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DETERMINATION OF ACTIVATED SLUDGE BIOKINETIC CONSTANTS FOR CHEMICAL AND PLASTIC INDUSTRIAL WASTEWATERS APPENDIX B

Oklahoma State University
Stillwater, OK

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DETERMINATION OF ACTIVATED SLUDGE BIOKINETIC CONSTANTS FOR CHEMICAL AND PLASTIC INDUSTRIAL WASTEWATERS
APPENDIX B

by

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Cooperative Agreement
CR-810293

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16. ABSTRACT

The most widely used method of wastewater treatment is biological treatment. The use of kinetic models to describe the behavior of a biological wastewater treatment process has become widely accepted practice. The most often used kinetic models include those developed by Eckenfelder, McKinney, Lawrence and McCarty, and Gaudy. All of these models contain kinetic constants, and the usefulness of each model is a function of the reliability of the kinetic constants. However, there has not been enough information available to establish reliable values for these kinetic constants for industrial wastewaters.

This continued project has determined the biokinetic constants and fate for twelve additional toxic organic pollutants when present in a highly biodegradable wastewater. The normal approach for determining biokinetic constants has been to plot the average values. This approach masks the actual scatter of the data. This study has produced a methodology for analysis of the test results from biological activated sludge systems for determining the biological variability inherent in these types of systems.

This study also investigated the possibility of predicting the fate and effluent concentrations of the various priority pollutants. It was found that good predictions for the priority pollutants can be made.

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FOREWORD

EPA is charged by Congress to protect the Nation's land, air, and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise, and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life.

The Robert S. Kerr Environmental Research Laboratory is the Agency's center of expertise for investigation of the soil and subsurface environment. Personnel at the Laboratory are responsible for management of research programs to: (a) determine the fate, transport and transformation rates of pollutants in the soil, the unsaturated zone and the saturated zones of the subsurface environment; (b) define the processes to be used in characterizing the soil and subsurface environment as a receptor of pollutants; (c) develop techniques for predicting the effect of pollutants on ground water, soil and indigenous organisms; and (d) define and demonstrate the applicability and limitations of using natural processes, indigenous to the soil and subsurface environment, for the protection of this resource.

EPA, as provided for in the Clean Water Act, has the responsibility to promulgate regulations to protect streams and publicly owned treatment works. An important consideration is the economic impact that these regulations may have. This appendix summarizes a study of the biokinetic constants and environmental fate for 12 additional toxic organic pollutants. This information will aid the Agency in its effort to determine the economic impact that specific effluent guidelines may have on a particular industry.

Clinton W. Hall

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ABSTRACT

The most widely used method of wastewater treatment is biological treatment. The use of kinetic models to describe the behavior of a biological wastewater treatment process has become widely accepted practice. The most often used kinetic models include those developed by Eckenfelder, McKinney, Lawrence and McCarty, and Gaudy. Recently, Kincannon and Stover introduced a model that shows great promise.

Cooperative Agreement CR-810293-01-0 determined the biokinetic constants needed for the design models for twelve toxic pollutants when present in a highly biodegradable wastewater. Biokinetic constants were also determined for four groups of three chemicals. The biokinetic constants were determined based upon biochemical oxygen demand (BOD_5), total organic carbon (TOC), and chemical oxygen demand (COD).

The fate of the twelve chemicals during biological treatment was also determined. It was determined whether the chemicals were removed by biodegradation, sorption, stripping, or combinations of these mechanisms.

Continuous flow, internal recycle activated sludge pilot plants were used to develop the data needed for determining the biokinetic constants and the fate of the specific chemicals.

Cooperative Agreement CR-810293-01-0 is a continuation of the work reported in "Determination of Activated Sludge Biokinetic Constants for Chemical and Plastic Industrial Wastewater," EPA-600/2-83-073a.

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LIST OF ABBREVIATIONS AND SYMBOLS

BOD_5	-- biochemical oxygen demand
COD	-- chemical oxygen demand
F	-- flow rate
F/M	-- food to microorganism ratio FS_i/XV
F_w	-- waste sludge flow rate
K	-- Lawrence and McCarty's maximum substrate utilization rate
K_b	-- substrate loading at which the rate of substrate utilization is one-half the maximum rate
k_d	-- maintenance energy or decay coefficient
K_e	-- Eckenfelder's first order substrate removal rate constant
K_e'	-- Eckenfelder's second order substrate removal rate constant
K_L	-- stripping rate constant
K_m	-- Mckinny's substrate removal rate
K_s	-- saturation constant
MLSS	-- mixed liquor suspended solids
MLVSS	-- mixed liquor volatile suspended solids
S_e	-- effluent substrate concentration
S_i	-- influent substrate concentration
SRT	-- sludge retention time, θ_c
SVI	-- sludge volume index
TC	-- SRT (sludge retention time)
TOC	-- total organic carbon
U	--$S_i - S_e/Xt$, specific substrate utilization
U_{max}	-- maximum substrate utilization rate
V	-- volume
VSS	-- volatile suspended solids
X	-- biological solids
X_e	-- effluent suspended solids

X_r -- underflow solids concentration

Y_t -- true yield

α -- recycle flow ratio

θ_c -- SRT (sludge retention time)

μ_n -- observed growth rate

μ_{max} -- maximum growth rate

SECTION 1

INTRODUCTION

Provisions in the Clean Water Act clearly require the U.S. Environmental Protection Agency to promulgate regulations to protect streams and publicly owned treatment works and to see to it that regulatory practices are in place to protect the vast investment of public funds. This law can affect nearly all industrial manufacturing plants now discharging or planning to discharge into POTW's or a stream. An important category for which effluent guidelines are needed is waste components from chemical and plastic industries. For this category, the problem is extremely difficult because of the thousands of different chemicals produced at plants across the nation. The product lines of these plants, and thus the nature of the wastes, are not fixed and change with market needs. This industrial activity consequently produces wastewaters of great and changing variety in the types of pollutants they contain. Furthermore, a significant number of the growing list of priority pollutants are appearing in various waste streams from the manufacturing of chemicals and plastics.

Because of the immensity and tremendous variety of products and process routes from production, it is logical that a computer programming procedure would be developed to handle the definition of wastewater composition as well as alternate processing routes for the treatment of wastewater. Computer programs have been developed that can combine waste load information on each product, select various product treatability routes, combine them, design and cost-out a plant's treatment system, and, finally, allocate the estimated treatment costs to the contributing product process route. However, before plant costs can be modeled, the treatment design models must be established. Design models are available but the biokinetic parameters for the chemical and plastic industries are not available. Therefore, the determination of the biokinetic parameters becomes of vital concern to the success of the cost model.

The current best-practical technology (BPT) for treatment of chemical industrial and plastic manufacturing wastes usually involves activated sludge since biological treatment is often found to be the most cost effective in dealing with relatively low concentrations of the types of organic materials in such wastes.

Modern approaches for the design of activated sludge employ mathematical process models depicting the relationships among factors affecting the kinetics of wastewater purification. All design models require quantitative assessment of numerical values for biokinetic constants for the activated

sludge in question. These values are, in general, a function of the type of carbon source comprising the carbonaceous biochemical oxygen demand. Various models are available for use in designing activated sludge processes.

Cooperative Agreement CR-806843-01-02 determined the biokinetic constants and fate for twenty-four toxic organic pollutants when present in a highly biodegradable wastewater. The objective of this study was to extend this work by studying twelve additional toxic chemicals.

Since this work is a continuation of the work reported in "Determination of Activated Sludge Biokinetic Constants for Chemical and Plastic Industrial Wastewater," EPA-600/2-83-073a, many of the basic procedures have not been included in this report. If the reader is interested in the basic procedures they should consult the above reference.

SECTION 2

CONCLUSIONS AND RECOMMENDATIONS

High treatment efficiencies (in terms of biochemical oxygen demand, BOD_5; chemical oxygen demand, COD; and total organic carbon, TOC) can be achieved by biological treatment of wastewaters containing toxic priority pollutants. This study has shown that priority pollutants can be accommodated in biological wastewater treatment processes. In addition, it was found that many of the priority pollutants were biodegraded to very low concentrations. In other cases, the priority pollutants were stripped or sorbed to low levels without interfering with the biodegradation of the other organics.

The biokinetic constants of the wastewaters containing the priority pollutants are representative of a readily biodegradable wastewater. The biokinetic constants for Eckenfelder, Lawrence and McCarty, and Gaudy's design models are subject to variability. The Kincannon and Stover model provides a method for eliminating the variability of the system. This new model provides designs comparable with the other design models without the variability of the biokinetic constants.

Priority pollutants are removed by biodegradation, stripping, sorption, or combinations of these mechanisms. When biodegradation is the major mechanism of removal, the priority pollutants are removed to their lowest concentrations. Stripping and sorption mechanisms do not remove the pollutants to effluent levels as low as those accomplished by biodegradation.

This study and cooperative agreement CR 806843-010-02 have shown that wastewaters containing priority pollutants can be successfully treated by biological processes.

SECTION 3

MATERIALS AND METHODS

GENERAL EXPERIMENTAL PLAN

Continuous flow, internal recycle activated sludge pilot plants were used to develop the data needed for determining biokinetic constants. Three specific chemicals were studied each quarter. Activated sludge for starting the pilot plants was obtained from the Southside wastewater treatment plant, Tulsa, Oklahoma. The pilot plants were acclimated to the synthetic wastewater for four weeks and then sampled for two months. Twelve pilot plants were operated to provide three SRT's for each specific chemical and three SRT's for the three chemicals combined in one wastewater.

The pilot plants were sealed reactors which made the measurement of the off-gases possible. Thus, the experimental procedures allowed for the determination of the fate of the specific chemicals.

DESCRIPTION AND OPERATION OF PILOT PLANTS

A schematic of the bench-scale activated sludge pilot plants is shown in Figure 1. These systems consisted of stainless steel internal recycle reactors with 3.0 liter activated sludge reactor volumes and 3.23 liter settling compartment volumes. The reactor and settling compartment were both fitted with air tight stainless steel covers to facilitate off-gas analysis. The wastewaters were pumped from sealed feed tanks to the reactors, and the effluents flowed by gravity from the settling compartments to collection tanks. All parts of the experimental system were constructed of materials to minimize contamination.

The influent wastewater flow rates were regulated to provide hydraulic retention times of 8 hours in the activated sludge reactors. The influent air and off-gas were measured and controlled with air flow meters. The off-gas was pulled by vacuum pumps through purge traps containing 6 inches of Tenax and 4 inches of silica gel for gas chromatograph analysis.

The following procedure was used for daily operation of the internal recycle pilot plants.

1. The feed pump was set at a flow rate to prove a hydraulic detention time of eight hours.

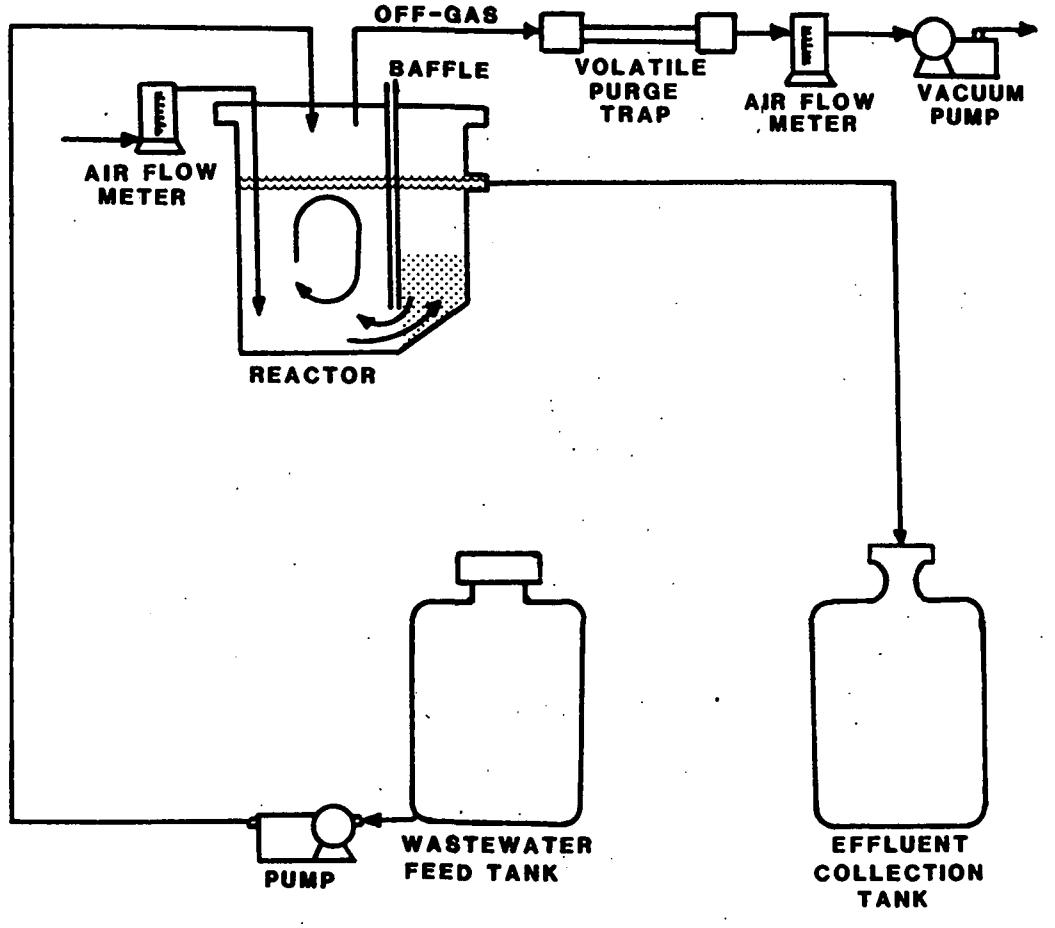

Figure 1. Bench-scale activated sludge pilot plants.

2. The adjustable baffle was set at a level that provided good return flow of the return solids. This required adjusting the baffle several times per day.

3. MLVSS were wasted once each day to provide desired SRT. This was accomplished by the following procedure:

   a. A sample was collected from the aeration chamber for MLVSS analysis.

   b. The clarified effluent collection tank was mixed and a sample taken for VSS analysis.

   c. The sludge waste flow rate was calculated by

$$F_w = \frac{\frac{VX}{SRT} - FX_e}{X - X_e}$$

   where:

   F_w = waste sludge flow rate, l/day

   SRT = sludge age, days

   V = volume of reactor, liters

   F = influent flow rate/day

   X_e = effluent volatile suspended solids, mg/ℓ

   X = MLVSS, mg/ℓ

   d. The baffle was pulled and the aeration chamber and clarifier were allowed to mix.

   e. A volume equal to the calculated F_w was withdrawn from the entire volume and wasted.

   f. The baffle was reset.

The municipal activated sludge was allowed to acclimate to the "base mix" wastewater for one week and then the organic compound was added to the wastewater. The organic compound was first added at a low concentration. This concentration was increased slightly each two or three days until the desired concentration was reached. This build-up period took from two to three weeks. Three pilot plants were operated for each compound - each at a different SRT. The SRT's were selected so that there would be a spread in the effluent BOD_5 achieved by the three pilot plants.

During each quarter the pilot plants were operated as:

Set No.	Number of Pilot Plants	Feed	Remarks
1	3	BM*+ compound A	Three sludge ages
2	3	BM + compound B	Three sludge ages
3	3	BM + compound C	Three sludge ages
4	3	BM + A, B, C .	Three sludge ages

*BM = base mix

A total of twelve pilot plants were operated at a time. The concentration of compounds A, B, and C in the combined units was one-third of the concentration of those compounds in the other units.

The synthetic wastewater included selected organic chemicals combined with a "base mix". The "base mix" was a readily biodegradable substrate which consisted of:

ethylene glycol	1 volume
ethyl alcohol	1 volume
acetic acid	1 volume
glutamic acid	1 weight
glucose	1 weight
phenol	0.2 weight
ammonium sulfate	1.8 weight
phosphoric acid	0.14 volume
magnesium sulfate	0.7 weight
manganese sulfate	0.07 weight
calcium chloride	0.07 weight
ferric chloride	0.004 weight

Note: use of 1 gm of weight equivalent to 1 mℓ of volume

The "base mix" was proportioned so that the BOD_5 due to the "base mix" would be approximately 250 mg/ℓ. Any BOD_5 attributed to the study chemical would add to the 250 mg/ℓ. Table 1 gives the average influent BOD_5, TOC, and COD for the twelve reactors. Table 2 gives some chemical characteristics for the twelve chemicals.

SAMPLE SCHEDULE

The following sample schedule was followed:

Parameter	Frequency
Influent	
Flow rate	Several times per day
BOD_5	3 per week
TOC	3 per week
COD	1 per week
pH	daily
Specific chemical	1 per week

TABLE 1. WASTEWATER CONCENTRATIONS

Group	Chemical	Wastewater Concentrations, mg/ℓ		
		BOD_5	TOC	COD
I	Anthracene	273	133	449
	Dimethyl phthalate	313	149	505
	Hexachloroethane	278	134	485
	Combined	299	134	499
II	1,2-dichloroethylene	255	119	316
	4-nitrophenol	302	134	482
	2,4,6-trichlorophenol	353	153	505
	Combined	339	154	501
III	Fluoranthene	268	185	426
	2-chloronaphthalene	255	201	424
	Hydrazobenzene	271	201	424
	Combined	265	190	406
IV	Nickel	214	167	318
	Cadmium	229	162	276
	Chromium	253	181	343
	Combined	264	171	336

TABLE 2. CHEMICAL CHARACTERISTICS

Chemical	Henry's Law Constant atm.m^3/mole	Molecular Weight	Log P_{ow}	Solubility mg/ℓ
Anthracene	N.A.	178.2	4.45	0.073
Dimethyl Phthalate	N.A.	194.2	2.12	4,300
Hexachloroethane	9.85×10^{-3}	236.7	3.34	50
1,2-dichloroethylene	1.5×10^{-2}	96.9	1.48	5,000
4-nitrophenol	N.A.	139.1	1.91	16,000
2,4,6-trichlorophenol	N.A.	197.4	3.38	800
Fluoranthene	N.A.	202.3	5.33	0.26
2-chloronaphthalene	N.A.	162.6	4.12	6.74
Hrydazobenzene	N.A.	184.2	3.03	221
Nickel	N.A.	58.7	N.A.	6.42×10^5 ($NiCl_2$)
Cadmium	N.A.	112.4	N.A.	1.40×10^6 ($CdCl_2$)
Chromium	N.A.	52.0	N.A.	6.17×10^5 (C_rO_3)

Parameter	Frequency
Effluent	
BOD_5	3 per week
TOC	3 per week
COD	1 per week
Suspended solids	3 per week
VSS	3 per week
specific chemical	1 per week
Aeration Basin	
MLSS	3 per week
MLVSS	3 per week
Dissolved oxygen	daily
Dissolved oxygen uptake	3 per week
SVI	1 per week
pH	daily
off-gas	1 per week
specific compound of mixed liquor	1 per week
Temperature	daily

PROJECT MANAGEMENT

The successful conduct of this Cooperative Agreement centered around the proper operation of the pilot plants, proper laboratory procedures, and the correct interpretation of the data. Therefore, a quality assurance plan was developed to accomplish the goals of the project.

Management

The project director and co-principal investigator maintained complete control of the project. They inspected the pilot plants at least two times each day. Some days the inspection visits were as many as four or five. These inspections ensured that the pilot plants were being operated in a proper manner. Such items as wastewater feed rates, air flow rates, baffle settings, and MLSS conditions were checked. Proper laboratory procedures were also routinely checked.

The project director and the co-principal investigator routinely checked all instruments and performed most routine maintenance of the laboratory instruments. They also provided unknown and spiked samples for analyses. All data analyses were conducted by these two.

Once a week a meeting of all personnel was held. A review of the week's activities was conducted. All problems encountered during the week were discussed by the group. This allowed all personnel to be aware of all problems encountered. Plans for the coming week were also outlined during this meeting.

Quality Assurance of Pilot Plant Operation

The key factors in the proper operation of the pilot plants included

1. Cleaning of wastewater feed tank and feed lines:
2. Making up synthetic wastewater feed.
3. Adjustment of baffle.
4. Pump flow rates.
5. Air flow rates.

To ensure that biological growth did not develop in the wastewater feed tank or lines, a disinfection program was developed. This included acid washing of the feed tank each time fresh synthetic wastewater was made up and chlorination of each feed line every fourth day. After the disinfection operation, the feed tank and lines were thoroughly rinsed with tap water before being put back into operation.

It was important that the synthetic wastewater have the proper ingredients. To ensure this, TOC, COD, and BOD_5 were routinely conducted on the synthetic wastewater. Also, gas chromatography analyses were made to measure the concentration of the specific organic compound under study.

Proper adjustment of the baffle of each pilot plant is a matter of experience. Also, either the project director or co-principal investigator checked the flow rates daily. The flow rate was checked by the volume-time method.

Laboratory Procedures

Quality assurance in the laboratory involved reagents, glassware, instruments, and analytical techniques. The laboratory analyses conducted for this project included:

1. BOD_5 - 5 day biochemical oxygen demand
2. TOC - total organic carbon
3. COD - chemical oxygen demand
4. Suspended solids
5. Volatile suspended solids
6. D.O. - dissolved oxygen
7. pH
8. Gas chromatography analyses
9. Atomic absorption analysis of metals

Sample Preservation:

Analyses were conducted immediately for most tests. However, there were times that this was not possible. For those instances the samples were filtered and stored at $4^{o}C$.

Analytical Methods:

The following analytical methods were used:

Parameter	Method
BOD_5	EPA and/or Standard Methods used. Dissolved oxygen measured by Probe method. Both total and soluble BOD_5 were determined. Soluble is defined as that left after filtering with a glass fiber filter.

Parameter	Method
TOC	Beckman 915 TOC Analyzer and Oceanography 05248 used. Only soluble TOC was determined.
COD	EPA and/or Standard Methods used
Suspended Solids	EPA and/or Standard Methods used. Reeve angel type 934-AH glass fiber filter used.
Volatilive Solids	EPA and/or Standard Methods used
Dissolved Oxygen	Probe method
pH	Instrument
Specific organic compound	Analyses followed the instructions for gas chromatograph analysis given in the Federal Register, Volume 44, Number 233, December 4, 1979. F & M Model 810 GC with Tekmar LC-Purge and Trap and HP 3380 Integrator. HP 7626A GC with HP 3380 Integrator. Perkin-Elmer Sigma 3B GC.
Metals	Total metals were digested according to EPA's March/April 1977 Protocol Atomic Absorption Newsletter 14 (5) 109' (1975), using distilled HNO_3 and H_2O_2. Perkin-Elmer 5000 AA with Graphite Furnace was used for metals analysis.

Glassware

Standard Kimax or Pyrex brand glassware was used in this study. All glassware was chromic acid washed before use.

Instruments

An analytical laboratory depends very heavily upon instrumentation. It was very important that these instruments be maintained in proper working conditions. The discussion below illustrates how this project ensured that these instruments were working properly.

1. Analytical Balance. The analytical balance was mounted on a heavy shock-proof table and was checked and adjusted yearly by a company serviceman. Accuracy of balance was routinely checked by using known weights.

2. pH Meters. The pH meters used for this project were standardized daily by using standard buffer solutions.

3. Beckman 915 TOC Analyzer. The Beckman TOC Analyzer required good maintenance and operation practices to ensure continuous operation. The following maintenance was performed once per month:

a) repack combustion tube

b) clean and dry microfilter

c) clean and dry infrared cell

For improved operation, the instrument remained on continuously and was preconditioned with repeated injections of distilled water to obtain stable operating conditions before actual sample injection.

4. Oceanographic Total Carbon Analyzer. The main concern with this instrument was to ensure that there were no leaks in the system and that the drying tubes were replaced regularly with granular magnesium perchlorate.

5. Dissolved Oxygen Probe. The dissolved oxygen probe was calibrated before each series of analyses.

Internal Quality Control Practices

Internal quality control practices varied for the various tests. These were:

1. BOD_5 - There are no good methods for testing the reliability of the BOD test. Our control used duplicate samples and spiked samples prepared by the project director.

2. TOC - Linearity of standards, duplicates, and recoveries from spiked solutions provided the quality assurance of the TOC analysis.

3. COD - The ferrous ammonium sulfate titrant was standardized as part of the test. Duplicates and recoveries from spiked solutions provided the quality assurance for the COD test.

4. Suspended Solids - Duplicate samples provided the only quality assurance for suspended solids.

5. GC Analysis for Specific Compounds - Quality assurance involved determining linearity of the analytical range, replicate runs, and recoveries from spiked solutions.

6. Atomic Absorption of Specific Metals - Quality assurance involved determining linearity of the analytical range, replicate runs, and recoveries from spiked solutions.

SECTION 4

RESULTS

PERFORMANCE OF PILOT PLANTS

Twelve chemicals have been studied in the complete mix continuous flow bench scale activated sludge pilot plants. Summaries of the operating conditions and responses of the single chemical systems are shown in Table 3-8. In addition, summaries of the operating conditions and responses of the combined chemical systems are shown in Tables 9-14. The chemicals associated with each group were given in Table 1.

Table 3 provides the mean and standard deviation (SD) values of the sludge age (SRT), hydraulic residence time (HRT), and the mixed liquor volatile suspended solids (MLVSS) for the single chemical systems. Table 4 gives the influent and effluent BOD_5 along with the SRT and F/M ratio for the single chemical systems. Tables 5 and 6 provide the influent and effluent TOC and COD along with the respective F/M ratios for the single chemical systems. Table 7 gives the effluent volatile solids, sludge volume index and oxygen uptake rate for the single chemical systems. Table 8 gives the influent and effluent specific chemical values for the single chemical systems. By studying the data in these tables, it can be seen that the single chemical systems performed very well during the study. High removal levels of BOD_5, TOC, COD, and specific chemicals were observed. In some cases the effluent suspended solids were high; however, in most cases they were at acceptable levels. Oxygen uptake rates were within acceptable levels and did not indicate any adverse effects from the wastewaters.

Table 9 provides the SRT, HRT, and MLVSS values for the various combined systems. Tables 10, 11, and 12 give the influent and effluent BOD_5, TOC, and COD, respectively, along with the corresponding F/M ratios. Table 13 provides the effluent suspended solids, sludge volume index, and oxygen uptake rate for the combined chemical systems. Table 14 gives the influent and effluent concentrations of the specific compounds for the combined chemicals. It is seen from these tables that the combined chemical systems also performed very well. No apparent adverse effects from the chemicals were observed.

BIOKINETIC CONSTANTS

The aim of all design models is to provide more accurate predictive equations which are in keeping with the underlying metabolic and biological

TABLE 3. SLUDGE AGE, HYDRAULIC RESIDENCE TIME, AND MIXED LIQUOR SOLIDS FOR SINGLE SYSTEMS

Compound	SRT, days		HRT, hours		MLVSS, mg/ℓ	
	mean	S.D.	mean	S.D.	mean	S.D.
Anthracene	1.17	1.20	8.52	1.53	478	235
	2.27	0.97	8.12	0.58	1001	477
	5.27	1.66	8.31	0.82	1548	463
Dimethyl phthalate	1.00	0.01	7.91	0.23	491	127
	2.70	0.77	8.45	1.46	1109	379
	4.23	2.25	8.08	0.04	1096	425
Hexachloroethane	1.00	0.00	8.01	0.01	594	329
	2.79	0.74	8.01	0.00	935	265
	5.94	0.32	8.01	0.00	1483	202
1,2-dichloroethylene	0.98	0.21	8.22	1.49	470	146
	2.90	0.61	8.41	1.48	1005	246
	5.78	3.83	8.39	1.47	1287	411
4-nitrophenol	0.94	0.22	8.34	1.47	453	146
	2.52	0.94	8.42	1.49	982	382
	6.45	3.92	8.36	1.48	1526	749
2,46-trichlorophenol	1.00	0.00	7.85	0.09	625	266
	2.96	0.16	8.10	0.10	1131	163
	5.97	3.50	8.12	0.15	1722	301
Fluoranthene	1.02	0.08	8.04	0.10	344	93
	3.02	0.13	8.07	0.09	936	138
	9.31	1.53	8.03	0.06	1930	174
2-chloronaphthalene	1.00	0.00	7.94	0.24	517	112
	3.02	0.03	8.13	0.15	1042	136
	9.28	1.73	8.17	0.27	2015	454
Hydrazobenzene	1.00	0.00	8.17	0.37	445	85
	3.00	0.03	8.02	0.34	1165	177
	10.08	0.38	7.91	0.36	2441	257
Nickel	1.01	0.04	8.06	0.15	351	101
	2.88	0.30	7.99	0.18	719	254
	10.08	0.23	8.12	0.10	2192	168
Cadmium	1.03	0.05	8.04	0.06	322	76
	3.06	0.06	8.01	0.03	708	45
	9.92	1.05	7.98	0.04	1288	314
Chromium	1.00	0.00	7.87	0.25	418	142
	2.96	0.20	8.37	0.69	1013	383
	9.98	0.07	7.45	0.94	2369	386

TABLE 4. INFLUENT AND EFFLUENT BOD_5 FOR SINGLE SYSTEMS

Compound	SRT, days		F/M		Inf.Bod_5 mg/ℓ		Eff.BOD_5 mg/ℓ	
	mean	S.D.	mean	S.D.	mean	S.D.	mean	S.D.
Anthracene	1.17	1.20	1.88	0.91	273	71	2.6	3.1
	2.28	0.97	1.04	0.62	281	40	1.7	2.6
	5.27	1.66	0.60	0.29	287	42	2.0	2.7
Dimethyl Phthalate	1.00	0.01	2.03	0.55	313	46	6.1	5.0
	2.70	0.77	0.82	0.26	302	77	2.3	2.9
	4.23	2.25	0.99	0.41	313	46	3.0	3.0
Hexachloroethane	1.00	0.00	1.77	0.87	278	47	5.0	3.6
	2.79	0.74	1.00	0.54	278	47	2.7	2.8
	5.94	0.32	0.58	0.14	278	47	1.3	0.8
1,2-dichloroethylene	0.98	0.21	1.64	0.54	255	71	4.4	3.3
	2.90	0.61	0.73	0.22	252	70	2.5	2.7
	5.78	3.83	0.60	0.25	252	70	3.1	3.1
4-nitrophenol	0.94	0.22	2.04	0.76	302	77	6.3	4.5
	2.52	0.94	1.00	0.52	302	77	3.7	2.9
	6.45	3.92	0.72	0.50	302	77	2.6	1.3
2,4,6-trichlorophenol	1.00	0.00	1.93	0.60	353	41	12.7	6.7
	2.96	0.16	0.94	0.14	353	41	4.7	3.7
	5.97	3.50	0.63	0.15	353	41	5.3	4.6
Fluoranthene	1.02	0.08	2.48	0.71	268	28	5.5	2.8
	3.02	0.13	0.86	0.14	268	28	2.6	1.3
	9.31	1.53	0.42	0.05	268	28	1.6	0.8
2-chloronaphthalene	1.00	0.00	1.59	0.54	255	20	4.5	2.6
	3.02	0.03	0.74	0.12	256	20	1.8	0.9
	9.28	1.73	0.40	0.12	256	20	1.3	0.8
Hydrazobenzene	1.00	0.00	1.85	0.37	271	22	5.8	3.6
	3.00	0.03	0.72	0.14	271	22	2.5	1.1
	10.08	0.38	0.34	0.04	271	22	1.4	0.8
Nickel	1.01	0.04	1.91	0.55	214	47	8.9	4.7
	2.88	0.30	1.03	0.44	214	47	3.0	1.7
	10.08	0.23	0.29	0.06	214	47	1.0	0.4
Cadmium	1.03	0.05	2.23	0.59	229	30	7.0	5.0
	3.06	0.06	0.98	0.16	231	31	3.7	2.1
	9.92	1.05	0.59	0.24	231	30	1.7	0.7
Chromium	1.00	0.00	1.99	0.50	253	33	8.8	8.3
	2.96	0.20	0.85	0.39	253	33	6.8	6.5
	9.98	0.07	0.33	0.05	256	27	3.1	3.7

TABLE 5. INFLUENT AND EFFLUENT TOC FOR SINGLE SYSTEMS

Compound	SRT, days		F/M		Influent mg/ℓ		Effluent mg/ℓ	
	mean	S.D.	mean	S.D.	mean	S.D.	mean	S.D.
Anthracene	1.17	1.20	0.94	0.49	133	22	39	10
	2.28	0.97	0.45	0.19	130	25	30	11
	5.27	1.66	0.30	0.19	129	24	27	13
Dimethyl phthalate	1.00	0.01	0.95	0.37	149	30	33	11
	2.70	0.77	0.38	0.11	149	30	25	14
	4.23	2.25	0.48	0.18	149	30	30	14
Hexachloroethane	1.00	0.00	0.83	0.40	134	26	35	12
	2.79	0.74	0.50	0.28	133	26	27	12
	5.94	0.32	0.28	0.07	134	26	32	11
1,2-dichloroethylene	0.98	0.21	0.85	0.28	119	13	27	8
	2.90	0.61	0.34	0.05	119	13	27	9
	5.78	3.83	0.29	0.09	119	13	27	10
4-nitrophenol	0.94	0.22	0.91	0.36	134	37	29	13
	2.52	0.94	0.45	0.28	134	37	27	10
	6.45	3.92	0.32	0.20	135	37	23	8
2,4,6-trichlorophenol	1.00	0.00	0.83	0.26	153	14	40	15
	2.96	0.16	0.41	0.06	153	14	36	12
	5.97	3.50	0.27	0.05	153	14	33	12
Fluoranthene	1.02	0.08	1.70	0.44	185	30	29	7
	3.02	0.13	0.60	0.12	187	27	26	8
	9.31	1.53	0.30	0.06	185	30	16	8
2-chloronophthalene	1.00	0.00	1.24	0.37	2.01	38	22	4
	3.02	0.03	0.58	0.11	2.02	39	17	2
	9.28	1.73	0.30	0.07	196	23	19	8
Hydrazobenzene	1.00	0.00	1.34	0.21	201	23	34	7
	3.00	0.03	0.53	0.08	201	23	21	7
	10.08	0.38	0.25	0.04	201	23	18	5
Nickel	1.01	0.04	1.77	0.24	167	11	36	21
	2.88	0.30	1.03	0.25	167	11	27	15
	10.08	0.23	0.23	0.02	167	11	15	9
Cadmium	1.03	0.05	1.26	0.26	162	22	21	12
	3.06	0.06	0.67	0.08	161	21	27	12
	9.92	1.05	0.48	0.16	160	20	17	14
Chromium	1.00	0.00	1.58	0.53	181	11	40	33
	2.96	0.20	0.78	0.34	181	11	25	14
	9.98	0.07	0.27	0.05	181	11	18	9

TABLE 6. INFLUENT AND EFFLUENT COD FOR SINGLE SYSTEMS

Compound	SRT, days		F/M		Influent mg/ℓ		Effluent mg/ℓ	
	mean	S.D.	mean	S.D.	mean	S.D.	mean	S.D.
Anthracene	1.17	1.20	3.32	1.74	449	54	42	25
	2.28	0.97	1.27	0.67	380	165	43	30
	5.27	1.66	0.93	0.31	441	62	35	27
Dimethyl phthalate	1.00	0.01	3.25	1.03	505	133	55	23
	2.70	0.77	1.38	1.32	453	223	24	16
	4.23	2.25	1.56	0.68	505	133	38	23
Hexachloroethane	1.00	0.00	2.65	1.35	485	101	46	17
	2.79	0.74	1.58	0.17	494	106	39	30
	5.94	0.32	1.06	0.29	485	101	31	25
1,2-dichloroethylene	0.98	0.21	2.18	1.23	316	154	22	15
	2.90	0.61	0.99	0.40	348	133	20	13
	5.78	3.83	0.76	0.32	348	133	24	14
4-nitrophenol	0.94	0.22	3.04	1.87	482	272	44	35
	2.52	0.94	1.63	1.04	482	272	30	17
	6.45	3.92	1.03	0.57	482	272	24	19
2,4,6-trichlorophenol	1.00	0.00	2.85	0.78	505	91	43	39
	2.96	0.16	1.24	0.27	505	91	26	18
	5.97	3.50	0.92	0.17	505	91	31	24
Fluoranthene	1.02	0.08	4.08	1.07	426	76	27	24
	3.02	0.13	1.37	0.37	426	76	12	8
	9.31	1.53	0.63	0.07	426	76	7	4
2-chloronaphthalene	1.00	0.00	2.84	1.20	424	58	18	8
	3.02	0.03	1.25	0.35	424	58	13	7
	9.28	1.73	0.68	0.26	435	54	9	6
Hydrazobenzene	1.00	0.00	2.73	0.67	424	52	24	12
	3.00	0.03	1.14	0.22	424	52	20	9
	10.08	0.38	0.51	0.07	424	52	10	7
Nickel	1.01	0.04	2.82	0.93	318	52	35	14
	2.88	0.30	1.47	0.90	318	52	42	15
	10.08	0.23	0.43	0.07	318	52	23	11
Cadmium	1.03	0.05	2.67	0.53	276	13	47	14
	3.06	0.06	1.14	0.07	276	13	43	9
	9.92	1.05	0.74	0.25	291	38	25	7
Chromium	1.00	0.00	2.30	0.73	343	18	38	16
	2.96	0.20	1.41	1.00	343	18	30	10
	9.98	0.07	0.42	0.08	343	18	31	16

