EVALUATION OF SHAPES OF QUARTZ SILT GRAINS AS PROVENANCE INDICATORS IN CENTRAL MICHIGAN

Thesis for the Degree of M. S.
MICHIGAN STATE UNIVERSITY
STEPHEN RAY WALTZ
1972

248

9 130

OCT 3 1 81

NOV 2 9 1993

6768225



Wi

cisely

provena

In

provena

the ex

Sample

mainst

tribut

silt g

projec

shape

Harmo

the t

conti

vario

areas

ence

to b

howe

dete

ABSTRACT

EVALUATION OF SHAPES OF QUARTZ SILT GRAINS AS PROVENANCE INDICATORS IN CENTRAL MICHIGAN

By

Stephen Ray Waltz

With the recent development of a technique which precisely quantifies grain shape, a new dimension in sediment provenance determination arises.

In order to develop a method for determining sediment provenance by shape analysis, an investigation was made in the extremely heterogenous glacial drift of central Michigan. Samples were taken in two small watersheds at points on the mainstream above and below major confluences and on major tributaries. Samples were processed to remove all but quartz silt grains. These grains were mounted on slides and their projections were traced and digitized. For each digitized shape, a Fourier Series of closed form was determined. Harmonic amplitudes -- the relative weighting factors of the terms of the Fourier Series -- were used in chi-square contingency table comparisons of the shape distributions of various groupings of samples.

Results indicate that shape differences do exist in areas at least as small as about 25 square miles. Differences could not be detected within smaller areas which seem to be homogenous in their heterogeneity. It has been shown however, that shape differences do exist and can be used in determination of quartz silt provenance.

EVALUATION OF SHAPES OF QUARTZ SILT GRAINS AS PROVENANCE INDICATORS IN CENTRAL MICHIGAN

By

Stephen Ray Waltz

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Geology

1972

Me

optimi

who he

hard W

And th

Servic

procur

615722

ACKNOWLEDGMENTS

Many thanks to Dr. Robert Ehrlich whose guidance and optimism pulled me through. Thanks also to Dr. Thomas Vogel who helped establish the optical procedures and to Dr. Bernhard Weinberg who smoothed over many computer problems. And thanks to Mr. James Thompson and the Soil Conservation Service whose know-how and funding aided greatly in the procurement of samples.

TABLE OF CONTENTS

Page v .... List of Tables

Page vii .. List of Figures

Page 1 .... Introduction

Page 3 .... Sampling Design

Page 8 .... Provenance Response

Page 10 ... Sample Preparation

Page 12 ... Fourier Shape Equation Generation

Page 14 ... Tests of Data Accuracy and Precision

Page 19 ... Interrelationship of Size and Shape

Page 23 ... Analytical Techniques

Page 28 ... Results

Page 32 ..... General Pattern of Variation

Page 33 ..... Pattern of Variation of the Tenth Harmonic

Page 33 ..... Pattern of Variation Within Stony Creek

Page 36 ..... Pattern of Variation Within Lower Stony Creek

Page 36 ..... Pattern of Variation Within Coon Creek

Page 39 ..... List of References

Appendices

Appendix A ... An Example of Fourier Printout

Appendix B ... Scatter Plots of Harmonic Amplitude Values Versus Size

Appendix C-1 . Chi-Square Contingency Tables for the Total Variation

..... Appendix C-2 . Chi-Square Contingency Tables for Lumped Coon Creek Samples

..... Appendix C-3 . Chi-Square Contingency Tables for Lumped Stony Creek Samples

..... Appendix C-4 . Chi-Square Contingency Tables for Both Stony and Coon Creek Samples Lumped

..... Appendix C-5 . Computation Tables for Further Breakdown of Total Chi-Square (Tables 12 through 16)

Table 1 --
Table 2 --
Table 3 --
Table 4 -
Table 5 -
Table 6 -
Table 7 -
Table 8
Table 9
Table 10
Table 11
Table 12
Table 13
Table 1
Table 1
Table 1

LIST OF TABLES

Table 1 -- Harmonic Amplitude Values for Octagon Test

Table 2 -- Harmonic Amplitude Values for Geometric Test

Table 3 -- Mean Harmonic Amplitude Values for Sample SC11AP2 at Five Different Sample Sizes

Table 4 -- Mean Harmonic Amplitude Values for Two Mounts of Sample SC11

Table 5 -- Mean Harmonic Amplitude Values for a Sand Mount and a Silt Mount of Sample SC11

Table 6 -- Mean Harmonic Amplitude Values for Sand and Silt Mounts from Coon Creek

Table 7 -- Examples of Observed and Expected Values Tables for Testing Interharmonic Correlations

Table 8 -- Chi-Square and Student-T Values for Interharmonic Correlations of Sample SC3-4J

Table 9 -- Chi-Square Values for Variation Within Coon Creek Samples

Table 10 - Chi-Square Values for Variation Within Stony Creek Samples

Table 11 - Chi-Square Values for Variation Between Watershed Samples

Table 12 - Chi-Square Values for Variation of Upstream and Downstream Portions

Table 13A Chi-Square Values for Variation Breakdown of Upstream Samples

Table 13B Chi-Square Values for Variation Breakdown of Downstream Samples

Table 14A Chi-Square Values for Variation Breakdown of a Downstream Tributary and an Upstream Tributary

