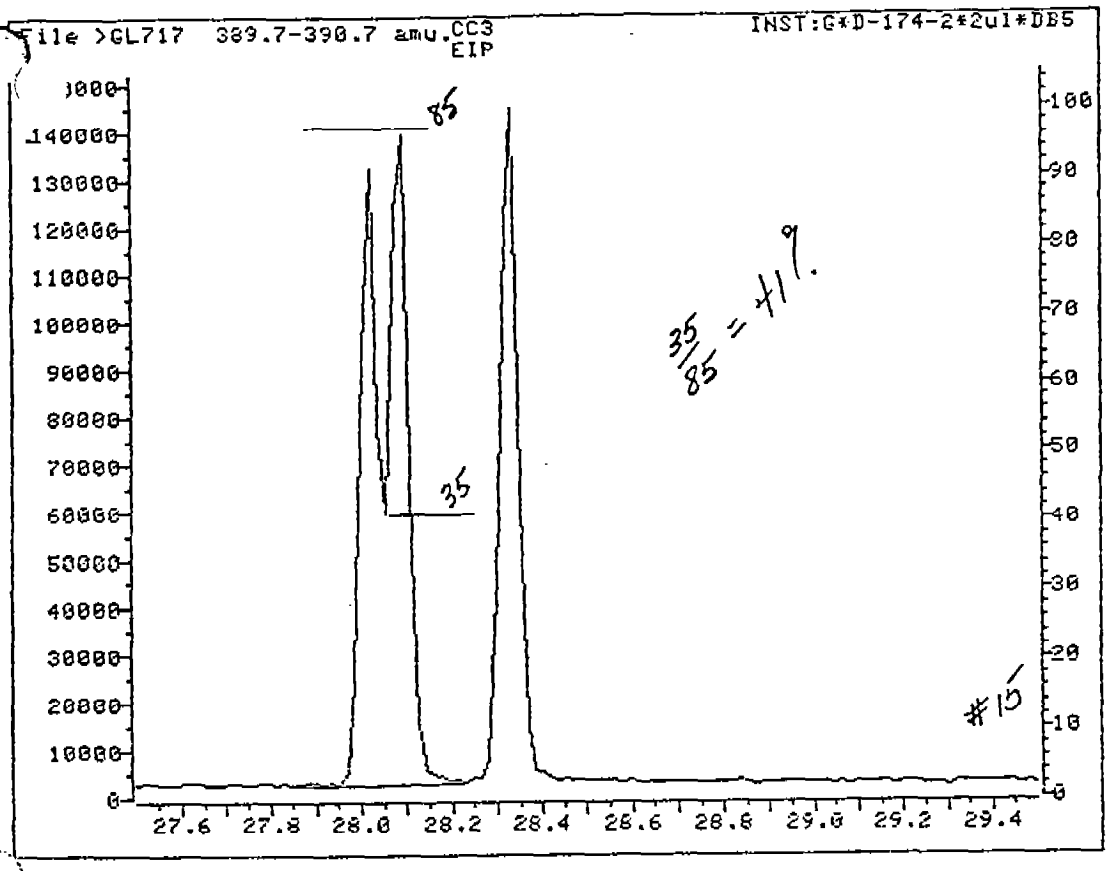
MS data file header from : >GL717::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/21/94 11:56
Misc : INST:G*D-174-2*2ul*DB5 (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

SHG 11/21/94

316K025



S data file header from : >GL717::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/21/94 11:56
Misc : INST:G*D-174-2*2ul*DB5 (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

SLG 11/21/94

316026

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

II. Continuing Calibration

Injection Date: 11 D1 94 Injection Time: 11:5V

Instrument ID: 6 File ID: GL717

1. Is the isotopic ratio criteria in the specified range for each calibration compound in each isomer class?

	Ions(m/z)	Range	Ions(m/z)	Range	Yes	No
PCDDs						
Tetra	320/322	0.65-0.89	322/320	1.12-1.54	Yes	No
Penta	358/356	0.55-0.75	356/358	1.33-1.82	Yes	No
Hexa	392/390	0.69-0.93	390/392	1.08-1.45	Yes	No
Hepta	426/424	0.83-1.12	424/426	0.89-1.20	Yes	No
Octa	458/460	0.75-1.01	460/458	0.99-1.33	Yes	No
PCDFs						
Tetra	304/306	0.65-0.89	306/304	1.12-1.54	Yes	No
Penta	342/340	0.55-0.75	340/342	1.33-1.82	Yes	No
Hexa	376/374	0.69-0.93	374/376	1.08-1.45	Yes	No
Hepta	410/408	0.83-1.12	408/410	0.89-1.20	Yes	No
Octa	442/444	0.75-1.01	444/442	0.99-1.33	Yes	No

2. Were all samples analyzed within 12 hours of the first calibration injection (standard or column performance check)? Yes No

If no, list samples and required action(s): _____

12/8/94

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

3. Are the measured RRFs of all analytes for the continuing calibration standard within ± 30% D of the mean values from the initial calibration?

Yes No

If no, list congeners and/or class(es) that exceeds the %D criteria and any actions that may be required:

1.2.3.4.7,8.9- HpCDF - 1.014 RRF

$$\frac{413945 \times 1}{326478 \times 1.25} = 1.014$$

OCDD = 6.42% D

$$\frac{0.630 - 0.671}{0.630} \times 100 = -6.5\%$$

Calibration Check Report

Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN(.32X60)
Calibrated: 941118 17:04

Check Standard Data File: >GL717
Injection Time: 941121 11:58

Compound	$\overline{RF}$	RF	%Diff	Calib Meth	
2378.TETRA DIOXIN C13	1.09154	1.04893	3.90	Average	(Conc=.500)
2378 TETRA FURAN C13	1.95129	1.91828	1.69	Average	(Conc=.500)
37 CL4 2378 TCDD	1.63953	1.76206	7.47	Average	(Conc=.250)
123678 HEXA DIOXIN C13	.92852	.95472	2.82	Average	(Conc=.500)
OCTA DIOXIN C13	.50293	.48723	3.12	Average	(Conc=1.00)
1234678 HEPTA FURAN C13	.91804	.93263	1.59	Average	(Conc=1.00)
2378 TCDD	.96538	1.01482	5.12	Average	
12378 PENTA DIOXIN	.53377	.58634	9.85	Average	
123478 HEXA DIOXIN	.94505	.93568	.99	Average	(Conc=1.25)
123678 HEXA DIOXIN	.91113	.84874	6.85	Average	(Conc=1.25)
123789 HEXA DIOXIN	.94183	.95648	1.56	Average	(Conc=1.25)
1234678 HEPTA DIOXIN	.60356	.61686	2.20	Average	(Conc=1.25)
2378 TETRA FURAN	.82922	.82591	.40	Average	
12378 PENTA FURAN	.46968	.48061	2.33	Average	
23478 PENTA FURAN	.63216	.66979	5.95	Average	(Conc=.500)
123478 HEXA FURAN	1.68917	1.72973	2.40	Average	(Conc=1.25)
123678 HEXA FURAN	1.64628	1.58315	3.83	Average	(Conc=1.25)
234678 HEXA FURAN	1.55462	1.56420	.62	Average	(Conc=1.25)
123789 HEXA FURAN	1.43147	1.44403	.88	Average	(Conc=1.25)
1234678 HEPTA FURAN	1.09131	1.08555	.53	Average	(Conc=1.25)
1234789 HEPTA FURAN	.98178	1.01433	3.32	Average	(Conc=1.25)
OCTA DIOXIN	.63031	.67075	6.42	Average	(Conc=2.50)
OCTA FURAN	1.05969	1.09640	3.46	Average	(Conc=2.50)

SKG 11/21/94 PA 11/28/94

RF - Response Factor from daily standard file at .500 NG/UL

$\overline{RF}$ - Average Response Factor from Initial Calibration

%Diff - % Difference from original average or curve

316

QUANT REPORT

Operator ID: SANDY
Output File: ^GL716::D1
Data File: >GL716::D7
Name: WDM
Misc: INST:G*D-167-2*2ul*DB5 (.32mmX60m)

Quant Rev: 7
Quant Time: 941121 11:54
Injected at: 941121 11:19
Dilution Factor: 1.00000
Instrument ID: G
BTL# 1

ID File: I_GWIN::TE
Title: DB5 WINDOW DEFINING SOLUTION DB5 COLUMN (.32mmX60m)
Last Calibration: :
Last Qcal Time: <none>

11/21/94

Sig 11/21/94

Compound	R.T.	Scan#	Area	Conc	Units	q
1) ##TCDD	22.33	163	662310	662310.0	NO CALIB	98
1) ##TCDD	22.43	169	2891	2891.00	NO CALIB	96
1) ##TCDD	22.95	199	3204	3204.00	NO CALIB	72
1) ##TCDD	24.06	263	458625	458625.0	NO CALIB	98
1) ##TCDD	24.87	310	7184	7184.00	NO CALIB	88
2) ##PCDD	24.42	284	1464	1464.00	NO CALIB	91
2) ##PCDD	24.87	310	196108	196108.0	NO CALIB	97
2) ##PCDD	25.98	374	2347	2347.00	NO CALIB	97
2) ##PCDD	26.19	386	186435	186435.0	NO CALIB	95
2) ##PCDD	27.16	442	2297	2297.00	NO CALIB	93
##HXCDD	26.05	378	1694^	1694.00	NO CALIB	95
3) ##HXCDD	27.16	442	156692	156692.0	NO CALIB	96
3) ##HXCDD	27.63	469	2603	2603.00	NO CALIB	93
3) ##HXCDD	28.28	507	131325	131325.0	NO CALIB	95
3) ##HXCDD	28.61	526	1290	1290.00	NO CALIB	98
4) ##HPCDD	28.91	543	3091	3091.00	NO CALIB	70
4) ##HPCDD	29.08	553	2776	2776.00	NO CALIB	74
4) ##HPCDD	30.08	611	94171	94171.00	NO CALIB	93
4) ##HPCDD	30.74	649	89035	89035.00	NO CALIB	92
4) ##HPCDD	31.99	721	2312	2312.00	NO CALIB	87
5) ##TCDF	21.70	127	830501	830501.0	NO CALIB	98
5) ##TCDF	22.26	159	2856	2856.00	NO CALIB	69
5) ##TCDF	22.98	201	8743	8743.00	NO CALIB	83
5) ##TCDF	24.08	264	756318	756318.0	NO CALIB	97
5) ##TCDF	24.20	271	14170	14170.00	NO CALIB	99
6) ##PCDF	24.20	271	303170	303170.0	NO CALIB	96
6) ##PCDF	24.63	296	1700	1700.00	NO CALIB	77
6) ##PCDF	24.80	306	3903	3903.00	NO CALIB	84
6) ##PCDF	25.30	335	6014	6014.00	NO CALIB	86
6) ##PCDF	26.29	392	226704	226704.0	NO CALIB	97
7) ##HXCDF	26.81	422	240865	240865.0	NO CALIB	97
7) ##HXCDF	26.92	428	4510	4510.00	NO CALIB	94
7) ##HXCDF	27.50	462	11020	11020.00	NO CALIB	96
7) ##HXCDF	28.58	524	177047	177047.0	NO CALIB	99
7) ##HXCDF	29.84	597	4165	4165.00	NO CALIB	89
##HPCDF	29.10	554	3172	3172.00	NO CALIB	89
##HPCDF	29.84	597	178946	178946.0	NO CALIB	96
8) ##HPCDF	30.08	611	2648	2648.00	NO CALIB	95
8) ##HPCDF	30.53	637	2745^	2745.00	NO CALIB	78
8) ##HPCDF	31.16	673	160597	160597.0	NO CALIB	98

Compound uses ESTD

316B030

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

Associated Samples and Blanks: LCS, LCSD

I. **Column Performance Check Mixture**

Injection Date: 11/22/94 Injection Time: 13:42

Instrument ID: 9 File ID: GL740

Column ID: DB-5

1. Is there overlap of between the late-eluting tetra-isomers and the early eluting penta-isomers?

   Yes (No)

2. Did the laboratory analyze the column performance check mixture on a column that can resolve the TCDD isomer?

   (Yes) No

3. If the answer to #2 is no, did the laboratory reanalyze the samples containing positive results for TCDD isomers on a column that can resolve the TCDD isomers?

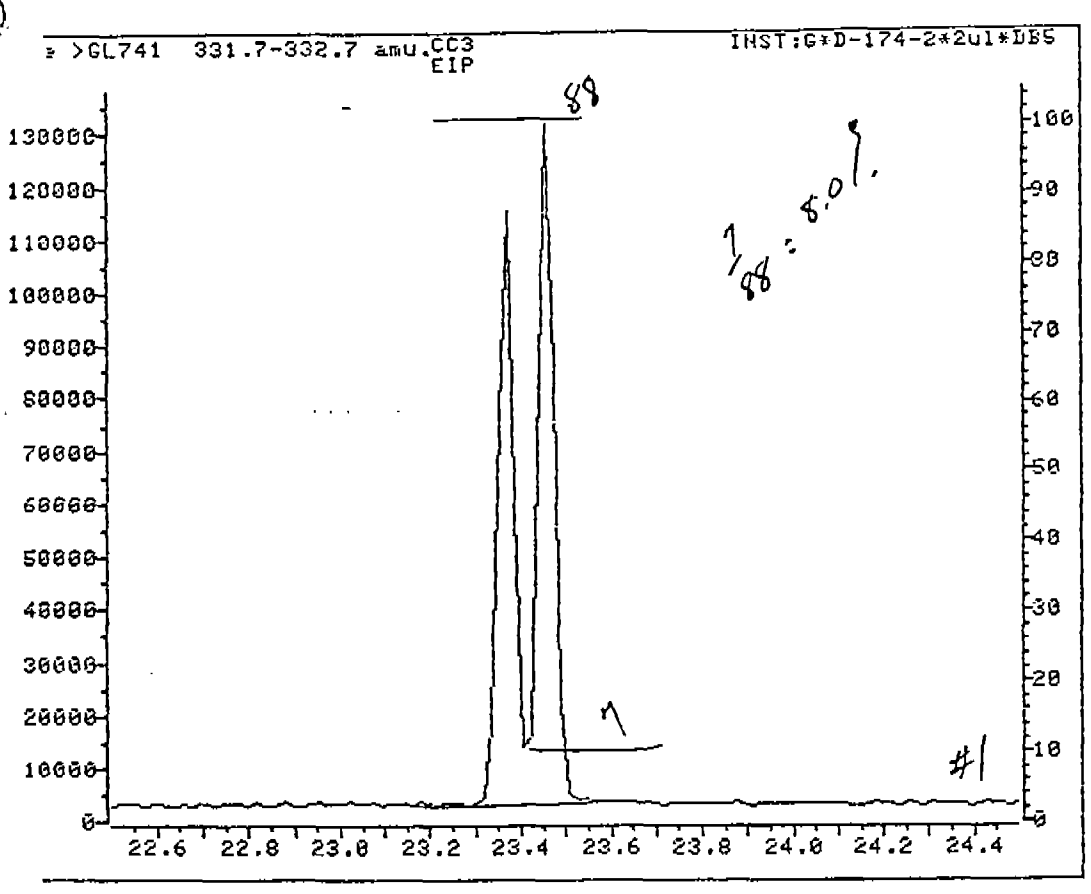
   Yes No (NA)

4. Is the chromatographic separation between 2,3,7,8-TCDD and 1,2,3,4-TCDD resolved with a valley ≤ 25%?

   (Yes) No

Show calculation:

$\frac{7}{84} \times 100 = 8\%$



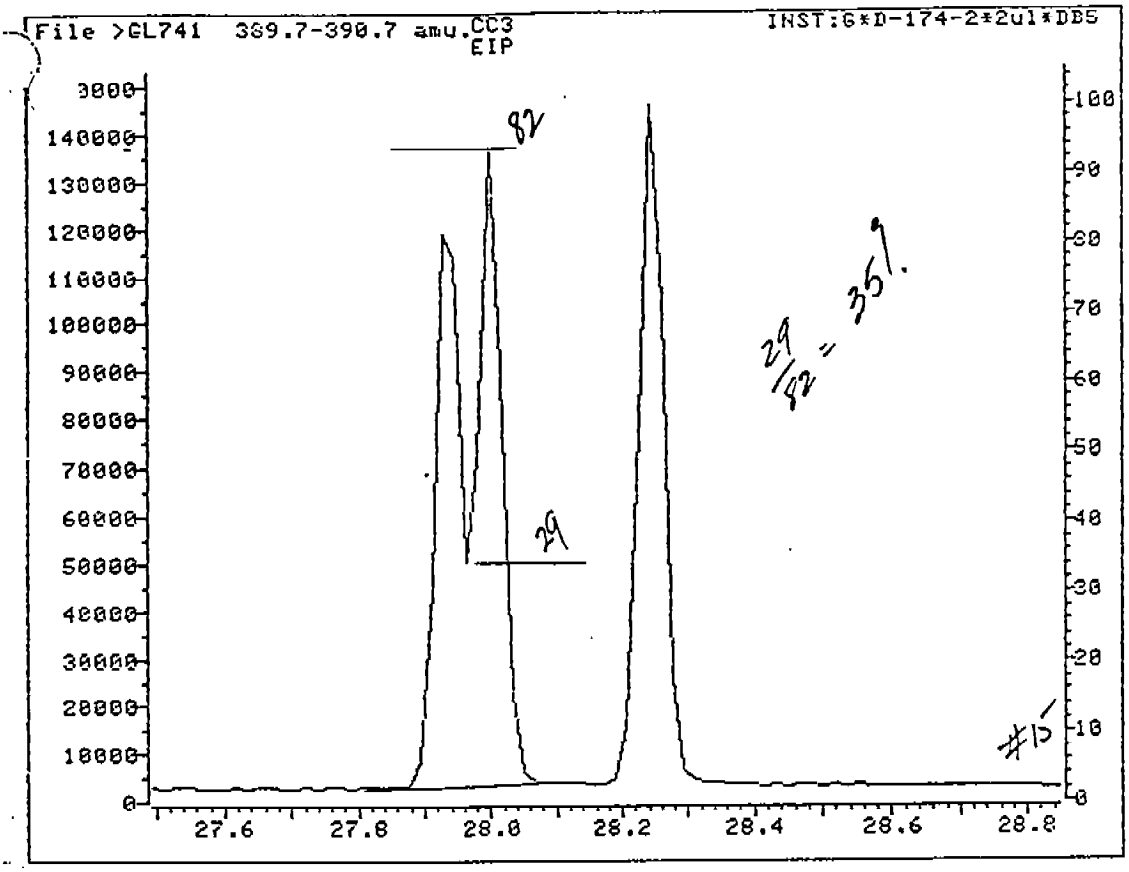
MS data file header from : >GL741::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/22/94 14:17
Misc : INST:G*D-174-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

DD
11/28/94

FLG 11/22/94



MS data file header from : >GL741::D7

Sample: CC3 Operator: SANDY SUPER GRP. 11/22/94 14:17
Misc : INST:G*D-174-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 2
Sys. #: 2 MS model: 88 SW/HW rev.: LF ALS # : 2 Equip ID: G
Method file: M_GTO Tuning file: T_G No. of extra records: 6
Source temp.: 265 Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	0.	0.	0.	0.	0.
Chromatographic times, min. :	0.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	0.0	0.0	0.0	0.0	0.0

SRG 11/22/94

372033

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

II. Continuing Calibration

Injection Date: 11/22/94 Injection Time: 1419

Instrument ID: G File ID: GL741

1. Is the isotopic ratio criteria in the specified range for each calibration compound in each isomer class?

	Ions(m/z)	Range	Ions(m/z)	Range	Yes	No
PCDDs						
Tetra	320/322	0.65-0.89	322/320	1.12-1.54	Yes	No
Penta	358/356	0.55-0.75	356/358	1.33-1.82	Yes	No
Hexa	392/390	0.69-0.93	390/392	1.08-1.45	Yes	No
Hepta	426/424	0.83-1.12	424/426	0.89-1.20	Yes	No
Octa	458/460	0.75-1.01	460/458	0.99-1.33	Yes	No
PCDFs						
Tetra	304/306	0.65-0.89	306/304	1.12-1.54	Yes	No
Penta	342/340	0.55-0.75	340/342	1.33-1.82	Yes	No
Hexa	376/374	0.69-0.93	374/376	1.08-1.45	Yes	No
Hepta	410/408	0.83-1.12	408/410	0.89-1.20	Yes	No
Octa	442/444	0.75-1.01	444/442	0.99-1.33	Yes	No

2. Were all samples analyzed within 12 hours of the first calibration injection (standard or column performance check)?

Yes No

If no, list samples and required action(s):

JW 101394

GC/MS ROUTINE MASS CALIBRATION AND COLUMN PERFORMANCE DIOXIN/FURAN ANALYSIS

3. Are the measured RRFs of all analytes for the continuing calibration standard within ± 30% D of the mean values from the initial calibration?

Yes No

If no, list congeners and/or class(es) that exceeds the %D criteria and any actions that may be required:

2.3.7.8-TCDF 0.58% D

$$\frac{0.829 - 0.824}{0.829} \times 100 \quad 0.6\%$$

1.2.3.7.8-PeCDF = 0.507

$$\frac{367376 \times 0.5}{724228 \times 0.5} = 0.507$$

Rev. 11/93

Calibration Check Report

Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN(.32X60)
Calibrated: 941118 17:04

Check Standard Data File: >GL741
Injection Time: 941122 14:19

Compound	$\overline{RF}$	RF	%Diff	Calib Meth	
2378 TETRA DIOXIN C13	1.09154	1.11349	2.01	Average	(Conc=.500)
2378 TETRA FURAN C13	1.95129	2.03779	4.43	Average	(Conc=.500)
37 CL4 2378 TCDD	1.63953	1.87878	14.59	Average	(Conc=.250)
123678 HEXA DIOXIN C13	.92852	.88352	4.85	Average	(Conc=.500)
OCTA DIOXIN C13	.50293	.45720	9.09	Average	(Conc=1.00)
1234678 HEPTA FURAN C13	.91804	.95087	3.58	Average	(Conc=1.00)
2378 TCDD	.96538	1.00642	4.25	Average	
12378 PENTA DIOXIN	.53377	.59442	11.36	Average	
123478 HEXA DIOXIN	.94505	.92438	2.19	Average	(Conc=1.25)
123678 HEXA DIOXIN	.91113	.91178	.07	Average	(Conc=1.25)
123789 HEXA DIOXIN	.94183	1.04835	11.31	Average	(Conc=1.25)
1234678 HEPTA DIOXIN	.60356	.66315	9.87	Average	(Conc=1.25)
2378 TETRA FURAN	.82922	.82441	.58	Average	
12378 PENTA FURAN	.46968	.50657	7.85	Average	
23478 PENTA FURAN	.63216	.72099	14.05	Average	(Conc=.500)
123478 HEXA FURAN	1.68917	1.82965	8.32	Average	(Conc=1.25)
123678 HEXA FURAN	1.64628	1.50539	8.56	Average	(Conc=1.25)
234678 HEXA FURAN	1.55462	1.52537	1.88	Average	(Conc=1.25)
3789 HEXA FURAN	1.43147	1.43315	.12	Average	(Conc=1.25)
1234678 HEPTA FURAN	1.09131	1.07395	1.59	Average	(Conc=1.25)
1234789 HEPTA FURAN	.98178	1.00911	2.78	Average	(Conc=1.25)
OCTA DIOXIN	.63031	.69375	10.06	Average	(Conc=2.50)
OCTA FURAN	1.05969	1.16303	9.75	Average	(Conc=2.50)

P) 11/28/94

Eug 11/22/94

RF - Response Factor from daily standard file at .500 NG/UL

$\overline{RF}$ - Average Response Factor from Initial Calibration

%Diff - % Difference from original average or curve

372

QUANT REPORT

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 15:11
Output File: XGL741::D1 Injected at: 941122 14:19
Data File: >GL741::D7 Dilution Factor: 1.00000
Name: CC3 Instrument ID: G
Misc: INST:G*D-174-2*2ul*DB5 COLUMN (.32mmX60m) BTL# 2

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

SAG 11/22/94

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1234 TETRA DIOXIN C13	23.37	226	356089	.500	NG/UL	97
2)	2378 TETRA DIOXIN C13	23.46	231	396501	.510	NG/UL	96
3)	2378 TETRA FURAN C13	23.09	210	725636	.522	NG/UL	95
4)	37 CL4 2378 TCDD	23.47	232	334507	.286	NG/UL	100
5)	*123789 HEXA DIOXIN C13	28.24	507	164579	.500	NG/UL	96
6)	123678 HEXA DIOXIN C13	28.00	493	145409	.476	NG/UL	98
7)	OCTA DIOXIN C13	33.92	846	150490	.909	NG/UL	95
8)	1234678 HEPTA FURAN C13	29.75	594	312986	1.04	NG/UL	97
	*2378 TETRA DIOXIN C13	23.46	231	396501	.500	NG/UL	96
10)	2378 TCDD	23.47	232	399047	.521	NG/UL	99
12)	12378 PENTA DIOXIN	25.83	368	235689	.557	NG/UL	99
14)	*123678 HEXA DIOXIN C13	28.00	493	145409	.500	NG/UL	98
15)	123478 HEXA DIOXIN	27.93	489	336034	1.22	NG/UL	99
16)	123678 HEXA DIOXIN	28.00	493	331453	1.25	NG/UL	98
17)	123789 HEXA DIOXIN	28.24	507	381100	1.39	NG/UL	97
19)	1234678 HEPTA DIOXIN	30.63	645	241069	1.37	NG/UL	95
21)	*2378 TETRA FURAN C13	23.09	210	725228	.500	NG/UL	95
22)	2378 TETRA FURAN	23.11	211	597888	.497	NG/UL	99
24)	12378 PENTA FURAN	25.23	333	367376	.539	NG/UL	98
25)	23478 PENTA FURAN	25.62	356	522879	.570	NG/UL	97
27)	*1234678 HEPTA FURAN C13	29.75	594	312986	1.00	NG/UL	97
28)	123478 HEXA FURAN	27.41	459	715819	1.35	NG/UL	97
29)	123678 HEXA FURAN	27.50	464	588957	1.14	NG/UL	96
30)	234678 HEXA FURAN	27.86	485	596774	1.23	NG/UL	98
31)	123789 HEXA FURAN	28.45	519	560694	1.25	NG/UL	97
33)	1234678 HEPTA FURAN	29.75	594	420166	1.23	NG/UL	97
34)	1234789 HEPTA FURAN	31.07	670	394795	1.28	NG/UL	99
36)	*12346789 OCTA DIOXIN C13	33.92	846	150490	1.00	NG/UL	95
37)	OCTA DIOXIN	33.93	847	261006	2.75	NG/UL	99
38)	OCTA FURAN	34.09	857	437561	2.74	NG/UL	95

* Compound is ISTD

METHOD BLANK SUMMARY
DIOXIN/FURAN ANALYSIS

Sample ID: DfBlk File ID: BLK11701

COMPOUND	CONCENTRATION	CRQL

NW 12/28/1

Rev. 11/93

GL719D
GL719F

1DFA

PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

DFBLK

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: BLK111701

Sample wt/vol: 10 (g/ml) g Lab File ID: GL719D

Water Sample Prep:_____ (Sepf/Cont) Date Received:_____

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322			ND	U	.10
2378-TCDF	304/306			ND	U	.23
12378-PeCDF	342/340			ND	U	.08
12378-PeCDD	358/356			ND	U	.39
23478-PeCDF	342/340			ND	U	.19
123478-HxCDF	376/374			ND	U	.20
123678-HxCDF	376/374			ND	U	.27
123478-HXCDD	392/390			ND	U	.62
123678-HxCDD	392/390			ND	U	.87
123789-HxCDD	392/390			ND	U	.40
234678-HxCDF	376/374			ND	U	.26
123789-HxCDF	376/374			ND	U	.17
1234678-HpCDF	410/408			ND	U	.37
1234678-HpCDD	426/424			ND	U	.49
1234789-HpCDF	410/408			ND	U	.15
OCDD	458/460			ND	U	1.23
OCDF	442/444			ND	U	.40

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.17	.799	0.65-0.89	65	40-120
13C-2378-TCDD	332/334	23.53	.770	0.65-0.89	68	40-120
13C-123678-HxCDD	402/404	28.07	.823	0.69-0.93	73	40-120
13C-1234678-HpCDF	420/422	29.84	.948	0.83-1.12	76	40-120
13C-OCDD	470/472	34.03	.877	0.75-1.01	71	40-120
37Cl-2378-TCDD	328/NA	23.55	N/A	N/A	97	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

GL719D
GL719F

1DFB

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

DFBLK

Lab Name: SWL-TULSA Contract:_____

Lab Code:__SWOK_____ Case No.:___IEA__ SAS No.:_____ SDG. NO.:__20608__

Matrix:___SOIL___(Soil/Water/Waste/Ash) LAB SAMPLE ID:_____BLK111701

Sample wt/vol: 10 (g/ml) g Lab File ID:_____GL719D

Water Sample Prep:_____ (Sepf/Cont) Date Received:_____

Concentrated Extract Volume: 100 (uL) Date Extracted:____11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed:_____11/21/94

GC Column: ____DB5 ID:__.32 (mm) Dilution Factor:___ 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	ND	x	1.0	=	.000
2378-TCDF	ND	x	0.1	=	.000
12378-PeCDF	ND	x	0.05	=	.000
12378-PeCDD	ND	x	0.5	=	.000
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	ND	x	0.1	=	.000
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	ND	x	0.1	=	.000
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	ND	x	0.01	=	.000
1234678-HpCDD	ND	x	0.01	=	.000
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	ND	x	0.001	=	.000
OCDF	ND	x	0.001	=	.000
			TOTAL	=	.000

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL719D
GL719F

2DF

PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

DFBLK

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: BLK111701

Sample wt/vol: 10 (g/ml) g Lab File ID: GL719D

Water Sample Prep:_____ (Sepf/Cont) Date Received:____

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD		.0	U	.10
Total PeCDD		.0	U	.39
Total HxCDD		.0	U	.40
Total HpCDD		.0	U	.49
FURANS				
Total TCDF		.0	U	.23
Total PeCDF		.0	U	.08
Total HxCDF		.0	U	.16
Total HpCDF		.0	U	.15

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis. The total congener concentrations do not affect the TEF calculations.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS
DIOXIN/FURAN ANALYSIS

Sample ID: LCS File ID: LCSD

Sample Type: Matrix Spike Blank Spike

1. Are the recoveries for the PCDDs and PCDFs acceptable?

Yes No

If no, list the congener, the ng of congener spiked and the non compliant recoveries.

