

**DEVELOPMENT OF NONFLAMMABLE,
ENVIRONMENTALLY COMPLIANT
FLUOROIODOCARBON SOLVENTS:
PHASE 1 FINAL REPORT**

JANUARY 1995

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WL/MLBT
2941 P STREET, SUITE 1
WRIGHT-PATTERSON AFB, OH 45433-7750**

**prepared by
Jonathan S. Nimitz
Environmental Technology & Education Center
3300 Mountain Road NE
Albuquerque, NM 87106-1920
(505) 256-1463**

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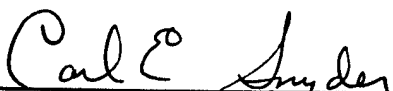
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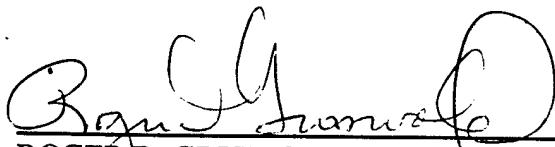
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CARL E. SNYDER, Materials Research Engineer
Nonstructural Materials Transition Team
Nonstructural Materials Branch



WAYNE E. WARD, Chief
Nonstructural Materials Branch
Nonmetallic Materials Division



ROGER D. GRISWOLD, Assistant Chief
Nonmetallic Materials Division
Materials and Manufacturing Directorate

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PREFACE

This report was prepared by the Environmental Technology & Education Center (ETEC), 3300 Mountain Road NE, Albuquerque, NM 87106-1920, under Small Business Innovation Research (SBIR) Contract Number F33615-94-C-5003, for Wright Laboratories, Wright-Patterson Air Force Base, OH 45433.

This is a summary of work performed from June through November 1994. The Air Force technical manager was Ed Snyder. The ETEC principal investigator was Dr. Jon Nimitz. Thanks are due to Dianne Bennett and Brent Gordon who provided substantial assistance with laboratory work.

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ABBREVIATIONS/ACRONYMS

A	absorbance
B	boiling point
C	concentration of iodine in mg/mL
c	concentration
CAS	Chemical Abstracts Service
CFC	chlorofluorocarbon
CRC	Chemical Rubber Company
D	diameter
DoD	Department of Defense
DOE	Department of Energy
ϵ	absorptivity
EPA	Environmental Protection Agency
ESCA	electron spectroscopy for chemical analysis
ETEC	Environmental Technology & Education Center
FIC	fluoroiodocarbon
FTIR	Fourier-transform infrared spectrometry
g	gram
GC	gas chromatograph
GWP	global warming potential
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
ICOLP	International Committee for Ozone Layer Protection
INEL	Idaho National Engineering Laboratory
IPA	isopropyl alcohol
L	liters
l	pathlength through sample
LC ₅₀	lethal concentration for 50% of the population
LCL ₀	lethal concentration limits for no fatalities
LD ₅₀	lethal dose for 50% of the population
LDL ₀	lethal dose limit for no fatalities
LOAEL	lowest observable adverse effect level
MILSPECS	military specifications
MILSTDS	military standards
mL	milliliter
nm	nanometer
NOAEL	no observable adverse effect level
NTIS	National Technical Information Service
o.d.	outer diameter
ODP	ozone-depletion potential
P ₁₇₅	vapor pressure at 175°C
PCE	perchloroethylene
psi	pounds per square inch

ABBREVIATIONS/ACRONYMS (concluded)

PWB	printed wiring board
R	correlation coefficient.
RTECS	Registry of Toxic Effects of Chemical Substances
SBIR	Small Business Innovation Research
SHDS	Solvent Handbook Database System
SIMS	secondary ion mass spectrometry
SIR	surface ionic resistance
SNAP	Significant New Alternatives Policy
SMT	surface-mount technology
TCA	1,1,1-trichloroethane, methyl chloroform
TCE	trichloroethylene
USAF	United States Air Force
VOC	volatile organic compound
W	wall thickness

1. Background

A. History of Ozone-Depleting Solvents

The solvents CFC-113 and 1,1,1-trichloroethane (also called TCA or methyl chloroform) have been widely used for many years for cleaning of metals, electronics, and precision surfaces because of their effectiveness, rapid evaporation, nonflammability, and low toxicity. They have been very convenient to use because they do not require water washes or complex equipment. Millions of pounds of these solvents have been used annually by the U. S. Air Force (USAF) for maintenance and repair of mechanical equipment for Air Force systems and ground support. Many other Government and industrial organizations are also major users of these solvents. However, because of concerns about stratospheric ozone depletion and the resulting legislation, the production of these chemicals will be phased out by December 31, 1995 (Refs. 1-6).

Because of the phaseout of these ozone-depleting chemicals, new chemicals and processes are needed for many cleaning operations in both military and civilian applications. Trichloroethylene (TCE) and perchloroethylene (PCE) can be used in some cases, but these chemicals are suspected carcinogens and require elaborate and expensive systems to recover the vapors and avoid exposure of workers. In addition, TCE and PCE are not easily biodegradable and can cause contamination problems if they reach ground water.

In some cases flammable or combustible solvents such as isopropyl alcohol or *d*-limonene can be used, but strict precautions must be taken to avoid ignition sources and these solvents may pose potential volatile organic compound (VOC) problems (contributing to smog formation). Although hydrochlorofluorocarbons (HCFCs) once appeared promising, concerns over their ozone-depletion potentials (ODPs) and toxicity have severely limited their applicability as solvents. Recently, perfluorocarbons and hydrofluorocarbons have been promoted as alternative cleaning solvents, but these substances are poor cleaners and have relatively high global warming potentials (GWPs).

Aqueous cleaning consists of spray or immersion using water plus detergents and alcohols, followed by rinsing with water and drying. In some cases aqueous cleaning can be used, where water can penetrate adequately, does not become trapped, and does not harm the substrate. When aqueous cleaning is possible, it is attractive for the low cost, worker safety, and low environmental impact. However, there are many cleaning situations in manufacturing and repair of military and civilian equipment where water cannot penetrate adequately, would become trapped, or would harm the substrate; for these cases alternative nonaqueous cleaners are needed.

Alternative cleaning processes already in use or under development include blasting technologies (e.g., plastic beads, wheat starch, solid CO₂), supercritical CO₂ cleaning, and plasma cleaning. In the electronics area, several no-clean options are under development, including low-solids flux and fluxless solder. However, all of these alternative technologies require substantial investment, retooling, and retraining, and are not universally applicable.

B. Desired Properties for a Replacement Solvent

An ideal solvent should meet the following requirements:

- have high solvency for the contaminants present
- penetrate well
- represent minimal or no health hazard
- have an ODP and GWP of zero or as close to zero as possible
- not present a volatile organic compound (VOC) problem
- not present a flammability hazard
- have no adverse effects on materials or components, including long-term durability
- be cost effective
- be recyclable
- be biodegradable
- be suitable for use with existing equipment.

These are quite stringent requirements; no solvents in current use meet all of these criteria. If a nonflammable, nontoxic, effective, environmentally safe nonaqueous cleaner can be identified, it will be a virtual drop-in replacement for TCA, CFC-113, TCE, and PCE. Hundreds of millions of dollars of investment in cleaning equipment (such as vapor degreasers) could remain in use, eliminating the economic and environmental costs of scrapping existing equipment, manufacturing new equipment, and retraining personnel.

C. Classes of Alternative Solvents

Solvents fall into three categories: aqueous, semiaqueous, or nonaqueous. Aqueous cleaners use water plus additives such as detergents and alcohols. The advantages of aqueous systems include low toxicity, nonflammability, low environmental impact, and low cost. Potential concerns include adequate penetration, possible residues, and the effects of water on the substrate. Several aerospace firms (including Northrop, Rockwell, Douglas, Rocketdyne, and Aerojet) are implementing aqueous cleaning of parts.

In semi-aqueous processes, the substrate is cleaned with an organic solvent such as *d*-limonene (a terpene), then rinsed with deionized water to remove traces of solvent. Although this process is effective in some applications, potential concerns include the toxicity and flammability of the organic solvent, possible residues from incomplete rinsing, and the complexity of the process.

Nonaqueous cleaners are organic liquids that do not require aqueous rinsing. This category includes TCA, CFC-113, TCE, PCE, alcohols, esters, ethers, hydrocarbons, and ketones. Nonaqueous cleaners possess the substantial advantages of excellent removal of oils and greases, rapid clean evaporation (for sufficiently volatile solvents), and elimination of the need to expose the surface to water. Potential concerns in general include flammability, toxicity, materials compatibility, adequate volatility for removal, and environmental impact. Nonaqueous cleaners in use include isopropyl alcohol (IPA) and TCE, which may require elaborate engineering systems to minimize the flammability and toxicity risks, respectively.

Solvents are needed that penetrate well, remove a variety of soils, and evaporate quickly and cleanly, as well as being nonflammable and nontoxic. No such solvents are now available to replace CFC-113 and TCA.

D. Government and Industry Initiatives in Cleaning Technologies

Several government and industry initiatives are underway to develop improved cleaning technologies. Organizations currently conducting programs to assist in the assessment and evaluation of cleaning technologies include trade organizations, the Environmental Protection Agency (EPA), the Department of Energy (DOE), and the Department of Defense (DoD). An industry cooperative to track and provide up-to-date cleaning technology information, the Industry Cooperative For Ozone Layer Protection (ICOLP), has been established. The EPA and DoD are working together to reevaluate military specifications (MILSPECs) and standards (MILSTDs) to reflect the phaseout of ozone-depleting solvents. The National Laboratories are conducting several programs to assess and develop alternative solvents and cleaning processes, including testing solvents, plasma cleaning, and supercritical carbon dioxide cleaning technologies. Manufacturers worldwide are reassessing their cleaning requirements and implementing "environmentally friendly" alternatives; Northern Telecom, AT&T, Motorola, and IBM are among those who have provided leadership. The cleaning agent, recovery/recycling/reclamation, and industrial drying industries have also begun to develop new technologies.

During the past few years several new cleaning agents and processes have been developed or their applicability has been expanded. These include, for example, the use of aqueous, semi-aqueous, and nonaqueous cleaners, supercritical carbon dioxide, blasting technologies, and plasma cleaning.

There are several reasons why the U.S. Air Force cannot count on any of the current efforts to provide the best possible cleaners for its specific needs. Established manufacturers in all businesses (including solvent cleaning) tend to look for alternatives that are available right now, rather than carrying out the research needed to provide optimal solutions, even though currently available options may require complex procedures and give poor performance. The USAF has unique requirements that may not be addressed by solvent manufacturers. The history of technology shows that major innovations are usually made by creative individuals working outside of major established organizations (Refs. 7 and 8). Small companies with technologically innovative ideas have a difficult time getting new technologies adopted by larger manufacturers. One of the main advantages of the USAF SBIR program is that it nurtures innovative technologies to meet USAF needs.

2. Phase I Effort

A. Properties of Fluoriodocarbons (FICs)

ETEC has identified a new group of nonaqueous solvents that appears to provide "drop-in" replacements for CFC-113, TCA, TCE and PCE in many applications. These alternative chemicals are known as fluoriodocarbons (FICs) and contain carbon, fluorine, and iodine. FICs are nonflammable, do not deplete stratospheric ozone, do not cause global warming, have low

toxicity, have high cleaning effectiveness, and may be usable in existing vapor degreasers. In addition, FICs are simple to use, evaporate quickly and cleanly, and do not require exposure of the parts being cleaned to water. These solvents also appear very attractive for hand wipe and spray applications. If FICs are found to have acceptable thermal stability, they may also be usable in existing vapor degreasers. Both pure FICs and blends with conventional solvents appear attractive. Conventional solvents that may be blended with FICs in any proportions include alcohols, esters, ethers, hydrocarbons, and ketones.

Four FICs, both alone and in blends, show the greatest promise as replacement non-aqueous solvents. Structures, names, and boiling points of these four FICs are shown in Table 1.

Table 1. Fluoroiodocarbons to be used in solvents

Formula	Condensed Formula	Names	Boiling Point (°C)
CF ₃ (CF ₂) ₂ I	1-C ₃ F ₇ I	perfluoro- <i>n</i> -propyl iodide 1-iodoperfluoropropane heptafluoro-1-iodopropane	41
CF ₃ (CF ₂) ₃ I	1-C ₄ F ₉ I	perfluoro- <i>n</i> -butyl iodide 1-iodoperfluorobutane nonafluoro-1-iodobutane	67
CF ₃ (CF ₂) ₄ I	1-C ₅ F ₁₁ I	perfluoro- <i>n</i> -pentyl iodide 1-iodoperfluoropentane undecafluoro-1-iodopentane	94
CF ₃ (CF ₂) ₅ I	1-C ₆ F ₁₃ I	perfluoro- <i>n</i> -hexyl iodide 1-iodoperfluorohexane tridecafluoro-1-iodohexane	117

The properties of these FICs make them the most promising alternative nonaqueous solvents for the future. These chemicals are nonflammable, and in fact are excellent extinguishants, comparable to halons. In published reports of cup-burner testing by two independent laboratories, FICs have shown extinguishing ability for hydrocarbon fires almost identical to that of halons on a gas volume percent basis (Refs. 9-11). FICs also have attractive boiling points, vapor pressures, and other physical properties.

The environmental properties of FICs are very appealing. They have essentially zero ODP because if released at ground level they are destroyed within two days by sunlight and will never reach the stratosphere (Refs. 12 and 13). The C-I bond is very susceptible to photolysis, even at ground level. The short atmospheric lifetime also gives FICs GWPs hundreds to thousands of times lower than chlorofluorocarbons, hydrochlorofluorocarbons, perfluorocarbons, and

hydrofluorocarbons. There is substantial evidence that FICs destroy components of smog, and are in fact "anti-VOCs" (Refs. 14-17).

The limited toxicity data reported on FICs are very encouraging. For example, one study reported that the level of exposure to $\text{CF}_3\text{CF}_2\text{CF}_2\text{I}$ necessary to cause lethality in 50% of a mouse population in 2 hours (mice 2-hr LC_{50}) was 404 g/L, corresponding to 3.1% by gas volume and 250,000 ppm by weight (Ref. 18). This is a relatively high concentration, indicating a fairly safe chemical.

Very little solubility (cleaning ability) data had been reported in the literature on FICs before this Phase I effort. Because of their chemical structures, however, FICs were expected to have similar solubility characteristics to CFCs. They should have much greater solubility than perfluorocarbons for both nonpolar and polar contaminants because of the presence of the large, polarizable iodine atom. In blends, the solubility properties are expected to be determined by both components. For example, a blend of 50% by volume ethyl acetate and 50% perfluorobutyl iodide is expected to have solubility properties of both the FIC and ethyl acetate.

The author (in unfunded work) had carried out some rough preliminary tests of FIC-based solvents and had given a talk on the subject (Ref. 19). In very crude qualitative tests of cleaning effectiveness (visual inspection of contaminated glass slides) the author had found that perfluoro-*n*-butyl iodide ($1\text{-C}_4\text{F}_9\text{I}$) and perfluoro-*n*-hexyl iodide ($1\text{-C}_6\text{F}_{13}\text{I}$) gave good removal of WD40 oil and 10W30 motor oil, fair to good removal of molybdenum spray lubricant and molybdenum grease, and fair removal of lanolin. These results compared favorably with cleaning results of conventional flammable solvents. Thus FICs appeared to be quite effective solvents.

Blends of conventional solvents with FICs can provide the advantages of lower cost and customized solubility performance. FICs can be blended with a wide variety of well-known solvents from the classes of alcohols, esters, ethers, hydrocarbons, and ketones. The FICs tested ($\text{C}_4\text{F}_9\text{I}$ and $\text{C}_6\text{F}_{13}\text{I}$) were found to be miscible in all proportions with all solvents tested, including isopropyl alcohol, ethanol, ethyl acetate, acetone, methyl ethyl ketone, hexanes, toluene, naphtha, and limonene. In general, addition of 20% to 50% of the FIC by volume was found to render blends nonflammable when an open flame was touched to the surface. In some cases, addition of as little as 1% of an FIC rendered a mixture nonflammable (e.g., 1% $\text{C}_4\text{F}_9\text{I}$ in *d*-limonene).

Azeotropic blends are particularly attractive because they do not change composition on evaporation. Thus an azeotropic solvent would not tend to lose the more volatile component if exposed to air. An important part of Phase II of this effort is the laboratory identification of nonflammable azeotropic blends of FICs with conventional solvents.

FICs have very low surface tension, which will aid penetration into tight spaces. This low surface tension is shown by the size of the drops; the smaller the drop, the lower the surface tension. FICs have over 200 drops per mL, whereas water has about 20 drops to the milliliter and most organic solvents have about 60.

At this time, FICs are available only in research quantities and are expensive. In small quantities they now cost about \$1/g, similar to the current cost of HFC-134a in research quantities. HFC-134a sells for \$9/lb in bulk, and it is expected that FICs should be in about that price range when produced in bulk. Chemicals drop in price dramatically (by factors of 30 or

more) as larger quantities are produced and FICs are relatively simple molecules to prepare. In addition, in solvent blends they will be in mixtures with common, inexpensive solvents which typically cost about one or two dollars a pound. Thus all the solvents under investigation here are expected to be available soon for lower costs than CFCs, which are now selling for about \$15/lb in many locations because of taxes and shortages, and are continuing to increase in price. FICs appear to provide the *only* candidate solvents at this time that are nonflammable, have high cleaning abilities, low toxicity, and low environmental impact, and could be manufactured at reasonable cost.

B. Objectives, Scope, and Approach

This Phase I effort involved five tasks: (1) collection of known information on pure components of solvent blends, (2) identification of soils to be removed, (3) quantitative testing of cleaning effectiveness of pure FICs, (4) thermal stability testing of pure FICs, and (5) reporting of results, including recommendations for Phase II testing.

The Phase I effort screened FICs for top-ranking solvent candidates and provided initial laboratory validation of cleaning effectiveness and thermal stability. The three top-ranking pure FIC solvents shown in Table 1 (1-C₃F₇I, 1-C₄F₉I, and 1-C₆F₁₃I) were tested for cleaning abilities and thermal stabilities. In addition, initial materials compatibility tests were conducted and the properties of conventional solvents for blending were collected and assessed. The results of this Phase I effort are a set of top-ranked FIC solvents, with known cleaning abilities and thermal stabilities, to undergo comprehensive validation (both alone and in blends) in Phase II.

It was determined early in the Phase I effort that one of the FICs listed in Table 1, perfluoro-n-pentyl iodide (1-C₅F₁₁I) appears to have attractive physical properties, but cannot be purchased even in laboratory research quantities at this time. A search of Chem Sources On-Line (a comprehensive, up-to-date database of vendors for chemicals) revealed no vendors for this chemical. Two custom synthesis laboratories (Ryan Scientific and Flura Corp.) that synthesize other FICs were requested to prepare quotations for synthesis of one kg of this chemical, but both declined to provide a quotation. The starting material for the synthesis (perfluorohexanoic acid) is sold by at least two chemical producers (3M and Montefluos), so it is believed that the five-carbon FIC could be prepared without any special difficulty. However, because of the lack of availability even for laboratory testing, perfluoro-n-pentyl iodide was judged less attractive as a candidate solvent than the other three FICs listed in Table 1 at this time. For this reason it was not tested as part of this Phase I effort.

The overall objectives of this Phase I effort were to identify, test, and rank the most attractive pure FIC solvents. The specific objectives and scope of this effort, with approaches taken, included:

(1) Collection of known information on the properties of chemicals of interest.

Existing data on the physical and environmental properties, cleaning abilities, materials compatibilities, and thermal stabilities of the 57 chemicals of interest (both FICs and conventional solvents) were collected, organized, and critically assessed. Collections of information such as the CRC Handbook of Chemistry and Physics, the Aldrich Chemical Catalog, and the on-line

databases of Chemical Abstracts Service (CAS) and Beilstein's Handbook of Organic Chemistry were searched (Refs. 20-23).

(2) Identification of the Soils of Interest

Literature searches and interviews with USAF personnel were conducted to determine the soils of greatest interest in aircraft maintenance operations.

(3) Quantitative testing of cleaning effectiveness of pure FICs.

Quantitative laboratory tests were carried out to determine the effectiveness of pure FICs in removing nineteen difficult soils of interest. Protocols were based on those developed at Sandia and Lawrence Livermore National Labs, for example those described in Ref. 24. Tables of data and graphs of soil removal vs. time were prepared.

(4) Thermal stability testing of pure FICs

Three top-ranking pure FICs underwent thermal stability testing. Samples with and without potential stabilizers were sealed in glass tubes and heated in ovens at 90, 120, 150, and 175°C for up to four months. Potential stabilizers tested included both solids and liquids. The solids tested were copper metal, silver metal, activated charcoal, zeolite molecular sieve, and silica filter-drier beads. The liquids tested were combinations of the following additives reported to stabilize chlorinated solvents: methanol, nitromethane, 1,2-butylene oxide, 1,4-dioxane, 1,3-dioxolan, and furan. The sample tubes were removed periodically from the ovens and analyzed by visible spectroscopy to quantify decomposition. The data obtained were analyzed to provide information on rates of decomposition and stabilizing effects of additives.

(5) Ranking of solvents for Phase II testing.

Based on the results of the data collected, the attractiveness of the FIC solvents has been ranked based on a combination of cleaning effectiveness, physical and environmental properties, toxicity, and expected materials compatibility. A set of top-ranking FIC solvents has been recommended for Phase II testing.

To achieve all of these objectives, the following questions were addressed in this Phase I effort:

- (1) What is known about the physical properties, cleaning effectiveness, materials compatibilities, toxicities, and thermal stabilities of the solvent components of interest?
- (2) What soils must be removed from mechanical equipment for Air Force systems and ground support?
- (3) What are the solubility properties (cleaning abilities) of pure FICs?
- (4) How thermally stable are pure FICs, with and without stabilizers?
- (5) Which FIC-containing solvents rank highest for Phase II testing?

Two optional transitional tasks are now underway. These tasks consist of (1) *Calculation of properties of solvent blends* and (2) *Selection of optimal blends*. The optional transition phase will provide a set of top-ranking solvent blends containing FICs for Phase II testing.

3. Properties of FICs and Potential Blending solvents

A. Search Strategy

A literature search was conducted to find and tabulate data of interest on the components considered for use in FIC-containing solvents. Components include the FICs listed in Table 1 and the other components shown in Table 2, which are common solvents with boiling points between 35°C and 200°C (the normal boiling point range of solvents used for a wide variety of applications). Properties of interest included physical properties such as boiling point, vapor pressure as a function of temperature, liquid density, critical temperature and pressure, flash point, and heat of vaporization as well as toxicity, flammability, materials compatibility, thermal stability, and environmental properties. Environmental properties include atmospheric lifetimes, global warming potentials, ozone-depletion potentials, and contributions to tropospheric air pollution (smog).

Sources of information included books, journals, patents, and solvent databases such as the Solvent Handbook Database System (SHDS) at the Idaho National Engineering Lab (INEL) SHDS, the Solvent Alternative Guide of the EPA (SAGE), and OZONET, the database of the International Cooperative for Ozone Layer Protection (ICOLP). On-line literature databases including Chemical Abstracts Service (CAS) and the National Technical Information Service (NTIS) were searched, and personal contacts were interviewed.

B. Results

The results of this search for properties of solvents of interest are shown in Table 3. Most of the properties desired on the solvents of interest were found in the literature.

C. Toxicities of FICs

Apart from thermal stability, one of the most common concerns expressed about FICs regards their toxicities. For this reason a review of toxicity information on FICs was conducted and the results are reported here.

The most thoroughly studied FIC at this time is trifluoromethyl iodide (CF_3I) because of interest by the USAF in this compound as a drop-in replacement for Halon 1301. The author first identified CF_3I and its blends as the top Halon 1301 candidates in a previous effort sponsored by the Air Force (Ref. 9). Armstrong Labs and ManTech have performed extensive testing on CF_3I and reported data include the following: mice 15-minute LC_{50} 27.4% by gas volume (74.9% by mass, mechanism of lethality: anesthesia), no lethality on exposure of mice to 6% by gas volume (30% by mass) for 72 hours, and cardiac sensitization observed in a beagle at 0.4% by gas volume (2.7% by mass) under the test conditions of 1000 times normal adrenalin levels (10 times maximum levels under stress). Several positive Ames tests were observed. For heptafluoro-*n*-propyl iodide ($\text{CF}_3\text{CF}_2\text{CF}_2\text{I}$, 1- $\text{C}_3\text{F}_7\text{I}$), the reported 15-minute rat LC_{50} is 4.9% by gas volume (34.4% by mass). This relatively high LC_{50} indicates a high degree of safety.

Table 2. Solvent components that may be blended with fluoroiodocarbons

Class	Name(s)	Formula
alcohols	1-butanol	$\text{HO}(\text{CH}_2)_3\text{CH}_3$
	2-butanol	$\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$
	ethanol	$\text{CH}_3\text{CH}_2\text{OH}$
	methanol	CH_3OH
	2-methyl-1-propanol	$\text{HOCH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
	2-methyl-2-propanol	$(\text{CH}_3)_3\text{COH}$
	1-pentanol	$\text{CH}_3(\text{CH}_2)_4\text{OH}$
	2-pentanol	$\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{CH}_3$
	1-propanol	$\text{HO}(\text{CH}_2)_2\text{CH}_3$
	2-propanol	$(\text{CH}_3)_2\text{CHOH}$
esters	ethyl acetate	$\text{CH}_3\text{COOCH}_2\text{CH}_3$
	ethyl butanoate, ethyl butyrate	$\text{CH}_3(\text{CH}_2)_2\text{COOCH}_2\text{CH}_3$
	ethyl propanoate, ethyl propionate	$\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_3$
	isobutyl acetate	$(\text{CH}_3)_2\text{CHCH}_2\text{OCOCH}_3$
	isopropyl acetate	$\text{CH}_3\text{COOCH}(\text{CH}_3)_2$
	methyl acetate	$\text{CH}_3\text{COOCH}_3$
	methyl butanoate, methyl butyrate	$\text{CH}_3(\text{CH}_2)_3\text{COOCH}_3$
	methyl propanoate, methyl propionate	$\text{CH}_3(\text{CH}_2)_2\text{COOCH}_3$
	<u>n</u> -butyl acetate	$\text{CH}_3(\text{CH}_2)_3\text{OCOCH}_3$
	hexyl acetate	$\text{CH}_3(\text{CH}_2)_5\text{OCOCH}_3$
	<u>n</u> -pentyl acetate, amyl acetate	$\text{CH}_3(\text{CH}_2)_4\text{OCOCH}_3$
	<u>n</u> -propyl acetate	$\text{CH}_3(\text{CH}_2)_2\text{OCOCH}_3$
	<u>sec</u> -butyl acetate	$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{OCOCH}_3$
	diethyl ether, ethyl ether	$(\text{CH}_3\text{CH}_2)_2\text{O}$
	diisopropyl ether, isopropyl ether	$((\text{CH}_3)_2\text{CH})_2\text{O}$
ethers	di- <u>n</u> -butyl ether, butyl ether	$(\text{CH}_3(\text{CH}_2)_3)_2\text{O}$
	di- <u>n</u> -propyl ether, propyl ether	$(\text{CH}_3\text{CH}_2\text{CH}_2)_2\text{O}$
	1,4-dioxane	$\text{cyclo}-(\text{CH}_2\text{CH}_2\text{O})_2$
	tetrahydrofuran	$\text{cyclo}-(\text{CH}_2)_4\text{O}$
	decane	$\text{CH}_3(\text{CH}_2)_8\text{CH}_3$
hydrocarbons	heptanes	$\text{CH}_3(\text{CH}_2)_5\text{CH}_3$
	hexanes	$\text{CH}_3(\text{CH}_2)_4\text{CH}_3$
	ligroin	blend of hydrocarbons
	limonene	$\text{C}_{10}\text{H}_{16}$
	nonane	$\text{CH}_3(\text{CH}_2)_7\text{CH}_3$
	octane	$\text{CH}_3(\text{CH}_2)_6\text{CH}_3$
	pentanes	$\text{CH}_3(\text{CH}_2)_3\text{CH}_3$
	petroleum ether	blend of hydrocarbons
	petroleum spirit	blend of hydrocarbons
	pinene	$\text{C}_{10}\text{H}_{16}$
	Stoddard's solvent	blend of C8 to C11 HCs
	toluene	$\text{C}_6\text{H}_5\text{CH}_3$
	turpentine	blend of hydrocarbons
	acetone, propanone	CH_3COCH_3
	2-butanone, butanone, methyl ethyl ketone	$\text{CH}_3\text{COCH}_2\text{CH}_3$
ketones	2-hexanone, methyl butyl ketone	$\text{H}_3\text{COCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
	3-methyl-2-butanone	$\text{CH}_3\text{COCH}(\text{CH}_3)_2$
	2-pentanone, methyl propyl ketone	$\text{CH}_3\text{COCH}_2\text{CH}_2\text{CH}_3$

TABLE 3. PROPERTIES OF FICS AND CONVENTIONAL SOLVENTS

A		B		C		D	E	F
1								
2	Class	Name(s)	Structure	CAS No.	BP	QC	Density	
3	alcohol	methanol, methyl alcohol	CH ₃ OH	67-56-1	64.6	0.791		
4	alcohol	ethanol, ethyl alcohol	CH ₃ CH ₂ OH	64-17-5	78.5	0.785		
5	alcohol	2-propanol, isopropyl alcohol	(CH ₃) ₂ CHOH	67-63-0	82.4	0.785		
6	alcohol	2-methyl-2-propanol, t-butyl alcohol	(CH ₃) ₃ COH	75-65-0	83.0	0.786		
7	alcohol	1-propanol	HO(CH ₂) ₂ CH ₃	71-23-8	97.0	0.804		
8	alcohol	2-butanol	CH ₃ CH(OH)CH ₂ CH ₃	15892-23-6	98.0	0.808		
9	alcohol	2-methyl-1-propanol, isobutyl alcohol	HOCH ₂ CH(CH ₃)CH ₃	78-83-1	108.0	0.803		
10	alcohol	1-butanol	HO(CH ₂) ₃ CH ₃	71-36-3	117.7	0.81		
11	alcohol	2-pentanol	CH ₃ CH(OH)CH ₂ CH ₂ CH ₃	6032-29-7	118.5	0.812		
12	alcohol	1-pentanol	CH ₃ (CH ₂) ₄ OH	71-41-0	137.0	0.811		
13	ester	methyl acetate	CH ₃ COOCH ₃	79-20-9	57.5	0.932		
14	ester	ethyl acetate	CH ₃ COOCH ₂ CH ₃	141-78-6	77.0	0.902		
15	ester	methyl propionate, methyl propionate	CH ₃ (CH ₂) ₂ COOCH ₃	554-12-1	79.0	0.915		
16	ester	isopropyl acetate	CH ₃ COOCH(CH ₃) ₂	108-21-4	85.0	0.872		
17	ester	ethyl propionate, ethyl propionate	CH ₃ CH ₂ COOCH ₂ CH ₃	105-37-3	99.0	0.891		
18	ester	propyl acetate, n-propyl acetate	CH ₃ (CH ₂) ₂ COOCH ₂ CH ₃	109-60-4	102.0	0.888		
19	ester	methyl butanoate, methyl butyrate	CH ₃ (CH ₂) ₃ COOCH ₃	623-42-7	102.5	0.898		
20	ester	sec-butyl acetate	CH ₃ CH ₂ CH(CH ₃)COOCH ₃	105-46-4	111.5	0.872		
21	ester	isobutyl acetate	(CH ₃) ₂ CHCH ₂ COOCH ₃	110-19-0	116.0	0.868		
22	ester	ethyl butanoate, ethyl butyrate	CH ₃ (CH ₂) ₂ COOCH ₂ CH ₃	105-54-4	120.0	0.878		
23	ester	butyl acetate, n-butyl acetate	CH ₃ (CH ₂) ₃ COOCH ₂ CH ₃	123-86-4	125.0	0.882		
24	ester	pentyl acetate, n-pentyl acetate, amyl acetate	CH ₃ (CH ₂) ₄ COOCH ₂ CH ₃	628-63-7	149.0	0.876		
25	ester	hexyl acetate	CH ₃ (CH ₂) ₅ COOCH ₂ CH ₃	142-92-7	169.0	0.876		
26	ester	cyclohexyl acetate	CH ₃ COOC ₆ H ₁₁					
27	ether	ether, ethyl ether, diethyl ether	(CH ₃ CH ₂) ₂ O	60-29-7	34.6	0.708		
28	ether	tetrahydrofuran	cyclo-(CH ₂) ₄ O	109-99-9	67.0	0.886		
29	ether	isopropyl ether, diisopropyl ether	(CH ₃) ₂ CH ₂ O	108-20-3	68.5	0.725		
30	ether	propyl ether, dipropyl ether, di-n-propyl ether	(CH ₃ CH ₂) ₂ O	111-43-3	89.0	0.736		
31	ether	1,4-dioxane	cyclo-(CH ₂) ₄ O	123-91-1	101.0	1.034		
32	ether	butyl ether, dibutyl ether, di-n-butyl ether	(CH ₃) ₂ CH ₂ O	142-96-1	142.5	0.764		
33	fluoriodocarbon	trifluoriodomethane, trifluoromethyl iodide, iodotrifluoromethane	CF ₃ I	2314-97-8	-22.5	2.36		
34	fluoriodocarbon	perfluoriodomethane, iodopentadecafluorobutane, perfluorobutyl iodide	CF ₃ CF ₂ I	354-64-3	12.0	2.085		
35	fluoriodocarbon	1,1,2,2,3,3,3-heptafluoro-1-iodopropane, heptafluoro-1-iodopropane	CF ₃ CF ₂ CF ₂ I	754-34-7	40.5	2.06		
36	fluoriodocarbon	1,1,2,2,3,3,4,4,4-nonafluoro-1-iodobutane, perfluoro-n-butyl iodide, iodoperfluorobutane, nonafluorobutyl iodide	CF ₃ CF ₂ CF ₂ CF ₂ I	423-39-2	67.5	2.01		
37	fluoriodocarbon	1-iododecafluoropentane, perfluoro-n-pentyl iodide	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ I	638-79-9	94.0	2.05		
38	fluoriodocarbon	tridecafluoro-1-iodohexane, perfluorohexyl iodide, 1-iodotridecafluorohexane, 1-iodoperfluorohexane	CF ₃ (CF ₂) ₅ I	355-43-1	117.0	2.05		
39	hydrocarbon	cyclohexane	(CH ₂) ₆	110-82-7	81.0	0.779		
40	hydrocarbon	pentane	CH ₃ (CH ₂) ₃ CH ₃	109-66-0	35.5	0.626		
41	hydrocarbon	hexane	CH ₃ (CH ₂) ₄ CH ₃	110-54-3	69.0	0.659		
42	hydrocarbon	ligroin	blend of hydrocarbons	8032-32-4	70.0	0.656		
43	hydrocarbon	heptane	CH ₃ (CH ₂) ₅ CH ₃	142-82-5	98.0	0.684		
44	hydrocarbon	toluene	C ₆ H ₅ CH ₃	108-88-3	111.0	0.867		
45	hydrocarbon	octane	CH ₃ (CH ₂) ₆ CH ₃	111-65-9	126.0	0.703		
46	hydrocarbon	nonane	CH ₃ (CH ₂) ₇ CH ₃	111-84-2	151.0	0.718		
47	hydrocarbon	pinene	C ₁₀ H ₁₆	18172-67-3	166.0	0.859		
48	hydrocarbon	decane	CH ₃ (CH ₂) ₈ CH ₃	124-18-5	174.0	0.73		
49	hydrocarbon	limonene	C ₁₀ H ₁₆	5989-54-8	176.0	0.844		
50	hydrocarbon	Stoddard's solvent	blend of C ₈ to C ₁₁ HC's	8052-41-3	150-200			
51	hydrocarbon	turpentine	blend of hydrocarbons	8006-64-2	156-166			
52	hydrocarbon	petroleum spirit, mineral spirits	blend of hydrocarbons	179-210	179-210			
53	hydrocarbon	petroleum ether	blend of hydrocarbons	8032-32-4	35-60	0.64		
54	ketone	acetone, propanone	CH ₃ COCH ₃	67-64-1	56.0	0.791		
55	ketone	2-butanone, butanone, methyl ethyl ketone	CH ₃ COCH ₂ CH ₃	78-93-3	80.0	0.805		
56	ketone	3-methyl-2-butanone, methyl isopropyl ketone	(CH ₃) ₂ CHCOCH ₃	563-80-4	94.5	0.805		
57	ketone	2-pentanone, methyl propyl ketone	CH ₃ COCH ₂ CH ₂ CH ₃	107-87-9	100.5	0.812		
58	ketone	2-hexanone, methyl butyl ketone	CH ₃ COCH ₂ CH ₂ CH ₂ CH ₃	591-78-6	127.0	0.812		

TABLE 3. PROPERTIES OF FICS AND CONVENTIONAL SOLVENTS (CONCLUDED)

1	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Flash pt.	Flammability	Toxicity	RTECS #	TSCA	lit of Vap	Temp 1	Temp 1	num lig	Temp 2	VP 2	Temp 3	VP 3	Crit Temp	Crit Pres	VOC?	Atm. Life	GWP	ODP
2	52	flammable	highly toxic	PC1400000	yes	260	-44	1	12.1	60	64.7	760	240	78.7	yes	a few days	very low	zero
3	52	flammable	highly toxic	KQ6300000	yes	204.3	20	44	48.4	200	78.5	760	243.1	63.1	yes	a few days	very low	zero
4	48	flammable	highly toxic	NT8050000	yes	21.4	20	33	30.5	60	82.4	760	234.9	53	yes	a few days	very low	zero
5	72	flammable	irritant	EO1925000	yes	130.6	30	57.3	40	103	83	760	234.9	46	yes	a few days	very low	zero
6	40	flammable	irritant	UH8225000	yes	162.6	0	3.44	50	87.2	97.2	760	263.7	49.9	yes	a few days	very low	zero
7	59	flammable	irritant	EO175000	yes	134.4	20	12.1	60	59.2	98	760	265.2	46.9	yes	a few days	very low	zero
8	80	flammable	irritant	NP9625000	yes	138	20	8.8	70	156.5	108	760	265	48	yes	a few days	very low	zero
9	99	flammable	irritant	EO1400000	yes	141.3	20	4.39	60	59.2	108	400	287	48.4	yes	a few days	very low	zero
10	95	flammable	irritant	SA4900000	yes	97.8						760			yes	a few days	very low	zero
11	93	flammable	irritant	SB9800000	yes	120.6	0	0.6	80	95.1	137	760			yes	a few days	very low	zero
12	120	flammable	toxic, irritant	AI9100000	yes	104.4	20	173	40	400	57.8	760	233.7	46.3	yes	a few days	very low	zero
13	15	flammable	irritant	AH5425000	yes	102.9	-43.3	1	16.6	60	77	760	250.1	37.8	yes	a few days	very low	zero
14	26	flammable	irritant	UF5970000	yes	102.9	-38.3	1	25.1	60	88.8	760			yes	a few days	very low	zero
15	43	flammable	irritant	UF3675000	yes		-26.7	1	37	60	102	760			yes	a few days	very low	zero
16	62	flammable	irritant	AI6930000	yes						102.5	760			yes	a few days	very low	zero
17	54	flammable	irritant	AF7380000	yes		25	24			111.5	760			yes	a few days	very low	zero
18	55	flammable	irritant	AI6675000	yes		20	12.5	96	400	117.2	760			yes	a few days	very low	zero
19	61	flammable	irritant	ET1660000	yes	73.6					120	760			yes	a few days	very low	zero
20	71	flammable	irritant	AF7380000	yes		20	9	60	70	125	760	346		yes	a few days	very low	zero
21	67	flammable	irritant	AI6025000	yes	73.8	20	4.5			149	760			yes	a few days	very low	zero
22	72	flammable	irritant	AF7380000	yes	69	20	20			169	760			yes	a few days	very low	zero
23	75	flammable	irritant	AI0875000	yes		20	3.8							yes	a few days	very low	zero
24	99	flammable	irritant	KI5775000	yes	83.96	-21.8	60	20	442	34.6	760	194.6	35.52	yes	a few days	very low	zero
25	-40	flammable	irritant	LU5950000	yes	15	15	114	45	385	67	760	268	51.2	yes	a few days	very low	zero
26	1	flammable	irritant	TZ5425000	yes	68.16	-20	13.4	20	119.4	80	1078.7	288	27.5	yes	a few days	very low	zero
27	9	flammable	irritant	UJ5125000	yes		-43.3	1	21.6	60	89	760			yes	a few days	very low	zero
28	40	flammable	cancer suspect agent	JG8225000	yes	98.6	20	29	33.8	60	101	760			yes	a few days	very low	zero
29	54	flammable	irritant	EK5425000	yes	68.8	20	4.8			142.5	760			yes	a few days	very low	zero
30	77	flammable	irritant	none	yes		-40	338	-22.5	760	23	3990	122	39.9	no	a few days	very low	zero
31	none	nonflammable	irritant	TZ393000	yes		-15	119	23	481	12.0	760	138	29.1	no	a few days	very low	zero
32	none	nonflammable	irritant	none	yes		-40	36	23	479	40.5	760	172	25	no	a few days	very low	zero
33	none	nonflammable	irritant	none	yes						67.5	760	196	19.1	no	a few days	very low	zero
34	none	nonflammable	irritant	none	yes						94.0	760			no	a few days	very low	zero
35	none	nonflammable	irritant	GU6300000	yes	86	0	27	60	390	117.0	760			no	a few days	very low	zero
36	-1	flammable	irritant	RZ9450000	yes	84	-76.6	1	-22.2	60	35.5	760	197.2	33	yes	a few days	very low	zero
37	-57	flammable	irritant	MI7000000	yes	82	-53.9	1	5.4	60	68.7	760	234.8	29.5	yes	a few days	very low	zero
38	-10	flammable	irritant	XS5250000	yes	76	-34	1	30.6	60	98.4	760	266.8	26.8	yes	a few days	very low	zero
39	-16	flammable	irritant	RG8400000	yes	86	-26.7	1	40.3	60	111	760	320.6	41.6	yes	a few days	very low	zero
40	30	flammable	irritant	RA6115000	yes		100F	0.5 ptia			126	760			yes	a few days	very low	zero
41	40	flammable	irritant	DT5077000	yes		100F	0.2 ptia			151	760			yes	a few days	very low	zero
42	60	flammable	irritant	HD6550000	yes		4.2	1	81.2	60	166	760			yes	a few days	very low	zero
43	88	flammable	irritant	OS8350000	yes		17.1	1	84.6	40	174	760			yes	a few days	very low	zero
44	91	flammable	irritant	VO8400000	yes						176	760			yes	a few days	very low	zero
45	115	flammable	irritant	DI3030000	yes										yes	a few days	very low	zero
46	119	flammable	irritant	AL3150000	yes										yes	a few days	very low	zero
47	135	flammable	irritant	EL6475000	yes	125.3	20	180	40	421.5	56	760	235	47	yes	a few days	very low	zero
48	-57	flammable	irritant	EL6475000	yes	106	-48.3	1	14	60	80	760	260	43.3	yes	a few days	very low	zero
49	1	flammable	irritant	EL9100000	yes	89.9	-19.9	1	29.6	40	88.9	760			yes	a few days	very low	zero
50	26	flammable	toxic	SA7875000	yes	91	20	27.8	47.3	60	100.5	760			yes	a few days	very low	zero
51	43	flammable	irritant	MP1400000	yes	83	7.7	1	69.8	60	127.5	760			yes	a few days	very low	zero
52	45	flammable	irritant		yes													
53	95	flammable	irritant		yes													

There is a small amount of previous published data on toxicity of FICs (reviewed in Refs. 9 and 25). For example, one report shows that a dog exposed to 50% by volume (91% by mass) of CF_3I for 30 seconds survived and exhibited no signs of anesthesia (Ref. 26). It was reported that after 30 seconds of exposure the dog experienced coughing, choking, retching, and convulsions. It is very encouraging that no anesthesia or lethality were observed at this high concentration. The coughing, choking, retching, and convulsions could well have been caused by traces of acid gases (HF and HI) or by oxygen deprivation (asphyxiation), since displacement of 50% of the air in the test chamber by CF_3I would leave the oxygen concentration below 11%, a level that cannot sustain mammalian life. In modern test protocols at high concentrations of halocarbons, oxygen is added to keep the total oxygen concentration near the normal level, but there is no indication that oxygen was added in this 1953 test. In the Registry of Toxic Effects of Chemical Substances (RTECS) it is reported that the mice LC_{50} for 2-hour exposure to $\text{CF}_3\text{CF}_2\text{CF}_2\text{I}$ is 404 g/m^3 (Ref. 18). This corresponds to 25% by weight or 3.34% by gas volume. Again this relatively high LC_{50} indicates a high degree of safety.

Several iodocarbons have been used as radiopaque agents in humans, providing improved contrast for X-rays (Ref. 27). In fact radiopaque agents are one of the largest worldwide uses of iodine at this time. The fact that these compounds have been injected or ingested into many humans with no ill effects provides additional evidence for the low toxicity of many iodocarbons.

No data are reported on the long-term effects of exposure to FICs. It would be reasonable to assume that highly volatile compounds such as CF_3I would have little or no long-term health effects because they will leave the body within minutes of exposure. For less volatile compounds, the long-term effects are more difficult to predict. Because the body can excrete or use iodine, it is unlikely that any adverse effects will be observed from the iodine atoms from FICs. In general, the main area of potential concern for most haloalkanes is possible alkylation of important biological molecules. However, because fluorinated 1-iodoalkanes are hundreds or thousands of times less reactive than most alkyl halides in both $\text{S}_{\text{N}}1$ (substitution, nucleophilic, unimolecular) and $\text{S}_{\text{N}}2$ (substitution, nucleophilic, bimolecular) type reactions, very little if any alkylation should occur.

CF_3I has already been approved for use in unoccupied areas under the EPA's Significant New Alternatives Program (SNAP), and has appeared on the published SNAP list of acceptable alternatives. Because this approval applies only to unoccupied areas, cardiac sensitization data was not required for this approval. Thus, regardless of future findings, CF_3I is likely to be an important halon replacement for unoccupied spaces. For unoccupied spaces, no human exposure is expected in use; only workers handling the chemicals are at possible risk of exposure. Because the chemicals are handled in closed systems, only an accident would expose workers. Additional engineering controls can be incorporated to minimize this hazard.

Recent toxicity results give increased importance to blends containing FICs. Blends can be designed to improve performance, lower cost, and decrease toxicity. Often two chemicals used in combination are less toxic than linearly predicted.

None of the toxicity results to date should have significant adverse effects on usage of FICs as solvents. The mouse LC_{50} of $1\text{-C}_3\text{F}_7\text{I}$ (3.3%/2hr) is more than 8 times higher than that of TCA (0.39%/2 hr), indicating that $1\text{-C}_3\text{F}_7\text{I}$ is substantially safer than the widely-used TCA. The

LC₅₀ data also indicate that 1-C₃F₇I has similar toxicity to ethanol. If necessary, appropriate engineering controls on solvents (e.g., fume hoods or enclosed systems) can be used to minimize exposure, and blending of FICs with conventional solvents can decrease toxicity as well as cost. The commonly-used refrigerant CFC-11 has a no observable adverse effect limit (NOAEL) and lowest observable adverse effect limit (LOAEL) lower than CF₃I, indicating that CF₃I is safer than CFC-11. No lethality was observed on exposure of mice to 6% CF₃I for 72 hours. Thus CF₃I appears much safer than the widely used beverage and solvent ethanol, which killed half the mice exposed to 2.1% for 4 hours.

Table 4 lists some comparative toxicity data on halogenated hydrocarbons in use as solvents, refrigerants, foam blowing agents, and firefighting agents (Refs. 18 and 25). Data on ethanol are also included. For ease of comparison all exposure numbers have been converted to percentage gas volume.

Other FICs (e.g., 1-C₃F₇I, 1-C₄F₉I, 1-C₆F₁₃I) will have different toxicity characteristics from CF₃I and should be thoroughly investigated because of their promise as high-performance solvents and foam blowing agents, both alone and in blends. An important part of the Phase II study is an in-depth investigation of the toxicology of these three compounds.

5. Cleaning Ability

A. Introduction

Cleaning performance is an important factor in the attractiveness of any solvent. Cleaning ability tests were conducted to compare the effectiveness of FICs to that of conventional chlorinated solvents in removing difficult soils commonly encountered in USAF operations. Tests were conducted following standard protocols developed at Sandia National Laboratories and elsewhere. These tests involve preparation of coupons contaminated with simulated soils, cleaning under controlled conditions, and reweighing.

The three highest-ranking pure FIC solvents selected were tested for cleaning effectiveness using coupons contaminated with simulated soils such as hydraulic fluids, oils, greases, solder flux residue, lanolin, wax, and other appropriate contaminants. Each contaminated coupon will be suspended in a beaker of the test solvent with magnetic stirring at room temperature for a set time. The soil remaining was determined by weighing on an analytical balance.

B. Solvents Tested

The FIC solvents tested were pure 1-C₃F₇I, 1-C₄F₉I, and 1-C₆F₁₃I. For comparison, baseline tests with TCA, CFC-113, and TCE were also run for all soils tested.

C. Soils Tested

To aid determination of soils to be used for testing, a survey was taken to determine the range of soils encountered on mechanical equipment for Air Force systems and ground support equipment. This included literature surveys and interviews with personnel responsible for equipment maintenance. Some common contaminants found on metal surfaces in USAF operations are shown in Table 5.

Table 4. Comparison of Toxicity Data on FICs and Other Chemicals in Wide Use

Compound	Name(s)	CAS No.	RTECS No.	Mouse LC/time	Rat LC/time	PEL TWA	STEL	NOAEL %	LOAEL %
CF ₃ I	trifluoromethyl iodide	2314-97-8	--	LC50 27.4%/15min, LCLo>6%/72h				0.2	0.4
1-C ₃ F ₇ I	heptafluoro-1-iodopropane	754-34-7	TZ3930000	LC50 3.3%/2h, 4.9%/15 min					
CH ₃ CH ₂ OH	ethanol, ethyl alcohol	64-17-5	KQ6300000	LC50 2.1%/4h	LC50 2%/10h	1000			
CFC-11	chlorotrifluoromethane	75-69-4	PB6125000	LC50 10%/30 min	LC50 13%/15 min	1000		0.13	0.35
CFC-113	1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	KJ4000000	LCLo 25%/90sec	LCLo 8.7%/6 hrs				
CFC-12	dichlorodifluoromethane	75-71-8	PA8200000						
CH ₂ Cl ₂	dichloromethane, methylene chloride	75-09-02	PA8050000	LC50 1.4%/7h	LC50: 2.5%/30min	500			
Halon 1202	dibromodifluoromethane	75-61-6	PA7525000	LCLo 0.8%/15min		100			
Halon 1211	bromochlorodifluoromethane	353-59-3	PA5270000		LC50: 20%/15 min			0.5	1.0
Halon 1301	bromotrifluoromethane	75-63-8	PA5425000	LC50: 6.3%					
Halon 2402	1,2-dibromotetrafluoroethane	124-73-2	KH9370300	LC50 2.8%/2h	LC50 8.2%/2h				
HCFC-123	2,2-dichloro-1,1,1-trifluoroethane	306-83-2	KI1108000	LC50 7.4%/1hr				1.0	2.0
HCFC-141b	1,1-dichloro-1-fluoroethane	1717-00-6	KI0997000	LC50 3.2%/2 hr	LC50 5.0%/2h				
HCFC-22	chlorodifluoromethane	75-45-6	PA6390000					2.5	5.0
PCE	tetrachloroethylene	127-18-4	KX3850000	LC50: 0.52%/4h	LC50: 0.5%/8h	50	200		
TCA, methyl chloroform	1,1,1-trichloroethane	71-55-6	KJ975000	LC50: 0.39%/2h	LC50 1.8%/4h	350	450		
TCE	trichloroethylene	79-01-6	KX4550000	LC50: 0.84%/4h	LCLo 0.8%/4h	50	200		

Table 5. Some Common Contaminants found on Metal Surfaces in U. S. Air Force Applications

adhesive from aluminum oxide paper
aqueous film-forming foam (AFFF)
core-cutting lubricants
duct & masking tape residue
fingerprints
fluorinated greases
forming oil such as Houghton-Draw 7007
grease pencil
hydraulic fluids such as MIL-H-5606 and 7808
JP-4
JP-5
JP-8
lanolin
lithium-based lubricants
machining oil from electric discharge machining (EDM)
marker pen
mill markings
molybdenum-based lubricants
oil from compressors
particulates in wide size range (shop and road dust)
polysulfide sealant
preservative oil VV-L-800
salts from alkaline cleaners and seawater
silicone
starch from gloves
tube bending oil
waxes

These contaminants can be grouped into the chemical categories of ionic, nonpolar organic, polar organic, and particulate, all of which exhibit different solubilities. Results of contamination can include corrosion, bond failure, mold growth (tropicalisation), hygroscopy, fracture/dusting, and (for electronics) leakage currents, dendritic growth, capacitance effects, and electrical failure.

The soils listed in Table 6 were selected for testing because they represent a wide range of difficult soils. These soils (containing oils, greases, and particulates) are difficult to remove with conventional solvents because of their low solubility and adhesion to metal surfaces.

The "supersoil" was a combination of marker pen, salt, EDM oil, hydraulic fluid MIL-H-82382, shop dust, and aluminum oxide powder. This supersoil, designed with input from shop personnel at McClellan AFB, was designed to represent realistic soils encountered during repairs of aircraft parts at an air logistics center.

D. Procedure

Cleaning abilities were tested on the 19 difficult soils listed in Table 6, following protocols developed at Sandia National Labs (Ref. 24). For each test a set of four 1" by 3" aluminum coupons were weighed to the nearest 0.01 mg on an analytical balance, soiled on the lower 1/3 of one face, reweighed, then immersed in a magnetically stirred solvent bath consisting of 60 mL of solvent in a 100-mL Pyrex beaker. The soiled faces of the coupons faced inward and glass spacers (stir bars) were used to keep the coupons from touching each other. Coupons were removed after 0.5, 1.0, 2.0, and 5.0 minutes, dried, reweighed, and examined. The percentage of soil removal was plotted versus time. For baseline comparison, all cleaning tests were also conducted using TCA, CFC-113, and TCE.

For soiling samples with supersoil, the following procedure was followed (all soiling refers to only the lower 1/3 of the coupon): (1) one face of the coupon was marked with an X with marker pen, (2) the coupon was dipped into a 5% solution of salt in water and oven-dried at 250°F for 15 minutes, (3) the coupon was dipped into a vigorously agitated supersoil solution (consisting of 1% by volume EDM oil, 1% by volume hydraulic fluid MIL-H-83282, 0.5% by weight shop dust, and 0.25% by weight aluminum oxide powder in hexanes) and oven-dried.

E. Results

The results of these tests are summarized in Table 7 with one-word descriptions of the cleaning abilities of each solvent on each soil tested. The definitions of the terms "excellent" etc. used in Table 7 are given in Table 8. Detailed experimental data are given in Appendix A and graphs of soil removal are given in Appendix B. The conventional chlorinated solvents TCA, TCE, and CFC-113 differ somewhat in their abilities to remove soils; these differences are summarized in Table 7.

These data and graphs show that FICs are excellent solvents, quite similar to TCA, CFC-113, and TCE in cleaning ability for most soils, including AFFF, EDM oil, hydraulic fluids, jet fuels, motor oil, WD40 oil, silicone sealant, silicone spray, and supersoil. FICs are superior to the conventional chlorinated solvents in removal of perfluorinated greases, and are inferior in

Table 6. List of 19 Soils Used for Cleaning Ability Testing

Soil Type	Description
AFFF	from 3M Corp.
beeswax	
castor oil	USP grade from Walgreens, lot 4C9258
EDM oil	Eloxol 76 mfg. by Elox Corp., from Page Products Co., 625 Wanda, Ferndale, MI 45220
grease pencil	Berol China marker, black, 173T
hydraulic fluid MIL-H-5606	Texaco Aircraft Hydraulic Oil 15, meets MIL-H-5606F
hydraulic fluid MIL-H-83282	Royco 782 Superclean Hydraulic Fluid, MIL-H-83282 H537 9150-00-149-7452 L93, Div. of Royal Lubricants Co., Inc., East Hanover, NJ 07936
hydraulic fluid Skydrol 500B4	Skydrol 500B4 hydraulic fluid by Monsanto, containing phosphate esters
jet fuel A	
jet fuel JP-4	
lanolin	USP grade from Fougere
moly grease	U-Lube-It, prod. no. 3944 from E.P. Moly Automotive Grease 302 from Stay-Lube Inc., Compton, CA 90224
moly spray lube	Kal-Gard Chainkote from Kal-Gard Coating and Mfg. Corp., Sepulveda, CA 91343
motor oil 10W30	Pennzoil Multi-vis SAE 10W30 motor oil with Z-7 from Pennzoil Products Co., Oil City, PA 16301
oil WD-40	WD-40 Co., San Diego, CA 92110
perfluorinated grease	Fomblin by Montefluos, type YRT/2, MLO 86316
silicone sealant	100% silicone sealant, clear, from Dow Corning Corp., Midland, MI 48686-0994, marketed by DAP
silicone spray	Permatex Silicone Spray Lubricant, part no. 116DA, item no. 80070, from Loc-Tite Corp., Cleveland, OH 44128
supersoil	

Table 7. Summary of Cleaning Abilities of FIC and Chlorinated Solvents

	TCA	TCE	CFC-113	1-C ₃ F ₇ I	1-C ₄ F ₉ I	1-C ₆ F ₁₃ I
AFFF	very good	very good	excellent	excellent	excellent	excellent
BEESWAX	good	very good	good	poor	poor	poor
CASTOR OIL	very good	excellent	very good	excellent	very good	fair
EDM OIL	excellent	excellent	excellent	excellent	excellent	excellent
GREASE PENCIL	fair	fair	fair	fair	fair	poor
HYDRAULIC FLUID MIL-H-5606	excellent	excellent	excellent	excellent	excellent	excellent
HYDRAULIC FLUID MIL-H-83282	excellent	excellent	excellent	excellent	excellent	excellent
HYDR. FLUID SKYDROL 500B4	excellent	excellent	excellent	excellent	excellent	excellent
JET FUEL A	very good	excellent	excellent	excellent	excellent	excellent
JET FUEL JP-4	excellent	very good	excellent	excellent	excellent	excellent
LANOLIN	very good	excellent	very good	poor	fair	fair
MOLY GREASE	very good	excellent	very good	very good	good	fair
MOLY SPRAY LUBE	excellent	excellent	excellent	fair	poor	poor
MOTOR OIL 10W30	poor	excellent	excellent	excellent	excellent	very good
OIL WD-40	excellent	excellent	excellent	excellent	excellent	excellent
PERFLUORINATED GREASE	poor	poor	very good	excellent	very good	very good
SILICONE SEALANT	poor	good	fair	poor	fair	poor
SILICONE SPRAY	excellent	very good	excellent	excellent	excellent	excellent
SUPER SOIL	excellent	very good	very good	very good	very good	excellent

removal of beeswax, grease pencil, lanolin, and molybdenum spray lubricant. A chart of removal of perfluorinated grease is shown in Figure 1.

FICs are virtually identical to the chlorinated solvents in removal of supersoil (from which all solvents were effective at removing the EDM oil and hydraulic fluid, but ineffective on salt). All solvents gave similar results with AFFF, removing the organic components but not the small amount of water contained in AFFF, which evaporated after the cleaning. The most difficult soils to remove of the 19 tested were beeswax, castor oil, grease pencil, lanolin, molybdenum grease, molybdenum spray lubricant, and silicone sealant. It should be noted that even if a solvent performed poorly in removing a particular soil in this test, it is expected that in most cases satisfactory removal could be obtained by using some combination of longer soaking times, ultrasonic agitation, and physical methods such as wiping or brushing.

6. THERMAL STABILITY TESTS

A. Introduction

In addition to cleaning ability testing, the other main thrust of Phase I was to examine the thermal stabilities of FICs with and without added stabilizers. The thermal stability of a solvent determines its storage conditions and shelf life. It also has a major bearing on whether the solvent can be used in a constantly-boiling vapor degreaser or can only be used at room temperature. Stabilizers are often used with haloalkane solvents to improve thermal stability and increase storage lifetime. Liquid stabilizers used with haloalkane solvents have been reviewed (Ref. 28). The purpose of the thermal stability testing was to determine the rates of decomposition of 1-C₃F₇I, 1-C₄F₉I, and 1-C₆F₁₃I with and without various potential stabilizers at temperatures from 90° to 175°C. The candidate stabilizers tested were in two classes: solids and liquids. Solids tested included copper metal, silver metal, activated charcoal, molecular sieve (zeolite), and refrigerant filter-drier beads (silica). Liquids tested were combinations of methanol, nitromethane, 1,2-butylene oxide, 1,4-dioxane, 1,3-dioxolan, and furan known to stabilize chlorinated solvents (Ref. 28). Table 9 lists the candidate stabilizers tested.

When FICs decompose, they form molecular iodine (I₂) and the perfluorocarbon corresponding to coupling of two of the perfluoroalkyl radicals. This reaction is shown in Reaction [1].



Molecular iodine is brown, red, or purple depending on the solvent, and absorbs visible light near 540 nm. Iodine dissolved in FICs is pink to purple and absorbs visible light near 510 nm. Known concentrations of iodine in FICs were prepared and their spectra taken to yield a Beer's Law plot of iodine concentration versus absorbance. These plots were used to correlate readings of absorbance to iodine concentration in the aging samples.

FIGURE 1. CLEANING RESULTS WITH PERFLUORINATED GREASE

TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	4	2.5	46	89	64	70
1.00	11	6	61	92	81	76
2.00	1.5	0	72	97	99	90
5.00	5	0	91	99	99	89

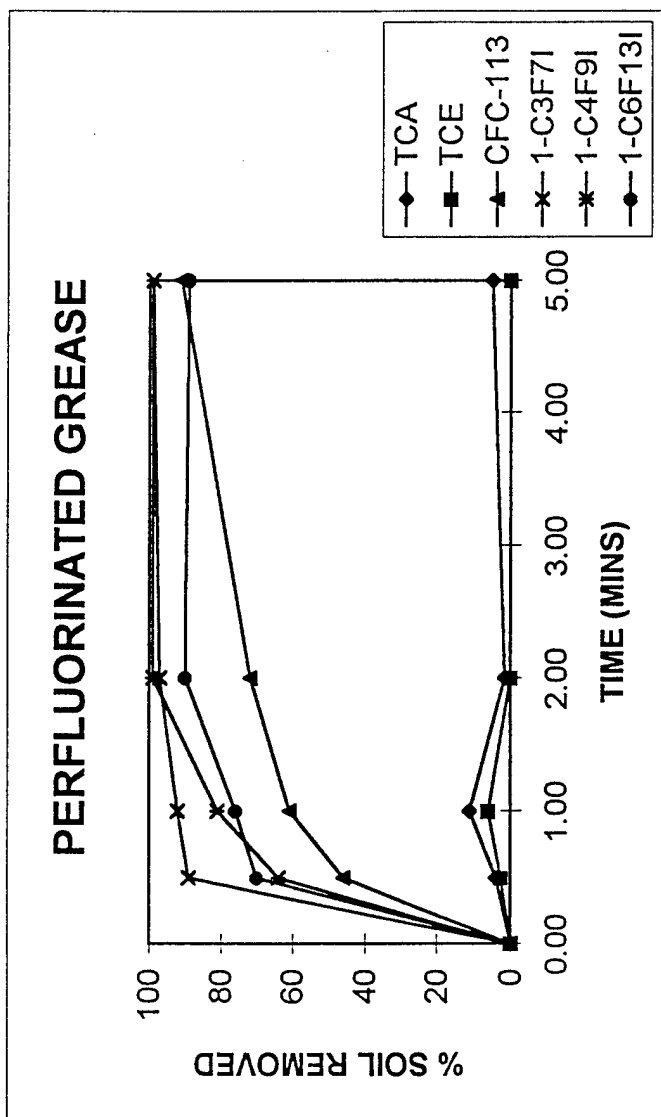


Table 8. Definitions of Cleaning Abilities of Solvents

Category	% Soil removal within 0.5 minutes	% Soil removal within 1 minute	% Soil removal within 5 minutes
excellent	>80		>95
very good		>40	>85
good		>20	>70
fair			>30
poor			<30

Table 9. Additives Tested as Potential Stabilizers

Additive 1	% by Vol. or Wt. ^a	Additive 2	Vol. %	Additive 3	Vol. %	Abbrev.
1,2-butylene oxide	0.5	1,3-dioxolan	0.5	--	--	B_3
1,2-butylene oxide	0.5	nitromethane	0.5	--	--	B_N
1,2-butylene oxide	1.5	nitromethane	1.5	1,3-dioxolan	3.5	3BN
1,2-butylene oxide	0.5	triethylamine	0.5	--	--	B_T
1,2-butylene oxide	0.5	1,4-dioxane	0.5	--	--	B_4
air	--	--	--	--	--	AIR
charcoal (carbon black) ^b	4.0	--	--	--	--	CHR
copper metal ^b	4.0	--	--	--	--	COP
filter-drier beads (silica) ^b	4.0	--	--	--	--	FIL
furan	5.0	nitromethane	0.5	--	--	F_N
furan	5.0	1,3-dioxolan	0.5	--	--	F_3
furan	0.5	1,4-dioxane	1.5	--	--	F_4
methanol	2.0	nitromethane	0.5	--	--	M_N
molecular sieve (zeolite) ^b	4.0	--	--	--	--	MOL
none	--	--	--	--	--	NON
silver metal ^b	4.0	--	--	--	--	SIL
water	0.1	--	--	--	--	WAT
water	0.1	air	--	--	--	A_W

a. Solid additives are reported in weight percent; liquids by volume percent.

b. Solid.

According to the Corning Co., the allowable internal pressure in undamaged Pyrex tubing is given in psi by Equation (1)¹.

$$P = 2000W/D \quad (1)$$

where P is the allowable internal pressure in psi, W is the minimum wall thickness in mm, and D is the maximum outside diameter in mm. Placing the values of 2 mm wall thickness and 6 mm outer diameter into this equation yields an allowable internal pressure of 667 psi or 45 atm. Imperfections in the seals will make the tubes able to withstand only lower pressures.

In order to estimate the pressures of the FICs at 175°C, a correlation was made between normal boiling points and vapor pressures at 175°C for several halocarbons and hydrocarbons. The data used are shown in Table 10, and a plot of the data appears in Figure 2 (Ref. 29).

The data shown in Table 10 and Figure 2 gave Equation (2), relating vapor pressure at 175°C (P_{175}) in atmospheres to normal boiling point (B) in °C.

$$P_{175} = 0.0023B^2 - 0.6084B + 44.23 \quad (2)$$

Using Equation (2) to predict the vapor pressures of the three FICs at 175°C gives the results shown in Table 11.

Table 10. Boiling Points and Vapor Pressures at 175°C for Selected Compounds

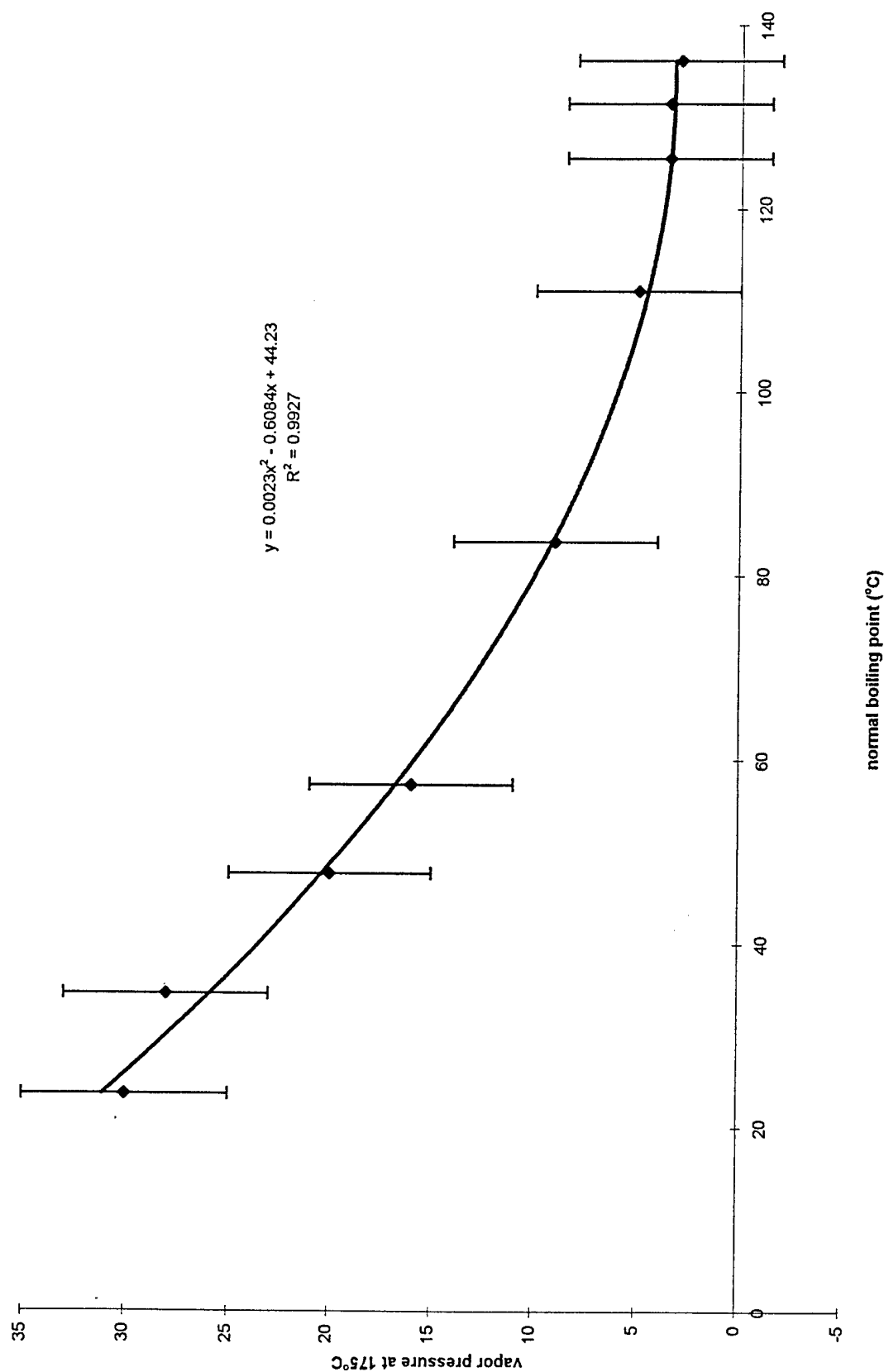
Compound	BP (°C)	VP at 175°C (atm)
trichlorofluoromethane	23.7	30
diethyl ether	34.6	28
1,1,2-trichloro-1,2,2-trifluoroethane	47.6	20
1,1-dichloroethane	57.3	16
1,2-dichloroethane	83.7	9
toluene	111	5
octane	125.6	3.5
1,2-dibromoethane	131.5	3.5
ethylbenzene	136.2	3

Table 11. Estimated Vapor Pressures of FICs at 175°C

FIC	BP (°C)	Estd. Vapor Pressure at 175°C (atm)
1-C ₃ F ₇ I	40	24
1-C ₄ F ₉ I	67	14
1-C ₆ F ₁₃ I	117	5

¹ For the convenience of the reader, equations are numbered in parentheses and reaction numbers in square brackets throughout this report.

FIGURE 2. VAPOR PRESSURE AT 175°C VS. NORMAL BOILING POINT FOR SELECTED LIQUIDS



Almost none of the tubes containing 1-C₃F₇I survived exposure to 175°C; most exploded within one hour of commencement of heating. However, virtually all the tubes containing 1-C₃F₇I survived prolonged exposure to 150°C, and almost all the tubes containing 1-C₄F₉I and 1-C₆F₁₃I survived prolonged heating at 175°C. Thus the upper limit for integrity of most tubes lay at estimated internal pressures between 14 and 24 atmospheres.

B. Procedures

i. Safety Considerations

FICs are nonflammable and appear from the limited evidence available to have low toxicity. However, as in the case of all research chemicals whose properties are not completely known, standard precautions were taken. All filling was done in a fume hood by a trained chemist wearing goggles and gloves. Exposure was avoided, fumes were not breathed, and skin was rinsed promptly if any contact occurred. Caution was used to avoid touching hot glass or sharp glass fragments.

ii. Calibration of Visible Spectrometry

In order to correlate absorbance of visible light with concentration of iodine, a series of known concentrations of iodine in the FIC solvents was prepared. Before this calibration curve was prepared, spectra of iodine in the three FICs were taken to determine the wavelengths of maximum absorbance of iodine in solution. These wavelengths are listed in Table 12.

Table 12. Wavelengths of Maximum Absorbances of Iodine in FIC Solutions

FIC	Wavelength (nm)
1-C ₃ F ₇ I	506
1-C ₄ F ₉ I	513
1-C ₆ F ₁₃ I	513

Examples of visible spectra showing absorbance maxima for iodine dissolved in FICs are shown in Figures 3 to 5. Figure 3 is a broad-range scan of iodine in 1-C₆F₁₃I from 365 to 700 nm, showing the iodine peak at 450-580 nm. Figure 4 is a shorter-range scan of the same solution from 450 to 550 nm showing the iodine absorbance maximum at 513 nm. Figure 5 is a short-range scan from 420 to 700 nm of iodine in 1-C₃F₇I showing the absorbance maximum at 506 nm.

According to Beer's Law (Equation 3) absorbance (A) is directly proportional to concentration (c), with the constant of proportionality being the absorptivity (ε) times the pathlength through the sample (l).

$$A = \epsilon cl \quad (3)$$

Data to calibrate iodine concentration vs. absorbance were obtained for all three FICs. The data obtained are shown in Table 13. High-quality Beer's Law plots were obtained for all three FIC solvents tested; these are shown in Figures 6 through 8.

FIGURE 3. VISIBLE SPECTRUM OF IODINE IN 1-C₆F₁₃I FROM 365 TO 700 NM, SHOWING IODINE PEAK
AT 450 TO 580 NM

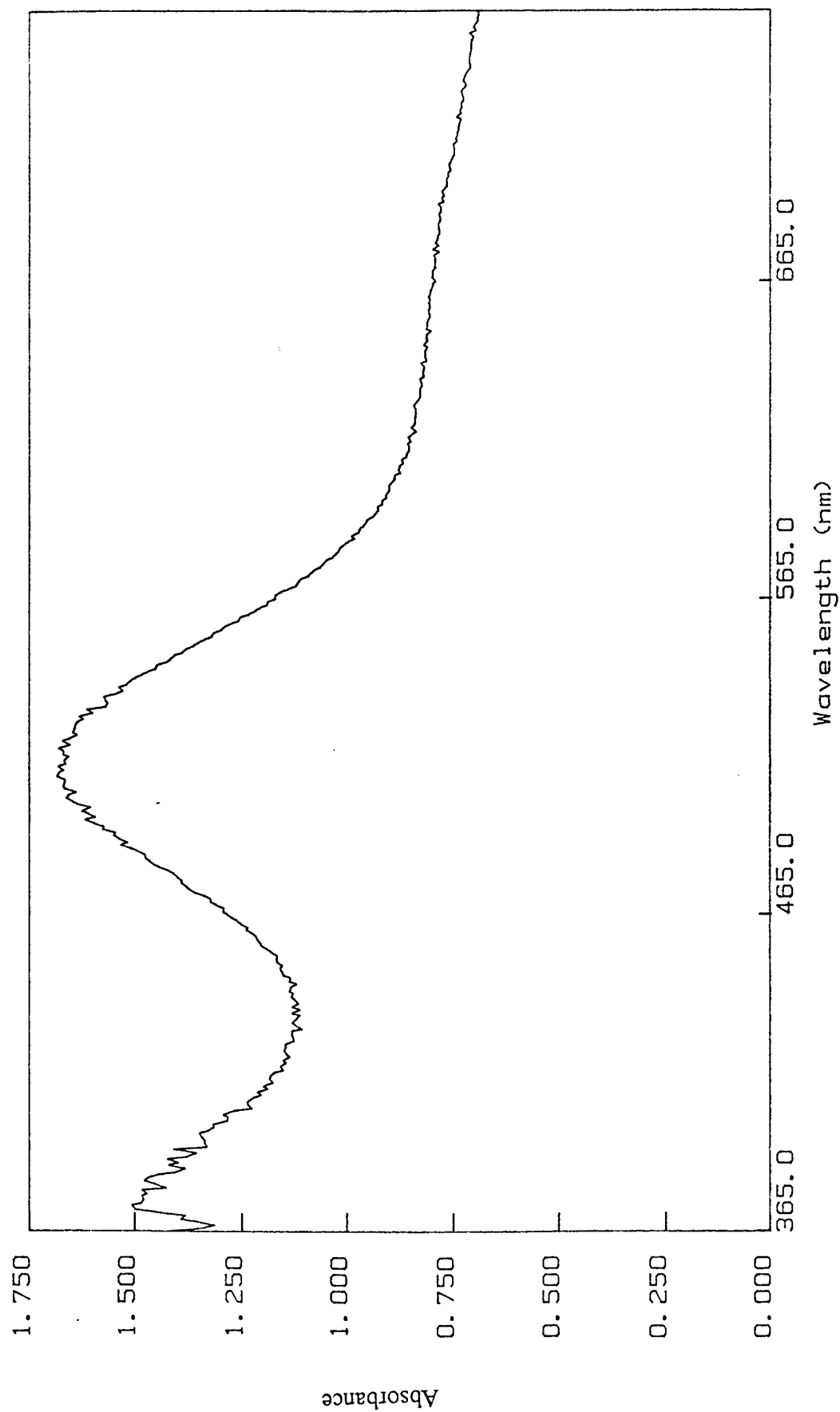


FIGURE 4. EXPANDED VIEW OF 450-550 NM REGION OF SPECTRUM OF IODINE IN 1-C₆F₁₃I,
SHOWING ABSORBANCE MAXIMUM OF IODINE AT 513 NM

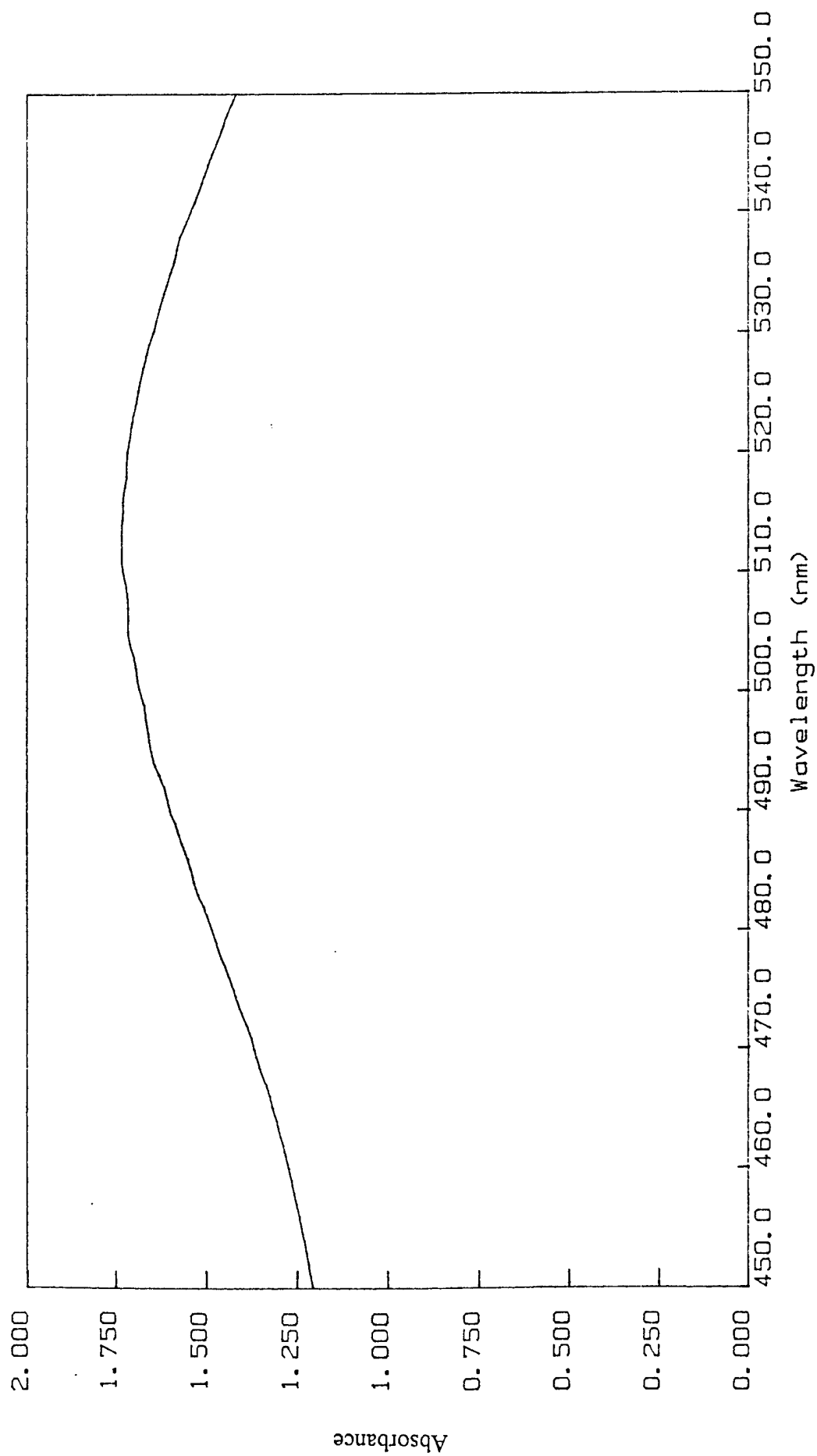


FIGURE 5. EXPANDED VIEW OF 420-700 NM REGION OF SPECTRUM OF IODINE IN 1-C₃F₇I, SHOWING ABSORBANCE MAXIMUM OF IODINE AT 506 NM

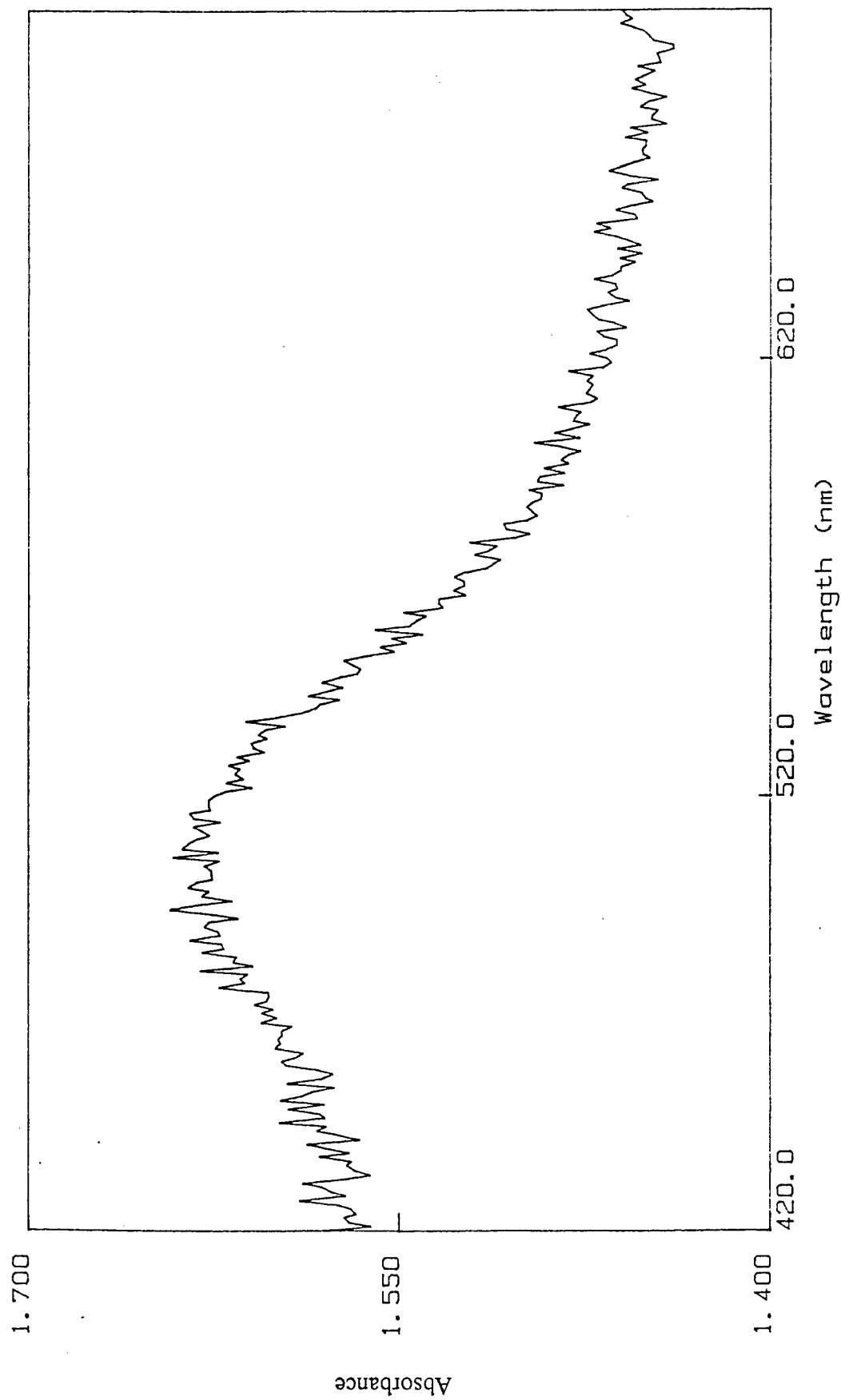


Table 13. Calibration Data on Iodine Dissolved in FICs

FIC	mg iodine	mL FIC	Absorbance	Conc. (mg iodine/mL)
3	0.00	1.00	0.0000	0.00
3	1.53	1.60	0.5657	0.96
3	1.53	1.40	0.6385	1.09
3	1.53	1.20	0.7198	1.28
3	1.53	1.00	0.8742	1.53
4	0.00	1.00	0.0000	0.00
4	0.36	1.10	0.1136	0.33
4	0.36	0.90	0.1315	0.40
4	0.36	0.70	0.2086	0.51
4	0.91	1.28	0.2809	0.71
4	0.91	1.03	0.3901	0.88
4	0.91	0.80	0.4576	1.14
4	0.91	0.60	0.6251	1.52
4	0.91	0.50	0.6840	1.82
6	0.00	1.00	0.0000	0.00
6	0.27	1.13	0.2294	0.24
6	0.27	0.88	0.3037	0.31
6	0.74	1.75	0.5010	0.42
6	0.74	1.50	0.6254	0.49
6	0.74	1.25	0.8515	0.59
6	0.74	1.00	1.0129	0.74
6	0.74	0.80	1.1688	0.93
6	0.74	0.60	1.3724	1.23

FIGURE 6. IODINE CONCENTRATION VS. ABSORBANCE FOR $I-C_3F_7I$ AT 506 NM

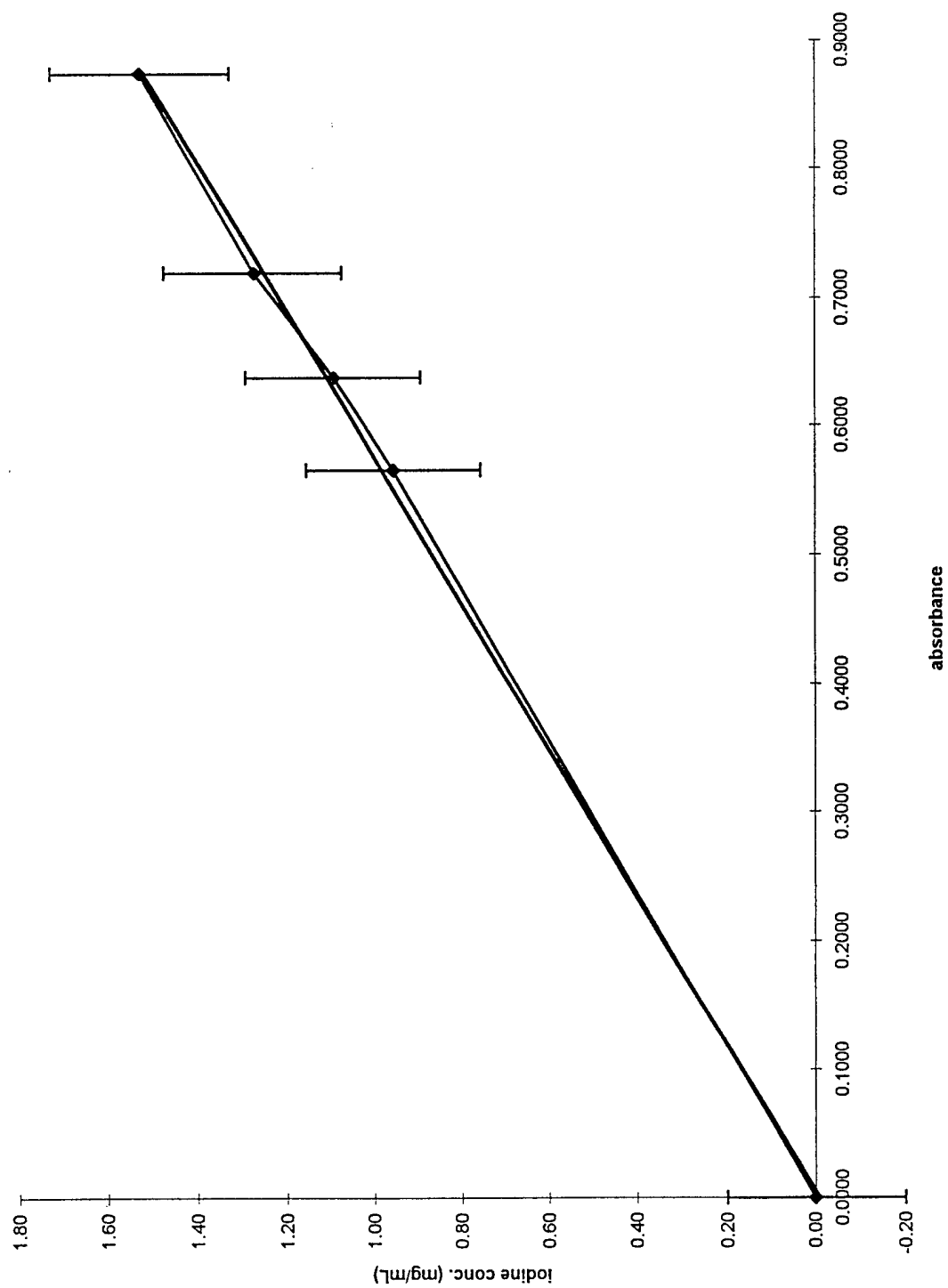


FIGURE 7. IODINE CONCENTRATION VS. ABSORBANCE FOR 1-C₄F₉I AT 513 NM

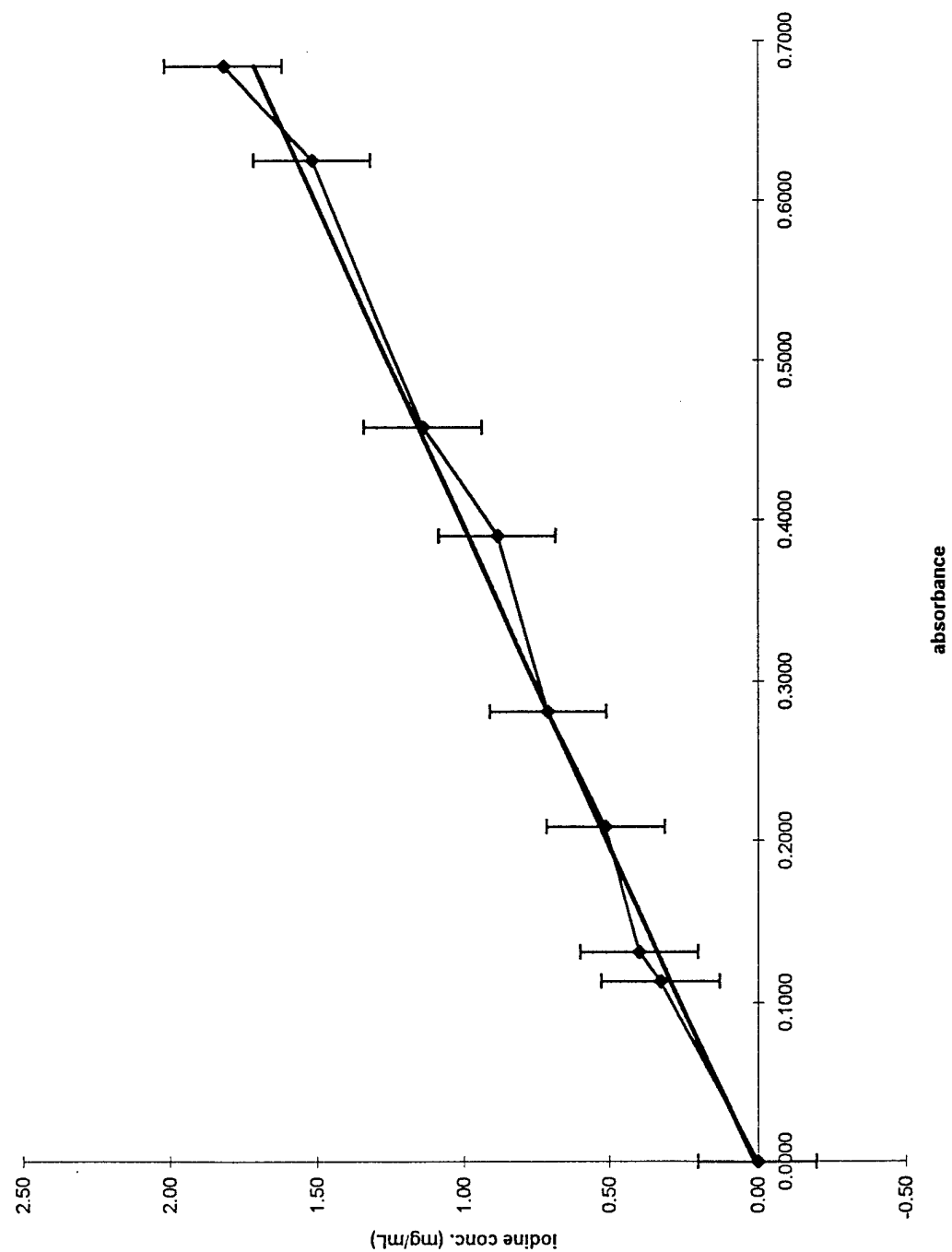
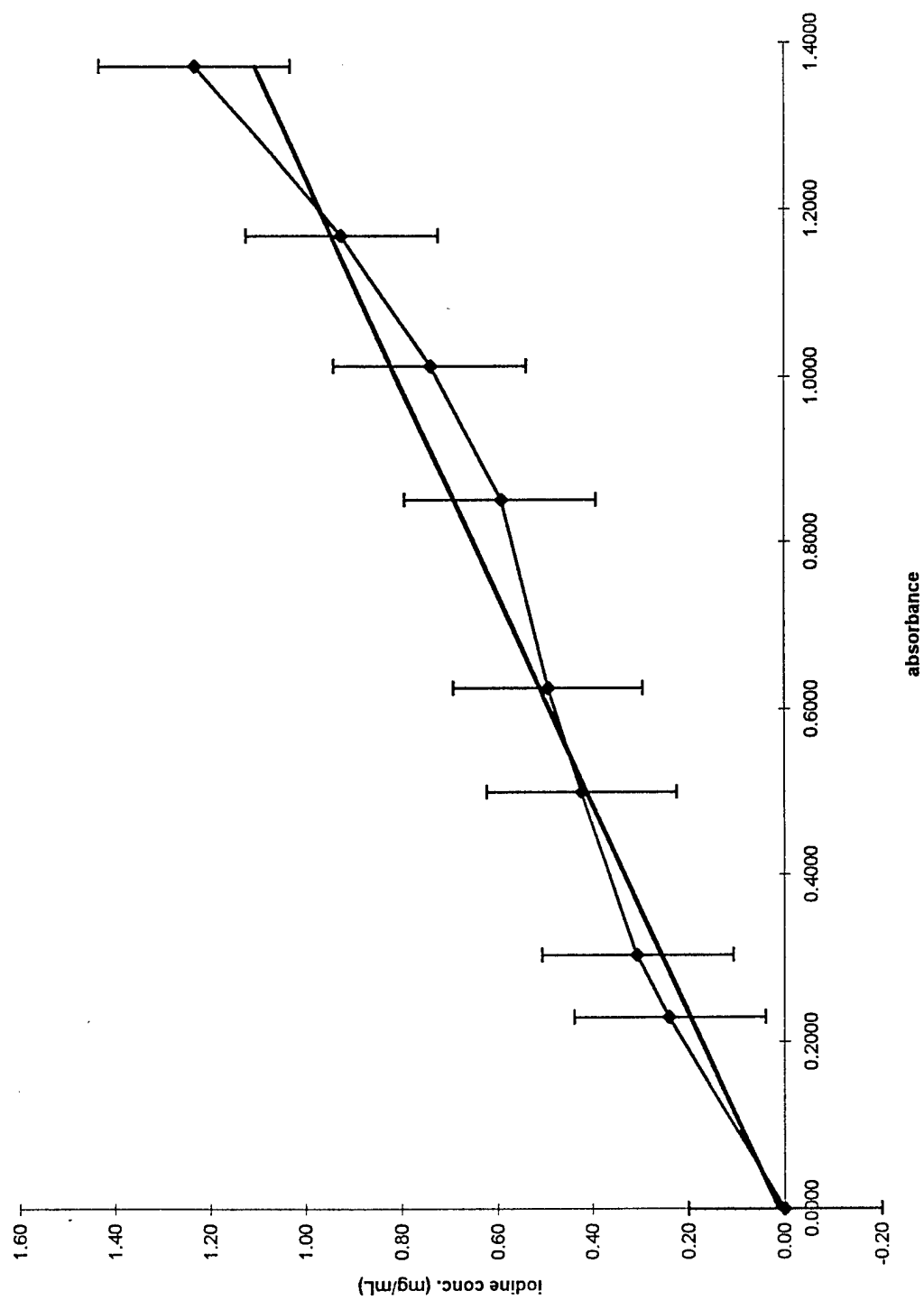


FIGURE 8. IODINE CONCENTRATION VS. ABSORBANCE FOR 1-C₆F₁₃I AT 513 NM



The equations describing the lines obtained for concentration vs. absorbance for the three FICs are given in Equations (4) through (6).

$$C_3 = -0.0086 + 1.752A \quad (R = 0.999 \text{ for } 5 \text{ points}) \quad (4)$$

$$C_4 = 0.0107 + 2.495A \quad (R = 0.995 \text{ for } 9 \text{ points}) \quad (5)$$

$$C_6 = 0.0121 + 0.798A \quad (R = 0.983 \text{ for } 9 \text{ points}) \quad (6)$$

where A is the absorbance, C is the concentration in mg/mL of iodine in the three, four, or six-carbon FIC, and R is the correlation coefficient.

To convert mg iodine per mL to percent decomposition, the following reasoning can be followed. One mL of C_3F_7I weighs 2.06g and contains $(2.06g)/(295.93g/mole) = 6.96 \text{ mmol}$ solvent. One milligram of iodine corresponds to $(0.001g)/(253.8g/mole)$ or 0.00394 mmol I_2 , which corresponds to 0.00788 mmol atomic iodine. Because each molecule of the FIC decomposing supplies one atom of iodine, this means that 0.00788 mmol of the FIC have decomposed, so the percent decomposition is $(0.00788/6.96) \times 100\% = 0.113\%$. The relationship of percentage decomposition of 1- C_3F_7I to iodine concentration can be summarized by Equation (7).

$$D_3 = 0.113C_3 \quad (7)$$

Similar calculations for the four- and six-carbon FICs yield Equations (8) and (9).

$$D_4 = 0.136C_4 \quad (8)$$

$$D_6 = 0.171C_6 \quad (9)$$

Substituting Equations (4) through (6) into Equations (7) through (9) gives Equations (10) through (12).

$$D_3 = -.0010 + 0.1980A \quad (10)$$

$$D_4 = 0.0015 + 0.3393A \quad (11)$$

$$D_6 = 0.0021 + 0.1365A \quad (12)$$

Equation (10) to (12) were used to convert absorbance data collected to percentage decomposition in the aging samples. These values of absorbance and percentage decomposition are tabulated in Appendices C, D, and E for 1- C_3F_7I , 1- C_4F_9I , and 1- $C_6F_{13}I$, respectively.

iii. Preparation and Labeling of Tubes

Special-walled Pyrex glass tubing (6 mm outer diameter, 2 mm glass thickness) was cut into 8-inch sections and sealed at one end by a professional glassblower. On each tube a constriction was made about one inch from the open end to facilitate later sealing, and the tubes were annealed. Tubes were oven-dried for at least 1 hour at 120°C to remove any traces of moisture. They were removed from the oven, placed in a desiccator, and allowed to cool to room temperature.

In general (with some exceptions) tubes were filled in sets of. Each tube was labeled with a first digit indicating the FIC. This digit was 3, 4, or 6, corresponding to the number of carbons in the FIC. Next came a 3-character description of the additive. Next was a 3-digit number representing the exposure temperature. It should be noted that originally it was planned to expose the tubes to 82, 115, 150, and 175°C and they were labeled as such. Before aging was begun it was decided to raise the two lower temperatures to 90 and 120°C respectively. Therefore all tubes labeled 082 were exposed to 90° and all labeled 115 were exposed to 120°C. The last character in the label was an A, B, C, or D indicating which of the two to four duplicate samples it was. For example, the eight tubes containing the 3-carbon FIC with no additive (NON) were labeled:

3NON082A
3NON082B
3NON115A
3NON115B
3NON150A
3NON150B
3NON175A
3NON175B

Labels were written with permanent aluminum fine-tip marker toward the bottom of the tube, so as not to interfere with spectroscopic readings later. Usually the labels remained legible throughout the filling and aging; they were touched up as needed.

iv. Filling

Pyrex special-walled tubes (6 mm o.d., 2 mm wall thickness) that had been sealed at one end and had a constriction about one inch from the open end were oven-dried, filled with the FIC (about 1.2 mL; the volume did not have to be exact) and appropriate additive, degassed with argon or nitrogen, cooled in liquid nitrogen, attached to a manifold, cooled further in liquid nitrogen, evacuated using a vacuum pump, backfilled with nitrogen gas, evacuated again, and sealed under vacuum at the constriction by a glassblower. The tubes were then aged in ovens at 90°, 120°, 150°, and 175°C for up to four months. Further procedural details are provided below. The tubes were removed periodically from the heating ovens, cooled briefly, and analyzed for decomposition by reading the absorbance at 510 nm. This method had the advantage that the same samples could be heated and monitored for decomposition over an extended time.