Table 14B Chi-Square Values for Variation Breakdown of a Mid-Basin Tributary

Table 1

Table 1

Table 1

Table 1

Table 15 - Chi-Square Values for Variation Breakdown of a Mid-Basin Sub-Tributary System

Table 16 - Chi-Square Values for Variation Breakdown of Coon Creek Samples

Table 17 - Significance of Chi-Square Analyses for Orthogonal Comparisons of Harmonics 1 to 15

Table 18 - Tenth Harmonic Chi-Square Values for Orthogonal Breakdown Comparisons

Figur

Figur

Figur

Figu

Figu

LIST OF FIGURES

Figure 1 -- Map of the Grand River Watershed Showing the Basins of Stony Creek and Coon Creek

Figure 2 -- Map of the Stony Creek Drainage Basin

Figure 3 -- Map of the Coon Creek Drainage Basin

Figure 4 -- Schematic Diagram of Chi-Square Analysis Orthogonal Comparisons

Figure 5 -- Operational Schematic Diagram of Chi-Square Orthogonal Breakdown

Bec
land use
characte
effects
tant. S
effect
in this
system
sedimen
touch u
emphasi
mining
drainag
T
has be
large
compos
region
histor
variat
needed
natura

INTRODUCTION

Because human modification of the natural system and land use have affected sediment erosion and transport characteristics, evaluation of erosional and depositional effects at the local level is becoming increasingly important. Sedimentology can make two general contributions to effect immediate understanding and to alleviate problems in this area. Rates of sediment transport through the system can be estimated and monitored and the sources of sediment erosion can be located. Results of this study touch upon both of these objectives. However, the main emphasis will be on evaluation of a technique for determining sediment provenance within a relatively small drainage basin.

The determination of sediment provenance traditionally has been accomplished at the scale of mountain ranges and large depositional basins. Such studies have relied upon compositional contrasts in various parts of the eroded region. If one wishes to determine origin and transport history of a sediment at finer scales, such compositional variation is of little value. Consequently, a method is needed to investigate erosion and siltation phenomena of natural and man-induced processes at these smaller scales.

It has recently been shown (Ehrlich & Weinberg, 1970;

Redmond
bears p
provena
without
regions
has bee
provena
onto th
and pro
parame t
be of l

Th
bility
net inc
this st
niques
deposit

Redmond, 1969) that grain shape, if measured precisely, bears promise of being a useful indicator of sediment provenance. In a few selected instances, grain shape can, without doubt, be a powerful tool. For instance, in regions of great contrasts in bedrock type, grain shape has been shown to be a valuable parameter in determining provenance (Cleary & Conolly, 1971). Drainage nets incised onto that sort of geological pattern are rare however, and provenance schemes based upon grain shape or any other parameter which depends upon such geological contrast can be of little general interest.

This investigation concerns evaluation of the possibility of extracting provenance data from a small drainage net incised onto glacial drift. The positive results of this study, as discussed below, indicate that such techniques should be valuable for investigation in similar deposits and possibly in non-glacial terranes.

S

centra

was th

in Cli

subtri

tively

(Figur

the Gr

benefi

(Redmo

Stony

Stony

paral

Tribu

end m

end m

Lobe

conce

Which

it fi

howev

SAMPLING DESIGN

Sediment moving through two small drainage basins in central Michigan was studied. The primary area investigated was that of the Stony Creek drainage basin, located mostly in Clinton County, Michigan (Figure 1). Stony Creek is a subtributary in the Grand River watershed and is a relatively large creek with four major tributaries of its own (Figure 2). The Coon Creek drainage basin -- also part of the Grand River watershed -- was also sampled in order to benefit from a previous study of its quartz sand fraction (Redmond, 1969). Coon Creek is a small stream relative to Stony Creek -- approximately the order of magnitude of a Stony Creek tributary (Figure 3).

The mainstream of the Stony Creek watershed roughly parallels the Fowler end moraine immediately to the north. Tributaries to the mainstream are sourced in the Portland end moraine to the south which is concentric to the Fowler end moraine. These moraines were formed by the Saginaw Lobe of the Wisconsin glaciation, which accounts for the concentric pattern and the general slope to the northeast.

The Coon Creek basin consists of only the mainstream which is similar to the tributaries of Stony Creek in that it finds its source in an end moraine. It is different however, in the respect that it flows to the south and