Congener	ng Spiked	% Recovery	% Recovery	Action(s)

Rev. 11/93

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: IEA
3000 WESTON PARKWAY
CARY, NORTH CAROLINA 27513
ATTN: JIM HAYS

REPORT: 20608DF

DATE: 11-30-94

SAMPLE MATRIX: SOIL
SWLO #: BLK111701 LCS/LCSD
DATE EXTRACTED: 11-17-94
DATE ANALYZED: 11-22-94
METHOD REFERENCE: SW846-8280
PROJECT: 1934-0045
SAMPLE ID: LABORATORY CONTROL SPIKE/SPIKE DUPLICATE

RESULTS REPORTED IN Parts Per Billion (ug/kg)

DIOXIN/FURANS LABORATORY CONTROL SPIKE RECOVERY

COMPOUNDS	AMOUNT IN SAMPLE (ug/kg)	AMOUNT ADDED (ug/kg)	AMOUNT DETECTED (ug/kg)	LCS PERCENT RECOVERY	TARGET RECOVERY LIMITS
2378-TCDF	0	2.5	2.76	110	50-150
12378-PCDF	0	6.25	6.51	104	50-150
123678 HxCDF	0	6.25	6.30	101	50-150
1234678 HpCDF	0	6.25	7.25	116	50-150
OCDF	0	12.5	12.2	98	50-150
2378 TCDD	0	2.5	3.20	128	50-150
12378 PeCD	0	6.25	6.61	106	50-150
123678 HxCD	0	6.25	6.18	99	50-150
1234678 HpCD	0	6.25	5.77	92	50-150
OCDD	0	12.5	17.8	142	50-150

COMPOUNDS	AMOUNT ADDED (ug/kg)	AMOUNT DETECTED (ug/kg)	LCSD PERCENT RECOVERY	RPD	TARGET QC LIMITS RPD	% RECOVERY
2378-TCDF	2.5	2.92	117	6.2	50	50 - 150
12378-PCDF	6.25	7.28	116	11	50	50 - 150
123678 HxCDF	6.25	6.17	99	2	50	50 - 150
1234678 HpCDF	6.25	7.25	116	0	50	50 - 150
OCDF	12.5	12.1	97	1	50	50 - 150
2378 TCDD	2.5	3.46	138	7.5	50	50 - 150
12378 PeCD	6.25	7.18	115	8.1	50	50 - 150
123678 HxCD	6.25	6.28	100	1	50	50 - 150
1234678 HpCD	6.25	6.24	100	8.3	50	50 - 150
OCDD	12.5	18.5	148	4.1	50	50 - 150

QA/QC SURROGATE RECOVERIES

SPIKE

13C-TCDD	(25-150)	71%	13C-TCDF	(25-150)	71%	13C-HxCDD	(25-150) 79%
13C-OCDD	(25-150)	55%	13C-HpCDF	(25-150)	82%	37C14-TCDD	(25-150) 110%

SPIKE DUPLICATE

13C-TCDD	(25-150)	64%	13C-TCDF	(25-150)	66%	13C-HxCDD	(25-150) 76%
13C-OCDD	(25-150)	64%	13C-HpCDF	(25-150)	79%	37C14-TCDD	(25-150) 106%

* = VALUES OUTSIDE OF QC LIMITS
SW - EPA METHODOLOGY "SW846" THIRD EDITION, JULY 1992

GL745D
GL745F

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

LCS

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608

Sample wt/vol: 10 (g/ml) g Lab File ID: GL745D

Water Sample Prep:_____ (Sepf/Cont) Date Received:____

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/22/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	23.46	.805	3.198		
2378-TCDF	304/306	23.09	.800	2.763		
12378-PeCDF	342/340	25.21	.667	6.509		
12378-PeCDD	358/356	25.83	.669	6.606		
23478-PeCDF	342/340			ND	U	.16
123478-HxCDF	376/374			ND	U	.21
123678-HxCDF	376/374	27.48	.811	6.300		
123478-HXCDD	392/390			ND	U	.78
123678-HxCDD	392/390	28.00	.808	6.181		
123789-HxCDD	392/390			ND	U	.17
234678-HxCDF	376/374			ND	U	.23
123789-HxCDF	376/374			ND	U	.10
1234678-HpCDF	410/408	29.75	.926	7.245		
1234678-HpCDD	426/424	30.64	.907	5.772		
1234789-HpCDF	410/408			ND	U	.14
OCDD	458/460	33.90	.924	17.832		
OCDF	442/444	34.07	.933	12.182		

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.09	.795	0.65-0.89	71	40-120
13C-2378-TCDD	332/334	23.46	.804	0.65-0.89	71	40-120
13C-123678-HxCDD	402/404	27.98	.789	0.69-0.93	79	40-120
13C-1234678-HpCDF	420/422	29.73	.954	0.83-1.12	82	40-120
13C-OCDD	470/472	33.89	.911	0.75-1.01	55	40-120
37Cl-2378-TCDD	328/NA	23.46	N/A	N/A	110	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

GL745D 1DFB EPA SAMPLE NO.
GL745F

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

LCS

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608

Sample wt/vol: 10 (g/ml) g Lab File ID: GL745D

Water Sample Prep:_____ (Sepf/Cont) Date Received:_____

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/22/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	3.2	x	1.0	=	3.198
2378-TCDF	2.8	x	0.1	=	.276
12378-PeCDF	6.5	x	0.05	=	.325
12378-PeCDD	6.6	x	0.5	=	3.303
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	6.3	x	0.1	=	.630
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	6.2	x	0.1	=	.618
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	7.2	x	0.01	=	.072
1234678-HpCDD	5.8	x	0.01	=	.058
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	17.6	x	0.001	=	.018
OCDF	12.2	x	0.001	=	.012
			TOTAL	=	8.511

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL745D DIOXINS AREA SUMMARY FORM

SAMPLE ID.	LCS	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608
WEIGHT IN GRAMS	10	DATE ANALYSED	11/22/94	TIME ANALYSED	17:11	DRY WT	10

Compounds							CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard	R.T.	332	334	332/334 RATIO	.65-.89			
2,3,7,8 TCDD C13	23.46	180198	224023	.804				
50 ng.								
2378 TCDD								
RF .965	R.T.	259	320	322	320/322 RATIO			
	23.46	35735	111289	138328	.805		3198.08	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL TETRA CDD							3198.08	.00
	R.T.	328	N/A	356/N/A RATIO				
2378 TCDD 37CL 25 ng.	23.46	262902		N/A				
12378 PENTA CDD	R.T.	356	358	358/356 RATIO	.55-.75			
RF .534	25.83	157990	105768	.669			6606.22	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL PENTA CDD							6606.22	.00
Internal Standard	R.T.	404	402	404/402 RATIO	.69-.93			
1,2,3,6,7,8 HXCDD C13	27.98	58600	74244	.789				
50 ng.								
123478 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93			
RF .945	27.77	1546	4378	.353			ND	779.96
							ND	.00
123678 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93			
RF .911	28.00	67540	83630	.808			6181.45	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
123789 HEXA CDD	R.T	392	390	392/390 RATIO	.69-.93			
RF .942	28.24	1163	933	1.247			ND	166.79
							ND	.00
TOTAL HEXA CDD							6181.45	.00
1234678 HEPTA CDD	R.T	426	424	426/424 RATIO	.83-1.22			
RF .604	30.64	46906	51727	.907			5771.72	
							ND	.00
							ND	.00
TOTAL HEPTA CDD							5771.72	
Internal Standard	R.T	470	472	470/472 RATIO	.75-1.01			
OCTA DIOXIN C13	33.89	54699	60073	.911				
Int. Std. 100 ng.								
OCTA CDD	R.T	458	460	458/460 RATIO	.75-1.01			

RF	.630	33.90	62409	67521	.924	17832.22	
						ND	.00
TOTAL OCTA CDD						17832.22	

SURROGATE RECOVERIES

2378 TCDD C13	=	71
2378TCDD CL37	=	110
123678 HxCDD C13	=	79
OCDD C13	=	55

GL745F DIBENZOFURANS AREA SUMMARY FORM

SAMPLE ID.	LCS	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608
WEIGHT IN GRAMS	10	DATE ANALYSED	11/22/94	TIME ANALYSED	17:11	DRY WT	10

Compounds							CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard		R.T.	316	318	316/318	.65-.89		
2,3,7,8 TCDF C13		23.09	320948	403646	.795			
50 ng.								
2378 TCDF					304/306			
RF	.829	R.T.	304	306	RATIO	.65-.89		
		23.09	147924	184945	.800		2762.75	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL TETRA CDF							2762.75	.00
12378 PENTA CDF		R.T	342	340	342/340 RATIO	.55-.75		
RF	.470	25.21	164612	246796	.667		6508.87	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
23478 PENTA CDF		R.T.	342	340	342/340 RATIO	.55-.75		
RF	.632	25.63	2305	3166	.728		ND	155.09
							ND	.00
TOTAL PENTA CDF							6508.87	.00
Internal Standard		R.T	422	420	420/422	.83-1.12		
1234678 HPCDF C13		29.73	144160	151042	.954			
100 ng.								
123478 HEXA CDF		R.T	376	374	376/374 RATIO	.69-.93		
RF	1.689	27.34	1005	2143	.469		ND	209.99
							ND	.00
							ND	.00
123678 HEXA CDF						.69-.93	ND	.00
RF	1.646	R.T	376	374	376/374 RATIO			
		27.48	127073	156653	.811		6299.95	
							ND	.00
							ND	.00

							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
_34678 HEXA CDF						.69-.93		
RF	1.555	R.T	376	374	376/374 RATIO			
		28.03	1601	897	1.785		ND	95.50
							ND	.00
123789 HEXA CDF		R.T	376	374	376/374 RATIO	.69-.93		
RF	1.431	28.40	897	1979	.453		ND	228.83
							ND	.00
TOTAL HEXA CDF							6299.95	.00
1234678 HEPTA CDF		R.T.	410	408	410/408 RATIO	.83-1.12		
RF	1.091	29.75	110570	119425	.926		7245.18	
							ND	.00
							ND	.00
							ND	.00
1234789 HEPTA CDF		R.T	410	408	410/408 RATIO	.83-1.12		
RF	.982	31.00	1078	810	1.331		ND	136.56
							ND	.00
TOTAL HEPTA CDF							7245.18	.00
Internal Standard		R.T	470	472	470/472 RATIO	.75-1.01		
OCTA CDD C13		33.89	54699	60073	.911			
Int. Std.	100 ng.							
OCTA CDF		R.T	442	444	442/444 RATIO	.75-1.01		
RF	1.060	34.07	72380	77551	.933		12182.30	
							ND	.00
TOTAL OCTA CDF							12182.30	

SURROGATE RECOVERIES

2378TCDF 13C = 71

1234678 HpCDF = 82

QUANT REPORT

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 17:49
Output File: ^GL745::D1 Injected at: 941122 17:11
Data File: >GL745::D7 Dilution Factor: 1.00000
Name: LCS Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 6

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1234 TETRA DIOXIN C13	23.37	226	290304	.500	NG/UL	96
2)	2378 TETRA DIOXIN C13	23.46	231	224023	.353	NG/UL 71	96
3)	2378 TETRA FURAN C13	22.87	197	1659	.00146	NG/UL	45
3)	2378 TETRA FURAN C13	22.97	203	742	.000655	NG/UL	44
3)	2378 TETRA FURAN C13	23.09	210	403646	.356	NG/UL 71	97
3)	2378 TETRA FURAN C13	23.37	226	4569	.00403	NG/UL	82
4)	37 CL4 2378 TCDD	23.46	231	262902	.276	NG/UL 110	100
5)	*123789 HEXA DIOXIN C13	28.23	506	100757	.500	NG/UL	99
6)	123678 HEXA DIOXIN C13	27.81	482	1852	.00990	NG/UL	59
	123678 HEXA DIOXIN C13	27.98	492	74244	.397	NG/UL 79	97
7)	OCTA DIOXIN C13	33.59	825	1120	.0111	NG/UL	51
7)	OCTA DIOXIN C13	33.89	844	56150	.554	NG/UL 55	93
7)	OCTA DIOXIN C13	34.64	892	1149	.0113	NG/UL	79
7)	OCTA DIOXIN C13	34.68	895	1710	.0169	NG/UL	67
7)	OCTA DIOXIN C13	34.78	901	2807	.0277	NG/UL	52
8)	1234678 HEPTA FURAN C13	29.61	586	1417	.00766	NG/UL	76
8)	1234678 HEPTA FURAN C13	29.73	593	151042	.816	NG/UL 82	97
9)	*2378 TETRA DIOXIN C13	23.46	231	224023	.500	NG/UL	96
10)	2378 TCDD	23.46	231	138328	.320	NG/UL 72	96
11)	TCDD	22.05	150	4524	4524.00	NO CALIB	75
11)	TCDD	22.21	159	2339^	2339.00	NO CALIB	82
11)	TCDD	22.30	164	2620	2620.00	NO CALIB	70
11)	TCDD	22.44	172	1738	1738.00	NO CALIB	52
11)	TCDD	22.57	180	2060	2060.00	NO CALIB	1
11)	TCDD	22.66	185	1773	1773.00	NO CALIB	17
11)	TCDD	22.87	197	3686	3686.00	NO CALIB	7
11)	TCDD	23.46	231	138328	138328.0	NO CALIB	96
11)	TCDD	23.68	244	601^	601.00	NO CALIB	51
11)	TCDD	23.72	246	1999	1999.00	NO CALIB	64
11)	TCDD	23.84	253	1722^	1722.00	NO CALIB	77
11)	TCDD	23.94	259	1406	1406.00	NO CALIB	18
11)	TCDD	24.07	266	1114	1114.00	NO CALIB	45
11)	TCDD	24.15	271	1239	1239.00	NO CALIB	70
11)	TCDD	24.24	276	1461	1461.00	NO CALIB	99
11)	TCDD	24.31	280	2039	2039.00	NO CALIB	87
	12378 PENTA DIOXIN	25.83	368	157990	.661	NG/UL 106	97
12)	PCDD	24.52	292	1643	1643.00	NO CALIB	95
13)	PCDD	24.65	300	2942	2942.00	NO CALIB	97
13)	PCDD	24.88	313	1876	1876.00	NO CALIB	64
13)	PCDD	25.17	330	3436^	3436.00	NO CALIB	72

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 17:49
Output File: ^GL745::D1 Injected at: 941122 17:11
Data File: >GL745::D7 Dilution Factor: 1.00000
Name: LCS Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 6

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
13)	PCDD	25.38	342	783	783.00	NO CALIB	92
13)	PCDD	25.50	349	3054	3054.00	NO CALIB	81
13)	PCDD	25.57	353	969	969.00	NO CALIB	82
13)	PCDD	25.83	368	157990	157990.0	NO CALIB	97
13)	PCDD	26.02	379	1781	1781.00	NO CALIB	89
13)	PCDD	26.15	386	1024	1024.00	NO CALIB	1
13)	PCDD	26.22	390	1627	1627.00	NO CALIB	60
13)	PCDD	26.35	398	2089	2089.00	NO CALIB	26
14)	*123678 HEXA DIOXIN C13	27.98	492	74244	.500	NG/UL	97
16)	123478 HEXA DIOXIN	28.00	493	83630	.596	NG/UL	99
16)	123678 HEXA DIOXIN	28.00	493	83630	.618	NG/UL 99%	99
17)	123789 HEXA DIOXIN	28.24	507	933	.00667	NG/UL	50
18)	HXCDD	26.28	394	2040^	2040.00	NO CALIB	90
18)	HXCDD	26.39	400	1061^	1061.00	NO CALIB	38
18)	HXCDD	26.65	415	1761	1761.00	NO CALIB	45
18)	HXCDD	26.72	419	1070	1070.00	NO CALIB	63
18)	HXCDD	26.94	432	1547	1547.00	NO CALIB	55
18)	HXCDD	27.08	440	1032	1032.00	NO CALIB	77
18)	HXCDD	27.19	446	2598^	2598.00	NO CALIB	52
18)	HXCDD	27.36	456	2962	2962.00	NO CALIB	85
18)	HXCDD	27.46	462	1954	1954.00	NO CALIB	98
18)	HXCDD	27.60	470	5178	5178.00	NO CALIB	61
18)	HXCDD	27.77	480	4378	4378.00	NO CALIB	48
18)	HXCDD	28.00	493	83630	83630.00	NO CALIB	99
18)	HXCDD	28.50	522	1742	1742.00	NO CALIB	84
18)	HXCDD	28.68	532	2203	2203.00	NO CALIB	94
18)	HXCDD	29.09	556	2369	2369.00	NO CALIB	74
19)	1234678 HEPTA DIOXIN	30.64	645	51727	.577	NG/UL	93
19)	1234678 HEPTA DIOXIN	30.79	654	2485	.0277	NG/UL	98
20)	HPCDD	29.54	582	1506	.0116	NG/UL	88
20)	HPCDD	29.60	585	1109	.00855	NG/UL	98
20)	HPCDD	29.73	593	77519	.598	NG/UL	36
20)	HPCDD	29.98	607	2433^	.0188	NG/UL	61
20)	HPCDD	30.17	618	1015	.00783	NG/UL	58
20)	HPCDD	30.36	629	1072^	.00827	NG/UL	61
20)	HPCDD	30.51	638	1304^	.0101	NG/UL	62
20)	HPCDD	30.64	645	51601	.398	NG/UL	93
20)	HPCDD	30.79	654	2430	.0187	NG/UL	98
20)	HPCDD	30.98	665	2342	.0181	NG/UL 49.6	89
21)	*2378 TETRA FURAN C13	23.09	210	403646	.500	NG/UL	051
22)	2378 TETRA FURAN	23.09	210	184945	.276	NG/UL 110%	96

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 17:49
Output File: ^GL745::D1 Injected at: 941122 17:11
Data File: >GL745::D7 Dilution Factor: 1.00000
Name: LCS Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 6

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
23)	TCDF	21.41	113	777	777.00	NO CALIB	85
23)	TCDF	21.57	122	2042	2042.00	NO CALIB	65
23)	TCDF	21.67	128	3607	3607.00	NO CALIB	73
23)	TCDF	21.90	141	1693	1693.00	NO CALIB	19
23)	TCDF	22.09	152	1488	1488.00	NO CALIB	50
23)	TCDF	22.18	157	1762	1762.00	NO CALIB	77
23)	TCDF	22.52	177	2441	2441.00	NO CALIB	93
23)	TCDF	22.75	190	4163	4163.00	NO CALIB	81
23)	TCDF	22.89	198	5238	5238.00	NO CALIB	98
23)	TCDF	23.09	210	184945	184945.0	NO CALIB	79
23)	TCDF	23.37	226	5199	5199.00	NO CALIB	58
23)	TCDF	23.48	232	2323	2323.00	NO CALIB	67
23)	TCDF	23.61	240	3044	3044.00	NO CALIB	78
23)	TCDF	23.75	248	1637	1637.00	NO CALIB	63
23)	TCDF	23.84	253	579	579.00	NO CALIB	45
23)	TCDF	24.05	265	2768^	2768.00	NO CALIB	83
23)	TCDF	24.20	274	1420	1420.00	NO CALIB	59
24)	12378 PENTA FURAN	24.91	315	1372	.00362	NG/UL	52
24)	12378 PENTA FURAN	25.04	322	2407	.00635	NG/UL	75
24)	12378 PENTA FURAN	25.21	332	246796	.651	NG/UL 104%	97
24)	12378 PENTA FURAN	25.63	356	3166	.00835	NG/UL	94
25)	23478 PENTA FURAN	25.21	332	246796	.484	NG/UL	97
25)	23478 PENTA FURAN	25.63	356	3166	.00620	NG/UL	90
25)	23478 PENTA FURAN	25.80	366	1423	.00279	NG/UL	36
25)	23478 PENTA FURAN	25.87	370	1326	.00260	NG/UL	56
26)	PCDF	23.72	246	1784^	1784.00	NO CALIB	73
26)	PCDF	23.87	255	2982	2982.00	NO CALIB	97
26)	PCDF	23.94	259	1655	1655.00	NO CALIB	95
26)	PCDF	24.08	267	1567	1567.00	NO CALIB	58
26)	PCDF	24.20	274	940	940.00	NO CALIB	28
26)	PCDF	24.26	277	1660	1660.00	NO CALIB	29
26)	PCDF	24.33	281	443	443.00	NO CALIB	6
26)	PCDF	24.43	287	1014	1014.00	NO CALIB	66
26)	PCDF	24.57	295	1538	1538.00	NO CALIB	79
26)	PCDF	24.72	304	1736	1736.00	NO CALIB	97
26)	PCDF	24.91	315	1372	1372.00	NO CALIB	1
26)	PCDF	25.04	322	2407	2407.00	NO CALIB	94
26)	PCDF	25.21	332	246796	246796.0	NO CALIB	97
26)	PCDF	25.37	341	2122^	2122.00	NO CALIB	1
26)	PCDF	25.63	356	3166	3166.00	NO CALIB	52
26)	PCDF	25.80	366	1407	1407.00	NO CALIB	52

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 17:49
Output File: ^GL745::D1 Injected at: 941122 17:11
Data File: >GL745::D7 Dilution Factor: 1.00000
Name: LCS Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 6

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
26)	PCDF	25.87	370	1311	1311.00	NO CALIB	89
26)	PCDF	26.15	386	1483	1483.00	NO CALIB	44
26)	PCDF	26.22	390	2756	2756.00	NO CALIB	75
26)	PCDF	26.34	397	1030	1030.00	NO CALIB	26
26)	PCDF	26.44	403	1405	1405.00	NO CALIB	82
27)	*1234678 HEPTA FURAN C13	29.73	593	151042	1.00	NG/UL	97
28)	123478 HEXA FURAN	26.98	434	843	.00330	NG/UL	55
28)	123478 HEXA FURAN	27.10	441	878	.00344	NG/UL	53
28)	123478 HEXA FURAN	27.34	455	2143	.00840	NG/UL	61
[illegible]	123478 HEXA FURAN	27.48	463	156653	.614	NG/UL	99
[illegible]	123478 HEXA FURAN	27.69	475	2012	.00789	NG/UL	39
29)	123678 HEXA FURAN	27.10	441	887	.00357	NG/UL	64
29)	123678 HEXA FURAN	27.34	455	2143	.00862	NG/UL	61
29)	123678 HEXA FURAN	27.48	463	156653	.630	NG/UL 1011	99
29)	123678 HEXA FURAN	27.69	475	2012	.00809	NG/UL	39
31)	123789 HEXA FURAN	28.40	516	1979	.00915	NG/UL	59
32)	HXCDF	26.51	407	2021	2021.00	NO CALIB	33
32)	HXCDF	26.60	412	749	749.00	NO CALIB	98
32)	HXCDF	26.74	420	2272	2272.00	NO CALIB	41
32)	HXCDF	26.80	424	1339	1339.00	NO CALIB	70
32)	HXCDF	26.98	434	843	843.00	NO CALIB	55
32)	HXCDF	27.10	441	847	847.00	NO CALIB	58
32)	HXCDF	27.34	455	2143	2143.00	NO CALIB	61
32)	HXCDF	27.48	463	156653	156653.0	NO CALIB	99
32)	HXCDF	27.69	475	1452	1452.00	NO CALIB	1
32)	HXCDF	28.03	495	897	897.00	NO CALIB	1
32)	HXCDF	28.17	503	1624	1624.00	NO CALIB	24
32)	HXCDF	28.40	516	1979	1979.00	NO CALIB	59
32)	HXCDF	28.56	525	1896	1896.00	NO CALIB	70
33)	1234678 HEPTA FURAN	29.75	594	119425	.725	NG/UL 1167	95
33)	1234678 HEPTA FURAN	29.91	603	3556	.0216	NG/UL	24
34)	1234789 HEPTA FURAN	31.00	666	810	.00546	NG/UL	63
35)	HPCDF	29.51	580	3152	3152.00	NO CALIB	90
35)	HPCDF	29.75	594	119425	119425.0	NO CALIB	95
35)	HPCDF	29.91	603	3556	3556.00	NO CALIB	24
[illegible]	HPCDF	30.06	612	1295	1295.00	NO CALIB	80
[illegible]	HPCDF	30.25	623	2429	2429.00	NO CALIB	34
35)	HPCDF	30.39	631	2905	2905.00	NO CALIB	71
35)	HPCDF	30.60	643	3358	3358.00	NO CALIB	55
35)	HPCDF	30.93	662	1436	1436.00	NO CALIB	66
35)	HPCDF	31.21	678	1756	1756.00	NO CALIB	70

QUANT REPORT

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 17:49
Output File: ^GL745::D1 Injected at: 941122 17:11
Data File: >GL745::D7 Dilution Factor: 1.00000
Name: LCS Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 6

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
35)	HPCDF	31.52	696	2294	2294.00	NO CALIB	66
36)	*12346789 OCTA DIOXIN C13	33.89	844	60073M	1.00	NG/UL	93
37)	OCTA DIOXIN	33.51	820	2204	.0582	NG/UL	89
37)	OCTA DIOXIN	33.56	823	1205	.0318	NG/UL	74
37)	OCTA DIOXIN	33.75	835	1047	.0277	NG/UL	41
37)	OCTA DIOXIN	33.90	845	67521M	1.78	NG/UL 142%	96
37)	OCTA DIOXIN	34.25	867	1651	.0436	NG/UL	28
37)	OCTA DIOXIN	34.39	876	1231	.0325	NG/UL	52
9)	OCTA FURAN	33.70	832	443	.00696	NG/UL	9
	OCTA FURAN	34.07	856	77551	1.22	NG/UL 98%	94
3[illegible])	OCTA FURAN	34.35	874	968	.0152	NG/UL	60
38)	OCTA FURAN	34.51	884	2055	.0323	NG/UL	94

* Compound is ISTD

GL746D
GL746F

TDFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

LCSD

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: IEA SAS No.: SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608

Sample wt/vol: 10 (g/ml) g Lab File ID: GL7460

Water Sample Prep: (Sepf/Cont) Date Received:

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/22/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L or ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	23.47	.782	3.462		
2378-TCDF	304/306	23.10	.803	2.921		
12378-PeCDF	342/340	25.22	.623	7.285		
12378-PeCDD	358/356	25.83	.650	7.181		
23478-PeCDF	342/340			ND	U	.08
123478-HxCDF	376/374			ND	U	.06
123678-HxCDF	376/374	27.47	.792	6.173		
123478-HXCDD	392/390			ND	U	.37
123678-HxCDD	392/390	27.99	.793	.628		
123789-HxCDD	392/390			ND	U	.19
234678-HxCDF	376/374			ND	U	.05
123789-HxCDF	376/374			ND	U	.10
1234678-HpCDF	410/408	29.74	.959	7.249		
1234678-HpCDD	426/424	30.63	.939	6.238		
1234789-HpCDF	410/408			ND	U	.10
OCDD	458/460	33.91	.881	18.524		
OCDF	442/444	34.07	.927	12.053		

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.09	.789	0.65-0.89	66	40-120
13C-2378-TCDD	332/334	23.45	.779	0.65-0.89	64	40-120
13C-123678-HxCDD	402/404	27.98	.778	0.69-0.93	76	40-120
13C-1234678-HpCDF	420/422	29.74	.928	0.83-1.12	79	40-120
13C-OCDD	470/472	33.89	.796	0.75-1.01	64	40-120
37Cl-2378-TCDD	328/NA	23.47	N/A	N/A	106	40-120

Column to be used to flag values outside QC limits.