TABLE 7. EFFLUENT SOLIDS, SLUDGE VOLUME INDEX AND OXYGEN UPTAKE RATE FOR SINGLE SYSTEMS

Compound	SRT, days mean	SRT, days S.D.	Effluent VSS, mg/ℓ mean	Effluent VSS, mg/ℓ S.D.	SVI Range	O_2 Uptake mg/gm/hr mean
Anthracene	1.17	1.20	23	55	102-1648	22.7
	2.28	0.97	122	122	183-2041	12.7
	5.27	1.66	56	99	478-797	8.1
Dimethyl phthalate	1.00	0.01	21	12	94-1448	43.8
	2.70	0.77	61	84	590-1852	17.1
	4.23	2.25	82	89	556-1493	16.8
Hexachloroethane	1.00	0.00	17	24	84-1721	23.3
	2.79	0.74	47	95	721-1302	15.8
	5.94	0.32	19	27	508-797	14.0
1,2-dichloroethylene	0.98	0.21	22	30	419-3205	23.6
	2.90	0.61	9	16	704-1047	15.8
	5.78	3.83	116	122	552-1149	13.5
4-nitrophenol	0.94	0.22	38	52	187-2697	25.8
	2.52	0.94	64	93	131-2708	14.5
	6.45	3.92	93	128	326-1951	11.9
2,4,6-trichlorophenol	1.00	0.00	38	17	63-206	30.5
	2.96	0.16	19	18	261-813	17.5
	5.97	3.50	120	93	448-775	14.8
Fluoranthene	1.02	0.08	8	14	182-605	32.7
	3.02	0.13	6	11	546-1029	16.1
	9.31	1.53	21	33	398-515	10.3
2-chloronaphthalene	1.00	0.00	11	20	157-2439	36.0
	3.02	0.03	9	12	321-1136	18.2
	9.28	1.73	20	30	355-1031	13.2
Hydrazobenzene	1.00	0.00	12	14	98-188	27.0
	3.00	0.03	10	19	224-600	15.2
	10.08	0.38	5	7	325-408	10.9
Nickel	1.01	0.04	32	16	111-290	24.6
	2.88	0.30	22	21	105-282	13.5
	10.08	0.23	6	6	358-415	11.6
Cadmium	1.03	0.05	21	18	124-725	25.4
	3.06	0.06	6	9	172-625	17.2
	9.92	1.05	9	10	273-1020	12.5
Chromium	1.00	0.00	23	16	83-342	30.6
	2.96	0.20	16	16	79-570	18.3
	9.98	0.07	18	13	77-143	8.3

TABLE 8. INFLUENT, EFFLUENT, AND SLUDGE CONCENTRATIONS OF SPECIFIC COMPOUND FOR SINGLE SYSTEMS

Compound	SRT days	Influent µg/ℓ	Effluent µg/ℓ	Sludge µg/g
Anthracene	1.17	63	48	61
	2.28	63	44	42
	5.27	63	53	21
Dimethyl phthalate	1.00	37,250	262	< 10
	2.70	37,250	198	< 10
	4.23	37,250	132	< 10
Hexachloroethane	1.00	3,720	465	81
	2.79	3,720	371	64
	5.94	3,720	338	24
4-nitrophenol	0.94	32,300	1820	--
	2.52	32,300	2670	--
	6.45	32,300	2160	--
2,4,6-trichlorophenol	1.00	14,830	1790	8,190
	2.96	14,830	1470	753
	5.97	14,830	590	570
1,2-dichloroethylene	0.98	29,200	235	< 10
	2.90	29,200	320	< 10
	5.78	29,200	280	< 10
Fluoranthene	1.02	134	26	< 10
	3.02	134	29	< 10
	9.31	134	24	10
2-chloronatphthalene	1.00	2,020	49	< 10
	3.02	2,020	30	< 10
	9.28	2,020	25	27
Hydrazobenzene	1.00	4,180	2740	< 10
	3.00	4,180	2330	226
	10.08	4,180	2650	159
Nickel	1.01	3,860	2780	7,950
	2.88	3,860	3170	4,090
	10.08	3,860	2950	1,280
Cadmium	1.03	3,680	1280	24,880
	3.06	3,680	1170	16,980
	9.92	3,680	1110	18,160
Chromium	1.00	3,570	1120	42,380
	2.96	3,570	1520	21,120
	9.98	3,570	600	22,290

TABLE 9. SLUDGE AGE, HYDRAULIC RESIDENCE TIME, AND MIXED LIQUOR SOLIDS FOR COMBINED SYSTEMS

Combined System		SRT, days		HRT, days		MLVSS, mg/ℓ	
		mean	S.D.	mean	S.D.	mean	S.D.
I		1.01	0.03	8.08	0.05	568	198
	Anthracene	2.42	0.97	8.41	0.77	1422	650
	Dimethyl phthalate	4.93	1.59	8.00	0.00	1316	373
	Hexachloroethane						
II		1.00	0.00	7.94	0.20	471	117
	1,2 dichloroethylene	3.00	0.00	8.07	0.00	1414	258
	4 nitrophenol	8.01	2.69	7.98	0.03	1798	254
	2,4,6 trichlorophenol						
III		1.02	0.03	7.96	0.09	625	--
	Fluoranthene	3.02	0.03	8.15	0.24	1153	95
	2-chloronaphthalene	8.89	2.51	8.09	0.23	1869	436
	Hydrazobenzene						
IV		1.00	0.00	8.10	0.40	425	186
	Nickel	3.07	0.07	7.96	0.06	663	131
	Cadmium	9.87	0.22	8.03	0.18	1741	229
	Chromium						

TABLE 10. INFLUENT AND EFFLUENT BOD_5 FOR COMBINED SYSTEMS

Combined System	SRT, days	F/M	Influent BOD_5 mg/ℓ mean	Influent BOD_5 mg/ℓ S.D.	Effluent BOD_5 mg/ℓ mean	Effluent BOD_5 mg/ℓ S.D.
I	1.01	1.74	294	46	4.3	4.3
	2.42	0.79	299	46	2.9	3.2
	4.93	0.72	295	45	3.3	3.8
II	1.00	2.27	339	49	4.6	3.1
	3.00	0.73	339	49	7.2	
	8.01	0.58	339	49	2.5	1.2
III	1.02	1.76	265	28	3.6	2.0
	3.02	0.68	266	29	2.1	1.1
	8.89	0.45	265	28	1.5	0.8
IV	1.00	2.40	264	28	13.5	9.6
	3.07	1.23	260	30	16.6	8.9
	9.87	0.45	260	30	6.1	7.0

TABLE 11. INFLUENT AND EFFLUENT COD FOR COMBINED SYSTEMS

Combined System	SRT days	F/M	Influent BOD_5 mg/ℓ mean	Influent BOD_5 mg/ℓ S.D.	Effluent BOD_5 mg/ℓ mean	Effluent BOD_5 mg/ℓ S.D.
I	1.01	2.93	499	95	40	12
	2.42	1.08	503	101	41	17
	4.93	1.04	450	182	18	14
II	1.00	3.56	501	66	32	17
	3.00	1.10	501	66	19	12
	8.01	0.86	501	66	18	12
III	1.02	2.76	406	62	18	11
	3.02	1.07	406	62	7	5
	8.89	0.70	406	62	7	4
IV	1.00	3.49	336	18	42	14
	3.07	1.64	336	18	47	14
	9.87	0.55	330	12	30	9

TABLE 12. INFLUENT AND EFFLUENT TOC FOR COMBINED SYSTEMS

Combine System	SRT days	F/M	Influent BOD_5 mg/ℓ mean	Influent BOD_5 mg/ℓ S.D.	Effluent BOD_5 mg/ℓ mean	Effluent BOD_5 mg/ℓ S.D.
I	1.01	0.85	134	24	32	12
	2.42	0.43	136	23	25	8
	4.93	0.34	135	24	30	10
II	1.00	1.04	154	28	33	8
	3.00	0.33	154	28	33	11
	8.01	0.26	154	28	29	8
III	1.02	1.36	190	35	24	7
	3.02	0.49	190	30	20	3
	8.89	0.31	186	37	17	4
IV	1.00	2.14	171	14	36	3
	3.07	0.68	171	14	34	19
	9.87	0.30	171	14	21	8

TABLE 13. EFFLUENT SOLIDS, SLUDGE VOLUME INDEX, AND OXYGEN UPTAKE RATE FOR COMBINED SYSTEMS

Combined Systems	SRT days	Effluent VSS, mg/ℓ mean	Effluent VSS, mg/ℓ S.D.	SVI Range	O_2 Uptake mg/gm/hr
I	1.01	11	9	128-2382	30.4
	2.42	108	169	400-1562	10.8
	4.93	57	82	489-1122	15.4
II	1.00	43	41	86-2152	20.2
	3.00	7	5	124-1456	17.2
	8.01	50	61	472-624	12.5
III	1.02	8	14	144-1406	27.2
	3.02	3	8	664-952	15.6
	8.89	37	59	378-573	11.3
IV	1.00	15	9	143-1737	44.7
	3.07	11	9	137-1346	22.3
	9.87	11	10	76-100	8.2

TABLE 14. INFLUENT, EFFLUENT, AND SLUDGE CONCENTRATIONS OF SPECIFIC COMPOUNDS FOR COMBINED SYSTEMS

Combined System		SRT days	Influent µg/ℓ	Effluent µg/ℓ	Sludge µg/ℓ
I	Anthracene	1.01	68	≤10	≤10
	Dimethyl phthalate		5960	540	56
	Hexachloroethane		900	≤10	≤10
	Anthracene	2.42	68	≤10	≤10
	Dimethyl phthalate		5960	370	256
	Hexachloroethane		900	≤10	≤10
	Anthracene	4.93	68	≤10	≤10
	Dimethyl phthalate		5960	410	208
	Hexachloroethane		900	≤10	≤10
II	4-nitrophenol	1.00	13500	1990	--
	2,4,6 trichlorophenol		11960	330	2080
	1,2 dichloroethylene		9100	29	57
	4-nitrophenol	3.00	13500	600	--
	2,4, 6 trichlorophenol		11960	450	375
	1,2 dichloroethylene		9100	26	19
	4-nitrophenol	8.01	13500	1390	--
	2,4,6 trichlorophenol		11960	360	230
	1,2 dichloroethylene		9100	29	26
III	Fluroanthene	1.02	144	24	45
	2-chloronaphthalene		840	18	18
	Hydrazobenzene		1750	790	333
	Fluoranthene	3.02	144	16	45
	2-chloronaphthalene		840	18	36
	Hydrazobenzene		1750	710	462
	Fluoranthene	8.89	144	23	21
	2-chloronaphthalene		840	45	≤10
	Hydrazobenzene		1750	750	89
IV	Nickel	1.00	1.96	1.33	6.6
	Cadmium		1.49	0.41	8.7
	Chromium		1.87	0.98	18.3
	Nickel	3.07	1.96	1.49	5.1
	Cadmium		1.49	0.55	7.6
	Chromium		1.87	0.88	14.1
	Nickel	9.87	1.96	1.70	5.5
	Cadmium		1.49	0.58	8.5
	Chromium		1.87	1.51	7.9

principles governing the purification process. Most models are developed by writing material balances describing the mass rate of change in substrate and in biomass. Substrate utilization and biomass increase are the two major concerns in the functional design of the bioreactor. Describing mathematically these two functions is where the various models differ.

Figure 1 is a diagram of an activated sludge process including the bioreactor and the mixed liquor separator. If a mass balance for substrate is written around the entire process:

Rate of change of substrate in reactor	=	Rate of substrate inflow to reactor	—	Rate of substrate outflow from reactor	—	Rate of substrate utilization
$\left(\frac{ds}{dt}\right)_R V$	=	FS_i	—	FS_e	—	$\left(\frac{ds}{dt}\right)_g V$

For steady state conditions $\left(\frac{ds}{dt}\right)_g = 0$. Therefore

$$\left(\frac{ds}{dt}\right)_g V = FS_i - FS_e$$

The various models differ by the assumption for

$$\left(\frac{ds}{dt}\right)_g$$

Eckenfelder $$\left(\frac{ds}{dt}\right)_g = \frac{K_e' \times S_e}{S_i}$$

Lawrence and McCarty $$\left(\frac{ds}{dt}\right)_g = \frac{K \times S_e}{K_s + S_e}$$

Gaudy $$\left(\frac{ds}{dt}\right)_g = \frac{U_{max} \times S_e}{Y_t (K_s + S_e)}$$

Kincannon and Stover $$\left(\frac{ds}{dt}\right)_g = \frac{U_{max} \times \frac{FS_i}{xv}}{K_b + \frac{FS_i}{xv}}$$

Each model contains several biokinetic constants. These are:

K_e' - Eckenfelder's 2nd order substrate removal constant

K - Maximum substrate utilization rate (Lawrence & McCarty)

μ_{max} - Maximum specific growth rate (Gaudy)

K_s - Saturation constant (Lawrence & McCarty, Gaudy)

Y_t - True cell yield (all models)

k_d - Maintenance energy coefficient (all models)

U_{max} - Kincannon and Stover's maximum substrate utilization rate

K_b - Kincannon and Stover's saturation constant

These biokinetic constants were determined by linear regression analysis of the pilot plant data. The results are given in Tables 15-18. Table 15 provides the BOD_5 biokinetic constants for the single chemical systems. Table 16 provides the TOC biokinetic constants for the single chemical systems and Table 17 provides the COD biokinetic constants for the single chemical systems. Table 18 provides the BOD_5, TOC, and COD biokinetic constants for the combined systems. All biokinetic constants are mean constants. The graphical procedures for determining the biokinetic constants are outlined in the original report "Determination of Activated Sludge Biokinetic Constants for Chemical and Plastic Industrial Wastewaters," EPA-600/2-83-073a.

The linear regression analysis for determination of Y_t, k_d, U_{max}, and K_b gave results with very acceptable correlation coefficients. The linear regression analysis for K, μ_{max}, and K_s were so poor that the biokinetic constants determined by the analysis have very little use. Eckenfelder's constant, K_e', also showed poor correlation. However, the constants do appear to give a good mean value. They are usable if one recognizes the high variability and uses them accordingly.

The biokinetic constants, K_e' and U_{max}, can be used to assess the effect of the various chemicals on the biological systems. Table 15 shows that K_e' for the control system was 71 day^{-1}, and U_{max} for the control system was 100 lbs BOD/day/lb solids. The systems fed 2,4,6 trichlorophenol, nickel, cadmium, and chromium all had kinetic constants less than these. Whereas, the other systems show constants equal to or greater than the control constants. It can also be seen in Table 4 that, in general, these systems also had higher effluent BOD's. Table 18 shows that the combined system containing the metals had a detrimental effect on the system; whereas, the other combined systems showed no detrimental effect. It is also seen in Table 10 that combined system IV had higher effluent BOD's than the other combined systems.

TABLE 15. BOD_5 BIOKINETIC CONSTANTS FOR SINGLE CHEMICAL SYSTEMS

Compound	Y_t	k_d day^{-1}	μ_{max} day^{-1}	K day^{-1}	K_s mg/ℓ	K_e' day^{-1}	U_{max} lbs/day/lb	K_b lb/day/lb
Anthracene	0.41	0.16	0.60	0.03	0.08	162	100	101
Dimethyl Phthalate	0.41	0.07	0.48	0.05	0.10	105	100	101
Hexachloroethane	0.35	0.16	0.57	0.85	2.00	106	100	100
1,2-dichloroethylene	0.51	0.03	0.33	0.78	2.34	80	100	101
4-nitrophenol	0.49	0.00	0.55	1.64	4.92	94	100	101
2,4,6 trichlorophenol	0.46	0.02	0.41	1.03	3.09	54	50	50
Fluoranthene	0.35	0.04	0.50	1.27	3.80	102	100	101
2-chloronapthalene	0.55	0.01	0.24	0.64	1.92	91	100	100
Hydrazobenzene	0.54	0.04	0.28	0.61	1.82	80	100	100
Nickel	0.43	0.03	0.55	1.00	3.00	53	50	50
Cadmium	0.43	0.06	1.00	2.13	5.14	70	50	50
Chromium	0.46	0.01	0.38	0.93	1.54	41	50	50
Control	0.46	0.09	3.00	6.50	22.00	71	100	100

TABLE 16. TOC BIOKINETIC CONSTANTS FOR SINGLE CHEMICAL SYSTEMS

Compound	Y_t	k_d day^{-1}	μ_{max} day^{-1}	K day^{-1}	K_s mg/ℓ	K_e' day^{-1}	U_{max} lbs/day/lb	K_b lbs/day/lb
Anthracene	0.85	0.32	0.87	0.24	2.66	1.81	14.3	20.1
Dimethyl Phthalate	0.89	0.16	0.65	0.35	2.11	2.55	14.3	17.9
Hexachloroethane	0.91	0.18	0.54	0.21	0.10	1.85	14.3	18.4
1,2-dichloroethylene	1.39	0.04	--	--	--	1.67	12.7	13.7
4-nitrophenol	1.26	0.03	1.13	0.37	--	2.52	10.0	12.7
2,4,6 trichlorophenol	1.45	0.01	0.41	0.31	8.67	1.60	10.0	12.7
Fluoranthene	0.61	0.03	0.34	0.53	3.90	6.02	9.0	9.8
2-chloronaphthalene	0.79	0.02	0.65	0.74	24.80	6.93	21.2	22.8
Hydrazobenzene	0.74	0.01	--	25.0	--	5.97	16.7	18.2
Nickel	0.67	0.05	0.40	0.57	3.96	5.33	7.7	8.2
Cadmium	0.96	0.20	0.53	0.56	0.49	5.59	5.9	6.1
Chromium	0.67	0.01	0.27	0.47	1.31	4.54	6.3	6.7
Control	0.86	0.10	4.30	5.0	154	5.50	--	--

TABLE 17. COD BIOKINETIC CONSTANTS FOR SINGLE CHEMICAL SYSTEMS

Compound	Y_t	k_d $days^{-1}$	μ_{max} day^{-1}	K day^{-1}	K_s mg/ℓ	K_e' day^{-1}	U_{max} lbs/day/lb	K_b lbs/day/lb
Anthracene	0.24	0.30	0.95	1.67	5.85	18	25	26
Dimethyl Phthalate	0.20	0.19	0.71	1.82	4.73	27	100	108
Hexachloroethane	0.26	0.09	0.47	1.33	1.67	21	100	108
1,2-dichloroethylene	--	--	2.04	0.90	0.71	21	71	76
4-nitrophenol	0.18	0.19	0.74	1.82	7.80	33	50	52
2,4,6 trichlorophenol	0.35	0.04	0.43	1.45	7.46	24	100	107
Fluoranthene	0.22	0.07	0.36	0.88	0.04	58	50	50
2-chloronaphthalene	0.26	0.08	0.39	1.09	0.11	51	100	101
Hydrazobenzene	0.37	0.04	0.29	0.93	0.12	33	50	51
Nickel	0.29	0.08	1.09	4.76	61	14	25	27
Cadmium	0.42	0.10	--	--	--	9	20	22
Chromium	0.31	0.11	0.49	0.68	7.77	13	100	110
Control	0.28	0.07	1.90	6.7	140	20	--	--

TABLE 18. BIOKINETIC CONSTANTS FOR COMBINED SYSTEMS

Combined Systems	Y_t	k_d $days^{-1}$	μ_{max} day^{-1}	K day^{-1}	K_s mg/ℓ	K_e' day^{-1}	U_{max} lbs/day/lb	K_b lb/day/lb
				BOD				
I	0.40	0.18	0.61	0.80	0.03	92	100	102
II	0.40	0.02	0.38	1.03	0.71	85	100	101
III	0.50	0.01	0.31	0.72	0.39	106	100	101
IV	0.24	0.16	0.74	1.81	4.37	27	25	25
				TOC				
I	0.91	0.26	--	--	--	2.05	12.3	15.6
II	0.94	0.08	0.65	0.31	21.56	2.15	20.0	25.0
III	0.61	0.10	2.44	0.65	100	6.31	27.0	29.2
IV	0.47	0.10	0.70	0.73	21.80	4.61	6.3	7.0
				COD				
I	0.26	0.09	0.47	1.33	1.67	21.4	100	108
II	0.29	0.03	0.32	1.43	1.45	38.9	50	51
III	0.33	0.01	0.27	1.05	--	55.7	100	101
IV	0.09	0.32	1.02	1.72	21.0	14.6	20	22

FATE OF SPECIFIC CHEMICALS

The removal mechanism for each specific chemical during biological treatment by the activated sludge process was determined. Stripping was determined by measuring the off-gases. Sorption was determined by 24-hours continuous solvent extraction or by purging sludge samples. Biological degradation was assumed to account for the rest of the removal. The percent treatment achieved by each mechanism for the single chemical systems is shown in Table 19, and the percent treatment achieved by each mechanism for the combined systems is shown in Table 20. It is seen that 1,2-dichloroethylene was the only chemical removed by stripping. However, the removal was not solely by stripping. Biological removal of 1,2-dichloroethylene also occurred. In the single chemical systems, 37 percent of the 1,2-dichloroethylene was stripped; however, when combined with 4-nitrophenol and 2,4,6-trichlorophenol, 62 percent was stripped.

Only four organic chemicals were removed by sorption in the single chemical systems; these being, hydrazobenzene, 2,4,6-trichlorophenol, anthracene, and hexachloroethane. The chemical 4-nitrophenol was probably removed by sorption but problems with analysis of the sludge prevented determining whether this was true or not. In the combined systems, these compounds responded in a slightly different manner with different levels of sorption being observed. This probably was due to the problem associated with measuring the small quantities that were sorbed. Also, sorption capabilities of certain chemicals may be changed when in the presence of other chemicals.

It is seen that the only removal mechanism for the metals was sorption. Similar levels of removal were observed in both the single and combined systems.

It was also found that all of the organic chemicals were biodegraded to some degree. Kincannon and Stover (1-5) have previously reported this with other organic priority pollutants. This shows that biological treatment is an effective treatment process for organic priority pollutants.

The effluent concentrations for the chemicals that were achieved by the treatment process are shown in Table 21. This data shows that, when biological treatment is the major mechanism of removal, the effluent concentrations achieved are lower than those achieved by other removal mechanisms. Sorption seems to be the most inefficient removal mechanism.

TABLE 19. REMOVAL MECHANISMS FOR SPECIFIC CHEMICALS IN SINGLE SYSTEMS

Chemical	PERCENT TREATMENT ACHIEVED			
	Stripping	Sorption	Biological	Total
Phthalates				
Dimethyl	0	0	99.5	99.5
Nitrogen Compound				
Hydrazobenzene	0	0.3	38.1	38.4
Phenols				
4-Nitro	0	93.1*		93.1
2,4,6-Trichloro		4.2	74.4	78.6
Polynuclear Aromatics				
Anthracene	0	8.7	14.6	23.3
Fluoranthene	0	0	80.6	80.6
2-Chloronaphthalene	0	0	98.3	98.3
Halogenated Hydrocarbons				
Hexachloroethane	0	0.4	87.1	87.5
1,2 dichloroethylene	37.0	0	62.0	99.0
Metals				
Nickel	0	23.1	0	23.1
Cadmium	0	67.7	0	67.7
Chromium	0	60.8	0	60.8

* 4-nitrophenol was removed by sorption and biological means both, but mechanisms could not be separated.

TABLE 20. REMOVAL MECHANISMS FOR SPECIFIC CHEMICALS IN COMBINED SYSTEMS

Chemical	PERCENT TREATMENT ACHIEVED			
	Stripping	Sorption	Biological	Total
Phthalates				
Dimethyl	0	0.6	92.0	92.6
Nitrogen Compounds				
Hydrazobenzene	0	3.7	53.4	57.1
Phenols				
4-nitro	0	90.2		90.2
2,4,6-trichloro	0	2.7	94.1	96.8
Polynuclear Aromatics				
Anthracene	0	0	85.3	85.3
Fluoranthene	0	3.8	81.6	85.4
2-chloronaphthalene	0	0.4	96.4	96.8
Halogenated Hydrocarbons				
Hexachloroethane	0	0	98.8	98.8
1,2 dichloroethylene	62.1	0	37.6	99.7
Metals				
Nickel	0	23.0	0	23.0
Cadmium	0	65.8	0	65.8
Chromium	0	40.1	0	40.1

TABLE 21. EFFLUENT ACHIEVED FOR SPECIFIC CHEMICAL

Chemical	Influent µg/ℓ	Effluent Achieved, µg/ℓ			
		Biological	Sorption	Biological plus Stripping	Biological plus Sorption
Phthalates					
Dimethyl	37250	197			
Nitrogen Compound					
Hydrazobenzene	4180				2573
Phenols					
4-nitro	32300				2217
2,4,6 trichloro	14830				1283
Polynuclear Aromatics					
Anthracene	63				48
Fluoranthene	134	26			
2-chloronaphthalene	2020	35			
Halogenated Hydrocarbons					
Hexachloroethane	3720				391
1,2 dichloroethylene	29200			278	
Metals					
Nickel	3860		3059		
Cadmium	3680		1187		
Chromium	3570		1080		

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3. Kincannon, Don F., Enos L. Stover, Virgil Nichols, and David Medley. Removal Mechanisms for Biodegradable and Non-Biodegradable Toxic Priority Pollutants in Industrial Wastewaters. Proceedings, Industrial Wastes Session, 54th Annual Water Pollution Control Federation Conference, Detroit, Michigan, 1981.

4. Kincannon, Don F., Enos L. Stover and Yu-Ping Chung. Biological Treatment of Organic Compounds Found in Industrial Aqueous Effluents. Presented at American Chemical Society National Meeting, Atlanta, Georgia, 1981.

5. Kincannon, Don F. and Enos L. Stover. Stripping Characteristics of Priority Pollutants During Biological Treatment. Presented at Secondary Emissions Session of the 74th Annual American Institute of Chemical Engineers Meeting, New Orleans, Louisiana, 1981.

APPENDIX

This appendix provides the raw data collected during this study. It is provided so that others interested in the treatment of wastewaters containing priority pollutants may have the opportunity of conducting additional analysis of the data if they so desire.

COMPOUND =ANTHRACENE THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	202	0.8	9.50	3.13	390	0	1.572	1.566	1.00
11/03	259	4.5	9.36	3.13	590	0	1.313	1.290	1.00
11/05	254	12.5	9.36	3.08	630	16	1.206	1.146	0.97
11/08	276	4.6	9.65	3.10	400	2	2.127	2.092	1.00
11/10	278	0.9	9.07	3.10	470	2	1.714	1.708	1.00
11/12	276	0.7	8.93	3.13	730	0	1.079	1.076	1.00
11/15	305	1.3	9.36	3.10	370	2	2.465	2.455	1.00
11/17	306	1.7	9.50	3.09	343	4	2.708	2.693	0.99
11/19	349	11.0	9.36	3.00	336	8	3.106	3.008	0.99
11/24	207	0.0	9.65	2.98	623	14	1.024	1.024	1.00
11/29	337	2.1	9.65	3.13	885	0	1.174	1.167	1.00
12/01	334	2.0	8.93	3.10	1047	2	0.910	0.905	1.01
12/03	263	0.8	9.65	3.04	948	14	0.855	0.853	1.00
12/06	256	1.7	9.22	3.04	425	7	1.774	1.763	1.00
12/08	238	2.0	9.50	3.05	458	6	1.577	1.564	1.00
12/10	249	0.5	9.50	2.95	427	13	1.770	1.766	0.99
12/13	339	1.3	9.36	1.70	428	82	2.369	2.359	0.99
12/15	335	1.5	6.48	0.00	416	258	1.667	1.660	0.78
12/17	268	3.0	9.22	0.00	183	98	4.314	4.266	0.63
12/20	271	5.5	9.22	2.90	353	13	2.261	2.216	1.00
12/22	285	1.9	8.93	0.30	390	7	2.085	2.071	6.88
12/24	299	1.8	9.36	3.13	262	0	3.413	3.392	1.00
12/27	279	0.3	8.93	2.60	306	26	2.601	2.599	1.00
12/29	366	1.9	8.93	3.04	530	8	1.970	1.960	1.00
MEAN	273	2.6	8.82	2.51	478	23	1.882	1.864	1.17
S.DEV	70.75	3.09	1.93	1.12	234.91	54.5	.91	.9	1.2
C V %	25.8	120.2	21.9	44.7	49.1	234.1	48.8	48.7	103.4

COMPOUND =ANTHRACENE THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.14

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	202	0.5	9.36	1.04	830	0	0.725	0.724	3.02
11/03	259	2.7	9.65	0.90	940	20	0.847	0.838	2.89
11/05	254	12.5	9.22	1.03	1040	2	0.717	0.682	3.00
11/08	276	0.6	9.50	1.04	970	0	0.861	0.859	3.02
11/10	278	0.4	9.36	1.02	940	2	0.882	0.880	3.03
11/12	276	1.1	9.36	0.00	860	114	0.957	0.953	2.53
11/15	305	0.0	9.65	0.00	295	180	3.177	3.177	0.53
11/17	306	1.1	9.36	0.00	410	150	2.225	2.217	0.92
11/19	319	1.6	9.36	0.00	719	349	1.323	1.316	0.69
11/22	295	1.3	9.50	0.00	568	555	1.571	1.564	0.34
11/24	207	0.0	9.65	0.65	997	44	0.638	0.638	3.00
11/26	287	1.8	9.36	0.00	645	262	1.326	1.318	0.83
11/29	337	0.3	9.14	0.00	865	102	1.134	1.133	2.91
12/01	334	0.6	9.22	0.37	841	80	1.166	1.164	2.59
12/03	263	0.4	9.36	1.00	1260	20	0.622	0.621	2.77
12/06	256	1.5	9.36	0.70	1864	80	0.409	0.407	2.93
12/08	238	4.3	9.65	1.00	2250	8	0.325	0.319	3.05
12/10	249	0.2	9.65	0.95	2013	24	0.380	0.380	2.98
12/13	339	0.6	9.50	0.00	1065	294	0.963	0.961	1.20
12/15	355	0.6	6.19	0.00	975	247	0.718	0.717	2.00
12/20	271	3.3	9.65	0.90	741	11	1.124	1.110	3.05
12/22	285	2.0	8.64	0.22	654	64	1.199	1.191	3.01
12/27	279	1.4	9.65	0.00	1274	201	0.673	0.670	2.06
MEAN	281	1.7	9.28	0.47	1001	122	1.042	1.036	2.28
S.DEV	39.65	2.59	.71	.46	477.1	141.73	.62	.62	.97
C V %	14	153.6	7.6	99.2	47.6	116	60.3	60.7	43

COMPOUND =ANTHRACENE THETA C = 6

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	202	0.7	9.65	0.52	1930	0	0.326	0.325	5.96
11/03	259	6.4	9.79	0.52	1660	0	0.493	0.481	5.96
11/05	254	13.0	9.07	0.50	1650	4	0.450	0.427	5.95
11/08	276	1.5	8.93	0.50	1640	4	0.485	0.482	5.96
11/10	278	0.7	9.50	0.00	1500	168	0.568	0.567	2.91
11/12	276	0.7	8.93	0.34	1670	34	0.476	0.475	6.02
11/15	305	0.0	8.93	0.52	1800	0	0.488	0.488	5.96
11/17	306	1.3	9.36	0.52	1778	0	0.520	0.517	5.96
11/19	319	1.6	9.65	0.52	2861	0	0.347	0.345	5.96
11/22	295	1.2	9.22	0.49	2067	6	0.424	0.423	6.02
11/24	207	1.6	9.22	0.40	1980	21	0.311	0.309	6.28
11/26	287	0.6	9.07	0.37	1886	37	0.445	0.444	5.73
11/29	337	1.5	9.07	0.00	1551	392	0.636	0.633	1.35
12/01	334	0.1	8.78	0.39	1444	19	0.655	0.655	6.20
12/08	238	1.4	8.93	0.00	398	115	1.723	1.712	1.20
12/10	249	1.2	9.65	0.05	1103	54	0.703	0.699	5.96
12/13	339	3.9	9.22	0.39	979	14	1.030	1.018	6.00
12/15	355	0.8	5.90	0.42	1180	20	0.573	0.571	6.04
12/17	268	1.4	9.36	0.07	1333	64	0.607	0.604	6.01
12/20	271	1.9	9.36	0.32	1283	27	0.638	0.633	6.08
12/22	285	3.3	8.78	0.50	1313	3	0.615	0.608	5.97
12/24	299	1.0	9.22	0.54	1523	0	0.584	0.582	5.74
12/27	279	1.4	5.90	0.24	1473	72	0.360	0.359	6.00
12/29	366	1.4	9.36	0.00	1150	296	0.961	0.957	1.29
MEAN	287	2.0	8.95	0.34	1548	56	0.601	0.596	5.27
S.DEV	41.98	2.69	.98	.2	463.07	98.62	.29	.29	1.66
C V %	14.6	132.9	10.9	59.9	29.9	175.3	49.2	49.3	31.6

COMPOUND =ANTHRACENE THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	550	28.0	9.36	3.08	630	16	2.611	2.478	0.97
11/12	500	20.0	8.93	3.13	730	0	1.954	1.876	1.00
11/19	390	86.0	9.36	3.00	336	8	3.471	2.706	0.99
12/03	420	36.0	9.65	3.04	948	14	1.366	1.249	1.00
12/10	410	37.0	9.50	2.95	427	13	2.914	2.651	0.99
12/17	410	76.0	9.22	0.00	183	98	6.600	5.376	0.63
12/24	455	18.0	9.36	3.13	262	0	5.193	4.988	1.00
12/29	455	37.0	8.93	3.04	530	8	2.449	2.250	1.00
MEAN	449	42.3	9.29	2.67	506	20	3.320	2.947	0.95
S.DEV	53.76	25.16	.25	1.08	256.48	32.23	1.74	1.46	.12
C V %	11.9	59.5	2.7	40.4	50.7	164.2	52.6	49.5	13.4

COMPOUND =ANTHRACENE THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.14

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	550	60.0	9.22	1.03	1040	2	1.553	1.383	3.00
11/12	500	14.0	9.36	0.00	860	114	1.733	1.685	2.53
11/19	390	29.0	9.36	0.00	719	349	1.617	1.497	0.69
11/26	360	72.0	9.36	0.00	645	262	1.664	1.331	0.83
12/03	420	46.0	9.36	1.00	1260	20	0.994	0.885	2.77
12/10	410	30.0	9.65	0.95	2013	24	0.626	0.580	2.98
12/17	410	90.0	9.65	0.00	629	381	2.003	1.563	0.54
MEAN	380	42.6	8.25	0.37	896	144	1.274	1.116	1.67
S.DEV	165.44	30.24	3.33	.51	581.94	161.99	.67	.58	1.26
C.V %	43.5	70.9	40.4	138.1	64.9	112.4	53.1	52.1	75.8

COMPOUND =ANTHRACENE THETA C = 6

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	550	81.0	9.07	0.50	1165	4	1.381	1.178	5.86
11/12	500	66.0	8.93	0.34	1670	34	0.862	0.749	6.02
11/19	390	8.0	9.65	0.52	2624	0	0.463	0.453	5.96
11/26	360	27.0	9.07	0.35	1886	37	0.558	0.517	5.95
12/10	410	39.0	9.65	0.05	1103	54	1.157	1.047	5.96
12/17	410	38.0	9.36	0.07	1333	64	0.929	0.843	6.01
12/24	455	10.0	9.22	0.54	1523	0	0.889	0.869	5.74
12/29	455	14.0	9.36	0.00	1150	296	1.195	1.158	1.29
MEAN	441	35.4	9.29	0.30	1557	61	0.929	0.852	5.35
S.DEV	61.91	26.61	.26	.22	512.17	98.03	.31	.27	1.64
C V %	14	75.2	2.8	76	32.9	160.3	33.7	32	30.7

COMPOUND =ANTHRACENE THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	128	40.0	9.65	3.10	400	2	0.987	0.678	1.00
11/10	116	48.0	9.07	3.10	470	2	0.715	0.419	1.00
11/12	122	51.0	8.93	3.13	730	0	0.477	0.277	1.00
11/15	93	33.0	9.36	3.10	370	2	0.748	0.481	1.00
11/17	94	28.0	9.50	3.09	343	4	0.832	0.584	0.99
11/24	110	31.0	9.65	2.98	623	14	0.544	0.391	1.00
11/29	158	50.0	9.65	3.13	885	0	0.550	0.376	1.00
12/01	128	36.0	8.93	3.10	1047	2	0.349	0.251	1.01
12/03	146	51.0	9.65	3.04	948	14	0.475	0.309	1.00
12/06	152	27.0	9.22	3.04	425	7	1.054	0.866	1.00
12/08	141	26.0	9.50	3.05	458	6	0.934	0.762	1.00
12/10	163	32.0	9.50	2.95	427	13	1.159	0.931	0.99
12/13	161	22.0	9.36	1.70	428	82	1.125	0.971	0.99
12/15	115	41.0	6.48	0.00	416	258	0.572	0.368	0.78
12/17	148	40.0	9.22	0.00	183	98	2.382	1.738	0.63
12/20	162	28.0	9.22	2.90	353	13	1.352	1.118	1.00
12/22	120	59.0	8.93	3.00	390	7	0.878	0.446	1.01
12/24	160	35.0	9.36	3.13	262	0	1.826	1.427	1.00
12/27	120	48.0	8.93	2.60	306	26	1.119	0.671	1.00
12/29	124	45.0	8.93	3.04	530	8	0.668	0.425	1.00
MEAN	133	38.6	9.15	2.66	500	28	0.937	0.675	0.97
S.DEV	22.46	10.32	.68	.96	232.03	60.24	.49	.4	.09
C V %	16.8	26.7	7.4	36.2	46.4	215.9	52.3	59.4	9.5