Caution was used in carrying the tubes. No more than 3 or 4 tubes were lifted at a time if not in a container, because the middle tubes in a bunch lifted by hand tended to drop out (and break).

v. Aging

Four ovens were maintained at 90°, 120°, 150°, and 175°C ($\pm 3^\circ\text{C}$), respectively. Each oven had a thermocouple connected to a central datalogger that recorded temperature versus time. Each sealed tube was placed inside a section of copper tubing 1/2" diameter by 8" long, open at both ends. This precaution was taken so that if a tube exploded from the internal pressure it would not damage other tubes. Periodically (about once a week) the ovens were shut off to allow the tubes to cool briefly and spectroscopic readings of each tube were recorded.

vi. Analysis

As the tubes were aged, they were removed periodically from the heating ovens, cooled briefly to room temperature, and the absorbance at 510 nm was recorded to indicate the extent of decomposition. For each reading, a reference reading of light counts (in arbitrary units) with no sample present was also taken. The absorbance was calculated using Equation (13).

$$A = \log (\text{reference counts/sample counts}) \quad (13)$$

Changes in absorbance from initial readings were calculated. Percentage decomposition was calculated using Equations (10)-(12) and changes in percent decomposition from initial readings were determined.

Raw hours (total hours since tube was first placed in the oven) were calculated from the dates of readings, then the cumulative times the tubes were out of the ovens (obtained from the datalogger records) were subtracted to give the actual hours of heating.

C. Results

Over 3000 spectroscopic readings were recorded over a period of 120 days. Tabulated data from the aging samples are given for 1-C₃F₇I in Appendix C, 1-C₄F₉I in Appendix D, and 1-C₆F₁₃I in Appendix E. These data tables include tube identification numbers, dates of readings, index numbers (indicating order of readings on a given date), total light counts from the reference beam, light counts through the samples, comments, calculated absorbances, changes in absorbance from initial readings, percentage decomposition, and changes in percentage decomposition from initial readings, raw hours since start of heating, actual hours heated, temperature, and additives present.

Overall aging results are summarized in Table 14. Table 14 shows, for each FIC with each additive at each temperature tested, whether decomposition was zero, slight, or extensive. For those sets of samples that showed slight decomposition, two types of graphs were prepared: percent decomposition vs. time and percent decomposition at final readings vs. temperature of aging. Where judged appropriate, least-squares fitted functions were obtained. The best-fitting function (linear, logarithmic, or second-order polynomial) was used in each case. These graphs are included in Appendix F. The following sets of tubes showed good kinetics (gradation to darker colors at higher temperatures) with slight decomposition: 3AIR, 3A_W, 3FIL, 3NON, 4AIR, 4NON, 4WAT, 6AIR, 6FIL, 6NON, and 6WAT.

Overall, the results indicated that pure FICs underwent less than 0.6% decomposition at 175°C for 4 months, and that all the solid stabilizers helped prevent even this minimal accumulation of decomposition products. All liquid stabilizers failed, leading to severe decomposition.

All tubes with silver were water-clear, showing that silver was the best stabilizer. For tubes with copper, all were water-clear except 1-C₄F₉I and 1-C₆F₁₃I at 175°C. (The tube with 1-C₃F₇I and copper exploded on heating to 175°C and no data were obtained 1-C₃F₇I at 175°C). These observations showed that copper was an effective stabilizer, but not as effective as silver, and that it reached its limits of effectiveness below 175°C under the test conditions.

There are two possible mechanisms to explain the observation that solid additives led to lower observed amounts of the iodine decomposition product. Either the additive prevents decomposition of the solvent, or the additive is adsorbing iodine on the surface (and possibly reacting with iodine). At this time, with the data now available, it is not possible to determine which mechanism is operating. Further studies, such as gas chromatographic (GC) analysis, would clarify the situation. Such studies are planned as part of Phase II of this effort.

Results of the tests for effects of light are summarized in Table 15. For all FICs, less than 0.07% decomposition was observed in bright sunlight for 350 hours exposure (corresponding to 700 hours of outside exposure). These results show that exposure to room light and moderate amounts of sunlight are not of concern. It should be kept in mind that the Pyrex tubes absorb wavelengths shorter than visible light and would serve to protect the FICs to some degree from the full effects of sunlight. However, it has been shown that even visible light possesses sufficient energy to break the C-I bonds in FICs (Refs. 9 and 12). The fact that more extensive decomposition was not observed on exposure of FICs to bright sunlight at an elevation of 5000 feet in summertime is encouraging in that it indicates FICs are not highly susceptible to photolysis during use.

To examine the relative stabilities of the three FICs tested, data for all three FICs under comparable conditions were collected in Table 16. These conditions were selected because data were available on all three FICs, and slight decomposition was observed. Comparisons of the three FICs could not be made effectively in cases where no decomposition or extensive decomposition occurred. If no decomposition was observed, then the FICs appeared equal in stability. If extensive decomposition was observed, accurate readings of absorbance could not be obtained.

The data in Tables 15 and 16 show no definite trends of stability in the series of FICs. One subjective observation made was that 1-C₆F₁₃I tends to take on a purplish tinge on storage much more quickly than either of the other two FICs. Thus there may be a slight tendency to decreased thermal stability with increasing chain length of the FIC, although no numerical evidence for this trend was observed.

No evidence of decomposition was observed for 1-C₃F₇I in the presence of copper, silver, molecular sieve, or filter-drier beads up to 150° (the maximum temperature tested). Only slight decomposition was observed at 150° for no additive (0.09% at 120 days) or air (0.29% at 100 days). Exposure to darkness or room light at room temperature gave no detectable decomposition.

Table 14. Summary of Extent of Decomposition Observed for Different Additives and Conditions

(Key: d = decomposition extensive, n = no decomposition, s = slight decomposition)

Additive	90°			120°			150°			175°		
	3	4	6	3	4	6	3	4	6	3	4	6
3BN	S	N	S	D	D	D	D	D	D	-	D	D
AIR	S	S	S	S	S	S	S	S	S	-	S	S
A_W	S	-	-	S	-	-	-	-	-	-	-	-
B_3	S	N	S	S	D	S	D	D	D	-	D	D
B_4	S	N	N	D	D	D	D	D	D	-	D	D
B_N	N	N	N	S	D	S	D	D	D	-	D	D
B_T	S	S	D	D	D	D	D	D	D	-	D	D
CHR	N	N	N	N	N	N	S	S	N	S	S	S
COP	N	N	N	N	N	N	N	N	N	-	S	S
FIL	N	N	S	N	N	S	N	N	N	N	S	S
F_3	D	D	D	D	D	D	-	D	D	-	D	D
F_4	-	D	D	-	D	D	-	D	D	-	D	D
F_N	D	D	D	D	D	D	-	D	D	-	D	D
MOL	N	N	N	N	N	N	N	N	N	-	S	S
M_N	N	N	N	S	N	S	D	D	D	-	D	D
NON	N	N	N	N	S	S	S	S	S	-	S	S
SIL	N	N	N	N	N	N	N	N	N	-	N	N
WAT	N	N	N	-	N	N	-	S	S	-	-	S

Table 15. Summary of Extent of Decomposition of FICs Under Different Lighting Conditions

(Key: N = no decomposition, S = slight decomposition)

Light Conditions	1-C ₃ F ₇ I	1-C ₄ F ₉ I	1-C ₆ F ₁₃ I
DARK (DRK)	N	N	N
ROOMLIGHT (RML)	N	N	S
SUNLIGHT (SUN)	S	S	S

Table 16. Percentage Decomposition Observed for Different FICs Under Comparable Conditions

FIC	Sunlight, 700 hrs	FIL 175°C, 120 days	NON 150°C, 120 days	AIR 150°C, 120 days
1-C ₃ F ₇ I	0.069	0	0.082	0.282
1-C ₄ F ₉ I	0.053	0.218	0.317	0.451
1-C ₆ F ₁₃ I	0.046	0.222	0.177	0.192

No evidence of decomposition was observed for 1-C₄F₉I up to and including 175°C in the presence of silver. With copper and filter-drier beads, 1-C₄F₉I showed no decomposition through 150°C and slight decomposition at 175°C (0.44% for copper, 0.22% for filter-drier beads). Perfluorobutyl iodide with no additive or water showed no decomposition through 120°C and slight decomposition at 150°C and 175°C (0.32% for no additive, 0.44% for water at 150°C). Exposure to darkness or room light at room temperature gave no detectable decomposition.

For 1-C₆F₁₃I, no evidence of decomposition was observed up to and including 175°C in the presence of silver. Copper and filter-drier beads gave protection through 150°C. Exposure to darkness at room temperature gave no detectable decomposition; exposure to room light or sunlight gave traces of decomposition products.

For all three FICs, comparison of graphs of percent decomposition vs. time for the pure FICs and for air and water added shows that neither air nor water had any detectable effect on the rate or extent of decomposition.

The best stabilizer was silver metal, which protected all three FICs from decomposition at 175°C for more than 120 days (the length of this test). Copper and molecular sieve protected all three FICs up to 150°C for 120 days, but showed slight traces of decomposition products at 175°C. Charcoal and filter-drier beads gave some protection against decomposition compared to no additive, but less protection than silver, copper, or molecular sieve.

7. Materials Compatibility

A. Introduction

Solvents must not damage the materials they contact. Although no materials compatibility tests were proposed or funded in Phase I, because of the importance of this information some preliminary tests were carried out during the course of the Phase I studies. The materials compatibility tests were above and beyond the required tasks and were performed at no cost to the Government.

B. Polymers Tested

i. Procedures

Testing was based on the method described in the American Society for Testing and Materials (ASTM) Standard D471-79 (revised 1991) "Rubber Properties-Effects of Liquids," which references ASTM Standards D412 and D751 (Ref. 30). For each polymer tested, three O-rings were labeled by tying zero, one, or two pieces of cotton string around each O-ring for samples number one, two, and three, respectively. Each O-ring was weighed and the cross-sections (in four readings 90° apart) and inner diameter across the O-ring (in two readings 90° apart) were measured with digital calipers and recorded. Each set of three O-rings was placed into a 4-oz brown bottle with 15 mL of the appropriate FIC (1-C₃F₇I, 1-C₄F₉I, or 1-C₆F₁₃I). The bottles were capped and stored in the dark at room temperature. The samples were observed periodically for two weeks, then the O-rings were removed, allowed to dry at room temperature for about an hour, and weight and dimensions were remeasured.

ii. Results

A material failed if any of the following occurred: (1) any dimension changed by 10% or more, (2) the weight changed by 20% or more, or (3) the material became hard or brittle or showed other obvious degradation. The experimental data on polymer compatibility tests of FICs are given in Table 17. The results showed that 1-C₃F₇I, 1-C₄F₉I and 1-C₆F₁₃I are compatible with Viton, Neoprene, ethylene propylene rubber (EPR), fluorosilicone, butyl rubber, and Teflon. These FICs are incompatible with Buna-N (nitrile), silicone rubber, and polyurethane O-rings on prolonged immersion. A summary of compatibilities of FICs and a comparison with compatibilities of other halogenated compounds is given in Table 18 (Refs. 31 and 32). Table 18 shows that the range of compatibilities of FICs is quite similar to the ranges of other halogenated hydrocarbons. There should be no significant difficulties finding polymers to use in prolonged contact with FICs. For brief contact (e.g., washing of a part containing a polymer) there should be no problem even for those polymers that are incompatible on prolonged immersion.

Table 17. Experimental Data on Compatibility of Polymers with FICs

Polymer Type	FIC	Sample	Cross-section before (mm)		Avg.	Cross-section after (mm)		Avg.	Diff. %	ID Before (mm)	Avg.	ID after (mm)	Avg.	Diff %	Int. Wt. (g)	Final Wt (g)	Diff %	Comments	Pass or Fail				
Buna-N	C3	1	3.17	3.17	3.28	3.36	3.25	4.03	3.95	3.82	3.80	3.90	20	25.42	24.64	25.03	28.38	29.71	29.05	16	1.17	13	
	C3	2	3.09	3.19	3.06	3.18	3.13	4.18	3.95	4.04	3.74	3.98	27	24.89	24.88	28.83	28.96	28.90	16	1.06	1.18	11	
	C3	3	3.22	3.33	3.20	3.40	3.29	4.07	3.97	3.97	3.87	3.97	21	24.95	25.27	25.11	28.54	28.36	28.45	13	1.10	1.19	8
Averages						3.22			3.95	3.95	3.97	23			25.01		28.80	15			11	Too much swelling	
Buna-N	C4	1	3.34	3.30	3.20	3.27	3.28	3.55	3.44	3.50	3.45	3.49	6	25.21	25.20	25.21	25.86	26.40	26.13	4	1.08	1.49	38
	C4	2	3.30	3.23	3.19	3.25	3.34	3.30	3.51	3.38	3.45	3.41	5	25.32	24.73	25.92	25.85	25.89	3	1.08	1.50	39	
	C4	3	3.19	3.22	3.27	3.16	3.22	3.44	3.43	3.47	3.41	3.44	7	25.13	24.94	25.04	25.81	25.97	25.89	3	1.10	1.51	37
Averages						3.25			3.44	3.44	6			25.09		25.97	4			38	Too much swelling & wt gain		
Buna-N	C6	4	3.32	3.28	3.31	3.21	3.28	3.31	3.30	3.29	3.26	3.29	0	24.75	24.97	24.86	24.49	25.01	24.75	0	1.08	1.10	2
	C6	5	3.32	3.31	3.33	3.35	3.33	3.34	3.40	3.35	3.37	3.37	1	25.14	24.97	25.06	25.26	25.08	25.17	0	1.08	1.12	4
	C6	6	3.27	3.25	3.25	3.19	3.24	3.27	3.21	3.40	3.26	3.29	1	25.19	24.68	24.94	25.34	24.96	25.15	1	1.08	1.11	3
Averages						3.28			3.31	3.31	1			24.95		25.02	0			3	Became hard and brittle		
Butyl	C4	1	2.37	2.36	2.59	2.57	2.47	2.50	2.43	2.53	2.47	2.48	0	117.00	109.98	113.49	117.41	111.35	114.38	1	2.25	2.47	10
	C4	2	2.43	2.37	2.41	2.31	2.38	2.47	2.44	2.44	2.47	2.46	3	118.94	108.57	113.76	116.37	112.53	114.45	1	2.25	2.44	8
	Averages						2.43			2.47	2.47	2			113.62		114.42	1			9	Pass	
Butyl	C6	3	2.48	2.42	2.37	2.45	2.43	2.55	2.44	2.27	2.41	2.42	-1	116.99	108.89	112.94	118.53	105.47	112.00	-1	2.25	2.30	2
	C6	4	2.37	2.33	2.41	2.41	2.38	2.37	2.39	2.39	2.47	2.41	1	115.82	112.43	114.13	117.20	110.75	113.98	0	2.26	2.30	2
	Averages						2.41			2.41	2.41	0			113.53		112.99	0			2	Pass	
EPR	C3	1	3.44	3.45	3.42	3.50	3.45	3.54	3.53	3.47	3.41	3.49	1	25.15	24.92	25.04	25.89	26.07	25.98	4	1.08	1.1	2
	C3	2	3.47	3.41	3.43	3.39	3.43	3.51	3.60	3.49	3.46	3.52	3	25.47	24.65	25.06	26.44	25.45	25.95	4	1.08	1.11	3
	C3	3	3.40	3.39	3.51	3.37	3.42	3.59	3.49	3.50	3.50	3.52	3	24.98	24.95	24.97	25.92	26.16	26.04	4	1.08	1.11	3
Averages						3.42			3.51	3.51	2			25.02		25.99	4			4	2	Pass	
EPR	C4	1	3.47	3.45	3.41	3.40	3.43	3.46	3.52	3.55	3.51	3.51	2	24.75	25.06	24.91	25.34	25.19	25.27	1	1.09	1.18	8
	C4	2	3.41	3.44	3.44	3.45	3.44	3.47	3.53	3.52	3.54	3.52	2	24.47	25.16	24.82	25.82	24.96	25.24	2	1.10	1.18	7
	C4	3	3.31	3.37	3.36	3.42	3.37	3.52	3.46	3.41	3.58	3.49	4	25.13	24.86	25.00	25.32	25.17	25.25	1	1.10	1.18	7
Averages						3.41			3.51	3.51	3			24.91		25.25	1			8	2	Pass	
EPR	C6	4	3.43	3.44	3.41	3.37	3.41	3.47	3.45	3.53	3.44	3.47	2	25.07	24.54	24.81	24.53	24.93	24.73	0	1.11	1.11	0
	C6	5	3.44	3.39	3.37	3.40	3.40	3.51	3.46	3.42	3.46	3.46	2	24.68	24.72	24.70	25.03	24.86	24.95	1	1.09	1.11	2
	C6	6	3.41	3.32	3.40	3.38	3.38	3.48	3.51	3.52	3.50	3.50	4	24.67	24.87	24.77	25.01	24.75	24.88	0	1.10	1.11	1
Averages						3.40			3.48	3.48	2			24.76		24.85	0			1		Pass	
Fluorosilicone	C3	1	2.38	2.32	2.45	2.36	2.38	2.68	2.69	2.66	2.47	2.63	10	20.42	20.04	20.23	22.01	21.98	22.00	9	0.57	0.58	2
	C3	2	2.16	2.17	2.29	2.17	2.20	2.76	2.65	2.50	2.57	2.62	19	20.2	20.68	20.44	21.39	21.82	21.61	6	0.55	0.54	-2
	C3	3	2.30	2.27	2.33	2.29	2.30	2.49	2.47	2.64	2.55	2.54	10	20.59	20.69	20.64	22.41	21.73	22.07	7	0.54	0.55	2
Averages						2.29			2.59	2.59	13			20.44		21.89	7			1		Pass	
Fluorosilicone	C4	1	2.34	2.31	2.27	2.31	2.31	2.39	2.34	2.33	2.33	2.35	2	19.43	21.13	20.28	20.18	21.47	20.83	3	0.56	0.64	14
	C4	2	2.34	2.16	2.16	2.16	2.21	2.43	2.27	2.37	2.26	2.33	6	20.57	20.14	20.36	20.78	20.94	20.86	2	0.56	0.62	11
	C4	3	2.25	2.39	2.31	2.31	2.32	2.42	2.58	2.54	2.44	2.50	8	19.81	20.45	20.13	21.15	20.86	21.01	4	0.57	0.63	11
Averages						2.28			2.39	2.39	5			20.26		20.90	3			12		Pass	
Fluorosilicone	C6	4	2.31	2.25	2.31	2.25	2.28	2.43	2.57	2.32	2.44	2.44	7	19.91	20.70	20.31	20.85	21.04	20.95	3	0.55	0.64	17
	C6	5	2.27	2.27	2.31	2.29	2.31	2.44	2.48	2.49	2.49	2.48	7	20.32	20.22	20.27	20.44	20.80	20.62	2	0.56	0.65	16
	C6	6	2.21	2.25	2.25	2.34	2.26	2.37	2.41	2.40	2.41	2.40	6	20.14	20.32	20.23	20.79	21.03	20.91	3	0.56	0.64	14
Averages						2.28			2.44	2.44	7			20.27		20.83	3			15		Pass	
Neoprene	C3	1	3.33	3.30	3.38	3.39	3.35	3.37	3.53	3.49	3.51	3.48	4	23.31	23.48	23.40	23.98	23.97	23.98	2	1.2	1.25	4
	C3	2	3.32	3.31	3.40	3.37	3.35	3.45	3.48	3.54	3.58	3.51	5	23.69	23.51	23.60	23.97	24.07	24.02	2	1.22	1.21	-1
	C3	3	3.28	3.43	3.39	3.30	3.35	3.56	3.44	3.64	3.48	3.54	6	23.17	23.4	23.29	23.71	23.77	23.74	2	1.21	1.22	1
Averages						3.35			3.51	3.51	5			23.43		23.91	2			1		Pass	
Neoprene	C4	1	3.52	3.55	3.36	3.44	3.47	3.55	3.47	3.53	3.43	3.50	1	23.27	23.16	23.22	23.22	23.30	23.26	0	1.24	1.26	2
	C4	2	3.44	3.47	3.47	3.47	3.46	3.41	3.51	3.44	3.39	3.44	-1	23.50	23.05	23.28	23.47	23.31	23.39	0	1.24	1.26	2
	C4	3	3.48	3.37	3.36	3.38	3.40	3.50	3.49	3.37	3.46	3.46	2	23.43	23.56	23.50	23.50	23.32	23.31	0	1.24	1.28	3
Averages						3.44			3.46	3.46	1			23.33		23.35	0			2		Pass	

Table 17. Experimental Data on Compatibility of Polymers with FICs (concluded)

Neoprene	C6	4	3.39	3.39	3.36	3.41	3.39	3.59	3.43	3.53	3.39	3.49	3	23.11	23.27	23.19	23.20	23.50	23.35	1	1.23	1.25	2	
Neoprene	C6	5	3.40	3.26	3.25	3.40	3.33	3.40	3.39	3.40	3.41	3.40	2	23.24	23.18	23.21	22.97	23.48	23.23	0	1.23	1.25	2	
Neoprene	C6	6	3.51	3.44	3.36	3.42	3.43	3.41	3.39	3.48	3.48	3.44	0	23.61	23.18	23.40	23.69	23.53	23.61	1	1.24	1.25	1	
Averages							3.38					3.44	2		23.27				23.40	1		1	Pass	
Silicone	C3	1	3.25	3.44	3.29	3.26	3.31	4.47	4.11	4.04	4.39	4.25	28	25.18	24.48	24.83	32.77	32.73	32.75	32	1.21	1.2	-1	weighed after drying
Silicone	C3	2	3.00	3.28	3.29	3.19	3.19	4.23	4.27	4.15	4.08	4.18	31	24.76	24.41	24.59	34.59	32.11	33.35	36	1.16	1.16	0	weighed after drying
Silicone	C3	3	3.46	3.24	3.35	3.25	3.33	4.11	4.09	4.07	4.01	4.07	22	24.88	24.9	24.89	34.68	32.52	33.60	35	1.21	1.18	-2	weighed after drying
Averages							3.28					4.17	27		24.77				33.23	34		-1	Too much swelling	
Silicone	C4	1	3.26	3.33	3.37	3.35	3.33	3.78	4.14	4.04	3.95	3.98	20	24.69	24.71	24.70	31.68	30.83	31.26	27	1.20	2.15	79	
Silicone	C4	2	3.37	3.38	3.38	3.43	3.39	4.23	4.07	3.96	4.15	4.10	21	24.76	24.89	24.83	31.30	31.30	31.30	26	1.23	2.10	71	
Silicone	C4	3	3.23	3.25	3.32	3.20	3.25	4.00	3.95	4.02	3.83	3.95	22	24.94	24.33	24.64	31.22	30.63	30.93	26	1.20	1.87	56	
Averages							3.32					4.01	21		24.72				31.16	26		69	Too much swelling and weight gain	
Silicone	C6	4	3.28	3.36	3.35	3.33	3.33	Fell apart (no measurement possible)						24.82	24.89	24.86	Fell apart (no measurement possible)				1.21	Fell apart (no measurement possible)		
Silicone	C6	5	3.37	3.28	3.28	3.26	3.30	Fell apart (no measurement possible)						24.83	24.77	24.80	Fell apart (no measurement possible)				1.25	Fell apart (no measurement possible)		
Silicone	C6	6	3.35	3.28	3.42	3.33	3.35	Fell apart (no measurement possible)						24.49	24.71	24.60	Fell apart (no measurement possible)				1.21	Fell apart (no measurement possible)		
Averages							3.32								24.75								Fell apart	
Teflon	C3	1	3.56	3.53	3.54	3.54	3.54	3.60	3.62	3.59	3.58	3.60	2	23.43	23.07	23.25	23.98	23.19	23.59	1	1.8	1.9	6	
Teflon	C3	2	3.55	3.52	3.52	3.52	3.53	3.60	3.54	3.58	3.57	3.57	1	23.22	23.2	23.21	23.74	23.22	23.48	1	1.79	1.88	5	
Teflon	C3	3	3.51	3.47	3.46	3.45	3.47	3.55	3.56	3.51	3.56	3.55	2	23.27	23.12	23.20	22.9	24.35	23.63	2	1.79	1.88	5	
Averages							3.51					3.57	2		23.22				23.56	1			5	Pass
Teflon	C4	1	3.46	3.47	3.46	3.47	3.47	3.54	3.54	3.55	3.55	3.55	2	25.20	25.01	25.11	24.99	24.86	24.93	-1	1.93	2.02	5	
Teflon	C4	2	3.46	3.47	3.49	3.48	3.48	3.54	3.55	3.56	3.55	3.55	2	24.88	24.97	24.93	24.97	24.79	24.88	0	1.95	2.06	6	
Teflon	C4	3	3.47	3.46	3.45	3.43	3.45	3.54	3.57	3.55	3.51	3.54	3	25.07	25.21	25.14	24.99	25.10	25.05	0	1.90	1.99	5	
Averages							3.46					3.55	2		25.06				24.95	0			5	Pass
Teflon	C6	4	3.47	3.49	3.46	3.44	3.47	3.53	3.56	3.52	3.51	3.53	2	25.01	25.09	25.05	24.91	24.83	24.87	-1	1.94	2.00	3	
Teflon	C6	5	3.48	3.48	3.49	3.50	3.49	3.54	3.53	3.54	3.52	3.53	1	24.86	24.93	24.90	24.98	24.87	24.93	0	1.94	2.00	3	
Teflon	C6	6	3.46	3.49	3.47	3.47	3.47	3.53	3.52	3.51	3.52	3.52	1	25.31	25.04	25.18	24.98	24.78	24.88	-1	1.95	2.01	3	
Averages							3.48					3.53	2		25.04				24.89	-1			3	Pass
Urethane	C3	1	2.38	2.47	2.40	2.43	2.42	2.28	2.46	2.53	2.47	2.44	1	18.60	18.90	18.75	18.93	18.94	18.94	1	0.38	0.43	13	
Urethane	C3	2	2.43	2.42	2.41	2.40	2.42	2.32	2.54	2.55	2.51	2.48	3	18.74	18.78	18.76	19.03	18.67	18.85	0	0.40	0.43	7	dark red
Averages							2.42					2.46	2		18.76				18.89	1			10	Pass
Urethane	C4	1	2.40	2.39	2.38	2.50	2.42	2.83	2.71	2.72	2.65	2.73	13	18.78	18.74	18.76	20.74	21.01	20.88	11	0.41	0.66	61	
Urethane	C4	2	2.35	2.30	2.35	2.37	2.34	2.73	2.59	2.54	2.77	2.66	13	18.66	18.67	18.67	20.46	20.90	20.68	11	0.43	0.65	51	no color change.
Averages							2.38					2.69	13		18.71				20.78	11			56	too much swelling & weight gain
Urethane	C6	1	2.50	2.45	2.47	2.45	2.47	3.19	3.13	2.91	2.94	3.04	23	18.61	18.67	18.64	23.09	23.31	23.20	24	0.40	0.65	63	
Urethane	C6	2	2.45	2.48	2.51	2.52	2.49	2.78	2.83	2.64	2.96	2.80	13	18.42	18.56	18.49	22.61	22.83	22.72	23	0.41	0.76	85	medium orange.
Averages							2.48					2.92	18		18.57				22.96	24			74	too much swelling & weight gain
Viton	C3	1	3.37	3.27	3.21	3.27	3.28	3.38	3.56	3.43	3.51	3.47	6	24.85	25.01	24.93	26.23	25.77	26.00	4	1.85	1.99	8	
Viton	C3	2	3.32	3.42	3.32	3.25	3.33	3.37	3.47	3.41	3.49	3.44	3	25.29	24.96	25.13	25.95	26.06	26.01	4	1.85	1.99	8	
Viton	C3	3	3.35	3.22	3.18	3.29	3.26	3.50	3.46	3.46	3.37	3.45	6	24.93	25.31	25.12	26.06	26.47	26.27	5	1.85		2	
Averages							3.29					3.45	5		25.06				26.09	4			8	Pass
Viton	C4	1	3.37	3.20	3.30	3.28	3.29	3.37	3.39	3.46	3.47	3.42	4	24.66	24.43	24.55	25.01	24.95	24.98	2	1.84	1.92	4	
Viton	C4	2	3.33	3.22	3.23	3.29	3.27	3.33	3.38	3.26	3.40	3.34	2	25.15	25.15	25.15	25.04	25.02	25.03	0	1.90	1.91	1	
Viton	C4	3	3.28	3.27	3.32	3.31	3.30	3.47	3.44	3.40	3.34	3.41	4	24.96	24.97	24.97	25.03	25.13	25.08	0	1.80	1.91	6	
Averages							3.28					3.39	3		24.89				25.03	1			4	Pass
Viton	C6	4	3.38	3.25	3.35	3.29	3.32	3.38	3.35	3.31	3.42	3.37	1	24.86	24.63	24.75	24.94	25.13	25.04	1	1.82	1.86	2	
Viton	C6	5	3.25	3.29	3.29	3.29	3.28	3.43	3.38	3.30	3.34	3.36	3	24.59	25.06	24.83	25.50	25.13	25.32	2	1.84	1.90	3	
Viton	C6	6	3.24	3.30	3.36	3.30	3.30	3.43	3.32	3.32	3.33	3.35	2	24.67	24.70	24.69	24.90	24.99	24.95	1	1.85	1.84	-1	
Averages							3.30					3.36	2		24.75				25.10	1			2	Pass

Table 18. Compatibility of Selected CFCs, HCFCs, HFCs, and FICs With Polymers

(Key: Y = yes, N = no, U = unknown)

Polymer	Trade Name	CFC-11	CFC-12	R-502	HCFC-22	HCFC-142b	HFC-152a	Halon 1301	Halon 2402	FICs
butadiene acrylonitrile (nitrile)	Buna-N	N	Y	Y	N	Y	Y	Y	Y	N
butyl rubber		N	N	Y	N	Y	Y	U	N	Y
chlorosulfonated polyethylene	Hypalon	Y	Y	U	Y	Y	N	Y	Y	U
ethylene-propylene rubber (EPR)		N	N	Y	N	Y	Y	U	N	Y
fluorocarbon	Viton	Y	N	Y	N	N	N	N	Y	Y
fluorosilicone		Y	N	U	N	U	U	U	U	Y
natural rubber		N	Y	Y	Y	Y	Y	U	N	U
polyacrylate		N	U	U	Y	U	U	U	U	U
polychloroprene	Neoprene	N	Y	Y	Y	Y	Y	Y	Y	Y
polytetrafluoroethylene	Teflon	Y	Y	Y	Y	Y	Y	Y	Y	Y
polyurethane		U	Y	U	N	U	U	U	U	N
silicone		N	N	U	N	U	U	N	N	N
styrene-butadiene rubber (SBR)		N	Y	Y	Y	Y	Y	U	N	U

C. Metals Tested

i. Procedures

Compatibility testing with metals was also carried out based on ASTM method D2251, "Standard Test Method for Metal Corrosion by Halogenated Organic Solvents and Their Admixtures" (Ref. 33). Preliminary compatibility testing of FIC solvents was carried out with the metals shown in Table 19.

Table 19. Metals Used for Compatibility Testing with FICs

Metal	Abbreviation Used
Aluminum 2024	Al2
Aluminum 5052	Al5
Aluminum 6061	Al6
Aluminum 7075T6	Al7
Brass	Bras
Bronze	Bron
Cast iron	Fe
Copper	Cu
Magnesium	Mg
Mild steel	MS
Stainless steel 303	SS3
Stainless steel 416	SS4
Titanium	Ti

To conduct the tests, three coupons of each metal were prepared and engraved with identifying numbers (e.g., Al7-3) in which the final number indicated the carbon number of the FIC tested (1-C₃F₇I, 1-C₄F₉I, or 1-C₆F₁₃I). The coupons were placed in Pyrex test tubes with threaded closures and 5 mL of the appropriate FIC was added to each. The tubes were sealed, kept in the dark at room temperature, and examined periodically. Total exposure time was 90 days; this exposure time was much longer (and therefore more severe) than the standard 10-day test.

ii. Results

The results of the metal compatibility tests are given in Table 20. Table 20 lists initial weights, final weights, and observations. All of these metals, with the exception of mild steel, showed excellent compatibility with all three FICs tested. The mild steel showed significant oxidation, but that could well be due to air and moisture which were not rigorously excluded. More detailed investigation of the effects of FICs on mild steel will be conducted in the Phase II effort.

Table 20. Experimental Data on Compatibility of Metals with FICs

Metal	Sample No.	Init. wt. (g)	Final wt. (g)	Wt. Change (g)	% Wt. Change	Observations
Aluminum 2024	Al2-3	2.70645	2.70661	0.00016	0.01%	No visible changes.
	Al2-4	2.68693	2.68806	0.00113	0.04%	No visible changes.
	Al2-6	2.71631	2.71701	0.00070	0.03%	Barely noticeable discoloration on submerged part.
Aluminum 5052	Al5-3	2.52445	2.52467	0.00022	0.01%	Almost no visible changes. Bare visible white residue on small part of surface just above liquid level.
	Al5-4	2.56312	2.56388	0.00076	0.03%	Small amount white material on surface directly above liquid line and very bottom.
	Al5-6	2.54014	2.54205	0.00191	0.08%	Tiny amount white oxidation on submerged surface.
Aluminum 6061	Al6-3	1.91451	1.91467	0.00016	0.01%	Tiny amount white material in small patches above liquid level.
	Al6-4	1.87358	1.87450	0.00092	0.05%	Small amount white material on surface directly above surface of liquid.
	Al6-6	1.89951	1.90133	0.00182	0.10%	Barely noticeable discoloration on submerged part.
Aluminum 7075T6	Al7-3	2.11894	2.11900	0.00006	0.00%	No visible changes.
	Al7-4	2.11608	2.11654	0.00046	0.02%	No visible changes.
	Al7-6	2.09561	2.09761	0.00200	0.10%	Tiny amount white oxidation on submerged surface.
Brass	Bras-3	3.31228	3.31247	0.00019	0.01%	Very slight lightening of submerged surface. Almost no visible changes.
	Bras-4	3.31412	3.31432	0.00020	0.01%	No visible changes.
	Bras-6	3.30859	3.30817	-0.00042	-0.01%	Sit darkening of submerged surface. Tiny amt white ppt suspended in liquid.
Bronze	Bron-3	2.02697	2.02730	0.00033	0.02%	No visible changes on metal. Small amount white ppt suspended in liquid.
	Bron-4	2.00324	2.00330	0.00006	0.00%	No visible changes.
	Bron-6	2.03827	2.03821	-0.00006	0.00%	No visible changes.
Cast Iron	Fe-3	8.38314	8.38400	0.00086	0.01%	No visible changes. Oily residue in container.
	Fe-4	10.48647	10.48757	0.00110	0.01%	No visible changes.
	Fe-6	10.55118	10.55180	0.00062	0.01%	Some oxidation on surface.
Copper	Cu-3	3.48246	3.48329	0.00083	0.02%	Almost no visible changes. Tiny amount darkening of submerged surface.
	Cu-4	3.48117	3.48208	0.00091	0.03%	Slight darkening of submerged surface. Slight suspended yellow-green ppt in liquid.
	Cu-6	3.53396	3.53426	0.00030	0.01%	Tiny amt. discoloration on submerged surface plus tiny amt yellow-green ppt suspended.
Magnesium	Mg-3	2.94371	2.94420	0.00049	0.02%	No visible changes.
	Mg-4	2.91178	2.91202	0.00024	0.01%	No visible changes.
	Mg-6	2.93003	2.93024	0.00021	0.01%	No noticeable change.
Mild steel	MS-3	3.37302	3.37357	0.00055	0.02%	Heavy rust below liquid level.
	MS-4	3.42323	3.41962	-0.00361	-0.11%	Heavy red oxidation on entire submerged surface and partway up surface above liquid.
	MS-6	3.46179	3.46102	-0.00077	-0.02%	Heavily oxidized on most of surface + rust-colored ppt in tube.
Solder, acid-core	SA-3	0.72079	0.72032	-0.00047	-0.07%	No visible changes to metal or liquid. Tiny clear droplets clinging to inside submerged glass wall.
	SA-4	0.75386	0.75334	-0.00052	-0.07%	Tiny amount white material on submerged surface. Almost no visible changes.
	SA-6	0.72500	0.72463	-0.00037	-0.05%	Yellow solid at center exposed to air.
Solder, plumbing	SP-3	2.71221	2.71233	0.00012	0.00%	No visible changes.
	SP-4	2.67021	2.67100	0.00079	0.03%	Tiny amount darkening of submerged surface-almost no visible changes.
	SP-6	2.59091	2.59175	0.00084	0.03%	Yellow-orange oxidation (?) on surface above liquid.
Solder, rosin core	SR-3	0.52277	0.51288	-0.00989	-1.89%	Slight coating white material on submerged surface. Slight yellow tinge to liquid.
	SR-4	0.54545	0.53604	-0.00941	-1.73%	Darkening of submerged surface, yellow tinge to liquid.
	SR-6	0.52354	0.53204	0.00850	1.62%	Slight yellow tint to solution, silt yellow color on surface above liquid.
Stainless steel 303	SS3-3	3.30592	3.30618	0.00026	0.01%	No visible changes.
	SS3-4	3.34335	3.34381	0.00046	0.01%	No visible changes.
	SS3-6	3.30062	3.30057	-0.00005	0.00%	Brown specks on submerged surface and on walls of glass tube.
Stainless steel 416	SS4-3	3.09530	3.09629	0.00099	0.03%	No visible changes.
	SS4-4	3.09507	3.09597	0.00090	0.03%	Tiny amount oxidation on surface.
	SS4-6	3.07105	3.07118	0.00013	0.00%	Significant amount red oxidation on surface.
Titanium	Ti-3	2.39636	2.39726	0.00090	0.04%	No visible changes.
	Ti-4	2.27018	2.27070	0.00052	0.02%	No visible changes.
	Ti-6	2.36260	2.36310	0.00050	0.02%	No visible changes.

8. Conclusions

In Phase I, the known properties of pure FICs and potential blending agents were tabulated and laboratory testing was carried out to determine thermal stability and cleaning effectiveness of pure FIC solvents. The results of the Phase I effort have shown that all three FICs tested (1-C₃F₇I, 1-C₄F₉I, and 1-C₆F₁₃I) have high cleaning effectiveness on a wide variety of difficult soils, excellent thermal stability, and excellent materials compatibility. The *most* attractive as a general replacement for TCA and CFC-113 appears to be 1-C₄F₉I, because of its physical properties (e.g., boiling point and vapor pressure between those of TCA and CFC-113) and high cleaning performance.

Phase I of this effort has demonstrated the feasibility of the approach taken to finding environmentally compliant solvents, and has provided a list of top-ranking nonflammable, nonaqueous, non-ozone-depleting FIC solvents. It has shown that pure FICs undergo less than 0.6% decomposition when exposed to 175°C for four months, and that several solid stabilizers are effective in preventing the accumulation of even these small amounts of decomposition products. It has been shown that neither air nor water affect the stabilities of FICs.

The results have demonstrated the technical feasibility of fluoroiodocarbons solvents as "drop-in" replacements for CFC-113, TCA, TCE, and PCE. Phase I has validated all three FICs tested as high-performance, nonflammable, nonaqueous, non-ozone-depleting FIC solvents for further Phase II development.

The solvents developed in this effort are expected to find wide application not only in cleaning of metals but also of electronics and precision surfaces. This technology is ideally suited for dual use: both military and civilian sectors rely heavily on solvent cleaning. FICs are expected to provide superior cleaning at lower cost than CFCs and other alternatives. They will replace ozone-depleting substances with environmentally safe solvents. They may allow continued use of vapor degreasers without disruption of established manufacturing procedures. These solvents could save hundreds of millions of dollars by allowing continued use of existing vapor degreasers. In addition, this effort will assist development of related FIC-containing blends that show promise as effective and environmentally safe refrigerants, foam blowing agents, and firefighting agents.

Once the best solvents have been identified and validated, a new industry in FIC-containing solvents will be created that will create many new jobs for Americans in several areas of chemical manufacturing, cleaning, and recycling. Many technically trained individuals are already well qualified for these jobs and would not require substantial retraining.

9. Transitional Tasks Underway

The transitional phase now in progress between Phase I and Phase II will model the properties of blends of conventional solvents with FICs and identify top-ranking blends for Phase II testing.

In the optional transitional effort now underway, two objectives will be met:

(1) *Identification of azeotropic and near-azeotropic solvent blends containing FICs.*

Azeotropes are mixtures of two or more chemicals that do not separate on evaporation. In terms of physical properties, the mixture behaves much like a single chemical. An azeotropic

mixture has several logistical advantages over simple blends. The properties of an azeotrope are highly predictable. Since the composition does not change on evaporation, a partially empty system can be safely topped up without chemical analysis. Recovery and recycling are made much easier. Potential concerns about FICs, including cost and toxicity, can be reduced by using blends.

Properties of blends will be calculated using ETEC's proprietary thermodynamic computer program called AZEO, and likely azeotropic blends will be identified. Laboratory testing will then be done in Phase II to confirm or disprove the formation and compositions of these azeotropes and near-azeotropes.

AZEO calculates properties of mixtures and predicts azeotrope formation and composition. Mathematical modeling in this program is based upon the theory of corresponding states using a third order virial equation of state. AZEO uses the well-documented Soave modification of the Redlich-Kwong equation of state. The required inputs for each chemical are the molecular weight, normal boiling point, critical temperature, critical pressure, and Pitzer acentric factor (which can be calculated).

The AZEO program reproduces all known azeotropes tested (such as R-500 and R-502) within 1% accuracy. AZEO runs on a PC, works for up to five-component mixtures, and allows a choice of units. It identifies probable azeotropes, near-azeotropes, and non-azeotropes. For azeotropes and near-azeotropes, it gives the approximate azeotropic composition. It calculates vapor pressure curves and gives enthalpies of vaporization and specific heats of liquid and vapor as functions of temperature. AZEO provides pressure-volume-temperature data with an accuracy within 1% and enthalpies of vaporization within 2%. AZEO is only a tool for initial screening to identify attractive blends and possible azeotropes; results obtained from AZEO will be validated by laboratory measurements.

In this task, AZEO will be used to predict the properties of possible blends consisting of one component from Table 1 and one component from Table 2.

(2) Selection of optimal blends containing FICs

Optimal solvent blends will be selected based on the properties of the pure components and the calculated properties of the blends determined by the AZEO program. Properties to be considered in the ranking include physical properties such as boiling point, vapor pressure, and heat of vaporization as well as toxicity, flammability, materials compatibility, thermal stability, environmental effects, and cleaning effectiveness. Environmental properties considered include atmospheric lifetimes, global warming potentials, recyclability, biodegradability, breakdown products, and contributions to tropospheric air pollution (smog).

The predicted properties of blends based on the information on pure and the calculated properties of blends will be screened to determine optimal solvent blends for Phase II testing. Properties to be considered include physical properties, cleaning effectiveness, toxicity, environmental effects, and cost. Those blends identified by the modeling as showing the likelihood of azeotropic or near-azeotropic behavior will be particularly attractive and will be identified for laboratory investigation in Phase II. Special emphasis will be given to blending solvents that have high cleaning effectiveness on the soils for which FICs are less effective: beeswax, castor oil, grease pencil, lanolin, molybdenum grease, molybdenum spray lubricant, and

silicone sealant. Preliminary results from the optional transition tasks indicate that blends of 1-C₄F₉I with isopropyl alcohol or cyclohexane may provide attractive nonflammable azeotropic blends and good solubility properties.

Based on the information collected, approximately 12 of the most promising solvents will be selected for additional laboratory testing. Solvents will be ranked for attractiveness on the basis of probable high cleaning effectiveness, high compatibility with materials, low toxicity, and low environmental impact. Preliminary results from the optional transition tasks indicate that blends of 1-C₄F₉I with isopropyl alcohol or cyclohexane may provide attractive nonflammable azeotropic blends.

10. Planned Phase II Effort

Phase II will further develop and optimize the materials demonstrated in Phase I and will provide in-depth evaluations and larger-scale testing of high-ranking materials identified in Phase I. In Phase II the top-ranking solvents will be tested for formation of azeotropic blends and the properties of these blends as well as the pure FICs will be studied in depth. Flammability, cleaning effectiveness under realistic conditions, materials compatibility, thermal stability, and compatibility with existing cleaning equipment and procedures will be tested. All required toxicity information for regulatory approval under the EPA SNAP program will be obtained and the SNAP applications for the top solvents will be prepared and filed. The methods of synthesis of FICs will be assessed and improved. The Phase II effort will provide all the information needed for regulatory approval and commercial production of FIC-based solvents.

The proposed Phase II effort validates the performance, nonflammability, and low toxicity of pure FICs and blended solvents. The result will be a set of FIC-based solvents validated, approved, and ready for commercial production. Phase II will further develop and optimize the FIC solvents demonstrated in Phase I and will provide in-depth evaluations and larger-scale testing. In Phase II the top-ranking FIC-based solvents will be tested for formation of azeotropic blends, flammability, toxicity, cleaning effectiveness under realistic conditions, materials compatibility, and compatibility with existing cleaning equipment and procedures.

Likely azeotropic nonflammable solvent blends identified in the transitional phase using the AZEO program will be tested in the laboratory. Blends of the components will be made, distilled and the temperature vs. volume of the distillate will be plotted to observe evidence of azeotrope formation. A leveling of the temperature-volume curve below the boiling points of both components indicates a low-boiling azeotrope. A leveling above the boiling points indicates a high-boiling azeotrope. When evidence of azeotrope formation is observed, aliquots (small samples) will be removed and analyzed by gas chromatography to determine the compositions.

In Phase II, the flammability of a range of blends of interest will be determined by testing based on ASTM standard methods. ASTM methods to be used as guides include D92 (*Flash and Fire Points by Cleveland Open Cup*), D1310 (*Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus*), E502 (*Selection and Use of ASTM Standards for the Determination of Flash Point of Chemicals by Closed Cup Methods*), and E681 (*Limits of Flammability of Chemicals*). Graphs of flammability versus composition will be prepared to determine which blends are flammable, which are combustible, and which are nonflammable.

Cleaning effectiveness will be determined with a variety of soils and substrates under realistic conditions. Test samples will include metal and polymer coupons with simulated soils and printed wiring boards (PWBs) with surface mount technology (SMT) devices. The samples will be cleaned and may be analyzed for contaminants using highly accurate, sophisticated analytical tools such as FTIR reflectance, electron spectroscopy for chemical analysis (ESCA), Auger spectroscopy, and secondary ion mass spectrometry (SIMS), as well as simpler methods such as contact goniometry and surface ionic resistance (SIR).

The compatibility of the solvents will be tested with additional polymers such as polyfunctional FR-4, high-temperature epoxy, bismaleimide triazine epoxy, cyanate esters, and polyimide. Additional studies will be conducted on the compatibilities of FICs with mild steel.

The solvents will be tested in a variety of existing vapor degreasers and other cleaning equipment to see what, if any, modifications are needed. The compatibility of the new solvents with existing vapor degreasers and other existing cleaning equipment will be assessed. If necessary, stabilizers will be added to the solvents. Process performance, hardware costs, materials usage and costs, and hazardous waste generation will be investigated. If incompatibilities are found with existing equipment, the changes needed will be defined.

Flammability testing will be carried out on blends containing varying concentrations of FICs to determine the minimum concentrations needed to make the mixtures nonflammable.

It is anticipated that certain portions of the Phase II efforts may be conducted in collaboration with organizations such as the Air Force Center for Environmental Excellence at Brooks AFB, Texas, the National Defense Center for Environmental Excellence in Johnstown, PA, the Environmentally Conscious Manufacturing (ECM) division of Sandia National Labs in Albuquerque, Lawrence Livermore National Labs in Livermore, California, and/or the National Center For Manufacturing Sciences (NCMS) in Ann Arbor, Michigan. Several of these organizations have been contacted and have expressed interest in testing FIC-based solvents. Possible collaborations have also been discussed with Martin Marietta, Texas Instruments, Hewlett-Packard, Dow Chemical, Branson Electronics, Seagate Technologies, and Motorola. Strategic alliances will be developed to produce and market the top-ranking solvents. It is anticipated that collaboration with such major chemical producers as Du Pont, Dow, or Allied-Signal will be undertaken.

In Phase III, the commercialization of the best solvents validated in Phase II will be carried out. The feasibility of using these solvents will be demonstrated on a pilot manufacturing scale, and agreements for bulk production will be made. Developmental toxicity testing and a worker exposure assessment will be conducted. Developmental toxicity testing involves prolonged (1- to 2-year) exposure of rodents to the test chemical and thorough examination of their offspring for defects. This study costs about \$150-200K and can be carried out by Pharmaco LSR or several other high-quality laboratories. The worker exposure assessment consists of four steps: (1) establishing occupational exposure guidelines, (2) development of an air sampling protocol, (3) measuring exposures in a pilot or larger-scale production facility, and (4) comparing exposures to the occupational exposure limits to establish any necessary engineering controls. Worker exposure assessment can be conducted by Environ, the sister company to Pharmaco LSR; one contact at Environ is Dr. Joe Rodricks (phone 703-516-2345); another is Mark Katchen (phone 714-261-5151).

The Phase III effort will bring to market a new family of nonaqueous solvents with proven cleaning ability, nonflammability, low toxicity, and negligible environmental impact. These solvents are expected to provide the best alternative cleaners for a wide variety of USAF applications.

11. References

1. "Montreal Protocol," *The International Lawyer*, Vol. 26, no. 1, pp. 148-179, 1992.
2. "The Montreal Protocol," *Harvard Environmental Law Review*, Vol. 15, pp. 275-289, 1991
3. Zurer, P., "Ozone Treaty Tightened, CFC Substitutes Controlled," *Chemical & Engineering News*, December 7, 1992, p. 5. (Montreal Protocol 1992 Copenhagen amendments)
4. "Synthesis of the Reports of the Ozone Scientific Assessment Panel, Environmental Effects Assessment Panel, Technology and Economic Assessment Panel," United Nations Environmental Program, November 1991
5. "Clean Air Act Amendments of 1990: Conference Report to Accompany S. 1630," report 101-952, U.S. Government Printing Office, Washington, DC 20402
6. Giblin, "The 1990 Amendments to the Federal Clean Air Act: Has Congress Built a Better Mousetrap?" *Southwestern Law Journal*, Vol. 45, pp. 1167-1211, 1991.
7. Kuhn, T., *The Structure of Scientific Revolutions*, University of Chicago Press, 1970
8. Barber, B., "Resistance by Scientists to Scientific Discovery" *Science*, Vol. 134, 1961, pp. 596-602
9. Nimitz, J. S., High-Performance, Environmentally Sound Replacements for Halon 1301, Prepared for McClellan AFB under contract F04699-93-C-0004, December 1993, ETEC 93-3
10. Sheinson, R. S., Penner-Hahn, and Indritz, D., "The Physical and Chemical Action of Fire Suppressants," *Fire Safety Journal*, Vol. 15, 1989, p. 437.
11. Skaggs, S. R., Dierdorf, D. S., and Tapscott, R. E., "Update on Iodides as Fire Extinguishing Agents," *Proceedings of the 1993 CFC and Halon Alternatives Conference*, Washington, DC, October 20-22, 1993, pp. 800-809.
12. Solomon, S., Burkholder, J., Ravishankara, A., and Garcia, R., "Ozone Depletion and Global Warming Potentials of CF_3I ," *Journal of Geophysical Research*, Vol. 99, No. D10, Oct. 20, 1994, pp. 20929-20935.
13. Solomon, S., Garcia, R., and Ravishankara, A., "On The Role of Iodine in Ozone Depletion," *Journal of Geophysical Research*, Vol. 99, No. D10, Oct. 20, 1994, pp. 20491-20499
14. Chalmeides, W. L., and Davis, D. D., "Iodine: Its Possible Role in Tropospheric Photochemistry," *Journal of Geophysical Research*, Vol. 85, No. C12, 1980, pp. 7383-7398
15. "Iodine May Be Smog Weapon," *Chemical and Engineering News*, Vol. 40, No. 39, 1962, p. 68.

16. Hamilton, W. F., Levine, M., and Simon, E., "Atmospheric Iodine Abates Smog Ozone," *Science*, Vol. 140, 1963, pp. 190-191.
17. "Iodine and Iodine Compounds," in *The Kirk-Othmer Encyclopedia of Chemical Technology*, Vol. 13, 1978, pp. 649-677.
18. *Registry of Toxic Effects of Chemical Substances*, National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, 1993.
19. Nimitz, J. S., and Lankford, L. H., "A New Class of Nonflammable, Environmentally Safe Solvents," Fourth Annual International Workshop on Solvent Substitution, Phoenix, AZ, Dec. 7-10, 1993.
20. *Aldrich Catalog-Handbook of Fine Chemicals*, Aldrich Chemical Co., Madison, WI, 1992-3.
21. Weast, R. C., ed., *The CRC Handbook of Chemistry and Physics*, 69th Edition, Chemical Rubber Company, Boca Raton, FL, 1989.
22. Beilstein Online Database produced by the Beilstein Institute for Organic Chemistry, Frankfurt, Germany, 1994, accessed through STN International, Columbus, OH.
23. CAS On-Line Database produced by Chemical Abstracts Service, Columbus, OH, 1994, accessed through STN International, Columbus, OH.
24. Lopez, E. P., Peebles, D. E., Reich, J. E., and Smith, M. E., The Effect of Environmentally Compatible, Alternative Cleaners on Solder Flux and Silicone Mold Release Removal, Sandia Report 92-1030 prepared under contract DE-AC04-76DP00789, 1992.
25. Skaggs, S., "Interpreting the Toxicology of CF₃I," prepared for Pacific Scientific, HTL/Kin Tech, September 1994.
26. Lu, G., Ling, J. S. L., and Krantz, J. C., "Anesthesia. XLI: The Anesthetic Properties of Certain Fluorinated Hydrocarbons and Ethers," *Anesthesia*, Vol. 14, 1953, pp. 467-472.
27. "Radiopaques," in *The Kirk-Othmer Encyclopedia of Chemical Technology*, 3rd ed., Vol. 19, 1982, pp. 786-800.
28. Krishtal, N. F., and Poselenov, A. I., "Development and Introduction of Stabilizers for Organochlorine Solvents," *Zhurnal Vses. Khim. Ob-va im. D. I. Mendeleeva*, Vol. 30, No. 3, pp. 106-109, 1985, in English translation.
29. Green, D. W., ed., *Perry's Chemical Engineers' Handbook*, 6th ed., McGraw-Hill, New York, 1984.
30. American Society of Testing Materials, "Test Method for Rubber Property - Effect of Liquids," ASTM D471-79 (Reapproved 1991), *1992 Annual Book of ASTM Standards*, Philadelphia, PA, 1992, Vol. 9.01, pp. 82-87.
31. Parker Hannifin Corp., Seal Group, *Parker O-Ring Handbook*, Lexington, KY, 1992.
32. *Saechtling International Plastics Handbook*, Hanser Publishers (Macmillan), NY, 1987.
33. American Society of Testing Materials, "Standard Test Method Metal Corrosion by Halogenated Organic Solvents and Their Admixtures," ASTM D2251-92, *1994 Annual Book of ASTM Standards*, Philadelphia, PA, 1994, Vol. 10.03, pp. 55-56.

APPENDIX A:
DATA FROM CLEANING ABILITY TESTS

SOIL	COUPON	INITIAL WT.	SOILED WT.	RINSE TIME (MIN)	DRIED WT.	WT OF SOIL	% SOIL REMOVED
AFFF	A04	10.00357	10.01605	0.50	10.00554	0.01248	84
	A06	10.00272	10.01237	1.00	10.00325	0.00965	95
	A07	10.05704	10.06543	2.00	10.05797	0.00839	89
	A10	10.03704	10.04520	5.00	10.03828	0.00816	85
BEESWAX	A09	10.08013	10.08877	0.50	10.08644	0.00864	27
	A12	9.89562	9.91101	1.00	9.90556	0.01539	35
	A14	9.89304	9.90470	2.00	9.89706	0.01166	66
	A28	10.14055	10.14503	3.00	10.14133	0.00448	83
	A29	10.10527	10.11002	5.00	10.10637	0.00475	77
	A19	9.83690	9.85280	5.00	9.83757	0.01590	96
	A30	10.13451	10.13974	10.00	10.13541	0.00523	83
	A10	10.19732	10.22009	0.50	10.20812	0.02277	61
CASTOR OIL	A14	10.11745	10.12981	1.00	10.11788	0.01236	97
	A16	10.15788	10.17469	2.00	10.15813	0.01681	99
	A17	10.15144	10.18831	5.00	10.15170	0.03687	99
	A04	10.00140	10.01854	0.50	10.00342	0.01714	88
EDM OIL	A12	10.14433	10.15390	1.00	10.14450	0.00957	98
	A13	10.14576	10.15350	2.00	10.14596	0.00774	97
	A14	10.11676	10.12841	5.00	10.11705	0.01165	98
	A15	10.10989	10.11835	10.00	10.11029	0.00846	95
GREASE PENCIL	A14	9.89265	9.89731	0.50	9.89585	0.00468	31
	A04	9.99697	9.99817	0.50	9.99761	0.00120	47
	A13	10.00692	10.00843	1.00	10.00804	0.00151	26
	A06	10.00077	10.00214	1.00	10.00159	0.00137	40
	A23	9.93727	9.93932	2.00	9.93844	0.00205	43
	A09	10.08035	10.08210	2.00	10.08094	0.00175	66
	A26	9.96185	9.96471	5.00	9.96350	0.00286	42
	A03	10.11647	10.12942	0.50	10.11708	0.01295	95
HYDR. FLUID MIL-H-5606	A24	10.15912	10.17023	1.00	10.15943	0.01111	97
	A26	10.22822	10.24269	2.00	10.22849	0.01447	98
	A29	10.10650	10.12229	5.00	10.10668	0.01579	99
	A11	10.18992	10.20090	0.50	10.19013	0.01098	98
HYDR. FLUID MIL-H-83282	A20	10.17838	10.18886	1.00	10.17875	0.01048	96
	A21	10.19923	10.21538	2.00	10.19894	0.01615	102
	A31	10.19503	10.20602	5.00	10.19515	0.01099	99
	A01	10.14058	10.15849	0.50	10.14084	0.01791	99
HYDR. FLUID SKYDROL 500B4	A13	10.14639	10.16725	1.00	10.14652	0.02086	99
	A18	10.16078	10.17740	2.00	10.16100	0.01662	99
	A25	10.16000	10.18210	5.00	10.16014	0.02210	99
	A06	10.00093	10.00880	0.50	10.00262	0.00787	79
JET FUEL A	A05	10.10399	10.11173	1.00	10.10416	0.00774	98
	A06	10.15912	10.17018	2.00	10.15935	0.01106	98
	A18	9.99727	10.00419	5.00	9.99774	0.00692	93
	A08	10.14558	10.15248	10.00	10.14586	0.00690	96
JET FUEL JP-4	A02	10.10543	10.10692	0.50	10.10544	0.00149	99
	A04	10.12719	10.12807	1.00	10.12723	0.00088	95
	A12	10.14467	10.14568	2.00	10.14470	0.00101	97
	A23	10.07953	10.08109	5.00	10.07953	0.00156	100
LANOLIN	A11	9.91133	9.95595	0.50	9.93874	0.04462	39
	A01	10.12975	10.15033	1.00	10.14027	0.02058	49
	A31	9.94812	9.99064	1.00	9.96492	0.04252	60
	A31	9.94796	9.97262	1.00	9.95414	0.02466	75
	A02	10.10464	10.11445	2.00	10.10514	0.00981	95
	A03	10.11628	10.12421	5.00	10.11670	0.00793	95
	A04	10.12683	10.15057	10.00	10.12745	0.02374	97
	A04	9.99723	10.03067	0.50	10.01816	0.03344	37
MOLY. GREASE	A15	10.11029	10.13495	1.00	10.12100	0.02466	57
	A06	10.00119	10.04298	1.00	10.02673	0.04179	39
	A19	10.12102	10.14454	2.00	10.12664	0.02352	78
	A22	10.16160	10.18075	5.00	10.16177	0.01915	99
MOLY SPRAY LUBE	A12	9.89615	9.91002	0.50	9.89840	0.01387	84
	A09	10.20583	10.24534	1.00	10.21053	0.03951	88
	A19	9.83757	9.85090	2.00	9.83780	0.01333	98
	A10	10.19693	10.21254	3.00	10.19695	0.01561	100
	A11	10.18950	10.20941	5.00	10.18984	0.01991	98
	A16	10.15765	10.17093	10.00	10.15800	0.01328	97
	A10	10.03744	10.08594	0.50	10.05395	0.04850	66
	A17	10.15110	10.17112	1.00	10.15148	0.02002	98
MOTOR OIL 10W30	A18	10.16046	10.17071	2.00	10.16080	0.01025	97
	A19	10.12097	10.13418	5.00	10.12121	0.01321	98
	A20	10.17805	10.19867	10.00	10.17871	0.02062	97
	A09	10.08056	10.08797	0.50	10.08070	0.00741	98
OIL WD-40	A22	10.16122	10.16989	1.00	10.16163	0.00867	95
	A23	10.07944	10.09721	2.00	10.08011	0.01777	96
	A25	10.15976	10.17730	5.00	10.16023	0.01754	97
	A27	10.20256	10.21482	10.00	10.20278	0.01226	98
PERFLUORINATED GREASE	A07	10.05506	10.22059	0.50	10.21420	0.16553	4
	A11	9.91154	10.02736	0.50	10.02689	0.11582	0
	A14	9.89347	9.99527	1.00	9.98414	0.10180	11
	A07	10.05730	10.20628	2.00	10.20556	0.14898	0
	A28	9.98981	10.05280	2.00	10.05093	0.06299	3
	A31	9.94806	10.01188	5.00	10.00851	0.06382	5
	A11	10.18934	10.35259	0.50	10.33858	0.16325	9
	A27	10.20229	10.34320	1.00	10.33059	0.14091	9
SILICONE SEALANT	A28	10.14154	10.22000	2.00	10.21143	0.07846	11
	A30	10.13552	10.22661	5.00	10.21555	0.09109	12
	A16	9.93910	9.96259	0.50	9.93952	0.02349	98
	A22	10.02361	10.06922	1.00	10.02403	0.04561	99
	A27	9.98184	10.03804	2.00	9.98242	0.05620	99
	A30	10.01636	10.07640	5.00	10.01677	0.06004	99
	A03	9.85642	9.94307	0.50	9.86250	0.08665	93
	A12	9.89639	10.04307	1.00	9.90566	0.14668	94
SUPERSOIL	A14	9.89327	10.01007	2.00	9.89669	0.11680	97
	A20	9.89466	10.02350	5.00	9.89870	0.12884	97

CLEANING RESULTS WITH TCE

SOIL	COUPON	INITIAL WT	SOILED WT	RINSE TIME (MIN)	DRIED WT	WT OF SOIL	% SOIL REMOVED
AFFF	A01	10.00311	10.00419	0.50	10.00330	0.00108	82
	A02	9.92165	9.93401	0.50	9.92380	0.01238	83
	A09	10.08159	10.08239	1.00	10.08170	0.00080	88
	A11	9.91077	9.92384	1.00	9.91280	0.01307	84
	A17	9.94520	9.94584	2.00	9.94535	0.00064	77
BEESWAX	A28	9.98606	9.99934	2.00	9.98822	0.01328	84
	A31	9.94703	9.97722	5.00	9.95029	0.03019	89
	A02	9.92228	9.93532	0.50	9.93133	0.01304	31
	A10	10.03722	10.05334	1.00	10.03837	0.01612	93
	A18	9.99769	10.01571	2.00	9.99771	0.01802	100
CASTOR OIL	A26	9.96210	9.98143	5.00	9.96231	0.01933	99
	A06	10.00275	10.00575	0.50	10.00304	0.00300	90
	A14	9.89277	9.89502	1.00	9.89275	0.00225	101
	A22	10.02317	10.02488	2.00	10.02334	0.00171	90
	A30	10.01587	10.01978	5.00	10.01611	0.00391	94
EDM OIL	A03	9.85619	9.85835	0.50	9.85622	0.00216	99
	A11	9.91124	9.91420	1.00	9.91125	0.00296	100
	A19	9.83705	9.84181	2.00	9.83711	0.00456	99
	A27	9.98153	9.99005	5.25	9.98162	0.00852	99
	A05	9.92749	9.93019	0.50	9.92884	0.00270	50
GREASE PENCIL	A27	9.98245	9.98354	0.50	9.98295	0.00109	54
	A02	9.92221	9.92400	0.50	9.92319	0.00179	45
	A13	10.00635	10.00882	1.00	10.00792	0.00247	36
	A29	10.00021	10.00130	1.00	10.00075	0.00109	50
	A05	9.92774	9.92924	1.00	9.92851	0.00150	49
	A21	9.93354	9.93658	2.00	9.93545	0.00304	37
	A13	10.00684	10.00772	2.00	10.00713	0.00088	67
	A29	9.99990	10.00299	5.00	10.00120	0.00309	58
	A22	10.01975	10.02078	5.00	10.02032	0.00103	45
	A02	9.92219	9.92560	0.50	9.92233	0.00341	98
HYDR. FLUID MIL-H-5608	A10	10.03719	10.04232	1.00	10.03734	0.00513	97
	A18	9.99726	10.00548	2.00	9.99725	0.00822	100
	A26	9.96196	9.97121	5.00	9.96205	0.00925	99
	A03	9.85608	9.85913	0.50	9.85620	0.00305	96
	A11	9.91116	9.91691	1.00	9.91126	0.00575	98
HYDR. FLUID MIL-H-83282	A19	9.83694	9.84282	2.00	9.83710	0.00588	97
	A27	9.98163	9.98926	5.00	9.98168	0.00763	99
	A04	10.00347	10.01130	0.50	10.00382	0.00783	96
	A12	9.89579	9.90406	1.00	9.89581	0.00827	100
	A20	9.89453	9.90394	2.00	9.89456	0.00941	100
JET FUEL A	A28	9.98641	10.00755	5.00	9.98634	0.02114	100
	A01	10.00305	10.00420	0.50	10.00309	0.00115	97
	A09	10.08152	10.08307	1.00	10.08152	0.00155	100
	A17	9.94519	9.94745	2.00	9.94520	0.00226	100
	A25	9.92640	9.93031	5.00	9.92640	0.00391	100
JET FUEL JP-4	A02	9.92220	9.92243	0.50	9.92224	0.00023	83
	A10	10.03719	10.03741	1.00	10.03722	0.00022	86
	A18	9.99715	9.99806	2.00	9.99720	0.00091	95
	A26	9.96195	9.96218	5.00	9.96195	0.00023	100
	A03	9.85649	9.89767	0.50	9.86128	0.04118	88
LANOLIN	A11	9.91132	9.96050	1.00	9.91371	0.04918	95
	A19	9.83725	9.87993	2.00	9.83730	0.04268	100
	A27	9.98200	10.03130	5.00	9.98218	0.04930	100
	A06	10.00293	10.01053	0.50	10.00357	0.00760	92
	A14	9.89279	9.90815	1.00	9.89307	0.01536	98
MOLY. GREASE	A22	10.02331	10.04822	2.00	10.02344	0.02491	99
	A08	9.80334	9.84571	5.00	9.80385	0.04237	99
	A05	9.92748	9.93053	0.50	9.92765	0.00305	94
	A13	10.00669	10.00993	1.00	10.00680	0.00324	97
	A21	9.93362	9.93806	2.00	9.93371	0.00444	98
MOTOR OIL 10W30	A29	9.99961	10.00622	5.00	9.99977	0.00861	98
	A07	10.05722	10.06171	0.50	10.05732	0.00449	98
	A15	9.92541	9.93530	1.00	9.92544	0.00989	100
	A23	9.93726	9.94231	2.00	9.93726	0.00505	100
	A31	9.94785	9.95535	5.00	9.94786	0.00750	100
OIL WD-40	A04	10.00350	10.00444	0.50	10.00365	0.00094	84
	A23	9.93752	9.94433	0.50	9.93766	0.00681	98
	A31	9.94817	9.95116	1.00	9.94824	0.00299	98
	A20	9.89446	9.89601	2.00	9.89452	0.00155	98
	A28	9.98628	9.99086	5.00	9.98633	0.00458	99
PERFLUORINATED GREASE	A04	10.00356	10.14432	0.50	10.13874	0.14076	4
	A03	9.85667	9.93334	0.50	9.93273	0.07667	1
	A12	9.8959	10.02663	1.00	10.02662	0.13073	0
	A17	9.94522	9.99873	1.00	9.99235	0.05351	12
	A25	9.92689	10.04020	2.00	10.04050	0.11331	0
	A04	9.99480	10.13713	2.00	10.13665	0.14233	0
	A20	9.89677	9.98466	2.00	9.97437	0.08789	12
	A10	10.03716	10.11687	5.00	10.11733	0.07971	-1
	A29	10.00069	10.07753	5.00	10.07763	0.07684	0
	A06	10.00278	10.07980	0.50	10.07242	0.07702	10
SILICONE SEALANT	A14	9.84300	9.94593	1.00	9.92467	0.10293	21
	A22	10.02327	10.07302	2.00	10.03634	0.04975	74
	A30	10.01604	10.07660	5.00	10.02002	0.06056	93
	A05	9.92749	9.92773	0.50	9.92758	0.00024	62
	A13	10.00661	10.00706	1.00	10.00674	0.00045	71
	A21	9.93360	9.93381	2.00	9.93366	0.00021	71
	A07	10.05748	10.07417	2.00	10.05744	0.01669	100
	A15	9.92570	9.95410	5.00	9.92558	0.02840	100
	A08	9.80332	9.85552	0.50	9.80859	0.05220	90
	A11	9.91133	9.97513	1.00	9.91560	0.06380	93
SUPERSOIL	A16	9.93910	10.01179	2.00	9.94311	0.07269	94
	A27	9.98291	10.0431	5.00	9.98740	0.06019	93

SOIL	COUPON	INITIAL WT.	SOILED WT.	RINSE TIME (MIN)	DRIED WT.	WT OF SOIL	% SOIL REMOVED
AFFF	A13	10.14867	10.17324	0.50	10.14924	0.02457	98
	A19	10.13086	10.16482	1.00	10.13319	0.03396	93
	A18	10.16343	10.19150	2.00	10.16457	0.02807	96
	A21	10.20168	10.23044	5.00	10.20260	0.02876	97
BEESWAX	A03	10.11764	10.12624	0.50	10.12013	0.00860	71
	A09	10.20830	10.22700	1.00	10.21391	0.01870	70
	A15	10.11053	10.14163	2.00	10.11954	0.03110	71
	A18	10.16254	10.19388	5.00	10.16934	0.03134	78
CASTOR OIL	A04	10.00336	10.03967	0.50	10.01978	0.03631	55
	A06	10.00245	10.03278	1.00	10.01140	0.03033	70
	A23	10.08015	10.10992	2.00	10.08710	0.02977	77
	A29	10.10773	10.15543	5.00	10.11010	0.04770	95
EDM OIL	A07	10.17164	10.19526	0.50	10.17167	0.02362	100
	A10	10.20102	10.22213	1.00	10.20120	0.02111	99
	A16	10.16142	10.19673	2.00	10.16125	0.03531	100
	A22	10.16794	10.20722	5.00	10.16801	0.03928	100
GREASE PENCIL	A07	10.05696	10.05780	0.50	10.05713	0.00084	80
	A17	9.94543	9.94687	0.50	9.94644	0.00144	30
	A18	9.99750	9.99906	1.00	9.99804	0.00156	65
	A21	9.93388	9.93516	1.00	9.93483	0.00128	26
	A27	9.98175	9.98329	2.00	9.98227	0.00154	66
	A29	9.99979	10.00157	5.00	10.00043	0.00178	64
HYDR. FLUID MIL-H-5606	A02	10.11045	10.13575	0.50	10.11027	0.02530	101
	A15	10.11231	10.12677	2.00	10.11220	0.01446	101
	A20	10.18280	10.19994	5.00	10.18248	0.01714	102
	A31	10.20092	10.21743	7.00	10.20122	0.01651	98
HYDR. FLUID MIL-H-83282	A01	10.14550	10.16259	0.50	10.14557	0.01709	100
	A03	10.11821	10.14792	1.00	10.11840	0.02971	99
	A08	10.15433	10.17081	2.00	10.15430	0.01648	100
	A24	10.16366	10.18398	5.00	10.16363	0.02032	100
HYDR. FLUID SKYDROL 500B4	A06	10.16248	10.19449	0.50	10.16284	0.03201	99
	A12	10.15008	10.17539	1.00	10.14983	0.02531	101
	A24	10.16336	10.18470	2.00	10.16352	0.02134	99
	A25	10.16330	10.19180	5.00	10.16344	0.02850	100
JET FUEL A	A14	10.12011	10.15662	0.50	10.12043	0.03651	99
	A17	10.16211	10.18456	1.00	10.16158	0.02245	102
	A23	10.08164	10.09892	2.00	10.08137	0.01728	102
	A29	10.11055	10.13390	5.00	10.11081	0.02335	99
JET FUEL JP-4	A04	10.12900	10.13228	0.50	10.12896	0.00328	101
	A17	9.94521	9.96460	1.00	9.94528	0.01939	100
	A09	10.21068	10.21318	2.00	10.21063	0.00250	102
	A26	10.23596	10.24258	5.00	10.23580	0.00662	102
LANOLIN	A23	9.93725	9.98717	0.50	9.97809	0.04992	18
	A24	9.97389	10.00635	1.00	9.99160	0.03246	45
	A19	10.12641	10.15111	2.00	10.12666	0.02470	99
	A22	10.16482	10.18194	5.00	10.16557	0.01712	96
MOLY. GREASE	A01	10.14354	10.16428	0.50	10.15242	0.02074	57
	A02	9.92219	9.96692	0.50	9.94912	0.04473	40
	A07	10.16999	10.19622	1.00	10.18191	0.02623	55
	A18	9.99760	10.03219	1.00	10.01506	0.03459	50
	A26	10.23335	10.26777	2.00	10.23347	0.03442	100
	A28	9.98684	10.02339	2.00	9.99569	0.03655	76
	A31	10.19820	10.23660	5.00	10.20456	0.03840	83
	A31	9.94790	9.97973	5.00	9.95070	0.03183	91
MOLY SPRAY LUBE	A03	10.11786	10.12352	0.50	10.11782	0.00566	101
	A14	10.11870	10.13006	1.00	10.11874	0.01136	100
	A21	10.19984	10.22441	2.00	10.19983	0.02457	100
	A30	10.13344	10.14160	5.00	10.13354	0.00816	99
MOTOR OIL 10W30	A08	10.14826	10.17597	0.50	10.14959	0.02771	95
	A10	10.19757	10.23750	1.00	10.19778	0.03993	99
	A21	10.19935	10.24028	2.00	10.19965	0.04093	99
	A23	10.08000	10.11010	5.00	10.08010	0.03010	100
OIL WD-40	A02	10.10803	10.14295	0.50	10.10790	0.03492	100
	A04	10.12864	10.15945	1.00	10.12865	0.03081	100
	A20	10.18030	10.20936	2.00	10.18012	0.02906	101
	A28	10.13890	10.15707	5.00	10.13900	0.01817	99
PERFLUORINATED GREASE	A05	10.10715	10.18991	0.50	10.15194	0.08276	46
	A11	10.18413	10.23880	1.00	10.20570	0.05467	61
	A13	10.14746	10.23104	2.00	10.17063	0.08358	72
	A27	10.19746	10.29667	5.00	10.20627	0.09921	91
SILICONE SEALANT	A24	9.97222	10.10603	0.50	10.09694	0.13381	7
	A26	10.23182	10.30507	1.00	10.29626	0.07325	12
	A28	10.13890	10.21604	2.00	10.18800	0.07714	36
	A30	10.13314	10.20234	5.00	10.15921	0.06920	62
SILICONE SPRAY	A03	9.85612	9.90504	0.50	9.86227	0.04892	87
	A14	9.89293	9.93911	1.00	9.89712	0.04618	91
	A23	9.93745	9.97738	2.00	9.93855	0.03993	97
	A19	9.83673	9.86356	5.00	9.83716	0.02683	98
SUPERSOIL	A01	10.00291	10.07277	0.50	10.00816	0.06986	92
	A13	10.00658	10.08423	1.00	10.01636	0.07765	87
	A19	9.83757	9.91939	2.00	9.84628	0.08182	89
	A29	10.00014	10.09160	5.00	10.01218	0.09146	87

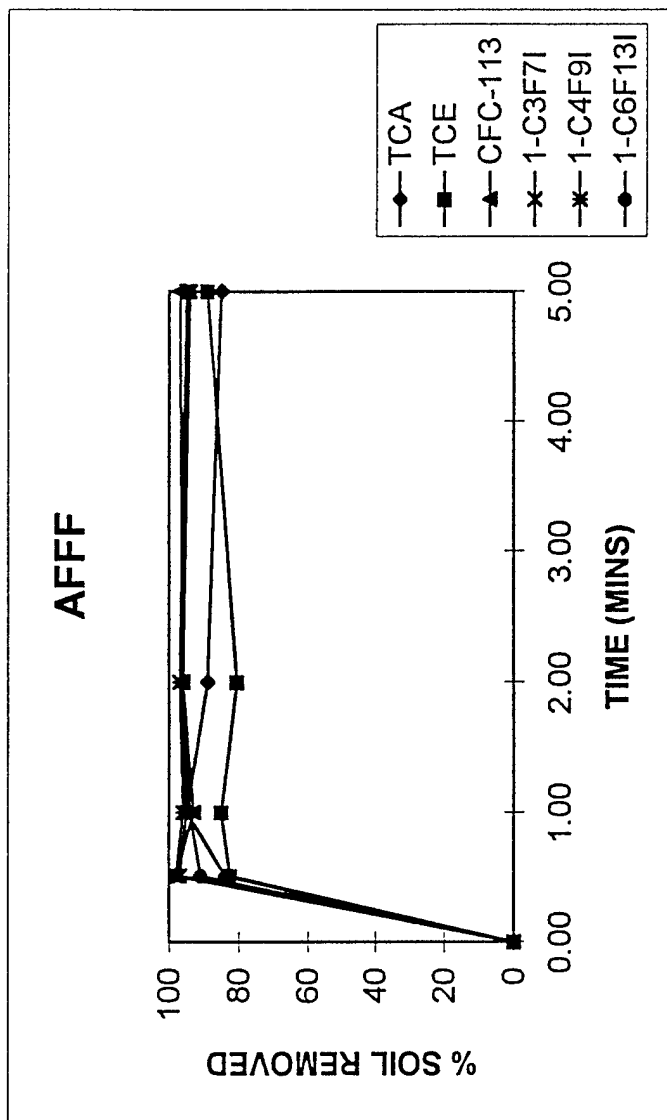
SOIL	COUPON	INITIAL WT.	SOILED WT.	RINSE TIME (MIN)	DRIED WT.	WT OF SOIL	% SOIL REMOVED
AFFF	A12	10.14595	10.14838	0.50	10.14603	0.00243	97%
	A15	10.10715	10.11088	1.00	10.10733	0.00373	95%
	A18	10.15883	10.16288	2.00	10.15897	0.00405	97%
	A28	10.13622	10.13997	5.00	10.13641	0.00375	95%
BEESWAX	A02	9.92237	9.94440	0.50	9.94288	0.02203	7%
	A16	9.93926	9.95431	1.00	9.95320	0.01505	7%
	A22	10.02008	10.03500	2.00	10.03290	0.01492	14%
	A26	9.96230	9.98219	5.00	9.97945	0.01989	14%
CASTOR OIL	A02	9.92227	9.93194	0.50	9.92271	0.00967	95%
	A10	10.03729	10.04897	1.00	10.03747	0.01168	98%
	A18	9.99712	10.01095	2.17	9.99744	0.01383	98%
	A26	9.96198	9.99827	5.00	9.96232	0.03629	99%
EDM OIL	A05	10.10316	10.11671	0.50	10.10305	0.01355	101%
	A09	10.20783	10.22449	1.00	10.20774	0.01666	101%
	A11	10.18389	10.19310	2.00	10.18396	0.00921	99%
	A31	10.19576	10.20910	5.00	10.19575	0.01334	100%
GREASE PENCIL	A03	9.93474	9.93794	0.50	9.93701	0.00320	29%
	A11	9.99190	9.99416	1.00	9.99341	0.00226	33%
	A19	9.94981	9.95282	2.00	9.95174	0.00301	36%
	A27	10.07335	10.07625	5.00	10.07523	0.00290	35%
HYDR. FLUID MIL-H-5606	A04	9.99697	10.02637	0.50	9.99700	0.02940	100%
	A06	10.00144	10.03201	1.00	10.00112	0.03057	101%
	A07	10.05775	10.09115	2.00	10.05736	0.03340	101%
	A30	10.13076	10.14247	5.00	10.13066	0.01171	101%
HYDR. FLUID MIL-H-83282	A09	10.08079	10.11589	5.00	10.08078	0.03510	100%
	A01	10.00308	10.00706	0.67	10.00370	0.00398	84%
	A09	10.08145	10.08827	1.00	10.08204	0.00682	91%
	A17	9.94523	9.95291	2.00	9.94581	0.00768	92%
HYDR. FLUID SKYDROL 500B4	A25	9.92638	9.93806	5.00	9.92694	0.01168	95%
	A02	9.92222	9.92912	0.50	9.92243	0.00690	97%
	A10	10.03728	10.04664	1.00	10.03741	0.00936	99%
	A18	9.99713	10.01052	2.00	9.99734	0.01339	98%
JET FUEL A	A26	9.96192	9.99753	5.00	9.96238	0.03561	99%
	A05	10.10325	10.11838	0.50	10.10316	0.01513	101%
	A09	10.20789	10.22379	1.00	10.20783	0.01590	100%
	A11	10.18393	10.18995	2.00	10.18389	0.00602	101%
JET FUEL JP-4	A31	10.19566	10.20721	5.00	10.19576	0.01155	99%
	A01	10.13939	10.17935	0.50	10.13937	0.03996	100%
	A08	10.14642	10.15251	1.00	10.14646	0.00609	99%
	A14	10.11812	10.12109	2.00	10.11813	0.00297	100%
LANOLIN	A21	10.19893	10.20164	5.00	10.19895	0.00271	99%
	A05	9.92753	9.96794	0.50	9.96748	0.04041	1%
	A13	10.00673	10.06032	1.00	10.05980	0.05359	1%
	A21	9.93375	9.98660	2.00	9.98556	0.05285	2%
MOLY. GREASE	A29	9.99967	10.05501	5.00	10.05203	0.05534	5%
	A01	10.00310	10.00806	0.50	10.00417	0.00496	78%
	A09	10.08139	10.08736	1.00	10.08243	0.00597	83%
	A17	9.94511	9.95920	2.00	9.94716	0.01409	85%
MOLY. SPRAY LUBE	A25	9.92621	9.94049	5.00	9.92791	0.01428	88%
	A06	10.00293	10.00844	0.50	10.00606	0.00551	43%
	A14	9.89268	9.89584	1.00	9.89407	0.00316	56%
	A22	10.02335	10.02607	2.00	10.02436	0.00272	63%
MOTOR OIL 10W30	A30	10.01597	10.02039	5.00	10.01749	0.00442	66%
	A06	10.00302	10.00577	0.50	10.00330	0.00275	90%
	A14	9.89356	9.92888	0.50	9.89805	0.03532	87%
	A14	9.89274	9.89613	1.00	9.89296	0.00339	94%
	A19	9.83738	9.87406	1.00	9.83781	0.03668	99%
	A22	10.02332	10.02792	2.00	10.02368	0.00460	92%
	A28	9.98694	10.01008	2.00	9.98717	0.02314	99%
	A30	10.01604	10.02210	5.00	10.01645	0.00606	93%
OIL WD-40	A31	9.94806	9.98104	5.00	9.94838	0.03298	99%
	A11	9.91154	9.94214	0.50	9.91157	0.03060	100%
	A12	9.89615	9.90671	1.00	9.89612	0.01056	100%
	A18	9.99800	10.00887	2.00	9.99793	0.01087	101%
PERFLUORINATED GREASE	A20	9.89520	9.90529	5.00	9.89512	0.01009	101%
	A07	10.05718	10.06402	0.50	10.05793	0.00684	89%
	A15	9.92537	9.93539	1.00	9.92614	0.01002	92%
	A23	9.93713	9.95996	2.00	9.93777	0.02283	97%
SILICONE SEALANT	A31	9.94770	10.01172	5.00	9.94817	0.06402	99%
	A01	10.00336	10.10009	0.50	10.09091	0.09673	9%
	A08	9.80327	9.93473	1.00	9.92625	0.13146	6%
	A15	9.92560	10.07746	2.00	10.04153	0.15186	24%
SILICONE SPRAY	A24	9.97369	10.12240	5.00	10.08101	0.14871	28%
	A04	10.12765	10.13669	0.50	10.12904	0.00904	85%
	A03	9.85663	9.86019	0.50	9.85700	0.00356	90%
	A10	10.03715	10.05156	1.00	10.03757	0.01441	97%
SUPERSOIL	A13	10.00690	10.01112	2.00	10.00706	0.00422	96%
	A30	10.01701	10.03957	5.00	10.01745	0.02256	98%
	A05	9.92764	10.01477	0.50	9.93349	0.08713	93%
	A17	9.94517	10.03300	1.00	9.95080	0.08783	94%
	A25	9.92666	10.00392	2.00	9.93357	0.07726	91%
	A27	9.98225	10.08331	5.00	9.99213	0.10106	90%

SOIL	COUPON	INITIAL WT.	SOILED WT.	RINSE TIME (MIN)	DRIED WT.	WT OF SOIL	% SOIL REMOVED
AFFE	A13	10.14651	10.16857	0.50	10.14698	0.02206	98
	A21	10.19898	10.21709	1.00	10.19978	0.01811	96
	A24	10.16023	10.17233	2.00	10.16060	0.01210	97
	A28	10.13600	10.14986	5.00	10.13681	0.01386	94
BEESWAX	A08	10.14690	10.15617	0.50	10.15578	0.00927	4
	A16	10.15766	10.16557	1.00	10.16502	0.00791	7
	A19	10.12095	10.13083	2.00	10.12968	0.00988	12
	A23	10.07970	10.08815	5.00	10.08612	0.00845	24
CASTOR OIL	A05	10.10370	10.14665	0.50	10.13631	0.04295	24
	A10	10.19691	10.22130	1.00	10.20569	0.02439	64
	A18	10.15908	10.18707	2.00	10.16004	0.02799	97
	A30	10.01740	10.03156	5.00	10.01700	0.01416	103
EDM OIL	A08	10.14654	10.16240	0.50	10.14645	0.01586	101
	A16	10.15753	10.16970	1.00	10.15748	0.01217	100
	A19	10.12012	10.13292	2.50	10.11996	0.01280	101
	A20	10.17836	10.19092	5.00	10.17829	0.01256	101
GREASE PENCIL	A31	9.94658	9.94897	0.50	9.94863	0.00239	14
	A29	10.00018	10.00176	1.00	10.00130	0.00158	29
	A23	10.07949	10.08017	2.00	10.07996	0.00068	31
	A29	10.10593	10.10705	5.00	10.10671	0.00112	30
HYDR. FLUID MIL-H-5606	A06	10.15966	10.17455	0.50	10.15994	0.01489	98
	A09	10.20719	10.22040	1.00	10.20799	0.01321	94
	A19	10.12177	10.13678	2.00	10.12145	0.01501	102
	A25	10.16061	10.17744	5.00	10.16068	0.01683	100
HYDR. FLUID MIL-H-83282	A01	10.13963	10.16052	0.50	10.13976	0.02089	99
	A02	10.10672	10.12433	1.00	10.10664	0.01761	100
	A08	10.14731	10.16311	2.00	10.14731	0.01580	100
	A13	10.14676	10.17223	5.00	10.14675	0.02547	100
HYDR. FLUID SKYDROL 500B4	A14	10.11827	10.13726	0.50	10.11862	0.01899	98
	A15	10.10995	10.13611	1.00	10.11068	0.02616	97
	A24	10.16108	10.18326	2.50	10.16115	0.02218	100
	A31	10.19620	10.22192	5.00	10.19633	0.02572	99
JET FUEL A	A03	10.11368	10.12463	0.50	10.11365	0.01095	100
	A11	10.18385	10.19242	1.00	10.18378	0.00857	101
	A20	10.17885	10.18764	2.00	10.17865	0.00879	102
	A29	10.10656	10.11817	5.00	10.10648	0.01161	101
JET FUEL JP-4	A04	10.12821	10.13200	0.50	10.12818	0.00379	101
	A10	10.19693	10.20077	1.00	10.19695	0.00384	99
	A12	10.14679	10.15065	2.00	10.14671	0.00386	102
	A23	10.07973	10.08221	5.00	10.07968	0.00248	102
LANOLIN	A01	10.00282	10.03769	0.50	10.03236	0.03487	15
	A12	10.14625	10.16080	1.00	10.15684	0.01455	27
	A07	10.05928	10.08097	1.00	10.07428	0.02169	31
	A25	10.16053	10.17311	2.00	10.16641	0.01258	53
	A09	10.08068	10.10762	2.00	10.09965	0.02694	30
	A31	10.19597	10.21110	5.00	10.20491	0.01513	41
	A13	10.00670	10.02931	5.00	10.02059	0.02261	39
	A04	9.99674	10.02400	0.50	10.01275	0.02726	41
MOLY. GREASE	A16	10.15799	10.17602	1.00	10.16557	0.01803	58
	A06	10.00150	10.02328	1.00	10.01141	0.02178	54
	A10	10.03741	10.07104	2.00	10.05112	0.03363	59
	A19	10.12125	10.14119	5.00	10.12516	0.01994	80
	A22	10.02007	10.04377	5.00	10.02463	0.02370	81
	A04	10.12814	10.13661	0.50	10.13475	0.00847	22
	A10	10.19691	10.20545	1.00	10.20338	0.00854	24
	A20	10.17861	10.18765	2.00	10.18547	0.00904	24
MOTOR OIL 10W30	A29	10.10640	10.11581	5.00	10.11358	0.00941	24
	A11	10.18394	10.20962	0.50	10.18764	0.02568	86
	A14	10.11827	10.13780	1.00	10.11850	0.01953	99
	A17	10.15297	10.17267	2.00	10.15342	0.01970	98
	A27	10.19456	10.21845	5.00	10.19509	0.02389	98
	A07	10.16830	10.18328	0.50	10.16854	0.01498	98
	A16	10.15804	10.17019	1.00	10.15829	0.01215	98
	A17	10.15460	10.18168	2.00	10.15454	0.02708	100
PERFLUORINATED GREASE	A22	10.16307	10.18481	5.00	10.16320	0.02174	99
	A02	10.10641	10.15576	0.50	10.12424	0.04935	64
	A07	10.16812	10.21777	1.00	10.17750	0.04965	81
	A09	10.20784	10.27035	2.00	10.20865	0.06251	99
	A22	10.16283	10.23740	5.00	10.16327	0.07457	99
	A08	10.14645	10.22697	0.50	10.21693	0.08052	12
	A16	10.15748	10.22994	1.00	10.21545	0.07246	20
	A19	10.11996	10.18408	2.00	10.16366	0.06412	32
SILICONE SEALANT	A20	10.17829	10.23671	5.00	10.20637	0.05842	52
	A08	10.14732	10.17000	0.50	10.14832	0.02268	96
	A12	10.14677	10.15212	1.00	10.14681	0.00535	99
	A21	10.19925	10.20710	2.00	10.19926	0.00785	100
SUPERSOIL	A15	9.92574	9.93359	5.00	9.92559	0.00785	102
	A03	9.85676	9.91862	0.50	9.86061	0.06186	94
	A11	9.91164	9.97961	1.00	9.91647	0.06797	93
	A12	9.89613	9.95669	2.00	9.90033	0.06056	93
	A14	9.89340	9.96599	5.00	9.89530	0.07259	97

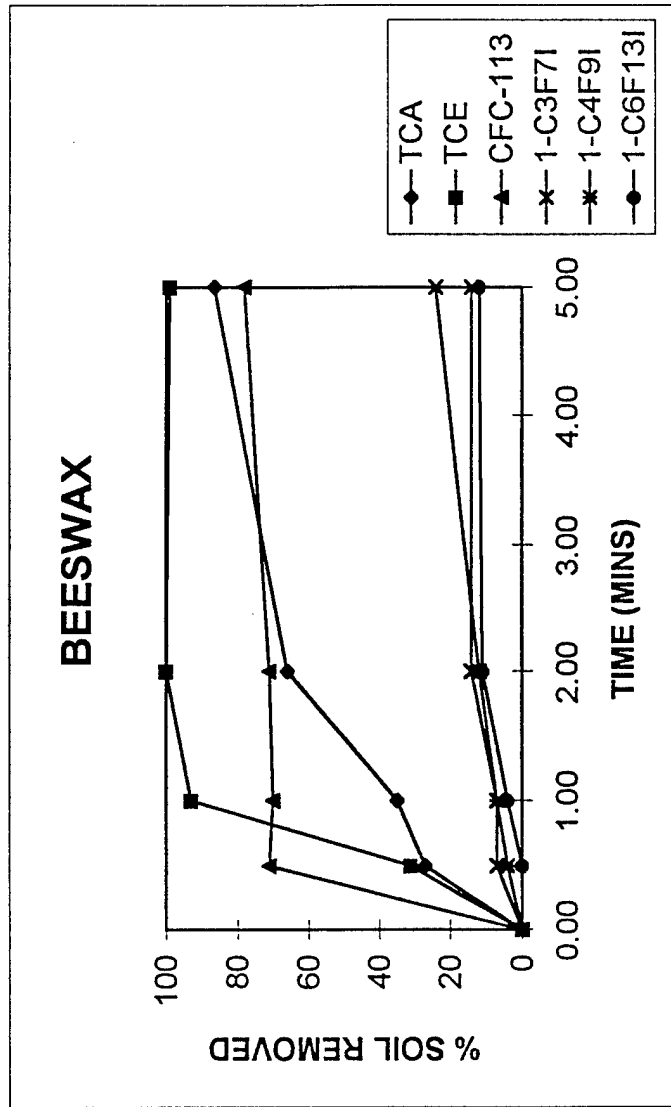
SOIL	COUPON	INITIAL WT.	SOILED WT.	RINSE TIME (MIN)	DRIED WT.	WT OF SOIL	% SOIL REMOVED
AFFE	A10	10.19724	10.23210	0.50	10.20033	0.03486	91%
	A16	10.15831	10.21120	1.00	10.16127	0.05289	94%
	A23	10.07989	10.13431	2.00	10.08191	0.05442	96%
	A31	10.19670	10.23951	5.00	10.19919	0.04281	94%
BEESWAX	A07	10.16847	10.17708	0.50	10.17714	0.00861	-1%
	A19	10.12334	10.13313	1.00	10.13271	0.00979	4%
	A24	10.16117	10.17404	2.00	10.17264	0.01287	11%
	A29	10.10672	10.11554	5.00	10.11447	0.00882	12%
CASTOR OIL	A21	10.19920	10.24834	0.50	10.24083	0.04914	15%
	A08	9.80336	9.80597	0.50	9.80479	0.00261	45%
	A22	10.16359	10.19610	1.00	10.19351	0.03251	8%
	A19	9.83733	9.84254	1.00	9.84060	0.00521	37%
	A28	10.13625	10.16950	2.00	10.16204	0.03325	22%
	A20	9.89517	9.89959	2.00	9.89568	0.00442	88%
	A29	10.10695	10.16226	5.00	10.13794	0.05531	44%
	A21	9.93398	9.94166	5.00	9.93522	0.00768	84%
EDM OIL	A12	10.14868	10.16001	0.50	10.14876	0.01133	99%
	A17	10.15583	10.17115	1.00	10.15551	0.01532	102%
	A19	10.12438	10.13360	2.00	10.12426	0.00922	101%
	A31	10.19744	10.20540	5.00	10.19762	0.00796	98%
GREASE PENCIL	A02	9.92182	9.92446	0.50	9.92430	0.00264	6%
	A02	9.92044	9.92313	0.50	9.92296	0.00269	6%
	A27	9.98171	9.98438	1.00	9.98434	0.00267	1%
	A28	9.98637	9.98843	2.00	9.98838	0.00206	2%
HYDR. FLUID MIL-H-5606	A29	10.00069	10.07753	5.00	10.07763	0.07684	0%
	A05	10.10709	10.12832	0.50	10.10808	0.02123	95%
	A06	10.16100	10.17458	1.00	10.16108	0.01358	99%
	A20	10.18000	10.19778	2.00	10.18012	0.01778	99%
HYDR. FLUID MIL-H-83282	A29	10.10721	10.19778	5.00	10.10732	0.09057	100%
	A01	10.13959	10.15076	0.50	10.14049	0.01117	92%
	A08	10.14776	10.17049	1.00	10.14873	0.02273	96%
	A21	10.19907	10.21254	2.00	10.19934	0.01347	98%
HYDR. FLUID SKYDROL 500B4	A25	10.16076	10.17713	5.00	10.16105	0.01637	98%
	A02	10.10800	10.12963	0.50	10.10922	0.02163	94%
	A04	10.12848	10.15347	1.00	10.12878	0.02499	99%
	A22	10.16415	10.18144	2.00	10.16411	0.01729	100%
JET FUEL A	A25	10.16128	10.18925	5.00	10.16163	0.02797	99%
	A03	10.11729	10.12766	0.50	10.11735	0.01037	99%
	A09	10.20859	10.21720	1.00	10.20870	0.00861	99%
	A15	10.11015	10.12424	2.00	10.11022	0.01409	100%
JET FUEL JP-4	A21	10.19935	10.21151	5.00	10.19980	0.01216	96%
	A07	10.16915	10.17415	0.50	10.16911	0.00500	101%
	A10	10.19784	10.20273	1.00	10.19784	0.00489	100%
	A16	9.93918	9.94055	2.00	9.93924	0.00137	96%
LANOLIN	A22	10.01918	10.02920	5.00	10.02000	0.01002	92%
	A06	10.16087	10.18318	0.50	10.17992	0.02231	15%
	A09	10.20854	10.23768	1.00	10.23257	0.02914	18%
	A11	10.18423	10.20471	2.00	10.20052	0.02048	20%
MOLY. GREASE	A20	10.17977	10.19816	5.00	10.19158	0.01839	36%
	A02	10.10724	10.13071	0.50	10.12473	0.02347	25%
	A12	10.14772	10.16533	1.00	10.15967	0.01761	32%
	A25	10.16087	10.18603	2.00	10.17435	0.02516	46%
MOLY. SPRAY LUBE	A27	10.19691	10.21750	5.00	10.20571	0.02059	57%
	A11	10.18400	10.19520	0.50	10.19302	0.01120	19%
	A26	9.96217	10.00040	0.50	9.99003	0.03823	27%
	A20	10.17912	10.18750	1.00	10.18634	0.00838	14%
	A27	9.98238	10.00364	1.00	10.00048	0.02126	15%
	A28	10.13612	10.14220	2.00	10.14156	0.00608	11%
	A30	10.13151	10.13779	5.00	10.13716	0.00628	10%
	A02	10.10667	10.11400	0.50	10.11092	0.00733	42%
MOTOR OIL 10W30	A04	10.12865	10.14148	1.00	10.13251	0.01283	70%
	A09	10.20797	10.21558	2.00	10.20944	0.00761	81%
	A22	10.16308	10.18064	5.00	10.16517	0.01756	88%
	A08	10.14852	10.17574	0.50	10.14979	0.02722	95%
OIL WD-40	A14	10.11837	10.13585	1.00	10.11884	0.01748	97%
	A18	10.16213	10.18881	2.00	10.16243	0.02668	99%
	A23	10.07978	10.10658	5.00	10.08032	0.02680	98%
	A01	10.13967	10.18145	0.50	10.15231	0.04178	70%
PERFLUORINATED GREASE	A04	10.12818	10.16933	1.00	10.13789	0.04115	76%
	A08	10.14769	10.19907	2.00	10.15307	0.05138	90%
	A19	10.12314	10.18415	5.00	10.12970	0.06101	89%
	A03	10.11720	10.17503	0.50	10.17482	0.05783	0%
SILICONE SEALANT	A18	10.16190	10.21872	1.00	10.21328	0.05682	10%
	A26	10.22598	10.29715	2.00	10.28442	0.07117	18%
	A27	10.19679	10.25830	5.00	10.24157	0.06151	27%
	A13	10.14670	10.15832	0.50	10.14748	0.01162	93%
SILICONE SPRAY	A15	10.10996	10.11720	1.00	10.11041	0.00724	94%
	A17	10.15470	10.16458	2.00	10.15516	0.00988	95%
	A18	10.16210	10.16766	5.00	10.16242	0.00556	94%
	A16	9.93945	10.03312	0.50	9.94780	0.09367	91%
SUPERSOIL	A24	9.97397	10.06092	1.00	9.98256	0.08695	90%
	A25	9.92694	10.05214	2.00	9.93547	0.12520	93%
	A26	9.96278	10.04032	5.00	9.97335	0.07754	86%

APPENDIX B:
GRAPHS OF SOIL REMOVAL VS. TIME

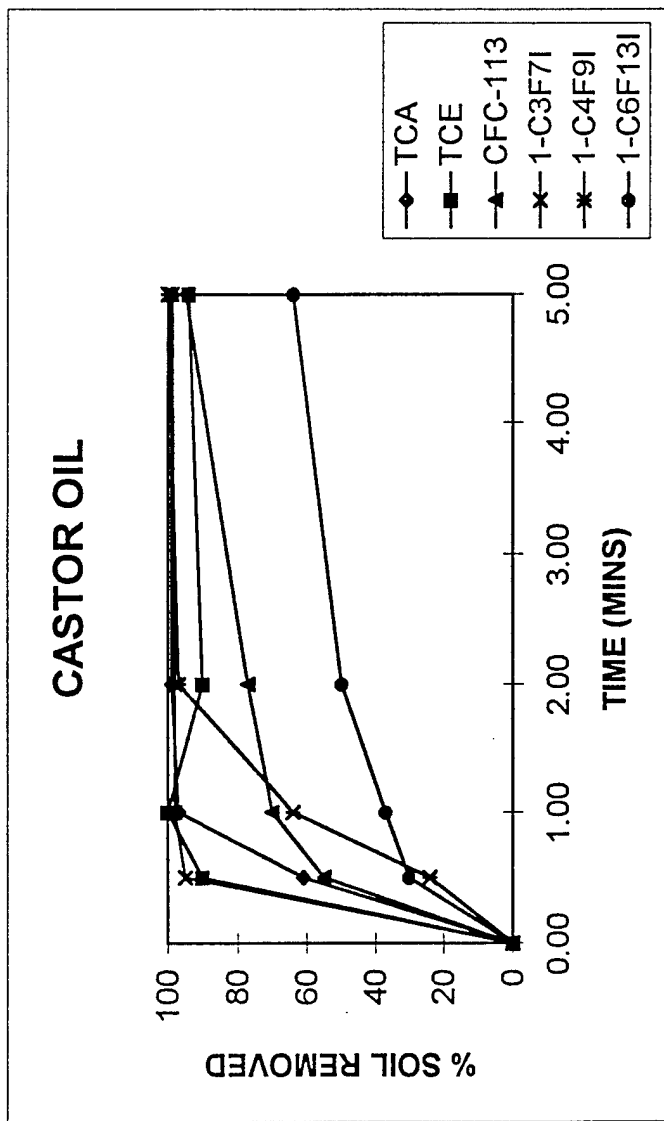
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	84	83	98	97	98	91
1.00	95	85	93	95	96	94
2.00	89	81	96	97	97	96
5.00	85	89	97	95	94	94