FORM I PCDD-1

GL746D 1DF8 EPA SAMPLE NO.
GL746F

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

LCSD

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608

Sample wt/vol: 10 (g/ml) g Lab File ID: GL746D

Water Sample Prep:_____ (Sepf/Cont) Date Received:_____

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 100 Date Analyzed: 11/22/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	3.5	x	1.0	=	3.462
2378-TCDF	2.9	x	0.1	=	.292
12378-PeCDF	7.3	x	0.05	=	.364
12378-PeCDD	7.2	x	0.5	=	3.590
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	6.2	x	0.1	=	.617
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	.6	x	0.1	=	.063
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	7.2	x	0.01	=	.072
1234678-HpCDD	6.2	x	0.01	=	.062
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	18.5	x	0.001	=	.019
OCDF	12.1	x	0.001	=	.012
			TOTAL	=	8.554

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL7460 DIOXINS AREA SUMMARY FORM

SAMPLE ID.	LCSD	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608
WEIGHT IN GRAMS	10	DATE ANALYSED	11/22/94	TIME ANALYSED	17:51	DRY WT	10

Compounds						CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard	R.T.	332	334	332/334 RATIO	.65-.89		
2,3,7,8 TCDD C13	23.45	217334	278933	.779			
50 ng.							
2378 TCDD							
RF .965	R.T.	259	320	322	320/322 RATIO		
	23.47	48155	145797	186452	.782	3462.09	
						ND	.00
						ND	.00
						ND	.00
						ND	.00
						ND	.00
TOTAL TETRA CDD						3462.09	.00
	R.T.	328	N/A	356/N/A RATIO			
2378 TCDD 37CL 25 ng.	23.47	344378		N/A			
12378 PENTA CDD	R.T.	356	358	358/356 RATIO	.55-.75		
RF .534	25.83	213819	138992	.650		7180.62	
						ND	.00
						ND	.00
						ND	.00
						ND	.00
						ND	.00
						ND	.00
TOTAL PENTA CDD						7180.62	.00
Internal Standard	R.T.	404	402	404/402 RATIO	.69-.93		
1,2,3,6,7,8 HXCDD C13	27.98	63637	107471	.778			
50 ng.							
123478 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93		
RF .945	27.85	851	2991	.285		ND	368.11
						ND	.00
123678 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93		
RF 9.111	27.99	97545	123002	.793		628.07	
						ND	.00
						ND	.00
						ND	.00
						ND	.00
123789 HEXA CDD	R.T	392	390	392/390 RATIO	.69-.93		
RF .942	28.22	1204	1537	.783		ND	189.81
						ND	.00
TOTAL HEXA CDD						628.07	.00
1234678 HEPTA CDD	R.T	426	424	426/424 RATIO	.83-1.22		
RF .604	30.63	76005	80928	.939		6238.17	
						ND	.00
						ND	.00
TOTAL HEPTA CDD						6238.17	
Internal Standard	R.T	470	472	470/472 RATIO	.75-1.01		
OCTA DIOXIN C13	33.89	82270	103296	.796			
Int. Std. 100 ng.							
OCTA CDD	R.T	458	460	458/460 RATIO	.75-1.01		

RF	.630	33.91	106212	120605	.881	18523.69	
						ND	.00
TOTAL OCTA CDD						18523.69	

SURROGATE RECOVERIES

2378 TCDD C13	=	64
2378TCDD CL37	=	106
123678 HxCDD C13	=	76
OCDD C13	=	64

GL746F DIBENZOFURANS AREA SUMMARY FORM

SAMPLE ID.	LCSD	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608
WEIGHT IN GRAMS	10	DATE ANALYSED	11/22/94	TIME ANALYSED	17:51	DRY WT	10

Compounds							CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard		R.T.	316	318	316/318	.65-.89		
2,3,7,8 TCDF C13		23.09	400139	507101	.789			
50 ng.								
2378 TCDF					304/306			
RF	.829	R.T.	304	306	RATIO	.65-.89		
		23.10	197232	245684	.803		2921.34	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL TETRA CDF							2921.34	.00
12378 PENTA CDF		R.T	342	340	342/340 RATIO	.55-.75		
RF	.470	25.22	216062	347014	.623		7284.85	
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
23478 PENTA CDF		R.T.	342	340	342/340 RATIO	.55-.75		
RF	.632	25.90	2843	2173	1.308		ND	84.73
							ND	.00
TOTAL PENTA CDF							7284.85	.00
Internal Standard		R.T	422	420	420/422	.83-1.12		
1234678 HPCDF C13		29.74	206095	221974	.928			
100 ng.								
123478 HEXA CDF		R.T	376	374	376/374 RATIO	.69-.93		
RF	1.689	27.35	1324	945	1.401		ND	63.01
							ND	.00
							ND	.00
123678 HEXA CDF						.69-.93	ND	.00
F	1.646	R.T	376	374	376/374 RATIO			
		27.47	178753	225588	.792		6173.20	
							ND	.00
							ND	.00

							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
..678 HEXA CDF						.69-.93		
RF	1.555	R.T	376	374	376/374 RATIO			
		27.78	606	1412	.429		ND	102.29
							ND	.00
123789 HEXA CDF		R.T	376	374	376/374 RATIO	.69-.93		
RF	1.431	28.36	711	580	1.226		ND	45.63
							ND	.00
TOTAL HEXA CDF							6173.20	.00
1234678 HEPTA CDF		R.T.	410	408	410/408 RATIO	.83-1.12		
RF	1.091	29.74	168440	175606	.959		7249.18	
							ND	.00
							ND	.00
							ND	.00
1234789 HEPTA CDF		R.T	410	408	410/408 RATIO	.83-1.12		
RF	.982	31.01	216	892	.242		ND	102.33
							ND	.00
TOTAL HEPTA CDF							7249.18	.00
Internal Standard		R.T	470	472	470/472 RATIO	.75-1.01		
OCTA CDD C13		33.89	82270	103296	.796			
Int. Std.	100 ng.							
OCTA CDF		R.T	442	444	442/444 RATIO	.75-1.01		
RF	1.060	34.07	122342	131936	.927		12053.16	
							ND	.00
TOTAL OCTA CDF							12053.16	

SURROGATE RECOVERIES

2378TCDF 13C = 66

1234678 HpCDF = 79

QUANT REPORT

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 18:29
Output File: ^GL746::D1 Injected at: 941122 17:51
Data File: >GL746::D7 Dilution Factor: 1.00000
Name: LCSD Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 7

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

PD 11/29/94

Sig 11/23/94

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1234 TETRA DIOXIN C13	23.36	226	395999	.500	NG/UL	95
2)	2378 TETRA DIOXIN C13	23.45	231	278738	.322	NG/UL 64	98
3)	2378 TETRA FURAN C13	22.81	194	975	.000631	NG/UL	58
3)	2378 TETRA FURAN C13	23.09	210	507101	.328	NG/UL 66	97
4)	37 CL4 2378 TCDD	23.47	232	344378	.265	NG/UL 106	100
5)	*123789 HEXA DIOXIN C13	28.22	506	152219	.500	NG/UL	99
6)	123678 HEXA DIOXIN C13	27.80	482	634	.00224	NG/UL	67
6)	123678 HEXA DIOXIN C13	27.85	485	682	.00241	NG/UL	95
6)	123678 HEXA DIOXIN C13	27.98	492	107471	.380	NG/UL 76	96
7)	OCTA DIOXIN C13	33.05	791	1554	.0101	NG/UL	90
7)	OCTA DIOXIN C13	33.43	815	1612	.0105	NG/UL	84
7)	OCTA DIOXIN C13	33.54	822	2060	.0135	NG/UL	81
7)	OCTA DIOXIN C13	33.89	845	97791	.639	NG/UL 64	94
7)	OCTA DIOXIN C13	34.78	902	1682	.0110	NG/UL	89
8)	1234678 HEPTA FURAN C13	29.61	586	1101	.00394	NG/UL	83
8)	1234678 HEPTA FURAN C13	29.74	594	221974	.794	NG/UL 79	95
9)	*2378 TETRA DIOXIN C13	23.45	231	278933	.500	NG/UL	98
10)	2378 TCDD	23.47	232	186452	.346	NG/UL 138	98
11)	TCDD	21.98	146	1950	1950.00	NO CALIB	83
11)	TCDD	22.06	151	905	905.00	NO CALIB	63
11)	TCDD	22.27	163	691	691.00	NO CALIB	85
11)	TCDD	22.41	171	608	608.00	NO CALIB	54
11)	TCDD	22.48	175	888	888.00	NO CALIB	5
11)	TCDD	22.64	184	1406	1406.00	NO CALIB	97
11)	TCDD	22.71	188	599	599.00	NO CALIB	43
11)	TCDD	22.79	193	701	701.00	NO CALIB	49
11)	TCDD	23.47	232	186452	186452.0	NO CALIB	98
11)	TCDD	23.69	245	1501	1501.00	NO CALIB	90
11)	TCDD	24.09	268	4931	4931.00	NO CALIB	93
11)	TCDD	24.23	276	2127	2127.00	NO CALIB	66
12)	12378 PENTA DIOXIN	25.83	368	213819	.718	NG/UL 115	99
13)	PCDD	24.58	296	1027	1027.00	NO CALIB	89
13)	PCDD	24.63	299	1137	1137.00	NO CALIB	55
13)	PCDD	24.72	304	2157	2157.00	NO CALIB	96
13)	PCDD	24.80	309	1703	1703.00	NO CALIB	93
13)	PCDD	24.89	314	1404	1404.00	NO CALIB	72
13)	PCDD	25.20	332	1757	1757.00	NO CALIB	84
13)	PCDD	25.46	347	687	687.00	NO CALIB	67
13)	PCDD	25.64	357	862^	862.00	NO CALIB	89
13)	PCDD	25.71	361	1461	1461.00	NO CALIB	61

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 18:29
Output File: ^GL746::D1 Injected at: 941122 17:51
Data File: >GL746::D7 Dilution Factor: 1.00000
Name: LCSD Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 7

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
13)	PCDD	25.83	368	213819	213819.0	NO CALIB	99
13)	PCDD	26.00	378	2924	2924.00	NO CALIB	57
13)	PCDD	26.17	388	808	808.00	NO CALIB	12
13)	PCDD	26.24	392	1718	1718.00	NO CALIB	98
14)	*123678 HEXA DIOXIN C13	27.98	492	107471	.500	NG/UL	96
15)	123478 HEXA DIOXIN	27.85	485	2991	.0147	NG/UL	40
15)	123478 HEXA DIOXIN	27.99	493	123002	.606	NG/UL	97
16)	123678 HEXA DIOXIN	27.99	493	123002	.628	NG/UL /100/	98
7)	123789 HEXA DIOXIN	28.15	502	1382	.00683	NG/UL	78
)	123789 HEXA DIOXIN	28.22	506	1537	.00759	NG/UL	96
)	HXCDD	26.38	400	4121	4121.00	NO CALIB	90
18)	HXCDD	26.43	403	2285	2285.00	NO CALIB	96
18)	HXCDD	26.61	413	4267	4267.00	NO CALIB	48
18)	HXCDD	26.68	417	1430	1430.00	NO CALIB	79
18)	HXCDD	27.11	442	1589	1589.00	NO CALIB	76
18)	HXCDD	27.21	448	1438	1438.00	NO CALIB	68
18)	HXCDD	27.26	451	2004^	2004.00	NO CALIB	84
18)	HXCDD	27.44	461	1991	1991.00	NO CALIB	87
18)	HXCDD	27.68	475	1980	1980.00	NO CALIB	44
18)	HXCDD	27.85	485	2991	2991.00	NO CALIB	40
18)	HXCDD	27.99	493	123002	123002.0	NO CALIB	97
18)	HXCDD	28.22	506	1514	1514.00	NO CALIB	97
18)	HXCDD	28.60	528	1391	1391.00	NO CALIB	49
18)	HXCDD	28.86	543	1778	1778.00	NO CALIB	96
18)	HXCDD	29.00	551	1526^	1526.00	NO CALIB	83
19)	1234678 HEPTA DIOXIN	30.44	634	2263	.0174	NG/UL	69
19)	1234678 HEPTA DIOXIN	30.63	645	80928	.624	NG/UL /100/	96
19)	1234678 HEPTA DIOXIN	30.80	655	1459	.0112	NG/UL	75
20)	HPCDD	29.57	584	881	.00469	NG/UL	21
20)	HPCDD	29.73	593	105525	.562	NG/UL	37
20)	HPCDD	30.30	626	1094	.00583	NG/UL	53
20)	HPCDD	30.39	631	859	.00458	NG/UL	83
20)	HPCDD	30.44	634	2263	.0121	NG/UL	71
20)	HPCDD	30.63	645	80928	.431	NG/UL	96
)	HPCDD	30.80	655	1194	.00636	NG/UL	48
)	HPCDD	30.89	660	976	.00520	NG/UL	84
)	HPCDD	30.96	664	1675	.00893	NG/UL	73
20)	HPCDD	31.06	670	2395	.0128	NG/UL	74
21)	*2378 TETRA FURAN C13	23.09	210	507101	.500	NG/UL	97
22)	2378 TETRA FURAN	23.10	211	245684	.292	NG/UL /117/	86
22)	2378 TETRA FURAN	23.26	220	2320	.00276	NG/UL	41

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 18:29
Output File: ^GL746::D1 Injected at: 941122 17:51
Date File: >GL746::D7 Dilution Factor: 1.00000
Name: LCSD Instrument ID: G
Misc: INST:G*IEA-1934 45*2060B*10g/100ul/2ul*DB5 COLUMN BTL# 7

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
23)	TCDF	21.47	117	4258	4258.00	NO CALIB	46
23)	TCDF	21.54	121	940	940.00	NO CALIB	90
23)	TCDF	21.60	124	1212^	1212.00	NO CALIB	68
23)	TCDF	21.67	128	582	582.00	NO CALIB	36
23)	TCDF	21.84	138	1111^	1111.00	NO CALIB	83
23)	TCDF	21.94	144	995	995.00	NO CALIB	64
23)	TCDF	22.06	151	3481	3481.00	NO CALIB	68
23)	TCDF	22.20	159	923	923.00	NO CALIB	65
23)	TCDF	22.25	162	489^	489.00	NO CALIB	43
23)	TCDF	22.32	166	1666	1666.00	NO CALIB	72
23)	TCDF	22.50	176	2870^	2870.00	NO CALIB	74
23)	TCDF	22.77	192	810^	810.00	NO CALIB	68
23)	TCDF	22.88	198	7946	7946.00	NO CALIB	93
23)	TCDF	23.10	211	245684	245684.0	NO CALIB	80
23)	TCDF	23.26	220	2320	2320.00	NO CALIB	26
23)	TCDF	23.36	226	4327	4327.00	NO CALIB	56
23)	TCDF	23.68	244	2278	2278.00	NO CALIB	49
23)	TCDF	23.81	252	2681	2681.00	NO CALIB	70
23)	TCDF	23.88	256	2697	2697.00	NO CALIB	41
23)	TCDF	24.01	263	1707	1707.00	NO CALIB	46
23)	TCDF	24.25	277	1344	1344.00	NO CALIB	35
24)	12378 PENTA FURAN	24.82	310	1404	.00295	NG/UL	76
24)	12378 PENTA FURAN	24.94	317	5359	.0113	NG/UL	60
24)	12378 PENTA FURAN	25.22	333	347014	.728	NG/UL 116	96
25)	23478 PENTA FURAN	25.22	333	347014	.541	NG/UL	96
25)	23478 PENTA FURAN	25.90	372	2173	.00339	NG/UL	16
25)	23478 PENTA FURAN	26.00	378	2048	.00319	NG/UL	96
26)	PCDF	23.73	247	1879	1879.00	NO CALIB	75
26)	PCDF	23.87	255	1791^	1791.00	NO CALIB	96
26)	PCDF	24.04	265	927	927.00	NO CALIB	75
26)	PCDF	24.27	278	1434	1434.00	NO CALIB	21
26)	PCDF	24.32	281	1499	1499.00	NO CALIB	57
26)	PCDF	24.47	290	2227	2227.00	NO CALIB	65
26)	PCDF	24.53	293	1165^	1165.00	NO CALIB	81
26)	PCDF	24.58	296	960	960.00	NO CALIB	23
26)	PCDF	24.65	300	857	857.00	NO CALIB	88
26)	PCDF	24.82	310	1404	1404.00	NO CALIB	76
26)	PCDF	24.94	317	5359	5359.00	NO CALIB	60
26)	PCDF	25.22	333	347014	347014.0	NO CALIB	96
26)	PCDF	25.90	372	2173	2173.00	NO CALIB	16
26)	PCDF	26.00	378	2048	2048.00	NO CALIB	96

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 18:29
Output File: ^GL746::D1 Injected at: 941122 17:51
Data File: >GL746::D7 Dilution Factor: 1.00000
Name: LCSD Instrument ID: G
Misc: INST:G*IEA-1934 45*20608*10g/100ul/2ul*DB5 COLUMN BTL# 7

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
26)	PCDF	26.21	390	7169	7169.00	NO CALIB	68
26)	PCDF	26.36	399	2271^	2271.00	NO CALIB	31
26)	PCDF	26.59	412	974	974.00	NO CALIB	6
27)	*1234678 HEPTA FURAN C13	29.74	594	221974	1.00	NG/UL	95
28)	123478 HEXA FURAN	27.06	439	456	.00122	NG/UL	29
28)	123478 HEXA FURAN	27.13	443	1102	.00294	NG/UL	9
28)	123478 HEXA FURAN	27.20	447	1358	.00362	NG/UL	88
28)	123478 HEXA FURAN	27.35	456	945	.00252	NG/UL	33
3)	123478 HEXA FURAN	27.47	463	225588	.602	NG/UL	98
)	123478 HEXA FURAN	27.70	476	2318	.00618	NG/UL	78
28)	123478 HEXA FURAN	27.78	481	1412	.00377	NG/UL	57
29)	123678 HEXA FURAN	27.06	439	456	.00125	NG/UL	29
29)	123678 HEXA FURAN	27.13	443	1102	.00302	NG/UL	9
29)	123678 HEXA FURAN	27.20	447	1358	.00372	NG/UL	88
29)	123678 HEXA FURAN	27.35	456	945	.00259	NG/UL	33
29)	123678 HEXA FURAN	27.47	463	225588	.617	NG/UL	98
29)	123678 HEXA FURAN	27.70	476	2318	.00634	NG/UL	78
29)	123678 HEXA FURAN	27.78	481	1412	.00386	NG/UL	57
29)	123678 HEXA FURAN	27.98	492	1832	.00501	NG/UL	76
30)	234678 HEXA FURAN	27.78	481	1412	.00409	NG/UL	57
31)	123789 HEXA FURAN	28.36	514	580	.00183	NG/UL	53
31)	123789 HEXA FURAN	28.50	522	1190	.00375	NG/UL	68
32)	HXCDF	26.52	408	1844	1844.00	NO CALIB	60
32)	HXCDF	26.71	419	1179^	1179.00	NO CALIB	86
32)	HXCDF	26.88	429	711	711.00	NO CALIB	71
32)	HXCDF	27.06	439	456	456.00	NO CALIB	29
32)	HXCDF	27.13	443	1102	1102.00	NO CALIB	9
32)	HXCDF	27.20	447	1358	1358.00	NO CALIB	88
32)	HXCDF	27.25	450	1287^	1287.00	NO CALIB	99
32)	HXCDF	27.35	456	945	945.00	NO CALIB	33
32)	HXCDF	27.47	463	225588	225588.0	NO CALIB	98
32)	HXCDF	27.70	476	2318	2318.00	NO CALIB	78
32)	HXCDF	27.78	481	1412	1412.00	NO CALIB	57
32)	HXCDF	27.98	492	1832	1832.00	NO CALIB	76
2)	HXCDF	28.04	496	1871	1871.00	NO CALIB	69
)	HXCDF	28.11	500	1413	1413.00	NO CALIB	95
2)	HXCDF	28.20	505	1207	1207.00	NO CALIB	96
32)	HXCDF	28.29	510	1419	1419.00	NO CALIB	55
32)	HXCDF	28.36	514	453	453.00	NO CALIB	43
32)	HXCDF	28.50	522	1190	1190.00	NO CALIB	[illegible]
33)	1234678 HEPTA FURAN	29.55	583	1058	.00437	NG/UL	92

Operator ID: SANDY Quant Rev: 7 Quant Time: 941122 18:29
Output File: ^GL746::D1 Injected at: 941122 17:51
Data File: >GL746::D7 Dilution Factor: 1.00000
Name: LCSD Instrument ID: G
Misc: INST:G*IEA-1934 45*206D8*10g/100ul/2ul*DB5 COLUMN BTL# 7

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941122 14:19

	Compound	R.T.	Scan#	Area	Conc	Units	q
33)	1234678 HEPTA FURAN	29.62	587	890	.00367	NG/UL	47
33)	1234678 HEPTA FURAN	29.74	594	175606	.725	NG/UL 116/.	98
34)	1234789 HEPTA FURAN	30.98	665	1760	.00808	NG/UL	65
34)	1234789 HEPTA FURAN	31.01	667	892	.00409	NG/UL	25
35)	HPCDF	29.28	567	2127	2127.00	NO CALIB	62
35)	HPCDF	29.48	579	1519	1519.00	NO CALIB	97
35)	HPCDF	29.74	594	175351	175351.0	NO CALIB	97
35)	HPCDF	30.18	619	2242	2242.00	NO CALIB	68
35)	HPCDF	30.66	647	1530^	1530.00	NO CALIB	33
35)	HPCDF	30.72	650	2519	2519.00	NO CALIB	85
35)	HPCDF	30.98	665	1760	1760.00	NO CALIB	65
35)	HPCDF	31.18	677	2764^	2764.00	NO CALIB	38
35)	HPCDF	31.32	685	2693	2693.00	NO CALIB	82
35)	HPCDF	31.44	692	1824	1824.00	NO CALIB	76
36)	*12346789 OCTA DIOXIN C13	33.89	845	103296M	1.00	NG/UL	94
37)	OCTA DIOXIN	33.41	814	1299	.0200	NG/UL	68
37)	OCTA DIOXIN	33.49	819	1222	.0188	NG/UL	55
37)	OCTA DIOXIN	33.91	846	120605m	1.85	NG/UL 148/.	99
37)	OCTA DIOXIN	34.04	854	483	.00742	NG/UL	29
38)	OCTA FURAN	33.71	833	1413	.0129	NG/UL	83
38)	OCTA FURAN	33.75	836	1497	.0137	NG/UL	84
38)	OCTA FURAN	33.86	843	1195	.0109	NG/UL	67
38)	OCTA FURAN	34.07	856	131936	1.21	NG/UL 97/.	94
38)	OCTA FURAN	34.19	864	2449	.0224	NG/UL	83
38)	OCTA FURAN	34.27	869	1844	.0168	NG/UL	70
38)	OCTA FURAN	34.43	879	1164	.0106	NG/UL	10
38)	OCTA FURAN	34.57	888	1677	.0153	NG/UL	43

* Compound is ISTD

SAMPLE RESULT VERIFICATION
DIOXIN/FURAN ANALYSIS

1. Were the recoveries of the internal standards acceptable (40%-120%)?
   Yes No

   If no, list sample ID, percent recovery and action(s) .

Congener		Code
$^{13}C_{12}$-2,3,7,8-TCDF	-	1
$^{13}C_{12}$-2,3,7,8-TCDD	-	2
$^{13}C_{12}$-1,2,3,7,8-PeCDD	-	3
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	-	4
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	-	5
$^{13}C_{12}$-OCDD	-	6

Congener	1	2	3	4	5	6	Action(s)

2. Were the sample results reported within the calibration range?
   Yes No

3. Was the percent moisture reported? Yes No NR

4. Was the data reported on a dry weight basis? Yes No NR

5. Did the laboratory calculate the detection limits based on signal to noise?
   Yes No

Rev. 11/93

SAMPLE RESULT VERIFICATION
DIOXIN/FURAN ANALYSIS

5. Did the data contain elevated detection limits that could not be accounted for?

Yes (No)

6. Were any computational or transcription errors found?

Yes (No)

Specific Comments:

9411302-1 ion ratio - OCDD m/z 458/460

0.75-1.01 range.

17959 / 19693 = 0.912 ✓

conc OCDD: 6.109 ng/kg.

19693 × 100 ul × 1 ng / 57143 × 0.631 × 10 g = 6.112 ng/g = 6.112 ng/kg

ok

Reviewer: [signature] Date: 7/13/94

Rev. 11/93

GL720D
GL720F

1DFA

PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

9411302-1

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: IEA SAS No.: SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL7200

Water Sample Prep: (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322			ND	U	.21
2378-TCDF	304/306			ND	U	.14
12378-PeCDF	342/340			ND	U	.12
12378-PeCDD	358/356			ND	U	.11
23478-PeCDF	342/340			ND	U	.12
123478-HxCDF	376/374			ND	U	.39
123678-HxCDF	376/374			ND	U	.20
123478-HXCDD	392/390			ND	U	.52
123678-HxCDD	392/390			ND	U	.38
123789-HxCDD	392/390			ND	U	.31
234678-HxCDF	376/374			ND	U	.41
123789-HxCDF	376/374			ND	U	.15
1234678-HpCDF	410/408			ND	U	.22
1234678-HpCDD	426/424			ND	U	.63
1234789-HpCDF	410/408			ND	U	.47
OCDD	458/460	34.06	.912	6.109		
OCDF	442/444			ND	U	.40

NOTE: Concentrations, EMPCs, and EDLs are calculated on wet weight basis.