COMPOUND =ANTHRACENE THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.14

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	128	40.0	9.50	1.04	970	0	0.399	0.274	3.02
11/10	116	43.0	9.36	1.02	940	2	0.368	0.231	3.03
11/12	122	53.0	9.36	0.00	860	114	0.423	0.239	2.53
11/15	93	20.0	9.65	0.00	295	180	0.964	0.755	0.53
11/17	94	22.0	9.36	0.00	410	150	0.683	0.523	0.92
11/22	85	27.0	9.50	0.00	568	555	0.453	0.309	0.34
11/24	110	27.0	9.65	0.65	977	44	0.346	0.261	2.98
11/29	158	22.0	9.14	0.00	865	102	0.532	0.458	2.91
12/01	128	28.0	9.22	0.37	841	80	0.447	0.349	2.59
12/03	146	17.0	9.36	1.00	1260	20	0.345	0.305	2.77
12/06	152	20.0	9.36	0.70	1864	80	0.243	0.211	2.93
12/08	141	25.0	9.65	1.00	2250	8	0.193	0.158	3.05
12/10	163	19.0	9.65	0.95	2013	24	0.249	0.220	2.98
12/13	161	12.0	9.50	0.00	1065	294	0.457	0.423	1.20
12/15	115	35.0	6.19	0.00	975	247	0.233	0.162	2.00
12/17	148	41.0	9.65	0.00	629	381	0.723	0.523	0.54
12/20	162	40.0	9.65	0.90	741	11	0.672	0.506	3.05
12/22	120	44.0	8.64	0.22	654	64	0.505	0.320	3.01
12/27	120	32.0	9.65	0.00	1274	201	0.289	0.212	2.06
MEAN	130	29.8	9.27	0.41	1024	135	0.449	0.339	2.23
S.DEV	24.56	11.13	.78	.45	521.55	148.17	.19	.15	.99
C V %	18.9	37.3	8.4	109.5	50.9	110.1	44.1	45.8	44.7

COMPOUND =ANTHRACENE THETA C = 6

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	128	43.0	8.93	0.50	1640	4	0.225	0.149	5.96
11/10	116	47.0	9.50	0.00	1500	168	0.237	0.141	2.91
11/12	122	52.5	8.93	0.34	1670	34	0.210	0.120	6.02
11/15	93	31.0	8.93	0.52	1800	0	0.148	0.098	5.96
11/17	94	28.0	9.36	0.52	1778	0	0.160	0.112	5.96
11/22	85	31.0	9.22	0.49	2067	6	0.122	0.078	6.02
11/24	110	25.0	9.22	0.40	1980	21	0.165	0.128	6.28
11/26	123	18.0	9.07	0.37	1880	37	0.191	0.163	5.73
11/29	158	9.0	9.07	0.00	1551	392	0.298	0.281	1.35
12/01	128	17.0	8.78	0.39	1444	19	0.251	0.218	6.20
12/08	141	15.0	8.93	0.00	398	115	1.021	0.912	1.20
12/10	163	23.0	9.65	0.05	1103	54	0.460	0.395	5.96
12/13	161	18.0	9.22	0.39	979	14	0.489	0.434	6.00
12/15	115	19.0	5.90	0.42	1180	20	0.185	0.155	6.04
12/17	148	16.0	9.36	0.07	1335	64	0.335	0.299	6.02
12/20	162	44.0	9.36	0.32	1283	27	0.381	0.278	6.08
12/22	120	35.0	8.78	0.50	1313	3	0.259	0.183	5.97
12/24	160	12.0	9.22	0.54	1523	0	0.312	0.289	5.74
12/27	120	38.0	5.90	0.24	1473	72	0.155	0.106	6.00
12/29	124	10.0	9.36	0.00	1150	296	0.326	0.299	1.29
MEAN	129	26.6	8.83	0.30	1452	67	0.297	0.242	5.13
S.DEV	24.13	13.09	1.03	.2	387.38	104.89	.19	.18	1.8
C V %	18.7	49.2	11.6	67.5	26.6	155.8	66.9	77.5	35

COMPOUND =DIMETHYL PHTHALATE THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	180	5.8	9.50	2.96	410	9	1.345	1.302	1.00
11/03	244	11.9	9.50	2.80	430	19	1.739	1.654	1.00
11/05	262	7.5	9.50	2.97	450	9	1.784	1.733	1.00
11/08	286	6.1	9.50	2.99	520	9	1.685	1.650	1.00
11/12	315	5.0	9.50	3.08	530	2	1.821	1.792	1.00
11/15	360	3.3	9.50	2.89	500	16	2.206	2.186	1.00
11/17	331	3.2	9.50	2.91	630	18	1.610	1.595	1.00
11/19	366	1.0	9.22	2.97	490	10	2.222	2.215	1.00
11/22	336	4.0	9.36	2.95	600	14	1.691	1.671	1.00
11/24	290	2.9	9.50	2.95	960	22	0.926	0.916	1.00
11/26	285	3.2	9.50	2.95	520	12	1.680	1.661	1.00
11/29	324	2.1	9.50	2.64	480	32	2.069	2.055	1.00
12/01	364	6.9	9.50	2.76	560	28	1.992	1.954	1.00
12/03	314	3.3	9.50	2.72	570	32	1.688	1.670	1.00
12/06	295	6.7	9.50	2.43	420	40	2.152	2.104	1.00
12/08	327	9.0	8.06	2.84	570	28	1.492	1.451	1.00
12/10	270	7.5	9.50	2.39	400	40	2.069	2.011	1.00
12/13	345	18.8	9.50	2.57	470	36	2.249	2.127	1.00
12/15	411	19.5	9.22	2.61	430	32	2.843	2.708	1.00
12/17	329	11.9	9.22	2.66	480	32	2.039	1.965	1.00
12/20	312	7.2	9.50	2.47	400	36	2.390	2.335	1.00
12/22	300	2.1	9.50	2.59	350	26	2.627	2.608	1.00
12/24	310	0.0	9.50	3.10	419	0	2.267	2.267	1.00
12/27	306	0.6	9.50	2.70	408	15	2.298	2.294	1.05
12/29	352	3.7	9.50	3.02	281	2	3.839	3.798	1.01
MEAN	313	6.1	9.40	2.80	491	21	2.029	1.989	1.00
S.DEV	45.95	5	.29	.2	126.77	12.41	.55	.55	.01
C V %	14.7	81.7	3.1	7.4	25.8	59.7	27.5	27.7	1

COMPOUND =DIMETHYL PHTHALATE THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	180	1.6	9.22	0.34	690	54	0.776	0.769	3.00
11/03	244	7.5	9.22	0.34	880	69	0.825	0.799	2.99
11/05	262	12.9	9.22	0.00	540	81	1.443	1.372	2.24
11/08	286	5.3	9.22	0.00	720	110	1.181	1.160	2.20
11/12	315	1.0	9.22	0.99	790	4	1.186	1.182	3.00
11/15	360	2.6	9.22	0.82	1100	28	0.973	0.966	3.00
11/17	331	1.1	9.22	0.90	1280	20	0.769	0.767	3.01
11/19	366	0.2	8.93	0.97	1350	10	0.781	0.781	3.01
11/22	336	0.3	9.07	0.97	1710	14	0.575	0.574	2.99
11/24	290	0.1	9.22	0.98	1680	10	0.513	0.513	3.01
11/26	285	1.4	9.22	0.80	1470	40	0.577	0.574	3.01
11/29	324	0.2	9.22	0.91	1320	20	0.730	0.730	2.99
12/01	364	0.2	9.22	0.95	1130	12	0.958	0.958	2.99
12/03	314	0.4	9.22	0.00	1200	224	0.778	0.777	1.80
12/06	295	4.6	9.22	0.00	900	380	0.975	0.960	0.80
12/08	327	1.4	8.35	0.84	1270	32	0.694	0.691	3.01
12/13	345	2.2	9.22	0.35	1500	116	0.684	0.680	2.99
12/15	411	3.1	9.22	0.41	1470	104	0.832	0.825	3.00
12/17	329	2.5	9.22	0.42	1310	92	0.747	0.741	2.99
12/20	312	3.5	9.22	0.71	1280	48	0.725	0.717	3.01
12/22	300	3.3	9.22	0.91	1110	16	0.804	0.795	3.01
12/24	310	0.9	9.22	1.03	986	0	0.935	0.932	3.01
12/27	306	0.6	9.22	0.87	1008	12	0.903	0.901	3.20
12/29	352	1.7	9.22	0.72	1023	26	1.023	1.018	3.31
MEAN	302	2.3	8.80	0.61	1109	61	0.815	0.807	2.70
S.DEV	77.36	2.87	1.84	.38	379.03	83.94	.26	.26	.77
C V %	25.6	122.6	20.9	62.4	34.1	137.8	32.9	32.2	28.6

COMPOUND =DIMETHYL PHTHHLATE THETA C = 6

PARAMETER =BOD VOLUME-REACTOR = 3.3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	180	1.6	9.79	0.40	1730	29	0.309	0.306	5.92
11/03	244	2.3	9.79	0.00	1000	360	0.724	0.717	0.94
11/05	262	12.2	9.79	0.37	1510	29	0.515	0.491	5.99
11/08	286	6.0	9.79	0.00	620	144	1.368	1.340	1.45
11/12	315	3.0	9.79	0.27	890	26	1.050	1.040	6.02
11/15	360	4.9	9.79	0.40	900	14	1.187	1.171	6.04
11/17	331	3.6	9.79	0.00	760	152	1.292	1.278	1.69
11/19	366	0.7	9.79	0.00	650	124	1.670	1.667	1.77
11/22	336	2.8	9.79	0.00	700	110	1.424	1.412	2.15
11/24	290	0.0	9.79	0.49	880	6	0.978	0.978	5.96
11/26	285	0.4	9.79	0.00	910	120	0.929	0.928	2.56
11/29	324	1.0	9.79	0.00	720	160	1.335	1.331	1.52
12/01	364	0.3	9.79	0.00	690	108	1.565	1.564	2.15
12/03	314	2.2	9.79	0.00	570	192	1.634	1.623	1.00
12/06	295	0.8	9.79	0.00	520	244	1.683	1.678	0.72
12/08	327	11.6	10.08	0.00	850	60	1.175	1.133	4.64
12/10	270	2.2	9.79	0.33	1030	24	0.778	0.771	6.00
12/13	345	2.9	9.79	0.25	1670	52	0.613	0.608	6.03
12/15	411	3.7	9.79	0.46	1270	12	0.960	0.951	6.02
12/17	329	3.1	9.79	0.46	1660	16	0.588	0.582	6.00
12/20	312	2.9	9.79	0.48	1680	12	0.551	0.546	6.04
12/22	300	3.2	9.79	0.47	1420	12	0.627	0.620	6.01
12/24	310	1.6	9.79	0.47	1490	9	0.617	0.614	6.27
12/27	306	0.5	9.79	0.46	1472	10	0.617	0.616	6.31
12/29	352	1.6	9.79	0.37	1806	24	0.578	0.576	6.66
MEAN	313	3.0	9.80	0.23	1096	82	0.991	0.982	4.23
S.DEV	45.95	3.04	.05	.21	425.44	89.43	.41	.41	2.25
C V %	14.7	101.5	.5	94	38.8	109.1	42.2	42.4	53.2

COMPOUND =DIMETHYL PHTHALATE THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	810	33.0	9.50	2.97	450	9	5.516	5.291	1.00
11/12	420	66.0	9.50	3.08	530	2	2.428	2.047	1.00
11/19	468	59.0	9.22	2.97	490	10	2.841	2.483	1.00
11/26	450	72.0	9.50	2.95	520	12	2.652	2.228	1.00
12/03	550	94.0	9.50	2.72	570	32	2.957	2.452	1.00
12/10	490	53.0	9.50	2.39	400	40	3.754	3.348	1.00
12/17	380	35.0	9.22	2.66	480	32	2.355	2.138	1.00
12/24	475	28.0	9.50	3.10	419	0	3.474	3.269	1.00
MEAN	505	55.0	9.43	2.86	482	17	3.247	2.907	1.00
S.DEV	132.78	22.56	.12	.24	57.66	15.26	1.03	1.08	0
C V %	26.2	41	1.3	8.5	11.9	89.1	31.9	37.2	0

COMPOUND =DIMETHYL PHTHALATE THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	810	37.0	9.22	0.00	540	81	4.461	4.258	2.24
11/19	468	8.0	8.93	0.97	1350	10	0.999	0.982	3.01
11/26	450	23.0	9.22	0.80	1470	40	0.910	0.864	3.01
12/03	550	24.0	9.22	0.00	1200	224	1.363	1.304	1.80
12/10	490	31.0	9.22	1.03	1500	0	0.972	0.910	3.01
12/17	380	50.0	9.22	0.42	1310	92	0.863	0.749	2.99
12/24	475	18.0	9.22	1.03	986	0	1.433	1.379	3.01
MEAN	453	23.9	8.03	0.53	1045	56	1.375	1.306	2.38
S.DEV	223.44	15.86	3.24	.48	524.46	77.39	1.32	1.26	1.06
C V %	49.3	66.4	40.4	90.5	50.2	138.5	96	96.8	44.7

COMPOUND =DIMETHYL PHTHALATE THETA C = 6

PARAMETER =COD VOLUME-REACTOR = 3.3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	810	37.0	9.79	0.37	1510	29	1.591	1.519	5.99
11/12	420	88.0	9.79	0.27	890	26	1.400	1.107	6.02
11/19	468	24.0	9.79	0.00	650	124	2.136	2.026	1.77
11/26	450	15.0	9.79	0.00	910	120	1.467	1.418	2.56
12/03	550	43.0	9.79	0.00	570	192	2.863	2.639	1.00
12/10	490	43.0	9.79	0.33	1030	24	1.411	1.287	6.00
12/17	380	38.0	9.79	0.46	1660	16	0.679	0.611	6.00
12/24	475	18.0	9.79	0.47	1490	9	0.946	0.910	6.27
MEAN	505	38.3	9.79	0.24	1089	68	1.562	1.440	4.45
S.DEV	132.78	22.91	0	.2	414.26	68.26	.68	.64	2.25
C V %	26.2	59.9	0	87.1	38	101.1	43.5	44.6	50.6

COMPOUND =DIMETHYL PHTHALATE THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	130	49.5	9.50	2.99	520	9	0.766	0.474	1.00
11/10	133	46.0	9.50	3.00	1060	16	0.385	0.252	1.00
11/12	146	48.5	9.50	3.08	530	2	0.844	0.564	1.00
11/15	106	31.0	9.50	2.89	500	16	0.650	0.460	1.00
11/17	111	22.0	9.50	2.91	630	18	0.540	0.433	1.00
11/19	107	36.0	9.22	2.97	490	10	0.649	0.431	1.00
11/22	116	25.0	9.36	2.95	600	14	0.584	0.458	1.00
11/24	110	21.0	9.50	2.95	960	22	0.351	0.284	1.00
11/26	171	25.5	9.50	2.95	520	12	1.008	0.857	1.00
11/29	171	30.0	9.50	2.64	480	32	1.092	0.900	1.00
12/01	136	8.0	9.50	2.76	560	28	0.744	0.700	1.00
12/03	169	30.0	9.50	2.72	570	32	0.909	0.747	1.00
12/06	173	29.0	9.50	2.43	420	40	1.262	1.051	1.00
12/08	154	47.0	8.06	2.84	570	28	0.702	0.488	1.00
12/10	173	31.0	9.50	2.39	400	40	1.325	1.088	1.00
12/13	128	22.0	9.50	2.57	470	36	0.835	0.691	1.00
12/15	169	30.0	9.22	2.61	430	32	1.169	0.961	1.00
12/17	143	32.0	9.22	2.66	480	32	0.886	0.688	1.00
12/20	218	30.0	9.50	2.47	400	36	1.670	1.440	1.00
12/22	184	58.0	9.50	2.59	350	26	1.611	1.103	1.00
12/24	194	40.0	9.50	3.10	419	0	1.419	1.126	1.00
12/27	148	31.0	9.50	2.70	408	15	1.112	0.879	1.05
12/29	131	36.0	9.50	3.02	281	2	1.429	1.036	1.01
MEAN	149	33.0	9.39	2.79	524	22	0.954	0.744	1.00
S.DEV	30.31	11.21	.3	.21	174.86	12.47	.37	.31	.01
C V %	20.3	33.9	3.2	7.7	33.3	57.6	39.1	42	1

COMPOUND =DIMETHYL PHTHALATE THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	130	48.0	9.22	0.00	720	110	0.537	0.339	2.20
11/10	133	46.0	9.22	0.83	1000	23	0.396	0.259	3.03
11/12	146	50.0	9.22	0.99	790	4	0.550	0.361	3.00
11/15	106	35.0	9.22	0.82	1100	28	0.287	0.192	3.00
11/17	111	29.0	9.22	0.90	1280	20	0.258	0.191	3.01
11/19	107	34.0	8.93	0.97	1350	10	0.228	0.156	3.01
11/22	116	24.0	9.07	0.97	1710	14	0.198	0.157	2.99
11/24	110	17.0	9.22	0.98	1680	10	0.195	0.165	3.01
11/26	171	16.5	9.22	0.80	1470	40	0.346	0.313	3.01
11/29	171	19.0	9.22	0.91	1320	20	0.385	0.342	2.99
12/01	136	15.5	9.22	0.95	1130	12	0.358	0.317	2.99
12/03	169	9.0	9.22	0.00	1200	224	0.419	0.397	1.80
12/06	173	17.0	9.22	0.00	900	380	0.572	0.516	0.80
12/08	154	9.0	8.35	0.84	1270	32	0.327	0.308	3.01
12/10	173	12.0	9.22	1.03	1500	0	0.343	0.319	3.01
12/13	128	22.0	9.22	0.35	1500	116	0.254	0.210	2.99
12/15	169	36.0	9.22	0.41	1470	104	0.342	0.269	3.00
12/17	143	19.0	9.22	0.42	1310	92	0.325	0.282	2.99
12/20	218	38.0	9.22	0.71	1280	48	0.507	0.418	3.01
12/22	184	5.0	9.22	0.91	1110	16	0.493	0.480	3.01
12/24	194	48.0	9.22	1.03	986	0	0.585	0.440	3.01
12/27	148	22.0	9.22	0.87	1008	12	0.437	0.372	3.20
12/29	131	13.0	9.22	0.72	1023	26	0.381	0.343	3.31
MEAN	149	25.4	9.16	0.71	1222	58	0.379	0.311	2.84
S.DEV	30.31	13.83	.18	.34	264.34	87.87	.11	.1	.54
C V %	20.3	54.5	2	47.7	21.6	150.7	31.1	32.7	19.1

COMPOUND =DIMETHYL PHTHALATE THETA C = 6

PARAMETER =TOC VOLUME-REACTOR = 3.3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	130	45.5	9.79	0.00	620	144	0.622	0.404	1.45
11/10	133	61.0	9.79	0.00	780	69	0.506	0.274	3.81
11/12	146	47.0	9.79	0.27	890	26	0.487	0.330	6.02
11/15	106	32.0	9.79	0.40	900	14	0.349	0.244	6.04
11/17	111	20.0	9.79	0.00	760	152	0.433	0.355	1.69
11/19	107	33.0	9.79	0.00	650	124	0.488	0.338	1.77
11/22	116	60.0	9.79	0.00	700	110	0.492	0.237	2.15
11/24	110	19.0	9.79	0.49	880	6	0.371	0.307	5.96
11/26	171	41.0	9.79	0.00	910	120	0.557	0.424	2.56
11/29	171	25.5	9.79	0.00	720	160	0.705	0.600	1.52
12/01	136	29.0	9.79	0.00	690	108	0.585	0.460	2.15
12/03	169	15.0	9.79	0.00	570	192	0.880	0.802	1.00
12/06	173	33.0	9.79	0.00	520	244	0.987	0.799	0.72
12/08	154	11.0	10.08	0.00	850	60	0.553	0.514	4.64
12/10	173	22.0	9.79	0.33	1030	24	0.498	0.435	6.00
12/13	128	27.0	9.79	0.25	1670	52	0.227	0.179	6.03
12/15	169	28.0	9.79	0.46	1270	12	0.395	0.329	6.02
12/17	143	36.0	9.79	0.46	1660	16	0.256	0.191	6.00
12/20	218	23.0	9.79	0.48	1680	12	0.385	0.344	6.04
12/22	184	27.0	9.79	0.47	1420	12	0.384	0.328	6.01
12/24	194	3.0	9.79	0.47	1490	9	0.386	0.380	6.27
12/27	148	23.0	9.79	0.46	1472	10	0.298	0.252	6.31
12/29	131	28.0	9.79	0.37	1806	24	0.215	0.169	6.66
MEAN	149	30.0	9.80	0.21	1041	74	0.481	0.378	4.21
S.DEV	30.31	14	.06	.21	415.12	69.97	.18	.16	2.18
C V %	20.3	46.7	.6	101.8	39.8	94.6	39.4	44.9	51.9

COMPOUND =HEXACHLOROETHANE THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	205	11.0	9.50	2.83	379	18	1.621	1.534	1.01
11/03	245	12.2	9.50	2.50	395	36	1.859	1.766	1.01
11/05	219	11.5	9.50	2.94	555	18	1.183	1.120	1.01
11/08	319	11.2	9.40	3.10	300	0	3.153	3.042	1.02
11/10	322	3.1	9.50	3.00	310	6	3.113	3.083	1.01
11/12	322	6.2	9.50	3.10	386	4	2.500	2.452	1.00
11/15	355	10.0	9.50	3.10	260	3	4.092	3.977	1.00
11/17	357	8.4	9.50	3.10	771	0	1.388	1.355	1.02
11/19	362	2.1	9.50	3.10	894	0	1.213	1.206	1.02
11/22	302	3.0	9.50	3.17	1285	0	0.704	0.697	1.00
11/24	270	3.5	9.50	3.11	1296	12	0.624	0.616	1.00
11/26	234	1.7	9.50	2.96	1068	25	0.657	0.652	1.02
11/29	251	2.7	9.50	3.06	633	11	1.188	1.176	1.00
12/01	322	5.8	9.50	3.17	1257	0	0.768	0.754	1.00
12/03	239	1.2	9.50	3.17	971	0	0.738	0.734	1.00
12/06	245	1.6	9.50	3.01	501	12	1.466	1.456	1.00
12/08	218	2.6	9.50	3.00	447	12	1.462	1.444	1.00
12/10	221	2.2	9.50	2.45	322	33	2.057	2.036	1.00
12/13	330	5.2	9.50	2.95	437	15	2.263	2.227	1.00
12/15	307	4.6	9.50	2.96	314	10	2.930	2.886	1.00
12/17	298	4.5	9.50	3.05	561	10	1.592	1.568	1.00
12/20	240	2.4	9.50	1.55	480	98	1.498	1.483	1.00
12/22	249	6.2	9.50	0.89	325	86	2.296	2.239	1.00
12/24	266	2.0	9.50	3.17	490	0	1.627	1.615	1.00
12/27	268	1.8	9.50	2.97	482	15	1.666	1.655	1.00
12/29	261	2.5	9.50	3.05	323	6	2.422	2.398	1.00
MEAN	278	5.0	9.50	2.86	594	17	1.772	1.737	1.00
S.DEV	47.38	3.55	.01	.52	328.59	24.36	.87	.85	0
C V %	17	71.4	.2	18.3	55.3	147.3	49.5	49.2	.8

COMPOUND =HEXACHLOROETHANE THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	205	1.1	9.50	0.98	908	8	0.677	0.673	3.00
11/03	245	9.7	9.50	0.65	735	12	0.999	0.959	3.99
11/05	219	10.7	9.50	0.95	1026	34	0.640	0.608	2.57
11/08	319	5.1	9.50	1.00	1030	4	0.928	0.913	3.07
11/10	322	5.6	9.50	0.61	1170	59	0.825	0.810	3.00
11/12	322	1.4	9.50	0.56	1150	64	0.839	0.835	3.00
11/15	355	1.0	9.50	0.58	1210	66	0.879	0.877	2.97
11/17	357	0.7	9.50	1.00	1168	6	0.916	0.914	3.04
11/19	362	0.7	9.50	1.00	859	1	1.263	1.260	3.14
11/22	302	0.1	9.50	1.00	1092	0	0.829	0.829	3.17
11/24	270	5.0	9.50	0.95	1102	15	0.734	0.721	2.97
11/26	234	1.7	9.50	0.81	998	30	0.703	0.698	2.96
11/29	251	0.6	9.50	1.00	1488	6	0.506	0.504	3.06
12/01	322	1.0	9.50	1.00	995	6	0.970	0.967	3.02
12/03	239	1.0	9.50	1.04	848	2	0.845	0.841	2.99
12/06	245	0.9	9.50	0.20	885	98	0.830	0.827	2.58
12/08	218	1.5	9.50	0.20	823	149	0.794	0.788	1.68
12/10	221	6.9	9.50	0.57	760	41	0.871	0.844	3.01
12/13	330	2.2	9.50	0.10	310	130	3.190	3.169	0.78
12/15	307	1.6	9.50	0.88	437	9	2.105	2.094	3.00
12/17	298	1.5	9.50	1.05	891	0	1.002	0.997	3.02
12/20	240	3.3	9.50	0.05	542	466	1.327	1.309	0.39
12/22	249	3.0	9.50	1.05	676	0	1.104	1.091	3.02
12/24	266	0.3	9.50	1.05	810	0	0.984	0.983	3.02
12/27	268	0.6	9.50	0.97	1084	11	0.741	0.739	3.00
12/29	261	3.4	9.50	0.98	1316	11	0.594	0.587	3.02
MEAN	278	2.7	9.50	0.78	935	47	1.004	0.994	2.79
S.DEV	47.38	2.84	0	.32	265.28	94.74	.54	.53	.74
C V %	17	104.7	0	41.5	28.3	200.6	53.8	54.1	26.5

COMPOUND =HEXACHLOROETHANE THETA C = 6

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	205	1.0	9.50	0.53	1430	0	0.430	0.428	5.98
11/03	245	0.9	9.50	0.48	1480	6	0.496	0.494	6.14
11/05	219	2.0	9.50	0.45	1300	11	0.505	0.500	6.02
11/08	319	2.4	9.50	0.47	1470	8	0.650	0.645	6.11
11/10	322	1.5	9.50	0.52	1658	1	0.582	0.579	6.03
11/12	322	0.1	9.50	0.51	1340	3	0.720	0.720	5.98
11/15	355	0.5	9.50	0.52	1700	0	0.626	0.625	6.10
11/17	357	0.9	9.50	0.45	977	8	1.095	1.092	6.05
11/19	362	0.5	9.50	0.51	1386	3	0.783	0.782	5.99
11/22	302	0.5	9.50	0.51	1496	2	0.605	0.604	6.07
11/24	270	1.5	9.50	0.53	1502	0	0.539	0.536	5.98
11/26	234	0.5	9.50	0.23	1197	38	0.586	0.585	6.05
11/29	251	0.3	9.50	0.52	2016	2	0.373	0.373	5.99
12/01	322	2.4	9.50	0.36	1404	25	0.687	0.682	6.06
12/03	239	0.6	9.50	0.53	1233	0	0.581	0.579	5.98
12/06	245	0.5	9.50	0.39	1680	24	0.437	0.436	6.09
12/08	218	1.9	9.50	0.27	1400	39	0.467	0.463	6.01
12/10	221	0.8	9.50	0.33	1705	38	0.388	0.387	5.99
12/13	330	1.6	9.50	0.10	1524	86	0.649	0.646	5.03
12/15	307	3.1	9.50	0.40	1510	21	0.609	0.603	6.02
12/17	298	1.9	9.50	0.53	1531	0	0.583	0.580	5.98
12/20	240	2.1	9.50	0.05	1706	113	0.422	0.418	4.69
12/22	249	1.8	9.50	0.44	1381	13	0.540	0.536	6.03
12/24	266	0.2	9.50	0.36	1508	28	0.529	0.528	5.98
12/27	268	1.4	9.50	0.53	1613	0	0.498	0.495	5.98
12/29	261	2.6	9.50	0.43	1399	15	0.559	0.554	6.01
MEAN	278	1.3	9.50	0.42	1483	19	0.575	0.572	5.94
S.DEV	47.38	.83	0	.13	201.95	27.34	.14	.14	.32
C V %	17	65.2	0	31.4	13.6	146.9	25.4	25.5	5.4

COMPOUND =HEXACHLOROETHANE THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	640	43.0	9.50	2.94	555	18	3.456	3.224	1.01
11/12	640	60.0	9.50	3.10	386	4	4.969	4.503	1.00
11/19	430	41.0	9.50	3.10	894	0	1.441	1.304	1.02
11/26	510	67.0	9.50	2.96	1068	25	1.431	1.243	1.02
12/03	420	33.0	9.50	3.17	971	0	1.296	1.194	1.00
12/10	425	59.0	9.50	2.45	322	33	3.955	3.406	1.00
12/17	395	48.0	9.50	3.05	561	10	2.110	1.854	1.00
12/24	420	16.0	9.50	3.17	490	0	2.569	2.471	1.00
MEAN	485	45.9	9.50	2.99	656	11	2.653	2.400	1.01
S.DEV	101.31	16.53	0	.23	282.04	12.76	1.35	1.21	0
C V %	20.8	36	0	7.9	43	113.5	50.9	50.8	.8

COMPOUND =HEXACHLOROETHANE THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	640	40.0	9.50	0.95	1026	34	1.869	1.753	2.57
11/12	640	14.0	9.50	0.56	1150	64	1.668	1.631	3.00
11/19	430	3.0	9.50	1.00	859	1	1.500	1.490	3.14
11/26	510	50.0	9.50	0.81	998	30	1.531	1.381	2.96
12/03	420	96.0	9.50	1.04	848	2	1.484	1.145	2.99
12/10	425	31.0	9.50	0.58	760	41	1.676	1.554	3.00
12/17	395	38.0	9.50	1.05	891	0	1.329	1.201	3.02
MEAN	494	38.9	9.50	0.86	933	25	1.580	1.451	2.95
S.DEV	105.68	29.87	0	.21	131.88	24.53	.17	.22	.17
C V %	21.3	76.8	0	24.7	14.1	99.8	11	15.3	6

COMPOUND =HEXACHLOROETHANE THETA C = 6

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	640	14.0	9.50	0.45	1300	11	1.475	1.443	6.02
11/12	640	28.0	9.50	0.51	1340	3	1.431	1.369	5.98
11/19	430	3.0	9.50	0.51	1386	3	0.930	0.923	5.99
11/22	510	35.0	9.50	0.23	1197	38	1.277	1.189	6.05
12/03	420	83.0	9.50	0.53	1233	0	1.021	0.819	5.98
12/10	425	37.0	9.50	0.33	1705	38	0.747	0.682	5.99
12/17	395	38.0	9.50	0.53	1531	0	0.773	0.699	5.98
12/24	420	12.0	9.50	0.36	1508	28	0.835	0.811	5.98
MEAN	485	31.3	9.50	0.43	1400	15	1.061	0.992	6.00
S.DEV	101.31	24.63	0	.11	171.02	16.82	.29	.3	.02
C V %	20.8	78.8	0	26.2	12.2	111.2	27.7	30.3	.4

COMPOUND =HEXACHLOROETHANE THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	131	48.0	9.50	3.10	300	0	1.309	0.829	1.02
11/12	129	56.5	9.50	3.10	386	4	1.002	0.563	1.00
11/15	95	30.0	9.50	3.10	260	3	1.095	0.749	1.00
11/17	115	29.0	9.50	3.10	771	0	0.447	0.334	1.02
11/19	96	40.5	9.50	3.10	894	0	0.322	0.186	1.02
11/22	92	34.0	9.50	3.17	1285	0	0.215	0.135	1.00
11/24	94	34.0	9.50	3.11	1296	12	0.217	0.139	1.00
11/26	169	34.0	9.50	3.96	1068	25	0.474	0.379	0.78
11/29	104	48.0	9.50	3.06	633	11	0.492	0.265	1.00
12/01	131	35.0	9.50	3.17	1257	0	0.312	0.229	1.00
12/03	176	34.0	9.50	3.17	971	0	0.543	0.438	1.00
12/06	149	22.0	9.50	3.01	501	12	0.888	0.757	1.00
12/08	134	20.0	9.50	3.00	447	12	0.895	0.761	1.00
12/10	154	22.0	9.50	2.45	322	33	1.433	1.229	1.00
12/13	150	45.0	9.50	2.95	437	15	1.029	0.720	1.00
12/15	142	30.0	9.50	2.96	314	10	1.355	1.069	1.00
12/17	136	42.0	9.50	3.05	561	10	0.727	0.502	1.00
12/20	148	28.0	9.50	1.54	480	98	0.924	0.749	1.00
12/22	139	53.0	9.50	0.89	325	86	1.282	0.793	1.00
12/24	176	6.0	9.50	3.17	490	0	1.076	1.040	1.00
12/27	149	37.0	9.50	2.97	482	15	0.926	0.696	1.00
12/29	150	37.0	9.50	3.05	323	6	1.392	1.048	1.00
MEAN	134	34.8	9.50	2.92	627	16	0.834	0.619	0.99
S.DEV	25.83	11.65	0	.61	345.49	26.13	.4	.32	.04
C V %	19.2	33.5	0	20.9	55	163.3	48	52.5	4.9

COMPOUND =HEXACHLOROETHANE THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/10	128	59.0	9.50	0.61	1170	59	0.328	0.177	3.00
11/12	129	46.0	9.50	0.56	1150	64	0.336	0.216	3.00
11/15	95	23.0	9.50	0.58	1210	66	0.235	0.178	2.97
11/17	115	25.0	9.50	1.00	1168	6	0.295	0.231	3.04
11/19	96	27.0	9.50	1.00	859	1	0.335	0.241	3.14
11/22	92	22.0	9.50	1.00	1092	0	0.252	0.192	3.17
11/24	94	27.0	9.50	0.95	1102	15	0.256	0.182	2.97
11/26	169	18.0	9.50	0.81	998	30	0.507	0.453	2.96
11/29	104	30.0	9.50	1.00	1488	6	0.209	0.149	3.06
12/01	131	20.0	9.50	1.00	995	6	0.395	0.334	3.02
12/03	176	23.0	9.50	1.04	848	2	0.622	0.541	2.99
12/06	149	23.0	9.50	0.20	885	98	0.503	0.425	2.58
12/08	114	15.0	9.50	0.20	823	149	0.413	0.359	1.68
12/10	154	22.0	9.50	0.58	760	41	0.607	0.521	3.00
12/13	150	19.0	9.50	0.10	310	130	1.450	1.266	0.78
12/15	142	18.0	9.50	0.88	437	9	0.974	0.850	3.00
12/17	136	15.0	9.50	1.05	891	0	0.457	0.407	3.02
12/20	148	32.0	9.50	0.05	542	466	0.818	0.641	0.39
12/22	139	24.0	9.50	1.05	676	0	0.616	0.510	3.02
12/24	176	44.0	9.50	1.05	810	0	0.651	0.488	3.02
12/27	149	48.0	9.50	0.97	1084	11	0.412	0.279	3.00
12/29	150	14.0	9.50	0.98	1316	11	0.342	0.310	3.02
MEAN	133	27.0	9.50	0.76	937	53	0.501	0.407	2.72
S.DEV	26.24	11.93	0	.34	284.62	102.07	.28	.26	.75
C V %	19.6	44.2	0	45.2	30.3	191.9	57.5	64.3	27.7

COMPOUND =HEXACHLOROETHANE THETA C = 6

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	131	46.0	9.50	0.47	1470	8	0.267	0.173	6.11
11/10	128	46.0	9.50	0.52	1628	1	0.236	0.151	6.03
11/12	129	45.0	9.50	0.51	1340	3	0.289	0.188	5.98
11/15	95	27.0	9.50	0.52	1700	0	0.167	0.120	6.10
11/17	115	28.0	9.50	0.45	977	8	0.353	0.267	6.05
11/19	96	29.0	9.50	0.51	1386	3	0.208	0.145	5.99
11/22	92	27.0	9.50	0.51	1496	2	0.184	0.130	6.07
11/24	94	26.0	9.50	0.53	1502	0	0.188	0.136	5.98
11/26	169	35.0	9.50	0.23	1197	38	0.423	0.335	6.05
11/29	104	53.0	9.50	0.52	2016	2	0.155	0.076	5.99
12/01	131	35.0	9.50	0.36	1404	25	0.280	0.205	6.06
12/03	176	38.0	9.50	0.53	1233	0	0.428	0.335	5.98
12/06	149	23.0	9.50	0.39	1680	24	0.265	0.224	6.09
12/08	134	45.0	9.50	0.27	1400	39	0.286	0.189	6.01
12/10	154	37.0	9.50	0.33	1705	38	0.271	0.206	5.99
12/13	150	25.0	9.50	0.10	1524	86	0.295	0.246	5.03
12/15	142	30.0	9.50	0.40	1510	21	0.282	0.222	6.02
12/17	136	24.0	9.50	0.53	1531	0	0.266	0.219	5.98
12/20	148	32.0	9.50	0.05	1706	113	0.260	0.204	4.69
12/22	139	30.0	9.50	0.44	1381	13	0.302	0.237	6.03
12/24	176	9.0	9.50	0.36	1508	28	0.350	0.332	5.98
12/27	149	37.0	9.50	0.53	1613	0	0.277	0.208	5.98
12/29	150	11.0	9.50	0.43	1399	15	0.321	0.298	6.01
MEAN	134	32.1	9.50	0.41	1492	20	0.276	0.211	5.92
S.DEV	25.27	10.78	0	.13	210.2	28.65	.07	.06	.34
C V %	18.8	33.6	0	33.5	14	141.1	25.4	33.2	5.7