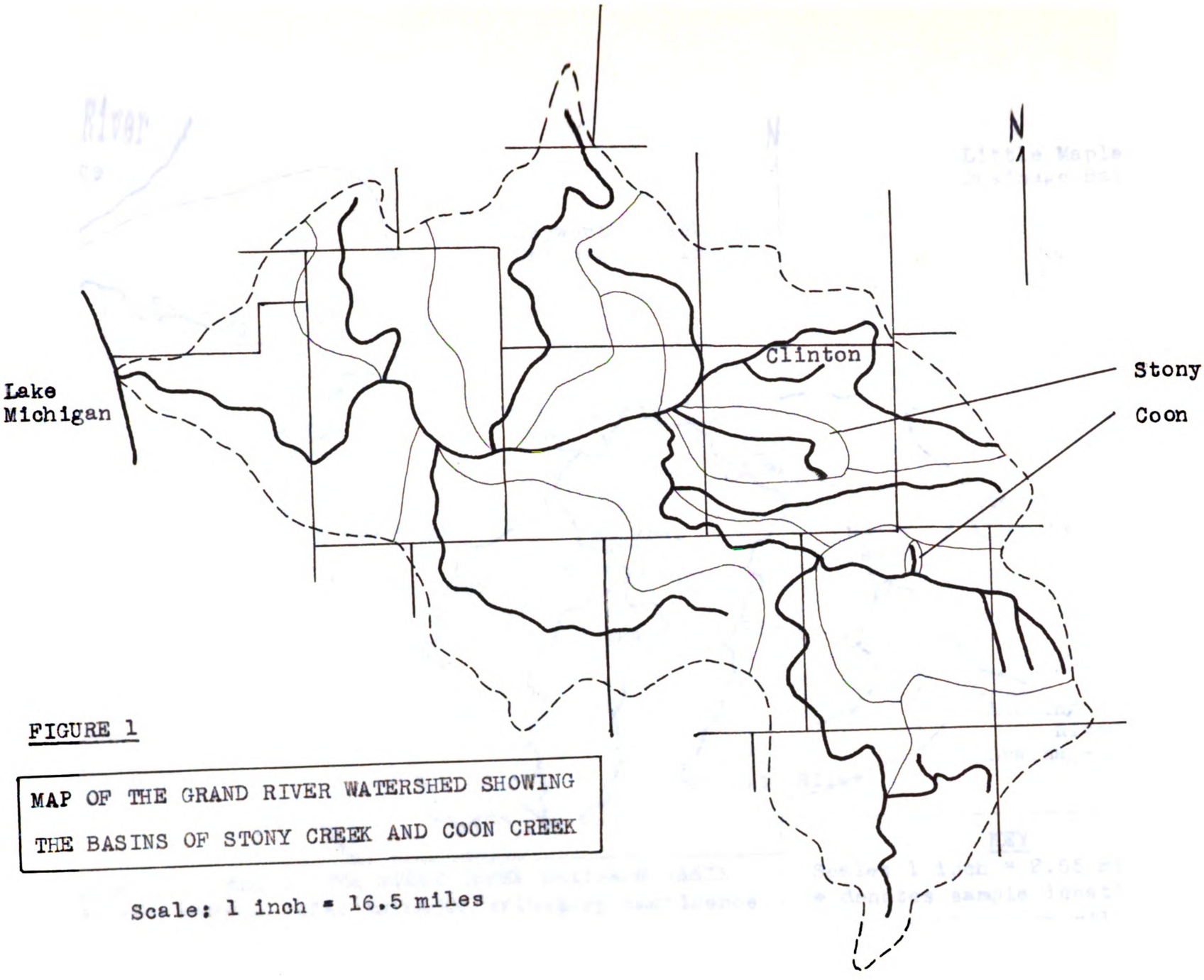


FIGURE 1

MAP OF THE GRAND RIVER WATERSHED SHOWING THE BASINS OF STONY CREEK AND COON CREEK

Scale: 1 inch = 16.5 miles


Maple River
Drainage
N
Little Maple River
Drainage Basin

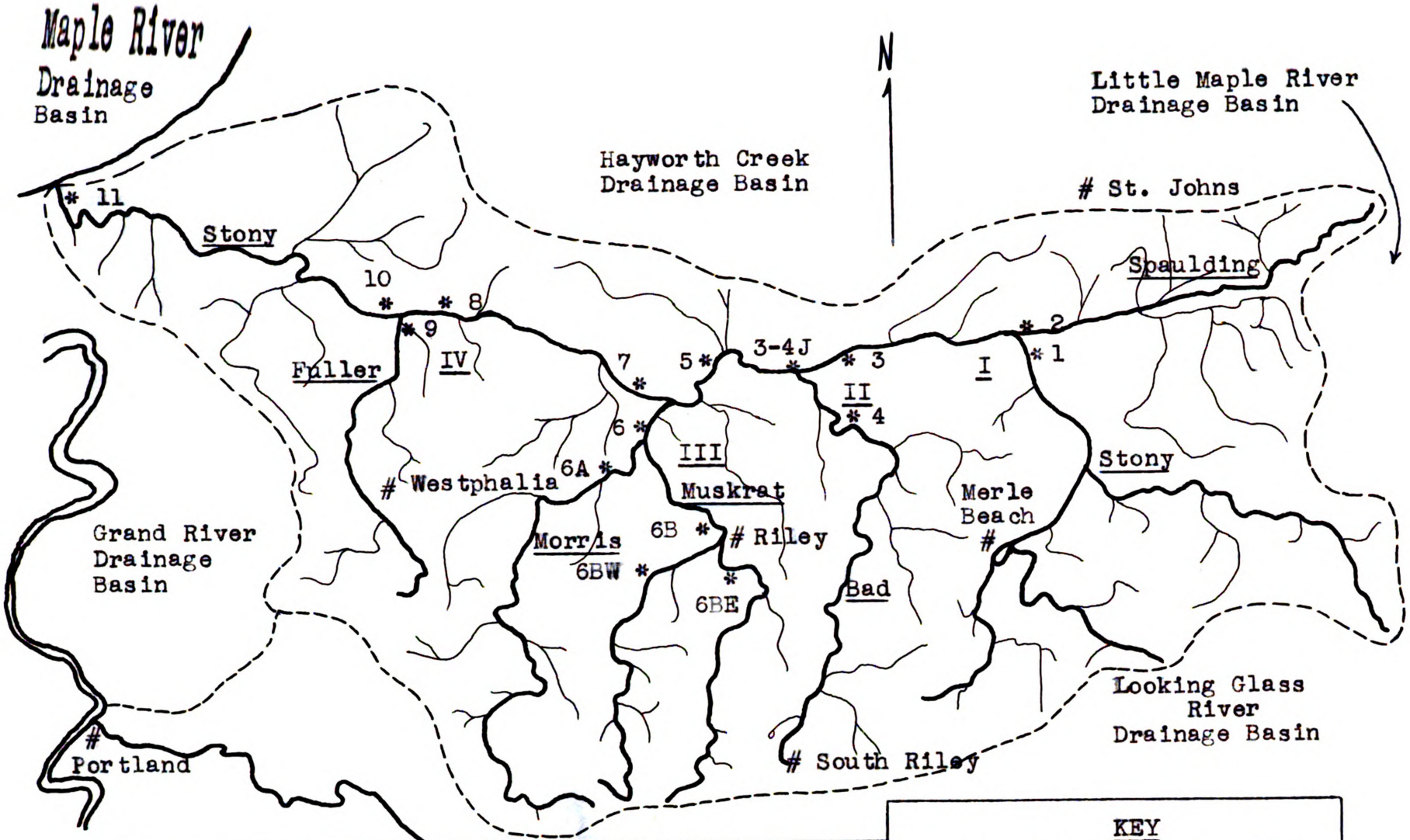


FIGURE 2 MAP OF THE STONY CREEK DRAINAGE BASIN
Roman numerals refer to major tributary confluence areas. All sample numbers have "SC" prefixes.