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318	23.17	.794	0.65-0.89	63	40-120
13C-2378-TCDD	332/334	23.54	.834	0.65-0.89	58	40-120
13C-123678-HxCDD	402/404	28.06	.790	0.69-0.93	72	40-120
13C-1234678-HpCDF	420/422	29.83	.927	0.83-1.12	74	40-120
13C-OCDD	470/472	34.02	.885	0.75-1.01	62	40-120
37Cl-2378-TCDD	328/NA	23.54	N/A	N/A	110	40-120

#, Column to be used to flag values outside QC limits.

FORM I PCDD-1

GL720D
GL720F

1DFB

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

9411302-1

Lab Name: SWL-TULSA Contract:_____

Lab Code: SWOK Case No.: IEA SAS No.:_____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) LAB SAMPLE ID: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL720D

Water Sample Prep:_____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L of ug/Kg) Ug/Kg

ANALYTE	CONCENTRATION		TEF		TEF-ADJUSTED CONCENTRATION
2378-TCDD	ND	x	1.0	=	.000
2378-TCDF	ND	x	0.1	=	.000
12378-PeCDF	ND	x	0.05	=	.000
12378-PeCDD	ND	x	0.5	=	.000
23478-PeCDF	ND	x	0.5	=	.000
123478-HxCDF	ND	x	0.1	=	.000
123678-HxCDF	ND	x	0.1	=	.000
123478-HXCDD	ND	x	0.1	=	.000
123678-HxCDD	ND	x	0.1	=	.000
123789-HxCDD	ND	x	0.1	=	.000
234678-HxCDF	ND	x	0.1	=	.000
123789-HxCDF	ND	x	0.1	=	.000
1234678-HpCDF	ND	x	0.01	=	.000
1234678-HpCDD	ND	x	0.01	=	.000
1234789-HpCDF	ND	x	0.01	=	.000
OCDD	6.1	x	0.001	=	.006
OCDF	ND	x	0.001	=	.000
			TOTAL	=	.006

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, grater than 0.7 ug/Kg for any solid matrix, or grater than 7 ug/kg for a chemical waste sample, then second column confirmation of the results may be required.

GL7200
GL720F

2DF

PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

9411302-1

Lab Name: SWL-TULSA Contract: _____

Lab Code: SWOK Case No.: IEA SAS No.: _____ SDG. NO.: 20608

Matrix: SOIL (Soil/Water/Waste/Ash) Lab Sample ID.: 20608.01

Sample wt/vol: 10 (g/ml) g Lab File ID: GL7200

Water Sample Prep: _____ (Sepf/Cont) Date Received: 11/15/94

Concentrated Extract Volume: 100 (uL) Date Extracted: 11/17/94

Injection Volume: 2 (uL) % Solids: 86 Date Analyzed: 11/21/94

GC Column: DB5 ID: .32 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (ng/L or ug/Kg) Ug/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD		.0	U	.21
Total PeCDD		.0	U	.11
Total HxCDD		.0	U	.31
Total HpCDD		.0	U	.63
FURANS				
Total TCDF		.0	U	.14
Total PeCDF		.0	U	.12
Total HxCDF		.0	U	.15
Total HpCDF		.0	U	.22

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis.
The total congener concentrations do not affect the TEF calculations.

GL7200 DIOXINS AREA SUMMARY FORM

SAMPLE ID.	9411302-1	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608.01
GHT IN GRAMS	10	DATE ANALYSED	11/21/94	TIME ANALYSED	14:12	DRY WT	10

Compounds							CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard	R.T.	332	334	332/334 RATIO	.65-.89			
2,3,7,8 TCDD C13	23.54	115267	138201	.834				
50 ng.								
2378 TCDD								
RF .965	R.T.	259	320	322	320/322 RATIO			
	23.54	2938	2361	2293	1.030		ND	214.83
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL TETRA CDD							.00	.00
	R.T.	328	N/A	356/N/A RATIO				
2378 TCDD 37CL 25 ng.	23.54	196194		N/A				
12378 PENTA CDD	R.T.	356	358	358/356 RATIO	.55-.75			
RF .534	25.90	621	945	1.522			ND	105.23
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL PENTA CDD							.00	.00
Internal Standard	R.T.	404	402	404/402 RATIO	.69-.93			
1,2,3,6,7,8 HXCDD C13	28.06	42874	54255	.790				
50 ng.								
123478 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93			
RF .945	27.99	2542	2141	1.187			ND	521.95
							ND	.00
123678 HEXA CDD	R.T.	392	390	392/390 RATIO	.69-.93			
RF .911	28.12	1495	1519	.984			ND	384.10
							ND	.00
							ND	.00
							ND	.00
							ND	.00
123789 HEXA CDD	R.T	392	390	392/390 RATIO	.69-.93			
RF .942	28.12	1593	1276	1.248			ND	312.14
							ND	.00
TOTAL HEXA CDD							.00	.00
1234678 HEPTA CDD	R.T	426	424	426/424 RATIO	.83-1.22			
RF .604	30.58	1831	1650	1.110			ND	629.85
							ND	.00
							ND	.00
TOTAL HEPTA CDD							.00	
Internal Standard	R.T	470	472	470/472 RATIO	.75-1.01			
TA DIOXIN C13	34.02	45270	51143	.885				
nt. Std. 100 ng.								
OCTA CDD	R.T	458	460	458/460 RATIO	.75-1.01			

RF	.630	34.06	17959	19693	.912	6109.02	
						ND	.00
TOTAL OCTA CDD						6109.02	

SURROGATE RECOVERIES

2378 TCDD C13	=	58
2378TCDD CL37	=	110
123678 HxCDD C13	=	72
OCDD C13	=	62

GL720F DIBENZOFURANS AREA SUMMARY FORM

SAMPLE ID.	9411302-1	DATE EXTRACTED	11/17/94	INSTRUMENT ID	G	EPISODE #	20608.01
WEIGHT IN GRAMS	10	DATE ANALYSED	11/21/94	TIME ANALYSED	14:12	DRY WT	10

Compounds							CONCENTRATION PPT	DETECTION LIMIT PPT
Internal Standard		R.T.	316	318	316/318	.65-.89		
2,3,7,8 TCDF C13		23.17	212347	267579	.794			
50 ng.								
2378 TCDF					304/306			
RF	.829	R.T.	304	306	RATIO	.65-.89		
		23.17	1724	2404	.717		ND	135.43
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
TOTAL TETRA CDF							.00	.00
12378 PENTA CDF		R.T	342	340	342/340	RATIO .55-.75		
RF	.470	25.19	1803	1247	1.446		ND	124.03
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
23478 PENTA CDF		R.T.	342	340	342/340	RATIO .55-.75		
RF	.632	25.66	1126	1686	.668		ND	124.59
							ND	.00
TOTAL PENTA CDF							.00	.00
Internal Standard		R.T	422	420	420/422	.83-1.12		
1234678 HPCDF C13		29.83	102631	110685	.927			
100 ng.								
123478 HEXA CDF		R.T	376	374	376/374	RATIO .69-.93		
RF	1.689	27.68	904	2896	.312		ND	387.24
							ND	.00
							ND	.00
123678 HEXA CDF						.69-.93	ND	.00
RF	1.646	R.T	376	374	376/374	RATIO		
		27.77	663	1434	.462		ND	196.74
							ND	.00
							ND	.00

							ND	.00
							ND	.00
							ND	.00
							ND	.00
							ND	.00
.678 HEXA CDF						.69-.93		
RF	1.555	R.T	376	374	376/374 RATIO			
		28.03	1118	1007	1.110		ND	146.30
							ND	.00
123789 HEXA CDF		R.T	376	374	376/374 RATIO	.69-.93		
RF	1.431	28.50	2130	2596	.820		ND	409.61
							ND	.00
TOTAL HEXA CDF							.00	.00
1234678 HEPTA CDF		R.T.	410	408	410/408 RATIO	.83-1.12		
RF	1.091	29.85	919	1075	.855		ND	222.49
							ND	.00
							ND	.00
							ND	.00
1234789 HEPTA CDF		R.T	410	408	410/408 RATIO	.83-1.12		
RF	.982	31.12	1398	2051	.682		ND	471.85
							ND	.00
TOTAL HEPTA CDF							.00	.00
Internal Standard		R.T	470	472	470/472 RATIO	.75-1.01		
OCTA CDD C13		34.04	45270	51143	.885			
Int. Std.	100 ng.							
OCTA CDF		R.T	442	444	442/444 RATIO	.75-1.01		
RF	1.060	34.21	518	877	.591		ND	404.55
							ND	.00
TOTAL OCTA CDF							.00	404.55

SURROGATE RECOVERIES

2378TCDF 13C = 63

1234678 HpCDF = 74

QUANT REPORT

Operator ID: SANDY
Output File: ^GL720::D1
Data File: >GL720::D7
Name: 9411302-1
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

Quant Rev: 7
Quant Time: 941121 14:50
Injected at: 941121 14:12
Dilution Factor: 1.00000
Instrument ID: G

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05
Last Qcal Time: 941121 11:58

SAG 11/22/94

P.S. 11/29/94

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1234 TETRA DIOXIN C13	23.44	227	217700	.500	NG/UL	97
2)	2378 TETRA DIOXIN C13	23.54	233	138163	.291	NG/UL 58	92
3)	2378 TETRA FURAN C13	22.98	201	944	.00111	NG/UL	80
3)	2378 TETRA FURAN C13	23.04	204	827	.000973	NG/UL	43
3)	2378 TETRA FURAN C13	23.17	212	268365	.316	NG/UL 63	97
3)	2378 TETRA FURAN C13	23.42	226	2388	.00281	NG/UL	28
4)	37 CL4 2378 TCDD	23.54	233	196194	.275	NG/UL 110	100
5)	*123789 HEXA DIOXIN C13	28.32	509	81704	.500	NG/UL	99
6)	123678 HEXA DIOXIN C13	27.92	486	640	.00422	NG/UL	56
6)	123678 HEXA DIOXIN C13	28.06	494	54255	.358	NG/UL 72	97
6)	123678 HEXA DIOXIN C13	28.19	501	1423	.00938	NG/UL	63
7)	OCTA DIOXIN C13	33.20	797	1436	.0175	NG/UL	91
7)	OCTA DIOXIN C13	33.29	803	1763	.0215	NG/UL	87
7)	OCTA DIOXIN C13	33.53	818	2561	.0312	NG/UL	32
7)	OCTA DIOXIN C13	34.04	851	51143	.622	NG/UL 62	99
7)	OCTA DIOXIN C13	34.65	890	1494	.0182	NG/UL	83
8)	1234678 HEPTA FURAN C13	29.83	596	110685	.738	NG/UL 74	94
9)	*2378 TETRA DIOXIN C13	23.54	233	138201	.500	NG/UL	92
10)	2378 TCDD	23.54	233	2293	.00859	NG/UL	69
10)	2378 TCDD	23.63	238	1046	.00392	NG/UL	22
10)	2378 TCDD	23.75	245	1696	.00636	NG/UL	83
11)	TCDD	22.08	149	2337	2337.00	NO CALIB	69
11)	TCDD	22.22	157	1646	1646.00	NO CALIB	81
11)	TCDD	22.34	164	820	820.00	NO CALIB	57
11)	TCDD	22.38	166	1482	1482.00	NO CALIB	96
11)	TCDD	22.46	171	1514	1514.00	NO CALIB	87
11)	TCDD	22.55	176	1609	1609.00	NO CALIB	77
11)	TCDD	22.62	180	700	700.00	NO CALIB	76
11)	TCDD	22.72	186	2085	2085.00	NO CALIB	77
11)	TCDD	23.02	203	1438	1438.00	NO CALIB	1
11)	TCDD	23.33	221	967	967.00	NO CALIB	42
11)	TCDD	23.40	225	700	700.00	NO CALIB	34
11)	TCDD	23.54	233	2293	2293.00	NO CALIB	73
11)	TCDD	23.63	238	1046	1046.00	NO CALIB	90
11)	TCDD	23.75	245	1696	1696.00	NO CALIB	91
11)	TCDD	23.83	250	1902	1902.00	NO CALIB	55
11)	TCDD	23.89	253	3118^	3118.00	NO CALIB	47
11)	TCDD	24.01	260	978	978.00	NO CALIB	73
11)	TCDD	24.13	267	1588	1588.00	NO CALIB	95
11)	TCDD	24.18	270	949	949.00	NO CALIB	85

Operator ID: SANDY Quant Rev: 7 Quant Time: 941121 14:50
Output File: ^GL720::D1 Injected at: 941121 14:12
Data File: >GL720::D7 Dilution Factor: 1.00000
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941121 11:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
11)	TCDD	24.28	276	510	510.00	NO CALIB	5
11)	TCDD	24.41	283	982^	982.00	NO CALIB	14
12)	12378 PENTA DIOXIN	25.83	365	594	.00403	NG/UL	64
12)	12378 PENTA DIOXIN	25.90	369	621	.00421	NG/UL	1
13)	PCDD	24.65	297	3777	3777.00	NO CALIB	75
13)	PCDD	24.77	304	2404	2404.00	NO CALIB	83
13)	PCDD	24.89	311	2359^	2359.00	NO CALIB	86
13)	PCDD	25.05	320	1674	1674.00	NO CALIB	54
13)	PCDD	25.13	325	1831^	1831.00	NO CALIB	53
13)	PCDD	25.29	334	1764	1764.00	NO CALIB	74
(	PCDD	25.38	339	1316^	1316.00	NO CALIB	73
13)	PCDD	25.62	353	366^	366.00	NO CALIB	99
13)	PCDD	25.72	359	2473	2473.00	NO CALIB	79
13)	PCDD	25.90	369	621	621.00	NO CALIB	1
13)	PCDD	26.04	377	1576	1576.00	NO CALIB	96
13)	PCDD	26.09	380	991	991.00	NO CALIB	77
13)	PCDD	26.14	383	1049	1049.00	NO CALIB	76
13)	PCDD	26.30	392	629^	629.00	NO CALIB	57
13)	PCDD	26.49	403	1199	1199.00	NO CALIB	97
14)	*123678 HEXA DIOXIN C13	28.06	494	54255	.500	NG/UL	97
15)	123478 HEXA DIOXIN	27.99	490	2141	.0209	NG/UL	57
16)	123678 HEXA DIOXIN	27.99	490	2141	.0217	NG/UL	57
16)	123678 HEXA DIOXIN	28.12	497	1519	.0154	NG/UL	80
17)	123789 HEXA DIOXIN	28.26	505	607	.00594	NG/UL	32
17)	123789 HEXA DIOXIN	28.41	514	4135	.0405	NG/UL	11
18)	HXCDD	26.28	391	1441	1441.00	NO CALIB	76
18)	HXCDD	26.35	395	1707	1707.00	NO CALIB	79
18)	HXCDD	26.49	403	1537	1537.00	NO CALIB	84
18)	HXCDD	26.85	424	1179	1179.00	NO CALIB	75
18)	HXCDD	26.89	426	1225	1225.00	NO CALIB	91
18)	HXCDD	27.08	437	1767	1767.00	NO CALIB	88
18)	HXCDD	27.13	440	1150	1150.00	NO CALIB	59
18)	HXCDD	27.23	446	1163	1163.00	NO CALIB	93
18)	HXCDD	27.37	454	1020	1020.00	NO CALIB	52
18)	HXCDD	27.49	461	1800^	1800.00	NO CALIB	89
3)	HXCDD	27.99	490	2141	2141.00	NO CALIB	30
( )	HXCDD	28.12	497	1276	1276.00	NO CALIB	50
18)	HXCDD	28.41	514	4135	4135.00	NO CALIB	11
18)	HXCDD	28.97	546	1155	1155.00	NO CALIB	39
18)	HXCDD	29.10	554	978	978.00	NO CALIB	13
19)	1234678 HEPTA DIOXIN	30.58	639	1650	.0252	NG/UL	85

Operator ID: SANDY Quant Rev: 7 Quant Time: 941121 14:50
Output File: ^GL720::D1 Injected at: 941121 14:12
Data File: >GL720::D7 Dilution Factor: 1.00000
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941121 11:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
19)	1234678 HEPTA DIOXIN	30.75	649	986	.0151	NG/UL	25
19)	1234678 HEPTA DIOXIN	30.87	656	1638	.0250	NG/UL	63
20)	HPCDD	29.64	585	2649	.0280	NG/UL	55
20)	HPCDD	29.83	596	54983	.580	NG/UL	32
20)	HPCDD	29.95	603	2297	.0242	NG/UL	53
20)	HPCDD	30.08	610	1029	.0109	NG/UL	37
20)	HPCDD	30.27	621	1138^	.0120	NG/UL	84
20)	HPCDD	30.34	625	1073	.0113	NG/UL	81
20)	HPCDD	30.49	634	1489	.0157	NG/UL	46
20)	HPCDD	30.58	639	1500	.0158	NG/UL	75
	HPCDD	30.75	649	986	.0104	NG/UL	22
20)	HPCDD	30.87	656	1638	.0173	NG/UL	63
21)	*2378 TETRA FURAN C13	23.17	212	267579	.500	NG/UL	97
22)	2378 TETRA FURAN	23.17	212	2404	.00542	NG/UL	93
22)	2378 TETRA FURAN	23.30	219	1410	.00318	NG/UL	99
23)	TCDF	21.42	111	1935	1935.00	NO CALIB	91
23)	TCDF	21.53	117	1002^	1002.00	NO CALIB	83
23)	TCDF	21.61	122	2609	2609.00	NO CALIB	99
23)	TCDF	21.84	135	1756	1756.00	NO CALIB	32
23)	TCDF	21.96	142	1207	1207.00	NO CALIB	54
23)	TCDF	22.12	151	1391	1391.00	NO CALIB	78
23)	TCDF	22.29	161	1227	1227.00	NO CALIB	55
23)	TCDF	22.36	165	3246	3246.00	NO CALIB	60
23)	TCDF	22.52	174	353	353.00	NO CALIB	47
23)	TCDF	22.67	183	1081	1081.00	NO CALIB	17
23)	TCDF	22.74	187	1175	1175.00	NO CALIB	71
23)	TCDF	22.83	192	3110	3110.00	NO CALIB	51
23)	TCDF	22.91	197	1615	1615.00	NO CALIB	56
23)	TCDF	23.07	206	2235^	2235.00	NO CALIB	71
23)	TCDF	23.17	212	2404	2404.00	NO CALIB	71
23)	TCDF	23.30	219	1410	1410.00	NO CALIB	76
23)	TCDF	23.44	227	3575	3575.00	NO CALIB	21
23)	TCDF	23.76	246	1379	1379.00	NO CALIB	92
23)	TCDF	24.01	260	3116	3116.00	NO CALIB	32
23)	TCDF	24.13	267	1987	1987.00	NO CALIB	31
23)	TCDF	24.28	276	373	373.00	NO CALIB	80
	TCDF	24.39	282	1006^	1006.00	NO CALIB	91
24)	12378 PENTA FURAN	24.91	312	1044	.00415	NG/UL	65
24)	12378 PENTA FURAN	25.05	320	1716	.00683	NG/UL	77
24)	12378 PENTA FURAN	25.19	328	1247	.00496	NG/UL	1
24)	12378 PENTA FURAN	25.27	333	928	.00369	NG/UL	1

Operator ID: SANDY Quant Rev: 7 Quant Time: 941121 14:50
Output File: ^GL720::D1 Injected at: 941121 14:12
Data File: >GL720::D7 Dilution Factor: 1.00000
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941121 11:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
24)	12378 PENTA FURAN	25.31	335	1294	.00515	NG/UL	85
24)	12378 PENTA FURAN	25.66	355	1686	.00671	NG/UL	97
25)	23478 PENTA FURAN	25.27	333	928	.00274	NG/UL	76
25)	23478 PENTA FURAN	25.31	335	1294	.00382	NG/UL	92
25)	23478 PENTA FURAN	25.66	355	1686	.00498	NG/UL	97
25)	23478 PENTA FURAN	26.18	385	1782	.00527	NG/UL	49
26)	PCDF	23.85	251	6467	6467.00	NO CALIB	83
26)	PCDF	24.01	260	1067	1067.00	NO CALIB	42
26)	PCDF	24.11	266	679	679.00	NO CALIB	77
[illegible])	PCDF	24.18	270	2687	2687.00	NO CALIB	83
[illegible])	PCDF	24.27	275	1171	1171.00	NO CALIB	37
[illegible])	PCDF	24.35	280	2345	2345.00	NO CALIB	22
26)	PCDF	24.49	288	2030	2030.00	NO CALIB	89
26)	PCDF	24.61	295	1257	1257.00	NO CALIB	72
26)	PCDF	24.74	302	2058^	2058.00	NO CALIB	72
26)	PCDF	24.80	306	2584	2584.00	NO CALIB	86
26)	PCDF	24.91	312	1044	1044.00	NO CALIB	76
26)	PCDF	25.05	320	1716	1716.00	NO CALIB	86
26)	PCDF	25.19	328	1247	1247.00	NO CALIB	8
26)	PCDF	25.27	333	928	928.00	NO CALIB	69
26)	PCDF	25.31	335	1294	1294.00	NO CALIB	89
26)	PCDF	25.66	355	1686	1686.00	NO CALIB	97
26)	PCDF	26.02	376	1176^	1176.00	NO CALIB	69
26)	PCDF	26.18	385	1782	1782.00	NO CALIB	49
26)	PCDF	26.24	389	2080^	2080.00	NO CALIB	76
26)	PCDF	26.31	393	2160	2160.00	NO CALIB	58
26)	PCDF	26.43	400	1856	1856.00	NO CALIB	1
26)	PCDF	26.52	405	1373	1373.00	NO CALIB	33
26)	PCDF	26.63	411	2080	2080.00	NO CALIB	84
26)	PCDF	26.75	418	1596	1596.00	NO CALIB	20
27)	*1234678 HEPTA FURAN C13	29.83	596	110685	1.00	NG/UL	95
28)	123478 HEXA FURAN	27.04	435	976	.00522	NG/UL	8
28)	123478 HEXA FURAN	27.15	441	2410	.0129	NG/UL	1
28)	123478 HEXA FURAN	27.77	477	1434	.00767	NG/UL	60
29)	123678 HEXA FURAN	27.15	441	2410	.0132	NG/UL	1
[illegible])	123678 HEXA FURAN	27.77	477	1434	.00787	NG/UL	60
[illegible])	123678 HEXA FURAN	28.03	492	1007	.00553	NG/UL	65
[illegible])	123789 HEXA FURAN	28.50	519	2596	.0164	NG/UL	98
32)	HXCDF	26.63	411	2256	2256.00	NO CALIB	49
32)	HXCDF	26.69	415	1343^	1343.00	NO CALIB	76
32)	HXCDF	27.04	435	976	976.00	NO CALIB	[illegible]

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Operator ID: SANDY Quant Rev: 7 Quant Time: 941121 14:50
Output File: ^GL720::D1 Injected at: 941121 14:12
Data File: >GL720::D7 Dilution Factor: 1.00000
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941121 11:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
32)	HXCDF	27.15	441	2410	2410.00	NO CALIB	1
32)	HXCDF	27.27	448	1828^	1828.00	NO CALIB	80
32)	HXCDF	27.35	453	679^	679.00	NO CALIB	65
32)	HXCDF	27.68	472	2896^	2896.00	NO CALIB	43
32)	HXCDF	27.77	477	1434	1434.00	NO CALIB	60
32)	HXCDF	28.03	492	1007	1007.00	NO CALIB	66
32)	HXCDF	28.10	496	1033	1033.00	NO CALIB	82
32)	HXCDF	28.15	499	857	857.00	NO CALIB	95
32)	HXCDF	28.22	503	1079	1079.00	NO CALIB	84
[illegible])	HXCDF	28.32	509	977	977.00	NO CALIB	9
[illegible])	HXCDF	28.50	519	2596	2596.00	NO CALIB	98
[illegible])	HXCDF	28.62	526	1737	1737.00	NO CALIB	89
32)	HXCDF	28.74	533	1925	1925.00	NO CALIB	80
33)	1234678 HEPTA FURAN	29.69	588	3071	.0254	NG/UL	89
33)	1234678 HEPTA FURAN	29.85	597	1075	.00890	NG/UL	87
33)	1234678 HEPTA FURAN	30.01	606	2126	.0176	NG/UL	97
34)	1234789 HEPTA FURAN	31.12	670	2051	.0189	NG/UL	70
35)	HPCDF	29.69	588	3071	3071.00	NO CALIB	89
35)	HPCDF	30.01	606	2126	2126.00	NO CALIB	97
35)	HPCDF	30.44	631	1667	1667.00	NO CALIB	93
35)	HPCDF	30.56	638	1954	1954.00	NO CALIB	88
35)	HPCDF	30.73	648	1997	1997.00	NO CALIB	61
35)	HPCDF	30.94	660	1890	1890.00	NO CALIB	35
35)	HPCDF	31.12	670	1926	1926.00	NO CALIB	79
35)	HPCDF	31.27	679	2479	2479.00	NO CALIB	60
35)	HPCDF	31.36	684	2355^	2355.00	NO CALIB	54
35)	HPCDF	31.55	695	1919	1919.00	NO CALIB	96
36)	*12346789 OCTA DIOXIN C13	34.04	851	51143	1.00	NG/UL	99
37)	OCTA DIOXIN	33.67	827	773	.0240	NG/UL	79
37)	OCTA DIOXIN	33.70	829	674	.0209	NG/UL	38
37)	OCTA DIOXIN	33.79	835	965	.0299	NG/UL	72
37)	OCTA DIOXIN	33.90	842	569	.0177	NG/UL	74
37)	OCTA DIOXIN	34.06	852	19693	.611	NG/UL	97
37)	OCTA DIOXIN	34.18	860	792	.0246	NG/UL	55
37)	OCTA DIOXIN	34.28	866	1896	.0588	NG/UL	57
[illegible])	OCTA DIOXIN	34.37	872	1070	.0332	NG/UL	27
[illegible])	OCTA FURAN	33.78	834	3580	.0661	NG/UL	81
[illegible])	OCTA FURAN	33.90	842	723	.0133	NG/UL	5
38)	OCTA FURAN	34.00	848	1376	.0254	NG/UL	89
38)	OCTA FURAN	34.14	857	1336	.0247	NG/UL	53
38)	OCTA FURAN	34.21	862	877	.0162	NG/UL	68