COMPOUND =COMBINED THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/1	191	1.2	8.93	2.96	780	5	0.729	0.724	1.00
11/3	278	3.7	8.93	2.79	530	18	1.561	1.541	1.00
11/5	273	6.3	8.93	2.90	610	10	1.332	1.301	1.00
11/8	253	11.7	8.93	2.96	810	6	0.930	0.887	1.00
11/10	309	9.9	8.93	2.89	610	11	1.508	1.460	1.00
11/12	328	2.0	8.93	2.96	540	4	1.808	1.797	1.00
11/15	382	6.1	8.93	2.92	750	10	1.516	1.492	1.00
11/17	374	2.9	8.93	2.95	670	6	1.662	1.649	1.00
11/19	343	1.1	8.64	2.98	680	2	1.453	1.448	1.00
11/22	334	15.3	8.78	3.00	860	0	1.137	1.085	1.00
11/24	293	3.5	8.93	2.91	940	14	0.928	0.917	1.00
11/26	290	1.5	8.93	2.83	580	16	1.488	1.481	1.00
11/29	294	8.7	8.93	2.58	420	28	2.084	2.022	1.00
12/01	334	3.3	8.93	2.85	660	16	1.506	1.491	1.00
12/03	249	6.5	8.93	2.82	530	16	1.398	1.362	1.00
12/06	268	3.8	8.93	3.00	300	0	2.659	2.621	1.00
12/08	283	0.6	8.93	3.00	600	0	1.404	1.401	1.00
12/10	249	0.6	8.93	2.89	890	16	0.833	0.831	1.00
12/13	362	0.7	8.93	2.73	370	16	2.912	2.907	1.00
12/15	338	1.0	8.93	2.79	350	12	2.875	2.866	1.00
12/17	285	1.2	8.93	2.86	340	8	2.495	2.485	1.00
12/20	271	1.0	8.93	2.63	340	20	2.373	2.364	1.00
12/22	278	1.3	8.93	3.00	340	0	2.434	2.422	1.00
12/24	247	0.5	8.93	2.05	389	30	1.890	1.886	1.16
12/27	256	12.5	8.93	3.00	300	0	2.540	2.416	1.00
MEAN	294	4.3	8.91	2.85	568	11	1.738	1.714	1.01
S.DEV	45.66	4.27	.06	.2	198.32	8.51	.64	.64	.03
C V %	15.5	99.9	.7	7	34.9	80.6	37.1	37.4	3.2

COMPOUND =COMBINED THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	191	1.6	9.50	1.03	1760	0	0.333	0.330	3.01
11/03	278	1.0	9.05	1.02	1670	2	0.486	0.484	3.01
11/05	273	2.9	9.22	1.00	1818	4	0.447	0.442	3.04
11/08	253	12.0	8.78	1.03	2620	0	0.273	0.261	3.01
11/10	309	12.2	9.36	1.02	3070	2	0.304	0.292	3.02
11/12	328	0.5	9.36	1.03	1900	0	0.521	0.520	3.01
11/15	382	1.5	9.07	1.01	1780	4	0.628	0.625	3.02
11/17	374	2.1	8.93	0.00	1502	230	0.717	0.713	2.27
11/19	343	0.8	9.22	1.00	1477	8	0.691	0.689	2.97
11/22	334	0.7	9.07	1.03	1419	0	0.689	0.687	3.01
11/24	293	1.3	9.50	1.01	1735	5	0.518	0.515	3.00
11/26	290	1.4	9.50	0.80	1337	34	0.665	0.661	3.04
11/29	294	2.0	9.07	0.97	1570	12	0.548	0.544	3.00
12/01	334	3.9	8.78	0.00	709	407	1.334	1.319	0.62
12/03	249	2.6	5.10	0.00	651	329	0.629	0.623	1.20
12/06	268	3.5	9.36	0.00	245	105	3.303	3.260	0.77
12/08	283	3.0	9.65	0.00	556	321	1.584	1.568	0.56
12/10	249	0.6	9.79	0.00	1487	600	0.529	0.528	0.78
12/13	362	1.1	9.07	0.95	1182	10	0.896	0.893	3.04
12/15	338	1.4	8.64	0.96	1536	14	0.613	0.611	3.01
12/17	285	0.8	8.93	0.93	1200	15	0.684	0.682	3.01
12/27	256	2.7	8.93	0.20	866	82	0.852	0.843	3.02
12/29	305	6.3	5.76	0.00	620	296	0.914	0.895	1.13
MEAN	299	2.9	8.85	0.65	1422	108	0.789	0.782	2.42
S.DEV	46.05	3.2	1.12	.47	649.87	169.18	.62	.61	.97
C V %	15.4	111.8	12.6	72.4	45.6	156.9	79.2	78.9	40.3

COMPOUND =COMBINED .THETA C = 6

PARAMETER =BOD VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/01	191	1.4	9.39	0.36	1360	24	0.421	0.418	6.03
11/03	279	7.6	9.39	0.46	1490	10	0.562	0.546	6.02
11/05	273	13.5	9.39	0.52	1290	0	0.635	0.603	6.02
11/08	253	12.1	9.39	0.44	1153	10	0.658	0.627	6.05
11/10	309	13.1	9.39	0.48	1222	5	0.759	0.726	6.06
11/12	328	2.8	9.39	0.39	1440	18	0.683	0.678	6.23
11/15	382	2.5	9.39	0.46	1407	8	0.814	0.809	6.13
11/17	374	1.1	9.39	0.52	1587	0	0.707	0.705	6.02
11/19	343	1.9	9.39	0.47	2073	14	0.496	0.494	5.90
11/22	334	0.7	9.39	0.44	1975	18	0.507	0.506	6.00
11/24	293	1.0	9.39	0.36	1998	35	0.440	0.438	6.04
11/26	290	0.5	9.39	0.15	1835	115	0.474	0.473	4.29
11/29	294	2.0	9.39	0.14	1198	82	0.736	0.731	4.05
12/01	334	3.0	9.39	0.10	686	56	1.461	1.448	3.65
12/03	249	1.0	9.39	0.05	993	66	0.752	0.749	4.67
12/06	268	1.6	9.39	0.10	915	115	0.879	0.873	2.47
12/08	283	2.1	9.39	0.10	779	204	1.090	1.082	1.24
12/10	249	0.4	9.39	0.10	787	94	0.949	0.948	2.59
12/13	362	3.4	9.39	0.39	1081	25	1.005	0.995	5.23
12/15	338	3.9	9.39	0.10	980	60	1.035	1.023	4.68
12/17	285	2.6	9.39	0.51	1081	1	0.791	0.784	6.04
12/20	271	1.8	9.39	0.45	1389	11	0.585	0.581	6.01
12/22	278	1.6	9.39	0.05	1132	375	0.737	0.733	1.00
12/24	247	0.1	9.39	0.05	1392	119	0.532	0.532	3.69
12/27	256	1.9	9.39	0.44	1472	13	0.522	0.518	6.03
12/29	305	2.7	9.39	0.46	1510	11	0.606	0.601	6.01
MEAN	295	3.3	9.39	0.31	1316	57	0.724	0.716	4.93
S.DEV	44.77	3.82	0	.18	373.18	82.02	.23	.23	1.59
C V %	15.1	115.2	0	58	28.3	143.2	32.9	33.1	32.4

COMPOUND =COMBINED THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	730	60.0	8.93	2.90	610	10	3.447	3.164	1.03
11/12	540	34.0	8.93	2.96	540	4	2.881	2.699	1.03
11/19	495	29.0	8.64	2.98	680	2	2.029	1.910	1.03
11/26	480	36.0	8.93	2.83	580	16	2.384	2.205	1.03
12/03	420	40.0	8.93	2.82	530	16	2.283	2.065	1.03
12/10	435	35.0	8.93	2.89	890	16	1.408	1.295	1.03
12/17	420	57.0	8.93	2.86	340	8	3.677	3.178	1.00
12/24	475	26.0	8.93	2.05	389	30	3.635	3.436	1.16
12/31	500	41.0	8.93	2.48	320	16	4.651	4.270	1.07
MEAN	499	39.8	8.90	2.75	542	13	2.933	2.691	1.05
S.DEV	95.24	11.63	.09	.3	180.22	8.37	1	.91	.04
C V %	19	29.2	1	10.9	33.2	63.8	34.3	33.9	4.4

COMPOUND =COMBINED THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	730	67.0	9.22	1.00	1818	4	1.194	1.085	3.04
11/12	540	60.0	9.36	1.03	1900	0	0.858	0.763	3.01
11/19	495	29.0	9.22	1.00	1477	8	0.997	0.938	2.97
11/26	480	15.0	9.50	0.80	1337	34	1.100	1.066	3.04
12/03	420	40.0	5.10	0.00	651	329	1.061	0.960	1.20
12/10	435	40.0	9.79	0.00	1487	600	0.924	0.839	0.78
12/17	420	47.0	8.93	0.93	1200	15	1.008	0.895	3.01
12/29	500	28.0	5.76	0.00	620	296	1.498	1.415	1.13
MEAN	503	40.8	8.36	0.60	1311	161	1.080	0.995	2.27
S.DEV	101.34	17.16	1.83	.49	476.38	223.79	.19	.2	1.02
C V %	20.1	42.1	21.9	83.6	36.3	139.2	18.3	20.1	45.2

COMPOUND =COMBINED THETA C = 6

PARAMETER =COD VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/05	730	47.0	9.39	0.52	1290	0	1.698	1.588	6.02
11/12	540	14.0	9.39	0.39	1440	18	1.125	1.096	6.23
11/19	495	2.0	9.39	0.52	2073	47	0.716	0.713	4.34
11/26	480	7.5	9.39	0.15	1835	115	0.785	0.772	4.29
12/03	420	28.0	9.39	0.05	993	66	1.269	1.184	4.67
12/10	435	29.0	9.39	0.10	787	94	1.658	1.548	2.59
12/17	420	12.0	9.39	0.51	1081	1	1.166	1.132	6.04
12/24	475	18.0	9.39	0.05	1392	119	1.024	0.985	3.69
12/29	500	18.0	9.39	0.46	1510	11	0.993	0.958	5.96
MEAN	450	17.6	8.45	0.28	1240	47	1.043	0.998	4.38
S.DEV	181.68	14.15	2.96	.22	578.84	48.36	.48	.45	1.95
C V %	40.4	80.6	35.1	80.9	46.6	102.6	46.7	45.3	44.5

COMPOUND =COMBINED THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	157	43.0	8.93	2.96	810	6	0.577	0.419	1.00
11/10	134	41.0	8.93	2.89	610	11	0.654	0.454	1.00
11/12	130	37.0	8.93	2.96	540	4	0.717	0.513	1.00
11/15	122	40.0	8.93	2.92	750	10	0.484	0.325	1.00
11/17	110	32.0	8.93	2.95	670	6	0.489	0.347	1.00
11/19	104	27.0	8.64	2.98	680	2	0.440	0.326	1.00
11/22	105	15.3	8.78	3.00	860	0	0.357	0.305	1.00
11/24	100	21.0	8.93	2.91	940	14	0.317	0.250	1.00
11/26	158	21.0	8.93	2.83	580	16	0.811	0.703	1.00
11/29	169	42.0	8.93	2.58	420	28	1.198	0.900	1.00
12/03	176	24.0	8.93	2.82	530	16	0.988	0.854	1.00
12/06	142	21.5	8.93	3.00	300	0	1.409	1.196	1.00
12/08	149	27.0	8.93	3.00	600	0	0.739	0.605	1.00
12/10	156	23.0	8.93	2.89	890	16	0.522	0.445	1.00
12/13	111	21.0	8.93	2.73	370	16	0.893	0.724	1.00
12/15	130	43.0	8.93	2.79	350	12	1.106	0.740	1.00
12/17	130	23.0	8.93	2.86	340	8	1.138	0.937	1.00
12/20	120	23.0	8.93	2.63	340	20	1.051	0.849	1.00
12/22	118	22.0	8.93	3.00	340	0	1.033	0.840	1.00
12/24	136	51.0	8.93	2.05	389	30	1.041	0.650	1.16
12/27	177	65.0	8.93	3.00	300	0	1.756	1.111	1.00
12/29	113	42.0	8.93	2.48	320	16	1.051	0.660	1.07
MEAN	134	32.0	8.91	2.83	542	11	0.853	0.643	1.01
S.DEV	23.71	12.48	.06	.22	210.92	8.87	.36	.26	.03
C V %	17.7	38.9	.7	8	38.9	84.5	42.6	41.8	3.6

COMPOUND =COMBINED THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	157	37.0	8.78	1.03	2620	0	0.170	0.130	3.01
11/10	134	38.0	9.36	1.02	3070	2	0.132	0.094	3.02
11/12	130	33.0	9.36	1.03	1900	0	0.207	0.154	3.01
11/15	122	33.0	9.07	1.01	1780	4	0.201	0.146	3.02
11/17	110	26.0	8.93	0.00	410	230	0.773	0.590	0.62
11/22	105	21.0	9.07	1.03	1419	0	0.216	0.173	3.01
11/24	100	19.5	9.50	1.01	1735	5	0.177	0.142	3.00
11/26	158	34.0	9.50	0.80	1337	34	0.362	0.284	3.04
12/03	176	17.0	5.10	0.00	651	329	0.445	0.402	1.20
12/06	142	17.0	9.36	0.00	245	105	1.750	1.540	0.77
12/08	149	31.0	9.65	0.00	556	321	0.834	0.661	0.56
12/10	156	20.0	9.79	0.00	1487	600	0.331	0.289	0.78
12/13	111	15.0	9.07	0.95	1182	10	0.275	0.238	3.04
12/15	130	25.0	8.64	0.96	1536	14	0.236	0.191	3.01
12/17	130	18.0	8.93	0.93	1200	15	0.312	0.269	3.01
12/20	120	19.0	9.79	0.60	1032	49	0.367	0.309	2.99
12/27	177	22.0	8.93	0.20	866	82	0.589	0.516	3.02
12/29	133	31.0	5.76	0.00	620	296	0.399	0.306	1.13
MEAN	136	25.4	8.81	0.59	1314	116	0.432	0.357	2.29
S.DEV	22.93	7.61	1.27	.47	742.97	169.7	.38	.33	1.06
C V %	16.9	30	14.5	80.3	56.5	145.7	89	94.1	46.3

COMPOUND =COMBINED THETA C = 6

PARAMETER =TOC VOLUME-REACTOR = 3.13

DATE 1982	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
11/08	157	45.0	9.39	0.44	1153	10	0.409	0.291	6.05
11/10	134	36.0	9.39	0.48	1222	5	0.329	0.241	6.06
11/12	130	59.0	9.39	0.39	1440	18	0.271	0.148	6.23
11/15	122	33.0	9.39	0.46	1407	8	0.260	0.190	6.13
11/17	110	33.0	9.39	0.52	1587	0	0.208	0.146	6.02
11/19	104	28.0	9.39	0.47	2073	14	0.151	0.110	5.90
11/22	105	26.0	9.39	0.44	1975	18	0.159	0.120	6.00
11/24	100	22.0	9.39	0.36	1998	35	0.150	0.117	6.04
11/26	158	17.0	9.39	0.15	1835	115	0.258	0.231	4.29
11/29	169	39.0	9.39	0.14	1198	82	0.423	0.326	4.05
12/03	176	22.0	9.39	0.05	993	66	0.532	0.465	4.67
12/06	142	18.0	9.39	0.10	915	115	0.466	0.407	2.47
12/08	149	22.0	9.39	0.10	779	204	0.574	0.489	1.24
12/10	156	34.5	9.39	0.10	787	94	0.595	0.463	2.59
12/13	111	29.0	9.39	0.39	1081	25	0.308	0.228	5.23
12/15	130	32.0	9.39	0.10	980	60	0.398	0.300	4.68
12/17	130	33.0	9.39	0.51	1081	1	0.361	0.269	6.04
12/20	120	19.0	9.39	0.45	1389	11	0.259	0.218	6.01
12/22	118	31.0	9.39	0.05	1132	375	0.313	0.231	1.00
12/27	177	26.0	9.39	0.44	1472	13	0.361	0.308	6.03
MEAN	135	30.2	9.39	0.31	1325	63	0.339	0.265	4.84
S.DEV	24.43	9.99	0	.17	397.81	90.28	.13	.11	1.71
C V %	18.1	33	0	58.4	30	142.2	39.2	44.5	35.3

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	309	1.4	9.50	3.08	610	8	1.518	1.511	1.00
01/19	275	1.7	9.50	3.18	514	6	1.603	1.593	0.97
01/21	201	1.0	9.50	3.17	642	0	0.938	0.934	1.00
01/24	289	1.5	11.95	3.17	490	0	2.223	2.212	1.00
01/26	272	0.9	9.50	3.17	454	0	1.795	1.790	1.00
01/28	214	0.2	9.50	3.08	560	8	1.145	1.144	1.00
01/31	246	0.0	10.94	3.06	452	4	1.878	1.878	1.01
02/02	265	7.5	9.50	3.06	488	0	1.627	1.581	1.04
02/04	285	2.4	9.36	3.17	502	0	1.676	1.662	1.00
02/07	265	4.8	9.50	3.17	410	0	1.937	1.902	1.00
02/09	306	10.3	9.50	3.17	493	6	1.860	1.798	0.98
02/11	303	3.9	9.50	3.17	740	8	1.227	1.211	0.98
02/14	281	4.0	9.50	2.80	620	24	1.358	1.339	1.04
02/16	316	4.7	9.50	2.94	490	12	1.933	1.904	1.02
02/14	281	4.0	9.50	2.80	620	24	1.358	1.339	1.04
02/16	316	4.7	9.50	2.94	490	12	1.933	1.904	1.02
02/18	277	8.2	9.50	2.00	310	42	2.678	2.599	1.05
02/21	161	4.4	9.50	2.17	379	40	1.273	1.238	1.08
02/23	323	6.0	9.38	2.11	530	60	1.803	1.770	1.08
02/25	294	8.5	9.50	1.24	334	68	2.638	2.562	1.08
02/28	255	5.3	9.40	0.57	445	122	1.699	1.664	1.06
03/02	146	10.6	9.52	1.78	324	60	1.353	1.255	0.99
03/04	238	9.4	9.40	2.50	392	28	1.800	1.729	1.06
MEAN	255	4.4	9.25	2.56	470	22	1.636	1.605	0.98
S.DEV	71.29	3.31	2.05	.88	145.85	30.06	.54	.53	.21
C V %	27.9	75.4	22.1	34.4	31	135.6	33.3	33.2	21.5

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	309	14.1	9.50	1.03	1202	4	0.770	0.735	3.00
01/19	275	1.1	9.50	1.05	1109	0	0.743	0.740	3.02
01/21	201	0.6	9.50	0.99	1186	10	0.508	0.506	3.00
01/26	289	3.1	9.50	1.02	998	4	0.868	0.859	3.01
01/26	272	3.7	9.50	1.02	1046	0	0.779	0.769	3.11
01/28	214	0.6	9.50	1.00	1118	4	0.574	0.572	3.08
01/31	246	0.3	9.36	1.06	1092	0	0.665	0.664	2.99
02/02	265	0.5	9.50	0.92	986	14	0.805	0.804	3.04
02/04	285	2.5	9.22	0.99	1102	8	0.752	0.746	3.02
02/07	265	3.7	8.93	0.60	944	48	0.791	0.780	3.10
02/09	306	2.5	9.50	1.06	903	0	1.016	1.007	2.99
02/11	303	1.3	9.40	0.91	890	14	1.010	1.005	3.04
02/12	281	2.9	9.50	0.30	900	72	0.936	0.926	3.06
02/16	316	1.8	9.36	1.06	1200	0	0.778	0.773	3.00
02/18	277	3.2	9.40	1.00	930	6	0.883	0.873	3.01
02/21	161	2.3	9.50	0.90	1190	20	0.405	0.400	3.03
02/23	323	2.9	9.50	1.05	1042	0	0.929	0.921	3.02
02/25	294	1.7	9.50	1.06	1382	0	0.638	0.634	2.99
02/28	255	2.3	9.48	0.98	978	6	0.780	0.773	3.07
03/02	146	2.1	9.50	0.98	996	8	0.439	0.433	3.02
03/04	238	2.8	9.46	1.04	976	0	0.728	0.719	3.05
03/07	256	2.1	9.52	1.02	980	4	0.784	0.778	3.01
03/09	263	1.2	9.48	1.06	974	0	0.808	0.804	2.99
MEAN	252	2.5	9.05	0.92	1005	9	0.725	0.718	2.90
S.DEV	69.87	2.69	1.93	.25	245.59	16.92	.22	.21	.61
C V %	27.7	109.2	21.3	28.2	24.4	183	30.4	30.4	21.3

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 10

PARAMETER =BOD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	309	14.7	9.50	0.05	1678	298	0.552	0.526	1.83
01/19	275	1.4	9.50	0.00	1512	206	0.545	0.542	2.45
01/21	201	2.6	9.50	0.05	1712	158	0.352	0.347	3.44
01/24	289	5.1	9.50	0.00	1578	138	0.549	0.539	3.82
01/26	272	2.3	9.50	0.00	1038	260	0.785	0.779	1.33
01/28	214	1.3	9.50	0.00	940	129	0.682	0.678	2.43
01/31	246	4.0	9.50	0.16	1098	18	0.671	0.661	%10.12
02/02	265	0.9	9.50	0.24	1196	10	0.664	0.662	%10.15
02/04	285	3.4	9.36	0.04	1278	38	0.658	0.651	%10.00
02/07	265	4.0	9.36	0.00	660	288	1.186	1.168	0.78
02/09	306	3.0	9.36	0.22	790	8	1.144	1.132	%10.14
02/11	303	1.7	9.50	0.05	1330	65	0.683	0.679	6.19
02/14	281	1.9	9.50	0.00	1060	493	0.794	0.789	0.72
02/16	316	1.8	9.40	0.00	1130	64	0.829	0.825	5.95
02/18	277	4.2	9.38	0.00	1178	90	0.696	0.685	4.42
02/21	161	1.4	9.50	0.18	1422	20	0.339	0.336	%10.19
02/23	323	2.2	9.45	0.05	1592	62	0.605	0.601	7.62
02/25	294	1.6	9.50	0.00	1556	198	0.566	0.563	2.62
02/28	255	9.1	9.46	0.00	1580	130	0.482	0.464	4.07
03/02	146	2.6	9.48	0.14	1688	32	0.259	0.254	%10.16
03/04	238	2.7	9.50	0.25	1708	12	0.418	0.413	%10.06
03/07	256	0.0	9.48	0.14	1680	32	0.456	0.456	%10.13
03/09	263	1.4	9.46	0.10	1486	34	0.528	0.525	%10.09
MEAN	252	3.1	9.07	0.07	1287	116	0.602	0.595	5.78
S.DEV	69.87	3.11	1.93	.08	410.89	122.44	.25	.25	3.83
C V %	27.7	101.9	21.3	123.9	31.9	105.5	42.2	42.3	66.3

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	420	23.0	9.50	3.08	610	8	2.063	1.950	1.00
01/26	370	10.0	9.50	3.17	490	0	2.263	2.202	1.00
02/04	390	18.0	9.36	3.17	502	0	2.294	2.188	1.00
02/11	430	12.0	9.50	3.17	740	8	1.741	1.693	0.98
02/18	410	50.0	9.50	2.00	310	42	3.964	3.480	1.05
02/25	104	39.0	9.50	1.24	334	68	0.933	0.583	1.08
03/04	350	27.0	9.40	2.50	392	28	2.648	2.443	1.06
03/09	368	20.0	9.42	0.69	298	78	3.670	3.470	1.07
MEAN	316	22.1	8.41	2.11	408	26	2.175	2.001	0.92
S.DEV	153.98	15.19	3.15	1.2	212.27	30.42	1.23	1.15	.34
C V %	48.7	68.7	37.5	57.2	51.9	118	56.6	57.8	37.7

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	420	33.0	9.50	1.03	1202	4	1.047	0.965	3.00
01/26	370	10.0	9.50	1.02	1046	0	1.060	1.031	3.11
02/04	390	10.0	9.22	0.99	1102	8	1.029	1.003	3.02
02/11	430	37.0	9.40	0.91	890	14	1.433	1.309	3.05
02/18	410	31.0	9.50	1.00	930	6	1.321	1.221	3.01
02/25	390	28.0	9.50	1.06	1382	0	0.846	0.785	2.99
03/04	350	9.0	9.46	1.04	976	0	1.070	1.043	3.05
03/09	368	18.0	9.48	1.06	974	0	1.130	1.075	2.99
MEAN	348	19.6	8.40	0.90	945	4	0.993	0.937	2.69
S.DEV	132.88	13.06	3.14	.34	385.67	4.97	.4	.38	1
C V %	38.2	66.8	37.5	37.8	40.8	139.9	41.2	40.7	37.5

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 10

PARAMETER =COD VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	420	43.0	9.50	%50.00	1678	298	0.750	0.673	0.07
01/26	370	11.0	9.50	0.00	1038	260	1.068	1.036	1.33
02/04	390	19.0	9.36	0.04	1278	38	0.901	0.857	%10.00
02/11	430	27.0	9.50	0.05	1330	65	0.969	0.908	6.19
02/18	410	46.0	9.50	0.00	1178	90	1.043	0.926	4.37
02/25	390	26.0	9.50	0.00	1556	198	0.751	0.701	2.62
03/04	350	22.0	9.50	0.25	1708	12	0.614	0.576	%10.06
03/09	368	26.0	9.46	0.10	1486	34	0.739	0.687	%10.09
MEAN	348	24.4	8.42	5.60	1250	111	0.760	0.707	4.97
S.DEV	132.88	14.29	3.15	16.64	519.86	112.17	.32	.3	4.28
C V %	38.2	58.4	37.5	297	41.5	101.4	42.6	42.9	86.1

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	118	20.0	9.50	3.08	610	8	0.580	0.481	1.00
01/19	104	10.0	9.50	3.18	514	6	0.606	0.548	0.97
01/21	104	19.0	9.50	3.17	642	0	0.485	0.397	1.00
01/24	127	34.0	11.95	3.17	490	0	0.977	0.715	1.00
01/26	124	20.0	9.50	3.17	454	0	0.819	0.687	1.00
01/28	129	26.0	9.50	3.08	560	8	0.690	0.551	1.00
01/31	104	20.0	10.94	3.06	452	4	0.794	0.641	1.01
02/02	116	43.0	9.50	3.06	488	0	0.712	0.448	1.04
02/04	110	27.0	9.36	3.17	502	0	0.647	0.488	1.00
02/07	129	40.0	9.50	3.17	410	0	0.943	0.651	1.00
02/09	118	34.0	9.50	3.17	493	6	0.717	0.511	0.98
02/11	114	27.0	9.50	3.17	740	8	0.462	0.352	0.98
02/14	122	30.0	9.50	2.80	620	24	0.590	0.445	1.04
02/16	126	30.0	9.50	2.94	490	12	0.771	0.587	1.02
02/18	149	37.0	9.50	2.00	310	42	1.440	1.083	1.05
02/21	115	39.0	9.50	2.17	379	40	0.909	0.601	1.08
02/23	136	25.0	9.38	2.11	530	60	0.759	0.620	1.08
02/25	104	27.0	9.50	1.24	334	68	0.933	0.691	1.08
03/02	140	27.0	9.52	1.78	324	60	1.298	1.047	0.99
03/04	112	23.0	9.40	2.50	392	28	0.847	0.673	1.06
03/07	100	22.0	9.42	0.00	192	142	1.548	1.207	0.46
03/09	112	23.0	9.50	0.69	298	78	1.126	0.895	1.06
MEAN	119	27.4	9.66	2.54	465	27	0.848	0.651	1.00
S.DEV	12.85	7.99	.6	.9	129.3	35.97	.28	.22	.12
C V %	10.8	29.1	6.2	35.7	27.8	133.2	34	34.5	12.6

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	118	47.0	9.50	1.03	1202	4	0.294	0.177	3.00
01/19	104	24.0	9.50	1.05	1109	0	0.281	0.216	3.02
01/21	104	15.0	9.50	0.98	1186	10	0.263	0.225	3.01
01/24	127	27.0	9.50	1.02	998	4	0.381	0.300	3.01
01/26	124	16.5	9.50	1.02	1046	0	0.355	0.308	3.11
01/28	129	18.0	9.50	1.00	1118	4	0.346	0.298	3.08
01/31	104	25.0	9.36	1.06	1092	0	0.281	0.214	2.99
02/02	116	35.0	9.50	0.92	986	14	0.353	0.246	3.04
02/04	110	47.0	9.22	0.99	1102	8	0.290	0.166	3.02
02/07	129	33.0	8.93	0.60	944	48	0.385	0.286	3.10
02/09	118	18.0	9.50	1.06	903	0	0.392	0.332	2.99
02/11	114	23.0	9.40	0.91	890	14	0.380	0.303	3.05
02/14	122	28.0	9.50	0.30	900	72	0.406	0.313	3.06
02/16	126	30.0	9.36	1.06	1200	0	0.310	0.236	3.00
02/18	149	37.0	9.40	1.00	930	6	0.475	0.357	3.01
02/21	115	30.0	9.50	0.90	1190	20	0.290	0.214	3.03
02/23	136	26.0	9.50	1.05	1042	0	0.391	0.316	3.02
02/25	104	28.0	9.50	1.06	1382	0	0.226	0.165	2.99
03/02	140	21.0	9.50	0.98	996	8	0.421	0.358	3.02
03/04	112	27.0	9.46	1.04	976	0	0.342	0.260	3.05
03/07	100	19.0	9.52	1.02	980	4	0.306	0.248	3.01
03/09	112	27.0	9.48	1.06	974	0	0.344	0.261	2.99
MEAN	119	27.3	9.44	0.96	1052	10	0.341	0.264	3.03
S.DEV	12.85	8.62	.13	.17	124.91	17.57	.05	.05	.03
C V %	10.8	31.5	1.4	18.5	11.8	179	17.5	22	1.1

COMPOUND =1-2 DICHLOROELTYLENE THETA C = 10

PARAMETER =TOC VOLUME-REACTOR = 3.17

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	118	55.0	9.50	0.05	1678	298	0.211	0.113	1.83
01/19	104	12.0	9.50	0.00	1512	206	0.206	0.182	2.45
01/21	104	15.0	9.50	0.05	1712	158	0.182	0.156	3.44
01/24	127	29.0	9.50	0.00	1578	138	0.241	0.186	3.82
01/26	124	16.0	9.50	0.00	1038	260	0.358	0.312	1.33
01/28	129	23.0	9.50	0.00	940	129	0.411	0.338	2.43
01/31	104	29.0	9.50	0.16	1098	18	0.284	0.205	%10.12
02/02	116	34.0	9.50	0.24	1196	10	0.291	0.205	%10.15
02/04	110	37.0	9.36	0.04	1278	38	0.254	0.169	%10.00
02/07	129	38.0	9.36	0.00	660	288	0.577	0.407	0.78
02/09	118	20.0	9.36	0.22	790	8	0.441	0.366	%10.14
02/11	114	20.0	9.50	0.05	1330	65	0.257	0.212	6.19
02/14	122	21.0	9.50	0.00	1060	493	0.345	0.286	0.72
02/16	126	30.0	9.40	0.00	1130	64	0.331	0.252	5.95
02/18	149	41.0	9.38	0.00	1178	90	0.374	0.271	4.42
02/21	115	29.0	9.50	0.18	1422	20	0.242	0.181	%10.19
02/23	136	22.0	9.45	0.05	1592	62	0.255	0.213	7.62
02/25	104	34.0	9.50	0.00	1556	198	0.200	0.135	2.62
03/02	140	23.0	9.48	0.14	1688	32	0.248	0.207	%10.16
03/04	112	24.0	9.50	0.25	1708	12	0.197	0.154	%10.06
03/07	100	17.0	9.48	0.14	1680	32	0.178	0.148	%10.13
03/09	112	24.0	9.46	0.10	1486	34	0.225	0.177	%10.09
MEAN	119	27.0	9.47	0.08	1332	121	0.287	0.222	6.12
S.DEV	12.85	10.04	.05	.08	315.92	125.49	.09	.07	3.77
C V %	10.8	37.2	.5	115.1	23.7	104	34.4	35.2	61.7

COMPOUND =4 NITROPHENOL THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	444	12.0	9.65	2.37	460	48	2.976	2.895	1.00
01/19	319	19.1	9.79	2.55	350	28	2.851	2.680	1.00
01/21	257	2.3	9.65	2.92	380	12	2.085	2.066	1.00
01/24	339	8.2	9.65	2.29	440	50	2.375	2.318	1.00
01/26	318	3.3	9.50	3.13	340	0	2.839	2.809	1.00
01/28	258	2.0	9.07	2.92	540	18	1.384	1.374	1.00
01/31	261	1.0	9.07	3.06	560	6	1.351	1.345	1.00
02/02	301	1.4	9.36	3.05	470	6	1.915	1.906	1.00
02/04	310	4.2	8.93	2.89	500	20	1.769	1.745	1.00
02/07	287	5.8	9.22	2.92	490	16	1.725	1.690	1.00
02/09	356	10.9	9.22	3.13	290	0	3.616	3.505	1.00
02/11	319	6.9	9.22	2.74	430	26	2.185	2.138	1.00
02/14	337	9.1	8.93	2.94	680	22	1.414	1.376	1.00
02/16	348	9.2	9.07	3.01	610	12	1.653	1.609	1.00
02/18	291	3.3	9.65	3.07	700	6	1.282	1.267	1.00
02/21	277	1.6	9.65	3.13	470	0	1.817	1.807	1.00
02/23	342	5.5	9.22	2.97	420	10	2.399	2.360	1.00
02/25	290	7.1	9.65	1.64	450	84	1.987	1.938	1.00
02/28	306	12.8	9.65	0.00	320	204	2.948	2.825	0.51
03/02	306	9.2	9.50	0.00	310	104	2.996	2.906	0.98
03/04	270	6.4	9.65	2.50	590	52	1.411	1.377	1.00
03/07	358	4.0	9.65	2.88	550	20	2.007	1.984	1.00
03/09	350	6.9	9.36	0.26	520	164	2.013	1.973	1.00
MEAN	302	6.3	9.01	2.35	453	38	2.042	1.996	0.94
S.DEV	76.54	4.5	1.93	1.09	146.47	52.48	.76	.73	.22
C.V %	25.3	71	21.5	46.7	32.3	138.7	37.4	36.8	23.8

COMPOUND =4 NITROPHENOL THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.14

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	444	13.0	9.07	0.65	860	40	1.491	1.448	3.01
01/19	319	6.3	9.50	0.75	880	30	1.097	1.075	3.00
01/21	257	1.0	9.65	1.04	1060	0	0.745	0.742	3.02
01/24	339	2.0	9.36	0.95	1230	14	0.822	0.817	3.00
01/26	318	3.7	8.64	1.04	830	0	1.054	1.042	3.02
01/28	258	2.2	9.65	0.94	1430	18	0.554	0.550	2.99
01/31	261	1.6	9.36	0.78	910	28	0.855	0.850	3.01
02/02	301	2.7	9.22	0.00	1020	140	0.866	0.859	2.48
02/04	310	3.4	9.79	0.36	1040	76	0.929	0.919	2.99
02/07	287	4.1	9.22	0.93	1420	20	0.593	0.585	3.00
02/09	356	1.8	9.22	1.04	1360	0	0.769	0.765	3.02
02/11	319	1.7	9.22	1.03	1390	2	0.674	0.670	3.01
02/14	337	2.9	9.36	0.97	1400	12	0.718	0.711	3.01
02/16	348	2.0	9.22	1.02	1350	4	0.757	0.753	3.01
02/18	291	4.0	9.07	1.02	1480	4	0.568	0.560	3.01
02/21	277	2.2	9.79	1.05	1200	0	0.720	0.714	2.99
02/23	342	1.9	9.22	0.26	680	60	1.477	1.469	2.99
02/25	290	1.5	9.22	0.00	670	172	1.271	1.264	1.33
02/28	306	3.9	9.79	0.00	650	224	1.468	1.449	0.93
03/02	306	7.3	9.65	0.00	340	368	2.766	2.700	0.30
03/04	270	8.6	9.22	0.31	530	44	1.496	1.448	2.99
03/07	358	6.8	9.22	0.34	1050	84	1.001	0.982	2.99
03/09	350	4.2	9.07	0.00	790	196	1.280	1.264	1.40
MEAN	302	3.7	8.95	0.60	982	64	0.999	0.985	2.52
S.DEV	76.54	2.9	1.92	.43	381.9	92.7	.52	.5	.94
C V %	25.3	78.3	21.5	72	38.8	144.8	52.3	51.6	37.6