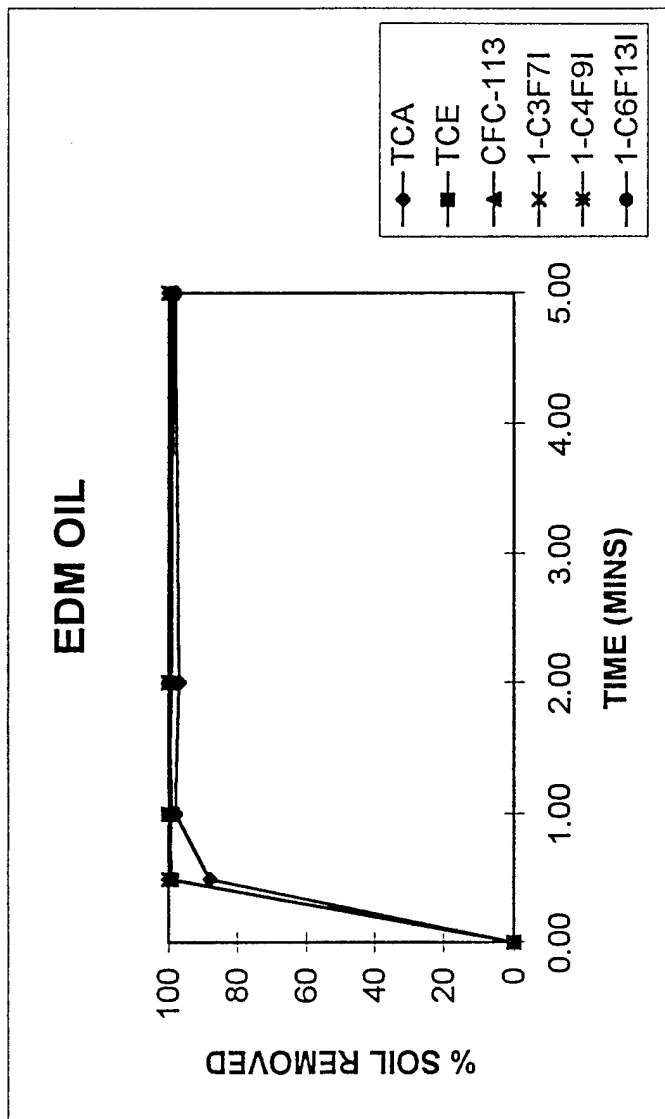
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	27	31	71	7	4	0
1.00	35	93	70	7	7	4
2.00	66	100	71	14	12	11
5.00	86.5	99	78	14	24	12



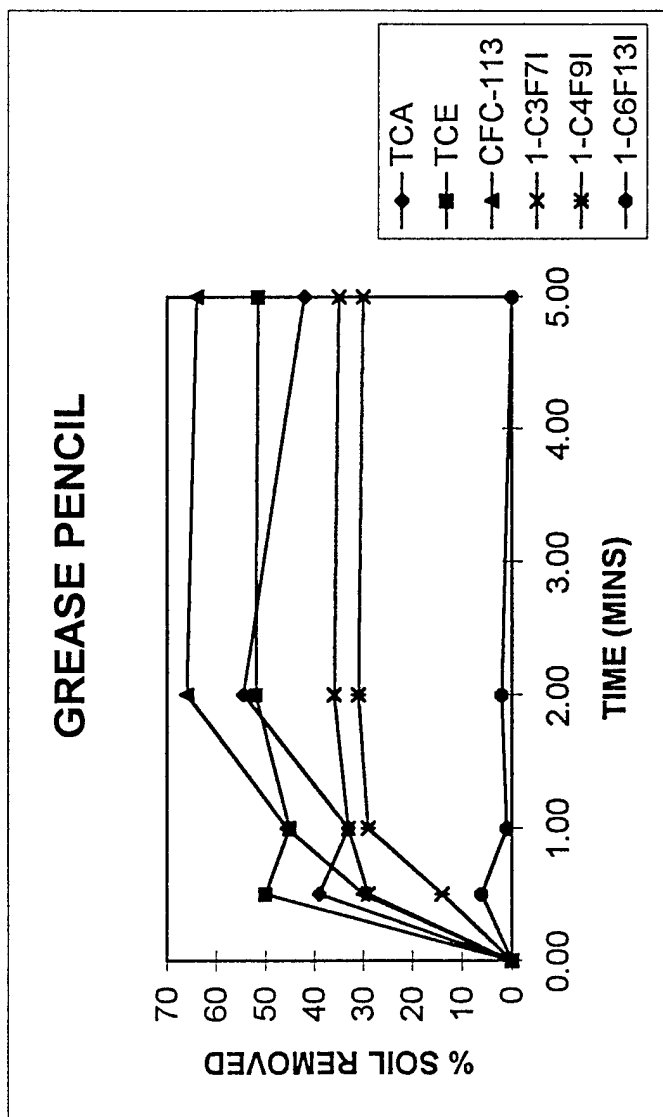
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	61	90	55	95	24	30
1.00	97	100	70	98	64	37
2.00	99	90	77	98	97	50
5.00	99	94	95	99	100	64



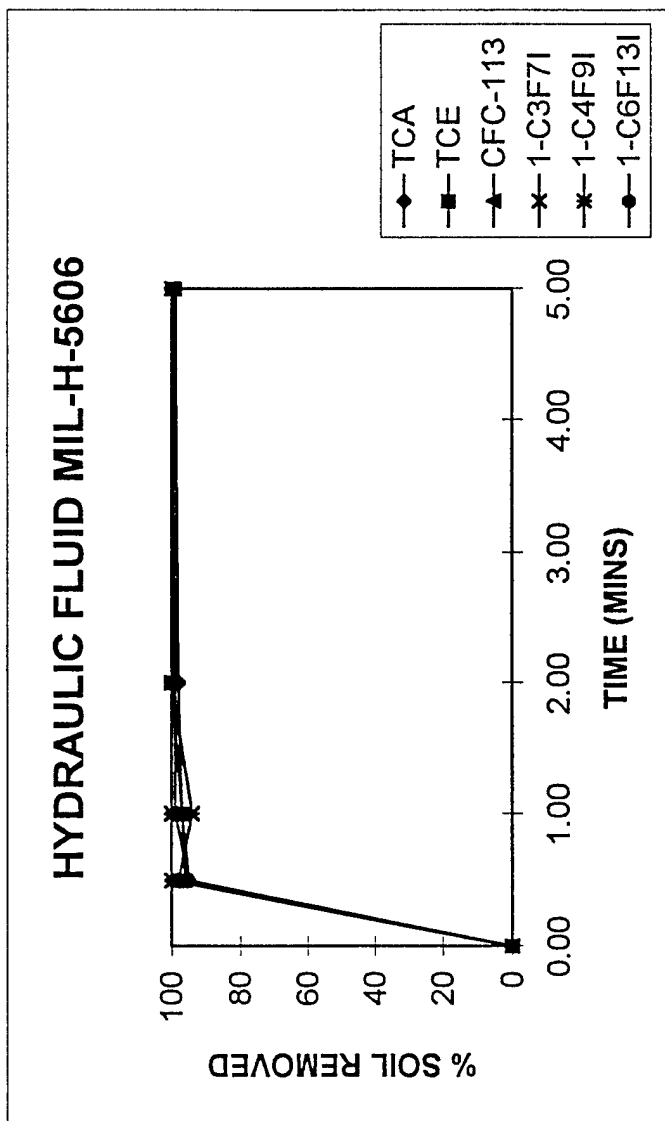
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	88	99	100	100	100	99
1.00	98	100	99	100	100	100
2.00	97	99	100	99	100	100
5.00	98	99	100	100	100	98



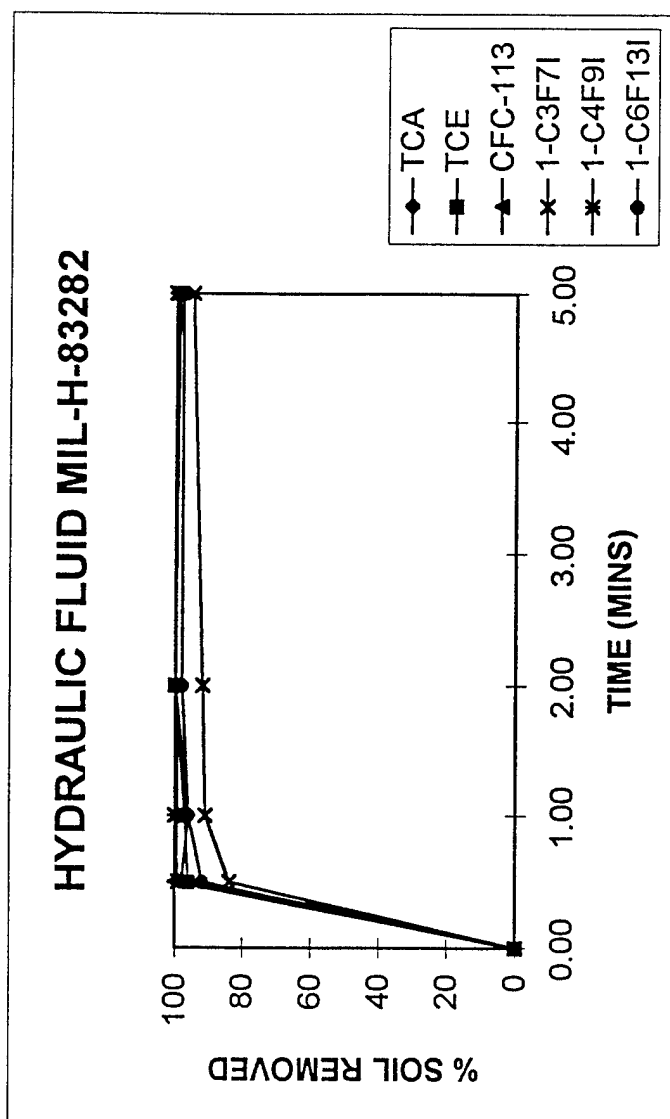
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	39	50	30	29	14	6
1.00	33	45	45.5	33	29	1
2.00	54.5	52	66	36	31	2
5.00	42	51.5	64	35	30	0



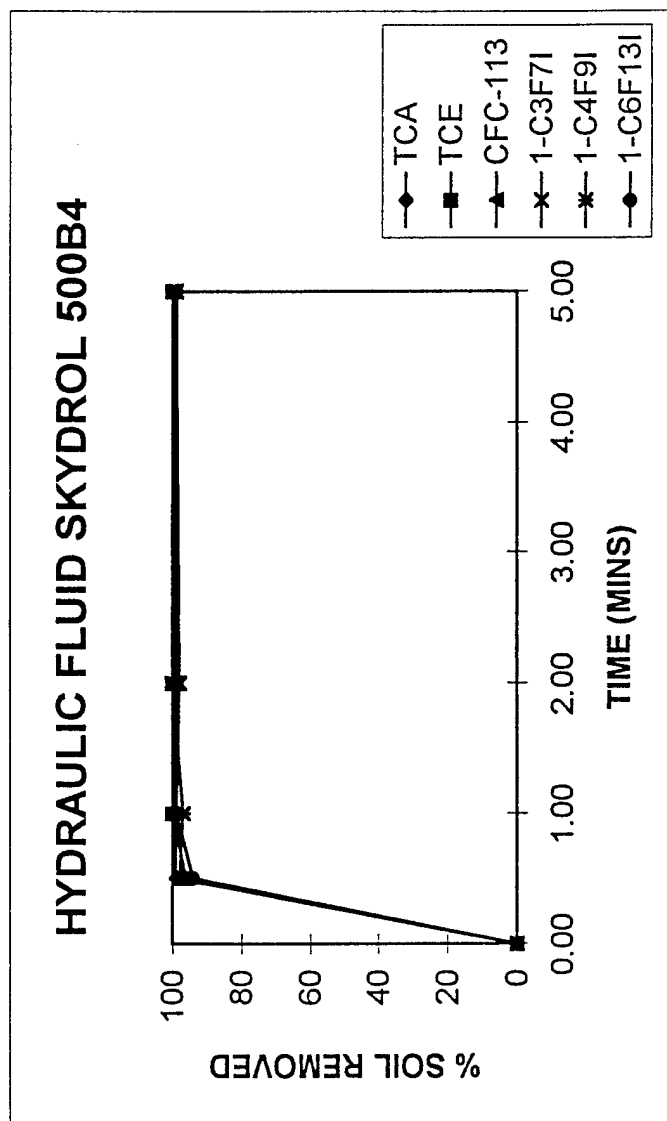
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	95	96	100	100	98	95
1.00	97	97	100	100	94	99
2.00	98	100	100	100	100	99
5.00	99	99	100	100	100	100



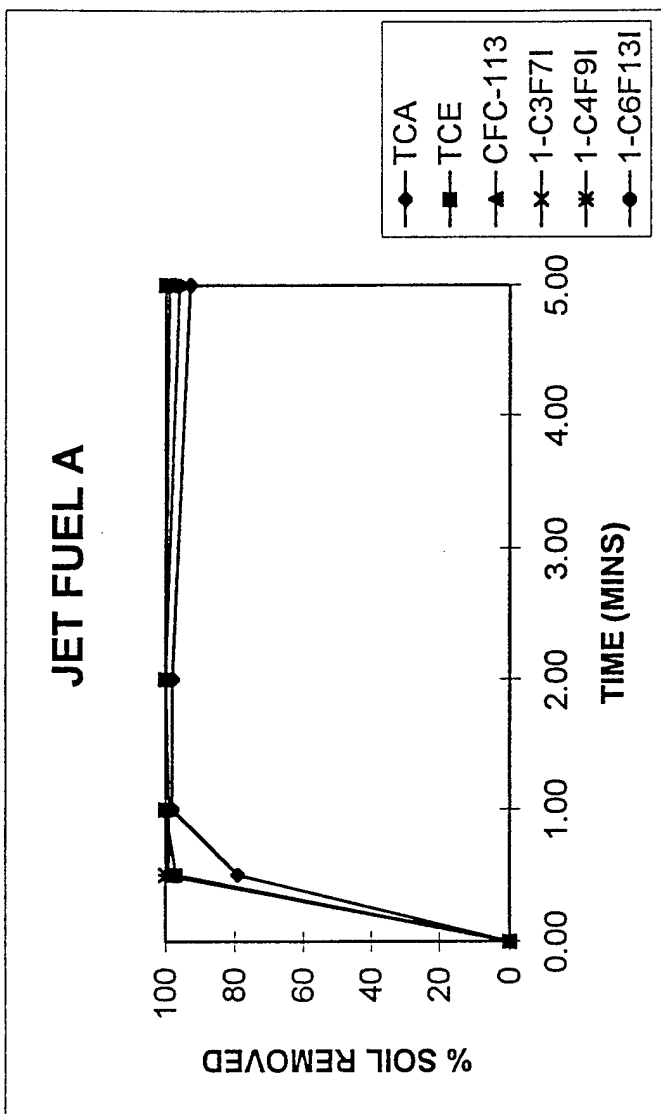
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	98	96	100	84	99	92
1.00	96	97	99	91	100	96
2.00	100	100	100	92	100	98
5.00	99	99	100	95	100	98



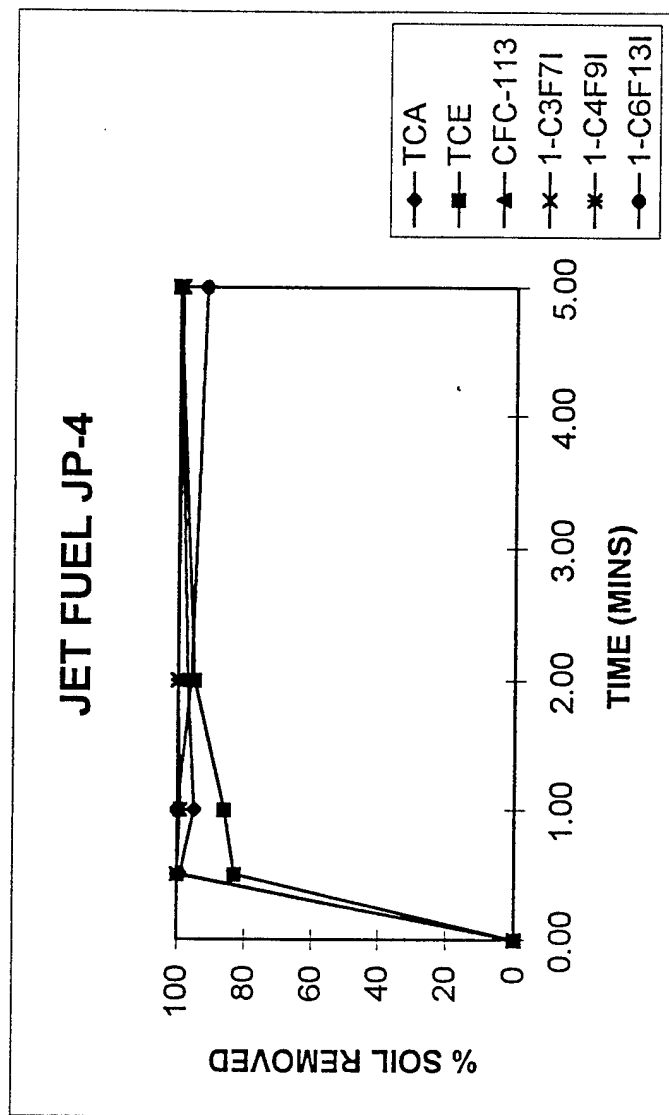
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	99	96	99	97	98	94
1.00	99	100	100	99	97	99
2.00	99	100	99	98	100	100
5.00	99	100	100	99	99	99



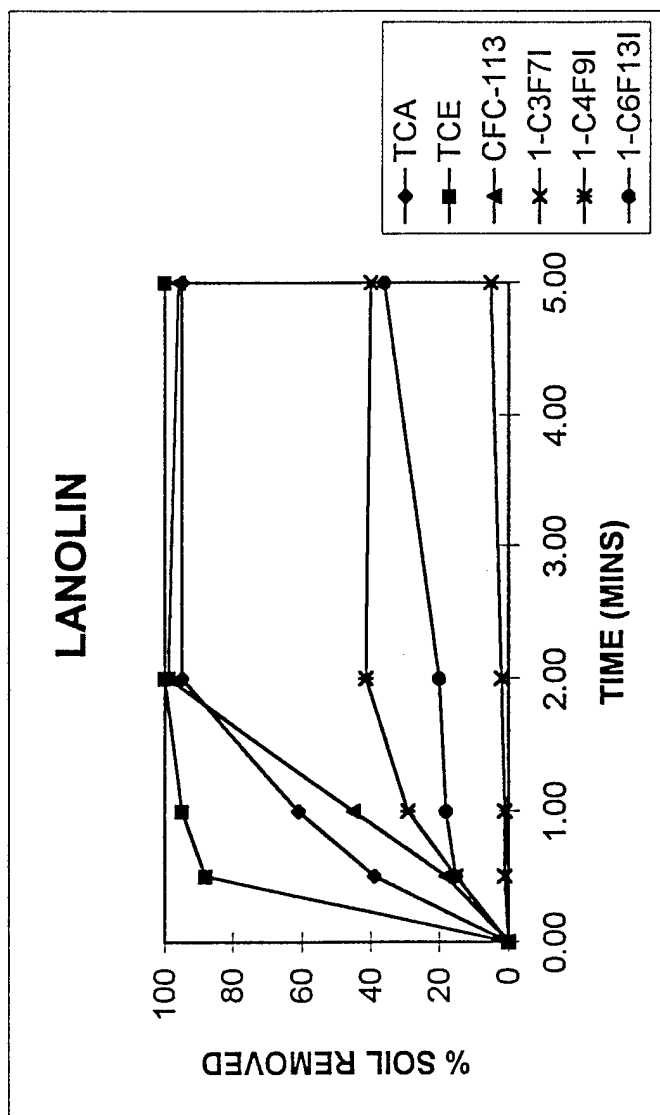
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	79	97	99	100	100	99
1.00	98	100	100	100	100	99
2.00	98	100	100	100	100	100
5.00	93	100	99	99	100	96



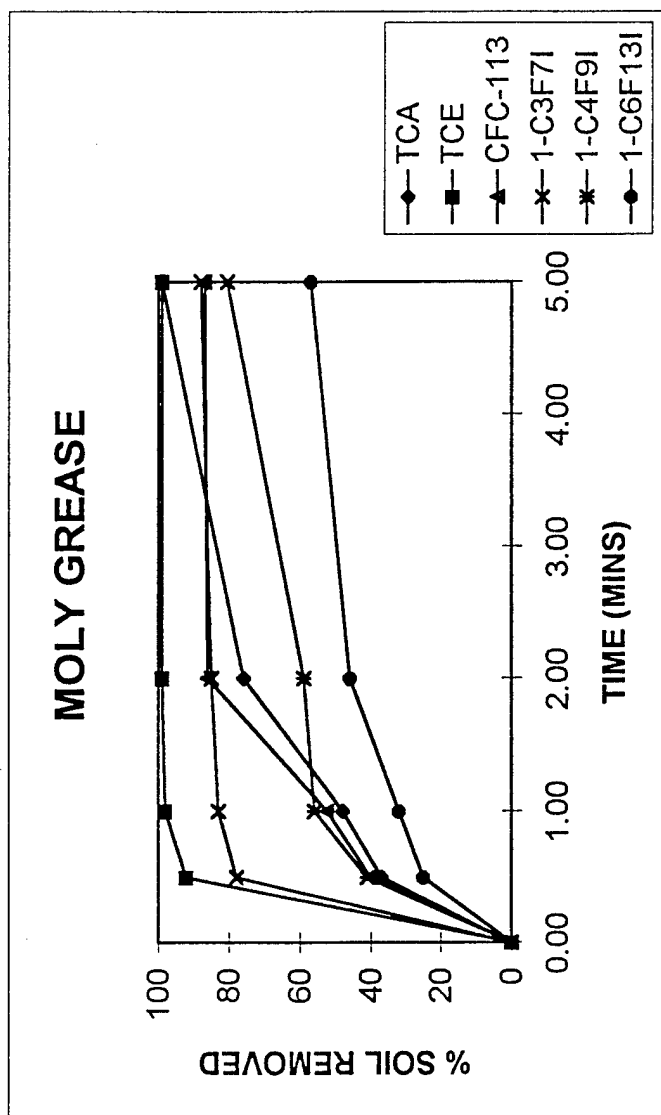
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	99	83	100	100	100	100
1.00	95	86	100	99	99	100
2.00	97	95	100	100	100	96
5.00	100	100	100	99	100	92



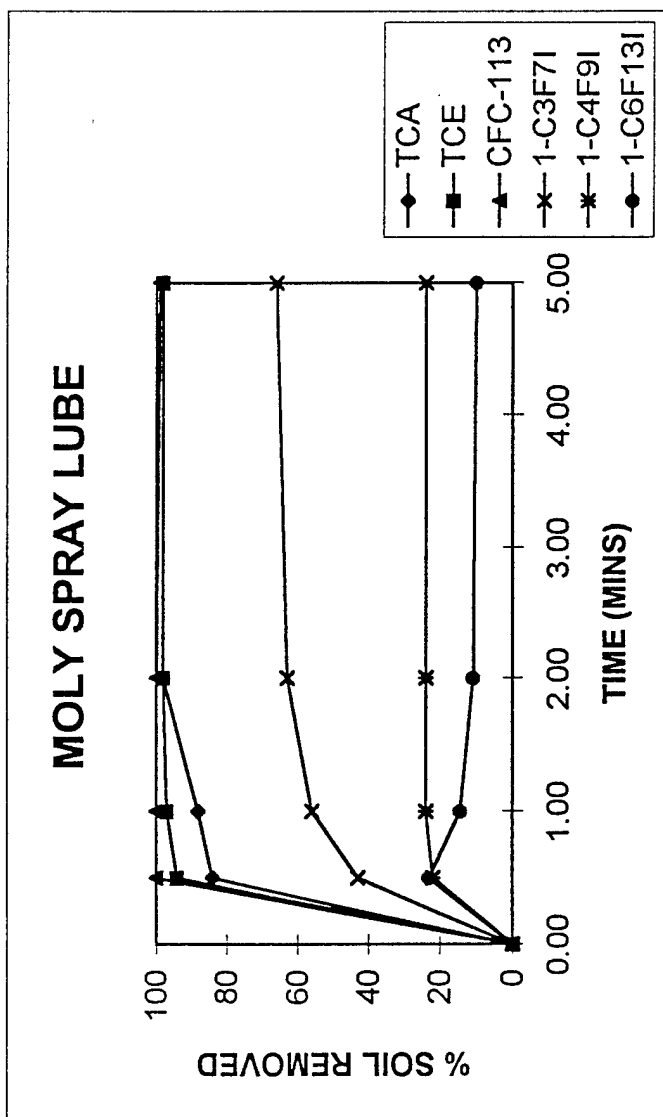
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	39	88	18	1	15	15
1.00	61	95	45	1	29	18
2.00	95	100	99	2	41.5	20
5.00	95	100	96	5	40	36



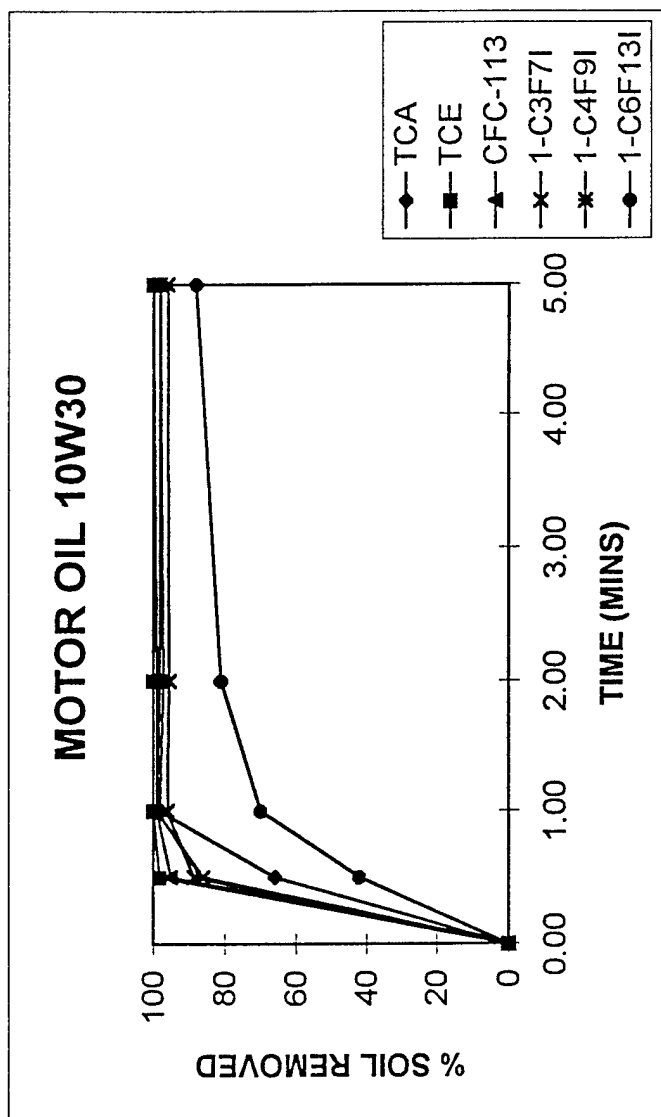
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	37	92	40	78	41	25
1.00	48	98	52.5	83	56	32
2.00	76	99	86	85	59	46
5.00	99	99	87	88	80.5	57



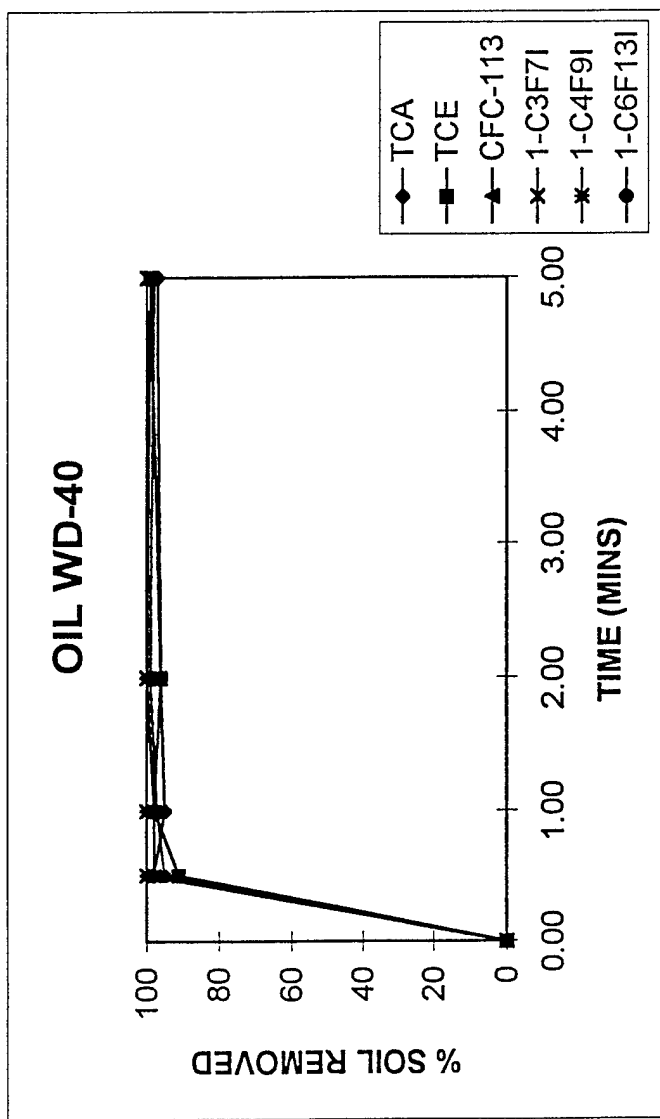
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	84	94	100	43	22	23
1.00	88	97	100	56	24	14.5
2.00	98	98	100	63	24	11
5.00	98	98	99	66	24	10



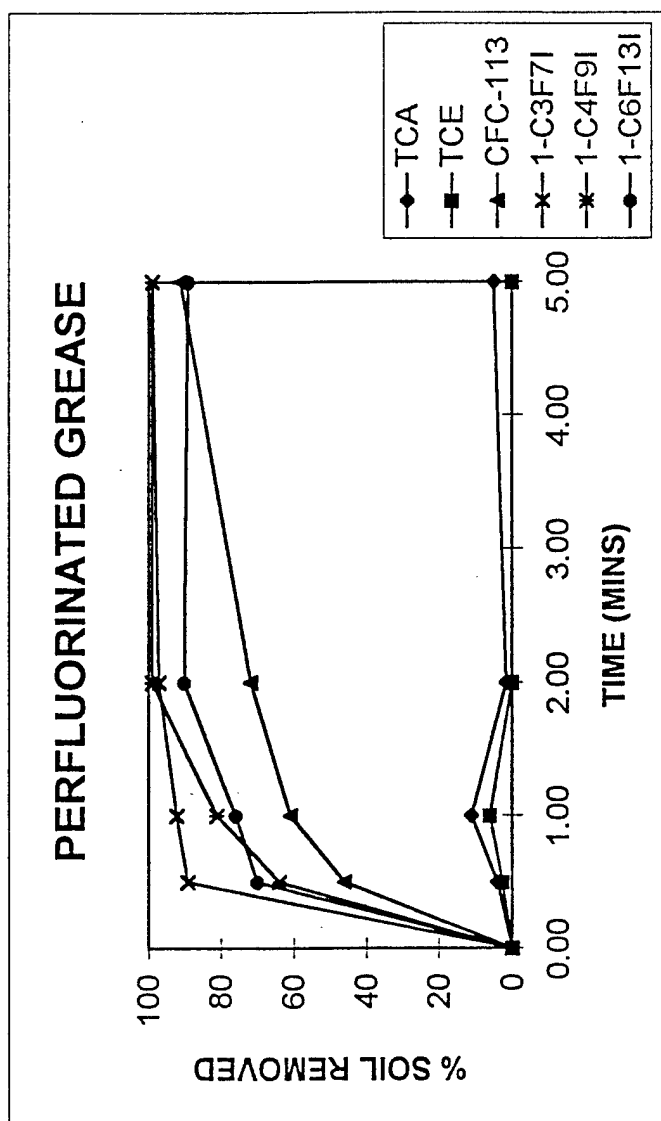
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	66	98	95	88.5	86	42
1.00	98	100	99	96	99	70
2.00	97	100	99	95.5	98	81
5.00	98	100	100	96	98	88



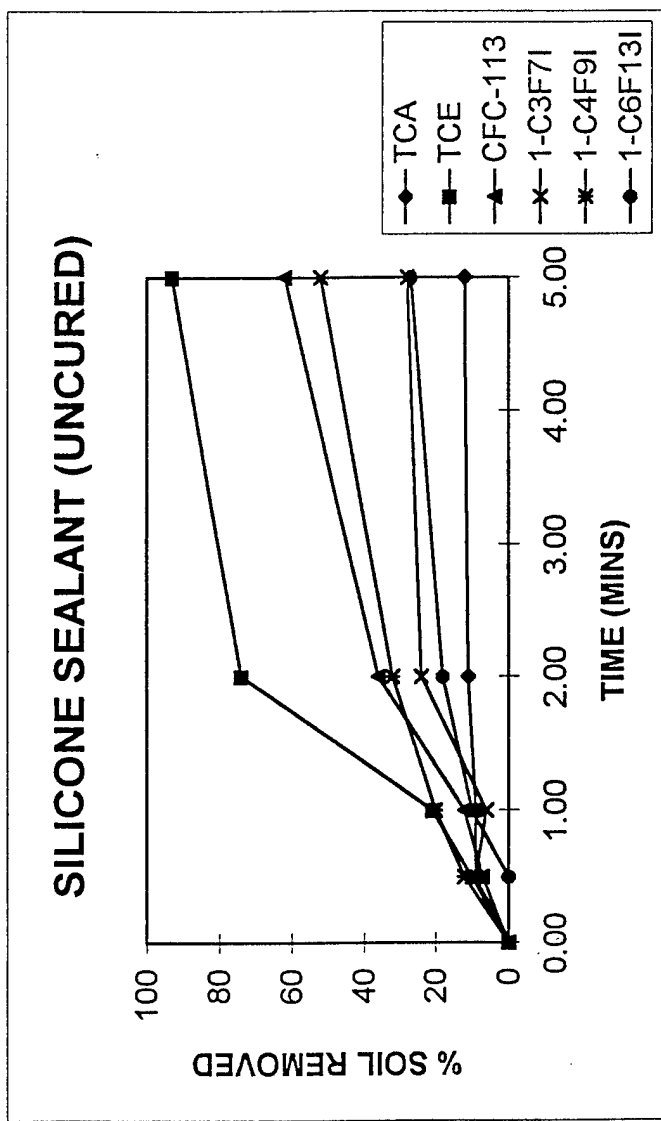
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	98	91	100	100	98	95
1.00	95	98	100	100	98	97
2.00	96	96	100	100	100	99
5.00	97	99	99	100	99	98



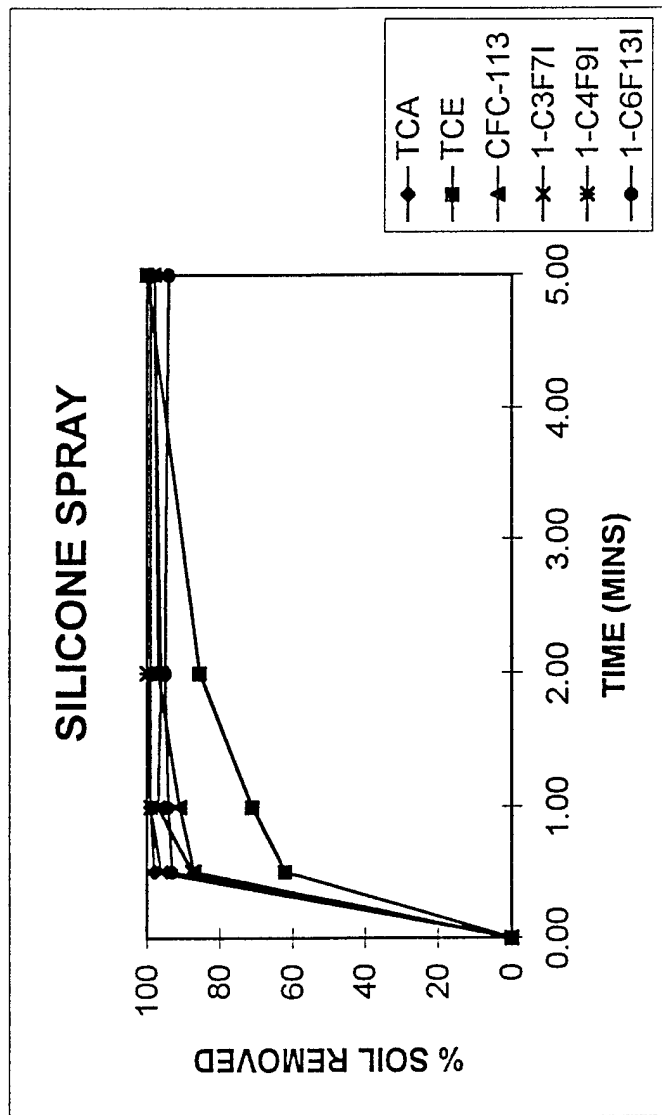
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	4	2.5	46	89	64	70
1.00	11	6	61	92	81	76
2.00	1.5	0	72	97	99	90
5.00	5	0	91	99	99	89



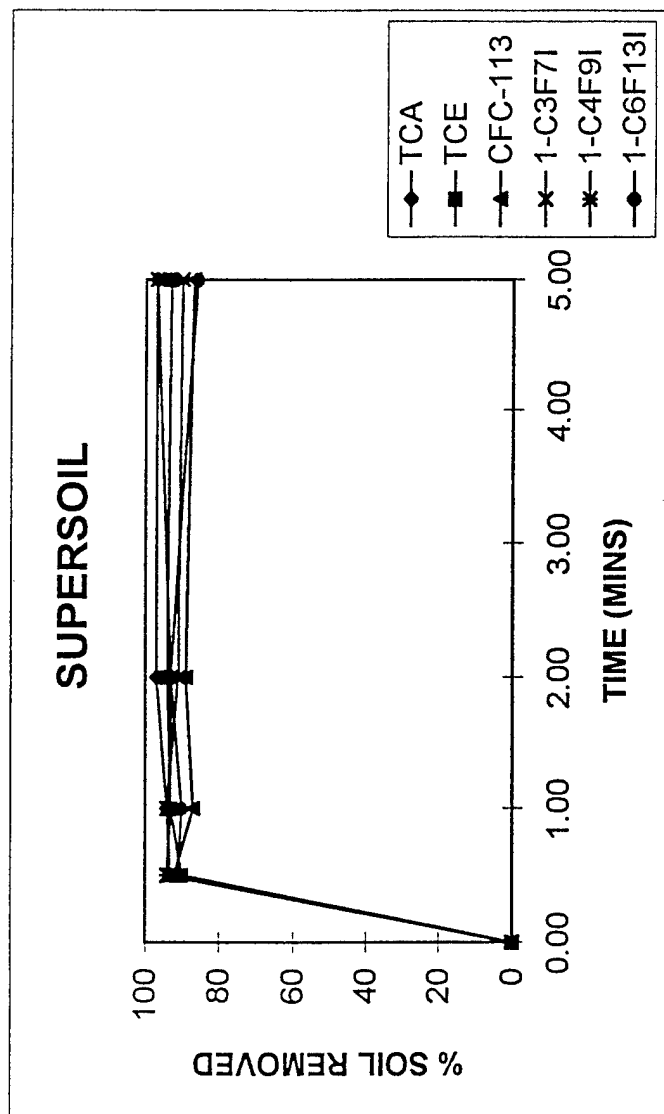
TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	9	10	7	9	12	0
1.00	9	21	12	6	20	10
2.00	11	74	36	24	32	18
5.00	12	93	62	28	52	27



TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	98	62	87	87.5	96	93
1.00	99	71	91	97	99	94
2.00	99	85.5	97	96	100	95
5.00	99	100	98	98	100	94



TIME (MIN)	TCA	TCE	CFC-113	1-C3F7I	1-C4F9I	1-C6F13I
0.00	0	0	0	0	0	0
0.50	93	90	92	93	94	91
1.00	94	93	87	94	93	90
2.00	97	94	89	91	93	93
5.00	97	93	87	90	97	86



APPENDIX C:
AGING DATA ON 1-C₃F₇I

1-C3F7I

<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
33BN082A	7-Jul-94	109	1097453	7023		2.194	0.000	-0.001	0.000	0	0	90	3BN
33BN082A	12-Jul-94	11	1073314	7098		2.180	-0.014	-0.004	-0.003	120	117	90	3BN
33BN082A	15-Jul-94	6	2589386	16649	MAGENTA	2.192	-0.002	-0.001	0.000	192	184	90	3BN
33BN082A	20-Jul-94	5	2565708	18208	SALMON	2.149	-0.045	-0.010	-0.009	312	299	90	3BN
33BN082A	25-Jul-94	26	2463296	22828	PINK	2.033	-0.161	-0.033	-0.032	432	415	90	3BN
33BN082A	5-Aug-94	14	2996443	55051	SALMON	1.736	-0.458	-0.092	-0.091	696	665	90	3BN
33BN082A	17-Aug-94	29	2922101	59946	PINK	1.688	-0.506	-0.101	-0.100	984	946	90	3BN
33BN082A	26-Aug-94	88	2847560	46389	SALMON	1.788	-0.406	-0.081	-0.080	1200	1156	90	3BN
33BN082A	2-Sep-94	36	2853753	54052	SALMON	1.723	-0.471	-0.094	-0.093	1368	1317	90	3BN
33BN082A	21-Sep-94	5	2940767	81679	PEACH	1.556	-0.638	-0.127	-0.126	1824	1720	90	3BN
33BN082A	6-Oct-94	11	2741004	127521	SALMON	1.332	-0.862	-0.172	-0.171	2184	2075	90	3BN
33BN082A	28-Oct-94	19	2951428	100677	LIGHT PINK	1.467	-0.727	-0.145	-0.144	2712	2576	90	3BN
33BN082A	9-Nov-94	90	2954483	121035	SALMON	1.388	-0.806	-0.161	-0.160	3000	2788	90	3BN
33BN082B	7-Jul-94	117	1084754	8145		2.124	0.000	-0.001	0.000	0	0	90	3BN
33BN082B	12-Jul-94	12	1080034	7623		2.151	0.027	0.004	0.005	120	117	90	3BN
33BN082B	15-Jul-94	7	2584180	21609	PEACH	2.078	-0.047	-0.010	-0.009	192	184	90	3BN
33BN082B	20-Jul-94	20	2574895	18682	SALMON	2.139	0.015	0.002	0.003	312	299	90	3BN
33BN082B	25-Jul-94	37	2422965	25568	SALMON	1.977	-0.148	-0.030	-0.029	432	415	90	3BN
33BN082B	5-Aug-94	25	3008450	65180	SALMON	1.664	-0.460	-0.092	-0.091	696	665	90	3BN
33BN082B	17-Aug-94	44	2952912	77471	SALMON	1.581	-0.543	-0.109	-0.108	984	946	90	3BN
33BN082B	26-Aug-94	107	2845792	76475	LIGHT PEACH	1.571	-0.554	-0.111	-0.110	1200	1156	90	3BN
33BN082B	2-Sep-94	51	2849830	89948	SALMON	1.501	-0.624	-0.124	-0.123	1368	1317	90	3BN
33BN082B	21-Sep-94	20	2953502	146588	PEACH	1.304	-0.820	-0.163	-0.162	1824	1720	90	3BN
33BN082B	6-Oct-94	26	2749696	216597	SALMON	1.104	-1.021	-0.203	-0.202	2184	2075	90	3BN
33BN082B	28-Oct-94	35	2943319	173101	LIGHT PEACH	1.231	-0.894	-0.178	-0.177	2712	2576	90	3BN
33BN082B	10-Nov-94	2	2958121	209231	PEACH	1.150	-0.974	-0.194	-0.193	3024	2788	90	3BN
33BN115A	7-Jul-94	137	1081766	4375		2.393	0.000	-0.001	0.000	0	0	120	3BN
33BN115A	13-Jul-94	28	1080999	9691	PEACH	2.047	-0.346	-0.069	-0.068	144	143	120	3BN
33BN115A	18-Jul-94	3	2615590	104317	FAINT YELLOW	1.399	-0.994	-0.198	-0.197	264	253	120	3BN
33BN115A	22-Jul-94	1	2296394	62018	YELLOW	1.569	-0.825	-0.164	-0.163	360	344	120	3BN
33BN115A	28-Jul-94	33	2494682	63641	YELLOW	1.593	-0.800	-0.159	-0.158	504	482	120	3BN
33BN115A	8-Aug-94	1	2904700	133438	YELLOW	1.338	-1.055	-0.210	-0.209	768	731	120	3BN
33BN115A	15-Aug-94	95	2962639	103575	YELLOW	1.456	-0.937	-0.186	-0.185	936	873	120	3BN
33BN115A	19-Aug-94	57	2964326	58995	YELLOW	1.701	-0.692	-0.138	-0.137	1032	941	120	3BN
33BN115A	26-Aug-94	4	2863841	10645	SLIMY ORANGE	2.430	0.037	0.006	0.007	1200	1099	120	3BN
33BN115A	1-Sep-94	3	2883084	2906	ORANGE, SLIME	2.997	0.603	0.118	0.119	1344	1240	120	3BN
33BN115A	19-Sep-94	2	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	1776	1641	120	3BN
33BN115B	7-Jul-94	146	1090345	7381		2.169	0.000	-0.001	0.000	0	0	120	3BN
33BN115B	13-Jul-94	29	1080303	16828	PEACH	1.808	-0.362	-0.073	-0.072	144	143	120	3BN
33BN115B	18-Jul-94	4	2610562	141353	YELLOW	1.266	-0.903	-0.180	-0.179	264	253	120	3BN
33BN115B	22-Jul-94	12	2299891	94744	YELLOW	1.385	-0.784	-0.156	-0.155	360	344	120	3BN
33BN115B	28-Jul-94	43	2509710	89247	YELLOW	1.449	-0.720	-0.144	-0.143	504	482	120	3BN
33BN115B	8-Aug-94	14	2915408	129896	YELLOW	1.351	-0.818	-0.163	-0.162	768	731	120	3BN
33BN115B	16-Aug-94	2	2945054	100038	YELLOW	1.469	-0.701	-0.140	-0.139	960	873	120	3BN
33BN115B	19-Aug-94	70	2941800	51311	YELLOW	1.758	-0.411	-0.082	-0.081	1032	941	120	3BN

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
33BN115B	26-Aug-94	18	2856961	2275	SLIMY ORANGE	3.099	0.929	0.183	0.184	1200	1099	120	3BN
33BN115B	1-Sep-94	15	2881755	1759	CRIMSON	3.214	1.045	0.206	0.207	1344	1240	120	3BN
33BN115B	1-Sep-94	16	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	1344	1240	120	3BN
33BN150A	7-Jul-94	168	1088769	4132		2.421	0.000	-0.001	0.000	0	0	150	3BN
33BN150A	14-Jul-94	72	2641377	15302	ORANGE	2.237	-0.184	-0.037	-0.036	168	165	150	3BN
33BN150A	19-Jul-94	1	2612077	1731	PINK, BROWN LAYER	3.179	0.758	0.149	0.150	288	278	150	3BN
33BN150A	21-Jul-94	17	2557911	1497	DARK ORANGE, SLIME	3.233	0.812	0.160	0.161	336	319	150	3BN
33BN150A	22-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	360	339	150	3BN
33BN150B	7-Jul-94	166	1096431	7484		2.166	0.000	-0.001	0.000	0	0	150	3BN
33BN150B	14-Jul-94	73	2630875	33139	ORANGE	1.900	-0.266	-0.054	-0.053	168	165	150	3BN
33BN150B	19-Jul-94	11	2598393	2283	MAGENTA, DARK BROWN LAYER	3.056	0.890	0.175	0.176	288	278	150	3BN
33BN150B	21-Jul-94	27	2548325	2212	BROWN, SLIME	3.061	0.896	0.176	0.177	336	319	150	3BN
33BN150B	22-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	360	339	150	3BN
3AIR082A	2-Aug-94	1	1474215	54075	PINK	1.436	0.000	-0.001	0.000	0	0	90	AIR
3AIR082A	5-Aug-94	1	3021078	159606	PINK	1.277	-0.158	-0.032	-0.031	72	67	90	AIR
3AIR082A	17-Aug-94	27	2944428	69018	PINK	1.630	0.194	0.038	0.039	360	349	90	AIR
3AIR082A	26-Aug-94	86	2844269	47230	PINK	1.780	0.344	0.067	0.068	576	559	90	AIR
3AIR082A	2-Sep-94	37	2862009	53919	PINK	1.725	0.289	0.056	0.057	744	720	90	AIR
3AIR082A	21-Sep-94	6	2922970	73273	PINK	1.601	0.165	0.032	0.033	1200	1122	90	AIR
3AIR082A	6-Oct-94	12	2731448	89497	SALMON	1.485	0.049	0.009	0.010	1560	1478	90	AIR
3AIR082A	28-Oct-94	20	2953493	73346	LIGHT PINK	1.605	0.169	0.033	0.034	2088	1978	90	AIR
3AIR082A	9-Nov-94	89	2947645	79309	SALMON	1.570	0.135	0.026	0.027	2376	2191	90	AIR
3AIR082B	2-Aug-94	7	1491500	88534	PINK	1.227	0.000	-0.001	0.000	0	0	90	AIR
3AIR082B	5-Aug-94	10	2998236	17676	PURPLE	2.229	1.003	0.198	0.199	72	67	90	AIR
3AIR082B	17-Aug-94	42	2947335	16722	HOT PINK	2.246	1.020	0.201	0.202	360	349	90	AIR
3AIR082B	26-Aug-94	105	2844033	11362	PINK	2.398	1.172	0.231	0.232	576	559	90	AIR
3AIR082B	2-Sep-94	52	2877292	11328	PURPLE	2.405	1.178	0.232	0.233	744	720	90	AIR
3AIR082B	21-Sep-94	21	2925581	10215	PURPLE	2.457	1.230	0.243	0.244	1200	1122	90	AIR
3AIR082B	6-Oct-94	27	2750433	11596	DARK PINK	2.375	1.149	0.226	0.227	1560	1478	90	AIR
3AIR082B	28-Oct-94	36	2963312	8611	HOT PINK	2.537	1.310	0.258	0.259	2088	1978	90	AIR
3AIR082B	10-Nov-94	1	2973883	9249	PINK	2.507	1.281	0.253	0.254	2400	2191	90	AIR
3AIR115B	2-Aug-94	63	1474466	67211	PINK	1.341	0.000	-0.001	0.000	0	0	120	AIR
3AIR115B	8-Aug-94	15	2884430	101203	SALMON	1.455	0.114	0.022	0.023	144	142	120	AIR
3AIR115B	16-Aug-94	3	2962182	121101	PINK	1.388	0.047	0.008	0.009	336	283	120	AIR
3AIR115B	19-Aug-94	68	2945851	109531	PINK	1.430	0.088	0.017	0.018	408	351	120	AIR
3AIR115B	26-Aug-94	16	2872906	58329	SALMON	1.692	0.351	0.069	0.070	576	509	120	AIR
3AIR115B	1-Sep-94	18	2892601	67302	PINK	1.633	0.292	0.057	0.058	720	650	120	AIR
3AIR115B	19-Sep-94	15	2950667	72971	SALMON	1.607	0.266	0.052	0.053	1152	1051	120	AIR
3AIR115B	30-Sep-94	27	2631681	54162	SALMON	1.687	0.345	0.067	0.068	1416	1313	120	AIR
3AIR115B	28-Oct-94	37	2941666	62938	SALMON	1.670	0.328	0.064	0.065	2088	1979	120	AIR
3AIR115B	10-Nov-94	81	2962431	52578	SALMON	1.751	0.410	0.080	0.081	2400	2263	120	AIR
3AIR150A	2-Aug-94	71	1480144	69047	PINK	1.331	0.000	-0.001	0.000	0	0	150	AIR
3AIR150A	5-Aug-94	157	2963445	85420	PINK	1.540	0.209	0.040	0.041	72	67	150	AIR
3AIR150A	15-Aug-94	20	2933095	36420	SALMON	1.906	0.575	0.113	0.114	312	293	150	AIR
3AIR150A	19-Aug-94	12	2963961	27817	PINK	2.028	0.696	0.137	0.138	408	385	150	AIR

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3AIR150A	25-Aug-94	36	2963406	20193	SALMON	2.167	0.835	0.164	0.165	552	525	150	AIR
3AIR150A	31-Aug-94	35	2899928	13757	SALMON	2.324	0.993	0.196	0.197	696	667	150	AIR
3AIR150A	16-Sep-94	1	2976539	9752	PINK	2.485	1.153	0.227	0.228	1080	1048	150	AIR
3AIR150A	28-Sep-94	1	2583142	7291	DARK PINK	2.549	1.218	0.240	0.241	1368	1332	150	AIR
3AIR150A	27-Oct-94	35	3023469	5192	SALMON	2.765	1.434	0.283	0.284	2064	2024	150	AIR
3AIR150A	9-Nov-94	35	2959642	4787	SALMON	2.791	1.460	0.288	0.289	2376	2331	150	AIR
3AIR150B	2-Aug-94	76	1484539	70749	PINK	1.322	0.000	-0.001	0.000	0	0	150	AIR
3AIR150B	5-Aug-94	144	2990269	59287	PINK	1.703	0.381	0.074	0.075	72	67	150	AIR
3AIR150B	15-Aug-94	30	2938951	37517	SALMON	1.894	0.572	0.112	0.113	312	293	150	AIR
3AIR150B	19-Aug-94	3	2972201	26444	SALMON	2.051	0.729	0.143	0.144	408	385	150	AIR
3AIR150B	25-Aug-94	46	2962535	15286	SALMON	2.287	0.965	0.190	0.191	552	525	150	AIR
3AIR150B	31-Aug-94	44	2887623	10331	SALMON	2.446	1.125	0.222	0.223	696	667	150	AIR
3AIR150B	16-Sep-94	28	2953491	9017	SALMON	2.515	1.193	0.235	0.236	1080	1048	150	AIR
3AIR150B	28-Sep-94	11	2574646	6591	DARK PINK	2.592	1.270	0.250	0.251	1368	1332	150	AIR
3AIR150B	27-Oct-94	58	3010052	5552	DARK PINK	2.734	1.412	0.279	0.280	2064	2024	150	AIR
3AIR150B	9-Nov-94	60	2980974	5765	DARK PINK	2.714	1.392	0.275	0.276	2376	2331	150	AIR
3A_W082A	2-Aug-94	2	1489626	75524	PINK	1.295	0.000	-0.001	0.000	0	0	90	A_W
3A_W082A	5-Aug-94	5	2996012	190756	PINK	1.196	-0.099	-0.021	-0.020	72	67	90	A_W
3A_W082A	17-Aug-94	28	2939056	189311	PINK	1.191	-0.104	-0.022	-0.021	360	349	90	A_W
3A_W082A	26-Aug-94	87	2847731	139598	LIGHT PINK	1.310	0.015	0.002	0.003	576	559	90	A_W
3A_W082A	2-Sep-94	38	2847581	164906	LIGHT PINK	1.237	-0.058	-0.012	-0.011	744	720	90	A_W
3A_W082A	21-Sep-94	7	2934761	197826	LIGHT PEACH	1.171	-0.124	-0.025	-0.024	1200	1122	90	A_W
3A_W082A	6-Oct-94	13	2732480	249980	LIGHT PINK	1.039	-0.256	-0.052	-0.051	1560	1478	90	A_W
3A_W082A	28-Oct-94	21	2938370	191681	LIGHT PEACH	1.186	-0.109	-0.023	-0.022	2088	1978	90	A_W
3A_W082A	9-Nov-94	91	2938026	215683	PEACH	1.134	-0.161	-0.033	-0.032	2376	2191	90	A_W
3A_W082B	2-Aug-94	8	1494633	40466	PINK	1.567	0.000	-0.001	0.000	0	0	90	A_W
3A_W082B	5-Aug-94	11	3011392	35148	PINK	1.933	0.365	0.071	0.072	72	67	90	A_W
3A_W082B	17-Aug-94	43	2938566	41705	SALMON	1.848	0.281	0.055	0.056	360	349	90	A_W
3A_W082B	26-Aug-94	106	2866226	35852	LIGHT PINK	1.903	0.335	0.065	0.066	576	559	90	A_W
3A_W082B	2-Sep-94	53	2869744	40892	SALMON	1.846	0.279	0.054	0.055	744	720	90	A_W
3A_W082B	21-Sep-94	22	2948398	54318	PEACH	1.735	0.167	0.032	0.033	1200	1122	90	A_W
3A_W082B	6-Oct-94	28	2735980	74158	SALMON	1.567	0.000	-0.001	0.000	1560	1478	90	A_W
3A_W082B	28-Oct-94	37	2938777	56265	LIGHT PINK	1.718	0.150	0.029	0.030	2088	1978	90	A_W
3A_W082B	10-Nov-94	3	2962347	63581	SALMON	1.668	0.101	0.019	0.020	2400	2191	90	A_W
3A_W115A	2-Aug-94	58	1473629	37730	PINK	1.592	0.000	-0.001	0.000	0	0	120	A_W
3A_W115A	8-Aug-94	5	2908731	1963	OPAQUE PURPLE	3.171	1.579	0.312	0.313	144	142	120	A_W
3A_W115A	16-Aug-94	16	2984480	2547	PURPLE	3.069	1.477	0.291	0.292	336	283	120	A_W
3A_W115A	19-Aug-94	56	2935285	2466	PURPLE	3.076	1.484	0.293	0.294	408	351	120	A_W
3A_W115A	26-Aug-94	3	2871030	2833	PURPLE	3.006	1.414	0.279	0.280	576	509	120	A_W
3A_W115A	1-Sep-94	4	2882449	2824	NEON PURPLE	3.009	1.417	0.280	0.281	720	650	120	A_W
3A_W115A	19-Sep-94	4	2934916	3105	PURPLE	2.976	1.384	0.273	0.274	1152	1051	120	A_W
3A_W115A	30-Sep-94	15	2648184	2771	NEON PURPLE	2.980	1.389	0.274	0.275	1416	1313	120	A_W
3A_W115A	28-Oct-94	2	2990937	5206	NEON PURPLE	2.759	1.168	0.230	0.231	2088	1979	120	A_W
3A_W115A	10-Nov-94	74	2949237	5835	PINK	2.704	1.112	0.219	0.220	2400	2263	120	A_W
3A_W115B	2-Aug-94	64	1477877	43246	PINK	1.534	0.000	-0.001	0.000	0	0	120	A_W

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3A_W115B	8-Aug-94	16	2899694	108618	LIGHT PINK	1.426	-0.107	-0.022	-0.021	144	142	120	A_W
3A_W115B	16-Aug-94	11	2961417	148566	PEACH	1.300	-0.234	-0.047	-0.046	336	283	120	A_W
3A_W115B	19-Aug-94	69	2938764	142484	LIGHT BEIGE	1.314	-0.219	-0.044	-0.043	408	351	120	A_W
3A_W115B	26-Aug-94	17	2873685	94846	LIGHT YELLOW TINGE	1.481	-0.052	-0.011	-0.010	576	509	120	A_W
3A_W115B	1-Sep-94	19	2902335	104707	YELLOW TINGE	1.443	-0.091	-0.019	-0.018	720	650	120	A_W
3A_W115B	19-Sep-94	16	2965471	133665	BEIGE	1.346	-0.188	-0.038	-0.037	1152	1051	120	A_W
3A_W115B	30-Sep-94	28	2624142	113479	BEIGE	1.364	-0.170	-0.035	-0.034	1416	1313	120	A_W
3A_W115B	28-Oct-94	38	2938387	132949	OFF WATER WHITE	1.344	-0.189	-0.038	-0.037	2088	1979	120	A_W
3A_W115B	10-Nov-94	82	2946259	147444	LIGHT YELLOW	1.301	-0.233	-0.047	-0.046	2400	2263	120	A_W
3B_3082A	29-Jun-94	39	586691	4452		2.120	0.000	-0.001	0.000	0	0	90	B_3
3B_3082A	12-Jul-94	13	1075663	13525		1.901	-0.219	-0.044	-0.043	312	309	90	B_3
3B_3082A	15-Jul-94	8	2591647	28015	MAGENTA	1.966	-0.154	-0.031	-0.030	384	376	90	B_3
3B_3082A	20-Jul-94	6	2573904	22893	LIGHT PURPLE	2.051	-0.069	-0.015	-0.014	504	491	90	B_3
3B_3082A	25-Jul-94	27	2448535	30508	PURPLE	1.904	-0.215	-0.044	-0.043	624	607	90	B_3
3B_3082A	5-Aug-94	15	3007999	60764	PINK	1.695	-0.425	-0.085	-0.084	888	857	90	B_3
3B_3082A	17-Aug-94	30	2935134	58289	PINK	1.702	-0.418	-0.084	-0.083	1176	1138	90	B_3
3B_3082A	26-Aug-94	89	2842104	39244	PINK	1.860	-0.260	-0.052	-0.051	1392	1348	90	B_3
3B_3082A	2-Sep-94	39	2842679	41727	PINK	1.833	-0.387	-0.058	-0.057	1560	1509	90	B_3
3B_3082A	21-Sep-94	8	2919212	53490	PINK	1.737	-0.383	-0.077	-0.076	2016	1912	90	B_3
3B_3082A	6-Oct-94	14	2744739	74021	PINK	1.569	-0.551	-0.110	-0.109	2376	2267	90	B_3
3B_3082A	28-Oct-94	22	2940113	47170	PINK	1.795	-0.325	-0.065	-0.064	2904	2768	90	B_3
3B_3082A	9-Nov-94	92	2951108	53979	PINK	1.738	-0.382	-0.077	-0.076	3192	2980	90	B_3
3B_3082B	29-Jun-94	11	602800	2327		2.413	0.000	-0.001	0.000	0	0	90	B_3
3B_3082B	12-Jul-94	14	1082541	8155	MAGENTA	2.123	-0.290	-0.058	-0.057	312	309	90	B_3
3B_3082B	15-Jul-94	9	2590555	13031	PURPLE	2.298	-0.115	-0.024	-0.023	384	376	90	B_3
3B_3082B	20-Jul-94	18	2580485	16688	PURPLE	2.189	-0.224	-0.045	-0.044	504	491	90	B_3
3B_3082B	25-Jul-94	38	2407689	15988	PURPLE	2.178	-0.236	-0.048	-0.047	624	607	90	B_3
3B_3082B	5-Aug-94	26	3000043	32391	PURPLE	1.967	-0.447	-0.089	-0.088	888	857	90	B_3
3B_3082B	17-Aug-94	45	2946214	35429	PINK	1.920	-0.493	-0.099	-0.098	1176	1138	90	B_3
3B_3082B	26-Aug-94	108	2861427	20802	PINK	2.138	-0.275	-0.055	-0.054	1392	1348	90	B_3
3B_3082B	2-Sep-94	54	2872357	25341	PINK	2.054	-0.359	-0.072	-0.071	1560	1509	90	B_3
3B_3082B	21-Sep-94	23	2913829	30282	PINK	1.983	-0.430	-0.086	-0.085	2016	1912	90	B_3
3B_3082B	6-Oct-94	29	2758460	44144	PINK	1.796	-0.618	-0.123	-0.122	2376	2267	90	B_3
3B_3082B	28-Oct-94	38	2943177	29655	PINK	1.997	-0.417	-0.083	-0.082	2904	2768	90	B_3
3B_3082B	10-Nov-94	10	2975060	30572	PINK	1.988	-0.425	-0.085	-0.084	3216	2980	90	B_3
3B_3115A	29-Jun-94	1	602592	7414		1.910	0.000	-0.001	0.000	0	0	120	B_3
3B_3115A	13-Jul-94	30	1087540	16457	MAGENTA	1.820	-0.090	-0.019	-0.018	336	335	120	B_3
3B_3115A	18-Jul-94	5	2618476	42071	MAGENTA	1.794	-0.116	-0.024	-0.023	456	445	120	B_3
3B_3115A	22-Jul-94	2	2301580	51083	PINK	1.654	-0.256	-0.052	-0.051	552	536	120	B_3
3B_3115A	28-Jul-94	34	2512834	36468	PINK	1.838	-0.072	-0.015	-0.014	696	674	120	B_3
3B_3115A	8-Aug-94	3	2906806	142667	PINK	1.309	-0.601	-0.120	-0.119	960	923	120	B_3
3B_3115A	15-Aug-94	94	2950315	123351	PINK	1.379	-0.531	-0.106	-0.105	1128	1065	120	B_3
3B_3115A	19-Aug-94	58	2949099	153561	PINK	1.283	-0.627	-0.125	-0.124	1224	1133	120	B_3
3B_3115A	26-Aug-94	5	2889000	96628	LIGHT PINK	1.476	-0.434	-0.087	-0.086	1392	1291	120	B_3
3B_3115A	1-Sep-94	5	2902223	101717	PINK	1.455	-0.455	-0.091	-0.090	1536	1432	120	B_3

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3B_3115A	19-Sep-94	5	2967870	118000	PINK	1.401	-0.509	-0.102	-0.101	1968	1833	120	B_3
3B_3115A	30-Sep-94	16	2629995	83829	PINK	1.497	-0.413	-0.083	-0.082	2232	2095	120	B_3
3B_3115A	28-Oct-94	3	2973519	121264	PINK	1.390	-0.520	-0.104	-0.103	2904	2761	120	B_3
3B_3115A	10-Nov-94	88	2940947	94760	PINK	1.492	-0.418	-0.084	-0.083	3216	3045	120	B_3
3B_3115B	30-Jun-94	6	591829	4881		2.084	0.000	-0.001	0.000	0	0	120	B_3
3B_3115B	13-Jul-94	31	1088419	12320	MAGENTA	1.946	-0.138	-0.028	-0.027	312	311	120	B_3
3B_3115B	18-Jul-94	6	2584887	26877	MAGENTA	1.983	-0.101	-0.021	-0.020	432	421	120	B_3
3B_3115B	22-Jul-94	13	2303349	30883	PINK	1.873	-0.211	-0.043	-0.042	528	512	120	B_3
3B_3115B	28-Jul-94	44	2486424	30783	PINK	1.907	-0.176	-0.036	-0.035	672	650	120	B_3
3B_3115B	8-Aug-94	17	2915170	57348	PINK	1.706	-0.378	-0.076	-0.075	936	899	120	B_3
3B_3115B	16-Aug-94	4	2943771	100736	PINK	1.466	-0.618	-0.123	-0.122	1128	1041	120	B_3
3B_3115B	19-Aug-94	71	2947146	109721	PINK	1.429	-0.655	-0.131	-0.130	1200	1109	120	B_3
3B_3115B	26-Aug-94	19	2875799	45039	PINK	1.805	-0.279	-0.056	-0.055	1368	1267	120	B_3
3B_3115B	1-Sep-94	17	2908066	55403	PINK	1.720	-0.364	-0.073	-0.072	1512	1408	120	B_3
3B_3115B	19-Sep-94	17	2954713	54241	PINK	1.736	-0.347	-0.070	-0.069	1944	1809	120	B_3
3B_3115B	30-Sep-94	29	2646609	42788	PINK	1.791	-0.292	-0.059	-0.058	2208	2071	120	B_3
3B_3115B	28-Oct-94	39	2968912	60580	PINK	1.690	-0.393	-0.079	-0.078	2880	2737	120	B_3
3B_3115B	10-Nov-94	83	2962621	56969	SALMON	1.716	-0.368	-0.074	-0.073	3192	3021	120	B_3
3B_3150A	30-Jun-94	9	593949	6790		1.942	0.000	-0.001	0.000	0	0	150	B_3
3B_3150A	14-Jul-94	74	2649748	15654	MAGENTA	2.229	0.287	0.056	0.057	336	333	150	B_3
3B_3150A	19-Jul-94	2	2606354	5587	MAGENTA	2.669	0.727	0.143	0.144	456	446	150	B_3
3B_3150A	21-Jul-94	18	2549356	5302	PURPLE	2.682	0.740	0.146	0.147	504	487	150	B_3
3B_3150A	25-Jul-94	72	2379829	3123	PURPLE	2.882	0.940	0.185	0.186	600	579	150	B_3
3B_3150A	5-Aug-94	158	2979139	3288	MAGENTA	2.957	1.015	0.200	0.201	864	833	150	B_3
3B_3150A	15-Aug-94	21	2956817	2175	MAGENTA	3.133	1.191	0.235	0.236	1104	1059	150	B_3
3B_3150A	19-Aug-94	13	2955588	2521	MAGENTA, SOME SLIME	3.069	1.127	0.222	0.223	1200	1150	150	B_3
3B_3150A	25-Aug-94	39	2993899	2524	MAGENTA	3.074	1.132	0.223	0.224	1344	1291	150	B_3
3B_3150A	31-Aug-94	36	2871828	2797	DARK MAGENTA	3.011	1.070	0.211	0.212	1488	1432	150	B_3
3B_3150A	16-Sep-94	2	2961113	2016	MAGENTA	3.167	1.225	0.242	0.243	1872	1814	150	B_3
3B_3150A	28-Sep-94	2	2590525	1654	DARK PURPLE	3.195	1.253	0.247	0.248	2160	2097	150	B_3
3B_3150A	28-Sep-94	3	0	0	DECOMPOSED	0.000	0.000	-0.001		2160	2097	150	B_3
3B_3150B	29-Jun-94	5	602898	4094		2.168	0.000	-0.001	0.000	0	0	150	B_3
3B_3150B	14-Jul-94	75	2657940	28553	MAGENTA	1.969	-0.199	-0.040	-0.039	360	357	150	B_3
3B_3150B	19-Jul-94	12	2634319	3017	MAGENTA	2.941	0.773	0.152	0.153	480	470	150	B_3
3B_3150B	21-Jul-94	28	2568093	3089	MAGENTA	2.920	0.752	0.148	0.149	528	511	150	B_3
3B_3150B	25-Jul-94	80	2365091	2403	MAGENTA	2.993	0.825	0.162	0.163	624	603	150	B_3
3B_3150B	5-Aug-94	145	2996131	2852	MAGENTA	3.021	0.853	0.168	0.169	888	857	150	B_3
3B_3150B	15-Aug-94	31	2965042	2209	MAGENTA	3.128	0.960	0.189	0.190	1128	1083	150	B_3
3B_3150B	19-Aug-94	4	2967086	2294	MAGENTA, SOME SLIME	3.112	0.944	0.186	0.187	1224	1174	150	B_3
3B_3150B	25-Aug-94	47	2990173	2301	MAGENTA	3.114	0.946	0.186	0.187	1368	1315	150	B_3
3B_3150B	31-Aug-94	45	2880267	2491	DARK MAGENTA	3.063	0.895	0.176	0.177	1512	1456	150	B_3
3B_3150B	16-Sep-94	29	2943292	1933	MAGENTA	3.183	1.015	0.200	0.201	1896	1838	150	B_3
3B_3150B	16-Sep-94	30	0	0	DECOMPOSED	0.000	0.000	-0.001		1896	1838	150	B_3
3B_4082A	7-Jul-94	108	1094374	6264		2.242	0.000	-0.001	0.000	0	0	90	B_4
3B_4082A	12-Jul-94	7	1068232	32887		1.512	-0.731	-0.146	-0.145	120	117	90	B_4

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3B_4082A	15-Jul-94	10	2599893	84966	PEACH	1.486	-0.757	-0.151	-0.150	192	184	90	B_4
3B_4082A	20-Jul-94	7	2562984	76116	PEACH	1.527	-0.715	-0.143	-0.142	312	299	90	B_4
3B_4082A	25-Jul-94	28	2440250	74052	PEACH	1.518	-0.724	-0.144	-0.143	432	415	90	B_4
3B_4082A	5-Aug-94	16	3000431	219849	PEACH	1.135	-1.107	-0.220	-0.219	696	665	90	B_4
3B_4082A	17-Aug-94	31	2959341	234923	PEACH	1.100	-1.142	-0.227	-0.226	984	946	90	B_4
3B_4082A	26-Aug-94	90	2853397	119672	YELLOW	1.377	-0.865	-0.172	-0.171	1200	1156	90	B_4
3B_4082A	2-Sep-94	40	2868043	185135	LIGHT PEACH	1.190	-1.052	-0.209	-0.208	1368	1317	90	B_4
3B_4082A	21-Sep-94	9	2947101	243863	YELLOW	1.082	-1.160	-0.231	-0.230	1824	1720	90	B_4
3B_4082A	6-Oct-94	15	2738396	290353	BEIGE	0.975	-1.268	-0.252	-0.251	2184	2075	90	B_4
3B_4082A	28-Oct-94	23	2960891	183069	LIGHT YELLOW	1.209	-1.034	-0.206	-0.205	2712	2576	90	B_4
3B_4082A	9-Nov-94	93	2958521	203264	LIGHT YELLOW	1.163	-1.079	-0.215	-0.214	3000	2788	90	B_4
3B_4082B	1-Jul-94	97	599161	5798		2.014	0.000	-0.001	0.000	0	0	90	B_4
3B_4082B	12-Jul-94	8	1076150	37158		1.462	-0.552	-0.110	-0.109	264	261	90	B_4
3B_4082B	15-Jul-94	11	2590284	83326	PEACH	1.493	-0.522	-0.104	-0.103	336	328	90	B_4
3B_4082B	20-Jul-94	19	2554462	87176	PEACH	1.467	-0.547	-0.109	-0.108	456	443	90	B_4
3B_4082B	25-Jul-94	40	2392614	118567	PEACH	1.305	-0.709	-0.141	-0.140	576	559	90	B_4
3B_4082B	5-Aug-94	27	3005408	246688	PEACH	1.086	-0.929	-0.185	-0.184	840	809	90	B_4
3B_4082B	17-Aug-94	46	2937358	270959	PEACH	1.035	-0.979	-0.195	-0.194	1128	1090	90	B_4
3B_4082B	26-Aug-94	109	2866402	186802	LIGHT YELLOW	1.186	-0.828	-0.165	-0.164	1344	1300	90	B_4
3B_4082B	2-Sep-94	55	2858566	192690	PEACH	1.171	-0.843	-0.168	-0.167	1512	1461	90	B_4
3B_4082B	21-Sep-94	24	2941545	232803	YELLOW	1.102	-0.913	-0.182	-0.181	1968	1864	90	B_4
3B_4082B	6-Oct-94	30	2738004	286190	BEIGE	0.981	-1.033	-0.206	-0.205	2328	2219	90	B_4
3B_4082B	28-Oct-94	39	2954988	209136	LIGHT YELLOW	1.150	-0.864	-0.172	-0.171	2856	2720	90	B_4
3B_4082B	10-Nov-94	4	2948747	250765	YELLOW	1.070	-0.944	-0.188	-0.187	3168	2932	90	B_4
3B_4115A	1-Jul-94	91	599764	4986		2.080	0.000	-0.001	0.000	0	0	120	B_4
3B_4115A	13-Jul-94	32	1080022	40814	YELLOW	1.423	-0.658	-0.131	-0.130	288	287	120	B_4
3B_4115A	18-Jul-94	7	2603605	71679	PEACH	1.560	-0.520	-0.104	-0.103	408	397	120	B_4
3B_4115A	22-Jul-94	3	2307038	44186	SALMON	1.718	-0.362	-0.073	-0.072	504	488	120	B_4
3B_4115A	28-Jul-94	35	2513934	28805	ORANGE	1.941	-0.139	-0.029	-0.028	648	626	120	B_4
3B_4115A	8-Aug-94	6	2900141	42188	SALMON	1.837	-0.243	-0.049	-0.048	912	875	120	B_4
3B_4115A	15-Aug-94	96	2955614	51973	ORANGE	1.755	-0.325	-0.065	-0.064	1080	1017	120	B_4
3B_4115A	19-Aug-94	59	2942457	41503	ORANGE	1.851	-0.230	-0.046	-0.045	1176	1085	120	B_4
3B_4115A	26-Aug-94	7	2881739	17136	SALMON	2.226	0.146	0.028	0.029	1344	1243	120	B_4
3B_4115A	1-Sep-94	6	2882038	17401	SALMON	2.219	0.139	0.027	0.028	1488	1384	120	B_4
3B_4115A	19-Sep-94	6	2941053	10336	DARK SALMON	2.454	0.374	0.073	0.074	1920	1785	120	B_4
3B_4115A	30-Sep-94	17	2640785	6326	RED-ORANGE	2.621	0.540	0.106	0.107	2184	2047	120	B_4
3B_4115A	28-Oct-94	4	2998532	4814	DARK PINK	2.794	0.714	0.140	0.141	2856	2713	120	B_4
3B_4115A	10-Nov-94	89	2934468	4150	ORANGE	2.849	0.769	0.151	0.152	3168	2997	120	B_4
3B_4115B	7-Jul-94	151	1099065	3333		2.518	0.000	-0.001	0.000	0	0	120	B_4
3B_4115B	13-Jul-94	33	1079497	19428	YELLOW	1.745	-0.773	-0.154	-0.153	144	143	120	B_4
3B_4115B	18-Jul-94	8	2601013	30932	PEACH	1.925	-0.593	-0.119	-0.118	264	253	120	B_4
3B_4115B	22-Jul-94	14	2294753	23965	SALMON	1.981	-0.537	-0.107	-0.106	360	344	120	B_4
3B_4115B	28-Jul-94	45	2516262	12174	ORANGE	2.315	-0.203	-0.041	-0.040	504	482	120	B_4
3B_4115B	28-Jul-94	46	2505746	18080	ORANGE, REPOSITIONED	2.142	-0.376	-0.076	-0.075	504	482	120	B_4
3B_4115B	8-Aug-94	18	2884552	16524	SALMON	2.242	-0.276	-0.056	-0.055	768	731	120	B_4

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3B_4115B	16-Aug-94	5	2963532	21327	ORANGE	2.143	-0.375	-0.075	-0.074	960	873	120	B_4
3B_4115B	19-Aug-94	72	2956206	12779	ORANGE	2.364	-0.154	-0.031	-0.030	1032	941	120	B_4
3B_4115B	26-Aug-94	20	2858848	4286	DARK ORANGE	2.824	0.306	0.060	0.061	1200	1099	120	B_4
3B_4115B	1-Sep-94	20	2908550	4178	SALMON	2.843	0.325	0.063	0.064	1344	1240	120	B_4
3B_4115B	19-Sep-94	18	2965588	3410	DARK SALMON	2.939	0.421	0.082	0.083	1776	1641	120	B_4
3B_4115B	30-Sep-94	30	2633421	2045	RED	3.110	0.592	0.116	0.117	2040	1903	120	B_4
3B_4115B	28-Oct-94	40	2945099	1613	RED	3.261	0.743	0.146	0.147	2712	2569	120	B_4
3B_4115B	28-Oct-94	41	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	2712	2569	120	B_4
3B_4150A	11-Jul-94	4	1048120	4503		2.367	0.000	-0.001	0.000	0	0	150	B_4
3B_4150A	14-Jul-94	76	2655527	10618	DARK ORANGE	2.398	0.031	0.005	0.006	72	69	150	B_4
3B_4150A	19-Jul-94	3	2613792	3220	DARK ORANGE	2.909	0.543	0.106	0.107	192	182	150	B_4
3B_4150A	21-Jul-94	19	2544244	2939	RED	2.937	0.570	0.112	0.113	240	223	150	B_4
3B_4150A	25-Jul-94	73	2378134	2297	MAGENTA	3.015	0.648	0.127	0.128	336	315	150	B_4
3B_4150A	5-Aug-94	159	2957300	2111	DARK MAGENTA	3.146	0.779	0.153	0.154	600	569	150	B_4
3B_4150A	5-Aug-94	160	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	600	569	150	B_4
3B_4150B	1-Jul-94	92	599761	4677		2.108	0.000	-0.001	0.000	0	0	150	B_4
3B_4150B	14-Jul-94	77	2654214	16047	DARK ORANGE	2.219	0.111	0.021	0.022	312	309	150	B_4
3B_4150B	19-Jul-94	13	2618848	2365	DARK ORANGE	3.044	0.936	0.184	0.185	432	422	150	B_4
3B_4150B	21-Jul-94	29	2541265	3055	RED	2.920	0.912	0.160	0.161	480	463	150	B_4
3B_4150B	25-Jul-94	81	2322205	2119	MAGENTA	3.040	0.932	0.183	0.184	576	555	150	B_4
3B_4150B	5-Aug-94	146	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	840	809	150	B_4
3B_N082A	1-Jul-94	90	598242	14636		1.611	0.000	-0.001	0.000	0	0	90	B_N
3B_N082A	12-Jul-94	17	1078941	38629	PINK	1.446	-0.165	-0.034	-0.033	264	261	90	B_N
3B_N082A	15-Jul-94	12	2572749	88601	PINK	1.463	-0.148	-0.030	-0.029	336	328	90	B_N
3B_N082A	20-Jul-94	8	2559962	88339	PINK	1.462	-0.149	-0.031	-0.030	456	443	90	B_N
3B_N082A	25-Jul-94	30	2425244	88044	PINK	1.440	-0.171	-0.035	-0.034	576	559	90	B_N
3B_N082A	5-Aug-94	18	2981280	275796	PINK	1.034	-0.578	-0.115	-0.114	840	809	90	B_N
3B_N082A	17-Aug-94	32	2928884	315274	V LIGHT PINK TINGE	0.968	-0.643	-0.128	-0.127	1128	1090	90	B_N
3B_N082A	26-Aug-94	91	2874274	183289	WATER WHITE	1.195	-0.416	-0.083	-0.082	1344	1300	90	B_N
3B_N082A	2-Sep-94	41	2869843	239990	WATER WHITE	1.078	-0.534	-0.107	-0.106	1512	1461	90	B_N
3B_N082A	21-Sep-94	10	2931698	301068	WATER WHITE	0.988	-0.623	-0.124	-0.123	1968	1864	90	B_N
3B_N082A	6-Oct-94	16	2745503	366158	WATER WHITE	0.875	-0.737	-0.147	-0.146	2328	2219	90	B_N
3B_N082A	28-Oct-94	24	2932349	258296	WATER WHITE	1.055	-0.556	-0.111	-0.110	2856	2720	90	B_N
3B_N082A	9-Nov-94	94	2936376	288021	WATER WHITE	1.008	-0.603	-0.120	-0.119	3144	2932	90	B_N
3B_N082B	1-Jul-94	95	599291	14219		1.625	0.000	-0.001	0.000	0	0	90	B_N
3B_N082B	12-Jul-94	18	1071017	35097		1.485	-0.140	-0.029	-0.028	264	261	90	B_N
3B_N082B	15-Jul-94	13	2589987	84811	PINK	1.485	-0.140	-0.029	-0.028	336	328	90	B_N
3B_N082B	20-Jul-94	17	2561634	87106	PINK	1.468	-0.156	-0.032	-0.031	456	443	90	B_N
3B_N082B	25-Jul-94	41	2402571	97267	PINK	1.393	-0.232	-0.047	-0.046	576	559	90	B_N
3B_N082B	5-Aug-94	29	2955227	219875	LIGHT PINK	1.134	-0.491	-0.098	-0.097	840	809	90	B_N
3B_N082B	17-Aug-94	47	2932377	265239	V LIGHT PINK TINGE	1.044	-0.581	-0.116	-0.115	1128	1090	90	B_N
3B_N082B	26-Aug-94	112	2847007	198116	WATER WHITE	1.157	-0.467	-0.094	-0.093	1344	1300	90	B_N
3B_N082B	2-Sep-94	56	2849240	207132	WATER WHITE	1.138	-0.486	-0.097	-0.096	1512	1461	90	B_N
3B_N082B	21-Sep-94	25	2946204	218804	LIGHT PEACH	1.129	-0.496	-0.099	-0.098	1968	1864	90	B_N
3B_N082B	6-Oct-94	31	2757163	322500	WATER WHITE	0.932	-0.693	-0.138	-0.137	2328	2219	90	B_N

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3B_N082B	28-Oct-94	40	2945666	216260	OFF WATER WHITE	1.134	-0.491	-0.098	-0.097	2856	2720	90	B_N
3B_N082B	10-Nov-94	5	2965149	260138	OFF WATER WHITE	1.057	-0.568	-0.113	-0.112	3168	2932	90	B_N
3B_N082B	10-Nov-94	6	2958108	250036	REDO	1.073	-0.552	-0.110	-0.109	3168	2932	90	B_N
3B_N115A	1-Jul-94	93	599083	9599		1.795	0.000	-0.001	0.000	0	0	120	B_N
3B_N115A	13-Jul-94	34	1089608	32498	PINK	1.525	-0.270	-0.054	-0.053	288	287	120	B_N
3B_N115A	18-Jul-94	9	2588764	90089	PINK TINGE	1.458	-0.337	-0.068	-0.067	408	397	120	B_N
3B_N115A	22-Jul-94	4	2295082	119697	WATER WHITE	1.283	-0.513	-0.102	-0.101	504	488	120	B_N
3B_N115A	28-Jul-94	36	2494301	98449	WATER WHITE	1.404	-0.392	-0.079	-0.078	648	626	120	B_N
3B_N115A	8-Aug-94	2	2902695	204620	WATER WHITE	1.152	-0.643	-0.128	-0.127	912	875	120	B_N
3B_N115A	15-Aug-94	97	2970705	193253	WATER WHITE	1.187	-0.609	-0.121	-0.120	1080	1017	120	B_N
3B_N115A	19-Aug-94	60	2944772	162991	LIGHT YELLOW	1.257	-0.538	-0.108	-0.107	1176	1085	120	B_N
3B_N115A	26-Aug-94	8	2851915	76438	LIGHT PEACH	1.572	-0.223	-0.045	-0.044	1344	1243	120	B_N
3B_N115A	1-Sep-94	7	2891654	69380	PEACH	1.620	-0.175	-0.036	-0.035	1488	1384	120	B_N
3B_N115A	19-Sep-94	7	2957373	38268	ORANGE	1.888	0.093	0.017	0.018	1920	1785	120	B_N
3B_N115A	30-Sep-94	18	2654200	22828	ORANGE	2.065	0.270	0.053	0.054	2184	2047	120	B_N
3B_N115A	28-Oct-94	5	2980161	14257	ORANGE	2.320	0.525	0.103	0.104	2856	2713	120	B_N
3B_N115A	10-Nov-94	90	2958511	10592	ORANGE	2.446	0.651	0.128	0.129	3168	2997	120	B_N
3B_N115B	1-Jul-94	94	598950	6891		1.939	0.000	-0.001	0.000	0	0	120	B_N
3B_N115B	13-Jul-94	35	1090698	23421	PINK	1.668	-0.271	-0.055	-0.054	288	287	120	B_N
3B_N115B	18-Jul-94	10	2608239	74356	PINK TINGE	1.545	-0.394	-0.079	-0.078	408	397	120	B_N
3B_N115B	22-Jul-94	15	2300594	79263	WATER WHITE	1.463	-0.476	-0.095	-0.094	504	488	120	B_N
3B_N115B	28-Jul-94	47	2500230	69731	YELLOW	1.555	-0.385	-0.077	-0.076	648	626	120	B_N
3B_N115B	8-Aug-94	19	2899179	88715	ORANGE	1.514	-0.425	-0.085	-0.084	912	875	120	B_N
3B_N115B	16-Aug-94	6	2974648	79387	YELLOW	1.574	-0.365	-0.073	-0.072	1104	1017	120	B_N
3B_N115B	19-Aug-94	73	2943498	38854	ORANGE	1.879	-0.060	-0.013	-0.012	1176	1085	120	B_N
3B_N115B	26-Aug-94	21	2877603	12694	ORANGE	2.355	0.416	0.081	0.082	1344	1243	120	B_N
3B_N115B	1-Sep-94	21	2882916	11224	ORANGE	2.410	0.471	0.092	0.093	1488	1384	120	B_N
3B_N115B	19-Sep-94	19	2964927	7870	ORANGE	2.576	0.637	0.125	0.126	1920	1785	120	B_N
3B_N115B	30-Sep-94	31	2638809	4762	ORANGE	2.744	0.805	0.158	0.159	2184	2047	120	B_N
3B_N115B	28-Oct-94	42	2954083	2463	ORANGE	3.079	1.140	0.225	0.226	2856	2713	120	B_N
3B_N115B	10-Nov-94	91	2955417	2106	ORANGE	3.147	1.208	0.238	0.239	3168	2997	120	B_N
3B_N150A	7-Jul-94	159	1088491	18013	DARK ORANGE	1.781	0.000	-0.001	0.000	0	0	150	B_N
3B_N150A	14-Jul-94	70	2645060	151440	PINK TINGE	1.242	-0.539	-0.108	-0.107	168	165	150	B_N
3B_N150A	19-Jul-94	4	2630172	9375	PEACH	2.448	0.667	0.131	0.132	288	278	150	B_N
3B_N150A	21-Jul-94	20	2567145	6303	ORANGE-RED	2.610	0.829	0.163	0.164	336	319	150	B_N
3B_N150A	25-Jul-94	74	2379558	1549	RED	3.186	1.405	0.277	0.278	432	411	150	B_N
3B_N150A	5-Aug-94	161	2985954	1660	MAGENTA, BROWN PPT ON WALLS	3.255	1.474	0.291	0.292	696	665	150	B_N
3B_N150A	5-Aug-94	162	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	696	665	150	B_N
3B_N150B	7-Jul-94	163	1084154	31097		1.542	0.000	-0.001	0.000	0	0	150	B_N
3B_N150B	14-Jul-94	71	2657633	216265	PINK TINGE	1.090	-0.453	-0.091	-0.090	168	165	150	B_N
3B_N150B	19-Jul-94	14	2620361	3855	DARK ORANGE	2.832	1.290	0.254	0.255	288	278	150	B_N
3B_N150B	21-Jul-94	30	2547554	2811	ORANGE-RED	2.957	1.415	0.279	0.280	336	319	150	B_N
3B_N150B	25-Jul-94	82	2318199	1572	RED	3.169	1.626	0.321	0.322	432	411	150	B_N
3B_N150B	5-Aug-94	148	2965558	1831	MAGENTA, BROWN PPT ON WALLS	3.209	1.667	0.329	0.330	696	665	150	B_N
3B_N150B	5-Aug-94	163	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	696	665	150	B_N

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3B_T082A	7-Jul-94	115	1095723	57331		1.281	0.000	-0.001	0.000	0	0	90	B_T
3B_T082A	7-Jul-94	118	1092502	101093		1.034	-0.248	-0.050	-0.049	0	0	90	B_T
3B_T082A	12-Jul-94	9	1071502	21773		1.692	0.411	0.080	0.081	120	117	90	B_T
3B_T082A	15-Jul-94	14	2593439	51341	YELLOW	1.703	0.422	0.083	0.084	192	184	90	B_T
3B_T082A	20-Jul-94	9	2575942	33097	DARK YELLOW	1.891	0.610	0.120	0.121	312	299	90	B_T
3B_T082A	25-Jul-94	29	2425801	34890	YELLOW	1.842	0.561	0.110	0.111	432	415	90	B_T
3B_T082A	5-Aug-94	17	3004848	127781	YELLOW	1.371	0.090	0.017	0.018	696	665	90	B_T
3B_T082A	17-Aug-94	33	2948231	178764	YELLOW	1.217	-0.064	-0.014	-0.013	984	946	90	B_T
3B_T082A	26-Aug-94	92	2863666	109560	YELLOW	1.417	0.136	0.026	0.027	1200	1156	90	B_T
3B_T082A	2-Sep-94	42	2847689	121503	YELLOW	1.370	0.089	0.017	0.018	1368	1317	90	B_T
3B_T082A	21-Sep-94	11	2924745	130870	YELLOW	1.349	0.068	0.012	0.013	1824	1720	90	B_T
3B_T082A	6-Oct-94	17	2745028	152190	YELLOW	1.256	-0.025	-0.006	-0.005	2184	2075	90	B_T
3B_T082A	28-Oct-94	25	2931665	92994	YELLOW	1.499	0.217	0.042	0.043	2712	2576	90	B_T
3B_T082A	9-Nov-94	95	2963359	93333	YELLOW	1.502	0.220	0.043	0.044	3000	2788	90	B_T
3B_T082B	12-Jul-94	10	1078271	59108		1.261	0.000	-0.001	0.000	0	0	90	B_T
3B_T082B	15-Jul-94	15	2585292	118638	YELLOW	1.338	0.077	0.014	0.015	72	67	90	B_T
3B_T082B	20-Jul-94	21	2569096	110708	DARK YELLOW	1.366	0.105	0.020	0.021	192	182	90	B_T
3B_T082B	25-Jul-94	42	2406634	110670	YELLOW	1.337	0.076	0.014	0.015	312	298	90	B_T
3B_T082B	5-Aug-94	28	3004580	258822	YELLOW	1.065	-0.196	-0.040	-0.039	576	548	90	B_T
3B_T082B	17-Aug-94	48	2933984	271985	YELLOW	1.033	-0.228	-0.046	-0.045	864	829	90	B_T
3B_T082B	26-Aug-94	110	2858642	178338	YELLOW	1.205	-0.056	-0.012	-0.011	1080	1039	90	B_T
3B_T082B	2-Sep-94	57	2843988	174338	YELLOW	1.213	-0.049	-0.011	-0.010	1248	1200	90	B_T
3B_T082B	21-Sep-94	26	2936147	166305	YELLOW	1.247	-0.014	-0.004	-0.003	1704	1603	90	B_T
3B_T082B	6-Oct-94	32	2736068	172502	YELLOW	1.200	-0.061	-0.013	-0.012	2064	1958	90	B_T
3B_T082B	28-Oct-94	41	2937511	119643	YELLOW	1.390	0.129	0.025	0.026	2592	2459	90	B_T
3B_T082B	10-Nov-94	7	2960125	124010	YELLOW	1.378	0.117	0.022	0.023	2904	2671	90	B_T
3B_T115A	7-Jul-94	150	1096000	71980		1.183	0.000	-0.001	0.000	0	0	120	B_T
3B_T115A	13-Jul-94	36	1083893	14353	DARK YELLOW	1.878	0.695	0.137	0.138	144	143	120	B_T
3B_T115A	18-Jul-94	11	2616536	6900	BROWN	2.579	1.396	0.275	0.276	264	253	120	B_T
3B_T115A	22-Jul-94	6	2288645	2241	BROWN, SLIME	3.009	1.827	0.361	0.362	360	344	120	B_T
3B_T115A	29-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	528	499	120	B_T
3B_T115B	7-Jul-94	144	1095043	84524		1.112	0.000	-0.001	0.000	0	0	120	B_T
3B_T115B	13-Jul-94	37	1075808	13558	DARK YELLOW	1.900	0.787	0.155	0.156	144	143	120	B_T
3B_T115B	18-Jul-94	12	2606163	9208	BROWN	2.452	1.339	0.264	0.265	264	253	120	B_T
3B_T115B	22-Jul-94	16	2300803	1906	BROWN, SLIME	3.082	1.969	0.389	0.390	360	344	120	B_T
3B_T115B	29-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	528	499	120	B_T
3B_T150A	7-Jul-94	165	1094169	101950		1.031	0.000	-0.001	0.000	0	0	150	B_T
3B_T150A	14-Jul-94	78	2643827	1913	BROWN, SLIME LAYER	3.141	2.110	0.417	0.418	168	165	150	B_T
3B_T150A	19-Jul-94	5	0	0	PINK, BROWN LAYER	0.000	0.000	-0.001	0.000	288	278	150	B_T
3B_T150A	21-Jul-94	21	2564545	2043	BROWN, SLIME, PPT.	3.099	2.068	0.408	0.409	336	319	150	B_T
3B_T150A	22-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	360	339	150	B_T
3B_T150B	7-Jul-94	171	1090037	114222		0.980	0.000	-0.001	0.000	0	0	150	B_T
3B_T150B	14-Jul-94	79	2626349	1689	SLIME LAYER	3.192	2.212	0.437	0.438	168	165	150	B_T
3B_T150B	19-Jul-94	15	0	0	PINK, BROWN LAYER	0.000	0.000	-0.001	0.000	288	278	150	B_T
3B_T150B	22-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	360	339	150	B_T

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3CHR082A	7-Jul-94	28	1111309	50263		1.345	0.000	-0.001	0.000	0	0	90	CHR
3CHR082A	12-Jul-94	28	1072736	1083	NO TINT	2.996	1.651	0.326	0.327	120	117	90	CHR
3CHR082A	15-Jul-94	16	0	0	NO TINT	0.000	0.000	-0.001	0.000	192	184	90	CHR
3CHR082A	20-Jul-94	10	0	0	NO TINT	0.000	0.000	-0.001	0.000	312	299	90	CHR
3CHR082A	25-Jul-94	31	0	0	NO TINT	0.000	0.000	-0.001	0.000	432	415	90	CHR
3CHR082A	5-Aug-94	19	2989436	0	NO TINT	0.000	0.000	-0.001	0.000	696	665	90	CHR
3CHR082A	17-Aug-94	35	0	0	NO TINT	0.000	0.000	-0.001	0.000	984	946	90	CHR
3CHR082A	26-Aug-94	93	2861073	29969	NO TINT	1.980	0.635	0.125	0.126	1200	1156	90	CHR
3CHR082A	2-Sep-94	43	2852528	37671	NO TINT	1.879	0.535	0.105	0.106	1368	1317	90	CHR
3CHR082A	21-Sep-94	12	0	0	NO TINT, UNREADABLE	0.000	0.000	-0.001	0.000	1824	1720	90	CHR
3CHR082A	6-Oct-94	18	2756008	9898	NO TINT	2.445	1.100	0.217	0.218	2184	2075	90	CHR
3CHR082A	28-Oct-94	26	2935871	22060	NO TINT	2.124	0.780	0.153	0.154	2712	2576	90	CHR
3CHR082A	9-Nov-94	96	2942893	0	NO TINT, UNREADABLE	0.000	0.000	-0.001	0.000	3000	2788	90	CHR
3CHR082B	7-Jul-94	26	1102478	71156		1.190	0.000	-0.001	0.000	0	0	90	CHR
3CHR082B	12-Jul-94	29	1071536	938		3.058	1.868	0.369	0.370	120	117	90	CHR
3CHR082B	15-Jul-94	17	0	0	NO TINT	0.000	0.000	-0.001	0.000	192	184	90	CHR
3CHR082B	20-Jul-94	22	0	0	NO TINT	0.000	0.000	-0.001	0.000	312	299	90	CHR
3CHR082B	25-Jul-94	44	0	0	NO TINT	0.000	0.000	-0.001	0.000	432	415	90	CHR
3CHR082B	29-Jul-94	18	0	0	NO TINT	0.000	0.000	-0.001	0.000	528	507	90	CHR
3CHR082B	5-Aug-94	30	0	0	NO TINT	0.000	0.000	-0.001	0.000	696	665	90	CHR
3CHR082B	17-Aug-94	49	0	0	NO TINT	0.000	0.000	-0.001	0.000	984	946	90	CHR
3CHR082B	26-Aug-94	111	2836259	33801	NO TINT	1.924	0.734	0.144	0.145	1200	1156	90	CHR
3CHR082B	2-Sep-94	58	2835990	8416	NO TINT	2.528	1.337	0.264	0.265	1368	1317	90	CHR
3CHR082B	21-Sep-94	27	2948421	0	NO TINT, UNREADABLE	0.000	0.000	-0.001	0.000	1824	1720	90	CHR
3CHR082B	6-Oct-94	33	2751794	5353	NO TINT	2.711	1.521	0.300	0.301	2184	2075	90	CHR
3CHR082B	28-Oct-94	42	2956775	7604	NO TINT	2.590	1.400	0.276	0.277	2712	2576	90	CHR
3CHR082B	10-Nov-94	8	2956826	5536	NO TINT	2.728	1.537	0.303	0.300	3024	2788	90	CHR
3CHR115A	7-Jul-94	19	1102985	80528		1.137	0.000	-0.001	-0.304	0	0	120	CHR
3CHR115A	13-Jul-94	38	1088206	17464	NO PINK	1.795	0.658	0.129	-0.174	144	143	120	CHR
3CHR115A	18-Jul-94	13	0	0	NO TINT	0.000	0.000	-0.001	-0.304	264	253	120	CHR
3CHR115A	22-Jul-94	7	2306967	0	NO TINT	0.000	0.000	-0.001	-0.304	360	344	120	CHR
3CHR115A	28-Jul-94	38	0	0	NO TINT	0.000	0.000	-0.001	-0.304	504	482	120	CHR
3CHR115A	8-Aug-94	7	0	0	NO TINT	0.000	0.000	-0.001	-0.304	768	731	120	CHR
3CHR115A	15-Aug-94	98	0	0	NO TINT	0.000	0.000	-0.001	-0.304	936	873	120	CHR
3CHR115A	19-Aug-94	61	2933747	105955	NO TINT	1.442	0.306	0.060	-0.244	1032	941	120	CHR
3CHR115A	26-Aug-94	9	2863838	72838	NO TINT	1.595	0.458	0.090	-0.214	1200	1099	120	CHR
3CHR115A	1-Sep-94	8	2898210	75733	NO TINT	1.583	0.446	0.087	-0.216	1344	1240	120	CHR
3CHR115A	19-Sep-94	8	2960841	77826	NO TINT	1.580	0.444	0.087	-0.217	1776	1641	120	CHR
3CHR115A	30-Sep-94	19	2650303	21553	NO TINT	2.090	0.953	0.188	-0.116	2040	1903	120	CHR
3CHR115A	28-Oct-94	6	2962674	12456	NO TINT	2.376	1.240	0.244	-0.059	2712	2569	120	CHR
3CHR115A	10-Nov-94	76	2949116	17491	NO TINT	2.227	1.090	0.215	-0.089	3024	2853	120	CHR
3CHR115B	7-Jul-94	22	1101049	43341	NO TINT	1.405	0.000	-0.001	0.000	0	0	120	CHR
3CHR115B	13-Jul-94	39	1085853	3680	NO PINK	2.470	1.065	0.210	0.211	144	143	120	CHR
3CHR115B	18-Jul-94	14	0	0	NO TINT	0.000	0.000	-0.001	0.000	264	253	120	CHR
3CHR115B	22-Jul-94	17	0	0	NO TINT	0.000	0.000	-0.001	0.000	360	344	120	CHR