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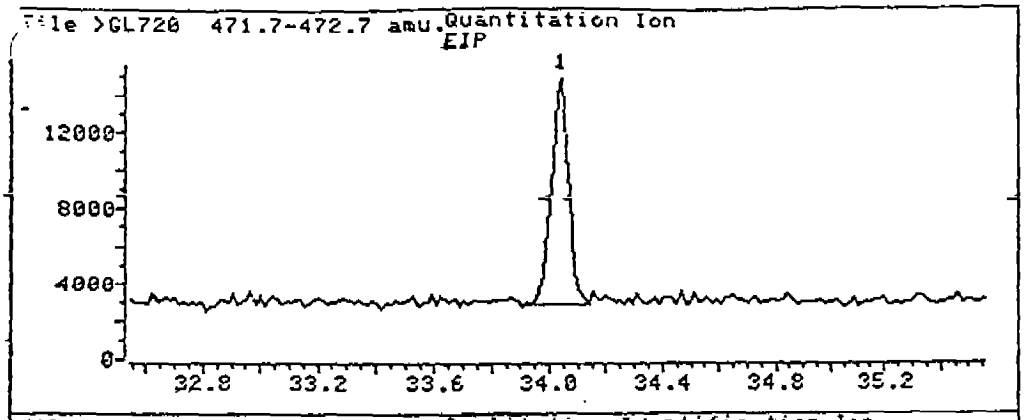
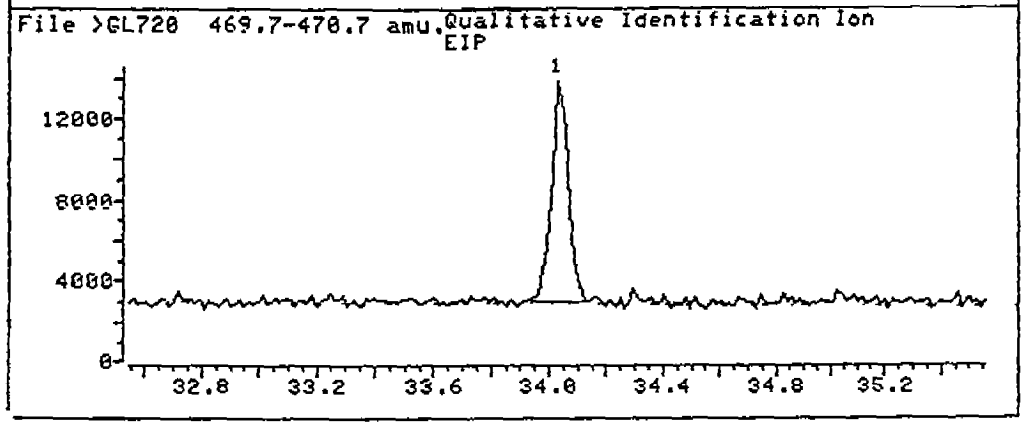
Operator ID: SANDY Quant Rev: 7 Quant Time: 941121 14:50
Output File: ^GL720::D1 Injected at: 941121 14:12
Data File: >GL720::D7 Dilution Factor: 1.00000
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5

ID File: I_8280::TE
Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN (.32X60)
Last Calibration: 941118 17:05 Last Qcal Time: 941121 11:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
38)	OCTA FURAN	34.26	865	1601	.0295	NG/UL	95
38)	OCTA FURAN	34.35	871	1473	.0272	NG/UL	64
38)	OCTA FURAN	34.48	879	372	.00686	NG/UL	24
38)	OCTA FURAN	34.53	882	1050	.0194	NG/UL	45
38)	OCTA FURAN	34.64	889	1311	.0242	NG/UL	79

* Compound is ISTD

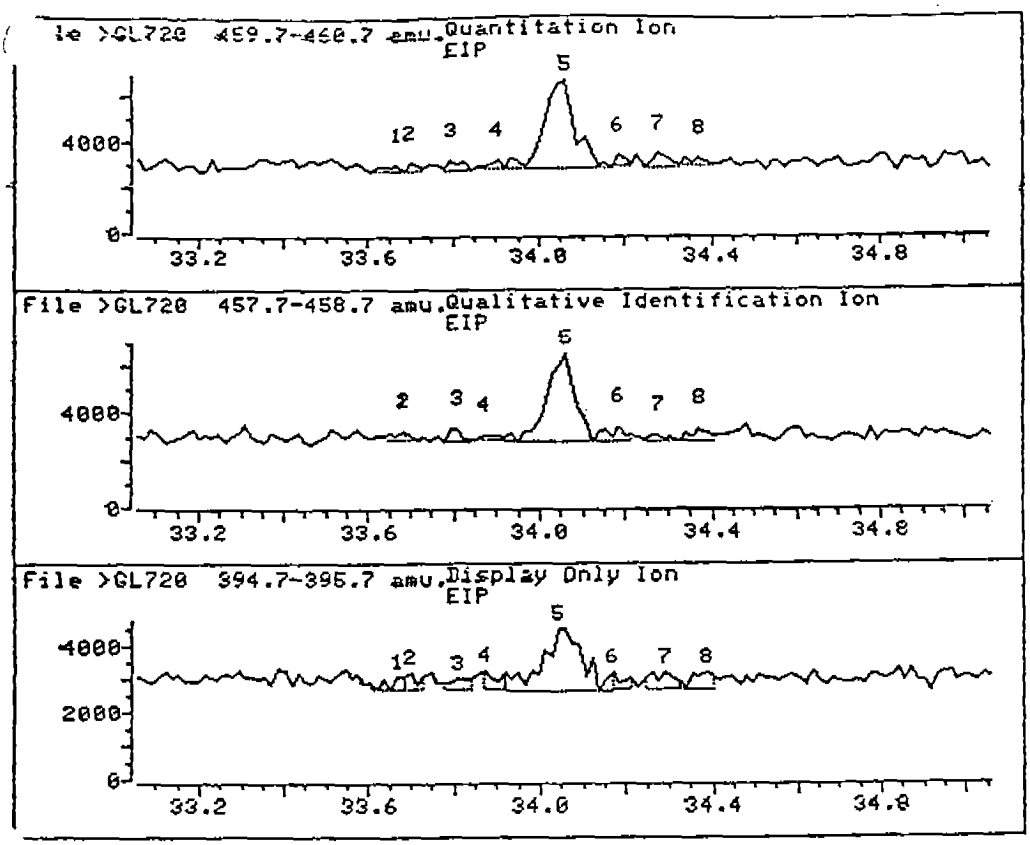




ta File: >GL720::D7 Quant Output File: ^GL720::D1
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5
Quant Time: 941121 14:50 Quant ID File: I_8280::TE
Injected at: 941121 14:12 Last Calibration: 941118 17:05
Last Qcal Time: 941121 11:58

Compound No : 36 (ISTD)
Compound Name: 12346789 OCTA DIOXIN C13
Quant Ion : 472.0

Hit #	R.T. Scan#	Conc Area	Units	q	Areas and Ratios 472.0	470.0			
1	34.04	1.00	NG/UL	99	51143	45270			
	851	51143			1.000	.885			



ata File: >GL720::D7 Quant Output File: ^GL720::D1
Name: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5
Quant Time: 941121 14:50 Quant ID File: I_8280::TE
Injected at: 941121 14:12 Last Calibration: 941118 17:05
Last Qcal Time: 941121 11:58

Compound No : 37
Compound Name: OCTA DIOXIN
Quant Ion : 460.0

Hit #	R.T. Scan#	Conc Area	Units	q	Areas and Ratios 460.0	458.0	395.0		
1	33.67	.0240	NG/UL	79	773	833	1120		
	827	773			1.000	1.078	1.449		
2	33.70	.0209	NG/UL	38	674	213	1030		
	829	674			1.000	.316	1.528		
3	33.79	.0299	NG/UL	72	965	1105	1119		
	835	965			1.000	1.145	1.160		
4	33.90	.0177	NG/UL	74	569	371	1109		
	842	569			1.000	.652	1.949		
5	34.06	.611	NG/UL	97	19693	17959	13005		
	852	19693			1.000	.912	.660		
6	34.18	.0246	NG/UL	55	792	1037	772		
	860	792			1.000	1.309	.975		

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Data File: >GL720::D7 Quant Output File: ^GL720::D1
me: 9411302-1 Instrument ID: G
Misc: INST:G*IEA-1934 45*20608.01*10g/100ul/2ul*DB5 COLUMN BTL# 5
Quant Time: 941121 14:50 Quant ID File: I_8280::TE
Injected at: 941121 14:12 Last Calibration: 941118 17:05
Last Qcal Time: 941121 11:58

Compound No : 37
Compound Name: OCTA DIOXIN
Quant Ion : 460.0

Hit #	R.T. Scan#	Conc Area	Units	q	Areas and Ratios 460.0	458.0	395.0		
7	34.28	.0588	NG/UL	57	1896	925	1834		
	866	1896			1.000	.488	.967		
8	34.37	.0332	NG/UL	27	1070	1674	1722		
	872	1070			1.000	1.564	1.609		

Calibration Check Report

Title: TETRA-OCTA DIOXINS & FURANS METHOD 8280 DB5 COLUMN(.32X60)
Calibrated: 941118 17:04

Check Standard Data File: >GL717
Injection Time: 941121 11:58

Compound	$\overline{RF}$	RF	%Diff	Calib Meth	
2378 TETRA DIOXIN C13	1.09154	1.04893	3.90	Average	(Conc=.500)
2378 TETRA FURAN C13	1.95129	1.91828	1.69	Average	(Conc=.500)
37 CL4 2378 TCDD	1.63953	1.76206	7.47	Average	(Conc=.250)
123678 HEXA DIOXIN C13	.92852	.95472	2.82	Average	(Conc=.500)
OCTA DIOXIN C13	.50293	.48723	3.12	Average	(Conc=1.00)
1234678 HEPTA FURAN C13	.91804	.93263	1.59	Average	(Conc=1.00)
2378 TCDD	.96538	1.01482	5.12	Average	
12378 PENTA DIOXIN	.53377	.58634	9.85	Average	
123478 HEXA DIOXIN	.94505	.93568	.99	Average	(Conc=1.25)
123678 HEXA DIOXIN	.91113	.84874	6.85	Average	(Conc=1.25)
123789 HEXA DIOXIN	.94183	.95648	1.56	Average	(Conc=1.25)
1234678 HEPTA DIOXIN	.60356	.61686	2.20	Average	(Conc=1.25)
2378 TETRA FURAN	.82922	.82591	.40	Average	
12378 PENTA FURAN	.46968	.48061	2.33	Average	
23478 PENTA FURAN	.63216	.66979	5.95	Average	(Conc=.500)
123478 HEXA FURAN	1.68917	1.72973	2.40	Average	(Conc=1.25)
123678 HEXA FURAN	1.64628	1.58315	3.83	Average	(Conc=1.25)
234678 HEXA FURAN	1.55462	1.56420	.62	Average	(Conc=1.25)
123789 HEXA FURAN	1.43147	1.44403	.88	Average	(Conc=1.25)
1234678 HEPTA FURAN	1.09131	1.08555	.53	Average	(Conc=1.25)
~~1234789 HEPTA FURAN~~	.98178	1.01433	3.32	Average	(Conc=1.25)
OCTA DIOXIN	.63031	.67075	6.42	Average	(Conc=2.50)
OCTA FURAN	1.05969	1.09640	3.46	Average	(Conc=2.50)

SKG 11/21/94 PA 11/28/94

RF - Response Factor from daily standard file at .500 NG/UL

$\overline{RF}$ - Average Response Factor from Initial Calibration

%Diff - % Difference from original average or curve

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Appendix B

Laboratory Analysis of Excavated Soil

Table 1: Shipment Information Summary

Dumpster #	Delivery Date	Fill Date	Quantity	Shipment Date	Contamination Level		Analysis Date
RB-29	03/16/95	03/23/95	12 CY	04/12/95	RB-29-01	5.78 ppm	03/28/95
					RB-29-02	5.71 ppm	03/28/95
RB-39	03/16/95	03/27/95	12 CY	04/12/95	RB39-1	1.59 ppm	04/05/95
					RB39-2	0.97 ppm	04/05/95
RB-64	03/24/95	03/29/95	12 CY	04/19/95	RB64-1	321 ppm	04/10/95
					RB64-2	112 ppm	04/10/95
RB-70	03/28/95	03/31/95	12 CY	04/19/95	RB70-1	412 ppm	04/10/95
					RB70-2	266 ppm	04/10/95
RB-43	04/11/95	04/19/95	12 CY	05/09/95	RB43-01	33 ppm	05/02/95
					RB43-02	162 ppm	05/02/95
RB-48	04/11/95	04/21/95	12 CY	05/09/95	RB48-01	136 ppm	05/02/95
					RB48-02	219 ppm	05/02/95
RB-63	04/25/95	05/03/95	12 CY	05/31/95	RB-63-01	17.1 ppm	05/17/95
					RB-63-02	15.0 ppm	05/17/95
RB-66	04/25/95	05/03/95	12 CY	05/31/95	RB-66/68-1	150 ppm	05/17/95
					RB-66/68-2	106 ppm	05/17/95
RB-68	04/25/95	05/06/95	12 CY	05/31/95	RB-66/68-1	150 ppm	05/17/95
					RB-66/68-2	106 ppm	05/17/95
RB-34	04/19/95	05/15/95	20 CY	08/29/95	LC-D1	<0.5 ppm	05/22/95

CHAIN-OF-CUSTODY RECORD

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

CLIENT INFORMATION

COMPANY/COMMAND: PWC-NORFOLK CODE: 414
CONTACT: JP MESSIER
PHONE: 5-4885/7803 EXT: FAX: 5-9204
J.O. #: 1374014
SIGNATURE: JP Messier
PERMIT NO.:

LAB USE ONLY LINE ITEM #	LAB USE ONLY SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVATION VERIFIED BY
0002	1146	RB-29-01	START	3/24/95	8:45	C	JPM	S	NONE	1	PCB IN SOIL				NA DAE
			STOP	3/24/95	8:50										
3228 1	1147	RB-29-02	START	3/24/95	8:51	C	JPM	S	NONE	1	PCB IN SOIL				1
			STOP	3/24/95	8:56										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TURNAROUND: 1-Rush 3-day TR (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS:

REGULATION APPLIED:
RCRA ( ) HRSD ( )
SDWA ( ) TSCA (✓)
CWA ( ) PHOTO ( )
CAA ( ) OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT ( )DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB: JR Reed
CONTRACT NO.(S) 8308

*1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).**
**ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: JPMessier	COMPANY/COMMAND: PWC 414	DATE/TIME: 3/24/95 1235
RECEIVED BY: [illegible]	COMPANY/COMMAND: PWC Env Lab	DATE/TIME: 3/24/95 1235
RELINQUISHED BY: Rodney A. Reed	COMPANY/COMMAND: PWC-ENV	DATE/TIME: 3/24/95 1425
RECEIVED BY: Elaine [illegible]	COMPANY/COMMAND: JKR	DATE/TIME: 3/24/95 1425
RELINQUISHED BY:	COMPANY/COMMAND:	DATE/TIME:
RECEIVED BY:	COMPANY/COMMAND:	DATE/TIME:

March 28, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

Sample Received: 03/24/95 @ 14:25
Sample Collected: 03/24/95 @ 08:45
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0002B
PWC Sample Number: 1146 Soil
Sample ID/Location: RB-29-01
JRA ID No.: 95-3227

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<0.17	CDN-03/27/95 @ 14:10
1221		0.17	<0.17	CDN-03/27/95 @ 14:10
1232		0.17	<0.17	CDN-03/27/95 @ 14:10
1248		0.17	5.78	CDN-03/27/95 @ 14:10
1254		0.17	<0.17	CDN-03/27/95 @ 14:10
1260		0.17	<0.17	CDN-03/27/95 @ 14:10

Respectfully,

Carol Isenhour
Vice President

JRA:dld

032895

March 28, 1995

SUBMITTED BY:

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Sample Received: 03/24/95 @ 14:25
Sample Collected: 03/24/95 @ 08:51
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0002
PWC Sample Number: 1147 Soil
Sample ID/Location: RB-29-02
JRA ID No.: 95-3228

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<0.17	CDN-03/27/95 @ 13:42
1221		0.17	<0.17	CDN-03/27/95 @ 13:42
1232		0.17	<0.17	CDN-03/27/95 @ 13:42
1248		0.17	5.71	CDN-03/27/95 @ 13:42
1254		0.17	<0.17	CDN-03/27/95 @ 13:42
1260		0.17	<0.17	CDN-03/27/95 @ 13:42

Respectfully,

Carol Isenhour
Vice President

JRA:dld

032895

Apr 6,95 9:43 No.004 P.03

CHAIN-OF-CUSTODY RECORD

Mar*

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511-3095
PH: (804)445-8851 FAX: (804)445-8852

Read

ENVIRONMENTAL

CLIENT INFORMATION

COMPANY/COMMAND: PWC NORFOLK CODE: 414
CONTACT: JP MESSIER / Craig Mayer
PHONE: 445-4885 EXT: FAX: 445-9204
J.O. #: 1374014
SIGNATURE: JPMessier
PERMIT NO.:

LAB USE ONLY LINE ITEM #	LAB USE ONLY SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVAT VERIFIED
0003	1204	RB39-1	START	3/28	0900	C	JPM	S	NONE	1	PCB IN SOIL				M. DA
			STOP	3/28	0930										
1	1205	RB39-2	START	3/28	0845	C	JPM	S	NONE	1	PCB IN SOIL				1
			STOP	3/28	0815										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TURNAROUND: SEE BELOW (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: 3 DAY IF POSSIBLE, ELSE 5-DAY

REGULATION APPLIED:
RCRA ( ) HRSD ( )
SDWA ( ) TSCA (X)
CWA ( ) PHOTO ( )
CAA ( ) OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT (X)DISPOSAL BY LAB

D.O. NUMBER: ASL 3-29-95
CONTRACT LAB: ~~Mr. Chemist~~ Reac
CONTRACT NO.(S) 8308

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: JPMessier	COMPANY/COMMAND: PWC Norfolk C414	DATE/TIME: 3/28/95 11a
RECEIVED BY: Daniel Goodwin	COMPANY/COMMAND: Env Lab	DATE/TIME: 3-29-95 10
RELINQUISHED BY: J Ehr	COMPANY/COMMAND: PWC Env Lab	DATE/TIME: 3/31/95 R2
RECEIVED BY: Elaine Charlton	COMPANY/COMMAND: James R. Reeds Inc.	DATE/TIME: 3/31/95
RELINQUISHED BY:	COMPANY/COMMAND:	DATE/TIME
RECEIVED BY:		

PWC ENVIRONMENTAL LABORATORY

April 5, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
Norfolk, VA 23511

Sample Received: 03/31/95 @ 12:25
Sample Collected: 03/28/95 @ 09:00 - 09:30
RE: Contract No. N62470-94-D-8308
J.O. #: 0023
Line Item #: 0003
Delivery Order #: 0023
Samplers Initials: JPM
PWC Sample Number: 1204
Sample ID/Location: RB 39-1 (Soil)
JRA ID No.: 95-3446

Parameter	Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW 846 Method 8080 w/3540			
1016/1242		0.17	<0.17	CDN-04/04/95 @ 18:58
1221		0.17	<0.17	CDN-04/04/95 @ 18:58
1232		0.17	<0.17	CDN-04/04/95 @ 18:58
1248		0.17	1.59	CDN-04/04/95 @ 18:58
1254		0.17	<0.17	CDN-04/04/95 @ 18:58
1260		0.17	<0.17	CDN-04/04/95 @ 18:58

Notes:
- Duplicate - % RPD = 8.2%
- Blank - <0.17 mg/kg
- QCWP 185 (PCB 1248) Result =39 ug/L (TV = 50 ug/L, Range = 29.0-70.2 ug/L)

Respectfully,

Beverly E. Blanchard
for Carol Isenhour
Vice President

JRA:dld

040295

April 5, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
Norfolk, VA 23511

Sample Received: 03/31/95 @ 12:25
Sample Collected: 03/28/95 @ 09:45 - 10:15
RE: Contract No. N62470-94-D-8308
J.O. #: 0023
Line Item #: 0003
Delivery Order #: 0023
Samplers Initials: JPM
PWC Sample Number: 1205
Sample ID/Location: RB 39-2 (Soil)
JRA ID No.: 95-3447

Parameter	Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW 846 Method 8080 w/3540			
1016/1242		0.17	<0.17	CDN-04/04/95 @ 20:01
1221		0.17	<0.17	CDN-04/04/95 @ 20:01
1232		0.17	<0.17	CDN-04/04/95 @ 20:01
1248		0.17	0.97	CDN-04/04/95 @ 20:01
1254		0.17	<0.17	CDN-04/04/95 @ 20:01
1260		0.17	<0.17	CDN-04/04/95 @ 20:01

Notes:
- Duplicate - % RPD = 8.2%
- Blank - <0.17 mg/kg
- QCWP 185 (PCB 1248) Result =39 ug/L (TV = 50 ug/L, Range = 29.0-70.2 ug/L)

Respectfully,

for Beverly E. Blanchard
Carol Isenhour
Vice President

JRA:dld

040595

CHAI[illegible]-CUSTODY RECORD

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

CLIENT INFORMATION

COMPANY/COMMAND: PWC CODE: 414
CONTACT: J.P. Messier / C. Mayer
PHONE: 54885 EXT: FAX:
J.O. #: 1374014
SIGNATURE:
PERMIT NO.:

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVATI VERIFIED B
003	1276	RB70-1	START	3/31	0730	C	JPM	S	none	1	PCB in soil				
			STOP												
	1277	RB70-2	START	3/31	0745	C	JPM	S		1					
			STOP												
	1278	RB64-1	START	3/31	0800	C	JPM	S		1					
			STOP												
	1279	RB64-2	START	3/31	0815	C	JPM	S		1					
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TURNAROUND: 5 day (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS:

REGULATION APPLIED:

RCRA ( )	HRSD ( )
SDWA ( )	TSCA ( )
CWA ( )	PHOTO ( )
CAA ( )	OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT ( )DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB: SR Reed
CONTRACT NO.(S) 8308
B/B 3/31/95

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: C Mayer	COMPANY/COMMAND: PWC - 414	DATE/TIME: 3/31/95/1000
RECEIVED BY: Rodney Reed	COMPANY/COMMAND: PWC-ENV	DATE/TIME: 3-31-95/1003
RELINQUISHED BY: A. Angeles	COMPANY/COMMAND: PWC-ENV	DATE/TIME: 4/5/95 0830
RECEIVED BY: Elaine Clarkson	COMPANY/COMMAND: SPR	DATE/TIME: 4/5/95 0830
RELINQUISHED BY:	COMPANY/COMMAND:	

April 10, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
9742 Maryland Avenue
Code 930, Bldg. Z-140
Norfolk, VA 23511

Samples Received: 04/05/95 @ 08:30
Samples Collected: 03/31/95 @ See below
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Delivery Order: 0024
Line Item #: 003

Sample Collected:	@ 07:30	07:45	@ 08:00	@ 08:15
PWC Sample Number:	1276	1277	1278	1279
Sample Identification:	RB70-1	RB70-2	RB64-1	RB64-2
JRA ID No.:	95-3658	95-3659	95-3660	95-3661
ANALYSIS (results reported in mg/kg)				
PCBs				
1016/1242	<17	<17	<17	<17
1221	<17	<17	<17	<17
1232	<17	<17	<17	<17
1248	412	266	321	112
1254	<17	<17	<17	<17
1260	<17	<17	<17	<17

NOTES:
EPA Method: SW846 8080
Method Detection Limit: 17 mg/kg
Practical Quantitation Limit: 17 mg/kg
Analyst/Date/Time: CDN-04/07/95 @ 15:33, 16:03, 16:58, 17:20

041095

Respectfully,

for Beverly E. Blanchard
Carol Isenhour
Vice President

JRA/jsc

CHAIN-OF-CUSTODY RECORD

& ANALYSIS REQUEST FORM

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511-3095
PH: (804)445-8851 FAX: (804)445-8852

CLIENT INFORMATION

COMPANY/COMMAND: PWC CODE: 414
CONTACT: CRAIG MAYER / JP MESSIER
PHONE: 54885 EXT: FAX: 52904
J.O. #: 137 4014
SIGNATURE:
PERMIT NO.:

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVATION VERIFIED BY
~~0003~~	1492	RB43-01	START	4/21	~~0900~~ 1400	G	CM	S	NA	10 1	PCB IN SOIL	95.4569			NA DAC
			STOP	"											
~~0003~~	1493	RB43-02	START	4/21	1420					10 1	PCB IN SOIL	95.4570			
			STOP	"											
~~0003~~	1494	RB48-01	START	4/21	1440					10 1	PCB IN SOIL	95.4571			
			STOP	"											
~~0003~~	1495	RB48-02	START	4/21	1500					10 1	PCB IN SOIL	95.4572			
			STOP	"											
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TURNAROUND: ~~RUSH~~ 5-Day (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS:

REGULATION APPLIED:
RCRA ( ) HRSD ( )
SDWA ( ) TSCA ( )
CWA ( ) PHOTO ( )
CAA ( ) OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT ( )DISPOSAL BY LAB

D.O. NUMBER: RAP 4-24-95
CONTRACT LAB: S/K Reed
CONTRACT NO.(S) 8308

*1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).**
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. -- THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM -- 4:00 PM).

RELINQUISHED BY: CWMayer	COMPANY/COMMAND:	DATE/TIME:
RECEIVED BY: Darrell Goodrich	COMPANY/COMMAND: PWC Lab	DATE/TIME: 4-21-95 1510
RELINQUISHED BY: A. Angeles	COMPANY/COMMAND: PWC LAB	DATE/TIME: 4/27/95 1305
RECEIVED BY: Elaine Chaloux	COMPANY/COMMAND: JKR	DATE/TIME: 4/27/95 1305
RELINQUISHED BY:	COMPANY/COMMAND:	DATE/TIME:
RECEIVED BY:	COMPANY/COMMAND:	DATE/TIME:
RELINQUISHED BY:		

May 2, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

Sample Received: 04/27/95 @ 13:05
Sample Collected: 04/21/95 @ 14:00
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0003
PWC Sample Number: 1492 Soil
Sample ID/Location: RB-43-01
JRA ID No.: 95-4569

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<1.7	CDN-05/01/95 @ 10:42
1221		0.17	<1.7	CDN-05/01/95 @ 10:42
1232		0.17	<1.7	CDN-05/01/95 @ 10:42
1248		0.17	33	CDN-05/01/95 @ 10:42
1254		0.17	<1.7	CDN-05/01/95 @ 10:42
1260		0.17	<1.7	CDN-05/01/95 @ 10:42

Note:
- Practical Quantitation Limit = 1.7 mg/kg

Respectfully,

for Elaine Claiborne
Carol Isenhour
Vice President

JRA:dld

050295

May 2, 1995

SUBMITTED BY:

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Sample Received: 04/27/95 @ 13:05
Sample Collected: 04/21/95 @ 14:20
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0003
PWC Sample Number: 1493 Soil
Sample ID/Location: RB-43-02
JRA ID No.: 95-4570

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<8.5	CDN-05/01/95 @ 13:48
1221		0.17	<8.5	CDN-05/01/95 @ 13:48
1232		0.17	<8.5	CDN-05/01/95 @ 13:48
1248		0.17	162	CDN-05/01/95 @ 13:48
1254		0.17	<8.5	CDN-05/01/95 @ 13:48
1260		0.17	<8.5	CDN-05/01/95 @ 13:48

Note:
-Practical Quantitation Limit = 8.5 mg/kg

Respectfully,

Elaine Claiborne
for Carol Isenhour
Vice President

JRA:dld

05029

May 2, 1995

SUBMITTED BY:

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Sample Received: 04/27/95 @ 13:05
Sample Collected: 04/21/95 @ 14:40
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0003
PWC Sample Number: 1494 Soil
Sample ID/Location: RB-48-01
JRA ID No.: 95-4571

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<8.5	CDN-05/01/95 @ 14:23
1221		0.17	<8.5	CDN-05/01/95 @ 14:23
1232		0.17	<8.5	CDN-05/01/95 @ 14:23
1248		0.17	136	CDN-05/01/95 @ 14:23
1254		0.17	<8.5	CDN-05/01/95 @ 14:23
1260		0.17	<8.5	CDN-05/01/95 @ 14:23

Note:
-Practical Quantitation Limit = 8.5 mg/kg

Respectfully,

for Elaine Clailone
Carol Isenhour
Vice President

JRA:dld

05029

May 2, 1995

SUBMITTED BY:

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511-3095

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Sample Received: 04/27/95 @ 13:05
Sample Collected: 04/21/95 @ 15:00
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Line Item #: 0003
PWC Sample Number: 1495 Soil
Sample ID/Location: RB-48-02
JRA ID No.: 95-4572

Parameter	SW846 Method	Method Detection Limit (mg/kg)	Results (mg/kg)	Analyst/Date/Time
PCBs	SW846/8080			
1016/1242		0.17	<8.5	CDN-05/01/95 @ 14:56
1221		0.17	<8.5	CDN-05/01/95 @ 14:56
1232		0.17	<8.5	CDN-05/01/95 @ 14:56
1248		0.17	219	CDN-05/01/95 @ 14:56
1254		0.17	<8.5	CDN-05/01/95 @ 14:56
1260		0.17	<8.5	CDN-05/01/95 @ 14:56

Note:
-Practical Quantitation Limit = 8.5 mg/kg

Respectfully,

for Elaine Claiborne
Carol Isenhour
Vice President

JRA:dld

050295

CHAIN-OF-CUSTODY RECORD

& ANALYSIS REQUEST FORM

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

CLIENT INFORMATION

COMPANY/COMMAND: PWC NORFOLK CODE: 414
CONTACT: CRAIG MAYUE / PHESSIER
PHONE: 445-4885 / EXT: 7803 FAX: 445-9294
J.O. #: 1374014
SIGNATURE: [illegible]
PERMIT NO.:

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	TYPE	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVA VERIFIED
	1573	LC-11	START	5/09	1000	CT	JPM	S	NONE	1/GL	PCB IN SOIL				
			STOP		1005										
	1574	LC-21	START		1030										
			STOP		1035										
	1575	LC-31	START		1050										
			STOP		1055										
	1576	LC-41	START		1110										
			STOP		1115										
	1577	LC-5	START		0950										
			STOP		0955										
	1578	RB-66/68-1	START	5/11	0800										
			STOP		0815										
	1579	RB-66/68-2	START		0820										
			STOP		0835										
	1580	RB-63-1	START		0845										
			STOP		0900										

TYPE	MATRIX	CONTAINER	PRESERVATIVE
G - GRAB	L - LIQUID SW - SWIPE	P - PLASTIC B - BAG A - AMBER(glass)	1 - COOL TO 4 C 5 - HCL, pH<2
CF - COMPOSITE, FLOW	S - SOLID	GL - GLASS C - CARTRIDGE	2 - HNO3, pH<2 6 - 0.008% Na2S2O3, 4 C
CT - COMPOSITE, TIME	GS - GAS	T - TEFLON TL - TEFLON LINED LID	3 - H2SO4, pH<2 7 - FIELD FILTER
	SS - SEMI SOLID	V - VOA H - HEXANE RINSED	4 - NaOH, pH>12 8 - NONE

* TURNAROUND: ASAP (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: NEEDED TO CLOSE SITE/SOIL DISPOSAL

REGULATION APPLIED:

RCRA ( )	HRSD ( )
SDWA ( )	TSCA (X)
CWA ( )	PHOTO ( )
CAA ( )	OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT (X)DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB:
CONTRACT NO.(S)

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: [illegible]	COMPANY/COMMAND: PWC NORFOLK 0414	REC'D BY: [illegible]	DATE/TIME: 5/11/95
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:

CHAIN-OF-CUSTODY RECORD
& ANALYSIS REQUEST FORM

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

CONTINUATION SHEET
SHEET 2 OF 2

P.O.C.: CRAIG MAYER / J P MESSIER
COMMAND: PWC NORFOLK CODE 414

LAB USE ONLY LINE ITEM #	LAB USE ONLY SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	FIELD READINGS TEMPERATURE	FIELD READINGS OTHER	PRESERVATIO VERIFIED BY
	1581	RB-63-2	START	5/11	0905	C	JMM	S	NONE	1	PCB IN SOIL				MA DAC
			STOP	5/11	0920										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
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			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

D.O. NUMBER
CONTRACT LAB:
CONTRACT NO.(S):

*1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).**
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. -- THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM -- 4:00 PM).

