S.I.O. REFERENCE SERIES

Oceanic CO_2 Measurements for the WOCE Hydrographic Survey in the Pacific Ocean: Shipboard Alkalinity Measurements on CGC92 Legs 1 and 2, 1992

by:

Peter R. Guenther
Guy Emanuele, III
Timothy J. Lueker
David J. Moss
Elisabeth F. Stewart
Charles D. Keeling

December 1994 Ref. No. 94-30

UNIVERSITY OF CALIFORNIA, SAN DIEGO

Oceanic CO_2 Measurements for the WOCE Hydrographic Survey in the Pacific Ocean: Shipboard Alkalinity Measurements on CGC92 Legs 1 and 2, 1992

Prepared for the U.S. Department of Energy
Special Research Grant Program 89-7A:
Global Survey of Carbon Dioxide in the Ocean
(Grant No. DE-FG03-91ER61116)
Submitted: October 24, 1994

Prepared by:

Peter R. Guenther
Guy Emanuele, III
Timothy J. Lueker
David J. Moss
Elisabeth F. Stewart
Charles D. Keeling

Scripps Institution of Oceanography
University of California, San Diego
La Jolla, CA 92093

December 1994 S.I.O. Reference Series No. 94-30

TABLE OF CONTENTS

List of Figures ii

1. Cruise Summary 1

2. Shipboard Water Sampling Program 1

3. Alkalinity Measurement Summary 2

4. Description of Analytical System and Procedures 2
   - 4.1 Overall system description 2
   - 4.2 Titration cell 4
   - 4.3 Sample aliquoting system and calibration 6
   - 4.4 Acid titrant delivery system and calibration 6
   - 4.5 Temperature measurement and calibration 8
   - 4.6 Data acquisition system 9
   - 4.7 Calculation of titration alkalinity 9
   - 4.8 Titrator operating procedure 10
   - 4.9 Daily analysis schedule 11

5. Summary of Results 12
   - 5.1 Data quality assessments 12
     - 5.1a Duplicate sea water samples 12
     - 5.1b SIO bicarbonate reference materials 13
     - 5.1c CRM sea water reference materials, batch 13 16
     - 5.1d Discussion of data quality 16
   - 5.2 Data tabulations of shipboard alkalinity results 18
     - 5.2a Sea water sample data 18
     - 5.2b SIO bicarbonate reference material data 19
     - 5.2c CRM sea water reference material data 20

List of references 21

Table 1. Alkalinity of Sea Water Samples 22

Table 2. Alkalinity of Bicarbonate Reference Materials (STD A) 45

Table 3. Alkalinity of Bicarbonate Reference Materials (STD B) 47

Table 4. Alkalinity of Certified DIC Reference Materials (Batch No. 13) 49

List of Figures

Figure 1. Schematic Diagram of the Dual Volumetric Alkalinity Titrator..... 3

Figure 2. Schematic Diagram of Alkalinity Titration Cell..... 5

Figure 3. Control chart for CDRG Bicarbonate Reference Material Batch A shipboard alkalinity data..... 14

Figure 4. Control chart for CDRG Bicarbonate Reference Material Batch B shipboard alkalinity data..... 15

Figure 5. Control chart for SIO Certified DIC Reference Material Batch 13 shipboard alkalinity data..... 17

1. Cruise Summary

Shipboard measurements of CO_2 system parameters in sea water were made on the Climate and Global Change 92 (CGC92) cruise of the Pacific Marine Environmental Laboratory (PMEL) of the National Oceanic and Atmospheric Administration (NOAA). The ship used for the cruise was the R/V *John Vickers* of the University of Southern California. The Chief Scientists were Dr. John Bullister on Leg 1 and Dr. Bruce Taft on Leg 2. Both are staff scientists at PMEL. The cruise, along approximately 165 ° E longitude between Dutch Harbor, Alaska and Noumea, New Caledonia, was designated Line P13 of the one - time survey of the World Ocean Circulation Experiment (WOCE). CO_2 system measurements on this cruise were carried out by the Carbon Dioxide Research Group (CDRG) of Scripps Institution of Oceanography (SIO) (Dr. Charles Keeling, Principal Investigator), with the assistance of Battelle NW Laboratory and of Dr. Andrew Dickson of SIO. Dr. Dickson and his group were responsible for measurements of Total Dissolved Inorganic Carbon (DIC) with a SOMMA coulometric titrator. The DIC analysts on Leg 1 were Mr. George Anderson of SIO and Mr. Ronald Citterman of Battelle NW and on Leg 2, Ms. Lori Bell of SIO and Mr. Citterman. The CDRG of SIO was responsible for measurements of Titration (or "Total") Alkalinity (ALK) with a potentiometric acid titration system. The ALK analysts on Leg 1 were Mr. Peter Guenther and Mr. Guy Emanuele, both of SIO, and on Leg 2, Dr. Andrew Dickson of SIO and Mr. Emanuele.

This report concerns only the ALK data. Dr. Dickson reports the DIC data in a separate report.

2. Shipboard Water Sampling Program

Samples for shipboard analysis of DIC and ALK were collected from 10 liter Niskin bottles on the 36 position small volume rosette water sampling system. Of the total of 84 stations on the two legs, CO_2 samples were collected from all Niskins throughout the water column on 39 stations (nominally 36 Niskins, but fewer depths were sampled on a number of stations). On an additional 41 stations CO_2 samples were collected from surface Niskins only. Stations sampled were located along about 165 ° E longitude between 54 ° N and 5 ° S latitude.

Samples were collected by established procedures (DOE,1994) in 500 ml borosilicate glass bottles equipped with greased ground glass joints held closed with rubber bands. Single samples were collected from most Niskins. On stations where CO_2 samples were collected throughout the water column, duplicate

samples were collected from two Niskins, one near the surface and one near the bottom, for quality assessment purposes. All samples were collected by the CO_2 analysts. Two persons worked as a team during sample collection. One analyst filled the bottles from the Niskins and the other adjusted the water volume, added the mercuric chloride poison and prepared and sealed the bottle joints. Additionally, replicate samples for shore based analyses of DIC and ALK were collected in duplicate from 161 Niskins on 34 stations.

Analyses of DIC and ALK were performed on aliquots of water subsampled from the same bottle of water. Single aliquots for DIC analysis were removed from the bottles first. Aliquots for ALK analysis were later removed from the same bottles. Enough water was available to perform at least two ALK titrations on each bottle.

3. Alkalinity Measurement Summary

Samples from a total of 1153 Niskins, 574 from Leg 1 and 579 from Leg 2, were titrated to determine ALK. Usually all 36 samples collected on a station were analyzed for ALK. A total of 72 duplicate samples, 36 on each leg, were also analyzed. For quality assessment purposes, 84 titrations were performed on 68 bottles of the natural sea water Certified DIC Reference Material Batch No. 13 and 182 more titrations were performed on 38 bottles of bicarbonate reference material solutions prepared at SIO. A total of 1636 individual titrations were performed during 44 days on the cruise, including all multiple trials on individual bottles of sea water and quality assessment samples.

4. Description of Analytical System and Procedures

4.1 *Overall system description*

The closed cell potentiometric acid titration system was designed and constructed at SIO by David Moss with the developmental and experimental assistance of Timothy Lueker. Figure 1 is a schematic diagram of the analytical system. It differs from other alkalinity titration systems in the method employed to define the volume of seawater to be titrated. This was accomplished by dispensing simultaneously constant volumes of water from two syringes into two titration cells so that two titrations could be run at the same time. Between titrations the cells were rinsed with purified water to remove all traces of acid or alkalinity from the cell. The cell volumes, after filling with water, were adjusted using a bladder to minimize the air space. This scheme eliminated the need to determine and

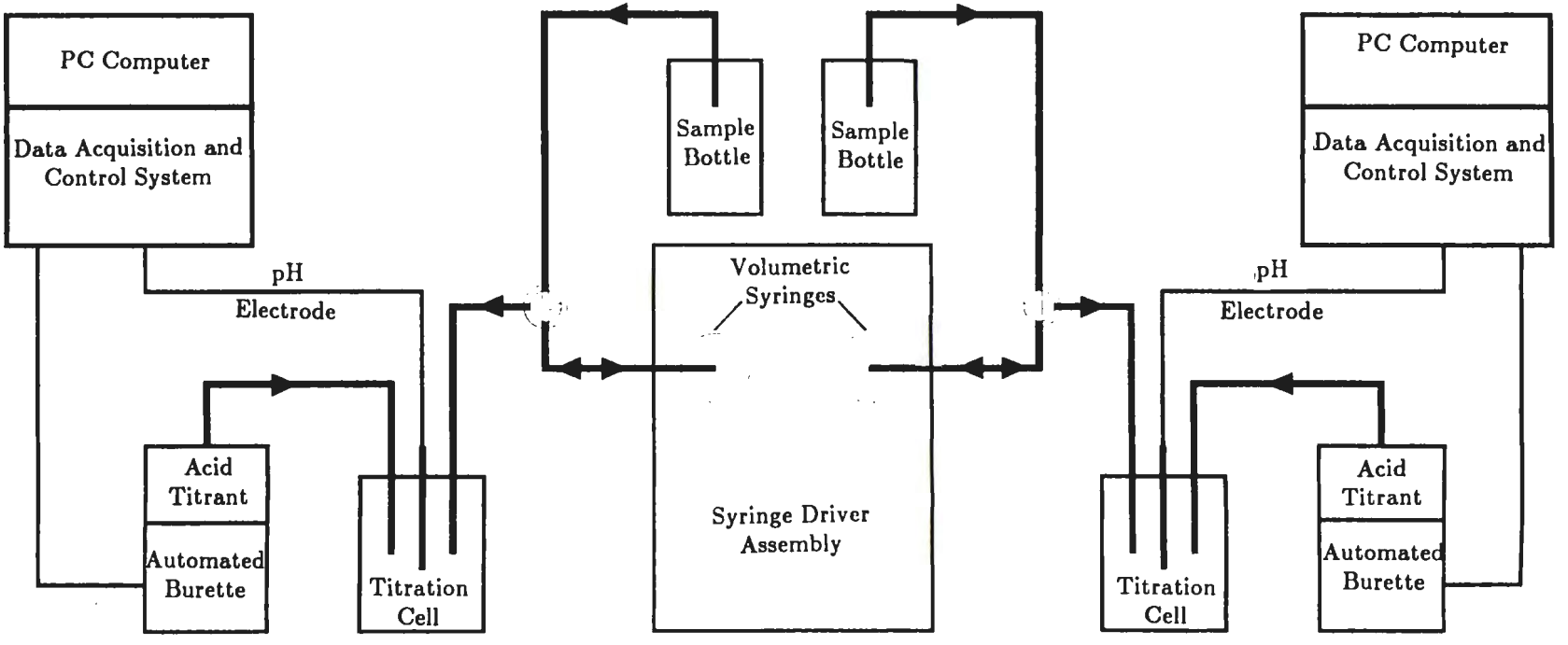

Figure 1. Schematic Diagram of the Dual Volumetric Alkalinity Titrator

control the cell volume. It added the requirement of calibrating and controlling the delivery of constant volumes by the syringe system. Calibration of the syringes was readily monitored at sea by delivering samples into pre - weighed septum bottles for later weighing at the shore laboratory.

The analytical system was modified in several ways after the TUNES Leg 3 cruise in 1991. Surface thermistor probes were attached to the outside surfaces of the glass syringes for measurement of the temperatures of the volumetric aliquots. A different type of glass electrode was used, and it was electrically shielded with a copper sleeve and a coaxial cable sleeve. A "bubble catcher" consisting of a section of glass tubing with a bulb was added in the plastic acid line to prevent air bubbles from injection into the titration cell. A plastic cage was erected around the system to reduce temperature fluctuations and a damping system built under the titrator to ameliorate expected vibration problems on the R/V *Vickers*.

After the titration cell had been filled and adjusted, the analytical procedures were typical of those used by other investigators. Acid doses were added using an automated burette and the resultant EMF recorded, all under computer control. All of the titration points were fit to a model of the system using a non - linear least squares approach. The alkalinity that minimized the residuals of this fit was found.

Details of the several main parts of the system and operating procedures follow.

4.2 *Titration cell*

Figure 2 is a schematic diagram of the titration cell. The cell bottom is a borosilicate glass Sybron/Brinkmann "90 ml" size water jacketed cell, modified by a glassblower to include a drain outlet equipped with a Teflon plug stopcock. The cell top was fabricated of plexiglass at SIO, and is attached to the bottom with an O - ring seal. The cell top has seven holes or ports with the following functions: 1) Combination glass pH electrode; 2) Glass sheathed temperature sensor (thermistor); 3) Water (sample) inlet (glass tube); 4) Glass capillary tip for acid delivery; 5) Glass vent tube for an approximately 5 ml capacity bladder made of a finger of a latex rubber surgical glove; 6) Valve made of glass rod bent to allow sealing of water inlet; 7) Glass cell vent tube with cap. All ports have O - ring seals.

The electrodes used were Radiometer combination glass pH electrodes (general use model GK2402C). This electrode, in comparison to the previously used Orion - Ross electrode, proved to be longer lasting, to have a significantly faster

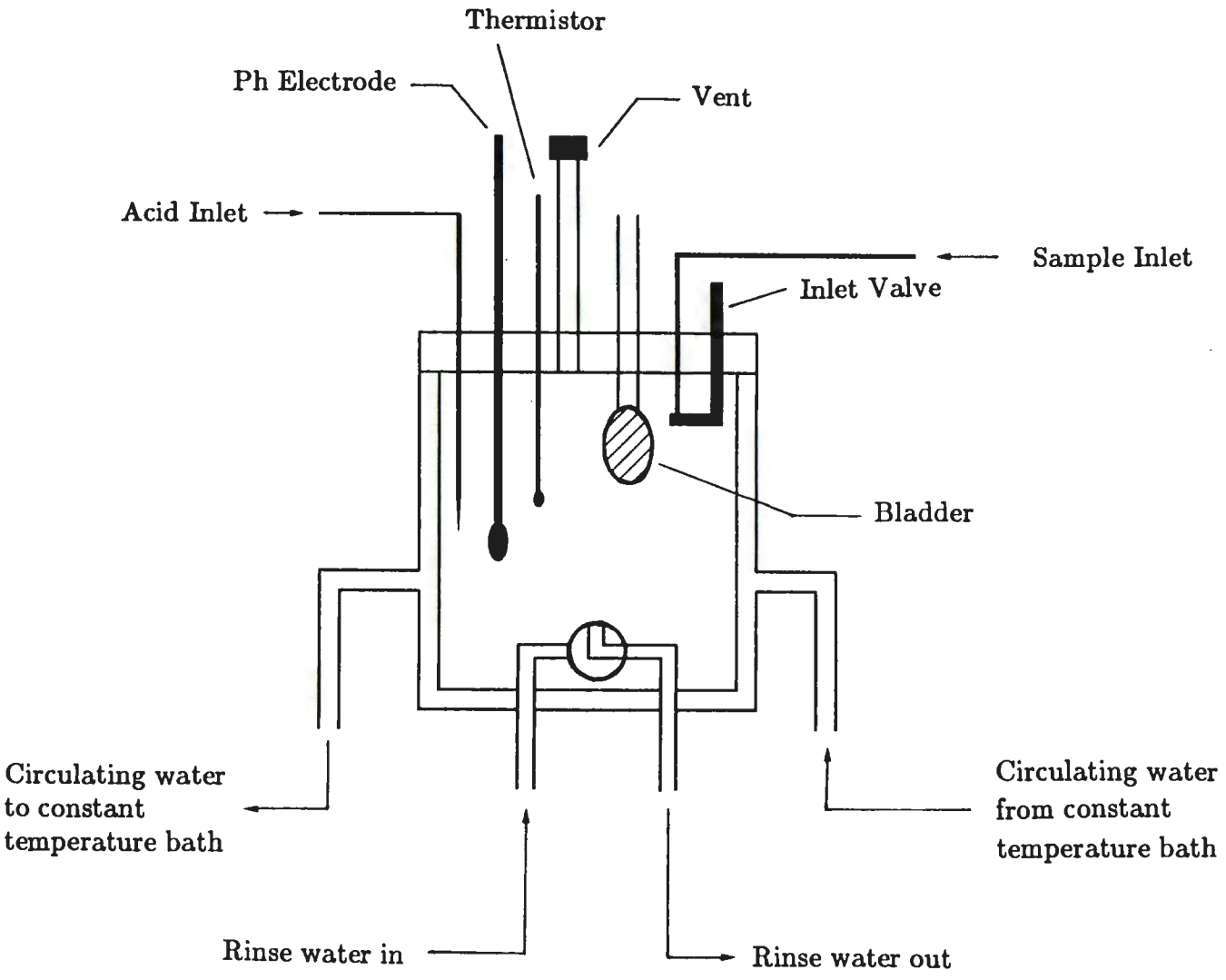

Figure 2. Schematic Diagram of Alkalinity Titration Cell

response and to be more stable. A pH meter was not used; instead, the electrode voltage output was connected to an isolation amplifier (voltage follower) that served as an impedance buffer between the electrode and a digital voltmeter.

4.3 *Sample aliquoting system and calibration*

Two 100 ml size glass syringes (of Japanese manufacture by "Star") were mounted on an optical bench and the syringe plungers were driven by a stepper motorized precision lead screw. Delivery of a constant volume of sample was accomplished by commanding the stepper motor to turn a preset number of counts.

Syringe volume calibrations were done by weighing deliveries of samples of known density (either pure water or sea water). The means of the pre - cruise laboratory calibrations of the syringe delivery volumes agreed with the means of the post - cruise calibrations to better than one part in 6000. Four sets of calibrations of both syringes were made at sea by delivering sea water samples of known salinity into pre - weighed bottles. The bottles were sealed with rubber septums and later weighed in the shore laboratory. Six deliveries were done for each calibration set; the sample standard deviation for each set was better than one part in 5000. All of the sets agreed with the laboratory calibrations to within one part in 1800. The sets on the left side agreed to better than one part in 3600; those on the right side, to one part in 2300 on average. The ALK data reported here were calculated using the pre - cruise volume calibrations for the syringes (91.151 ml for the left side syringe, serial number 7736; and 91.210 ml for the right side syringe, serial number 7754). The average for all shore calibrations (APR 91 to MAR 94) of the left side syringe is 91.150 ml ($\pm$1/10000 for 7 sets); for the right side syringe, the average is 91.181 ml ($\pm$1/2800 for 9 sets). A possible future small adjustment to the data would be to use the overall average volume for the right side, which agrees to one part in 7000 with the shipboard values. This change would raise the right side ALK's by one part in 3000. No significant change based on the calibration data would be possible for the left side results.

4.4 *Acid titrant delivery system and calibration*

The acid titrant was 0.1N hydrochloric acid in an aqueous sodium chloride matrix of approximately 0.7 ionic strength. Doses of acid were added to the titration cell under computer control from a Metrohm Dosimat 665 automatic burette. The plastic acid line from the Dosimat (5 ml size burette) was connected to a capillary glass tip for entrance into the titration cell.

A total of 26 doses were made during a titration, with a total of 3.4 ml of added acid titrant. Prior to and after the second (bicarbonate) equivalence point, the doses were of 200 microliters. Around the equivalence point, from 2.0 ml to 2.6 ml, the doses were of 50 microliters in order to weigh the titration curve fit to that region for total alkalinity determination.

The acid titrants were prepared in batches (designated batch numbers 9 and 11) of 20 liters and bottled in one liter reagent bottles with greased stoppers. During the cruise ten different bottles of acid were used. Bottles were changed when half empty. Three pairs of acid batch 11 bottles were used on Leg 1. After the first few days of Leg 2, two pairs of batch 9 bottles were used until the end of the cruise.

Acid densities were measured with a pycnometer at two different temperatures, 21 and 25 ° C. A linear equation, using a universal slope of 0.28261, was used to calculate the acid density for a titration according to the temperature measured with a thermistor (surface probe) attached to the glass Dosimat burette.

The acid titrant concentration was determined by titration of sodium carbonate solutions. These were prepared by solution in purified water of primary standard sodium carbonate heated to constant weight at 270 ° C. Titrations of standard carbonate were done on two bottles of acid batch 9, one prior to the cruise and one during the period of the cruise, and on one bottle of acid batch 11, during the cruise. These titrations were performed on the shore based gravimetric titration system in the CDRG laboratory at SIO (Guenther et al, 1994a). Results are summarized in the following table:

Date	STD Bottle-Trial	Acid Bottle No.	[HCl](eq/kg)
23 May 91	59-2	9D	0.09731
23 May 91	60-2	9D	0.09725
1 Sep 92	69-4	9B	0.09729
1 Sep 92	70-3	9B	0.09724
28 Aug 92	70-2	11C	0.09709
31 Aug 92	68-3	11C	0.09698
31 Aug 92	69-2	11C	0.09712

The average of the four determinations of acid batch 9 is 0.09727 ±0.00033 equivalents per kilogram (eq/kg). The value used to calculate the reported data is a preliminary value of 0.09724 eq/kg, representing about 0.75 microequivalents per kilogram (μeq/kg) difference in calculated alkalinity. Pending further retrospective analysis of the acid calibrations, it was not deemed worthwhile to adjust the tabulated data. The average of the three determinations of batch 11 is 0.09706 ±0.00007 eq/kg. The value used to calculate the reported data is a preliminary value of 0.09690 eq/kg, representing about 3.8 μeq/kg difference in calculated alkalinity. This latter value was determined before the cruise by titrating water from a number of bicarbonate quality assessment bottles (STD batch A) with both batch 9 and batch 11 acids, and then choosing an acid concentration for batch 11 that produced the same concentration for STD A as obtained with batch 9. If the average batch 11 value from the above table is used, an offset would appear in the quality assessment standards when batch 9 acid was substituted on Leg 2; the offset would be such that the quality assessment standards would agree less well with the shore based results on the gravimetric system. If the preliminary batch 11 value is used, no offset is discernible when the acids were changed. For that reason, pending further analysis, we have not used the sodium carbonate calibrations of acid batch 11 listed in the above table.

4.5 *Temperature measurement and calibration*

Several temperatures were measured in the titration procedure, using YSI thermistor probes. The aliquot temperature was measured with a surface probe attached to the outside surface of the syringe. This temperature was read and recorded in the data set when a key was pressed on the computer after the water had been in the syringe for at least ten minutes and just before injection of the aliquot into the titration cell. The acid temperature was measured with a surface probe attached to the Dosimat burette and recorded for every dose of titrant. The average temperature during the titration was used for calculation of the acid density. The cell temperature was measured with a glass sheathed immersion probe and recorded for every dose. The temperature at the midpoint of the titration was used in the calculation of alkalinity. The ambient air temperature was measured with an air probe during the titration and recorded, but not used in the calculations.

Thermistors were calibrated at the Oceanographic Data Facility of SIO by comparison to standard thermometers, with the assistance of Mr. Robert Williams. One set of calibrations was done prior to the cruise, in summer 1992. Calibration curves for the probes were very close to those done prior to the TUNES Leg 3 cruise, in summer 1991.

4.6 *Data acquisition system*

The titrator had two identical computerized data acquisition systems, one for each side of the titrator. The thermistor resistances and the electrode voltage (after passing through the isolation amplifier) were measured with a 5 1/2 digit Hewlett Packard digital multimeter. The electrode voltages were measured on the ±300 mv scale and recorded to 0.01 mv. A switching box and scanner allowed the multiple inputs to be recorded on hard disc under program control of a Zenith 286 lap top computer equipped with a data acquisition expansion chassis. The operating program also controlled the addition of acid titrant doses by the Dosimat burette.

At the end of a titration, recorded data were copied to a 3 1/2" HD diskette for archiving and later calculation of the alkalinity. One saved file contains one set of data for each titration point, i.e. the final stable electrode EMF's and associated temperatures. Another saved file contains 1/2 second averages of the electrode EMF's throughout the titration, allowing the electrode behavior and stability for every titration to be recreated.

4.7 *Calculation of titration alkalinity*

The titration alkalinity, ALK, was calculated from the titration data set using a non -linear least squares fit of the entire titration curve. A description of this procedure is given in the Department of Energy Handbook of Methods (DOE, 1994). In this procedure, the residuals of the fit are minimized by adjustment of four parameters: the bicarbonate equilibrium constant, K1; the ALK; the DIC; and f, related to the E0 of the system. Codes entered by the operator identified the sample as either sea water or bicarbonate in sodium chloride solution and the appropriate constants and densities were then selected by the program.