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TubelD	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3CHR115B	28-Jul-94	48	0	0	NO TINT	0.000	0.000	-0.001	0.000	504	482	120	CHR
3CHR115B	8-Aug-94	20	0	0	NO TINT	0.000	0.000	-0.001	0.000	768	731	120	CHR
3CHR115B	16-Aug-94	7	0	0	NO TINT	0.000	0.000	-0.001	0.000	960	873	120	CHR
3CHR115B	19-Aug-94	74	2939631	55626	NO TINT	1.723	0.318	0.062	0.063	1032	941	120	CHR
3CHR115B	26-Aug-94	22	2855976	23704	NO TINT	2.081	0.676	0.133	0.134	1200	1099	120	CHR
3CHR115B	1-Sep-94	22	2907946	25213	NO TINT	2.062	0.657	0.129	0.130	1344	1240	120	CHR
3CHR115B	19-Sep-94	20	2955184	39267	NO TINT	1.877	0.472	0.092	0.093	1776	1641	120	CHR
3CHR115B	30-Sep-94	32	2637900	25517	NO TINT	2.014	0.610	0.120	0.121	2040	1903	120	CHR
3CHR115B	28-Oct-94	43	2941101	33153	NO TINT	1.948	0.543	0.107	0.108	2712	2569	120	CHR
3CHR115B	10-Nov-94	92	0	0	NO TINT, UNREADABLE	0.000	0.000	-0.001	0.000	3024	2853	120	CHR
3CHR150A	7-Jul-94	5	1115680	68229		1.214	0.000	-0.001	0.000	0	0	150	CHR
3CHR150A	14-Jul-94	80	0	0	NO TINT	0.000	0.000	-0.001	0.000	168	165	150	CHR
3CHR150A	14-Jul-94	98	0	0	NO TINT	0.000	0.000	-0.001	0.000	168	165	150	CHR
3CHR150A	19-Jul-94	6	0	0	SLT PINK TINGE	0.000	0.000	-0.001	0.000	288	278	150	CHR
3CHR150A	21-Jul-94	22	0	0	NO TINT	0.000	0.000	-0.001	0.000	336	319	150	CHR
3CHR150A	25-Jul-94	75	0	0	NO TINT	0.000	0.000	-0.001	0.000	432	411	150	CHR
3CHR150A	5-Aug-94	164	0	0	PINK TINGE	0.000	0.000	-0.001	0.000	696	665	150	CHR
3CHR150A	15-Aug-94	22	0	0	NO TINT	0.000	0.000	-0.001	0.000	936	891	150	CHR
3CHR150A	19-Aug-94	14	2983578	15927	NO TINT	2.273	1.059	0.209	0.210	1032	982	150	CHR
3CHR150A	25-Aug-94	37	2978943	40527	LIGHT PINK TINGE	1.866	0.653	0.128	0.129	1176	1123	150	CHR
3CHR150A	31-Aug-94	37	2874538	23464	PINK TINGE	2.088	0.875	0.172	0.173	1320	1264	150	CHR
3CHR150A	16-Sep-94	3	2978618	18862	PINK	2.198	0.985	0.194	0.195	1704	1646	150	CHR
3CHR150A	28-Sep-94	4	2572975	10679	LIGHT PINK TINT	2.382	1.168	0.230	0.231	1992	1929	150	CHR
3CHR150A	27-Oct-94	36	3020388	8549	LIGHT PINK TINT	2.548	1.335	0.263	0.264	2688	2621	150	CHR
3CHR150A	9-Nov-94	37	2984417	15168	PINK TINT	2.294	1.080	0.213	0.214	3000	2928	150	CHR
3CHR150B	7-Jul-94	13	1102955	71756		1.187	0.000	-0.001	0.000	0	0	150	CHR
3CHR150B	14-Jul-94	81	0	0	NO TINT	0.000	0.000	-0.001	0.000	168	165	150	CHR
3CHR150B	19-Jul-94	16	0	0	PINK TINGE	0.000	0.000	-0.001	0.000	288	278	150	CHR
3CHR150B	21-Jul-94	31	0	0	NO TINT	0.000	0.000	-0.001	0.000	336	319	150	CHR
3CHR150B	25-Jul-94	83	0	0	NO TINT	0.000	0.000	-0.001	0.000	432	411	150	CHR
3CHR150B	5-Aug-94	149	0	0	SLT PINK TINGE	0.000	0.000	-0.001	0.000	696	665	150	CHR
3CHR150B	15-Aug-94	32	0	0	PINK TINGE	0.000	0.000	-0.001	0.000	936	891	150	CHR
3CHR150B	19-Aug-94	5	2965089	63077	PINK TINT	1.672	0.485	0.095	0.096	1032	982	150	CHR
3CHR150B	25-Aug-94	48	2965256	61155	LIGHT PINK TINT	1.686	0.499	0.098	0.099	1176	1123	150	CHR
3CHR150B	31-Aug-94	46	2885783	43488	LIGHT PINK TINGE	1.822	0.635	0.125	0.126	1320	1264	150	CHR
3CHR150B	16-Sep-94	31	2952165	39912	PINK	1.869	0.682	0.134	0.135	1704	1646	150	CHR
3CHR150B	28-Sep-94	12	2586951	19538	PINK TINT	2.122	0.935	0.184	0.185	1992	1929	150	CHR
3CHR150B	27-Oct-94	59	3004774	25362	PINK TINT	2.074	0.887	0.175	0.176	2688	2621	150	CHR
3CHR150B	9-Nov-94	61	2964666	23588	PINK	2.099	0.913	0.180	0.181	3000	2928	150	CHR
3CHR175C	3-Aug-94	24	0	0	NO TINT	0.000	0.000	-0.001	0.000	0	0	175	CHR
3CHR175C	5-Aug-94	114	0	0	MAGENTA	0.000	0.000	-0.001	0.000	48	46	175	CHR
3CHR175C	11-Aug-94	85	0	0	DARK PINK TINT	0.000	0.000	-0.001	0.000	192	185	175	CHR
3CHR175C	16-Aug-94	86	0	0	DARK PINK TINT	0.000	0.000	-0.001	0.000	312	300	175	CHR
3CHR175C	18-Aug-94	1	2929839	19049	DARK PINK TINT	2.187	0.925	0.182	0.183	360	344	175	CHR
3CHR175C	25-Aug-94	1	2983321	11779	PURPLE TINGE	2.404	1.141	0.225	0.226	528	509	175	CHR

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TubelD	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3CHR175C	31-Aug-94	1	2870133	10525	PURPLE TINT	2.436	1.173	0.231	0.232	672	645	175	CHR
3CHR175C	16-Sep-94	2	2958193	6097	PURPLE	2.686	1.424	0.281	0.282	1056	1027	175	CHR
3CHR175C	26-Sep-94	1	2644646	4291	WINE TINT	2.790	1.528	0.301	0.302	1296	1265	175	CHR
3CHR175C	27-Oct-94	2	3029209	3485	PURPLE	2.939	1.677	0.331	0.332	2040	2005	175	CHR
3CHR175C	9-Nov-94	1	2943557	3414	PURPLE	2.936	1.673	0.330	0.331	2352	2314	175	CHR
3CHR175D	3-Aug-94	33	0	0	NO TINT	0.000	0.000	-0.001	0.000	0	0	175	CHR
3CHR175D	5-Aug-94	115	0	0	MAGENTA	0.000	0.000	-0.001	0.000	48	46	175	CHR
3CHR175D	11-Aug-94	84	0	0	DARK PINK TINT	0.000	0.000	-0.001	0.000	192	185	175	CHR
3CHR175D	16-Aug-94	88	0	0	DARK PINK TINT	0.000	0.000	-0.001	0.000	312	300	175	CHR
3CHR175D	18-Aug-94	17	2926919	8901	WINE	2.517	1.255	0.247	0.248	360	344	175	CHR
3CHR175D	25-Aug-94	3	3009364	6391	PURPLE TINGE	2.673	1.411	0.278	0.279	528	509	175	CHR
3CHR175D	31-Aug-94	3	2903694	6331	PURPLE	2.661	1.399	0.276	0.277	672	645	175	CHR
3CHR175D	16-Sep-94	18	2997438	4301	WINE	2.843	1.581	0.312	0.313	1056	1027	175	CHR
3CHR175D	26-Sep-94	3	2641894	3290	WINE TINT	2.905	1.643	0.324	0.325	1296	1265	175	CHR
3CHR175D	27-Oct-94	18	3010493	2813	DARK PURPLE	3.029	1.767	0.349	0.350	2040	2005	175	CHR
3CHR175D	9-Nov-94	18	2974719	2565	WINE	3.064	1.802	0.356	0.357	2352	2314	175	CHR
3COP082A	7-Jul-94	113	1091492	89840		1.085	0.000	-0.001	0.000	0	0	90	COP
3COP082A	12-Jul-94	22	1084815	83678	WATER WHITE	1.113	0.028	0.005	0.006	120	117	90	COP
3COP082A	15-Jul-94	18	2595032	207462	WATER WHITE	1.097	0.013	0.002	0.003	192	184	90	COP
3COP082A	20-Jul-94	11	2560191	221826	WATER WHITE	1.062	-0.022	-0.005	-0.004	312	299	90	COP
3COP082A	25-Jul-94	32	2430309	197730	WATER WHITE	1.090	0.005	0.000	0.001	432	415	90	COP
3COP082A	5-Aug-94	20	3005358	343221	WATER WHITE	0.942	-0.142	-0.029	-0.028	696	665	90	COP
3COP082A	17-Aug-94	34	2928896	425242	WATER WHITE	0.838	-0.246	-0.050	-0.049	984	946	90	COP
3COP082A	26-Aug-94	94	2851998	241889	WATER WHITE	1.072	-0.013	-0.004	-0.003	1200	1156	90	COP
3COP082A	2-Sep-94	44	2870921	286413	WATER WHITE	1.001	-0.084	-0.018	-0.017	1368	1317	90	COP
3COP082A	21-Sep-94	13	2942484	325712	WATER WHITE	0.956	-0.129	-0.026	-0.025	1824	1720	90	COP
3COP082A	6-Oct-94	19	2756795	433436	WATER WHITE	0.803	-0.281	-0.057	-0.056	2184	2075	90	COP
3COP082A	28-Oct-94	27	2942582	290649	WATER WHITE	1.005	-0.079	-0.017	-0.016	2712	2576	90	COP
3COP082A	9-Nov-94	97	2940227	317172	WATER WHITE	0.967	-0.117	-0.024	-0.023	3000	2788	90	COP
3COP082B	7-Jul-94	111	1086839	119117		0.960	0.000	-0.001	0.000	0	0	90	COP
3COP082B	12-Jul-94	23	1071164	106958	WATER WHITE, WHITE PPTITATE	1.001	0.040	0.007	0.008	120	117	90	COP
3COP082B	15-Jul-94	19	2596267	205150	WATER WHITE	1.102	0.142	0.027	0.028	192	184	90	COP
3COP082B	20-Jul-94	23	2567405	191742	WATER WHITE	1.127	0.167	0.032	0.033	312	299	90	COP
3COP082B	25-Jul-94	43	2390259	201328	WATER WHITE	1.075	0.114	0.022	0.023	432	415	90	COP
3COP082B	5-Aug-94	31	3003939	364365	WATER WHITE	0.916	-0.044	-0.010	-0.009	696	665	90	COP
3COP082B	17-Aug-94	50	2926231	355582	WATER WHITE	0.915	-0.045	-0.010	-0.009	984	946	90	COP
3COP082B	26-Aug-94	131	2862012	266419	WATER WHITE, WHITE PPT.	1.031	0.071	0.013	0.014	1200	1156	90	COP
3COP082B	2-Sep-94	59	2861307	277960	WATER WHITE	1.013	0.052	0.009	0.010	1368	1317	90	COP
3COP082B	21-Sep-94	28	2915063	308768	WATER WHITE	0.975	0.015	0.002	0.003	1824	1720	90	COP
3COP082B	6-Oct-94	34	2732535	357831	WATER WHITE	0.883	-0.077	-0.016	-0.015	2184	2075	90	COP
3COP082B	28-Oct-94	43	2934467	292016	WATER WHITE	1.002	0.042	0.007	0.008	2712	2576	90	COP
3COP082B	10-Nov-94	9	2966250	313010	WATER WHITE	0.977	0.016	0.002	0.003	3024	2788	90	COP
3COP115A	7-Jul-94	149	1088335	69316	WATER WHITE	1.196	0.000	-0.001	0.000	0	0	120	COP
3COP115A	13-Jul-94	40	1081218	90834	WATER WHITE, NO PPT.	1.076	-0.120	-0.025	-0.024	144	143	120	COP
3COP115A	18-Jul-94	15	2603546	147330		1.247	0.051	0.009	0.010	264	253	120	COP

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TubID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3COP115A	22-Jul-94	8	2301481	127986	WATER WHITE	1.255	0.059	0.011	0.012	360	344	120	COP
3COP115A	28-Jul-94	39	2522506	175750	WATER WHITE	1.157	-0.039	-0.009	-0.008	504	482	120	COP
3COP115A	8-Aug-94	8	2897428	296876	WATER WHITE	0.989	-0.206	-0.042	-0.041	768	731	120	COP
3COP115A	15-Aug-94	99	2962214	315525	WATER WHITE	0.973	-0.223	-0.045	-0.044	936	873	120	COP
3COP115A	19-Aug-94	62	2947380	287631	WATER WHITE	1.011	-0.185	-0.038	-0.037	1032	941	120	COP
3COP115A	26-Aug-94	10	2859846	163589	WATER WHITE	1.243	0.047	0.008	0.009	1200	1099	120	COP
3COP115A	1-Sep-94	9	2889617	203126	WATER WHITE	1.153	-0.043	-0.009	-0.008	1344	1240	120	COP
3COP115A	19-Sep-94	9	2946504	233532	WATER WHITE	1.101	-0.095	-0.020	-0.019	1776	1641	120	COP
3COP115A	30-Sep-94	21	2633312	191076	WATER WHITE	1.139	-0.057	-0.012	-0.011	2040	1903	120	COP
3COP115A	28-Oct-94	7	2991590	237151	WATER WHITE	1.101	-0.095	-0.020	-0.019	2712	2569	120	COP
3COP115A	10-Nov-94	77	2939650	198818	WATER WHITE	1.170	-0.026	-0.006	-0.005	3024	2853	120	COP
3COP115B	7-Jul-94	153	1086162	52290	WATER WHITE	1.317	0.000	-0.001	0.000	0	0	120	COP
3COP115B	13-Jul-94	41	1080509	58761	WATER WHITE	1.265	-0.053	-0.011	-0.010	144	143	120	COP
3COP115B	18-Jul-94	16	2619987	133094	WATER WHITE, NO PPT.	1.294	-0.023	-0.006	-0.005	264	253	120	COP
3COP115B	22-Jul-94	18	2294326	73561	WATER WHITE	1.494	0.177	0.034	0.035	360	344	120	COP
3COP115B	22-Jul-94	63	2427428	73614	WATER WHITE, PPT.	1.518	0.201	0.039	0.040	360	344	120	COP
3COP115B	28-Jul-94	49	2506375	91673	WATER WHITE	1.437	0.119	0.023	0.024	504	482	120	COP
3COP115B	8-Aug-94	21	2904550	188193	WATER WHITE	1.188	-0.129	-0.027	-0.026	768	731	120	COP
3COP115B	16-Aug-94	8	2971096	244813	WATER WHITE	1.084	-0.233	-0.047	-0.046	960	873	120	COP
3COP115B	19-Aug-94	75	2946343	248766	WATER WHITE	1.073	-0.244	-0.049	-0.048	1032	941	120	COP
3COP115B	26-Aug-94	23	2871890	127234	WATER WHITE	1.354	0.036	0.006	0.007	1200	1099	120	COP
3COP115B	1-Sep-94	23	2904385	174922	WATER WHITE	1.220	-0.097	-0.020	-0.019	1344	1240	120	COP
3COP115B	19-Sep-94	21	2936071	183669	WATER WHITE	1.204	-0.114	-0.024	-0.023	1776	1641	120	COP
3COP115B	30-Sep-94	33	2650938	138869	WATER WHITE	1.281	-0.037	-0.008	-0.007	2040	1903	120	COP
3COP115B	28-Oct-94	44	2937576	184295	WATER WHITE	1.202	-0.115	-0.024	-0.023	2712	2569	120	COP
3COP115B	10-Nov-94	93	2932443	220473	WATER WHITE	1.124	-0.194	-0.039	-0.038	3024	2853	120	COP
3COP150A	7-Jul-94	167	1090669	91598	WATER WHITE	1.076	0.000	-0.001	0.000	0	0	150	COP
3COP150A	14-Jul-94	82	2620454	243434	WATER WHITE	1.032	-0.044	-0.010	-0.009	168	165	150	COP
3COP150A	14-Jul-94	100	2654929	242354	WATER WHITE	1.040	-0.036	-0.008	-0.007	168	165	150	COP
3COP150A	19-Jul-94	7	2619278	187735	WATER WHITE, NO PPT.	1.145	0.069	0.013	0.014	288	278	150	COP
3COP150A	21-Jul-94	23	2563418	135374	WATER WHITE, EST. REF.	1.277	0.201	0.039	0.040	336	319	150	COP
3COP150A	25-Jul-94	76	2371270	158156	WATER WHITE	1.176	0.100	0.019	0.020	432	411	150	COP
3COP150A	5-Aug-94	165	2973012	342647	WATER WHITE	0.938	-0.137	-0.028	-0.027	696	665	150	COP
3COP150A	15-Aug-94	23	2962776	378679	WATER WHITE	0.893	-0.182	-0.037	-0.036	936	891	150	COP
3COP150A	19-Aug-94	15	2968002	391334	WATER WHITE	0.880	-0.196	-0.040	-0.039	1032	982	150	COP
3COP150A	25-Aug-94	40	2993867	363290	WATER WHITE	0.916	-0.160	-0.033	-0.032	1176	1123	150	COP
3COP150A	31-Aug-94	38	2902637	284577	WATER WHITE	1.009	-0.067	-0.014	-0.013	1320	1264	150	COP
3COP150A	16-Sep-94	4	2952706	334181	WATER WHITE	0.946	-0.130	-0.027	-0.026	1704	1646	150	COP
3COP150A	28-Sep-94	5	2583326	256808	WATER WHITE	1.003	-0.073	-0.016	-0.015	1992	1929	150	COP
3COP150A	28-Sep-94	6	2598815	240729	REPEAT	1.033	-0.043	-0.009	-0.008	1992	1929	150	COP
3COP150A	27-Oct-94	37	3017087	319959	WATER WHITE	0.974	-0.101	-0.021	-0.020	2688	2621	150	COP
3COP150A	9-Nov-94	38	2979373	338802	WATER WHITE	0.944	-0.132	-0.027	-0.026	3000	2928	150	COP
3COP150B	7-Jul-94	164	1096738	38860	WATER WHITE	1.451	0.000	-0.001	0.000	0	0	150	COP
3COP150B	14-Jul-94	83	2638743	159454	WATER WHITE	1.219	-0.232	-0.047	-0.046	168	165	150	COP
3COP150B	19-Jul-94	17	2606135	123603	WATER WHITE, SLT WHITE PPT	1.324	-0.127	-0.026	-0.025	288	278	150	COP

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3COP150B	21-Jul-94	32	2532196	80918	WATER WHITE	1.495	0.045	0.008	0.009	336	319	150	COP
3COP150B	25-Jul-94	84	2304441	86844	WATER WHITE	1.424	-0.027	-0.006	-0.005	432	411	150	COP
3COP150B	5-Aug-94	150	2970068	207856	WATER WHITE	1.155	-0.296	-0.060	-0.059	696	665	150	COP
3COP150B	15-Aug-94	33	2954768	197918	WATER WHITE	1.174	-0.277	-0.056	-0.055	936	891	150	COP
3COP150B	19-Aug-94	6	2969693	214756	WATER WHITE	1.141	-0.310	-0.062	-0.061	1032	982	150	COP
3COP150B	25-Aug-94	49	2977920	201897	WATER WHITE	1.169	-0.282	-0.057	-0.056	1176	1123	150	COP
3COP150B	31-Aug-94	47	2896365	138160	WATER WHITE	1.321	-0.129	-0.027	-0.026	1320	1264	150	COP
3COP150B	16-Sep-94	32	2935057	188313	WATER WHITE	1.193	-0.258	-0.052	-0.051	1704	1646	150	COP
3COP150B	28-Sep-94	13	2598260	146243	WATER WHITE	1.250	-0.201	-0.041	-0.040	1992	1929	150	COP
3COP150B	27-Oct-94	60	2996709	196313	WATER WHITE	1.184	-0.267	-0.054	-0.053	2688	2621	150	COP
3COP150B	9-Nov-94	62	2981845	256193	WATER WHITE	1.066	-0.385	-0.077	-0.076	3000	2928	150	COP
3DRK025A	1-Jul-94	3	592087	31546		1.273	0.000	-0.001	0.000	0	0	25	DRK
3DRK025A	7-Jul-94	130	1098255	60007		1.263	-0.011	-0.003	-0.002	144	144	25	DRK
3DRK025A	14-Jul-94	61	2665269	120749	PINK	1.344	0.070	0.013	0.014	312	312	25	DRK
3DRK025A	21-Jul-94	12	2556001	78688	PINK	1.512	0.238	0.046	0.047	480	480	25	DRK
3DRK025A	28-Jul-94	13	2003955	67716	PINK	1.471	0.198	0.038	0.039	648	648	25	DRK
3DRK025A	9-Aug-94	82	2944389	200142	PINK	1.168	-0.106	-0.022	-0.021	936	936	25	DRK
3DRK025A	16-Aug-94	120	2934288	179576	PINK	1.213	-0.060	-0.013	-0.012	1104	1104	25	DRK
3DRK025A	26-Aug-94	9	2813110	104522	PINK	1.430	0.157	0.030	0.031	1344	1344	25	DRK
3DRK025A	2-Sep-94	127	2871489	135011	PINK	1.328	0.054	0.010	0.011	1512	1512	25	DRK
3DRK025A	4-Nov-94	11	2940257	185837	LIGHT PINK	1.199	-0.074	-0.016	-0.015	3024	3024	25	DRK
3DRK025A	10-Nov-94	151	2934890	187977	PINK	1.193	-0.080	-0.017	-0.016	3168	3168	25	DRK
3FIL082A	12-Jul-94	15	1077296	25681		1.623	0.000	-0.001	0.000	0	0	90	FIL
3FIL082A	15-Jul-94	20	2585428	63955	PINK	1.607	-0.016	-0.004	-0.003	72	67	90	FIL
3FIL082A	20-Jul-94	12	2564989	53197	PINK	1.683	0.060	0.011	0.012	192	182	90	FIL
3FIL082A	25-Jul-94	33	2411846	57689	PINK	1.621	-0.001	-0.001	0.000	312	298	90	FIL
3FIL082A	5-Aug-94	21	2985218	102984	PINK	1.462	-0.161	-0.033	-0.032	576	548	90	FIL
3FIL082A	17-Aug-94	36	2958248	117757	PINK	1.400	-0.223	-0.045	-0.044	864	829	90	FIL
3FIL082A	26-Aug-94	95	2855828	75953	PINK	1.575	-0.048	-0.010	-0.009	1080	1039	90	FIL
3FIL082A	2-Sep-94	45	2870954	87861	PINK	1.514	-0.108	-0.022	-0.021	1248	1200	90	FIL
3FIL082A	21-Sep-94	14	2945716	108061	PINK	1.436	-0.187	-0.038	-0.037	1704	1603	90	FIL
3FIL082A	6-Oct-94	20	2747538	149189	PINK	1.265	-0.358	-0.072	-0.071	2064	1958	90	FIL
3FIL082A	28-Oct-94	28	2955983	89913	PINK	1.517	-0.106	-0.022	-0.021	2592	2459	90	FIL
3FIL082A	10-Nov-94	25	2971991	104815	PINK	1.453	-0.170	-0.035	-0.034	2904	2671	90	FIL
3FIL082B	7-Jul-94	112	1093184	33969		1.508	0.000	-0.001	0.000	0	0	90	FIL
3FIL082B	12-Jul-94	16	1069437	22261		1.682	0.174	0.033	0.034	120	117	90	FIL
3FIL082B	15-Jul-94	21	2585938	47846	PINK	1.733	0.225	0.044	0.045	192	184	90	FIL
3FIL082B	20-Jul-94	24	2557851	49433	PINK	1.714	0.206	0.040	0.041	312	299	90	FIL
3FIL082B	25-Jul-94	45	2409658	37987	PINK	1.802	0.295	0.057	0.058	432	415	90	FIL
3FIL082B	5-Aug-94	32	2993242	76727	PINK	1.591	0.084	0.016	0.017	696	665	90	FIL
3FIL082B	17-Aug-94	52	2930817	98018	PINK	1.476	-0.032	-0.007	-0.006	984	946	90	FIL
3FIL082B	26-Aug-94	113	2842053	57826	PINK	1.692	0.184	0.035	0.036	1200	1156	90	FIL
3FIL082B	2-Sep-94	60	2848881	79078	PINK	1.557	0.049	0.009	0.010	1368	1317	90	FIL
3FIL082B	21-Sep-94	29	2934185	84394	PINK	1.541	0.034	0.006	0.007	1824	1720	90	FIL
3FIL082B	6-Oct-94	35	2757543	112160	PINK	1.391	-0.117	-0.024	-0.023	2184	2075	90	FIL

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3FIL082B	28-Oct-94	44	2943930	90942	PINK	1.510	0.003	0.000	0.001	2712	2576	90	FIL
3FIL082B	10-Nov-94	12	2972918	102814	PINK	1.461	-0.046	-0.010	-0.009	3024	2788	90	FIL
3FIL115A	7-Jul-94	154	1093476	77709		1.148	0.000	-0.001	0.000	0	0	120	FIL
3FIL115A	13-Jul-94	42	1083353	47938	PINK	1.354	0.206	0.040	0.041	144	143	120	FIL
3FIL115A	18-Jul-94	17	2607656	149026	PINK	1.243	0.095	0.018	0.019	264	253	120	FIL
3FIL115A	22-Jul-94	9	2300408	88683	PINK	1.414	0.266	0.052	0.053	360	344	120	FIL
3FIL115A	28-Jul-94	40	2492785	117682	PINK	1.326	0.178	0.034	0.035	504	482	120	FIL
3FIL115A	8-Aug-94	9	2913423	197152	PINK	1.170	0.021	0.003	0.004	768	731	120	FIL
3FIL115A	15-Aug-94	100	2954012	258879	PINK	1.057	-0.091	-0.019	-0.018	936	873	120	FIL
3FIL115A	19-Aug-94	63	2937219	214729	PINK	1.136	-0.012	-0.003	-0.002	1032	941	120	FIL
3FIL115A	26-Aug-94	11	2852921	194391	PINK	1.167	0.018	0.003	0.004	1200	1099	120	FIL
3FIL115A	1-Sep-94	10	2892465	210555	LIGHT PINK	1.138	-0.010	-0.003	-0.002	1344	1240	120	FIL
3FIL115A	19-Sep-94	10	2944655	229926	PINK	1.107	-0.041	-0.009	-0.008	1776	1641	120	FIL
3FIL115A	30-Sep-94	22	2640727	190013	PINK	1.143	-0.005	-0.002	-0.001	2040	1903	120	FIL
3FIL115A	28-Oct-94	8	2970487	241684	LIGHT PINK	1.090	-0.059	-0.013	-0.012	2712	2569	120	FIL
3FIL115A	10-Nov-94	78	2937125	272671	PINK	1.032	-0.116	-0.024	-0.023	3024	2853	120	FIL
3FIL115B	7-Jul-94	140	1089783	48003		1.356	0.000	-0.001	0.000	0	0	120	FIL
3FIL115B	13-Jul-94	43	1081172	52356	PINK	1.315	-0.041	-0.009	-0.008	144	143	120	FIL
3FIL115B	18-Jul-94	18	2606635	112734	PINK	1.364	0.008	0.001	0.002	264	253	120	FIL
3FIL115B	22-Jul-94	19	2291219	89097	PINK	1.410	0.054	0.010	0.011	360	344	120	FIL
3FIL115B	28-Jul-94	50	2490353	88029	PINK	1.452	0.096	0.018	0.019	504	482	120	FIL
3FIL115B	8-Aug-94	22	2896792	212435	PINK	1.135	-0.221	-0.045	-0.044	768	731	120	FIL
3FIL115B	16-Aug-94	10	2947039	229230	PINK	1.109	-0.247	-0.050	-0.049	960	873	120	FIL
3FIL115B	19-Aug-94	76	2950049	229364	PINK	1.109	-0.247	-0.050	-0.049	1032	941	120	FIL
3FIL115B	26-Aug-94	24	2852348	155719	LIGHT PINK	1.263	-0.093	-0.019	-0.018	1200	1099	120	FIL
3FIL115B	1-Sep-94	24	2905398	174391	PINK	1.222	-0.134	-0.028	-0.027	1344	1240	120	FIL
3FIL115B	19-Sep-94	22	2965462	220364	PINK	1.129	-0.227	-0.046	-0.045	1776	1641	120	FIL
3FIL115B	30-Sep-94	34	2650388	155151	PINK	1.233	-0.124	-0.025	-0.024	2040	1903	120	FIL
3FIL115B	28-Oct-94	45	2949216	203812	PINK	1.160	-0.196	-0.040	-0.039	2712	2569	120	FIL
3FIL115B	10-Nov-94	95	2953618	212503	PINK	1.143	-0.213	-0.043	-0.042	3024	2853	120	FIL
3FIL150A	7-Jul-94	162	1094348	60183		1.260	0.000	-0.001	0.000	0	0	150	FIL
3FIL150A	14-Jul-94	84	2654633	117215	PINK	1.355	0.095	0.018	0.019	168	165	150	FIL
3FIL150A	19-Jul-94	8	2611218	93538	PINK	1.446	0.186	0.036	0.037	288	278	150	FIL
3FIL150A	21-Jul-94	24	2562292	122237	PINK	1.321	0.062	0.011	0.012	336	319	150	FIL
3FIL150A	25-Jul-94	77	2363651	104697	PINK	1.354	0.094	0.018	0.019	432	411	150	FIL
3FIL150A	5-Aug-94	166	2972542	200543	PINK	1.171	-0.089	-0.019	-0.018	696	665	150	FIL
3FIL150A	15-Aug-94	24	2960004	224016	PINK	1.121	-0.139	-0.028	-0.027	936	891	150	FIL
3FIL150A	19-Aug-94	16	2966370	265856	LIGHT PINK	1.048	-0.212	-0.043	-0.042	1032	982	150	FIL
3FIL150A	25-Aug-94	41	2969861	269275	PINK	1.043	-0.217	-0.044	-0.043	1176	1123	150	FIL
3FIL150A	31-Aug-94	39	2901659	219179	WATER WHITE	1.122	-0.138	-0.028	-0.027	1320	1264	150	FIL
3FIL150A	16-Sep-94	5	2966749	254670	WATER WHITE	1.066	-0.193	-0.039	-0.038	1704	1646	150	FIL
3FIL150A	28-Sep-94	7	2602970	232191	WATER WHITE	1.050	-0.210	-0.043	-0.042	1992	1929	150	FIL
3FIL150A	27-Oct-94	38	3032237	240745	WATER WHITE	1.100	-0.159	-0.033	-0.032	2688	2621	150	FIL
3FIL150A	9-Nov-94	39	2950500	244453	V SLT PINK TINGE	1.082	-0.178	-0.036	-0.035	3000	2928	150	FIL
3FIL150B	7-Jul-94	169	1083583	57148		1.278	0.000	-0.001	0.000	0	0	150	FIL

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3FIL150B	14-Jul-94	85	2656168	84034	PINK	1.500	0.222	0.043	0.044	168	165	150	FIL
3FIL150B	19-Jul-94	18	2613250	74681	PINK	1.544	0.266	0.052	0.053	288	278	150	FIL
3FIL150B	21-Jul-94	33	2539663	55688	PINK	1.659	0.381	0.074	0.075	336	319	150	FIL
3FIL150B	25-Jul-94	85	2290156	88419	PINK	1.413	0.135	0.026	0.027	432	411	150	FIL
3FIL150B	5-Aug-94	151	2978397	224553	PINK	1.123	-0.155	-0.032	-0.031	696	665	150	FIL
3FIL150B	15-Aug-94	34	2958271	218949	PINK	1.131	-0.147	-0.030	-0.029	936	891	150	FIL
3FIL150B	19-Aug-94	7	2979682	211788	PINK	1.148	-0.130	-0.027	-0.026	1032	982	150	FIL
3FIL150B	25-Aug-94	50	2960242	253452	LIGHT PINK	1.067	-0.210	-0.043	-0.042	1176	1123	150	FIL
3FIL150B	31-Aug-94	48	2877533	170868	PINK	1.226	-0.052	-0.011	-0.010	1320	1264	150	FIL
3FIL150B	16-Sep-94	33	2957866	189484	LIGHT PINK	1.193	-0.084	-0.018	-0.017	1704	1646	150	FIL
3FIL150B	28-Sep-94	14	2573421	160254	PINK	1.206	-0.072	-0.015	-0.014	1992	1929	150	FIL
3FIL150B	27-Oct-94	61	2994023	152067	PINK	1.294	0.016	0.002	0.003	2888	2821	150	FIL
3FIL150B	9-Nov-94	63	2971642	155545	PINK	1.281	0.003	0.000	0.001	3000	2928	150	FIL
3FIL175C	3-Aug-94	26	3005568	221428	PINK	1.133	0.000	-0.001	0.000	0	0	175	FIL
3FIL175C	5-Aug-94	92	2970560	158596	PINK	1.273	0.140	0.027	0.028	48	46	175	FIL
3FIL175C	11-Aug-94	86	2995613	156900	PINK	1.281	0.148	0.028	0.029	192	185	175	FIL
3FIL175C	16-Aug-94	87	2942927	221660	PINK	1.123	-0.010	-0.003	-0.002	312	300	175	FIL
3FIL175C	18-Aug-94	2	2940777	255667	LIGHT PINK	1.061	-0.072	-0.015	-0.014	360	344	175	FIL
3FIL175C	25-Aug-94	2	2994088	254496	LIGHT PINK	1.071	-0.062	-0.013	-0.012	528	509	175	FIL
3FIL175C	31-Aug-94	2	2898780	199196	LIGHT PINK TINT	1.163	0.030	0.005	0.006	672	645	175	FIL
3FIL175C	16-Sep-94	3	2990522	253115	SLT PINK TINGE	1.072	-0.060	-0.013	-0.012	1056	1027	175	FIL
3FIL175C	26-Sep-94	2	2644895	227582	LIGHT PINK TINGE	1.065	-0.067	-0.014	-0.013	1296	1265	175	FIL
3FIL175C	27-Oct-94	3	3026391	242823	LIGHT PINK	1.096	-0.037	-0.008	-0.007	2040	2005	175	FIL
3FIL175C	9-Nov-94	2	2959866	269482	V SLT PEACH TINGE	1.041	-0.092	-0.019	-0.018	2352	2314	175	FIL
3F_3082A	7-Jul-94	104	1090546	32524		1.525	0.000	-0.001	0.000	0	0	90	F_3
3F_3082A	12-Jul-94	24	1070642	4190		2.407	0.882	0.174	0.175	120	117	90	F_3
3F_3082A	15-Jul-94	22	2570734	3936	YELLOW-GREEN, BLACK SOLIDS	2.815	1.290	0.254	0.255	192	184	90	F_3
3F_3082A	20-Jul-94	13	2575621	3045	LIGHT BLACK, BLACK SOLIDS	2.927	1.402	0.277	0.278	312	299	90	F_3
3F_3082A	25-Jul-94	34	2424031	2733	BROWN, PPT.	2.948	1.422	0.281	0.282	432	415	90	F_3
3F_3082A	5-Aug-94	22	2996637	23465	BROWN, BLACK SOLIDS	2.106	0.581	0.114	0.115	696	665	90	F_3
3F_3082A	9-Aug-94	85	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	792	758	90	F_3
3F_3082B	7-Jul-94	31	1108437	32435		1.534	0.000	-0.001	0.000	0	0	90	F_3
3F_3082B	12-Jul-94	25	1072192	8072		2.123	0.590	0.116	0.117	120	117	90	F_3
3F_3082B	15-Jul-94	23	2587152	10939	YELLOW-GREEN, BLACK SOLIDS	2.374	0.840	0.165	0.166	192	184	90	F_3
3F_3082B	20-Jul-94	25	2573190	8540	LIGHT BLACK, BLACK SOLIDS	2.479	0.945	0.186	0.187	312	299	90	F_3
3F_3082B	25-Jul-94	46	2396743	8793	BROWN, PPT.	2.435	0.902	0.178	0.179	432	415	90	F_3
3F_3082B	5-Aug-94	33	2998514	27786	BROWN, BLACK SOLIDS	2.033	0.499	0.098	0.099	696	665	90	F_3
3F_3082B	9-Aug-94	86	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	792	758	90	F_3
3F_3115A	7-Jul-94	212	1086020	39934		1.434	0.000	-0.001	0.000	0	0	120	F_3
3F_3115A	13-Jul-94	44	0	0	BLACK SLUDGE, YELLOW-GREEN LIQ	0.000	0.000	-0.001	0.000	144	143	120	F_3
3F_3115A	18-Jul-94	19	0	0	FAINT BROWN, THICK SLIME LAYER	0.000	0.000	-0.001	0.000	264	253	120	F_3
3F_3115A	19-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	288	273	120	F_3
3F_3115B	7-Jul-94	42	1096181	21817		1.701	0.000	-0.001	0.000	0	0	120	F_3
3F_3115B	13-Jul-94	45	0	0	BLACK SLUDGE, YELLOW-GREEN LIQ	0.000	0.000	-0.001	0.000	144	143	120	F_3
3F_3115B	18-Jul-94	20	0	0	FAINT BROWN, THICK SLIME LAYER	0.000	0.000	-0.001	0.000	264	253	120	F_3

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TubeID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3F_3115B	19-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	288	273	120	F_3
3F_N082A	7-Jul-94	116	1093792	4836		2.354	0.000	-0.001	0.000	0	0	90	F_N
3F_N082A	12-Jul-94	26	1070734	575		3.270	0.916	0.180	0.181	120	117	90	F_N
3F_N082A	15-Jul-94	24	2588981	1335	SLIME LAYER	3.288	0.933	0.184	0.185	192	184	90	F_N
3F_N082A	20-Jul-94	14	2555300	1253	BLACK, SLIME	3.309	0.955	0.188	0.189	312	299	90	F_N
3F_N082A	21-Jul-94	0	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	336	319	90	F_N
3F_N082B	7-Jul-94	123	1097558	4543		2.383	0.000	-0.001	0.000	0	0	90	F_N
3F_N082B	12-Jul-94	27	1075787	668	SLIME LAYER	3.207	0.824	0.162	0.163	120	117	90	F_N
3F_N082B	15-Jul-94	25	2599424	1765	BLACK, SLIME	3.168	0.785	0.154	0.155	192	184	90	F_N
3F_N082B	20-Jul-94	26	2563048	1343	DECOMPOSED	3.281	0.898	0.177	0.178	312	299	90	F_N
3F_N082B	21-Jul-94	0	0	0		0.000	0.000	-0.001	0.000	336	319	90	F_N
3F_N115A	7-Jul-94	210	1085244	36587	BLACK SLUDGE, PINK LIQ	1.472	0.000	-0.001	0.000	0	0	120	F_N
3F_N115A	13-Jul-94	46	0	0	PEACH, SLUDGE	0.000	0.000	-0.001	0.000	144	143	120	F_N
3F_N115A	18-Jul-94	21	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	264	253	120	F_N
3F_N115A	19-Jul-94	0	0	0		0.000	0.000	-0.001	0.000	288	273	120	F_N
3F_N115B	7-Jul-94	205	1075092	55181	BLACK SLUDGE, PINK LIQ	1.290	0.000	-0.001	0.000	0	0	120	F_N
3F_N115B	13-Jul-94	47	0	0	DARK YELLOW, SLUDGE	0.000	0.000	-0.001	0.000	144	143	120	F_N
3F_N115B	18-Jul-94	22	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	264	253	120	F_N
3F_N115B	19-Jul-94	0	0	0		0.000	0.000	-0.001	0.000	288	273	120	F_N
3MOL082A	2-Aug-94	3	1482022	64416	PINK	1.362	0.000	-0.001	0.000	0	0	90	MOL
3MOL082A	5-Aug-94	6	2991496	166068	PINK	1.256	-0.106	-0.022	-0.021	72	67	90	MOL
3MOL082A	17-Aug-94	38	2933805	197207	PINK	1.173	-0.189	-0.038	-0.037	360	349	90	MOL
3MOL082A	26-Aug-94	97	2863808	168365	LIGHT PINK	1.231	-0.131	-0.027	-0.026	576	559	90	MOL
3MOL082A	2-Sep-94	47	2858813	141605	LIGHT PINK	1.305	-0.057	-0.012	-0.011	744	720	90	MOL
3MOL082A	21-Sep-94	15	2918042	226012	LIGHT PINK	1.111	-0.251	-0.051	-0.050	1200	1122	90	MOL
3MOL082A	6-Oct-94	21	2746217	299967	LIGHT PINK	0.962	-0.400	-0.080	-0.079	1560	1478	90	MOL
3MOL082A	28-Oct-94	29	2940158	242479	LIGHT PINK TINGE	1.084	-0.278	-0.056	-0.055	2088	1978	90	MOL
3MOL082A	9-Nov-94	98	2957386	282674	WATER WHITE	1.020	-0.342	-0.069	-0.068	2376	2191	90	MOL
3MOL082B	2-Aug-94	10	1491822	70089	PINK	1.328	0.000	-0.001	0.000	0	0	90	MOL
3MOL082B	5-Aug-94	14	1494614	70286	PINK	1.328	0.000	-0.001	0.000	0	0	90	MOL
3MOL082B	17-Aug-94	53	2991273	304608	PINK	0.992	-0.336	-0.068	-0.067	72	67	90	MOL
3MOL082B	26-Aug-94	114	2835918	233352	WATER WHITE	0.955	-0.373	-0.075	-0.074	360	349	90	MOL
3MOL082B	2-Sep-94	61	2867387	270535	WATER WHITE	1.085	-0.243	-0.049	-0.048	576	559	90	MOL
3MOL082B	21-Sep-94	30	2940843	329593	WATER WHITE	1.025	-0.303	-0.061	-0.060	744	720	90	MOL
3MOL082B	6-Oct-94	37	2731870	384908	WATER WHITE	0.950	-0.378	-0.076	-0.075	1200	1122	90	MOL
3MOL082B	28-Oct-94	45	2952994	271824	WATER WHITE	0.851	-0.477	-0.095	-0.094	1560	1478	90	MOL
3MOL082B	10-Nov-94	13	2942899	308101	WATER WHITE	1.036	-0.292	-0.059	-0.058	2088	1978	90	MOL
3MOL115A	2-Aug-94	59	1480920	33113	PINK	0.980	-0.348	-0.070	-0.069	2400	2191	90	MOL
3MOL115A	8-Aug-94	10	2906904	165125	WATER WHITE	1.651	0.000	-0.001	0.000	0	0	120	MOL
3MOL115B	2-Aug-94	65	1475438	70891	EXPLODED	1.246	-0.405	-0.081	-0.080	144	142	120	MOL
3MOL115B	8-Aug-94	23	2896121	392014	PINK	0.000	0.000	-0.001	0.000	168	142	120	MOL
3MOL115B	16-Aug-94	13	2984790	214088	WATER WHITE	0.869	-0.450	-0.090	-0.089	144	142	120	MOL
3MOL115B	17-Aug-94	0	0	0	EXPLODED	1.144	-0.174	-0.035	-0.034	336	283	120	MOL
						0.000	0.000	-0.001	0.000	360	303	120	MOL

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TubelD	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3MOL115C	15-Aug-94	102	2956093	196243	WATER WHITE	1.178	0.000	-0.001	0.000	0	0	120	MOL
3MOL115C	19-Aug-94	67	2954765	216457	WATER WHITE	1.135	-0.043	-0.009	-0.008	96	68	120	MOL
3MOL115C	26-Aug-94	13	2870752	126095	WATER WHITE	1.357	0.179	0.035	0.036	264	226	120	MOL
3MOL115C	1-Sep-94	12	2903262	136104	WATER WHITE	1.329	0.151	0.029	0.030	408	367	120	MOL
3MOL115C	19-Sep-94	11	2954285	159634	WATER WHITE	1.267	0.089	0.017	0.018	840	768	120	MOL
3MOL115C	30-Sep-94	23	2635619	127531	WATER WHITE	1.315	0.137	0.026	0.027	1104	1030	120	MOL
3MOL115C	28-Oct-94	9	2980099	162200	WATER WHITE	1.264	0.086	0.016	0.017	1776	1697	120	MOL
3MOL115C	10-Nov-94	79	2952351	149520	WATER WHITE	1.295	0.118	0.022	0.023	2088	1980	120	MOL
3MOL115D	19-Aug-94	78	2950188	394922	WATER WHITE	1.120	0.247	0.048	0.049	168	158	120	MOL
3MOL115D	26-Aug-94	26	2859001	216668	WATER WHITE	1.077	0.204	0.039	0.040	312	299	120	MOL
3MOL115D	1-Sep-94	25	2906687	243425	WATER WHITE	0.935	0.062	0.011	0.012	744	700	120	MOL
3MOL115D	19-Sep-94	23	2966007	344105	WATER WHITE	1.018	0.144	0.028	0.029	1008	962	120	MOL
3MOL115D	30-Sep-94	35	2648248	254213	WATER WHITE	0.959	0.086	0.016	0.017	1680	1628	120	MOL
3MOL115D	28-Oct-94	46	2950901	324076	WATER WHITE	1.074	0.200	0.039	0.040	1992	1912	120	MOL
3MOL115D	10-Nov-94	84	2956524	249534	WATER WHITE	1.305	0.000	-0.001	0.000	0	0	150	MOL
3MOL150A	2-Aug-94	73	1487634	73642	PINK	0.927	-0.378	-0.076	-0.075	72	67	150	MOL
3MOL150A	5-Aug-94	167	2968482	350843	SLT PINK TINGE	0.920	-0.386	-0.077	-0.076	312	293	150	MOL
3MOL150A	15-Aug-94	26	2949848	354811	WATER WHITE	0.894	-0.411	-0.082	-0.081	408	385	150	MOL
3MOL150A	19-Aug-94	18	2952339	376574	WATER WHITE	0.953	-0.352	-0.071	-0.070	552	525	150	MOL
3MOL150A	25-Aug-94	43	2963533	329974	WATER WHITE	1.084	-0.221	-0.045	-0.044	696	667	150	MOL
3MOL150A	31-Aug-94	40	2889760	237912	WATER WHITE	0.961	-0.344	-0.069	-0.068	1080	1048	150	MOL
3MOL150A	16-Sep-94	7	2941290	321663	WATER WHITE	1.015	-0.290	-0.058	-0.057	1368	1332	150	MOL
3MOL150A	28-Sep-94	8	2582971	249375	WATER WHITE	1.047	-0.322	-0.065	-0.064	2064	2024	150	MOL
3MOL150A	27-Oct-94	39	3015113	270680	WATER WHITE	0.984	-0.329	-0.052	-0.051	2376	2331	150	MOL
3MOL150A	9-Nov-94	40	2973638	308658	WATER WHITE	1.281	0.000	-0.001	0.000	0	0	150	MOL
3MOL150B	2-Aug-94	78	1488637	78034	PINK, SLT PPT.	0.849	-0.432	-0.087	-0.086	72	67	150	MOL
3MOL150B	5-Aug-94	152	2988131	423366	WATER WHITE	0.942	-0.338	-0.068	-0.067	312	293	150	MOL
3MOL150B	15-Aug-94	36	2946735	336603	WATER WHITE	0.866	-0.415	-0.083	-0.082	408	385	150	MOL
3MOL150B	19-Aug-94	9	2973146	405194	WATER WHITE	0.929	-0.351	-0.071	-0.070	552	525	150	MOL
3MOL150B	25-Aug-94	52	2997384	352963	WATER WHITE	1.026	-0.255	-0.051	-0.050	696	667	150	MOL
3MOL150B	31-Aug-94	49	2871429	270571	WATER WHITE	0.956	-0.325	-0.065	-0.064	1080	1048	150	MOL
3MOL150B	16-Sep-94	34	2956061	327221	WATER WHITE	0.979	-0.302	-0.061	-0.060	1368	1332	150	MOL
3MOL150B	28-Sep-94	15	2604069	273610	WATER WHITE	1.018	-0.263	-0.053	-0.052	2064	2024	150	MOL
3MOL150B	27-Oct-94	62	3005015	288323	WATER WHITE	0.986	-0.295	-0.059	-0.058	2376	2331	150	MOL
3MOL150B	9-Nov-94	64	2951454	304817	WATER WHITE	1.753	0.000	-0.001	0.000	0	0	90	M_N
3M_N082A	29-Jun-94	10	602927	10660		1.520	-0.233	-0.047	-0.046	312	309	90	M_N
3M_N082A	12-Jul-94	20	1071493	32381	PINK	1.488	-0.265	-0.053	-0.052	384	376	90	M_N
3M_N082A	15-Jul-94	26	2599694	84589	PINK	1.580	-0.173	-0.035	-0.034	504	491	90	M_N
3M_N082A	20-Jul-94	15	2534626	66715	PINK	1.573	-0.179	-0.037	-0.036	624	607	90	M_N
3M_N082A	25-Jul-94	35	2421313	64707	PINK	1.277	-0.475	-0.095	-0.094	888	857	90	M_N
3M_N082A	5-Aug-94	23	2983564	157559	PINK	1.320	-0.432	-0.087	-0.086	1176	1138	90	M_N
3M_N082A	17-Aug-94	37	2959122	141503	PINK	1.469	-0.283	-0.057	-0.056	1392	1348	90	M_N
3M_N082A	26-Aug-94	96	2858110	96961	PINK	1.440	-0.312	-0.063	-0.062	1560	1509	90	M_N
3M_N082A	2-Sep-94	46	2843859	103189	PINK	1.348	-0.405	-0.081	-0.080	2016	1912	90	M_N
3M_N082A	21-Sep-94	16	2934572	131712	PINK								

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<u>TubID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3M_N082A	6-Oct-94	22	2758466	188265	PINK	1.166	-0.587	-0.117	-0.116	2376	2267	90	M_N
3M_N082A	28-Oct-94	31	2947859	128424	LIGHT PINK	1.361	-0.392	-0.079	-0.078	2904	2768	90	M_N
3M_N082A	9-Nov-94	99	2931445	135792	PINK	1.334	-0.418	-0.084	-0.083	3192	2980	90	M_N
3M_N082B	29-Jun-94	3	602697	8680		1.842	0.000	-0.001	0.000	0	0	90	M_N
3M_N082B	12-Jul-94	21	1073756	37028		1.462	-0.379	-0.076	-0.075	312	309	90	M_N
3M_N082B	15-Jul-94	27	2591736	100266	PINK	1.412	-0.429	-0.086	-0.085	384	376	90	M_N
3M_N082B	20-Jul-94	27	2579939	47746	PINK	1.733	-0.109	-0.023	-0.022	504	491	90	M_N
3M_N082B	25-Jul-94	47	2396478	56497	PINK	1.628	-0.214	-0.043	-0.042	624	607	90	M_N
3M_N082B	5-Aug-94	34	3000463	159505	PINK	1.274	-0.567	-0.113	-0.112	888	857	90	M_N
3M_N082B	17-Aug-94	51	2924341	122797	PINK	1.377	-0.465	-0.093	-0.092	1176	1138	90	M_N
3M_N082B	26-Aug-94	132	2835989	97189	PINK	1.465	-0.376	-0.076	-0.075	1392	1348	90	M_N
3M_N082B	2-Sep-94	62	2854963	87910	PINK	1.512	-0.330	-0.066	-0.065	1560	1509	90	M_N
3M_N082B	21-Sep-94	31	2942201	97071	PINK	1.482	-0.360	-0.072	-0.071	2016	1912	90	M_N
3M_N082B	6-Oct-94	36	2751955	153336	PINK	1.254	-0.588	-0.117	-0.116	2376	2267	90	M_N
3M_N082B	28-Oct-94	46	2934841	119142	PINK	1.392	-0.450	-0.090	-0.089	2904	2768	90	M_N
3M_N082B	10-Nov-94	14	2961929	128228	PINK	1.364	-0.478	-0.096	-0.095	3216	2980	90	M_N
3M_N115A	29-Jun-94	21	588575	11483		1.710	0.000	-0.001	0.000	0	0	120	M_N
3M_N115A	13-Jul-94	48	1080659	45800	PINK	1.373	-0.337	-0.068	-0.067	336	335	120	M_N
3M_N115A	18-Jul-94	23	2607116	69803	PINK	1.572	-0.137	-0.028	-0.027	456	445	120	M_N
3M_N115A	22-Jul-94	10	2299231	58648	PINK	1.593	-0.116	-0.024	-0.023	552	536	120	M_N
3M_N115A	28-Jul-94	41	2504062	46313	PINK	1.733	0.023	0.004	0.005	696	674	120	M_N
3M_N115A	8-Aug-94	11	2888172	75254	SALMON	1.584	-0.126	-0.026	-0.025	960	923	120	M_N
3M_N115A	15-Aug-94	101	2971827	94035	SALMON	1.500	-0.210	-0.043	-0.042	1128	1065	120	M_N
3M_N115A	19-Aug-94	64	2957933	91918	PINK	1.508	-0.202	-0.041	-0.040	1224	1133	120	M_N
3M_N115A	26-Aug-94	12	2851522	55094	SALMON	1.714	0.004	0.000	0.001	1392	1291	120	M_N
3M_N115A	1-Sep-94	11	2882718	52919	PINK	1.736	0.026	0.004	0.005	1536	1432	120	M_N
3M_N115A	19-Sep-94	12	2965489	62398	PINK	1.677	-0.033	-0.007	-0.006	1968	1833	120	M_N
3M_N115A	30-Sep-94	24	2642929	43162	SALMON	1.787	0.077	0.014	0.015	2232	2095	120	M_N
3M_N115A	28-Oct-94	10	2978531	57408	PINK	1.715	0.005	0.000	0.001	2904	2761	120	M_N
3M_N115A	10-Nov-94	94	2935885	62053	SALMON	1.675	-0.035	-0.008	-0.007	3216	3045	120	M_N
3M_N115B	30-Jun-94	7	592570	15654		1.578	0.000	-0.001	0.000	0	0	120	M_N
3M_N115B	13-Jul-94	49	1082144	21466	PINK	1.703	0.124	0.024	0.025	312	311	120	M_N
3M_N115B	18-Jul-94	24	2613760	41079	PINK	1.804	0.226	0.044	0.045	432	421	120	M_N
3M_N115B	22-Jul-94	20	2311088	45178	SALMON	1.709	0.131	0.025	0.026	528	512	120	M_N
3M_N115B	28-Jul-94	51	2513922	32321	SALMON	1.891	0.313	0.061	0.062	672	650	120	M_N
3M_N115B	8-Aug-94	24	2907930	42626	SALMON	1.834	0.256	0.050	0.051	936	899	120	M_N
3M_N115B	16-Aug-94	12	2986528	60745	SALMON	1.692	0.114	0.021	0.022	1128	1041	120	M_N
3M_N115B	19-Aug-94	77	2937994	51439	PINK	1.757	0.179	0.034	0.035	1200	1109	120	M_N
3M_N115B	26-Aug-94	25	2866899	32165	SALMON	1.950	0.372	0.073	0.074	1368	1267	120	M_N
3M_N115B	1-Sep-94	26	2885862	33417	PINK	1.936	0.358	0.070	0.071	1512	1408	120	M_N
3M_N115B	19-Sep-94	24	2939849	36587	PINK	1.905	0.327	0.064	0.065	1944	1809	120	M_N
3M_N115B	30-Sep-94	36	2644726	29210	SALMON	1.957	0.379	0.074	0.075	2208	2071	120	M_N
3M_N115B	28-Oct-94	47	2942534	40240	SALMON	1.864	0.286	0.056	0.057	2880	2737	120	M_N
3M_N115B	10-Nov-94	85	2955766	44977	SALMON	1.818	0.240	0.046	0.047	3192	3021	120	M_N
3M_N150A	29-Jun-94	40	587955	10282		1.757	0.000	-0.001	0.000	0	0	150	M_N

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<u>TubID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3M_N150A	14-Jul-94	86	2661233	31253	PEACH	1.930	0.173	0.033	0.034	360	357	150	M_N
3M_N150A	19-Jul-94	9	2619468	10255	PEACH	2.407	0.650	0.128	0.129	480	470	150	M_N
3M_N150A	21-Jul-94	25	2544141	8427	SALMON	2.480	0.723	0.142	0.143	528	511	150	M_N
3M_N150A	25-Jul-94	78	2356518	4251	RED	2.744	0.987	0.194	0.195	624	603	150	M_N
3M_N150A	5-Aug-94	168	2956866	8581	ORANGE	2.537	0.780	0.153	0.154	888	857	150	M_N
3M_N150A	15-Aug-94	25	2941533	5578	ORANGE, SLIME	2.722	0.965	0.190	0.191	1128	1083	150	M_N
3M_N150A	19-Aug-94	17	2970238	23597	DIRTY ORANGE, SLIME	2.100	0.343	0.067	0.068	1224	1174	150	M_N
3M_N150A	25-Aug-94	42	2984091	37557	DIRTY BILE	1.900	0.143	0.027	0.028	1368	1315	150	M_N
3M_N150A	31-Aug-94	41	2873300	14511	DIRTY YELLOW	2.297	0.539	0.106	0.107	1512	1456	150	M_N
3M_N150A	16-Sep-94	6	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	1896	1838	150	M_N
3M_N150B	29-Jun-94	12	603020	8943		1.829	0.000	-0.001	0.000	0	0	150	M_N
3M_N150B	14-Jul-94	87	2637540	41560	PEACH	1.803	-0.026	-0.006	-0.005	360	357	150	M_N
3M_N150B	19-Jul-94	19	2605555	2075	DARK ORANGE	3.099	1.270	0.250	0.251	480	470	150	M_N
3M_N150B	21-Jul-94	34	2552628	2137	RED	3.077	1.248	0.246	0.247	528	511	150	M_N
3M_N150B	25-Jul-94	86	2286076	2268	RED	3.003	1.175	0.232	0.233	624	603	150	M_N
3M_N150B	5-Aug-94	153	2975268	16728	ORANGE, BROWN PPT ON WALLS	2.250	0.421	0.082	0.083	888	857	150	M_N
3M_N150B	15-Aug-94	35	2968115	51794	DIRTY YELLOW	1.758	-0.071	-0.015	-0.014	1128	1083	150	M_N
3M_N150B	19-Aug-94	8	2952758	41188	DIRTY YELLOW, SLIME	1.855	0.027	0.004	0.005	1224	1174	150	M_N
3M_N150B	25-Aug-94	51	2969543	6729	DIRTY BILE	2.645	0.816	0.161	0.162	1368	1315	150	M_N
3M_N150B	31-Aug-94	50	0	0	DECOMPOSED	0.000	0.000	-0.001	0.000	1512	1456	150	M_N
3NON082A	1-Jul-94	23	594340	13434		1.646	0.000	-0.001	0.000	0	0	90	NON
3NON082A	12-Jul-94	19	1073629	23533		1.659	0.013	0.002	0.003	264	261	90	NON
3NON082A	15-Jul-94	28	2610160	42826	PINK	1.785	0.139	0.027	0.028	336	328	90	NON
3NON082A	20-Jul-94	16	2573945	42171	PINK	1.786	0.140	0.027	0.028	456	443	90	NON
3NON082A	25-Jul-94	36	2424610	61466	PINK	1.596	-0.050	-0.011	-0.010	576	559	90	NON
3NON082A	5-Aug-94	24	2996480	90300	PINK	1.521	-0.125	-0.026	-0.025	840	809	90	NON
3NON082A	9-Aug-94	52	2955685	88586	PINK, NO 3NON082B	1.523	-0.123	-0.025	-0.024	936	902	90	NON
3NON082A	17-Aug-94	39	2932793	97653	PINK	1.478	-0.168	-0.034	-0.033	1128	1090	90	NON
3NON082A	26-Aug-94	98	2835346	53270	PINK	1.726	0.080	0.015	0.016	1344	1300	90	NON
3NON082A	2-Sep-94	48	2859399	59948	PINK	1.679	0.033	0.005	0.006	1512	1461	90	NON
3NON082A	21-Sep-94	17	2947833	74231	PINK	1.599	-0.047	-0.010	-0.009	1968	1864	90	NON
3NON082A	6-Oct-94	23	2746672	113556	PINK	1.384	-0.262	-0.053	-0.052	2328	2219	90	NON
3NON082A	28-Oct-94	32	2939770	75918	PINK	1.588	-0.058	-0.012	-0.011	2856	2720	90	NON
3NON082A	9-Nov-94	100	2926908	81539	PINK	1.555	-0.091	-0.019	-0.018	3144	2932	90	NON
3NON082D	2-Aug-94	4	1478560	56924	PINK	1.415	0.000	-0.001	0.000	0	0	90	NON
3NON082D	5-Aug-94	7	3001635	154469	PINK	1.289	-0.126	-0.026	-0.025	72	67	90	NON
3NON082D	9-Aug-94	53	2963462	164204	PINK, NO 3NON082C	1.256	-0.158	-0.032	-0.031	168	161	90	NON
3NON082D	17-Aug-94	54	2941146	155201	PINK	1.278	-0.137	-0.028	-0.027	360	349	90	NON
3NON082D	26-Aug-94	133	2845817	96878	PINK	1.468	0.053	0.010	0.011	576	559	90	NON
3NON082D	2-Sep-94	63	2865310	96025	SALMON	1.475	0.060	0.011	0.012	744	720	90	NON
3NON082D	21-Sep-94	32	2945798	122947	PINK	1.379	-0.035	-0.008	-0.007	1200	1122	90	NON
3NON082D	6-Oct-94	38	2754853	151281	PINK	1.260	-0.154	-0.032	-0.031	1560	1478	90	NON
3NON082D	28-Oct-94	47	2931364	103657	PEACH	1.451	0.037	0.006	0.007	2088	1978	90	NON
3NON082D	10-Nov-94	15	2970646	112669	SALMON	1.421	0.007	0.000	0.001	2400	2191	90	NON
3NON115A	1-Jul-94	12	593859	36588		1.210	0.000	-0.001	0.000	0	0	120	NON

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3NON15A	13-Jul-94	50	1088389	70242	PINK	1.190	-0.020	-0.005	-0.004	288	287	120	NON
3NON15A	18-Jul-94	25	2597393	140851	PINK	1.266	0.055	0.010	0.011	408	397	120	NON
3NON15A	22-Jul-94	11	2285309	112241	PINK	1.309	0.038	0.018	0.019	504	488	120	NON
3NON15A	28-Jul-94	42	2511057	133017	PINK	1.276	0.066	0.012	0.013	648	626	120	NON
3NON15A	8-Aug-94	12	2914508	249202	PINK	1.068	-0.142	-0.029	-0.028	912	875	120	NON
3NON15A	15-Aug-94	103	2980601	253890	PINK	1.070	-0.141	-0.029	-0.028	1080	1017	120	NON
3NON15A	19-Aug-94	65	2942841	268036	PINK	1.041	-0.170	-0.035	-0.034	1176	1085	120	NON
3NON15A	26-Aug-94	14	2877097	164869	PINK	1.242	0.031	0.005	0.006	1344	1243	120	NON
3NON15A	1-Sep-94	13	2901416	185870	PINK	1.193	-0.017	-0.004	-0.003	1488	1384	120	NON
3NON15A	19-Sep-94	13	2939291	217237	PINK	1.131	-0.079	-0.017	-0.016	1920	1785	120	NON
3NON15A	30-Sep-94	25	2627112	172340	PINK	1.183	-0.027	-0.006	-0.005	2184	2047	120	NON
3NON15A	28-Oct-94	12	2961958	185551	PINK	1.203	-0.007	-0.002	-0.001	2856	2713	120	NON
3NON15A	10-Nov-94	80	2970853	200370	PINK	1.171	-0.039	-0.009	-0.008	3168	2997	120	NON
3NON15B	1-Jul-94	25	595342	32898	PINK	1.258	0.000	-0.001	0.000	0	0	120	NON
3NON15B	13-Jul-94	51	1075975	54623	PINK	1.294	0.037	0.006	0.007	288	287	120	NON
3NON15B	18-Jul-94	26	2608061	121369	PINK	1.332	0.075	0.014	0.015	408	397	120	NON
3NON15B	22-Jul-94	21	2312039	109150	PINK	1.326	0.068	0.013	0.014	504	488	120	NON
3NON15B	28-Jul-94	52	2516618	89887	PINK	1.447	0.190	0.037	0.038	648	626	120	NON
3NON15B	8-Aug-94	25	2885071	181877	PINK	1.200	-0.057	-0.012	-0.011	912	875	120	NON
3NON15B	16-Aug-94	14	2975079	213854	PINK	1.143	-0.114	-0.024	-0.023	1104	1017	120	NON
3NON15B	19-Aug-94	79	2950224	221058	PINK	1.125	-0.132	-0.027	-0.026	1176	1085	120	NON
3NON15B	26-Aug-94	27	2852649	142056	PINK	1.303	0.045	0.008	0.009	1344	1243	120	NON
3NON15B	1-Sep-94	27	2892270	152131	PINK	1.279	0.021	0.003	0.004	1488	1384	120	NON
3NON15B	19-Sep-94	25	2963508	185369	PINK	1.204	-0.054	-0.012	-0.011	1920	1785	120	NON
3NON15B	30-Sep-94	37	2642831	134667	PINK	1.293	0.035	0.006	0.007	2184	2047	120	NON
3NON15B	28-Oct-94	48	2960843	167105	PINK	1.248	-0.009	-0.003	-0.002	2856	2713	120	NON
3NON15B	10-Nov-94	86	2961643	191216	PINK	1.190	-0.068	-0.014	-0.013	3168	2997	120	NON
3NON150A	1-Jul-94	19	595567	30905	PINK	1.285	0.000	-0.001	0.000	0	0	150	NON
3NON150A	14-Jul-94	88	2655186	145294	PINK	1.262	-0.023	-0.006	-0.005	312	309	150	NON
3NON150A	19-Jul-94	10	2613256	86054	PINK	1.482	0.198	0.038	0.039	432	422	150	NON
3NON150A	21-Jul-94	26	2556606	97188	PINK	1.420	0.135	0.026	0.027	480	463	150	NON
3NON150A	25-Jul-94	79	2351398	109789	PINK	1.331	0.046	0.008	0.009	576	555	150	NON
3NON150A	5-Aug-94	169	2967517	185916	PINK	1.203	-0.082	-0.017	-0.016	840	809	150	NON
3NON150A	15-Aug-94	27	2943307	127764	PINK	1.362	0.078	0.014	0.015	1080	1035	150	NON
3NON150A	19-Aug-94	19	2966508	189281	PINK	1.195	-0.090	-0.019	-0.018	1176	1126	150	NON
3NON150A	25-Aug-94	44	2982059	168386	PINK	1.248	-0.037	-0.008	-0.007	1320	1267	150	NON
3NON150A	31-Aug-94	42	2896107	103834	PINK	1.445	0.161	0.031	0.032	1464	1408	150	NON
3NON150A	16-Sep-94	8	2956371	120153	PINK	1.391	0.106	0.020	0.021	1848	1790	150	NON
3NON150A	28-Sep-94	9	2592696	89994	PINK	1.460	0.175	0.034	0.035	2136	2073	150	NON
3NON150A	27-Oct-94	40	2998518	71885	PINK	1.620	0.335	0.065	0.066	2832	2765	150	NON
3NON150A	9-Nov-94	41	2977138	66403	PINK	1.652	0.367	0.072	0.073	3144	3072	150	NON
3NON150B	1-Jul-94	22	594583	7960	PINK	1.873	0.000	-0.001	0.000	0	0	150	NON
3NON150B	14-Jul-94	89	2639226	31795	PINK	1.919	0.046	0.008	0.009	312	309	150	NON
3NON150B	19-Jul-94	20	2620418	22194	PINK	2.072	0.199	0.038	0.039	432	422	150	NON
3NON150B	21-Jul-94	35	2558266	21537	PINK	2.075	0.201	0.039	0.040	480	463	150	NON

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<u>TubelD</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3NON150B	25-Jul-94	87	2290593	35337	PINK	1.812	-0.062	-0.013	-0.012	576	555	150	NON
3NON150B	5-Aug-94	154	2980586	44523	DARK PINK	1.826	-0.048	-0.010	-0.009	840	809	150	NON
3NON150B	15-Aug-94	37	2969766	42402	PINK	1.845	-0.028	-0.007	-0.006	1080	1035	150	NON
3NON150B	19-Aug-94	10	2968778	47212	PINK	1.799	-0.075	-0.016	-0.015	1176	1126	150	NON
3NON150B	25-Aug-94	53	2963215	34772	PINK	1.931	0.057	0.010	0.011	1320	1267	150	NON
3NON150B	31-Aug-94	51	2868713	22317	PINK	2.109	0.236	0.046	0.047	1464	1408	150	NON
3NON150B	16-Sep-94	35	2956752	23778	PINK	2.095	0.221	0.043	0.044	1848	1790	150	NON
3NON150B	28-Sep-94	16	2604576	22701	PINK	2.060	0.186	0.036	0.037	2136	2073	150	NON
3NON150B	27-Oct-94	63	3008772	16498	PINK	2.261	0.388	0.076	0.077	2832	2765	150	NON
3NON150B	9-Nov-94	65	2970633	13790	PINK	2.333	0.480	0.090	0.091	3144	3072	150	NON
3RML025A	30-Jun-94	31	593442	34185		1.240	0.000	-0.001	0.000	0	0	25	RML
3RML025A	7-Jul-94	128	1093715	50986		1.331	0.092	0.017	0.018	168	168	25	RML
3RML025A	14-Jul-94	56	2659560	150239	PINK	1.248	0.008	0.001	0.002	336	336	25	RML
3RML025A	21-Jul-94	7	2554493	55636	PINK	1.662	0.422	0.083	0.084	504	504	25	RML
3RML025A	28-Jul-94	7	2008016	63895	PINK	1.497	0.258	0.050	0.051	672	672	25	RML
3RML025A	9-Aug-94	73	2943692	201524	PINK	1.165	-0.075	-0.016	-0.015	960	960	25	RML
3RML025A	16-Aug-94	125	2951509	185444	PINK	1.202	-0.038	-0.008	-0.007	1128	1128	25	RML
3RML025A	26-Aug-94	4	2836740	130802	PINK	1.336	0.097	0.018	0.019	1368	1368	25	RML
3RML025A	2-Sep-94	132	2870695	137901	PINK	1.318	0.079	0.015	0.016	1536	1536	25	RML
3RML025A	7-Oct-94	49	2740362	222514	PINK	1.090	-0.149	-0.031	-0.030	2376	2376	25	RML
3RML025A	4-Nov-94	5	2939757	194280	LIGHT PINK	1.180	-0.060	-0.013	-0.012	3048	3048	25	RML
3RML025A	10-Nov-94	146	2939326	173786	PINK	1.228	-0.011	-0.003	-0.002	3192	3192	25	RML
3SIL082A	2-Aug-94	5	1481823	68735	WATER WHITE	1.334	0.000	-0.001	0.000	0	0	90	SIL
3SIL082A	5-Aug-94	8	3009631	245259	WATER WHT, SLT BEIGE TINGE	1.089	-0.245	-0.049	-0.048	72	67	90	SIL
3SIL082A	17-Aug-94	40	2942638	244138	OFF WATER WHITE	1.081	-0.253	-0.051	-0.050	360	349	90	SIL
3SIL082A	26-Aug-94	99	2856397	164360	LIGHT YELLOW TINT	1.240	-0.094	-0.020	-0.019	576	559	90	SIL
3SIL082A	2-Sep-94	49	2874408	172986	LIGHT YELLOW TINGE	1.221	-0.113	-0.023	-0.022	744	720	90	SIL
3SIL082A	21-Sep-94	18	2912689	219094	OFF WATER WHITE	1.124	-0.210	-0.043	-0.042	1200	1122	90	SIL
3SIL082A	6-Oct-94	24	2758777	274831	OFF WATER WHITE	1.002	-0.332	-0.067	-0.066	1560	1478	90	SIL
3SIL082A	28-Oct-94	33	2934191	204554	LIGHT YELLOW TINT	1.157	-0.177	-0.036	-0.035	2088	1978	90	SIL
3SIL082A	9-Nov-94	101	2933050	209251	OFF WATER WHITE	1.147	-0.187	-0.038	-0.037	2376	2191	90	SIL
3SIL082B	2-Aug-94	11	1494438	109609	WATER WHITE	1.135	0.000	-0.001	0.000	0	0	90	SIL
3SIL082B	5-Aug-94	12	2999401	344359	WATER WHITE, SLT BEIGE TINGE	0.940	-0.195	-0.040	-0.039	72	67	90	SIL
3SIL082B	17-Aug-94	55	2952342	355464	OFF WATER WHITE	0.919	-0.215	-0.044	-0.043	360	349	90	SIL
3SIL082B	26-Aug-94	115	2855149	240150	LIGHT YELLOW TINGE	1.075	-0.059	-0.013	-0.012	576	559	90	SIL
3SIL082B	2-Sep-94	64	2871993	259432	WATER WHITE	1.044	-0.090	-0.019	-0.018	744	720	90	SIL
3SIL082B	21-Sep-94	33	2948850	290703	OFF WATER WHITE	1.006	-0.128	-0.026	-0.025	1200	1122	90	SIL
3SIL082B	6-Oct-94	39	2752295	394322	WATER WHITE	0.844	-0.291	-0.059	-0.058	1560	1478	90	SIL
3SIL082B	28-Oct-94	48	2935489	268202	OFF WATER WHITE	1.039	-0.095	-0.020	-0.019	2088	1978	90	SIL
3SIL082B	10-Nov-94	11	2964972	281958	OFF WATER WHITE	1.022	-0.113	-0.023	-0.022	2400	2191	90	SIL
3SIL115A	2-Aug-94	60	1473129	115128	PINK TINGE	1.107	0.000	-0.001	0.000	0	0	120	SIL
3SIL115A	8-Aug-94	13	2911808	405824	WATER WHITE, SLT BEIGE TINGE	0.856	-0.251	-0.051	-0.050	144	142	120	SIL
3SIL115A	15-Aug-94	104	2962563	407592	OFF WATER WHITE	0.861	-0.246	-0.050	-0.049	312	283	120	SIL
3SIL115A	19-Aug-94	66	2951642	435312	OFF WATER WHITE	0.831	-0.276	-0.056	-0.055	408	351	120	SIL
3SIL115A	26-Aug-94	15	2859814	286266	LIGHT YELLOW TINGE	1.000	-0.107	-0.022	-0.021	576	509	120	SIL

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TubID	Date	Index	Reference	Sample	Comment	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additives
3SIL115A	1-Sep-94	14	2907426	298082	WATER WHITE	0.989	-0.118	-0.024	-0.023	720	650	120	SIL
3SIL115A	19-Sep-94	14	2963325	349519	SLT BEIGE TINGE	0.928	-0.179	-0.036	-0.035	1152	1051	120	SIL
3SIL115A	30-Sep-94	26	2651836	281913	OFF WATER WHITE	0.973	-0.134	-0.027	-0.026	1416	1313	120	SIL
3SIL115A	28-Oct-94	11	2984182	303080	OFF WATER WHITE	0.993	-0.114	-0.024	-0.023	2088	1979	120	SIL
3SIL115A	10-Nov-94	96	2962494	346227	WATER WHITE	0.932	-0.175	-0.036	-0.035	2400	2263	120	SIL
3SIL115B	2-Aug-94	66	1489684	99124	PINK TINGE	1.177	0.000	-0.001	0.000	0	0	120	SIL
3SIL115B	8-Aug-94	26	2897585	332961	WATER WHITE, SLT BEIGE TINGE	0.940	-0.237	-0.048	-0.047	144	142	120	SIL
3SIL115B	16-Aug-94	15	2972408	334197	OFF WATER WHITE	0.949	-0.228	-0.046	-0.045	336	283	120	SIL
3SIL115B	19-Aug-94	80	2929868	370131	OFF WATER WHITE	0.898	-0.278	-0.056	-0.055	408	351	120	SIL
3SIL115B	26-Aug-94	28	2857866	227494	LIGHT YELLOW TINGE	1.099	-0.078	-0.016	-0.015	576	509	120	SIL
3SIL115B	1-Sep-94	28	2889017	235625	WATER WHITE	1.089	-0.088	-0.019	-0.018	720	650	120	SIL
3SIL115B	19-Sep-94	27	2961439	290202	BEIGE	1.009	-0.168	-0.034	-0.033	1152	1051	120	SIL
3SIL115B	30-Sep-94	38	2639492	237202	OFF WATER WHITE	1.046	-0.131	-0.027	-0.026	1416	1313	120	SIL
3SIL115B	28-Oct-94	49	2932205	275021	WATER WHITE	1.028	-0.149	-0.031	-0.030	2088	1979	120	SIL
3SIL115B	10-Nov-94	87	2948304	295595	OFF WATER WHITE	0.999	-0.178	-0.036	-0.035	2400	2263	120	SIL
3SIL150A	2-Aug-94	74	1482663	106047	WATER WHITE	1.146	0.000	-0.001	0.000	0	0	150	SIL
3SIL150A	5-Aug-94	170	2973557	331419	YELLOW TINGE	0.953	-0.193	-0.039	-0.038	72	67	150	SIL
3SIL150A	15-Aug-94	28	2963899	354169	OFF WHITE	0.923	-0.223	-0.045	-0.044	312	293	150	SIL
3SIL150A	19-Aug-94	20	2956282	385340	OFF WATER WHITE	0.885	-0.261	-0.053	-0.052	408	385	150	SIL
3SIL150A	25-Aug-94	45	2950781	376520	SLT YELLOW TINGE	0.894	-0.251	-0.051	-0.050	552	525	150	SIL
3SIL150A	31-Aug-94	43	2897261	258349	LIGHT YELLOW TINGE	1.050	-0.096	-0.020	-0.019	696	667	150	SIL
3SIL150A	16-Sep-94	9	2973686	313190	SLT YELLOW TINGE	0.977	-0.168	-0.034	-0.033	1080	1048	150	SIL
3SIL150A	28-Sep-94	10	2584237	255177	SLT YELLOW TINGE	1.005	-0.140	-0.029	-0.028	1368	1332	150	SIL
3SIL150A	27-Oct-94	41	2994620	277564	LIGHT YELLOW	1.033	-0.113	-0.023	-0.022	2064	2024	150	SIL
3SIL150A	9-Nov-94	42	2981806	300972	LIGHT YELLOW TINT	0.996	-0.150	-0.031	-0.030	2376	2331	150	SIL
3SIL150B	2-Aug-94	79	1494473	101513	PINK TINGE	1.168	0.000	-0.001	0.000	0	0	150	SIL
3SIL150B	5-Aug-94	155	2982824	381513	YELLOW TINT	0.893	-0.275	-0.055	-0.054	72	67	150	SIL
3SIL150B	15-Aug-94	38	2942658	404941	OFF WATER WHITE	0.861	-0.307	-0.062	-0.061	312	293	150	SIL
3SIL150B	19-Aug-94	11	2966850	416461	OFF WATER WHITE	0.853	-0.315	-0.063	-0.062	408	385	150	SIL
3SIL150B	25-Aug-94	54	2961284	394678	LIGHT YELLOW TINGE	0.875	-0.293	-0.059	-0.058	552	525	150	SIL
3SIL150B	31-Aug-94	52	2870542	281743	LIGHT YELLOW TINGE	1.008	-0.160	-0.033	-0.032	696	667	150	SIL
3SIL150B	16-Sep-94	36	2953021	325503	SLT YELLOW TINT	0.958	-0.210	-0.043	-0.042	1080	1048	150	SIL
3SIL150B	28-Sep-94	17	2594415	291528	LIGHT YELLOW TINT	0.949	-0.219	-0.044	-0.043	1368	1332	150	SIL
3SIL150B	27-Oct-94	64	3004162	289575	OFF WATER WHITE	1.016	-0.152	-0.031	-0.030	2064	2024	150	SIL
3SIL150B	9-Nov-94	66	2967866	325774	BEIGE	0.960	-0.208	-0.042	-0.041	2376	2331	150	SIL
3SUN025A	30-Jun-94	29	593162	15831		1.574	0.000	-0.001	0.000	0	0	25	SUN
3SUN025A	7-Jul-94	126	1090769	19946		1.738	0.164	0.032	0.033	168	168	25	SUN
3SUN025A	14-Jul-94	65	2648729	61889	PINK	1.631	0.058	0.010	0.011	336	336	25	SUN
3SUN025A	21-Jul-94	4	2563640	33777	PINK	1.880	0.307	0.060	0.061	504	504	25	SUN
3SUN025A	28-Jul-94	2	2020505	23924	PINK	1.927	0.353	0.069	0.070	672	672	25	SUN
3SUN025A	9-Aug-94	78	2949433	53156	PINK	1.744	0.171	0.033	0.034	960	960	25	SUN
3SUN025A	16-Aug-94	128	2968689	62590	PINK	1.676	0.102	0.019	0.020	1128	1128	25	SUN
3SUN025A	26-Aug-94	1	2827920	35352	PINK	1.903	0.329	0.064	0.065	1368	1368	25	SUN
3WAT082A	2-Aug-94	6	1477933	23322	PINK	1.802	0.000	-0.001	0.000	0	0	90	WAT
3WAT082A	5-Aug-94	9	2991227	62387	PINK	1.681	-0.121	-0.025	-0.024	72	67	90	WAT

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comment</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additives</u>
3WAT082A	17-Aug-94	41	2950894	79451	LIGHT PINK	1.570	-0.232	-0.047	-0.046	360	349	90	WAT
3WAT082A	26-Aug-94	100	2851302	50347	LIGHT PINK	1.753	-0.049	-0.011	-0.010	576	559	90	WAT
3WAT082A	2-Sep-94	50	2858174	54695	LIGHT PEACH	1.718	-0.084	-0.018	-0.017	744	720	90	WAT
3WAT082A	21-Sep-94	19	2935405	69097	LIGHT PEACH	1.628	-0.174	-0.035	-0.034	1200	1122	90	WAT
3WAT082A	6-Oct-94	25	2730770	115049	BEIGE	1.375	-0.426	-0.085	-0.084	1560	1478	90	WAT
3WAT082A	28-Oct-94	34	2950314	81453	LIGHT YELLOW TINGE	1.559	-0.243	-0.049	-0.048	2088	1978	90	WAT
3WAT082A	9-Nov-94	102	2924418	82956	BEIGE	1.547	-0.255	-0.051	-0.050	2376	2191	90	WAT

APPENDIX D:
AGING DATA ON 1-C₄F₉I

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
43BN082A	1-Jul-94	73	596298	6359		1.972	0.000	0.002	0.000	0	0	90	3BN
43BN082A	12-Jul-94	42	1067203	11035	ORANGE	1.985	0.013	0.006	0.005	264	261	90	3BN
43BN082A	15-Jul-94	31	2591360	22827	ORANGE	2.055	0.083	0.030	0.028	336	328	90	3BN
43BN082A	20-Jul-94	30	2569028	23830	SALMON	2.033	0.061	0.022	0.021	456	443	90	3BN
43BN082A	25-Jul-94	5	2491563	27939	SALMON	1.950	-0.022	-0.006	-0.007	576	559	90	3BN
43BN082A	25-Jul-94	15	2482802	17807	SALMON	2.144	0.172	0.060	0.058	576	559	90	3BN
43BN082A	5-Aug-94	36	3015016	60962	SALMON	1.694	-0.278	-0.093	-0.094	840	809	90	3BN
43BN082A	17-Aug-94	58	2929389	72905	PEACH	1.604	-0.368	-0.123	-0.125	1128	1090	90	3BN
43BN082A	26-Aug-94	117	2852425	59886	ORANGE	1.678	-0.294	-0.098	-0.100	1344	1300	90	3BN
43BN082A	2-Sep-94	66	2861877	66195	ORANGE	1.636	-0.336	-0.113	-0.114	1512	1461	90	3BN
43BN082A	21-Sep-94	34	2955923	109794	YELLOW	1.430	-0.542	-0.182	-0.184	1968	1864	90	3BN
43BN082A	6-Oct-94	41	2751147	119002	PEACH	1.364	-0.608	-0.205	-0.206	2328	2219	90	3BN
43BN082A	28-Oct-94	49	2941125	108497	PEACH	1.433	-0.539	-0.181	-0.183	2856	2720	90	3BN
43BN082A	10-Nov-94	16	2947230	131447	YELLOW	1.351	-0.621	-0.209	-0.211	3168	2932	90	3BN
43BN082B	1-Jul-94	53	596024	4166		2.156	0.000	0.002	0.000	0	0	90	3BN
43BN082B	12-Jul-94	43	1069260	8543		2.097	-0.058	-0.018	-0.020	264	261	90	3BN
43BN082B	15-Jul-94	32	2576303	19022	ORANGE	2.132	-0.024	-0.007	-0.008	336	328	90	3BN
43BN082B	20-Jul-94	43	2570464	20665	ORANGE	2.095	-0.061	-0.019	-0.021	456	443	90	3BN
43BN082B	5-Aug-94	49	2977046	51040	ORANGE	1.766	-0.390	-0.131	-0.132	840	809	90	3BN
43BN082B	17-Aug-94	71	2948782	58686	PEACH	1.701	-0.454	-0.153	-0.154	1128	1090	90	3BN
43BN082B	26-Aug-94	134	2837048	58423	ORANGE	1.686	-0.469	-0.158	-0.159	1344	1300	90	3BN
43BN082B	2-Sep-94	81	2863137	66495	ORANGE	1.634	-0.521	-0.175	-0.177	1512	1461	90	3BN
43BN082B	21-Sep-94	49	2937162	109634	YELLOW	1.428	-0.728	-0.245	-0.247	1968	1864	90	3BN
43BN082B	7-Oct-94	2	2748938	150522	YELLOW	1.262	-0.894	-0.302	-0.303	2352	2219	90	3BN
43BN082B	28-Oct-94	63	2932708	116565	YELLOW	1.401	-0.755	-0.255	-0.256	2856	2720	90	3BN
43BN082B	10-Nov-94	32	2943894	136295	YELLOW	1.334	-0.821	-0.277	-0.279	3168	2932	90	3BN
43BN115A	1-Jul-94	74	596134	6790		1.943	0.000	0.002	0.000	0	0	120	3BN
43BN115A	13-Jul-94	2	1077637	9270	ORANGE	2.065	0.122	0.043	0.041	288	287	120	3BN
43BN115A	18-Jul-94	30	2611687	2748	BROWN	2.978	1.034	0.352	0.351	408	397	120	3BN
43BN115A	22-Jul-94	24	2303455	1225	BROWN, SLIME	3.274	1.331	0.453	0.452	504	488	120	3BN
43BN115A	29-Jul-94	0	0	0	DECOMPOSED					672	643	120	3BN
43BN115B	1-Jul-94	65	594469	6579		1.956	0.000	0.002	0.000	0	0	120	3BN
43BN115B	13-Jul-94	3	1091028	11314	ORANGE	1.984	0.028	0.011	0.010	288	287	120	3BN
43BN115B	18-Jul-94	31	2592460	6522	BROWN	2.599	0.643	0.220	0.218	408	397	120	3BN
43BN115B	22-Jul-94	34	2306533	1631	BROWN, SLIME	3.151	1.195	0.407	0.405	504	488	120	3BN
43BN115B	29-Jul-94	0	0	0	DECOMPOSED					672	643	120	3BN
43BN175A	1-Jul-94	52	594829	7125		1.922	0.000	0.002	0.000	0	0	175	3BN
43BN175A	14-Jul-94	2	2654933	2141	SLIME LAYER	3.093	1.172	0.399	0.398	312	311	175	3BN
43BN175A	15-Jul-94	0	0	0	DECOMPOSED					336	329	175	3BN
43BN175B	1-Jul-94	64	593511	3979		2.174	0.000	0.002	0.000	0	0	175	3BN
43BN175B	14-Jul-94	3	2671231	1403	SLIME LAYER	3.280	1.106	0.377	0.375	312	311	175	3BN
43BN175B	15-Jul-94	0	0	0	DECOMPOSED					336	329	175	3BN
4AIR082A	2-Aug-94	25	1481190	48468	PINK	1.485	0.000	0.002	0.000	0	0	90	AIR
4AIR082A	5-Aug-94	37	2999536	61685	PURPLE	1.687	0.202	0.070	0.068	72	67	90	AIR
4AIR082A	17-Aug-94	57	2923950	44187	HOT PINK	1.821	0.336	0.115	0.114	360	349	90	AIR

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<u>TubID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4AIR082A	17-Aug-94	70	2964164	32051	HOT PINK	1.966	0.481	0.165	0.163	360	349	90	AIR
4AIR082A	26-Aug-94	118	2832680	30038	MAGENTA	1.975	0.489	0.168	0.166	576	559	90	AIR
4AIR082A	2-Sep-94	67	2868597	27995	HOT PINK	2.011	0.525	0.180	0.178	744	720	90	AIR
4AIR082A	21-Sep-94	35	2938392	28220	HOT PINK	2.018	0.532	0.182	0.181	1200	1122	90	AIR
4AIR082A	6-Oct-94	40	2740677	27019	PINK	2.006	0.521	0.178	0.177	1560	1478	90	AIR
4AIR082A	28-Oct-94	50	2942226	19012	PINK	2.190	0.704	0.241	0.239	2088	1978	90	AIR
4AIR082A	10-Nov-94	17	2974836	19765	PINK	2.178	0.692	0.236	0.235	2400	2191	90	AIR
4AIR082B	2-Aug-94	30	1489581	38956	PINK	1.582	0.000	0.002	0.000	0	0	90	AIR
4AIR082B	5-Aug-94	51	2989219	45438	PURPLE	1.818	0.236	0.081	0.080	72	67	90	AIR
4AIR082B	26-Aug-94	135	2866664	21458	MAGENTA	2.126	0.543	0.186	0.184	576	559	90	AIR
4AIR082B	2-Sep-94	82	2845724	20380	HOT PINK	2.145	0.562	0.192	0.191	744	720	90	AIR
4AIR082B	21-Sep-94	50	2936841	18882	PINK	2.192	0.609	0.208	0.207	1200	1122	90	AIR
4AIR082B	7-Oct-94	3	2736305	22247	PINK	2.090	0.507	0.174	0.172	1584	1478	90	AIR
4AIR082B	28-Oct-94	64	2960308	17398	PINK	2.231	0.648	0.221	0.220	2088	1978	90	AIR
4AIR082B	10-Nov-94	33	2963321	18499	PINK	2.205	0.622	0.213	0.211	2400	2191	90	AIR
4AIR115A	2-Aug-94	46	1486593	44377	PINK	1.525	0.000	0.002	0.000	0	0	120	AIR
4AIR115A	9-Aug-94	1	2980817	14368	HOT PINK	2.317	0.792	0.270	0.269	168	142	120	AIR
4AIR115A	16-Aug-94	19	2950757	11339	PURPLE	2.415	0.890	0.304	0.302	336	283	120	AIR
4AIR115A	19-Aug-94	81	2953157	10802	HOT PINK	2.437	0.912	0.311	0.309	408	351	120	AIR
4AIR115A	26-Aug-94	29	2854265	8189	HOT PINK	2.542	1.017	0.347	0.345	576	509	120	AIR
4AIR115A	19-Sep-94	28	2944856	7529	HOT PINK	2.592	1.067	0.364	0.362	1152	1051	120	AIR
4AIR115A	30-Sep-94	2	2654876	6414	DARK PINK	2.617	1.092	0.372	0.370	1416	1313	120	AIR
4AIR115A	28-Oct-94	13	2983371	5373	DARK PINK	2.744	1.219	0.415	0.414	2088	1979	120	AIR
4AIR115A	10-Nov-94	97	2941203	5759	DARK PINK	2.708	1.183	0.403	0.401	2400	2263	120	AIR
4AIR115B	2-Aug-94	52	1472938	25873	PINK	1.755	0.000	0.002	0.000	0	0	120	AIR
4AIR115B	9-Aug-94	13	2983497	72494	PINK	1.614	-0.141	-0.046	-0.048	168	142	120	AIR
4AIR115B	16-Aug-94	33	2972158	60611	PINK	1.691	-0.065	-0.020	-0.022	336	283	120	AIR
4AIR115B	26-Aug-94	117	2943152	51902	PINK	1.754	-0.002	0.001	-0.001	408	351	120	AIR
4AIR115B	1-Sep-94	41	2845607	34561	PINK	1.916	0.160	0.056	0.054	576	509	120	AIR
4AIR115B	1-Sep-94	41	2893363	32727	PINK	1.946	0.191	0.066	0.065	720	650	120	AIR
4AIR115B	19-Sep-94	41	2961327	37393	PINK	1.899	0.143	0.050	0.049	1152	1051	120	AIR
4AIR115B	30-Sep-94	39	2638618	29414	PINK	1.953	0.197	0.069	0.067	1416	1313	120	AIR
4AIR115B	28-Oct-94	50	2959327	34378	PINK	1.935	0.180	0.062	0.061	2088	1979	120	AIR
4AIR115B	10-Nov-94	109	2951209	35768	PINK	1.917	0.161	0.056	0.055	2400	2263	120	AIR
4AIR150B	3-Aug-94	4	2993892	111280	PINK	1.430	0.000	0.002	0.000	0	0	150	AIR
4AIR150B	5-Aug-94	187	2979206	43099	MAGENTA	1.840	0.410	0.141	0.139	48	46	150	AIR
4AIR150B	15-Aug-94	49	2936766	20757	PINK	2.151	0.721	0.246	0.245	288	272	150	AIR
4AIR150B	19-Aug-94	28	2973490	22340	PINK	2.124	0.694	0.237	0.236	384	364	150	AIR
4AIR150B	25-Aug-94	63	2972962	16460	DARK PINK	2.257	0.827	0.282	0.281	528	504	150	AIR
4AIR150B	31-Aug-94	61	2889443	11024	PINK	2.418	0.989	0.337	0.335	672	646	150	AIR
4AIR150B	16-Sep-94	37	2940471	9493	HOT PINK	2.491	1.061	0.362	0.360	1056	1027	150	AIR
4AIR150B	28-Sep-94	27	2587538	7324	PINK	2.548	1.118	0.381	0.379	1344	1310	150	AIR
4AIR150B	27-Oct-94	65	2976786	4843	PINK	2.789	1.359	0.463	0.461	2040	2002	150	AIR
4AIR150B	9-Nov-94	68	2983611	5199	PURPLE	2.759	1.329	0.452	0.451	2352	2310	150	AIR
4AIR175A	3-Aug-94	41	3006038	72900	PINK	1.615	0.000	0.002	0.000	0	0	175	AIR

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<u>TubelD</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4AIR175A	5-Aug-94	93	2965003	22065	MAGENTA	2.128	0.513	0.176	0.174	48	46	175	AIR
4AIR175A	11-Aug-94	90	2987882	11017	MAGENTA	2.433	0.818	0.279	0.278	192	185	175	AIR
4AIR175A	16-Aug-94	89	2954903	8081	PURPLE	2.563	0.948	0.323	0.322	312	300	175	AIR
4AIR175A	18-Aug-94	4	2933523	8627	MAGENTA	2.532	0.916	0.312	0.311	360	344	175	AIR
4AIR175A	25-Aug-94	4	2981993	6968	PURPLE	2.631	1.016	0.346	0.345	528	509	175	AIR
4AIR175A	31-Aug-94	4	2888403	5179	PURPLE	2.746	1.131	0.385	0.384	672	645	175	AIR
4AIR175A	26-Sep-94	4	2623661	3547	PURPLE	2.869	1.254	0.427	0.425	1296	1265	175	AIR
4AIR175A	27-Oct-94	4	3028848	3427	NEON PURPLE	2.946	1.331	0.453	0.452	2040	2005	175	AIR
4AIR175A	9-Nov-94	3	2975430	3407	PURPLE	2.941	1.326	0.451	0.450	2352	2314	175	AIR
4AIR175B	3-Aug-94	46	2986822	102775	PINK	1.463	0.000	0.002	0.000	0	0	175	AIR
4AIR175B	5-Aug-94	117	2990325	32798	MAGENTA	1.960	0.497	0.170	0.168	48	46	175	AIR
4AIR175B	11-Aug-94	95	2996646	18097	MAGENTA	2.219	0.756	0.258	0.256	192	185	175	AIR
4AIR175B	16-Aug-94	96	2942212	16885	PURPLE	2.246	0.783	0.267	0.266	312	300	175	AIR
4AIR175B	18-Aug-94	18	2937473	12258	PURPLE	2.380	0.916	0.312	0.311	360	344	175	AIR
4AIR175B	25-Aug-94	12	2973349	10791	PURPLE	2.440	0.977	0.333	0.331	528	509	175	AIR
4AIR175B	31-Aug-94	11	2883516	8324	PURPLE	2.540	1.076	0.367	0.365	672	645	175	AIR
4AIR175B	16-Sep-94	19	2995318	5636	PURPLE	2.725	1.262	0.430	0.428	1056	1027	175	AIR
4AIR175B	26-Sep-94	11	2646504	4244	PURPLE	2.795	1.332	0.453	0.452	1296	1265	175	AIR
4AIR175B	27-Oct-94	19	3028056	3820	PURPLE	2.899	1.436	0.489	0.487	2040	2005	175	AIR
4AIR175B	9-Nov-94	19	2963855	4228	PURPLE	2.846	1.382	0.471	0.469	2352	2314	175	AIR
4B_3082A	29-Jun-94	36	587903	1736		2.530	0.000	0.002	0.000	0	0	90	B_3
4B_3082A	12-Jul-94	44	1076375	6764	MAGENTA	2.202	-0.328	-0.110	-0.111	312	309	90	B_3
4B_3082A	15-Jul-94	33	2588919	17961	PURPLE	2.159	-0.371	-0.124	-0.126	384	376	90	B_3
4B_3082A	20-Jul-94	31	2566786	14729	PURPLE	2.241	-0.289	-0.096	-0.098	504	491	90	B_3
4B_3082A	25-Jul-94	6	2489225	18622	PINK	2.121	-0.408	-0.137	-0.139	624	607	90	B_3
4B_3082A	5-Aug-94	38	2993202	29788	PINK	2.002	-0.528	-0.178	-0.179	888	857	90	B_3
4B_3082A	17-Aug-94	59	2935659	35611	PINK	1.916	-0.614	-0.207	-0.208	1176	1138	90	B_3
4B_3082A	26-Aug-94	119	2855708	25857	PINK	2.043	-0.487	-0.164	-0.165	1392	1348	90	B_3
4B_3082A	2-Sep-94	68	2859374	24547	PINK	2.066	-0.463	-0.156	-0.157	1560	1509	90	B_3
4B_3082A	21-Sep-94	36	2936881	25135	PINK	2.068	-0.462	-0.155	-0.157	2016	1912	90	B_3
4B_3082A	6-Oct-94	42	2758192	25126	PINK	2.041	-0.489	-0.165	-0.166	2376	2267	90	B_3
4B_3082A	28-Oct-94	51	2956423	24653	PINK	2.079	-0.451	-0.151	-0.153	2904	2768	90	B_3
4B_3082A	10-Nov-94	18	2957014	22778	PINK	2.113	-0.416	-0.140	-0.141	3216	2980	90	B_3
4B_3082B	30-Jun-94	17	591883	4145		2.155	0.000	0.002	0.000	0	0	90	B_3
4B_3082B	12-Jul-94	45	1071075	6940	MAGENTA	2.188	0.034	0.013	0.011	288	285	90	B_3
4B_3082B	15-Jul-94	34	2585132	17643	PINK	2.166	0.011	0.005	0.004	360	352	90	B_3
4B_3082B	20-Jul-94	44	2552510	15496	PURPLE	2.217	0.062	0.023	0.021	480	467	90	B_3
4B_3082B	25-Jul-94	16	2467101	14970	PURPLE	2.217	0.062	0.023	0.021	600	583	90	B_3
4B_3082B	5-Aug-94	50	2986956	32088	PINK	1.969	-0.186	-0.062	-0.063	864	833	90	B_3
4B_3082B	17-Aug-94	72	2956680	30167	PINK	1.991	-0.163	-0.054	-0.055	1152	1114	90	B_3
4B_3082B	26-Aug-94	136	2855792	18008	MAGENTA	2.200	0.046	0.017	0.015	1368	1324	90	B_3
4B_3082B	2-Sep-94	83	2850189	21503	PINK	2.122	-0.032	-0.009	-0.011	1536	1485	90	B_3
4B_3082B	21-Sep-94	51	2941418	21267	PINK	2.141	-0.014	-0.003	-0.005	1992	1888	90	B_3
4B_3082B	7-Oct-94	5	2735515	23719	PINK	2.062	-0.093	-0.030	-0.031	2376	2243	90	B_3
4B_3082B	31-Oct-94	2	2974529	18067	PINK	2.217	0.062	0.022	0.021	2952	2744	90	B_3

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4B_3082B	10-Nov-94	34	2976054	16748	PINK	2.250	0.095	0.034	0.032	3192	2956	90	B_3
4B_3115A	30-Jun-94	22	592051	4111	PINK	2.158	0.000	0.002	0.000	0	0	120	B_3
4B_3115A	13-Jul-94	4	1088467	5454	PINK	2.300	0.142	0.050	0.048	312	311	120	B_3
4B_3115A	18-Jul-94	32	2601643	6246	MAGENTA	2.620	0.461	0.158	0.156	432	421	120	B_3
4B_3115A	22-Jul-94	25	2295039	4308	PURPLE	2.727	0.568	0.194	0.193	528	512	120	B_3
4B_3115A	28-Jul-94	17	2499123	3626	MAGENTA	2.838	0.680	0.232	0.231	672	650	120	B_3
4B_3115A	9-Aug-94	2	3017212	3749	SALMON WITH YELLOW TINGE	2.906	0.747	0.255	0.254	960	900	120	B_3
4B_3115A	16-Aug-94	18	2949777	3144	PINK	2.972	0.814	0.278	0.276	1128	1041	120	B_3
4B_3115A	19-Aug-94	82	2954829	3357	MAGENTA	2.945	0.786	0.268	0.267	1200	1109	120	B_3
4B_3115A	26-Aug-94	30	2874032	3270	SALMON	2.944	0.786	0.268	0.267	1368	1267	120	B_3
4B_3115A	1-Sep-94	30	2884465	3407	DARK PINK	2.928	0.769	0.263	0.261	1512	1408	120	B_3
4B_3115A	19-Sep-94	29	2943459	2841	DARK PINK	3.015	0.857	0.292	0.291	1944	1809	120	B_3
4B_3115A	30-Sep-94	3	2650884	2185	DARK PINK	3.084	0.926	0.316	0.314	2208	2071	120	B_3
4B_3115A	28-Oct-94	14	2973821	2079	DARK PINK	3.155	0.997	0.340	0.338	2880	2737	120	B_3
4B_3115A	10-Nov-94	98	2959810	1719	SALMON, YELLOW SLIME	3.236	1.078	0.367	0.366	3192	3021	120	B_3
4B_3115B	29-Jun-94	31	588393	3585		2.215	0.000	0.002	0.000	0	0	120	B_3
4B_3115B	13-Jul-94	5	1082641	8046	PINK	2.129	-0.086	-0.028	-0.029	336	335	120	B_3
4B_3115B	18-Jul-94	33	2607169	6779	MAGENTA	2.585	0.370	0.127	0.125	456	445	120	B_3
4B_3115B	22-Jul-94	35	2289564	6283	PURPLE	2.562	0.346	0.119	0.118	552	536	120	B_3
4B_3115B	28-Jul-94	25	2501895	4390	MAGENTA	2.756	0.541	0.185	0.183	696	674	120	B_3
4B_3115B	9-Aug-94	14	2985292	3013	SALMON WITH YELLOW TINGE	2.996	0.781	0.266	0.265	984	924	120	B_3
4B_3115B	16-Aug-94	34	2953354	2037	SALMON, YELLOW SLIME	3.161	0.946	0.323	0.321	1152	1065	120	B_3
4B_3115B	19-Aug-94	93	2951432	2629	MAGENTA	3.050	0.835	0.285	0.283	1224	1133	120	B_3
4B_3115B	26-Aug-94	42	2845193	3018	DARK PINK, YELLOW TINGE	2.974	0.759	0.259	0.258	1392	1291	120	B_3
4B_3115B	1-Sep-94	42	2906676	2848	DARK PINK	3.009	0.794	0.271	0.269	1536	1432	120	B_3
4B_3115B	19-Sep-94	42	2943023	2177	SALMON PINK	3.131	0.916	0.312	0.311	1968	1833	120	B_3
4B_3115B	30-Sep-94	40	2648612	1698	DARK PINK, YELLOW SLIME	3.193	0.978	0.333	0.332	2232	2095	120	B_3
4B_3115B	28-Oct-94	51	2932748	1528	DARK PINK	3.283	1.068	0.364	0.362	2904	2761	120	B_3
4B_3115B	28-Oct-94	52	0	0	DECOMPOSED					2904	2761	120	B_3
4B_3150A	30-Jun-94	20	591218	6394		1.966	0.000	0.002	0.000	0	0	150	B_3
4B_3150A	14-Jul-94	92	2630534	1943	DARK MAGENTA	3.132	1.166	0.397	0.395	336	333	150	B_3
4B_3150A	19-Jul-94	2	2555161	1694	DARK RED	3.179	1.213	0.413	0.411	456	446	150	B_3
4B_3150A	21-Jul-94	36	2558805	2296	MAGENTA	3.047	1.081	0.368	0.367	504	487	150	B_3
4B_3150A	5-Aug-94	171	0	0	DECOMPOSED					864	833	150	B_3
4B_3150B	29-Jun-94	37	587916	3943		2.173	0.000	0.002	0.000	0	0	150	B_3
4B_3150B	14-Jul-94	93	2629233	1567	DARK MAGENTA	3.225	1.051	0.358	0.357	360	357	150	B_3
4B_3150B	19-Jul-94	10	2575997	1768	MAGENTA	3.163	0.990	0.337	0.336	480	470	150	B_3
4B_3150B	21-Jul-94	44	2559152	1730	MAGENTA	3.170	0.997	0.340	0.338	528	511	150	B_3
4B_3150B	5-Aug-94	183	0	0	DECOMPOSED					888	857	150	B_3
4B_3175A	29-Jun-94	17	598981	2454		2.388	0.000	0.002	0.000	0	0	175	B_3
4B_3175A	14-Jul-94	4	2671428	1302	DARK MAGENTA	3.312	0.925	0.315	0.314	360	359	175	B_3
4B_3175A	18-Jul-94	85	2573821	1571	DARK RED, METALLIC SLIVERS	3.214	0.827	0.282	0.281	456	449	175	B_3
4B_3175A	20-Jul-94	81	2542428	1691	MAGENTA, NEEDLE PPT	3.177	0.790	0.269	0.268	504	494	175	B_3
4B_3175A	22-Jul-94	70	2482650	1655	MAGENTA, PPT	3.176	0.789	0.269	0.268	552	539	175	B_3
4B_3175A	27-Jul-94	15	2504406	1762	MAGENTA, NEEDLE PPT	3.153	0.765	0.261	0.260	672	653	175	B_3