RELINQUISHED BY: JMessier	COMPANY/COMMAND: PWC NORFOLK C414	REC'D BY: David Goodwin	DATE/TIME: 5/11/95 11
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:

7, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

avy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511

Sample Received: 05/12/95 @ 14:38
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Delivery Order #: 0029
Line Item #: 0003

Sample Collected:	05/09/95 10:00 - 10:05	05/09/95 10:30 - 10:35	05/09/95 10:50 - 10:55	05/09/95 11:10 - 11:15	05/09/95 09:50 - 09:55	05/11/95 08:00 - 08:15
PWC Sample Number:	1573	1574	1575	1576	1577	1578
Sample ID:	LC-11	LC-21	LC-31	LC-41	LC-5	RB-66/68-1
JRA ID No.:	95-5126	95-5127	95-5128	95-5129	95-5130	95-5131
ANALYSIS (results reported in mg/kg)						
PCBs						
1016/1242	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1221	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1232	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1248	<0.17	8.52	5.51	7.33	<0.17	150
1254	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1260	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

Sample Collected:	05/11/95 08:20 - 08:35	05/11/95 08:45 - 09:00	05/11/95 09:05 - 09:20
PWC Sample Number:	1579	1580	1581
Sample ID:	RB-66/68-2	RB-63-1	RB-63-2
JRA ID No.:	95-5132	95-5133	95-5134
ANALYSIS (results reported in mg/kg)			
PCBs			
1016/1242	<0.17	<0.17	<0.17
1221	<0.17	<0.17	<0.17
1232	<0.17	<0.17	<0.17
1248	106	17.1	15.0
1254	<0.17	<0.17	<0.17
1260	<0.17	<0.17	<0.17

NOTES:
-Duplicate - % RPD = 0.66%
-Blank - <0.17 mg/kg
-Spikes - 120% recovery
-EPA Method: SW846 8080
-Method Detection Limit: 0.17 mg/kg
-Analyst/Date/Time: CDN-05/16/95 @ 09:33, 10:06, 11:11, 12:10, 12:46, 13:19, 14:05, 14:43, 15:26, 18:16, 18:44

LC-11,21,31,41 ARE AS SHOWN ON ATTACHED DRAWINGS
LC-5 : BLANK
RB-66/68-1/2 : ROLL-OFF ANALYSIS
JRA/jsc

Respectfully,

Beverly E. Blanchard
for Carol Isenhour, Vice President

CHAIN-OF-CUSTODY RECORD

& ANALYSIS REQUEST FORM

PWC ENVIRONMENTAL LABORATORY
CODE 830 BLDG Z-140
8742 MARYLAND AVENUE
NORFOLK, VA 23511-3085
PH: (804)445-8851 FAX: (804)445-8852

ENVIRONMENTAL

CLIENT INFORMATION

COMPANY/COMMAND: PWC NORFOLK, VA CODE: 414
CONTACT: JP MESSIER
PHONE: 445-4885 EXT: — FAX: 445-9204
J.O. #: 1374014
SIGNATURE: JP Messier
PERMIT NO.: N/A

LAB USE ONLY LINE ITEM #	LAB USE ONLY SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	TYPE	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	FIELD READINGS TEMPERATURE	FIELD READINGS OTHER	PRESERVATIO VERIFIED BY
	11755	LC-W1	START	07/10/95	1230	G	JM	L	8	1	PCB IN WATER	—	—	—	
			STOP		1235										
	11756	LC-D1	START		1240	G	JM	S	8	1	~~TCLP~~ ~~PCB~~ PCB, Semi-VOA	—	—	—	
			STOP		1300										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TYPE	MATRIX	CONTAINER	PRESERVATIVE
G - GRAB	L - LIQUID	P - PLASTIC	1 - COOL TO 4 C
CF - COMPOSITE FLOW	S - SOLID	GL - GLASS	2 - HNO3, pH<2
CT - COMPOSITE TIME	GS - GAS	T - TEFLON	3 - H2SO4, pH<2
	SS - SEMI SOLID	VO - VOA	4 - NaOH, pH>12
	SW - SWIPE	B - BAG	5 - HCL pH<2
		C - CARTRIDGE	6 - 0.006% Na2B2O3, 4 C
		TL - TEFLON LINED LID	7 - FIELD FILTER
		A - AMBER (glass)	8 - NONE
		H - HEXANE RINSED	

TURNAROUND: RUSH (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: REQ'D TO CLOSEOUT JOB SITE

REGULATION APPLIED:
RCRA ( ) HRSD ( )
SDWA ( ) TSCA (X)
CWA ( ) PHOTO ( )
CAA ( ) OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( ) RETURN TO CLIENT (X) DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB:
CONTRACT NO.(S)

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
JP Messier	PWC NORFOLK, C414	[illegible]	7-10-95 143

NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 07/17/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : LC - W1 -G
Sample Matrix: CLOUDY-L

Receipt Date : 07/10/1995
Collected By : JPM
Collection Site : LC - W1

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME		RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY11757	PCB	<	0.5	mg/L	0.5	07/10/1995	1230	07/14/1995	15:00:00	8081	DRE

Legend: < -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 07/19/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : LC - W1 -G
Sample Matrix: SOLID

Receipt Date : 07/10/1995
Collected By : JPM
Collection Site : LC - W1

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME	RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY11756	TCLP EXTRACTION	B COMPLETED			07/10/1995	1240	07/10/1995	15:30:00	1311	DKH
	PYRIDINE	< NOT FOUND	UG/L	7	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	1,4-DICHLOROBENZENE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	O-CRESOL	160	UG/L	15	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROETHANE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	META&PARA-CRESOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	NITROBENZENE	200	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROBUTADIENE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4,6-TRICHLOROPHENOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4,5-TRICHLOROPHENOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4-DINITROTOLUENE	< NOT FOUND	UG/L	5	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROBENZENE	< NOT FOUND	UG/L	5	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	PENTACHLOROPHENOL	< 20	UG/L	20	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	PCB	< 0.5	mg/L	0.5	07/10/1995	1240	07/14/1995	15:00:00	8081	DRE

Legend: < -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

Appendix C

Confirmatory Sampling, Clean-Fill Sampling, and Decontamination Sampling Laboratory Analysis Summary

Table 2: Soil Sample Summary					
Sample ID	**Lab ID**	**Date Received**	**Date Extracted**	**Data Analyzed**	**Concentration of Aroclor 1248 mg/kg (ppm)**
LC-11	1573	05/12/95	05/15/95	05/16/95	<0.17
LC-21	1574	05/12/95	05/15/95	05/16/95	8.52
LC-31	1575	05/12/95	05/15/95	05/16/95	5.51
LC-41	1576	05/12/95	05/15/95	05/16/95	7.33
LC-5	1577	05/12/95	05/15/95	05/16/95	<0.17

Table 3: Soil Sample Holding Time Verification and Surrogate Recoveries			
Sample ID	**VTSR**	**Date of Preparation**	**Date of Analysis**
LC-11	05/15/95	05/15/95	05/16/95
LC-21	05/15/95	05/15/95	05/16/95
LC-31	05/15/95	05/15/95	05/16/95
LC-41	05/15/95	05/15/95	05/16/95
LC-5	05/15/95	05/15/95	05/16/95

VTSR - validated time of sample receipt

Table 4: Soil Sample QC Summary Method Blanks, MS & MSD Results						
Sample Delivery Group	**Method Blank ID**	**Results**	**MS/MSD Sample ID**	**MS % Recovery**	**MSD/ % RPD**	**Corresponding Sample**
950029	BLK5126	<0.17	CDN-1	120	0.66	LC-11
950029	BLK5127	<0.17	CDN-2	120	0.66	LC-21
950029	BLK5128	<0.17	CDN-3	120	0.66	LC-31
950029	BLK5129	<0.17	CDN-4	120	0.66	LC-41
950029	BLK5130	<0.17	CDN-5	120	0.66	LC-5

MS - matrix spike
MSD - matrix spike duplicate
RPD - relative percent difference

CHAIN-OF-CUSTODY RECORD

& ANALYSIS REQUEST FORM

ENVIRONMENTAL

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

CLIENT INFORMATION

COMPANY/COMMAND: ANC NORFOLK CODE: 419
CONTACT: CRAIG MAYUR / JPM ESSIER
PHONE: 445-4885 EXT: 7803 FAX: 445-9294
J.O. #: 1374014
SIGNATURE: JPMessier
PERMIT NO.:

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	TYPE	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRECEIPT VERIFI
	1573	LC-11	START	5/09	1000	CT GRAB	JPM	S	NONE	1/GL	PCB IN SOIL				
			STOP		1005										
	1574	LC-21	START		1030										
			STOP		1035										
	1575	LC-31	START		1050										
			STOP		1055										
	1576	LC-41	START		1110										
			STOP		1115										
	1577	LC-5	START		0950										
			STOP		0955										
	1578	RB-66/68-1	START	5/11	0800										
			STOP		0815										
	1579	RB-66/68-2	START		0820										
			STOP		0835										
	1580	RB-63-1	START		0845										
			STOP		0900										

TYPE	MATRIX	CONTAINER	PRESERVATIVE
G - GRAB	L - LIQUID SW - SWIPE	P - PLASTIC B - BAG A - AMBER(glass)	1 - COOL TO 4 C 5 - HCL, pH<2
CF - COMPOSITE, FLOW	S - SOLID	GL - GLASS C - CARTRIDGE	2 - HNO3, pH<2 6 - 0.008% Na2S2O3
CT - COMPOSITE, TIME	GS - GAS	T - TEFLON TL - TEFLON LINED LID	3 - H2SO4, pH<2 7 - FIELD FILTER
	SS - SEMI SOLID	V - VOA H - HEXANE RINSED	4 - NaOH, pH>12 8 - NONE

* TURNAROUND: ASAP (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: NEEDED TO CLOSE SITE/SOIL DISPOSAL

REGULATION APPLIED:

RCRA ( )	HRSD ( )
SDWA ( )	TSCA (X)
CWA ( )	PHOTO ( )
CAA ( )	OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT (X)DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB:
CONTRACT NO.(S)

1. *CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).**
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. *SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).*

RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
JPMessier	PWC NORFOLK 0414	[illegible]	5/11/95

CHAIN-OF-CUSTODY RECORD
& ANALYSIS REQUEST FORM

CONTIN[redacted]
SHEET 2[redacted]

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)445-8852

ENVIRONMENTAL

P.O.C.: CRAIG MAYER [redacted]
COMMAND: PWC NORFOLK CODE 414

LAB USE ONLY LINE ITEM #	LAB USE ONLY SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	ON DATE	AT TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	FIELD READINGS TEMPERATURE	FIELD READINGS OTHER	PRESERVATI VERIFIED
	1581	RB-63-2	START	5/11	0905	C	PM	S	NONE	1	PCB IN SOIL				Y
			STOP	5/11	0920										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
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			STOP												
			START												
			STOP												
			START												
			STOP												

D.O. NUMBER
CONTRACT LAB:
CONTRACT NO.(S):

1. *CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).**
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. *SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).*

RELINQUISHED BY: [illegible]	COMPANY/COMMAND: PWC NORFOLK C414	REC'D BY: [illegible]	DATE/TIME: 5/11/95
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:

May 17, 1995

SUBMITTED BY:

James R. Reed and Associates
11864 Canon Blvd., Suite 103
Newport News, VA 23606
(804) 873-4703

Navy Public Works Center
ATTN: Merrill Anderson-Ashcraft
Code 930, Bldg. Z-140
9742 Maryland Avenue
Norfolk, VA 23511

Sample Received: 05/12/95 @ 14:38
RE: Contract No. N62470-94-D-8308
J.O. #: 1374014
Delivery Order #: 0029
Line Item #: 0003

Sample Collected:	05/09/95 10:00 – 10:05	05/09/95 10:30 – 10:35	05/09/95 10:50 – 10:55	05/09/95 11:10 – 11:15	05/09/95 09:50 – 09:55	05/11/95 08:00 – 08:15
PWC Sample Number:	1573	1574	1575	1576	1577	1578
Sample ID:	LC-11	LC-21	LC-31	LC-41	LC-5	RB-66/68-1
JRA ID No.:	95-5126	95-5127	95-5128	95-5129	95-5130	95-5131
ANALYSIS (results reported in mg/kg)						
PCBs						
1016/1242	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1221	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1232	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1248	<0.17	8.52	5.51	7.33	<0.17	150
1254	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1260	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

Sample Collected:	05/11/95 08:20 – 08:35	05/11/95 08:45 – 09:00	05/11/95 09:05 – 09:20
PWC Sample Number:	1579	1580	1581
Sample ID:	RB-66/68-2	RB-63-1	RB-63-2
JRA ID No.:	95-5132	95-5133	95-5134
ANALYSIS (results reported in mg/kg)			
PCBs			
1016/1242	<0.17	<0.17	<0.17
1221	<0.17	<0.17	<0.17
1232	<0.17	<0.17	<0.17
1248	106	17.1	15.0
1254	<0.17	<0.17	<0.17
1260	<0.17	<0.17	<0.17

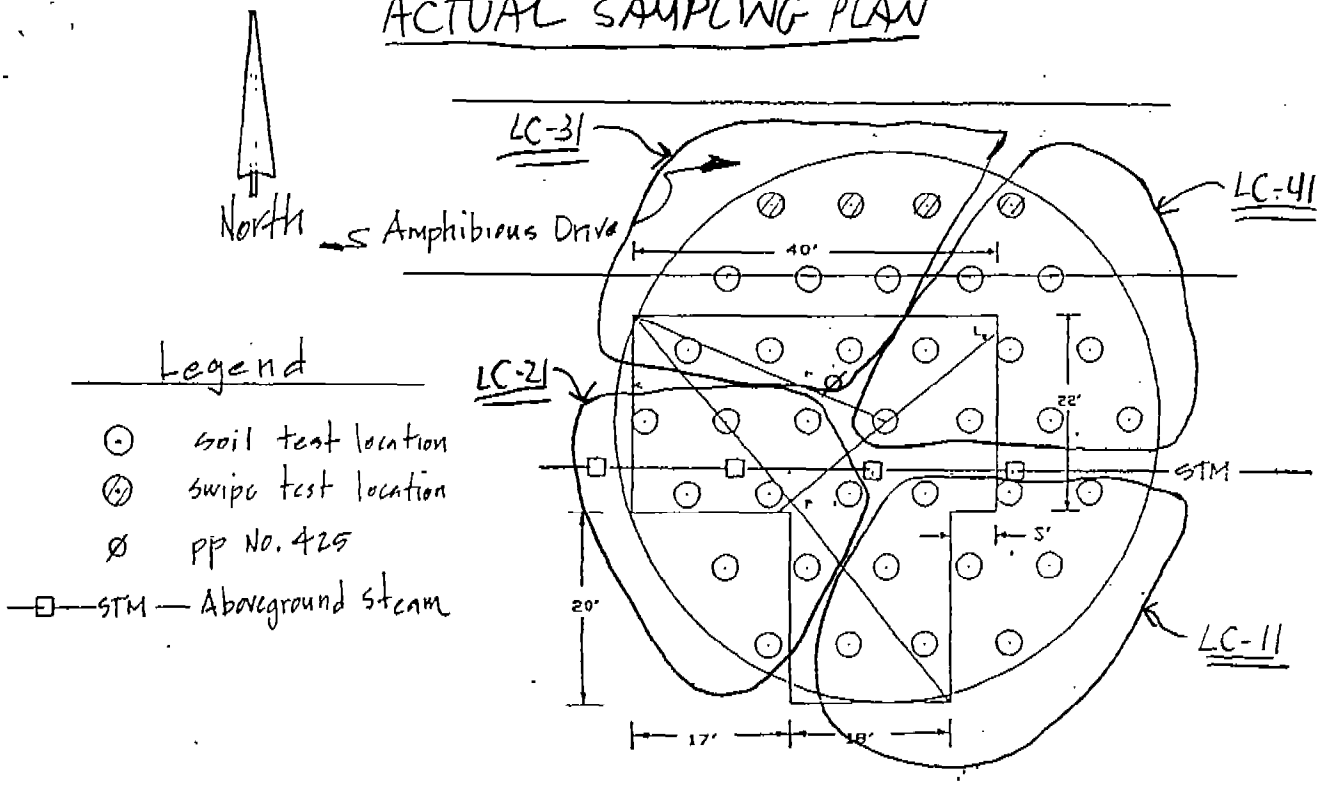
NOTES:
-Duplicate – % RPD = 0.66%
-Blank – <0.17 mg/kg
-Spikes – 120% recovery
-EPA Method: SW846 8080
-Method Detection Limit: 0.17 mg/kg
-Analyst/Date/Time: CDN-05/16/95 @ 09:33, 10:06, 11:11, 12:10, 12:46, 13:19, 14:05, 14:43, 15:26, 18:16, 18:44

LC-11,21,31,41 ARE AS SHOWN ON ATTACHED DRAWINGS
LC-5 : BLANK
RB-66/68-1/2 : ROLL-OFF ANALYSIS
JRA/jsc

Respectfully,

Beverly E. Blanchard
for Carol Isenhour, Vice President

ACTUAL SAMPLING PLAN



Sample Location Determination Calculations

r = 7.8cm x 4 = 31.2'

FROM TABLE 4: R>11.3, THUS, SAMPLE SIZE IS 37

FROM TABLE 2: S(DISTANCE BETWEEN ADJACENT POINTS)=0.3r

S=0.3(31.2)

S=9.36' OR (9.36/4)=2.35cm

Calculations from EPA 560/5-85-025

The procedures and sample locations were chosen in accordance with EPA 560/5-85-025. The actual sample locations are dependent on the exact extents of excavation and will be determined at the time of final excavation.

NOTE: ACTUAL CORE SAMPLE WAS TAKEN 0-6" AT EACH DESIGNATED SPOT
LC-5: BLANK/BACKGROUND SAMPLE

Confirmatory Sampling Plan - NAB Site 16 Little Creek

Table 5: TCLP Analytical Results and Regulatory Limits for Clean Fill Certification			
Compound or Element	**Concentration mg/L (ppm)**		**Regulatory Level mg/L (ppm)**
	Backfill (WB-01)	**Topsoil (CD1-02)**	
TCLP Metals Analysis			
Arsenic	ND/0.047	ND/0.047	5.0
Barium	0.36	0.60	100.0
Cadmium	ND/0.01	ND/0.01	1.0
Chromium	ND/0.013	ND/0.013	5.0
Lead	0.030	0.528	5.0
Mercury	ND	ND	0.20
Selenium	ND/0.049	ND/0.049	1.0
Silver	ND/0.022	ND/0.022	5.0
TCLP Volatile Compounds			
Vinyl Chloride	ND/0.0006	ND/0.0006	0.2
Chloroform	ND/0.01	ND/0.01	6.0
1,2-Dichloroethane	ND/0.002	ND/0.002	0.5
2-Butanone	ND/0.002	ND/.002	200.0
Carbon Tetrachloride	ND/0.002	ND/0.002	0.5
Trichloroethene	ND/0.0011	ND/0.0011	0.5
Benzene	ND/0.002	ND/0.002	0.5
Tetrachloroethene	ND/0.001	ND/0.001	0.7
Chlorobenzene	ND/0.002	ND/0.002	100.0
TCLP Semivolatile Compounds			
1,4-Dichlorobenzene	ND/0.002	ND/0.002	7.5
Hexachlorobutadiene	ND/0.002	ND/0.002	0.5
2,4,6-Trichlorophenol	ND/0.002	ND/0.002	2.0
2,4,5-Trichlorophenol	ND/0.002	ND/0.002	400
2,4-Dinitrotoluene	ND/0.001	ND/0.001	0.13
Hexachlorobenzene	ND/0.002	ND/0.002	0.13
Pentachlorophenol	ND/0.002	ND/0.002	100
Pyridine	ND/0.002	ND/0.002	5.0

Table 5: TCLP Analytical Results and Regulatory Limits for Clean Fill Certification			
Compound or Element	**Concentration mg/L (ppm)**		**Regulatory Level mg/L (ppm)**
	Backfill (WB-01)	**Topsoil (CD1-02)**	
TCLP Pesticide Analysis			
Chlordane	ND/0.01	ND/0.01	0.03
Endrin	ND/0.002	ND/0.002	0.02
Heptachlor	ND/0.002	ND/0.002	0.008
Heptachlor Epoxide	ND/0.002	ND/0.002	0.008
Gamma-BHC (lindane)	ND/0.002	ND/0.002	0.4
Methoxychlor	ND/0.002	ND/0.002	0.03
Toxaphene	ND/0.1	ND/0.1	0.5
TCLP Herbicide Analysis			
2,4-D	ND/0.02	ND/0.02	10
Silvex	ND/0.02	ND/0.02	1.0
TPH			
Diesel	7	<1	100
PCB's			
All Aroclors	<0.17	<0.17	10

TCLP - toxicity characteristic leaching procedure
TPH - total petroleum hydrocarbons
PCB - polychlorinated biphenyls
ND - not detected

Table 6: TCLP Analysis and Extraction Dates for Clean Fill Certification					
Sample ID	**VSTR**	**TCLP Extraction Date**	**Method Extraction Date**	**Analysis Date**	**Analytical Parameter**
9504069	06/05/95	06/05/95	06/06/95	06/09/95	Volatiles
9504069	06/05/95	06/05/95	06/06/95	06/09/95	Semivolatiles
9504069	06/05/95	06/05/95	06/06/95	06/09/95	Pesticides
9504069	06/05/95	06/05/95	06/06/95	06/09/95	Herbicides
9504069	06/05/95	06/05/95	06/06/95	06/09/95	Metals

TCLP - toxicity characteristic leaching procedure
VTSR - validated time of sample receipt

Table 7: TCLP Blank Summary for Clean Fill Certification				
Analytical Parameter	**Corresponding Sample ID**	**Method Blank ID**	**Method Blank Results Units mg/L (ppm)**	**Matrix Spike Sample ID**
Volatiles	9504069	Method Blank TCLP Preparation Blank	ND	NA
Semivolatiles	9504069	Method Blank TCLP Preparation Blank	ND	NA
Pesticides	9504069	Method Blank TCLP Preparation Blank	ND	NA
Herbicides	9504069	Method Blank TCLP Preparation Blank	ND	NA
Metals	9504069	Method Blank TCLP Preparation Blank	ND	NA

TCLP - toxicity characteristic leaching procedure
ND - not detected
NA - not applicable

CHAIN-OF-CUSTODY RECORD

0051
D.O. #4

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
9742 MARYLAND AVENUE
NORFOLK, VA 23511 - 3095
PH: (804)445-8851 FAX: (804)446-8862

ENVIRONMENTAL

CLIENT INFORMATION

COMPANY/COMMAND: PWC NORFOLK, VA CODE: 414
CONTACT: JP MESSIER
PHONE: 5-4885 FAX: 5-9204
J.O. #: 1374014
SIGNATURE: JP Messier
PERMIT NO.:

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION		DATE	TIME	COMPOS. or GRAB	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES /CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHE
0001AA	1718	9504069 WB-01	START	06/05	0735	C	JM	S	NONE	1	TCLP ~~VOLATILES, SEMIVOLATILES,~~ PESTICIDES, HERBICIDES, METALS JM 6/6/95	—	—	—
			STOP	06/05	0755									
	1719	9504070 CD1-02	START	06/05	0815	C	JM	S	NONE	1	TCLP ~~VOLATILES, SEMIVOLATILES,~~ PESTICIDES, HERBICIDES, METALS JM 6/6/95	—	—	—
			STOP	06/05	0830									
CCDIAA			START											
			STOP											
			START								TCLP COMPLETE ~~+ TPH DRO~~			
			STOP											
			START								(CONT ABOVE)			
			STOP											
			START											
			STOP											
			START											
			STOP											

TURNAROUND: RUSH (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: NEEDED TO SUPPORT JOB CLOSEOUT

SAMPLE DISPOSAL: RETURN TO CLIENT _____ or DISPOSAL BY LAB: X

REGULATION APPLIED:			
RCRA		HRSD	
SDWA		TSCA	
CWA		PHOTO	
CAA		OTHER	

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

MICROBAC, D.O. NUMBER: 6-5-95
ETS
0051

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: JP Messier	COMPANY/COMMAND: PWC NORFOLK, VA; CODE 414	DATE/TIME: 06/05/95 09	
RECEIVED BY: [illegible]	COMPANY/COMMAND: Gov Lab	DATE/TIME: 6-5-95 10	
RELINQUISHED BY: [illegible]	COMPANY/COMMAND: Gov Lab	DATE/TIME: 6-6-95 07	
RECEIVED BY: [illegible]	COMPANY/COMMAND: ETSI	DATE/TIME: 6-5-95 09	
RELINQUISHED BY: [illegible]	COMPANY/COMMAND: ETSI	DATE/TIME: 6-5-95 02	
RECEIVED BY: [illegible]	COMPANY/COMMAND: ETS	DATE/TIME: 6-5-95 10	

NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 06/14/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : WB - 01 -G
Sample Matrix: SOIL-S

Receipt Date : 06/05/1995
Collected By : JPM
Collection Site : WB - 01

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME	RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY10453	TPH-DIESEL	7	ug/G	1	06/05/1995	0735	06/07/1995	20:48:00	GC/FID	WEC

Legend:< -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

ENVIRONMENTAL TESTING SERVICES, INC.
888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

06/15/1995

CERTIFICATE OF ANALYSIS

CLIENT
NAVAL PUBLIC WORKS CENTER
CODE 640-2 BLDG. Z-140
NORFOLK, VA 23511

ATTN: BETTY BRADLEY

SAMPLE DESCRIPTION
DESIGNATION: J.O. #1374014 / WB-01
MATRIX: SOLID
LAB NUMBER: 9504069

INDUSTRY NAME: NAVAL PUBLIC WORKS CENTER
SAMPLE PT. ADDRESS: CODE 640-2 BLDG. Z-140 NORFOLK,
LOCATION: 0001AA/1718--COMP
SAMPLED BY: JM

COMPOSITE SAMPLES

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8270 o-CRESOL	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 m&p-CRESOL	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 1,4_DICHLOROBENZENE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 2,4_DINITROTOLUENE	U	UG/L	10	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 HEXACHLOROBENZENE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO

LABORATORY MANAGER/ASST. LABORATORY MANAGER

U = NOT DETECTED ABOVE QUANTITATION LIMIT

The information presented in the report represents the laboratory analyses performed on the samples provided to Environmental Testing Services, Inc. in accordance with the test methods requested and described above. Environmental Testing Services, Inc. is not responsible for any use of this information by its clients and shall not reveal these results to any person or entity without written authorization from its client. Any liability on the part of Environmental Testing Services, Inc. shall not exceed the sum paid by the client to Environmental Testing Services, Inc. for the work performed.