KEY
Scale: 1 inch = 2.65 miles
* denotes sample locations
# denotes towns or villages

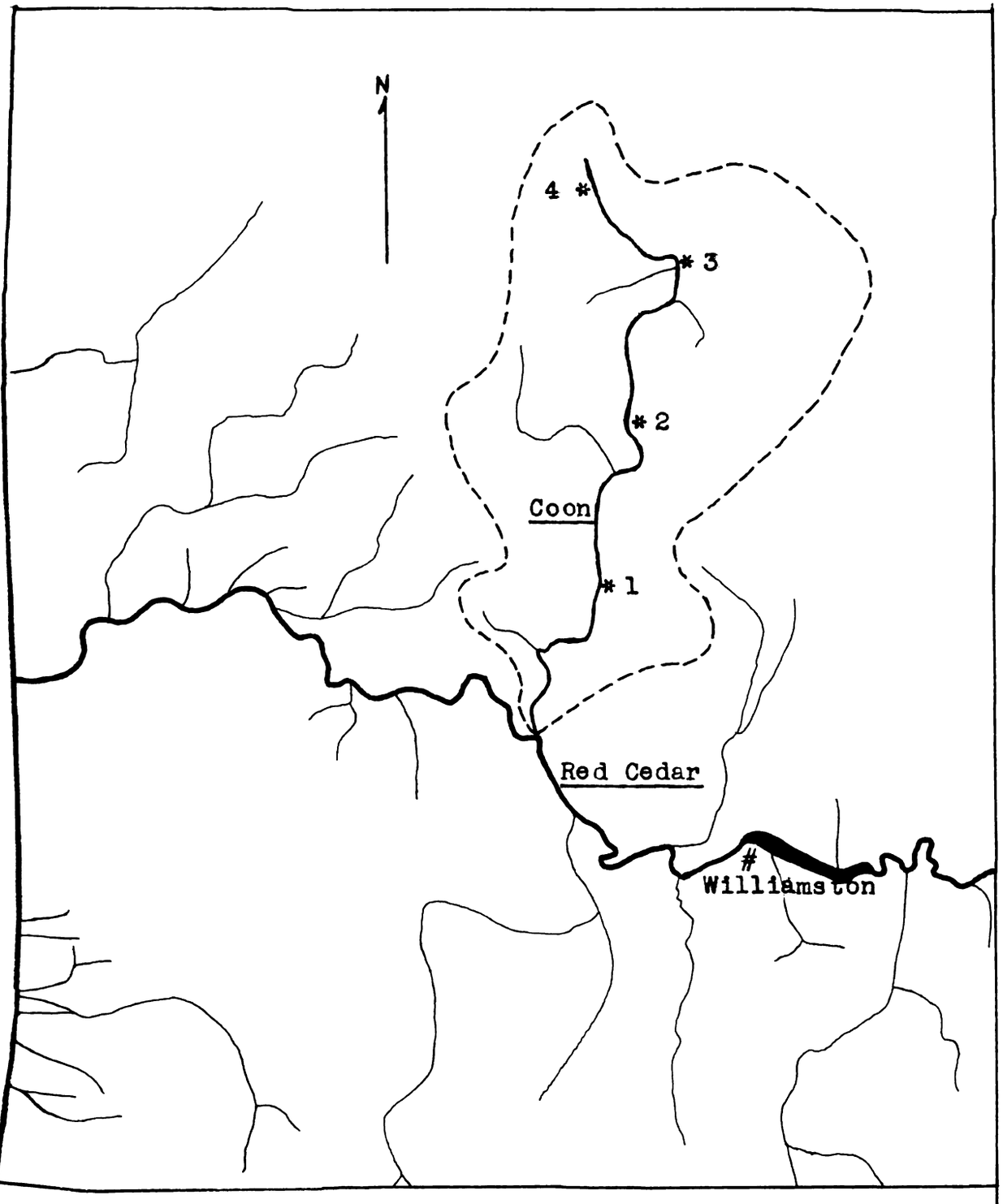


FIGURE 3 MAP OF THE COON CREEK DRAINAGE BASIN

Scale: 1 inch = 1 mile * denotes sample locations
All samples have "CC" prefixes # denotes towns
For reference (Redmond, 1969) samples correspond as -- CC1 is B9; CC2 is B10; CC3 is B11 and B12; CC4 has no counterpart.