COMPOUND =4 NITROPHENOL THETA C = 10

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	444	5.5	8.93	0.19	2240	30	0.571	0.564	%10.10
01/19	319	3.5	9.07	0.28	2280	8	0.409	0.405	9.97
01/21	257	1.6	9.79	0.27	2150	10	0.377	0.375	9.86
01/24	339	2.0	9.65	0.26	2410	12	0.438	0.435	%10.11
01/26	318	1.8	9.22	0.31	2150	0	0.440	0.437	%10.00
01/28	258	1.5	9.65	0.24	2310	18	0.348	0.346	9.89
01/31	261	1.4	9.36	0.29	2880	6	0.274	0.272	%10.04
02/02	301	2.7	9.50	0.00	2760	270	0.334	0.331	3.34
02/04	310	2.2	9.22	0.00	2150	320	0.429	0.426	2.26
02/07	287	2.5	8.93	0.00	1130	376	0.732	0.725	1.04
02/09	356	3.8	9.80	0.00	420	104	2.680	2.651	1.28
02/11	319	2.2	9.36	0.00	720	74	1.338	1.329	3.22
02/14	337	3.3	9.07	0.15	1100	20	0.896	0.888	9.93
02/16	348	2.2	9.36	0.00	1100	76	0.955	0.949	4.79
02/18	291	2.8	9.07	0.00	1170	120	0.728	0.721	3.33
02/21	277	1.8	9.07	0.00	1050	146	0.772	0.767	2.46
02/23	342	2.2	8.93	0.25	1160	8	0.849	0.844	%10.00
02/25	290	2.4	9.22	0.24	1240	10	0.696	0.690	9.92
02/28	306	1.8	9.36	0.00	1300	52	0.711	0.707	8.28
03/02	306	3.6	9.07	0.00	920	440	0.973	0.962	0.71
03/04	270	4.3	8.93	0.31	1120	0	0.694	0.683	%10.00
03/07	358	5.4	9.65	0.00	1490	108	0.748	0.737	4.43
03/09	350	1.8	9.50	0.12	1370	28	0.783	0.779	9.95
MEAN	302	2.6	8.90	0.12	1526	93	0.716	0.709	6.45
S.DEV	76.54	1.26	1.91	.13	748.84	128.03	.5	.5	3.92
C V %	25.3	48.8	21.5	107.8	49	137.4	70.6	70.5	60.7

COMPOUND =4 NITROPHENOL THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	%1060	%113.0	9.65	2.37	460	48	7.104	6.347	1.00
01/26	460	16.0	9.50	3.13	340	0	4.106	3.964	1.00
02/04	408	20.0	8.93	2.89	500	20	2.328	2.214	1.00
02/11	465	53.0	9.22	2.74	430	26	3.185	2.822	1.00
02/18	580	81.0	9.65	3.07	700	6	2.555	2.198	1.00
02/25	398	47.0	9.65	1.64	450	84	2.727	2.405	1.00
03/04	510	28.0	9.65	2.50	590	52	2.665	2.519	1.00
03/09	460	38.0	9.36	0.26	520	164	2.645	2.427	1.00
MEAN	482	44.0	8.40	2.07	443	44	3.035	2.766	0.89
S.DEV	271.7	35.01	3.16	1.18	195	52.78	1.87	1.68	.33
C V %	56.3	79.5	37.6	57.4	43.9	118.7	61.7	61	37.5

COMPOUND =4 NITROPHENOL THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.14

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	%1060	50.0	9.07	0.65	860	40	3.560	3.392	3.01
01/26	460	18.0	8.64	1.04	830	0	1.525	1.465	3.02
02/04	408	17.0	9.79	0.36	1040	76	1.223	1.172	2.99
02/11	465	43.0	9.22	1.03	1390	2	0.982	0.891	3.01
02/18	580	51.0	9.07	1.02	1480	4	1.132	1.032	3.01
02/25	398	32.0	9.22	0.00	670	172	1.744	1.604	1.33
03/04	510	27.0	9.22	0.31	530	44	2.826	2.676	2.99
03/09	460	30.0	9.07	0.00	790	196	1.682	1.572	1.40
MEAN	482	29.8	8.14	0.49	843	59	1.630	1.534	2.31
S.DEV	271.7	16.71	3.06	.45	445.19	75.53	1.04	.99	1.12
C V %	56.3	56.1	37.6	93.2	52.7	127.3	63.8	64.8	48.5

COMPOUND =4 NITROPHENOL THETA C = 10

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	%1060	39.0	8.93	0.19	2240	30	1.363	1.313	%10.10
01/26	460	16.0	9.22	0.31	2150	0	0.636	0.614	%10.00
02/04	408	11.0	9.22	0.00	2150	320	0.564	0.549	2.26
02/11	465	50.0	9.36	0.00	720	74	1.950	1.740	3.22
02/18	580	52.0	9.07	0.00	1170	120	1.450	1.320	3.33
02/25	398	26.0	9.22	0.24	1240	10	0.955	0.892	9.92
03/04	510	5.0	8.93	0.31	1120	0	1.312	1.299	%10.00
03/09	460	18.0	9.50	0.12	1370	28	1.029	0.989	9.95
MEAN	482	24.1	8.16	0.13	1351	65	1.029	0.969	6.53
S.DEV	271.7	19.02	3.06	.13	740.71	103.93	.57	.52	4.21
C V %	56.3	78.8	37.5	104.6	54.8	160.7	55.9	54	64.5

COMPOUND =4 NITROPHENOL THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	218	67.0	9.65	2.37	460	48	1.461	1.012	1.00
01/19	126	42.0	9.79	2.55	350	28	1.126	0.751	1.00
01/21	128	24.0	9.65	2.92	380	12	1.039	0.844	1.00
01/24	144	39.0	9.65	2.92	440	50	1.009	0.736	0.85
01/26	157	17.0	9.50	3.13	340	0	1.402	1.250	1.00
01/28	143	21.0	9.07	2.92	540	18	0.767	0.655	1.00
01/31	95	25.0	9.07	3.06	560	6	0.492	0.362	1.00
02/02	120	56.0	9.36	3.05	470	6	0.764	0.407	1.00
02/04	157	34.0	8.93	2.89	500	20	0.896	0.702	1.00
02/07	125	32.0	9.22	2.92	490	16	0.751	0.559	1.00
02/09	139	30.5	9.22	3.13	290	0	1.412	1.102	1.00
02/11	146	21.5	9.22	2.74	430	26	1.000	0.853	1.00
02/14	145	32.0	8.93	2.94	680	22	0.608	0.474	1.00
02/16	135	25.0	9.07	3.01	610	12	0.641	0.523	1.00
02/18	143	26.0	9.65	3.07	700	6	0.630	0.515	1.00
02/21	138	29.0	9.65	3.13	470	0	0.905	0.715	1.00
02/23	151	27.0	9.22	2.97	420	10	1.059	0.870	1.00
02/25	142	30.0	9.65	1.64	450	84	0.973	0.767	1.00
02/28	137	28.0	9.65	0.00	320	204	1.320	1.050	0.51
03/02	166	21.0	9.50	0.00	310	104	1.625	1.420	0.98
03/04	142	22.0	9.65	2.50	590	52	0.742	0.627	1.00
03/07	124	11.0	9.65	2.88	550	20	0.695	0.633	1.00
03/09	106	23.0	9.36	0.26	520	164	0.610	0.477	1.00
MEAN	134	28.5	9.01	2.37	453	38	0.914	0.721	0.93
S.DEV	36.63	13.4	1.93	1.1	146.47	52.48	.36	.3	.22
C V %	27.2	47	21.5	46.4	32.3	138.7	39.9	42.5	24

COMPOUND =4 NITROPHENOL THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.14

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	218	26.0	9.07	0.65	860	40	0.732	0.645	3.01
01/19	126	44.0	9.50	0.75	880	30	0.433	0.282	3.00
01/21	128	23.0	9.65	1.04	1060	0	0.371	0.304	3.02
01/24	144	34.0	9.36	0.95	1230	14	0.349	0.267	3.00
01/26	157	22.0	8.64	1.04	830	0	0.520	0.448	3.02
01/28	143	19.0	9.65	0.94	1430	18	0.307	0.266	2.99
01/31	95	28.0	9.36	0.78	910	28	0.311	0.219	3.01
02/02	120	44.0	9.22	0.00	1020	140	0.345	0.219	2.48
02/04	157	41.0	9.79	0.36	1040	76	0.471	0.348	2.99
02/07	125	34.0	9.22	0.93	1420	20	0.258	0.188	3.00
02/09	139	31.5	9.22	1.04	1360	0	0.300	0.232	3.02
02/11	146	17.0	9.22	1.03	1390	2	0.308	0.273	3.01
02/14	145	37.0	9.36	0.97	1400	12	0.309	0.230	3.01
02/16	135	19.5	9.22	1.02	1350	4	0.294	0.251	3.01
02/18	143	22.0	9.07	1.02	1480	4	0.279	0.236	3.01
02/21	138	32.0	9.79	1.05	1200	0	0.359	0.275	2.99
02/23	151	27.0	9.22	0.26	680	60	0.652	0.535	2.99
02/25	142	25.0	9.22	0.00	670	172	0.622	0.513	1.33
02/28	137	26.0	9.79	0.00	650	224	0.657	0.532	0.93
03/02	166	29.0	9.65	0.00	340	368	1.500	1.238	0.30
03/04	142	22.0	9.22	0.31	530	44	0.787	0.665	2.99
03/07	124	24.0	9.22	0.34	1050	84	0.347	0.280	2.99
03/09	106	19.0	9.07	0.00	790	196	0.388	0.318	1.40
MEAN	134	26.9	8.95	0.60	982	64	0.454	0.365	2.52
S.DEV	36.63	9.64	1.92	.43	381.9	92.7	.28	.24	.94
C V %	27.2	35.8	21.5	72	38.8	144.8	62.6	66.2	37.6

COMPOUND =4 NITROPHENOL THETA C = 10

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	218	23.0	8.93	0.19	2240	30	0.280	0.251	%10.10
01/19	126	19.0	9.07	0.28	2280	8	0.162	0.137	9.97
01/21	128	15.0	9.79	0.27	2150	10	0.188	0.166	9.86
01/24	144	31.0	9.65	0.26	2410	12	0.186	0.146	%10.11
01/26	157	14.0	9.22	0.31	2150	0	0.217	0.198	%10.00
01/28	143	16.0	9.65	0.24	2310	18	0.193	0.171	9.89
01/31	95	22.0	9.36	0.29	2880	6	0.100	0.077	%10.04
02/02	120	37.0	9.50	0.00	2760	270	0.133	0.092	3.34
02/04	157	26.0	9.22	0.00	2150	320	0.217	0.181	2.26
02/07	125	28.5	8.93	0.00	1130	376	0.319	0.246	1.04
02/09	139	17.0	9.80	0.00	420	104	1.046	0.918	1.28
02/11	146	18.0	9.36	0.00	720	74	0.612	0.537	3.22
02/14	145	28.0	9.07	0.15	1100	20	0.386	0.311	9.93
02/16	143	24.0	9.07	0.00	1170	120	0.358	0.298	3.33
02/18	143	24.0	9.07	0.00	1170	120	0.358	0.298	3.33
02/21	138	29.0	9.07	0.00	1050	146	0.385	0.304	2.46
02/23	151	29.0	8.93	0.25	1160	8	0.375	0.303	%10.00
02/25	142	32.0	9.22	0.24	1240	10	0.341	0.264	9.92
02/28	137	30.0	9.36	0.00	1300	52	0.318	0.249	8.28
03/02	166	24.0	9.07	0.00	920	440	0.528	0.452	0.71
03/04	142	21.0	8.93	0.31	1120	0	0.365	0.311	%10.00
03/07	124	21.0	9.65	0.00	1490	108	0.259	0.215	4.43
03/09	106	13.0	9.50	0.12	1370	28	0.237	0.208	9.95
MEAN	135	22.6	8.89	0.12	1529	95	0.315	0.264	6.39
S.DEV	36.67	7.89	1.91	.13	747.25	128.09	.2	.18	3.95
C V %	27.2	34.9	21.5	107.8	48.8	134.8	65.1	68.3	61.9

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	1.6	9.50	2.99	690	12	1.466	1.459	1.00
01/19	310	1.5	9.50	3.07	740	4	1.284	1.278	1.00
01/21	231	11.9	9.50	2.97	610	12	1.161	1.101	1.00
01/24	332	22.3	9.50	3.05	480	4	2.120	1.977	1.00
01/26	366	24.2	9.50	2.84	610	24	1.839	1.717	1.00
01/28	334	11.8	9.50	2.71	770	44	1.329	1.282	1.00
01/31	341	5.2	9.50	2.68	780	48	1.340	1.319	1.00
02/02	347	5.6	9.50	2.68	840	52	1.266	1.246	1.00
02/04	366	5.1	9.50	2.70	880	52	1.275	1.257	1.00
02/07	361	8.2	9.50	3.10	1650	24	0.670	0.655	0.97
02/09	396	5.7	9.50	2.29	570	64	2.129	2.098	1.00
02/11	375	8.6	9.50	2.29	570	64	2.016	1.970	1.00
02/14	394	16.8	9.50	2.48	500	48	2.415	2.312	0.98
02/16	420	18.9	9.50	2.41	490	48	2.627	2.509	1.00
02/18	337	18.0	9.50	2.50	560	48	1.844	1.746	1.00
02/21	292	12.6	8.93	2.25	330	42	2.549	2.439	1.00
02/23	396	16.2	9.50	2.44	430	40	2.822	2.707	1.00
02/25	385	19.1	9.50	2.34	450	48	2.622	2.492	1.00
02/28	360	8.7	9.50	2.62	520	36	2.122	2.070	1.00
03/02	375	18.9	9.50	2.63	580	40	1.981	1.882	1.00
03/04	312	15.9	9.50	2.39	440	44	2.173	2.062	1.00
03/07	384	15.5	9.50	2.39	440	44	2.674	2.567	1.00
03/09	379	19.2	9.50	2.53	440	36	2.640	2.506	1.00
MEAN	353	12.7	9.48	2.62	625	38	1.929	1.854	1.00
S.DEV	41.47	6.66	.11	.27	266.4	17.1	.6	.56	0
C V %	11.7	52.5	1.2	10.2	42.6	44.8	31.3	30.6	.6

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	2.0	9.22	0.93	990	12	0.991	0.985	3.01
01/19	310	0.7	9.22	0.97	960	8	0.960	0.958	2.98
01/21	231	5.1	9.22	1.00	940	4	0.731	0.715	3.00
01/24	332	0.7	9.22	1.00	900	4	1.097	1.095	2.99
01/26	366	2.9	9.22	1.03	1020	0	1.067	1.059	3.01
01/28	334	2.0	9.22	0.89	1130	20	0.879	0.874	2.99
01/31	341	0.7	9.22	0.93	1310	16	0.774	0.773	3.01
02/02	347	2.4	9.22	0.89	1350	24	0.764	0.759	2.99
02/04	366	2.0	9.22	0.93	1270	16	0.857	0.852	3.00
02/07	361	3.1	9.22	1.03	1260	0	0.852	0.845	3.01
02/09	396	3.7	9.22	0.98	1130	8	1.042	1.033	2.99
02/11	375	2.2	9.22	0.96	1330	12	0.839	0.834	3.00
02/14	394	5.6	9.22	0.98	1240	8	0.945	0.932	3.00
02/16	420	6.3	9.22	0.98	1160	8	1.077	1.061	2.99
02/18	337	2.0	9.22	0.96	1420	12	0.706	0.702	3.01
02/21	292	3.2	8.64	0.97	920	8	0.885	0.875	2.99
02/23	396	5.9	9.22	0.86	990	20	1.190	1.172	3.01
02/25	385	6.3	9.22	0.66	1300	56	0.881	0.866	3.01
02/28	360	6.5	9.22	0.87	950	60	1.127	1.107	2.22
03/02	375	14.3	9.22	0.54	980	56	1.138	1.095	2.99
03/04	312	8.8	9.22	0.74	1140	40	0.814	0.791	2.99
03/07	384	11.8	9.22	0.81	1040	28	1.098	1.064	2.99
03/09	379	9.9	9.22	0.85	1290	28	0.874	0.851	3.00
MEAN	353	4.7	9.19	0.90	1131	19	0.939	0.926	2.96
S.DEV	41.47	3.66	.12	.12	163.1	17.81	.14	.13	.16
C V %	11.7	77.9	1.3	13.3	14.4	91.4	15.1	14.9	5.4

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 10

PARAMETER =BOD VOLUME-REACTOR = 3.3

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	1.4	9.79	0.21	1840	24	0.532	0.530	9.85
01/19	310	0.7	9.79	0.00	1820	136	0.505	0.504	4.51
01/21	231	0.6	9.79	0.16	1620	28	0.423	0.422	%10.11
01/24	332	1.9	9.79	0.26	1580	12	0.623	0.620	9.93
01/26	366	2.5	9.79	0.03	1940	60	0.560	0.556	9.94
01/28	334	1.7	9.79	0.10	2030	48	0.488	0.486	%10.03
01/31	341	1.9	9.79	0.10	1950	204	0.519	0.516	2.96
02/02	347	1.8	9.79	0.10	1880	176	0.548	0.545	3.28
02/04	366	0.6	9.79	0.10	1470	128	0.739	0.737	3.50
02/07	361	4.4	9.79	0.10	2580	116	0.415	0.410	6.16
02/09	396	5.3	9.79	0.15	1880	36	0.625	0.617	9.86
02/11	375	5.2	9.79	0.10	1750	152	0.636	0.627	3.50
02/14	394	7.9	9.79	0.10	1520	328	0.769	0.754	1.51
02/16	420	12.3	9.79	0.10	1510	188	0.825	0.801	2.53
02/18	337	2.8	9.79	0.10	1650	72	0.606	0.601	6.31
02/21	292	6.2	8.93	0.10	1920	132	0.412	0.403	4.67
02/23	396	19.2	9.79	0.10	1460	276	0.805	0.766	1.71
02/25	385	4.9	9.79	0.10	1190	164	0.960	0.948	2.30
02/28	360	4.9	9.79	0.10	1210	140	0.883	0.871	2.70
03/02	375	11.7	9.79	0.10	1420	276	0.783	0.759	1.66
03/04	312	7.0	9.79	0.26	1690	12	0.548	0.535	%10.07
03/07	384	7.5	9.79	0.24	1750	16	0.651	0.638	%10.08
03/09	379	9.9	9.79	0.17	1950	32	0.577	0.562	%10.07
MEAN	353	5.3	9.75	0.13	1722	120	0.627	0.618	5.97
S.DEV	41.47	4.59	.17	.06	300.58	92.51	.15	.14	3.5
C V %	11.7	86.3	1.8	52.2	17.4	77.2	24.3	23.8	58.8

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	10.0	9.50	2.97	610	12	1.658	1.608	1.00
01/26	630	0.0	9.50	2.84	610	24	3.165	3.165	1.00
02/04	500	17.0	9.50	2.70	880	52	1.741	1.682	1.00
02/11	600	75.0	9.50	2.29	570	64	3.226	2.823	1.00
02/18	465	%118.0	9.50	2.50	560	48	2.545	1.899	1.00
02/25	482	40.0	9.50	2.34	450	48	3.282	3.010	1.00
03/04	510	50.0	9.50	2.39	440	44	3.552	3.204	1.00
03/09	520	32.0	9.50	2.53	440	36	3.622	3.399	1.00
MEAN	505	42.8	9.50	2.57	570	41	2.849	2.599	1.00
S.DEV	90.77	38.62	0	.24	145.2	16.52	.78	.74	0
C V %	17.9	90.3	0	9.5	25.4	40.3	27.3	28.5	0

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	10.0	9.22	0.93	990	12	0.991	0.961	3.01
01/26	630	0.0	9.22	1.03	1020	0	1.837	1.837	3.01
02/04	500	13.0	9.22	0.93	1270	16	1.171	1.141	3.00
02/11	600	46.0	9.22	0.96	1330	12	1.342	1.239	3.00
02/18	465	33.0	9.22	0.96	1420	12	0.974	0.905	3.01
02/25	482	42.0	9.22	0.66	1300	56	1.103	1.007	3.01
03/04	510	44.0	9.22	0.74	1140	40	1.331	1.216	2.99
03/09	520	19.0	9.22	0.85	1290	28	1.199	1.155	3.00
MEAN	505	25.9	9.22	0.88	1220	22	1.243	1.183	3.00
S.DEV	90.77	17.64	0	.12	153.62	18.26	.27	.29	0
C V %	17.9	68.1	0	14.1	12.5	83	22.1	24.5	.2

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 10

PARAMETER =COD VOLUME-REACTOR = 3.3

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	330	21.0	9.79	0.16	1620	28	0.604	0.566	%10.11
01/26	630	10.0	9.79	0.03	1940	60	0.963	0.948	9.94
02/04	500	13.0	9.79	0.10	1470	128	1.009	0.983	3.50
02/11	600	37.0	9.79	0.10	1750	152	1.017	0.954	3.50
02/18	465	87.0	9.79	0.10	1650	72	0.836	0.680	6.31
02/25	482	28.0	9.79	0.10	1190	164	1.202	1.132	2.30
03/04	510	32.0	9.79	0.26	1690	12	0.895	0.839	%10.07
03/09	520	19.0	9.79	0.17	1950	32	0.791	0.762	%10.07
MEAN	505	30.9	9.79	0.13	1658	81	0.915	0.858	6.98
S.DEV	90.77	24.46	0	.06	247.89	59.31	.17	-.18	3.46
C V %	17.9	79.2	0	53.8	14.9	73.2	19.4	21.3	49.7

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	115	14.0	9.50	2.99	690	12	0.511	0.449	1.00
01/19	130	16.0	9.50	3.07	740	4	0.538	0.472	1.00
01/21	116	20.0	9.50	2.97	610	12	0.583	0.482	1.00
01/24	169	25.0	9.50	3.05	480	4	1.079	0.919	1.00
01/26	162	18.0	9.50	2.84	610	24	0.814	0.723	1.00
01/28	153	37.0	9.50	2.71	770	44	0.609	0.462	1.00
01/31	148	37.0	9.50	2.68	780	48	0.581	0.436	1.00
02/02	161	42.0	9.50	2.68	840	52	0.587	0.434	1.00
02/04	149	38.0	9.50	2.70	880	52	0.519	0.387	1.00
02/07	156	35.0	9.50	3.10	1650	24	0.290	0.225	0.97
02/09	164	37.0	9.50	2.85	750	28	0.670	0.519	1.00
02/11	153	38.0	9.50	2.29	570	64	0.823	0.618	1.00
02/14	165	41.0	9.50	2.48	500	48	1.011	0.760	0.98
02/16	167	59.0	9.50	2.41	490	48	1.044	0.675	1.00
02/18	153	43.0	9.50	2.50	560	48	0.837	0.602	1.00
02/21	154	50.0	8.93	2.25	330	42	1.344	0.908	1.00
02/23	160	53.0	9.50	2.44	430	40	1.140	0.763	1.00
02/25	159	42.0	9.50	2.34	450	48	1.083	0.797	1.00
02/28	159	50.0	9.50	2.62	520	36	0.937	0.642	1.00
03/02	162	48.0	9.50	2.63	580	40	0.856	0.602	1.00
03/04	161	50.0	9.50	2.39	440	44	1.121	0.773	1.00
03/07	151	73.0	9.50	2.39	440	44	1.052	0.543	1.00
03/09	152	58.0	9.50	2.53	440	36	1.059	0.655	1.00
MEAN	153	40.2	9.48	2.65	633	37	0.830	0.602	1.00
S.DEV	14.34	14.68	.11	.26	267.36	16.26	.26	.17	0
C V %	9.3	36.5	1.2	9.9	42.2	44.4	32.4	28.9	.6

COMPOUND =2-4-6 TRICHLOROPHENOL THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	115	19.0	9.22	0.93	990	12	0.345	0.288	3.01
01/19	130	23.0	9.22	0.97	960	8	0.403	0.331	2.98
01/21	116	23.0	9.22	1.00	940	4	0.367	0.294	3.00
01/24	169	32.0	9.22	1.00	900	4	0.558	0.453	2.99
01/26	162	19.0	9.22	1.03	1020	0	0.472	0.417	3.01
01/28	153	26.0	9.22	0.89	1130	20	0.403	0.334	2.99
01/31	148	25.0	9.22	0.93	1310	16	0.336	0.279	3.01
02/02	161	39.0	9.22	0.89	1350	24	0.355	0.269	2.99
02/04	149	42.0	9.22	0.93	1270	16	0.349	0.251	3.00
02/07	156	44.0	9.22	1.03	1260	0	0.368	0.264	3.01
02/09	164	43.0	9.22	0.98	1130	8	0.432	0.318	2.99
02/11	153	37.0	9.22	0.96	1330	12	0.342	0.259	3.00
02/14	165	31.0	9.22	0.98	1240	8	0.396	0.321	3.00
02/16	167	67.0	9.22	0.98	1160	8	0.428	0.256	2.99
02/18	153	48.0	9.22	0.96	1420	12	0.320	0.220	3.01
02/21	154	32.0	8.64	0.97	920	8	0.467	0.370	2.99
02/23	160	37.0	9.22	0.86	990	20	0.481	0.370	3.01
02/25	159	32.0	9.22	0.66	1300	56	0.364	0.291	3.01
02/28	159	38.0	9.22	0.87	950	60	0.498	0.379	2.22
03/02	162	24.0	9.22	0.54	980	56	0.492	0.419	2.99
03/04	161	38.0	9.22	0.74	1140	40	0.420	0.321	2.99
03/07	151	56.0	9.22	0.81	1040	28	0.432	0.272	2.99
03/09	152	42.0	9.22	0.85	1290	28	0.350	0.254	3.00
MEAN	153	35.5	9.19	0.90	1131	19	0.408	0.314	2.96
S.DEV	14.34	11.78	.12	.12	163.1	17.81	.06	.06	.16
C V %	9.3	33.1	1.3	13.3	14.4	91.4	15.5	19.6	5.4

COMPOUND =2-4-6-TRICHLOROPHENOL THETA C = 10

PARAMETER =TOC VOLUME-REACTOR = 3.3

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	115	40.0	9.79	0.21	1840	24	0.185	0.121	9.85
01/19	130	21.0	9.79	0.00	1820	136	0.212	0.178	4.51
01/21	116	13.0	9.79	0.16	1620	28	0.212	0.189	%10.11
01/24	169	60.0	9.79	0.26	1580	12	0.317	0.205	9.93
01/26	162	23.0	9.79	0.03	1940	60	0.248	0.213	9.94
01/28	153	34.0	9.79	0.10	2030	48	0.224	0.174	%10.03
01/31	148	32.0	9.79	0.10	1950	204	0.225	0.176	2.96
02/02	161	37.0	9.79	0.10	1880	176	0.254	0.196	3.28
02/04	149	40.0	9.79	0.10	1470	128	0.301	0.220	3.50
02/07	156	36.0	9.79	0.10	2580	116	0.179	0.138	6.16
02/09	164	41.0	9.79	0.15	1880	36	0.259	0.194	9.86
02/11	153	21.0	9.79	0.10	1750	152	0.259	0.224	3.50
02/14	165	28.0	9.79	0.10	1520	328	0.322	0.267	1.51
02/16	167	64.0	9.79	0.10	1510	188	0.328	0.202	2.53
02/18	153	39.0	9.79	0.10	1650	72	0.275	0.205	6.31
02/21	154	30.0	8.93	0.10	1920	132	0.217	0.175	4.67
02/23	160	32.0	9.79	0.10	1460	276	0.325	0.260	1.71
02/25	159	27.0	9.79	0.10	1190	164	0.396	0.329	2.30
02/28	159	27.0	9.79	0.10	1210	140	0.390	0.324	2.70
03/02	162	20.0	9.79	0.10	1420	276	0.338	0.297	1.66
03/04	161	23.0	9.79	0.26	1690	12	0.283	0.242	%10.07
03/07	151	40.0	9.79	0.24	1750	16	0.256	0.188	%10.08
03/09	152	32.0	9.79	0.17	1950	32	0.231	0.183	%10.07
MEAN	153	33.0	9.75	0.13	1722	120	0.271	0.213	5.97
S.DEV	14.34	11.92	.17	.06	300.58	92.51	.05	.05	3.5
C V %	9.3	36	1.8	52.2	17.4	77.2	22.1	24.8	58.8

COMPOUND =COMBINED THETA C = 1

PARAMETER =BOD VOLUME-REACTOR = 2.949

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	297	3.6	8.64	2.63	450	24	1.934	1.910	1.00
01/24	402	3.5	8.93	2.51	410	28	2.969	2.943	1.00
01/26	332	2.0	9.22	2.95	400	0	2.595	2.579	1.00
01/28	301	1.5	9.07	2.72	600	22	1.543	1.535	1.00
01/31	373	1.0	9.07	2.90	540	4	2.124	2.119	1.00
02/02	336	1.5	9.22	2.83	530	10	1.982	1.973	1.00
02/04	378	1.9	9.07	2.87	460	6	2.527	2.515	1.00
02/07	378	3.3	8.64	2.95	590	0	1.877	1.861	1.00
02/09	390	2.9	9.07	2.95	310	0	3.869	3.841	1.00
02/11	381	1.9	9.22	2.95	540	0	2.206	2.195	1.00
02/14	380	9.2	8.78	2.40	750	64	1.508	1.472	1.00
02/16	338	4.8	8.64	1.64	590	110	1.678	1.655	1.00
02/18	330	3.9	9.07	0.79	460	120	2.206	2.180	1.00
02/21	317	7.8	8.64	1.98	590	86	1.574	1.535	1.00
02/23	326	8.4	8.64	2.48	370	28	2.581	2.515	1.00
02/25	358	5.6	8.78	2.03	410	56	2.600	2.559	1.00
02/28	322	4.2	8.78	0.83	390	104	2.458	2.426	1.00
03/02	184	9.5	8.78	1.79	290	48	1.889	1.792	1.00
03/04	293	4.8	8.93	1.04	330	80	2.689	2.645	1.00
03/07	357	11.5	8.93	1.67	410	72	2.637	2.552	1.00
MEAN	339	4.6	8.91	2.25	471	43	2.272	2.240	1.00
S.DEV	48.84	3.07	.21	.73	117.46	40.69	.57	.57	0
C V %	14.4	66.2	2.3	32.7	24.9	94.4	25.2	25.4	0

COMPOUND =COMBINED THETA C = 3

PARAMETER =BOD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	297	2.1	9.22	1.03	930	0	0.950	0.943	3.01
01/24	402	1.7	9.22	0.93	990	12	1.208	1.203	3.01
01/26	332	6.2	9.22	1.03	1150	0	0.859	0.843	3.01
01/28	301	1.9	9.22	0.98	1180	8	0.759	0.754	2.99
01/31	373	91.9	9.22	0.99	1560	8	0.711	0.536	3.00
02/02	336	2.6	9.22	0.99	1390	8	0.719	0.713	2.99
02/04	378	3.1	9.22	0.95	1510	16	0.745	0.738	2.99
02/07	378	4.2	9.22	1.03	1860	0	0.604	0.598	3.01
02/09	390	2.9	9.22	0.99	1650	8	0.703	0.698	3.01
02/11	381	2.3	9.22	0.94	1460	16	0.776	0.771	3.01
02/14	380	3.2	9.22	0.99	1640	8	0.689	0.683	3.01
02/16	338	4.0	9.22	1.01	1450	4	0.693	0.685	3.00
02/18	330	1.5	9.22	0.96	1870	16	0.525	0.522	3.01
02/21	317	1.8	9.22	1.01	1350	4	0.698	0.694	3.00
02/23	326	3.4	9.22	0.98	1200	8	0.808	0.800	3.00
02/25	358	1.9	9.22	1.01	1260	4	0.845	0.841	2.99
02/28	322	3.5	9.22	1.01	1270	4	0.754	0.746	2.99
03/02	184	2.4	9.22	1.01	1410	4	0.388	0.383	3.00
03/04	293	0.5	9.22	0.96	1700	16	0.513	0.512	2.99
03/07	357	2.4	9.22	1.01	1450	4	0.732	0.727	3.00
MEAN	339	7.2	9.22	0.99	1414	7	0.734	0.720	3.00
S.DEV	48.84	19.97	0	.02	257.93	5.39	.16	.17	0
C V %	14.4	278.4	0	3	18.2	72.8	23	24.1	.2

COMPOUND =COMBINED THETA C = 10

PARAMETER =BOD VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	297	2.1	9.38	0.31	2120	0	0.420	0.417	%10.10
01/24	402	1.4	9.38	0.25	1990	14	0.605	0.603	9.96
01/26	332	1.9	9.38	0.31	2000	0	0.497	0.495	%10.10
01/28	301	1.0	9.38	0.21	2008	22	0.449	0.448	%10.08
01/31	373	1.7	9.40	0.31	2018	0	0.555	0.553	%10.10
02/02	336	2.2	9.40	0.26	2112	8	0.478	0.475	%10.62
02/04	378	2.9	9.50	0.26	2002	12	0.573	0.569	9.92
02/07.	378	3.4	9.50	0.00	1481	83	0.775	0.768	5.88
02/09	390	3.7	9.40	0.31	1522	0	0.770	0.762	%10.10
02/11	381	1.9	9.36	0.21	1520	16	0.750	0.746	%10.22
02/14	380	2.5	9.38	0.27	1705	8	0.668	0.664	%10.01
02/16	338	1.6	9.40	0.26	2300	12	0.441	0.439	%10.17
02/18	330	1.1	9.41	0.00	1450	122	0.684	0.682	3.95
02/21	317	1.0	9.40	0.00	1563	92	0.609	0.607	5.66
02/23	326	2.3	9.42	0.05	1650	248	0.595	0.590	2.15
02/25	358	4.0	9.41	0.20	1898	88	0.567	0.561	4.99
02/28	322	4.6	9.40	0.05	1592	94	0.607	0.599	5.20
03/02	184	1.6	9.36	0.05	1692	58	0.325	0.322	8.48
03/04	293	2.7	9.41	0.05	1648	62	0.535	0.530	7.78
03/07	357	5.6	9.45	0.30	1686	66	0.639	0.629	4.76
MEAN	339	2.5	9.41	0.18	1798	50	0.577	0.573	8.01
S.DEV	48.84	1.24	.03	.12	253.98	61.01	.12	.11	2.69
C V %	14.4	50.8	.4	66.4	14.1	121.4	20.8	20.7	33.6

COMPOUND =COMBINED THETA C = 1

PARAMETER =COD VOLUME-REACTOR = 2.949

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	430	12.0	8.64	2.63	450	24	2.800	2.721	1.00
01/26	540	28.0	9.22	2.95	400	0	4.221	4.002	1.00
02/04	440	13.0	9.07	2.87	460	6	2.942	2.855	1.00
02/11	600	46.0	9.22	2.95	540	0	3.474	3.208	1.00
02/18	560	37.0	9.07	0.79	460	120	3.744	3.497	1.00
02/25	450	58.0	8.78	2.03	410	56	3.268	2.847	1.00
03/04	485	27.0	8.93	1.04	330	80	4.450	4.203	1.00
MEAN	501	31.6	8.99	2.18	436	41	3.557	3.333	1.00
S.DEV	66.35	16.82	.21	.92	65.02	46.3	.62	.58	0
C V %	13.2	53.2	2.4	42.3	14.9	113.3	17.4	17.6	0

COMPOUND =COMBINED THETA C = 3

PARAMETER =COD VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	430	12.0	9.22	3.10	930	0	1.375	1.337	1.00
01/26	540	11.0	9.22	1.03	1150	0	1.397	1.368	3.01
02/04	440	10.0	9.22	0.95	1510	16	0.867	0.847	2.99
02/11	600	34.0	9.22	0.94	1460	16	1.222	1.153	3.01
02/18	560	31.0	9.22	0.96	1870	16	0.891	0.841	3.01
02/25	450	28.0	9.22	1.01	1260	4	1.062	0.996	2.99
03/04	485	5.0	9.22	0.96	1700	16	0.849	0.840	2.99
MEAN	501	18.7	9.22	1.28	1411	10	1.095	1.055	2.71
S.DEV	66.35	11.82	0	.8	323.69	7.95	.23	.23	.75
C V %	13.2	63.2	0	62.8	22.9	81.8	21.7	22	27.8

COMPOUND =COMBINED THETA C = 10

PARAMETER =COD VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	430	0.0	9.38	0.31	2120	0	0.608	0.608	%10.10
01/28	540	15.0	9.38	0.21	2008	22	0.806	0.784	%10.08
02/04	440	7.0	9.50	0.26	2002	12	0.667	0.656	9.92
02/11	600	30.0	9.36	0.21	1520	16	1.180	1.121	%10.22
02/18	560	33.0	9.41	0.00	1450	122	1.161	1.093	3.95
02/25	450	26.0	9.41	0.20	1898	88	0.713	0.672	4.99
03/04	485	12.0	9.41	0.05	1648	62	0.885	0.863	7.78
MEAN	501	17.6	9.41	0.18	1807	46	0.860	0.828	8.15
S.DEV	66.35	12.39	.04	.11	264.5	45.72	.23	.2	2.66
C V %	13.2	-70.5	.4	63	14.6	99.3	26.8	25.2	32.7