ENVIRONMENTAL TESTING SERVICES, INC.

888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8270 HEXACHLOROBUTADIENE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 HEXACHLOROETHANE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 NITROBENZENE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 PENTACHLOROPHENOL	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 PYRIDINE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 2,4,5-TRICHLOROPHENOL	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8270 2,4,6-TRICHLOROPHENOL	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311 BENZENE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 2-BUTANONE_(MEK)	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 CARBON_TETRACHLORIDE	U	ppm MG/L	0.002	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 CHLOROBENZENE	U	MG/L	0.002	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 CHLOROFORM	U	MG/L	0.01	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR

G J Hall

LABORATORY MANAGER/ASST. LABORATORY MANAGER

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888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311 1,2-DICHLOROETHANE	U	MG/L	0.002	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 1,1-DICHLOROETHENE	U	MG/L	0.002	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 TETRACHLOROETHENE	U	MG/L	0.001	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 TRICHLOROETHENE	U	MG/L	0.0011	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311 VINYL_CHLORIDE	U	MG/L	0.0006	6-5-95/07:35	6-5-95/07:55	06/13/1995	GR
TCLP_1311/8080 CHLORDANE	U	UG/L	10	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 ENDRIN	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 HEPTACHLOR	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 HEPTACHLOR_EPOXIDE	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 GAMMA-BHC_(LINDANE)	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 METHOXYCHLOR	U	UG/L	2	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8080 TOXAPHENE	U	UG/L	100	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO

LABORATORY MANAGER/ASST. LABORATORY MANAGER

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PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8150 2,4-D	U	UG/L	20	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311/8150 2,4,5-TP_(SILVEX)	U	UG/L	20	6-5-95/07:35	6-5-95/07:55	06/09/1995	TDO
TCLP_1311 SELENIUM_6010	U	MG/L	0.049	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 LEAD_6010	0.030	MG/L	0.024	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 MERCURY_7471	U	MG/L	******	6-5-95/07:35	6-5-95/07:55	06/12/1995	JK
TCLP_1311 CHROMIUM_6010	U	MG/L	0.013	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 CADMIUM_6010	U	MG/L	0.01	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 BARIUM_6010	0.36	MG/L	0.094	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 ARSENIC_6010	U	MG/L	0.047	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM
TCLP_1311 SILVER_6010	U	MG/L	0.022	6-5-95/07:35	6-5-95/07:55	06/09/1995	RM

LABORATORY MANAGER/ASST. LABORATORY MANAGER

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NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 06/19/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : CD1 - 02 -G
Sample Matrix: SOIL-S

Receipt Date : 06/05/1995
Collected By : JPM
Collection Site : CD1 - 02

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME	RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY10454	TPH-DIESEL	< 1	ug/G	1	06/05/1995	0815	06/07/1995	21:17:00	GC/FID	WEC

Legend: < -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

ENVIRONMENTAL TESTING SERVICES, INC.
888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

06/15/1995

CERTIFICATE OF ANALYSIS

CLIENT
NAVAL PUBLIC WORKS CENTER
CODE 640-2 BLDG. Z-140
NORFOLK, VA 23511

SAMPLE DESCRIPTION
DESIGNATION: J.O. #1374014 / CD1-02
MATRIX: SOLID
LAB NUMBER: 9504070

ATTN: BETTY BRADLEY

INDUSTRY NAME: NAVAL PUBLIC WORKS CENTER
SAMPLE PT. ADDRESS: CODE 640-2 BLDG. Z-140 NORFOLK,
LOCATION: 0001AA/1719--COMP
SAMPLED BY: JM

COMPOSITE SAMPLES

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8270 o-CRESOL	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 m&p-CRESOL	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 1,4_DICHLOROBENZENE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 2,4_DINITROTOLUENE	U	UG/L	10	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 HEXACHLOROBENZENE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO

LABORATORY MANAGER/ASST. LABORATORY MANAGER

U = NOT DETECTED ABOVE QUANTITATION LIMIT

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ENVIRONMENTAL TESTING SERVICES, INC.
888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8270 HEXACHLOROBUTADIENE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 HEXACHLOROETHANE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 NITROBENZENE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 PENTACHLOROPHENOL	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 PYRIDINE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 2,4,5-TRICHLOROPHENOL	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8270 2,4,6-TRICHLOROPHENOL	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311 BENZENE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 2-BUTANONE_(MEK)	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 CARBON_TETRACHLORIDE	U	MG/L	0.002	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 CHLOROBENZENE	U	MG/L	0.002	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 CHLOROFORM	U	MG/L	0.01	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR

LABORATORY MANAGER/ASST. LABORATORY MANAGER

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ENVIRONMENTAL TESTING SERVICES, INC.

888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311 1,2-DICHLOROETHANE	U	MG/L	0.002	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 1,1-DICHLOROETHENE	U	MG/L	0.002	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 TETRACHLOROETHENE	U	MG/L	0.001	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 TRICHLOROETHENE	U	MG/L	0.0011	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311 VINYL_CHLORIDE	U	MG/L	0.0006	6-5-95/08:15	6-5-95/08:30	06/13/1995	GR
TCLP_1311/8080 CHLORDANE	U	UG/L	10	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 ENDRIN	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 HEPTACHLOR	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 HEPTACHLOR_EPOXIDE	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 GAMMA-BHC_(LINDANE)	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 METHOXYCHLOR	U	UG/L	2	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8080 TOXAPHENE	U	UG/L	100	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO

LABORATORY MANAGER/ASST. LABORATORY MANAGER

The information presented in the report represents the laboratory analyses performed on the samples provided to Environmental Testing Services, Inc. in accordance with the test methods requested and described above. Environmental Testing Services, Inc. is not responsible for any use of this information by its clients and shall not reveal these results to any person or entity without written authorization from its client. Any liability on the part of Environmental Testing Services, Inc. shall not exceed the sum paid by the client to Environmental Testing Services, Inc. for the work performed.

ENVIRONMENTAL TESTING SERVICES, INC.

888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

PARAMETER AND METHOD OF ANALYSIS	RESULTS	UNITS	MDL	COMPOSITE_START	COMPOSITE_STOP	ANALYSIS DATE	ETS ANALYST
TCLP_1311/8150 2,4-D	U	UG/L	20	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311/8150 2,4,5-TP_(SILVEX)	U	UG/L	20	6-5-95/08:15	6-5-95/08:30	06/09/1995	TDO
TCLP_1311 SELENIUM_6010	U	MG/L	0.049	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 LEAD_6010	0.528	MG/L	0.024	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 MERCURY_7471	U	MG/L	******	6-5-95/08:15	6-5-95/08:30	06/12/1995	JK
TCLP_1311 CHROMIUM_6010	U	MG/L	0.013	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 CADMIUM_6010	U	MG/L	0.01	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 BARIUM_6010	0.60	MG/L	0.094	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 ARSENIC_6010	U	MG/L	0.047	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM
TCLP_1311 SILVER_6010	U	MG/L	0.022	6-5-95/08:15	6-5-95/08:30	06/09/1995	RM

LABORATORY MANAGER/ASST. LABORATORY MANAGER

The information presented in the report represents the laboratory analyses performed on the samples provided to Environmental Testing Services, Inc. in accordance with the test methods requested and described above. Environmental Testing Services, Inc. is not responsible for any use of the information by its clients and shall not reveal these results to any person or entity without written authorization from its client. Any liability on the part of Environmental Testing Services, Inc. shall not exceed the sum paid by the client to Environmental Testing Services, Inc. for the work performed.

Table 8: Equipment Decontamination Wipe Sample Summary				
Sample ID	**Area Wiped**	**Location**	**Analytical Method**	**Result**
Wipe-1	100cm2	Excavator - Bucket	EPA 4020	<10ug/100 cm2
Wipe-2	100cm2	Exacavator - Bucket	EPA 4020	<10ug/100 cm2

Table 9: Equipment Decontamination Wipe Sample and Corresponding Blank Results			
Sample ID	**Method Blank ID**	**Results**	**Corresponding Sample**
BLKW-1	Method Blank	ND	Wipe-1
BLKW-2	Method Blank	ND	Wipe-2

ND - not detected

Table 10: Decontamination Water Sample Summary				
Sample ID	**Description**	**Date**	**Method**	**Result**
LC-W1	Decon Water	07/14/95	EPA 8081	<0.5 mg/L (ppm)

Table 11: Decontamination Water Sample QC Summary				
Sample ID	**VTSR**	**Preparation Date**	**Analysis Date**	**Surrogate DCB Recovery**
LC-W1	07/10/95	07/10/95	07/14/95	86

VTSR - validated time of sample receipt

Table 12: Decontamination Water Sample and Corresponding Blank Results			
Lab ID	**Method Blank ID**	**Result**	**Corresponding Sample**
95FY11757	Method Blank	ND	LC-W1

ND - not detected

& ANALYSIS REQUEST FORM

PWC ENVIRONMENTAL LABORATORY
CODE 930 BLDG Z-140
8742 MARYLAND AVENUE
NORFOLK, VA 23511-3085
PH: (804)445-8851 FAX: (804)445-8852

ENVIRONMENTAL

CLIENT INFORMATION

COMPANY/COMMAND: PWC NORFOLK, VA CODE: 414
CONTACT: JP MESSIER
PHONE: 445-4885 EXT: — FAX: 445-9204
J.O. #: 1374014
SIGNATURE: JP Messier
PERMIT NO.: N/A

LAB USE ONLY LINE ITEM #	SAMPLE NO.	SAMPLE ID/LOCATION	SAMPLE TAKEN	DATE	AT TIME	TYPE	SAMPLED BY	MATRIX	PRESERVATIVE	# OF SAMPLES CONTAINERS	ANALYSIS	FIELD READINGS pH	TEMPERATURE	OTHER	PRESERVATIVE VERIFIED
	11755	LC-W1	START	07/10/97	1230	G	JM	L	8	1	PCB IN WATER	—	—	—	
			STOP		1235										
	11756	LC-D1	START		1240	G	JM	S	8	1	~~TCLP~~ PCB, Semi-VOA	—	—	—	
			STOP		1300										
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												
			START												
			STOP												

TYPE	MATRIX	CONTAINER	PRESERVATIVE
G - GRAB	L - LIQUID	SW - SWIPE	P - PLASTIC	B - BAG	A - AMBER (glass)	1 - COOL TO 4°C	5 - HCL, pH<2
CF - COMPOSITE FLOW	S - SOLID	GL - GLASS	C - CARTRIDGE	2 - HNO3, pH<2	6 - 0.008% Na2S2O3, 4°C
CT - COMPOSITE TIME	GS - GAS	T - TEFLON	TL - TEFLON LINED LID	3 - H2SO4, pH<2	7 - FIELD FILTER
	SS - SEMI SOLID	V - VOA	H - HEXANE RINSED	4 - NaOH, pH>12	8 - NONE

TURNAROUND: RUSH (FOR RUSH TURNAROUND STATE REASON BELOW)
SPECIAL INSTRUCTIONS: REQ'D TO CLOSEOUT JOB SITE

REGULATION APPLIED:
RCRA ( ) HRSD ( )
SDWA ( ) TSCA (X)
CWA ( ) PHOTO ( )
CAA ( ) OTHER ( )

SAMPLING/COLLECTION CHARGE:
POSSIBLE SAMPLE HAZARDS:
COMMENTS:

SAMPLE DISPOSAL: ( )RETURN TO CLIENT (X)DISPOSAL BY LAB

D.O. NUMBER :
CONTRACT LAB:
CONTRACT NO.(S)

1. CUSTOMER IS RESPONSIBLE FOR ALL CHARGES NECESSARY FOR THE PROCESSING AND ANALYSIS OF SAMPLE(S).*
*ALL RUSH SAMPLES ARE SUBJECT TO SURCHARGE.
2. SAMPLES RECEIVED AFTER 3:00 PM MON. - THURS. AND 2:00 PM ON FRIDAY WILL BE PROCESSED THE NEXT BUSINESS DAY (7:30 AM - 4:00 PM).

RELINQUISHED BY: JP Messier	COMPANY/COMMAND: PWC NORFOLK, 414	REC'D BY: Lawrence Goodwin	DATE/TIME: 7-10-97 14
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:
RELINQUISHED BY:	COMPANY/COMMAND:	REC'D BY:	DATE/TIME:

NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 07/17/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : LC - W1 -G
Sample Matrix: CLOUDY-L

Receipt Date : 07/10/1995
Collected By : JPM
Collection Site : LC - W1

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME		RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY11757	PCB	<	0.5	mg/L	0.5	07/10/1995	1230	07/14/1995	15:00:00	8081	DRE

Legend: < -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

NAVY PWC ENVIRONMENTAL LABORATORY
9742 Maryland Avenue
Bldg Z-140, Code 930
Norfolk, Virginia 23511-6098
Phone: (804) 445-8851 Fax: (804) 445-8852

GRAB
- SAMPLE ANALYSIS REPORT -

To: PWC CODE 414 (MESSIER)
PWC NORFOLK, VA CODE 414

Point of Contact: J.P. MESSIER

Report Date : 07/19/1995

PH: 445-4885 FAX: 445-9204

Job Order No.: 1374014
Sample ID : LC - W1 -G
Sample Matrix: SOLID

Receipt Date : 07/10/1995
Collected By : JPM
Collection Site : LC - W1

Industrial Waste Code:
Sample Point Code :

PWC LAB#	TEST NAME	RESULT	UNITS	MDL	COLLECT DATE	COLLECT TIME	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS METHOD	ANALYST INITIAL
95FY11756	TCLP EXTRACTION	B COMPLETED			07/10/1995	1240	07/10/1995	15:30:00	1311	DKH
	PYRIDINE	< NOT FOUND	UG/L	7	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	1,4-DICHLOROBENZENE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	O-CRESOL	160	UG/L	15	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROETHANE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	META&PARA-CRESOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	NITROBENZENE	200	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROBUTADIENE	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4,6-TRICHLOROPHENOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4,5-TRICHLOROPHENOL	< NOT FOUND	UG/L	10	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	2,4-DINITROTOLUENE	< NOT FOUND	UG/L	5	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	HEXACHLOROBENZENE	< NOT FOUND	UG/L	5	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	PENTACHLOROPHENOL	< 20	UG/L	20	07/10/1995	1240	07/18/1995	01:00:00	8270B-TC	WEC
	PCB	< 0.5	mg/L	0.5	07/10/1995	1240	07/14/1995	15:00:00	8081	DRE

Legend: < -Below the Method Limit
B -Below the Limit of Quantitation
H -Above the High Limit

Comments:

These results have been reviewed by:

Merrill Ashcraft
Laboratory Manager

Appendix D

Disposal Site Permits

MODEL CITY'S PERMIT

CWM CHEMICAL SERVICES

USEPA ID #NYD 049836679

MODEL CITY FACILITY

1. General Information

-	Facility Address:	CWM Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107
-	Facility General Manager:	Dr. John Stanulonis
-	Telephone:	(716) 754-8231
-	Unit measure:	per ton, per 55-gallon or 85-gallon steel drum, per yard
-	Requirements:	Chemical Waste Management Profile Sheet, five (5) gallon representative sample, $300.00 waste evaluation fee.
-	Secure Landfill:	12
-	Authorizations:	
-	Part B Permit:	received July 31, 1989

2. Inspections:

NYS DEC	-	September 9, 1992
USEPA	-	August 28, 1991

At this time there are no unresolved orders or violations for this facility.

- CERCLA STATUS: OK

MODEL CITY FACILITY

CWM Chemical Services, Inc.
1550 Balmer Road
Model City, New York 14107
(716)754-8231

USEPA ID # - NYD049836679

CONTACTS:

General Manager	Dr. John Stanulonis	716/754-0205
Facility Service Manager	Jim Hageman	716/754-0219
Facility Service Rep.	Jim Callahan	716/754-0207
Fac. WMNA Service Rep.	Greg Damm	716/754-0217
Landfill Projects	Don Kopacz	716/754-0210
Fac. Service Secretary	Shirley Brown	716/754-0231
Facility Service Fax Number		716/754-0337
Scheduling through centralized scheduling in Princeton		800-843-3604

CAPABILITIES:

* Secure Landfill for Solid RCRA & TSCA material and select non-hazardous waste streams.
* Stabilization of solid waste, to meet treatment standards or strength criteria, for material destined for landfill.
* Transformer decommissioning & landfill.
* Waste Water Treatment of acids, bases and other aqueous based streams. Also bulking options to Newark, NJ or Vickery, OH facilities.
* Fuels blending of chlorinated, low-chlorinated and non-chlorinated organics.
* Trans-shipment of drummed material to other CWM sites (i.e. TWI, Emelle, Chicago, CWMRR)
* Decharacterization of certain D-coded metal wastes then trans-shipment to WMNA sites.

SAMPLES & PROFILES SEND TO:

CWM, Inc.
Eastern Region Laboratory
2 Stewart Court
Bridgeview Business Park
Denville, New Jersey 07834

SAMPLE REQUIREMENTS:

* Generally one (1) quart sample except for sludge-type material for landfill, then a 3-5 gallon sample would be required.
* No sample needed for debris, PCB soil, transformers or small capacitors.

CWM CHEMICAL SERVICES, INC.

MODEL CITY, NY

	PERMIT	NUMBER	EXPIRATION DATE/COMMENT
1.	USEPA Part A	NYD049836679	-
2.	HSWA (Sitewide)	NYD049836679	9/01/94
3.	NYSDEC Part 373 (Sitewide)	90-87-0476	7/31/94
4.	NYSDEC Part 373 SLF-12A	98-86-1137	Dated 9/28/90
	HSWA SLF-12A	NYD049836679	For the Life of SLF-12A
5.	NYSDEC Part 373 SLF-12B	90-86-1137	Dated 11/02/90;
	HSWA SLF-12B	NLYD049836679	For the Life of SLF-12B
6.	TSCA SLF-12 B and C		Dated 11/02/90 For the Life of SLF-12B
7.	SPDES	NY-007-2061	1/01/92
8.	Sanitary Wastewater From Lockport, NY	CL900401	2/29/92

95-20-6 (9/85)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER	EFFECTIVE DATE
90-87-0476	July 31, 1989
FACILITY/PROGRAM NUMBER(s)	EXPIRATION DATE(s)
NYD049836679	July 31, 1994

PERMIT

Under the Environmental Conservation Law

- ☐ Article 15, Title 5: Protection of Water
- ☐ Article 15, Title 15: Water Supply
- ☐ Article 15, Title 15: Water Transport
- ☐ Article 15, Title 15: Long Island Wells
- ☐ Article 15, Title 27: Wild, Scenic and Recreational Rivers
- ☐ 6NYCRR 608: Water Quality Certification
- ☐ Article 17, Titles 7, 8: SPDES
- ☐ Article 19: Air Pollution Control
- ☐ Article 23, Title 27: Mined Land Reclamation
- ☐ Article 24: Freshwater Wetlands
- ☐ Article 25: Tidal Wetlands
- ☐ Article 27, Title 7: Solid Waste Management
- ☒ Article 27, Title 9: Hazardous Waste Management R & N
- ☐ Article 34: Coastal Erosion Management
- ☐ Article 36: Floodplain Management
- ☐ Articles 1, 3, 37; 6NYCRR 380: Radiation Control

N—New, R—Renewal, M—Modification
C—Construction, O—Operation, (If Applicable)

PERMIT ISSUED TO	CWM Chemical Services, Inc.
ADDRESS OF PERMITTEE	P.O. Box 200, Model City, New York 14107
AGENT FOR PERMITTEE/CONTACT PERSON	John Stanulonis, General Manager
TELEPHONE NUMBER	716/754-8231
NAME AND ADDRESS OF FACILITY (If different from Permittee)	Model City Facility, 1550 Balmer Road

LOCATION OF PROJECT	COUNTY	TOWN	UTM COORDINATES
630 acre Model City Site	Niagara	Porter & Lewiston	E1771.1/N4793.1

DESCRIPTION OF PROJECT/FACILITY

Continue operating the Drum Management Bldg., PCB Warehouse, Secure Trailer Parking Area, Transformer Decommissioning Bldg., Truckwash, Drum Crusher Area, Waste Stabilization Area, Aqueous Waste Treatment System, Fuels Tankage, Incinerables Tankage, and Secure Landfill 11. Operate the DECHLOR System on a permanently secured basis.

GENERAL CONDITIONS (See Also Module II)

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations and the conditions specified herein or attached hereto.

1. The permittee shall file in the office of the appropriate regional permit administrator, or other office designated in the special conditions, a notice of intention to commence work at least 48 hours in advance of the time of commencement and shall also notify him/her promptly in writing of the completion of the work.
2. The permitted work shall be subject to inspection by an authorized representative of the Department of Environmental Conservation which may order the work suspended if the public interest so requires.
3. The permittee has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature, and by whomsoever suffered, arising out of the project described herein and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from the said project.
4. The Department reserves the right to modify, suspend or revoke this permit at any time after due notice, and, if requested, hold a hearing when:
   a) the scope of the project is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations are found; or
   b) the permit was obtained by misrepresentation or failure to disclose relevant facts; or
   c) newly discovered information or significant physical changes are discovered since the permit was issued.
5. The permittee is responsible for keeping the permit active by submitting a renewal application, including any forms, fees or supplemental information which may be required by the Department, no later than 30 days (180 days for SPDES or Solid or Hazardous Waste Management permits) prior to the expiration date.
6. This permit shall not be construed as conveying to the applicant any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work or as authorizing the impairment of any rights, title or interest in real or personal property held or vested in a person not a party to the permit.
7. The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of way which may be required for this project.
   Issuance of this permit by the Department does not, unless expressly provided for, modify, supersede or rescind an order on consent or determination by the Commissioner issued heretofore by the Department or any of the terms, conditions, or requirements contained in such order or determination.
9. Any modification of this permit granted by the Department must be in writing and attached hereto.

PERMIT ISSUANCE DATE	PERMIT ADMINISTRATOR (Deputy)	ADDRESS
June 16, 1989	Paul D. Eismann	NYSDEC - Region 9 600 Delaware Ave., Buffalo, NY 14202

AUTHORIZED SIGNATURE
X Paul D. Eismann

and attachments A-K

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER → NYD049836679

SCA Chemical Waste Services
PO. Box 200
Model City, NY 14107 Attn: Paul Iepki

INSTALLATION ADDRESS → 1550 Balmer Road
Model City, NY 14107

EPA Form 8700-12A (4-80)

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

WL# 200.9

September 24, 1992

Dr. Miguel Antonetti, P.E.
Environmental Manager
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

RE: Hazardous Waste Compliance Inspection Date: September 9, 1992
Location of Handler: Same as Above

EPA Identification Number: NYD049836679

Dear Dr. Antonetti:

In order to determine compliance with the New York State Hazardous Waste Regulations, the New York State Department of Environmental Conservation conducted an inspection of your facility on the above referenced date.

As a result of that inspection, we believe that your facility is operating as a generator and a treater, storer and/or disposer of hazardous waste. No violations of the New York State Hazardous Waste Regulations were observed by the inspector on the inspection date referenced above. A copy of the inspection Form is enclosed for your records.

Please be advised that your facility is under the continuing obligation to comply with all the applicable state and federal regulations regarding the management of hazardous waste. If your facility should be found in violation of the regulations in the future, you may be subject to escalated enforcement action, including monetary penalties.

Please note that this letter in no way addresses any liability you may have for any regulatory fees and hazardous waste special assessment fees.

Printed on Recycled Paper

Thank you for your cooperation.

Sincerely,

Richard J. Baker, P.E.
Environmental Engineer II

Enclosure

cc: Mr. Jeffrey Lacey, Regional Attorney, Region 9
Mr. Frank Shattuck, RHSE, Region 9
Mr. Bidjan Rostami, Inspector, Region 9
Mr. Parag Amin, Reviewer, Central Office
New York State Department of Environmental Conservation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

AUG 01 1989

AUG 3 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Stanuloinis
General Manager
CWM Chemical Services, Inc.
P.O. Box 200
155 Balmer Road
Model City, N.Y. 14107

Re: Notice of Issuance of Final Permit Decision
HSWA Permit No. NYD049836679

Dear Mr. Stanuloinis:

Pursuant to authority granted by Section 3005 of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, you are hereby [illegible] with this Notice of Issuance of a Final HSWA Permit [illegible] above-indicated facility.

This final permit, a copy of which is enclosed, becomes effective in its entirety and a legally enforceable document on [illegible] indicated on the first page of the permit unless [illegible] review of the permit decision is granted pursuant [illegible] the Code of Federal Regulations (40 CFR) [illegible] a request for a hearing is granted p[illegible] Section 124.74.

Please read the final permit ca[illegible] changes from the draft permit [illegible] were timely submitted as [illegible] preparation of a draf[illegible] be making this final permit decision and a copy enclosed which explains EPA's position on issues [illegible] comments submitted.

Please be advised that violation of any of the conditions of the enclosed permit may subject you and your facility to the civil and criminal penalties provided for in Section 3008 of RCRA.

Your cooperation in the RCRA program is appreciated.