agains

I

sixte

from m

the fo

major

Creek

for t

mains

count

samp

effe

summ

leve

7-da

whi

Cha

of

thu

pro

dur

slg

to

against the general slope to the northeast.

In order to study tributary contributions, a total of sixteen samples were taken both upstream and downstream from major confluences, plus samples were taken on each of the four major tributaries of Stony Creek (Figure 2). A major tributary system, consisting of Morris and Muskrat Creeks, was further subdivided and sampled in order to test for the presence of very small-scale provenance effects.

Coon Creek was sampled at four locations on the mainstream only -- due to the lack of tributaries.

Exact sample sites were located in both areas where county roads bridged the streams. Care was taken to procure samples upstream from the road crossings to reduce the effects of roadwash. Sampling was conducted throughout the summer months when streams were at relatively low streamflow levels. Procurement of samples was accomplished by filling 7-dram plastic vials with sediment from channel deposits which appeared to be of transient character. Many of these channel deposits were so loosely-formed that introduction of the sample vial caused the water to roil. The water, thus very heavily silt-laden, contained enough silt to provide an adequate sample. Other samples, collected during periods of lower streamflow levels, were taken from slightly less water-saturated deposits which still appeared to be readily erodible.

Re

sedimen

by a wi

sample,

of the

size of

tions i

use. I

erodibi

stream

tional

In

proport

distrib

and sil

ences i

tion, c

bility

is caus

soil ty

istics.

"tracer

expect

PROVENANCE RESPONSE

Regardless of whether they can be measured or not, sediment provenance throughout a drainage basin is affected by a wide variety of factors. If we consider a downstream sample, the relative contribution from the various portions of the drainage net will be a function of the relative size of the sub-basins, the variety of soil types, variations in natural vegetative cover, and differential land use. If each sub-basin possessed material of similar erodibility -- and assuming uniform rainfall -- the downstream sample should contain amounts of sediment proportional to the relative areas of the sub-basins.

In general however, downstream samples do not contain proportionate contributions from upstream sources. Unevenly distributed precipitation may cause differential erosion and siltation. This unevenness may be expressed by differences in the time of the occurence, the rate of precipitation, or some combination of these factors. Soil erodibility may vary throughout the watershed. This variability is caused by differences in soil moisture conditions, soil type or profile, or topographic or slope characteristics. Therefore, assuming each sub-basin contains "tracers" in its eroded sediments, we would not in general expect to see a uniform contribution array in a downstream

sample

the si

S

approx

A samp

taneou

respon

bility

probabl

tions f

investi

of a sm

be dete

determ

sample. This is particularly true, if as in this study, the silt fraction is considered.

Silt travels mostly in suspension, and thus moves with approximately the same velocity as the transporting medium. A sample of silt therefore, represents an almost "instantaneous" response of the drainage net. Because this response is governed by differential rainfall and erodibility, samples taken at the same time and place would probably contain varying proportions of sediment contributions from the different sub-basins. The purpose of this investigation is to see whether, upon heirarchical sampling of a small drainage system, differences in provenance can be detected using evaluation of shapes of quartz silt grains determined by Fourier Series approximation.

A

sample

Approx

was po

the or

efferv

organi

efferv

hydrog

37% hy

chlori

from t

and re

yellow

were r

then d

then m

slips

number

P

was ac

scope

object

SAMPLE PREPARATION

About ten milligrams of sediment was taken from each sample vial and placed in 100-milliliter plastic beakers. Approximately fifty milliliters of 30% hydrogen peroxide was poured over the sediment, causing rapid oxidation of the organic component. After about 24 hours or until effervescence ceased, the liquid was decanted. On several organic-rich samples, this procedure was repeated until effervescence was no longer in evidence. Following the hydrogen peroxide treatment, the samples were boiled in 37% hydrochloric acid which contained a trace of stannous chloride. This was done to remove iron stain coatings from the quartz grains. This treatment was also decanted and repeated until the solution no longer had a cast of yellow-green. After the final acid treatment, samples were rinsed in distilled water, allowed to settle overnight, then decanted and dried in an oven. The dry sediment was then mounted in Permount on standard glass slides. Cover slips were carefully positioned so as to minimize the number of air bubbles entrapped.