COMPOUND =COMBINED THETA C = 1

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	110	20.0	8.64	2.63	450	24	0.716	0.586	1.00
01/24	151	26.0	8.93	2.51	410	28	1.115	0.923	1.00
01/26	133	13.0	9.22	2.95	400	0	1.040	0.938	1.00
01/28	150	27.0	9.07	2.72	600	22	0.769	0.631	1.00
01/31	142	30.0	9.07	2.90	540	4	0.809	0.638	1.00
02/02	152	43.0	9.22	2.83	530	10	0.897	0.643	1.00
02/04	169	41.0	9.07	2.87	460	6	1.130	0.856	1.00
02/07	152	33.5	8.64	2.95	590	0	0.755	0.588	1.00
02/09	161	37.5	9.07	2.95	310	0	1.597	1.225	1.00
02/11	169	31.0	9.22	2.95	540	0	0.978	0.799	1.00
02/14	151	36.5	8.78	2.40	750	64	0.599	0.455	1.00
02/16	198	41.0	8.64	1.64	590	2	0.983	0.780	1.78
02/18	154	44.0	9.07	0.79	460	120	1.030	0.735	1.00
02/21	135	34.0	8.64	1.98	590	86	0.670	0.502	1.00
02/23	120	31.0	8.64	2.48	370	28	0.950	0.705	1.00
02/25	161	41.0	8.78	2.03	410	56	1.169	0.871	1.00
02/28	238	35.0	8.78	0.83	390	104	1.817	1.550	1.00
03/02	160	30.0	8.78	1.79	290	48	1.643	1.335	1.00
03/04	130	27.0	8.93	1.04	330	80	1.193	0.945	1.00
03/07	137	38.0	8.93	1.67	410	72	1.012	0.731	1.00
MEAN	154	33.0	8.91	2.25	471	38	1.044	0.822	1.04
S.DEV	27.64	7.91	.21	.73	117.46	38.46	.32	.27	.17
C V %	17.9	24	2.3	32.7	24.9	102	31.1	33.9	16.7

COMPOUND =COMBINED THETA C = 3

PARAMETER =TOC VOLUME-REACTOR = 3.1

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	110	19.0	9.22	1.03	930	0	0.352	0.291	3.01
01/24	151	22.0	9.22	0.93	990	12	0.454	0.388	3.01
01/26	133	22.0	9.22	1.03	1150	0	0.344	0.287	3.01
01/28	150	27.0	9.22	0.98	1180	8	0.378	0.310	2.99
01/31	142	39.0	9.22	0.99	1560	8	0.271	0.196	3.00
02/02	152	45.0	9.22	0.99	1390	8	0.325	0.229	2.99
02/04	169	41.0	9.22	0.95	1510	16	0.333	0.252	2.99
02/07	152	34.0	9.22	1.03	1860	0	0.243	0.189	3.01
02/09	161	23.0	9.22	0.99	1650	8	0.290	0.249	3.01
02/11	169	33.0	9.22	0.94	1460	16	0.344	0.277	3.01
02/14	151	27.0	9.22	0.99	1640	8	0.274	0.225	3.01
02/16	198	33.0	9.22	1.01	1450	4	0.406	0.338	3.00
02/18	154	37.0	9.22	0.96	1870	16	0.245	0.186	3.01
02/21	135	71.0	9.22	1.01	1350	4	0.297	0.141	3.00
02/23	120	26.0	9.22	0.98	1200	8	0.297	0.233	3.00
02/25	161	40.0	9.22	1.01	1260	4	0.380	0.286	2.99
02/28	238	26.0	9.22	1.01	1270	4	0.557	0.496	2.99
03/02	160	30.0	9.22	1.01	1410	4	0.337	0.274	3.00
03/04	130	34.0	9.22	0.96	1700	16	0.227	0.168	2.99
03/07	137	39.0	9.22	1.01	1450	4	0.281	0.201	3.00
MEAN	154	33.4	9.22	0.99	1414	7	0.332	0.261	3.00
S.DEV	27.64	11.48	0	.02	257.93	5.39	.07	.08	0
C V %	17.9	34.3	0	3	18.2	72.8	23.6	31.4	.2

COMPOUND =COMBINED THETA C = 10

PARAMETER =TOC VOLUME-REACTOR = 3.13

DATE 1983	SI	SE	F	FW	X	XE	FSI XV	F(SI-SE) XV	TC
01/17	110	13.0	9.38	0.31	2120	0	0.155	0.137	%10.10
01/24	151	23.0	9.38	0.25	1990	14	0.227	0.193	9.96
01/26	133	17.0	9.38	0.31	2000	0	0.199	0.174	%10.10
01/28	150	23.0	9.38	0.21	2008	22	0.224	0.190	%10.08
01/31	142	33.0	9.40	0.31	2018	0	0.211	0.162	%10.10
02/02	152	40.0	9.40	0.26	2112	8	0.216	0.159	%10.62
02/04	169	42.0	9.50	0.26	2002	12	0.256	0.193	9.92
02/07	152	37.0	9.50	0.00	1481	83	0.312	0.236	5.88
02/09	161	23.0	9.40	0.31	1522	0	0.318	0.272	%10.10
02/11	169	26.0	9.36	0.21	1520	16	0.332	0.281	%10.22
02/14	151	30.0	9.38	0.27	1705	8	0.265	0.213	%10.01
02/16	198	33.0	9.40	0.26	2300	12	0.259	0.215	%10.17
02/18	154	36.0	9.41	0.00	1450	122	0.319	0.245	3.95
02/21	135	21.0	9.40	0.00	1563	92	0.259	0.219	5.66
02/23	120	31.0	9.42	0.05	1650	248	0.219	0.162	2.15
02/25	161	39.0	9.41	0.20	1898	88	0.255	0.193	4.99
02/28	238	30.0	9.40	0.05	1592	94	0.449	0.392	5.20
03/02	160	25.0	9.36	0.05	1692	58	0.283	0.239	8.48
03/04	130	23.0	9.41	0.05	1648	62	0.237	0.195	7.78
03/07	137	42.0	9.45	0.30	1686	66	0.245	0.170	4.76
MEAN	154	29.4	9.41	0.18	1798	50	0.262	0.212	8.01
S.DEV	27.64	8.39	.03	.12	253.98	61.01	.06	.05	2.69
C V %	17.9	28.6	.4	66.4	14.1	121.4	23.9	26.9	33.6

COMPOUND = FLUORANTHENE THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	270	6.2	9.22	2.53	580	40	1.354	1.323	1.06
04/06	278	2.5	9.50	2.76	467	20	1.784	1.768	1.04
04/08	281	13.4	9.50	3.17	424	0	1.986	1.891	1.00
04/11	271	6.8	9.22	3.08	390	4	2.021	1.970	1.01
04/13	286	3.2	9.50	3.17	410	0	2.090	2.067	1.00
04/15	259	4.6	9.50	3.17	260	0	2.985	2.932	1.00
04/18	237	4.0	9.52	3.17	362	0	1.966	1.933	1.00
04/20	267	6.0	9.50	1.77	490	38	1.633	1.596	1.34
04/22	280	8.9	9.51	3.17	404	0	2.079	2.013	1.00
04/25	260	4.1	9.50	2.91	363	10	2.147	2.113	1.03
04/27	273	4.9	9.22	2.08	220	24	3.609	3.544	1.11
04/29	307	4.9	9.55	3.17	365	0	2.534	2.493	1.00
05/02	300	4.2	9.50	3.17	202	0	4.451	4.388	1.00
05/04	282	4.2	9.65	3.17	300	0	2.862	2.819	1.00
05/06	276	3.4	9.22	2.80	260	10	3.088	3.049	1.04
05/09	269	4.0	9.50	3.17	298	0	2.705	2.665	1.00
05/11	260	11.6	9.50	3.17	322	0	2.420	2.312	1.00
05/13	279	8.3	9.46	3.17	410	0	2.031	1.970	1.00
05/16	259	4.8	9.50	2.60	260	42	2.985	2.930	0.85
05/18	289	5.5	9.45	3.17	300	0	2.872	2.817	1.00
05/20	281	4.4	9.50	3.17	260	0	3.239	3.188	1.00
05/23	210	1.6	9.50	3.17	280	0	2.248	2.231	1.00
05/25	180	5.8	9.50	3.17	295	0	1.829	1.770	1.00
MEAN	268	5.5	9.46	2.96	344	8	2.475	2.425	1.02
S.DEV	27.52	2.76	.11	.38	93.13	14.24	.71	.71	.08
C V %	10.2	50	1.2	12.9	27	174.2	28.9	29.3	7.9

COMPOUND = FLUORANTHENE THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	270	2.2	9.07	1.07	820	16	0.942	0.934	2.59
04/06	278	1.3	9.40	1.06	845	0	0.976	0.971	2.99
04/08	281	1.8	9.36	1.06	806	0	1.029	1.023	2.99
04/11	271	3.1	9.36	1.00	677	0	1.182	1.168	3.17
04/13	286	1.2	9.50	0.62	856	40	1.001	0.997	3.08
04/15	259	1.6	9.36	1.06	933	0	0.820	0.815	2.99
04/18	237	3.6	9.50	1.00	986	0	0.720	0.709	3.17
04/20	267	2.9	9.50	0.75	1000	20	0.800	0.791	3.43
04/22	280	3.1	9.48	1.06	868	0	0.965	0.954	2.99
04/25	259	2.2	9.50	1.06	1180	0	0.658	0.652	2.99
04/27	273	1.9	9.50	0.79	907	26	0.902	0.896	3.05
04/29	307	2.4	9.50	1.06	1280	0	0.719	0.713	2.99
05/02	300	0.6	9.36	1.06	867	0	1.022	1.020	2.99
05/04	282	1.9	9.22	0.91	986	16	0.832	0.826	3.03
05/06	276	2.2	9.50	0.94	1160	14	0.713	0.707	3.04
05/09	269	2.6	9.50	1.06	1082	0	0.745	0.738	2.99
05/11	260	2.9	9.55	1.06	1004	0	0.780	0.771	2.99
05/13	279	3.6	9.50	1.06	970	0	0.862	0.851	2.99
05/16	259	4.5	9.50	1.05	836	0	0.928	0.912	3.02
05/18	289	5.1	9.50	1.05	893	0	0.970	0.953	3.02
05/20	281	5.6	9.22	1.06	830	0	0.985	0.965	2.99
05/23	210	0.8	9.40	1.06	860	0	0.724	0.721	2.99
05/25	180	2.8	9.50	1.06	890	0	0.606	0.597	2.99
MEAN	268	2.6	9.43	1.00	936	6	0.864	0.856	3.02
S.DEV	27.53	1.27	.11	.12	137.76	10.92	.14	.14	.13
C V %	10.2	48.8	1.2	12.1	14.7	190.3	16.6	16.6	4.5

COMPOUND = FLUORANTHENE THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	270	1.7	9.50	0.07	2033	52	0.398	0.396	10.19
04/06	278	1.0	9.36	0.10	2005	46	0.409	0.408	10.15
04/08	281	0.4	9.40	0.30	2222	60	0.375	0.374	5.81
04/11	271	2.7	9.50	0.05	1804	61	0.450	0.446	8.58
04/13	286	1.3	9.50	0.11	2350	52	0.365	0.363	9.98
04/15	259	1.2	9.50	0.32	2103	0	0.369	0.367	9.91
04/18	237	1.4	9.40	0.32	1800	0	0.390	0.388	9.91
04/20	267	1.5	9.48	0.05	1910	130	0.418	0.416	4.58
04/22	280	1.8	9.46	0.32	1887	0	0.443	0.440	9.91
04/25	259	1.8	9.50	0.32	1740	0	0.446	0.443	9.91
04/27	273	1.4	9.50	0.24	1880	25	0.435	0.433	8.73
04/29	307	0.9	9.50	0.30	2000	8	0.460	0.459	9.41
05/02	300	1.4	9.50	0.32	1800	0	0.499	0.497	9.91
05/04	282	0.9	9.50	0.32	1886	0	0.448	0.447	9.91
05/06	276	1.1	9.50	0.30	1730	34	0.478	0.476	6.59
05/09	269	1.5	9.40	0.20	1610	20	0.495	0.493	10.09
05/11	260	0.9	9.50	0.32	1956	0	0.398	0.397	9.91
05/13	279	2.0	9.52	0.32	2058	0	0.407	0.404	9.91
05/16	259	1.8	9.50	0.32	1674	0	0.464	0.460	9.91
05/18	289	2.0	9.50	0.31	1960	0	0.442	0.439	10.23
05/20	281	4.3	9.22	0.31	1890	0	0.432	0.426	10.23
05/23	210	1.8	9.50	0.31	2080	0	0.303	0.300	10.23
05/25	180	2.2	9.46	0.31	2020	0	0.266	0.263	10.23
MEAN	268	1.6	9.47	0.25	1930	21	0.417	0.415	9.31
S.DEV	27.53	.77	.06	.1	173.63	32.77	.05	.05	1.53
C V %	10.2	48.2	.7	39.6	8.9	154.4	13.5	13.5	16.5

COMPOUND = FLUORANTHENE THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	500	78.5	9.50	3.17	424	0	3.534	2.979	1.00
04/13	560	21.0	9.50	3.17	410	0	4.093	3.940	1.00
04/22	418	20.0	9.50	3.17	404	0	3.101	2.952	1.00
04/29	440	44.0	9.55	3.17	202	0	6.562	5.906	1.00
05/06	360	10.0	9.22	2.80	260	10	4.027	3.915	1.04
05/11	400	20.0	9.50	3.17	298	0	4.023	3.821	1.00
05/18	410	12.0	9.45	3.17	300	0	4.074	3.955	1.00
05/25	320	10.0	9.50	3.17	295	0	3.251	3.149	1.00
MEAN	426	26.9	9.47	3.12	324	1	4.083	3.827	1.01
S.DEV	75.79	23.53	.1	.13	80.06	3.53	1.07	.94	.01
C V %	17.7	87.3	1	4.1	24.7	282.8	26.3	24.7	1.4

COMPOUND = FLUORANTHENE THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	500	11.0	9.36	1.06	806	0	1.832	1.791	2.99
04/13	560	27.0	9.50	0.62	856	40	1.961	1.866	3.08
04/22	418	10.0	9.48	1.06	868	0	1.440	1.406	2.99
04/29	440	16.0	9.50	1.06	1280	0	1.030	0.993	2.99
05/06	360	0.0	9.50	0.94	1160	14	0.930	0.930	3.04
05/11	400	6.0	9.55	1.06	1004	0	1.200	1.182	2.99
05/18	410	10.0	9.50	1.05	893	0	1.376	1.342	3.02
05/25	320	14.0	9.50	1.06	890	0	1.078	1.030	2.99
MEAN	426	11.8	9.49	0.99	970	7	1.356	1.318	3.01
S.DEV	75.79	7.86	.05	.15	167.32	14.3	.37	.35	.03
C V %	17.7	66.9	.5	15.8	17.2	211.8	27.7	27	1

COMPOUND = FLUORANTHENE THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	500	9.0	9.40	0.30	2222	60	0.667	0.655	5.81
04/13	560	7.0	9.50	0.11	2350	52	0.714	0.705	9.98
04/22	418	8.0	9.46	0.32	1887	0	0.661	0.648	9.91
04/29	440	10.0	9.50	0.30	2000	8	0.659	0.644	9.41
05/06	360	0.0	9.50	0.30	1730	34	0.624	0.624	6.59
05/11	400	0.0	9.50	0.32	1956	0	0.613	0.613	9.91
05/18	410	10.0	9.50	0.31	1960	0	0.627	0.612	10.23
05/25	320	10.0	9.46	6.31	2020	0	0.473	0.458	0.50
MEAN	426	6.8	9.48	1.03	2016	19	0.630	0.620	7.79
S.DEV	75.79	4.3	.03	2.13	192.51	25.52	.07	.07	3.39
C V %	17.7	63.7	.3	206.3	9.5	132.5	11.2	11.6	43.5

COMPOUND = FLUORANTHENE THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	178	29.0	9.22	2.53	580	40	0.893	0.747	1.06
04/06	179	30.5	9.50	2.76	467	20	1.149	0.953	1.04
04/08	198	45.5	9.50	3.17	424	0	1.399	1.078	1.00
04/11	207	27.5	9.22	3.08	390	4	1.544	1.339	1.01
04/13	234	26.5	9.50	3.17	410	0	1.710	1.517	1.00
04/15	224	29.0	9.50	3.17	260	0	2.582	2.248	1.00
04/18	194	37.5	9.52	3.17	362	0	1.609	1.298	1.00
04/20	204	32.0	9.50	1.77	490	38	1.248	1.052	1.34
04/22	223	36.5	9.50	3.17	404	0	1.654	1.383	1.00
04/25	174	25.5	9.50	2.91	363	10	1.437	1.226	1.03
04/27	176	31.0	9.22	2.08	220	24	2.327	1.917	1.11
04/29	210	26.5	9.55	3.17	365	0	1.733	1.515	1.00
05/02	162	26.0	9.50	3.17	202	0	2.403	2.018	1.00
05/04	171	24.0	9.65	3.17	300	0	1.735	1.492	1.00
05/06	145	24.0	9.22	2.80	260	10	1.622	1.354	1.04
05/09	200	26.5	9.50	3.17	298	0	2.011	1.745	1.00
05/11	124	50.5	9.50	3.17	322	0	1.154	0.684	1.00
05/13	204	22.5	9.46	3.17	410	0	1.481	1.317	1.00
05/16	187	24.0	9.50	2.60	260	42	2.155	1.879	0.85
05/18	179	27.0	9.45	3.17	300	0	1.779	1.510	1.00
05/20	180	23.5	9.50	3.17	260	0	2.075	1.804	1.00
05/23	199	23.0	9.50	3.17	280	0	2.130	1.884	1.00
05/25	114	24.0	9.50	3.17	295	0	1.158	0.914	1.00
MEAN	185	29.2	9.46	2.96	344	8	1.695	1.429	1.02
S.DEV	29.6	7.17	.11	.38	93.13	14.24	.44	.41	.08
C V %	15.9	24.5	1.2	12.9	27	174.2	26	29	7.9

COMPOUND = FLUORANTHENE THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	178	31.5	9.07	1.07	820	16	0.621	0.511	2.59
04/06	179	23.0	9.40	1.06	845	0	0.628	0.547	2.99
04/08	198	22.0	9.36	1.06	806	0	0.725	0.645	2.99
04/11	207	21.5	9.36	1.00	677	0	0.903	0.809	3.17
04/13	234	31.0	9.50	0.62	856	40	0.819	0.711	3.08
04/15	224	22.5	8.50	1.06	933	0	0.644	0.579	2.99
04/18	194	26.5	9.50	1.00	986	0	0.590	0.509	3.17
04/20	204	33.0	9.50	0.75	1000	20	0.611	0.512	3.43
04/22	223	27.5	9.48	1.06	868	0	0.768	0.674	2.99
04/25	174	27.0	9.50	1.06	1180	0	0.442	0.373	2.99
04/27	176	31.0	9.50	0.79	907	26	0.582	0.479	3.05
04/29	210	25.5	9.50	1.06	1280	0	0.492	0.432	2.99
05/02	162	16.0	9.36	1.06	867	0	0.552	0.497	2.99
05/04	172	16.0	9.22	0.91	986	16	0.507	0.460	3.03
05/06	145	16.0	9.50	0.94	1160	14	0.375	0.333	3.04
05/09	200	22.0	9.50	1.06	1082	0	0.554	0.493	2.99
05/11	124	57.5	9.55	1.06	1004	0	0.372	0.200	2.99
05/13	204	24.0	9.50	1.06	970	0	0.630	0.556	2.99
05/16	187	26.5	9.50	1.05	836	0	0.670	0.575	3.02
05/18	179	24.5	9.50	1.05	893	0	0.601	0.518	3.02
05/20	180	25.0	9.22	1.06	830	0	0.631	0.543	2.99
05/23	199	25.0	9.40	1.06	860	0	0.686	0.600	2.99
05/25	144	18.5	9.50	1.06	890	0	0.485	0.423	2.99
MEAN	187	25.8	9.39	1.00	936	6	0.604	0.521	3.02
S.DEV	26.83	8.42	.22	.12	137.76	10.92	.12	.12	.13
C V %	14.3	32.6	2.4	12.1	14.7	190.3	21.3	24.4	4.5

COMPOUND = FLUORANTHENE THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	178	20.0	9.50	0.07	2033	52	0.262	0.233	10.19
04/06	179	15.0	9.36	0.10	2005	46	0.264	0.242	10.15
04/08	198	29.0	9.40	0.30	2222	60	0.264	0.226	5.81
04/11	207	21.5	9.50	0.05	1804	61	0.344	0.308	8.58
04/13	234	16.0	9.50	0.11	2350	52	0.298	0.278	9.98
04/15	224	19.5	9.50	0.32	2103	0	0.319	0.291	9.91
04/18	194	23.5	9.40	0.32	1800	0	0.320	0.281	9.91
04/20	204	21.5	9.48	0.05	1910	130	0.319	0.286	4.58
04/22	223	22.0	9.46	0.32	1887	0	0.353	0.318	9.91
04/25	174	25.5	9.50	0.32	1740	0	0.300	0.256	9.91
04/27	176	18.5	9.50	0.24	1880	25	0.281	0.251	8.73
04/29	210	19.5	9.50	0.30	2000	8	0.315	0.285	9.41
05/02	162	13.0	9.50	0.32	1000	0	0.485	0.447	9.91
05/04	171	14.5	9.50	0.32	1886	0	0.272	0.249	9.91
05/06	145	15.0	9.50	0.30	1730	34	0.251	0.225	6.59
05/09	200	18.5	9.40	0.20	1610	20	0.368	0.334	10.09
05/11	124	18.0	9.50	0.32	1956	0	0.190	0.162	9.91
05/13	204	16.5	9.52	0.32	2058	0	0.298	0.274	9.91
05/16	187	1.8	9.50	0.32	1674	0	0.335	0.332	9.91
05/18	179	2.0	9.50	0.31	1960	0	0.274	0.271	10.23
05/20	180	4.3	9.22	0.31	1890	0	0.277	0.270	10.23
05/23	199	1.8	9.50	0.31	2080	0	0.287	0.284	10.23
05/25	114	2.2	9.46	0.31	2020	0	0.168	0.165	10.23
MEAN	185	15.6	9.47	0.25	1896	21	0.298	0.272	9.31
S.DEV	29.62	7.99	.06	.1	259.72	32.77	.06	.05	1.53
C V %	15.9	51.1	.7	39.6	13.7	154.4	20.8	21.2	16.5

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	255	2.2	8.93	3.10	670	0	1.096	1.087	1.00
04/06	268	1.2	8.93	3.10	640	0	1.206	1.201	1.00
04/08	244	1.1	9.50	3.10	500	0	1.495	1.489	1.00
04/11	268	5.0	8.64	2.88	420	16	1.778	1.745	1.00
04/13	259	1.6	10.00	3.10	570	0	1.466	1.457	1.00
04/15	244	2.6	9.50	2.90	530	16	1.411	1.396	1.00
04/18	248	6.5	9.79	2.84	530	20	1.478	1.439	1.00
04/20	244	3.2	9.50	3.10	580	0	1.289	1.272	1.00
04/22	242	3.6	9.50	3.10	390	0	1.902	1.873	1.00
04/25	274	4.5	9.22	3.10	390	0	2.090	2.055	1.00
04/27	280	5.7	9.50	2.73	580	32	1.479	1.449	1.00
04/29	250	3.2	9.22	2.85	610	24	1.219	1.203	1.00
05/02	276	5.2	9.22	2.63	620	44	1.324	1.299	1.00
05/04	241	2.4	9.50	3.10	510	0	1.448	1.434	1.00
05/06	264	3.7	9.22	3.10	480	0	1.636	1.613	1.00
05/09	276	4.6	9.50	1.87	520	84	1.627	1.599	1.00
05/11	254	3.7	9.22	2.80	510	24	1.481	1.460	1.00
05/13	246	4.8	9.50	3.10	490	0	1.539	1.508	1.00
05/16	248	6.7	9.50	3.10	350	0	2.171	2.113	1.00
05/18	259	12.2	9.50	3.10	440	0	1.804	1.719	1.00
05/20	297	9.6	9.50	3.00	250	4	3.641	3.523	1.00
05/23	204	4.9	9.50	3.10	560	0	1.116	1.090	1.00
05/25	227	5.2	9.22	3.10	750	0	0.900	0.880	1.00
MEAN	255	4.5	9.37	2.95	517	11	1.591	1.561	1.00
S.DEV	19.54	2.58	.28	.27	111.65	20.29	.54	.52	0
C V %	7.6	57.4	3	9.3	21.5	176.8	34.1	33.3	0

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	255	2.1	8.93	1.01	990	0	0.742	0.736	3.07
04/06	268	0.9	8.93	1.01	990	0	0.780	0.777	3.07
04/08	244	1.0	9.22	1.00	880	0	0.825	0.821	3.10
04/11	268	3.5	8.64	0.97	950	8	0.786	0.776	3.00
04/13	259	1.9	9.22	1.00	890	0	0.866	0.859	3.10
04/15	244	1.5	9.22	0.90	1010	16	0.719	0.714	3.00
04/18	248	2.9	9.36	0.85	950	20	0.788	0.779	3.01
04/20	244	0.9	9.22	0.63	940	44	0.772	0.769	3.00
04/22	242	1.7	9.22	1.03	1110	0	0.648	0.644	3.01
04/25	274	1.8	8.93	1.01	1250	4	0.631	0.627	2.99
04/27	280	1.9	9.22	1.03	1080	0	0.771	0.766	3.01
04/29	250	1.5	9.22	0.86	1170	24	0.636	0.632	3.01
05/02	276	1.9	9.22	0.88	1070	20	0.767	0.762	2.99
05/06	264	1.7	9.22	1.01	1030	4	0.762	0.757	2.98
05/09	276	2.0	9.22	0.98	1250	8	0.657	0.652	3.00
05/11	254	0.9	9.22	0.80	1170	32	0.646	0.643	3.01
05/13	246	0.2	9.22	1.03	1320	0	0.554	0.554	3.01
05/16	248	2.4	9.22	1.01	1030	4	0.716	0.709	2.98
05/18	259	3.1	9.22	1.03	950	0	0.811	0.801	3.01
05/20	297	2.7	9.22	0.82	790	20	1.118	1.108	3.00
05/23	204	0.0	9.22	1.03	940	0	0.645	0.645	3.01
05/25	227	2.8	8.93	1.03	1170	0	0.559	0.552	3.01
MEAN	256	1.8	9.15	0.95	1042	9	0.736	0.731	3.02
S.DEV	19.75	.9	.16	.1	135.5	12.49	.12	.11	.03
C V %	7.7	50.6	1.8	11	13	134.7	16.3	16.2	1.1

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	255	2.3	9.79	0.33	2610	0	0.290	0.287	10.00
04/06	268	1.4	9.79	0.33	2540	0	0.313	0.311	10.00
04/08	244	0.2	9.79	0.29	2560	12	0.283	0.283	9.86
04/11	268	3.9	8.93	0.33	2250	0	0.322	0.318	10.00
04/13	259	1.1	9.79	0.33	2100	0	0.366	0.364	10.00
04/15	244	1.5	9.79	0.22	2040	24	0.355	0.353	9.92
04/18	248	1.6	10.37	0.31	2100	4	0.371	0.369	10.03
04/20	244	0.5	9.79	0.33	2390	0	0.303	0.302	10.00
04/22	242	1.2	9.79	0.27	2380	16	0.302	0.300	9.88
04/25	274	1.8	8.93	0.00	1900	112	0.390	0.388	6.27
04/27	280	1.0	9.79	0.11	1940	44	0.428	0.427	10.01
04/29	250	1.4	9.50	0.25	2280	16	0.316	0.314	10.48
05/02	276	0.9	9.50	0.33	2070	0	0.384	0.383	10.00
05/04	241	0.9	9.79	0.33	2080	0	0.344	0.342	10.00
05/06	264	0.9	9.50	0.33	2130	0	0.357	0.356	10.00
05/09	276	0.8	9.79	0.31	1980	4	0.414	0.412	10.03
05/16	248	0.6	9.79	0.33	1090	0	0.675	0.673	10.00
05/18	259	1.9	9.79	0.33	1320	56	0.582	0.578	4.51
05/20	297	1.7	10.01	0.33	2040	0	0.442	0.439	10.00
05/23	204	1.0	9.79	0.00	1620	60	0.374	0.372	9.10
05/25	227	1.0	9.50	0.00	900	64	0.726	0.723	4.88
MEAN	256	1.3	9.69	0.26	2015	20	0.397	0.395	9.28
S.DEV	20.38	.77	.31	.11	453.87	30.4	.12	.12	1.73
C V %	7.9	59	3.2	46.6	22.5	154.9	30.5	30.5	18.7

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	485	5.0	9.50	3.10	500	0	2.973	2.942	1.00
04/13	500	16.0	10.00	3.10	570	0	2.830	2.739	1.00
04/22	430	22.0	9.50	3.10	390	0	3.379	3.206	1.00
04/29	450	30.0	9.22	2.85	610	24	2.194	2.048	1.00
05/06	345	14.0	9.22	3.10	480	0	2.138	2.051	1.00
05/13	350	26.0	9.50	3.10	490	0	2.189	2.026	1.00
05/20	445	10.0	9.50	3.00	250	4	5.455	5.332	1.00
05/25	390	21.0	9.22	3.10	750	0	1.547	1.463	1.00
MEAN	424	18.0	9.46	3.06	505	4	2.838	2.726	1.00
S.DEV	57.96	8.33	.25	.09	148.51	8.4	1.2	1.19	0
C V %	13.6	46.2	2.7	2.9	29.4	240	42.4	43.9	0

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	485	11.0	9.22	1.00	880	0	1.639	1.602	3.10
04/13	500	12.0	9.22	1.00	890	0	1.671	1.631	3.10
04/22	430	9.0	9.22	1.03	1110	0	1.152	1.128	3.01
04/29	450	18.0	9.22	0.86	1170	24	1.144	1.098	3.01
05/06	345	10.0	9.22	1.01	1030	4	0.996	0.967	2.98
05/13	350	10.0	9.22	1.03	1320	0	0.789	0.766	3.01
05/20	445	4.0	9.22	0.82	790	20	1.675	1.660	3.00
05/25	390	28.0	8.93	1.03	1170	0	0.960	0.891	3.01
MEAN	424	12.8	9.18	0.97	1045	6	1.253	1.218	3.03
S.DEV	57.96	7.26	.1	.08	180.31	10.02	.35	.36	.04
C V %	13.6	56.9	1.1	8.5	17.2	167.1	28.4	29.5	1.5

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	485	9.0	9.79	0.29	2560	12	0.562	0.552	9.86
04/13	500	11.0	9.79	0.33	2100	0	0.706	0.691	10.00
04/22	430	4.0	9.79	0.27	2380	16	0.536	0.531	9.88
04/29	450	10.0	9.50	0.25	2280	16	0.568	0.556	10.48
05/06	345	10.0	9.50	0.33	2130	0	0.466	0.453	10.00
05/20	445	0.0	10.01	0.33	2040	0	0.662	0.662	10.00
05/25	390	19.0	9.50	0.00	900	64	1.247	1.187	4.88
MEAN	435	9.0	9.70	0.26	2056	15	0.678	0.661	9.30
S.DEV	53.54	5.94	.2	.11	540.55	22.67	.26	.24	1.95
C V %	12.3	66	2	45.8	26.2	146.9	38.8	37	21

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	210	23.0	8.93	3.10	670	0	0.903	0.804	1.00
04/06	221	22.0	8.93	3.10	640	0	0.995	0.896	1.00
04/08	185	23.0	9.50	3.10	500	0	1.134	0.993	1.00
04/11	227	21.0	8.64	2.88	420	16	1.506	1.367	1.00
04/13	227	21.0	10.00	3.10	570	0	1.285	1.166	1.00
04/15	225	19.0	9.50	2.90	530	16	1.301	1.191	1.00
04/18	205	15.0	9.79	2.84	530	20	1.222	1.132	1.00
04/20	213	15.0	9.50	3.10	580	0	1.125	1.046	1.00
04/22	210	13.0	9.50	3.10	390	0	1.650	1.548	1.00
04/25	206	25.0	9.22	2.78	400	20	1.532	1.346	1.00
04/27	186	26.0	9.50	2.73	580	32	0.983	0.845	1.00
04/29	175	30.0	9.22	2.85	610	24	0.853	0.707	1.00
05/02	188	26.0	9.22	2.63	620	44	0.902	0.777	1.00
05/04	186	17.0	9.50	3.10	510	0	1.118	1.015	1.00
05/06	193	21.0	9.22	3.10	480	0	1.196	1.066	1.00
05/09	185	23.0	9.50	1.87	520	84	1.090	0.955	1.00
05/11	186	21.0	9.22	2.80	510	24	1.085	0.962	1.00
05/13	341	31.0	9.50	3.10	490	0	2.133	1.939	1.00
05/16	140	19.0	9.50	3.10	350	0	1.226	1.059	1.00
05/18	166	21.0	9.50	3.10	440	0	1.156	1.010	1.00
05/20	182	26.0	9.50	3.00	250	4	2.231	1.912	1.00
05/23	213	24.0	9.50	3.10	560	0	1.166	1.034	1.00
05/25	164	22.0	9.22	3.10	750	0	0.650	0.563	1.00
MEAN	201	21.9	9.37	2.94	517	12	1.237	1.101	1.00
S.DEV	37.65	4.45	.28	.27	111.15	20.21	.37	.33	0
C V %	18.6	20.3	3	9.4	21.4	163.7	30.1	30.7	0

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/06	221	21.0	8.93	1.01	990	0	0.643	0.582	3.07
04/08	185	18.0	9.22	1.00	880	0	0.625	0.564	3.10
04/11	227	16.0	8.64	0.97	950	8	0.666	0.619	3.00
04/13	227	16.0	9.22	1.00	890	0	0.759	0.705	3.10
04/15	225	17.0	9.22	0.90	1010	16	0.663	0.613	3.00
04/18	205	17.0	9.36	0.85	950	20	0.652	0.598	3.01
04/20	213	16.0	9.22	0.63	940	44	0.674	0.623	3.00
04/22	210	14.0	9.22	1.03	1110	0	0.563	0.525	3.01
04/25	206	20.0	8.93	1.01	1250	4	0.475	0.429	2.99
04/27	186	16.0	9.22	1.03	1080	0	0.512	0.468	3.01
04/29	175	18.0	9.22	0.86	1170	24	0.445	0.399	3.01
05/02	188	14.0	9.22	0.88	1070	20	0.523	0.484	2.99
05/06	193	12.0	9.22	1.01	1030	4	0.557	0.523	2.98
05/09	185	17.0	9.22	0.98	1250	8	0.440	0.400	3.00
05/11	186	17.0	9.22	0.80	1170	32	0.473	0.430	3.01
05/13	341	17.0	9.22	1.03	1320	0	0.768	0.730	3.01
05/16	140	14.0	9.22	1.01	1030	4	0.404	0.364	2.98
05/18	166	11.0	9.22	1.03	950	0	0.520	0.485	3.01
05/20	182	17.0	9.22	0.82	790	20	0.685	0.621	3.00
05/23	213	19.0	9.22	1.03	940	0	0.674	0.614	3.01
05/25	164	19.0	8.93	1.03	1170	0	0.404	0.357	3.01
MEAN	202	16.5	9.16	0.95	1045	10	0.577	0.530	3.01
S.DEV	39.28	2.46	.16	.1	138.33	12.62	.11	.1	.03
C V %	19.4	14.9	1.7	11.2	13.2	129.9	19.5	20.5	1.1

COMPOUND = 2-CHLORONAPHTHALENE THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	210	32.0	9.79	0.33	2610	0	0.239	0.202	10.00
04/06	221	27.0	9.79	0.33	2540	0	0.258	0.227	10.00
04/08	185	18.0	9.79	0.29	2560	12	0.214	0.194	9.86
04/11	227	18.0	8.93	0.33	2250	0	0.273	0.251	10.00
04/13	227	27.0	9.79	0.33	2100	0	0.321	0.283	10.00
04/15	225	14.0	9.79	0.22	2040	24	0.327	0.307	9.92
04/18	205	23.0	10.37	0.31	2100	4	0.307	0.272	10.03
04/20	213	27.0	9.79	0.33	2390	0	0.264	0.231	10.00
04/22	210	30.0	9.79	0.27	2380	16	0.262	0.224	9.88
04/25	206	22.0	8.93	0.00	1900	112	0.293	0.262	6.27
04/27	186	14.0	9.79	0.11	1940	44	0.284	0.263	10.01
04/29	175	15.0	9.50	0.25	2280	16	0.221	0.202	10.48
05/02	188	8.0	9.50	0.33	2070	0	0.261	0.250	10.00
05/04	186	7.0	9.79	0.33	2080	0	0.265	0.255	10.00
05/06	193	8.0	9.50	0.33	2130	0	0.261	0.250	10.00
05/09	185	12.0	9.79	0.31	1980	4	0.277	0.259	10.03
05/16	140	30.0	9.79	0.33	1090	0	0.381	0.299	10.00
05/18	166	12.0	9.79	0.33	1320	56	0.373	0.346	4.51
05/20	182	10.0	10.01	0.33	2040	0	0.271	0.256	10.00
05/23	213	18.0	9.79	0.00	1620	60	0.390	0.357	9.10
05/25	164	22.0	9.50	0.00	900	64	0.525	0.454	4.88
MEAN	196	18.8	9.69	0.26	2015	20	0.298	0.269	9.28
S.DEV	23.18	7.96	.31	.11	453.87	30.4	.07	.05	1.73
C V %	11.8	42.4	3.2	46.6	22.5	154.9	23.6	22.3	18.7