Sincerely yours,

Laura Livingston

Laura J. Livingston, Chief
Permits Administration Branch

Enclosures

cc: Mr. Paul Counterman, Director
Bureau of Hazardous Waste
Facilities Permitting
New York State Department of
Environmental Conservation

Regional Permit Administrator
New York State Department of
Environmental Conservation-Region 9

New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, New York 14202

December 12, 1990

Thomas C. Jo
Commissioner

Mr. Miguel A. Antonetti, Ph.D., P.E.
Environmental Manager
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

Dear Mr. Antonetti:

Stabilization Facility Project
Certification and Inspection Report
Stabilization Facility Operations Manual
Condition I(1), Module IV Overall Site Part 373
Permit No. 90-B7-0476

The New York State Department of Environmental Conservation (NYSDEC) has completed its review of the documents entitled: 1. "Certification and Inspection Report, Stabilization Facility Project", (as revised by your December 5, 1990 letter) and; 2. "Stabilization Facility Operations Manual", (as re-submitted by your November 27, 1990 letter to Mr. Paul Counterman). The results of the review of these documents is as follows:

1. Certification and Inspection Report: The NYSDEC has determined that the revisions made to this document, as submitted by your December 5, 1990 letter, have adequately addressed the document's deficiencies as identified by the NYSDEC's November 7, 1990 letter. Although, the NYSDEC is aware that certain construction details have yet to be completed on the facility, the NYSDEC agrees with the Certifying Engineer that all construction necessary for the operation of the process train has been completed. It is CWM's responsibility to insure that all construction on this facility is completed and that the operation of the facility does not conflict with the remaining construction activities. CWM must obtain and submit to the NYSDEC, the Engineer's final certification for the entire facility including all features identified in the approved Design Assessment Document, both inside and outside of the building once all construction is complete. The NYSDEC hereby accepts the Certification and Inspection Report, as revised, in accordance with Module I, Condition D(19) of the Permit. Your office shall be responsible to inform our construction engineers of your final completion date to allow for a final walk-through inspection.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

NOV 2 1990

John J. Stanulonis, Ph.D.
General Manager
CWM Chemical Services, Inc.
P.O. Box 200
1550 Balmer Road
Model City, New York 14107

Dear Dr. Stanulonis:

This letter responds to the original December 16, 1986 application and supplemental documents submitted by CWM Chemical Services, Inc. (CWM) requesting approval, under the Toxic Substances Control Act (TSCA), by the Regional Administrator of the United States Environmental Protection Agency (EPA), Region II, for the utilization of a chemical waste landfill, Secure Landfill (SLF) No. 12, for the disposal of polychlorinated biphenyls (PCBs) at CWM's Model City, New York facility. EPA Region II hereby grants the requested approval, effective on the date of this letter, based upon the findings and subject to the limitations and conditions specified below.

Please be aware that this approval is only applicable to the disposal of PCBs in Cell B and Cell C of SLF No. 12 and disposal of PCBs in any other cells of SLF No. 12 shall constitute noncompliance with the conditions of this approval.

A public comment period was held from May 17, 1989 to June 21, 1989. A responsiveness summary to these comments was included as part of the attachments to the permit issued to CWM for SLF No. 12 under the Hazardous And Solid Waste Amendments of 1984. After review of the application and supporting documents, which are listed in Appendix 2, I have determined that SLF No. 12 merits approval as a chemical waste landfill for the disposal of PCBs. This approval is based upon my evaluation that this landfill meets all the requirements of 40 C.F.R. § 761.75 with the following exception:

> The landfill is not located at least 50 feet higher than the nearest groundwater elevation, and its orientation to the highest groundwater table is not in strict compliance with the requirements of 40 C.F.R. § 761.75(b)(3). However, the landfill is designed to collect internal leachate via collection sumps and is equipped with two low permeability composite liners composed of clay and high density polyethylene. It is my assessment, based on the information submitted by CWM, that this landfill, if operated as outlined in this approval, should prevent leachate migration.

I have determined that the above cited waiver will not present an unreasonable risk of injury to health or the environment from PCBs.

In addition to PCB disposal in SLF No. 12, this approval addresses the management of TSCA regulated leachate from SLF No. 12 and updates the leachate management requirements for all TSCA regulated leachate at the entire Model City facility. The amended leachate management provisions are found in Appendix 3 to this approval.

This approval is issued based on CWM's compliance with the technical landfill design requirements of 40 C.F.R. § 761.75 (Chemical waste landfills) except as detailed above. I emphasize that CWM's Model City facility must comply with all conditions of this approval and any other applicable federal, state and local rules or regulations. Failure to comply with any condition of this approval shall constitute a violation of 40 C.F.R. § 761.75 which may result in an enforcement action and/or revocation, suspension, or modification of this approval.

Furthermore, receipt of evidence that a misrepresentation of any material fact has been made in the CWM application, or that relevant facts have not been disclosed, shall constitute sufficient cause for revocation, suspension, or modification of this approval in addition to any enforcement action. EPA may seek the maximum statutory penalties for any violation of PCB disposal regulations, including 40 C.F.R. § 761.60, 40 C.F.R. § 761.75, and the conditions of this approval.

This approval for CWM to operate SLF No. 12 for PCB disposal is granted subject to the conditions in the three appendices to this letter and consistent with materials and data in CWM's application and supporting documents. Any change or modification in the plan, specifications, or operational procedures at CWM's facility, which are incorporated in this approval, must receive prior written approval from EPA.

Sincerely,

Constantine Sidamon-Eristoff
Regional Administrator

Enclosures

cc: Mr. Thomas Jorling
Commissioner, NYSDEC w/encl.

2. Operations Manual: The NYSDEC hereby accepts the "Stabilization Facility Operations Manual" submitted by your November 27, 1990 letter, including the revision dated December 11, 1990. Strict adherence to the Manual is necessary, especially in regards to strength stabilization, due to potential slope stability problems associated with low strength materials placed in the landfill. Furthermore, concerning the strength issue, CWM should be aware that NYSDEC may require additional testing to verify strength based on evaluation of the data from the initial weeks of operation. CWM is also responsible to revise this Manual whenever operational changes are necessary. CWM must submit these revisions, in the form of addendums or revised pages, to the NYSDEC for review and acceptance. CWM must keep an updated copy of the Manual in a central location within the Stabilization Facility. A specific person should be assigned at CWM to be responsible for keeping the manual current.

In regards to CWM's request for confidentially concerning this Operations Manual, CWM must submit to the NYSDEC a non-confidential version of the Manual. CWM may delete those specific pages from the submittal for which CWM is claiming confidentiality, but must include in their place a page or pages which: 1. State how many pages have been deleted; 2. Give a generic description of the deleted pages and; 3. Provide specific reasons for CWM's claim of confidentiality concerning these pages. Although it is not necessary to submit this prior to commencing facility operations, NYSDEC does request its submission before January 18, 1991, so that a copy can be placed in our files for public review.

With the acceptance of these documents by the NYSDEC, the NYSDEC believes CWM has satisfied requirements related to the commencing of facility operations. Therefore, the NYSDEC is hereby granting approval to CWM to commence operation of the Stabilization Facility (including the Specialized Waste Streams Treatment Room) in accordance with the approved Operations Manual.

If you have any questions or concerns on this matter, please contact Mr. Matthew Mortefolio at (518)457-9253 or Mr. Bidjan Rostami at (716)847-4585.

Sincerely,

Louis Violanti, P.E.
Environmental Engineer III

cc: Mr. Frank Shattuck
On-Site Monitors
Mr. Paul Counterman
Mr. Matthew Mortefolio
Mr. James Devald

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

Mr. Brian Senefelder
Manager,
Environmental, Health and Safety
CWM Chemical Services
1550 Balmer Road
Model City, New York 14107

Dear Mr. Senefelder,

As you are aware, on July 24-25, 1989 and August 3, 1989 the Department conducted a groundwater monitoring inspection at the CWM Chemical Services Inc. Model City facility. The inspection included an evaluation of the sampling activities which were performed by CWM personnel and the collection of groundwater samples from monitoring wells MW 11-3s, MW 11-5s and BW-2s.

As a result of the inspection, the Department has determined that the facility is presently in compliance with the applicable groundwater monitoring requirements of 6 NYCRR Part 373. Enclosed is a copy of the NYSDEC inspection report and analytical results from the split sampling.

The enclosed analytical results are of split samples collected as part of the sample collection study (Module VIII, Special Condition R of Permit #90-87-4076).

If you have any questions, please contact Mr. William Wertz, PhD. or Mr. Kent Johnson, of my staff at (518) 457-9255.

Sincerely,

Roger D. Murphy

for Paul R. Counterman, P.E.
Director
Bureau of Hazardous Waste
Facility Permitting
Division of Hazardous
Substances Regulation

Enclosure

cc: w/o enc. - L. Violante, Region 9
CWM Site Monitors

Appendix E

Vehicle Inspection Log

Table 13: Vehicle Inspection Log

Shipment Date	Dumpster ID	Placards	Drivers License (Y/N)	State Trucking Tags (Y/N)	Vehicle Condition	Dumpster Covered (Y/N)
04/12/95	RB-29	UN2315	Y	Y	Good	Y
04/12/95	RB-39	UN2315	Y	Y	Good	Y
04/19/95	RB-64	UN2315	Y	Y	Good	Y
04/19/95	RB-70	UN2315	Y	Y	Good	Y
05/09/95	RB-43	UN2315	Y	Y	Good	Y
05/09/95	RB-48	UN2315	Y	Y	Good	Y
05/31/95	RB-63	UN2315	Y	Y	Good	Y
05/31/95	RB-66	UN2315	Y	Y	Good	Y
05/31/95	RB-68	UN2315	Y	Y	Good	Y
08/29/95	RB-34	UN2315	Y	Y	Good	Y

Appendix F

Transportation and Disposal Log

Table 14: Transportation and Disposal Log						
Shipment Date	**Truck #**	**Dumpster ID**	**Generator's USEPA #**	**Manifest Document#**	**NY State Manifest Document #**	**Soil/Debris Weight (Pounds)**
04/12/95	67	RB-29	VA5170022482	51021	6742845	14,823
04/12/95	106	RB-39	VA5170022482	51022	6742854	19,405
04/19/95	30	RB-64	VA5170022482	51092	6742863	13,019
04/19/95	102	RB-70	VA5170022482	51091	6742377	7,602
05/09/95	6	RB-43	VA5170022482	51291	6742458	12,320
05/09/95	92	RB-48	VA5170022482	51292	6742467	15,667
05/31/95	126	RB-63	VA5170022482	51513	6742476	11,222
05/31/95	76	RB-66	VA5170022482	51512	6742485	12,764
05/31/95	69	RB-68	VA5170022482	51511	6742494	7,682
08/29/95	25	RB-34	VA5170022482	15011	5084199	5,434

Appendix G

Waste Shipment Documentation

48-14-1 (3/89)—7F

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Stapple

UNIFORM HAZARDOUS WASTE MANIFEST

Transporter's ID EPA No. 5102-1

VA 3 1 7 9 0 2 3 4 8 3 / 1 1

NY B 674284 5

SAME

604 ~~444-5173~~

HAZMAT ENVIRONMENTAL GROUP NYD980799842 716 877-7200

RA7101

Supermetals & Supply Co., Inc.
~~CHEMICAL WASTE MANAGEMENT~~ - HODGL CITY
1550 BARNER ROAD
HODGL CITY, NY 14107 NYD049836679 716 754-~~2211~~ 2231

NOT DOT REGULATED: CONTAINS POLYCHLORINATED BIPHENYLS LESS THAN 50 PPM PCBS

(EST) 14555 lb

001 C1

SOIL <50 PPM

214-7621

EPA 7.431. IN AN EMERGENCY CALL CHEMTREC AT 800-424-9300 OR CALL TRANS - ENO TECHNOLOGY AT 800-460-2399.

TRUCK #67 Sr.# 208961-1

21A012 SM4009400072-0055

Printed/Typed Name MARTIN D CORELLO Signature Martin D Corello Mo. Day Year 04 12 94

Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Mo. Day Year 4 12 94

Printed/Typed Name Signature Mo. Day Year

19. Discrepancy Indication Space

Estimated 14,233 K

20. Facility Owner or Operator Certification

Printed/Typed Name MARY CONFORT Signature Mary Comfort Mo. Day Year 04 12 94

NY B 674284 5

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

8-14-1 (3/89)—71

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12020, Albany, New York 12212

UNIFORM HAZARDOUS WASTE MANIFEST

Manifest Document No. 5F022

NYSD980612431

NY B 674285 4

SAME

204 ~~444-1175~~

HAZMAT ENVIRONMENTAL INC.

NYD980769947

ROCHESTER NY 716 607-7200

CHEMICAL WASTE MANAGEMENT - MODEL CITY
1550 BALMER ROAD
MODEL CITY, NY 14107

NYD041836679

716 754-0211

NOT DOT REGULATED: CONTAINS POLYCHLORINATED BIPHENYLS LESS THAN 50 PPM

0010 M 140.00

SOIL <50 PPM

1

B.R.C.#31. IN AN EMERGENCY CALL CHEMTREC AT 800-424-9300 OR CALL TRANS - END TECHNOLOGY AT 800-960-2399.

814276

B4012

Time 11 Pm S.# 208761-LSPA8D8410072-0055

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
MARTIN D. COSTELLO	Martin D. Costello			

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)				
Printed/Typed Name	Signature	Month	Day	Year
TIMOTHY HALE	Timothy Hale	04	14	97

18. Transporter 2 (Acknowledgement of Receipt of Materials)				
Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

Actual Wgt. 19405K

20. Facility Owner or Operator Certification: I hereby acknowledge receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
EILEEN CARTER	Eileen Carter	04	14	97

In case of emergency or spill immediately call state police, fire department, or local civil defense office.

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

COPY 1—Disposal State—mailed by TSD facility

COPIES

48-14-1 (3/89)—

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York

Please print or type. Do not staple.

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's US EPA ID | Manifest Document No. | Page 1 of 1 | Information in the shaded areas is not required by Federal Law

State Manifest Document No. NYB 674286 3

CWM CHEMICAL SERVICES

8231

B007

EPA
STATE
EPA
STATE
EPA
STATE

Handling Codes for Wastes Listed Above

8. Special Handling Instructions and Additional Information

9. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Mo. Day Year

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name: Kenneth Joyal | Signature | Mo. Day Year

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

FACILITY

19. Discrepancy Indication Space

Arial Pond 1301K

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Cathy Villanueva | Signature | Mo. Day Year

EPA Form 8700-22 (Rev. 3-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

In case of emergency or spill immediately call the National Response Center (only for hazardous substances) 1-800-424-8802 and the State Police

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12520, Albany, New York 12209

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039 Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. / Manifest Document No.: NYA 000 224 [illegible]
2. Page 1 of 1 — Information in the shaded areas is not required by Federal Law.
3. Generator's Name and Mailing Address: [illegible]
4. Generator's Phone ( ): [illegible]
A. State Manifest Document No.: NYB 674236
B. Generator's ID: SAME
5. Transporter 1 (Company Name): HAZMAT [illegible]
6. US EPA ID Number: NYD 049 [illegible]
C. State Transporter's ID: PD [illegible]
D. Transporter's Phone ( ): [illegible]
7. Transporter 2 (Company Name):
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone ( ):
9. Designated Facility Name and Site Address: [illegible] CITY, 1550 BALMER PLAT [illegible]
10. US EPA ID Number: NYD 980 [illegible]
G. State Facility's ID:
H. Facility's Phone: (716) 754-[illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NON RCRA [illegible] CHEMICALS, NOS, [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	EPA [illegible] / STATE
b.					EPA / STATE
c.					EPA / STATE
d.					EPA / STATE

J. Additional Descriptions for Materials listed Above
a. COIL 750.2641
b.

K. Handling Codes for Wastes Listed Above
a. c.
b. d.

15. Special Handling Instructions and Additional Information
[illegible] # 91 BLUE L CHEMICAL PHONE 424-7306 TRAILER
[illegible] TEL # 800-860-2346 (TRANS. END) [illegible]

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: [illegible] Signature: [illegible] Mo. Day Year: [illegible]

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: TED [illegible] Signature: [illegible] Mo. Day Year: [illegible]

18. Transporter 2 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: Signature: Mo. Day Year:

19. Discrepancy Indication Space: [illegible]

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Kathleen Morrison Signature: [illegible] Mo. Day Year: [illegible]

GENERATOR — TRANSPORTER — FACILITY

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator mailed by TSD facility

48-14-1 (3/89)—71

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12200, Albany, New York 12212

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's Name and Mailing Address
SEND COPY TO: DND NORFOLK
7829 SHORE ST.
NORFOLK, VA. 23511
804 444-7173

2. Generator's Phone

3. Generator's EPA ID: VA5170022492

NAVAL AMPHIBIOUS BASE
B.V. CAMPGROUNDS
LITTLE CREEK, VA. 23511

Manifest Document No. 6029

Type or print in the shaded areas not required by Federal Law.

State Manifest Document No. NYB 674245

4. Transporter 1
NAVAL ENVIRONMENTAL GROUP

NYD980769947

5. Transporter 1 Phone (716) 527-7200

6. State Transporter's ID

7. Transporter 2 Phone

8. Transporter 2 EPA ID

~~CHEMICAL WASTE MANAGEMENT - MODEL CITY~~
1550 BALMER ROAD
MODEL CITY, NY 14107

NYD049836679

716 754-~~3211~~

9. Designated Facility Name and Site Address

10. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

NO, POLYCHLORINATED BIPHENYLS, 9, UN2315, PGII (BOX #43 162 PPM)
D.I.S. 4/21/95 DOC # 51256564 BL4012 001CM 12891 R

12. Containers: No. PCBI Type BOXI

13. Total Quantity

14. Unit Wt/Vol

EPA
STATE

EPA
STATE

EPA
STATE

15. Waste Codes for Materials Listed Above

16. Additional Descriptions for Materials Listed Above

PCB SOIL CONTAMINATED

17. Special Handling Instructions and Additional Information ALL WEIGHTS ARE ESTIMATED. E.R.G.#31. IN AN EMERGENCY CALL CHEMTREC AT 800-424-9300 OR CALL TRANS-END TECHNOLOGY AT 800-360-2399

14-7204 SP4400940072-0070 (1)

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: [illegible] Signature: [illegible] Mo. Day Year: 05 08 95

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name: MICHAEL G. MYERS Signature: [illegible] Mo. Day Year: 05 08 95

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name Signature Mo. Day Year

FACILITY

19. Discrepancy Indication Space

Partial load 10 BOX

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: [illegible] Signature: [illegible] Mo. Day Year: [illegible]

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

COPY 6—Disposal State—mailed by generator

In case of emergency or spill immediately call the 24 hr. Spill Hotline (518) 457-7362 or 800-457-7362

1797 COPIES

48-14-1 (3/89)—7!

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's US EPA No. VA5170022402 | Manifest Document No. 15007 | Page 1 of 1 | Information in the shaded areas is required by Federal Law

5. Generator's Name and Mailing Address
SEND COPY TO: DEMO NORFOLK
7829 SEVENTH STREET
NORFOLK, VA. 23517
804 441-3173

NAVAL AMPHIBIOUS BASE
E.V. CAMPGROUNDS
LITTLE CREEK, VA. 23511

State Manifest Document No. NYB 674246 7

6. Transporter 1 Company Name: HAZMAT ENVIRONMENTAL GROUP
US EPA ID Number: NYD980769947
State Transporter's ID: NY13034P
Transporter's Phone: 716 827-7200

7. Transporter 2 Company Name
US EPA ID Number
State Transporter's ID
Transporter's Phone

8. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT - MODEL CITY
1550 BALMER ROAD
MODEL CITY, NY 14107
N.I.D.049836679
716 754-8231

9a. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)
RQ, POLYCHLORINATED BIPHENYLS, 9, UN2315, PGII
BOX #48 219 PPM
D.I.S. 6/21/95 DOC #51256564 PLA012 0010 CH 14764 K

10. Containers: No. PCBL; Type BOX; Total Quantity; Unit Wt./Vol.; Waste No. D007; State; EPA; State; EPA; State; EPA; State

11. Additional Descriptions for Materials Listed Above
a. PCB CONTAMINATED SOIL

12. Handling Codes for Wastes Listed Above
a. L

13. Special Handling Instructions and Additional Information
ALL WEIGHTS ARE ESTIMATED. E.R.G. #31. IN AN EMERGENCY CALL CHEMTREC AT 800-424-9300 OR CALL TRANS-END TECHNOLOGY AT 800-860-2399.
TRUCK NUMBER: PD7147 SF440094DG072-0070 (2)

14. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: MARTIN D. CORELLO | Signature | Mo. Day Year 05 09 95

TRANSPORTER

15. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: John Wall | Signature | Mo. Day Year 05 09 95

16. Transporter 2 (Acknowledgement of Receipt of Materials)
Printed/Typed Name | Signature | Mo. Day Year

FACILITY

17. Discrepancy Indication Space
Not Indicated 15667 K

18. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Eileen Carter | Signature | Mo. Day Year

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

COPY 8—Generator—retained by generator

In case of emergency or spill immediately call the Hazardous Chemical Response Center (800) 424-8802

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's US EPA No. VA 5 1 7 0 0 2 2 4 6 2

NAVAL AMPHIBIOUS BASE
BY CAMPGROUND
LITTLE CREEK, VA

NY B 674247 6

804 444-5172

HAZMAT ENVIRONMENTAL GROUP NYD982769947 716 827-7200

CHEMICAL SERVICES, INC.
1550 BALMER ROAD
MODEL CITY, NY 14107 NYD042036679 716 754-8231

NOT D.O.T. REGULATED: CONTAINS POLYCHLORINATED BIPHENYLS LESS THAN 50 PPM

0.01 CM

Additional Descriptions for Materials listed above

BIS: BOX: 1 2
SOIL LESS THAN 50 PPM

15. Special Handling Instructions and Additional Information ALL WEIGHTS ARE ESTIMATED. E.R.G. #31
IN AN EMERGENCY, CONTACT CHEMTREC (800) 424-9300 OR CALL TRANS-END TECHNOLOGY (800) 860-2399. MAIL COPY TO TET - ASHTABULA, OH. CONTRACT#: SP440094D0072-0077
MAIL COPY TO DRMO NORFOLK, 7829 7TH ST., NORFOLK, VA 23511 CHM PROFILE # BL4012

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Mo. Day Year

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name TIMOTHY HUEY | Signature | Mo. Day Year

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name | Signature | Mo. Day Year

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

In case of emergency or spill immediately call the National Response Center (toll) 1-800-424-8802 and the New York State Spill Hotline 1-518-457-7362

NY B 674247 6

48-14-1 (3/89)—71

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's US EPA No. FA5173022482

Manifest Tracking No. 5 1 5 1 2

Page 1 of 1

Information in the shaded areas is not required by Federal Law.

NAVAL AMPHIBIOUS BASE
RV CAMPGROUND
LITTLE CREEK, VA

Phone 804 444-5173

State Manifest Document No. NYB 674248 E

Generator's ID

State Transporter's ID NY 13036E

Transporter's Phone 716 327-7200

BAGNAT ENVIRONMENTAL GROUP NYD986076947

Transporter's ID

Transporter's Phone

Transporter's ID

CHEMICAL SERVICES, INC.
1550 BALMER ROAD
MODEL CITY, NY 14107

NYD049836679 716 754-8231

NOT D.O.T. REGULATED: CONTAINS POLYCHLORINATED BIPHENYLS GREATER THAN 50 PPM

0.0.1.C.N. E

13364

Additional Descriptions for Materials listed above

BIS: BOX#: 166

SOIL GREATER THAN 50 PPM

Total Quantity of Wastes listed above

1

214 1242

Special Handling Instructions and Additional Information ALL WEIGHTS ARE ESTIMATED. E.R.G. #31

IN AN EMERGENCY, CONTACT CHEMTREC (800) 424-9300 OR CALL ITRANS-END TECHNOLOGY (800) 860-2399. MAIL COPY TO TET - ASHTABULA, OH. CONTRACT#: SP44009ADO072-0077

MAIL COPY TO DRMO NORFOLK, 7829 7TH ST., NORFOLK, VA 23511 CWM PROFILE # EL4012

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Printed/Typed Name | Signature | Mo. Day Year

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year 05 31 95

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name KATHY VILLENEUVE | Signature | Mo. Day Year 06 07 95

In case of emergency or spill immediately call the Chemtrec Emergency Response Center at 1-800-424-9300

NYD074248

EPA Form 3700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

COPY 3—Generator—retained by generator

1797

48-14-1 (3/89)—71

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12320, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-89 **X296**

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's U.S. EPA I.D. No. F A 5 1 7 0 0 2 2 4 3 2

Manifest Document No. 5511

Information in the shaded areas is not required by Federal Law.

1

NAVAL AMPHIBIOUS BASE
RV CAMPGROUND
LITTLE CREEK, VA

NY B 674249 4

804 444-5173

HAZMAT ENVIRONMENTAL GROUP

N Y D 9 8 0 7 6 3 9 4 7

715 827-7200

CHEMICAL SERVICES, INC.

1550 PALMER ROAD
MODEL CITY, NY 14107

N Y D 0 4 8 2 2 6 6 7 9

716 754-8231

NOT D.O.T. REGULATED: CONTAINS POLYCHLORINATED BIPHENYLS GREATER THAN 50 PPM.

9 0 1. C. M. K

9010 0760 X

Additional Descriptions for Materials Listed Above

DIS: SOIF:
SOIL GREATER THAN 50 PPM

L

15. Special Handling Instructions and Additional Information ALL WEIGHTS ARE ESTIMATED. E.R.C. #31

IN AN EMERGENCY, CONTACT CHEMTREC (800) 424-9300 OR CALL TRANS-END TECHNOLOGY (800) 860-2399. MAIL COPY TO TET - ASHTABULA, OH. CONTRACT#: SP44009ADC072-0077
MAIL COPY TO DRMO NORFOLK, 7829 7TH ST., NORFOLK, VA 23511 CMC PROFILE # SL4012

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Printed/Typed Name | Signature | Mo. Day Year

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

FACILITY

19. Discrepancy Indication Space

ITEM 7 ITEM 14 K

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Mo. Day Year

In case of emergency or spill immediately call the National Response Center (800) 424-8802

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility

COPY 5—Generator—retained by generator

0147470

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. VA5170022482 — Manifest Document No. 15011
2. Page 1 of 2 — Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
NAB LITTLE CREEK
ATTN: M463 (M. COSTELLO)
1450 GATOR BLVD.
NORFOLK, VA 23521-2616

4. Generator's Phone (804464-8566

5. Transporter 1 (Company Name) HAZMAT ENVIRONMENTAL GROUP
6. US EPA ID Number NYD980769947

7. Transporter 2 (Company Name)
8. US EPA ID Number

9. Designated Facility Name and Site Address
~~CHEMICAL WASTE MANAGEMENT-MODEL CITY~~
1550 BALMER ROAD
MODEL CITY, NY 14107
10. US EPA ID Number NYD049836679

A. State Manifest Document No. NY B508419 9
B. Generator's ID
C. State Transporter's ID 10-93PN
D. Transporter's Phone (716 827-7
E. State Transporter's ID
F. Transporter's Phone ( )
G. State Facility's ID
H. Facility's Phone (716) ~~754-0211~~

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
GENERATOR a. NON-PCB DEBRIS Non Haz — Non DOT	001	CM	0347	K	EPA / STATE
b.					EPA / STATE
c.					EPA / STATE
d.					EPA / STATE

J. Additional Descriptions for Materials listed Above
a NON-PCB SOIL CONTAMINATED
b
c
d

K. Handling Codes for Wastes Listed Above
a E
b
c
d

15. Special Handling instructions and Additional Information
ALL WEIGHTS ARE ESTIMATED. E.R.G.#31 IN AN EMERGENCY CALL CHEMTREC AT 800-424-9300 OR CALL TRANS-END TECHNOLOGY AT 800-860-2399
RB#34 2M-3007 EP449094D0072-0108

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Printed/Typed Name MARTIN D. COSTELLO Carmelo Vega Jr. — Signature — Mo. Day Year 08 29 95

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name Rich Carter — Signature — Mo. Day Year 08 29 95

18. Transporter 2 (Acknowledgement or Receipt of Materials)
Printed/Typed Name — Signature — Mo. Day Year

FACILITY

19. Discrepancy Indication Space
actual weight 11980 P/ 434K

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name Kathleen Martin — Signature — Mo. Day Year 8 30 95

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5—Generator-mailed by TSD facility