The sets of chemical equilibrium constants used in the fit routine to calculate the alkalinity were as follows:

For 0.7M NaCl:	K1 (bicarbonate)	: Dyrssen and Hansson	(1972)
	K2 (carbonate)	: Dyrssen and Hansson	(1972)
	Kw (water)	: Dyrssen and Hansson	(1972)
For sea water:	K1 (bicarbonate)	: Dickson and Millero	(1985)
	K2 (bicarbonate)	: Dickson and Millero	(1985)
	Kw (water)	: Dickson and Riley	(1979)
	Kb (borate)	: Johansson and Wedborg	(1981)
	Ks (sulfate)	: Khoo et. al.	(1977)
	Kf (fluoride)	: Dickson and Riley	(1979)
relation to SAL:	Total borate	: Uppstrom	(1974)
	Total sulfate	: Morris and Riley	(1966)
	Total fluoride	: Riley	(1965)

Phosphate and silica were assumed to be equal to zero. According to Dickson (DOE, 1994), this assumption has a negligible effect on the calculated alkalinity.

For every titration a graph was produced that displayed the residuals of the fit versus the actual data. Titration data files were copied into a master computer directory to allow refits of the titration data after final calibrations and adjustments to the data. All data, including the 1/2 second averages, have been archived at SIO.

4.8 *Titrator operating procedure*

Two bottles of water to be analyzed are placed in holders above the syringe driver assembly and allowed to adjust to ambient temperature. Residual prior samples are emptied from the syringes using the three way valves at the tips. The syringes and connective tubing are filled and emptied with small volumes of new samples, then the syringes are allowed to fill through a mostly glass (Tygon connection pieces) tubing system from the bottoms of the sample bottles.

The titration cells and water delivery tubing are prepared by a rinsing and flushing procedure. First the caps are removed from the cell vent tubes. The previous samples of acidified water are drained from the cells, then the cells are rinsed with purified water. The glass tubing leading from the syringes to the cells are flushed simultaneously with preset injections of 15 ml, using the syringe driver mechanism. The syringes are now set at a constant starting point. The valves at the sample inlets to the cells are closed. The cells are rinsed two more times and allowed to soak for a few minutes while stirring. The acid titrant tips in the cells are flushed with injections of 50 microliters; and the cells are drained then rinsed again to just below the acid tips. The cell drain stopcocks are closed and the

syringe delivery tubing again opened to the cells. The cells are now ready to be filled with samples. The computers are signaled to record the current temperatures of the surface thermistor probes attached to the outside surfaces of the syringes: these temperatures are used as the aliquot temperatures. The syringe driver motor is switched on to move the syringes a constant distance for simultaneous injection of aliquots into both cells. The sample entry tubes in the cells are closed with the valves. The submerged bladders are inflated using rubber pipette bulbs to reduce the cell air spaces to a minimum volume, one to two cc including the visible bubble and the volume of the cell vent tube. The cells are then closed by placing air tight plastic caps on the cell vent tubes. The bulbs are removed from the tubes leading to the bladders so that the insides of the bladders remain at atmospheric pressure during the titrations. The stirrers are turned on and the cells allowed to equilibrate to the operating temperature maintained by flowing water from a refrigerated constant temperature bath through the water jackets on the cells.

The computer data acquisition program prompts the operator to enter sample identification, sample type (sea water or bicarbonate in sodium chloride solution), and salinity. The "salinities" assigned to the bicarbonate reference materials were 39.39 for SIO STD batch A and 38.15 for SIO STD batch B. The salinity used for the natural sea water Certified DIC Reference Material, batch number 13, was 32.864 (A. Dickson, private communication). All of these apparent salinities were calculated from pycnometer density measurements using an equation of state for sea water (Fofonoff, 1985). When temperature stability has been reached, in about ten minutes, the titration programs are started and the first doses added. At each point on the titration curve, the program evaluates the electrode output stability according to a preset criterion. When stability is reached, the electrode EMF and the cell, acid burette and ambient air temperatures are recorded and the next dose of acid is injected.

The complete analysis cycle is about 30 minutes long; thus, about four titrations can be completed per hour, with dual titrators.

4.9 *Daily analysis schedule*

With two operators on board ship, the titrator was operated essentially around the clock during the cruise, interrupted by water sampling activities on station. An average of 37 titrations per analysis day were run. The usual analysis sequence was as follows. Before and after every eight sets of sea water samples (16

titrations), a set of reference materials for quality assessment were run. These reference materials were bicarbonate solutions prepared by the CDRG at SIO. These solutions were prepared in 50 liter batches by bubbling ambient air through solutions of sodium carbonate in 0.7 ionic strength sodium chloride until the pH reached stability. One liter borosilicate glass bottles were filled with solutions from two batches (designated STD batches A and B). Normally five titrations were performed on each bottle during the cruise. Each time these reference materials were titrated they were switched side to side on the system . Once a day, approximately every 40 titrations, a pair of bottles of Dr. Andrew Dickson's Certified DIC Reference Material Batch No. 13 were titrated. This batch was prepared from natural sea water. Normally one analysis was done on each CRM bottle after a DIC analysis had been made on the SOMMA coulometric system. Twice a day duplicate sea water samples collected on profile stations were titrated, one bottle of the pair on each side of the titrator. Samples were normally analyzed in order of depth, from shallow to deep. Thus on one day of 40 titrations there would be two pairs of STD's and one pair of CRM's in addition to 17 pairs of collected sea water samples, including two pairs of duplicate samples.

5. Summary of Results

5.1 *Data quality assessments*

5.1a Duplicate sea water samples

During each leg of the cruise thirty six pairs of duplicate samples were collected and analyzed, i.e. two sample bottles were filled with water from the same Niskin bottle. The bottle pairs were titrated together, one bottle on the right side of the titrator and the other on the left. The sample standard deviations calculated from the pair data, assuming the left and right sides were not systematically different, are summarized in the following table:

Leg	No. of duplicate pairs	s, μeq/kg
1	33	1.56
2	30	2.13

For Leg 1, one duplicate pair was flagged (identified malfunction or error) and one pair was omitted from consideration by the three sigma criterion (side to side delta of 11.7 μeq/kg). For leg 2, three pairs were flagged and the data record

was lost for one pair. Two pairs were omitted by the three sigma criterion (delta's of 12.5 and 9.9 μeq/kg).

5.1b SIO bicarbonate reference materials

A total of 86 titrations on bottles of STD batch A were done on both legs. Eleven were omitted from consideration due to operator error or titrator malfunction and by the three sigma criterion (one result: 11.2 μeq/kg low). For batch B, there were 92 total titrations, with two omissions (including one greater than three times sigma at 7.2 μeq/kg low). The results are summarized in the following table:

STD Batch	No. of analyses	Avg. ALK	Sample std dev (μeq/kg)
A	75	2304.24	2.77
B	90	2298.75	2.03

In comparison, analyses of samples of these batches of STD were made before and after the cruise in the shore laboratory on the gravimetric titration system, with the following results:

STD Batch	No. of analyses	Avg. ALK	Sample std dev (μeq/kg)
A	26	2307.03	1.59
B	26	2302.15	1.94

We have not determined the reason why the shore data are higher than the shipboard data.

Figures 3 and 4 are versions of control charts for the shipboard STD data. The individual results are plotted for each STD batch, with the overall mean and the two times and three times standard deviation levels shown. Six of the omitted data points are plotted on the STD A chart - the six points greater than the three times level. All of the other omitted data are off the scale of the chart. One of the omitted data points is plotted on the STD B chart - the only one below the three times level.

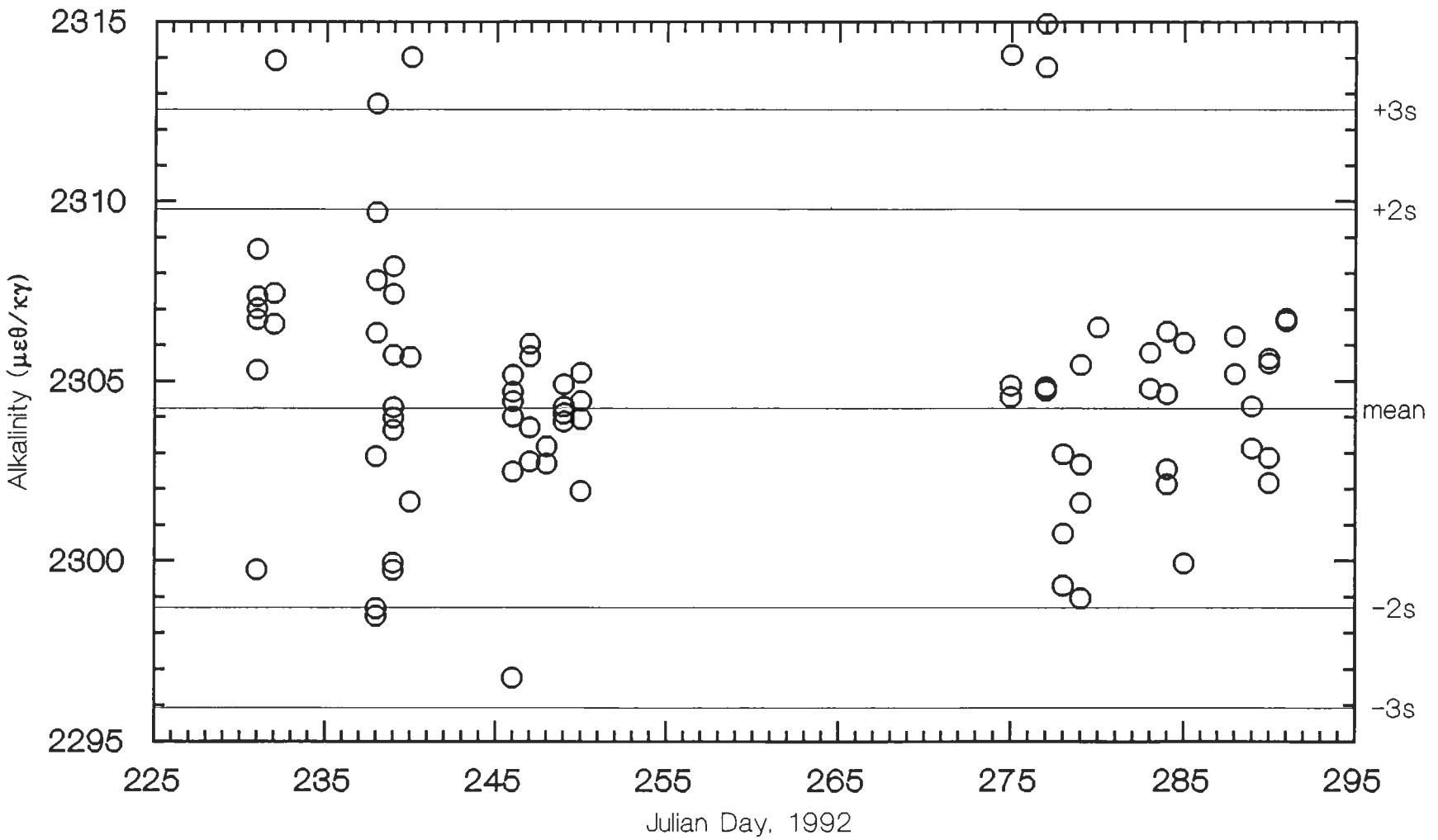

Figure 3: Control chart for CDRG Bicarbonate Reference Material Batch A shipboard alkalinity data from CGC92 Legs 1 and 2 (WOCE line P13). Average alkalinity for batch A: 2304.24 ± 2.77 μeq/kg for 75 analyses.

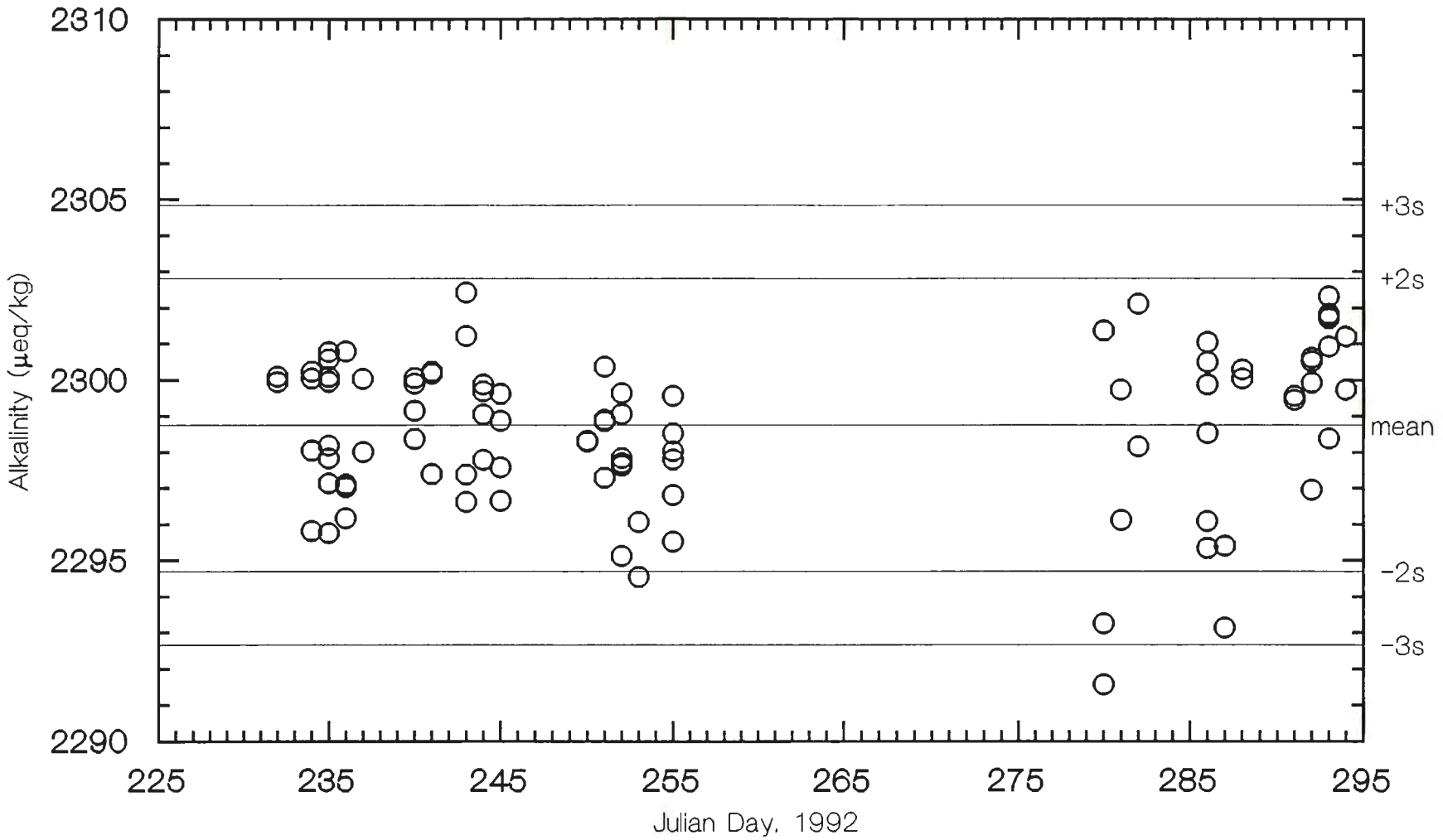

Figure 4: Control chart for CDRG Bicarbonate Reference Material Batch B shipboard alkalinity data from CGC92 Leg 1 and 2 (WOCE line P13). Average alkalinity for batch B: 2298.75 ± 2.03 µeq/kg for 90 analyses.

5.1c CRM sea water reference materials, batch 13

A total of 84 titrations of CRM batch 13 samples were done during the cruise. In most cases aliquots had previously been removed from the CRM bottles for coulometric DIC analysis. Six titrations were omitted from consideration due to operator error or instrument malfunction and by the three times sigma criterion (two results, at 15.0 μeq/kg high and 19.0 μeq/kg low). At the shore laboratory, 6 titrations were made on this batch of CRM on the gravimetric titration system. One was omitted. These results are shown in the following table:

Titrator	No. of analyses	Avg. ALK (μeq/kg)	Sample std dev (μeq/kg)
volumetric (sea)	78	2201.26	2.29
gravimetric(shore)	5	2198.67	3.87

Figure 5 is a control chart for the shipboard analyses of CRM batch 13 samples.

5.1d Discussion of data quality

Multiple titrations of duplicate sea water samples, CRM's and STD's during the cruise demonstrate that the imprecision of the shipboard titration system for the CGC92 cruise is at the level of approximately 2.5 microequivalents per kilogram (one standard deviation). The three types of quality assessment samples titrated actually give different results. The duplicate sea waters yield a standard deviation of a single measurement (s) of 1.6 μeq/kg on Leg 1 and 2.1 on Leg 2. The two bicarbonate STD reference materials do not agree well. Batch A has the highest standard deviation at 2.8 μeq/kg overall, but batch B is significantly lower at 2.0. Moreover, the scatter in STD A decreased on Leg 2 in comparison with Leg 1, while STD B increased, as did the other quality assessment samples. The primary reason for the general increase in scatter on this cruise, in comparison to the TUNES Leg 3 cruise the previous year, is the frequent appearance of significant bias between the two sides of the titrator. The bias varied to some extent, and fortuitously had a larger effect on the STD A set than the other quality assessment data sets. The side to side bias also became more severe on Leg 2, accounting for the general increase in scatter from Leg 1 to Leg 2. We have not been able to identify the cause of the side to side bias. On average it was about 1.8 $\pm$2.3 μeq/kg, right side being higher, as determined from 172 runs of the

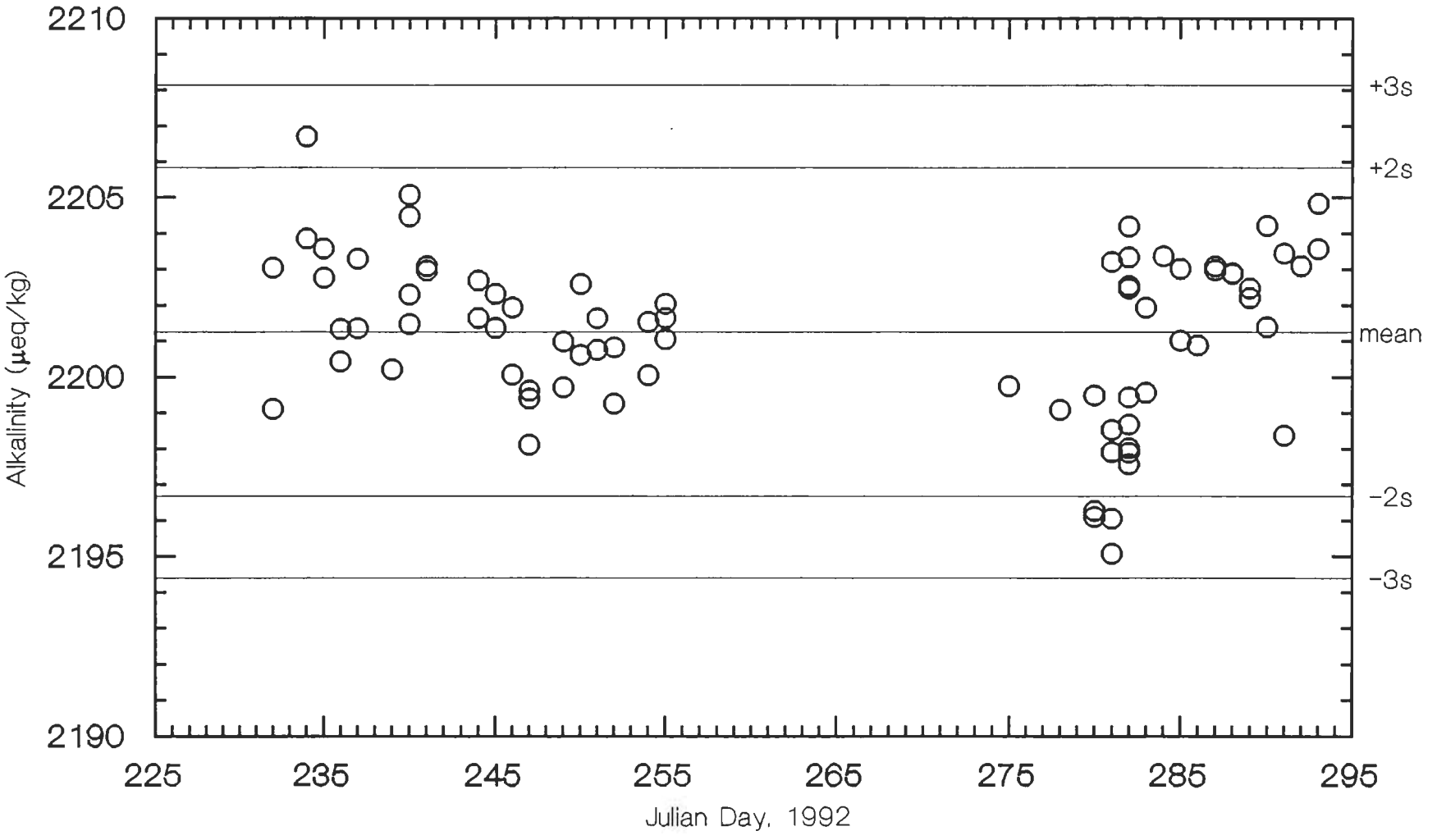

Figure 5: Control chart for SIO Certified DIC Reference Material Batch 13 shipboard alkalinity data from CGC92 Legs 1 and 2 (WOCE line P13). Average alkalinity for CRM 13: 2201.26 ± 2.29 µeq/kg for 78 analyses.

"same" water simultaneously on both sides of the titration system, i.e. for duplicate sea water samples run side by side, and also for CRM's and STD's run side by side.

Comparison of CRM and STD results at sea on the volumetric titrator to those in the shore laboratory obtained on the gravimetric titrator reveals an offset between the two systems. For STD A, the shore results are on average 2.8 μeq/kg higher than the shipboard results, and for STD B, the shore results are 3.5 higher. The side to side offset tends to be averaged out for these comparisons. For CRM 13, the few shore results are on average 2.6 μeq/kg lower than the shipboard results. The standard deviation for the shore CRM results is very high, however, with the data set split between low numbers and others higher than the shipboard result.

The lack of a definitive calibration of the acid titrant batch 11 (see section 4.4 above) implies another possible source of systematic error. As discussed above, the concentration of acid 11 was chosen to produce results for bicarbonate STD reference materials that agreed with those obtained using acid batch 9, for which the acid calibration is better and shows consistency with other results, as discussed in Guenther et al. (1994b). Some further scrutiny of the data may result in an improvement of the results in this area.

In conclusion, it can be stated that influences due to temperature, density and volume measurements on the accuracy of the results are likely to be small, close to the analytical imprecision, based on results reported here. The side to side bias in the titrator system seen in this cruise could lead to a systematic error of up to 2 μeq/kg in a single sea water result, although the sign of this possible error is as yet unknown. The offset between bicarbonate STD reference materials analyzed at sea and in the shore laboratory indicates that the shipboard results may be up to 3 μeq/kg low. The question of the accuracy of the acid calibration and indeed of the titration method overall is less clear due to the lack of a Certified Reference Material for ALK. Interlaboratory comparisons indicate that the accuracy level may be $\pm$10 μeq/kg or more.

5.2 *Data tabulations of shipboard alkalinity results*

5.2a Sea water sample data

The table lists results from all titrations in the data set. The seventh column, headed TRIAL, lists the sequential number of the titration on the same sample bottle of water. In most cases, only one was made. The "A" and "B" refer to

duplicate samples collected from the same Niskin bottle. The eighth column, headed FLAG, identifies with an "X" those calculated titrations that were affected by identified operator error or titrator system malfunctions. Such problems included: 1) Loss of water during filling of the titration cell (sometimes identified after the titration had been run); 2) problems with the pH electrodes or isolation amplifiers, often evidenced by poor residuals on the titration fit; 3) operator mistakes, such as forgetting to turn on the stir bar or to close the drain or inlet valves. The titrations identified with the flag "EX" refer to those titrations off by a large margin, usually 20 μeq/kg or more, presumably due to operator error or system malfunction, but not identified. The ninth column, headed TRIAL ALK, is the individual result for one titration trial. The tenth column, headed TRIAL DELTA, is the difference between good trials on aliquots from a single sample of water. The eleventh column, headed BOTTLE ALK, is the average of all the good trials made on water from one bottle. The twelfth column, headed BOTTLE DELTA, is the difference between analyses of water from duplicate sample bottles. The thirteenth column, headed "NISKIN" AVG is the average alkalinity obtained for a single Niskin bottle. In most cases, with a single titration per Niskin bottle, columns nine, eleven and thirteen are identical, and nothing appears in columns ten and twelve.