COMPOUND = HYDRAZOBENZENE THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	285	2.4	8.64	2.52	400	40	1.967	1.950	1.00
04/06	274	1.7	8.78	2.53	420	40	1.830	1.819	1.00
04/08	269	1.4	9.22	3.13	410	0	1.933	1.923	1.00
04/11	276	4.2	8.93	3.13	500	0	1.575	1.551	1.00
04/13	276	3.1	9.65	3.02	490	8	1.737	1.717	1.00
04/15	258	2.8	9.79	2.63	470	32	1.717	1.698	1.00
04/18	248	4.2	9.07	3.13	390	0	1.843	1.811	1.00
04/20	292	5.1	8.64	2.68	430	32	1.874	1.842	1.00
04/22	268	3.0	9.65	3.13	510	0	1.620	1.602	1.00
04/25	288	2.6	9.22	3.13	470	0	1.805	1.789	1.00
04/27	290	3.3	9.36	2.82	420	20	2.065	2.041	1.00
04/29	280	3.3	8.93	2.80	450	24	1.775	1.754	1.00
05/02	273	6.0	9.79	3.13	320	0	2.668	2.610	1.00
05/04	285	12.6	10.08	2.67	390	24	2.353	2.249	1.00
05/06	274	12.4	9.65	3.13	510	0	1.656	1.581	1.00
05/09	303	11.7	9.07	2.70	360	24	2.439	2.345	1.00
05/11	249	10.6	8.93	3.13	310	0	2.292	2.194	1.00
05/13	243	7.8	8.93	3.13	300	0	2.311	2.237	1.00
05/16	268	8.2	9.22	3.13	480	0	1.645	1.594	1.00
05/18	280	7.2	9.07	3.13	490	0	1.656	1.613	1.00
05/20	294	6.2	9.07	3.13	680	0	1.253	1.226	1.00
05/23	198	10.7	8.64	3.00	540	12	1.012	0.957	1.00
05/25	263	3.6	9.36	2.97	490	12	1.605	1.583	1.00
MEAN	271	5.8	9.20	2.95	445	12	1.854	1.813	1.00
S.DEV	22	3.62	.4	.22	84.52	14.46	.37	.36	0
C V %	8.1	62.1	4.3	7.6	19	124.1	20.4	20.1	.1

COMPOUND = HYDRAZOBENZENE THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	285	2.0	9.50	0.94	970	12	0.889	0.883	3.00
04/06	274	1.6	9.50	0.97	1360	12	0.610	0.606	3.00
04/08	269	1.0	9.79	0.42	1070	72	0.784	0.781	2.99
04/11	276	2.7	8.93	1.05	1170	0	0.671	0.664	2.99
04/13	276	2.0	8.64	1.05	1090	0	0.697	0.692	2.99
04/15	258	1.8	9.79	1.05	1060	0	0.759	0.754	2.99
04/18	248	1.9	8.93	1.05	1290	0	0.547	0.543	2.99
04/20	292	3.2	8.78	0.86	1029	24	0.793	0.785	3.01
04/22	268	2.9	9.79	1.05	1200	0	0.696	0.689	2.99
04/25	288	2.8	9.65	1.05	860	0	1.029	1.019	2.99
04/27	290	2.5	9.65	0.57	1130	60	0.789	0.782	2.98
04/29	280	1.4	9.36	0.84	1000	24	0.835	0.830	3.01
05/02	273	2.8	9.07	1.05	1110	0	0.710	0.703	2.99
05/04	285	5.5	10.37	0.97	980	8	0.960	0.942	3.00
05/06	274	3.2	9.07	1.05	1270	0	0.623	0.616	2.99
05/09	303	4.2	9.64	1.00	1540	0	0.604	0.596	3.14
05/11	249	3.0	9.22	0.95	920	8	0.795	0.785	3.07
05/13	243	3.4	9.36	1.05	1480	0	0.489	0.483	2.99
05/16	268	2.6	9.22	1.05	1350	0	0.583	0.577	2.99
05/18	280	2.3	9.50	1.05	1130	0	0.750	0.744	2.99
05/20	294	3.3	9.79	1.05	1140	0	0.804	0.795	2.99
05/23	198	0.4	9.22	1.05	1290	0	0.451	0.450	2.99
05/25	263	0.8	9.36	1.00	1350	8	0.581	0.579	2.99
MEAN	271	2.5	9.40	0.96	1165	10	0.715	0.709	3.00
S.DEV	22	1.12	.39	.16	177.43	19.25	.14	.14	.03
C.V %	8.1	45.2	4.2	16.8	15.2	194.2	20.1	20	1.1

COMPOUND = HYDRAZOBENZENE THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	285	1.0	9.79	0.24	2210	16	0.407	0.406	10.03
04/06	274	2.2	9.36	0.28	2280	8	0.363	0.360	9.94
04/08	269	0.3	9.50	0.31	1850	0	0.446	0.445	10.00
04/11	276	3.0	9.22	0.31	2520	0	0.326	0.322	10.00
04/13	276	2.4	8.64	0.31	2580	0	0.298	0.296	10.00
04/15	258	1.1	9.94	0.31	2350	0	0.352	0.351	10.00
04/18	248	1.2	9.36	0.31	2140	0	0.350	0.348	10.00
04/20	292	2.2	8.64	0.24	2570	20	0.317	0.314	10.15
04/22	268	1.5	9.94	0.31	2440	0	0.352	0.350	10.00
04/25	288	1.4	9.79	0.31	2200	0	0.413	0.411	10.00
04/27	290	2.1	9.50	0.28	2410	8	0.369	0.366	9.98
04/29	280	1.6	9.22	0.24	2560	20	0.325	0.323	9.99
05/02	273	0.6	9.22	0.31	2480	0	0.327	0.327	10.00
05/04	285	1.5	10.08	0.27	2600	12	0.356	0.355	9.83
05/06	274	1.1	9.36	0.31	2690	0	0.308	0.306	10.00
05/09	303	0.9	9.22	0.25	3050	4	0.295	0.295	11.84
05/11	249	0.0	8.93	0.31	2590	0	0.277	0.277	10.00
05/13	243	0.6	9.36	0.31	2290	0	0.320	0.320	10.00
05/16	268	1.6	9.79	0.31	2490	0	0.340	0.338	10.00
05/18	280	1.0	9.07	0.31	2570	0	0.319	0.318	10.00
05/20	294	2.8	9.07	0.31	2510	0	0.343	0.339	10.00
05/23	198	0.5	9.94	0.26	2750	14	0.231	0.230	10.02
05/25	263	1.8	9.22	0.29	2010	4	0.389	0.386	10.07
MEAN	271	1.4	9.40	0.29	2441	5	0.340	0.338	10.08
S.DEV	22	.78	.4	.02	256.95	6.96	.04	.04	.38
C V %	8.1	55.8	4.2	9.3	10.5	151.1	13.7	13.7	3.8

COMPOUND = HYDRAZOBENZENE THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	530	27.0	9.22	3.13	410	0	3.808	3.614	1.00
04/13	450	14.0	9.65	3.02	490	8	2.831	2.743	1.00
04/22	445	10.0	9.65	3.13	510	0	2.690	2.630	1.00
04/29	400	30.0	8.93	2.80	450	24	2.536	2.346	1.00
05/06	390	44.0	9.65	3.13	510	0	2.358	2.092	1.00
05/11	390	34.0	8.93	3.13	310	0	3.589	3.276	1.00
05/20	420	26.0	9.07	3.13	680	0	1.790	1.679	1.00
05/25	365	10.0	9.36	2.97	490	12	2.228	2.167	1.00
MEAN	424	24.4	9.31	3.06	481	6	2.729	2.568	1.00
S.DEV	51.73	12.18	.31	.12	104.66	8.79	.67	.63	0
C V %	12.2	50	3.4	3.9	21.7	159.9	24.8	24.8	0

COMPOUND = HYDRAZOBENZENE THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/08	530	33.0	9.79	0.42	1070	72	1.544	1.448	2.99
04/13	450	16.0	8.64	1.05	1090	0	1.136	1.096	2.99
04/22	445	10.0	9.79	1.05	1200	0	1.156	1.130	2.99
04/29	400	28.0	9.36	0.84	1000	24	1.192	1.109	3.01
05/06	390	20.0	9.07	1.05	1270	0	0.887	0.842	2.99
05/11	390	24.0	9.22	0.95	920	8	1.245	1.168	3.07
05/20	420	7.0	9.79	1.05	1140	0	1.149	1.130	2.99
05/25	365	18.0	9.36	1.00	1350	8	0.806	0.766	2.99
MEAN	424	19.5	9.38	0.93	1130	14	1.139	1.086	3.00
S.DEV	51.73	8.75	.4	.21	141.01	24.84	.22	.2	.02
C V %	12.2	44.8	4.3	23.4	12.4	177.4	19.7	19.2	.9

COMPOUND = HYDRAZOBENZENE THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	530	12.0	9.50	0.31	2580	0	0.630	0.615	10.00
04/13	450	11.0	8.64	0.31	2580	0	0.486	0.474	10.00
04/22	445	2.0	9.94	0.31	2440	0	0.585	0.582	10.00
04/29	400	20.0	9.22	0.24	2560	20	0.465	0.441	9.99
05/06	390	0.0	9.36	0.31	2690	0	0.438	0.438	10.00
05/11	390	19.0	8.93	0.31	2590	0	0.434	0.413	10.00
05/20	420	7.0	9.07	0.31	2510	0	0.490	0.481	10.00
05/25	365	10.0	9.22	0.29	2010	4	0.540	0.525	10.07
MEAN	424	10.1	9.24	0.30	2495	3	0.508	0.496	10.01
S.DEV	51.73	7.16	.38	.02	208.46	7.01	.07	.07	.02
C V %	12.2	70.7	4.2	8.2	8.3	233.6	13.8	14.5	.2

COMPOUND = HYDRAZOBENZENE THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	219	24.0	8.64	2.52	400	40	1.511	1.346	1.00
04/06	225	34.0	8.78	2.53	420	40	1.503	1.276	1.00
04/08	232	30.0	9.22	3.13	410	0	1.667	1.451	1.00
04/11	238	22.5	8.93	3.13	500	0	1.358	1.230	1.00
04/13	219	25.0	9.65	3.02	490	8	1.378	1.221	1.00
04/15	223	29.5	9.79	2.63	470	32	1.484	1.288	1.00
04/18	199	25.2	9.07	3.13	390	0	1.479	1.291	1.00
04/20	219	39.0	8.64	2.68	430	32	1.406	1.156	1.00
04/22	215	26.5	9.65	3.13	510	0	1.300	1.140	1.00
04/25	185	26.5	9.22	3.13	470	0	1.159	0.993	1.00
04/27	208	30.0	9.36	2.82	420	20	1.481	1.267	1.00
04/29	177	28.0	8.93	2.80	450	24	1.119	0.942	1.00
05/02	155	24.0	9.79	3.13	320	0	1.515	1.280	1.00
05/04	170	39.0	10.08	2.67	390	24	1.404	1.082	1.00
05/06	186	30.5	9.65	3.13	510	0	1.121	0.937	1.00
05/09	205	31.5	9.07	2.70	360	24	1.650	1.397	1.00
05/11	164	33.0	8.93	3.13	310	0	1.509	1.206	1.00
05/16	203	29.0	9.22	3.13	480	0	1.246	1.068	1.00
05/18	197	28.0	9.07	3.13	490	0	1.165	0.999	1.00
05/20	180	30.5	9.07	3.13	680	0	0.767	0.637	1.00
05/23	212	49.0	8.64	3.00	540	12	1.084	0.833	1.00
05/25	194	44.5	9.36	2.97	490	12	1.184	0.912	1.00
MEAN	201	30.9	9.22	2.94	451	12	1.340	1.134	1.00
S.DEV	22.67	6.74	.4	.22	80.25	14.57	.21	.2	0
C V %	11.2	21.8	4.4	7.7	17.7	119.6	16	17.7	.1

COMPOUND = HYDRAZOBENZENE THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	219	43.0	9.50	0.94	970	12	0.683	0.549	3.00
04/06	225	25.5	9.50	0.97	1360	12	0.501	0.444	3.00
04/08	232	29.0	9.79	0.42	1070	72	0.676	0.592	2.99
04/11	238	19.0	8.93	1.05	1170	0	0.579	0.532	2.99
04/13	219	17.0	8.64	1.05	1090	0	0.553	0.510	2.99
04/15	223	22.5	9.79	1.05	1060	0	0.656	0.590	2.99
04/18	199	19.0	8.93	1.05	1290	0	0.439	0.397	2.99
04/20	219	20.0	8.78	0.86	1029	24	0.595	0.541	3.01
04/22	215	23.5	9.79	1.05	1200	0	0.559	0.498	2.99
04/25	185	22.0	9.65	1.05	860	0	0.661	0.582	2.99
04/27	208	31.0	9.65	0.57	1130	60	0.566	0.481	2.98
04/29	177	14.5	9.36	0.84	1000	24	0.526	0.483	3.01
05/02	155	11.5	9.07	1.05	1110	0	0.403	0.373	2.99
05/04	170	17.0	10.37	0.97	980	8	0.573	0.516	3.00
05/06	186	17.5	9.07	1.05	1270	0	0.422	0.382	2.99
05/09	205	20.0	9.64	1.00	1540	0	0.409	0.369	3.14
05/11	164	18.0	9.22	0.95	920	8	0.523	0.466	3.07
05/16	203	18.5	9.22	1.05	1350	0	0.442	0.401	2.99
05/18	197	16.0	9.50	1.05	1130	0	0.527	0.485	2.99
05/20	180	13.0	9.79	1.05	1140	0	0.492	0.457	2.99
05/23	212	23.5	9.22	1.05	1290	0	0.483	0.429	2.99
05/25	194	21.5	9.36	1.00	1350	8	0.428	0.381	2.99
MEAN	201	21.0	9.40	0.96	1150	10	0.532	0.475	3.00
S.DEV	22.67	6.81	.4	.16	167.43	19.58	.08	.07	.03
C V %	11.2	32.4	4.3	17.1	14.5	188.9	16.5	15.1	1.1

COMPOUND = HYDRAZOBENZENE THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	219	19.5	9.79	0.24	2210	16	0.313	0.285	10.03
04/06	225	13.0	9.36	0.28	2280	8	0.298	0.281	9.94
04/08	232	12.0	9.50	0.31	1850	0	0.384	0.364	10.00
04/11	238	29.0	9.22	0.31	2520	0	0.281	0.247	10.00
04/13	219	19.0	8.64	0.31	2580	0	0.237	0.216	10.00
04/15	223	18.0	9.94	0.31	2350	0	0.304	0.280	10.00
04/18	199	19.0	9.36	0.31	2140	0	0.281	0.254	10.00
04/20	219	19.5	8.64	0.24	2570	20	0.237	0.216	10.15
04/22	215	17.0	9.94	0.31	2440	0	0.283	0.260	10.00
04/25	185	25.0	9.79	0.31	2200	0	0.266	0.230	10.00
04/27	208	18.5	9.50	0.28	2410	8	0.264	0.241	9.98
04/29	177	25.0	9.22	0.24	2560	20	0.206	0.177	9.99
05/02	155	15.0	9.22	0.31	2480	0	0.186	0.168	10.00
05/04	170	16.5	10.08	0.27	2600	12	0.213	0.192	9.83
05/06	186	14.0	9.36	0.31	2690	0	0.209	0.193	10.00
05/09	205	14.5	9.22	0.25	3050	4	0.200	0.186	11.84
05/11	164	15.0	8.93	0.31	2590	0	0.182	0.166	10.00
05/16	203	11.0	9.79	0.31	2490	0	0.257	0.244	10.00
05/18	197	10.0	9.07	0.31	2570	0	0.224	0.213	10.00
05/20	180	19.0	9.07	0.31	2510	0	0.210	0.188	10.00
05/23	212	27.0	9.94	0.26	2750	14	0.247	0.216	10.02
05/25	194	17.0	9.22	0.29	2010	4	0.287	0.262	10.07
MEAN	201	17.9	9.40	0.29	2448	5	0.253	0.231	10.08
S.DEV	22.63	5.03	.41	.02	260.83	7.05	.04	.04	.39
C V %	11.2	28.1	4.3	9.4	10.6	146.4	19.4	20.6	3.9

COMPOUND = COMBINED THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 2.945

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	235	1.9	8.96	2.23	400	32	1.787	1.773	1.06
04/06	274	1.0	8.93	2.00	440	46	1.888	1.881	1.08
04/08	252	1.3	8.93	2.72	404	10	1.891	1.882	1.02
04/11	274	3.7	8.93	2.76	382	8	2.175	2.146	1.02
04/13	281	2.2	8.93	2.55	407	18	2.094	2.077	1.04
04/15	244	2.4	8.90	2.95	260	0	2.836	2.808	1.00
04/18	267	3.0	8.60	2.95	290	0	2.689	2.658	1.00
04/20	244	3.9	8.93	1.76	349	40	2.120	2.086	1.14
04/22	198	3.3	8.93	2.95	280	0	2.144	2.109	1.00
04/25	292	2.2	8.96	2.95	580	0	1.532	1.520	1.00
04/27	279	3.2	8.93	2.61	636	24	1.330	1.315	1.03
04/29	300	2.6	8.64	2.92	610	4	1.443	1.430	1.00
05/02	271	8.2	8.93	2.95	450	0	1.826	1.771	1.00
05/04	243	4.3	8.93	2.95	4330	0	0.170	0.167	1.00
05/06	271	4.4	8.80	2.95	490	0	1.653	1.626	1.00
05/09	274	4.4	8.90	2.95	540	0	1.533	1.509	1.00
05/11	274	5.5	8.86	2.95	490	0	1.682	1.649	1.00
05/13	253	7.0	8.90	2.95	434	0	1.762	1.713	1.00
05/16	271	3.2	8.90	2.95	518	0	1.581	1.562	1.00
05/18	310	3.1	8.60	2.95	512	0	1.768	1.750	1.00
05/20	322	7.8	8.93	2.95	650	0	1.502	1.466	1.00
05/23	216	0.8	8.93	2.95	420	0	1.559	1.554	1.00
05/25	252	2.9	8.90	2.95	502	0	1.517	1.500	1.00
MEAN	265	3.6	8.88	2.77	625	8	1.760	1.737	1.02
S.DEV	28.4	1.98	.1	.33	814.72	14.1	.51	.5	.03
C V %	10.7	55.4	1.2	12.1	130.3	178.3	29	29.1	3.5

COMPOUND = COMBINED THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	235	2.0	9.22	1.01	1010	0	0.692	0.686	3.07
04/06	274	0.8	9.22	1.01	1190	0	0.685	0.683	3.07
04/08	252	0.9	9.22	1.01	1060	0	0.707	0.705	3.07
04/11	274	3.9	9.22	1.00	1190	0	0.685	0.675	3.10
04/13	281	2.0	8.35	1.00	1120	0	0.676	0.671	3.10
04/15	244	2.1	9.22	0.90	1280	20	0.567	0.562	3.01
04/18	267	1.9	9.36	1.00	1100	4	0.733	0.728	3.01
04/20	244	1.8	9.22	1.03	1160	0	0.626	0.621	3.01
04/22	198	1.9	9.22	1.03	1120	0	0.526	0.521	3.01
04/25	292	2.2	8.64	1.01	1200	4	0.678	0.673	2.99
04/27	279	1.6	9.22	1.00	1070	4	0.776	0.771	3.01
04/29	300	1.2	8.93	1.03	1210	0	0.714	0.711	3.01
05/02	271	1.4	8.93	0.77	1110	36	0.703	0.700	3.00
05/06	271	2.0	9.50	1.03	980	0	0.847	0.841	3.01
05/09	274	3.8	9.22	1.03	1420	0	0.574	0.566	3.01
05/11	274	1.4	9.50	1.01	1210	4	0.694	0.690	2.99
05/13	253	1.9	9.22	1.03	1190	0	0.632	0.628	3.01
05/16	270	1.9	9.22	1.03	1180	0	0.681	0.676	3.01
05/18	310	5.1	9.22	1.03	1200	0	0.768	0.756	3.01
05/20	322	3.0	8.93	1.03	1040	0	0.892	0.884	3.01
05/23	216	0.2	9.22	1.00	1150	4	0.559	0.558	3.01
05/25	252	2.9	8.93	1.03	1170	0	0.620	0.613	3.01
MEAN	266	2.1	9.13	1.00	1153	3	0.683	0.678	3.02
S.DEV	28.64	1.1	.26	.05	94.87	8.48	.08	.08	.03
C V %	10.7	52.9	2.8	5.8	8.2	245.7	13	13	1.1

COMPOUND = COMBINED THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
04/04	235	1.7	9.22	0.31	2300	0	0.301	0.299	10.10
04/06	274	1.5	9.07	0.23	2410	24	0.329	0.328	9.84
04/08	252	0.2	9.22	0.31	2320	0	0.320	0.320	10.10
04/11	274	2.8	9.50	0.07	2480	64	0.335	0.332	9.99
04/13	281	2.4	8.93	0.15	2570	48	0.312	0.309	9.97
04/15	244	2.0	9.65	0.00	2130	116	0.353	0.350	5.96
04/18	267	2.3	9.22	0.31	2260	0	0.348	0.345	10.10
04/20	244	1.5	9.07	0.14	1900	36	0.372	0.370	10.12
04/22	198	1.8	9.65	0.31	2080	0	0.293	0.291	10.10
04/25	292	2.2	9.07	0.31	2080	0	0.407	0.404	10.10
04/27	279	1.0	9.22	0.28	1920	8	0.428	0.427	9.87
04/29	300	0.8	9.36	0.18	1840	28	0.488	0.486	9.79
05/02	271	0.2	9.22	0.31	2020	0	0.395	0.395	10.10
05/04	243	1.5	9.79	0.31	1840	0	0.413	0.411	10.10
05/06	271	2.3	9.07	0.31	1570	0	0.500	0.496	10.10
05/09	274	0.6	9.22	0.00	1760	64	0.459	0.458	9.34
05/11	274	1.4	9.22	0.00	1810	228	0.446	0.444	2.69
05/13	253	0.8	9.50	0.31	1480	0	0.519	0.517	10.10
05/16	270	0.8	9.22	0.31	1460	0	0.545	0.543	10.10
05/18	310	2.7	8.92	0.00	1070	128	0.826	0.818	2.93
05/20	322	2.3	9.79	0.00	1120	114	0.899	0.893	3.14
05/23	216	0.3	9.22	0.31	1270	0	0.501	0.500	10.10
05/25	252	1.9	9.07	0.29	1300	4	0.562	0.557	9.87
MEAN	265	1.5	9.28	0.21	1869	37	0.450	0.447	8.89
S.DEV	28.39	.8	.25	.12	436.41	58.67	.15	.15	2.51
C V %	10.7	52.8	2.7	62.8	23.3	156.5	34.1	34	28.2

COMPOUND = COMBINED THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 2.945

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	185	33.5	8.96	2.23	400	32	1.407	1.152	1.06
04/06	187	23.0	8.93	2.00	440	46	1.289	1.130	1.08
04/08	212	24.0	8.93	2.72	404	10	1.591	1.411	1.02
04/11	216	24.5	8.93	2.76	382	8	1.715	1.520	1.02
04/13	219	19.0	8.93	2.55	407	18	1.632	1.490	1.04
04/15	223	20.0	8.90	2.95	260	0	2.592	2.360	1.00
04/18	207	21.5	8.60	2.95	290	0	2.084	1.868	1.00
04/20	212	23.0	8.93	1.76	349	40	1.842	1.642	1.14
04/22	188	19.0	8.93	2.93	280	0	2.036	1.830	1.01
04/25	119	24.0	8.96	2.95	580	0	0.624	0.498	1.00
04/27	118	52.0	8.93	2.61	636	24	0.563	0.315	1.03
04/29	216	24.0	8.64	2.92	610	4	1.039	0.923	1.00
05/02	200	27.5	8.93	2.95	450	0	1.348	1.162	1.00
05/04	119	19.0	8.93	2.95	433	0	0.833	0.700	1.00
05/06	203	20.0	8.80	2.95	490	0	1.238	1.116	1.00
05/09	178	25.5	8.90	2.95	540	0	0.996	0.853	1.00
05/11	196	22.0	8.86	2.95	490	0	1.203	1.068	1.00
05/13	251	28.0	8.90	2.95	434	0	1.748	1.553	1.00
05/16	140	21.5	8.90	2.95	518	0	0.817	0.691	1.00
05/18	192	16.5	8.60	2.95	512	0	1.095	1.001	1.00
05/20	181	21.0	8.93	2.95	650	0	0.844	0.746	1.00
05/23	202	22.5	8.93	2.95	420	0	1.458	1.296	1.00
05/25	198	15.5	8.90	2.95	502	0	1.192	1.099	1.00
MEAN	190	23.8	8.88	2.77	456	8	1.356	1.192	1.02
S.DEV	34.9	7.28	.1	.33	107.08	14.1	.5	.47	.03
C V %	18.4	30.6	1.2	12.1	23.5	178.3	37	40	3.5

COMPOUND = COMBINED THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	185	29.0	9.22	1.01	1010	0	0.545	0.459	3.07
04/06	187	21.0	9.22	1.01	1190	0	0.467	0.415	3.07
04/08	212	17.0	9.22	1.01	1060	0	0.595	0.547	3.07
04/11	216	23.0	9.22	1.00	1190	0	0.540	0.482	3.10
04/13	219	20.0	8.35	1.00	1120	0	0.527	0.479	3.10
04/15	223	20.0	9.22	0.90	1280	20	0.518	0.472	3.01
04/18	207	21.0	9.36	1.00	1100	4	0.568	0.511	3.01
04/20	212	19.0	9.22	1.03	1160	0	0.544	0.495	3.01
04/22	189	20.0	9.22	1.03	1120	0	0.502	0.449	3.01
04/25	119	23.0	8.64	1.01	1200	4	0.276	0.223	2.99
04/27	118	19.0	9.22	1.00	1070	4	0.328	0.275	3.01
04/29	216	23.0	8.93	1.03	1210	0	0.514	0.459	3.01
05/02	200	14.0	8.93	0.77	1110	36	0.519	0.483	3.00
05/06	203	14.0	9.50	1.03	980	0	0.635	0.591	3.01
05/09	178	19.0	9.22	1.03	1420	0	0.373	0.333	3.01
05/11	196	19.0	9.50	1.01	1210	4	0.496	0.448	2.99
05/16	140	17.0	9.22	1.03	1180	0	0.353	0.310	3.01
05/18	192	17.0	9.22	1.03	1200	0	0.476	0.434	3.01
05/20	181	21.0	8.93	1.03	1040	0	0.501	0.443	3.01
05/23	202	20.0	9.22	1.00	1150	4	0.522	0.471	3.01
05/25	201	21.0	8.93	1.03	1170	0	0.495	0.443	3.01
MEAN	190	19.9	9.13	1.00	1151	4	0.490	0.439	3.02
S.DEV	30.08	3.27	.26	.05	96.84	8.66	.08	.08	.03
C V %	15.8	16.4	2.9	5.9	8.4	239.3	18	19.9	1.1

COMPOUND = COMBINED THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/04	85	20.5	9.22	0.31	2300	0	0.109	0.083	10.10
04/06	187	19.5	9.07	0.23	2410	24	0.225	0.201	9.84
04/08	212	15.6	9.22	0.31	2320	0	0.269	0.249	10.10
04/11	216	21.0	9.50	0.07	2480	64	0.264	0.239	9.99
04/13	219	24.5	8.93	0.15	2570	48	0.243	0.216	9.97
04/15	223	22.5	9.65	0.00	2130	116	0.323	0.290	5.96
04/18	207	21.5	9.22	0.31	2260	0	0.270	0.242	10.10
04/20	212	23.0	9.07	0.14	1900	36	0.323	0.288	10.12
04/22	189	19.0	9.65	0.31	2080	0	0.280	0.252	10.10
04/25	119	22.0	9.07	0.31	2080	0	0.166	0.135	10.10
04/27	118	14.0	9.22	0.28	1920	8	0.181	0.160	9.87
04/29	216	18.5	9.36	0.18	1840	28	0.351	0.321	9.79
05/02	200	11.5	9.22	0.31	2020	0	0.292	0.275	10.10
05/04	199	16.5	9.79	0.31	1840	0	0.338	0.310	10.10
05/06	203	14.0	9.07	0.31	1570	0	0.375	0.349	10.10
05/09	178	11.5	9.22	0.00	1760	64	0.298	0.279	9.34
05/11	196	19.0	9.22	0.00	1810	228	0.319	0.288	2.69
05/16	140	7.0	9.22	0.31	1460	0	0.282	0.268	10.10
05/18	192	12.5	8.92	0.00	1070	128	0.511	0.478	2.93
05/20	181	14.0	9.79	0.00	1120	114	0.505	0.466	3.14
05/23	202	16.5	9.22	0.31	1270	0	0.469	0.430	10.10
05/25	201	16.5	9.07	0.29	1300	4	0.448	0.411	9.87
MEAN	186	17.3	9.27	0.20	1887	39	0.311	0.283	8.84
S.DEV	37.06	4.47	.25	.13	438.16	59.47	.1	.1	2.56
C V %	19.9	25.8	2.7	64.8	23.2	151.7	33.4	35.3	28.9

COMPOUND = COMBINED THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 2.945

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	515	21.0	8.93	2.72	404	10	3.865	3.708	1.02
04/13	475	11.5	8.93	2.55	407	18	3.539	3.453	1.04
04/22	330	16.0	8.93	2.95	280	0	3.574	3.400	1.00
04/29	400	44.0	8.64	2.92	610	4	1.924	1.712	1.00
05/06	360	10.0	8.80	2.95	490	0	2.195	2.134	1.00
05/11	370	20.0	8.86	2.95	490	0	2.272	2.149	1.00
05/18	382	17.0	8.60	2.95	512	0	2.179	2.082	1.00
05/25	415	8.0	8.90	2.95	502	0	2.498	2.450	1.00
MEAN	406	18.4	8.82	2.87	462	4	2.756	2.636	1.01
S.DEV	61.55	11.33	.13	.15	97.89	6.67	.77	.76	.01
C V %	15.1	61.4	1.5	5.2	21.1	166.9	27.9	28.9	1.6

COMPOUND = COMBINED THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	515	9.0	9.22	1.01	1060	0	1.445	1.420	3.07
04/13	475	12.0	8.35	1.00	1120	0	1.142	1.113	3.10
04/22	330	4.0	9.22	1.03	1120	0	0.876	0.866	3.01
04/29	400	12.0	8.93	1.03	1210	0	0.952	0.924	3.01
05/06	360	0.0	9.50	1.03	980	0	1.126	1.126	3.01
05/13	370	0.0	9.22	1.03	1190	0	0.925	0.925	3.01
05/20	382	13.0	8.93	1.03	1040	0	1.058	1.022	3.01
05/25	415	8.0	8.93	1.03	1170	0	1.022	1.002	3.01
MEAN	406	7.3	9.04	1.02	1111	0	1.068	1.050	3.03
S.DEV	61.55	5.31	.34	.01	79.72	0	.17	.17	.03
C V %	15.1	73.2	3.7	1.1	7.1	282.8	16.7	16.7	1.1

COMPOUND = COMBINED THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
04/08	515	9.0	9.22	0.31	2320	0	0.654	0.642	10.10
04/13	475	9.0	8.93	0.15	2570	48	0.527	0.517	9.97
04/22	330	3.0	9.65	0.31	2080	0	0.489	0.485	10.10
04/29	400	12.0	9.36	0.18	1840	28	0.650	0.631	9.79
05/06	360	0.0	9.07	0.31	1570	0	0.664	0.664	10.10
05/11	370	8.0	9.22	0.00	1810	228	0.602	0.589	2.69
05/20	382	6.0	9.79	0.00	1120	114	1.067	1.050	3.14
05/25	415	6.0	9.07	0.29	1300	4	0.925	0.912	9.87
MEAN	406	6.6	9.29	0.19	1826	53	0.697	0.686	8.22
S.DEV	61.55	3.77	.29	.13	493.26	80.9	.19	.19	3.27
C V %	15.1	57	3.2	69.5	27	153.3	28.4	28.4	39.8

COMPOUND = NICKEL THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	210	17.0	9.50	2.75	230	12	2.798	2.572	1.00
07/06/83	197	15.3	9.36	2.18	280	44	2.124	1.959	0.94
07/08/83	231	12.6	9.50	2.54	300	4	2.360	2.231	1.18
07/11/83	204	12.3	9.22	2.71	330	20	1.839	1.728	1.00
07/13/83	230	12.0	9.22	2.62	330	24	2.073	1.965	1.00
07/15/83	193	10.0	9.22	2.53	280	24	2.050	1.944	1.00
07/18/83	247	12.0	9.22	1.91	270	44	2.721	2.589	1.00
07/20/83	247	9.0	8.93	2.04	260	40	2.737	2.637	1.00
07/22/83	192	7.0	9.22	2.23	290	36	1.969	1.897	1.00
07/25/83	228	3.0	9.22	2.67	430	28	1.577	1.556	1.00
07/27/83	220	2.0	9.22	2.91	440	16	1.487	1.474	0.99
07/29/83	216	3.0	9.22	2.88	460	16	1.397	1.377	1.00
08/01/83	280	4.5	9.50	2.85	630	24	1.362	1.340	1.00
08/03/83	272	3.5	9.22	2.40	350	36	2.311	2.282	1.00
08/05/83	267	10.0	8.93	2.29	490	60	1.570	1.511	1.00
08/08/83	100	15.0	9.22	2.49	310	28	0.959	0.816	1.00
08/10/83	114	6.5	8.93	1.92	310	52	1.059	0.999	1.00
08/12/83	205	5.5	9.22	1.69	320	60	1.905	1.854	1.00
MEAN	214	8.9	9.23	2.42	351	32	1.905	1.818	1.01
S.DEV	47.21	4.71	.17	.36	101.25	16.11	.55	.52	.04
C V %	22	52.9	1.8	15	28.8	51	28.9	28.8	4.5

COMPOUND = NICKEL THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	210	2.0	9.22	0.00	330	44	1.893	1.875	2.52
07/06/83	197	2.6	9.07	0.65	440	20	1.310	1.293	3.00
07/08/83	231	5.5	9.22	0.00	390	56	1.762	1.720	2.34
07/11/83	204	2.4	8.93	0.00	420	76	1.399	1.383	1.92
07/13/83	230	8.0	9.50	0.07	430	44	1.639	1.582	3.00
07/15/83	193	3.0	9.50	0.91	550	8	1.075	1.059	3.00
07/18/83	247	4.0	9.50	0.54	660	36	1.147	1.128	3.01
07/20/83	247	3.5	9.22	0.74	570	20	1.289	1.271	2.99
07/22/83	192	3.0	9.50	1.03	960	0	0.613	0.603	3.01
07/25/83	228	1.5	9.50	0.77	800	24	0.873	0.868	3.00
07/27/83	220	0.5	9.50	0.99	760	4	0.864	0.862	3.00
07/29/83	216	3.0	9.50	0.99	770	4	0.860	0.848	3.00
08/01/83	280	2.5	9.36	0.97	1030	8	0.821	0.813	2.99
08/03/83	272	1.5	8.93	0.97	950	8	0.825	0.820	2.99
08/05/83	267	3.5	9.22	0.98	1180	8	0.673	0.664	2.99
08/08/83	100	3.5	9.50	0.85	940	20	0.326	0.315	3.00
08/10/83	114	2.5	9.22	1.03	920	0	0.369	0.360	3.01
08/12/83	205	2.0	9.22	0.91	830	12	0.735	0.727	3.01
MEAN	214	3.0	9.31	0.69	719	22	1.026	1.011	2.88
S.DEV	47.21	1.65	.2	.39	254.33	21.35	.44	.44	.3
C V %	22	54.7	2.1	56.9	35.3	98	43.8	43.5	10.5

COMPOUND = NICKEL THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	210	1.0	9.78	0.31	1870	4	0.333	0.331	9.99
07/06/83	197	1.4	9.65	0.33	2080	0	0.277	0.275	10.00
07/08/83	231	0.3	9.78	0.33	2160	0	0.317	0.317	10.00
07/11/83	204	2.0	9.78	0.33	2260	0	0.268	0.265	10.00
07/13/83	230	1.0	9.78	0.33	2250	0	0.303	0.302	10.00
07/15/83	193	0.8	9.78	0.29	2060	8	0.278	0.277	10.10
07/18/83	247	1.5	9.78	0.27	2470	16	0.296	0.295	9.95
07/20/83	247	1.0	9.50	0.23	1920	20	0.370	0.369	10.11
07/22/83	192	0.8	9.78	0.30	2170	0	0.262	0.261	11.00
07/25/83	228	0.5	9.78	0.31	2260	4	0.299	0.298	10.10
07/27/83	220	0.5	9.78	0.31	2080	4	0.313	0.313	10.05
07/29/83	216	1.5	9.78	0.27	2070	12	0.309	0.307	10.15
08/01/83	280	1.5	9.78	0.30	2270	8	0.366	0.364	9.90
08/03/83	272	1.0	10.00	0.30	2520	8	0.327	0.326	9.98
08/05/83	267	1.0	9.78	0.28	2390	12	0.331	0.330	10.07
08/08/83	100	1.0	9.78	0.33	2190	0	0.135	0.134	10.00
08/10/83	114	1.0	9.50	0.33	2230	0	0.147	0.146	10.00
08/12/83	205	0.5	9.79	0.31	2200	4	0.276	0.276	10.08
MEAN	214	1.0	9.75	0.30	2192	6	0.289	0.288	10.08
S.DEV	47.21	.43	.11	.02	168.18	6.15	.06	.06	.23
C V %	22	42.8	1.1	9	7.6	110.8	21.3	21.4	2.3