Projection of the two-dimensional quartz grain shapes was accomplished using a Leitz binocular polarizing microscope with 16-millimeter oculars and a 50-millimeter objective. One eyepiece was fitted with a device called a

camer

tende

and

arra

a co

of g

maxi

phi

ties

for

prop

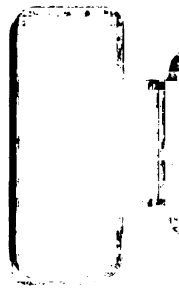
were

affe

dig

di

camera lucida -- which, by means of a prism and an extended mirror, allows the researcher to see both specimen and drawing board in the field of view. With such an arrangement, two-dimensional grain shapes were traced at a combined magnification of about 2000 times. The selection of grains to be drawn was based on three criteria. One, maximum grain size was limited to the silt range of 4 to 8 phi units (1/16 to 1/256 millimeter). Two, optical properties characteristic of quartz were held to be prerequisite for selection. And three, grains possessing such general properties but in badly altered or deteriorated condition were rejected upon the assumption that such grains were affected by the acid treatment and therefore not quartz.



An average of about 95 grain shapes per sample were digitized and punched onto Hollerith cards by automatic digitizer.

Tw

Fourier

Operati

and that

such tha

intersec

detrital

The gene

wh

s

Dr. B

which

of grav

radius c

which des

FOURIER SHAPE EQUATION GENERATION

Two-dimensional grain shape can be quantified by a Fourier Series equation (Ehrlich & Weinberg, 1970). Operational limitations require that the shape be closed and that there exist no involutions in the shape outline such that a radial line from the center of gravity would intersect the periphery more than once. Fortunately, detrital quartz grains are equant with very few embayments. The general Fourier Series equation used is given below.

$$R\theta = R_0 + \sum_{n=1}^{\infty} R_n(\cos n\theta_n - \phi_n)$$

where R is the periphery radius

and R_0 represents a circle of average radius

and R_n is the harmonic amplitude or "weighting factor"

and θ_n is the polar angle

and ϕ_n is the phase angle

and n is the harmonic number

Dr. Bernhard Weinberg has developed a computer routine which accepts the digitized data and determines the center of gravity. This center of gravity is then used as the radius center for computation of the Fourier Series equation which describes the inputed shape. Precision of fit is

regulated by the limit set on the number of terms in the series. In turn, the limit on the number of terms or harmonics in the series is set by the number of points taken per shape. As a general rule, at least twice as many points should be taken as harmonics desired. For purposes of this paper, 15 harmonics were used with an average of 40 points per grain shape.

Each term or harmonic gives a characteristic contribution to the total shape. R_0, or the zeroth harmonic, is a circle with a radius set at unity to eliminate any size dependence as a source of variation. The first harmonic is an offset circle, the second a figure-eight, the third a trefoil, the fourth a four-leafed clover, and so on, with each harmonic having the same number of equidistant nodes as its harmonic number. For example, if grain shape were perfectly square, the fourth harmonic would have a large harmonic amplitude or weighting factor. In effect, a large fourth harmonic amplitude added to the zeroth harmonic results in a circle with four nodes at 90 degrees separation. The remaining harmonics then would reflect minor filling. Consequently, all shape variation is expressed in terms of the Fourier equation.

An example of computer printout may be found in Appendix A. Histograms for each harmonic amplitude distribution are given in addition to individual Fourier shape data.

TESTS OF DATA ACCURACY AND PRECISION

In order to be certain that Fourier harmonic amplitude data was consistent and accurate, several tests were made. Such tests offer valuable insight to the actual workings and relationships involved in Fourier shape generation.

The first test was designed to check the precision of a particular shape and to detect any dependence upon physical size of the digitized figure. An octagon was chosen as the test shape and was drawn at five different sizes. The sizes ranged from dime-sized to six inches in diameter. Each size of octagon was digitized three times. The octagons were carefully expanded by radial extension of the eight corners. To further reduce sources of variation, 48 points per iteration were taken at 7½-degree intervals of arc. The data results show that only the eighth harmonic amplitudes are duplicated to any degree of precision (Table 1). The other harmonic amplitude values are widely-ranging and also very low in values. The roughness coefficient, a parameter which reflects grain shape "roughness" by evaluating all the harmonic mean values, is very low compared to the normal silt grain. These results can be explained by the equantness of an octagon. Consider that an octagon might be described as a circle with eight

TABLE 1 HARMONIC AMPLITUDE VALUES FOR OCTAGON TEST

(Harmonics 6 through 15)

6	7	8	9	10	11	12	13	14	15	
.005548	.007729	.029802	.005612	.006212	.004276	.000564	.004077	.004198	.000889	
.010529	.009239	.038603	.007140	.002249	.007084	.007979	.006261	.003103	.001329	1X
.007293	.006243	.029430	.006534	.004079	.006898	.006348	.004558	.005155	.004990	
.002726	.003190	.027154	.003204	.004260	.001109	.002177	.003534	.001690	.000820	
.004654	.005067	.028471	.005696	.002828	.002493	.001644	.002475	.002056	.000989	2X
.002698	.002294	.027933	.005251	.004744	.002530	.001708	.002144	.003387	.000728	
.002339	.003275	.030673	.004384	.003255	.002483	.002986	.000978	.002504	.001300	
.003019	.000543	.032018	.002878	.001681	.002966	.001904	.002118	.001195	.002851	3X
.001442	.004239	.030213	.003673	.004016	.001166	.002904	.001126	.002023	.000905	
.001484	.001871	.029776	.001166	.000896	.000692	.000388	.000269	.000540	.000285	
.001242	.002291	.029639	.003540	.002176	.001438	.000970	.000697	.000153	.000839	4X
.000696	.003406	.031373	.002206	.001246	.001539	.000431	.001459	.000381	.001573	
.000251	.001184	.030486	.000385	.001139	.000996	.000794	.001015	.000941	.000353	
.002452	.001983	.029385	.000778	.001539	.001168	.001317	.000291	.000650	.000977	5X
.002971	.001304	.030308	.001988	.002551	.001527	.001148	.001625	.001403	.000493	