5.2b SIO bicarbonate reference material data

Two tables report the shipboard alkalinity results for the SIO bicarbonate reference materials, designated STD A and STD B. The tables are arranged in order of analysis date during the cruise. The individual bottles of each batch are identified by a number after the A or B. The third column, headed TRIAL, is the sequential number of the titration on the same bottle of water. The fourth column, headed FLAG, identifies with an "X" those calculated titrations that are affected by identified operator error or titrator system malfunctions (same examples as listed above). Bottle number A2, titrated on 1 and 3 Oct 92 was given an "X" flag on all five titrations because the bottle was a "bad" one, consistently high by 10 μeq/kg. The titrations identified with the flag "EX" refer to those titrations off by a large margin, 30 μeq/kg or more, presumably due to operator error or system malfunction, but not identified. The fifth, sixth and seventh columns list the individual trial alkalinities and the overall average and sample standard deviation of all the alkalinity titrations of the STD batch during the cruise.

5.2c CRM sea water reference material data

The last table reports the shipboard alkalinity results for Certified DIC Reference Materials, batch number 13. The columns have the same meaning as described above for the SIO reference materials. The letters following the CRM sample bottle number are used for internal accounting purposes.

References

DOE, Handbook of methods for the analysis of the various parameters of the carbon dioxide system in sea water; version 2, A. G. Dickson and C. Goyet, eds. ORNL/CDIAC-74, 1994.

Fofonoff, N. P., Physical properties of sea water: a new salinity scale and equation of state of sea water, J. of Geophys. Res., 90, 3332-3342, 1985.

Guenther, P. R., Keeling, C. D. and Emanuele, G. Oceanic CO_2 measurements for the WOCE hydrographic survey in the Pacific Ocean, 1990-1991: Shore based analyses, SIO Reference Series, No. 94-28, 192 p., 1994a.

Guenther, P. R., Emanuele, G., Moss, D. J., Lueker, T. J. and Keeling, C. D. Oceanic CO_2 measurements for the WOCE hydrographic survey in the Pacific Ocean: Shipboard alkalinity measurements on TUNES Leg 3, 1991, SIO Reference Series, No. 94-29, 32 p., 1994b.

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY 14-OCT-94
CGC92 Legs 1 and 2 CDRG SHIPBOARD ALKALINITY REPORT

SUMMARY OF ALKALINITY DATA

STN	CAST NISK	DEPTH (dbar)	SAMPLE DATE	ANALYSIS DATE	SAMPLE BOTTLE	TRIAL	FLAG	TRIAL ALK	TRIAL DELTA	BOTTLE ALK	BOTTLE DELTA	"NISKIN" AVG
								(UEQUIV/KG SW)				
5	1 36	9	17AUG92	18AUG92	&631 A	1		2240.76		2240.76		
5	1 36	9	17AUG92	18AUG92	&631 B	1		2241.01		2241.01	+0.25	2240.89
5	1 34	24	17AUG92	18AUG92	&630	1		2241.25		2241.25		2241.25
5	1 33	50	17AUG92	18AUG92	&629	1		2248.64		2248.64		2248.64
5	1 32	75	17AUG92	18AUG92	&628	1		2251.85		2251.85		2251.85
5	1 31	99	17AUG92	18AUG92	&627	1		2253.58		2253.58		2253.58
5	1 30	148	17AUG92	18AUG92	&626	1		2256.40		2256.40		2256.40
5	1 29	199	17AUG92	18AUG92	&625	1		2260.96		2260.96		2260.96
5	1 28	248	17AUG92	18AUG92	&624	1		2274.72		2274.72		2274.72
5	1 27	301	17AUG92	18AUG92	&623	1		2293.02		2293.02		2293.02
5	1 26	348	17AUG92	18AUG92	&622	1		2302.19		2302.19		2302.19
5	1 25	397	17AUG92	18AUG92	&621	1		2311.88		2311.88		2311.88
5	1 24	488	17AUG92	19AUG92	&620	1		2328.16		2328.16		2328.16
5	1 23	597	17AUG92	19AUG92	&619	1		2340.52		2340.52		2340.52
5	1 22	697	17AUG92	19AUG92	&618	1		2352.83		2352.83		2352.83
5	1 21	798	17AUG92	19MAY92	&617	1		2362.14		2362.14		2362.14
5	1 20	897	17AUG92	19AUG92	&616	1		2369.52		2369.52		2369.52
5	1 19	999	17AUG92	19AUG92	&615	1		2378.28		2378.28		2378.28
5	1 18	1099	17AUG92	19AUG92	&614	1		2383.53		2383.53		2383.53
5	1 17	1185	17AUG92	19AUG92	&613	1		2388.56		2388.56		2388.56
5	1 16	1296	17AUG92	19AUG92	&612	1		2395.52				
5	1 16	1296	17AUG92	19AUG92	&612	2		2393.71	-1.81	2394.61		2394.61
5	1 14	1498	17AUG92	19AUG92	&611	1		2405.92		2405.92		2405.92
5	1 13	1598	17AUG92	19AUG92	&610	1		2410.18		2410.18		2410.18
5	1 12	1697	17AUG92	19AUG92	&609	1		2413.01		2413.01		2413.01
5	1 11	1799	17AUG92	19AUG92	&608	1		2414.97		2414.97		2414.97
5	1 10	1997	17AUG92	19AUG92	&607	1		2419.55		2419.55		2419.55
5	1 09	2196	17AUG92	19AUG92	&606	1		2424.31		2424.31		2424.31
5	1 08	2399	17AUG92	19AUG92	&605	1		2427.75		2427.75		2427.75
5	1 06	2798	17AUG92	19AUG92	&604	1		2431.96		2431.96		2431.96
5	1 05	3000	17AUG92	19AUG92	&603 A	1		2436.43		2436.43		
5	1 05	3000	17AUG92	19AUG92	&603 B	1		2435.86		2435.86	-0.57	2436.15
5	1 03	3102	17AUG92	19AUG92	&602	1		2440.22		2440.22		2440.22
5	1 01	3310	17AUG92	19AUG92	&601	1		2438.66		2438.66		2438.66
6	1 09	10	21AUG92	21AUG92	&632	1		2224.14		2224.14		2224.14
7	1 15	10	21AUG92	21AUG92	&633	1		2225.12		2225.12		2225.12
8	1 25	9	21AUG92	21AUG92	&658	1		2220.51		2220.51		2220.51
8	1 24	24	21AUG92	21AUG92	&657 A	1		2244.43		2244.43		
8	1 24	24	21AUG92	21AUG92	&657 B	1		2244.43		2244.43	+0.00	2244.43
8	1 23	50	21AUG92	21AUG92	&656	1		2255.09		2255.09		2255.09
8	1 22	74	21AUG92	21AUG92	&655	1		2246.81		2246.81		2246.81
8	1 21	100	21AUG92	21AUG92	&654	1		2257.00		2257.00		2257.00
8	1 20	124	21AUG92	21AUG92	&653	1		2244.47		2244.47		2244.47
8	1 19	148	21AUG92	21AUG92	&652	1		2250.60		2250.60		2250.60
8	1 18	198	21AUG92	21AUG92	&651	1		2249.83		2249.83		2249.83
8	1 17	248	21AUG92	21AUG92	&650	1		2268.13		2268.13		2268.13
8	1 16	299	21AUG92	21AUG92	&649	1		2288.00		2288.00		2288.00
8	1 15	348	21AUG92	21AUG92	&648	1		2298.97		2298.97		2298.97
8	1 14	399	21AUG92	21AUG92	&647	1		2305.07		2305.07		2305.07
8	1 13	448	21AUG92	21AUG92	&646	1		2316.47		2316.47		2316.47
8	1 12	498	21AUG92	21AUG92	&645	1		2324.00		2324.00		2324.00

8	1	11	598	21AUG92	21AUG92	&644		1		2335.58		2335.58	2335.58
8	1	10	697	21AUG92	21AUG92	&643		1		2348.70		2348.70	2348.70
8	1	09	797	21AUG92	21AUG92	&642		1		2353.73		2353.73	2353.73
8	1	08	896	21AUG92	21AUG92	&641		1		2366.12		2366.12	2366.12
8	1	07	998	21AUG92	21AUG92	&640		1		2373.80		2373.80	2373.80
8	1	06	1099	21AUG92	21AUG92	&639		1		2379.21		2379.21	2379.21
8	1	05	1246	21AUG92	21AUG92	&638		1		2387.19		2387.19	2387.19
8	1	04	1398	21AUG92	21AUG92	&637		1		2397.12		2397.12	2397.12
8	1	03	1548	21AUG92	21AUG92	&636	A	1		2401.36		2401.36	
8	1	03	1548	21AUG92	21AUG92	&636	B	1		2404.32		2404.32	+2.96 2402.84
8	1	02	1698	21AUG92	22AUG92	&635		1		2408.67		2408.67	2408.67
8	1	01	1818	21AUG92	22AUG92	&634		1		2414.06		2414.06	2414.06
9	1	30	10	21AUG92	21AUG92	&659		1		2222.72		2222.72	2222.72
10	1	32	10	21AUG92	22AUG92	&660		1		2240.50		2240.50	2240.50
11	1	36	11	22AUG92	22AUG92	&693		1		2241.76		2241.76	2241.76
11	1	35	25	22AUG92	22AUG92	&692	A	1		2240.14		2240.14	
11	1	35	25	22AUG92	22AUG92	&692	B	1		2243.57		2243.57	+3.43 2241.85
11	1	34	50	22AUG92	22AUG92	&691		1		2246.46		2246.46	2246.46
11	1	33	75	22AUG92	22AUG92	&690		1		2247.83		2247.83	2247.83
11	1	32	100	22AUG92	22AUG92	&689		1		2252.00		2252.00	2252.00
11	1	31	125	22AUG92	22AUG92	&688		1		2261.80		2261.80	2261.80
11	1	30	151	22AUG92	22AUG92	&687		1		2285.74		2285.74	2285.74
11	1	29	174	22AUG92	22AUG92	&686		1		2297.32		2297.32	2297.32
11	1	28	198	22AUG92	22AUG92	&685		1		2297.20		2297.20	2297.20
11	1	27	249	22AUG92	22AUG92	&684		1		2310.91		2310.91	2310.91
11	1	26	299	22AUG92	22AUG92	&683		1		2317.83		2317.83	2317.83
11	1	25	348	22AUG92	22AUG92	&682		1		2329.11		2329.11	2329.11
11	1	24	399	22AUG92	22AUG92	&681		1		2332.97		2332.97	2332.97
11	1	23	499	22AUG92	22AUG92	&680		1		2345.83		2345.83	2345.83
11	1	22	599	22AUG92	22AUG92	&679		1		2357.79		2357.79	2357.79
11	1	21	692	22AUG92	22AUG92	&678		1		2367.09		2367.09	2367.09
11	1	20	799	22AUG92	22AUG92	&677		1		2369.15		2369.15	2369.15
11	1	19	998	22AUG92	22AUG92	&676		1		2386.66		2386.66	2386.66
11	1	18	1198	22AUG92	22AUG92	&675		1		2392.93		2392.93	2392.93
11	1	17	1399	22AUG92	22AUG92	&674		1		2403.81		2403.81	2403.81
11	1	16	1598	22AUG92	22AUG92	&673		1		2410.96		2410.96	2410.96
11	1	15	1798	22AUG92	22AUG92	&672		1	EX	2449.68			
11	1	14	1998	22AUG92	22AUG92	&671		1		2414.08		2414.08	2414.08
11	1	13	2198	22AUG92	22AUG92	&670		1		2418.06		2418.06	2418.06
11	1	12	2398	22AUG92	22AUG92	&669		1		2421.93		2421.93	2421.93
11	1	11	2600	22AUG92	22AUG92	&668		1		2421.46		2421.46	2421.46
11	1	10	2799	22AUG92	22AUG92	&667		1		2418.08			
11	1	10	2799	22AUG92	22AUG92	&667		2		2422.04	+3.96	2420.06	2420.06
11	1	09	2999	22AUG92	22AUG92	&666		1		2422.39			
11	1	09	2999	22AUG92	22AUG92	&666		2		2420.12	-2.27	2421.26	2421.26
11	1	07	3500	22AUG92	22AUG92	&665		1		2418.30		2418.30	2418.30
11	1	06	3749	22AUG92	22AUG92	&664		1		2420.81		2420.81	2420.81
11	1	05	4000	22AUG92	22AUG92	&663		1		2410.84		2410.84	2410.84
11	1	03	4251	22AUG92	22AUG92	&662	A	1	X	2410.82			
11	1	03	4251	22AUG92	23AUG92	&662	A	3		2417.29		2417.29	
11	1	03	4251	22AUG92	22AUG92	&662	B	1		2418.51			
11	1	03	4251	22AUG92	23AUG92	&662	B	2	EX	2450.82			
11	1	03	4251	22AUG92	23AUG92	&662	B	3		2418.99	+0.48	2418.75	+1.46 2418.02
11	1	01	4706	22AUG92	22AUG92	&661		1		2415.98		2415.98	2415.98
12	1	36	10	23AUG92	23AUG92	&694		1		2237.70		2237.70	2237.70
13	1	36	10	23AUG92	23AUG92	&728		1	EX	2262.21			
13	1	35	24	23AUG92	23AUG92	&727	A	1	X	2214.57			
13	1	35	24	23AUG92	23AUG92	&727	A	3		2237.26		2237.26	
13	1	35	24	23AUG92	23AUG92	&727	B	2	EX	2261.87			2237.26
13	1	34	49	23AUG92	23AUG92	&726		1		2247.29		2247.29	2247.29

13	1	33	74	23AUG92	23AUG92	&725		1		2244.53		2244.53		2244.53
13	1	32	99	23AUG92	23AUG92	&724		1		2250.14		2250.14		2250.14
13	1	31	126	23AUG92	23AUG92	&723		1		2260.82		2260.82		2260.82
13	1	30	146	23AUG92	23AUG92	&722		1		2282.76		2282.76		2282.76
13	1	29	174	23AUG92	23AUG92	&721		1		2296.15		2296.15		2296.15
13	1	28	200	23AUG92	23AUG92	&720		1		2302.27		2302.27		2302.27
13	1	27	248	23AUG92	23AUG92	&719		1		2308.82		2308.82		2308.82
13	1	26	298	23AUG92	23AUG92	&718		1		2321.51		2321.51		2321.51
13	1	25	348	23AUG92	23AUG92	&717		1		2331.33		2331.33		2331.33
13	1	24	403	23AUG92	23AUG92	&716		1		2336.03		2336.03		2336.03
13	1	23	499	23AUG92	23AUG92	&715		1		2344.63		2344.63		2344.63
13	1	22	600	23AUG92	23AUG92	&714		1		2356.73		2356.73		2356.73
13	1	21	696	23AUG92	23AUG92	&713		1		2365.34		2365.34		2365.34
13	1	20	797	23AUG92	23AUG92	&712		1		2374.09		2374.09		2374.09
13	1	19	996	23AUG92	23AUG92	&711		1		2384.57		2384.57		2384.57
13	1	18	1198	23AUG92	23AUG92	&710		1		2395.17		2395.17		2395.17
13	1	17	1398	23AUG92	24AUG92	&709		1		2400.79		2400.79		2400.79
13	1	16	1598	23AUG92	24AUG92	&708		1		2409.86		2409.86		2409.86
13	1	15	1799	23AUG92	24AUG92	&707		1		2414.84		2414.84		2414.84
13	1	14	1999	23AUG92	24AUG92	&706		1		2414.86		2414.86		2414.86
13	1	13	2300	23AUG92	24AUG92	&705		1		2419.29		2419.29		2419.29
13	1	12	2597	23AUG92	24AUG92	&704		1		2413.35		2413.35		2413.35
13	1	11	2900	23AUG92	24AUG92	&703		1		2418.00		2418.00		2418.00
13	1	10	3301	23AUG92	24AUG92	&702		1		2423.95		2423.95		2423.95
13	1	09	3701	23AUG92	24AUG92	&701		1		2419.08		2419.08		2419.08
13	1	08	4101	23AUG92	24AUG92	&700		1		2419.37		2419.37		2419.37
13	1	07	4502	23AUG92	24AUG92	&699		1		2418.97		2418.97		2418.97
13	1	06	4903	23AUG92	24AUG92	&698		1		2418.41		2418.41		2418.41
13	1	05	5301	23AUG92	24AUG92	&697		1		2415.12		2415.12		2415.12
13	1	03	5701	23AUG92	24AUG92	&696	A	1		2411.12		2411.12		
13	1	03	5701	23AUG92	24AUG92	&696	B	1		2415.41		2415.41	+4.29	2413.27
13	1	01	5951	23AUG92	24AUG92	&695		1		2415.32		2415.32		2415.32
14	1	36	11	23AUG92	24AUG92	&729		1		2238.81				
14	1	36	11	23AUG92	24AUG92	&729		2		2240.25	+1.44	2239.53		2239.53
15	1	36	10	24AUG92	24AUG92	&730		1		2226.98				
15	1	36	10	24AUG92	24AUG92	&730		2		2220.44	-6.54	2223.71		2223.71
16	1	36	10	24AUG92	26AUG92	&731		1		2224.38		2224.38		2224.38
17	1	35	11	25AUG92	25AUG92	&764		1		2227.76		2227.76		2227.76
17	1	36	11	25AUG92	25AUG92	&765	A	1		2225.25		2225.25		
17	1	36	11	25AUG92	25AUG92	&765	B	1		2226.03		2226.03	+0.78	2225.64
17	1	34	25	25AUG92	25AUG92	&763		1		2229.09		2229.09		2229.09
17	1	33	50	25AUG92	25AUG92	&762		1		2235.07		2235.07		2235.07
17	1	32	76	25AUG92	25AUG92	&761		1		2240.98		2240.98		2240.98
17	1	31	100	25AUG92	25AUG92	&760		1		2240.76		2240.76		2240.76
17	1	30	125	25AUG92	25AUG92	&759		1		2251.66		2251.66		2251.66
17	1	29	149	25AUG92	25AUG92	&758		1		2251.06		2251.06		2251.06
17	1	28	175	25AUG92	25AUG92	&757		1	X	2330.89				
17	1	27	200	25AUG92	25AUG92	&756		1		2270.84		2270.84		2270.84
17	1	26	249	25AUG92	25AUG92	&755		1		2284.49		2284.49		2284.49
17	1	25	298	25AUG92	25AUG92	&754		1	EX	2340.43				
17	1	24	349	25AUG92	25AUG92	&753		1		2304.02		2304.02		2304.02
17	1	23	399	25AUG92	25AUG92	&752		1		2317.38		2317.38		2317.38
17	1	22	499	25AUG92	25AUG92	&751		1		2323.40		2323.40		2323.40
17	1	21	599	25AUG92	25AUG92	&750		1		2342.82		2342.82		2342.82
17	1	20	698	25AUG92	25AUG92	&749		1		2348.99		2348.99		2348.99
17	1	19	798	25AUG92	25AUG92	&748		1		2362.53		2362.53		2362.53
17	1	18	898	25AUG92	25AUG92	&747		1		2366.74		2366.74		2366.74
17	1	17	998	25AUG92	25AUG92	&746		1		2376.98		2376.98		2376.98
17	1	16	1098	25AUG92	25AUG92	&745		1		2379.25		2379.25		2379.25
17	1	15	1198	25AUG92	25AUG92	&744		1		2389.36		2389.36		2389.36

17	1	14	1399	25AUG92	25AUG92	&743		1		2396.56		2396.56	2396.56
17	1	13	1598	25AUG92	25AUG92	&742		1		2407.01		2407.01	2407.01
17	1	12	1796	25AUG92	25AUG92	&741		1		2405.42		2405.42	2405.42
17	1	11	2098	25AUG92	25AUG92	&740		1		2416.86		2416.86	2416.86
17	1	10	2400	25AUG92	25AUG92	&739		1		2413.60		2413.60	2413.60
17	1	09	2700	25AUG92	25AUG92	&738		1		2421.82		2421.82	2421.82
17	1	08	2999	25AUG92	26AUG92	&737		1		2416.46		2416.46	2416.46
17	1	07	3302	25AUG92	26AUG92	&736		1		2421.37		2421.37	2421.37
17	1	06	3601	25AUG92	26AUG92	&735		1		2417.23		2417.23	2417.23
17	1	05	3902	25AUG92	26AUG92	&734		1		2420.54		2420.54	2420.54
17	1	03	4203	25AUG92	26AUG92	&733	A	1		2416.64		2416.64	
17	1	03	4203	25AUG92	26AUG92	&733	B	1		2418.94		2418.94	+2.30 2417.79
17	1	01	4784	25AUG92	26AUG92	&732		1		2420.45		2420.45	2420.45
18	1	36	10	25AUG92	26AUG92	&766		1		2211.70		2211.70	2211.70
19	1	36	10	25AUG92	26AUG92	&767		1		2228.97		2228.97	2228.97
20	1	36	10	26AUG92	26AUG92	&801		1		2220.84		2220.84	2220.84
20	1	34	24	26AUG92	26AUG92	&800	A	1		2227.29		2227.29	
20	1	34	24	26AUG92	25AUG92	&800	B	1		2228.68		2228.68	+1.39 2227.99
20	1	33	50	26AUG92	26AUG92	&799		1		2245.06		2245.06	2245.06
20	1	32	75	26AUG92	26AUG92	&798		1		2241.60		2241.60	2241.60
20	1	31	100	26AUG92	26AUG92	&797		1		2251.09		2251.09	2251.09
20	1	30	125	26AUG92	26AUG92	&796		1		2269.56		2269.56	2269.56
20	1	29	150	26AUG92	26AUG92	&795		1		2308.34		2308.34	2308.34
20	1	28	174	26AUG92	26AUG92	&794		1		2291.85		2291.85	2291.85
20	1	27	199	26AUG92	26AUG92	&793		1		2302.59		2302.59	2302.59
20	1	26	249	26AUG92	26AUG92	&792		1		2311.17		2311.17	2311.17
20	1	25	299	26AUG92	26AUG92	&791		1		2322.90		2322.90	2322.90
20	1	24	349	26AUG92	26AUG92	&790		1		2328.53		2328.53	2328.53
20	1	23	398	26AUG92	26AUG92	&789		1		2338.19		2338.19	2338.19
20	1	22	497	26AUG92	26AUG92	&788		1		2346.68		2346.68	2346.68
20	1	21	598	26AUG92	26AUG92	&787		1		2358.49		2358.49	2358.49
20	1	20	698	26AUG92	26AUG92	&786		1		2363.34		2363.34	2363.34
20	1	19	799	26AUG92	26AUG92	&785		1	EX	2405.78			
20	1	18	898	26AUG92	26AUG92	&784		1		2378.41		2378.41	2378.41
20	1	17	997	26AUG92	26AUG92	&783		1		2388.71		2388.71	2388.71
20	1	16	1198	26AUG92	26AUG92	&782		1		2395.30		2395.30	2395.30
20	1	15	1398	26AUG92	26AUG92	&781		1		2413.61		2413.61	2413.61
20	1	14	1699	26AUG92	26AUG92	&780		1		2410.93		2410.93	2410.93
20	1	13	1994	26AUG92	26AUG92	&779		1		2417.37		2417.37	2417.37
20	1	12	2297	26AUG92	26AUG92	&778		1		2413.49		2413.49	2413.49
20	1	11	2599	26AUG92	26AUG92	&777		1		2421.37		2421.37	2421.37
20	1	10	2899	26AUG92	26AUG92	&776		1		2418.84		2418.84	2418.84
20	1	09	3101	26AUG92	26AUG92	&775		1		2421.54		2421.54	2421.54
20	1	08	3401	26AUG92	26AUG92	&774		1		2417.16		2417.16	2417.16
20	1	07	3700	26AUG92	26AUG92	&773		1		2420.26		2420.26	2420.26
20	1	06	4002	26AUG92	26AUG92	&772		1		2418.76		2418.76	2418.76
20	1	05	4303	26AUG92	26AUG92	&771		1		2420.42		2420.42	2420.42
20	1	04	4602	26AUG92	26AUG92	&770		1		2416.09		2416.09	2416.09
20	1	03	4894	26AUG92	26AUG92	&769	A	1		2414.86		2414.86	
20	1	03	4894	26AUG92	26AUG92	&769	B	1		2420.41		2420.41	+5.55 2417.64
20	1	01	5621	26AUG92	26AUG92	&768		1		2420.47			
20	1	01	5621	26AUG92	26AUG92	&768		2		2417.35	-3.12	2418.91	2418.91
21	1	35	10	26AUG92	26AUG92	&802		1		2228.87		2228.87	2228.87
22	1	36	10	26AUG92	26AUG92	&803		1		2231.19		2231.19	2231.19
23	1	36	9	26AUG92	28AUG92	&804		1		2233.27		2233.27	2233.27
24	1	36	10	27AUG92	27AUG92	&837	A	1		2233.35		2233.35	
24	1	36	10	27AUG92	27AUG92	&837	B	1		2245.07		2245.07	+11.72 2239.21
24	1	34	24	27AUG92	27AUG92	&836		1		2233.58			
24	1	34	24	27AUG92	27AUG92	&836		2		2236.01	+2.43	2234.80	2234.80
24	1	33	48	27AUG92	27AUG92	&835		1		2242.89			