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4B_3175A	29-Jul-94	0	0	0	DECOMPOSED	2.044	0.000	0.002	0.000	720	696	175	B_3
4B_3175B	30-Jun-94	16	591049	5336		3.285	1.240	0.422	0.421	0	0	175	B_3
4B_3175B	14-Jul-94	5	2664093	1383	DARK MAGENTA	3.197	1.152	0.392	0.391	336	335	175	B_3
4B_3175B	18-Jul-94	91	2582219	1642	DARK RED	3.213	1.169	0.398	0.396	432	425	175	B_3
4B_3175B	20-Jul-94	87	2566644	1572	MAGENTA, NEEDLE PPT	3.126	1.082	0.368	0.367	480	470	175	B_3
4B_3175B	22-Jul-94	76	2508696	1877	MAGENTA, PPT	3.173	1.129	0.384	0.383	528	515	175	B_3
4B_3175B	27-Jul-94	22	2507718	1683	MAGENTA, SOME NEEDLE PPT	1.846	0.000	0.002	0.000	648	629	175	B_3
4B_3175B	29-Jul-94	0	0	0	DECOMPOSED	1.393	-0.453	-0.152	-0.154	696	672	175	B_3
4B_4082A	1-Jul-94	59	594934	8490		1.428	-0.418	-0.140	-0.142	0	0	90	B_4
4B_4082A	12-Jul-94	32	1067941	43245		1.392	-0.453	-0.152	-0.154	264	261	90	B_4
4B_4082A	15-Jul-94	35	2581825	96380	YELLOW	1.229	-0.616	-0.208	-0.209	336	328	90	B_4
4B_4082A	20-Jul-94	32	2572289	104292	YELLOW	1.017	-0.828	-0.280	-0.281	456	443	90	B_4
4B_4082A	25-Jul-94	7	2483601	146555	LT PEACH	0.989	-0.857	-0.289	-0.291	576	559	90	B_4
4B_4082A	5-Aug-94	39	2986520	287017	WATER WHITE, SLT BEIGE TINGE	1.140	-0.705	-0.238	-0.239	840	809	90	B_4
4B_4082A	17-Aug-94	60	2951706	302902	OFF WATER WHITE	1.111	-0.735	-0.248	-0.249	1128	1090	90	B_4
4B_4082A	26-Aug-94	120	2854062	206547	PEACH	1.040	-0.806	-0.272	-0.273	1344	1300	90	B_4
4B_4082A	2-Sep-94	70	2840666	220233	LT YELLOW TINGE	0.911	-0.935	-0.316	-0.317	1512	1461	90	B_4
4B_4082A	21-Sep-94	37	2918286	266321	LT YELLOW TINGE	1.091	-0.754	-0.254	-0.256	1968	1864	90	B_4
4B_4082A	6-Oct-94	43	2731157	335273	WATER WHITE	1.040	-0.806	-0.272	-0.273	2328	2219	90	B_4
4B_4082A	28-Oct-94	52	2946950	238769	OFF WATER WHITE	1.795	0.000	0.002	0.000	2856	2720	90	B_4
4B_4082A	10-Nov-94	29	2941707	268308	REDO	1.357	-0.438	-0.147	-0.148	3168	2932	90	B_4
4B_4082B	1-Jul-94	76	594214	9529		1.343	-0.452	-0.152	-0.153	0	0	90	B_4
4B_4082B	12-Jul-94	33	1071031	47039	YELLOW	1.407	-0.387	-0.130	-0.131	264	261	90	B_4
4B_4082B	15-Jul-94	36	2569844	116599	LT YELLOW	1.232	-0.563	-0.190	-0.191	336	328	90	B_4
4B_4082B	20-Jul-94	45	2552468	99882	LT PEACH	1.030	-0.765	-0.258	-0.259	456	443	90	B_4
4B_4082B	25-Jul-94	17	2478815	145408	BEIGE	1.057	-0.738	-0.249	-0.251	576	559	90	B_4
4B_4082B	5-Aug-94	52	2975461	277438	OFF WATER WHITE	1.161	-0.634	-0.213	-0.215	840	809	90	B_4
4B_4082B	17-Aug-94	73	2947522	258735	PEACH	1.132	-0.663	-0.223	-0.225	1128	1090	90	B_4
4B_4082B	26-Aug-94	137	2867284	197751	WATER WHITE	1.036	-0.758	-0.256	-0.257	1344	1300	90	B_4
4B_4082B	2-Sep-94	85	2841722	209646	LT YELLOW	0.932	-0.863	-0.291	-0.293	1512	1461	90	B_4
4B_4082B	21-Sep-94	52	2908324	267404	OFF WATER WHITE	1.090	-0.705	-0.238	-0.239	1968	1864	90	B_4
4B_4082B	7-Oct-94	6	2740080	320521	OFF WATER WHITE	1.024	-0.770	-0.260	-0.261	2352	2219	90	B_4
4B_4082B	31-Oct-94	1	2982652	242270	WATER WHITE	1.638	0.000	0.002	0.000	2928	2720	90	B_4
4B_4082B	10-Nov-94	35	2944555	278310		1.354	-0.284	-0.095	-0.096	3168	2932	90	B_4
4B_4115A	1-Jul-94	57	596533	13723	YELLOW	2.557	0.918	0.313	0.312	0	0	120	B_4
4B_4115A	13-Jul-94	6	1081751	47837	DARK ORANGE	2.766	1.127	0.384	0.383	288	287	120	B_4
4B_4115A	18-Jul-94	34	2591367	7193	ORANGE	2.771	1.133	0.386	0.385	408	397	120	B_4
4B_4115A	22-Jul-94	26	2304836	3954	RED	2.996	1.358	0.462	0.461	504	488	120	B_4
4B_4115A	28-Jul-94	18	2509815	4248	ORANGE	3.106	1.467	0.499	0.498	648	626	120	B_4
4B_4115A	9-Aug-94	3	2988852	3014	ORANGE	3.056	1.418	0.483	0.481	936	876	120	B_4
4B_4115A	16-Aug-94	22	2951754	2315	DARK ORANGE	2.813	1.175	0.400	0.399	1104	1017	120	B_4
4B_4115A	19-Aug-94	83	2936958	2580	REDDISH-ORANGE	3.026	1.387	0.472	0.471	1176	1085	120	B_4
4B_4115A	26-Aug-94	31	2849613	4379	RED	3.201	1.563	0.532	0.530	1344	1243	120	B_4
4B_4115A	1-Sep-94	31	2885392	2720	RED					1488	1384	120	B_4
4B_4115A	19-Sep-94	30	2937812	1848						1920	1785	120	B_4

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4B_4115A	19-Sep-94	43	2969460	1804	RED	3.216	1.578	0.537	0.536	1920	1785	120	B_4
4B_4115A	19-Sep-94	44	0	0	DECOMPOSED					1920	1785	120	B_4
4B_4115A	30-Sep-94	4	2659107	1179	RED	3.353	1.715	0.583	0.582	2184	2047	120	B_4
4B_4115A	30-Sep-94	5	0	0	DECOMPOSED					2184	2047	120	B_4
4B_4115B	1-Jul-94	70	593772	15788		1.575	0.000	0.002	0.000	0	0	120	B_4
4B_4115B	13-Jul-94	7	1091464	42264	YELLOW	1.412	-0.163	-0.054	-0.055	288	287	120	B_4
4B_4115B	18-Jul-94	49	2574144	7336	DARK ORANGE	2.545	0.970	0.331	0.329	408	397	120	B_4
4B_4115B	22-Jul-94	36	2313639	6013	ORANGE	2.585	1.010	0.344	0.343	504	488	120	B_4
4B_4115B	28-Jul-94	26	2514392	32482	ORANGE	1.889	0.313	0.108	0.106	648	626	120	B_4
4B_4115B	9-Aug-94	15	3009399	2311	ORAGNE	3.115	1.539	0.524	0.522	936	876	120	B_4
4B_4115B	16-Aug-94	35	2967374	1338	ORANGE	3.346	1.771	0.602	0.601	1104	1017	120	B_4
4B_4115B	19-Aug-94	94	2964815	1357	DARK ORANGE	3.339	1.764	0.600	0.599	1176	1085	120	B_4
4B_4115B	26-Aug-94	43	2870848	2037	ORANGE	3.149	1.574	0.535	0.534	1344	1243	120	B_4
4B_4115B	1-Sep-94	43	2893906	2278	CRIMSON	3.104	1.529	0.520	0.519	1488	1384	120	B_4
4B_4115B	19-Sep-94	45	2939857	2349	ORANGE	3.097	1.522	0.518	0.516	1920	1785	120	B_4
4B_4150A	1-Jul-94	69	593757	7591		1.893	0.000	0.002	0.000	0	0	150	B_4
4B_4150A	14-Jul-94	94	2635504	1287	DARK MAGENTA	3.311	1.418	0.483	0.481	312	309	150	B_4
4B_4150A	19-Jul-94	3	2589438	1254	DARK RED	3.315	1.422	0.484	0.482	432	422	150	B_4
4B_4150A	21-Jul-94	38	2565158	1015	MAGENTA, SLIME	3.403	1.509	0.514	0.512	480	463	150	B_4
4B_4150A	5-Aug-94	172	0	0	DECOMPOSED					840	809	150	B_4
4B_4150B	1-Jul-94	36	598000	11662		1.710	0.000	0.002	0.000	0	0	150	B_4
4B_4150B	14-Jul-94	95	2627933	1439	DARK MAGENTA	3.262	1.552	0.528	0.526	312	309	150	B_4
4B_4150B	19-Jul-94	11	2595195	1353	DARK MAGENTA	3.283	1.573	0.535	0.534	432	422	150	B_4
4B_4150B	21-Jul-94	45	2555889	1160	MAGENTA	3.343	1.633	0.556	0.554	480	463	150	B_4
4B_4150B	5-Aug-94	184	0	0	DECOMPOSED					840	809	150	B_4
4B_4175A	1-Jul-94	66	595013	5648		2.023	0.000	0.002	0.000	0	0	175	B_4
4B_4175A	14-Jul-94	6	2678887	2306	DARK MAGENTA	3.065	1.042	0.355	0.354	312	311	175	B_4
4B_4175A	18-Jul-94	84	2598798	1184	DARK RED	3.341	1.319	0.449	0.447	408	401	175	B_4
4B_4175A	20-Jul-94	82	2558843	1349	MAGENTA, SLIME, NEEDLE PPT	3.278	1.255	0.427	0.426	456	446	175	B_4
4B_4175A	22-Jul-94	71	2488604	1182	RED, NEEDLE PPT	3.323	1.301	0.443	0.441	504	491	175	B_4
4B_4175A	27-Jul-94	16	2511191	1295	RED, NEEDLE PPT	3.288	1.265	0.431	0.429	624	605	175	B_4
4B_4175A	29-Jul-94	0	0	0	DECOMPOSED					672	648	175	B_4
4B_4175B	1-Jul-94	72	594545	13265		1.651	0.000	0.002	0.000	0	0	175	B_4
4B_4175B	14-Jul-94	7	2684253	2818	DARK MAGENTA	2.979	1.327	0.452	0.450	312	311	175	B_4
4B_4175B	18-Jul-94	92	2589097	1677	DARK RED, METALLIC SLIVERS	3.189	1.537	0.523	0.522	408	401	175	B_4
4B_4175B	20-Jul-94	89	2541578	1348	DIRTY MAGENTA, SLIME, NEEDLE PPT	3.275	1.624	0.553	0.551	456	446	175	B_4
4B_4175B	22-Jul-94	77	2509065	1250	RED, NEEDLE PPT	3.303	1.651	0.562	0.560	504	491	175	B_4
4B_4175B	27-Jul-94	23	2517066	1366	RED, SLIME, NEEDLE PPT	3.265	1.614	0.549	0.548	624	605	175	B_4
4B_4175B	29-Jul-94	0	0	0	DECOMPOSED					672	648	175	B_4
4B_N082A	30-Jun-94	19	592640	34411		1.236	0.000	0.002	0.000	0	0	90	B_N
4B_N082A	12-Jul-94	40	1068427	76577	PEACH	1.145	-0.091	-0.030	-0.031	288	285	90	B_N
4B_N082A	15-Jul-94	37	2568144	198566		1.112	-0.124	-0.041	-0.042	360	352	90	B_N
4B_N082A	20-Jul-94	33	2578553	119746	PEACH	1.333	0.097	0.034	0.033	480	467	90	B_N
4B_N082A	25-Jul-94	8	2495316	157631	PEACH	1.199	-0.037	-0.011	-0.012	600	583	90	B_N
4B_N082A	5-Aug-94	40	3017787	355574	PEACH	0.929	-0.307	-0.103	-0.104	864	833	90	B_N

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4B_N082A	17-Aug-94	61	2955235	381048	PEACH	0.890	-0.346	-0.116	-0.118	1152	1114	90	B_N
4B_N082A	26-Aug-94	121	2850869	279927	PEACH	1.008	-0.228	-0.076	-0.077	1368	1324	90	B_N
4B_N082A	2-Sep-94	71	2851002	326956	PEACH	0.941	-0.296	-0.099	-0.100	1536	1485	90	B_N
4B_N082A	21-Sep-94	38	2933848	382883	YELLOW	0.884	-0.352	-0.118	-0.119	1992	1888	90	B_N
4B_N082A	6-Oct-94	44	2729672	381795	PEACH	0.854	-0.382	-0.128	-0.130	2352	2243	90	B_N
4B_N082A	28-Oct-94	53	2959166	336432	LT YELLOW TINT	0.944	-0.292	-0.098	-0.099	2880	2744	90	B_N
4B_N082A	10-Nov-94	20	2951598	411471	LT YELLOW	0.856	-0.380	-0.128	-0.129	3192	2956	90	B_N
4B_N082B	30-Jun-94	21	592105	15339		1.587	0.000	0.002	0.000	0	0	90	B_N
4B_N082B	12-Jul-94	41	1076311	35304		1.484	-0.102	-0.033	-0.035	288	285	90	B_N
4B_N082B	15-Jul-94	38	2572496	73532	PEACH	1.544	-0.043	-0.013	-0.014	360	352	90	B_N
4B_N082B	20-Jul-94	46	2551240	62687	PEACH	1.610	0.023	0.009	0.008	480	467	90	B_N
4B_N082B	25-Jul-94	18	2487885	66383	PEACH	1.574	-0.013	-0.003	-0.004	600	583	90	B_N
4B_N082B	17-Aug-94	74	2929634	139707	PEACH	1.322	-0.265	-0.088	-0.090	1152	1114	90	B_N
4B_N082B	26-Aug-94	138	2846488	102240	PEACH	1.445	-0.142	-0.047	-0.048	1368	1324	90	B_N
4B_N082B	2-Sep-94	84	2847565	139439	PEACH	1.310	-0.277	-0.092	-0.094	1536	1485	90	B_N
4B_N082B	21-Sep-94	1	2970930	152659	YELLOW	1.289	-0.297	-0.099	-0.101	1992	1888	90	B_N
4B_N082B	7-Oct-94	7	2759854	197452	LT YELLOW	1.145	-0.441	-0.148	-0.150	2376	2243	90	B_N
4B_N082B	31-Oct-94	3	2961667	165180	YELLOW	1.254	-0.333	-0.111	-0.113	2952	2744	90	B_N
4B_N082B	10-Nov-94	36	2967449	189734	YELLOW	1.194	-0.392	-0.132	-0.133	3192	2956	90	B_N
4B_N115A	30-Jun-94	18	590324	32723		1.256	0.000	0.002	0.000	0	0	120	B_N
4B_N115A	13-Jul-94	22	1079781	58876	PEACH	1.263	0.007	0.004	0.002	312	311	120	B_N
4B_N115A	18-Jul-94	48	2590444	25878	ORANGE	2.000	0.744	0.254	0.253	432	421	120	B_N
4B_N115A	22-Jul-94	27	2316065	15458	ORANGE	2.176	0.919	0.313	0.312	528	512	120	B_N
4B_N115A	28-Jul-94	19	2528231	15009	ORANGE	2.226	0.970	0.331	0.329	672	650	120	B_N
4B_N115A	9-Aug-94	4	3013911	18284	ORANGE	2.217	0.961	0.328	0.326	960	900	120	B_N
4B_N115A	16-Aug-94	23	2964029	15808	ORANGE	2.273	1.017	0.346	0.345	1128	1041	120	B_N
4B_N115A	19-Aug-94	84	2937988	11954	ORANGE	2.391	1.134	0.386	0.385	1200	1109	120	B_N
4B_N115A	26-Aug-94	32	2852132	6617	ORANGE	2.635	1.378	0.469	0.468	1368	1267	120	B_N
4B_N115A	1-Sep-94	32	2888481	6030	ORANGE	2.680	1.424	0.485	0.483	1512	1408	120	B_N
4B_N115A	19-Sep-94	31	2966722	3887	ORANGE	2.883	1.626	0.553	0.552	1944	1809	120	B_N
4B_N115A	30-Sep-94	6	2651458	2705	ORANGE	2.991	1.735	0.590	0.589	2208	2071	120	B_N
4B_N115A	28-Oct-94	15	2977507	2130	ORANGE	3.145	1.889	0.643	0.641	2880	2737	120	B_N
4B_N115A	10-Nov-94	99	2964972	2476	DARK ORANGE	3.078	1.822	0.620	0.618	3192	3021	120	B_N
4B_N115B	29-Jun-94	6	602846	16643		1.559	0.000	0.002	0.000	0	0	120	B_N
4B_N115B	13-Jul-94	23	1084465	63070	PEACH	1.235	-0.324	-0.108	-0.110	336	335	120	B_N
4B_N115B	18-Jul-94	35	2595114	20443	DARK ORANGE	2.104	0.545	0.186	0.185	456	445	120	B_N
4B_N115B	22-Jul-94	37	2295654	15405	ORANGE	2.173	0.614	0.210	0.208	552	536	120	B_N
4B_N115B	28-Jul-94	27	2505907	10477	ORANGE	2.379	0.820	0.280	0.278	696	674	120	B_N
4B_N115B	9-Aug-94	16	2982157	12539	ORANGE	2.376	0.817	0.279	0.277	984	924	120	B_N
4B_N115B	16-Aug-94	36	2978794	7419	ORANGE	2.604	1.045	0.356	0.354	1152	1065	120	B_N
4B_N115B	19-Aug-94	95	2952514	5166	ORANGE	2.757	1.198	0.408	0.407	1224	1133	120	B_N
4B_N115B	26-Aug-94	44	2873136	3408	ORANGE	2.926	1.367	0.465	0.464	1392	1291	120	B_N
4B_N115B	1-Sep-94	44	2893150	3079	ORANGE	2.973	1.414	0.481	0.480	1536	1432	120	B_N
4B_N115B	30-Sep-94	41	2628973	1788	DARK ORANGE	3.167	1.608	0.547	0.546	2232	2095	120	B_N
4B_N115B	30-Sep-94	42	0	0	DECOMPOSED					2232	2095	120	B_N

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4B_N150A	1-Jul-94	26	593773	24382		1.387	0.000	0.002	0.000	0	0	150	B_N
4B_N150A	14-Jul-94	96	2655676	1703	DARK ORANGE	3.193	1.806	0.614	0.613	312	309	150	B_N
4B_N150A	19-Jul-94	4	2579450	1456	DARK ORANGE, BROWN LAYER	3.248	1.862	0.633	0.632	432	422	150	B_N
4B_N150A	21-Jul-94	39	2547584	1530	MAGENTA, SLIME	3.221	1.835	0.624	0.623	480	463	150	B_N
4B_N150A	2-Aug-94	0	0	0	DECOMPOSED					768	741	150	B_N
4B_N150B	30-Jun-94	23	591417	18522		1.504	0.000	0.002	0.000	0	0	150	B_N
4B_N150B	14-Jul-94	97	2653416	1592	DARK ORANGE	3.222	1.718	0.584	0.583	336	333	150	B_N
4B_N150B	19-Jul-94	12	2569537	1729	DARK ORANGE	3.172	1.668	0.567	0.566	456	446	150	B_N
4B_N150B	21-Jul-94	46	2555999	1903	DARK ORANGE, SLIME	3.128	1.624	0.552	0.551	504	487	150	B_N
4B_N150B	5-Aug-94	185	0	0	DECOMPOSED					864	833	150	B_N
4B_N175A	1-Jul-94	10	593524	12844		1.665	0.000	0.002	0.000	0	0	175	B_N
4B_N175A	14-Jul-94	8	2671423	1456	DARK ORANGE	3.264	1.599	0.544	0.542	312	311	175	B_N
4B_N175A	18-Jul-94	98	2599080	2207	DARK RED, BROWN SLIME, FLOATERS	3.071	1.406	0.479	0.477	408	401	175	B_N
4B_N175A	20-Jul-94	83	2548065	1390	DIRTY MAGENTA, SLIME, BLACK PPT	3.263	1.598	0.544	0.542	456	446	175	B_N
4B_N175A	22-Jul-94	72	2477878	1570	RED, SLIME, PPT	3.198	1.533	0.522	0.520	504	491	175	B_N
4B_N175A	27-Jul-94	17	2505094	2500	RED, SLIME, PPT	3.001	1.336	0.455	0.453	624	605	175	B_N
4B_N175A	29-Jul-94	0	0	0	DECOMPOSED					672	648	175	B_N
4B_N175B	30-Jun-94	24	591646	17650		1.525	0.000	0.002	0.000	0	0	175	B_N
4B_N175B	14-Jul-94	9	2670063	2308	DARK ORANGE	3.063	1.538	0.523	0.522	336	335	175	B_N
4B_N175B	18-Jul-94	95	2588813	3501	DARK RED, SLIME LAYER	2.869	1.344	0.457	0.456	432	425	175	B_N
4B_N175B	20-Jul-94	88	2557000	2490	MAGENTA, SLIME, BALCK PPT	3.012	1.486	0.506	0.504	480	470	175	B_N
4B_N175B	22-Jul-94	78	2516958	1187	RED, PPT	3.326	1.801	0.613	0.611	528	515	175	B_N
4B_N175B	27-Jul-94	24	2505958	1450	MAGENTA, SLIME, PPT	3.238	1.712	0.582	0.581	648	629	175	B_N
4B_N175B	29-Jul-94	0	0	0	DECOMPOSED					696	672	175	B_N
4B_T082A	7-Jul-94	114	1089689	37349		1.465	0.000	0.002	0.000	0	0	90	B_T
4B_T082A	12-Jul-94	36	1078817	12595		1.933	0.468	0.160	0.159	120	117	90	B_T
4B_T082A	15-Jul-94	39	2583260	30621	DARK YELLOW	1.926	0.461	0.158	0.156	192	184	90	B_T
4B_T082A	20-Jul-94	34	2565329	25004	YELLOW, PPT	2.011	0.546	0.187	0.185	312	299	90	B_T
4B_T082A	25-Jul-94	9	2503077	22293	YELLOW	2.050	0.585	0.200	0.199	432	415	90	B_T
4B_T082A	5-Aug-94	41	2989917	64160	DARK YELLOW	1.668	0.203	0.071	0.069	696	665	90	B_T
4B_T082A	17-Aug-94	62	2945004	59426	YELLOW	1.695	0.230	0.080	0.078	984	946	90	B_T
4B_T082A	26-Aug-94	122	2866298	36300	YELLOW	1.897	0.432	0.148	0.147	1200	1156	90	B_T
4B_T082A	2-Sep-94	72	2865205	38153	YELLOW	1.876	0.411	0.141	0.139	1368	1317	90	B_T
4B_T082A	21-Sep-94	39	2950053	44515	YELLOW	1.821	0.356	0.122	0.121	1824	1720	90	B_T
4B_T082A	6-Oct-94	45	2762269	44629	YELLOW	1.792	0.327	0.112	0.111	2184	2075	90	B_T
4B_T082A	28-Oct-94	54	2957577	27155	YELLOW	2.037	0.572	0.196	0.194	2712	2576	90	B_T
4B_T082A	10-Nov-94	21	2967877	21254	YELLOW	2.145	0.680	0.232	0.231	3024	2788	90	B_T
4B_T082B	1-Jul-94	28	598387	25668		1.368	0.000	0.002	0.000	0	0	90	B_T
4B_T082B	12-Jul-94	37	1071670	17812		1.779	0.412	0.141	0.140	264	261	90	B_T
4B_T082B	15-Jul-94	40	2593512	37670	DARK YELLOW	1.838	0.470	0.161	0.160	336	328	90	B_T
4B_T082B	20-Jul-94	47	2550414	31444	DARK YELLOW	1.909	0.541	0.185	0.184	456	443	90	B_T
4B_T082B	25-Jul-94	19	2475096	34380	YELLOW	1.857	0.490	0.168	0.166	576	559	90	B_T
4B_T082B	5-Aug-94	53	2974234	72412	PEE YELLOW	1.614	0.246	0.085	0.083	840	809	90	B_T
4B_T082B	17-Aug-94	75	2925121	70512	YELLOW	1.618	0.250	0.086	0.085	1128	1090	90	B_T
4B_T082B	26-Aug-94	139	2868940	38283	YELLOW	1.875	0.507	0.174	0.172	1344	1300	90	B_T

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4B_T082B	2-Sep-94	86	2865012	38377	YELLOW	1.873	0.505	0.173	0.172	1512	1461	90	B_T
4B_T082B	21-Sep-94	2	2966073	40855	YELLOW	1.861	0.493	0.169	0.167	1968	1864	90	B_T
4B_T082B	7-Oct-94	8	2746606	41957	DARK YELLOW	1.816	0.448	0.154	0.152	2352	2219	90	B_T
4B_T082B	10-Oct-94	4	2989401	24584	DARK YELLOW	2.085	0.717	0.245	0.243	2928	2720	90	B_T
4B_T082B	31-Nov-94	37	2961011	27909	YELLOW	2.026	0.658	0.225	0.223	3168	2932	90	B_T
4B_T115A	7-Jul-94	147	1087532	43955		1.393	0.000	0.002	0.000	0	0	120	B_T
4B_T115A	13-Jul-94	8	1077005	3050	BROWN	2.548	1.154	0.393	0.392	144	143	120	B_T
4B_T115A	18-Jul-94	36	2610362	2238	DARK BROWN, FLOATERS	3.067	1.673	0.569	0.568	264	253	120	B_T
4B_T115A	22-Jul-94	28	2310040	1586	BROWN, SLIME	3.163	1.770	0.602	0.601	360	344	120	B_T
4B_T115A	28-Jul-94	20	2517943	2830	BROWN, SLIME	2.949	1.556	0.529	0.528	504	482	120	B_T
4B_T115A	2-Aug-94	0	0	0	DECOMPOSED	1.180	0.000	0.002	0.000	624	590	120	B_T
4B_T115B	7-Jul-94	138	1086182	72384		2.631	1.450	0.494	0.492	144	143	120	B_T
4B_T115B	13-Jul-94	9	1087372	2545	BROWN	3.058	1.878	0.639	0.637	264	253	120	B_T
4B_T115B	18-Jul-94	37	2620510	2294	DARK BROWN, FLOATERS	3.071	1.891	0.643	0.642	360	344	120	B_T
4B_T115B	22-Jul-94	41	2294077	1946	BROWN, SLIME	2.947	1.766	0.601	0.599	504	482	120	B_T
4B_T115B	28-Jul-94	31	2488638	2814	BROWN, SLIME	1.589	0.000	0.002	0.000	0	0	175	B_T
4B_T115B	2-Aug-94	0	0	0	DECOMPOSED	3.278	1.689	0.575	0.573	168	167	175	B_T
4B_T175A	7-Jul-94	189	1084911	27943		1.178	0.000	0.002	0.000	192	185	175	B_T
4B_T175A	14-Jul-94	10	2666206	1406	DARK BROWN, FLOATERS	3.268	2.090	0.711	0.709	168	167	175	B_T
4B_T175A	15-Jul-94	0	0	0	DECOMPOSED	1.239	0.000	0.002	0.000	0	0	90	CHR
4B_T175B	7-Jul-94	178	1089057	72237		2.829	1.591	0.541	0.540	120	117	90	CHR
4B_T175B	14-Jul-94	11	2667619	1439		0.000	0.000	0.002	0.000	192	184	90	CHR
4B_T175B	15-Jul-94	0	0	0	NO TINT	0.000	0.000	0.002	0.000	312	299	90	CHR
4CHR082A	7-Jul-94	24	1105658	63782	NO TINT	0.000	0.000	0.002	0.000	432	415	90	CHR
4CHR082A	12-Jul-94	54	1073729	1590	NO TINT	0.000	0.000	0.002	0.000	696	665	90	CHR
4CHR082A	15-Jul-94	41	0	0	NO TINT	0.000	0.000	0.002	0.000	984	946	90	CHR
4CHR082A	20-Jul-94	35	0	0	NO TINT	0.000	0.000	0.002	0.000	1200	1156	90	CHR
4CHR082A	25-Jul-94	10	0	0	NO TINT	2.195	0.956	0.326	0.325	1368	1317	90	CHR
4CHR082A	5-Aug-94	42	0	0	NO TINT	1.745	0.506	0.173	0.172	1824	1720	90	CHR
4CHR082A	17-Aug-94	63	0	0	NO TINT	2.264	1.025	0.349	0.348	2184	2075	90	CHR
4CHR082A	26-Aug-94	123	0	0	NO TINT	2.165	0.926	0.316	0.314	2712	2576	90	CHR
4CHR082A	2-Sep-94	73	2842150	18124	NO TINT	1.978	0.739	0.252	0.251	3024	2788	90	CHR
4CHR082A	21-Sep-94	40	2941559	52968		1.319	0.000	0.002	0.000	0	0	90	CHR
4CHR082A	6-Oct-94	47	2734066	14903	NO TINT	2.538	1.219	0.415	0.414	120	117	90	CHR
4CHR082A	28-Oct-94	55	2943971	20139	NO TINT	0.000	0.000	0.002	0.000	192	184	90	CHR
4CHR082A	10-Nov-94	22	2948388	30999	NO TINT	0.000	0.000	0.002	0.000	312	299	90	CHR
4CHR082B	7-Jul-94	7	1102427	52834	NO TINT	0.000	0.000	0.002	0.000	432	415	90	CHR
4CHR082B	12-Jul-94	55	1080194	3127	NO TINT	0.000	0.000	0.002	0.000	696	665	90	CHR
4CHR082B	15-Jul-94	42	0	0	NO TINT	0.000	0.000	0.002	0.000	984	946	90	CHR
4CHR082B	20-Jul-94	48	0	0	NO TINT	0.000	0.000	0.002	0.000	1200	1156	90	CHR
4CHR082B	25-Jul-94	20	0	0	NO TINT	0.000	0.000	0.002	0.000	1368	1317	90	CHR
4CHR082B	5-Aug-94	54	0	0	NO TINT	0.000	0.000	0.002	0.000	1824	1720	90	CHR
4CHR082B	17-Aug-94	76	0	0	NO TINT	0.000	0.000	0.002	0.000	2184	2075	90	CHR
4CHR082B	26-Aug-94	140	0	0	NO TINT	0.000	0.000	0.002	0.000	2712	2576	90	CHR
4CHR082B	2-Sep-94	87	2851523	23906	NO TINT	2.077	0.757	0.258	0.257	3024	2788	90	CHR

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TubID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4CHR082B	21-Sep-94	3	2957466	50895	NO TINT	1.764	0.445	0.152	0.151	1824	1720	90	CHR
4CHR082B	7-Oct-94	9	2755606	66621	NO TINT	1.617	0.297	0.102	0.101	2208	2075	90	CHR
4CHR082B	31-Oct-94	5	2970790	43350	NO TINT	1.836	0.516	0.177	0.175	2784	2576	90	CHR
4CHR082B	10-Nov-94	38	2973062	6788	NO TINT	2.641	1.322	0.450	0.449	3024	2788	90	CHR
4CHR115A	7-Jul-94	23	1103522	36077		1.486	0.000	0.002	0.000	0	0	120	CHR
4CHR115A	13-Jul-94	10	1083836	3953		2.438	0.952	0.325	0.323	144	143	120	CHR
4CHR115A	18-Jul-94	38	0	0	NO TINT	0.000	0.000	0.002	0.000	264	253	120	CHR
4CHR115A	22-Jul-94	29	0	0	NO TINT	0.000	0.000	0.002	0.000	360	344	120	CHR
4CHR115A	28-Jul-94	21	0	0	NO TINT	0.000	0.000	0.002	0.000	504	482	120	CHR
4CHR115A	9-Aug-94	5	0	0	NO TINT	0.000	0.000	0.002	0.000	792	732	120	CHR
4CHR115A	16-Aug-94	24	0	0	NO TINT	0.000	0.000	0.002	0.000	960	873	120	CHR
4CHR115A	19-Aug-94	85	2933729	4602	NO TINT	2.804	1.319	0.449	0.448	1032	941	120	CHR
4CHR115A	26-Aug-94	33	2875162	29062	NO TINT	1.995	0.510	0.174	0.173	1200	1099	120	CHR
4CHR115A	1-Sep-94	33	2875423	44441	NO TINT	1.811	0.325	0.112	0.110	1344	1240	120	CHR
4CHR115A	19-Sep-94	32	2946881	23803	NO TINT	2.093	0.607	0.208	0.206	1776	1641	120	CHR
4CHR115A	30-Sep-94	7	2637112	18847	NO TINT	2.146	0.660	0.226	0.224	2040	1903	120	CHR
4CHR115A	28-Oct-94	16	2986862	30401	NO TINT	1.992	0.507	0.173	0.172	2712	2569	120	CHR
4CHR115A	10-Nov-94	101	2954856	17952	NO TINT	2.216	0.731	0.249	0.248	3024	2853	120	CHR
4CHR115B	7-Jul-94	25	1101427	55837		1.295	0.000	0.002	0.000	0	0	120	CHR
4CHR115B	13-Jul-94	11	1081899	34952		1.491	0.196	0.068	0.066	144	143	120	CHR
4CHR115B	18-Jul-94	39	0	0	NO TINT	0.000	0.000	0.002	0.000	264	253	120	CHR
4CHR115B	22-Jul-94	38	0	0	NO TINT	0.000	0.000	0.002	0.000	360	344	120	CHR
4CHR115B	28-Jul-94	28	0	0	NO TINT	0.000	0.000	0.002	0.000	504	482	120	CHR
4CHR115B	9-Aug-94	17	0	0	NO TINT	0.000	0.000	0.002	0.000	792	732	120	CHR
4CHR115B	16-Aug-94	37	0	0	NO TINT	0.000	0.000	0.002	0.000	960	873	120	CHR
4CHR115B	19-Aug-94	96	2943713	27750	NO TINT	2.026	0.731	0.249	0.248	1032	941	120	CHR
4CHR115B	26-Aug-94	45	2844600	30059	NO TINT	1.976	0.681	0.233	0.231	1200	1099	120	CHR
4CHR115B	1-Sep-94	45	2906390	33566	NO TINT	1.937	0.642	0.219	0.218	1344	1240	120	CHR
4CHR115B	19-Sep-94	46	2935904	80981	NO TINT	1.559	0.264	0.091	0.090	1776	1641	120	CHR
4CHR115B	30-Sep-94	44	2628612	31477	NO TINT	1.922	0.627	0.214	0.213	2040	1903	120	CHR
4CHR115B	28-Oct-94	53	2959008	49026	NO TINT	1.781	0.486	0.166	0.165	2712	2569	120	CHR
4CHR115B	10-Nov-94	110	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	0.000	3024	2853	120	CHR
4CHR150A	7-Jul-94	4	1106414	51754		1.330	0.000	0.002	0.000	0	0	150	CHR
4CHR150A	19-Jul-94	5	0	0	NO TINT	0.000	0.000	0.002	0.000	288	278	150	CHR
4CHR150A	21-Jul-94	40	0	0	NO TINT	0.000	0.000	0.002	0.000	336	319	150	CHR
4CHR150A	5-Aug-94	173	0	0	NO TINT	0.000	0.000	0.002	0.000	696	665	150	CHR
4CHR150A	15-Aug-94	40	0	0	PINK TINT	0.000	0.000	0.002	0.000	936	891	150	CHR
4CHR150A	19-Aug-94	21	2946284	47337	PINK TINGE	1.794	0.464	0.159	0.157	1032	982	150	CHR
4CHR150A	25-Aug-94	56	2962243	37938	PINK TINT	1.893	0.563	0.192	0.191	1176	1123	150	CHR
4CHR150A	31-Aug-94	54	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	0.000	1320	1264	150	CHR
4CHR150A	16-Sep-94	10	2967743	9349	NO TINT	2.502	1.172	0.399	0.398	1704	1646	150	CHR
4CHR150A	28-Sep-94	18	2582239	9791	PINK TINT	2.421	1.091	0.372	0.370	1992	1929	150	CHR
4CHR150A	27-Oct-94	42	3003724	20945	LT PINK	2.157	0.827	0.282	0.280	2688	2621	150	CHR
4CHR150A	9-Nov-94	43	2973065	17090	PINK TINT	2.240	0.910	0.310	0.309	3000	2928	150	CHR
4CHR150B	7-Jul-94	10	1104966	26090		1.627	0.000	0.002	0.000	0	0	150	CHR

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4CHR150B	14-Jul-94	99	0	0	NO TINT	0.000	0.000	0.002	0.000	168	165	150	CHR
4CHR150B	19-Jul-94	13	0	0	NO TINT	0.000	0.000	0.002	0.000	288	278	150	CHR
4CHR150B	21-Jul-94	47	0	0	NO TINT	0.000	0.000	0.002	0.000	336	319	150	CHR
4CHR150B	5-Aug-94	188	0	0	PINK TINGE	0.000	0.000	0.002	0.000	696	665	150	CHR
4CHR150B	15-Aug-94	50	0	0	PINK TINGE	0.000	0.000	0.002	0.000	936	891	150	CHR
4CHR150B	19-Aug-94	29	2966338	40073	PINK	1.869	0.242	0.084	0.082	1032	982	150	CHR
4CHR150B	25-Aug-94	64	2963623	35614	PINK TINT	1.920	0.293	0.101	0.100	1176	1123	150	CHR
4CHR150B	31-Aug-94	62	2888979	28094	LT PINK TINT	2.012	0.385	0.132	0.131	1320	1264	150	CHR
4CHR150B	16-Sep-94	38	2971108	26675	PINK	2.047	0.420	0.144	0.142	1704	1646	150	CHR
4CHR150B	28-Sep-94	25	2599157	17673	PINK	2.168	0.541	0.185	0.183	1992	1929	150	CHR
4CHR150B	27-Oct-94	66	2968843	22044	PINK TINT	2.129	0.502	0.172	0.170	2688	2621	150	CHR
4CHR150B	9-Nov-94	69	2977641	15191	PINK	2.292	0.665	0.227	0.226	3000	2928	150	CHR
4CHR175A	7-Jul-94	27	1108411	58119		1.280	0.000	0.002	0.000	0	0	175	CHR
4CHR175A	14-Jul-94	12	0	0	NO TINT	0.000	0.000	0.002	0.000	168	167	175	CHR
4CHR175A	18-Jul-94	86	0	0	NO TINT	0.000	0.000	0.002	0.000	264	257	175	CHR
4CHR175A	20-Jul-94	84	0	0	PINK TINT	0.000	0.000	0.002	0.000	312	302	175	CHR
4CHR175A	22-Jul-94	73	0	0	NO TINT	0.000	0.000	0.002	0.000	360	347	175	CHR
4CHR175A	27-Jul-94	19	0	0	NO TINT	0.000	0.000	0.002	0.000	480	461	175	CHR
4CHR175A	5-Aug-94	94	0	0	MAGENTA	0.000	0.000	0.002	0.000	696	666	175	CHR
4CHR175A	11-Aug-94	87	0	0	DARK PURPLE TINT	0.000	0.000	0.002	0.000	840	805	175	CHR
4CHR175A	16-Aug-94	90	0	0	PURPLE TINT	0.000	0.000	0.002	0.000	960	920	175	CHR
4CHR175A	18-Aug-94	3	2938267	3148	WINE	2.970	1.690	0.575	0.573	1008	964	175	CHR
4CHR175A	25-Aug-94	5	2998392	3073	WINE TINT	2.989	1.709	0.581	0.580	1176	1129	175	CHR
4CHR175A	31-Aug-94	5	2871014	3346	WINE TINT	2.934	1.653	0.562	0.561	1320	1265	175	CHR
4CHR175A	16-Sep-94	4	2978014	2843	WINE	3.020	1.740	0.592	0.590	1704	1647	175	CHR
4CHR175A	26-Sep-94	5	2646045	1905	WINE TINT	3.143	1.862	0.633	0.632	1944	1885	175	CHR
4CHR175A	27-Oct-94	6	3039790	1468	DARK PURPLE	3.316	2.036	0.692	0.691	2688	2625	175	CHR
4CHR175A	9-Nov-94	4	2970827	1978	DARK WINE	3.177	1.896	0.645	0.643	3000	2934	175	CHR
4CHR175B	7-Jul-94	3	1105972	47378		1.368	0.000	0.002	0.000	0	0	175	CHR
4CHR175B	14-Jul-94	13	0	0	NO TINT	0.000	0.000	0.002	0.000	168	167	175	CHR
4CHR175B	18-Jul-94	94	0	0	NO TINT	0.000	0.000	0.002	0.000	264	257	175	CHR
4CHR175B	20-Jul-94	90	0	0	PINK TINT	0.000	0.000	0.002	0.000	312	302	175	CHR
4CHR175B	22-Jul-94	79	0	0	NO TINT	0.000	0.000	0.002	0.000	360	347	175	CHR
4CHR175B	27-Jul-94	26	0	0	NO TINT	0.000	0.000	0.002	0.000	480	461	175	CHR
4CHR175B	5-Aug-94	99	0	0	MAGENTA	0.000	0.000	0.002	0.000	696	666	175	CHR
4CHR175B	11-Aug-94	94	0	0	V DARK PURPLE TINT	0.000	0.000	0.002	0.000	840	805	175	CHR
4CHR175B	16-Aug-94	97	0	0	PURPLE TINT	0.000	0.000	0.002	0.000	960	920	175	CHR
4CHR175B	18-Aug-94	19	2942612	2731	WINE	3.032	1.664	0.566	0.565	1008	964	175	CHR
4CHR175B	25-Aug-94	13	2967248	2377	WINE TINT	3.096	1.728	0.588	0.586	1176	1129	175	CHR
4CHR175B	31-Aug-94	12	2880360	2399	WINE TINT	3.079	1.711	0.582	0.581	1320	1265	175	CHR
4CHR175B	16-Sep-94	21	2997705	2126	WINE	3.149	1.781	0.606	0.604	1704	1647	175	CHR
4CHR175B	26-Sep-94	12	2622713	1496	WINE TINT	3.244	1.876	0.638	0.636	1944	1885	175	CHR
4CHR175B	27-Oct-94	20	3040608	1687	DARK PURPLE	3.256	1.888	0.642	0.640	2688	2625	175	CHR
4CHR175B	9-Nov-94	20	2956911	1468	WINE	3.304	1.936	0.658	0.657	3000	2934	175	CHR
4COP082A	1-Jul-94	63	590818	24864		1.376	0.000	0.002	0.000	0	0	90	COP

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4COP082A	12-Jul-94	34	1074543	58300	WATER WHITE, WHITE PPT	1.266	-0.110	-0.036	-0.037	264	261	90	COP
4COP082A	15-Jul-94	43	2599612	119368	WATER WHITE	1.338	-0.038	-0.011	-0.013	336	328	90	COP
4COP082A	20-Jul-94	36	2573692	121180	WATER WHITE	1.327	-0.049	-0.015	-0.017	456	443	90	COP
4COP082A	25-Jul-94	11	2481380	77363	WATER WHITE	1.506	0.130	0.046	0.044	576	559	90	COP
4COP082A	5-Aug-94	64	3000336	191012	WATER WHITE	1.196	-0.180	-0.059	-0.061	840	809	90	COP
4COP082A	17-Aug-94	64	2932073	189887	WATER WHITE	1.189	-0.187	-0.062	-0.064	1128	1090	90	COP
4COP082A	26-Aug-94	124	2861727	134472	WATER WHITE, SLT WHITE PPT	1.328	-0.048	-0.015	-0.016	1344	1300	90	COP
4COP082A	2-Sep-94	74	2855278	143136	WATER WHITE	1.300	-0.076	-0.024	-0.026	1512	1461	90	COP
4COP082A	21-Sep-94	41	2940103	176323	WATER WHITE	1.222	-0.154	-0.051	-0.052	1968	1864	90	COP
4COP082A	6-Oct-94	46	2745513	235430	WATER WHITE	1.067	-0.309	-0.103	-0.105	2328	2219	90	COP
4COP082A	28-Oct-94	56	2944732	166361	WATER WHITE	1.248	-0.128	-0.042	-0.043	2856	2720	90	COP
4COP082A	10-Nov-94	23	2961902	177558	WATER WHITE	1.222	-0.154	-0.051	-0.052	3168	2932	90	COP
4COP082B	1-Jul-94	27	596062	48405		1.090	0.000	0.002	0.000	0	0	90	COP
4COP082B	12-Jul-94	35	1075749	65977	WATER WHITE, WHITE PPT	1.212	0.122	0.043	0.041	264	261	90	COP
4COP082B	15-Jul-94	44	2587783	130962	WATER WHITE	1.296	0.205	0.071	0.070	336	328	90	COP
4COP082B	20-Jul-94	49	2559250	160076	WATER WHITE	1.204	0.113	0.040	0.038	456	443	90	COP
4COP082B	25-Jul-94	21	2473395	109003	WATER WHITE	1.356	0.265	0.092	0.090	576	559	90	COP
4COP082B	5-Aug-94	55	2992663	334033	WATER WHITE	0.952	-0.138	-0.045	-0.047	840	809	90	COP
4COP082B	17-Aug-94	77	2950220	270947	WATER WHITE	1.037	-0.053	-0.017	-0.018	1128	1090	90	COP
4COP082B	26-Aug-94	141	2861320	151473	WATER WHITE, WHITE PPT ON WALLS	1.276	0.186	0.065	0.063	1344	1300	90	COP
4COP082B	2-Sep-94	88	2847451	158122	WATER WHITE	1.255	0.165	0.058	0.056	1512	1461	90	COP
4COP082B	21-Sep-94	4	2966522	165582	WATER WHITE	1.253	0.163	0.057	0.055	1968	1864	90	COP
4COP082B	7-Oct-94	10	2745358	223760	WATER WHITE	1.089	-0.002	0.001	-0.001	2352	2219	90	COP
4COP082B	31-Oct-94	6	2966855	142668	WATER WHITE	1.318	0.228	0.079	0.077	2928	2720	90	COP
4COP082B	10-Nov-94	39	2973550	170167	WATER WHITE	1.242	0.152	0.053	0.052	3168	2932	90	COP
4COP115A	1-Jul-94	35	598079	48236	WATER WHITE	1.093	0.000	0.002	0.000	0	0	120	COP
4COP115A	13-Jul-94	12	1085300	85055	WATER WHITE	1.106	0.012	0.006	0.004	288	287	120	COP
4COP115A	18-Jul-94	40	2605861	166849	WATER WHITE, NO PPT	1.194	0.100	0.036	0.034	408	397	120	COP
4COP115A	22-Jul-94	30	2309790	148954	WATER WHITE	1.191	0.097	0.034	0.033	504	488	120	COP
4COP115A	28-Jul-94	22	2500388	165288	WATER WHITE	1.180	0.086	0.031	0.029	648	626	120	COP
4COP115A	9-Aug-94	6	2986882	328042	WATER WHITE	0.959	-0.134	-0.044	-0.045	936	876	120	COP
4COP115A	16-Aug-94	25	2960961	312043	WATER WHITE	0.977	-0.116	-0.038	-0.039	1104	1017	120	COP
4COP115A	19-Aug-94	86	2931848	307778	WATER WHITE	0.979	-0.114	-0.037	-0.039	1176	1085	120	COP
4COP115A	26-Aug-94	34	2856741	211119	WATER WHITE	1.131	0.038	0.014	0.013	1344	1243	120	COP
4COP115A	1-Sep-94	34	2914181	212865	WATER WHITE	1.136	0.043	0.016	0.015	1488	1384	120	COP
4COP115A	19-Sep-94	33	2941018	251409	WATER WHITE	1.068	-0.025	-0.007	-0.009	1920	1785	120	COP
4COP115A	30-Sep-94	8	2636586	223250	WATER WHITE	1.072	-0.021	-0.006	-0.007	2184	2047	120	COP
4COP115A	28-Oct-94	17	2981722	224194	WATER WHITE	1.124	0.030	0.012	0.010	2856	2713	120	COP
4COP115A	10-Nov-94	102	2941171	249390	WATER WHITE	1.072	-0.022	-0.006	-0.007	3168	2997	120	COP
4COP115B	1-Jul-94	55	595582	45207	WATER WHITE	1.120	0.000	0.002	0.000	0	0	120	COP
4COP115B	1-Jul-94	56	598274	48011	WATER WHITE	1.096	-0.024	-0.007	-0.008	0	0	120	COP
4COP115B	13-Jul-94	13	1092663	109674	WATER WHITE, NO PPT	0.998	-0.121	-0.040	-0.041	288	287	120	COP
4COP115B	18-Jul-94	41	2591278	182165	WATER WHITE	1.153	0.033	0.013	0.011	408	397	120	COP
4COP115B	22-Jul-94	39	2288545	205589	WATER WHITE	1.047	-0.073	-0.023	-0.025	504	488	120	COP
4COP115B	28-Jul-94	29	2511694	162826	WATER WHITE	1.188	0.069	0.025	0.023	648	626	120	COP

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<u>TubID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4COP115B	9-Aug-94	18	3009252	380425	WATER WHITE	0.898	-0.222	-0.074	-0.075	936	876	120	COP
4COP115B	16-Aug-94	38	2955677	376968	WATER WHITE	0.894	-0.225	-0.075	-0.076	1104	1017	120	COP
4COP115B	19-Aug-94	97	2954986	365162	WATER WHITE	0.908	-0.212	-0.070	-0.072	1176	1085	120	COP
4COP115B	26-Aug-94	46	2850876	279046	WATER WHITE	1.009	-0.110	-0.036	-0.037	1344	1243	120	COP
4COP115B	1-Sep-94	46	2893179	270922	WATER WHITE	1.029	-0.091	-0.029	-0.031	1488	1384	120	COP
4COP115B	19-Sep-94	47	2952412	313428	WATER WHITE	0.974	-0.146	-0.048	-0.049	1920	1785	120	COP
4COP115B	30-Sep-94	43	2637670	265579	WATER WHITE	0.997	-0.123	-0.040	-0.042	2184	2047	120	COP
4COP115B	28-Oct-94	54	2930689	265359	WATER WHITE	1.043	-0.077	-0.024	-0.026	2856	2713	120	COP
4COP115B	10-Nov-94	111	2964657	289811	WATER WHITE	1.010	-0.110	-0.036	-0.037	3168	2997	120	COP
4COP150A	1-Jul-94	54	596896	40971		1.163	0.000	0.002	0.000	0	0	150	COP
4COP150A	19-Jul-94	6	2582243	132001	WATER WHITE, SLT WHITE PPT	1.291	0.128	0.045	0.043	432	422	150	COP
4COP150A	21-Jul-94	41	2538536	179097	WATER WHITE	1.151	-0.012	-0.003	-0.004	480	463	150	COP
4COP150A	5-Aug-94	174	2964836	318300	WATER WHITE, METALLIC PPT ON WALLS	0.969	-0.194	-0.064	-0.066	840	809	150	COP
4COP150A	15-Aug-94	41	2944203	310009	WATER WHITE	0.978	-0.186	-0.062	-0.063	1080	1035	150	COP
4COP150A	19-Aug-94	22	2957745	339831	WATER WHITE	0.940	-0.224	-0.074	-0.076	1176	1126	150	COP
4COP150A	25-Aug-94	57	2961295	328665	WATER WHITE	0.955	-0.209	-0.069	-0.071	1320	1267	150	COP
4COP150A	31-Aug-94	55	2873431	217809	WATER WHITE	1.120	-0.043	-0.013	-0.015	1464	1408	150	COP
4COP150A	16-Sep-94	14	2967628	214937	WATER WHITE	1.140	-0.023	-0.006	-0.008	1848	1790	150	COP
4COP150A	28-Sep-94	19	2593469	210339	WATER WHITE	1.091	-0.072	-0.023	-0.025	2136	2073	150	COP
4COP150A	27-Oct-94	43	3019689	255106	WATER WHITE	1.073	-0.090	-0.029	-0.031	2832	2765	150	COP
4COP150A	9-Nov-94	44	2969931	289918	WATER WHITE	1.010	-0.153	-0.050	-0.052	3144	3072	150	COP
4COP150B	1-Jul-94	58	595990	51477		1.064	0.000	0.002	0.000	0	0	150	COP
4COP150B	14-Jul-94	101	2633185	277133	WATER WHITE	0.978	-0.086	-0.028	-0.029	312	309	150	COP
4COP150B	19-Jul-94	14	2581160	144595	WATER WHITE, SLT PPT	1.252	0.188	0.065	0.064	432	422	150	COP
4COP150B	21-Jul-94	48	2540895	194021	WATER WHITE	1.117	0.054	0.020	0.018	480	463	150	COP
4COP150B	5-Aug-94	189	2969537	327802	WATER WHITE	0.957	-0.107	-0.035	-0.036	840	809	150	COP
4COP150B	15-Aug-94	51	2945709	313385	WATER WHITE	0.973	-0.091	-0.029	-0.031	1080	1035	150	COP
4COP150B	19-Aug-94	30	2959819	418098	WATER WHITE	0.850	-0.214	-0.071	-0.072	1176	1126	150	COP
4COP150B	25-Aug-94	65	2973949	395223	WATER WHITE	0.876	-0.187	-0.062	-0.063	1320	1267	150	COP
4COP150B	31-Aug-94	63	2865210	294673	WATER WHITE	0.988	-0.076	-0.024	-0.026	1464	1408	150	COP
4COP150B	16-Sep-94	39	2944853	318502	WATER WHITE	0.966	-0.098	-0.032	-0.033	1848	1790	150	COP
4COP150B	28-Sep-94	28	2586585	267714	WATER WHITE	0.985	-0.079	-0.025	-0.027	2136	2073	150	COP
4COP150B	27-Oct-94	67	2957561	280952	WATER WHITE	1.022	-0.041	-0.013	-0.014	2832	2765	150	COP
4COP150B	9-Nov-94	70	2965620	314547	WATER WHITE	0.974	-0.089	-0.029	-0.030	3144	3072	150	COP
4COP175A	1-Jul-94	51	596424	25338		1.372	0.000	0.002	0.000	0	0	175	COP
4COP175A	14-Jul-94	15	2676254	129315	NO TINT	1.316	-0.056	-0.017	-0.019	312	311	175	COP
4COP175A	18-Jul-94	90	2578177	73696	WATER WHITE, NO PPT	1.544	0.172	0.060	0.058	408	401	175	COP
4COP175A	20-Jul-94	85	2542947	71196	WATER WHITE, V SLT PINK TINGE	1.553	0.181	0.063	0.061	456	446	175	COP
4COP175A	22-Jul-94	74	2492840	87897	WATER WHITE	1.453	0.081	0.029	0.027	504	491	175	COP
4COP175A	27-Jul-94	80	2508184	120468	WATER WHITE	1.318	-0.053	-0.017	-0.018	504	491	175	COP
4COP175A	22-Jul-94	18	2503658	89828	WATER WHITE, CU FIBER SWELLING	1.445	0.073	0.026	0.025	624	605	175	COP
4COP175A	5-Aug-94	95	2969857	181669	BEIGE	1.213	-0.158	-0.052	-0.054	840	810	175	COP
4COP175A	11-Aug-94	88	2972036	175596	LT PINK TINGE	1.229	-0.143	-0.047	-0.049	984	949	175	COP
4COP175A	16-Aug-94	91	2959283	87654	PINK	1.528	0.157	0.055	0.053	1104	1064	175	COP
4COP175A	18-Aug-94	5	2921784	73379	PINK	1.600	0.228	0.079	0.077	1152	1108	175	COP

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4COP175A	25-Aug-94	6	3000423	36265	PINK	1.918	0.546	0.187	0.185	1320	1273	175	COP
4COP175A	31-Aug-94	6	2897252	18230	PINK	2.201	0.829	0.283	0.281	1464	1409	175	COP
4COP175A	16-Sep-94	5	2985648	13053	PINK	2.359	0.988	0.337	0.335	1848	1791	175	COP
4COP175A	26-Sep-94	6	2626971	7671	PINK	2.535	1.163	0.396	0.395	2088	2029	175	COP
4COP175A	27-Oct-94	5	3039464	4600	SALMON PINK	2.820	1.448	0.493	0.491	2832	2769	175	COP
4COP175A	9-Nov-94	5	2955310	3444	SALMON PINK	2.934	1.562	0.531	0.530	3144	3078	175	COP
4COP175B	1-Jul-94	61	594030	33854	DARK SALMON	1.244	0.000	0.002	0.000	0	0	175	COP
4COP175B	14-Jul-94	16	2677000	203132	NO TINT	1.120	-0.124	-0.041	-0.042	312	311	175	COP
4COP175B	18-Jul-94	87	2577229	119221	PINK, NO PPT	1.335	0.091	0.032	0.031	408	401	175	COP
4COP175B	20-Jul-94	91	2549829	79434	WATER WHITE, PINK TINT	1.507	0.262	0.091	0.089	456	446	175	COP
4COP175B	27-Jul-94	25	2509250	123440	WATER WHITE, CU FIBER SWELLED	1.308	0.064	0.023	0.022	624	605	175	COP
4COP175B	5-Aug-94	101	2967564	297754	BEIGE, WIRE FUZZY	0.999	-0.246	-0.082	-0.083	840	810	175	COP
4COP175B	11-Aug-94	96	2985653	304632	WATER WHITE	0.991	-0.253	-0.084	-0.086	984	949	175	COP
4COP175B	16-Aug-94	98	2957674	275367	WATER WHITE	1.031	-0.213	-0.071	-0.072	1104	1064	175	COP
4COP175B	18-Aug-94	20	2926275	314220	WATER WHITE	0.969	-0.275	-0.092	-0.093	1152	1108	175	COP
4COP175B	25-Aug-94	14	2987418	290310	V SLT PEACH TINGE	1.012	-0.232	-0.077	-0.079	1320	1273	175	COP
4COP175B	31-Aug-94	13	2883515	168691	LT PINK	1.233	-0.011	-0.002	-0.004	1464	1409	175	COP
4COP175B	16-Sep-94	20	2985211	82315	PINK	1.559	0.315	0.108	0.107	1848	1791	175	COP
4COP175B	26-Sep-94	13	2627647	38829	SALMON	1.830	0.586	0.200	0.199	2088	2029	175	COP
4COP175B	27-Oct-94	21	3032859	17202	PINK	2.246	1.002	0.342	0.340	2832	2769	175	COP
4COP175B	9-Nov-94	21	2953428	15404	PINK	2.283	1.038	0.354	0.352	3144	3078	175	COP
4DRK025A	1-Jul-94	1	592055	51853		1.058	0.000	0.002	0.000	0	0	25	DRK
4DRK025A	7-Jul-94	132	1087168	75649		1.157	0.100	0.035	0.034	144	144	25	DRK
4DRK025A	14-Jul-94	62	2636935	210198	PINK	1.098	0.041	0.015	0.014	312	312	25	DRK
4DRK025A	21-Jul-94	14	2559517	152734	LT PINK	1.224	0.167	0.058	0.057	480	480	25	DRK
4DRK025A	28-Jul-94	14	2010253	158540	LT PINK	1.103	0.046	0.017	0.015	648	648	25	DRK
4DRK025A	9-Aug-94	83	2930898	309718	PINK	0.976	-0.082	-0.026	-0.028	936	936	25	DRK
4DRK025A	16-Aug-94	121	2959584	329192	LT PINK	0.954	-0.104	-0.034	-0.035	1104	1104	25	DRK
4DRK025A	26-Aug-94	10	2834825	237109	PINK	1.078	0.020	0.008	0.007	1344	1344	25	DRK
4DRK025A	2-Sep-94	128	2871529	207799	LT PINK	1.140	0.083	0.030	0.028	1512	1512	25	DRK
4DRK025A	4-Nov-94	12	2936374	276776	LT PINK	1.026	-0.032	-0.009	-0.011	3024	3024	25	DRK
4DRK025A	10-Nov-94	152	2948036	278828	LT PINK	1.024	-0.033	-0.010	-0.011	3168	3168	25	DRK
4FIL082A	1-Jul-94	85	600173	36827		1.212	0.000	0.002	0.000	0	0	90	FIL
4FIL082A	12-Jul-94	46	1075448	50095		1.332	0.120	0.042	0.041	264	261	90	FIL
4FIL082A	15-Jul-94	45	2588644	125285	WATER WHITE	1.315	0.103	0.036	0.035	336	328	90	FIL
4FIL082A	20-Jul-94	37	2570547	86900	WATER WHITE	1.471	0.259	0.089	0.088	456	443	90	FIL
4FIL082A	25-Jul-94	12	2494071	84304	WATER WHITE	1.471	0.259	0.089	0.088	576	559	90	FIL
4FIL082A	5-Aug-94	43	3007517	201971	WATER WHITE	1.173	-0.039	-0.012	-0.013	840	809	90	FIL
4FIL082A	17-Aug-94	65	2926829	208540	WATER WHITE	1.147	-0.065	-0.021	-0.022	1128	1090	90	FIL
4FIL082A	26-Aug-94	125	2844958	175802	WATER WHITE	1.209	-0.003	0.000	-0.001	1344	1300	90	FIL
4FIL082A	2-Sep-94	75	2847499	178535	WATER WHITE	1.203	-0.009	-0.002	-0.003	1512	1461	90	FIL
4FIL082A	21-Sep-94	42	2919714	203482	WATER WHITE	1.157	-0.055	-0.017	-0.019	1968	1864	90	FIL
4FIL082A	6-Oct-94	48	2733349	236643	WATER WHITE	1.063	-0.150	-0.049	-0.051	2328	2219	90	FIL
4FIL082A	28-Oct-94	57	2930439	180902	WATER WHITE	1.209	-0.003	0.001	-0.001	2856	2720	90	FIL
4FIL082A	10-Nov-94	24	2945079	179976	WATER WHITE	1.214	0.002	0.002	0.001	3168	2932	90	FIL

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4FIL082B	1-Jul-94	79	599389	21140		1.453	0.000	0.002	0.000	0	0	90	FIL
4FIL082B	12-Jul-94	47	1077088	73520	WATER WHITE	1.166	-0.287	-0.096	-0.097	264	261	90	FIL
4FIL082B	15-Jul-94	46	2605763	158817	WATER WHITE	1.215	-0.238	-0.079	-0.081	336	328	90	FIL
4FIL082B	20-Jul-94	50	2553400	101064	WATER WHITE	1.403	-0.050	-0.015	-0.017	456	443	90	FIL
4FIL082B	25-Jul-94	22	2466713	168896	WATER WHITE	1.170	-0.283	-0.094	-0.096	576	559	90	FIL
4FIL082B	5-Aug-94	56	2989680	317118	WATER WHITE	0.974	-0.478	-0.161	-0.162	840	809	90	FIL
4FIL082B	17-Aug-94	78	2957370	327535	WATER WHITE	0.956	-0.497	-0.167	-0.169	1128	1090	90	FIL
4FIL082B	26-Aug-94	142	2838359	246691	WATER WHITE	1.061	-0.392	-0.131	-0.133	1344	1300	90	FIL
4FIL082B	2-Sep-94	89	2853843	234793	WATER WHITE	1.085	-0.368	-0.123	-0.125	1512	1461	90	FIL
4FIL082B	21-Sep-94	5	2972690	271976	WATER WHITE	1.039	-0.414	-0.139	-0.140	1968	1864	90	FIL
4FIL082B	7-Oct-94	11	2742301	367638	WATER WHITE	0.873	-0.580	-0.195	-0.197	2352	2219	90	FIL
4FIL082B	31-Oct-94	7	2962041	233978	WATER WHITE	1.102	-0.350	-0.117	-0.119	2928	2720	90	FIL
4FIL082B	10-Nov-94	40	2956757	294277	WATER WHITE	1.002	-0.451	-0.151	-0.153	3168	2932	90	FIL
4FIL115A	1-Jul-94	86	599902	40908		1.166	0.000	0.002	0.000	0	0	120	FIL
4FIL115A	13-Jul-94	14	1083351	93077	SLT PINK TINGE	1.066	-0.100	-0.033	-0.034	288	287	120	FIL
4FIL115A	18-Jul-94	42	2602408	182234	WATER WHITE	1.155	-0.012	-0.002	-0.004	408	397	120	FIL
4FIL115A	22-Jul-94	31	2302775	150568	WATER WHITE	1.185	0.018	0.008	0.006	504	488	120	FIL
4FIL115A	28-Jul-94	23	2496022	194555	WATER WHITE	1.108	-0.058	-0.018	-0.020	648	626	120	FIL
4FIL115A	9-Aug-94	7	2988399	363576	WATER WHITE	0.915	-0.251	-0.084	-0.085	936	876	120	FIL
4FIL115A	16-Aug-94	26	2952911	347769	WATER WHITE	0.929	-0.237	-0.079	-0.081	1104	1017	120	FIL
4FIL115A	19-Aug-94	87	2941283	352316	WATER WHITE	0.922	-0.245	-0.082	-0.083	1176	1085	120	FIL
4FIL115A	26-Aug-94	35	2847888	239798	WATER WHITE	1.075	-0.092	-0.030	-0.031	1344	1243	120	FIL
4FIL115A	1-Sep-94	36	2873901	257103	WATER WHITE	1.048	-0.118	-0.039	-0.040	1488	1384	120	FIL
4FIL115A	19-Sep-94	35	2940235	306965	WATER WHITE	0.981	-0.185	-0.061	-0.063	1920	1785	120	FIL
4FIL115A	30-Sep-94	9	2657825	251777	WATER WHITE	1.024	-0.143	-0.047	-0.048	2184	2047	120	FIL
4FIL115A	28-Oct-94	18	2986866	282256	WATER WHITE	1.025	-0.142	-0.047	-0.048	2856	2713	120	FIL
4FIL115A	10-Nov-94	103	2941936	307329	WATER WHITE	0.981	-0.185	-0.061	-0.063	3168	2997	120	FIL
4FIL115B	1-Jul-94	87	600385	44018		1.135	0.000	0.002	0.000	0	0	120	FIL
4FIL115B	13-Jul-94	15	1085459	77707	SLT PINK TINGE	1.145	0.010	0.005	0.004	288	287	120	FIL
4FIL115B	18-Jul-94	43	2593472	229567	WATER WHITE	1.053	-0.082	-0.026	-0.028	408	397	120	FIL
4FIL115B	22-Jul-94	40	2306899	226762	WATER WHITE	1.007	-0.127	-0.042	-0.043	504	488	120	FIL
4FIL115B	28-Jul-94	30	2493067	245036	WATER WHITE	1.008	-0.127	-0.042	-0.043	648	626	120	FIL
4FIL115B	9-Aug-94	19	2980560	79625	WATER WHITE	1.573	0.438	0.150	0.149	936	876	120	FIL
4FIL115B	16-Aug-94	39	2964349	418140	WATER WHITE	0.851	-0.284	-0.095	-0.096	1104	1017	120	FIL
4FIL115B	19-Aug-94	98	2933435	446268	WATER WHITE	0.818	-0.317	-0.106	-0.108	1176	1085	120	FIL
4FIL115B	26-Aug-94	47	2879049	319899	WATER WHITE	0.954	-0.181	-0.060	-0.061	1344	1243	120	FIL
4FIL115B	1-Sep-94	47	2883839	354279	WATER WHITE	0.911	-0.224	-0.075	-0.076	1488	1384	120	FIL
4FIL115B	19-Sep-94	48	2933215	343537	WATER WHITE	0.931	-0.203	-0.068	-0.069	1920	1785	120	FIL
4FIL115B	30-Sep-94	45	2638427	263589	WATER WHITE	1.000	-0.134	-0.044	-0.046	2184	2047	120	FIL
4FIL115B	28-Oct-94	55	2958981	378511	WATER WHITE	0.893	-0.242	-0.081	-0.082	2856	2713	120	FIL
4FIL115B	10-Nov-94	112	2946826	384532	WATER WHITE	0.884	-0.250	-0.083	-0.085	3168	2997	120	FIL
4FIL150A	1-Jul-94	81	598303	27325		1.340	0.000	0.002	0.000	0	0	150	FIL
4FIL150A	14-Jul-94	102	2634513	125261	WATER WHITE	1.323	-0.017	-0.004	-0.006	312	309	150	FIL
4FIL150A	19-Jul-94	7	2566244	104992	WATER WHITE	1.388	0.048	0.018	0.016	432	422	150	FIL
4FIL150A	21-Jul-94	42	2550930	119584	WATER WHITE	1.329	-0.011	-0.002	-0.004	480	463	150	FIL

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4FIL150A	5-Aug-94	175	2983888	206189	WATER WHITE	1.161	-0.180	-0.060	-0.061	840	809	150	FIL
4FIL150A	15-Aug-94	42	2942495	197820	WATER WHITE	1.172	-0.168	-0.055	-0.057	1080	1035	150	FIL
4FIL150A	19-Aug-94	23	2971496	215763	WATER WHITE	1.139	-0.201	-0.067	-0.068	1176	1126	150	FIL
4FIL150A	25-Aug-94	58	2961179	208019	WATER WHITE	1.153	-0.187	-0.062	-0.063	1320	1267	150	FIL
4FIL150A	31-Aug-94	56	2869355	136911	WATER WHITE	1.321	-0.019	-0.005	-0.006	1464	1408	150	FIL
4FIL150A	16-Sep-94	15	2969332	177090	WATER WHITE	1.224	-0.116	-0.038	-0.039	1848	1790	150	FIL
4FIL150A	28-Sep-94	20	2595155	143468	WATER WHITE	1.257	-0.083	-0.027	-0.028	2136	2073	150	FIL
4FIL150A	27-Oct-94	44	3007085	179211	WATER WHITE	1.225	-0.116	-0.038	-0.039	2832	2765	150	FIL
4FIL150A	9-Nov-94	45	2981544	182672	WATER WHITE	1.213	-0.128	-0.042	-0.043	3144	3072	150	FIL
4FIL150B	1-Jul-94	80	598706	45720		1.117	0.000	0.002	0.000	0	0	150	FIL
4FIL150B	14-Jul-94	103	2625668	249118	WATER WHITE	1.023	-0.094	-0.030	-0.032	312	309	150	FIL
4FIL150B	19-Jul-94	15	2564286	122540	WATER WHITE	1.321	0.204	0.071	0.069	432	422	150	FIL
4FIL150B	21-Jul-94	49	2548917	204503	WATER WHITE	1.096	-0.021	-0.006	-0.007	480	463	150	FIL
4FIL150B	5-Aug-94	190	2972711	377183	WATER WHITE	0.897	-0.221	-0.073	-0.075	840	809	150	FIL
4FIL150B	15-Aug-94	52	2948033	378495	WATER WHITE	0.891	-0.226	-0.075	-0.077	1080	1035	150	FIL
4FIL150B	19-Aug-94	31	2950393	358819	WATER WHITE	0.915	-0.202	-0.067	-0.069	1176	1126	150	FIL
4FIL150B	25-Aug-94	67	2983249	368925	WATER WHITE	0.908	-0.209	-0.070	-0.071	1320	1267	150	FIL
4FIL150B	31-Aug-94	64	2881773	268281	WATER WHITE	1.031	-0.086	-0.028	-0.029	1464	1408	150	FIL
4FIL150B	16-Sep-94	40	2949879	335055	WATER WHITE	0.945	-0.172	-0.057	-0.059	1848	1790	150	FIL
4FIL150B	28-Sep-94	29	2589723	265654	WATER WHITE	0.989	-0.128	-0.042	-0.043	2136	2073	150	FIL
4FIL150B	27-Oct-94	68	2948762	279573	WATER WHITE	1.023	-0.094	-0.030	-0.032	2832	2765	150	FIL
4FIL150B	9-Nov-94	71	2955872	329987	WATER WHITE	0.952	-0.165	-0.054	-0.056	3144	3072	150	FIL
4FIL175A	1-Jul-94	84	598772	49154		1.086	0.000	0.002	0.000	0	0	175	FIL
4FIL175A	14-Jul-94	17	2682357	193274	PINK TINGE	1.142	0.057	0.021	0.019	312	311	175	FIL
4FIL175A	18-Jul-94	88	2582414	146666	PINK	1.246	0.160	0.056	0.054	408	401	175	FIL
4FIL175A	20-Jul-94	86	2541177	127973	PINK TINT	1.298	0.212	0.074	0.072	456	446	175	FIL
4FIL175A	22-Jul-94	75	2504929	101307	PINK	1.393	0.307	0.106	0.104	504	491	175	FIL
4FIL175A	27-Jul-94	20	2496370	71282	PINK	1.544	0.459	0.157	0.156	624	605	175	FIL
4FIL175A	5-Aug-94	96	2979870	130451	PINK	1.359	0.273	0.094	0.093	840	810	175	FIL
4FIL175A	11-Aug-94	89	2976035	136157	SALMON	1.340	0.254	0.088	0.086	984	949	175	FIL
4FIL175A	16-Aug-94	92	2965257	138811	SALMON	1.330	0.244	0.084	0.083	1104	1064	175	FIL
4FIL175A	18-Aug-94	6	2926642	142510	SALMON	1.313	0.227	0.078	0.077	1152	1108	175	FIL
4FIL175A	25-Aug-94	7	2994419	143271	SALMON	1.320	0.234	0.081	0.080	1320	1273	175	FIL
4FIL175A	31-Aug-94	7	2881342	97383	PEACH	1.471	0.385	0.132	0.131	1464	1409	175	FIL
4FIL175A	31-Aug-94	14	2876775	89614	SALMON	1.507	0.421	0.144	0.143	1464	1409	175	FIL
4FIL175A	16-Sep-94	6	2994183	108308	SALMON	1.442	0.356	0.122	0.121	1848	1791	175	FIL
4FIL175A	26-Sep-94	7	2648550	73816	SALMON	1.555	0.469	0.161	0.159	2088	2029	175	FIL
4FIL175A	27-Oct-94	7	3029400	51364	SALMON PINK	1.771	0.685	0.234	0.232	2832	2769	175	FIL
4FIL175A	9-Nov-94	7	2963749	56268	PEACH	1.722	0.636	0.217	0.216	3144	3078	175	FIL
4FIL175B	1-Jul-94	78	597332	53589		1.047	0.000	0.002	0.000	0	0	175	FIL
4FIL175B	14-Jul-94	18	2660529	276436	PINK TINGE	0.983	-0.064	-0.020	-0.022	312	311	175	FIL
4FIL175B	18-Jul-94	93	2573928	156378	PINK	1.216	0.169	0.059	0.057	408	401	175	FIL
4FIL175B	20-Jul-94	92	2537544	97488	WATER WHITE, PINK TINT	1.415	0.368	0.126	0.125	456	446	175	FIL
4FIL175B	22-Jul-94	81	2501303	124260	PINK	1.304	0.257	0.089	0.087	504	491	175	FIL
4FIL175B	27-Jul-94	27	2514173	116212	PINK	1.335	0.288	0.099	0.098	624	605	175	FIL

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4FIL175B	5-Aug-94	102	2958417	131766	PINK	1.351	0.304	0.105	0.103	840	810	175	FIL
4FIL175B	11-Aug-94	97	2979729	122404	SALMON	1.386	0.339	0.117	0.115	984	949	175	FIL
4FIL175B	16-Aug-94	99	2942772	144742	PINK	1.308	0.261	0.090	0.089	1104	1064	175	FIL
4FIL175B	18-Aug-94	22	2924903	127163	PINK	1.362	0.315	0.108	0.107	1152	1108	175	FIL
4FIL175B	25-Aug-94	15	2988069	134584	LT PINK	1.346	0.299	0.103	0.102	1320	1273	175	FIL
4FIL175B	16-Sep-94	22	2979417	84430	SALMON	1.548	0.500	0.171	0.170	1848	1791	175	FIL
4FIL175B	26-Sep-94	14	2622446	64673	SALMON	1.608	0.561	0.192	0.190	2088	2029	175	FIL
4FIL175B	27-Oct-94	22	3021885	60627	SALMON	1.698	0.650	0.222	0.221	2832	2769	175	FIL
4FIL175B	9-Nov-94	22	2951502	59713	SALMON	1.694	0.647	0.221	0.219	3144	3078	175	FIL
4F_3082A	7-Jul-94	35	1097253	15746	SALMON	1.843	0.000	0.002	0.000	0	0	90	F_3
4F_3082A	12-Jul-94	50	1062122	1310		2.909	1.066	0.363	0.362	120	117	90	F_3
4F_3082A	15-Jul-94	49	0	0		192	184	90	F_3	312	299	90	F_3
4F_3082A	20-Jul-94	38	2558281	7894	THICK SLIME LAYER, UNREADABLE LT BROWN, SLIME, BLACK FLOATERS DECOMPOSED	2.511	0.668	0.228	0.226	336	319	90	F_3
4F_3082B	7-Jul-94	45	26755	26576		0.003	0.000	0.002	0.000	0	0	90	F_3
4F_3082B	7-Jul-94	103	1091643	31858		1.535	1.532	0.521	0.520	0	0	90	F_3
4F_3082B	12-Jul-94	51	1070443	1568		2.834	2.831	0.962	0.961	120	117	90	F_3
4F_3082B	15-Jul-94	50	0	0		192	184	90	F_3	336	319	90	F_3
4F_3082B	20-Jul-94	51	2550187	1606	THICK SLIME LAYER, UNREADABLE BROWN, SLIME DECOMPOSED	3.201	3.198	1.087	1.085	312	299	90	F_3
4F_3082B	21-Jul-94	0	0	0		1.494	0.000	0.002	0.000	0	0	120	F_3
4F_3115A	7-Jul-94	214	1078620	34571						144	143	120	F_3
4F_3115A	13-Jul-94	16	0	0	BLACK SLUDGE, YELLOW GREEN PINK, THICK SLIME LAYER DECOMPOSED	2.350	0.000	0.002	0.000	0	0	120	F_3
4F_3115A	18-Jul-94	44	0	0		288	273	120	F_3	144	143	120	F_3
4F_3115A	19-Jul-94	0	0	0		264	253	120	F_3	288	273	120	F_3
4F_3115B	7-Jul-94	46	1103949	4929		1.673	0.000	0.002	0.000	0	0	175	F_3
4F_3115B	13-Jul-94	17	0	0	BLACK SLUDGE, NO LIQUID PINK, THICK SLIME LAYER DECOMPOSED	1.751	0.000	0.002	0.000	168	167	175	F_3
4F_3115B	18-Jul-94	45	0	0		192	185	175	F_3	192	185	175	F_3
4F_3115B	19-Jul-94	0	0	0		0	0	175	F_3	168	167	175	F_3
4F_3175A	7-Jul-94	37	1097843	23303	SLUDGE DECOMPOSED	1.751	0.000	0.002	0.000	0	0	175	F_3
4F_3175A	14-Jul-94	19	0	0		192	185	175	F_3	168	167	175	F_3
4F_3175A	15-Jul-94	0	0	0		192	185	175	F_3	168	167	175	F_3
4F_3175B	7-Jul-94	49	1098089	19473		1.391	0.000	0.002	0.000	0	0	90	F_4
4F_3175B	14-Jul-94	20	0	0	SLUDGE DECOMPOSED	2.187	0.796	0.272	0.270	288	285	90	F_4
4F_3175B	15-Jul-94	0	0	0		2.744	1.353	0.461	0.459	360	352	90	F_4
4F_4082A	30-Jun-94	33	593548	24125	YELLOW-GREEN, SLIME LAYER DARK BROWN, BLACK PPT BROWN, SLIME DECOMPOSED	3.156	1.765	0.600	0.599	480	467	90	F_4
4F_4082A	12-Jul-94	48	1076942	7003		3.170	1.779	0.605	0.604	600	583	90	F_4
4F_4082A	15-Jul-94	47	2582796	4653		1.558	0.000	0.002	0.000	864	833	90	F_4
4F_4082A	20-Jul-94	40	2560242	1787		2.338	0.780	0.266	0.265	264	261	90	F_4
4F_4082A	25-Jul-94	13	2487962	1682		2.753	1.195	0.407	0.405	336	328	90	F_4
4F_4082A	5-Aug-94	90	0	0		2.651	1.093	0.372	0.371	456	443	90	F_4
4F_4082B	1-Jul-94	4	591783	16377	YELLOW-GREEN, SLIME LAYER BROWN, BLACK FLOATERS BROWN, SLIME	3.263	1.705	0.580	0.579	576	559	90	F_4
4F_4082B	12-Jul-94	49	1065275	4891						0	0	90	F_4
4F_4082B	15-Jul-94	48	2579737	4558						264	261	90	F_4
4F_4082B	20-Jul-94	52	2564698	5726						336	328	90	F_4
4F_4082B	25-Jul-94	23	2488836	1357						456	443	90	F_4

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4F_4082B	5-Aug-94	91	0	0	DECOMPOSED	1.706	0.000	0.002	0.000	840	809	90	F_4
4F_4115A	30-Jun-94	34	592553	11650		3.760	2.054	0.698	0.697	0	0	120	F_4
4F_4115A	13-Jul-94	18	1082905	188	BROWN SLIME LAYER, PINK LIQUID					312	311	120	F_4
4F_4115A	18-Jul-94	46	0	0	MAGENTA					432	421	120	F_4
4F_4115A	19-Jul-94	0	0	0	DECOMPOSED					456	441	120	F_4
4F_4115B	1-Jul-94	7	592530	8209		1.858	0.000	0.002	0.000	0	0	120	F_4
4F_4115B	1-Jul-94	8	593428	7704		1.887	0.028	0.011	0.010	0	0	120	F_4
4F_4115B	13-Jul-94	19	1090995	368	BROWN SLIME LAYER, PINK LIQUID	3.472	1.614	0.549	0.547	288	287	120	F_4
4F_4115B	18-Jul-94	47	0	0	THICK SLIME LAYER					408	397	120	F_4
4F_4115B	19-Jul-94	0	0	0	DECOMPOSED					432	417	120	F_4
4F_4150A	1-Jul-94	9	593653	11025		1.731	0.000	0.002	0.000	0	0	150	F_4
4F_4150A	18-Jul-94	99	2601286	3285	DARK RED, SLIME LAYER. WRONG OVEN (175)	2.899	1.167	0.398	0.396	408	400	150	F_4
4F_4150A	19-Jul-94	8	2590432	2625	MAGENTA, BROWN SLIME	2.994	1.263	0.430	0.429	432	422	150	F_4
4F_4150A	20-Jul-94	0	0	0	DECOMPOSED					456	441	150	F_4
4F_4150B	30-Jun-94	32	593615	16514		1.556	0.000	0.002	0.000	0	0	150	F_4
4F_4150B	18-Jul-94	96	2576555	1998	DARK RED, SLIME LAYER. WRONG OVEN (175)	3.110	1.555	0.529	0.528	432	424	150	F_4
4F_4150B	19-Jul-94	17	2581617	2135	MAGENTA, SLIME, NEEDLE PPT	3.082	1.527	0.520	0.518	456	446	150	F_4
4F_4150B	21-Jul-94	5	2531864	1950	DARK MAGENTA, SLIME	3.113	1.558	0.530	0.529	504	487	150	F_4
4F_4150B	2-Aug-94	0	0	0	DECOMPOSED					792	765	150	F_4
4F_4175B	1-Jul-94	6	594145	17562		1.529	0.000	0.002	0.000	0	0	175	F_4
4F_4175B	14-Jul-94	21	2683129	1599	SLIME LAYER, DARK MAGENTA	3.225	1.695	0.577	0.575	312	311	175	F_4
4F_4175B	14-Jul-94	104	2648820	1681	MAGENTA, SLIME LAYER	3.197	1.668	0.568	0.566	312	311	175	F_4
4F_4175B	19-Jul-94	16	2581720	2112	DRK MAGENTA, SLIME LAYER, CHECK ID	3.087	1.558	0.530	0.529	432	422	175	F_4
4F_4175B	20-Jul-94	93	2546127	2459	DIRTY MAGENTA, SLIME, NEEDLE PPT	3.015	1.486	0.506	0.504	456	446	175	F_4
4F_4175B	22-Jul-94	82	2498184	2506	MAGENTA, SLIME, NEEDLE PPT	2.999	1.469	0.500	0.499	504	491	175	F_4
4F_4175B	27-Jul-94	28	2496313	3042	MAGENTA, SLIME, NEEDLE PPT	2.914	1.385	0.471	0.470	624	605	175	F_4
4F_4175B	29-Jul-94	0	0	0	DECOMPOSED					672	648	175	F_4
4F_N082A	1-Jul-94	38	599537	36919		1.211	0.000	0.002	0.000	0	0	90	F_N
4F_N082A	12-Jul-94	52	1069855	3668		2.465	1.254	0.427	0.426	264	261	90	F_N
4F_N082A	15-Jul-94	51	2598134	7649	YELLOW-GREEN, FLOATERS	2.531	1.320	0.450	0.448	336	328	90	F_N
4F_N082A	20-Jul-94	41	2574223	3023	LT BROWN, SLIME, BLACK FLOATERS	2.930	1.720	0.585	0.583	456	443	90	F_N
4F_N082A	21-Jul-94	0	0	0	DECOMPOSED					480	463	90	F_N
4F_N082B	30-Jun-94	26	593045	33309		1.251	0.000	0.002	0.000	0	0	90	F_N
4F_N082B	12-Jul-94	53	1072259	5023		2.329	1.079	0.368	0.366	288	285	90	F_N
4F_N082B	15-Jul-94	52	2585277	10520	YELLOW-GREEN, FLOATERS	2.390	1.140	0.388	0.387	360	352	90	F_N
4F_N082B	16-Jul-94	0	0	0	DECOMPOSED					384	373	90	F_N
4F_N115A	7-Jul-94	155	1095302	70666		1.194	0.000	0.002	0.000	0	0	120	F_N
4F_N115A	13-Jul-94	20	0	0	BLACK SLUDGE, ORANGE LIQUID					144	143	120	F_N
4F_N115A	18-Jul-94	50	0	0	ORANGE, SLUDGE					264	253	120	F_N
4F_N115A	19-Jul-94	0	0	0	DECOMPOSED					288	273	120	F_N
4F_N115B	30-Jun-94	27	592910	21350		1.444	0.000	0.002	0.000	0	0	120	F_N
4F_N115B	13-Jul-94	21	0	0	BLACK SLUDGE, ORANGE LIQUID					312	311	120	F_N
4F_N115B	18-Jul-94	51	0	0	SLUDGE					432	421	120	F_N
4F_N115B	19-Jul-94	0	0	0	DECOMPOSED					456	441	120	F_N
4F_N175A	30-Jun-94	25	591531	17462		1.530	0.000	0.002	0.000	0	0	175	F_N

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4F_N175A	14-Jul-94	22	0	0	SLUDGE					336	335	175	F_N
4F_N175A	15-Jul-94	0	0	0	DECOMPOSED	1.541	0.000	0.002	0.000	360	353	175	F_N
4F_N175B	7-Jul-94	181	1091476	31388						0	0	175	F_N
4F_N175B	14-Jul-94	23	0	0	SLUDGE					168	167	175	F_N
4F_N175B	15-Jul-94	0	0	0	DECOMPOSED					192	185	175	F_N
4MOL082A	2-Aug-94	26	1493773	101396	WATER WHITE	1.168	0.000	0.002	0.000	0	0	90	MOL
4MOL082A	5-Aug-94	44	2974968	410600	WATER WHITE	0.860	-0.308	-0.103	-0.105	72	67	90	MOL
4MOL082A	17-Aug-94	67	2937565	404865	WATER WHITE	0.861	-0.308	-0.103	-0.104	360	349	90	MOL
4MOL082A	26-Aug-94	126	2855904	311909	WATER WHITE	0.962	-0.207	-0.069	-0.070	576	559	90	MOL
4MOL082A	2-Sep-94	76	2851292	291383	WATER WHITE	0.991	-0.178	-0.059	-0.060	744	720	90	MOL
4MOL082A	21-Sep-94	43	2919684	319907	WATER WHITE	0.960	-0.208	-0.069	-0.071	1200	1122	90	MOL
4MOL082A	6-Oct-94	49	2750992	380173	WATER WHITE	0.860	-0.309	-0.103	-0.105	1560	1478	90	MOL
4MOL082A	28-Oct-94	58	2939043	315386	WATER WHITE	0.969	-0.199	-0.066	-0.067	2088	1978	90	MOL
4MOL082A	10-Nov-94	26	2970654	347849	WATER WHITE	0.931	-0.237	-0.079	-0.080	2400	2191	90	MOL
4MOL082B	2-Aug-94	31	1488885	102310	PINK TINGE	1.163	0.000	0.002	0.000	0	0	90	MOL
4MOL082B	5-Aug-94	57	2982441	350135	WATER WHITE	0.930	-0.233	-0.077	-0.079	72	67	90	MOL
4MOL082B	17-Aug-94	80	2948052	352220	WATER WHITE	0.923	-0.240	-0.080	-0.082	360	349	90	MOL
4MOL082B	26-Aug-94	143	2849419	202085	WATER WHITE	1.149	-0.014	-0.003	-0.005	576	559	90	MOL
4MOL082B	2-Sep-94	90	2870183	255072	WATER WHITE	1.051	-0.112	-0.036	-0.038	744	720	90	MOL
4MOL082B	21-Sep-94	6	2957672	273409	WATER WHITE	1.034	-0.129	-0.042	-0.044	1200	1122	90	MOL
4MOL082B	7-Oct-94	12	2757281	312571	WATER WHITE	0.946	-0.217	-0.072	-0.074	1584	1478	90	MOL
4MOL082B	31-Oct-94	8	2981558	127122	WATER WHITE	1.370	0.207	0.072	0.070	2160	1978	90	MOL
4MOL082B	10-Nov-94	41	2946047	324745	WATER WHITE	0.958	-0.205	-0.068	-0.070	2400	2191	90	MOL
4MOL115A	2-Aug-94	47	1487063	28117	PINK TINGE	1.723	0.000	0.002	0.000	0	0	120	MOL
4MOL115A	9-Aug-94	8	2998662	123193	WATER WHITE	1.386	-0.337	-0.113	-0.114	168	142	120	MOL
4MOL115A	16-Aug-94	27	2951817	127463	WATER WHITE	1.365	-0.359	-0.120	-0.122	336	283	120	MOL
4MOL115A	19-Aug-94	89	2928693	130758	WATER WHITE	1.350	-0.373	-0.125	-0.127	408	351	120	MOL
4MOL115A	26-Aug-94	36	2870566	79785	WATER WHITE	1.556	-0.167	-0.055	-0.057	576	509	120	MOL
4MOL115A	1-Sep-94	37	2887436	88572	WATER WHITE	1.513	-0.210	-0.070	-0.071	720	650	120	MOL
4MOL115A	19-Sep-94	36	2959285	110106	WATER WHITE	1.429	-0.294	-0.098	-0.100	1152	1051	120	MOL
4MOL115A	30-Sep-94	10	2652780	84919	WATER WHITE	1.495	-0.229	-0.076	-0.078	1416	1313	120	MOL
4MOL115A	28-Oct-94	19	2982281	107971	WATER WHITE	1.441	-0.282	-0.094	-0.096	2088	1979	120	MOL
4MOL115A	10-Nov-94	104	2933406	110659	WATER WHITE	1.423	-0.300	-0.100	-0.102	2400	2263	120	MOL
4MOL115B	2-Aug-94	53	1481971	79194	PINK	1.272	0.000	0.002	0.000	0	0	120	MOL
4MOL115B	9-Aug-94	20	2999947	297570	WATER WHITE	1.004	-0.269	-0.090	-0.091	168	142	120	MOL
4MOL115B	16-Aug-94	41	2978569	267739	WATER WHITE	1.046	-0.226	-0.075	-0.077	336	283	120	MOL
4MOL115B	19-Aug-94	100	2949256	275212	WATER WHITE	1.030	-0.242	-0.081	-0.082	408	351	120	MOL
4MOL115B	26-Aug-94	49	2882150	59180	WATER WHITE	1.688	0.415	0.142	0.141	576	509	120	MOL
4MOL115B	1-Sep-94	49	2877771	159598	WATER WHITE	1.256	-0.016	-0.004	-0.005	720	650	120	MOL
4MOL115B	19-Sep-94	49	2955099	226008	WATER WHITE	1.116	-0.156	-0.051	-0.053	1152	1051	120	MOL
4MOL115B	30-Sep-94	46	2623414	191450	WATER WHITE	1.137	-0.135	-0.044	-0.046	1416	1313	120	MOL
4MOL115B	28-Oct-94	56	2941069	220012	WATER WHITE	1.126	-0.146	-0.048	-0.050	2088	1979	120	MOL
4MOL115B	10-Nov-94	114	2940219	235088	WATER WHITE	1.097	-0.175	-0.058	-0.059	2400	2263	120	MOL
4MOL150A	5-Aug-94	176	2959481	458139	WATER WHITE	0.810	0.000	0.002	0.000	0	0	150	MOL
4MOL150A	15-Aug-94	44	2941743	405022	WATER WHITE	0.861	0.051	0.019	0.017	240	226	150	MOL

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4MOL150A	19-Aug-94	24	2970445	443811	WATER WHITE	0.826	0.015	0.007	0.005	336	318	150	MOL
4MOL150A	25-Aug-94	59	2974473	445861	WATER WHITE	0.824	0.014	0.006	0.005	480	458	150	MOL
4MOL150A	31-Aug-94	57	2873953	299814	WATER WHITE	0.982	0.171	0.060	0.058	624	600	150	MOL
4MOL150A	16-Sep-94	16	2968740	394298	WATER WHITE	0.877	0.067	0.024	0.023	1008	981	150	MOL
4MOL150A	28-Sep-94	21	2598261	297534	WATER WHITE	0.941	0.131	0.046	0.044	1296	1264	150	MOL
4MOL150A	27-Oct-94	45	2991456	335309	WATER WHITE	0.950	0.140	0.049	0.048	1992	1956	150	MOL
4MOL150A	9-Nov-94	46	2951379	359948	WATER WHITE	0.914	0.104	0.037	0.035	2304	2264	150	MOL
4MOL150B	3-Aug-94	5	3019539	249582	WATER WHITE, SLT OPAQUE	1.083	0.000	0.002	0.000	0	0	150	MOL
4MOL150B	5-Aug-94	191	2963761	341644	WATER WHITE	0.938	-0.144	-0.048	-0.049	48	46	150	MOL
4MOL150B	15-Aug-94	54	2945115	407173	WATER WHITE	0.859	-0.223	-0.074	-0.076	288	272	150	MOL
4MOL150B	19-Aug-94	32	2969296	430748	WATER WHITE	0.838	-0.244	-0.081	-0.083	384	364	150	MOL
4MOL150B	25-Aug-94	66	2955514	328639	WATER WHITE	0.954	-0.129	-0.042	-0.044	528	504	150	MOL
4MOL150B	31-Aug-94	65	2865943	284102	WATER WHITE	1.004	-0.079	-0.025	-0.027	672	646	150	MOL
4MOL150B	16-Sep-94	41	2938141	315289	WATER WHITE	0.969	-0.113	-0.037	-0.038	1056	1027	150	MOL
4MOL150B	28-Sep-94	30	2591123	263801	WATER WHITE	0.992	-0.091	-0.029	-0.031	1344	1310	150	MOL
4MOL150B	27-Oct-94	69	2977107	286447	WATER WHITE	1.048	-0.035	-0.010	-0.012	2040	2002	150	MOL
4MOL150B	9-Nov-94	72	2950805	287876	WATER WHITE	1.011	-0.072	-0.023	-0.024	2352	2310	150	MOL
4MOL175A	3-Aug-94	42	3010664	143520	PINK	1.322	0.000	0.002	0.000	0	0	175	MOL
4MOL175A	5-Aug-94	97	2987241	190429	WATER WHITE	1.196	-0.126	-0.041	-0.043	48	46	175	MOL
4MOL175A	11-Aug-94	91	2986981	166751	WATER WHITE	1.253	-0.069	-0.022	-0.023	192	185	175	MOL
4MOL175A	16-Aug-94	93	2960765	180180	WATER WHITE	1.216	-0.106	-0.034	-0.036	312	300	175	MOL
4MOL175A	18-Aug-94	7	2921063	176626	WATER WHITE	1.218	-0.103	-0.034	-0.035	360	344	175	MOL
4MOL175A	25-Aug-94	8	2990739	158280	LT PINK TINT	1.276	-0.045	-0.014	-0.015	528	509	175	MOL
4MOL175A	31-Aug-94	8	2897097	100562	LT PINK TINT	1.460	0.138	0.048	0.047	672	645	175	MOL
4MOL175A	16-Sep-94	7	2966103	127725	LT PINK	1.366	0.044	0.016	0.015	1056	1027	175	MOL
4MOL175A	26-Sep-94	8	2642140	98872	LT PINK	1.427	0.105	0.037	0.036	1296	1265	175	MOL
4MOL175A	27-Oct-94	8	3043923	82909	PINK	1.565	0.243	0.084	0.082	2040	2005	175	MOL
4MOL175A	9-Nov-94	8	2973529	43408	LT PINK	1.836	0.514	0.176	0.174	2352	2314	175	MOL
4MOL175B	3-Aug-94	47	2990062	244850	PINK TINGE	1.087	0.000	0.002	0.000	0	0	175	MOL
4MOL175B	5-Aug-94	103	2987596	294750	WATER WHITE	1.006	-0.081	-0.026	-0.027	48	46	175	MOL
4MOL175B	11-Aug-94	98	2982694	265667	WATER WHITE	1.050	-0.037	-0.011	-0.012	192	185	175	MOL
4MOL175B	16-Aug-94	100	2955665	247228	WATER WHITE	1.078	-0.009	-0.002	-0.003	312	300	175	MOL
4MOL175B	18-Aug-94	21	2933858	266248	WATER WHITE	1.042	-0.045	-0.014	-0.015	360	344	175	MOL
4MOL175B	25-Aug-94	16	2989337	246947	V SLT PINK TINGE	1.083	-0.004	0.000	-0.001	528	509	175	MOL
4MOL175B	31-Aug-94	15	2891209	158388	LT PINK	1.261	0.175	0.061	0.059	672	645	175	MOL
4MOL175B	16-Sep-94	29	2985074	171286	WATER WHITE	1.241	0.154	0.054	0.052	1056	1027	175	MOL
4MOL175B	26-Sep-94	15	2635008	129331	PINK	1.309	0.222	0.077	0.075	1296	1265	175	MOL
4MOL175B	27-Oct-94	23	3015687	150914	LT PINK	1.301	0.214	0.074	0.073	2040	2005	175	MOL
4MOL175B	9-Nov-94	23	2975239	175909	LT PINK	1.228	0.141	0.049	0.048	2352	2314	175	MOL
4M_N082A	29-Jun-94	34	586424	8596		1.834	0.000	0.002	0.000	0	0	90	M_N
4M_N082A	12-Jul-94	38	1076551	62820	LT ORANGE	1.234	-0.600	-0.202	-0.204	312	309	90	M_N
4M_N082A	15-Jul-94	53	2594856	118463	PEACH	1.341	-0.493	-0.166	-0.167	384	376	90	M_N
4M_N082A	20-Jul-94	42	2565669	121099	PINK	1.326	-0.508	-0.171	-0.172	504	491	90	M_N
4M_N082A	25-Jul-94	14	2494675	106302	PEACH TINGE	1.370	-0.463	-0.156	-0.157	624	607	90	M_N
4M_N082A	5-Aug-94	45	3010275	253037		1.075	-0.758	-0.256	-0.257	888	857	90	M_N