COMPOUND = NICKEL THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/08/83	420	55.0	9.50	2.54	300	4	4.290	3.728	1.18
07/15/83	290	47.0	9.22	2.53	280	24	3.080	2.581	1.00
07/22/83	315	23.0	9.22	2.23	290	36	3.231	2.995	1.00
07/29/83	310	20.0	9.22	2.88	460	16	2.004	1.875	1.00
08/05/83	290	33.0	8.93	2.29	490	60	1.705	1.511	1.00
08/12/83	280	29.0	9.22	1.69	320	60	2.602	2.333	1.00
MEAN	318	34.5	9.22	2.36	357	33	2.819	2.504	1.03
S.DEV	51.93	13.79	.18	.4	93.09	23.14	.93	.79	.07
C V %	16.3	39.9	1.9	16.9	26.1	69.4	33.1	31.7	7

COMPOUND = NICKEL THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/08/83	420	50.0	9.22	0.00	390	56	3.203	2.822	2.34
07/15/83	290	63.0	9.50	0.91	550	8	1.616	1.265	3.00
07/22/83	315	52.0	9.50	1.03	960	0	1.006	0.840	3.01
07/29/83	310	35.0	9.50	0.99	770	4	1.234	1.094	3.00
08/05/83	290	26.0	9.22	0.98	1180	8	0.731	0.665	2.99
08/12/83	280	25.0	9.22	0.91	830	12	1.003	0.914	3.01
MEAN	318	41.8	9.36	0.80	780	15	1.465	1.267	2.89
S.DEV	51.93	15.48	.15	.39	282.84	20.65	.9	.78	.26
C V %	16.3	37	1.6	49.3	36.2	140.8	61.4	62.3	9.3

COMPOUND = NICKEL THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/08/83	420	19.0	9.78	0.33	2160	0	0.576	0.550	10.00
07/15/83	290	33.0	9.78	0.29	2060	8	0.417	0.370	10.10
07/22/83	315	41.0	9.78	0.30	2170	0	0.430	0.374	11.00
07/29/83	310	19.0	9.78	0.27	2070	12	0.444	0.417	10.15
08/05/83	290	15.0	9.78	0.28	2390	12	0.360	0.341	10.07
08/12/83	280	12.0	9.79	0.31	2200	4	0.378	0.361	10.08
MEAN	318	23.2	9.78	0.30	2175	6	0.434	0.402	10.23
S.DEV	51.93	11.32	0	.02	119.45	5.51	.07	.07	.37
C V %	16.3	48.8	.0	7.2	5.4	91.8	17.6	19	3.6

COMPOUND = NICKEL THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	158	50.0	9.50	2.75	230	12	2.105	1.439	1.00
07/06/83	172	63.0	9.36	2.18	280	44	1.855	1.175	0.94
07/08/83	164	45.0	9.50	2.54	300	4	1.675	1.216	1.18
07/11/83	146	28.0	9.22	2.71	330	20	1.316	1.064	1.00
07/13/83	166	24.0	9.22	2.62	330	24	1.496	1.280	1.00
07/15/83	169	63.0	9.22	2.53	280	24	1.795	1.126	1.00
07/18/83	165	26.0	9.22	1.91	270	44	1.818	1.531	1.00
07/20/83	183	14.0	8.93	2.04	260	40	2.028	1.872	1.00
07/22/83	181	7.0	9.22	2.23	290	36	1.856	1.785	1.00
MEAN	167	35.6	9.27	2.39	286	28	1.772	1.387	1.01
S.DEV	11.27	20.51	.17	.3	32.05	14.34	.24	.29	.06
C V %	6.7	57.6	1.8	12.8	11.2	52	13.9	20.9	6.4

COMPOUND = NICKEL THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	158	53.0	9.22	0.00	330	44	1.424	0.946	2.52
07/06/83	172	42.0	9.07	0.65	440	20	1.144	0.864	3.00
07/08/83	164	35.0	9.22	0.00	390	56	1.251	0.984	2.34
07/11/83	146	21.0	8.93	0.00	420	76	1.001	0.857	1.92
07/13/83	166	31.0	9.50	0.07	430	44	1.183	0.962	3.00
07/15/83	169	8.0	9.50	0.91	550	8	0.942	0.897	3.00
07/18/83	165	19.0	9.50	0.54	660	36	0.766	0.678	3.01
07/20/83	183	22.0	9.22	0.74	570	20	0.955	0.840	2.99
07/22/83	181	8.0	9.50	1.03	960	0	0.578	0.552	3.01
MEAN	167	26.6	9.30	0.44	528	34	1.027	0.842	2.75
S.DEV	11.27	15.1	.21	.42	191.55	24.17	.25	.14	.4
C V %	6.7	56.8	2.3	96.6	36.2	71.5	25	16.7	14.5

COMPOUND = NICKEL THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.3

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	158	27.0	9.78	0.31	1970	4	0.250	0.208	9.99
07/06/83	172	20.0	9.65	0.33	2080	0	0.242	0.214	10.00
07/08/83	164	15.0	9.78	0.33	2160	0	0.225	0.204	10.00
07/11/83	146	7.0	9.78	0.33	2260	0	0.191	0.182	10.00
07/13/83	166	5.0	9.78	0.33	2250	0	0.219	0.212	10.00
07/15/83	169	2.0	9.78	0.29	2060	8	0.243	0.240	10.10
07/18/83	165	24.0	9.78	0.27	2470	16	0.198	0.169	9.95
07/20/83	183	22.0	9.50	0.23	1920	20	0.274	0.241	10.11
07/22/83	181	11.0	9.78	0.30	2170	0	0.247	0.232	11.00
MEAN	167	14.8	9.73	0.30	2138	5	0.232	0.211	10.13
S.DEV	11.27	8.99	.09	.03	183.01	7.74	.02	.02	.33
C V %	6.7	60.8	1	11.4	8.5	145.2	11.4	11.6	3.2

COMPOUND = CADMIUM THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	220	1.5	9.50	3.04	470	6	1.403	1.393	1.02
07/06/83	210	2.1	9.36	3.13	470	2	1.319	1.306	1.00
07/08/83	220	2.0	9.50	0.89	256	60	2.575	2.552	1.09
07/11/83	185	4.5	9.50	2.17	380	40	1.459	1.424	1.08
07/13/83	236	10.0	9.50	2.85	360	12	1.965	1.881	1.03
07/15/83	196	8.5	9.50	2.85	360	12	1.632	1.561	1.03
07/20/83	277	9.0	9.50	2.63	320	18	2.594	2.510	1.05
07/22/83	285	3.0	9.50	3.17	385	0	2.218	2.195	1.00
07/25/83	224	3.0	9.50	2.84	285	10	2.355	2.324	1.03
07/27/83	236	3.5	9.50	1.80	219	53	3.229	3.182	0.87
07/29/83	254	6.0	9.52	2.56	248	16	3.076	3.003	1.05
08/01/83	220	13.0	9.40	2.60	239	16	2.730	2.568	1.04
08/03/83	240	9.5	9.40	2.82	270	10	2.636	2.531	1.03
08/05/83	261	14.0	9.22	2.30	288	27	2.636	2.494	1.08
08/10/83	186	18.5	9.50	2.55	306	34	1.822	1.640	0.95
08/12/83	209	4.5	9.50	2.40	300	17	2.088	2.043	1.13
MEAN	229	7.0	9.46	2.54	322	21	2.234	2.163	1.03
S.DEV	29.67	5	.07	.56	76.3	17.54	.59	.58	.05
C V %	12.9	71.1	.8	22.4	23.6	84.2	26.5	26.8	5.8

COMPOUND = CADMIUM THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	220	2.4	9.65	0.85	660	12	1.015	1.004	3.14
07/06/83	210	1.2	9.50	1.00	750	6	0.839	0.834	2.97
07/11/83	185	2.5	9.43	1.00	779	0	0.706	0.697	3.17
07/15/83	196	5.0	9.50	1.00	720	0	0.816	0.795	3.17
07/18/83	258	10.0	9.50	0.58	600	30	1.289	1.239	3.09
07/20/83	277	4.5	9.50	1.05	730	0	1.137	1.119	3.02
07/22/83	285	3.0	9.50	1.05	702	0	1.217	1.204	3.02
07/25/83	224	1.5	9.43	1.05	655	0	1.017	1.011	3.02
07/27/83	236	2.5	9.50	1.05	686	0	1.031	1.020	3.02
07/29/83	254	3.0	9.50	1.01	726	3	1.048	1.036	3.03
08/01/83	220	3.5	9.50	1.05	730	0	0.903	0.889	3.02
08/03/83	240	3.5	9.50	1.05	689	0	1.044	1.029	3.02
08/05/83	261	5.0	9.50	0.84	749	17	1.044	1.024	3.06
08/10/83	186	5.0	9.50	0.79	716	20	0.779	0.758	3.07
08/12/83	209	2.5	9.50	0.98	726	6	0.863	0.852	3.02
MEAN	231	3.7	9.50	0.96	708	6	0.983	0.967	3.06
S.DEV	31.48	2.13	.04	.13	44.69	9.35	.16	.15	.06
C V %	13.6	58	.5	14.1	6.3	149.2	16.6	16.4	1.9

COMPOUND = CADMIUM THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	220	2.5	9.50	0.00	482	22	1.368	1.352	7.31
07/06/83	210	0.8	9.57	0.14	1295	24	0.490	0.488	10.07
07/08/83	220	2.0	9.50	0.00	980	26	0.673	0.667	12.58
07/15/83	196	1.5	9.65	0.13	800	18	0.746	0.740	9.21
07/20/83	277	1.5	9.57	0.32	1420	0	0.589	0.586	9.91
07/22/83	285	2.0	9.50	0.32	1520	0	0.562	0.558	9.91
07/25/83	224	1.0	9.50	0.32	1370	0	0.490	0.488	9.91
07/27/83	236	3.0	9.50	0.32	1480	0	0.478	0.472	9.91
07/29/83	254	1.5	9.60	0.29	1310	4	0.587	0.584	9.96
08/01/83	220	1.5	9.55	0.32	1386	0	0.478	0.475	9.91
08/03/83	240	1.0	9.50	0.32	1515	0	0.475	0.473	9.91
08/05/83	261	2.5	9.50	0.29	1499	4	0.522	0.517	10.08
08/10/83	186	1.5	9.50	0.20	1472	18	0.379	0.376	10.10
08/12/83	209	1.0	9.50	0.25	1500	10	0.418	0.416	10.17
MEAN	231	1.7	9.53	0.23	1288	9	0.589	0.585	9.92
S.DEV	29.29	.66	.04	.11	314.08	10.31	.24	.24	1.05
C V %	12.6	39.8	.5	51.3	24.3	114.5	41.4	41.1	10.6

COMPOUND = CADMIUM THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/15/83	260	60.0	9.50	2.85	360	12	2.164	1.665	1.03
07/22/83	290	60.0	9.50	3.17	385	0	2.257	1.790	1.00
07/29/83	290	29.0	9.50	2.56	248	16	3.504	3.154	1.05
08/05/83	270	50.0	9.20	2.30	288	27	2.721	2.217	1.08
08/12/83	270	37.0	9.50	2.40	300	17	2.697	2.328	1.13
MEAN	276	47.2	9.44	2.66	316	14	2.669	2.231	1.06
S.DEV	13.41	13.88	.13	.35	55.58	9.76	.53	.58	.04
C V %	4.8	29.4	1.4	13.3	17.5	67.7	19.8	26.2	4.6

COMPOUND = CADMIUM THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/15/83	260	50.0	9.50	1.05	720	0	1.082	0.874	3.02
07/22/83	290	54.0	9.50	1.05	702	0	1.238	1.007	3.02
07/29/83	290	38.0	9.50	1.01	720	3	1.207	1.049	3.03
08/05/83	270	38.0	9.50	0.84	749	17	1.080	0.928	3.06
08/12/83	270	33.0	9.50	0.98	726	6	1.115	0.978	3.02
MEAN	276	42.6	9.50	0.99	723	5	1.144	0.967	3.03
S.DEV	13.41	8.93	0	.08	16.9	7.04	.07	.06	.01
C V %	4.8	20.9	0	8.8	2.3	135.5	6.4	7	.5

COMPOUND = CADMIUM THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/08/83	365	16.0	9.50	0.00	980	26	1.116	1.067	12.58
07/15/83	260	17.0	9.65	0.13	800	18	0.989	0.925	9.21
07/22/83	290	29.0	9.50	0.30	1520	4	0.572	0.515	9.78
07/29/83	290	32.0	9.60	0.29	1310	4	0.670	0.596	9.96
08/05/83	270	29.0	9.50	0.29	1499	4	0.540	0.482	10.08
08/07/83	270	29.0	9.50	0.25	1500	10	0.539	0.481	10.17
MEAN	291	25.3	9.54	0.21	1268	11	0.738	0.678	10.29
S.DEV	38.26	6.94	.06	.12	308.03	9.18	.25	.25	1.16
C V %	13.1	27.4	.6	57.5	24.2	83.5	34.1	37.4	11.3

COMPOUND = CADMIUM THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/04/83	132	19.0	9.50	3.04	470	4	0.842	0.721	1.02
07/06/83	175	20.0	9.36	3.13	470	2	1.099	0.974	1.00
07/13/83	174	2.0	9.50	2.85	360	12	1.448	1.432	1.03
07/15/83	143	36.0	9.50	2.85	360	12	1.190	0.891	1.03
07/20/83	159	30.0	9.50	2.63	320	18	1.489	1.208	1.05
07/22/83	191	17.0	9.50	3.17	385	0	1.487	1.354	1.00
MEAN	162	20.7	9.48	2.95	394	8	1.259	1.097	1.02
S.DEV	22.01	11.72	.05	.2	62.32	7.04	.26	.27	.01
C V %	13.5	56.7	.6	6.9	15.8	88	20.8	25.4	1.8

COMPOUND = CADMIUM THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	132	30.0	9.65	0.85	660	12	0.609	0.470	3.14
07/06/83	175	46.0	9.50	1.00	750	6	0.699	0.515	2.97
07/11/83	164	16.0	9.43	1.00	779	0	0.626	0.565	3.17
07/15/83	143	34.0	9.50	1.00	720	0	0.595	0.454	3.17
07/20/83	159	16.0	9.50	1.05	730	0	0.653	0.587	3.02
07/22/83	191	20.0	9.50	1.05	702	0	0.815	0.730	3.02
MEAN	161	27.0	9.51	0.99	724	3	0.666	0.554	3.08
S.DEV	21.32	11.91	.07	.07	40.82	5.01	.08	.1	.08
C V %	13.2	44.1	.7	7.4	5.6	167.3	12.2	18.1	2.8

COMPOUND = CADMIUM THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.17

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	132	33.0	9.50	0.00	482	22	0.821	0.616	7.31
07/06/83	175	10.0	9.57	0.14	1295	24	0.408	0.385	10.07
07/08/83	153	7.0	9.50	0.00	980	26	0.468	0.446	12.58
07/15/83	143	1.0	9.65	0.13	800	18	0.544	0.540	9.21
07/20/83	159	11.0	9.57	0.32	1420	0	0.338	0.315	9.91
07/22/83	191	18.0	9.50	0.32	1520	0	0.377	0.341	9.91
07/18/83	170	37.0	9.50	0.00	1231	40	0.414	0.324	10.27
MEAN	160	16.7	9.54	0.13	1104	19	0.481	0.424	9.89
S.DEV	20.03	13.52	.05	.14	369.72	14.4	.16	.11	1.55
C V %	12.4	80.9	.6	110.1	33.4	77.5	34	27.4	15.7

COMPOUND = CHROMIUM THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	227	15.0	9.36	2.12	300	42	2.263	2.113	1.00
07/06/83	175	16.0	9.43	2.07	250	36	2.109	1.916	1.00
07/08/83	221	14.5	9.79	2.77	350	18	1.975	1.845	1.00
07/11/83	213	35.0	9.36	2.22	250	32	2.548	2.129	1.00
07/13/83	248	18.0	9.36	2.70	230	14	3.224	2.990	1.01
07/15/83	230	6.5	8.64	2.80	320	18	1.984	1.928	1.00
07/18/83	271	8.5	9.79	2.40	380	38	2.231	2.161	1.00
07/20/83	280	6.5	9.50	3.02	480	8	1.771	1.729	1.00
07/22/83	285	3.5	9.79	3.11	620	2	1.438	1.420	1.00
07/25/83	251	2.5	9.36	3.05	490	6	1.532	1.517	1.00
07/27/83	235	2.5	9.79	3.09	340	2	2.162	2.139	1.00
07/29/83	270	4.0	9.50	3.08	540	4	1.518	1.495	1.00
08/01/83	300	3.5	9.79	2.80	680	30	1.380	1.364	1.01
08/03/83	272	3.5	9.36	2.50	300	28	2.711	2.676	1.00
08/05/83	289	4.0	9.79	3.03	670	10	1.349	1.330	1.00
08/08/83	232	6.0	9.79	2.61	480	32	1.512	1.473	1.01
08/10/83	283	5.0	9.79	2.16	410	52	2.159	2.121	1.00
08/12/83	268	3.5	9.79	2.30	440	50	1.905	1.880	0.99
MEAN	253	8.8	9.55	2.66	418	23	1.987	1.902	1.00
S.DEV	32.59	8.27	.3	.37	141.97	16.47	.5	.44	0
C V %	12.8	94.2	3.1	13.9	33.9	70.2	25.4	23.6	.4

COMPOUND = CHROMIUM THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	227	17.0	9.36	0.32	650	52	1.041	0.963	3.01
07/06/83	175	18.5	9.50	0.88	1040	20	0.509	0.455	3.00
07/08/83	221	15.5	9.36	0.00	360	56	1.830	1.702	2.16
07/11/83	213	15.5	8.64	0.98	430	4	1.363	1.264	2.99
07/13/83	248	17.0	6.91	0.68	480	28	1.137	1.059	3.01
07/15/83	230	7.0	8.35	0.48	390	28	1.568	1.521	3.00
07/18/83	271	4.5	9.79	0.89	790	14	1.070	1.052	3.01
07/20/83	280	5.0	8.64	1.00	1340	10	0.575	0.565	2.98
07/22/83	285	2.0	9.36	1.03	1240	2	0.685	0.680	3.00
07/25/83	251	0.5	8.64	0.99	1290	8	0.535	0.534	3.03
07/27/83	235	2.0	8.93	1.03	1230	2	0.543	0.539	3.01
07/29/83	270	3.0	8.64	1.02	1180	4	0.630	0.623	3.00
08/01/83	300	2.5	9.79	1.03	1290	2	0.725	0.719	3.01
08/03/83	272	2.5	9.07	0.93	1130	16	0.695	0.689	3.00
08/05/83	289	3.0	8.64	1.05	1370	0	0.580	0.574	2.99
08/08/83	232	2.0	9.50	0.92	1480	22	0.474	0.470	3.00
08/10/83	283	3.0	9.36	0.99	1250	8	0.675	0.668	3.01
08/12/83	268	2.5	9.50	0.96	1290	12	0.629	0.623	3.02
MEAN	253	6.8	9.00	0.84	1013	16	0.848	0.817	2.96
S.DEV	32.59	6.47	.68	.29	383.46	16.36	.39	.36	.2
C V %	12.8	94.7	7.6	34.5	37.8	102.2	46.9	44.9	6.7

COMPOUND = CHROMIUM THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/04/83	227	4.0	9.36	0.19	2140	28	0.320	0.315	10.00
07/08/83	221	16.0	8.93	0.17	1930	32	0.330	0.306	9.99
07/11/83	213	4.0	8.93	0.31	2090	0	0.294	0.288	10.00
07/13/83	248	6.0	9.65	0.31	1590	0	0.486	0.474	10.00
07/15/83	230	2.0	7.92	0.28	2360	8	0.249	0.247	10.13
07/18/83	271	2.5	9.79	0.25	2100	14	0.408	0.404	9.89
07/20/83	280	2.5	9.36	0.29	2500	6	0.338	0.335	9.94
07/22/83	285	1.0	9.50	0.27	2370	10	0.369	0.367	10.03
07/25/83	251	1.5	9.79	0.30	2240	2	0.354	0.352	10.05
07/27/83	235	1.0	9.79	0.29	2420	6	0.307	0.305	9.89
07/29/83	270	2.0	9.36	0.18	2370	34	0.344	0.341	9.95
08/01/83	300	1.0	8.93	0.18	2340	36	0.369	0.368	9.85
08/03/83	272	1.0	9.36	0.23	2530	22	0.325	0.323	10.02
08/05/83	289	2.5	9.79	0.23	3170	26	0.288	0.285	10.05
08/08/83	232	1.5	9.79	0.21	2850	30	0.257	0.255	9.97
08/12/83	268	1.5	9.50	0.21	2910	32	0.282	0.281	9.93
MEAN	256	3.1	9.36	0.24	2369	18	0.332	0.328	9.98
S.DEV	27.02	3.69	.49	.05	385.66	13.33	.05	.05	.07
C V %	10.5	118.3	5.2	20.7	16.2	74.6	17.6	17.5	.7

COMPOUND = CHROMIUM THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/08/83	350	13.0	9.79	2.77	350	18	3.128	3.012	1.00
07/15/83	365	37.0	8.64	2.80	320	18	3.149	2.829	1.00
07/22/83	350	30.0	9.50	3.11	620	2	1.713	1.567	1.00
07/29/83	320	39.0	9.50	3.08	540	4	1.799	1.579	1.00
08/05/83	320	50.0	9.79	3.03	670	10	1.494	1.260	1.00
08/12/83	350	60.0	9.79	2.30	440	50	2.488	2.062	0.99
MEAN	343	38.2	9.50	2.85	490	17	2.295	2.051	1.00
S.DEV	18.37	16.24	.44	.3	143.38	17.51	.73	.72	0
C V %	5.3	42.5	4.6	10.6	29.2	103	31.9	35.2	.2

COMPOUND = CHROMIUM THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/08/83	350	21.5	9.36	0.00	360	56	2.898	2.720	2.16
07/15/83	365	50.0	8.35	0.48	390	28	2.489	2.148	3.00
07/22/83	350	25.0	9.36	1.03	1240	2	0.841	0.781	3.01
07/29/83	320	28.0	8.64	1.02	1180	4	0.746	0.681	3.00
08/05/83	320	30.0	8.64	1.05	1370	0	0.643	0.582	2.99
08/12/83	350	25.0	9.50	0.96	1220	12	0.868	0.806	3.01
MEAN	343	29.9	8.98	0.76	960	17	1.414	1.286	2.86
S.DEV	18.37	10.25	.48	.42	457.68	21.67	1	.91	.34
C V %	5.3	34.2	5.4	56.7	47.6	127.5	70.8	70.7	12

COMPOUND = CHROMIUM THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/08/83	350	14.0	9.36	0.17	1930	32	0.548	0.526	9.77
07/15/83	365	57.0	7.92	0.28	2360	8	0.395	0.333	10.13
07/22/83	350	20.0	9.79	0.27	2370	10	0.466	0.440	9.99
07/29/83	320	40.0	9.36	0.18	2370	34	0.408	0.357	9.95
08/05/83	320	29.0	9.79	0.23	3170	26	0.319	0.290	10.05
08/12/83	350	23.0	9.50	0.21	2910	32	0.369	0.344	9.93
MEAN	343	30.5	9.29	0.22	2518	24	0.417	0.382	9.97
S.DEV	18.37	15.7	.69	.04	445.7	11.69	.08	.08	.12
C V %	5.3	51.4	7.5	20.9	17.6	49.3	19.1	22.4	1.2

COMPOUND = CHROMIUM THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 3.13

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/11/83	172	52.0	9.36	2.22	250	32	2.057	1.435	1.00
07/13/83	182	42.0	9.36	2.70	230	14	2.366	1.820	1.01
07/15/83	184	98.0	8.64	2.80	320	18	1.587	0.742	1.00
07/18/83	168	27.0	9.79	2.40	380	38	1.383	1.161	1.00
07/20/83	183	11.0	9.36	3.02	480	8	1.140	1.072	1.00
07/22/83	198	7.0	9.50	3.11	620	2	0.969	0.935	1.00
MEAN	181	39.5	9.34	2.71	380	19	1.584	1.194	1.00
S.DEV	10.51	33.49	.37	.34	148.72	13.89	.53	.38	0
C V %	5.8	84.7	4	12.7	39.1	74.4	34	32.1	.3

COMPOUND = CHROMIUM THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.14

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/11/83	172	50.0	8.64	0.98	430	4	1.101	0.781	3.00
07/13/83	182	32.0	6.91	0.68	480	28	0.834	0.688	3.01
07/15/83	184	17.0	8.35	0.48	390	28	1.255	1.139	3.00
07/18/83	168	23.0	9.79	0.89	790	14	0.663	0.572	3.01
07/20/83	183	12.0	8.64	1.00	1340	10	0.376	0.351	2.98
07/22/83	198	18.0	9.36	1.03	1240	2	0.476	0.433	3.01
MEAN	181	25.3	8.62	0.84	778	14	0.784	0.661	3.00
S.DEV	10.51	13.85	.99	.21	421.87	11.41	.34	.28	.01
C V %	5.8	54.6	11.5	25.8	54.2	79.6	44.1	42.7	.3

COMPOUND = CHROMIUM THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/11/83	172	23.0	8.93	0.31	2090	0	0.237	0.205	10.00
07/13/83	182	25.0	9.65	0.31	1590	0	0.356	0.307	10.00
07/15/83	184	23.0	7.92	0.28	2360	8	0.199	0.174	10.13
07/18/83	168	23.0	9.79	0.25	2100	14	0.253	0.218	9.89
07/20/83	183	1.0	9.50	0.29	2500	6	0.224	0.223	9.93
07/22/83	198	13.0	9.79	0.27	2370	10	0.264	0.247	9.99
MEAN	181	18.0	9.26	0.29	2168	6	0.256	0.229	9.99
S.DEV	10.51	9.35	.73	.02	326.39	5.57	.05	.04	.08
C V %	5.8	51.9	7.8	8.2	15	88	21.2	19.6	.8

COMPOUND = COMBINED THETA C = 1

PARAMETER = BOD VOLUME-REACTOR = 2.95

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/08/83	229	14.2	8.93	2.38	230	20	3.014	2.827	1.00
07/08/83	250	15.0	8.93	2.22	110	12	6.880	6.467	1.00
07/11/83	262	35.5	7.49	2.70	140	8	4.752	4.108	0.99
07/13/83	259	36.5	8.35	1.70	200	36	3.666	3.149	1.02
07/18/83	273	7.0	8.35	2.55	290	20	2.665	2.596	1.00
07/20/83	290	8.0	8.64	2.50	380	28	2.235	2.173	1.00
07/22/83	285	5.5	8.93	2.80	450	10	1.917	1.880	1.00
07/25/83	258	6.0	8.64	2.80	580	14	1.303	1.273	1.00
07/27/83	261	21.0	8.93	2.83	410	8	1.927	1.772	1.00
07/29/83	278	9.0	8.64	2.80	490	12	1.662	1.608	1.00
08/01/83	306	9.5	8.93	2.90	560	4	1.654	1.603	1.00
08/03/83	291	8.0	9.36	2.80	510	10	1.810	1.761	1.01
08/05/83	286	11.5	8.93	2.91	540	4	1.603	1.539	1.00
08/08/83	265	11.5	8.93	2.85	720	12	1.114	1.066	1.00
08/10/83	186	10.0	8.93	2.83	510	10	1.104	1.045	1.00
08/12/83	251	8.5	8.93	2.73	680	24	1.117	1.080	1.00
MEAN	264	13.5	8.74	2.64	425	15	2.401	2.247	1.00
S.DEV	28.42	9.57	.41	.31	185.54	8.86	1.55	1.4	0
C V %	10.7	70.7	4.7	12	43.6	61.1	64.8	62.5	.5

COMPOUND = COMBINED THETA C = 3

PARAMETER = BOD VOLUME-REACTOR = 3.12

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/04/83	229	19.5	9.36	1.00	570	0	1.205	1.103	3.12
07/06/83	235	19.0	9.36	0.64	610	26	1.156	1.062	3.08
07/08/83	250	16.0	9.36	1.00	652	0	1.150	1.077	3.12
07/11/83	262	17.0	9.36	1.00	888	0	0.885	0.828	3.12
07/13/83	259	38.0	9.36	1.00	920	0	0.845	0.721	3.12
07/15/83	218	24.0	9.36	0.92	680	8	0.962	0.856	3.06
07/18/83	273	12.0	9.36	0.66	686	28	1.194	1.141	3.07
07/20/83	290	15.0	9.36	1.00	880	0	0.989	0.938	3.12
07/22/83	285	26.0	9.36	1.00	714	0	1.197	1.088	3.12
07/25/83	258	13.5	9.36	0.90	660	10	1.173	1.111	3.03
07/27/83	261	30.0	9.50	0.62	411	18	1.934	1.711	3.09
07/29/83	278	10.0	9.48	0.76	605	18	1.396	1.346	3.06
08/01/83	306	17.0	9.60	0.66	500	20	1.883	1.778	3.07
08/03/83	291	17.5	9.40	0.92	612	8	1.433	1.346	3.03
08/05/83	286	5.0	9.50	0.83	542	12	1.607	1.579	3.05
08/08/83	265	5.0	9.42	0.82	654	15	1.223	1.200	3.07
08/10/83	186	5.0	9.50	1.00	686	10	0.826	0.803	2.78
08/12/83	251	9.0	9.45	0.80	668	17	1.138	1.097	3.06
MEAN	260	16.6	9.41	0.86	663	11	1.233	1.155	3.07
S.DEV	29.51	8.86	.07	.14	130.62	9.35	.31	.3	.07
C V %	11.3	53.4	.7	16.5	19.6	88.6	25.7	26	2.5

COMPOUND = COMBINED THETA C = 10

PARAMETER = BOD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/04/83	229	3.5	9.50	0.27	1650	8	0.425	0.419	9.85
07/06/83	235	20.0	9.22	0.18	1130	16	0.619	0.566	10.06
07/08/83	250	28.0	9.22	0.12	1310	28	0.568	0.504	9.86
07/11/83	262	7.5	8.93	0.33	1540	0	0.490	0.476	9.39
07/13/83	259	3.5	9.22	0.27	1740	8	0.443	0.437	9.96
07/15/83	218	3.0	9.22	0.33	1660	0	0.391	0.385	9.39
07/18/83	273	3.0	9.22	0.25	1830	12	0.444	0.439	10.04
07/20/83	290	3.0	8.93	0.29	1750	4	0.477	0.472	10.01
07/22/83	285	2.5	9.22	0.33	1710	0	0.496	0.491	9.39
07/25/83	258	2.5	9.50	0.27	1810	8	0.437	0.433	9.97
07/27/83	261	3.0	9.22	0.25	1800	12	0.431	0.426	10.01
07/29/83	278	3.0	9.22	0.19	1780	24	0.465	0.459	9.94
08/01/83	306	6.5	9.07	0.14	1890	36	0.474	0.464	10.00
08/03/83	291	10.5	9.22	0.22	1960	20	0.442	0.426	9.94
08/05/83	286	3.0	9.50	0.26	2040	12	0.430	0.425	9.86
08/08/83	265	2.0	9.22	0.31	2010	0	0.392	0.389	10.00
08/10/83	186	2.0	9.78	0.31	1890	0	0.310	0.307	10.00
08/12/83	251	2.5	9.50	0.25	1830	12	0.420	0.416	9.98
MEAN	260	6.1	9.27	0.25	1741	11	0.453	0.441	9.87
S.DEV	29.51	7.02	.21	.06	229.46	10.49	.06	.05	.22
C V %	11.3	115.9	2.2	24.8	13.1	94.4	14.7	12.4	2.3

COMPOUND = COMBINED THETA C = 1

PARAMETER = COD VOLUME-REACTOR = 2.95

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/08/83	360	20.0	8.93	2.22	110	12	9.907	9.357	1.00
07/22/83	320	55.0	8.93	2.80	450	10	2.153	1.783	1.00
07/29/83	350	38.0	8.64	2.80	490	12	2.092	1.865	1.00
08/05/83	330	46.0	8.93	2.91	540	4	1.850	1.592	1.00
08/12/83	320	52.0	8.93	2.73	680	24	1.425	1.193	1.00
MEAN	336	42.2	8.87	2.69	454	12	3.485	3.158	1.00
S.DEV	18.16	14	.12	.27	211.02	7.26	3.6	3.47	0
C V %	5.4	33.1	1.4	10	46.4	58.5	103.3	110	.2

COMPOUND = COMBINED THETA C = 3

PARAMETER = COD VOLUME-REACTOR = 3.12

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/06/83	360	48.0	9.36	0.64	610	26	1.770	1.534	3.08
07/22/83	320	70.0	9.36	1.00	714	0	1.345	1.050	3.12
07/29/83	350	45.0	9.48	0.76	605	18	1.758	1.532	3.06
08/05/83	330	33.0	9.50	0.83	542	12	1.854	1.669	3.05
08/12/83	320	40.0	9.45	0.80	668	17	1.451	1.270	3.06
MEAN	336	47.2	9.43	0.81	628	15	1.636	1.411	3.08
S.DEV	18.16	13.95	.06	.13	65.65	9.58	.22	.24	.02
C V %	5.4	29.5	.7	16.1	10.4	65.6	13.6	17.5	.9

COMPOUND = COMBINED THETA C = 10

PARAMETER = COD VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi / XV	F(Si-Se) / XV	TC
07/15/83	330	20.0	9.22	0.33	1660	0	0.591	0.555	9.39
07/22/83	320	35.0	9.22	0.33	1710	0	0.557	0.496	9.39
07/29/83	350	42.0	9.22	0.19	1780	24	0.585	0.515	9.94
08/05/83	330	29.0	9.50	0.26	2040	12	0.496	0.452	9.86
08/12/83	320	23.0	9.50	0.25	1830	12	0.536	0.497	9.98
MEAN	330	29.8	9.33	0.27	1804	10	0.553	0.503	9.71
S.DEV	12.24	8.92	.15	.05	147.07	10.03	.03	.03	.29
C V %	3.7	29.9	1.6	21.8	8.1	104.5	7	7.4	3

COMPOUND = COMBINED THETA C = 1

PARAMETER = TOC VOLUME-REACTOR = 2.95

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/11/83	149	57.0	7.49	2.70	140	8	2.702	1.668	0.99
07/15/83	173	38.0	7.49	0.00	120	52	3.660	2.856	0.91
07/18/83	189	22.0	8.35	2.55	290	20	1.845	1.630	1.00
07/20/83	169	28.0	8.64	2.50	380	28	1.303	1.087	1.00
07/22/83	173	34.0	8.93	2.80	450	10	1.164	0.935	1.00
MEAN	171	35.8	8.18	2.11	276	24	2.135	1.635	0.98
S.DEV	14.31	13.31	.66	1.18	145.01	17.79	1.04	.75	.04
C V %	8.3	37.1	8	56.1	52.5	75.4	48.9	46.2	4.1

COMPOUND = COMBINED THETA C = 3

PARAMETER = TOC VOLUME-REACTOR = 3.12

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/11/83	149	63.0	9.36	1.00	888	0	0.503	0.291	3.12
07/15/83	173	20.0	9.36	0.92	680	8	0.763	0.675	3.06
07/18/83	189	26.0	9.36	0.66	686	28	0.827	0.713	3.07
07/20/83	169	19.0	9.36	1.00	880	0	0.576	0.511	3.12
07/22/83	173	42.0	9.36	1.00	714	0	0.727	0.550	3.12
MEAN	171	34.0	9.36	0.92	770	7	0.679	0.548	3.10
S.DEV	14.31	18.64	0	.14	105.25	12.13	.13	.16	.02
C V %	8.3	54.8	0	16	13.6	168.5	19.8	30.3	.9

COMPOUND = COMBINED THETA C = 10

PARAMETER = TOC VOLUME-REACTOR = 3.1

DATE 1983	Si	Se	F	Fw	X	Xe	FSi/XV	F(Si-Se)/XV	TC
07/11/83	149	8.0	8.93	0.33	1540	0	0.279	0.264	9.39
07/15/83	173	29.0	9.22	0.33	1660	0	0.310	0.258	9.39
07/18/83	189	24.0	9.22	0.25	1830	12	0.307	0.268	10.04
07/20/83	169	21.0	8.93	0.29	1750	4	0.278	0.244	10.01
07/22/83	173	23.0	9.22	0.33	1710	0	0.301	0.261	9.39
MEAN	171	21.0	9.10	0.31	1698	3	0.295	0.259	9.65
S.DEV	14.31	7.84	.15	.03	108.02	5.21	.01	0	.34
C V %	8.3	37.3	1.7	11.6	6.3	162.9	5.2	3.6	3.5