24	1	33	48	27AUG92	27AUG92	&835	2	2241.78	-1.11	2242.33		2242.33
24	1	32	75	27AUG92	27AUG92	&834	1	2239.33		2239.33		2239.33
24	1	31	100	27AUG92	27AUG92	&833	1	2242.96		2242.96		2242.96
24	1	30	125	27AUG92	27AUG92	&832	1	2255.32		2255.32		2255.32
24	1	29	149	27AUG92	27AUG92	&831	1	2280.33		2280.33		2280.33
24	1	27	200	27AUG92	27AUG92	&830	1	2293.50		2293.50		2293.50
24	1	26	249	27AUG92	27AUG92	&829	1	2305.36		2305.36		2305.36
24	1	25	299	27AUG92	27AUG92	&828	1	2314.35		2314.35		2314.35
24	1	24	349	27AUG92	27AUG92	&827	1	2323.83		2323.83		2323.83
24	1	23	400	27AUG92	27AUG92	&826	1	2330.38		2330.38		2330.38
24	1	22	499	27AUG92	27AUG92	&825	1	2344.60		2344.60		2344.60
24	1	21	599	27AUG92	27AUG92	&824	1	2356.08		2356.08		2356.08
24	1	20	699	27AUG92	27AUG92	&823	1	2366.36		2366.36		2366.36
24	1	19	799	27AUG92	27AUG92	&822	1	2374.50		2374.50		2374.50
24	1	18	898	27AUG92	27AUG92	&821	1	2381.13		2381.13		2381.13
24	1	17	998	27AUG92	27AUG92	&820	1	2383.87		2383.87		2383.87
24	1	16	1298	27AUG92	27AUG92	&819	1	2398.22		2398.22		2398.22
24	1	15	1601	27AUG92	27AUG92	&818	1	2406.49		2406.49		2406.49
24	1	14	1897	27AUG92	27AUG92	&817	1	2415.19		2415.19		2415.19
24	1	13	2199	27AUG92	27AUG92	&816	1	2418.42		2418.42		2418.42
24	1	12	2499	27AUG92	27AUG92	&815	1	2421.78		2421.78		2421.78
24	1	11	2800	27AUG92	27AUG92	&814	1	2420.80		2420.80		2420.80
24	1	10	3197	27AUG92	27AUG92	&813	1	2420.45		2420.45		2420.45
24	1	09	3600	27AUG92	27AUG92	&812	1	2419.17		2419.17		2419.17
24	1	08	4001	27AUG92	27AUG92	&811	1	2420.40		2420.40		2420.40
24	1	07	4402	27AUG92	28AUG92	&810	1	2418.04		2418.04		2418.04
24	1	06	4801	27AUG92	28AUG92	&809	1	2420.67		2420.67		2420.67
24	1	05	5102	27AUG92	28AUG92	&808	1	2418.25		2418.25		2418.25
24	1	04	5390	27AUG92	28AUG92	&807	1	2419.73		2419.73		2419.73
24	1	03	5701	27AUG92	28AUG92	&806 A	1	2419.14		2419.14		
24	1	03	5701	27AUG92	28AUG92	&806 B	1	2419.52		2419.52	+0.38	2419.33
24	1	01	5950	27AUG92	28AUG92	&805	1	2418.92		2418.92		2418.92
25	1	36	10	27AUG92	28AUG92	&838	1	2234.64		2234.64		2234.64
26	1	36	10	27AUG92	28AUG92	&867 A	1	2236.20		2236.20		
26	1	36	10	27AUG92	28AUG92	&867 B	1	2235.91		2235.91	-0.29	2236.05
26	1	34	24	27AUG92	28AUG92	&866	1	2237.93		2237.93		2237.93
26	1	33	50	27AUG92	28AUG92	&865	1	2254.22		2254.22		2254.22
26	1	32	74	27AUG92	28AUG92	&864	1	2254.15		2254.15		2254.15
26	1	31	100	27AUG92	28AUG92	&863	1	2251.02		2251.02		2251.02
26	1	30	123	27AUG92	28AUG92	&862	1	2257.65		2257.65		2257.65
26	1	29	149	27AUG92	28AUG92	&861	1	2263.32		2263.32		2263.32
26	1	28	173	27AUG92	28AUG92	&860	1	2277.02		2277.02		2277.02
26	1	27	199	27AUG92	28AUG92	&859	1	2279.93		2279.93		2279.93
26	1	26	248	27AUG92	28AUG92	&858	1	2306.15		2306.15		2306.15
26	1	25	299	27AUG92	28AUG92	&857	1	2304.65		2304.65		2304.65
26	1	24	347	27AUG92	28AUG92	&856	1	2313.27		2313.27		2313.27
26	1	23	399	27AUG92	28AUG92	&855	2	2321.18		2321.18		2321.18
26	1	21	595	27AUG92	28AUG92	&854	1	2349.20		2349.20		2349.20
26	1	20	698	27AUG92	28AUG92	&853	1	2358.20		2358.20		2358.20
26	1	19	798	27AUG92	28AUG92	&852	1	2363.95		2363.95		2363.95
26	1	18	1300	27AUG92	28AUG92	&851	1	2399.42		2399.42		2399.42
26	1	15	1597	27AUG92	28AUG92	&850	1	2403.32		2403.32		2403.32
26	1	14	1897	27AUG92	28AUG92	&849	1	2413.40		2413.40		2413.40
26	1	12	2498	27AUG92	28AUG92	&848	1	2418.39		2418.39		2418.39
26	1	11	2799	27AUG92	28AUG92	&847	1	2420.25		2420.25		2420.25
26	1	09	3600	27AUG92	28AUG92	&846	1	2419.09		2419.09		2419.09
26	1	08	4001	27AUG92	28AUG92	&845	1	2419.72		2419.72		2419.72
26	1	07	4401	27AUG92	28AUG92	&844	1	2416.94		2416.94		2416.94
26	1	06	4805	27AUG92	28AUG92	&843	1	2419.12		2419.12		2419.12
26	1	05	5100	27AUG92	29AUG92	&842	1	2418.12		2418.12		2418.12

26	1	04	5401	27AUG92	29AUG92	&841		1	2420.27		2420.27	2420.27
26	1	03	5700	27AUG92	29AUG92	&840	A	1	2417.02		2417.02	
26	1	03	5700	27AUG92	29AUG92	&840	B	1	2419.59		2419.59	+2.57 2418.31
26	1	01	5954	27AUG92	29AUG92	&839		1	2417.28			
26	1	01	5954	27AUG92	30AUG92	&839		2	2419.02	+1.74	2418.15	2418.15
28	1	12	9	28AUG92	29AUG92	&868		1	2251.38			
28	1	12	9	28AUG92	29AUG92	&868		2	2251.79	+0.41	2251.58	2251.58
29	1	36	9	30AUG92	30AUG92	&902		1	2240.51		2240.51	2240.51
29	1	35	19	30AUG92	30AUG92	&901	A	1	2243.02		2243.02	
29	1	35	19	30AUG92	30AUG92	&901	B	1	2244.01		2244.01	+0.99 2243.52
29	1	34	50	30AUG92	30AUG92	&900		1	2255.52		2255.52	2255.52
29	1	33	73	30AUG92	30AUG92	&899		1	2250.95		2250.95	2250.95
29	1	32	99	30AUG92	30AUG92	&898		1	2256.72		2256.72	2256.72
29	1	31	124	30AUG92	30AUG92	&897		1	2253.60		2253.60	2253.60
29	1	30	149	30AUG92	30AUG92	&896		1	2262.20		2262.20	2262.20
29	1	29	173	30AUG92	30AUG92	&895		1	2259.54		2259.54	2259.54
29	1	27	248	30AUG92	30AUG92	&894		1	2282.99		2282.99	2282.99
29	1	26	298	30AUG92	30AUG92	&893		1	2288.58		2288.58	2288.58
29	1	25	348	30AUG92	30AUG92	&892		1	2302.12		2302.12	2302.12
29	1	24	398	30AUG92	30AUG92	&891		1	2300.81		2300.81	2300.81
29	1	23	498	30AUG92	30AUG92	&890		1	2324.58		2324.58	2324.58
29	1	22	598	30AUG92	30AUG92	&889		1	2334.33		2334.33	2334.33
29	1	21	697	30AUG92	30AUG92	&888		1	2352.06		2352.06	2352.06
29	1	20	797	30AUG92	30AUG92	&887		1	2357.26		2357.26	2357.26
29	1	19	898	30AUG92	30AUG92	&886		1	2370.46		2370.46	2370.46
29	1	18	998	30AUG92	30AUG92	&885		1	2373.02		2373.02	2373.02
29	1	17	1196	30AUG92	30AUG92	&884		1	2390.48		2390.48	2390.48
29	1	16	1495	30AUG92	30AUG92	&883		1	2400.39		2400.39	2400.39
29	1	15	1798	30AUG92	30AUG92	&882		1	2413.36		2413.36	2413.36
29	1	14	2094	30AUG92	30AUG92	&881		1	2413.16		2413.16	2413.16
29	1	13	2398	30AUG92	30AUG92	&880		1	2421.22		2421.22	2421.22
29	1	12	2702	30AUG92	30AUG92	&879		1	2417.62		2417.62	2417.62
29	1	11	3000	30AUG92	30AUG92	&878		1	2423.21		2423.21	2423.21
29	1	10	3301	30AUG92	31AUG92	&877		1	2415.49			
29	1	10	3301	30AUG92	31AUG92	&877		2	2416.19	+0.70	2415.84	2415.84
29	1	09	3601	30AUG92	31AUG92	&876		1	2422.33			
29	1	09	3601	30AUG92	31AUG92	&876		2	2422.48	+0.15	2422.41	2422.41
29	1	08	3903	30AUG92	31AUG92	&875		1	2417.70		2417.70	2417.70
29	1	07	4203	30AUG92	31AUG92	&874		1	2419.79		2419.79	2419.79
29	1	06	4597	30AUG92	31AUG92	&873		1	2416.22		2416.22	2416.22
29	1	05	5007	30AUG92	31AUG92	&872		1	2418.62		2418.62	2418.62
29	1	04	5400	30AUG92	31AUG92	&871		1	2413.98		2413.98	2413.98
29	1	03	5595	30AUG92	31AUG92	&870		1	2421.40		2421.40	2421.40
29	1	02	5952	30AUG92	31AUG92	&869	A	1	2415.58		2415.58	
29	1	02	5952	30AUG92	31AUG92	&869	B	1	2421.81		2421.81	+6.23 2418.70
30	1	36	11	31AUG92	31AUG92	&903		1	2220.24		2220.24	2220.24
31	1	36	10	31AUG92	31AUG92	&904		1	2226.27		2226.27	2226.27
32	1	36	9	31AUG92	31AUG92	&938	A	1	2218.33		2218.33	
32	1	36	9	31AUG92	31AUG92	&938	B	1	2219.12		2219.12	+0.79 2218.73
32	1	34	25	31AUG92	31AUG92	&937		1	2223.66		2223.66	2223.66
32	1	33	49	31AUG92	31AUG92	&936		1	2249.25		2249.25	2249.25
32	1	32	74	31AUG92	31AUG92	&935		1	2244.32		2244.32	2244.32
32	1	31	99	31AUG92	31AUG92	&934		1	2248.35		2248.35	2248.35
32	1	30	124	31AUG92	31AUG92	&933		1	2249.62		2249.62	2249.62
32	1	29	149	31AUG92	31AUG92	&932		1	2262.84		2262.84	2262.84
32	1	27	172	31AUG92	31AUG92	&931		1	2271.13		2271.13	2271.13
32	1	26	198	31AUG92	31AUG92	&930		1	2283.04		2283.04	2283.04
32	1	25	249	31AUG92	31AUG92	&929		1	2289.01		2289.01	2289.01
32	1	24	298	31AUG92	31AUG92	&928		1	2301.24		2301.24	2301.24
32	1	23	349	31AUG92	31AUG92	&927		1	2305.12		2305.12	2305.12

32	1	22	399	31AUG92	31AUG92	&926	1	2315.85	2315.85		2315.85
32	1	21	497	31AUG92	31AUG92	&925	1	2328.12	2328.12		2328.12
32	1	20	594	31AUG92	31AUG92	&924	1	2346.84	2346.84		2346.84
32	1	19	698	31AUG92	31AUG92	&923	1	2356.51	2356.51		2356.51
32	1	18	799	31AUG92	31AUG92	&922	1	2367.58	2367.58		2367.58
32	1	17	897	31AUG92	31AUG92	&921	1	2372.64	2372.64		2372.64
32	1	16	997	31AUG92	31AUG92	&920	1	2381.20	2381.20		2381.20
32	1	15	1197	31AUG92	31AUG92	&919	1	2392.58	2392.58		2392.58
32	1	14	1397	31AUG92	31AUG92	&918	1	2402.33	2402.33		2402.33
32	1	13	1695	31AUG92	01SEP92	&917	1	2407.77	2407.77		2407.77
32	1	12	1996	31AUG92	01SEP92	&916	1	2415.40	2415.40		2415.40
32	1	11	2299	31AUG92	01SEP92	&915	1	2417.07	2417.07		2417.07
32	1	10	2599	31AUG92	01SEP92	&914	1	2420.72	2420.72		2420.72
32	1	09	2900	31AUG92	01SEP92	&913	1	2420.78	2420.78		2420.78
32	1	08	3100	31AUG92	01SEP92	&912	1	2421.33	2421.33		2421.33
32	1	07	3402	31AUG92	01SEP92	&911	1	2419.14	2419.14		2419.14
32	1	06	3701	31AUG92	01SEP92	&910	1	2421.09	2421.09		2421.09
32	1	05	3999	31AUG92	01SEP92	&909	1	2416.82	2416.82		2416.82
32	1	04	4402	31AUG92	01SEP92	&908	1	2419.69	2419.69		2419.69
32	1	03	4802	31AUG92	01SEP92	&907	1	2417.52	2417.52		2417.52
32	1	02	5201	31AUG92	01SEP92	&906	1	2419.55	2419.55		2419.55
32	1	01	5663	31AUG92	01SEP92	&905 A	1	2417.14	2417.14		
32	1	01	5663	31AUG92	01SEP92	&905 B	1	2418.14	2418.14	+1.00	2417.64
33	1	36	10	31AUG92	01SEP92	&939	1	2219.92	2219.92		2219.92
34	1	36	10	31AUG92	01SEP92	&940	1	2221.34	2221.34		2221.34
35	1	36	9	01SEP92	01SEP92	&941	1	2218.06	2218.06		2218.06
36	1	36	10	01SEP92	01SEP92	&976	1	2225.68	2225.68		2225.68
36	1	35	23	01SEP92	01SEP92	&975 A	1	2252.43	2252.43		
36	1	35	23	01SEP92	01SEP92	&975 B	1	2253.87	2253.87	+1.44	2253.15
36	1	34	50	01SEP92	01SEP92	&974	1	2267.06	2267.06		2267.06
36	1	33	75	01SEP92	01SEP92	&973	1	2267.15	2267.15		2267.15
36	1	32	99	01SEP92	01SEP92	&972	1	2265.70	2265.70		2265.70
36	1	31	125	01SEP92	01SEP92	&971	1	2269.75	2269.75		2269.75
36	1	30	149	01SEP92	01SEP92	&970	1	2266.75	2266.75		2266.75
36	1	29	174	01SEP92	01SEP92	&969	1	2265.92	2265.92		2265.92
36	1	27	201	01SEP92	01SEP92	&968	1	2266.44	2266.44		2266.44
36	1	26	249	01SEP92	01SEP92	&967	1	2279.02	2279.02		2279.02
36	1	25	297	01SEP92	01SEP92	&966	1	2288.12	2288.12		2288.12
36	1	24	350	01SEP92	01SEP92	&965	1	2297.19	2297.19		2297.19
36	1	23	398	01SEP92	01SEP92	&964	1	2306.30	2306.30		2306.30
36	1	22	497	01SEP92	01SEP92	&963	1	2324.22	2324.22		2324.22
36	1	21	598	01SEP92	01SEP92	&962	1	2337.42	2337.42		2337.42
36	1	20	697	01SEP92	01SEP92	&961	1	2351.13	2351.13		2351.13
36	1	19	797	01SEP92	02SEP92	&960	1	2359.60	2359.60		2359.60
36	1	18	897	01SEP92	02SEP92	&959	1	2370.70	2370.70		2370.70
36	1	17	997	01SEP92	02SEP92	&958	1	2379.38	2379.38		2379.38
36	1	16	1097	01SEP92	02SEP92	&957	1	2385.61	2385.61		2385.61
36	1	15	1196	01SEP92	02SEP92	&956	1	2390.51	2390.51		2390.51
36	1	14	1298	01SEP92	02SEP92	&955	1	2395.56	2395.56		2395.56
36	1	13	1496	01SEP92	02SEP92	&954	1	2404.15	2404.15		2404.15
36	1	12	1696	01SEP92	02SEP92	&953	1	2409.64	2409.64		2409.64
36	1	11	1898	01SEP92	02SEP92	&952	1	2414.04	2414.04		2414.04
36	1	10	2198	01SEP92	02SEP92	&951	1	2417.50	2417.50		2417.50
36	1	09	2500	01SEP92	02SEP92	&950	1	2417.51	2417.51		2417.51
36	1	08	2798	01SEP92	02SEP92	&949	1	2419.53	2419.53		2419.53
36	1	07	3100	01SEP92	02SEP92	&948	1	2419.22	2419.22		2419.22
36	1	06	3399	01SEP92	02SEP92	&947	1	2420.57	2420.57		2420.57
36	1	05	3701	01SEP92	02SEP92	&946	1	2416.70	2416.70		2416.70
36	1	04	4001	01SEP92	02SEP92	&945	1	2419.02	2419.02		2419.02
36	1	03	4302	01SEP92	02SEP92	&944	1	2416.60	2416.60		2416.60

36	1	02	4702	01SEP92	02SEP92	&943	1	2418.57		2418.57		2418.57
36	1	01	4866	01SEP92	02SEP92	&942 A	1	2418.27		2418.27		
36	1	01	4866	01SEP92	02SEP92	&942 B	1	2419.89		2419.89	+1.62	2419.08
37	1	36	10	02SEP92	02SEP92	&977	1	2241.04		2241.04		2241.04
38	1	36	10	02SEP92	02SEP92	&1010A	1	2246.38		2246.38		
38	1	36	10	02SEP92	02SEP92	&1010B	1	2248.29		2248.29	+1.91	2247.33
38	1	34	24	02SEP92	02SEP92	&1009	1	2259.10		2259.10		2259.10
38	1	33	50	02SEP92	02SEP92	&1008	1	2273.43		2273.43		2273.43
38	1	32	73	02SEP92	02SEP92	&1007	1	2270.67		2270.67		2270.67
38	1	31	99	02SEP92	02SEP92	&1006	1	2271.94		2271.94		2271.94
38	1	30	124	02SEP92	02SEP92	&1005	1	2268.70		2268.70		2268.70
38	1	29	148	02SEP92	02SEP92	&1004	1	2270.81		2270.81		2270.81
38	1	27	173	02SEP92	02SEP92	&1003	1	2271.03		2271.03		2271.03
38	1	26	200	02SEP92	02SEP92	&1002	1	2271.24		2271.24		2271.24
38	1	25	247	02SEP92	02SEP92	&1001	1	2272.80		2272.80		2272.80
38	1	24	299	02SEP92	02SEP92	&1000	1	2273.89		2273.89		2273.89
38	1	23	349	02SEP92	02SEP92	&999	1	2288.30		2288.30		2288.30
38	1	22	399	02SEP92	02SEP92	&998	1	2298.50		2298.50		2298.50
38	1	21	498	02SEP92	02SEP92	&997	1	2313.67		2313.67		2313.67
38	1	20	596	02SEP92	02SEP92	&996	1	2329.63		2329.63		2329.63
38	1	19	697	02SEP92	02SEP92	&995	1	2344.89		2344.89		2344.89
38	1	18	786	02SEP92	02SEP92	&994	1	2355.92		2355.92		2355.92
38	1	17	896	02SEP92	02SEP92	&993	1	2370.00		2370.00		2370.00
38	1	16	996	02SEP92	03SEP92	&992	1	2373.89		2373.89		2373.89
38	1	15	1197	02SEP92	03SEP92	&991	1	2387.88		2387.88		2387.88
38	1	14	1396	02SEP92	03SEP92	&990	1	2396.70		2396.70		2396.70
38	1	12	1898	02SEP92	03SEP92	&989	1	2412.76		2412.76		2412.76
38	1	11	2196	02SEP92	03SEP92	&988	1	2416.18		2416.18		2416.18
38	1	10	2498	02SEP92	03SEP92	&987	1	2419.65		2419.65		2419.65
38	1	09	2800	02SEP92	03SEP92	&986	1	2418.25		2418.25		2418.25
38	1	08	3101	02SEP92	03SEP92	&985	1	2419.28		2419.28		2419.28
38	1	07	3400	02SEP92	03SEP92	&984	1	2416.61		2416.61		2416.61
38	1	06	3701	02SEP92	03SEP92	&983	1	2417.95		2417.95		2417.95
38	1	05	4102	02SEP92	03SEP92	&982	1	2416.36		2416.36		2416.36
38	1	04	4501	02SEP92	03SEP92	&981	1	2418.66		2418.66		2418.66
38	1	03	4903	02SEP92	03SEP92	&980	1	2417.95		2417.95		2417.95
38	1	02	5201	02SEP92	03SEP92	&979	1	2419.82		2419.82		2419.82
38	1	01	5602	02SEP92	03SEP92	&978 A	1	2419.13		2419.13		
38	1	01	5602	02SEP92	03SEP92	&978 B	1	2419.33		2419.33	+0.20	2419.23
39	1	36	9	02SEP92	03SEP92	&1011	1	2236.94		2236.94		2236.94
40	1	36	10	03SEP92	03SEP92	&1012	1	2252.03		2252.03		2252.03
41	1	36	9	03SEP92	03SEP92	&1043A	1	2248.84		2248.84		
41	1	36	9	03SEP92	03SEP92	&1043B	1	2251.15		2251.15	+2.31	2250.00
41	1	33	49	03SEP92	03SEP92	&1042	1	2271.62		2271.62		2271.62
41	1	32	74	03SEP92	03SEP92	&1041	1	2279.32		2279.32		2279.32
41	1	30	102	03SEP92	03SEP92	&1040	1	2272.49		2272.49		2272.49
41	1	29	148	03SEP92	03SEP92	&1039	1	2274.80		2274.80		2274.80
41	1	27	174	03SEP92	03SEP92	&1038	1	2273.97		2273.97		2273.97
41	1	26	198	03SEP92	03SEP92	&1037	1	2275.06		2275.06		2275.06
41	1	25	249	03SEP92	03SEP92	&1036	1	2274.66				
41	1	25	249	03SEP92	03SEP92	&1036	2	2270.57	-4.09	2272.61		2272.61
41	1	24	300	03SEP92	03SEP92	&1035	1	2273.13				
41	1	24	300	03SEP92	03SEP92	&1035	2	2271.60	-1.53	2272.36		2272.36
41	1	23	351	03SEP92	03SEP92	&1034	1	2270.09		2270.09		2270.09
41	1	21	501	03SEP92	03SEP92	&1033	1	2295.18		2295.18		2295.18
41	1	20	605	03SEP92	03SEP92	&1032	1	2306.12		2306.12		2306.12
41	1	19	700	03SEP92	03SEP92	&1031	1	2326.64		2326.64		2326.64
41	1	18	811	03SEP92	03SEP92	&1030	1	2342.72		2342.72		2342.72
41	1	17	900	03SEP92	03SEP92	&1029	1	2353.92		2353.92		2353.92
41	1	16	1000	03SEP92	03SEP92	&1028	1	2362.41		2362.41		2362.41