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TubelD	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4M_N082A	17-Aug-94	66	2927913	277416	PEACH	1.023	-0.810	-0.273	-0.275	1176	1138	90	M_N
4M_N082A	26-Aug-94	127	2857151	211122	PEACH	1.131	-0.703	-0.237	-0.238	1392	1348	90	M_N
4M_N082A	2-Sep-94	77	2864636	219224	PEACH	1.116	-0.718	-0.242	-0.244	1560	1509	90	M_N
4M_N082A	21-Sep-94	44	2944184	246957	LT YELLOW TINGE	1.076	-0.758	-0.256	-0.257	2016	1912	90	M_N
4M_N082A	6-Oct-94	50	2752238	299049	LT PEACH TINT	0.964	-0.870	-0.294	-0.295	2376	2267	90	M_N
4M_N082A	28-Oct-94	59	2939219	275859	OFF WATER WHITE	1.028	-0.806	-0.272	-0.274	2904	2768	90	M_N
4M_N082A	10-Nov-94	27	2974598	323227	OFF WATER WHITE	0.964	-0.870	-0.294	-0.295	3216	2980	90	M_N
4M_N082B	29-Jun-94	20	589640	9459		1.795	0.000	0.002	0.000	0	0	90	M_N
4M_N082B	12-Jul-94	39	1068403	78333	LT ORANGE	1.135	-0.660	-0.222	-0.224	312	309	90	M_N
4M_N082B	15-Jul-94	54	2587257	154934	PEACH	1.223	-0.572	-0.193	-0.194	384	376	90	M_N
4M_N082B	20-Jul-94	53	2575438	139397		1.267	-0.528	-0.178	-0.179	504	491	90	M_N
4M_N082B	25-Jul-94	24	2477827	157179	PINK	1.198	-0.597	-0.201	-0.203	624	607	90	M_N
4M_N082B	5-Aug-94	58	2975560	286761	SLTLY PEACH	1.016	-0.779	-0.263	-0.264	888	857	90	M_N
4M_N082B	17-Aug-94	79	2936167	321176	LT PEACH	0.961	-0.834	-0.281	-0.283	1176	1138	90	M_N
4M_N082B	26-Aug-94	144	2851361	185951	PEACH	1.186	-0.609	-0.205	-0.207	1392	1348	90	M_N
4M_N082B	2-Sep-94	91	2861300	234824	LT PEACH TINGE	1.086	-0.709	-0.239	-0.241	1560	1509	90	M_N
4M_N082B	21-Sep-94	7	2959678	231534	OFF WATER WHITE	1.107	-0.688	-0.232	-0.233	2016	1912	90	M_N
4M_N082B	7-Oct-94	13	2738857	332253	WATER WHITE	0.916	-0.879	-0.297	-0.298	2400	2267	90	M_N
4M_N082B	31-Oct-94	10	2981385	282363	WATER WHITE	1.024	-0.771	-0.260	-0.262	2976	2768	90	M_N
4M_N082B	10-Nov-94	42	2954784	283188	WATER WHITE	1.018	-0.776	-0.262	-0.263	3216	2980	90	M_N
4M_N115A	29-Jun-94	7	602667	8143		1.869	0.000	0.002	0.000	0	0	120	M_N
4M_N115A	13-Jul-94	24	1085252	32428	PEACH	1.525	-0.345	-0.115	-0.117	336	335	120	M_N
4M_N115A	18-Jul-94	52	2593028	44965	YELLOW	1.761	-0.108	-0.035	-0.037	456	445	120	M_N
4M_N115A	22-Jul-94	33	2296806	31849	ORANGE	1.858	-0.011	-0.002	-0.004	552	536	120	M_N
4M_N115A	28-Jul-94	24	2495125	48124	ORANGE	1.715	-0.155	-0.051	-0.052	696	674	120	M_N
4M_N115A	9-Aug-94	9	2985357	149729	YELLOW	1.300	-0.570	-0.192	-0.193	984	924	120	M_N
4M_N115A	16-Aug-94	17	2970077	168217	YELLOW	1.247	-0.622	-0.210	-0.211	1152	1065	120	M_N
4M_N115A	19-Aug-94	88	2932438	144235	YELLOW	1.308	-0.561	-0.189	-0.190	1224	1133	120	M_N
4M_N115A	26-Aug-94	37	2859485	80233	PEACH	1.552	-0.317	-0.106	-0.108	1392	1291	120	M_N
4M_N115A	1-Sep-94	35	2897167	85643	PEACH	1.529	-0.340	-0.114	-0.115	1536	1432	120	M_N
4M_N115A	19-Sep-94	37	2969313	111788	YELLOW	1.424	-0.445	-0.149	-0.151	1968	1833	120	M_N
4M_N115A	30-Sep-94	11	2634941	98576	YELLOW	1.427	-0.442	-0.149	-0.150	2232	2095	120	M_N
4M_N115A	28-Oct-94	20	2955988	128033	YELLOW	1.363	-0.506	-0.170	-0.172	2904	2761	120	M_N
4M_N115A	10-Nov-94	105	2964089	150553	YELLOW	1.294	-0.575	-0.194	-0.195	3216	3045	120	M_N
4M_N115B	29-Jun-94	27	587339	9934		1.772	0.000	0.002	0.000	0	0	120	M_N
4M_N115B	13-Jul-94	25	1088892	34217	PEACH	1.503	-0.269	-0.090	-0.091	336	335	120	M_N
4M_N115B	18-Jul-94	53	2599333	54111	YELLOW	1.682	-0.090	-0.029	-0.031	456	445	120	M_N
4M_N115B	22-Jul-94	42	2304207	31805	ORANGE	1.860	0.088	0.031	0.030	552	536	120	M_N
4M_N115B	28-Jul-94	32	2515042	56300	ORANGE	1.650	-0.122	-0.040	-0.041	696	674	120	M_N
4M_N115B	9-Aug-94	21	3000225	187609	YELLOW	1.204	-0.568	-0.191	-0.193	984	924	120	M_N
4M_N115B	16-Aug-94	40	2953280	143019	YELLOW	1.315	-0.457	-0.154	-0.155	1152	1065	120	M_N
4M_N115B	19-Aug-94	99	2958146	144372	YELLOW	1.312	-0.460	-0.155	-0.156	1224	1133	120	M_N
4M_N115B	26-Aug-94	48	2857314	95207	YELLOW	1.477	-0.294	-0.098	-0.100	1392	1291	120	M_N
4M_N115B	1-Sep-94	48	2887913	95983	PEACH	1.478	-0.293	-0.098	-0.100	1536	1432	120	M_N
4M_N115B	19-Sep-94	50	2927753	142021	YELLOW	1.314	-0.458	-0.154	-0.155	1968	1833	120	M_N

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4M_N115B	30-Sep-94	47	2630537	125765	YELLOW	1.320	-0.451	-0.152	-0.153	2232	2095	120	M_N
4M_N115B	28-Oct-94	57	2940967	139513	YELLOW	1.324	-0.448	-0.150	-0.152	2904	2761	120	M_N
4M_N115B	10-Nov-94	113	2947571	144612	YELLOW	1.309	-0.463	-0.155	-0.157	3216	3045	120	M_N
4M_N150A	30-Jun-94	5	592537	12038		1.692	0.000	0.002	0.000	0	0	150	M_N
4M_N150A	14-Jul-94	105	2644578	2346	DARK ORANGE	3.052	1.360	0.463	0.461	336	333	150	M_N
4M_N150A	19-Jul-94	9	2570529	1876	ORANGE	3.137	1.445	0.492	0.490	456	446	150	M_N
4M_N150A	21-Jul-94	43	2534422	3288	ORANGE, SLIME	2.887	1.195	0.407	0.405	504	487	150	M_N
4M_N150A	5-Aug-94	177	2965724	5725	YELLOW TINT, BROWN PPT ON WALLS	2.714	1.022	0.348	0.347	864	833	150	M_N
4M_N150A	15-Aug-94	43	0	0	DECOMPOSED	1104				1104	1059	150	M_N
4M_N150B	29-Jun-94	2	603589	14102		1.631	0.000	0.002	0.000	0	0	150	M_N
4M_N150B	14-Jul-94	106	2638042	5195	DARK ORANGE	2.706	1.074	0.366	0.364	360	357	150	M_N
4M_N150B	19-Jul-94	18	2553050	2378	PEACH, SLIME LAYER	3.031	1.399	0.476	0.475	480	470	150	M_N
4M_N150B	21-Jul-94	6	2538182	2214	ORANGE, SLIME	3.059	1.428	0.486	0.484	528	511	150	M_N
4M_N150B	5-Aug-94	192	2973982	38626	YELLOW TINT, BROWN PPT ON WALLS	1.886	0.255	0.088	0.087	888	857	150	M_N
4M_N150B	15-Aug-94	53	0	0	DECOMPOSED	1128				1128	1083	150	M_N
4M_N175A	29-Jun-94	8	602946	11002		1.739	0.000	0.002	0.000	0	0	175	M_N
4M_N175A	14-Jul-94	24	2664879	2237	DARK ORANGE	3.076	1.337	0.455	0.454	360	359	175	M_N
4M_N175A	18-Jul-94	89	2601271	2524	LT TINT, BROWN SLIME LAYER	3.013	1.274	0.434	0.432	456	449	175	M_N
4M_N175A	19-Jul-94	0	0	0	DECOMPOSED	480				480	470	175	M_N
4M_N175B	29-Jun-94	22	588304	5491		2.030	0.000	0.002	0.000	0	0	175	M_N
4M_N175B	14-Jul-94	25	2677239	1580	DARK ORANGE	3.229	1.199	0.408	0.407	360	359	175	M_N
4M_N175B	18-Jul-94	97	2589275	4750	SLT TINT, BROWN SLIME LAYER	2.736	0.707	0.241	0.240	456	449	175	M_N
4M_N175B	19-Jul-94	0	0	0	DECOMPOSED	480				480	470	175	M_N
4NON082C	2-Aug-94	27	1480752	20755	PINK	1.853	0.000	0.002	0.000	0	0	90	NON
4NON082C	5-Aug-94	46	3000930	72093	PINK	1.619	-0.234	-0.078	-0.079	72	67	90	NON
4NON082C	9-Aug-94	54	2947014	73617	PINK	1.602	-0.251	-0.084	-0.085	168	161	90	NON
4NON082C	17-Aug-94	81	2956534	72401	PINK	1.611	-0.242	-0.081	-0.082	360	349	90	NON
4NON082C	26-Aug-94	130	2834874	36504	PINK	1.890	0.037	0.014	0.012	576	559	90	NON
4NON082C	2-Sep-94	78	2851164	41730	PINK	1.835	-0.019	-0.005	-0.006	744	720	90	NON
4NON082C	21-Sep-94	45	2943810	49896	PINK	1.771	-0.083	-0.026	-0.028	1200	1122	90	NON
4NON082C	6-Oct-94	51	2748531	62736	PINK	1.642	-0.212	-0.070	-0.072	1560	1478	90	NON
4NON082C	28-Oct-94	60	2948753	43886	PINK	1.827	-0.026	-0.007	-0.009	2088	1978	90	NON
4NON082C	10-Nov-94	28	2966970	44380	PINK	1.825	-0.028	-0.008	-0.010	2400	2191	90	NON
4NON082D	2-Aug-94	32	1480657	21945	PINK	1.829	0.000	0.002	0.000	0	0	90	NON
4NON082D	5-Aug-94	59	2988443	72969	PINK	1.612	-0.217	-0.072	-0.074	72	67	90	NON
4NON082D	9-Aug-94	55	2980730	74213	PINK	1.604	-0.225	-0.075	-0.076	168	161	90	NON
4NON082D	17-Aug-94	82	2933537	66390	PINK	1.645	-0.184	-0.061	-0.062	360	349	90	NON
4NON082D	26-Aug-94	145	2856529	39095	PINK	1.864	0.035	0.013	0.012	576	559	90	NON
4NON082D	2-Sep-94	92	2845788	39471	PINK	1.858	0.029	0.011	0.010	744	720	90	NON
4NON082D	21-Sep-94	8	2968418	48534	PINK	1.786	-0.043	-0.013	-0.014	1200	1122	90	NON
4NON082D	7-Oct-94	14	2740168	64750	PINK	1.627	-0.203	-0.067	-0.069	1584	1478	90	NON
4NON082D	31-Oct-94	11	2971620	44471	PINK	1.825	-0.004	0.000	-0.001	2160	1978	90	NON
4NON082D	10-Nov-94	43	2961061	46348	PINK	1.805	-0.024	-0.007	-0.008	2400	2191	90	NON
4NON115C	2-Aug-94	48	1492723	60509	PINK	1.392	0.000	0.002	0.000	0	0	120	NON
4NON115C	9-Aug-94	10	3013832	177121	PINK	1.231	-0.161	-0.053	-0.055	168	142	120	NON

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4NON15C 16-Aug-94	28	2984060	160514	PINK		1.269	-0.123	-0.040	-0.042	336	283	120	NON
4NON15C 19-Aug-94	90	2939353	155886	PINK		1.275	-0.117	-0.038	-0.040	408	351	120	NON
4NON15C 26-Aug-94	38	2869762	104050	PINK		1.441	0.048	0.018	0.016	576	509	120	NON
4NON15C 1-Sep-94	38	2895751	104276	PINK		1.444	0.051	0.019	0.017	720	650	120	NON
4NON15C 19-Sep-94	38	2949363	117233	PINK		1.401	0.009	0.004	0.003	1152	1051	120	NON
4NON15C 30-Sep-94	12	2650305	87202	PINK		1.483	0.091	0.032	0.031	1416	1313	120	NON
4NON15C 28-Oct-94	21	2962559	107114	PINK		1.442	0.050	0.018	0.017	2088	1979	120	NON
4NON15C 10-Nov-94	106	2948892	114833	PINK		1.410	0.017	0.007	0.006	2400	2263	120	NON
4NON15D 2-Aug-94	55	1474945	30566	PINK		1.684	0.000	0.002	0.000	0	0	120	NON
4NON15D 9-Aug-94	22	2974260	83877	PINK		1.550	-0.134	-0.044	-0.045	168	142	120	NON
4NON15D 16-Aug-94	42	2954897	92074	PINK		1.506	-0.177	-0.059	-0.060	336	283	120	NON
4NON15D 19-Aug-94	101	2951317	85339	PINK		1.539	-0.145	-0.048	-0.049	408	351	120	NON
4NON15D 26-Aug-94	50	2871133	59452	PINK		1.684	0.000	0.002	0.000	576	509	120	NON
4NON15D 1-Sep-94	50	2901088	56549	PINK		1.710	0.027	0.011	0.009	720	650	120	NON
4NON15D 19-Sep-94	51	2943526	70849	PINK		1.619	-0.065	-0.021	-0.022	1152	1051	120	NON
4NON15D 30-Sep-94	48	2644590	53745	PINK		1.692	0.008	0.004	0.003	1416	1313	120	NON
4NON15D 28-Oct-94	58	2947637	54007	PINK		1.737	0.053	0.020	0.018	2088	1979	120	NON
4NON15D 10-Nov-94	115	2962413	41072	PINK		1.858	0.175	0.061	0.059	2400	2263	120	NON
4NON15C 3-Aug-94	1	3006759	138344	PINK		1.337	0.000	0.002	0.000	0	0	150	NON
4NON15C 5-Aug-94	178	2969462	141084	PINK		1.323	-0.014	-0.003	-0.005	48	46	150	NON
4NON15C 15-Aug-94	46	2949367	46031	PINK		1.807	0.470	0.161	0.159	288	272	150	NON
4NON15C 19-Aug-94	25	2965632	42051	PINK		1.848	0.511	0.175	0.173	384	364	150	NON
4NON15C 25-Aug-94	60	2972305	38920	PINK		1.883	0.546	0.187	0.185	528	504	150	NON
4NON15C 31-Aug-94	58	2888833	26877	PINK		2.031	0.694	0.237	0.236	672	646	150	NON
4NON15C 16-Sep-94	17	2943760	29558	PINK		1.998	0.661	0.226	0.224	1056	1027	150	NON
4NON15C 28-Sep-94	22	2592419	16781	PINK		2.189	0.852	0.290	0.289	1344	1310	150	NON
4NON15C 27-Oct-94	46	3013764	16585	PINK		2.259	0.922	0.314	0.313	2040	2002	150	NON
4NON15C 9-Nov-94	47	2954115	17328	PINK		2.232	0.895	0.305	0.304	2352	2310	150	NON
4NON15D 3-Aug-94	6	2988910	169677	PINK		1.246	0.000	0.002	0.000	0	0	150	NON
4NON15D 5-Aug-94	193	2980840	124641	PINK		1.379	0.133	0.047	0.045	48	46	150	NON
4NON15D 15-Aug-94	55	2950218	66885	PINK		1.645	0.399	0.137	0.135	288	272	150	NON
4NON15D 19-Aug-94	33	2949363	64801	PINK		1.658	0.412	0.141	0.140	384	364	150	NON
4NON15D 25-Aug-94	68	2983932	47067	PINK		1.802	0.556	0.190	0.189	528	504	150	NON
4NON15D 31-Aug-94	66	2865993	34358	PINK		1.921	0.675	0.231	0.229	672	646	150	NON
4NON15D 16-Sep-94	42	2934475	32314	PINK		1.958	0.712	0.243	0.242	1056	1027	150	NON
4NON15D 28-Sep-94	31	2579172	22498	PINK		2.059	0.813	0.278	0.276	1344	1310	150	NON
4NON15D 27-Oct-94	70	2961469	21144	PINK		2.146	0.900	0.307	0.306	2040	2002	150	NON
4NON15D 9-Nov-94	73	2972002	18001	PINK		2.218	0.972	0.331	0.330	2352	2310	150	NON
4NON175C 3-Aug-94	43	2988592	220789	PINK		1.131	0.000	0.002	0.000	0	0	175	NON
4NON175C 5-Aug-94	98	2964281	78732	MAGENTA		1.576	0.444	0.152	0.151	48	46	175	NON
4NON175C 11-Aug-94	92	2994009	33426	MAGENTA		1.952	0.821	0.280	0.278	192	185	175	NON
4NON175C 16-Aug-94	94	2942027	23209	PURPLE		2.103	0.972	0.331	0.330	312	300	175	NON
4NON175C 18-Aug-94	8	2933091	23661	MAGENTA		2.093	0.962	0.328	0.326	360	344	175	NON
4NON175C 25-Aug-94	10	3001818	22185	HOT PINK		2.131	1.000	0.341	0.339	528	509	175	NON
4NON175C 31-Aug-94	9	2871795	15350	HOT PINK		2.272	1.141	0.388	0.387	672	645	175	NON

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TubelD	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4NON175C	16-Sep-94	8	2973182	12381	PURPLE	2.380	1.249	0.425	0.424	1056	1027	175	NON
4NON175C	26-Sep-94	9	2638904	7454	PURPLE	2.549	1.418	0.482	0.481	1296	1265	175	NON
4NON175C	27-Oct-94	9	3031299	5863	PURPLE	2.714	1.582	0.538	0.537	2040	2005	175	NON
4NON175C	9-Nov-94	9	2964302	5128	PURPLE	2.762	1.630	0.555	0.553	2352	2314	175	NON
4NON175D	3-Aug-94	49	3013703	167048	PINK	1.256	0.000	0.002	0.000	0	0	175	NON
4NON175D	5-Aug-94	104	2987692	66793	MAGENTA	1.651	0.394	0.135	0.134	48	46	175	NON
4NON175D	11-Aug-94	99	2996943	31237	MAGENTA	1.982	0.726	0.248	0.246	192	185	175	NON
4NON175D	16-Aug-94	101	2964424	23845	PURPLE	2.095	0.838	0.286	0.284	312	300	175	NON
4NON175D	18-Aug-94	23	2938543	20947	PINK	2.147	0.891	0.304	0.302	360	344	175	NON
4NON175D	25-Aug-94	17	2988635	17423	HOT PINK	2.234	0.978	0.333	0.332	528	509	175	NON
4NON175D	31-Aug-94	16	2886528	12700	HOT PINK	2.357	1.100	0.375	0.373	672	645	175	NON
4NON175D	16-Sep-94	23	2975400	8077	PURPLE	2.566	1.310	0.446	0.444	1056	1027	175	NON
4NON175D	26-Sep-94	16	2631246	5529	PURPLE	2.678	1.421	0.484	0.482	1296	1265	175	NON
4NON175D	27-Oct-94	24	3026721	3830	PURPLE	2.898	1.642	0.558	0.557	2040	2005	175	NON
4NON175D	9-Nov-94	24	2992463	3787	PURPLE	2.898	1.641	0.558	0.557	2352	2314	175	NON
4RML025A	30-Jun-94	28	593961	19122		1.492	0.000	0.002	0.000	0	0	25	RML
4RML025A	7-Jul-94	129	1086809	37277	PINK	1.465	-0.028	-0.008	-0.009	168	168	25	RML
4RML025A	14-Jul-94	57	2637155	100401	PINK	1.419	-0.073	-0.023	-0.025	336	336	25	RML
4RML025A	21-Jul-94	8	2551467	79472	PINK	1.507	0.014	0.006	0.005	504	504	25	RML
4RML025A	28-Jul-94	8	2011905	55071	PINK	1.563	0.070	0.025	0.024	672	672	25	RML
4RML025A	9-Aug-94	74	2966611	132291	PINK	1.351	-0.141	-0.047	-0.048	960	960	25	RML
4RML025A	16-Aug-94	126	2955038	165703	PINK	1.251	-0.241	-0.080	-0.082	1128	1128	25	RML
4RML025A	26-Aug-94	5	2832872	90803	PINK	1.494	0.002	0.002	0.001	1368	1368	25	RML
4RML025A	2-Sep-94	133	2853635	88900	PINK	1.506	0.014	0.006	0.005	1536	1536	25	RML
4RML025A	7-Oct-94	50	2751950	163063	PINK	1.227	-0.265	-0.088	-0.090	2376	2376	25	RML
4RML025A	4-Nov-94	6	2954366	112118	PINK	1.421	-0.071	-0.023	-0.024	3048	3048	25	RML
4RML025A	10-Nov-94	147	2940773	103438	PINK	1.454	-0.038	-0.012	-0.013	3192	3192	25	RML
4SIL082A	2-Aug-94	28	1484127	104350	PINK	1.153	0.000	0.002	0.000	0	0	90	SIL
4SIL082A	5-Aug-94	47	2979164	354477	WATER WHITE	0.925	-0.228	-0.076	-0.078	72	67	90	SIL
4SIL082A	17-Aug-94	68	2950347	425709	WATER WHITE	0.841	-0.312	-0.104	-0.106	360	349	90	SIL
4SIL082A	26-Aug-94	128	2844268	285576	WATER WHITE	0.998	-0.155	-0.051	-0.052	576	559	90	SIL
4SIL082A	2-Sep-94	79	2850706	307096	WATER WHITE	0.968	-0.185	-0.061	-0.063	744	720	90	SIL
4SIL082A	21-Sep-94	46	2942028	334700	WATER WHITE	0.944	-0.209	-0.069	-0.071	1200	1122	90	SIL
4SIL082A	28-Oct-94	61	2946126	340135	WATER WHITE	0.938	-0.215	-0.072	-0.073	2088	1978	90	SIL
4SIL082A	10-Nov-94	30	2967194	380441	WATER WHITE	0.892	-0.261	-0.087	-0.089	2400	2191	90	SIL
4SIL082B	2-Aug-94	33	1497554	53109	WATER WHITE	1.450	0.000	0.002	0.000	0	0	90	SIL
4SIL082B	5-Aug-94	60	2997282	218926	WATER WHITE	1.136	-0.314	-0.105	-0.106	72	67	90	SIL
4SIL082B	17-Aug-94	83	2940353	192592	WATER WHITE	1.184	-0.266	-0.089	-0.090	360	349	90	SIL
4SIL082B	26-Aug-94	146	2844994	134580	WATER WHITE	1.325	-0.125	-0.041	-0.042	576	559	90	SIL
4SIL082B	2-Sep-94	93	2867347	139117	WATER WHITE	1.314	-0.136	-0.045	-0.046	744	720	90	SIL
4SIL082B	21-Sep-94	9	2981242	190243	WATER WHITE	1.195	-0.255	-0.085	-0.087	1200	1122	90	SIL
4SIL082B	7-Oct-94	15	2746615	246788	WATER WHITE	1.046	-0.404	-0.135	-0.137	1584	1478	90	SIL
4SIL082B	31-Oct-94	12	2956871	162914	WATER WHITE	1.259	-0.191	-0.063	-0.065	2160	1978	90	SIL
4SIL082B	10-Nov-94	44	2945895	195873	WATER WHITE	1.177	-0.273	-0.091	-0.093	2400	2191	90	SIL
4SIL115A	2-Aug-94	49	1485714	76813	WATER WHITE	1.287	0.000	0.002	0.000	0	0	120	SIL

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4SIL115A	9-Aug-94	11	3010314	289082	WATER WHITE	1.018	-0.269	-0.090	-0.091	168	142	120	SIL
4SIL115A	16-Aug-94	29	2965127	293282	WATER WHITE	1.005	-0.282	-0.094	-0.096	336	283	120	SIL
4SIL115A	19-Aug-94	91	2936045	304270	WATER WHITE	0.985	-0.302	-0.101	-0.102	408	351	120	SIL
4SIL115A	26-Aug-94	39	2849852	179880	WATER WHITE	1.200	-0.087	-0.028	-0.029	576	509	120	SIL
4SIL115A	1-Sep-94	39	2880929	202648	WATER WHITE	1.153	-0.134	-0.044	-0.045	720	650	120	SIL
4SIL115A	19-Sep-94	39	2950975	244543	WATER WHITE	1.082	-0.205	-0.068	-0.070	1152	1051	120	SIL
4SIL115A	30-Sep-94	13	2655261	189184	WATER WHITE	1.147	-0.139	-0.046	-0.047	1416	1313	120	SIL
4SIL115A	28-Oct-94	22	2974257	229546	WATER WHITE	1.113	-0.174	-0.058	-0.059	2088	1979	120	SIL
4SIL115A	10-Nov-94	107	2962589	231442	WATER WHITE	1.107	-0.179	-0.059	-0.061	2400	2263	120	SIL
4SIL115B	2-Aug-94	56	1477468	113609	PINK TINGE	1.114	0.000	0.002	0.000	0	0	120	SIL
4SIL115B	9-Aug-94	23	2975186	416639	WATER WHITE	0.854	-0.260	-0.087	-0.088	168	142	120	SIL
4SIL115B	16-Aug-94	43	2981250	437642	WATER WHITE	0.833	-0.281	-0.094	-0.095	336	283	120	SIL
4SIL115B	19-Aug-94	102	2960766	412468	WATER WHITE	0.856	-0.258	-0.086	-0.088	408	351	120	SIL
4SIL115B	26-Aug-94	51	2876062	284780	WATER WHITE	1.004	-0.110	-0.036	-0.037	576	509	120	SIL
4SIL115B	1-Sep-94	51	2876465	285400	WATER WHITE	1.003	-0.111	-0.036	-0.038	720	650	120	SIL
4SIL115B	19-Sep-94	52	2956644	361382	WATER WHITE	0.913	-0.201	-0.067	-0.068	1152	1051	120	SIL
4SIL115B	30-Sep-94	49	2644892	274015	WATER WHITE	0.985	-0.129	-0.042	-0.044	1416	1313	120	SIL
4SIL115B	28-Oct-94	59	2954145	319084	WATER WHITE	0.967	-0.148	-0.049	-0.050	2088	1979	120	SIL
4SIL115B	10-Nov-94	116	2957462	334917	WATER WHITE	0.946	-0.168	-0.056	-0.057	2400	2263	120	SIL
4SIL150A	3-Aug-94	2	3021126	344831	WATER WHITE, PINK TINGE	0.943	0.000	0.002	0.000	0	0	150	SIL
4SIL150A	5-Aug-94	179	2966987	428508	WATER WHITE	0.840	-0.102	-0.033	-0.035	48	46	150	SIL
4SIL150A	15-Aug-94	47	2959840	408914	WATER WHITE	0.860	-0.083	-0.027	-0.028	288	272	150	SIL
4SIL150A	19-Aug-94	26	2968461	413614	WATER WHITE	0.856	-0.087	-0.028	-0.029	384	364	150	SIL
4SIL150A	25-Aug-94	61	2964892	429926	WATER WHITE	0.839	-0.104	-0.034	-0.035	528	504	150	SIL
4SIL150A	31-Aug-94	59	2904473	307448	WATER WHITE	0.975	0.033	0.013	0.011	672	646	150	SIL
4SIL150A	16-Sep-94	18	2972047	371226	WATER WHITE	0.903	-0.039	-0.012	-0.013	1056	1027	150	SIL
4SIL150A	28-Sep-94	23	2602455	288387	WATER WHITE	0.955	0.013	0.006	0.004	1344	1310	150	SIL
4SIL150A	27-Oct-94	47	3025803	328685	WATER WHITE	0.964	0.021	0.009	0.007	2040	2002	150	SIL
4SIL150A	9-Nov-94	48	2956480	384275	WATER WHITE	0.886	-0.056	-0.018	-0.019	2352	2310	150	SIL
4SIL150B	3-Aug-94	7	3016791	329624	WATER WHITE	0.962	0.000	0.002	0.000	0	0	150	SIL
4SIL150B	5-Aug-94	194	2970414	339485	WATER WHITE	0.942	-0.020	-0.005	-0.007	48	46	150	SIL
4SIL150B	15-Aug-94	56	2974153	361256	WATER WHITE	0.916	-0.046	-0.014	-0.016	288	272	150	SIL
4SIL150B	19-Aug-94	34	2963649	358938	WATER WHITE	0.917	-0.045	-0.014	-0.015	384	364	150	SIL
4SIL150B	25-Aug-94	69	2954661	351466	WATER WHITE	0.925	-0.037	-0.011	-0.013	528	504	150	SIL
4SIL150B	31-Aug-94	67	2894992	241588	WATER WHITE	1.079	0.117	0.041	0.040	672	646	150	SIL
4SIL150B	16-Sep-94	43	2938696	290263	WATER WHITE	1.005	0.044	0.016	0.015	1056	1027	150	SIL
4SIL150B	28-Sep-94	32	2585787	263700	WATER WHITE	0.991	0.030	0.012	0.010	1344	1310	150	SIL
4SIL150B	27-Oct-94	71	2959800	250551	WATER WHITE	1.072	0.111	0.039	0.038	2040	2002	150	SIL
4SIL150B	9-Nov-94	74	2953814	294235	WATER WHITE	1.002	0.040	0.015	0.014	2352	2310	150	SIL
4SIL175A	3-Aug-94	44	3006636	381849	WATER WHITE	0.896	0.000	0.002	0.000	0	0	175	SIL
4SIL175A	5-Aug-94	116	2967859	457534	WATER WHITE	0.812	-0.084	-0.027	-0.029	48	46	175	SIL
4SIL175A	11-Aug-94	93	3010243	378502	V SLT PINK TINGE	0.901	0.004	0.003	0.001	192	185	175	SIL
4SIL175A	16-Aug-94	95	2945744	313095	LT PINK TINGE	0.974	0.077	0.028	0.026	312	300	175	SIL
4SIL175A	18-Aug-94	9	2925041	405523	WATER WHITE	0.858	-0.038	-0.011	-0.013	360	344	175	SIL
4SIL175A	25-Aug-94	11	2998176	425199	WATER WHITE	0.848	-0.048	-0.015	-0.016	528	509	175	SIL

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TubelID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp.	Additives
4SIL175A	31-Aug-94	10	2872745	307015	WATER WHITE	0.971	0.075	0.027	0.025	672	645	175	SIL
4SIL175A	16-Sep-94	9	2997227	326797	V SLT PINK TINGE	0.962	0.066	0.024	0.022	1056	1027	175	SIL
4SIL175A	26-Sep-94	10	2850786	258279	WATER WHITE	1.011	0.115	0.041	0.039	1296	1265	175	SIL
4SIL175A	27-Oct-94	10	3032135	382428	WATER WHITE	0.899	0.003	0.003	0.001	2040	2005	175	SIL
4SIL175A	9-Nov-94	10	2975306	340292	WATER WHITE	0.942	0.045	0.017	0.015	2352	2314	175	SIL
4SIL175B	3-Aug-94	50	3016056	250902	V SLT PINK TINGE	1.080	0.000	0.002	0.000	0	0	175	SIL
4SIL175B	5-Aug-94	105	2969227	339563	WATER WHITE	0.942	-0.138	-0.045	-0.047	48	46	175	SIL
4SIL175B	11-Aug-94	100	2980593	278790	WATER WHITE	1.029	-0.051	-0.016	-0.017	192	185	175	SIL
4SIL175B	16-Aug-94	102	2942639	260539	LT PINK TINGE	1.053	-0.027	-0.008	-0.009	312	300	175	SIL
4SIL175B	18-Aug-94	24	2941258	274013	V LT PINK TINGE	1.031	-0.049	-0.015	-0.017	360	344	175	SIL
4SIL175B	25-Aug-94	18	2979897	269837	V SLT PINK TINGE	1.043	-0.037	-0.011	-0.012	528	509	175	SIL
4SIL175B	31-Aug-94	17	2885655	191596	WATER WHITE	1.178	0.098	0.035	0.039	672	645	175	SIL
4SIL175B	16-Sep-94	24	3000633	284582	WATER WHITE	1.023	-0.057	-0.018	-0.019	1056	1027	175	SIL
4SIL175B	26-Sep-94	17	2631726	196642	WATER WHITE	1.127	0.047	0.017	0.016	1296	1265	175	SIL
4SIL175B	27-Oct-94	25	3038993	233102	WATER WHITE	1.115	0.035	0.013	0.012	2040	2005	175	SIL
4SIL175B	9-Nov-94	25	2964738	279610	WATER WHITE	1.025	-0.055	-0.017	-0.018	2352	2314	175	SIL
4SUN025A	1-Jul-94	5	593012	16650		1.552	0.000	0.002	0.000	0	0	25	SUN
4SUN025A	7-Jul-94	124	1093590	43304		1.402	-0.149	-0.049	-0.051	144	144	25	SUN
4SUN025A	14-Jul-94	66	2628505	108826	PINK	1.383	-0.169	-0.056	-0.057	312	312	25	SUN
4SUN025A	21-Jul-94	1	2559737	63808	PINK	1.603	0.052	0.019	0.018	480	480	25	SUN
4SUN025A	28-Jul-94	3	2022585	39567	PINK	1.709	0.157	0.055	0.053	648	648	25	SUN
4SUN025A	29-Jul-94	0	0	0	EXPLODED	0.000	0.000	0.002	0.000	672	672	25	SUN
4WAT082A	2-Aug-94	29	1489401	69606	PINK	1.330	0.000	0.002	0.000	0	0	90	WAT
4WAT082A	5-Aug-94	48	2992305	296765	PINK	1.004	-0.327	-0.109	-0.111	72	67	90	WAT
4WAT082A	9-Aug-94	56	2963723	320049	PINK	0.967	-0.364	-0.122	-0.123	168	161	90	WAT
4WAT082A	17-Aug-94	69	2943646	289379	PINK	1.007	-0.323	-0.108	-0.110	360	349	90	WAT
4WAT082A	26-Aug-94	129	2856596	205489	PINK	1.143	-0.187	-0.062	-0.064	576	559	90	WAT
4WAT082A	2-Sep-94	80	2856531	223992	PINK	1.106	-0.225	-0.075	-0.076	744	720	90	WAT
4WAT082A	21-Sep-94	47	2928933	273827	LT PINK	1.029	-0.301	-0.101	-0.102	1200	1122	90	WAT
4WAT082A	6-Oct-94	53	2742916	286484	PINK	0.981	-0.349	-0.117	-0.119	1560	1478	90	WAT
4WAT082A	28-Oct-94	62	2941857	249845	LT PINK	1.071	-0.259	-0.087	-0.088	2088	1978	90	WAT
4WAT082A	10-Nov-94	31	2980141	270535	LT PINK	1.042	-0.288	-0.096	-0.098	2400	2191	90	WAT
4WAT082B	2-Aug-94	34	1482473	58928	PINK	1.401	0.000	0.002	0.000	0	0	90	WAT
4WAT082B	5-Aug-94	61	2974449	234364	SLTLY PINK	1.104	-0.297	-0.099	-0.101	72	67	90	WAT
4WAT082B	9-Aug-94	57	2970421	182158	PINK	1.212	-0.188	-0.062	-0.064	168	161	90	WAT
4WAT082B	17-Aug-94	84	2947547	198378	PINK	1.172	-0.229	-0.076	-0.078	360	349	90	WAT
4WAT082B	26-Aug-94	147	2838234	140452	PINK	1.306	-0.095	-0.031	-0.032	576	559	90	WAT
4WAT082B	2-Sep-94	94	2851851	139526	LT PINK	1.310	-0.090	-0.029	-0.031	744	720	90	WAT
4WAT082B	21-Sep-94	10	2975651	190123	LT PINK	1.195	-0.206	-0.068	-0.070	1200	1122	90	WAT
4WAT082B	7-Oct-94	16	2738022	241704	LT PINK	1.054	-0.347	-0.116	-0.118	1584	1478	90	WAT
4WAT082B	31-Oct-94	13	2974738	189923	LT PINK TINGE	1.195	-0.206	-0.068	-0.070	2160	1978	90	WAT
4WAT082B	10-Nov-94	45	2945483	224277	LT PINK TINT	1.118	-0.282	-0.094	-0.096	2400	2191	90	WAT
4WAT115A	2-Aug-94	50	1491795	59157	PINK	1.402	0.000	0.002	0.000	0	0	120	WAT
4WAT115A	9-Aug-94	12	2991867	358623	SLT PINK TINGE	0.921	-0.480	-0.161	-0.163	168	142	120	WAT
4WAT115A	16-Aug-94	30	2973151	359145	WATER WHITE	0.918	-0.484	-0.163	-0.164	336	283	120	WAT

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp.</u>	<u>Additives</u>
4WAT115A	19-Aug-94	92	2955688	355928	WATER WHITE	0.919	-0.482	-0.162	-0.164	408	351	120	WAT
4WAT115A	19-Aug-94	103	2959921	258273	LT PINK TINGE	1.059	-0.343	-0.115	-0.116	408	351	120	WAT
4WAT115A	26-Aug-94	40	2856100	224422	WATER WHITE	1.105	-0.297	-0.099	-0.101	576	509	120	WAT
4WAT115A	1-Sep-94	40	2885111	252987	WATER WHITE	1.057	-0.345	-0.115	-0.117	720	650	120	WAT
4WAT115A	19-Sep-94	40	2942578	283912	WATER WHITE	1.016	-0.386	-0.130	-0.131	1152	1051	120	WAT
4WAT115A	30-Sep-94	14	2628891	215902	WATER WHITE	1.086	-0.316	-0.106	-0.107	1416	1313	120	WAT
4WAT115A	28-Oct-94	23	2954811	266565	WATER WHITE	1.045	-0.357	-0.120	-0.121	2088	1979	120	WAT
4WAT115A	10-Nov-94	108	2959414	287965	WATER WHITE	1.012	-0.390	-0.131	-0.132	2400	2263	120	WAT
4WAT115B	2-Aug-94	57	1475294	50841	PINK	1.463	0.000	0.002	0.000	0	0	120	WAT
4WAT115B	9-Aug-94	24	2984709	256414	PINK TINGE, YELLOW SLIME FORMING	1.066	-0.397	-0.133	-0.135	168	142	120	WAT
4WAT115B	16-Aug-94	44	2959747	273189	LT PINK TINGE	1.035	-0.428	-0.144	-0.145	336	283	120	WAT
4WAT115B	26-Aug-94	52	2848684	176420	WATER WHITE	1.208	-0.255	-0.085	-0.086	576	509	120	WAT
4WAT115B	1-Sep-94	52	2891869	203515	WATER WHITE	1.153	-0.310	-0.104	-0.105	720	650	120	WAT
4WAT115B	19-Sep-94	53	2954323	236264	WATER WHITE	1.097	-0.366	-0.123	-0.124	1152	1051	120	WAT
4WAT115B	30-Sep-94	50	2644063	174721	WATER WHITE	1.180	-0.283	-0.094	-0.096	1416	1313	120	WAT
4WAT115B	28-Oct-94	60	2940866	213595	WATER WHITE	1.139	-0.324	-0.108	-0.110	2088	1979	120	WAT
4WAT115B	10-Nov-94	117	2941804	240602	WATER WHITE	1.087	-0.375	-0.126	-0.127	2400	2263	120	WAT
4WAT150A	3-Aug-94	3	3021939	178326	PINK	1.229	0.000	0.002	0.000	0	0	150	WAT
4WAT150A	5-Aug-94	180	2963469	226029	PINK, WATER YELLOW	1.118	-0.111	-0.036	-0.038	48	46	150	WAT
4WAT150A	15-Aug-94	48	2969176	30443	PINK	1.989	0.760	0.259	0.258	288	272	150	WAT
4WAT150A	19-Aug-94	27	2968345	52460	PINK	1.753	0.524	0.179	0.178	384	364	150	WAT
4WAT150A	25-Aug-94	62	2965656	48588	PINK	1.786	0.557	0.190	0.189	528	504	150	WAT
4WAT150A	31-Aug-94	60	2901543	37470	PINK	1.889	0.660	0.225	0.224	672	646	150	WAT
4WAT150A	16-Sep-94	19	2940392	21251	PINK	2.141	0.912	0.311	0.309	1056	1027	150	WAT
4WAT150A	28-Sep-94	24	2582649	14654	PINK	2.246	1.017	0.347	0.345	1344	1310	150	WAT
4WAT150A	27-Oct-94	48	3025801	8793	PURPLE	2.537	1.308	0.445	0.444	2040	2002	150	WAT
4WAT150A	9-Nov-94	49	2975673	9205	DARK PINK, YELLOW BLOB	2.510	1.280	0.436	0.434	2352	2310	150	WAT

APPENDIX E:
AGING DATA ON 1-C₆F₁₃I

1-C6F13I

TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
63BN082A	1-Jul-94	34	597912	9473		1.800	0.000	0.002	0.000	0	0	90	3BN
63BN082A	12-Jul-94	72	1065151	6300	ORANGE	2.228	0.428	0.306	0.304	264	261	90	3BN
63BN082A	15-Jul-94	57	2579475	16552	ORANGE	2.193	0.393	0.301	0.299	336	328	90	3BN
63BN082A	20-Jul-94	57	2578376	16566	ORANGE	2.192	0.392	0.301	0.299	456	443	90	3BN
63BN082A	25-Jul-94	49	2396949	26075	ORANGE	1.963	0.163	0.270	0.268	576	559	90	3BN
63BN082A	29-Jul-94	23	2379453	23821	DARK PEACH	2.000	0.199	0.275	0.273	672	651	90	3BN
63BN082A	5-Aug-94	63	2997332	62697	ORANGE	1.679	-0.121	0.231	0.229	840	809	90	3BN
63BN082A	17-Aug-94	86	2950861	96300	PEACH	1.486	-0.314	0.205	0.203	1128	1090	90	3BN
63BN082A	26-Aug-94	149	2834068	66325	DARK PEACH	1.631	-0.169	0.225	0.223	1344	1300	90	3BN
63BN082A	2-Sep-94	109	2839416	127485	YELLOW	1.348	-0.452	0.186	0.184	1512	1461	90	3BN
63BN082A	21-Sep-94	11	2984522	198834	YELLOW	1.176	-0.624	0.163	0.161	1968	1864	90	3BN
63BN082A	7-Oct-94	17	2755071	244635	LEMON YELLOW	1.052	-0.749	0.146	0.144	2352	2219	90	3BN
63BN082A	31-Oct-94	15	2965263	184139	LIGHT YELLOW	1.207	-0.593	0.167	0.165	2928	2720	90	3BN
63BN082A	10-Nov-94	47	2968018	209066	LIGHT YELLOW TINT	1.152	-0.648	0.159	0.157	3168	2932	90	3BN
63BN082B	1-Jul-94	71	593709	4773		2.095	0.000	0.288	0.000	0	0	90	3BN
63BN082B	12-Jul-94	73	1077259	3755		2.458	0.363	0.338	0.050	264	261	90	3BN
63BN082B	15-Jul-94	58	2584340	9732	ORANGE	2.424	0.329	0.333	0.045	336	328	90	3BN
63BN082B	20-Jul-94	67	2555084	9686	ORANGE	2.421	0.326	0.333	0.045	456	443	90	3BN
63BN082B	25-Jul-94	60	2374975	12322	ORANGE	2.285	0.190	0.314	0.026	576	559	90	3BN
63BN082B	29-Jul-94	34	2359539	12721	ORANGE	2.268	0.174	0.312	0.024	672	651	90	3BN
63BN082B	17-Aug-94	100	2934332	56984	DARK YELLOW	1.712	-0.383	0.236	-0.052	1128	1090	90	3BN
63BN082B	26-Aug-94	13	2822099	89343	YELLOW	1.500	-0.595	0.207	-0.081	1344	1300	90	3BN
63BN082B	2-Sep-94	95	2851264	134801	LEMON YELLOW	1.325	-0.769	0.183	-0.105	1512	1461	90	3BN
63BN082B	21-Sep-94	25	2975674	173093	YELLOW	1.235	-0.859	0.171	-0.117	1968	1864	90	3BN
63BN082B	7-Oct-94	31	2746879	243790	LIGHT YELLOW	1.052	-1.043	0.146	-0.142	2352	2219	90	3BN
63BN082B	31-Oct-94	30	2973087	179061	OFF WATER WHITE	1.220	-0.875	0.169	-0.119	2928	2720	90	3BN
63BN082B	10-Nov-94	61	2962573	205780	OFF WATER WHITE	1.158	-0.937	0.160	-0.128	3168	2932	90	3BN
63BN115A	1-Jul-94	32	597984	8229		1.861	0.000	0.256	0.000	0	0	120	3BN
63BN115A	13-Jul-94	54	1082848	7613	ORANGE	2.153	0.292	0.296	0.040	288	287	120	3BN
63BN115A	18-Jul-94	56	2574330	74149	YELLOW	1.541	-0.321	0.212	-0.044	408	397	120	3BN
63BN115A	22-Jul-94	44	2281057	18008	YELLOW, SLIME	2.103	0.241	0.289	0.033	504	488	120	3BN
63BN115A	29-Jul-94	1	1979087	1650	DARK ORANGE, SLIME	3.079	1.218	0.422	0.166	672	643	120	3BN
63BN115A	2-Aug-94	0	0	0	DECOMPOSED	1.741	0.000	0.240	0.000	768	734	120	3BN
63BN115B	1-Jul-94	37	598372	10861		1.898	0.157	0.261	0.021	288	287	120	3BN
63BN115B	13-Jul-94	55	1081918	13680	ORANGE	1.290	-0.451	0.178	-0.062	408	397	120	3BN
63BN115B	18-Jul-94	57	2612620	133934	YELLOW	2.152	0.410	0.296	0.056	504	488	120	3BN
63BN115B	22-Jul-94	55	2280651	16089	YELLOW, SLIME	3.287	1.546	0.451	0.211	672	643	120	3BN
63BN115B	29-Jul-94	9	1970690	1018	BROWN, SLIME	2.116	0.000	0.291	0.000	768	734	120	3BN
63BN115B	2-Aug-94	0	0	0	DECOMPOSED	1.757	-0.359	0.242	-0.049	0	0	150	3BN
63BN150A	1-Jul-94	31	598171	4582		1.726	-0.390	0.238	-0.053	240	240	150	3BN
63BN150A	1-Jul-94	39	598276	10471		3.222	1.106	0.442	0.151	312	309	150	3BN
63BN150A	11-Jul-94	5	1047564	19702	YELLOW, SLIME LAYER	1.834	0.000	0.252	0.000	336	328	150	3BN
63BN150A	14-Jul-94	109	2644130	1587	DECOMPOSED					0	0	150	3BN
63BN150A	15-Jul-94	0	0	0									
63BN150B	11-Jul-94	6	1050241	15400									

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<u>TubelD</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
63BN150B	14-Jul-94	110	2654640	959	YELLOW, SLIME LAYER DECOMPOSED	3.442	1.608	0.472	0.220	72	69	150	3BN
63BN150B	15-Jul-94	0	0	0						96	88	150	3BN
63BN175A	1-Jul-94	33	598482	11346		1.722	0.000	0.237	0.000	0	0	175	3BN
63BN175A	14-Jul-94	28	0	0						312	311	175	3BN
63BN175A	15-Jul-94	0	0	0	OPAQUE LAYER, PINK LIQUID DECOMPOSED					336	329	175	3BN
63BN175B	1-Jul-94	29	596842	11141		1.729	0.000	0.238	0.000	0	0	175	3BN
63BN175B	14-Jul-94	29	0	0						312	311	175	3BN
63BN175B	15-Jul-94	0	0	0						336	329	175	3BN
6AIR082A	2-Aug-94	19	1483181	36865	OPAQUE LAYER DECOMPOSED	1.605	0.000	0.221	0.000	0	0	90	AIR
6AIR082A	5-Aug-94	65	2977731	19918		2.175	0.570	0.299	0.078	72	67	90	AIR
6AIR082A	9-Aug-94	58	2964260	18924		2.195	0.590	0.302	0.081	168	161	90	AIR
6AIR082A	17-Aug-94	85	2957997	17884		2.219	0.614	0.305	0.084	360	349	90	AIR
6AIR082A	26-Aug-94	150	2836743	12955	MAGENTA HOT PINK	2.340	0.736	0.322	0.100	576	559	90	AIR
6AIR082A	2-Sep-94	110	2846350	10865		2.418	0.814	0.332	0.111	744	720	90	AIR
6AIR082A	21-Sep-94	12	2962411	12611		2.371	0.766	0.326	0.105	1200	1122	90	AIR
6AIR082A	7-Oct-94	18	2752223	15035		2.263	0.658	0.311	0.090	1584	1478	90	AIR
6AIR082A	31-Oct-94	16	2961486	11543	DARK PINK PINK	2.409	0.805	0.331	0.110	2160	1978	90	AIR
6AIR082A	10-Nov-94	48	2972672	11577		2.410	0.805	0.331	0.110	2400	2191	90	AIR
6AIR082B	2-Aug-94	13	1493797	64057		1.368	0.000	0.189	0.000	0	0	90	AIR
6AIR082B	9-Aug-94	59	2969778	195886		1.181	-0.187	0.163	-0.026	168	161	90	AIR
6AIR082B	17-Aug-94	99	2943624	180325	PINK PINK	1.213	-0.155	0.168	-0.021	360	349	90	AIR
6AIR082B	26-Aug-94	14	2832647	123498		1.361	-0.007	0.188	-0.001	576	559	90	AIR
6AIR082B	2-Sep-94	96	2866690	109799		1.417	0.049	0.195	0.007	744	720	90	AIR
6AIR082B	21-Sep-94	26	2964322	127490		1.366	-0.001	0.189	0.000	1200	1122	90	AIR
6AIR082B	7-Oct-94	33	2737839	180624	PINK PINK	1.181	-0.187	0.163	-0.026	1584	1478	90	AIR
6AIR082B	31-Oct-94	29	2962104	116977		1.403	0.036	0.194	0.005	2160	1978	90	AIR
6AIR082B	10-Nov-94	62	2939033	122257		1.381	0.013	0.191	0.002	2400	2191	90	AIR
6AIR115A	2-Aug-94	36	1488788	94028		1.200	0.000	0.166	0.000	0	0	120	AIR
6AIR115A	9-Aug-94	25	2990998	198850	PINK PINK	1.177	-0.022	0.163	-0.003	168	142	120	AIR
6AIR115A	16-Aug-94	46	2950906	189130		1.193	-0.006	0.165	-0.001	336	283	120	AIR
6AIR115A	19-Aug-94	104	2938970	170414		1.237	0.037	0.171	0.005	408	351	120	AIR
6AIR115A	26-Aug-94	53	2863837	112199		1.407	0.207	0.194	0.028	576	509	120	AIR
6AIR115A	1-Sep-94	29	2878932	8106	PURPLE PINK	2.550	1.351	0.350	0.184	720	650	120	AIR
6AIR115A	2-Sep-94	1	2840650	102476		1.443	0.243	0.199	0.033	744	650	120	AIR
6AIR115A	19-Sep-94	54	2957497	98907		1.476	0.276	0.204	0.038	1152	1051	120	AIR
6AIR115A	30-Sep-94	51	2649858	80717		1.516	0.317	0.209	0.043	1416	1313	120	AIR
6AIR115A	28-Oct-94	24	2974381	88472	PINK PINK	1.527	0.327	0.210	0.045	2088	1979	120	AIR
6AIR115A	10-Nov-94	120	2939552	99448		1.471	0.271	0.203	0.037	2400	2263	120	AIR
6AIR115B	2-Aug-94	41	1488272	82771		1.255	0.000	0.173	0.000	0	0	120	AIR
6AIR115B	9-Aug-94	38	2971068	19460		2.184	0.929	0.300	0.127	168	142	120	AIR
6AIR115B	16-Aug-94	58	2963994	20923	HOT PINK PURPLE PINK	2.151	0.896	0.296	0.122	336	283	120	AIR
6AIR115B	19-Aug-94	116	2941477	20746		2.152	0.897	0.296	0.122	408	351	120	AIR
6AIR115B	26-Aug-94	65	2846169	15390		2.267	1.012	0.312	0.138	576	509	120	AIR
6AIR115B	2-Sep-94	14	2858983	15912		2.254	1.000	0.310	0.136	744	650	120	AIR
6AIR115B	19-Sep-94	66	2935182	16806	HOT PINK	2.242	0.987	0.308	0.135	1152	1051	120	AIR

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6AIR115B	30-Sep-94	63	2610614	12553	NEON PURPLE	2.318	1.063	0.319	0.145	1416	1313	120	AIR
6AIR115B	28-Oct-94	61	2954842	12509	PURPLE	2.373	1.119	0.326	0.153	2088	1979	120	AIR
6AIR115B	10-Nov-94	132	2932760	13864	PINK	2.325	1.071	0.320	0.146	2400	2263	120	AIR
6AIR150A	3-Aug-94	11	3027763	139194	PINK	1.338	0.000	0.185	0.000	0	0	150	AIR
6AIR150A	5-Aug-94	199	2968513	25618	MAGENTA	2.064	0.726	0.284	0.099	48	46	150	AIR
6AIR150A	15-Aug-94	58	2939505	15253	PINK	2.285	0.947	0.314	0.129	288	272	150	AIR
6AIR150A	19-Aug-94	35	2957213	16252	PINK	2.260	0.922	0.311	0.126	384	364	150	AIR
6AIR150A	25-Aug-94	70	2971516	13306	DARK PINK	2.349	1.011	0.323	0.138	528	504	150	AIR
6AIR150A	31-Aug-94	68	2887648	8475	PINK	2.532	1.195	0.348	0.163	672	646	150	AIR
6AIR150A	16-Sep-94	20	2941721	7329	HOT PINK	2.604	1.266	0.357	0.173	1056	1027	150	AIR
6AIR150A	28-Sep-94	33	2595814	5835	HOT PINK	2.648	1.311	0.364	0.179	1344	1310	150	AIR
6AIR150A	27-Oct-94	49	2992298	4906	PURPLE	2.785	1.448	0.382	0.198	2040	2002	150	AIR
6AIR150A	9-Nov-94	50	2970578	5355	PURPLE	2.744	1.407	0.377	0.192	2352	2310	150	AIR
6AIR175A	3-Aug-94	52	2995944	71327	PINK	1.623	0.000	0.224	0.000	0	0	175	AIR
6AIR175A	5-Aug-94	118	2983020	8649	MAGENTA	2.538	0.914	0.348	0.125	48	46	175	AIR
6AIR175A	11-Aug-94	102	2985853	5826	MAGENTA	2.710	1.086	0.372	0.148	192	185	175	AIR
6AIR175A	16-Aug-94	103	2962905	5105	PURPLE	2.764	1.140	0.379	0.156	312	300	175	AIR
6AIR175A	18-Aug-94	10	2929975	5284	PURPLE	2.744	1.121	0.377	0.153	360	344	175	AIR
6AIR175A	25-Aug-94	19	2974027	5003	PURPLE	2.774	1.151	0.381	0.157	528	509	175	AIR
6AIR175A	31-Aug-94	18	2889378	4985	PURPLE	2.763	1.140	0.379	0.156	672	645	175	AIR
6AIR175A	16-Sep-94	10	2979754	4969	PURPLE	2.778	1.155	0.381	0.158	1056	1027	175	AIR
6AIR175A	26-Sep-94	18	2630224	3774	PURPLE	2.843	1.220	0.390	0.167	1296	1265	175	AIR
6AIR175A	27-Oct-94	11	3024122	4020	PURPLE	2.876	1.253	0.395	0.171	2040	2005	175	AIR
6AIR175A	9-Nov-94	11	2954078	4103	PURPLE	2.857	1.234	0.392	0.168	2352	2314	175	AIR
6AIR175B	3-Aug-94	58	2999990	162143	PINK	1.267	0.000	0.175	0.000	0	0	175	AIR
6AIR175B	5-Aug-94	128	3000676	19359	MAGENTA	2.190	0.923	0.301	0.126	48	46	175	AIR
6AIR175B	11-Aug-94	108	2991323	9525	MAGENTA	2.497	1.230	0.343	0.168	192	185	175	AIR
6AIR175B	16-Aug-94	110	2957753	7578	PURPLE	2.591	1.324	0.356	0.181	312	300	175	AIR
6AIR175B	18-Aug-94	25	2922286	7263	PURPLE	2.605	1.337	0.358	0.183	360	344	175	AIR
6AIR175B	25-Aug-94	26	2980095	6329	HOT PINK	2.673	1.406	0.367	0.192	528	509	175	AIR
6AIR175B	31-Aug-94	25	2884172	5741	PURPLE	2.701	1.434	0.371	0.196	672	645	175	AIR
6AIR175B	16-Sep-94	25	2971188	5141	PURPLE	2.762	1.495	0.379	0.204	1056	1027	175	AIR
6AIR175B	26-Sep-94	25	2644715	4235	HOT PINK	2.796	1.528	0.384	0.209	1296	1265	175	AIR
6AIR175B	27-Oct-94	26	3016930	3508	PURPLE	2.935	1.667	0.403	0.228	2040	2005	175	AIR
6AIR175B	9-Nov-94	26	2970181	3601	PURPLE	2.916	1.649	0.400	0.225	2352	2314	175	AIR
6B_3082A	30-Jun-94	2	592774	3016		2.293	0.000	0.315	0.000	0	0	90	B_3
6B_3082A	12-Jul-94	66	1072606	2432	MAGENTA	2.644	0.351	0.363	0.048	288	285	90	B_3
6B_3082A	15-Jul-94	59	2584701	6110	PURPLE	2.626	0.333	0.361	0.045	360	352	90	B_3
6B_3082A	20-Jul-94	58	2549382	5365	PURPLE	2.677	0.383	0.367	0.052	480	467	90	B_3
6B_3082A	25-Jul-94	50	2410813	4922	PURPLE	2.690	0.397	0.369	0.054	600	583	90	B_3
6B_3082A	29-Jul-94	24	2370995	4525	HOT PINK	2.719	0.426	0.373	0.058	696	675	90	B_3
6B_3082A	5-Aug-94	66	3003472	6895	MAGENTA	2.639	0.346	0.362	0.047	864	833	90	B_3
6B_3082A	17-Aug-94	87	2957899	6527	HOT PINK, LIGHT YELLOW SLIME	2.656	0.363	0.365	0.050	1152	1114	90	B_3
6B_3082A	26-Aug-94	1	2834535	4235	MAGENTA	2.826	0.532	0.388	0.073	1368	1324	90	B_3
6B_3082A	2-Sep-94	112	2842132	5139	SALMON, YELLOW TINT	2.743	0.449	0.376	0.061	1536	1485	90	B_3

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TubID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
68_3082A	21-Sep-94	13	2969094	3065	SALMON	2.986	0.693	0.410	0.095	1992	1888	90	B_3
68_3082A	7-Oct-94	19	2758774	2513	SALMON, YELLOW SLIME	3.041	0.747	0.417	0.102	2376	2243	90	B_3
68_3082A	31-Oct-94	17	2976434	3040	SALMON, YELLOW SLIME	2.991	0.697	0.410	0.095	2952	2744	90	B_3
68_3082A	10-Nov-94	49	2948002	3778	SALMON, YELLOW SLIME	2.892	0.599	0.397	0.082	3192	2956	90	B_3
68_3082B	30-Jun-94	1	590833	3605		2.215	0.000	0.304	0.000	0	0	90	B_3
68_3082B	30-Jun-94	4	592830	3998		2.171	-0.043	0.298	-0.006	0	0	90	B_3
68_3082B	12-Jul-94	67	1068262	3443	MAGENTA	2.492	0.277	0.342	0.038	288	285	90	B_3
68_3082B	15-Jul-94	60	2583532	8518	PURPLE	2.482	0.267	0.341	0.036	360	352	90	B_3
68_3082B	20-Jul-94	68	2561378	6188	PURPLE	2.617	0.402	0.359	0.055	480	467	90	B_3
68_3082B	25-Jul-94	61	2369388	7079	PURPLE	2.525	0.310	0.347	0.042	600	583	90	B_3
68_3082B	29-Jul-94	35	2387067	5349	HOT PINK	2.650	0.435	0.364	0.059	696	675	90	B_3
68_3082B	17-Aug-94	101	2926958	8758	SALMON, LIGHT YELLOW SLIME	2.524	0.309	0.347	0.042	1152	1114	90	B_3
68_3082B	26-Aug-94	15	2834339	5690	MAGENTA	2.697	0.483	0.370	0.066	1368	1324	90	B_3
68_3082B	2-Sep-94	97	2875835	7176	SALMON, YELLOW TINT	2.603	0.388	0.357	0.053	1536	1485	90	B_3
68_3082B	21-Sep-94	27	2956412	5197	SALMON	2.755	0.540	0.378	0.074	1992	1888	90	B_3
68_3082B	7-Oct-94	32	2744503	6238	SALMON, YELLOW SLIME	2.643	0.429	0.363	0.059	2376	2243	90	B_3
68_3082B	31-Oct-94	31	2959057	5441	SALMON, YELLOW SLIME	2.735	0.521	0.375	0.071	2952	2744	90	B_3
68_3082B	10-Nov-94	63	2942199	8694	SALMON, YELLOW SLIME	2.529	0.315	0.347	0.043	3192	2956	90	B_3
68_3115A	29-Jun-94	29	587646	2368		2.395	0.000	0.329	0.000	0	0	120	B_3
68_3115A	13-Jul-94	56	1084003	3732	MAGENTA	2.463	0.068	0.338	0.009	336	335	120	B_3
68_3115A	18-Jul-94	58	2585606	6044	MAGENTA	2.631	0.237	0.361	0.032	456	445	120	B_3
68_3115A	22-Jul-94	45	2292338	4237	PURPLE	2.733	0.338	0.375	0.046	552	536	120	B_3
68_3115A	29-Jul-94	2	1981643	2169	SALMON, YELLOW TINGE	2.961	0.566	0.406	0.077	720	691	120	B_3
68_3115A	9-Aug-94	26	3001103	5073	SALMON, YELLOW SLIME	2.772	0.377	0.380	0.051	984	924	120	B_3
68_3115A	16-Aug-94	47	2970042	6057	SALMON, YELLOW SLIME	2.691	0.296	0.369	0.040	1152	1065	120	B_3
68_3115A	19-Aug-94	105	2936261	9585	SALMON, SLT YELLOW SLIME	2.486	0.091	0.341	0.012	1224	1133	120	B_3
68_3115A	26-Aug-94	54	2852511	10215	SALMON, YELLOW TINGE	2.446	0.051	0.336	0.007	1392	1291	120	B_3
68_3115A	2-Sep-94	2	2855138	8955	PINK, YELLOW TINT	2.504	0.109	0.344	0.015	1560	1432	120	B_3
68_3115A	19-Sep-94	55	2935612	22743	SALMON	2.111	-0.284	0.290	-0.039	1968	1833	120	B_3
68_3115A	30-Sep-94	52	2652002	21517	SALMON, YELLOW SLIME	2.091	-0.304	0.287	-0.041	2232	2095	120	B_3
68_3115A	28-Oct-94	25	2951105	36630	SALMON PINK	1.906	-0.489	0.262	-0.067	2904	2761	120	B_3
68_3115A	10-Nov-94	118	2935205	42052	SALMON, YELLOW SLIME	1.844	-0.551	0.254	-0.075	3216	3045	120	B_3
68_3115B	29-Jun-94	25	587858	4938		2.076	0.000	0.285	0.000	0	0	120	B_3
68_3115B	13-Jul-94	57	1080257	5648	MAGENTA	2.282	0.206	0.314	0.028	336	335	120	B_3
68_3115B	18-Jul-94	59	2590628	9591	MAGENTA	2.432	0.356	0.334	0.049	456	445	120	B_3
68_3115B	22-Jul-94	56	2413594	7297	PINK	2.520	0.444	0.346	0.061	552	536	120	B_3
68_3115B	29-Jul-94	10	1971916	3538	SALMON, YELLOW TINT	2.746	0.670	0.377	0.092	720	691	120	B_3
68_3115B	9-Aug-94	39	2990810	9969	SALMON WITH YELLOW SLIME	2.477	0.401	0.340	0.055	984	924	120	B_3
68_3115B	16-Aug-94	59	2966170	12509	SALMON, YELLOW SLIME	2.375	0.299	0.326	0.041	1152	1065	120	B_3
68_3115B	19-Aug-94	118	2960147	19696	SALMON, SLT YELLOW SLIME	2.177	0.101	0.299	0.014	1224	1133	120	B_3
68_3115B	26-Aug-94	66	2854777	21648	SALMON, YELLOW TINGE	2.120	0.044	0.292	0.006	1392	1291	120	B_3
68_3115B	2-Sep-94	15	2850186	21046	SALMON, YELLOW TINT	2.132	0.056	0.293	0.008	1560	1432	120	B_3
68_3115B	19-Sep-94	67	2934624	39632	SALMON	1.870	-0.206	0.257	-0.028	1968	1833	120	B_3
68_3115B	30-Sep-94	64	2627279	41112	SALMON, YELLOW SLIME	1.806	-0.270	0.249	-0.037	2232	2095	120	B_3
68_3115B	28-Oct-94	1	2955033	56435	SALMON	1.719	-0.357	0.237	-0.049	2904	2761	120	B_3

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6B_3115B	10-Nov-94	133	2940223	45562	SALMON, YELLOW SLIME	1.810	-0.266	0.249	-0.036	3216	3045	120	B_3
6B_3150A	29-Jun-94	18	599532	3663		2.214	0.000	0.304	0.000	0	0	150	B_3
6B_3150A	14-Jul-94	111	2634812	4747	MAGENTA	2.744	0.530	0.377	0.072	360	357	150	B_3
6B_3150A	21-Jul-94	7	2533649	980	MAGENTA, SLIME, NEEDLE PPT.	3.413	1.199	0.468	0.164	528	511	150	B_3
6B_3150A	29-Jul-94	0	0	0	DECOMPOSED	720				720	695	150	B_3
6B_3150B	30-Jun-94	3	592561	2780		2.329	0.000	0.320	0.000	0	0	150	B_3
6B_3150B	14-Jul-94	112	2638690	2259	MAGENTA	3.067	0.739	0.421	0.101	336	333	150	B_3
6B_3150B	19-Jul-94	21	2587603	1081	MAGENTA	3.379	1.050	0.463	0.143	456	446	150	B_3
6B_3150B	19-Jul-94	28	2566346	1086	MAGENTA, NEEDLE PPT.	3.373	1.045	0.463	0.143	456	446	150	B_3
6B_3150B	21-Jul-94	14	0	0	MAGENTA, SLIME	504				504	487	150	B_3
6B_3150B	21-Jul-94	15	2523203	1086	MAGENTA, SLIME, NEEDLE PPT.	3.366	1.037	0.462	0.142	504	487	150	B_3
6B_3150B	5-Aug-94	196	0	0	DECOMPOSED	864				864	833	150	B_3
6B_3175A	29-Jun-94	33	587114	3828		2.186	0.000	0.300	0.000	0	0	175	B_3
6B_3175A	14-Jul-94	30	2645443	2636	DARK MAGENTA	3.002	0.816	0.412	0.111	360	359	175	B_3
6B_3175A	18-Jul-94	102	2585910	1268	DARK RED, METALLIC PPT IN BOTTOM	3.309	1.124	0.454	0.153	456	449	175	B_3
6B_3175A	20-Jul-94	94	2553076	1633	MAGENTA, NEEDLE PPT.	3.194	1.008	0.438	0.138	504	494	175	B_3
6B_3175A	22-Jul-94	84	2515454	1678	MAGENTA, NEEDLE PPT.	3.176	0.990	0.436	0.135	552	539	175	B_3
6B_3175A	27-Jul-94	1	2536824	1819	MAGENTA, NEEDLE PPT.	3.144	0.959	0.431	0.131	672	653	175	B_3
6B_3175A	5-Aug-94	119	0	0	DECOMPOSED	888				888	858	175	B_3
6B_3175B	29-Jun-94	26	587386	3570		2.216	0.000	0.305	0.000	0	0	175	B_3
6B_3175B	14-Jul-94	31	2645925	2304	DARK MAGENTA	3.060	0.844	0.420	0.115	360	359	175	B_3
6B_3175B	18-Jul-94	110	2584439	1897	DARK RED, METALLIC PPT	3.134	0.918	0.430	0.125	456	449	175	B_3
6B_3175B	20-Jul-94	100	2540451	2852	DARK MAGENTA, NEEDLE PPT	2.950	0.734	0.405	0.100	504	494	175	B_3
6B_3175B	22-Jul-94	92	2512256	2505	MAGENTA, NEEDLE PPT.	3.001	0.785	0.412	0.107	552	539	175	B_3
6B_3175B	27-Jul-94	8	2512526	2749	MAGENTA, NEEDLE PPT	2.961	0.745	0.406	0.102	672	653	175	B_3
6B_3175B	5-Aug-94	129	0	0	DECOMPOSED	888				888	858	175	B_3
6B_4082A	1-Jul-94	62	594972	11467		1.715	0.000	0.236	0.000	0	0	90	B_4
6B_4082A	12-Jul-94	62	1075009	29139		1.567	-0.148	0.216	-0.020	264	261	90	B_4
6B_4082A	15-Jul-94	61	2568704	56200	YELLOW	1.660	-0.055	0.229	-0.008	336	328	90	B_4
6B_4082A	20-Jul-94	59	2539921	43423	LIGHT ORANGE	1.767	0.052	0.243	0.007	456	443	90	B_4
6B_4082A	25-Jul-94	51	2398238	60222	ORANGE-YELLOW	1.600	-0.115	0.221	-0.016	576	559	90	B_4
6B_4082A	29-Jul-94	25	2384352	45459	DARK YELLOW	1.720	0.005	0.237	0.001	672	651	90	B_4
6B_4082A	5-Aug-94	67	3002011	120176	YELLOW	1.398	-0.317	0.193	-0.043	840	809	90	B_4
6B_4082A	17-Aug-94	88	2942789	123234	YELLOW	1.378	-0.337	0.190	-0.046	1128	1090	90	B_4
6B_4082A	26-Aug-94	2	2854111	89708	YELLOW	1.503	-0.212	0.207	-0.029	1344	1300	90	B_4
6B_4082A	2-Sep-94	113	2852506	90611	YELLOW	1.498	-0.217	0.207	-0.030	1512	1461	90	B_4
6B_4082A	21-Sep-94	14	2967455	134134	YELLOW	1.345	-0.370	0.186	-0.051	1968	1864	90	B_4
6B_4082A	7-Oct-94	22	2761233	168281	YELLOW	1.215	-0.500	0.168	-0.068	2352	2219	90	B_4
6B_4082A	31-Oct-94	18	2978626	119611	YELLOW	1.396	-0.319	0.193	-0.044	2928	2720	90	B_4
6B_4082A	10-Nov-94	50	2958747	133562	YELLOW	1.345	-0.370	0.186	-0.050	3168	2932	90	B_4
6B_4082B	30-Jun-94	13	590924	8186		1.858	0.000	0.256	0.000	0	0	90	B_4
6B_4082B	12-Jul-94	63	1070375	26453		1.607	-0.251	0.221	-0.034	288	285	90	B_4
6B_4082B	15-Jul-94	62	2598686	63967	YELLOW	1.609	-0.250	0.222	-0.034	360	352	90	B_4
6B_4082B	20-Jul-94	69	2542892	56329	DARK YELLOW	1.655	-0.204	0.228	-0.028	480	467	90	B_4
6B_4082B	25-Jul-94	62	2359284	65889	YELLOW-ORANGE	1.554	-0.304	0.214	-0.042	600	583	90	B_4

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6B_4082B	29-Jul-94	36	2389216	56647	YELLOW	1.625	-0.233	0.224	-0.032	696	675	90	B_4
6B_4082B	17-Aug-94	102	2928808	122648	YELLOW	1.378	-0.480	0.190	-0.066	1152	1114	90	B_4
6B_4082B	26-Aug-94	16	2838089	74986	YELLOW	1.578	-0.280	0.218	-0.038	1368	1324	90	B_4
6B_4082B	2-Sep-94	98	2846371	74554	YELLOW	1.582	-0.277	0.218	-0.038	1536	1485	90	B_4
6B_4082B	21-Sep-94	28	2960074	110368	YELLOW	1.428	-0.430	0.197	-0.059	1992	1888	90	B_4
6B_4082B	7-Oct-94	34	2745646	172854	YELLOW	1.201	-0.657	0.166	-0.090	2376	2243	90	B_4
6B_4082B	31-Oct-94	33	2980764	112782	YELLOW	1.422	-0.436	0.196	-0.060	2952	2744	90	B_4
6B_4082B	10-Nov-94	64	2950523	135782	YELLOW	1.337	-0.521	0.185	-0.071	3192	2956	90	B_4
6B_4115A	30-Jun-94	11	589620	7591		1.890	0.000	0.260	0.000	0	0	120	B_4
6B_4115A	13-Jul-94	58	1081220	23513	DARK YELLOW	1.663	-0.228	0.229	-0.031	312	311	120	B_4
6B_4115A	18-Jul-94	60	2616074	32735	DARK YELLOW	1.903	0.012	0.262	0.002	432	421	120	B_4
6B_4115A	22-Jul-94	46	2301693	19296	DARK YELLOW	2.077	0.186	0.286	0.025	528	512	120	B_4
6B_4115A	29-Jul-94	3	1980516	10211	VERY DARK YELLOW	2.288	0.397	0.314	0.054	696	667	120	B_4
6B_4115A	9-Aug-94	27	2991154	23032	ORANGE	2.114	0.223	0.291	0.030	960	900	120	B_4
6B_4115A	16-Aug-94	48	2961164	15389	ORANGE	2.284	0.394	0.314	0.054	1128	1041	120	B_4
6B_4115A	19-Aug-94	106	2934368	11716	ORANGE	2.399	0.508	0.330	0.069	1200	1109	120	B_4
6B_4115A	26-Aug-94	55	2858910	7151	SLIMY ORANGE	2.602	0.712	0.357	0.097	1368	1267	120	B_4
6B_4115A	2-Sep-94	3	2852293	5191	ORANGE	2.740	0.850	0.376	0.116	1536	1408	120	B_4
6B_4115A	19-Sep-94	56	2961086	3617	ORANGE	2.913	1.023	0.400	0.140	1944	1809	120	B_4
6B_4115A	30-Sep-94	53	2634992	2358	ORANGE	3.048	1.158	0.418	0.158	2208	2071	120	B_4
6B_4115A	28-Oct-94	26	2943704	2195	ORANGE	3.127	1.237	0.429	0.169	2880	2737	120	B_4
6B_4115A	10-Nov-94	119	2953227	8049	SLIMY ORANGE	2.565	0.674	0.352	0.092	3192	3021	120	B_4
6B_4115B	30-Jun-94	15	591248	7917		1.873	0.000	0.258	0.000	0	0	120	B_4
6B_4115B	13-Jul-94	59	1081226	18536	DARK YELLOW	1.766	-0.107	0.243	-0.015	312	311	120	B_4
6B_4115B	18-Jul-94	61	2609867	22251	DARK YELLOW	2.069	0.196	0.285	0.027	432	421	120	B_4
6B_4115B	22-Jul-94	59	2425889	14243	DARK YELLOW	2.231	0.358	0.307	0.049	528	512	120	B_4
6B_4115B	29-Jul-94	11	1983870	3475	ORANGE	2.757	0.883	0.378	0.121	696	667	120	B_4
6B_4115B	9-Aug-94	40	2986988	6212	ORANGE, SLIME	2.682	0.809	0.368	0.110	960	900	120	B_4
6B_4115B	16-Aug-94	60	2963203	3502	ORANGE	2.927	1.054	0.402	0.144	1128	1041	120	B_4
6B_4115B	19-Aug-94	119	2962022	2636	DARK ORANGE	3.051	1.177	0.419	0.161	1200	1109	120	B_4
6B_4115B	26-Aug-94	67	2848605	2727	ORANGE	3.019	1.146	0.414	0.156	1368	1267	120	B_4
6B_4115B	2-Sep-94	16	2856424	1765	DARK ORANGE	3.209	1.336	0.440	0.182	1536	1408	120	B_4
6B_4115B	2-Sep-94	17	0	0	DECOMPOSED					1536	1408	120	B_4
6B_4150A	1-Jul-94	67	595146	11058		1.731	0.000	0.238	0.000	0	0	150	B_4
6B_4150A	14-Jul-94	113	2642862	1354	DARK ORANGE	3.290	1.560	0.451	0.213	312	309	150	B_4
6B_4150A	19-Jul-94	29	2559891	1910	MAGENTA, NEEDLE PPT	3.127	1.396	0.429	0.191	432	422	150	B_4
6B_4150A	21-Jul-94	8	2525966	1492	MAGENTA, SLIME, NEEDLE PPT.	3.229	1.498	0.443	0.204	480	463	150	B_4
6B_4150A	29-Jul-94	0	0	0	DECOMPOSED					672	647	150	B_4
6B_4150B	30-Jun-94	14	591854	11523		1.711	0.000	0.236	0.000	0	0	150	B_4
6B_4150B	14-Jul-94	114	2625450	1787	DARK ORANGE	3.167	1.456	0.434	0.199	336	333	150	B_4
6B_4150B	19-Jul-94	22	2560754	1385	MAGENTA, NEEDLE PPT.	3.267	1.556	0.448	0.212	456	446	150	B_4
6B_4150B	21-Jul-94	16	2538736	1436	MAGENTA, NEEDLE PPT.	3.247	1.537	0.445	0.210	504	487	150	B_4
6B_4150B	5-Aug-94	197	0	0	DECOMPOSED					864	833	150	B_4
6B_4175A	30-Jun-94	12	589680	11352		1.716	0.000	0.236	0.000	0	0	175	B_4
6B_4175A	14-Jul-94	32	2634939	1425	DARK MAGENTA, BLACK PPT	3.267	1.551	0.448	0.212	336	335	175	B_4

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TubelD	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6B_4175A	18-Jul-94	103	2577430	2000	DARK RED, METALLIC PPT IN BOTTOM	3.110	1.395	0.427	0.190	432	425	175	B_4
6B_4175A	20-Jul-94	95	2541235	2535	MAGENTA, NEEDLE PPT.	3.001	1.286	0.412	0.175	480	470	175	B_4
6B_4175A	22-Jul-94	85	2502526	2500	RED, NEEDLE PPT.	3.000	1.285	0.412	0.175	528	515	175	B_4
6B_4175A	27-Jul-94	3	2504607	2973	CRIMSON, NEEDLE PPT.	2.926	1.210	0.401	0.165	648	629	175	B_4
6B_4175A	5-Aug-94	120	0	0	DECOMPOSED	1.419	0.000	0.196	0.000	864	834	175	B_4
6B_4175B	1-Jul-94	75	595975	22731		3.290	1.871	0.451	0.255	0	0	175	B_4
6B_4175B	14-Jul-94	33	2672830	1372	DARK MAGENTA, BLACK PPT	3.126	1.707	0.429	0.233	312	311	175	B_4
6B_4175B	18-Jul-94	111	2590325	1938	DARK RED, NEEDLE PPT	3.129	1.711	0.429	0.234	408	401	175	B_4
6B_4175B	20-Jul-94	102	2561460	1902	RED, NEEDLE PPT.	3.112	1.693	0.427	0.231	456	446	175	B_4
6B_4175B	22-Jul-94	93	2503832	1936	RED, NEEDLE PPT.	3.041	1.622	0.417	0.221	504	491	175	B_4
6B_4175B	27-Jul-94	10	2504474	2280	CRIMSON, NEEDLE PPT.	1.638	0.000	0.226	0.000	624	605	175	B_4
6B_4175B	29-Jul-94	0	0	0	DECOMPOSED	1.144	-0.493	0.158	-0.067	672	648	175	B_4
6B_N082A	29-Jun-94	15	598681	13794		1.120	-0.518	0.155	-0.071	0	0	90	B_N
6B_N082A	12-Jul-94	60	1070549	76775		1.138	-0.499	0.157	-0.068	312	309	90	B_N
6B_N082A	15-Jul-94	63	2572808	195177	WATER WHITE	1.160	-0.477	0.160	-0.065	384	376	90	B_N
6B_N082A	20-Jul-94	60	2575470	187430	WATER WHITE	1.201	-0.436	0.166	-0.060	504	491	90	B_N
6B_N082A	25-Jul-94	52	2399869	165885	WATER WHITE	0.913	-0.724	0.127	-0.099	624	607	90	B_N
6B_N082A	29-Jul-94	26	2383809	150008	WATER WHITE	0.882	-0.756	0.122	-0.103	720	699	90	B_N
6B_N082A	5-Aug-94	68	2994242	365645	WATER WHITE	1.055	-0.583	0.146	-0.080	888	857	90	B_N
6B_N082A	17-Aug-94	89	2933396	385231	WATER WHITE	1.010	-0.627	0.140	-0.086	1176	1138	90	B_N
6B_N082A	26-Aug-94	3	2840060	250276	WATER WHITE	0.835	-0.803	0.116	-0.110	1392	1348	90	B_N
6B_N082A	2-Sep-94	114	2835717	276996	WATER WHITE	0.949	-0.688	0.132	-0.094	1560	1509	90	B_N
6B_N082A	21-Sep-94	15	2955371	332138	WATER WHITE	1.167	-0.471	0.161	-0.064	2016	1912	90	B_N
6B_N082A	31-Oct-94	21	2766893	404988	WATER WHITE	1.225	-0.413	0.169	-0.056	2400	2267	90	B_N
6B_N082A	7-Nov-94	19	2955001	201264	LIGHT PEACH	1.785	0.000	0.246	0.000	2976	2768	90	B_N
6B_N082A	10-Nov-94	51	2958756	176386	PEACH	1.773	-0.012	0.244	-0.002	3216	2980	90	B_N
6B_N082B	29-Jun-94	41	587397	9633		1.890	0.105	0.260	0.014	0	0	90	B_N
6B_N082B	12-Jul-94	61	1070840	18069	PEACH	1.914	0.128	0.263	0.018	312	309	90	B_N
6B_N082B	15-Jul-94	64	2591867	33403	DARK PEACH	1.812	0.027	0.249	0.004	376	376	90	B_N
6B_N082B	20-Jul-94	70	2556275	31188	ORANGE	1.869	0.084	0.257	0.011	504	491	90	B_N
6B_N082B	25-Jul-94	63	2381182	36708	PEACH	1.538	-0.247	0.212	-0.034	624	607	90	B_N
6B_N082B	29-Jul-94	41	2379244	32165	ORANGE	1.722	-0.063	0.237	-0.009	720	699	90	B_N
6B_N082B	17-Aug-94	103	2939646	85168	PEACH	1.629	-0.156	0.224	-0.021	1176	1138	90	B_N
6B_N082B	26-Aug-94	17	2821549	53543	ORANGE	1.487	-0.298	0.205	-0.041	1392	1348	90	B_N
6B_N082B	2-Sep-94	99	2870512	67418	ORANGE	1.385	-0.400	0.191	-0.055	1560	1509	90	B_N
6B_N082B	21-Sep-94	29	2958541	96296	YELLOW	1.577	-0.208	0.217	-0.028	2016	1912	90	B_N
6B_N082B	7-Oct-94	35	2658451	109594	ORANGE-YELLOW	1.574	-0.212	0.217	-0.029	2400	2267	90	B_N
6B_N082B	31-Oct-94	34	2957186	78264	YELLOW	1.581	0.000	0.218	0.000	2976	2768	90	B_N
6B_N082B	10-Nov-94	65	2935945	78373	ORANGE-YELLOW	1.826	0.246	0.251	0.034	3216	2980	90	B_N
6B_N115A	29-Jun-94	44	586861	15409		1.896	0.316	0.261	0.043	0	0	120	B_N
6B_N115A	13-Jul-94	60	1088840	16237	PEACH	1.985	0.404	0.273	0.055	336	335	120	B_N
6B_N115A	18-Jul-94	62	2582502	32792	PEACH	2.092	0.511	0.288	0.070	456	445	120	B_N
6B_N115A	22-Jul-94	47	2286324	23656	ORANGE	1.874	0.294	0.258	0.040	552	536	120	B_N
6B_N115A	29-Jul-94	4	1989670	16104	ORANGE					720	691	120	B_N
6B_N115A	9-Aug-94	28	2992608	39965	ORANGE					984	924	120	B_N

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6B_N115A	16-Aug-94	49	2965114	39927	ORANGE	1.871	0.290	0.257	0.040	1152	1065	120	B_N
6B_N115A	19-Aug-94	107	2934029	30883	ORANGE	1.978	0.397	0.272	0.054	1224	1133	120	B_N
6B_N115A	26-Aug-94	56	2847707	15527	ORANGE	2.263	0.683	0.311	0.093	1392	1291	120	B_N
6B_N115A	2-Sep-94	4	2863579	14972	ORANGE	2.282	0.701	0.314	0.096	1560	1432	120	B_N
6B_N115A	19-Sep-94	57	2943405	9399	ORANGE	2.496	0.915	0.343	0.125	1968	1833	120	B_N
6B_N115A	30-Sep-94	54	2650394	5674	ORANGE	2.669	1.089	0.366	0.149	2232	2095	120	B_N
6B_N115A	28-Oct-94	27	2965871	4209	ORANGE	2.848	1.267	0.391	0.173	2904	2761	120	B_N
6B_N115A	10-Nov-94	121	2933922	3601	SLIMY ORANGE	2.911	1.330	0.399	0.182	3216	3045	120	B_N
6B_N115B	29-Jun-94	24	586855	14046		1.621	0.000	0.223	0.000	0	0	120	B_N
6B_N115B	13-Jul-94	61	1081783	17861	PEACH	1.782	0.161	0.245	0.022	336	335	120	B_N
6B_N115B	18-Jul-94	63	2591938	34796	PEACH	1.872	0.251	0.258	0.034	456	445	120	B_N
6B_N115B	22-Jul-94	60	2422441	28153	ORANGE	1.935	0.314	0.266	0.043	552	536	120	B_N
6B_N115B	29-Jul-94	12	1981275	17550	ORANGE	2.053	0.432	0.282	0.059	720	691	120	B_N
6B_N115B	9-Aug-94	42	2988420	40074	ORANGE	1.873	0.252	0.258	0.034	984	924	120	B_N
6B_N115B	16-Aug-94	61	2982719	24798	ORANGE	2.080	0.459	0.286	0.063	1152	1065	120	B_N
6B_N115B	19-Aug-94	120	2962680	14996	ORANGE	2.296	0.675	0.315	0.092	1224	1133	120	B_N
6B_N115B	26-Aug-94	68	2848655	6954	ORANGE	2.612	0.991	0.359	0.135	1392	1291	120	B_N
6B_N115B	2-Sep-94	18	2869749	6191	ORANGE	2.666	1.045	0.366	0.143	1560	1432	120	B_N
6B_N115B	19-Sep-94	68	2921816	4548	ORANGE	2.808	1.187	0.385	0.162	1968	1833	120	B_N
6B_N115B	30-Sep-94	65	2627094	2907	DARK ORANGE	2.956	1.335	0.406	0.182	2232	2095	120	B_N
6B_N115B	28-Oct-94	2	2960954	2069	DARK ORANGE	3.156	1.535	0.433	0.209	2904	2761	120	B_N
6B_N115B	10-Nov-94	134	2953647	2295	DARK ORANGE, SLIME	3.110	1.489	0.427	0.203	3216	3045	120	B_N
6B_N150A	29-Jun-94	43	585827	10719		1.738	0.000	0.239	0.000	0	0	150	B_N
6B_N150A	14-Jul-94	115	2625632	6792	ORANGE	2.587	0.850	0.355	0.116	360	357	150	B_N
6B_N150A	19-Jul-94	36	2575672	1572	DARK MAGENTA, NEEDLE PPT., SLIME	3.214	1.477	0.441	0.202	480	470	150	B_N
6B_N150A	21-Jul-94	9	2528722	1470	MAGENTA, SLIME, NEEDLE PPT.	3.236	1.498	0.444	0.204	528	511	150	B_N
6B_N150A	29-Jul-94	0	0	0	DECOMPOSED					720	695	150	B_N
6B_N150B	30-Jun-94	10	592316	21346		1.443	0.000	0.199	-0.040	0	0	150	B_N
6B_N150B	14-Jul-94	116	2635513	4583	DARK ORANGE	2.760	1.316	0.379	0.140	336	333	150	B_N
6B_N150B	19-Jul-94	23	2567299	1781	DARK PEACH	3.159	1.716	0.433	0.194	456	446	150	B_N
6B_N150B	21-Jul-94	17	2555420	2810	RED, SLIME, NEEDLE PPT.	2.959	1.516	0.406	0.167	504	487	150	B_N
6B_N150B	29-Jul-94	0	0	0	DECOMPOSED					696	671	150	B_N
6B_N175A	29-Jun-94	38	586105	8926		1.817	0.000	0.250	0.000	0	0	175	B_N
6B_N175A	14-Jul-94	34	2636192	1260	DARK ORANGE	3.321	1.503	0.455	0.205	360	359	175	B_N
6B_N175A	18-Jul-94	104	2600565	2680	MAGENTA, SLIME LAYER	2.987	1.170	0.410	0.160	456	449	175	B_N
6B_N175A	20-Jul-94	96	2552715	1902	DIRTY MAGENTA, SLIME, PPT.	3.128	1.310	0.429	0.179	504	494	175	B_N
6B_N175A	22-Jul-94	86	2500167	1985	BROWN, SLIME, PPT.	3.100	1.283	0.425	0.175	552	539	175	B_N
6B_N175A	27-Jul-94	4	0	0	MAGENTA, SLIME LAYER					672	653	175	B_N
6B_N175A	28-Jul-94	0	0	0	DECOMPOSED					696	672	175	B_N
6B_N175B	29-Jun-94	14	599000	14416		1.619	0.000	0.223	0.000	0	0	175	B_N
6B_N175B	14-Jul-94	35	2645774	2211	DARK ORANGE	3.078	1.459	0.422	0.199	360	359	175	B_N
6B_N175B	18-Jul-94	112	2595726	2544	DARK RED, BROWN SLIME LAYER	3.009	1.390	0.413	0.190	456	449	175	B_N
6B_N175B	19-Jul-94	0	0	0	DECOMPOSED					480	470	175	B_N
6B_T082A	1-Jul-94	13	593962	32620		1.260	0.000	0.174	0.000	0	0	90	B_T
6B_T082A	12-Jul-94	70	1074863	16793		1.806	0.546	0.249	0.075	264	261	90	B_T

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6B_T082A	15-Jul-94	65	2576999	40113	DARK YELLOW	1.808	0.548	0.249	0.075	336	328	90	B_T
6B_T082A	20-Jul-94	61	2552174	31299	DARK YELLOW	1.911	0.651	0.263	0.089	456	443	90	B_T
6B_T082A	25-Jul-94	53	2391541	30538	DARK YELLOW	1.894	0.634	0.261	0.086	576	559	90	B_T
6B_T082A	29-Jul-94	27	2364258	21579	YELLOW	2.040	0.779	0.281	0.106	672	651	90	B_T
6B_T082A	5-Aug-94	69	2981470	35544	PEE YELLOW	1.924	0.663	0.265	0.091	840	809	90	B_T
6B_T082A	17-Aug-94	90	2950465	24010	DARK YELLOW	2.089	0.829	0.287	0.113	1128	1090	90	B_T
6B_T082A	26-Aug-94	4	2832324	10715	DARK YELLOW	2.422	1.162	0.333	0.159	1344	1300	90	B_T
6B_T082A	2-Sep-94	115	2852072	5732	SLIMY ORANGE	2.697	1.437	0.370	0.196	1512	1461	90	B_T
6B_T082A	21-Sep-94	16	2978637	4308	ORANGE, SLIMY	2.840	1.579	0.390	0.216	1968	1864	90	B_T
6B_T082A	7-Oct-94	23	2752339	3048	DARK ORANGE, SLIME	2.956	1.695	0.406	0.231	2352	2219	90	B_T
6B_T082A	31-Oct-94	20	2946852	3284	SLIMEY ORANGE	2.953	1.693	0.405	0.231	2928	2720	90	B_T
6B_T082A	10-Nov-94	52	2952863	3330	DARK ORANGE, SLIME	2.948	1.688	0.404	0.230	3168	2932	90	B_T
6B_T082B	1-Jul-94	11	594731	32879		1.257	0.000	0.174	0.000	0	0	90	B_T
6B_T082B	12-Jul-94	71	1067578	15987		1.825	0.567	0.251	0.077	264	261	90	B_T
6B_T082B	15-Jul-94	66	2592467	35612	DARK YELLOW	1.862	0.605	0.256	0.083	336	328	90	B_T
6B_T082B	20-Jul-94	77	2553229	24451	DARK YELLOW, PPT.	2.019	0.761	0.278	0.104	456	443	90	B_T
6B_T082B	25-Jul-94	64	2362070	28595	DARK YELLOW	1.917	0.660	0.264	0.090	576	559	90	B_T
6B_T082B	29-Jul-94	37	2371965	19981	DARK YELLOW	2.074	0.817	0.285	0.112	672	651	90	B_T
6B_T082B	17-Aug-94	104	2931756	14021	DIRTY YELLOW	2.320	1.063	0.319	0.145	1128	1090	90	B_T
6B_T082B	26-Aug-94	18	2839124	3645	BROWN	2.891	1.634	0.397	0.223	1344	1300	90	B_T
6B_T082B	2-Sep-94	100	2854933	2646	SLIMY ORANGE	3.033	1.776	0.416	0.242	1512	1461	90	B_T
6B_T082B	21-Sep-94	30	2956934	2065	DARK ORANGE, SLIMY	3.156	1.899	0.433	0.259	1968	1864	90	B_T
6B_T082B	7-Oct-94	36	2760222	1742	DARK ORANGE	3.200	1.942	0.439	0.265	2352	2219	90	B_T
6B_T082B	7-Oct-94	37	0	0	DECOMPOSED					2352	2219	90	B_T
6B_T115A	1-Jul-94	16	594031	22887		1.414	0.000	0.195	0.000	0	0	120	B_T
6B_T115A	13-Jul-94	62	1078145	922	BROWN	3.068	1.654	0.421	0.226	288	287	120	B_T
6B_T115A	18-Jul-94	64	2607301	1229	DARK BROWN, LAYER	3.327	1.912	0.456	0.261	408	397	120	B_T
6B_T115A	22-Jul-94	48	2281215	1025	BROWN, SLIME, PPT.	3.347	1.933	0.459	0.264	504	488	120	B_T
6B_T115A	29-Jul-94	0	0	0	DECOMPOSED					672	643	120	B_T
6B_T115B	1-Jul-94	21	594228	33807		1.245	0.000	0.172	0.000	0	0	120	B_T
6B_T115B	13-Jul-94	63	1079358	1122	BROWN	2.983	1.738	0.409	0.237	288	287	120	B_T
6B_T115B	18-Jul-94	65	2603547	1855	DARK BROWN, SLIME LAYER	3.147	1.902	0.432	0.260	408	397	120	B_T
6B_T115B	22-Jul-94	61	2415683	1486	BROWN, SLIME, PPT.	3.211	1.966	0.440	0.268	504	488	120	B_T
6B_T115B	29-Jul-94	0	0	0	DECOMPOSED					672	643	120	B_T
6B_T175A	1-Jul-94	15	595406	40955		1.163	0.000	0.161	0.000	0	0	175	B_T
6B_T175A	14-Jul-94	36	0	0	OPAQUE LAYER, ORANGE					312	311	175	B_T
6B_T175A	15-Jul-94	0	0	0	DECOMPOSED					336	329	175	B_T
6B_T175B	1-Jul-94	20	595002	33076		1.255	0.000	0.173	0.000	0	0	175	B_T
6B_T175B	14-Jul-94	37	0	0	OPAQUE LAYER, ORANGE					312	311	175	B_T
6B_T175B	15-Jul-94	0	0	0	DECOMPOSED					336	329	175	B_T
6CHR082A	7-Jul-94	14	1109150	94821		1.068	0.000	0.148	0.000	0	0	90	CHR
6CHR082A	12-Jul-94	77	1072048	9705		2.043	0.975	0.281	0.133	120	117	90	CHR
6CHR082A	15-Jul-94	67	0	0	NO TINT	0.000	0.000	0.002	-0.146	192	184	90	CHR
6CHR082A	20-Jul-94	62	0	0	NO TINT	0.000	0.000	0.002	-0.146	312	299	90	CHR
6CHR082A	25-Jul-94	65	0	0	NO TINT	0.000	0.000	0.002	-0.146	432	415	90	CHR

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6CHR082A	29-Jul-94	28	0	0	NO TINT	0.000	0.000	0.002	-0.146	528	507	90	CHR
6CHR082A	5-Aug-94	70	0	0	NO TINT	0.000	0.000	0.002	-0.146	696	665	90	CHR
6CHR082A	17-Aug-94	91	0	0	NO TINT	0.000	0.000	0.002	-0.146	984	946	90	CHR
6CHR082A	26-Aug-94	5	0	0	NO TINT	0.000	0.000	0.002	-0.146	1200	1156	90	CHR
6CHR082A	2-Sep-94	117	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.146	1368	1317	90	CHR
6CHR082A	21-Sep-94	17	2956657	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.146	1824	1720	90	CHR
6CHR082A	7-Oct-94	20	0	0	NO TINT, UNABLE TO READ	0.000	0.000	0.002	-0.146	2208	2075	90	CHR
6CHR082A	31-Oct-94	21	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.146	2784	2576	90	CHR
6CHR082A	10-Nov-94	53	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.146	3024	2788	90	CHR
6CHR082B	7-Jul-94	9	1101394	67311		1.214	0.000	0.168	0.000	0	0	90	CHR
6CHR082B	12-Jul-94	78	1062601	4589		2.365	1.151	0.325	0.157	120	117	90	CHR
6CHR082B	15-Jul-94	68	0	0	NO TINT	0.000	0.000	0.002	-0.166	192	184	90	CHR
6CHR082B	20-Jul-94	71	0	0	NO TINT	0.000	0.000	0.002	-0.166	312	299	90	CHR
6CHR082B	25-Jul-94	54	0	0	NO TINT	0.000	0.000	0.002	-0.166	432	415	90	CHR
6CHR082B	29-Jul-94	38	0	0	NO TINT	0.000	0.000	0.002	-0.166	528	507	90	CHR
6CHR082B	17-Aug-94	105	0	0	NO TINT	0.000	0.000	0.002	-0.166	984	946	90	CHR
6CHR082B	26-Aug-94	19	0	0	NO TINT	0.000	0.000	0.002	-0.166	1200	1156	90	CHR
6CHR082B	2-Sep-94	101	2857753	10005	NO TINT	2.456	1.242	0.337	0.170	1368	1317	90	CHR
6CHR082B	21-Sep-94	31	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.166	1824	1720	90	CHR
6CHR082B	7-Oct-94	38	2759277	15942	NO TINT	2.238	1.024	0.308	0.140	2208	2075	90	CHR
6CHR082B	31-Oct-94	35	2960372	8769	NO TINT	2.528	1.315	0.347	0.179	2784	2576	90	CHR
6CHR082B	10-Nov-94	66	2971194	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.166	3024	2788	90	CHR
6CHR115A	7-Jul-94	20	1110040	34537		1.507	0.000	0.208	0.000	0	0	120	CHR
6CHR115A	13-Jul-94	76	0	0	UNSETTLED, NO TINT	0.000	0.000	0.002	-0.206	144	143	120	CHR
6CHR115A	18-Jul-94	66	0	0	NO TINT	0.000	0.000	0.002	-0.206	264	253	120	CHR
6CHR115A	22-Jul-94	49	0	0	NO TINT	0.000	0.000	0.002	-0.206	360	344	120	CHR
6CHR115A	29-Jul-94	5	0	0	NO TINT	0.000	0.000	0.002	-0.206	528	499	120	CHR
6CHR115A	9-Aug-94	29	0	0	NO TINT	0.000	0.000	0.002	-0.206	792	732	120	CHR
6CHR115A	16-Aug-94	50	0	0	NO TINT	0.000	0.000	0.002	-0.206	960	873	120	CHR
6CHR115A	19-Aug-94	108	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	1032	941	120	CHR
6CHR115A	26-Aug-94	57	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	1200	1099	120	CHR
6CHR115A	2-Sep-94	5	2854022	16126	WATER WHITE	2.248	0.741	0.309	0.101	1368	1240	120	CHR
6CHR115A	19-Sep-94	58	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	1776	1641	120	CHR
6CHR115A	30-Sep-94	55	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	2040	1903	120	CHR
6CHR115A	28-Oct-94	28	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	2712	2569	120	CHR
6CHR115A	10-Nov-94	122	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.206	3024	2853	120	CHR
6CHR115B	7-Jul-94	21	1105941	82877		1.125	0.000	0.156	0.000	0	0	120	CHR
6CHR115B	13-Jul-94	77	1090496	5342		2.310	1.185	0.317	0.162	144	143	120	CHR
6CHR115B	18-Jul-94	67	0	0	NO TINT	0.000	0.000	0.002	-0.154	264	253	120	CHR
6CHR115B	22-Jul-94	62	0	0	NO TINT	0.000	0.000	0.002	-0.154	360	344	120	CHR
6CHR115B	29-Jul-94	15	0	0	NO TINT	0.000	0.000	0.002	-0.154	528	499	120	CHR
6CHR115B	9-Aug-94	43	0	0	NO TINT	0.000	0.000	0.002	-0.154	792	732	120	CHR
6CHR115B	16-Aug-94	63	0	0	NO TINT	0.000	0.000	0.002	-0.154	960	873	120	CHR
6CHR115B	19-Aug-94	121	2934958	43003	NO TINT	1.834	0.709	0.252	0.097	1032	941	120	CHR
6CHR115B	26-Aug-94	69	2876395	45267	NO TINT	1.803	0.678	0.248	0.093	1200	1099	120	CHR