TABLE 2 HARMONIC AMPLITUDE VALUES FOR GEOMETRIC TEST

(Harmonics 1 through 10)

1	2	3	4	5	6	7	8	9	10	
.000543	.021195	.011017	.007576	.002613	.000920	.001574	.001249	.003586	.000944	CIRCLE
.003944	.010695	.275677	.001654	.008986	.100413	.003313	.006739	.052839	.002563	TRIANGLE
.000731	.006980	.003120	.136428	.001126	.002296	.001926	.041800	.001619	.001280	SQUARE
.000759	.005679	.005849	.004010	.084994	.002986	.002097	.000885	.001278	.022129	PENTAGON
.000237	.005276	.003688	.002791	.003621	.058005	.001998	.001808	.001423	.002161	HEXAGON
.002830	.133161	.011294	.008053	.006293	.006735	.004425	.006206	.001622	.002059	ELLIPSE
.000382	.003760	.008179	.000624	.005936	.003835	.003058	.026750	.003749	.005160	OCTAGON

corners or nodes. The Fourier equation describes this shape by adding an eight-leafed clover to a circle. The remaining harmonic amplitudes are left to randomly fill minor voids and to correct for operational error of digitization. This may be seen in that only the eighth harmonic amplitudes have high values and an order of precision. The low roughness coefficient indicates equantness and generally low harmonic amplitude values.

Another test was made of geometric shapes -- a circle, an ellipse, an equilateral triangle, a square, a pentagon, an hexagon, and another octagon. The results could have been predicted (Table 2). The circle had random values since it is the zeroth harmonic. The ellipse had high first and second harmonic amplitude values. The triangle had high third and sixth values. The square had high fourth and eighth. The pentagon had high fifth and tenth. The hexagon had a high sixth. The octagon had only a high eighth. In general, the high harmonic for a shape represents the number of equally-spaced nodes or a higher multiple of that number. This generality would hold only for equant figures, and probably just special geometric ones.

In order to test precision of harmonic amplitude values, one silt sample, SC11, was analyzed in several ways. A very large number (298) of shapes were drawn and digitized. Sub-samples extracted from the large sample agree with the parent sample very well in harmonic amplitude mean values (Table 3). From these results, 100 shapes per sample was decided upon as an adequate sample size for purposes of

this study. Two different mounts of sample SC11 were also drawn and digitized. The results indicated good statistical compliance of harmonic amplitude mean values (Table 4). This test suggests that grain shapes are not random but have a characteristic distribution of grain shapes.

TABLE 3 MEAN HARMONIC AMPLITUDE VALUES FOR SAMPLE SC11AP2 AT FIVE DIFFERENT SAMPLE SIZES

Sample Size	HARMONICS 1	2	3	4	5	6	7	8	9	10
30	.021	.178	.101	.061	.043	.026	.021	.015	.012	.010
52	.018	.169	.094	.051	.045	.028	.022	.016	.014	.010
100	.018	.165	.095	.055	.041	.031	.025	.018	.015	.011
176	.017	.164	.090	.056	.038	.032	.023	.017	.014	.010
298	.018	.173	.092	.058	.040	.030	.022	.017	.013	.010

TABLE 4 MEAN HARMONIC AMPLITUDE VALUES FOR TWO MOUNTS OF SAMPLE SC11

Mount	HARMONICS 1	2	3	4	5	6	7	8	9	10
11AP2X	.013	.137	.079	.049	.034	.021	.016	.013	.009	.008
11AP3	.013	.149	.076	.050	.033	.022	.017	.012	.009	.007

TABLE 5 MEAN HARMONIC AMPLITUDE VALUES FOR A SAND MOUNT AND A SILT MOUNT OF SAMPLE SC11

A-SC11AP2X(silt) B-SC11BP1(sand) RC-Roughness Coefficient

	HARMONICS 1	2	3	4	5	6	7	8	9	10	RC
A	.013	.137	.079	.049	.034	.021	.016	.013	.009	.008	.1219
B	.010	.134	.065	.039	.031	.018	.016	.011	.009	.008	.1140

TABLE 6 MEAN HARMONIC AMPLITUDE VALUES FOR SAND AND SILT MOUNTS FROM COON CREEK

CC-silt samples B-sand samples (paired locations)

	HARMONICS 1	2	3	4	5	6	7	8	9	10	RC
CC1	.016	.165	.085	.058	.038	.028	.020	.015	.012	.009	.1437
B9	.015	.167	.075	.049	.033	.020	.017	.010	.009	.008	.1382
CC2	.016	.169	.082	.059	.034	.028	.019	.014	.011	.009	.1445
B10	.016	.166	.080	.050	.029	.023	.017	.016	.011	.010	.1394
CC3	.014	.158	.073	.053	.033	.024	.016	.012	.009	.007	.1333
B11	.012	.147	.073	.051	.034	.027	.019	.014	.010	.008	.1271

INTERRELATIONSHIP OF SIZE AND SHAPE

It is generally accepted that there is a dependence between size and shape of detrital gquartz grains. Such a relationship, if strong in the silt sizes, would have an important effect on the analysis of shape data. Therefore, before serious data analysis commenced, scatter plots of amplitudes of harmonics one through ten were plotted for 98 grains from sample SC6, a sample in the center of the Stony Creek basin. Neither visual examination nor the magnitude of the correlation coefficients indicated any size/shape relationship in the silt size range (Appendix B).