41	1	15	1199	03SEP92	03SEP92	&1027	1	2381.13		2381.13		2381.13
41	1	14	1399	03SEP92	04SEP92	&1026	1	2392.18		2392.18		2392.18
41	1	13	1599	03SEP92	04SEP92	&1025	1	2401.49		2401.49		2401.49
41	1	12	1899	03SEP92	04SEP92	&1024	1	2408.81		2408.81		2408.81
41	1	11	2201	03SEP92	04SEP92	&1023	1	2415.48		2415.48		2415.48
41	1	10	2499	03SEP92	04SEP92	&1022	1	2417.77		2417.77		2417.77
41	1	09	2799	03SEP92	04SEP92	&1021	1	2419.28		2419.28		2419.28
41	1	08	3101	03SEP92	04SEP92	&1020	1	2418.57		2418.57		2418.57
41	1	07	3399	03SEP92	04SEP92	&1019	1	2419.93		2419.93		2419.93
41	1	06	3698	03SEP92	04SEP92	&1018	1	2416.28		2416.28		2416.28
41	1	05	4101	03SEP92	04SEP92	&1017	1	2418.71		2418.71		2418.71
41	1	04	4504	03SEP92	04SEP92	&1016	1	2416.42		2416.42		2416.42
41	1	03	4802	03SEP92	04SEP92	&1015	1	2416.80		2416.80		2416.80
41	1	02	5100	03SEP92	04SEP92	&1014A	1	2421.26		2421.26		
41	1	02	5100	03SEP92	04SEP92	&1014B	1	2420.64		2420.64	-0.62	2420.95
41	1	01	5492	03SEP92	04SEP92	&1013	1	2417.04				
41	1	01	5492	03SEP92	04SEP92	&1013	2	2414.95	-2.09	2416.00		2416.00
42	1	36	10	03SEP92	04SEP92	&1044	1	2263.66				
42	1	36	10	03SEP92	04SEP92	&1044	2	2263.35	-0.31	2263.51		2263.51
45	1	12	9	05SEP92	04SEP92	&1056	1	2254.70		2254.70		2254.70
45	1	11	24	05SEP92	04SEP92	&1055	1	2256.06		2256.06		2256.06
45	1	10	51	05SEP92	04SEP92	&1054	1	2276.39		2276.39		2276.39
45	1	09	100	05SEP92	04SEP92	&1053	1	2273.03		2273.03		2273.03
45	1	08	198	05SEP92	04SEP92	&1052	1	2271.77		2271.77		2271.77
45	1	07	398	05SEP92	04SEP92	&1051	1	2274.08		2274.08		2274.08
45	1	06	799	05SEP92	05SEP92	&1050	1	2336.27		2336.27		2336.27
45	1	05	1397	05SEP92	05SEP92	&1049	1	2392.30		2392.30		2392.30
45	1	04	2000	05SEP92	05SEP92	&1048	1	2412.08		2412.08		2412.08
45	1	03	2995	05SEP92	05SEP92	&1047	1	2418.84		2418.84		2418.84
45	1	02	4001	05SEP92	05SEP92	&1046	1	2419.19		2419.19		2419.19
45	1	01	4551	05SEP92	05SEP92	&1045	1	2417.54		2417.54		2417.54
46	1	12	9	05SEP92	06SEP92	&1057	1	2251.96		2251.96		2251.96
47	1	36	11	05SEP92	05SEP92	&1091A	1	2259.03		2259.03		
47	1	36	11	05SEP92	05SEP92	&1091B	1	2259.86		2259.86	+0.83	2259.45
47	1	34	23	05SEP92	05SEP92	&1090	1	2253.35		2253.35		2253.35
47	1	33	48	05SEP92	05SEP92	&1089	1	2275.42		2275.42		2275.42
47	1	32	74	05SEP92	05SEP92	&1088	1	2275.55		2275.55		2275.55
47	1	31	96	05SEP92	05SEP92	&1087	1	2273.95		2273.95		2273.95
47	1	30	121	05SEP92	05SEP92	&1086	1	2272.33		2272.33		2272.33
47	1	29	148	05SEP92	05SEP92	&1085	1	2271.37		2271.37		2271.37
47	1	27	172	05SEP92	05SEP92	&1084	1	2270.46		2270.46		2270.46
47	1	26	198	05SEP92	05SEP92	&1083	1	2271.42		2271.42		2271.42
47	1	25	249	05SEP92	05SEP92	&1082	1	2271.37		2271.37		2271.37
47	1	24	299	05SEP92	05SEP92	&1081	1	2273.03		2273.03		2273.03
47	1	23	344	05SEP92	05SEP92	&1080	1	2273.05		2273.05		2273.05
47	1	22	398	05SEP92	05SEP92	&1079	1	2276.66		2276.66		2276.66
47	1	21	497	05SEP92	05SEP92	&1078	1	2291.07		2291.07		2291.07
47	1	20	599	05SEP92	05SEP92	&1077	1	2304.66		2304.66		2304.66
47	1	19	699	05SEP92	06SEP92	&1076	1	2323.88		2323.88		2323.88
47	1	18	797	05SEP92	06SEP92	&1075	1	2342.53		2342.53		2342.53
47	1	17	898	05SEP92	06SEP92	&1074	1	2354.99		2354.99		2354.99
47	1	16	997	05SEP92	06SEP92	&1073	1	2366.74		2366.74		2366.74
47	1	15	1196	05SEP92	06SEP92	&1072	1	2384.72		2384.72		2384.72
47	1	14	1398	05SEP92	06SEP92	&1071	1	2395.82		2395.82		2395.82
47	1	13	1698	05SEP92	06SEP92	&1070	1	2408.93		2408.93		2408.93
47	1	12	1998	05SEP92	06SEP92	&1069	1	2415.32		2415.32		2415.32
47	1	11	2298	05SEP92	06SEP92	&1068	1	2418.54		2418.54		2418.54
47	1	10	2596	05SEP92	06SEP92	&1067	1	2420.98		2420.98		2420.98
47	1	09	2899	05SEP92	06SEP92	&1066	1	2418.72		2418.72		2418.72
47	1	08	3200	05SEP92	06SEP92	&1065	1	2421.72		2421.72		2421.72

47	1	07	3501	05SEP92	06SEP92	&1064	1	2416.90	2416.90		2416.90
47	1	06	3798	05SEP92	06SEP92	&1063	1	2420.25	2420.25		2420.25
47	1	05	4100	05SEP92	06SEP92	&1062	1	2421.50	2421.50		2421.50
47	1	04	4403	05SEP92	06SEP92	&1061	1	2421.79	2421.79		2421.79
47	1	03	4701	05SEP92	06SEP92	&1060	1	2416.81	2416.81		2416.81
47	1	02	5003	05SEP92	06SEP92	&1059	1	2418.66	2418.66		2418.66
47	1	01	5595	05SEP92	06SEP92	&1058A	1	2408.07	2408.07		
47	1	01	5595	05SEP92	06SEP92	&1058B	1	2410.49	2410.49	+2.42	2409.28
48	1	36	9	06SEP92	06SEP92	&1092	1	2254.34	2254.34		2254.34
49	1	35	24	06SEP92	06SEP92	&1126	1	2253.58	2253.58		2253.58
49	1	34	47	06SEP92	06SEP92	&1125	1	2258.22	2258.22		2258.22
49	1	33	70	06SEP92	06SEP92	&1124A	1	2269.25	2269.25		
49	1	33	70	06SEP92	06SEP92	&1124B	1	2269.19	2269.19	-0.06	2269.22
49	1	32	101	06SEP92	06SEP92	&1123	1	2276.85	2276.85		2276.85
49	1	31	120	06SEP92	06SEP92	&1122	1	2275.88	2275.88		2275.88
49	1	30	146	06SEP92	06SEP92	&1121	1	2271.81	2271.81		2271.81
49	1	29	171	06SEP92	06SEP92	&1120	1	2274.48	2274.48		2274.48
49	1	28	200	06SEP92	06SEP92	&1119	1	2274.36	2274.36		2274.36
49	1	27	243	06SEP92	06SEP92	&1118	1	2274.55	2274.55		2274.55
49	1	26	300	06SEP92	06SEP92	&1117	1	2276.67	2276.67		2276.67
49	1	25	348	06SEP92	06SEP92	&1116	1	2280.15	2280.15		2280.15
49	1	24	399	06SEP92	07SEP92	&1115	1	2280.64	2280.64		2280.64
49	1	23	498	06SEP92	07SEP92	&1114	1	2295.53	2295.53		2295.53
49	1	22	599	06SEP92	07SEP92	&1113	1	2311.81	2311.81		2311.81
49	1	21	700	06SEP92	07SEP92	&1112	1	2331.07	2331.07		2331.07
49	1	20	798	06SEP92	07SEP92	&1111	1	2345.64	2345.64		2345.64
49	1	19	898	06SEP92	07SEP92	&1110	1	2358.78	2358.78		2358.78
49	1	18	996	06SEP92	07SEP92	&1109	1	2371.14	2371.14		2371.14
49	1	17	1199	06SEP92	07SEP92	&1108	1	2387.76	2387.76		2387.76
49	1	16	1399	06SEP92	07SEP92	&1107	1	2398.17	2398.17		2398.17
49	1	15	1696	06SEP92	07SEP92	&1106	1	2410.83	2410.83		2410.83
49	1	14	2000	06SEP92	07SEP92	&1105	1	2413.05	2413.05		2413.05
49	1	13	2275	06SEP92	07SEP92	&1104	1	2421.24	2421.24		2421.24
49	1	12	2602	06SEP92	07SEP92	&1103	1	2418.07	2418.07		2418.07
49	1	11	2899	06SEP92	07SEP92	&1102	1	2420.15	2420.15		2420.15
49	1	10	3196	06SEP92	07SEP92	&1101	1	2417.60	2417.60		2417.60
49	1	09	3498	06SEP92	07SEP92	&1100	1	2420.75	2420.75		2420.75
49	1	08	3796	06SEP92	07SEP92	&1099	1	2419.53	2419.53		2419.53
49	1	07	4101	06SEP92	07SEP92	&1098	1	2420.02	2420.02		2420.02
49	1	05	4701	06SEP92	07SEP92	&1097	1	2412.85	2412.85		2412.85
49	1	04	5003	06SEP92	07SEP92	&1096	1	2412.27	2412.27		2412.27
49	1	03	5301	06SEP92	07SEP92	&1095	1	2406.88	2406.88		2406.88
49	1	02	5501	06SEP92	08SEP92	&1094	1	2409.10	2409.10		2409.10
49	1	01	5651	06SEP92	07SEP92	&1093A	1	2406.02	2406.02		
49	1	01	5651	06SEP92	07SEP92	&1093B	1	2407.10	2407.10	+1.08	2406.56
50	1	35	10	07SEP92	08SEP92	&1127	1	2251.64	2251.64		2251.64
51	1	36	9	07SEP92	07SEP92	&1146A	1	2256.90	2256.90		
51	1	36	9	07SEP92	07SEP92	&1146B	1	2258.48	2258.48	+1.58	2257.69
51	1	34	24	07SEP92	07SEP92	&1145	1	2253.71	2253.71		2253.71
51	1	33	48	07SEP92	07SEP92	&1144	1	2272.69	2272.69		2272.69
51	1	32	73	07SEP92	07SEP92	&1143	1	2282.99	2282.99		2282.99
51	1	31	99	07SEP92	07SEP92	&1142	1	2284.58	2284.58		2284.58
51	1	30	124	07SEP92	07SEP92	&1141	1	2283.35	2283.35		2283.35
51	1	29	150	07SEP92	07SEP92	&1140	1	2283.90	2283.90		2283.90
51	1	28	175	07SEP92	07SEP92	&1139	1	2282.24	2282.24		2282.24
51	1	27	199	07SEP92	07SEP92	&1138	1	2283.66	2283.66		2283.66
51	1	26	250	07SEP92	07SEP92	&1137	1	2279.72	2279.72		2279.72
51	1	25	298	07SEP92	07SEP92	&1136	1	2282.25	2282.25		2282.25
51	1	24	347	07SEP92	07SEP92	&1135	1	2272.86	2272.86		2272.86
51	1	23	399	07SEP92	07SEP92	&1134	1	2274.85	2274.85		2274.85

51	1	22	498	07SEP92	07SEP92	&1133	1	2275.08		2275.08		2275.08
51	1	21	598	07SEP92	07SEP92	&1132	1	2290.14		2290.14		2290.14
51	1	20	699	07SEP92	08SEP92	&1131	1	2306.36		2306.36		2306.36
51	1	19	798	07SEP92	08SEP92	&1130	1	2326.84		2326.84		2326.84
51	1	18	885	07SEP92	08SEP92	&1129A	1	2344.07		2344.07		
51	1	18	885	07SEP92	08SEP92	&1129B	1	2345.60		2345.60	+1.53	2344.84
51	1	17	998	07SEP92	08SEP92	&1128	1	2360.11		2360.11		2360.11
52	1	36	10	08SEP92	08SEP92	&1161	1	2259.47		2259.47		2259.47
52	1	19	999	08SEP92	08SEP92	&1160	1	2354.41		2354.41		2354.41
52	1	18	1199	08SEP92	08SEP92	&1159	1	2375.67		2375.67		2375.67
52	1	17	1398	08SEP92	08SEP92	&1158	1	2392.20		2392.20		2392.20
52	1	16	1596	08SEP92	08SEP92	&1157	1	2401.42		2401.42		2401.42
52	1	15	2105	08SEP92	08SEP92	&1156	1	2416.76		2416.76		2416.76
52	1	14	2600	08SEP92	08SEP92	&1155	1	2421.49		2421.49		2421.49
52	1	13	3100	08SEP92	08SEP92	&1154	1	2422.93		2422.93		2422.93
52	1	12	3600	08SEP92	08SEP92	&1153	1	2416.71		2416.71		2416.71
52	1	11	4103	08SEP92	08SEP92	&1152	1	2419.15		2419.15		2419.15
52	1	10	4601	08SEP92	08SEP92	&1151	1	2415.24		2415.24		2415.24
52	1	09	5002	08SEP92	08SEP92	&1150	1	2413.28		2413.28		2413.28
52	1	08	5400	08SEP92	08SEP92	&1149	1	2409.29		2409.29		2409.29
52	1	07	5800	08SEP92	08SEP92	&1148	1	2407.33		2407.33		2407.33
52	1	06	6104	08SEP92	08SEP92	&1147	1	2402.54		2402.54		2402.54
53	1	25	10	08SEP92	08SEP92	&1184A	1	2286.30		2286.30		
53	1	25	10	08SEP92	08SEP92	&1184B	1	2287.47		2287.47	+1.17	2286.89
53	1	23	24	08SEP92	08SEP92	&1183	1	2281.29		2281.29		2281.29
53	1	22	48	08SEP92	08SEP92	&1182	1	2279.07		2279.07		2279.07
53	1	21	75	08SEP92	08SEP92	&1181	1	2284.80		2284.80		2284.80
53	1	20	99	08SEP92	08SEP92	&1180	1	2287.27		2287.27		2287.27
53	1	19	123	08SEP92	08SEP92	&1179	1	2283.76		2283.76		2283.76
53	1	18	150	08SEP92	08SEP92	&1178	1	2283.06		2283.06		2283.06
53	1	17	174	08SEP92	08SEP92	&1177	1	2282.07		2282.07		2282.07
53	1	16	199	08SEP92	08SEP92	&1176	1	2283.45		2283.45		2283.45
53	1	15	249	08SEP92	08SEP92	&1175	1	2282.82		2282.82		2282.82
53	1	14	300	08SEP92	08SEP92	&1174	1	2282.95		2282.95		2282.95
53	1	13	346	08SEP92	08SEP92	&1173	1	2281.49		2281.49		2281.49
53	1	12	396	08SEP92	08SEP92	&1172	1	2277.98		2277.98		2277.98
53	1	11	498	08SEP92	08SEP92	&1171	1	2275.97		2275.97		2275.97
53	1	10	600	08SEP92	08SEP92	&1170	1	2276.43		2276.43		2276.43
53	1	09	697	08SEP92	08SEP92	&1169	1	2286.64		2286.64		2286.64
53	1	08	798	08SEP92	08SEP92	&1168	1	2292.77		2292.77		2292.77
53	1	07	895	08SEP92	08SEP92	&1167	1	2324.44		2324.44		2324.44
53	1	06	997	08SEP92	08SEP92	&1166	1	2342.46		2342.46		2342.46
53	1	05	1199	08SEP92	08SEP92	&1165	1	2369.46		2369.46		2369.46
53	1	04	1398	08SEP92	09SEP92	&1164	1	2387.35		2387.35		2387.35
53	1	03	1695	08SEP92	09SEP92	&1163A	1	2403.86		2403.86		
53	1	03	1695	08SEP92	09SEP92	&1163B	1	2404.44		2404.44	+0.58	2404.15
53	1	02	1996	08SEP92	09SEP92	&1162	1	2413.93		2413.93		2413.93
54	1	35	10	09SEP92	09SEP92	&1196	1	2287.01		2287.01		2287.01
54	1	13	2597	09SEP92	09SEP92	&1195	1	2419.05		2419.05		2419.05
54	1	12	2899	09SEP92	09SEP92	&1194	1	2419.26		2419.26		2419.26
54	1	11	3201	09SEP92	09SEP92	&1193	1	2421.67		2421.67		2421.67
54	1	10	3501	09SEP92	09SEP92	&1192	1	2417.80		2417.80		2417.80
54	1	09	3800	09SEP92	09SEP92	&1191	1	2418.91		2418.91		2418.91
54	1	08	4102	09SEP92	09SEP92	&1190	1	2416.61		2416.61		2416.61
54	1	07	4502	09SEP92	09SEP92	&1189	1	2416.01		2416.01		2416.01
54	1	06	4902	09SEP92	09SEP92	&1188	1	2407.11		2407.11		2407.11
54	1	05	5302	09SEP92	09SEP92	&1187	1	2407.04		2407.04		2407.04
54	1	04	5702	09SEP92	09SEP92	&1186	1	2403.36		2403.36		2403.36
54	1	03	5804	09SEP92	10SEP92	&1185	1	2401.89				
54	1	03	5804	09SEP92	10SEP92	&1185	2	2404.71	+2.82	2403.30		2403.30

55	1	35	11	10SEP92	09SEP92	&1231	1	2294.28		2294.28	2294.28
55	1	34	25	10SEP92	10SEP92	&1230A	1	2294.75		2294.75	
55	1	34	25	10SEP92	10SEP92	&1230B	1	2291.85		2291.85	-2.90 2293.30
55	1	33	52	10SEP92	10SEP92	&1229	1	2286.43		2286.43	2286.43
55	1	32	75	10SEP92	10SEP92	&1228	1	2286.13		2286.13	2286.13
55	1	31	101	10SEP92	10SEP92	&1227	1	2285.01		2285.01	2285.01
55	1	30	124	10SEP92	10SEP92	&1226	1	2283.45			
55	1	30	124	10SEP92	11SEP92	&1226	2	2282.29	-1.16	2282.87	2282.87
55	1	29	151	10SEP92	10SEP92	&1225	1	2284.16			
55	1	29	151	10SEP92	11SEP92	&1225	2	2283.01	-1.15	2283.58	2283.58
55	1	28	176	10SEP92	11SEP92	&1224	1	2280.16		2280.16	2280.16
55	1	27	201	10SEP92	11SEP92	&1223	1	2279.96		2279.96	2279.96
55	1	26	252	10SEP92	11SEP92	&1222	1	2279.67		2279.67	2279.67
55	1	25	301	10SEP92	11SEP92	&1221	1	2279.33		2279.33	2279.33
55	1	24	351	10SEP92	11SEP92	&1220	1	2275.62		2275.62	2275.62
55	1	23	408	10SEP92	11SEP92	&1219	1	2275.38		2275.38	2275.38
55	1	22	499	10SEP92	11SEP92	&1218	1	2274.90		2274.90	2274.90
55	1	21	599	10SEP92	11SEP92	&1217	1	2276.79		2276.79	2276.79
55	1	20	698	10SEP92	11SEP92	&1216	1	2293.44		2293.44	2293.44
55	1	19	798	10SEP92	11SEP92	&1215	1	2310.43		2310.43	2310.43
55	1	18	898	10SEP92	11SEP92	&1214	1	2330.19		2330.19	2330.19
55	1	17	998	10SEP92	11SEP92	&1213	1	2346.85		2346.85	2346.85
55	1	16	1198	10SEP92	11SEP92	&1212	1	2373.81		2373.81	2373.81
55	1	15	1398	10SEP92	11SEP92	&1211	1	2386.93		2386.93	2386.93
55	1	14	1598	10SEP92	11SEP92	&1210	1	2400.73		2400.73	2400.73
55	1	13	1902	10SEP92	11SEP92	&1209	1	2411.57		2411.57	2411.57
55	1	12	2197	10SEP92	11SEP92	&1208	1	2418.54		2418.54	2418.54
55	1	11	2497	10SEP92	11SEP92	&1207	1	2419.73		2419.73	2419.73
55	1	10	2798	10SEP92	11SEP92	&1206	1	2420.37		2420.37	2420.37
55	1	09	3101	10SEP92	11SEP92	&1205	1	2420.61		2420.61	2420.61
55	1	08	3402	10SEP92	11SEP92	&1204	1	2419.48		2419.48	2419.48
55	1	07	3702	10SEP92	11SEP92	&1203	1	2418.64		2418.64	2418.64
55	1	06	4103	10SEP92	11SEP92	&1202	1	2418.44		2418.44	2418.44
55	1	05	4501	10SEP92	11SEP92	&1201	1	2415.19		2415.19	2415.19
55	1	04	4902	10SEP92	11SEP92	&1200	1	2411.24		2411.24	2411.24
55	1	03	5200	10SEP92	11SEP92	&1199	1	2405.73		2405.73	2405.73
55	1	02	5405	10SEP92	11SEP92	&1198	1	2407.01		2407.01	2407.01
55	1	01	5582	10SEP92	11SEP92	&1197A	1	2405.44		2405.44	
55	1	01	5582	10SEP92	11SEP92	&1197B	1	2405.56		2405.56	+0.12 2405.50
56	1	36	10	30SEP92	02OCT92	&1232	1	2307.76		2307.76	2307.76
57	1	35	28	30SEP92	01OCT92	&1265	1	2301.40		2301.40	2301.40
57	1	34	31	30SEP92	01OCT92	&1264	1	2311.90		2311.90	2311.90
57	1	33	73	30SEP92	01OCT92	&1263A	1	2312.02		2312.02	
57	1	33	73	30SEP92	01OCT92	&1263B	1	2306.30		2306.30	-5.72 2309.16
57	1	31	121	30SEP92	01OCT92	&1262	1	2303.83		2303.83	2303.83
57	1	30	147	30SEP92	01OCT92	&1261	1	2299.64		2299.64	2299.64
57	1	29	170	30SEP92	01OCT92	&1260	2	2288.09		2288.09	2288.09
57	1	28	198	30SEP92	01OCT92	&1259	2	2286.63		2286.63	2286.63
57	1	26	297	30SEP92	01OCT92	&1258	1	2273.27		2273.27	2273.27
57	1	25	346	30SEP92	01OCT92	&1257	1	2271.22		2271.22	2271.22
57	1	24	398	30SEP92	01OCT92	&1256	1	2265.83		2265.83	2265.83
57	1	23	497	30SEP92	01OCT92	&1255	1	2276.99		2276.99	2276.99
57	1	22	600	30SEP92	01OCT92	&1254	1	2295.02		2295.02	2295.02
57	1	21	694	30SEP92	01OCT92	&1253	1	2320.04		2320.04	2320.04
57	1	20	796	30SEP92	01OCT92	&1252	1	2339.30		2339.30	2339.30
57	1	19	897	30SEP92	01OCT92	&1251	1	2354.24		2354.24	2354.24
57	1	18	997	30SEP92	01OCT92	&1250	1	2367.50		2367.50	2367.50
57	1	17	1198	30SEP92	01OCT92	&1249	1	2383.02		2383.02	2383.02
57	1	16	1391	30SEP92	01OCT92	&1248	1	2390.48		2390.48	2390.48
57	1	15	1594	30SEP92	01OCT92	&1247	1	2400.90		2400.90	2400.90