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6CHR115B	2-Sep-94	19	2863171	71207	NO TINT	1.604	0.479	0.221	0.065	1368	1240	120	CHR
6CHR115B	19-Sep-94	69	2948304	49925	NO TINT	1.771	0.646	0.244	0.088	1776	1641	120	CHR
6CHR115B	30-Sep-94	66	2621526	18145	NO TINT	2.160	1.034	0.297	0.141	2040	1903	120	CHR
6CHR115B	28-Oct-94	3	2947059	38113	NO TINT	1.888	0.763	0.260	0.104	2712	2569	120	CHR
6CHR115B	10-Nov-94	135	2943210	4966	NO TINT, UNREADABLE	2.773	1.648	0.381	0.225	3024	2853	120	CHR
6CHR150A	7-Jul-94	11	1104487	44255		1.397	0.000	0.193	0.000	0	0	150	CHR
6CHR150A	14-Jul-94	117	0	0	NO TINT	0.000	0.000	0.002	-0.191	168	165	150	CHR
6CHR150A	19-Jul-94	30	0	0	NO TINT	0.000	0.000	0.002	-0.191	288	278	150	CHR
6CHR150A	21-Jul-94	10	0	0	NO TINT	0.000	0.000	0.002	-0.191	336	319	150	CHR
6CHR150A	5-Aug-94	200	0	0	NO TINT	0.000	0.000	0.002	-0.191	696	665	150	CHR
6CHR150A	15-Aug-94	59	0	0	NO TINT	0.000	0.000	0.002	-0.191	936	891	150	CHR
6CHR150A	19-Aug-94	36	2956758	13452	NO TINT	2.342	0.945	0.322	0.129	1032	982	150	CHR
6CHR150A	25-Aug-94	71	2972086	25163	VERY SLT PINK TINGE	2.072	0.675	0.285	0.092	1176	1123	150	CHR
6CHR150A	31-Aug-94	69	2865646	12581	SLT TINT	2.358	0.960	0.324	0.131	1320	1264	150	CHR
6CHR150A	16-Sep-94	21	2947341	8444	PINK TINGE	2.543	1.146	0.349	0.156	1704	1646	150	CHR
6CHR150A	28-Sep-94	34	2580728	8685	NO TINT	2.473	1.076	0.340	0.147	1992	1929	150	CHR
6CHR150A	27-Oct-94	50	2996203	7441	NO TINT	2.605	1.208	0.358	0.165	2688	2621	150	CHR
6CHR150A	9-Nov-94	51	2967053	10804	SLT PINK TINGE	2.439	1.042	0.335	0.142	3000	2928	150	CHR
6CHR150A	9-Nov-94	52	2948064	7968	REDO	2.568	1.171	0.353	0.160	3000	2928	150	CHR
6CHR150B	7-Jul-94	15	1110252	95237		1.067	0.000	0.148	0.000	0	0	150	CHR
6CHR150B	14-Jul-94	118	0	0	NO TINT	0.000	0.000	0.002	-0.146	168	165	150	CHR
6CHR150B	19-Jul-94	24	0	0	NO TINT	0.000	0.000	0.002	-0.146	288	278	150	CHR
6CHR150B	21-Jul-94	18	0	0	NO TINT	0.000	0.000	0.002	-0.146	336	319	150	CHR
6CHR150B	5-Aug-94	207	0	0	SLT PINK TINGE	0.000	0.000	0.002	-0.146	696	665	150	CHR
6CHR150B	15-Aug-94	66	0	0	SLT PINK TINGE	0.000	0.000	0.002	-0.146	936	891	150	CHR
6CHR150B	19-Aug-94	44	2967685	32520	SLT PINK TINGE	1.960	0.894	0.270	0.122	1032	982	150	CHR
6CHR150B	25-Aug-94	78	2954234	34529	LIGHT PINK TINT	1.932	0.866	0.266	0.118	1176	1123	150	CHR
6CHR150B	31-Aug-94	76	2876497	31833	LIGHT PINK TINGE	1.956	0.889	0.269	0.121	1320	1264	150	CHR
6CHR150B	16-Sep-94	44	2947204	35010	SLT TINGE	1.925	0.859	0.265	0.117	1704	1646	150	CHR
6CHR150B	28-Sep-94	41	2578115	25888	PINK	1.998	0.932	0.275	0.127	1992	1929	150	CHR
6CHR150B	27-Oct-94	72	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.146	2688	2621	150	CHR
6CHR150B	9-Nov-94	75	2950706	10758	NO TINT	2.438	1.372	0.335	0.187	3000	2928	150	CHR
6CHR175A	7-Jul-94	105	1088398	58027		1.273	0.000	0.176	0.000	0	0	175	CHR
6CHR175A	14-Jul-94	38	0	0	NO TINT	0.000	0.000	0.002	-0.174	168	167	175	CHR
6CHR175A	18-Jul-94	105	0	0	NO TINT	0.000	0.000	0.002	-0.174	264	257	175	CHR
6CHR175A	20-Jul-94	97	0	0	PINK TINGE	0.000	0.000	0.002	-0.174	312	302	175	CHR
6CHR175A	22-Jul-94	89	0	0	NO TINT	0.000	0.000	0.002	-0.174	360	347	175	CHR
6CHR175A	27-Jul-94	5	0	0	NO TINT	0.000	0.000	0.002	-0.174	480	461	175	CHR
6CHR175A	5-Aug-94	122	0	0	PINK	0.000	0.000	0.002	-0.174	696	666	175	CHR
6CHR175A	11-Aug-94	101	0	0	DARK PURPLE TINT	0.000	0.000	0.002	-0.174	840	805	175	CHR
6CHR175A	16-Aug-94	104	0	0	WINE TINT	0.000	0.000	0.002	-0.174	960	920	175	CHR
6CHR175A	18-Aug-94	11	2940935	4919	WINE	2.777	1.503	0.381	0.205	1008	964	175	CHR
6CHR175A	25-Aug-94	20	2981352	4104	WINE TINT	2.861	1.588	0.393	0.217	1176	1129	175	CHR
6CHR175A	31-Aug-94	19	2880647	3881	WINE TINT	2.871	1.597	0.394	0.218	1320	1265	175	CHR
6CHR175A	16-Sep-94	11	2964690	2673	WINE	3.045	1.772	0.418	0.242	1704	1647	175	CHR

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6CHR175A	26-Sep-94	19	2630901	2003	WINE TINT	3.118	1.845	0.428	0.252	1944	1885	175	CHR
6CHR175A	27-Oct-94	13	3024462	1910	DARK PURPLE	3.200	1.926	0.439	0.263	2688	2625	175	CHR
6CHR175A	9-Nov-94	12	2973507	1429	DARK WINE	3.318	2.045	0.455	0.279	3000	2934	175	CHR
6CHR175B	7-Jul-94	16	1107305	63613		1.241	0.000	0.171	0.000	0	0	175	CHR
6CHR175B	14-Jul-94	39	0	0	NO TINT	0.000	0.000	0.002	-0.169	168	167	175	CHR
6CHR175B	18-Jul-94	113	0	0	NO TINT	0.000	0.000	0.002	-0.169	264	257	175	CHR
6CHR175B	20-Jul-94	103	0	0	NO TINT	0.000	0.000	0.002	-0.169	312	302	175	CHR
6CHR175B	22-Jul-94	94	0	0	NO TINT	0.000	0.000	0.002	-0.169	360	347	175	CHR
6CHR175B	27-Jul-94	11	0	0	NO TINT	0.000	0.000	0.002	-0.169	480	461	175	CHR
6CHR175B	5-Aug-94	130	0	0	NO TINT	0.000	0.000	0.002	-0.169	696	666	175	CHR
6CHR175B	11-Aug-94	109	0	0	VERY DARK	0.000	0.000	0.002	-0.169	840	805	175	CHR
6CHR175B	16-Aug-94	111	0	0	NO TINT	0.000	0.000	0.002	-0.169	960	920	175	CHR
6CHR175B	18-Aug-94	27	0	0	NO TINT	0.000	0.000	0.002	-0.169	1008	964	175	CHR
6CHR175B	25-Aug-94	27	0	0	WINE TINT, UNREADABLE	0.000	0.000	0.002	-0.169	1176	1129	175	CHR
6CHR175B	31-Aug-94	26	2902674	5627	PINK TINT	2.713	1.472	0.372	0.201	1320	1265	175	CHR
6CHR175B	16-Sep-94	26	0	0	UNREADABLE	0.000	0.000	0.002	-0.169	1704	1647	175	CHR
6CHR175B	26-Sep-94	26	0	0	WINE TINT, UNREADABLE	0.000	0.000	0.002	-0.169	1944	1885	175	CHR
6CHR175B	27-Oct-94	27	0	0	NO TINT, UNREADABLE	0.000	0.000	0.002	-0.169	2688	2625	175	CHR
6CHR175B	9-Nov-94	28	2980895	1792	DARK WINE	3.221	1.980	0.442	0.270	3000	2934	175	CHR
6COP082A	7-Jul-94	110	1095695	41771		1.419	0.000	0.196	0.000	0	0	90	COP
6COP082A	15-Jul-94	69	2591616	127112	SLT PINK TINGE, WHITE METALLIC PPT	1.309	-0.109	0.181	-0.015	192	184	90	COP
6COP082A	20-Jul-94	63	2552091	74332	WATER WHITE, WHITE PPT	1.536	0.117	0.212	0.016	312	299	90	COP
6COP082A	25-Jul-94	55	2384864	53473	WATER WHITE, CLOUDY	1.649	0.231	0.227	0.031	432	415	90	COP
6COP082A	29-Jul-94	29	2366731	56197	CLOUDY WATER WHITE	1.624	0.206	0.224	0.028	528	507	90	COP
6COP082A	5-Aug-94	71	2994645	129381	WATER WHITE	1.364	-0.054	0.188	-0.007	696	665	90	COP
6COP082A	17-Aug-94	92	2951104	93199	WATER WHITE	1.501	0.082	0.207	0.011	984	946	90	COP
6COP082A	26-Aug-94	6	2824386	125447	WATER WHITE, WHITE PPT.	1.352	-0.066	0.187	-0.009	1200	1156	90	COP
6COP082A	2-Sep-94	116	2857198	140124	WATER WHITE	1.309	-0.109	0.181	-0.015	1368	1317	90	COP
6COP082A	21-Sep-94	18	2970643	187957	WATER WHITE	1.199	-0.220	0.166	-0.030	1824	1720	90	COP
6COP082A	7-Oct-94	24	2758727	230557	WATER WHITE	1.078	-0.341	0.149	-0.047	2208	2075	90	COP
6COP082A	31-Oct-94	22	2970118	158362	WATER WHITE	1.273	-0.146	0.176	-0.020	2784	2576	90	COP
6COP082A	10-Nov-94	54	2965140	192493	WATER WHITE	1.188	-0.231	0.164	-0.032	3024	2788	90	COP
6COP082B	1-Jul-94	42	597887	28961		1.315	0.000	0.182	0.000	0	0	90	COP
6COP082B	15-Jul-94	70	2593150	63783	SLT PINK TINGE, WHITE PPT	1.609	0.294	0.222	0.040	336	328	90	COP
6COP082B	20-Jul-94	73	2551252	90659	WATER WHITE, PPT.	1.449	0.135	0.200	0.018	456	443	90	COP
6COP082B	25-Jul-94	66	2381221	62324	WATER WHITE, CLOUDY	1.582	0.267	0.218	0.036	576	559	90	COP
6COP082B	29-Jul-94	39	2369227	79772	CLOUDY WATER WHITE	1.473	0.158	0.203	0.022	672	651	90	COP
6COP082B	17-Aug-94	106	2958341	131122	WATER WHITE	1.353	0.039	0.187	0.005	1128	1090	90	COP
6COP082B	26-Aug-94	1	2822781	103182	WATER WHITE, WHITE PPT. ON WALLS	1.437	0.122	0.198	0.017	1344	1300	90	COP
6COP082B	2-Sep-94	102	2852612	113764	WATER WHITE	1.399	0.084	0.193	0.012	1512	1461	90	COP
6COP082B	21-Sep-94	32	2981516	154174	WATER WHITE	1.286	-0.028	0.178	-0.004	1968	1864	90	COP
6COP082B	7-Oct-94	39	2744535	171628	WATER WHITE	1.204	-0.111	0.166	-0.015	2352	2219	90	COP
6COP082B	31-Oct-94	36	2965962	137384	WATER WHITE	1.334	0.019	0.184	0.003	2928	2720	90	COP
6COP082B	10-Nov-94	67	2968052	147689	WATER WHITE	1.303	-0.012	0.180	-0.002	3168	2932	90	COP
6COP115A	1-Jul-94	46	596284	20563		1.462	0.000	0.202	0.000	0	0	120	COP

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6COP115A	13-Jul-94	64	1082811	41716	WATER WHITE, WHITE PPT	1.414	-0.048	0.195	-0.007	288	287	120	COP
6COP115A	18-Jul-94	68	2612764	72532	WATER WHITE, WHITE PPT.	1.557	0.094	0.215	0.013	408	397	120	COP
6COP115A	22-Jul-94	50	2275628	84969	WATER WHITE	1.428	-0.035	0.197	-0.005	504	488	120	COP
6COP115A	29-Jul-94	6	1978385	49915	WATER WHITE, WHITE PPT.	1.598	0.136	0.220	0.019	672	643	120	COP
6COP115A	9-Aug-94	30	2978287	141634	WATER WHITE	1.323	-0.140	0.183	-0.019	936	876	120	COP
6COP115A	16-Aug-94	51	2979387	161857	WATER WHITE	1.265	-0.197	0.175	-0.027	1104	1017	120	COP
6COP115A	19-Aug-94	109	2933898	157815	WATER WHITE	1.269	-0.193	0.175	-0.026	1176	1085	120	COP
6COP115A	26-Aug-94	58	2854986	91970	WATER WHITE	1.492	0.030	0.206	0.004	1344	1243	120	COP
6COP115A	2-Sep-94	6	2853379	100892	WATER WHITE, SOME OPACITY	1.452	-0.011	0.200	-0.001	1512	1384	120	COP
6COP115A	19-Sep-94	59	2953444	119435	WATER WHITE	1.393	-0.069	0.192	-0.009	1920	1785	120	COP
6COP115A	30-Sep-94	56	2630078	98113	WATER WHITE	1.428	-0.034	0.197	-0.005	2184	2047	120	COP
6COP115A	28-Oct-94	29	2957837	112279	WATER WHITE	1.421	-0.042	0.196	-0.006	2856	2713	120	COP
6COP115A	10-Nov-94	124	2949908	125647	WATER WHITE	1.371	-0.092	0.189	-0.013	3168	2997	120	COP
6COP115B	1-Jul-94	43	596155	33811		1.246	0.000	0.172	0.000	0	0	120	COP
6COP115B	13-Jul-94	65	1081657	35223	SLT PINK TINGE, WHITE PPT	1.487	0.241	0.205	0.033	288	287	120	COP
6COP115B	18-Jul-94	69	2594761	89770	WATER WHITE, WHITE PPT	1.461	0.215	0.202	0.029	408	397	120	COP
6COP115B	29-Jul-94	13	1971064	60469	WATER WHITE, WHITE PPT.	1.513	0.267	0.209	0.036	672	643	120	COP
6COP115B	9-Aug-94	44	2989722	160438	WATER WHITE	1.270	0.024	0.175	0.003	936	876	120	COP
6COP115B	16-Aug-94	62	2979029	174272	OPAQUE WATER WHITE	1.233	-0.013	0.170	-0.002	1104	1017	120	COP
6COP115B	16-Aug-94	123	2928509	156498	OPAQUE WHITE	1.272	0.026	0.176	0.004	1176	1085	120	COP
6COP115B	26-Aug-94	70	2862853	106558	WATER WHITE, SOME OPACITY	1.429	0.183	0.197	0.025	1344	1243	120	COP
6COP115B	2-Sep-94	20	2867032	115188	WATER WHITE	1.396	0.150	0.193	0.020	1512	1384	120	COP
6COP115B	19-Sep-94	70	2942962	132130	WATER WHITE	1.348	0.101	0.186	0.014	1920	1785	120	COP
6COP115B	30-Sep-94	67	2627834	103908	WATER WHITE	1.403	0.157	0.194	0.021	2184	2047	120	COP
6COP115B	28-Oct-94	4	2958680	117607	WATER WHITE	1.401	0.154	0.193	0.021	2856	2713	120	COP
6COP115B	10-Nov-94	136	2956302	132689	OPAQUE WATER WHITE	1.348	0.102	0.186	0.014	3168	2997	120	COP
6COP150A	7-Jul-94	160	1096082	52079		1.323	0.000	0.183	0.000	0	0	150	COP
6COP150A	14-Jul-94	119	2647316	111861	WHITE METALLIC PPT	1.374	0.051	0.190	0.007	168	165	150	COP
6COP150A	19-Jul-94	31	2568862	56599	WATER WHITE	1.657	0.334	0.228	0.046	288	278	150	COP
6COP150A	21-Jul-94	11	2526865	70409	WATER WHITE	1.555	0.232	0.214	0.032	336	319	150	COP
6COP150A	5-Aug-94	201	2977215	152666	METALLIC PPT ON WALLS, WATER WHITE	1.290	-0.033	0.178	-0.005	596	565	150	COP
6COP150A	15-Aug-94	60	2950631	153402	WATER WHITE	1.284	-0.039	0.177	-0.005	936	891	150	COP
6COP150A	19-Aug-94	38	2956347	173778	WATER WHITE	1.231	-0.092	0.170	-0.013	1032	982	150	COP
6COP150A	25-Aug-94	72	2986751	162742	WATER WHITE, SOME OPACITY	1.264	-0.059	0.175	-0.008	1176	1123	150	COP
6COP150A	31-Aug-94	70	2881071	99871	WATER WHITE	1.460	0.137	0.201	0.019	1320	1264	150	COP
6COP150A	16-Sep-94	22	2968896	122846	WATER WHITE	1.383	0.060	0.191	0.008	1704	1646	150	COP
6COP150A	28-Sep-94	35	2602860	127345	WATER WHITE	1.310	-0.013	0.181	-0.002	1992	1929	150	COP
6COP150A	27-Oct-94	51	3006340	132738	WATER WHITE	1.355	0.032	0.187	0.004	2688	2621	150	COP
6COP150A	9-Nov-94	53	2965662	138458	WATER WHITE	1.331	0.008	0.184	0.001	3000	2928	150	COP
6COP150B	1-Jul-94	41	597275	44903		1.124	0.000	0.156	0.000	0	0	150	COP
6COP150B	14-Jul-94	120	2634227	148948	WHITE METALLIC PPT	1.248	0.124	0.172	0.017	312	309	150	COP
6COP150B	19-Jul-94	25	2570310	96110	WATER WHITE, WHITE PPT.	1.427	0.303	0.197	0.041	432	422	150	COP
6COP150B	21-Jul-94	19	2949726	94933	WATER WHITE, WHITE PPT.	1.429	0.305	0.197	0.042	480	463	150	COP
6COP150B	5-Aug-94	208	2583587	208490	WATER WHITE, METALLIC PPT ON WALLS	1.156	0.032	0.160	0.004	840	809	150	COP
6COP150B	15-Aug-94	67	2958673	220210	WATER WHITE	1.128	0.004	0.156	0.001	1080	1035	150	COP

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6COP150B	19-Aug-94	45	2960363	230416	WATER WHITE	1.109	-0.015	0.153	-0.002	1176	1126	150	COP
6COP150B	25-Aug-94	79	2970927	225309	WATER WHITE, SOME OPACITY+F613	1.120	-0.004	0.155	-0.001	1320	1267	150	COP
6COP150B	31-Aug-94	77	2895842	166699	WATER WHITE, SOME OPACITY	1.240	0.116	0.171	0.016	1464	1408	150	COP
6COP150B	16-Sep-94	45	2930750	189509	WATER WHITE	1.189	0.065	0.164	0.009	1848	1790	150	COP
6COP150B	28-Sep-94	42	2574683	152769	OPAQUE WATER WHITE	1.227	0.103	0.170	0.014	2136	2073	150	COP
6COP150B	27-Oct-94	73	2959760	170041	WATER WHITE	1.241	0.117	0.171	0.016	2832	2765	150	COP
6COP150B	9-Nov-94	76	2967669	169880	WATER WHITE	1.242	0.118	0.172	0.016	3144	3072	150	COP
6COP175A	14-Jul-94	183	1082694	114698		0.975	0.000	0.135	0.000	0	0	175	COP
6COP175A	7-Jul-94	40	2624359	165637	WHITE PPT, PINK TINGE	1.200	0.225	0.166	0.031	168	167	175	COP
6COP175A	18-Jul-94	106	2604945	93403	PINK, METALLIC WHITE PPT	1.445	0.470	0.199	0.084	264	257	175	COP
6COP175A	20-Jul-94	98	2560316	107203	WATER WHITE, PINK TINT, WHITE PPT.	1.378	0.403	0.190	0.055	312	302	175	COP
6COP175A	22-Jul-94	90	2511762	92746	PINK, WHITE PPT.	1.433	0.458	0.198	0.062	360	347	175	COP
6COP175A	27-Jul-94	6	2531772	90097	PINK, WHITE PPT, WIRE FUZZY	1.449	0.474	0.200	0.065	480	461	175	COP
6COP175A	5-Aug-94	123	3000108	187700	WHITE PPT ON TUBE WALLS. FUZZY WIRE	1.204	0.229	0.166	0.031	696	666	175	COP
6COP175A	11-Aug-94	103	2972116	194181	SLT PINK TINGE	1.185	0.210	0.164	0.029	840	805	175	COP
6COP175A	11-Aug-94	110	2985560	128756	SLT PINK TINGE	1.365	0.390	0.188	0.053	840	805	175	COP
6COP175A	16-Aug-94	105	2968461	177443	PINK, PPT.	1.223	0.249	0.169	0.034	960	920	175	COP
6COP175A	18-Aug-94	12	2935008	157010	LIGHT PINK	1.272	0.297	0.176	0.041	1008	964	175	COP
6COP175A	25-Aug-94	21	2988453	95363	PINK	1.496	0.521	0.206	0.071	1176	1129	175	COP
6COP175A	31-Aug-94	20	2889669	49638	PINK	1.765	0.790	0.243	0.108	1320	1265	175	COP
6COP175A	16-Sep-94	12	2992100	26812	PINK	2.048	1.073	0.282	0.146	1704	1647	175	COP
6COP175A	26-Sep-94	20	2644134	12831	PINK	2.314	1.339	0.318	0.183	1944	1885	175	COP
6COP175A	27-Oct-94	12	3028493	6198	DARK PINK	2.689	1.714	0.369	0.234	2688	2625	175	COP
6COP175A	9-Nov-94	13	2963829	5030	PINK	2.770	1.795	0.380	0.245	3000	2934	175	COP
6COP175B	1-Jul-94	48	595872	28982		1.313	0.000	0.181	0.000	0	0	175	COP
6COP175B	14-Jul-94	41	2652736	87930	WHITE PPT, PINK TINGE	1.480	0.167	0.204	0.023	312	311	175	COP
6COP175B	18-Jul-94	114	2588225	76878	WATER WHITE, WHITE METALLIC PPT	1.527	0.214	0.211	0.029	408	401	175	COP
6COP175B	20-Jul-94	104	2550726	56752	V SLT PINK TINGE, WHITE PPT	1.653	0.340	0.228	0.046	456	446	175	COP
6COP175B	22-Jul-94	95	2509411	46859	PINK	1.729	0.416	0.238	0.057	504	491	175	COP
6COP175B	27-Jul-94	12	2508243	84366	PINK TINGE, FUZZY WIRE	1.473	0.160	0.203	0.022	624	605	175	COP
6COP175B	5-Aug-94	131	2989784	183333	WHITE PPT ON TUBE. WIRE FUZZY	1.212	-0.101	0.168	-0.014	840	810	175	COP
6COP175B	16-Aug-94	112	2935576	120893	PINK	1.385	0.072	0.191	0.010	1104	1064	175	COP
6COP175B	18-Aug-94	26	2922161	105226	PINK	1.444	0.131	0.199	0.018	1152	1108	175	COP
6COP175B	25-Aug-94	28	2981762	75704	PINK	1.595	0.282	0.220	0.039	1320	1273	175	COP
6COP175B	31-Aug-94	27	2907463	36053	PINK	1.907	0.594	0.262	0.081	1464	1409	175	COP
6COP175B	16-Sep-94	27	2983806	19944	PINK	2.175	0.862	0.299	0.118	1848	1791	175	COP
6COP175B	26-Sep-94	27	2626298	10511	PINK	2.398	1.085	0.329	0.148	2088	2029	175	COP
6COP175B	27-Oct-94	28	3033167	3899	DARK PINK	2.891	1.578	0.397	0.215	2832	2769	175	COP
6COP175B	9-Nov-94	27	2981744	717143	PINK	0.619	-0.694	0.087	-0.095	3144	3078	175	COP
6DRK025A	30-Jun-94	35	595536	26576		1.350	0.000	0.186	0.000	0	0	25	DRK
6DRK025A	7-Jul-94	131	1093492	57884		1.276	-0.074	0.176	-0.010	168	168	25	DRK
6DRK025A	14-Jul-94	63	2659623	136783	PINK	1.289	-0.062	0.178	-0.008	336	336	25	DRK
6DRK025A	21-Jul-94	15	2540950	94344	PINK	1.430	0.080	0.197	0.011	504	504	25	DRK
6DRK025A	28-Jul-94	15	2004736	77726	PINK	1.411	0.061	0.195	0.008	672	672	25	DRK
6DRK025A	9-Aug-94	84	2965452	208235	PINK	1.154	-0.197	0.160	-0.027	960	960	25	DRK

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6DRK025A	16-Aug-94	122	2936378	194199	PINK	1.180	-0.171	0.163	-0.023	1128	1128	25	DRK
6DRK025A	26-Aug-94	11	2825162	150694	PINK	1.273	-0.077	0.176	-0.011	1368	1368	25	DRK
6DRK025A	2-Sep-94	129	2854961	123034	PINK	1.366	0.015	0.189	0.002	1536	1536	25	DRK
6DRK025A	4-Nov-94	13	2947010	172215	PINK	1.233	-0.117	0.170	-0.016	3048	3048	25	DRK
6DRK025A	10-Nov-94	153	2929543	171055	PINK	1.234	-0.117	0.170	-0.016	3192	3192	25	DRK
6FIL082A	1-Jul-94	49	596430	25071		1.376	0.000	0.190	0.000	0	0	90	FIL
6FIL082A	12-Jul-94	58	1061738	24577		1.635	0.259	0.225	0.035	264	264	90	FIL
6FIL082A	15-Jul-94	71	2591985	50543		1.710	0.334	0.236	0.046	336	328	90	FIL
6FIL082A	20-Jul-94	64	2561134	49474		1.714	0.338	0.236	0.046	456	443	90	FIL
6FIL082A	25-Jul-94	57	2380921	37428		1.804	0.427	0.248	0.058	576	559	90	FIL
6FIL082A	29-Jul-94	30	2387711	51879		1.663	0.287	0.229	0.039	672	651	90	FIL
6FIL082A	5-Aug-94	72	2974158	83610		1.551	0.175	0.214	0.024	840	809	90	FIL
6FIL082A	9-Aug-94	60	2973526	84340		1.547	0.171	0.213	0.023	936	902	90	FIL
6FIL082A	17-Aug-94	94	2928374	73747		1.599	0.222	0.220	0.030	1128	1090	90	FIL
6FIL082A	26-Aug-94	7	2823854	71370	MAGENTA	1.597	0.221	0.220	0.030	1344	1300	90	FIL
6FIL082A	2-Sep-94	118	2863646	61845		1.666	0.289	0.229	0.039	1512	1461	90	FIL
6FIL082A	21-Sep-94	19	2956897	67058		1.644	0.268	0.227	0.037	1968	1864	90	FIL
6FIL082A	31-Oct-94	25	2745034	123207		1.348	-0.028	0.186	-0.004	2352	2219	90	FIL
6FIL082A	7-Nov-94	23	2978710	88385		1.528	0.151	0.211	0.021	2928	2720	90	FIL
6FIL082A	10-Nov-94	55	2944500	100375		1.467	0.091	0.202	0.012	3168	2932	90	FIL
6FIL082B	1-Jul-94	45	597001	34511		1.238	0.000	0.171	0.000	0	0	90	FIL
6FIL082B	12-Jul-94	59	1072055	32417		1.519	0.281	0.210	0.038	264	261	90	FIL
6FIL082B	15-Jul-94	72	2605360	51994		1.700	0.462	0.234	0.063	336	328	90	FIL
6FIL082B	20-Jul-94	74	2539941	54166		1.671	0.433	0.230	0.059	456	443	90	FIL
6FIL082B	25-Jul-94	67	2365468	54680		1.636	0.398	0.225	0.054	576	559	90	FIL
6FIL082B	29-Jul-94	40	2382837	35924		1.822	0.584	0.251	0.080	672	651	90	FIL
6FIL082B	9-Aug-94	61	2940550	84960		1.539	0.301	0.212	0.041	936	902	90	FIL
6FIL082B	17-Aug-94	108	2943228	84687		1.541	0.303	0.212	0.041	1128	1090	90	FIL
6FIL082B	26-Aug-94	2	2848873	49313		1.762	0.524	0.243	0.071	1344	1300	90	FIL
6FIL082B	2-Sep-94	103	2847613	48857		1.766	0.528	0.243	0.072	1512	1461	90	FIL
6FIL082B	21-Sep-94	33	2961597	56579		1.719	0.481	0.237	0.066	1968	1864	90	FIL
6FIL082B	7-Oct-94	40	2754259	83887		1.516	0.278	0.209	0.038	2352	2219	90	FIL
6FIL082B	31-Oct-94	37	2972601	66515		1.650	0.412	0.227	0.056	2928	2720	90	FIL
6FIL082B	10-Nov-94	68	2955386	73715		1.603	0.365	0.221	0.050	3168	2932	90	FIL
6FIL115A	1-Jul-94	89	599930	18846		1.503	0.000	0.207	0.000	0	0	120	FIL
6FIL115A	13-Jul-94	66	1079043	14316		1.877	0.374	0.258	0.051	288	287	120	FIL
6FIL115A	18-Jul-94	70	2603475	13837		2.275	0.772	0.313	0.105	408	397	120	FIL
6FIL115A	22-Jul-94	51	2299009	14443		2.202	0.699	0.303	0.095	504	488	120	FIL
6FIL115A	29-Jul-94	7	1965575	15598		2.100	0.598	0.289	0.082	672	643	120	FIL
6FIL115A	9-Aug-94	31	2966045	44591		1.823	0.320	0.251	0.044	936	876	120	FIL
6FIL115A	16-Aug-94	52	2970734	42889		1.841	0.338	0.253	0.046	1104	1017	120	FIL
6FIL115A	19-Aug-94	112	2961341	52106		1.755	0.252	0.242	0.034	1176	1085	120	FIL
6FIL115A	26-Aug-94	59	2855454	34946		1.912	0.409	0.263	0.056	1344	1243	120	FIL
6FIL115A	2-Sep-94	7	2847441	36781		1.889	0.386	0.260	0.053	1512	1384	120	FIL
6FIL115A	19-Sep-94	60	2960402	52216		1.754	0.251	0.241	0.034	1920	1785	120	FIL

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6FIL115A	30-Sep-94	57	2626629	47544	PINK	1.742	0.239	0.240	0.033	2184	2047	120	FIL
6FIL115A	28-Oct-94	30	2952052	68596	PINK	1.634	0.131	0.225	0.018	2856	2713	120	FIL
6FIL115A	10-Nov-94	125	2934025	85970	PINK	1.533	0.030	0.211	0.004	3168	2997	120	FIL
6FIL115B	1-Jul-94	82	599818	36723		1.213	0.000	0.168	0.000	0	0	120	FIL
6FIL115B	1-Jul-94	83	600575	36144		1.221	0.007	0.169	0.001	0	0	120	FIL
6FIL115B	13-Jul-94	67	1083206	28741	PINK	1.576	0.363	0.217	0.050	288	287	120	FIL
6FIL115B	18-Jul-94	71	2593290	26034	MAGENTA	1.998	0.785	0.275	0.107	408	397	120	FIL
6FIL115B	22-Jul-94	64	2439162	32479	PURPLE	1.876	0.663	0.258	0.090	504	488	120	FIL
6FIL115B	29-Jul-94	14	1976811	32076	DARK PINK	1.790	0.577	0.246	0.079	672	643	120	FIL
6FIL115B	9-Aug-94	45	2972987	91965	PINK	1.510	0.296	0.208	0.040	936	876	120	FIL
6FIL115B	16-Aug-94	64	2964911	121240	PINK	1.388	0.175	0.192	0.024	1104	1017	120	FIL
6FIL115B	19-Aug-94	122	2957750	116300	PINK	1.405	0.192	0.194	0.026	1176	1085	120	FIL
6FIL115B	26-Aug-94	71	2841333	90844	PINK	1.495	0.282	0.206	0.039	1344	1243	120	FIL
6FIL115B	2-Sep-94	21	2863162	102973	PINK	1.444	0.231	0.199	0.032	1512	1384	120	FIL
6FIL115B	19-Sep-94	71	2946717	132676	PINK	1.347	0.133	0.186	0.018	1920	1785	120	FIL
6FIL115B	30-Sep-94	68	2627003	110827	PINK	1.375	0.162	0.190	0.022	2184	2047	120	FIL
6FIL115B	28-Oct-94	5	2938464	165372	PINK	1.250	0.037	0.173	0.005	2856	2713	120	FIL
6FIL115B	10-Nov-94	137	2958726	186009	PINK	1.202	-0.012	0.166	-0.002	3168	2997	120	FIL
6FIL150A	1-Jul-94	44	597614	22401		1.426	0.000	0.197	0.000	0	0	150	FIL
6FIL150A	14-Jul-94	121	2632210	50523	PINK	1.717	0.291	0.236	0.040	312	309	150	FIL
6FIL150A	19-Jul-94	32	2564051	72309	WATER WHITE, PINK TINGE, WHITE PPT.	1.550	0.124	0.214	0.017	432	422	150	FIL
6FIL150A	21-Jul-94	12	2543473	65878	WATER WHITE	1.587	0.161	0.219	0.022	480	463	150	FIL
6FIL150A	15-Aug-94	61	2964178	162470	WATER WHITE	1.261	-0.165	0.174	-0.023	1080	1035	150	FIL
6FIL150A	19-Aug-94	39	2965611	183095	WATER WHITE	1.209	-0.217	0.167	-0.030	1176	1126	150	FIL
6FIL150A	25-Aug-94	74	2980975	165002	WATER WHITE	1.257	-0.169	0.174	-0.023	1320	1267	150	FIL
6FIL150A	31-Aug-94	71	2888731	110095	WATER WHITE	1.419	-0.007	0.196	-0.001	1464	1408	150	FIL
6FIL150A	16-Sep-94	23	2949571	117375	WATER WHITE	1.400	-0.026	0.193	-0.004	1848	1790	150	FIL
6FIL150A	28-Sep-94	36	2585321	113462	WATER WHITE	1.358	-0.068	0.187	-0.009	2136	2073	150	FIL
6FIL150A	27-Oct-94	52	3000739	127455	WATER WHITE	1.372	-0.054	0.189	-0.007	2832	2765	150	FIL
6FIL150A	9-Nov-94	54	2984554	120344	WATER WHITE	1.394	-0.032	0.192	-0.004	3144	3072	150	FIL
6FIL150B	1-Jul-94	88	599109	39475		1.181	0.000	0.163	0.000	0	0	150	FIL
6FIL150B	14-Jul-94	122	2654987	39295	MAGENTA	1.830	0.649	0.252	0.089	312	309	150	FIL
6FIL150B	19-Jul-94	26	2567961	159965	WATER WHITE	1.206	0.024	0.167	0.003	432	422	150	FIL
6FIL150B	21-Jul-94	20	2535318	190951	WATER WHITE	1.123	-0.058	0.155	-0.008	480	463	150	FIL
6FIL150B	5-Aug-94	202	2990745	153680	WATER WHITE, PPT ON WALLS	1.289	0.108	0.178	0.015	840	809	150	FIL
6FIL150B	5-Aug-94	209	2959880	290233	WATER WHITE	1.009	-0.173	0.140	-0.024	840	809	150	FIL
6FIL150B	15-Aug-94	68	2972160	309106	WATER WHITE	0.983	-0.198	0.136	-0.027	1080	1035	150	FIL
6FIL150B	19-Aug-94	46	2965022	332747	WATER WHITE	0.950	-0.231	0.132	-0.032	1176	1126	150	FIL
6FIL150B	25-Aug-94	80	2980757	321519	WATER WHITE	0.967	-0.214	0.134	-0.029	1320	1267	150	FIL
6FIL150B	31-Aug-94	78	2876614	205985	WATER WHITE	1.145	-0.036	0.158	-0.005	1464	1408	150	FIL
6FIL150B	16-Sep-94	46	2939294	259895	WATER WHITE	1.053	-0.128	0.146	-0.017	1848	1790	150	FIL
6FIL150B	28-Sep-94	43	2590832	176265	WATER WHITE	1.167	-0.014	0.161	-0.002	2136	2073	150	FIL
6FIL150B	27-Oct-94	74	2970392	223358	WATER WHITE	1.124	-0.057	0.156	-0.008	2832	2765	150	FIL
6FIL150B	9-Nov-94	77	2961017	264302	WATER WHITE	1.049	-0.132	0.145	-0.018	3144	3072	150	FIL
6FIL175A	1-Jul-94	47	595825	43482		1.137	0.000	0.157	0.000	0	0	175	FIL

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6FIL175A	14-Jul-94	42	2645624	41868	PINK	1.801	0.664	0.248	0.091	312	311	175	FIL
6FIL175A	18-Jul-94	107	2584554	110453	PINK	1.369	0.232	0.189	0.032	408	401	175	FIL
6FIL175A	20-Jul-94	99	2569367	91417	LIGHT PINK	1.449	0.312	0.200	0.043	456	446	175	FIL
6FIL175A	22-Jul-94	91	2521907	88326	PINK	1.456	0.319	0.201	0.044	504	491	175	FIL
6FIL175A	27-Jul-94	7	2516135	65463	PINK	1.585	0.448	0.218	0.061	624	605	175	FIL
6FIL175A	5-Aug-94	124	2997805	89658	PINK	1.524	0.387	0.210	0.053	840	810	175	FIL
6FIL175A	11-Aug-94	104	2972657	49240	PINK	1.781	0.644	0.245	0.088	984	949	175	FIL
6FIL175A	16-Aug-94	106	2945427	48474	PINK, SLT PPT.	1.784	0.647	0.246	0.088	1104	1064	175	FIL
6FIL175A	18-Aug-94	13	2941145	46128	PINK	1.805	0.668	0.248	0.091	1152	1108	175	FIL
6FIL175A	25-Aug-94	22	2988248	32988	SALMON	1.957	0.920	0.269	0.112	1320	1273	175	FIL
6FIL175A	31-Aug-94	21	2883053	22867	PINK	2.101	0.964	0.289	0.132	1464	1409	175	FIL
6FIL175A	16-Sep-94	13	2981119	15059	SALMON	2.297	1.160	0.316	0.158	1848	1791	175	FIL
6FIL175A	26-Sep-94	21	2645186	7506	DARK PINK	2.547	1.410	0.350	0.192	2088	2029	175	FIL
6FIL175A	27-Oct-94	14	3019994	4512	DARK PINK	2.826	1.689	0.388	0.231	2832	2769	175	FIL
6FIL175A	9-Nov-94	14	2987052	4377	DARK PINK	2.834	1.697	0.389	0.232	3144	3078	175	FIL
6FIL175B	1-Jul-94	50	595722	27400		1.337	0.000	0.185	0.000	0	0	175	FIL
6FIL175B	14-Jul-94	43	2634112	51442	PINK	1.709	0.372	0.235	0.051	312	311	175	FIL
6FIL175B	18-Jul-94	115	2593849	97278	PINK	1.426	0.089	0.197	0.012	408	401	175	FIL
6FIL175B	20-Jul-94	105	2552447	70465	LIGHT PINK	1.559	0.222	0.215	0.030	456	446	175	FIL
6FIL175B	22-Jul-94	96	2502715	75788	PINK	1.519	0.182	0.209	0.025	504	491	175	FIL
6FIL175B	27-Jul-94	13	2526478	72680	PINK	1.541	0.204	0.212	0.028	624	605	175	FIL
6FIL175B	5-Aug-94	132	2984163	59223	MAGENTA	1.702	0.365	0.234	0.050	840	810	175	FIL
6FIL175B	11-Aug-94	111	2997763	33928	PINK	1.946	0.609	0.268	0.083	984	949	175	FIL
6FIL175B	16-Aug-94	113	2953401	28616	PINK	2.014	0.676	0.277	0.092	1104	1064	175	FIL
6FIL175B	18-Aug-94	28	2940165	31416	PINK	1.971	0.634	0.271	0.087	1152	1108	175	FIL
6FIL175B	25-Aug-94	29	2976656	18885	PINK	2.198	0.860	0.302	0.117	1320	1273	175	FIL
6FIL175B	31-Aug-94	28	2892175	13491	DARK PINK	2.331	0.994	0.320	0.136	1464	1409	175	FIL
6FIL175B	16-Sep-94	28	2964926	9697	DARK PINK	2.485	1.148	0.341	0.157	1848	1791	175	FIL
6FIL175B	26-Sep-94	28	2645813	6161	PINK	2.633	1.296	0.361	0.177	2088	2029	175	FIL
6FIL175B	27-Oct-94	29	3008802	3773	DARK PINK	2.902	1.564	0.398	0.214	2832	2769	175	FIL
6FIL175B	9-Nov-94	29	2964148	3819	PINK	2.890	1.553	0.397	0.212	3144	3078	175	FIL
6F_3082A	7-Jul-94	120	1089860	13039		1.922	0.000	0.264	0.000	0	0	90	F_3
6F_3082A	12-Jul-94	81	1069223	4707	YELLOW-GREEN, THICK SLIME LAYER	2.356	0.434	0.324	0.059	120	117	90	F_3
6F_3082A	15-Jul-94	73	0	0	DECOMPOSED					192	184	90	F_3
6F_3082A	16-Jul-94	0	0	0						216	205	90	F_3
6F_3082B	7-Jul-94	122	1091249	5406		2.305	0.000	0.317	0.000	0	0	90	F_3
6F_3082B	12-Jul-94	82	1066734	2833	YELLOW-GREEN, THICK SLIME LAYER	2.576	0.271	0.354	0.037	120	117	90	F_3
6F_3082B	15-Jul-94	74	0	0	DECOMPOSED					192	184	90	F_3
6F_3082B	16-Jul-94	0	0	0						216	205	90	F_3
6F_3115A	7-Jul-94	139	1087120	7246		2.176	0.000	0.299	0.000	0	0	120	F_3
6F_3115A	13-Jul-94	68	0	0	BLACK SOLID					144	143	120	F_3
6F_3115A	18-Jul-94	72	0	0	THICK SLIME LAYER					264	253	120	F_3
6F_3115A	19-Jul-94	0	0	0	DECOMPOSED					288	273	120	F_3
6F_3115B	7-Jul-94	152	1090438	5556		2.293	0.000	0.315	0.000	0	0	120	F_3
6F_3115B	13-Jul-94	69	0	0	BLACK SOLID					144	143	120	F_3

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6F_3115B	18-Jul-94	73	0	0	THICK SLIME LAYER, YELLOW-GREEN DECOMPOSED					264	253	120	F_3
6F_3115B	19-Jul-94	0	0	0						288	273	120	F_3
6F_3175A	1-Jul-94	40	599243	13263		1.655	0.000	0.228	0.000	0	0	175	F_3
6F_3175A	14-Jul-94	44	0	0	SLUDGE, MAGENTA LIQUID DECOMPOSED					312	311	175	F_3
6F_3175A	15-Jul-94	0	0	0						336	329	175	F_3
6F_3175B	7-Jul-94	187	1082795	12133		1.951	0.000	0.268	0.000	0	0	175	F_3
6F_3175B	14-Jul-94	45	0	0	SLUDGE, MAGENTA LIQUID DECOMPOSED					168	167	175	F_3
6F_3175B	15-Jul-94	0	0	0						192	185	175	F_3
6F_4082A	7-Jul-94	43	1107356	27454		1.606	0.000	0.221	0.000	0	0	90	F_4
6F_4082A	12-Jul-94	74	1071686	7098		2.179	0.573	0.300	0.078	120	117	90	F_4
6F_4082A	15-Jul-94	75	2589448	13452		2.284	0.679	0.314	0.093	192	184	90	F_4
6F_4082A	20-Jul-94	65	2555960	8911	PINK, FLOATERS					312	299	90	F_4
6F_4082A	25-Jul-94	58	2391470	7361	DIRTY PINK, SLIME, BLACK FLOATERS					432	415	90	F_4
6F_4082A	29-Jul-94	31	2379737	5348	DIRTY PINK, BLACK FLOATERS					528	507	90	F_4
6F_4082A	5-Aug-94	73	2994424	8146	DIRTY PINK, BLACK FLOATERS, SLIME					696	665	90	F_4
6F_4082A	17-Aug-94	15	0	0	BROWN, BLACK FLOATERS DECOMPOSED					984	946	90	F_4
6F_4082B	7-Jul-94	107	1096338	13256		1.918	0.000	0.264	0.000	0	0	90	F_4
6F_4082B	12-Jul-94	75	1075052	2276		2.674	0.757	0.367	0.103	120	117	90	F_4
6F_4082B	15-Jul-94	76	2588884	5548		2.669	0.751	0.366	0.103	192	184	90	F_4
6F_4082B	20-Jul-94	75	2544319	4297	PINK, FLOATERS					312	299	90	F_4
6F_4082B	25-Jul-94	68	2359986	3479	DIRTY SALMON, SLIME, BLACK FLOATERS					432	415	90	F_4
6F_4082B	29-Jul-94	42	2373158	3308	DIRTY PINK, BLACK FLOATERS					528	507	90	F_4
6F_4082B	17-Aug-94	16	0	0	DIRTY PINK, SLIME, BLACK FLOATERS DECOMPOSED					984	946	90	F_4
6F_4115A	7-Jul-94	215	1085800	19628		1.743	0.000	0.240	0.000	0	0	120	F_4
6F_4115A	13-Jul-94	70	1077772	511	PINK WITH FLOATERS					144	143	120	F_4
6F_4115A	18-Jul-94	78	2584778	1368	MAGENTA, SLIME LAYER					264	253	120	F_4
6F_4115A	22-Jul-94	52	2297627	1273	DARK BROWN, SLIME, PPT.					360	344	120	F_4
6F_4115A	29-Jul-94	0	0	0	DECOMPOSED					528	499	120	F_4
6F_4115B	7-Jul-94	206	1079606	16073		1.827	0.000	0.252	0.000	0	0	120	F_4
6F_4115B	13-Jul-94	71	1079535	1039	PINK WITH FLOATERS					144	143	120	F_4
6F_4115B	18-Jul-94	79	2597027	1812	MAGENTA, SLIME LAYER					264	253	120	F_4
6F_4115B	22-Jul-94	65	2447731	1619	BROWN, SLIME, PPT.					360	344	120	F_4
6F_4115B	29-Jul-94	0	0	0	DECOMPOSED					528	499	120	F_4
6F_4150A	7-Jul-94	32	1108965	15132		1.865	0.000	0.257	0.000	0	0	150	F_4
6F_4150A	14-Jul-94	123	2641721	1717	DARK MAGENTA, FLOATERS					168	165	150	F_4
6F_4150A	19-Jul-94	33	2567318	1816	MAGENTA, NEEDLE PPT.					288	278	150	F_4
6F_4150A	21-Jul-94	13	2519943	1730	MAGENTA, SLIME, NEEDLE PPT.					336	319	150	F_4
6F_4150A	29-Jul-94	0	0	0	DECOMPOSED					528	503	150	F_4
6F_4150B	7-Jul-94	209	1079403	24584		1.643	0.000	0.226	0.000	0	0	150	F_4
6F_4150B	14-Jul-94	124	2650282	2043	DARK MAGENTA, FLOATERS					168	165	150	F_4
6F_4150B	19-Jul-94	34	2561517	2558	MAGENTA, NEEDLE PPT.					288	278	150	F_4
6F_4150B	21-Jul-94	21	2518850	25471	MAGENTA, SLIME, NEEDLE PPT.					336	319	150	F_4
6F_4150B	29-Jul-94	0	0	0	DECOMPOSED					528	503	150	F_4
6F_4175A	7-Jul-94	195	1085247	19604		1.743	0.000	0.240	0.000	0	0	175	F_4
6F_4175A	14-Jul-94	48	2634568	2250	DARK MAGENTA, FLOATERS					168	167	175	F_4

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6F_4175A	18-Jul-94	108	2580716	2329	DARK RED, METALLIC PPT	3.045	1.301	0.418	0.178	264	257	175	F_4
6F_4175A	19-Jul-94	0	0	0	DECOMPOSED					288	278	175	F_4
6F_4175B	7-Jul-94	47	1103506	16187		1.834	0.000	0.252	0.000	0	0	175	F_4
6F_4175B	14-Jul-94	49	2643009	1752	DARK MAGENTA, FLOATERS	3.179	1.345	0.436	0.184	168	167	175	F_4
6F_4175B	18-Jul-94	116	2606052	1696	DARK RED, NEEDLE PPT	3.187	1.353	0.437	0.185	264	257	175	F_4
6F_4175B	19-Jul-94	0	0	0	DECOMPOSED					288	278	175	F_4
6F_N082A	7-Jul-94	197	1087504	1302		2.922	0.000	0.401	0.000	0	0	90	F_N
6F_N082A	12-Jul-94	79	0	0	YELLOW-GREEN, THICK SLIME LAYER					120	117	90	F_N
6F_N082A	15-Jul-94	77	0	0	DECOMPOSED					192	184	90	F_N
6F_N082A	16-Jul-94	0	0	0						216	205	90	F_N
6F_N082B	7-Jul-94	204	1085704	5639		2.285	0.000	0.314	0.000	0	0	90	F_N
6F_N082B	15-Jul-94	78	0	0	YELLOW-GREEN, THICK SLIME LAYER					192	184	90	F_N
6F_N082B	16-Jul-94	0	0	0	DECOMPOSED					216	205	90	F_N
6F_N115A	7-Jul-94	200	1078198	5382		2.302	0.000	0.316	0.000	0	0	120	F_N
6F_N115A	18-Jul-94	76	0	0	DECOMPOSED					264	253	120	F_N
6F_N115A	19-Jul-94	0	0	0	THICK SLIME LAYER					288	273	120	F_N
6F_N115B	7-Jul-94	202	1084383	2426		2.650	0.000	0.364	0.000	0	0	120	F_N
6F_N115B	13-Jul-94	73	0	0	BLACK SLUDGE, PINK LIQUID					144	143	120	F_N
6F_N115B	18-Jul-94	77	0	0	THICK SLIME LAYER					264	253	120	F_N
6F_N115B	19-Jul-94	0	0	0	DECOMPOSED					288	273	120	F_N
6F_N175A	7-Jul-94	199	1084597	4886		2.346	0.000	0.322	0.000	0	0	175	F_N
6F_N175A	14-Jul-94	46	0	0	SLUDGE, MAGENTA LIQUID					168	167	175	F_N
6F_N175A	15-Jul-94	0	0	0	DECOMPOSED					192	185	175	F_N
6F_N175B	7-Jul-94	203	1080239	9267		2.067	0.000	0.284	0.000	0	0	175	F_N
6F_N175B	14-Jul-94	47	0	0	SLUDGE, MAGENTA LIQUID					168	167	175	F_N
6F_N175B	15-Jul-94	0	0	0	DECOMPOSED					192	185	175	F_N
6MOL082A	2-Aug-94	20	1488802	42318	PINK	1.546	0.000	0.213	0.000	0	0	90	MOL
6MOL082A	5-Aug-94	74	2990048	136198	LIGHT PINK	1.342	-0.205	0.185	-0.028	72	67	90	MOL
6MOL082A	9-Aug-94	62	2964309	138788	PINK TINGE	1.330	-0.217	0.184	-0.030	168	161	90	MOL
6MOL082A	17-Aug-94	95	2948668	159973	WATER WHITE	1.266	-0.281	0.175	-0.038	360	349	90	MOL
6MOL082A	26-Aug-94	8	2849160	78235	WATER WHITE	1.561	0.015	0.215	0.002	576	559	90	MOL
6MOL082A	2-Sep-94	119	2849868	89064	WATER WHITE	1.505	-0.041	0.208	-0.006	744	720	90	MOL
6MOL082A	21-Sep-94	20	2985247	96850	WATER WHITE	1.489	-0.057	0.205	-0.008	1200	1122	90	MOL
6MOL082A	7-Oct-94	26	2734556	200989	WATER WHITE	1.134	-0.413	0.157	-0.056	1584	1478	90	MOL
6MOL082A	31-Oct-94	25	2969109	117009	WATER WHITE	1.404	-0.142	0.194	-0.019	2160	1978	90	MOL
6MOL082A	10-Nov-94	56	2969588	66378	WATER WHITE	1.651	0.104	0.227	0.014	2400	2191	90	MOL
6MOL082B	2-Aug-94	15	1495810	96360	PINK	1.191	0.000	0.165	0.000	0	0	90	MOL
6MOL082B	9-Aug-94	63	2981235	346596	PINK TINGE	0.935	-0.256	0.130	-0.035	168	161	90	MOL
6MOL082B	17-Aug-94	109	2945812	366303	WATER WHITE	0.905	-0.286	0.126	-0.039	360	349	90	MOL
6MOL082B	26-Aug-94	3	2836553	258652	WATER WHITE	1.040	-0.151	0.144	-0.021	576	559	90	MOL
6MOL082B	2-Sep-94	104	2857542	299671	WATER WHITE	0.979	-0.212	0.136	-0.029	744	720	90	MOL
6MOL082B	21-Sep-94	34	2968915	360233	WATER WHITE	0.916	-0.275	0.127	-0.038	1200	1122	90	MOL
6MOL082B	7-Oct-94	41	2751921	398359	WATER WHITE	0.839	-0.352	0.117	-0.048	1584	1478	90	MOL
6MOL082B	31-Oct-94	38	2973657	314002	WATER WHITE	0.976	-0.215	0.135	-0.029	2160	1978	90	MOL
6MOL082B	10-Nov-94	69	2955915	280385	WATER WHITE	1.023	-0.168	0.142	-0.023	2400	2191	90	MOL

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<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6MOL115A	2-Aug-94	37	1496826	78612	PINK	1.280	0.000	0.177	0.000	0	0	120	MOL
6MOL115A	9-Aug-94	33	2969598	264055	WATER WHITE	1.051	-0.229	0.146	-0.031	168	142	120	MOL
6MOL115A	26-Aug-94	61	2842999	186229	WATER WHITE	1.184	-0.096	0.164	-0.013	576	509	120	MOL
6MOL115A	2-Sep-94	9	2860795	228797	WATER WHITE	1.097	-0.183	0.152	-0.025	744	650	120	MOL
6MOL115B	2-Aug-94	42	1487170	95082	PINK TINGE	1.194	0.000	0.165	0.000	0	0	120	MOL
6MOL115B	9-Aug-94	46	2970952	279821	WATER WHITE	1.026	-0.168	0.142	-0.023	168	142	120	MOL
6MOL115B	19-Aug-94	124	2935448	358488	WATER WHITE	0.913	-0.281	0.127	-0.038	408	351	120	MOL
6MOL115B	20-Aug-94	0	0	0	EXPLODED					432	370	120	MOL
6MOL115C	16-Aug-94	54	2964717	316486	WATER WHITE	0.972	0.000	0.135	0.000	0	0	120	MOL
6MOL115C	19-Aug-94	110	2946219	329214	WATER WHITE	0.952	-0.020	0.132	-0.003	72	68	120	MOL
6MOL115C	19-Sep-94	61	2958021	241387	WATER WHITE	1.088	0.117	0.151	0.016	816	768	120	MOL
6MOL115C	30-Sep-94	58	2647785	202750	WATER WHITE	1.116	0.144	0.154	0.020	1080	1030	120	MOL
6MOL115C	28-Oct-94	31	2955087	236318	WATER WHITE	1.097	0.125	0.152	0.017	1752	1697	120	MOL
6MOL115C	10-Nov-94	127	2961390	270716	WATER WHITE	1.039	0.067	0.144	0.009	2064	1980	120	MOL
6MOL115D	16-Aug-94	66	2951462	344374	WATER WHITE	0.933	0.000	0.129	0.000	0	0	120	MOL
6MOL115D	26-Aug-94	72	2878918	229283	WATER WHITE	1.099	0.166	0.152	0.023	240	226	120	MOL
6MOL115D	2-Sep-94	22	2838388	265937	WATER WHITE	1.028	0.095	0.142	0.013	408	367	120	MOL
6MOL115D	19-Sep-94	72	2932171	262186	WATER WHITE	1.049	0.116	0.145	0.016	816	768	120	MOL
6MOL115D	30-Sep-94	69	2633997	225161	WATER WHITE	1.068	0.135	0.148	0.018	1080	1030	120	MOL
6MOL115D	28-Oct-94	6	2951314	269496	WATER WHITE	1.039	0.106	0.144	0.015	1752	1697	120	MOL
6MOL115D	10-Nov-94	138	2951299	320277	WATER WHITE	0.964	0.031	0.134	0.004	2064	1980	120	MOL
6MOL150A	3-Aug-94	12	3013783	107701	PINK TINGE	1.447	0.000	0.200	0.000	0	0	150	MOL
6MOL150A	5-Aug-94	203	2956809	114063	WATER WHITE	1.414	-0.033	0.195	-0.005	48	46	150	MOL
6MOL150A	15-Aug-94	62	2959979	141427	WATER WHITE	1.321	-0.126	0.182	-0.017	288	272	150	MOL
6MOL150A	19-Aug-94	40	2944473	111838	WATER WHITE	1.420	-0.026	0.196	-0.004	384	364	150	MOL
6MOL150A	25-Aug-94	73	2978331	150981	WATER WHITE	1.295	-0.152	0.179	-0.021	528	504	150	MOL
6MOL150A	31-Aug-94	72	2873314	82988	WATER WHITE	1.539	0.092	0.212	0.013	672	646	150	MOL
6MOL150A	16-Sep-94	24	2943803	123233	WATER WHITE	1.378	-0.069	0.190	-0.009	1056	1027	150	MOL
6MOL150A	28-Sep-94	37	2584627	101683	WATER WHITE	1.405	-0.042	0.194	-0.006	1344	1310	150	MOL
6MOL150A	27-Oct-94	53	2995611	120199	WATER WHITE	1.397	-0.050	0.193	-0.007	2040	2002	150	MOL
6MOL150A	9-Nov-94	55	2964418	116727	WATER WHITE	1.405	-0.042	0.194	-0.006	2352	2310	150	MOL
6MOL150B	3-Aug-94	17	3016211	213049	PINK TINGE	1.151	0.000	0.159	0.000	0	0	150	MOL
6MOL150B	5-Aug-94	210	2975423	298621	WATER WHITE	0.998	-0.153	0.138	-0.021	48	46	150	MOL
6MOL150B	15-Aug-94	69	2948943	326194	WATER WHITE	0.956	-0.195	0.133	-0.027	288	272	150	MOL
6MOL150B	19-Aug-94	81	2952779	355349	WATER WHITE	0.920	-0.231	0.128	-0.032	384	364	150	MOL
6MOL150B	25-Aug-94	47	2956687	335524	WATER WHITE	0.945	-0.206	0.131	-0.028	528	504	150	MOL
6MOL150B	31-Aug-94	79	2891001	243520	WATER WHITE	1.075	-0.076	0.149	-0.010	672	646	150	MOL
6MOL150B	16-Sep-94	47	2958745	261890	WATER WHITE	1.053	-0.098	0.146	-0.013	1056	1027	150	MOL
6MOL150B	28-Sep-94	44	2596278	236037	WATER WHITE	1.041	-0.110	0.144	-0.015	1344	1310	150	MOL
6MOL150B	27-Oct-94	75	2958143	219821	WATER WHITE	1.129	-0.022	0.156	-0.003	2040	2002	150	MOL
6MOL150B	9-Nov-94	78	2975058	290051	WATER WHITE	1.011	-0.140	0.140	-0.019	2352	2310	150	MOL
6MOL175A	3-Aug-94	53	2988441	96623	PINK TINGE	1.490	0.000	0.206	0.000	0	0	175	MOL
6MOL175A	5-Aug-94	125	2960936	115652	WATER WHITE	1.408	-0.082	0.194	-0.011	48	46	175	MOL
6MOL175A	11-Aug-94	105	2998561	92408	VERY SLT PINK TINGE	1.511	0.021	0.208	0.003	192	185	175	MOL
6MOL175A	16-Aug-94	107	2953830	112137	VERY VERY SLT PINK TINGE	1.421	-0.070	0.196	-0.010	312	300	175	MOL

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TubelD	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6MOL175A	18-Aug-94	14	2911978	104508	VERY LIGHT PINK TINGE	1.445	-0.045	0.199	-0.006	360	344	175	MOL
6MOL175A	25-Aug-94	23	2971406	103854	VERY SLT PINK TINGE	1.457	-0.034	0.201	-0.005	528	509	175	MOL
6MOL175A	31-Aug-94	22	2897012	60897	WATER WHITE	1.677	0.187	0.231	0.026	672	645	175	MOL
6MOL175A	16-Sep-94	14	2984522	78970	WATER WHITE	1.577	0.087	0.217	0.012	1056	1027	175	MOL
6MOL175A	26-Sep-94	22	2642305	54909	LIGHT PINK TINGE	1.682	0.192	0.232	0.026	1296	1265	175	MOL
6MOL175A	27-Oct-94	15	3034647	52212	LIGHT PINK	1.764	0.274	0.243	0.037	2040	2005	175	MOL
6MOL175A	9-Nov-94	15	2980470	58502	LIGHT PINK	1.707	0.217	0.235	0.030	2352	2314	175	MOL
6MOL175B	3-Aug-94	59	2996512	101053	PINK TINGE	1.472	0.000	0.203	0.000	0	0	175	MOL
6MOL175B	5-Aug-94	133	2960934	102902	PINK TINGE	1.459	-0.013	0.201	-0.002	48	46	175	MOL
6MOL175B	11-Aug-94	112	3005837	103324	LIGHT PINK	1.464	-0.008	0.202	-0.001	192	185	175	MOL
6MOL175B	16-Aug-94	114	2950251	109600	PINK	1.430	-0.042	0.197	-0.006	312	300	175	MOL
6MOL175B	18-Aug-94	29	2914891	105042	PINK	1.443	-0.029	0.199	-0.004	360	344	175	MOL
6MOL175B	25-Aug-94	30	2974884	110123	VERY SLT PINK TINGE	1.432	-0.040	0.198	-0.006	528	509	175	MOL
6MOL175B	31-Aug-94	30	2889915	66532	LIGHT PINK TINT	1.638	0.166	0.226	0.023	672	645	175	MOL
6MOL175B	16-Sep-94	30	2996374	83160	LIGHT PINK	1.557	0.085	0.215	0.012	1056	1027	175	MOL
6MOL175B	26-Sep-94	29	2638356	60445	LIGHT PINK TINGE	1.640	0.168	0.226	0.023	1296	1265	175	MOL
6MOL175B	27-Oct-94	30	3012043	60832	LIGHT PINK	1.695	0.223	0.233	0.030	2040	2005	175	MOL
6MOL175B	9-Nov-94	30	2959252	61873	LIGHT PINK	1.680	0.208	0.231	0.028	2352	2314	175	MOL
6M_N082A	29-Jun-94	28	585570	7946	PINK	1.867	0.000	0.257	0.000	0	0	90	M_N
6M_N082A	12-Jul-94	68	1061993	16594	PINK	1.806	-0.061	0.249	-0.008	312	309	90	M_N
6M_N082A	15-Jul-94	79	2590294	36798	PINK	1.848	-0.020	0.254	-0.003	384	376	90	M_N
6M_N082A	20-Jul-94	66	2548710	33084	PINK	1.887	0.019	0.260	0.003	504	491	90	M_N
6M_N082A	25-Jul-94	59	2371988	27315	PINK	1.939	0.071	0.267	0.010	624	607	90	M_N
6M_N082A	29-Jul-94	32	2374126	29736	PINK	1.902	0.035	0.262	0.005	720	699	90	M_N
6M_N082A	5-Aug-94	75	2987100	52865	SALMON	1.752	-0.115	0.241	-0.016	888	857	90	M_N
6M_N082A	17-Aug-94	93	2947127	68122	SALMON	1.636	-0.231	0.225	-0.032	1176	1138	90	M_N
6M_N082A	26-Aug-94	9	2833659	31632	DARK PINK	1.952	0.085	0.269	0.012	1392	1348	90	M_N
6M_N082A	2-Sep-94	120	2865094	35219	PINK	1.910	0.043	0.263	0.006	1560	1509	90	M_N
6M_N082A	21-Sep-94	21	2965672	49528	SALMON	1.777	-0.090	0.245	-0.012	2016	1912	90	M_N
6M_N082A	7-Oct-94	27	2731829	83621	PINK	1.514	-0.353	0.209	-0.048	2400	2267	90	M_N
6M_N082A	31-Oct-94	24	2971825	60800	SALMON	1.689	-0.178	0.233	-0.024	2976	2768	90	M_N
6M_N082A	10-Nov-94	57	2970167	81221	PINK	1.563	-0.304	0.215	-0.042	3216	2980	90	M_N
6M_N082B	29-Jun-94	4	603249	7860	PINK	1.885	0.000	0.259	0.000	0	0	90	M_N
6M_N082B	12-Jul-94	69	1062832	16186	PINK	1.817	-0.068	0.250	-0.009	312	309	90	M_N
6M_N082B	15-Jul-94	80	2596820	35492	PINK	1.864	-0.021	0.257	-0.003	384	376	90	M_N
6M_N082B	20-Jul-94	78	2564184	27095	SALMON	1.976	0.091	0.272	0.012	504	491	90	M_N
6M_N082B	25-Jul-94	69	2368724	34908	PINK	1.832	-0.053	0.252	-0.007	624	607	90	M_N
6M_N082B	29-Jul-94	43	2367680	28282	PINK	1.923	0.038	0.265	0.005	720	699	90	M_N
6M_N082B	17-Aug-94	107	2955658	83455	PINK	1.549	-0.336	0.214	-0.046	1176	1138	90	M_N
6M_N082B	26-Aug-94	4	2840887	58978	PINK	1.683	-0.202	0.232	-0.028	1392	1348	90	M_N
6M_N082B	2-Sep-94	105	2857138	64742	PINK	1.645	-0.240	0.227	-0.033	1560	1509	90	M_N
6M_N082B	21-Sep-94	35	2971475	93172	SALMON	1.504	-0.381	0.207	-0.052	2016	1912	90	M_N
6M_N082B	7-Oct-94	42	2757553	131863	PINK	1.320	-0.565	0.182	-0.077	2400	2267	90	M_N
6M_N082B	31-Oct-94	39	2954410	108486	LIGHT PEACH	1.435	-0.450	0.198	-0.061	2976	2768	90	M_N
6M_N082B	10-Nov-94	70	2966008	118902	PINK	1.397	-0.488	0.193	-0.067	3216	2980	90	M_N

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<u>TubelD</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6M_N115A	29-Jun-94	35	586941	9996		1.769	0.000	0.244	0.000	0	0	120	M_N
6M_N115A	13-Jul-94	74	1086134	11393	PEACH	1.979	0.210	0.272	0.029	336	335	120	M_N
6M_N115A	28-Jul-94	80	2606259	28675	PINK	1.959	0.190	0.269	0.026	456	445	120	M_N
6M_N115A	22-Jul-94	54	2286625	20722	SALMON	2.043	0.274	0.281	0.037	552	536	120	M_N
6M_N115A	29-Jul-94	8	1980206	18797	ORANGE	2.023	0.254	0.278	0.035	720	691	120	M_N
6M_N115A	9-Aug-94	34	2972175	68566	SALMON-ORANGE	1.637	-0.132	0.226	-0.018	984	924	120	M_N
6M_N115A	16-Aug-94	53	2972877	75644	ORANGE	1.594	-0.174	0.220	-0.024	1152	1065	120	M_N
6M_N115A	19-Aug-94	111	2944388	71063	ORANGE	1.617	-0.151	0.223	-0.021	1224	1133	120	M_N
6M_N115A	26-Aug-94	60	2855804	64132	ORANGE	1.649	-0.120	0.227	-0.016	1392	1291	120	M_N
6M_N115A	2-Sep-94	10	2839848	75472	ORANGE	1.576	-0.193	0.217	-0.026	1560	1432	120	M_N
6M_N115A	19-Sep-94	62	2953271	94575	ORANGE	1.495	-0.274	0.206	-0.037	1968	1833	120	M_N
6M_N115A	30-Sep-94	59	2631814	77159	ORANGE	1.533	-0.236	0.211	-0.032	2232	2095	120	M_N
6M_N115A	28-Oct-94	32	2948845	136491	YELLOW	1.335	-0.434	0.184	-0.059	2904	2761	120	M_N
6M_N115A	10-Nov-94	128	2947523	168462	YELLOW	1.243	-0.526	0.172	-0.072	3216	3045	120	M_N
6M_N115B	30-Jun-94	8	593983	12072		1.692	0.000	0.233	0.068	0	0	120	M_N
6M_N115B	13-Jul-94	75	1086802	9117	PEACH	2.076	0.384	0.286	0.120	312	311	120	M_N
6M_N115B	18-Jul-94	81	2602377	12049	PINK	2.334	0.642	0.321	0.156	432	421	120	M_N
6M_N115B	22-Jul-94	66	2430412	11965	SALMON	2.308	0.616	0.317	0.152	528	512	120	M_N
6M_N115B	29-Jul-94	16	1984023	10135	ORANGE	2.292	0.600	0.315	0.150	696	667	120	M_N
6M_N115B	9-Aug-94	47	2989940	32162	SALMON-ORANGE	1.968	0.276	0.271	0.106	960	900	120	M_N
6M_N115B	16-Aug-94	65	2980206	35655	ORANGE	1.922	0.230	0.264	0.099	1128	1041	120	M_N
6M_N115B	19-Aug-94	125	2938846	27230	ORANGE	2.033	0.341	0.280	0.115	1200	1109	120	M_N
6M_N115B	26-Aug-94	73	2865124	19760	ORANGE	2.161	0.469	0.297	0.132	1368	1267	120	M_N
6M_N115B	2-Sep-94	23	2865884	30291	ORANGE	1.976	0.284	0.272	0.107	1536	1408	120	M_N
6M_N115B	19-Sep-94	73	2934362	32645	ORANGE	1.954	0.262	0.269	0.104	1944	1809	120	M_N
6M_N115B	30-Sep-94	70	2618320	30563	ORANGE	1.933	0.241	0.266	0.101	2208	2071	120	M_N
6M_N115B	28-Oct-94	7	2947449	49493	ORANGE	1.775	0.083	0.244	0.079	2880	2737	120	M_N
6M_N115B	10-Nov-94	139	2922002	62525	ORANGE	1.670	-0.022	0.230	0.065	3192	3021	120	M_N
6M_N150A	29-Jun-94	23	587719	10990	ORANGE	1.728	0.000	0.238	0.000	0	0	150	M_N
6M_N150A	14-Jul-94	125	2614962	12717		2.313	0.585	0.318	0.080	360	357	150	M_N
6M_N150A	19-Jul-94	35	2568892	1278	DARK BROWN WITH COLORFUL PPT, DECOMPOSED	3.303	1.575	0.453	0.215	480	470	150	M_N
6M_N150A	20-Jul-94	0	0	0						504	489	150	M_N
6M_N150B	29-Jun-94	16	599352	10392		1.761	0.000	0.242	0.000	0	0	150	M_N
6M_N150B	14-Jul-94	126	2647296	17176	ORANGE	2.188	0.427	0.301	0.058	360	357	150	M_N
6M_N150B	19-Jul-94	27	2555141	2977	PEACH, SLIME LAYER	2.934	1.173	0.403	0.160	480	470	150	M_N
6M_N150B	21-Jul-94	22	2544252	10633	DIRTY YELLOW, SLIME, PPT, DECOMPOSED	2.379	0.618	0.327	0.084	528	511	150	M_N
6M_N150B	2-Aug-94	0	0	0						816	789	150	M_N
6M_N175A	29-Jun-94	19	598448	7278		1.915	0.000	0.263	0.000	0	0	175	M_N
6M_N175A	14-Jul-94	50	2661094	1299	DARK ORANGE	3.311	1.396	0.454	0.191	360	359	175	M_N
6M_N175A	18-Jul-94	109	2591339	1157	LIGHT TINT, BROWN SLIME LAYER DECOMPOSED	3.350	1.435	0.459	0.196	456	449	175	M_N
6M_N175A	19-Jul-94	0	0	0						480	470	175	M_N
6M_N175B	29-Jun-94	42	586788	4542		2.111	0.000	0.290	0.000	0	0	175	M_N
6M_N175B	14-Jul-94	51	2643235	1276	DARK ORANGE	3.316	1.205	0.455	0.164	360	359	175	M_N
6M_N175B	18-Jul-94	117	2585366	1040	SLT TINGE, BROWN SLIME LAYER DECOMPOSED	3.395	1.284	0.466	0.175	456	449	175	M_N
6M_N175B	19-Jul-94	0	0	0						480	470	175	M_N

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<u>TubID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6NON082C	2-Aug-94	21	1484974	89144	PINK	1.222	0.000	0.169	0.000	0	0	90	NON
6NON082C	5-Aug-94	76	3003407	225963	LIGHT PINK	1.124	-0.098	0.155	-0.013	72	67	90	NON
6NON082C	9-Aug-94	64	2947180	213526	PINK	1.140	-0.082	0.158	-0.011	168	161	90	NON
6NON082C	17-Aug-94	96	2950149	211082	PINK	1.145	-0.076	0.158	-0.010	360	349	90	NON
6NON082C	26-Aug-94	10	2833490	120365	PINK	1.372	0.150	0.189	0.021	576	559	90	NON
6NON082C	2-Sep-94	121	2844514	124145	LIGHT PINK	1.360	0.138	0.188	0.019	744	720	90	NON
6NON082C	21-Sep-94	22	2976655	155668	PINK	1.282	0.060	0.177	0.008	1200	1122	90	NON
6NON082C	7-Oct-94	28	2746468	171683	PINK	1.204	-0.018	0.166	-0.002	1584	1478	90	NON
6NON082C	31-Oct-94	26	2969244	127054	PINK	1.369	0.147	0.189	0.020	2160	1978	90	NON
6NON082C	10-Nov-94	58	2941380	132273	PINK	1.347	0.125	0.186	0.017	2400	2191	90	NON
6NON082D	2-Aug-94	16	1487347	54877	PINK	1.433	0.000	0.198	0.000	0	0	90	NON
6NON082D	9-Aug-94	65	2969988	137689	PINK	1.334	-0.099	0.184	-0.014	168	161	90	NON
6NON082D	17-Aug-94	110	2936823	157284	PINK	1.271	-0.162	0.176	-0.022	360	349	90	NON
6NON082D	26-Aug-94	5	2841574	96551	PINK	1.469	0.036	0.203	0.005	576	559	90	NON
6NON082D	2-Sep-94	106	2851516	94784	PINK	1.478	0.045	0.204	0.006	744	720	90	NON
6NON082D	21-Sep-94	36	2981682	116133	PINK	1.410	-0.024	0.194	-0.003	1200	1122	90	NON
6NON082D	7-Oct-94	43	2761363	157768	PINK	1.243	-0.190	0.172	-0.026	1584	1478	90	NON
6NON082D	31-Oct-94	40	2978754	103972	PINK	1.457	0.024	0.201	0.003	2160	1978	90	NON
6NON082D	10-Nov-94	71	2964914	118592	PINK	1.398	-0.035	0.193	-0.005	2400	2191	90	NON
6NON115C	2-Aug-94	38	1489097	77531	PINK	1.283	0.000	0.177	0.000	0	0	120	NON
6NON115C	9-Aug-94	35	2984896	180205	PINK	1.219	-0.064	0.169	-0.009	168	142	120	NON
6NON115C	16-Aug-94	55	2971511	130475	PINK	1.357	0.074	0.187	0.010	336	283	120	NON
6NON115C	19-Aug-94	113	2944262	147310	PINK	1.301	0.017	0.180	0.002	408	351	120	NON
6NON115C	26-Aug-94	62	2868221	81049	PINK	1.549	0.265	0.214	0.036	576	509	120	NON
6NON115C	2-Sep-94	11	2859075	85352	PINK	1.525	0.242	0.210	0.033	744	650	120	NON
6NON115C	19-Sep-94	63	2929067	91539	PINK	1.505	0.222	0.208	0.030	1152	1051	120	NON
6NON115C	30-Sep-94	60	2646268	64667	PINK	1.612	0.329	0.222	0.045	1416	1313	120	NON
6NON115C	28-Oct-94	33	2972437	73995	PINK	1.604	0.320	0.221	0.044	2088	1979	120	NON
6NON115C	10-Nov-94	129	2951279	101741	PINK	1.463	0.179	0.202	0.024	2400	2263	120	NON
6NON115D	2-Aug-94	43	1495138	105016	PINK	1.153	0.000	0.160	0.000	0	0	120	NON
6NON115D	9-Aug-94	48	2968689	248482	PINK	1.077	-0.076	0.149	-0.010	168	142	120	NON
6NON115D	16-Aug-94	67	2958901	218611	PINK	1.131	-0.022	0.157	-0.003	336	283	120	NON
6NON115D	19-Aug-94	126	2930088	183141	PINK	1.204	0.051	0.166	0.007	408	351	120	NON
6NON115D	26-Aug-94	75	2856530	108639	PINK	1.420	0.266	0.196	0.036	576	509	120	NON
6NON115D	2-Sep-94	24	2859700	110148	PINK	1.414	0.261	0.195	0.036	744	650	120	NON
6NON115D	19-Sep-94	74	2947467	119008	PINK	1.394	0.240	0.192	0.033	1152	1051	120	NON
6NON115D	30-Sep-94	71	2637109	88584	PINK	1.474	0.320	0.203	0.044	1416	1313	120	NON
6NON115D	28-Oct-94	8	2947241	95885	PINK	1.488	0.334	0.205	0.046	2088	1979	120	NON
6NON115D	10-Nov-94	140	2950983	108445	PINK	1.435	0.281	0.198	0.038	2400	2263	120	NON
6NON150C	3-Aug-94	13	3035175	184049	PINK	1.217	0.000	0.168	0.000	0	0	150	NON
6NON150C	5-Aug-94	204	2956461	89034	PINK	1.521	0.304	0.210	0.041	48	46	150	NON
6NON150C	15-Aug-94	63	2963063	44665	PINK	1.822	0.605	0.251	0.083	288	272	150	NON
6NON150C	19-Aug-94	41	2956252	38897	PINK	1.881	0.664	0.259	0.091	384	364	150	NON
6NON150C	25-Aug-94	75	2980172	33448	PINK	1.950	0.733	0.268	0.100	528	504	150	NON
6NON150C	31-Aug-94	73	2887336	18108	PINK	2.203	0.985	0.303	0.135	672	646	150	NON

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TubelD	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6NON150C	16-Sep-94	25	2940110	13788	PINK	2.329	1.112	0.320	0.152	1056	1027	150	NON
6NON150C	28-Sep-94	38	2593325	11313	PINK	2.360	1.143	0.324	0.156	1344	1310	150	NON
6NON150C	27-Oct-94	54	3010820	7978	PINK	2.577	1.360	0.354	0.186	2040	2002	150	NON
6NON150C	9-Nov-94	56	2964918	7956	PINK	2.571	1.354	0.353	0.185	2352	2310	150	NON
6NON150D	3-Aug-94	18	3000103	136848	PINK	1.341	0.000	0.185	0.000	0	0	150	NON
6NON150D	5-Aug-94	211	2979707	55453	PINK	1.730	0.389	0.238	0.053	48	46	150	NON
6NON150D	15-Aug-94	70	2961599	36247	PINK	1.912	0.571	0.263	0.078	288	272	150	NON
6NON150D	19-Aug-94	48	2928382	32814	PINK	1.951	0.610	0.268	0.083	384	364	150	NON
6NON150D	25-Aug-94	82	2970706	23033	PINK	2.111	0.770	0.290	0.105	528	504	150	NON
6NON150D	31-Aug-94	80	2874010	13717	PINK	2.321	0.980	0.319	0.134	672	646	150	NON
6NON150D	16-Sep-94	48	2963090	12641	PINK	2.370	1.029	0.326	0.140	1056	1027	150	NON
6NON150D	28-Sep-94	45	2576135	8455	PINK	2.484	1.143	0.341	0.156	1344	1310	150	NON
6NON150D	27-Oct-94	76	2961187	7830	PURPLE	2.578	1.237	0.354	0.169	2040	2002	150	NON
6NON150D	9-Nov-94	79	2953555	7934	DARK PINK	2.571	1.230	0.353	0.168	2352	2310	150	NON
6NON175C	3-Aug-94	54	2986451	157802	PINK	1.277	0.000	0.176	0.000	0	0	175	NON
6NON175C	5-Aug-94	126	2971936	14958	MAGENTA	2.298	1.021	0.316	0.139	48	46	175	NON
6NON175C	11-Aug-94	106	3004228	5254	MAGENTA	2.757	1.480	0.378	0.202	192	185	175	NON
6NON175C	16-Aug-94	108	2952238	5106	PURPLE	2.762	1.485	0.379	0.203	312	300	175	NON
6NON175C	18-Aug-94	15	2922124	4644	PURPLE	2.799	1.522	0.384	0.208	360	344	175	NON
6NON175C	25-Aug-94	24	2982713	3692	PURPLE	2.907	1.630	0.399	0.223	528	509	175	NON
6NON175C	31-Aug-94	23	2891530	5232	PURPLE	2.742	1.465	0.376	0.200	672	645	175	NON
6NON175C	16-Sep-94	16	2993169	3522	PURPLE	2.929	1.652	0.402	0.226	1056	1027	175	NON
6NON175C	26-Sep-94	23	2619522	3808	PURPLE	2.838	1.560	0.389	0.213	1296	1265	175	NON
6NON175C	27-Oct-94	16	3022697	2220	PURPLE	3.134	1.857	0.430	0.253	2040	2005	175	NON
6NON175C	9-Nov-94	16	2961759	2034	PURPLE	3.163	1.886	0.434	0.257	2352	2314	175	NON
6NON175D	3-Aug-94	60	2988404	293313	PINK	1.008	0.000	0.140	0.000	0	0	175	NON
6NON175D	5-Aug-94	198	2979783	115202	PINK, WRONG OVEN (150)	1.413	0.405	0.195	0.055	48	46	175	NON
6NON175D	11-Aug-94	113	2979198	17921	MAGENTA	2.221	1.213	0.305	0.166	192	185	175	NON
6NON175D	16-Aug-94	115	2963095	12750	PURPLE	2.366	1.358	0.325	0.185	312	300	175	NON
6NON175D	18-Aug-94	30	2915498	10854	PURPLE	2.429	1.421	0.334	0.194	360	344	175	NON
6NON175D	25-Aug-94	31	2966775	10821	HOT PINK	2.438	1.430	0.335	0.195	528	509	175	NON
6NON175D	31-Aug-94	31	2893938	7914	HOT PINK	2.563	1.555	0.352	0.212	672	645	175	NON
6NON175D	16-Sep-94	31	2983816	6871	PURPLE	2.638	1.630	0.362	0.222	1056	1027	175	NON
6NON175D	26-Sep-94	30	2643306	5148	PURPLE	2.711	1.702	0.372	0.232	1296	1265	175	NON
6NON175D	27-Oct-94	31	3014340	4441	PURPLE	2.832	1.824	0.389	0.249	2040	2005	175	NON
6NON175D	9-Nov-94	31	2977984	4601	PURPLE	2.811	1.803	0.386	0.246	2352	2314	175	NON
6RML025A	1-Jul-94	2	592642	36792		1.207	0.000	0.167	0.000	0	0	25	RML
6RML025A	7-Jul-94	127	1089506	51800		1.323	0.116	0.183	0.016	144	144	25	RML
6RML025A	14-Jul-94	58	2640386	125868	PINK	1.322	0.115	0.183	0.016	312	312	25	RML
6RML025A	21-Jul-94	9	2561789	110463	PINK	1.365	0.158	0.188	0.022	480	480	25	RML
6RML025A	28-Jul-94	9	2014385	75916	PINK	1.424	0.217	0.196	0.030	648	648	25	RML
6RML025A	9-Aug-94	75	2955810	214994	PINK	1.138	-0.069	0.157	-0.009	936	936	25	RML
6RML025A	16-Aug-94	127	2942784	209724	PINK	1.147	-0.060	0.159	-0.008	1104	1104	25	RML
6RML025A	26-Aug-94	6	2826598	148961	PINK	1.278	0.071	0.177	0.010	1344	1344	25	RML
6RML025A	2-Sep-94	134	2852926	152516	PINK	1.272	0.065	0.176	0.009	1512	1512	25	RML

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6RML025A	7-Oct-94	51	2731362	202771	PINK	1.129	-0.078	0.156	-0.011	2352	2352	25	RML
6RML025A	4-Nov-94	7	2942843	163567	PINK	1.255	0.048	0.173	0.007	3024	3024	25	RML
6RML025A	10-Nov-94	148	2940006	155217	PINK	1.277	0.070	0.176	0.010	3168	3168	25	RML
6SIL082A	2-Aug-94	22	1487195	92826	WATER WHITE	1.205	0.000	0.167	0.000	0	0	90	SIL
6SIL082A	5-Aug-94	77	2981778	359911	WATER WHITE	0.918	-0.286	0.127	-0.039	72	67	90	SIL
6SIL082A	9-Aug-94	66	2977873	376987	WATER WHITE	0.898	-0.307	0.125	-0.042	168	161	90	SIL
6SIL082A	17-Aug-94	97	2919558	413123	WATER WHITE	0.849	-0.355	0.118	-0.049	360	349	90	SIL
6SIL082A	26-Aug-94	11	2825684	246500	WATER WHITE	1.059	-0.145	0.147	-0.020	576	559	90	SIL
6SIL082A	2-Sep-94	122	2870968	280476	WATER WHITE	1.010	-0.195	0.140	-0.027	744	720	90	SIL
6SIL082A	21-Sep-94	23	2971473	325715	WATER WHITE	0.960	-0.245	0.133	-0.033	1200	1122	90	SIL
6SIL082A	7-Oct-94	29	2753218	417931	WATER WHITE	0.819	-0.386	0.114	-0.053	1584	1478	90	SIL
6SIL082A	31-Oct-94	27	2964429	312727	WATER WHITE	0.977	-0.228	0.135	-0.031	2160	1978	90	SIL
6SIL082A	10-Nov-94	59	2938428	343765	WATER WHITE	0.932	-0.273	0.129	-0.037	2400	2191	90	SIL
6SIL082B	2-Aug-94	17	1493652	153341	WATER WHITE	0.989	0.000	0.137	0.000	0	0	90	SIL
6SIL082B	9-Aug-94	67	2973486	346111	WATER WHITE	0.934	-0.055	0.130	-0.007	168	161	90	SIL
6SIL082B	17-Aug-94	111	2956789	381090	WATER WHITE	0.890	-0.099	0.124	-0.013	360	349	90	SIL
6SIL082B	26-Aug-94	6	2817869	304814	WATER WHITE	0.966	-0.023	0.134	-0.003	576	559	90	SIL
6SIL082B	2-Sep-94	107	2873203	247002	WATER WHITE	1.066	0.077	0.148	0.011	744	720	90	SIL
6SIL082B	21-Sep-94	37	2949907	347496	WATER WHITE	0.929	-0.060	0.129	-0.008	1200	1122	90	SIL
6SIL082B	7-Oct-94	44	2761651	464612	WATER WHITE	0.774	-0.215	0.108	-0.029	1584	1478	90	SIL
6SIL082B	31-Oct-94	41	2958237	352368	WATER WHITE	0.924	-0.065	0.128	-0.009	2160	1978	90	SIL
6SIL082B	10-Nov-94	72	2945258	358013	WATER WHITE	0.915	-0.073	0.127	-0.010	2400	2191	90	SIL
6SIL115A	2-Aug-94	39	1497645	110532	WATER WHITE	1.132	0.000	0.157	0.000	0	0	120	SIL
6SIL115A	9-Aug-94	36	2962991	399942	WATER WHITE	0.870	-0.262	0.121	-0.036	168	142	120	SIL
6SIL115A	16-Aug-94	56	2970171	395709	WATER WHITE	0.875	-0.257	0.122	-0.035	336	283	120	SIL
6SIL115A	19-Aug-94	114	2957255	408055	WATER WHITE	0.860	-0.272	0.120	-0.037	408	351	120	SIL
6SIL115A	26-Aug-94	63	2850036	276838	WATER WHITE	1.013	-0.119	0.140	-0.016	576	509	120	SIL
6SIL115A	2-Sep-94	12	2839310	284735	WATER WHITE	0.999	-0.133	0.138	-0.018	744	650	120	SIL
6SIL115A	19-Sep-94	64	2927571	342344	WATER WHITE	0.932	-0.200	0.129	-0.027	1152	1051	120	SIL
6SIL115A	30-Sep-94	61	2632707	265745	WATER WHITE	0.996	-0.136	0.138	-0.019	1416	1313	120	SIL
6SIL115A	28-Oct-94	34	2948990	310140	WATER WHITE	0.978	-0.154	0.136	-0.021	2088	1979	120	SIL
6SIL115A	10-Nov-94	130	2944995	353381	WATER WHITE	0.921	-0.211	0.128	-0.029	2400	2263	120	SIL
6SIL115B	2-Aug-94	44	1486964	71297	WATER WHITE	1.319	0.000	0.182	0.000	0	0	120	SIL
6SIL115B	9-Aug-94	49	2983944	244178	WATER WHITE	1.087	-0.232	0.150	-0.032	168	142	120	SIL
6SIL115B	16-Aug-94	68	2950468	239267	WATER WHITE	1.091	-0.228	0.151	-0.031	336	283	120	SIL
6SIL115B	19-Aug-94	127	2952901	228719	WATER WHITE	1.111	-0.208	0.154	-0.028	408	351	120	SIL
6SIL115B	26-Aug-94	76	2850935	133497	WATER WHITE	1.330	0.010	0.184	0.001	576	509	120	SIL
6SIL115B	2-Sep-94	25	2869852	142274	WATER WHITE	1.305	-0.014	0.180	-0.002	744	650	120	SIL
6SIL115B	19-Sep-94	75	2940320	174189	WATER WHITE	1.227	-0.092	0.170	-0.013	1152	1051	120	SIL
6SIL115B	30-Sep-94	72	2641758	141160	WATER WHITE	1.272	-0.047	0.176	-0.006	1416	1313	120	SIL
6SIL115B	28-Oct-94	9	2958099	180820	WATER WHITE	1.214	-0.105	0.168	-0.014	2088	1979	120	SIL
6SIL115B	10-Nov-94	141	2947013	165190	WATER WHITE	1.251	-0.068	0.173	-0.009	2400	2263	120	SIL
6SIL150A	3-Aug-94	14	3028407	378741	WATER WHITE	0.903	0.000	0.125	0.000	0	0	150	SIL
6SIL150A	5-Aug-94	205	2971125	385179	WATER WHITE	0.887	-0.016	0.123	-0.002	48	46	150	SIL
6SIL150A	15-Aug-94	64	2965806	394512	WATER WHITE	0.876	-0.027	0.122	-0.004	288	272	150	SIL

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TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6SIL150A	19-Aug-94	42	2958145	410794	WATER WHITE	0.857	-0.045	0.119	-0.006	384	364	150	SIL
6SIL150A	25-Aug-94	76	2971352	378876	WATER WHITE	0.894	-0.008	0.124	-0.001	528	504	150	SIL
6SIL150A	31-Aug-94	74	2883982	298570	WATER WHITE	0.985	0.082	0.137	0.011	672	646	150	SIL
6SIL150A	16-Sep-94	26	2953481	357567	WATER WHITE	0.917	0.014	0.127	0.002	1056	1027	150	SIL
6SIL150A	28-Sep-94	39	2575401	279292	WATER WHITE	0.965	0.062	0.134	0.008	1344	1310	150	SIL
6SIL150A	27-Oct-94	55	2999686	310221	WATER WHITE	0.985	0.083	0.137	0.011	2040	2002	150	SIL
6SIL150A	9-Nov-94	57	2959439	342254	WATER WHITE	0.937	0.034	0.130	0.005	2352	2310	150	SIL
6SIL150B	3-Aug-94	19	3005422	293362	WATER WHITE	1.011	0.000	0.140	0.000	0	0	150	SIL
6SIL150B	5-Aug-94	212	2990739	244460	PINK TINT	1.088	0.077	0.151	0.011	48	46	150	SIL
6SIL150B	15-Aug-94	71	2955380	310439	WATER WHITE	0.979	-0.032	0.136	-0.004	288	272	150	SIL
6SIL150B	19-Aug-94	49	2956891	326083	WATER WHITE	0.958	-0.053	0.133	-0.007	384	364	150	SIL
6SIL150B	25-Aug-94	83	2960511	349512	WATER WHITE	0.928	-0.083	0.129	-0.011	528	504	150	SIL
6SIL150B	31-Aug-94	81	2889167	233598	WATER WHITE	1.092	0.082	0.151	0.011	672	646	150	SIL
6SIL150B	16-Sep-94	49	2962227	270079	WATER WHITE	1.040	0.030	0.144	0.004	1056	1027	150	SIL
6SIL150B	28-Sep-94	46	2576876	210329	WATER WHITE	1.088	0.078	0.151	0.011	1344	1310	150	SIL
6SIL150B	27-Oct-94	77	2956894	240490	WATER WHITE	1.090	0.079	0.151	0.011	2040	2002	150	SIL
6SIL150B	9-Nov-94	80	2974069	301649	WATER WHITE	0.994	-0.017	0.138	-0.002	2352	2310	150	SIL
6SIL175A	3-Aug-94	55	2987822	261982	WATER WHITE	1.057	0.000	0.146	0.000	0	0	175	SIL
6SIL175A	5-Aug-94	127	2979896	270892	PINK TINGE	1.041	-0.016	0.144	-0.002	48	46	175	SIL
6SIL175A	11-Aug-94	107	2974340	201833	VERY SLT PINK TINGE	1.168	0.111	0.162	0.015	192	185	175	SIL
6SIL175A	16-Aug-94	109	2961179	305748	WATER WHITE	0.986	-0.071	0.137	-0.010	312	300	175	SIL
6SIL175A	18-Aug-94	16	2941882	242212	VERY LIGHT PINK TINGE	1.084	0.027	0.150	0.004	360	344	175	SIL
6SIL175A	25-Aug-94	25	2984565	248417	WATER WHITE	1.080	0.023	0.149	0.003	528	509	175	SIL
6SIL175A	31-Aug-94	24	2910879	174800	WATER WHITE	1.221	0.164	0.169	0.022	672	645	175	SIL
6SIL175A	16-Sep-94	17	2967840	266022	WATER WHITE	1.048	-0.010	0.145	-0.001	1056	1027	175	SIL
6SIL175A	26-Sep-94	24	2641843	179412	WATER WHITE	1.168	0.111	0.162	0.015	1296	1265	175	SIL
6SIL175A	27-Oct-94	17	3022461	246678	WATER WHITE	1.088	0.031	0.151	0.004	2040	2005	175	SIL
6SIL175A	9-Nov-94	17	2966707	280591	WATER WHITE	1.024	-0.033	0.142	-0.004	2352	2314	175	SIL
6SIL175B	3-Aug-94	61	2979469	324582	WATER WHITE	0.963	0.000	0.134	0.000	0	0	175	SIL
6SIL175B	5-Aug-94	134	2984394	209757	PINK TINGE	1.153	0.190	0.160	0.026	48	46	175	SIL
6SIL175B	11-Aug-94	114	2983656	205769	LIGHT PINK TINGE	1.161	0.199	0.161	0.027	192	185	175	SIL
6SIL175B	16-Aug-94	116	2948101	294744	WATER WHITE	1.000	0.037	0.139	0.005	312	300	175	SIL
6SIL175B	18-Aug-94	31	2939231	281242	WATER WHITE	1.019	0.056	0.141	0.008	360	344	175	SIL
6SIL175B	25-Aug-94	32	2970720	303872	WATER WHITE	0.990	0.027	0.137	0.004	528	509	175	SIL
6SIL175B	31-Aug-94	32	2892758	192259	WATER WHITE	1.177	0.215	0.163	0.029	672	645	175	SIL
6SIL175B	16-Sep-94	32	2985848	241150	WATER WHITE	1.093	0.130	0.151	0.018	1056	1027	175	SIL
6SIL175B	26-Sep-94	31	2639415	199767	WATER WHITE	1.121	0.158	0.155	0.022	1296	1265	175	SIL
6SIL175B	27-Oct-94	32	3024179	237165	WATER WHITE	1.106	0.143	0.153	0.019	2040	2005	175	SIL
6SIL175B	9-Nov-94	32	2993179	276227	WATER WHITE	1.035	0.072	0.143	0.010	2352	2314	175	SIL
6SUN025A	30-Jun-94	30	593894	25182	PINK	1.373	0.000	0.189	0.000	0	0	25	SUN
6SUN025A	7-Jul-94	125	1096772	39714	PINK	1.441	0.069	0.199	0.009	168	168	25	SUN
6SUN025A	14-Jul-94	67	2649841	80430	PINK	1.518	0.145	0.209	0.020	336	336	25	SUN
6SUN025A	21-Jul-94	3	2554566	63141	LAVEREND-PINK	1.607	0.234	0.221	0.032	504	504	25	SUN
6SUN025A	28-Jul-94	4	2007942	39396	PINK	1.707	0.335	0.235	0.046	672	672	25	SUN
6SUN025A	9-Aug-94	79	2942450	88058	PINK	1.524	0.151	0.210	0.021	960	960	25	SUN

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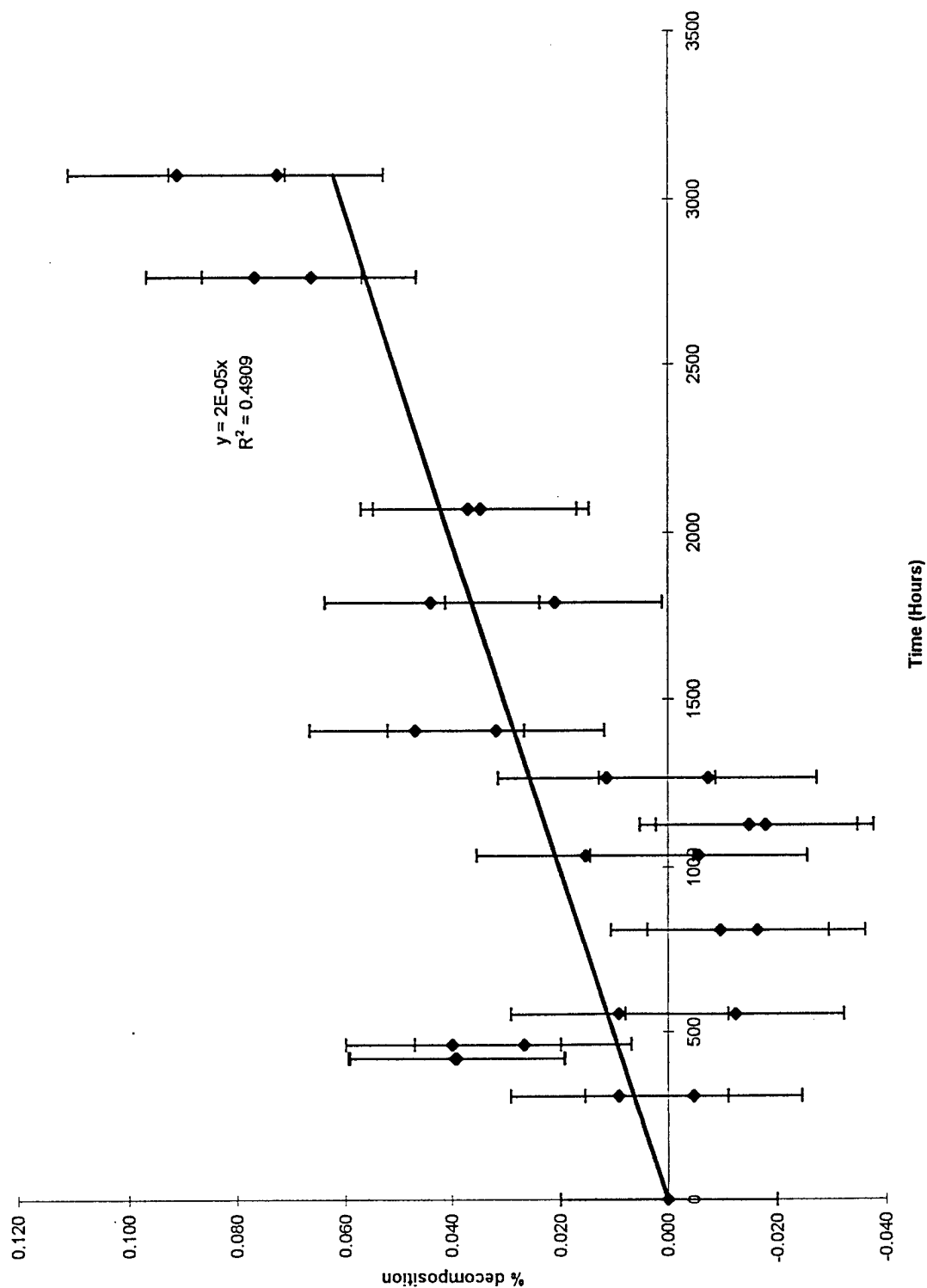
TubeID	Date	Index	Reference	Sample	Comments	Abs.	ΔAbs.	%Dec	Δ%Dec	Raw Hrs	Hours	Temp	Additive
6SUN025A	16-Aug-94	129	2974090	97197	PINK	1.486	0.113	0.205	0.015	1128	1128	25	SUN
6SUN025A	17-Aug-94	0	0	0	EXPLODED	1152				1152	1152	25	SUN
6WAT082A	2-Aug-94	23	1484578	96295	PINK	1.188	0.000	0.164	0.000	0	0	90	WAT
6WAT082A	9-Aug-94	68	2960734	305413	PINK	0.987	-0.201	0.137	-0.028	168	161	90	WAT
6WAT082A	17-Aug-94	98	2931370	330585	VERY VERY SLT PINK TINGE	0.948	-0.240	0.131	-0.033	360	349	90	WAT
6WAT082A	26-Aug-94	12	2847966	236825	WATER WHITE	1.080	-0.108	0.150	-0.015	576	559	90	WAT
6WAT082A	2-Sep-94	123	2860138	233524	WATER WHITE	1.088	-0.100	0.151	-0.014	744	720	90	WAT
6WAT082A	21-Sep-94	24	2969580	325906	WATER WHITE	0.960	-0.228	0.133	-0.031	1200	1122	90	WAT
6WAT082A	7-Oct-94	30	2738626	358581	WATER WHITE	0.883	-0.305	0.123	-0.042	1584	1478	90	WAT
6WAT082A	31-Oct-94	28	2967226	309873	WATER WHITE	0.981	-0.207	0.136	-0.028	2160	1978	90	WAT
6WAT082A	10-Nov-94	60	2934331	327825	WATER WHITE	0.952	-0.236	0.132	-0.032	2400	2191	90	WAT
6WAT082B	2-Aug-94	18	1495318	82244	PINK	1.260	0.000	0.174	0.000	0	0	90	WAT
6WAT082B	5-Aug-94	78	2990466	264193	SLT PINK	1.054	-0.206	0.146	-0.028	72	67	90	WAT
6WAT082B	9-Aug-94	69	2951510	311918	PINK TINT	0.976	-0.284	0.135	-0.039	168	161	90	WAT
6WAT082B	17-Aug-94	112	2949856	236519	WATER WHITE	1.096	-0.164	0.152	-0.022	360	349	90	WAT
6WAT082B	26-Aug-94	7	2830083	205030	WATER WHITE	1.140	-0.120	0.158	-0.016	576	559	90	WAT
6WAT082B	2-Sep-94	108	2848619	227139	WATER WHITE	1.098	-0.161	0.152	-0.022	744	720	90	WAT
6WAT082B	21-Sep-94	38	2951007	232167	WATER WHITE	1.104	-0.155	0.153	-0.021	1200	1122	90	WAT
6WAT082B	7-Oct-94	45	2732469	387384	WATER WHITE	0.848	-0.411	0.118	-0.056	1584	1478	90	WAT
6WAT082B	31-Oct-94	42	2959060	243377	WATER WHITE	1.085	-0.175	0.150	-0.024	2160	1978	90	WAT
6WAT082B	10-Nov-94	73	2965956	302290	WATER WHITE	0.992	-0.268	0.137	-0.037	2400	2191	90	WAT
6WAT115A	2-Aug-94	40	1484823	85515	PINK	1.240	0.000	0.171	0.000	0	0	120	WAT
6WAT115A	9-Aug-94	37	2975368	373353	WATER WHITE	0.901	-0.338	0.125	-0.046	168	142	120	WAT
6WAT115A	16-Aug-94	57	2975906	386859	WATER WHITE	0.886	-0.354	0.123	-0.048	336	283	120	WAT
6WAT115A	19-Aug-94	115	2939978	345296	WATER WHITE	0.930	-0.309	0.129	-0.042	408	351	120	WAT
6WAT115A	26-Aug-94	64	2876361	233478	WATER WHITE	1.091	-0.149	0.151	-0.020	576	509	120	WAT
6WAT115A	2-Sep-94	13	2841723	253445	WATER WHITE	1.050	-0.190	0.145	-0.026	744	650	120	WAT
6WAT115A	19-Sep-94	65	2957707	271515	WATER WHITE	1.037	-0.202	0.144	-0.028	1152	1051	120	WAT
6WAT115A	30-Sep-94	62	2648528	218866	WATER WHITE	1.083	-0.157	0.150	-0.021	1416	1313	120	WAT
6WAT115A	28-Oct-94	35	2969301	241886	WATER WHITE	1.089	-0.151	0.151	-0.021	2088	1979	120	WAT
6WAT115A	10-Nov-94	131	2950641	290200	WATER WHITE	1.007	-0.232	0.140	-0.032	2400	2263	120	WAT
6WAT115B	2-Aug-94	45	1484677	82599	PINK	1.255	0.000	0.173	0.000	0	0	120	WAT
6WAT115B	9-Aug-94	50	2946447	270287	WATER WHITE, SLT PINK TINGE	1.037	-0.217	0.144	-0.030	168	142	120	WAT
6WAT115B	16-Aug-94	69	2975200	314269	WATER WHITE	0.976	-0.278	0.135	-0.038	336	283	120	WAT
6WAT115B	19-Aug-94	128	2940024	252045	LIGHT PINK	1.067	-0.188	0.148	-0.026	408	351	120	WAT
6WAT115B	26-Aug-94	77	2860257	174544	LIGHT PINK TINGE	1.215	-0.040	0.168	-0.005	576	509	120	WAT
6WAT115B	2-Sep-94	26	2863446	209954	LIGHT PINK TINGE	1.135	-0.120	0.157	-0.016	744	650	120	WAT
6WAT115B	19-Sep-94	76	2927581	220579	WATER WHITE	1.123	-0.132	0.155	-0.018	1152	1051	120	WAT
6WAT115B	30-Sep-94	73	2637140	179762	WATER WHITE	1.166	-0.088	0.161	-0.012	1416	1313	120	WAT
6WAT115B	28-Oct-94	10	2965265	208283	WATER WHITE	1.153	-0.101	0.160	-0.014	2088	1979	120	WAT
6WAT115B	10-Nov-94	142	2952727	230388	WATER WHITE	1.108	-0.147	0.153	-0.020	2400	2263	120	WAT
6WAT150A	3-Aug-94	15	3020996	92853	PINK	1.512	0.000	0.209	0.000	0	0	150	WAT
6WAT150A	5-Aug-94	206	2975599	121868	WATER WHITE	1.388	-0.125	0.192	-0.017	48	46	150	WAT
6WAT150A	15-Aug-94	65	2945338	94851	SLT PINK TINGE	1.493	-0.019	0.206	-0.003	288	272	150	WAT
6WAT150A	19-Aug-94	43	2952138	88661	LIGHT PINK	1.522	0.010	0.210	0.001	384	364	150	WAT