57	1	14	1799	30SEP92	01OCT92	&1246	1		2407.70	2407.70	2407.70
57	1	13	2098	30SEP92	01OCT92	&1245	1		2414.15	2414.15	2414.15
57	1	12	2394	30SEP92	01OCT92	&1244	1		2417.91	2417.91	2417.91
57	1	11	2696	30SEP92	01OCT92	&1243	1		2420.65	2420.65	2420.65
57	1	10	2993	30SEP92	01OCT92	&1242	1		2421.61	2421.61	2421.61
57	1	09	3301	30SEP92	01OCT92	&1241	1		2420.99	2420.99	2420.99
57	1	08	3600	30SEP92	02OCT92	&1240	1		2418.91	2418.91	2418.91
57	1	07	3902	30SEP92	02OCT92	&1239	1		2417.56	2417.56	2417.56
57	1	06	4203	30SEP92	02OCT92	&1238	1		2415.07	2415.07	2415.07
57	1	05	4500	30SEP92	02OCT92	&1237	1		2411.91	2411.91	2411.91
57	1	04	4803	30SEP92	02OCT92	&1236	1		2408.31	2408.31	2408.31
57	1	03	5101	30SEP92	02OCT92	&1235	1		2403.82	2403.82	2403.82
57	1	02	5404	30SEP92	02OCT92	&1234	1		2399.44	2399.44	2399.44
57	1	01	5689	30SEP92	03OCT92	&1233A	1		2401.89	2401.89	
57	1	01	5689	30SEP92	03OCT92	&1233B	1		2403.99	2403.99	+2.10 2402.94
59	1	34	49	01OCT92	03OCT92	&1299	1		2307.73	2307.73	2307.73
59	1	33	75	01OCT92	03OCT92	&1298A	1		2304.95	2304.95	
59	1	33	75	01OCT92	03OCT92	&1298B	1	X	2366.39		2304.95
59	1	32	100	01OCT92	03OCT92	&1297	1		2311.92	2311.92	2311.92
59	1	31	123	01OCT92	03OCT92	&1296	1		2309.29	2309.29	2309.29
59	1	30	149	01OCT92	03OCT92	&1295	1		2302.40	2302.40	2302.40
59	1	29	169	01OCT92	03OCT92	&1294	1		2297.36	2297.36	2297.36
59	1	28	198	01OCT92	03OCT92	&1293	1		2286.30	2286.30	2286.30
59	1	27	250	01OCT92	03OCT92	&1292	1		2276.98	2276.98	2276.98
59	1	26	300	01OCT92	03OCT92	&1291	1		2270.51	2270.51	2270.51
59	1	25	347	01OCT92	03OCT92	&1290	1		2282.41	2282.41	2282.41
59	1	24	397	01OCT92	03OCT92	&1289	1		2266.91	2266.91	2266.91
59	1	23	496	01OCT92	03OCT92	&1288	1		2276.17	2276.17	2276.17
59	1	22	598	01OCT92	03OCT92	&1287	1		2296.02	2296.02	2296.02
59	1	21	697	01OCT92	03OCT92	&1286	1		2325.02	2325.02	2325.02
59	1	20	798	01OCT92	03OCT92	&1285	1		2341.60	2341.60	2341.60
59	1	19	895	01OCT92	03OCT92	&1284	1		2357.35	2357.35	2357.35
59	1	18	998	01OCT92	03OCT92	&1283	1		2366.52	2366.52	2366.52
59	1	17	1099	01OCT92	03OCT92	&1282	1		2394.64	2394.64	2394.64
59	1	16	1298	01OCT92	03OCT92	&1281	1		2391.18	2391.18	2391.18
59	1	15	1498	01OCT92	03OCT92	&1280	1		2408.42	2408.42	2408.42
59	1	14	1698	01OCT92	03OCT92	&1279	1		2405.44	2405.44	2405.44
59	1	13	1898	01OCT92	03OCT92	&1278	1		2409.33	2409.33	2409.33
59	1	12	2195	01OCT92	03OCT92	&1277	1		2415.59	2415.59	2415.59
59	1	11	2500	01OCT92	03OCT92	&1276	1		2420.43	2420.43	2420.43
59	1	10	2800	01OCT92	03OCT92	&1275	1		2421.90	2421.90	2421.90
59	1	09	3096	01OCT92	03OCT92	&1274	1		2420.55	2420.55	2420.55
59	1	08	3402	01OCT92	03OCT92	&1273	1		2419.33	2419.33	2419.33
59	1	07	3704	01OCT92	03OCT92	&1272	1		2418.45	2418.45	2418.45
59	1	06	4000	01OCT92	03OCT92	&1271	1		2415.92	2415.92	2415.92
59	1	05	4303	01OCT92	03OCT92	&1270	1		2411.60	2411.60	2411.60
59	1	04	4602	01OCT92	03OCT92	&1269	1		2407.48	2407.48	2407.48
59	1	03	4903	01OCT92	04OCT92	&1268	1		2399.96	2399.96	2399.96
59	1	02	5104	01OCT92	04OCT92	&1267	1		2400.77	2400.77	2400.77
59	1	01	5418	01OCT92	04OCT92	&1266A	1		2398.22	2398.22	
59	1	01	5418	01OCT92	04OCT92	&1266B	1		2399.13	2399.13	+0.91 2398.68
61	1	34	10	02OCT92	04OCT92	&1300	1		2297.81	2297.81	2297.81
62	1	34	0	02OCT92	04OCT92	&1334A	1		2300.25	2300.25	
62	1	34	0	02OCT92	04OCT92	&1334B	1		2302.15	2302.15	+1.90 2301.20
62	1	35	0	02OCT92	04OCT92	&1335	1		2301.30	2301.30	2301.30
62	1	33	23	02OCT92	04OCT92	&1333	1		2307.01	2307.01	2307.01
62	1	32	49	02OCT92	04OCT92	&1332	1		2300.13	2300.13	2300.13
62	1	31	74	02OCT92	04OCT92	&1331	1		2324.98	2324.98	2324.98
62	1	30	99	02OCT92	04OCT92	&1330	1		2312.12	2312.12	2312.12
62	1	29	125	02OCT92	04OCT92	&1329	1		2318.85	2318.85	2318.85

62	1	28	148	020CT92	040CT92	&1328	1		2316.88	2316.88	2316.88
62	1	27	176	020CT92	040CT92	&1327	1	X	2335.42		
62	1	26	199	020CT92	040CT92	&1326	1	X	2308.04		
62	1	25	250	020CT92	040CT92	&1325	1		2286.74	2286.74	2286.74
62	1	24	299	020CT92	040CT92	&1324	1		2276.72	2276.72	2276.72
62	1	23	346	020CT92	040CT92	&1323	1		2260.22	2260.22	2260.22
62	1	22	398	020CT92	040CT92	&1322	1		2264.96	2264.96	2264.96
62	1	21	497	020CT92	040CT92	&1321	1		2273.74	2273.74	2273.74
62	1	20	598	020CT92	040CT92	&1320	1		2300.99	2300.99	2300.99
62	1	19	697	020CT92	040CT92	&1319	1		2333.96	2333.96	2333.96
62	1	18	797	020CT92	040CT92	&1318	1		2347.61	2347.61	2347.61
62	1	17	896	020CT92	040CT92	&1317	1		2358.80	2358.80	2358.80
62	1	16	994	020CT92	040CT92	&1316	1		2369.13	2369.13	2369.13
62	1	15	1199	020CT92	040CT92	&1315	1		2386.46	2386.46	2386.46
62	1	14	1395	020CT92	040CT92	&1314	1		2395.61	2395.61	2395.61
62	1	13	1596	020CT92	040CT92	&1313	1		2401.69	2401.69	2401.69
62	1	12	1794	020CT92	040CT92	&1312	1		2405.82	2405.82	2405.82
62	1	11	2099	020CT92	040CT92	&1311	1		2414.03	2414.03	2414.03
62	1	10	2398	020CT92	040CT92	&1310	1		2421.03	2421.03	2421.03
62	1	09	2700	020CT92	040CT92	&1309	1		2421.26	2421.26	2421.26
62	1	08	3000	020CT92	040CT92	&1308	1		2422.81	2422.81	2422.81
62	1	07	3301	020CT92	040CT92	&1307	1		2420.27	2420.27	2420.27
62	1	06	3602	020CT92	040CT92	&1306	1		2421.49	2421.49	2421.49
62	1	05	3901	020CT92	040CT92	&1305	1		2416.87	2416.87	2416.87
62	1	04	4202	020CT92	040CT92	&1304	1		2415.05	2415.05	2415.05
62	1	03	4502	020CT92	040CT92	&1303	1		2406.44	2406.44	2406.44
62	1	02	4802	020CT92	040CT92	&1302	1		2404.01	2404.01	2404.01
62	1	01	5151	020CT92	040CT92	&1301A	1		2395.46	2395.46	
62	1	01	5151	020CT92	040CT92	&1301B	1		2398.61	2398.61	+3.15 2397.04
63	1	36	11	040CT92	050CT92	&1371	1		2308.34	2308.34	2308.34
63	1	35	24	040CT92	050CT92	&1370A	1		2305.72	2305.72	
63	1	35	24	040CT92	050CT92	&1370B	1		2311.11	2311.11	+5.39 2308.42
63	1	34	48	040CT92	050CT92	&1369	1		2312.94	2312.94	2312.94
63	1	33	63	040CT92	050CT92	&1368	1		2306.96	2306.96	2306.96
63	1	32	100	040CT92	050CT92	&1367	1		2319.49	2319.49	2319.49
63	1	31	126	040CT92	050CT92	&1366	1		2314.93	2314.93	2314.93
63	1	30	150	040CT92	050CT92	&1365	1	EX	2365.28		
63	1	29	174	040CT92	050CT92	&1364	1		2292.23	2292.23	2292.23
63	1	28	200	040CT92	050CT92	&1363	1		2296.41	2296.41	2296.41
63	1	27	225	040CT92	050CT92	&1362	1		2285.97	2285.97	2285.97
63	1	26	249	040CT92	050CT92	&1361	1		2285.49	2285.49	2285.49
63	1	25	300	040CT92	050CT92	&1360	1		2283.77	2283.77	2283.77
63	1	24	351	040CT92	050CT92	&1359	1		2277.76	2277.76	2277.76
63	1	23	390	040CT92	050CT92	&1358	1		2269.68	2269.68	2269.68
63	1	22	498	040CT92	050CT92	&1357	1		2270.55	2270.55	2270.55
63	1	21	599	040CT92	050CT92	&1356	1		2266.43	2266.43	2266.43
63	1	20	702	040CT92	050CT92	&1355	1		2276.49	2276.49	2276.49
63	1	19	800	040CT92	050CT92	&1354	1		2292.73	2292.73	2292.73
63	1	18	901	040CT92	050CT92	&1353	1		2321.32	2321.32	2321.32
63	1	17	1002	040CT92	050CT92	&1352	1		2341.95	2341.95	2341.95
63	1	16	1196	040CT92	050CT92	&1351	1		2361.58	2361.58	2361.58
63	1	15	1396	040CT92	050CT92	&1350	1		2383.28	2383.28	2383.28
63	1	14	1700	040CT92	050CT92	&1349	1		2396.83	2396.83	2396.83
63	1	13	2000	040CT92	050CT92	&1348	1		2407.77	2407.77	2407.77
63	1	12	2298	040CT92	050CT92	&1347	1		2416.62	2416.62	2416.62
63	1	11	2601	040CT92	050CT92	&1346	1		2409.03	2409.03	2409.03
63	1	10	2900	040CT92	050CT92	&1345	1		2421.62	2421.62	2421.62
63	1	09	3201	040CT92	050CT92	&1344	1		2418.71	2418.71	2418.71
63	1	08	3600	040CT92	050CT92	&1343	1		2422.20	2422.20	2422.20
63	1	07	4001	040CT92	050CT92	&1342	1		2416.93	2416.93	2416.93

63	1	06	4402	04OCT92	05OCT92	&1341	1		2415.65		2415.65	2415.65
63	1	05	4799	04OCT92	06OCT92	&1340	1		2408.47		2408.47	2408.47
63	1	04	5099	04OCT92	06OCT92	&1339	1		2407.59		2407.59	2407.59
63	1	03	5404	04OCT92	06OCT92	&1338	1		2400.60		2400.60	2400.60
63	1	02	5500	04OCT92	06OCT92	&1337	1		2404.05		2404.05	2404.05
63	1	01	5703	04OCT92	06OCT92	&1336A	1		2399.06		2399.06	
63	1	01	5703	04OCT92	06OCT92	&1336B	1		2403.43		2403.43	+4.37 2401.25
64	1	01	0	05OCT92	07OCT92	&1372A	1		2408.77			
64	1	01	0	05OCT92	07OCT92	&1372A	2		2407.98			
64	1	01	0	05OCT92	07OCT92	&1372A	3	X	2405.55	-0.79	2408.38	
64	1	01	0	05OCT92	07OCT92	&1372B	1		2413.83			
64	1	01	0	05OCT92	07OCT92	&1372B	2	EX	2508.99			
64	1	01	0	05OCT92	07OCT92	&1372B	3	X	2412.28		2413.83	+5.45 2411.10
64	1	21	0	05OCT92	07OCT92	&1392	1		2271.93		2271.93	2271.93
64	1	36	10	05OCT92	06OCT92	&1407	1		2312.54		2312.54	2312.54
64	1	35	25	05OCT92	06OCT92	&1406A	1		2305.26		2305.26	
64	1	35	25	05OCT92	06OCT92	&1406B	1		2317.79		2317.79	+12.53 2311.53
64	1	34	49	05OCT92	06OCT92	&1405	1		2316.76		2316.76	2316.76
64	1	33	74	05OCT92	06OCT92	&1404	1		2308.78		2308.78	2308.78
64	1	32	98	05OCT92	06OCT92	&1403	1		2320.56		2320.56	2320.56
64	1	31	122	05OCT92	06OCT92	&1402	1		2316.36		2316.36	2316.36
64	1	30	148	05OCT92	06OCT92	&1401	1		2316.89		2316.89	2316.89
64	1	29	174	05OCT92	06OCT92	&1400	1		2304.01		2304.01	2304.01
64	1	28	198	05OCT92	06OCT92	&1399	1		2298.92		2298.92	2298.92
64	1	27	249	05OCT92	06OCT92	&1398	1		2288.19		2288.19	2288.19
64	1	26	297	05OCT92	06OCT92	&1397	1		2282.75		2282.75	2282.75
64	1	25	347	05OCT92	06OCT92	&1396	1		2275.90		2275.90	2275.90
64	1	24	399	05OCT92	06OCT92	&1395	1		2276.80		2276.80	2276.80
64	1	23	498	05OCT92	06OCT92	&1394	1		2270.91		2270.91	2270.91
64	1	22	593	05OCT92	06OCT92	&1393	1		2273.30		2273.30	2273.30
64	1	20	690	05OCT92	07OCT92	&1391	1		2290.96		2290.96	2290.96
64	1	19	795	05OCT92	07OCT92	&1390	1		2305.85		2305.85	2305.85
64	1	18	889	05OCT92	07OCT92	&1389	1		2333.19		2333.19	2333.19
64	1	17	996	05OCT92	07OCT92	&1388	1		2346.84		2346.84	2346.84
64	1	16	1096	05OCT92	07OCT92	&1387	1		2366.82		2366.82	2366.82
64	1	15	1198	05OCT92	07OCT92	&1386	1		2372.55		2372.55	2372.55
64	1	14	1297	05OCT92	07OCT92	&1385	1		2386.81		2386.81	2386.81
64	1	13	1397	05OCT92	07OCT92	&1384	1		2387.51		2387.51	2387.51
64	1	12	1598	05OCT92	07OCT92	&1383	1		2405.11		2405.11	2405.11
64	1	11	1796	05OCT92	07OCT92	&1382	1		2388.17		2388.17	2388.17
64	1	10	2000	05OCT92	07OCT92	&1381	1		2416.06		2416.06	2416.06
64	1	09	2197	05OCT92	07OCT92	&1380	1		2410.85		2410.85	2410.85
64	1	08	2499	05OCT92	07OCT92	&1379	1		2421.09		2421.09	2421.09
64	1	07	2797	05OCT92	07OCT92	&1378	1		2415.03		2415.03	2415.03
64	1	06	3099	05OCT92	07OCT92	&1377	1		2421.38		2421.38	2421.38
64	1	05	3401	05OCT92	07OCT92	&1376	1		2417.92		2417.92	2417.92
64	1	04	3704	05OCT92	07OCT92	&1375	1		2422.09		2422.09	2422.09
64	1	03	4002	05OCT92	07OCT92	&1374	1		2410.41		2410.41	2410.41
64	1	02	4301	05OCT92	07OCT92	&1373	1		2415.20		2415.20	2415.20
65	1	36	10	05OCT92	08OCT92	&1442	1		2301.78		2301.78	2301.78
65	1	35	25	05OCT92	08OCT92	&1441A	1		2300.07		2300.07	
65	1	35	25	05OCT92	08OCT92	&1441B	1		2304.58		2304.58	+4.51 2302.33
65	1	34	48	05OCT92	08OCT92	&1440	1		2305.90		2305.90	2305.90
65	1	33	74	05OCT92	08OCT92	&1439	1		2283.74		2283.74	2283.74
65	1	32	96	05OCT92	08OCT92	&1438	1		2286.53		2286.53	2286.53
65	1	31	125	05OCT92	08OCT92	&1437	1		2274.29		2274.29	2274.29
65	1	30	148	05OCT92	08OCT92	&1436	1		2282.55		2282.55	2282.55
65	1	29	173	05OCT92	08OCT92	&1435	1		2278.49		2278.49	2278.49
65	1	28	200	05OCT92	08OCT92	&1434	1		2277.78		2277.78	2277.78
65	1	27	247	05OCT92	08OCT92	&1433	1		2274.52		2274.52	2274.52

65	1	26	299	05OCT92	08OCT92	&1432	1		2276.10	2276.10	2276.10
65	1	25	349	05OCT92	08OCT92	&1431	1		2271.99	2271.99	2271.99
65	1	24	397	05OCT92	08OCT92	&1430	1		2273.71	2273.71	2273.71
65	1	23	498	05OCT92	08OCT92	&1429	1		2270.71	2270.71	2270.71
65	1	22	598	05OCT92	08OCT92	&1428	1		2282.16	2282.16	2282.16
65	1	21	698	05OCT92	08OCT92	&1427	1		2290.08	2290.08	2290.08
65	1	20	797	05OCT92	08OCT92	&1426	1		2317.32	2317.32	2317.32
65	1	19	898	05OCT92	08OCT92	&1425	1		2336.57	2336.57	2336.57
65	1	18	999	05OCT92	08OCT92	&1424	1		2373.84	2373.84	2373.84
65	1	17	1196	05OCT92	08OCT92	&1423	1		2376.10	2376.10	2376.10
65	1	16	1398	05OCT92	08OCT92	&1422	1		2389.84	2389.84	2389.84
65	1	15	1597	05OCT92	08OCT92	&1421	1		2400.84	2400.84	2400.84
65	1	14	1800	05OCT92	08OCT92	&1420	1		2413.95	2413.95	2413.95
65	1	13	2100	05OCT92	08OCT92	&1419	1		2415.01	2415.01	2415.01
65	1	12	2400	05OCT92	08OCT92	&1418	1		2421.90	2421.90	2421.90
65	1	11	2702	05OCT92	08OCT92	&1417	1		2416.58	2416.58	2416.58
65	1	10	3002	05OCT92	08OCT92	&1416	1		2419.92	2419.92	2419.92
65	1	09	3301	05OCT92	08OCT92	&1415	1		2417.47	2417.47	2417.47
65	1	08	3601	05OCT92	08OCT92	&1414	1		2420.59	2420.59	2420.59
65	1	07	3902	05OCT92	08OCT92	&1413	1		2413.42	2413.42	2413.42
65	1	05	4502	05OCT92	08OCT92	&1412	1		2416.93	2416.93	2416.93
65	1	04	4802	05OCT92	09OCT92	&1411	1		2410.52	2410.52	2410.52
65	1	03	5102	05OCT92	09OCT92	&1410	1		2405.46	2405.46	2405.46
65	1	02	5300	05OCT92	09OCT92	&1409	1		2402.47	2402.47	2402.47
65	1	01	5544	05OCT92	09OCT92	&1408A	1		2403.12	2403.12	
65	1	01	5544	05OCT92	09OCT92	&1408B	1		2405.85	2405.85	+2.73 2404.49
66	1	36	11	08OCT92	09OCT92	&1476	1	EX	2331.46		
66	1	35	24	08OCT92	09OCT92	&1475A	1		2278.40	2278.40	
66	1	35	24	08OCT92	09OCT92	&1475B	1		2288.29	2288.29	+9.89 2283.34
66	1	34	50	08OCT92	09OCT92	&1474	1		2279.80	2279.80	2279.80
66	1	33	73	08OCT92	09OCT92	&1473	1		2282.35	2282.35	2282.35
66	1	32	98	08OCT92	09OCT92	&1472	1		2305.54	2305.54	2305.54
66	1	31	126	08OCT92	09OCT92	&1471	1		2316.57	2316.57	2316.57
66	1	30	150	08OCT92	09OCT92	&1470	1		2313.65	2313.65	2313.65
66	1	29	176	08OCT92	09OCT92	&1469	1		2303.13	2303.13	2303.13
66	1	28	200	08OCT92	09OCT92	&1468	1		2294.12	2294.12	2294.12
66	1	27	249	08OCT92	09OCT92	&1467	1		2275.36	2275.36	2275.36
66	1	26	299	08OCT92	09OCT92	&1466	1		2269.51	2269.51	2269.51
66	1	25	349	08OCT92	09OCT92	&1465	1		2282.98	2282.98	2282.98
66	1	24	400	08OCT92	09OCT92	&1464	1		2291.99	2291.99	2291.99
66	1	23	500	08OCT92	09OCT92	&1463	1		2312.41	2312.41	2312.41
66	1	22	598	08OCT92	09OCT92	&1462	1		2322.53	2322.53	2322.53
66	1	21	699	08OCT92	09OCT92	&1461	1		2337.08	2337.08	2337.08
66	1	20	796	08OCT92	09OCT92	&1460	1		2344.35	2344.35	2344.35
66	1	19	899	08OCT92	09OCT92	&1459	1		2354.26	2354.26	2354.26
66	1	18	997	08OCT92	09OCT92	&1458	1		2358.88	2358.88	2358.88
66	1	17	1100	08OCT92	09OCT92	&1457	1		2369.94	2369.94	2369.94
66	1	16	1197	08OCT92	09OCT92	&1456	1		2375.02	2375.02	2375.02
66	1	15	1297	08OCT92	09OCT92	&1455	1		2386.93	2386.93	2386.93
66	1	13	1699	08OCT92	09OCT92	&1454	1		2407.09	2407.09	2407.09
66	1	12	2000	08OCT92	09OCT92	&1453	1		2419.13	2419.13	2419.13
66	1	11	2297	08OCT92	09OCT92	&1452	1		2418.15	2418.15	2418.15
66	1	10	2599	08OCT92	09OCT92	&1451	1		2425.69	2425.69	2425.69
66	1	08	3200	08OCT92	09OCT92	&1450	1		2421.91	2421.91	2421.91
66	1	07	3502	08OCT92	09OCT92	&1449	1		2424.92	2424.92	2424.92
66	1	06	3801	08OCT92	10OCT92	&1448	1		2417.31	2417.31	2417.31
66	1	05	4102	08OCT92	10OCT92	&1447	1		2418.23	2418.23	2418.23
66	1	04	4403	08OCT92	10OCT92	&1446	1		2408.56	2408.56	2408.56
66	1	03	4702	08OCT92	10OCT92	&1445	1		2407.31	2407.31	2407.31
66	1	02	4903	08OCT92	10OCT92	&1444	1		2400.42	2400.42	2400.42

66	1	01	5117	080CT92	100CT92	&1443A	1	2399.68	2399.68		
66	1	01	5117	080CT92	100CT92	&1443B	1	2402.97	2402.97	+3.29	2401.32
67	1	36	10	090CT92	100CT92	&1512	1	2275.78	2275.78		2275.78
67	1	35	25	090CT92	100CT92	&1511A	1	2272.50	2272.50		
67	1	35	25	090CT92	100CT92	&1511B	1	2273.28	2273.28	+0.78	2272.89
67	1	34	49	090CT92	100CT92	&1510	1	2278.43	2278.43		2278.43
67	1	33	74	090CT92	100CT92	&1509	1	2283.47	2283.47		2283.47
67	1	32	99	090CT92	100CT92	&1508	1	2282.05	2282.05		2282.05
67	1	31	125	090CT92	100CT92	&1507	1	2306.21	2306.21		2306.21
67	1	30	149	090CT92	100CT92	&1506	1	2308.55	2308.55		2308.55
67	1	29	173	090CT92	100CT92	&1505	1	2303.90	2303.90		2303.90
67	1	28	198	090CT92	100CT92	&1504	1	2291.77	2291.77		2291.77
67	1	27	247	090CT92	100CT92	&1503	1	2276.16	2276.16		2276.16
67	1	26	299	090CT92	100CT92	&1502	1	2269.13	2269.13		2269.13
67	1	25	348	090CT92	100CT92	&1501	1	2283.56	2283.56		2283.56
67	1	24	404	090CT92	100CT92	&1500	1	2292.50	2292.50		2292.50
67	1	23	499	090CT92	100CT92	&1499	1	2313.08	2313.08		2313.08
67	1	22	597	090CT92	100CT92	&1498	1	2323.76	2323.76		2323.76
67	1	21	697	090CT92	100CT92	&1497	1	2336.50	2336.50		2336.50
67	1	20	797	090CT92	100CT92	&1496	1	2342.37	2342.37		2342.37
67	1	19	898	090CT92	100CT92	&1495	1	2352.96	2352.96		2352.96
67	1	18	997	090CT92	100CT92	&1494	1	2359.66	2359.66		2359.66
67	1	17	1126	090CT92	100CT92	&1493	1	2368.48	2368.48		2368.48
67	1	16	1296	090CT92	100CT92	&1492	1	2381.80	2381.80		2381.80
67	1	15	1496	090CT92	100CT92	&1491	1	2397.67	2397.67		2397.67
67	1	14	1694	090CT92	100CT92	&1490	1	2409.13	2409.13		2409.13
67	1	13	1904	090CT92	100CT92	&1489	1	2414.29	2414.29		2414.29
67	1	12	2198	090CT92	100CT92	&1488	1	2419.01	2419.01		2419.01
67	1	11	2384	090CT92	100CT92	&1487	1	2423.61	2423.61		2423.61
67	1	10	2600	090CT92	100CT92	&1486	1	2424.62	2424.62		2424.62
67	1	09	2799	090CT92	100CT92	&1485	1	2426.24	2426.24		2426.24
67	1	08	3098	090CT92	100CT92	&1484	1	2425.76	2425.76		2425.76
67	1	07	3399	090CT92	100CT92	&1483	1	2425.76	2425.76		2425.76
67	1	06	3702	090CT92	100CT92	&1482	1	2422.46	2422.46		2422.46
67	1	05	4003	090CT92	100CT92	&1481	1	2420.16	2420.16		2420.16
67	1	04	4302	090CT92	110CT92	&1480	1	2412.93	2412.93		2412.93
67	1	03	4601	090CT92	110CT92	&1479	1	2409.31	2409.31		2409.31
67	1	02	4902	090CT92	110CT92	&1478	1	2401.92	2401.92		2401.92
67	1	01	5322	090CT92	110CT92	&1477A	1	2397.36	2397.36		
67	1	01	5322	090CT92	110CT92	&1477B	1	2397.74	2397.74	+0.38	2397.55
68	1	36	9	090CT92	110CT92	&1548	1	2260.92	2260.92		2260.92
68	1	35	9	090CT92	110CT92	&1547A	1	2259.38	2259.38		
68	1	35	9	090CT92	110CT92	&1547B	1	2259.81	2259.81	+0.43	2259.59
68	1	34	25	090CT92	110CT92	&1546	1	2265.88	2265.88		2265.88
68	1	33	48	090CT92	110CT92	&1545	1	2272.17	2272.17		2272.17
68	1	32	74	090CT92	110CT92	&1544	1	2280.07	2280.07		2280.07
68	1	31	98	090CT92	110CT92	&1543	1	2282.58	2282.58		2282.58
68	1	30	123	090CT92	110CT92	&1542	1	2287.24	2287.24		2287.24
68	1	29	150	090CT92	110CT92	&1541	1	2300.79	2300.79		2300.79
68	1	28	179	090CT92	110CT92	&1540	1	2287.11	2287.11		2287.11
68	1	27	236	090CT92	110CT92	&1539	1	2273.50	2273.50		2273.50
68	1	26	298	090CT92	110CT92	&1538	1	2284.98	2284.98		2284.98
68	1	25	346	090CT92	110CT92	&1537	1	2299.46	2299.46		2299.46
68	1	24	397	090CT92	110CT92	&1536	1	2305.48	2305.48		2305.48
68	1	23	497	090CT92	110CT92	&1535	1	2311.32	2311.32		2311.32
68	1	22	596	090CT92	110CT92	&1534	1	2304.15	2304.15		2304.15
68	1	21	696	090CT92	110CT92	&1533	1	2336.74	2336.74		2336.74
68	1	20	798	090CT92	110CT92	&1532	1	2341.38	2341.38		2341.38
68	1	19	897	090CT92	110CT92	&1531	1	2354.89	2354.89		2354.89
68	1	18	996	090CT92	110CT92	&1530	1	2359.62	2359.62		2359.62

68	1	17	1098	09OCT92	11OCT92	&1529	1	2368.79	2368.79		2368.79
68	1	16	1197	09OCT92	11OCT92	&1528	1	2381.16	2381.16		2381.16
68	1	15	1295	09OCT92	11OCT92	&1527	1	2388.00	2388.00		2388.00
68	1	14	1398	09OCT92	11OCT92	&1526	1	2391.21	2391.21		2391.21
68	1	13	1598	09OCT92	11OCT92	&1525	1	2403.22	2403.22		2403.22
68	1	12	1797	09OCT92	11OCT92	&1524	1	2407.00	2407.00		2407.00
68	1	11	1997	09OCT92	11OCT92	&1523	1	2417.21	2417.21		2417.21
68	1	10	2199	09OCT92	11OCT92	&1522	1	2424.10	2424.10		2424.10
68	1	09	2496	09OCT92	11OCT92	&1521	1	2423.97	2423.97		2423.97
68	1	08	2800	09OCT92	11OCT92	&1520	1	2425.10	2425.10		2425.10
68	1	07	3100	09OCT92	11OCT92	&1519	1	2423.99	2423.99		2423.99
68	1	06	3400	09OCT92	11OCT92	&1518	1	2424.75	2424.75		2424.75
68	1	05	3702	09OCT92	11OCT92	&1517	1	2425.70	2425.70		2425.70
68	1	04	4001	09OCT92	11OCT92	&1516	1	2424.50	2424.50		2424.50
68	1	03	4301	09OCT92	11OCT92	&1515	1	2413.90	2413.90		2413.90
68	1	02	4501	09OCT92	12OCT92	&1514	1	2408.44	2408.44		2408.44
68	1	01	4756	09OCT92	11OCT92	&1513A	1	2407.63	2407.63		
68	1	01	4756	09OCT92	11OCT92	&1513B	1	2408.71	2408.71	+1.08	2408.17
69	1	36	9	10OCT92	12OCT92	&1584	1	2257.29	2257.29		2257.29
69	1	35	24	10OCT92	12OCT92	&1583	1	2255.38	2255.38		2255.38
69	1	34	50	10OCT92	12OCT92	&1582A	1	2275.03	2275.03		
69	1	34	50	10OCT92	12OCT92	&1582B	1	2275.10	2275.10	+0.07	2275.07
69	1	33	73	10OCT92	12OCT92	&1581	1	2279.32	2279.32		2279.32
69	1	32	100	10OCT92	12OCT92	&1580	1	2296.26	2296.26		2296.26
69	1	31	124	10OCT92	12OCT92	&1579	1	2299.04	2299.04		2299.04
69	1	30	148	10OCT92	12OCT92	&1578	1	2280.98	2280.98		2280.98
69	1	29	175	10OCT92	12OCT92	&1577	1	2279.24	2279.24		2279.24
69	1	28	200	10OCT92	12OCT92	&1576	1	2280.27	2280.27		2280.27
69	1	27	248	10OCT92	12OCT92	&1575	1	2294.74	2294.74		2294.74
69	1	26	297	10OCT92	12OCT92	&1574	1	2300.12	2300.12		2300.12
69	1	25	349	10OCT92	12OCT92	&1573	1	2306.48	2306.48		2306.48
69	1	24	399	10OCT92	12OCT92	&1572	1	2305.09	2305.09		2305.09
69	1	23	500	10OCT92	12OCT92	&1571	1	2314.75	2314.75		2314.75
69	1	22	598	10OCT92	12OCT92	&1570	1	2316.65	2316.65		2316.65
69	1	21	697	10OCT92	12OCT92	&1569	1	2328.53	2328.53		2328.53
69	1	20	799	10OCT92	12OCT92	&1568	1	2332.16	2332.16		2332.16
69	1	19	898	10OCT92	12OCT92	&1567	1	2345.58	2345.58		2345.58
69	1	18	998	10OCT92	12OCT92	&1566	1	2353.73	2353.73		2353.73
69	1	17	1096	10OCT92	12OCT92	&1565	1	2365.15	2365.15		2365.15
69	1	16	1194	10OCT92	12OCT92	&1564	1	2372.80	2372.80		2372.80
69	1	15	1299	10OCT92	12OCT92	&1563	1	2381.76	2381.76		2381.76
69	1	14	1496	10OCT92	12OCT92	&1562	1	2394.07	2394.07		2394.07
69	1	13	1698	10OCT92	12OCT92	&1561	1	2405.88	2405.88		2405.88
69	1	12	1999	10OCT92	12OCT92	&1560	1	2415.56	2415.56		2415.56
69	1	11	2298	10OCT92	11OCT92	&1559	1	2423.68	2423.68		2423.68
69	1	10	2600	10OCT92	12OCT92	&1558	1	2425.03	2425.03		2425.03
69	1	09	2899	10OCT92	11OCT92	&1557	1	2427.65	2427.65		2427.65
69	1	08	3199	10OCT92	12OCT92	&1556	2	2424.72	2424.72		2424.72
69	1	07	3501	10OCT92	12OCT92	&1555	1	2420.74	2420.74		2420.74
69	1	06	3800	10OCT92	12OCT92	&1554	2	2413.61	2413.61		2413.61
69	1	05	4102	10OCT92	12OCT92	&1553	1	2412.77	2412.77		2412.77
69	1	04	4378	10OCT92	12OCT92	&1552	1	2407.82	2407.82		2407.82
69	1	03	4704	10OCT92	12OCT92	&1551	1	2395.03	2395.03		2395.03
69	1	02	4902	10OCT92	12OCT92	&1550	1	2394.80	2394.80		2394.80
69	1	01	5151	10OCT92	12OCT92	&1549A	1	2394.08	2394.08		
69	1	01	5151	10OCT92	12OCT92	&1549B	1	2393.74	2393.74	-0.34	2393.91
70	1	36	9	11OCT92	12OCT92	&1620	1	2242.95	2242.95		2242.95
70	1	35	24	11OCT92	13OCT92	&1619A	1	2242.43	2242.43		
70	1	35	24	11OCT92	13OCT92	&1619B	1	2243.39	2243.39	+0.96	2242.91
70	1	34	50	11OCT92	13OCT92	&1618	1	2241.60	2241.60		2241.60

70	1	33	75	110CT92	130CT92	&1617	1		2288.67	2288.67	2288.67
70	1	32	99	110CT92	130CT92	&1616	1		2290.30	2290.30	2290.30
70	1	31	125	110CT92	130CT92	&1615	1		2293.30	2293.30	2293.30
70	1	30	149	110CT92	130CT92	&1614	1		2283.81	2283.81	2283.81
70	1	29	175	110CT92	130CT92	&1613	1		2286.60	2286.60	2286.60
70	1	28	199	110CT92	130CT92	&1612	1		2292.62	2292.62	2292.62
70	1	27	223	110CT92	130CT92	&1611	1		2297.90	2297.90	2297.90
70	1	26	248	110CT92	130CT92	&1610	1		2303.48	2303.48	2303.48
70	1	25	298	110CT92	130CT92	&1609	1		2306.67	2306.67	2306.67
70	1	24	348	110CT92	130CT92	&1608	1		2307.15	2307.15	2307.15
70	1	23	399	110CT92	130CT92	&1607	1		2309.68	2309.68	2309.68
70	1	22	499	110CT92	130CT92	&1606	1		2309.88	2309.88	2309.88
70	1	21	599	110CT92	130CT92	&1605	1		2322.48	2322.48	2322.48
70	1	20	697	110CT92	130CT92	&1604	1		2329.29	2329.29	2329.29
70	1	19	799	110CT92	130CT92	&1603	1		2340.27	2340.27	2340.27
70	1	18	897	110CT92	130CT92	&1602	1		2348.64	2348.64	2348.64
70	1	17	997	110CT92	130CT92	&1601	1		2359.82	2359.82	2359.82
70	1	16	1097	110CT92	130CT92	&1600	1		2369.71	2369.71	2369.71
70	1	15	1297	110CT92	130CT92	&1599	1	X	2396.25		
70	1	14	1497	110CT92	130CT92	&1598	1		2391.55	2391.55	2391.55
70	1	13	1696	110CT92	130CT92	&1597	1		2399.60	2399.60	2399.60
70	1	12	1895	110CT92	130CT92	&1596	1		2412.57	2412.57	2412.57
70	1	11	2196	110CT92	130CT92	&1595	1		2421.85	2421.85	2421.85
70	1	10	2498	110CT92	130CT92	&1594	1		2421.92	2421.92	2421.92
70	1	09	2799	110CT92	130CT92	&1593	1		2426.52	2426.52	2426.52
70	1	08	3099	110CT92	130CT92	&1592	1		2416.78	2416.78	2416.78
70	1	07	3400	110CT92	130CT92	&1591	1		2422.81	2422.81	2422.81
70	1	06	3701	110CT92	130CT92	&1590	1		2417.91	2417.91	2417.91
70	1	05	4001	110CT92	130CT92	&1589	1		2413.67	2413.67	2413.67
70	1	04	4302	110CT92	130CT92	&1588	1		2407.55	2407.55	2407.55
70	1	03	4601	110CT92	130CT92	&1587	1		2402.26	2402.26	2402.26
70	1	02	4902	110CT92	130CT92	&1586	1		2398.64	2398.64	2398.64
70	1	01	5265	110CT92	130CT92	&1585B	1		2398.44	2398.44	2398.44
71	1	36	10	120CT92	130CT92	&1656	1		2236.33	2236.33	2236.33
71	1	35	23	120CT92	130CT92	&1655A	1		2235.64	2235.64	
71	1	35	23	120CT92	130CT92	&1655B	1		2236.22	2236.22	+0.58 2235.93
71	1	34	49	120CT92	130CT92	&1654	1		2245.91	2245.91	2245.91
71	1	33	74	120CT92	130CT92	&1653	1		2285.79	2285.79	2285.79
71	1	32	98	120CT92	130CT92	&1652	1		2284.48	2284.48	2284.48
71	1	31	123	120CT92	130CT92	&1651	1		2284.14	2284.14	2284.14
71	1	30	148	120CT92	130CT92	&1650	1		2292.15	2292.15	2292.15
71	1	29	173	120CT92	130CT92	&1649	1		2282.86	2282.86	2282.86
71	1	28	199	120CT92	130CT92	&1648	1		2282.41	2282.41	2282.41
71	1	27	224	120CT92	140CT92	&1647	1		2289.93	2289.93	2289.93
71	1	26	247	120CT92	140CT92	&1646	1		2300.84	2300.84	2300.84
71	1	25	272	120CT92	140CT92	&1645	1		2306.00	2306.00	2306.00
71	1	24	299	120CT92	140CT92	&1644	1		2304.10	2304.10	2304.10
71	1	23	347	120CT92	140CT92	&1643	1		2308.68	2308.68	2308.68
71	1	22	398	120CT92	140CT92	&1642	1		2310.40	2310.40	2310.40
71	1	21	448	120CT92	140CT92	&1641	1		2308.11	2308.11	2308.11
71	1	20	496	120CT92	140CT92	&1640	1		2315.00	2315.00	2315.00
71	1	19	595	120CT92	140CT92	&1639	1		2318.53	2318.53	2318.53
71	1	18	695	120CT92	140CT92	&1638	1		2330.11	2330.11	2330.11
71	1	17	797	120CT92	140CT92	&1637	1		2345.22	2345.22	2345.22
71	1	16	897	120CT92	140CT92	&1636	1		2350.66	2350.66	2350.66
71	1	15	996	120CT92	140CT92	&1635	1		2359.48	2359.48	2359.48
71	1	14	1197	120CT92	140CT92	&1634	1		2375.70	2375.70	2375.70
71	1	13	1494	120CT92	140CT92	&1633	1		2386.24	2386.24	2386.24
71	1	12	1794	120CT92	140CT92	&1632	1		2410.82	2410.82	2410.82
71	1	11	2094	120CT92	140CT92	&1631	1		2419.64	2419.64	2419.64

71	1	10	2395	12OCT92	14OCT92	&1630	1		2426.16	2426.16	2426.16
71	1	09	2697	12OCT92	14OCT92	&1629	1		2428.01	2428.01	2428.01
71	1	08	2996	12OCT92	14OCT92	&1628	1		2424.58	2424.58	2424.58
71	1	07	3298	12OCT92	14OCT92	&1627	1		2425.64	2425.64	2425.64
71	1	06	3599	12OCT92	14OCT92	&1626	1		2421.33	2421.33	2421.33
71	1	05	3898	12OCT92	14OCT92	&1625	1		2418.80	2418.80	2418.80
71	1	04	4201	12OCT92	14OCT92	&1624	1		2411.12	2411.12	2411.12
71	1	03	4500	12OCT92	14OCT92	&1623	1		2406.48	2406.48	2406.48
71	1	02	4799	12OCT92	14OCT92	&1622	1		2399.75	2399.75	2399.75
71	1	01	4944	12OCT92	14OCT92	&1621A	1		2395.78	2395.78	
71	1	01	4944	12OCT92	14OCT92	&1621B	1		2394.58	2394.58	-1.20 2395.18
72	1	36	10	12OCT92	13OCT92	&1657	1		2233.17	2233.17	2233.17
73	1	33	9	12OCT92	14OCT92	&1685	1		2229.65	2229.65	2229.65
73	1	31	48	12OCT92	14OCT92	&1684	1		2233.79	2233.79	2233.79
73	1	30	73	12OCT92	14OCT92	&1683A	1		2282.98	2282.98	
73	1	30	73	12OCT92	14OCT92	&1683B	1		2280.94	2280.94	-2.04 2281.96
73	1	29	99	12OCT92	14OCT92	&1682	1		2297.53	2297.53	2297.53
73	1	28	123	12OCT92	14OCT92	&1681	1		2302.42	2302.42	2302.42
73	1	27	147	12OCT92	14OCT92	&1680	1		2301.80	2301.80	2301.80
73	1	26	173	12OCT92	14OCT92	&1679	1		2295.29	2295.29	2295.29
73	1	25	200	12OCT92	14OCT92	&1678	1		2291.22	2291.22	2291.22
73	1	24	223	12OCT92	14OCT92	&1677	1		2291.95	2291.95	2291.95
73	1	23	247	12OCT92	15OCT92	&1676	1		2296.24	2296.24	2296.24
73	1	22	297	12OCT92	15OCT92	&1675	1		2304.06	2304.06	2304.06
73	1	20	398	12OCT92	15OCT92	&1674	1		2310.36	2310.36	2310.36
73	1	19	446	12OCT92	15OCT92	&1673	1		2326.82	2326.82	2326.82
73	1	18	495	12OCT92	15OCT92	&1672	1		2311.64	2311.64	2311.64
73	1	17	594	12OCT92	15OCT92	&1671	1		2318.55	2318.55	2318.55
73	1	16	695	12OCT92	15OCT92	&1670	1		2325.31	2325.31	2325.31
73	1	14	894	12OCT92	15OCT92	&1669	1		2348.72	2348.72	2348.72
73	1	12	1195	12OCT92	15OCT92	&1668	1		2376.58	2376.58	2376.58
73	1	10	1696	12OCT92	15OCT92	&1667	1		2400.53	2400.53	2400.53
73	1	09	1997	12OCT92	15OCT92	&1666	1		2412.91	2412.91	2412.91
73	1	08	2298	12OCT92	15OCT92	&1665	1		2420.18	2420.18	2420.18
73	1	07	2598	12OCT92	15OCT92	&1664	1		2424.46	2424.46	2424.46
73	1	06	2899	12OCT92	15OCT92	&1663	1		2424.44	2424.44	2424.44
73	1	05	3200	12OCT92	15OCT92	&1662	1		2425.81	2425.81	2425.81
73	1	04	3501	12OCT92	15OCT92	&1661	1		2424.64	2424.64	2424.64
73	1	03	3800	12OCT92	15OCT92	&1660	1		2413.21	2413.21	2413.21
73	1	02	4102	12OCT92	15OCT92	&1659	1		2414.21	2414.21	2414.21
73	1	01	4281	12OCT92	15OCT92	&1658A	1		2407.86	2407.86	
73	1	01	4281	12OCT92	15OCT92	&1658B	1	X	2450.77		2407.86
74	1	36	10	13OCT92	14OCT92	&1686	1		2250.44	2250.44	2250.44
75	1	36	11	13OCT92	15OCT92	&1718	1		2261.55	2261.55	2261.55
75	1	35	26	13OCT92	15OCT92	&1717A	1		2262.51	2262.51	
75	1	35	26	13OCT92	15OCT92	&1717B	1		2262.74	2262.74	+0.23 2262.63
75	1	34	51	13OCT92	15OCT92	&1716	1		2265.94	2265.94	2265.94
75	1	33	75	13OCT92	15OCT92	&1715	1		2295.32	2295.32	2295.32
75	1	32	101	13OCT92	15OCT92	&1714	1		2297.52	2297.52	2297.52
75	1	31	124	13OCT92	15OCT92	&1713	1		2299.98	2299.98	2299.98
75	1	30	151	13OCT92	15OCT92	&1712	1		2302.81	2302.81	2302.81
75	1	29	180	13OCT92	15OCT92	&1711	1		2292.71	2292.71	2292.71
75	1	28	200	13OCT92	15OCT92	&1710	1		2296.87	2296.87	2296.87
75	1	27	248	13OCT92	15OCT92	&1709	1		2307.63	2307.63	2307.63
75	1	26	300	13OCT92	15OCT92	&1708	1		2308.49	2308.49	2308.49
75	1	25	349	13OCT92	15OCT92	&1707	1		2307.45	2307.45	2307.45
75	1	24	399	13OCT92	15OCT92	&1706	1		2306.90	2306.90	2306.90
75	1	23	449	13OCT92	15OCT92	&1705	1		2308.58	2308.58	2308.58
75	1	22	499	13OCT92	16OCT92	&1704	1		2309.50	2309.50	2309.50
75	1	21	598	13OCT92	16OCT92	&1703	1		2319.13	2319.13	2319.13

75	1	20	699	13OCT92	16OCT92	&1702	1	2328.90		2328.90	2328.90
75	1	19	799	13OCT92	16OCT92	&1701	1	2338.32		2338.32	2338.32
75	1	18	898	13OCT92	16OCT92	&1700	1	2350.80		2350.80	2350.80
75	1	17	997	13OCT92	16OCT92	&1699	1	2356.64		2356.64	2356.64
75	1	16	1098	13OCT92	16OCT92	&1698	1	2365.60		2365.60	2365.60
75	1	12	1498	13OCT92	16OCT92	&1697	1	2382.26		2382.26	2382.26
75	1	10	1697	13OCT92	16OCT92	&1696	1	2403.42		2403.42	2403.42
75	1	09	1998	13OCT92	16OCT92	&1695	1	2413.42		2413.42	2413.42
75	1	08	2297	13OCT92	16OCT92	&1694	1	2419.03		2419.03	2419.03
75	1	07	2597	13OCT92	16OCT92	&1693	1	2422.55		2422.55	2422.55
75	1	06	2899	13OCT92	16OCT92	&1692	1	2425.16		2425.16	2425.16
75	1	05	3201	13OCT92	16OCT92	&1691	1	2422.13		2422.13	2422.13
75	1	04	3502	13OCT92	16OCT92	&1690	1	2423.45		2423.45	2423.45
75	1	03	3799	13OCT92	16OCT92	&1689	1	2419.48		2419.48	2419.48
75	1	02	4101	13OCT92	16OCT92	&1688	1	2409.68		2409.68	2409.68
75	1	01	4311	13OCT92	16OCT92	&1687A	1	2399.19		2399.19	
75	1	01	4311	13OCT92	16OCT92	&1687B	1	2397.77		2397.77	-1.42 2398.48
76	1	36	11	13OCT92	14OCT92	&1719	1	2270.81		2270.81	2270.81
77	1	36	9	14OCT92	15OCT92	&1720	1	2277.06		2277.06	2277.06
78	1	36	9	14OCT92	16OCT92	&1753	1	2285.54		2285.54	2285.54
78	1	35	24	14OCT92	16OCT92	&1752A	1	2282.36		2282.36	
78	1	35	24	14OCT92	16OCT92	&1752B	1	2286.16		2286.16	+3.80 2284.26
78	1	34	49	14OCT92	16OCT92	&1751	1	2286.32		2286.32	2286.32
78	1	33	72	14OCT92	16OCT92	&1750	1	2300.06		2300.06	2300.06
78	1	32	98	14OCT92	16OCT92	&1749	1	2299.82		2299.82	2299.82
78	1	31	124	14OCT92	16OCT92	&1748	1	2308.16		2308.16	2308.16
78	1	30	149	14OCT92	16OCT92	&1747	1	2317.15		2317.15	2317.15
78	1	29	174	14OCT92	16OCT92	&1746	1	2308.62		2308.62	2308.62
78	1	28	198	14OCT92	16OCT92	&1745	1	2305.36		2305.36	2305.36
78	1	27	249	14OCT92	16OCT92	&1744	1	2310.53		2310.53	2310.53
78	1	26	298	14OCT92	16OCT92	&1743	1	2310.01		2310.01	2310.01
78	1	25	348	14OCT92	16OCT92	&1742	1	2309.39		2309.39	2309.39
78	1	24	398	14OCT92	16OCT92	&1741	1	2306.82		2306.82	2306.82
78	1	23	448	14OCT92	16OCT92	&1740	1	2311.09		2311.09	2311.09
78	1	22	497	14OCT92	16OCT92	&1739	1	2309.36		2309.36	2309.36
78	1	21	596	14OCT92	16OCT92	&1738	1	2318.62		2318.62	2318.62
78	1	20	695	14OCT92	16OCT92	&1737	1	2325.66		2325.66	2325.66
78	1	19	798	14OCT92	17OCT92	&1736	1	2330.46		2330.46	2330.46
78	1	18	895	14OCT92	17OCT92	&1735	1	2344.18		2344.18	2344.18
78	1	17	998	14OCT92	17OCT92	&1734	1	2353.61		2353.61	2353.61
78	1	16	1097	14OCT92	17OCT92	&1733	1	2362.64		2362.64	2362.64
78	1	14	1298	14OCT92	17OCT92	&1732	1	2382.04		2382.04	2382.04
78	1	12	1496	14OCT92	17OCT92	&1731	1	2391.25		2391.25	2391.25
78	1	10	1796	14OCT92	17OCT92	&1730	1	2406.28		2406.28	2406.28
78	1	09	2097	14OCT92	17OCT92	&1729	1	2412.67		2412.67	2412.67
78	1	08	2296	14OCT92	17OCT92	&1728	1	2419.84		2419.84	2419.84
78	1	07	2599	14OCT92	17OCT92	&1727	1	2422.39		2422.39	2422.39
78	1	06	2899	14OCT92	17OCT92	&1726	1	2424.93		2424.93	2424.93
78	1	05	3200	14OCT92	17OCT92	&1725	1	2421.41		2421.41	2421.41
78	1	04	3501	14OCT92	17OCT92	&1724	1	2418.29		2418.29	2418.29
78	1	03	3801	14OCT92	17OCT92	&1723	1	2417.52		2417.52	2417.52
78	1	02	4103	14OCT92	17OCT92	&1722	1	2410.86		2410.86	2410.86
78	1	01	4432	14OCT92	17OCT92	&1721A	1	2397.48			
78	1	01	4432	14OCT92	17OCT92	&1721A	2	2399.46	+1.98	2398.47	
78	1	01	4432	14OCT92	17OCT92	&1721B	1	2390.56		2390.56	-7.91 2394.52
79	1	36	10	14OCT92	16OCT92	&1754	1	2286.42		2286.42	2286.42
80	1	36	10	15OCT92	16OCT92	&1755	1	2272.70		2272.70	2272.70
81	1	36	9	15OCT92	17OCT92	&1788	1	2270.35		2270.35	2270.35
81	1	35	25	15OCT92	17OCT92	&1787A	1	2274.53		2274.53	
81	1	35	25	15OCT92	17OCT92	&1787B	1	2275.77		2275.77	+1.24 2275.15