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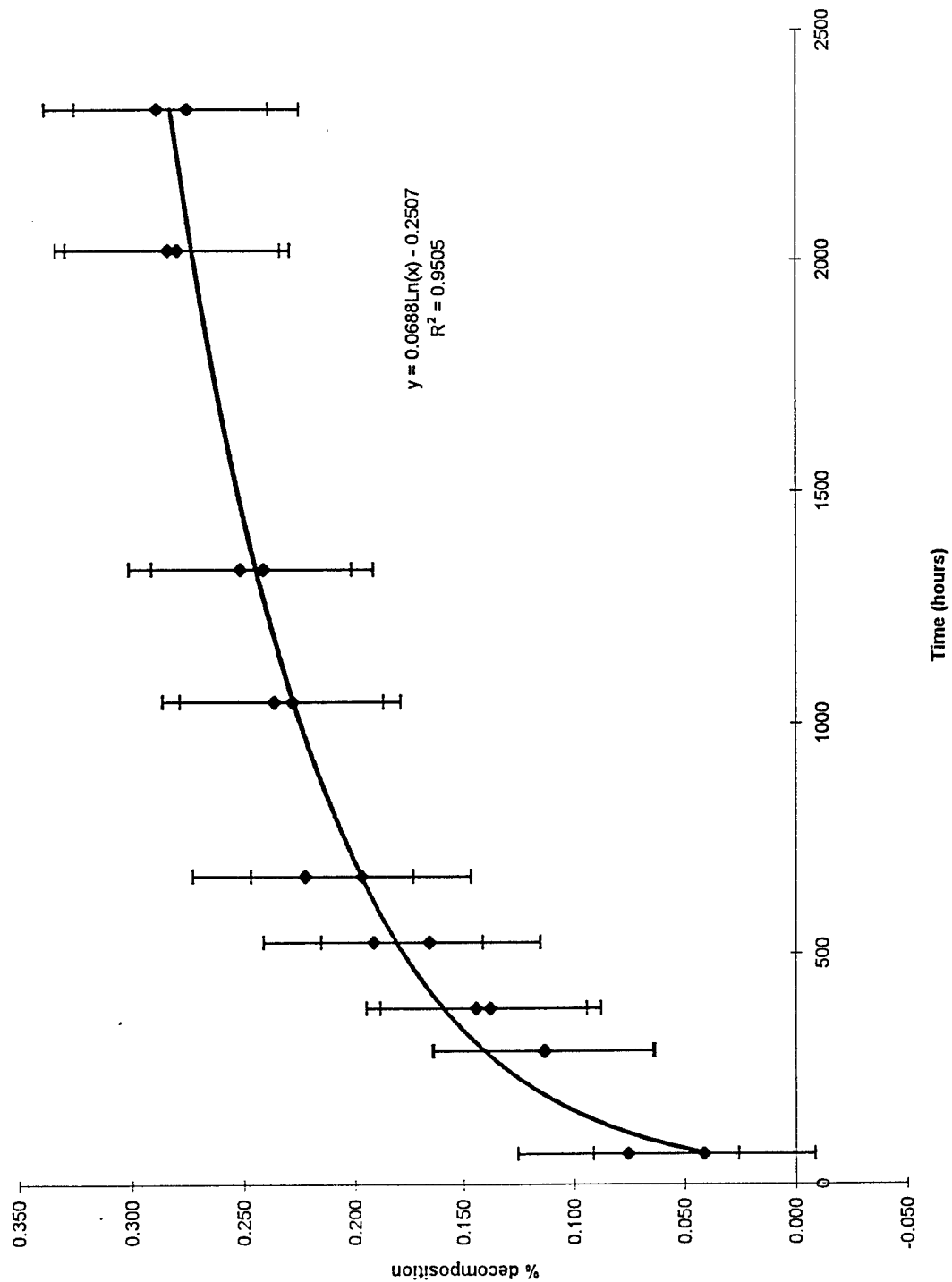
<u>TubeID</u>	<u>Date</u>	<u>Index</u>	<u>Reference</u>	<u>Sample</u>	<u>Comments</u>	<u>Abs.</u>	<u>ΔAbs.</u>	<u>%Dec</u>	<u>Δ%Dec</u>	<u>Raw Hrs</u>	<u>Hours</u>	<u>Temp</u>	<u>Additive</u>
6WAT150A	25-Aug-94	77	2952326	68030	SALMON, YELLOW WATER PPT.	1.637	0.125	0.226	0.017	528	504	150	WAT
6WAT150A	31-Aug-94	75	2864170	44007	LIGHT PINK, YELLOW TINT	1.813	0.301	0.250	0.041	672	646	150	WAT
6WAT150A	16-Sep-94	27	2944056	17809	SALMON, YELLOW SLIME	2.218	0.706	0.305	0.096	1056	1027	150	WAT
6WAT150A	28-Sep-94	40	2596732	13984	SALMON, YELLOW SLIME	2.269	0.756	0.312	0.103	1344	1310	150	WAT
6WAT150A	27-Oct-94	56	3002846	6884	SALMON, YELLOW SLIME	2.640	1.127	0.362	0.154	2040	2002	150	WAT
6WAT150A	9-Nov-94	58	2946975	7194	SALMON, YELLOW SLIME	2.612	1.100	0.359	0.150	2352	2310	150	WAT
6WAT150B	3-Aug-94	20	3024692	101449	PINK	1.474	0.000	0.203	0.000	0	0	150	WAT
6WAT150B	5-Aug-94	213	2975707	65882	PINK, WATER YELLOW, LEFT OUT UNTIL 8/8/94	1.655	0.180	0.228	0.025	48	46	150	WAT
6WAT150B	15-Aug-94	72	2952223	38377	PINK, YELLOW SLIME	1.886	0.412	0.260	0.056	288	272	150	WAT
6WAT150B	19-Aug-94	50	2944572	15195	PINK	2.287	0.813	0.314	0.111	384	364	150	WAT
6WAT150B	25-Aug-94	84	2966357	10127	PINK	2.467	0.992	0.339	0.135	528	504	150	WAT
6WAT150B	31-Aug-94	82	2888788	7274	HOT PINK	2.599	1.125	0.357	0.153	672	646	150	WAT
6WAT150B	16-Sep-94	50	2941901	6171	DARK PINK	2.678	1.204	0.368	0.164	1056	1027	150	WAT
6WAT150B	28-Sep-94	47	2593205	4457	PINK	2.765	1.290	0.379	0.176	1344	1310	150	WAT
6WAT150B	27-Oct-94	78	2963718	4522	PURPLE, ORANGE SLIME	2.817	1.342	0.387	0.183	2040	2002	150	WAT
6WAT150B	9-Nov-94	81	2961117	4895	DARK PINK	2.782	1.307	0.382	0.178	2352	2310	150	WAT
6WAT175B	3-Aug-94	62	2999908	80975	PINK	1.569	0.000	0.216	0.000	0	0	175	WAT
6WAT175B	5-Aug-94	135	2985772	4373	MAGENTA	2.834	1.266	0.389	0.173	48	46	175	WAT
6WAT175B	11-Aug-94	115	3003193	2910	MAGENTA	3.014	1.445	0.413	0.197	192	185	175	WAT
6WAT175B	16-Aug-94	117	2974612	2869	PURPLE	3.016	1.447	0.414	0.198	312	300	175	WAT
6WAT175B	18-Aug-94	32	2932769	2804	PURPLE	3.019	1.451	0.414	0.198	360	344	175	WAT
6WAT175B	25-Aug-94	34	2969816	2933	NEON PURPLE, NEEDLE PPT. FORMING	3.005	1.437	0.412	0.196	528	509	175	WAT
6WAT175B	31-Aug-94	33	2887121	3054	PURPLE	2.976	1.407	0.408	0.192	672	645	175	WAT
6WAT175B	16-Sep-94	33	2966090	3117	PURPLE	2.978	1.410	0.409	0.192	1056	1027	175	WAT
6WAT175B	26-Sep-94	32	2642357	2286	PURPLE	3.063	1.494	0.420	0.204	1296	1265	175	WAT
6WAT175B	27-Oct-94	33	3009219	2468	PURPLE	3.086	1.517	0.423	0.207	2040	2005	175	WAT
6WAT175B	9-Nov-94	33	2967090	2496	DARK PURPLE	3.075	1.506	0.422	0.206	2352	2314	175	WAT

APPENDIX F:
GRAPHS OF PERCENT DECOMPOSITION
VS. TIME OR TEMPERATURE

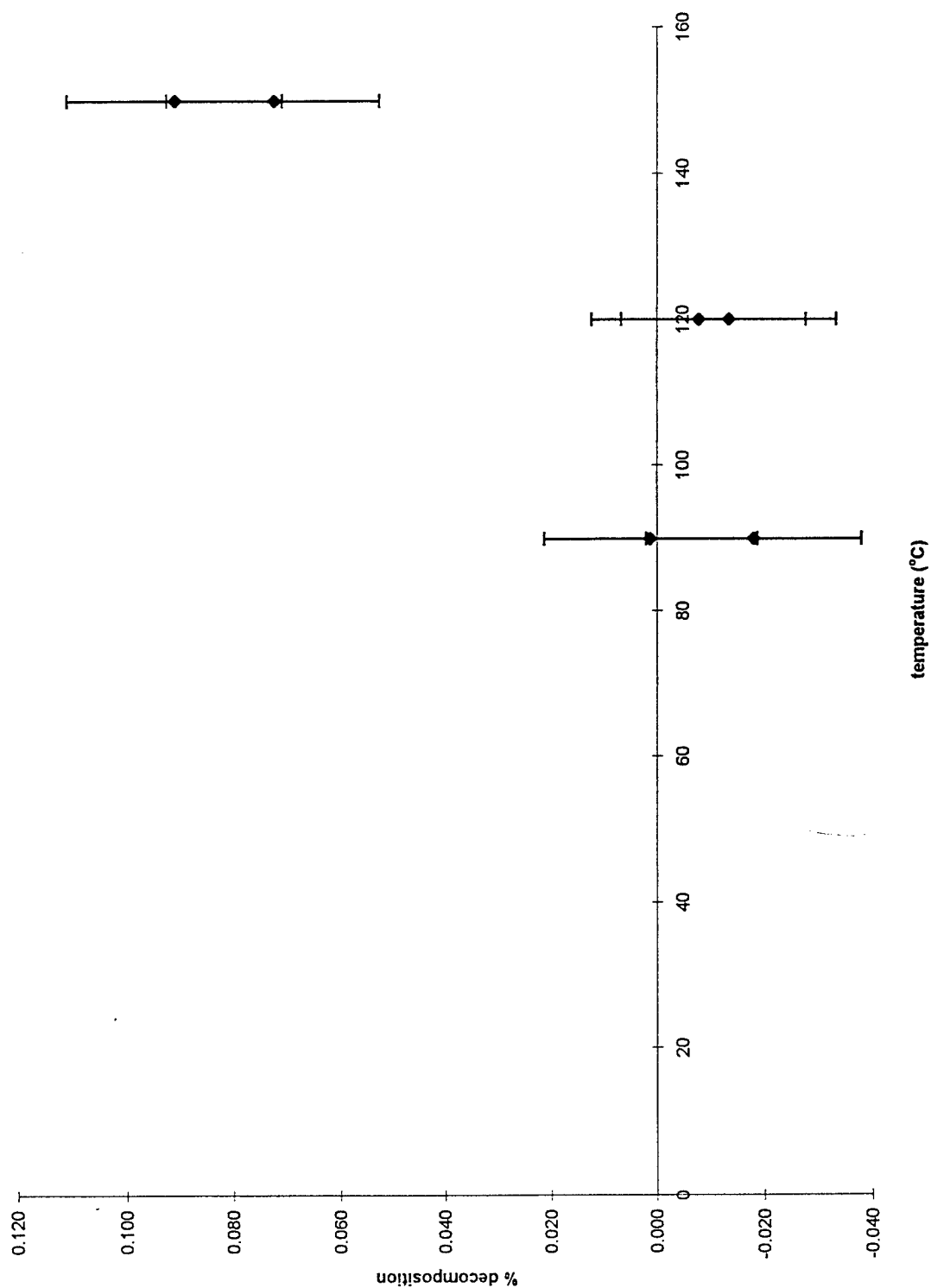
Percent Decomposition of 1-C₃F₇I vs. Time at 150°C



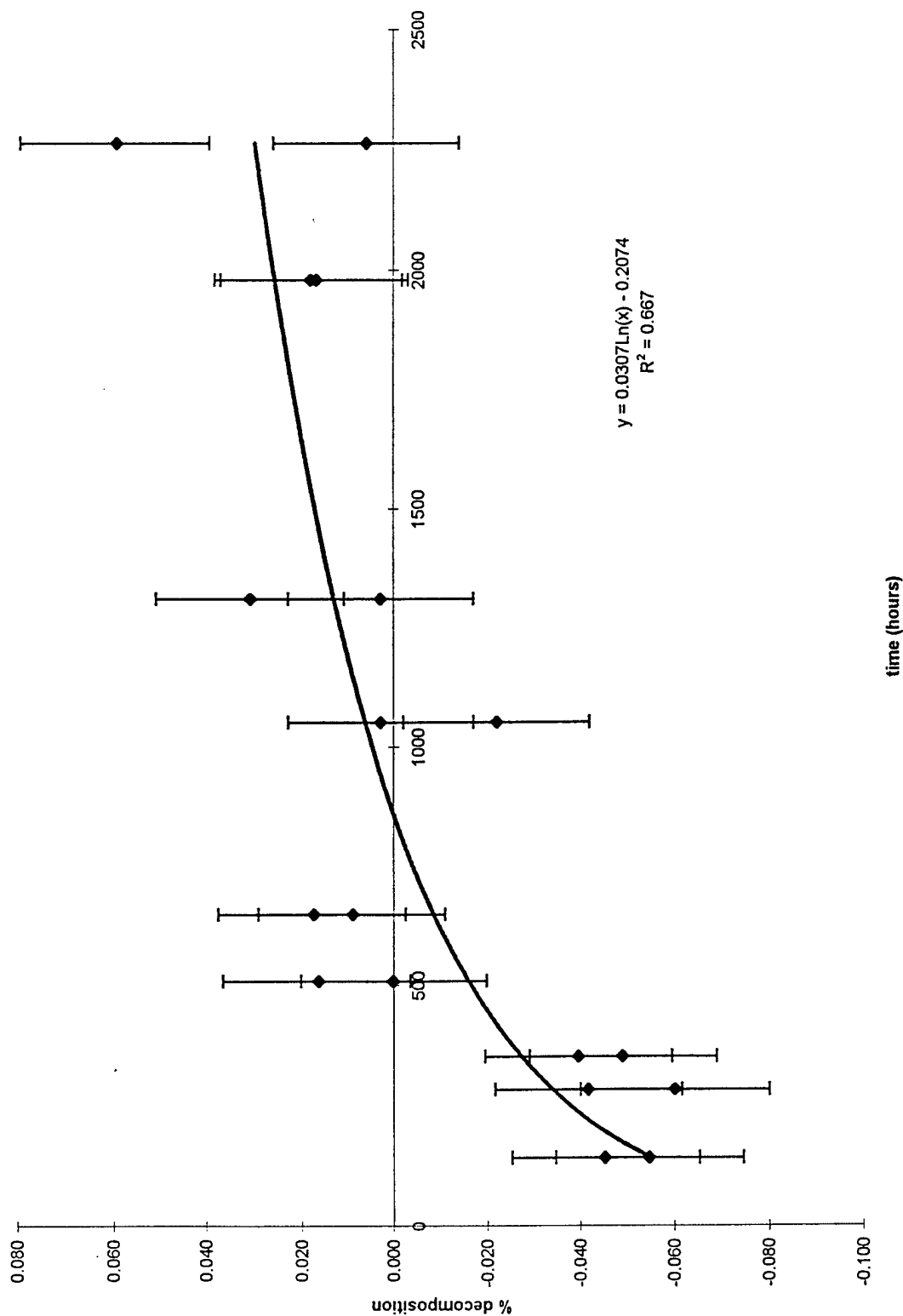
Percent Decomposition of 1-C₃F₇I vs. Time at 150°C with Air Added



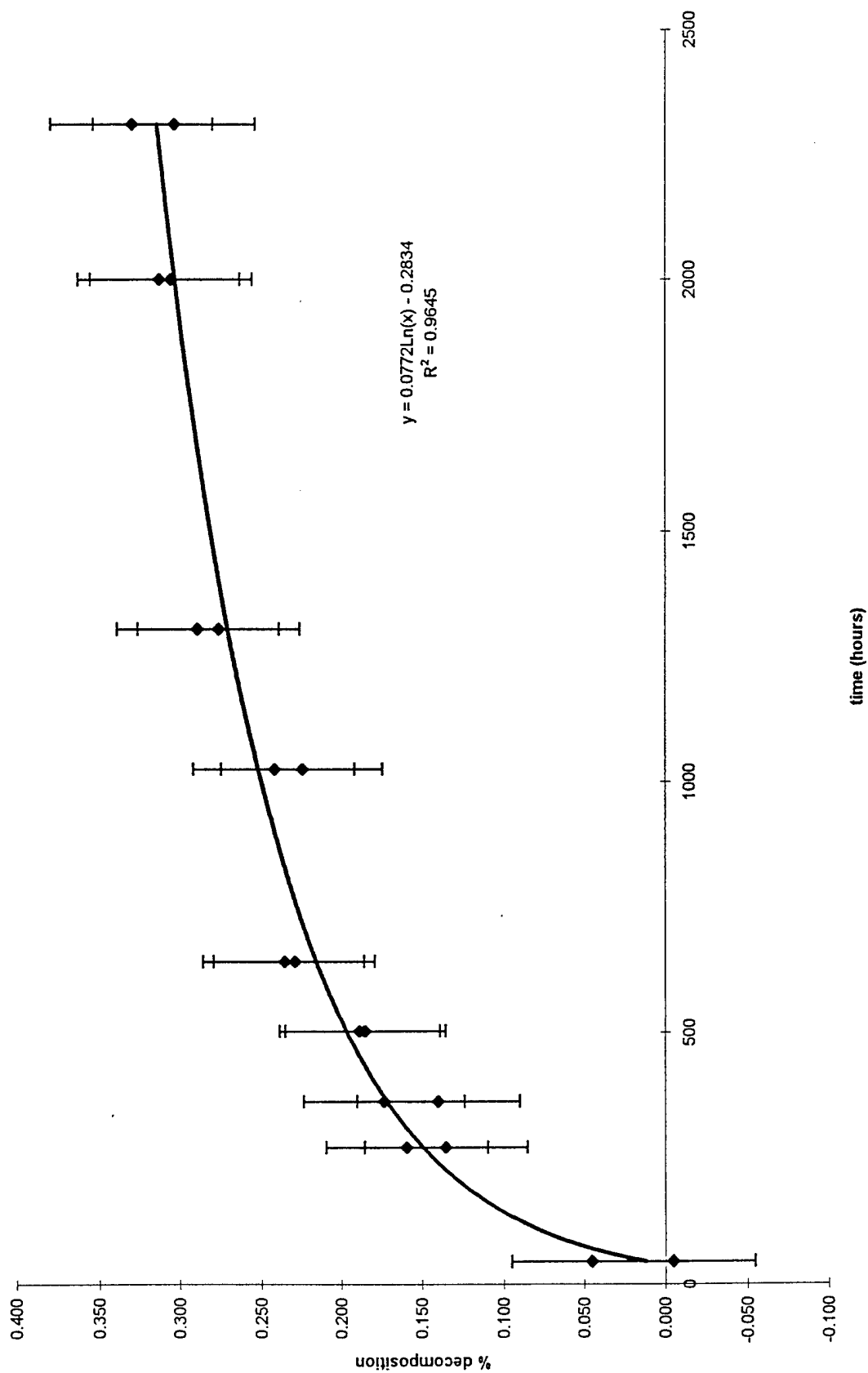
Percent Decomposition vs. Temperature for 1-C₃F₇I at 120 Days



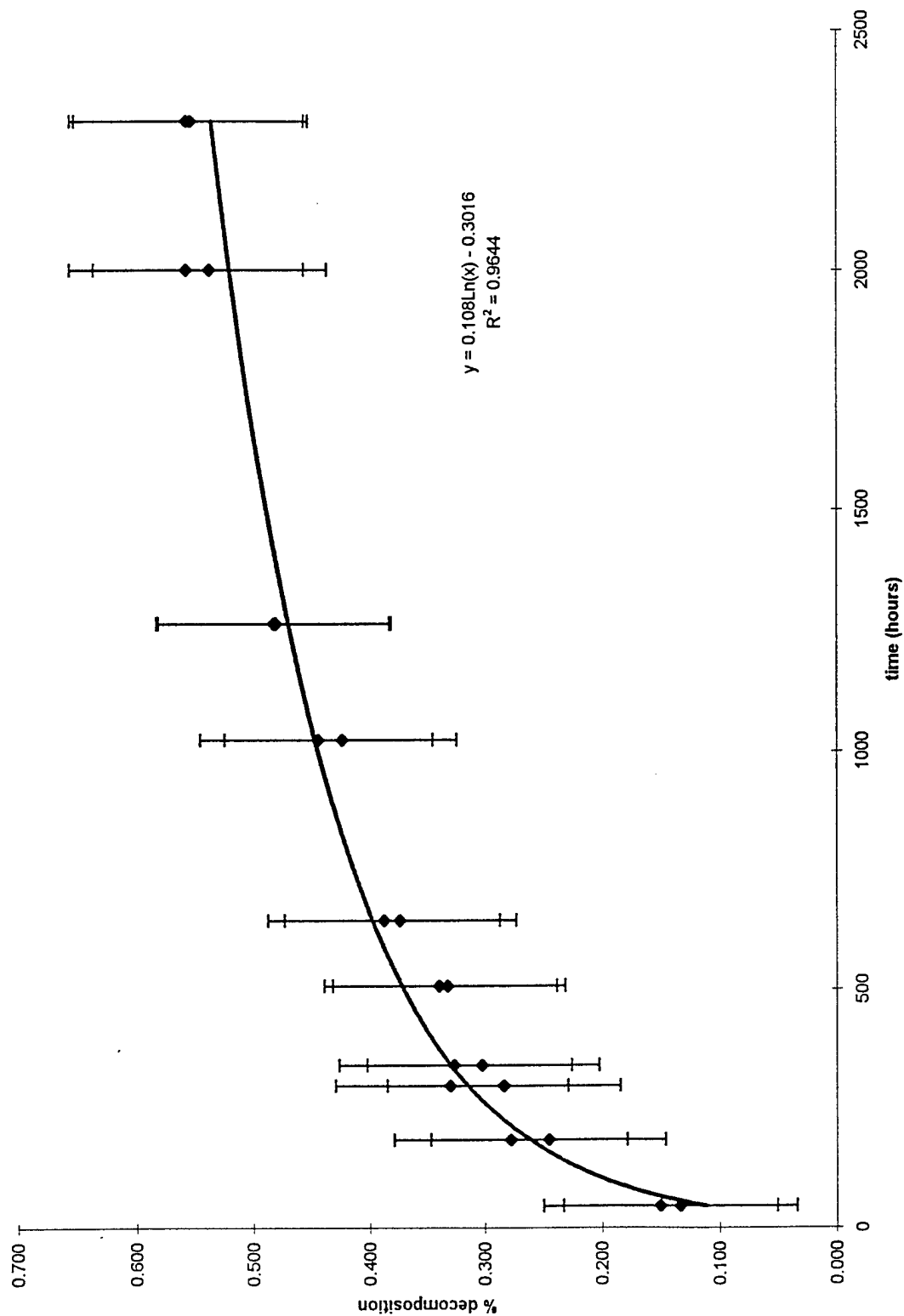
Percent Decomposition vs. Time for Pure 1-C₄F₉l at 120°C



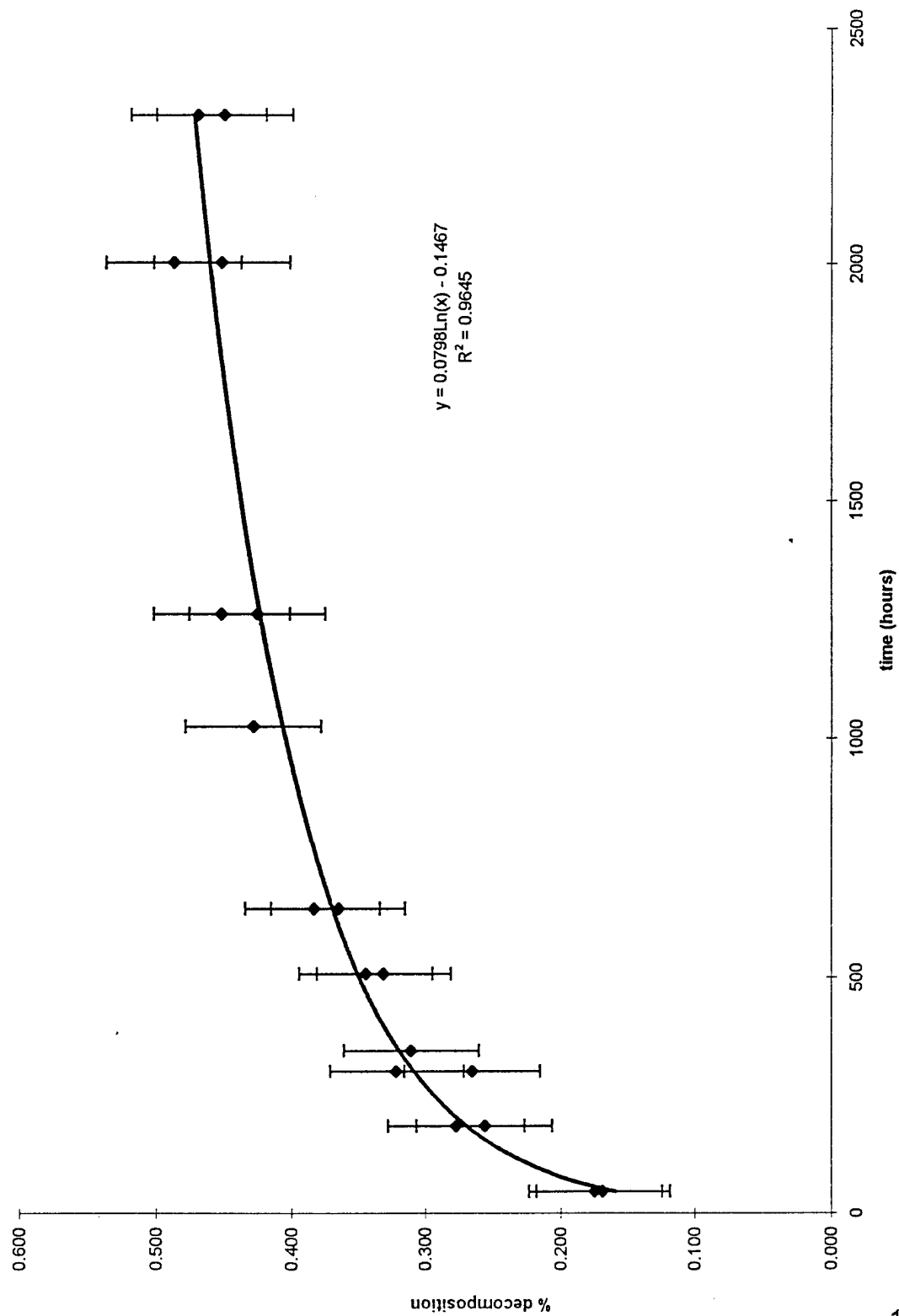
Percent Decomposition vs. Time for Pure 1-C₄F₉l at 150°C



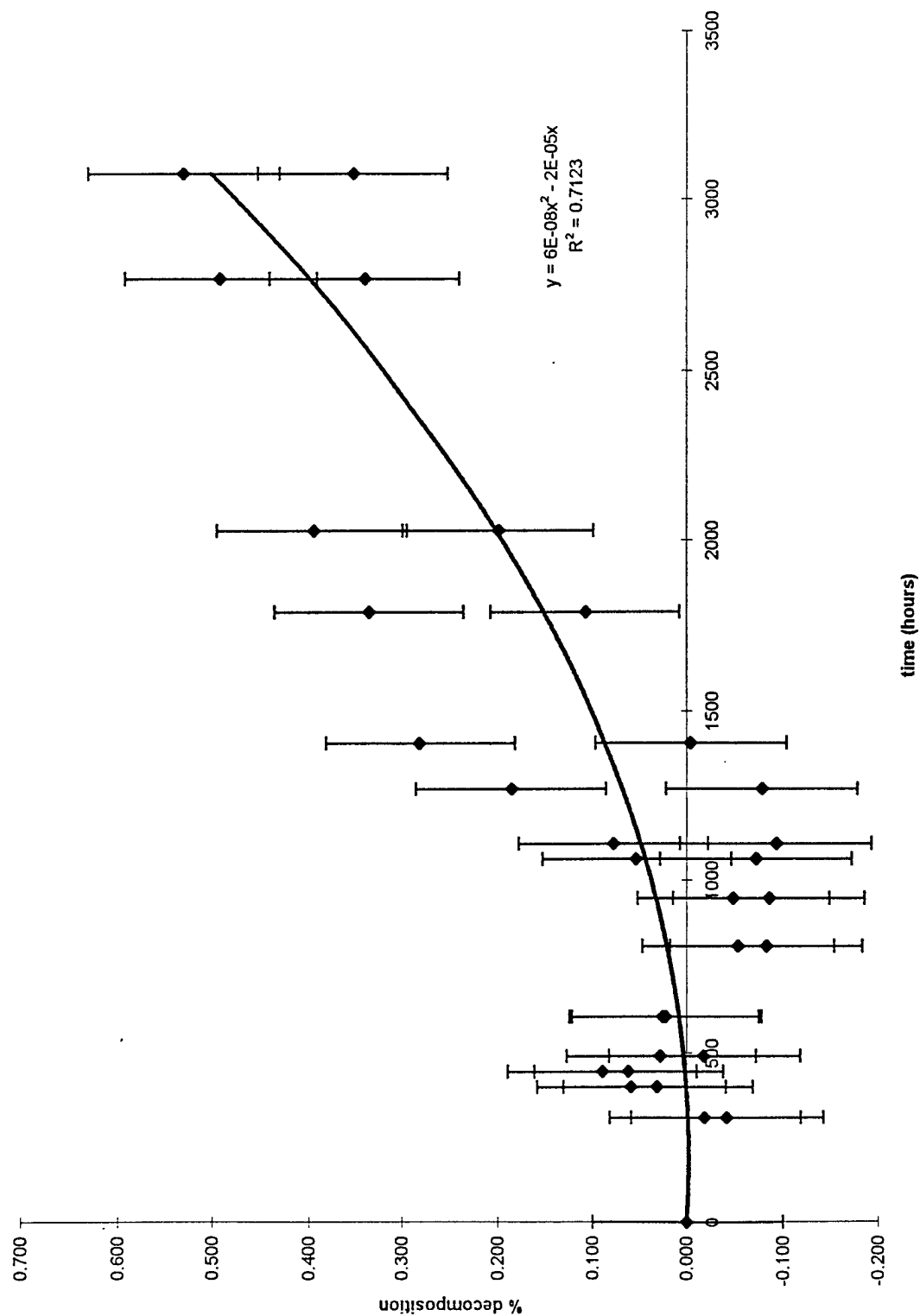
Percent Decomposition vs. Time for Pure 1-C₄F₉I at 175°C



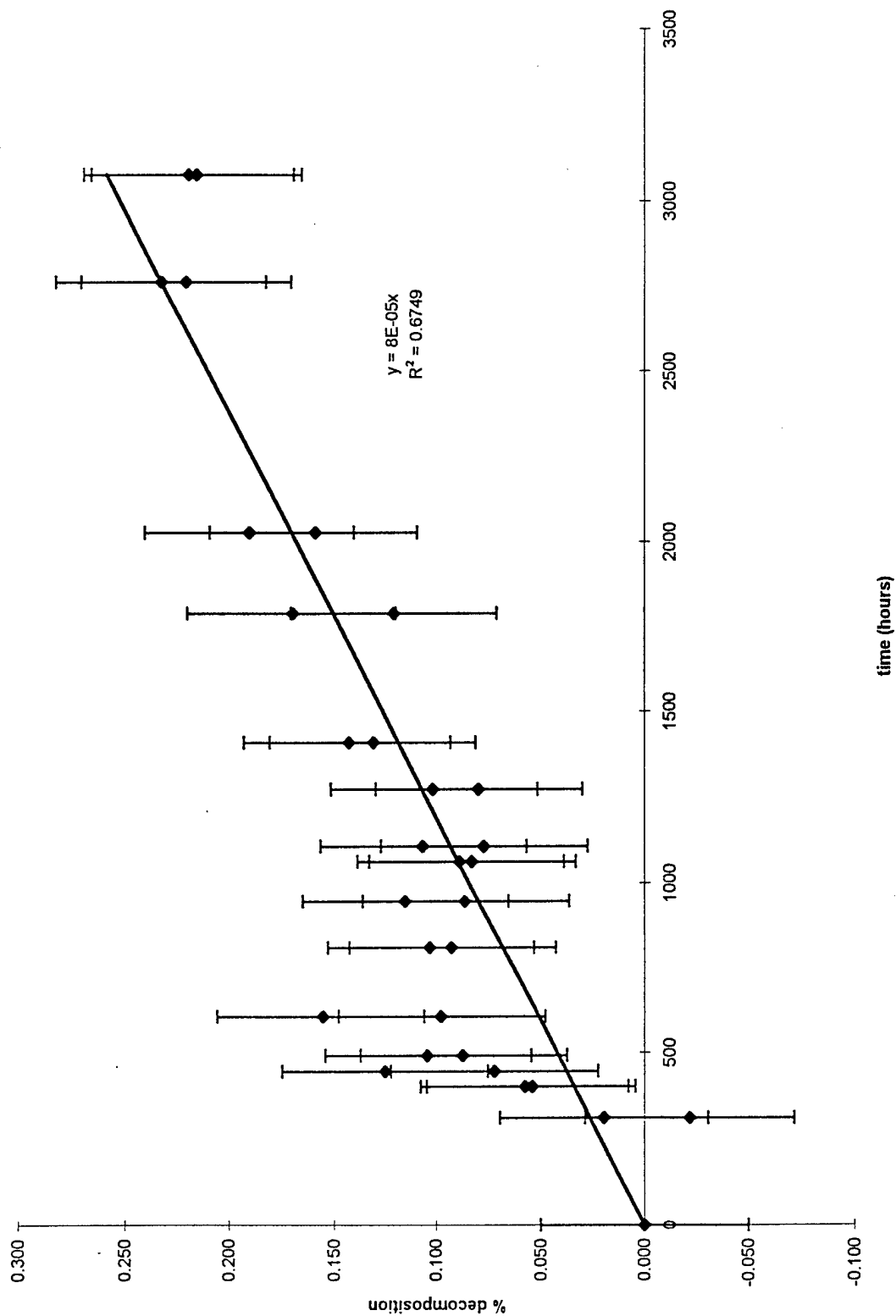
Percent Decomposition vs. Time for 1-C₄F₉l at 175°C with Air Added



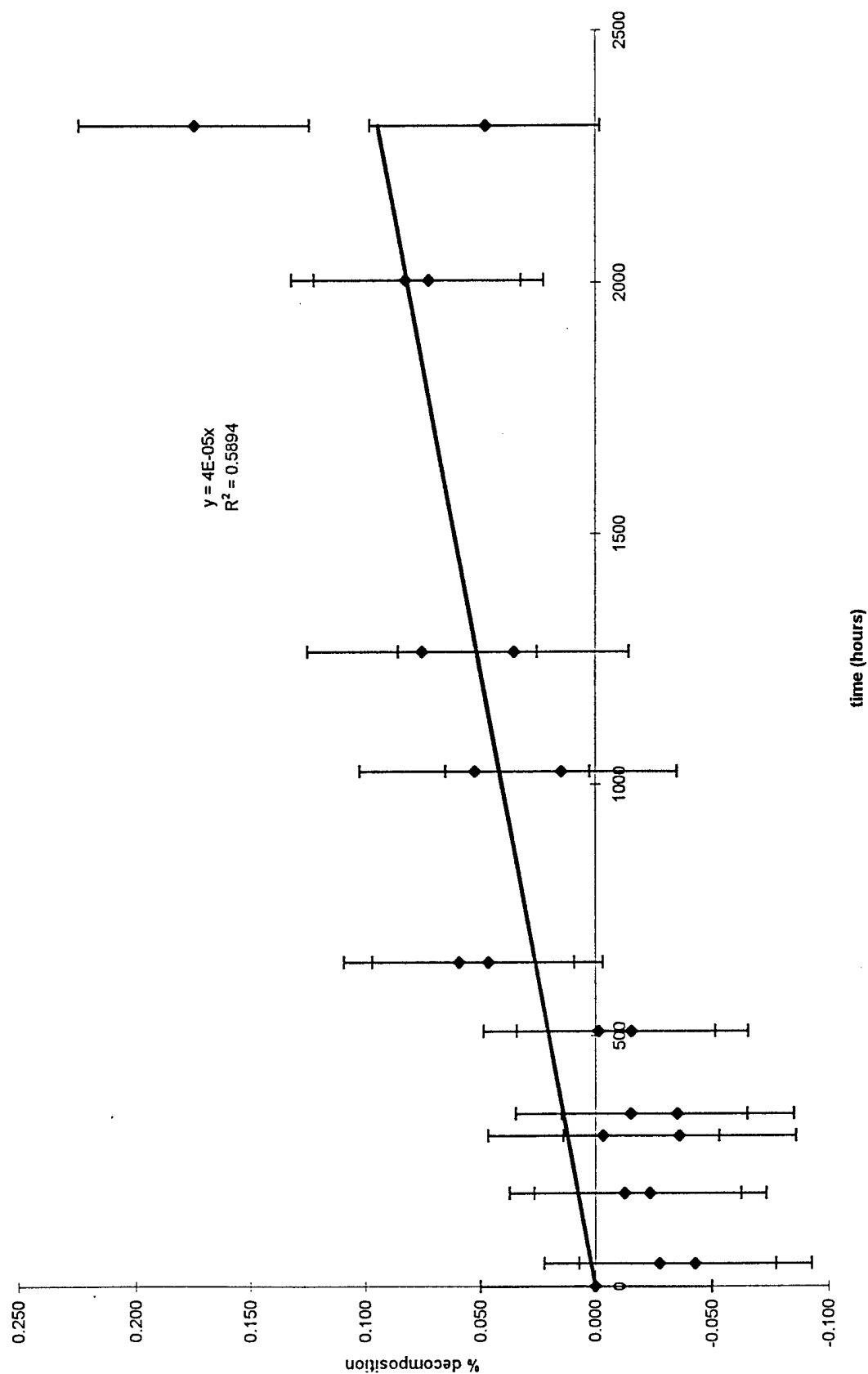
Percent Decomposition vs. Time for 1-C₄F₉l at 175°C with Copper



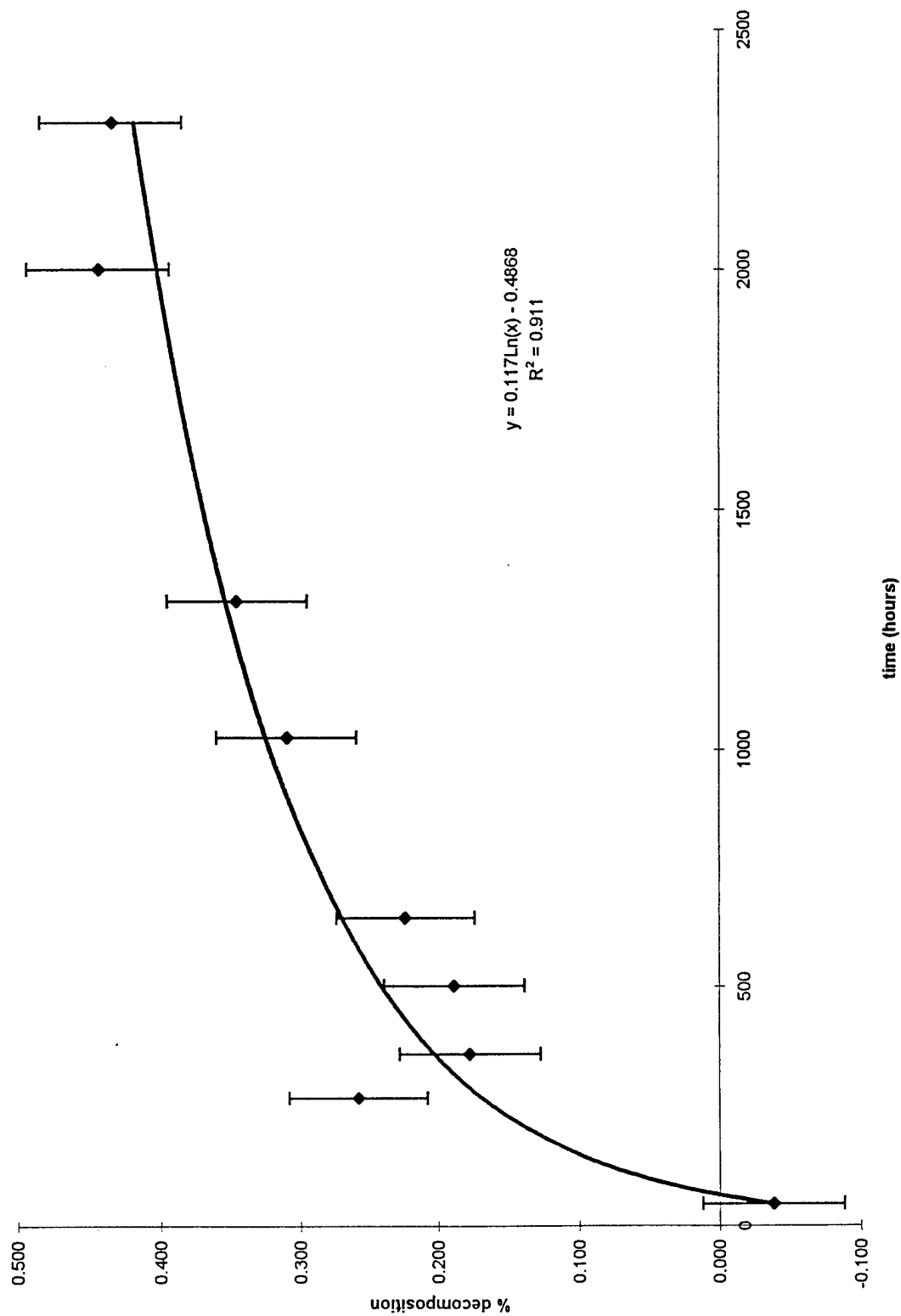
Percent Decomposition vs. Time for 1-C₄F₉l at 175°C with Filter-drier Beads



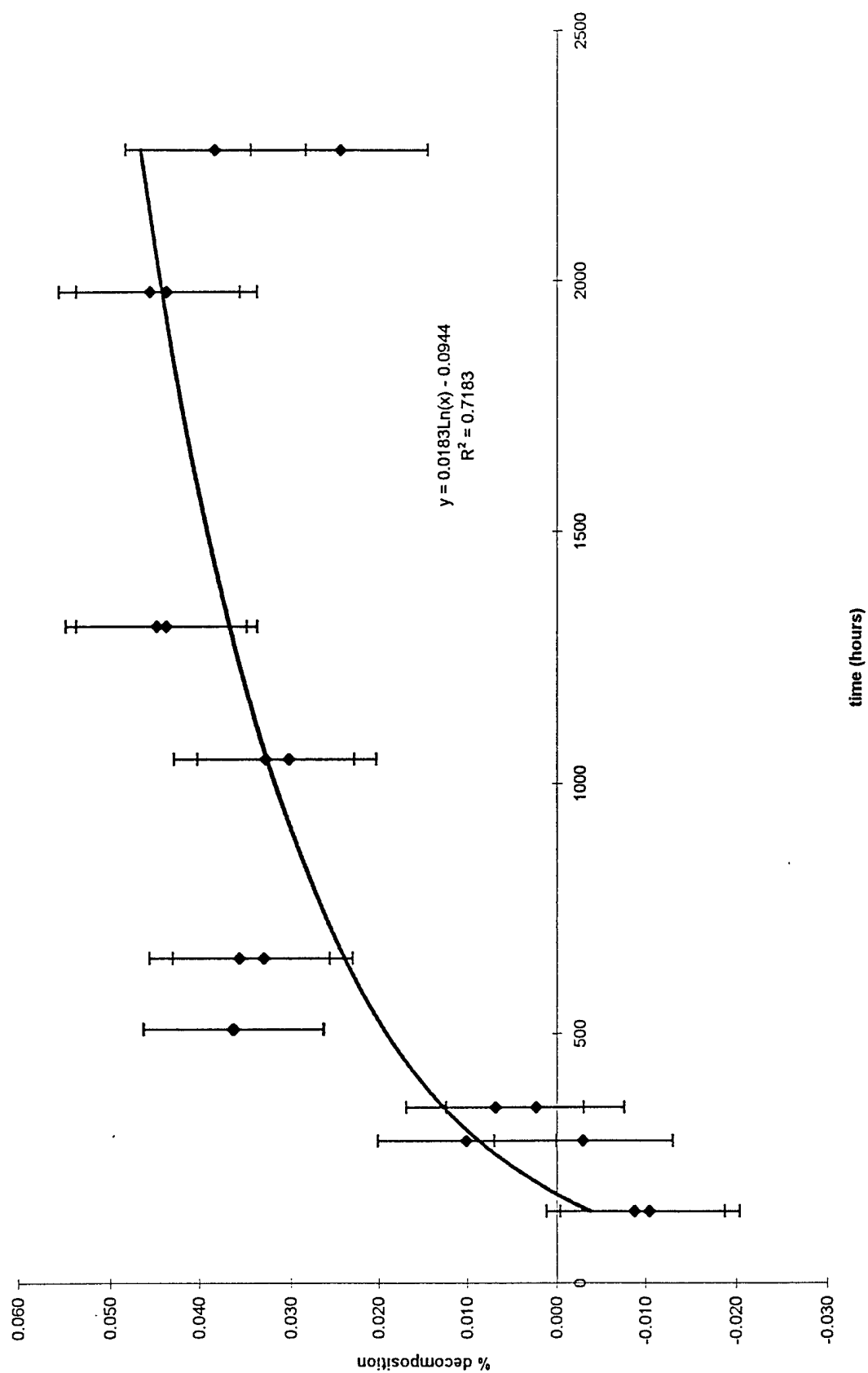
Percent Decomposition vs. Time for 1-C₄F₉l at 175°C with Molecular Sieve



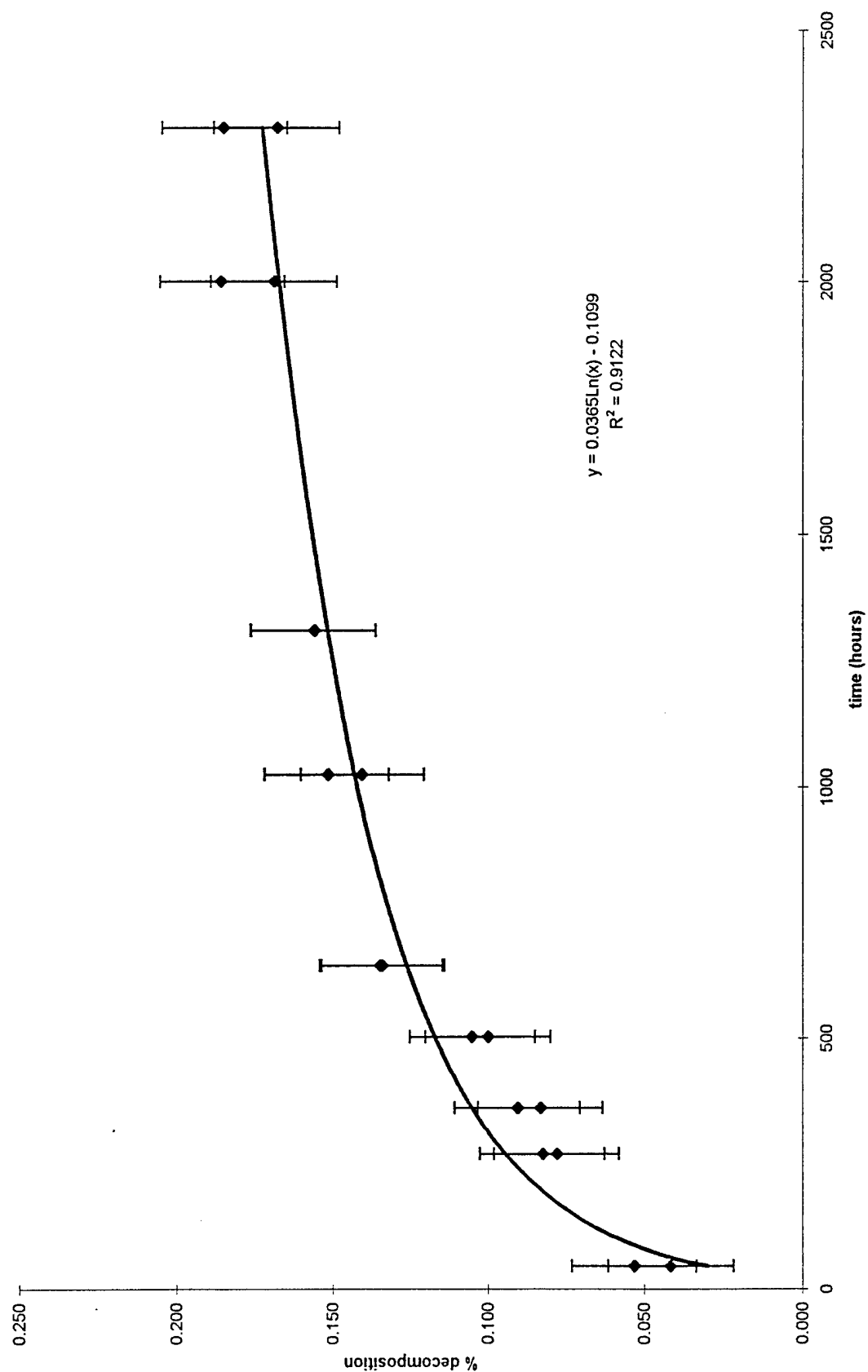
Percent Decomposition vs. Time for 1-C₄F₉l at 150°C with Water Added



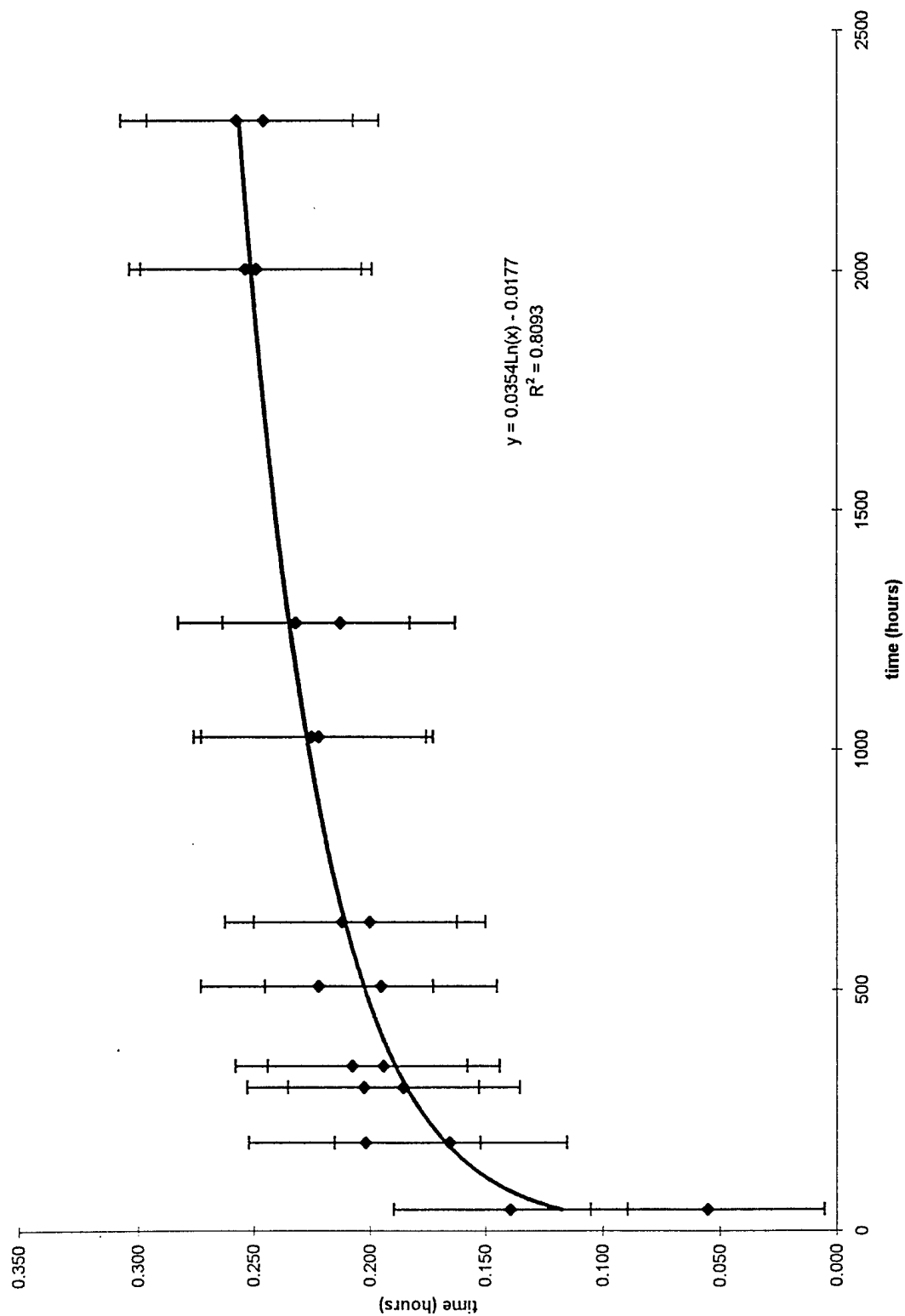
Percent Decomposition vs. Time for Pure 1-C₆F₁₃l at 120°C



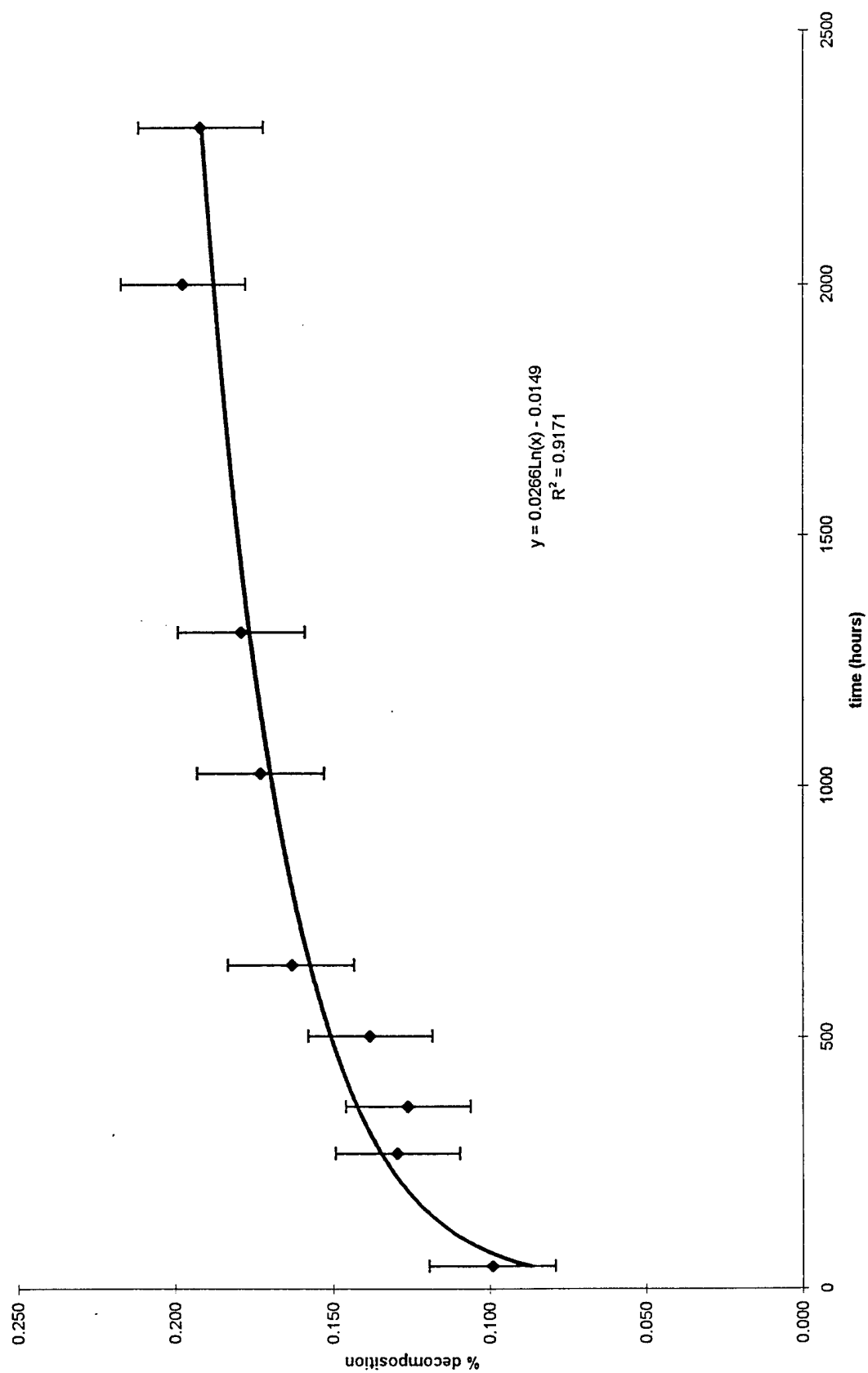
Percent Decomposition vs. Time for Pure 1-C₆F₁₃l at 150°C



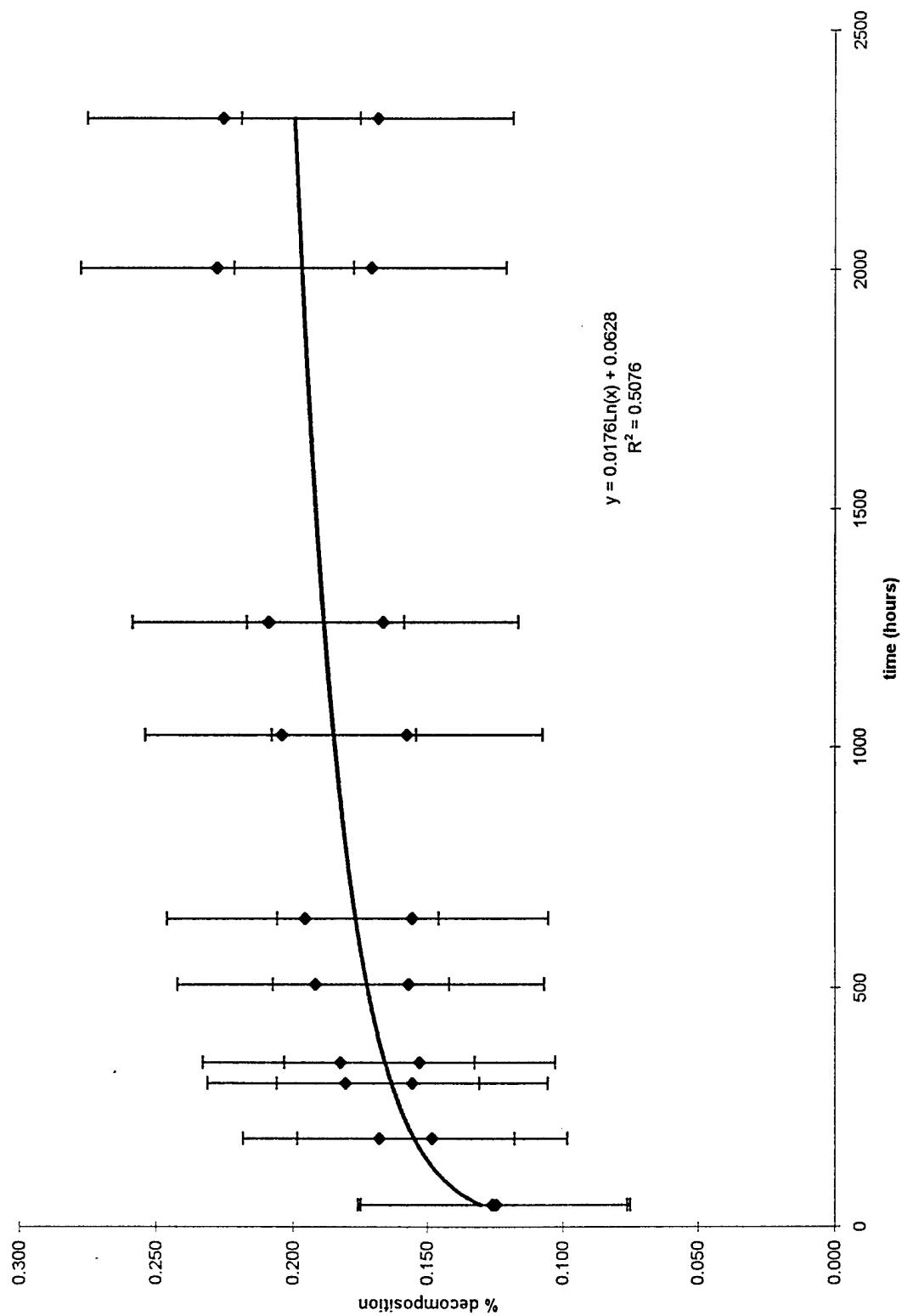
Percent Decomposition vs. Time for Pure 1-C₆F₁₃l at 175°C



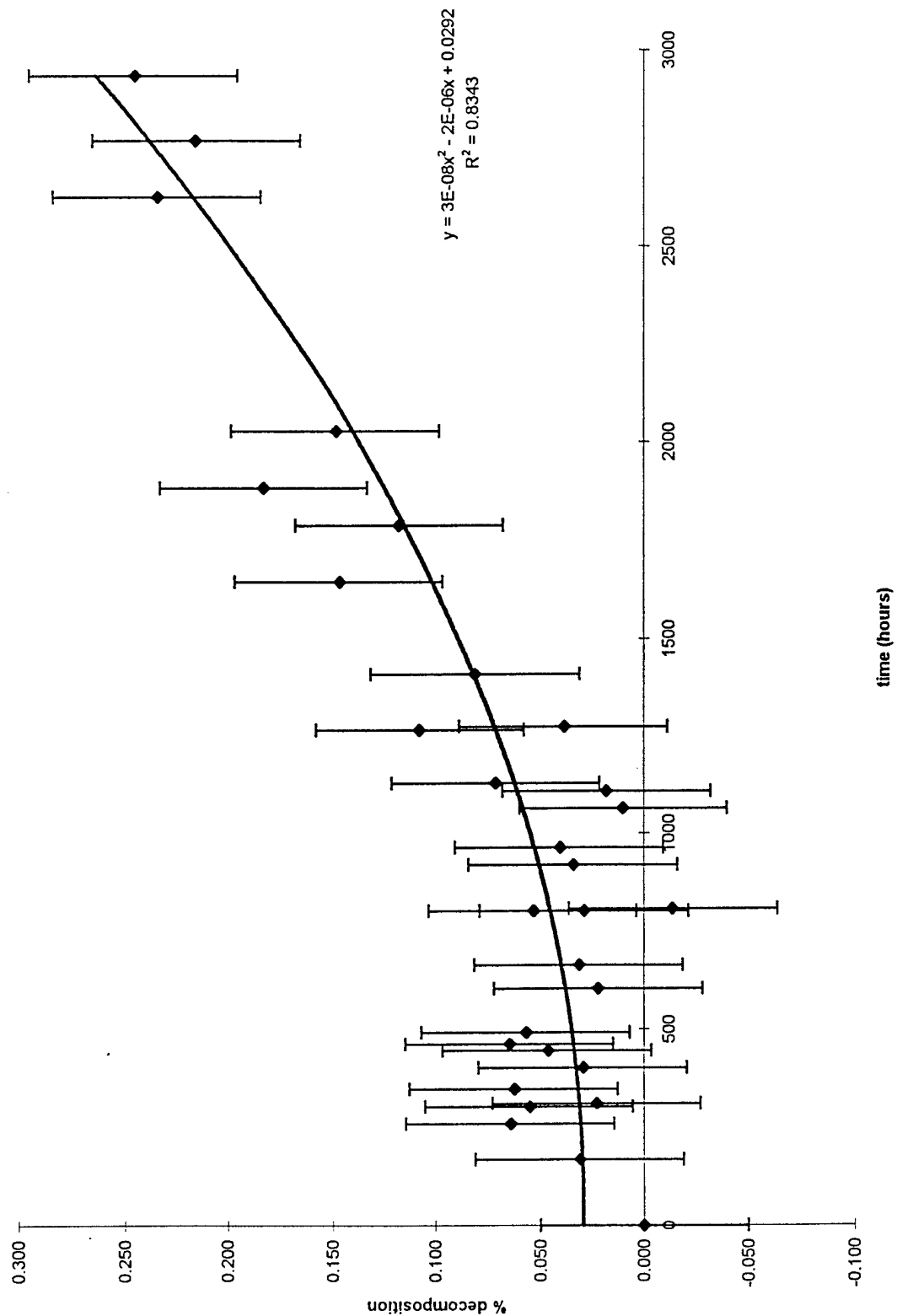
Percent Decomposition vs. Time for 1-C₆F₁₃I at 150°C With Air Added



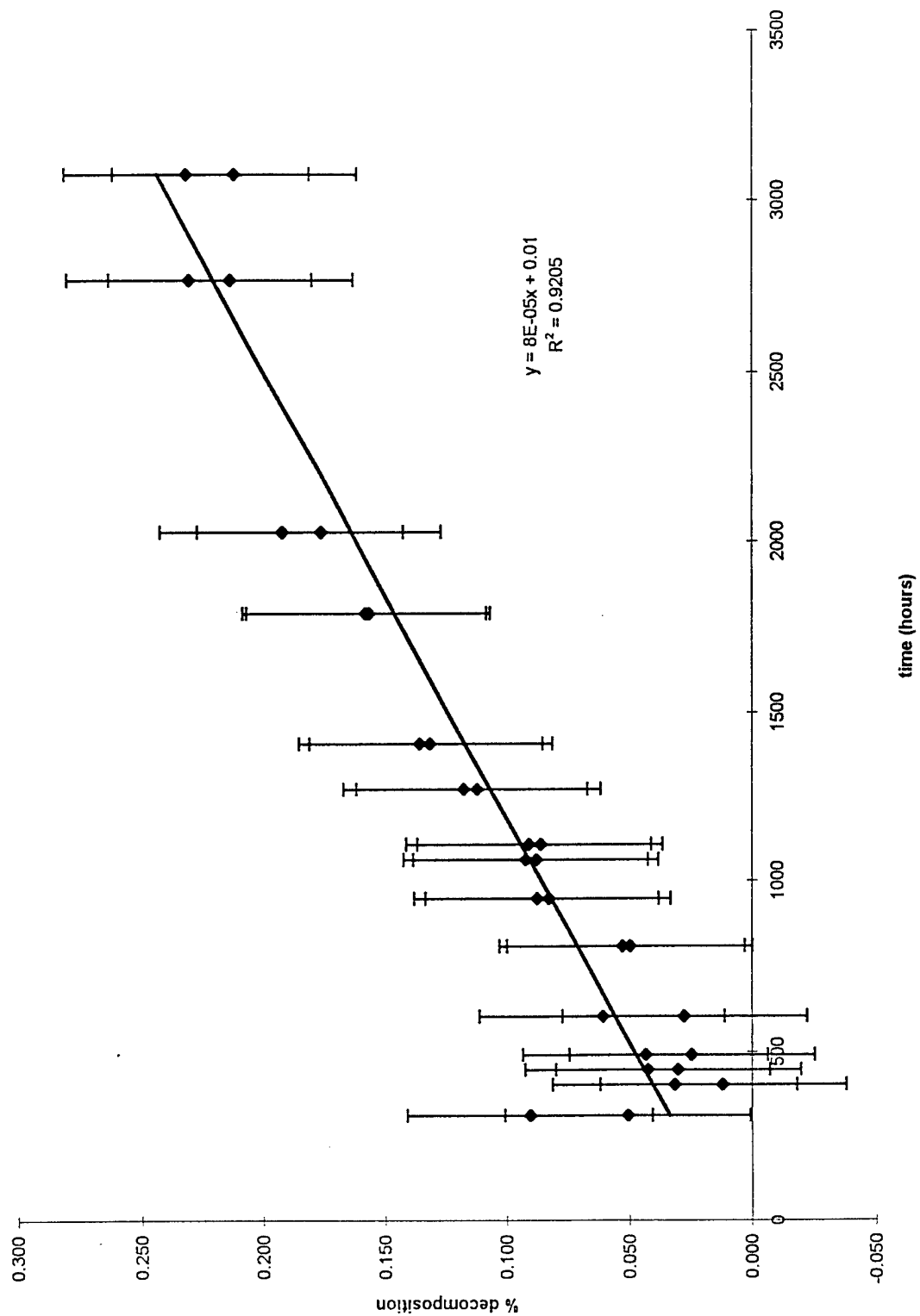
Percent Decomposition vs. Temperature for 1-C₆F₁₃l at 175°C With Air Added



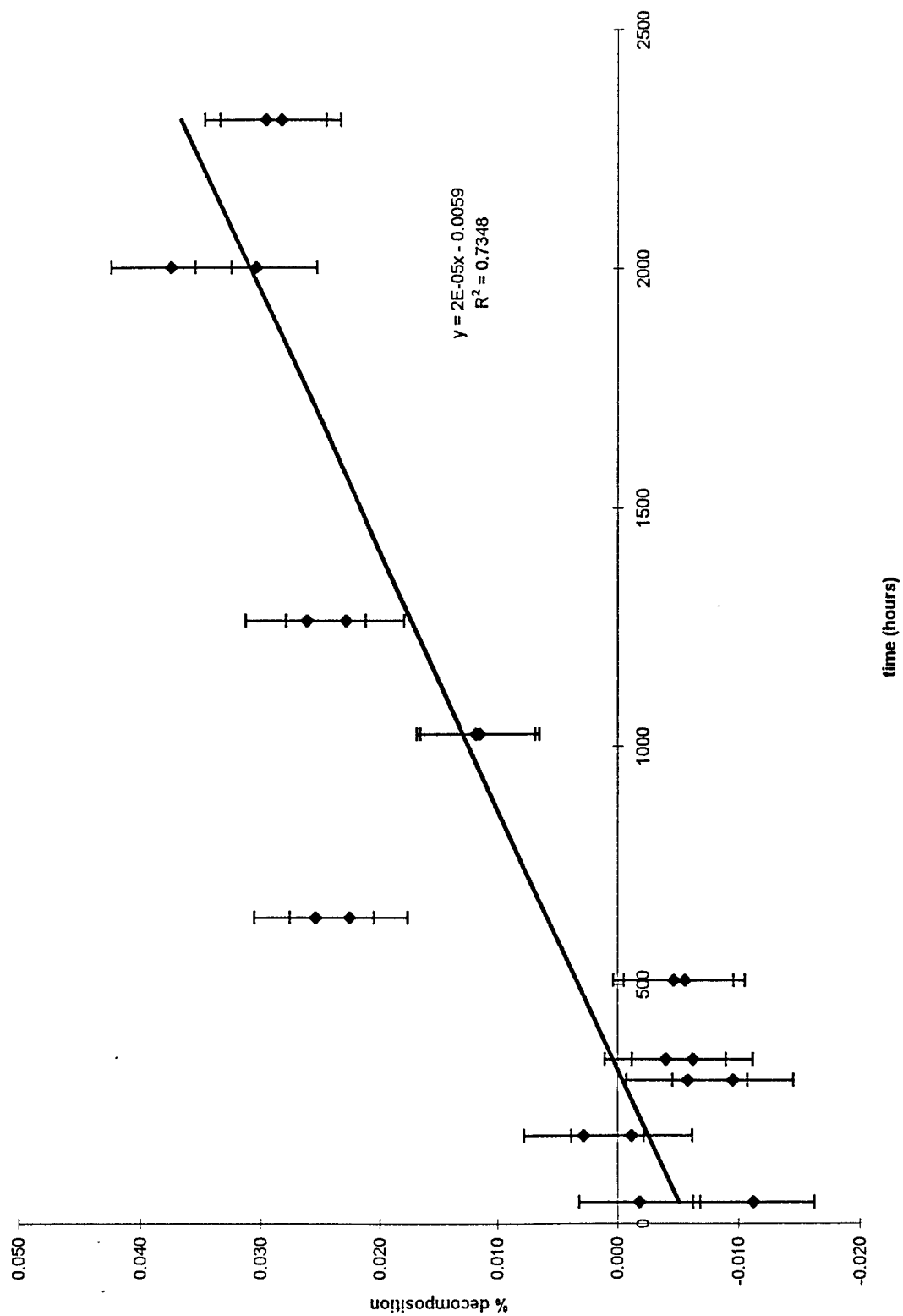
Percent Decomposition vs. Time for 1-C₆F₁₃I at 175°C with Copper



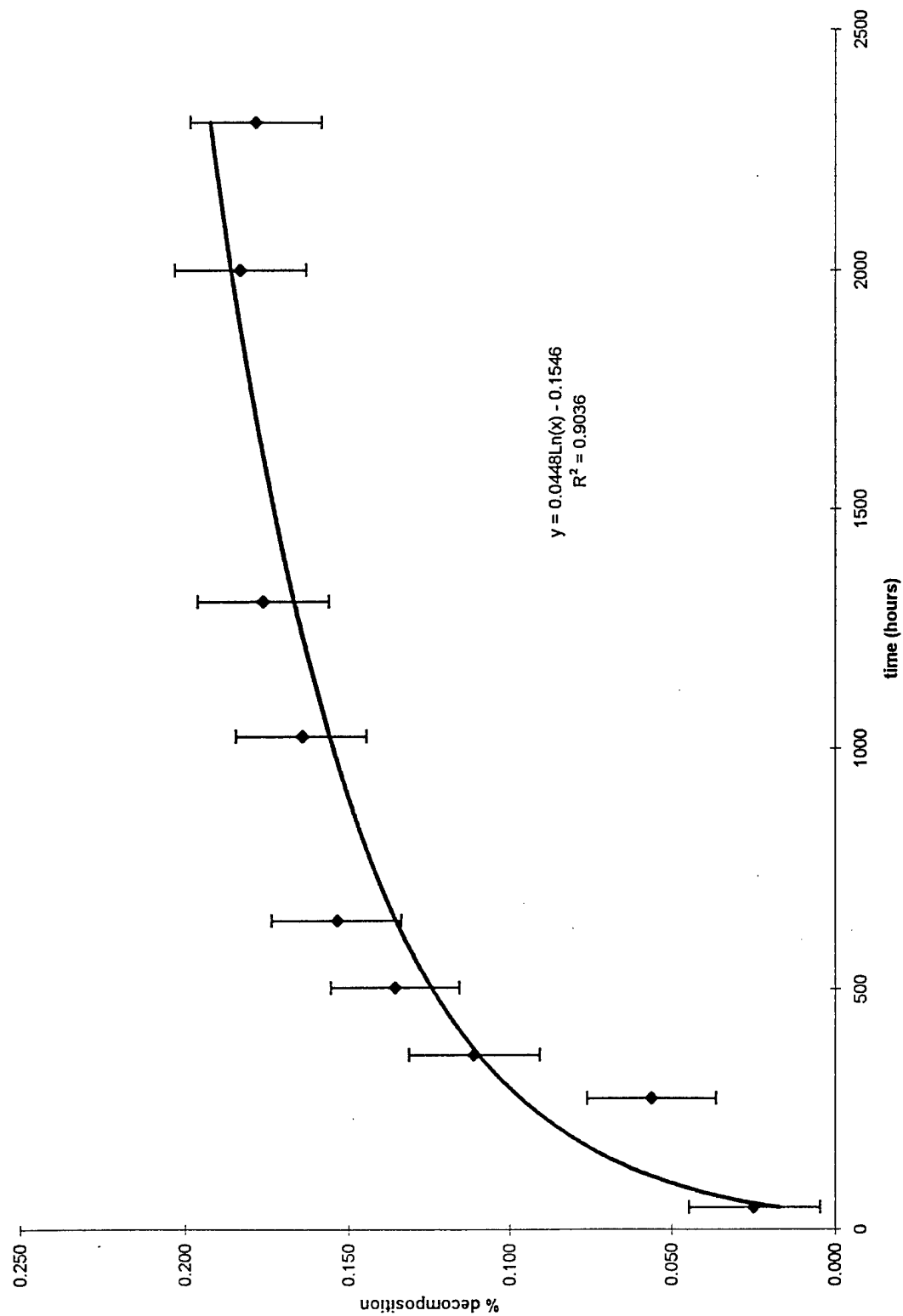
Percent Decomposition vs. Time for 1-C₆F₁₃I at 175°C With Filter-Drier Beads



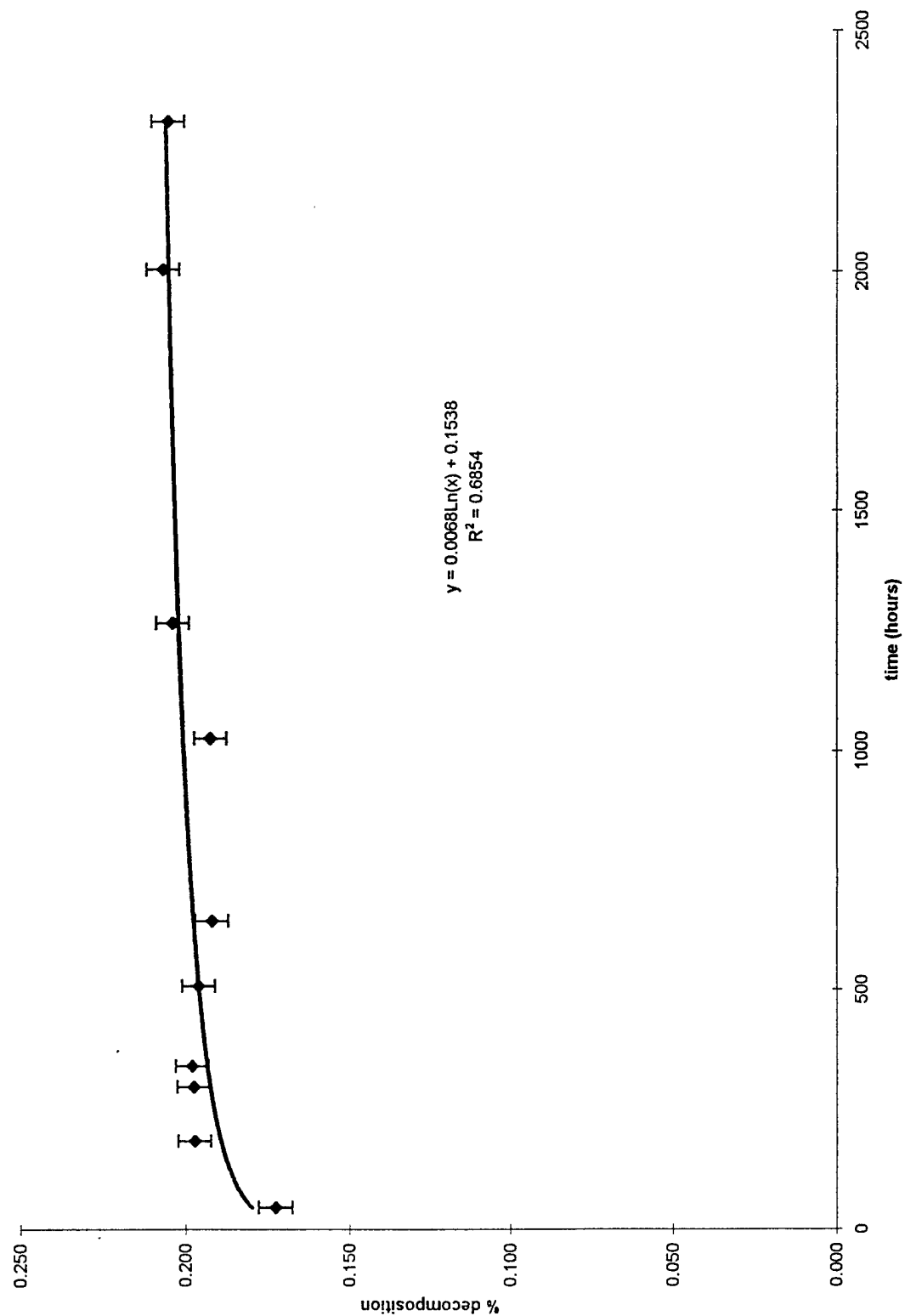
Percent Decomposition vs. Time for 1-C₆F₁₃I at 175°C with Molecular Sieve



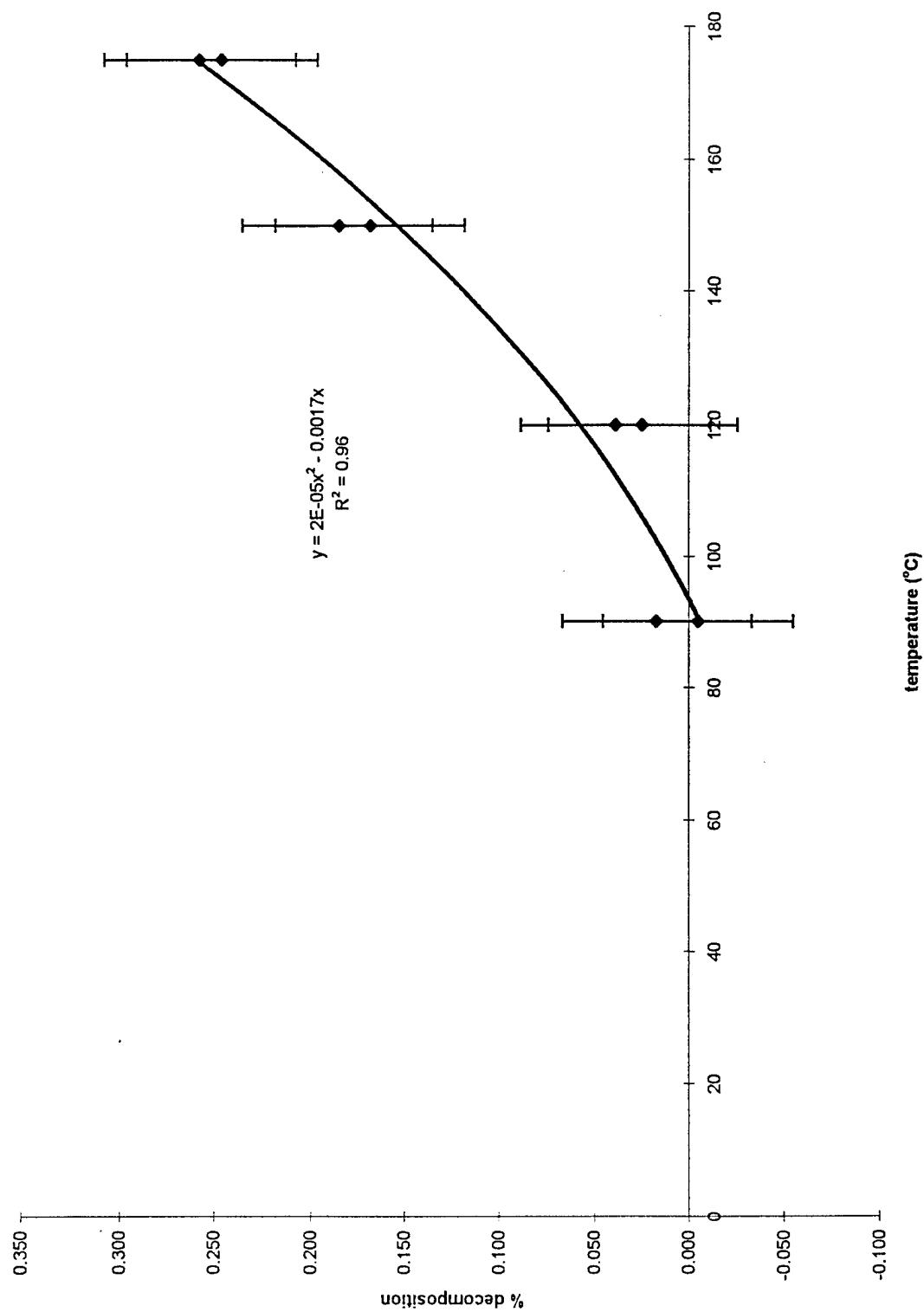
Percent Decomposition vs. Time for 1-C₆F₁₃I at 150°C With Water Added



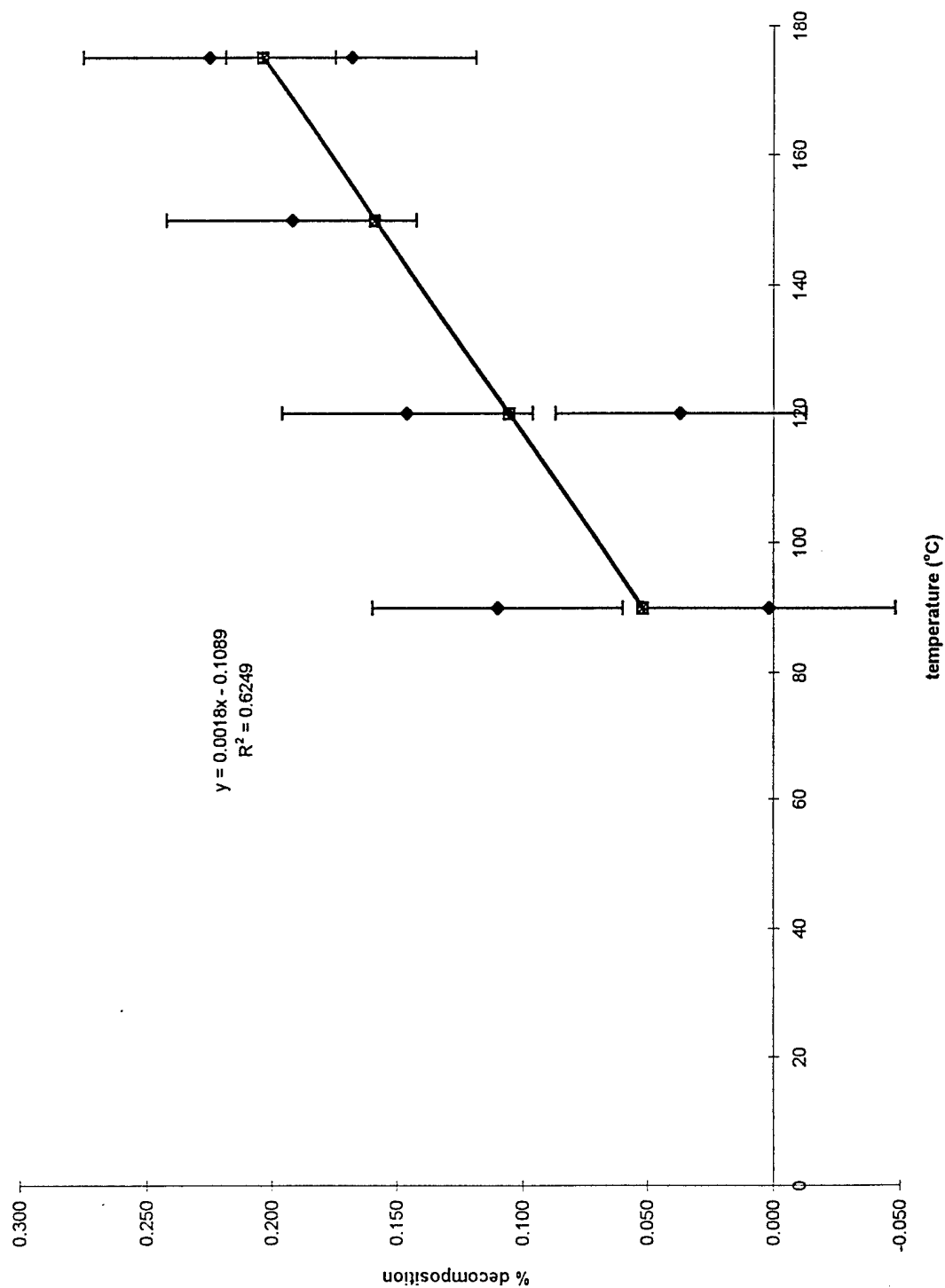
Percent Decomposition vs. Time for 1-C₆F₁₃l at 175°C With Water Added



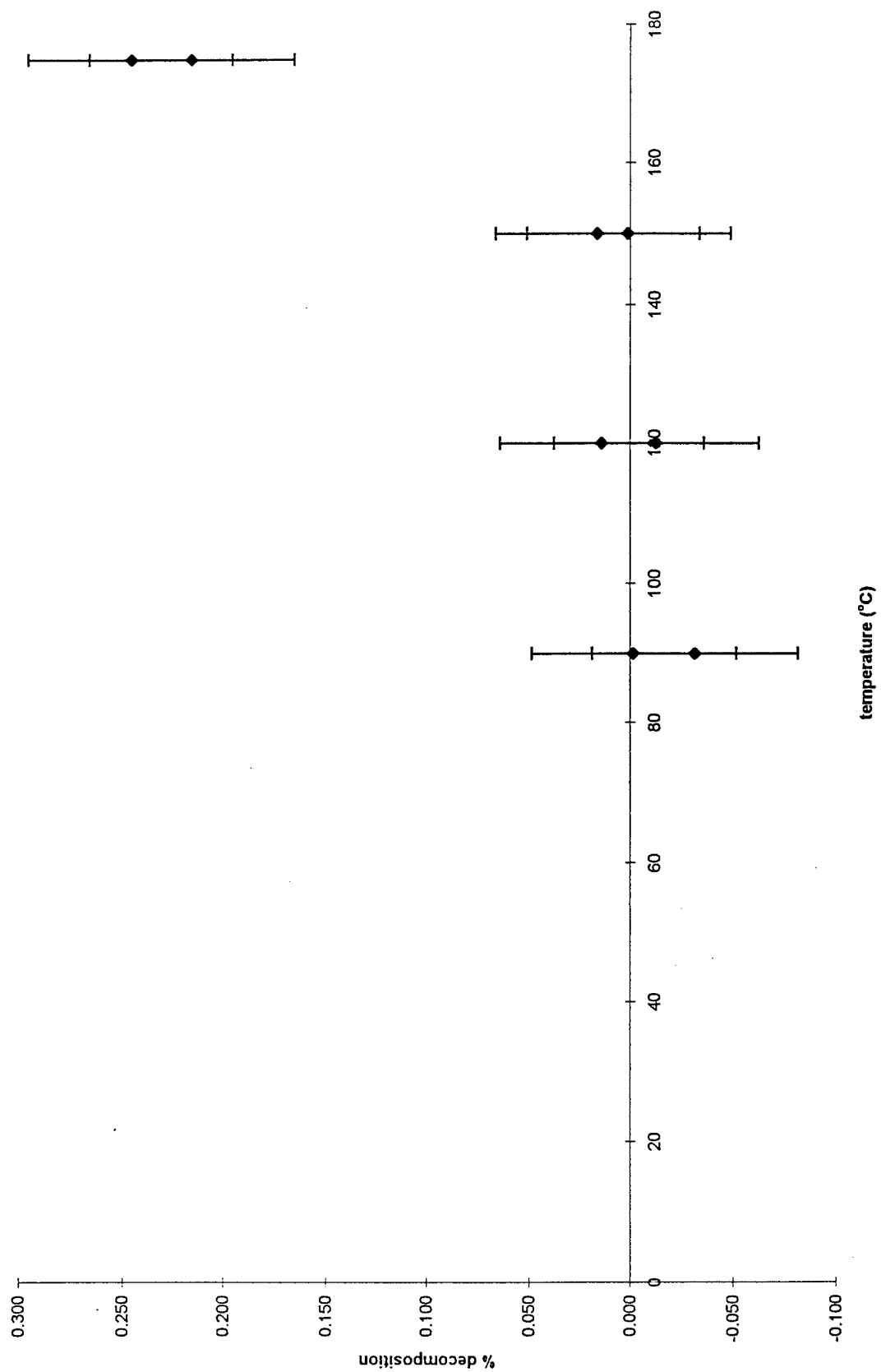
Percent Decomposition vs. Temperature for Pure 1-C₆F₁₃I at 120 Days



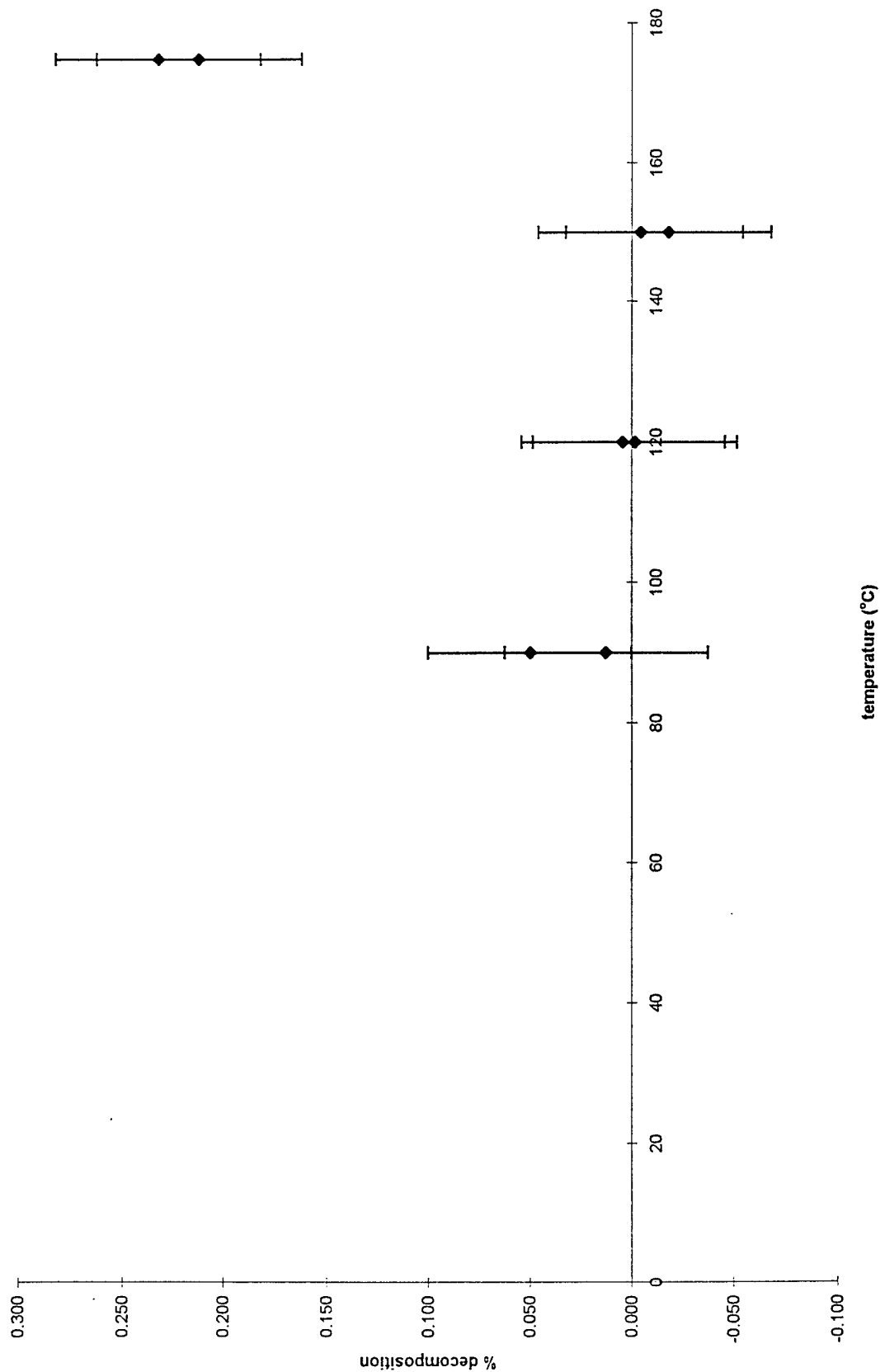
Percent Decomposition vs. Temperature for 1-C₆F₁₃l
with Air at 120 Days



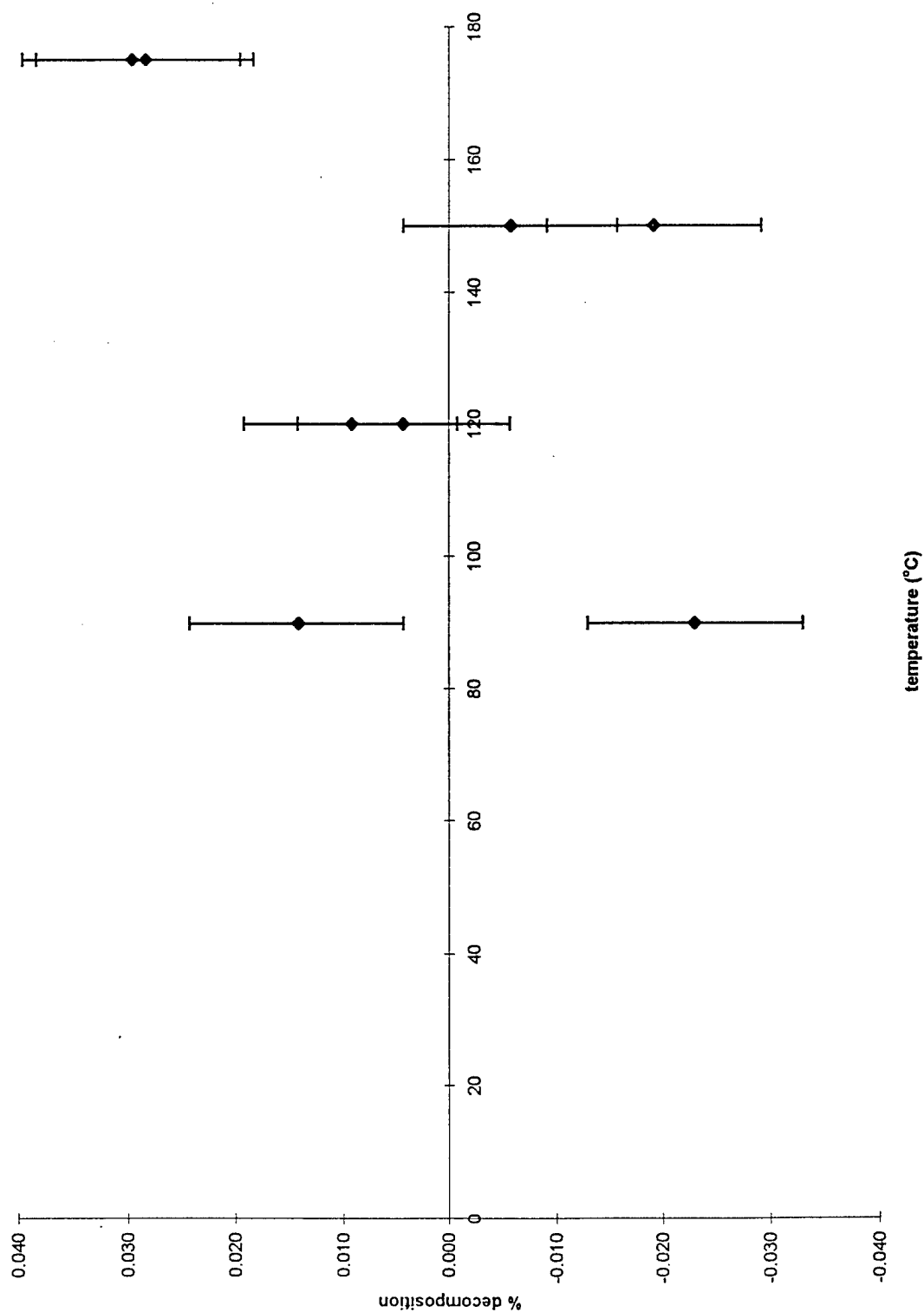
Percent Decomposition vs. Temperature for 1-C₆F₁₃I
with Copper at 120 Days



Percent Decomposition vs. Temperature for 1-C₆F₁₃I
With Filter Drier Beads at 120 Days



Percent Decomposition vs. Temperature for 1-C₆F₁₃
With Molecular Sieve at 120 Days



Percent Decomposition vs. Temperature for 1-C6F13I
With Water Added at 120 Days