81	1	34	49	15OCT92	17OCT92	&1786	1		2294.75	2294.75	2294.75
81	1	33	74	15OCT92	17OCT92	&1785	1		2320.16	2320.16	2320.16
81	1	32	99	15OCT92	17OCT92	&1784	1		2303.55	2303.55	2303.55
81	1	31	124	15OCT92	17OCT92	&1783	1		2308.09	2308.09	2308.09
81	1	30	150	15OCT92	17OCT92	&1782	1		2316.86	2316.86	2316.86
81	1	29	173	15OCT92	17OCT92	&1781	1		2317.57	2317.57	2317.57
81	1	28	199	15OCT92	17OCT92	&1780	1		2315.87	2315.87	2315.87
81	1	27	247	15OCT92	17OCT92	&1779	1		2310.48	2310.48	2310.48
81	1	26	298	15OCT92	17OCT92	&1778	1		2309.21	2309.21	2309.21
81	1	25	351	15OCT92	17OCT92	&1777	1		2306.60	2306.60	2306.60
81	1	24	397	15OCT92	17OCT92	&1776	1		2307.46	2307.46	2307.46
81	1	23	447	15OCT92	18OCT92	&1775	1		2317.80	2317.80	2317.80
81	1	22	496	15OCT92	18OCT92	&1774	1		2307.60	2307.60	2307.60
81	1	21	597	15OCT92	18OCT92	&1773	1		2316.57	2316.57	2316.57
81	1	20	696	15OCT92	18OCT92	&1772	1		2326.49	2326.49	2326.49
81	1	19	797	15OCT92	18OCT92	&1771	1		2332.56	2332.56	2332.56
81	1	18	897	15OCT92	18OCT92	&1770	1		2337.74	2337.74	2337.74
81	1	17	999	15OCT92	18OCT92	&1769	1		2348.85	2348.85	2348.85
81	1	16	1100	15OCT92	18OCT92	&1768	1		2358.40	2358.40	2358.40
81	1	14	1297	15OCT92	18OCT02	&1767	1		2380.75	2380.75	2380.75
81	1	12	1497	15OCT92	18OCT92	&1766	1		2390.11	2390.11	2390.11
81	1	10	1797	15OCT92	18OCT92	&1765	1		2405.78	2405.78	2405.78
81	1	09	2100	15OCT92	18OCT92	&1764	1		2416.90	2416.90	2416.90
81	1	08	2399	15OCT92	18OCT92	&1763	1		2418.35	2418.35	2418.35
81	1	07	2700	15OCT92	18OCT92	&1762	1		2422.95	2422.95	2422.95
81	1	06	3001	15OCT92	18OCT92	&1761	1		2422.57	2422.57	2422.57
81	1	05	3299	15OCT92	18OCT92	&1760	1	EX	2438.24		
81	1	04	3601	15OCT92	18OCT92	&1759	1		2419.22	2419.22	2419.22
81	1	03	3901	15OCT92	18OCT92	&1758	1		2412.79	2412.79	2412.79
81	1	02	4200	15OCT92	18OCT92	&1757	1		2403.88	2403.88	2403.88
81	1	01	4501	15OCT92	18OCT92	&1756A	1		2399.41	2399.41	
81	1	01	4501	15OCT92	18OCT92	&1756B	1		2401.33	2401.33	+1.92 2400.37
82	1	36	10	15OCT92	16OCT92	&1789	1		2280.80	2280.80	2280.80
83	1	35	24	16OCT92	18OCT92	&1818A	1		2281.53	2281.53	
83	1	35	24	16OCT92	18OCT92	&1818B	1		2281.49	2281.49	-0.04 2281.51
83	1	32	99	16OCT92	18OCT92	&1817	1		2319.99	2319.99	2319.99
83	1	31	122	16OCT92	18OCT92	&1816	1		2300.85	2300.85	2300.85
83	1	30	148	16OCT92	18OCT92	&1815	1		2313.01	2313.01	2313.01
83	1	29	173	16OCT92	18OCT92	&1814	1		2333.23	2333.23	2333.23
83	1	28	197	16OCT92	18OCT92	&1813	1		2326.48	2326.48	2326.48
83	1	27	239	16OCT92	18OCT92	&1812	1		2308.85	2308.85	2308.85
83	1	26	296	16OCT92	18OCT92	&1811	1		2303.69	2303.69	2303.69
83	1	24	396	16OCT92	18OCT92	&1810	1		2302.22	2302.22	2302.22
83	1	23	446	16OCT92	18OCT92	&1809	1		2307.35	2307.35	2307.35
83	1	22	496	16OCT92	18OCT92	&1808	1		2307.37	2307.37	2307.37
83	1	21	594	16OCT92	18OCT92	&1807	1		2310.89	2310.89	2310.89
83	1	20	693	16OCT92	18OCT92	&1806	1		2321.92	2321.92	2321.92
83	1	19	796	16OCT92	18OCT92	&1805	1		2333.93	2333.93	2333.93
83	1	18	895	16OCT92	18OCT92	&1804	1		2342.50	2342.50	2342.50
83	1	17	995	16OCT92	18OCT92	&1803	1		2352.23	2352.23	2352.23
83	1	16	1094	16OCT92	18OCT92	&1802	1		2361.10	2361.10	2361.10
83	1	14	1194	16OCT92	19OCT92	&1801	1		2370.71	2370.71	2370.71
83	1	12	1396	16OCT92	19OCT92	&1800	1		2387.08	2387.08	2387.08
83	1	10	1596	16OCT92	19OCT92	&1799	1		2397.55	2397.55	2397.55
83	1	09	1794	16OCT92	19OCT92	&1798	1		2407.38	2407.38	2407.38
83	1	08	1995	16OCT92	19OCT92	&1797	1		2415.05	2415.05	2415.05
83	1	07	2194	16OCT92	19OCT92	&1796	1		2416.97	2416.97	2416.97
83	1	06	2398	16OCT92	19OCT92	&1795	1		2419.90	2419.90	2419.90
83	1	05	2595	16OCT92	19OCT92	&1794	1		2422.29	2422.29	2422.29
83	1	04	2798	16OCT92	19OCT92	&1793	1		2422.97	2422.97	2422.97

83	1	03	2997	16OCT92	19OCT92	&1792	1		2423.81	2423.81	2423.81
83	1	02	3174	16OCT92	19OCT92	&1791	1		2424.03	2424.03	2424.03
83	1	01	3277	16OCT92	19OCT92	&1790A	1		2422.52	2422.52	
83	1	01	3277	16OCT92	19OCT92	&1790B	1		2421.82	2421.82	-0.70 2422.17
84	1	36	11	16OCT92	18OCT92	&1819	1		2286.63	2286.63	2286.63
85	1	36	10	16OCT92	18OCT92	&1820	1		2281.62	2281.62	2281.62
86	1	32	10	16OCT92	18OCT92	&1821	1		2286.56	2286.56	2286.56
87	1	32	11	16OCT92	19OCT92	&1850	1		2282.94	2282.94	2282.94
87	1	31	25	16OCT92	19OCT92	&1849A	1		2279.89	2279.89	
87	1	31	25	16OCT92	19OCT92	&1849B	1		2282.98	2282.98	+3.09 2281.44
87	1	30	50	16OCT92	19OCT92	&1848	1		2285.04	2285.04	2285.04
87	1	29	75	16OCT92	19OCT92	&1847	1		2313.27	2313.27	2313.27
87	1	28	100	16OCT92	19OCT92	&1846	1		2314.34	2314.34	2314.34
87	1	27	124	16OCT92	19OCT92	&1845	1		2324.08	2324.08	2324.08
87	1	26	149	16OCT92	19OCT92	&1844	1		2355.44	2355.44	2355.44
87	1	25	174	16OCT92	19OCT92	&1843	1		2340.51	2340.51	2340.51
87	1	24	198	16OCT92	19OCT92	&1842	1		2344.66	2344.66	2344.66
87	1	23	224	16OCT92	19OCT92	&1841	1		2321.76	2321.76	2321.76
87	1	22	249	16OCT92	19OCT92	&1840	1		2314.25	2314.25	2314.25
87	1	21	299	16OCT92	19OCT92	&1839	1		2310.87	2310.87	2310.87
87	1	20	350	16OCT92	19OCT92	&1838	1		2305.96	2305.96	2305.96
87	1	19	399	16OCT92	19OCT92	&1837	1		2304.99	2304.99	2304.99
87	1	18	450	16OCT92	19OCT92	&1836	1		2307.50	2307.50	2307.50
87	1	17	499	16OCT92	19OCT92	&1835	1		2310.25	2310.25	2310.25
87	1	16	598	16OCT92	19OCT92	&1834	1		2317.47	2317.47	2317.47
87	1	14	699	16OCT92	19OCT92	&1833	1		2322.63	2322.63	2322.63
87	1	12	798	16OCT92	19OCT92	&1832	1		2332.52	2332.52	2332.52
87	1	10	897	16OCT92	19OCT92	&1831	1		2341.40	2341.40	2341.40
87	1	09	998	16OCT92	19OCT92	&1830	1		2350.39	2350.39	2350.39
87	1	08	1097	16OCT92	19OCT92	&1829	1		2356.39	2356.39	2356.39
87	1	07	1198	16OCT92	19OCT92	&1828	1		2368.76	2368.76	2368.76
87	1	06	1397	16OCT92	19OCT92	&1827	1		2378.61	2378.61	2378.61
87	1	05	1595	16OCT92	20OCT92	&1826	1		2396.27	2396.27	2396.27
87	1	04	1797	16OCT92	20OCT92	&1825	1		2413.22	2413.22	2413.22
87	1	03	1999	16OCT92	20OCT92	&1824	1		2412.77	2412.77	2412.77
87	1	02	2198	16OCT92	20OCT92	&1823	1		2417.09	2417.09	2417.09
87	1	01	2390	16OCT92	20OCT92	&1822A	1	X	2426.36		
87	1	01	2390	16OCT92	20OCT92	&1822B	1		2418.71	2418.71	2418.71
88	1	33	8	17OCT92	18OCT92	&1851	1		2269.52	2269.52	2269.52

Flags: X: Observed titrator malfunction or operator error
EX: Data exluded from analysis
NOTE: Dilution factor of 1.000170 has been applied.

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
GC92 CDRG SHIPBOARD ALK 5-OCT-94
Bicarbonate Reference Material (STD A) Titration Data

ANALYSIS DATE	SAMPLE BOTTLE	TRIAL	FLAG	ALK (UEQUIV/KG)	AVG ALK	STD DEV
18AUG92	A34	1		2308.68		
18AUG92	A34	2		2299.75		
18AUG92	A34	3		2306.72		
18AUG92	A42	1		2307.36		
18AUG92	A42	2		2305.31		
18AUG92	A42	3		2307.02		
19AUG92	A42	4	X	2313.92		
19AUG92	A42	5		2306.59		
19AUG92	A34	4	X	2319.77		
19AUG92	A34	5		2307.45		
25AUG92	A25	1		2306.34		
25AUG92	A25	2		2302.91		
25AUG92	A25	3		2298.68		
25AUG92	A25	4		2309.70		
25AUG92	A40	2		2312.72		
25AUG92	A40	3		2307.81		
25AUG92	A40	4		2298.47		
26AUG92	A44	1		2299.94		
26AUG92	A44	2		2308.20		
26AUG92	A44	3		2304.27		
26AUG92	A25	5		2299.74		
26AUG92	A30	1		2303.98		
26AUG92	A30	2		2303.64		
26AUG92	A30	3		2305.73		
26AUG92	A40	5		2307.43		
27AUG92	A30	4	X	2331.80		
27AUG92	A30	5	X	2314.02		
27AUG92	A44	4		2305.67		
27AUG92	A44	5		2301.64		
02SEP92	A5	1		2304.70		
02SEP92	A5	2		2296.75		
02SEP92	A5	3		2305.17		
02SEP92	A47	1		2304.01		
02SEP92	A47	2		2302.48		
02SEP92	A47	3		2304.44		
03SEP92	A47	4		2306.04		
03SEP92	A47	5		2302.76		
03SEP92	A5	4		2303.71		
03SEP92	A5	5		2305.69		
04SEP92	A17	1		2303.18		
04SEP92	A6	1		2302.70		
05SEP92	A17	2		2304.28		
05SEP92	A17	3		2304.09		
05SEP92	A6	2		2303.87		
05SEP92	A6	3		2304.91		
06SEP92	A17	4		2303.94		
06SEP92	A17	5		2304.44		
06SEP92	A6	4		2305.23		
06SEP92	A6	5		2301.94		
010CT92	A2	1	X	2314.08		
010CT92	A2	2	X	2315.84		
010CT92	A45	1		2304.56		
010CT92	A45	2		2304.88		

030CT92	A2	3	X	2313.74		
030CT92	A2	4	X	2378.68		
030CT92	A2	5	X	2314.95		
030CT92	A45	3		2304.74		
030CT92	A45	5		2304.83		
040CT92	A46	1	EX	2379.80		
040CT92	A46	2		2299.31		
040CT92	A1	1		2300.76		
040CT92	A1	2		2302.97		
050CT92	A1	3		2302.68		
050CT92	A1	4		2301.61		
050CT92	A46	3		2298.96		
050CT92	A46	4		2305.45		
060CT92	A46	5		2306.50		
060CT92	A1	5		2293.04		
090CT92	A23	1		2305.80		
090CT92	A48	1		2304.79		
100CT92	A48	2		2306.38		
100CT92	A48	3		2302.55		
100CT92	A23	2		2302.13		
100CT92	A23	3		2304.64		
110CT92	A48	4		2306.07		
110CT92	A23	4		2299.93		
140CT92	A10	1		2305.20		
140CT92	A38	1		2306.25		
150CT92	A10	2		2303.13		
150CT92	A38	2		2304.30		
160CT92	A10	3		2302.17		
160CT92	A10	4		2305.50		
160CT92	A38	3		2305.63		
160CT92	A38	4		2302.87		
170CT92	A38	5		2306.74		
170CT92	A10	5		2306.67	2304.24	2.77

FLAGS: X: Observed titrator malfunction or operator error
EX: Data excluded from analysis
NOTE: Dilution factor of 1.000170 has been applied.

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
GC92 CDRG SHIPBOARD ALK 5-OCT-94
Bicarbonate Reference Material (STD B) Titration Data

ANALYSIS DATE	SAMPLE BOTTLE	TRIAL	FLAG	ALK (UEQUIV/KG)	AVG ALK	STD DEV
19AUG92	B2	1		2299.95		
19AUG92	B22	1		2300.10		
21AUG92	B22	2		2300.05		
21AUG92	B22	3		2295.82		
21AUG92	B2	2		2298.05		
21AUG92	B2	3		2300.24		
22AUG92	B22	4		2300.58		
22AUG92	B22	5		2300.78		
22AUG92	B2	4		2295.76		
22AUG92	B2	5		2298.19		
22AUG92	B26	1		2297.83		
22AUG92	B26	2		2297.14		
22AUG92	B44	1		2300.09		
22AUG92	B44	2		2299.96		
23AUG92	B44	3		2297.11		
23AUG92	B44	4		2297.03		
23AUG92	B26	3		2300.80		
23AUG92	B26	4		2296.17		
24AUG92	B26	5		2300.04		
24AUG92	B44	5		2298.01		
27AUG92	B7	1		2299.15		
27AUG92	B7	2		2299.91		
27AUG92	B25	1		2298.37		
27AUG92	B25	2		2300.06		
28AUG92	B25	3		2300.24		
28AUG92	B25	4		2300.18		
28AUG92	B7	3		2300.24		
28AUG92	B7	4		2297.40		
30AUG92	B7	5		2301.23		
30AUG92	B13	1		2302.43		
30AUG92	B25	5		2296.62		
30AUG92	B45	1		2297.38		
31AUG92	B45	2		2299.88		
31AUG92	B45	3		2299.05		
31AUG92	B13	2		2297.79		
31AUG92	B13	3		2299.69		
01SEP92	B13	4		2297.58		
01SEP92	B13	5		2298.87		
01SEP92	B45	4		2299.62		
01SEP92	B45	5		2296.65		
06SEP92	B9	1		2298.32		
06SEP92	B28	1		2298.29		
07SEP92	B28	2		2300.38		
07SEP92	B28	3		2297.29		
07SEP92	B9	2		2298.90		
07SEP92	B9	3		2298.86		
08SEP92	B9	4		2297.63		
08SEP92	B9	5		2299.64		
08SEP92	B19	1		2297.70		
08SEP92	B28	4		2299.06		
08SEP92	B28	5		2297.84		
08SEP92	B39	1		2295.12		
09SEP92	B39	2		2296.06		

09SEP92	B19	2		2294.54		
11SEP92	B19	3		2298.03		
11SEP92	B19	4		2298.52		
11SEP92	B19	5		2299.57		
11SEP92	B39	3		2296.81		
11SEP92	B39	4		2297.80		
11SEP92	B39	5		2295.52		
060CT92	B20	1		2293.25		
060CT92	B20	2		2291.57		
060CT92	B34	1	EX	2346.30		
060CT92	B34	2		2301.37		
070CT92	B34	4		2296.11		
070CT92	B20	4		2299.73		
080CT92	B34	5		2302.11		
080CT92	B20	5		2298.16		
120CT92	B4	1		2298.53		
120CT92	B4	2		2295.34		
120CT92	B4	3		2301.05		
120CT92	B46	1		2296.09		
120CT92	B46	2		2300.50		
120CT92	B46	3		2299.88		
130CT92	B46	4		2295.40		
130CT92	B4	4		2293.13		
140CT92	B4	5		2300.29		
140CT92	B46	5		2300.04		
170CT92	B10	1		2299.56		
170CT92	B16	1		2299.45		
180CT92	B16	2		2299.93		
180CT92	B16	3		2300.62		
180CT92	B10	2		2296.95		
180CT92	B10	3		2300.52		
190CT92	B10	4		2300.93		
190CT92	B10	5		2298.38		
190CT92	B16	4		2301.71		
190CT92	B16	5		2301.83		
190CT92	B36	1		2301.80		
190CT92	B40	1		2302.32		
200CT92	B36	2		2299.73		
200CT92	B40	2		2301.21	2298.68	2.15

FLAGS: X: Observed titrator malfunction or operator error
EX: Data excluded from analysis
NOTE: Dilution factor of 1.000170 has been applied.

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
GC92 CDRG SHIPBOARD ALK 5-OCT-94
Certified DIC Reference Material (No. 13) Titration Data

ANALYSIS DATE	SAMPLE BOTTLE	TRIAL	FLAG	ALK (UEQUIV/KG)	AVG ALK	STD DEV
19AUG92	1PM	1		2203.05		
19AUG92	220PM	1		2199.12		
21AUG92	13PM	1		2203.86		
21AUG92	33PM	1		2206.70		
22AUG92	231PM	1		2203.58		
22AUG92	436PM	1		2202.77		
23AUG92	4PM	1		2201.34		
23AUG92	170PM	1		2200.43		
24AUG92	486PM	1		2203.29		
24AUG92	478PM	1		2201.36		
26AUG92	9PM	1		2200.22		
26AUG92	52PM	1		2216.25		
27AUG92	356PM	1		2201.48		
27AUG92	356PM	2		2205.08		
27AUG92	443PM	1		2204.48		
27AUG92	443PM	2		2202.30		
28AUG92	452PM	1		2203.09		
28AUG92	487PM	1		2202.97		
31AUG92	121PM	1		2201.65		
31AUG92	320PM	1		2202.69		
01SEP92	44PM	1		2202.32		
01SEP92	380PM	1		2201.37		
02SEP92	165PM	1		2200.07		
02SEP92	209PM	1		2201.94		
03SEP92	122PM	2		2199.62		
03SEP92	274PM	1		2199.40		
03SEP92	274PM	2		2198.11		
05SEP92	438PM	1		2199.71		
05SEP92	425PM	1		2200.99		
06SEP92	97PM	1		2202.59		
06SEP92	472PM	1		2200.62		
07SEP92	182PM	1		2201.64		
07SEP92	193PM	1		2200.76		
08SEP92	298PM	1		2199.26		
08SEP92	226PM	1		2200.83		
10SEP92	7PM	1		2200.06		
10SEP92	150PM	1		2201.54		
11SEP92	232PM	1		2201.65		
11SEP92	232PM	2		2202.04		
11SEP92	445PM	1		2201.06		
010CT92	294PM	1		2199.74		
030CT92	353PM	1	X	2270.76		
040CT92	148PM	1		2199.09		
040CT92	290PM	1	EX	2279.33		
060CT92	240PM	1	EX	2261.49		
060CT92	250PM	2		2196.27		
060CT92	296PM	2		2199.49		
060CT92	407PM	1		2196.10		
070CT92	264PM	1		2197.91		
070CT92	264PM	2		2195.06		
070CT92	264PM	3		2196.05		
070CT92	387PM	1		2203.21		
070CT92	387PM	2	EX	2237.63		

07OCT92	387PM	3	2198.53		
08OCT92	67PM	1	2198.68		
08OCT92	80PM	1	2203.34		
08OCT92	80PM	2	2197.89		
08OCT92	366PM	1	2199.45		
08OCT92	366PM	2	2202.55		
08OCT92	195PM	1	2197.57		
08OCT92	195PM	2	2204.20		
08OCT92	421PM	1	2202.55		
08OCT92	421PM	2	2198.02		
08OCT92	484PM	1	2202.47		
09OCT92	281PM	1	2199.57		
09OCT92	348PM	1	2201.94		
10OCT92	253PM	1	2182.30		
10OCT92	418PM	1	2203.38		
11OCT92	107PM	1	2201.02		
11OCT92	499PM	1	2203.02		
12OCT92	64PM	1	2200.89		
13OCT92	423PM	1	2202.98		
13OCT92	446PM	1	2203.09		
14OCT92	235PM	1	2202.90		
14OCT92	385PM	1	2202.88		
15OCT92	230PM	1	2202.48		
15OCT92	317PM	1	2202.21		
16OCT92	475PM	1	2201.40		
16OCT92	500PM	1	2204.22		
17OCT92	333PM	1	2198.38		
17OCT92	360PM	1	2203.45		
18OCT92	222PM	1	2203.10		
19OCT92	54PM	1	2204.84		
19OCT92	318PM	1	2203.58	2201.26	2.29

FLAGS: X: Observed titrator malfunction or operator error
EX: Data excluded from analysis
NOTE: Dilution factor of 1.000170 has been applied.