Grain shapes of sand and silt collected from the same sites do not indicate any clear differences. However, the data suggests that grain shapes in the sand sizes may tend to be slightly smoother and rounder. This is reflected by somewhat lower values for the mean amplitude spectra and the roughness coefficient (Tables 5 & 6).

In sand samples from Coon Creek, Redmond (1969) found significant correlation between harmonic amplitude values from grain to grain. Extending his evaluation into the silt sizes, sample SC3-4J was tested by chi-square contingency tables. Analysis was made of the distributions of the first fifteen harmonic amplitude values. Each harmonic was paired against all other harmonics for a total of 105 possible

combinations. The harmonic amplitude values were divided into seven intervals (Table 7). Of the 105 combinations, 33 showed significant dependence at the 5% confidence level. Harmonics 2 and 8 through 15 had strong correlations, especially harmonic 10 which had 9 significant pairings out of a total possible of 14 (Table 8). A special formula for determining chi-square was used since the expected values were generally below 5. This formula uses the normative properties of the exact mean and variance of chi-square (Maxwell, 1961).



These significant relationships undoubtedly are a reflection of the physical properties of quartz. As such, they are the first positive indication of a relationship which has been suspected for a number of years. Presence of significant correlations indicates the necessity for "orthogonalization" of the data by some sort of factor analysis technique. Statistical techniques involving matrix inversions such as discriminate analysis can be used.

TABLE 7 EXAMPLES OF OBSERVED AND EXPECTED VALUES

TABLES FOR TESTING INTERHARMONIC CORRELATIONS

TABLE OF OBSERVED VALUES

DIV. 0.003 0.005 0.007 0.009 0.011 0.014 1.000 HARMONIC 10

COLS.	1	2	3	4	5	6	7	SUBTOT.	DIV.
ROWS 1	2	6	1	0	1	0	0	10	0.002
2	6	8	4	5	0	1	0	24	0.004
3	4	3	3	2	3	5	4	24	0.006
4	2	2	1	0	2	3	2	12	0.008
5	0	1	2	2	2	0	4	11	0.010
6	1	0	2	0	2	0	1	6	0.012
7	0	0	1	2	1	2	5	11	1.000
SUB.	15	20	14	11	11	11	16	98	HAR. 11 TOTAL

FOR 36 D.F., CHI-SQUARE (57.065) MINUS THE EXPECTED VALUE (36.371) DIVIDED BY THE STANDARD DEVIATION (8.001) GIVES THE STUDENT-T VALUE (2.59) FOR HARMONIC 10 VERSUS 11

TABLE OF EXPECTED VALUES

DIV. 0.003 0.005 0.007 0.009 0.011 0.014 1.000 HARMONIC 10

COLS.	1	2	3	4	5	6	7	SUBTOT.	DIV.
ROWS 1	1.53	2.04	1.43	1.12	1.12	1.12	1.63	10.00	0.002
2	3.67	4.90	3.43	2.69	2.69	2.69	3.92	24.00	0.004
3	3.67	4.90	3.43	2.69	2.69	2.69	3.92	24.00	0.006
4	1.84	2.45	1.71	1.35	1.35	1.35	1.96	12.00	0.008
5	1.68	2.25	1.57	1.23	1.23	1.23	1.80	11.00	0.010
6	0.92	1.22	0.86	0.67	0.67	0.67	0.98	6.00	0.012
7	1.68	2.25	1.57	1.23	1.23	1.23	1.80	11.00	1.000
SUB.	15.00	20.00	14.00	11.00	11.00	11.00	16.00	98.00	HAR. 11 TOTAL

TABLE 8 CHI-SQUARE AND STUDENT-T VALUES FOR INTERHARMONIC CORRELATIONS OF SAMPLE SC3-4J

		2	3	4	5	6	7	8	
	χ^2	77.14*	90.06*	21.72	36.74	44.10	39.89	39.76	1
	t	4.84*	6.06*	1.72	0.03	0.92	0.38	0.41	
14	χ^2	47.16	27.14	43.32	44.74	30.44	27.39	58.10*	2
	t	1.29	1.10	0.84	0.90	0.72	1.05	2.69*	
13	χ^2	19.39*	47.83	34.37	54.94*	49.75	41.06	41.30	3
	t	9.58*	1.08	0.24	1.76*	1.59	0.52	0.60	
12	χ^2	44.19	54.90*	49.61	17.92	43.86	35.76	35.02	4
	t	0.97	2.23*	1.54	1.93	0.91	0.07	0.17	
11	χ^2	56.39*	54.83*	60.31*	58.18*	56.00*	31.01	57.28*	5
	t	2.50*	2.30*	2.99*	2.72*	2.11*	0.47	2.42*	
10	χ^2	58.34*	68.09*	57.34*	55.52*	57.07*	34.27	35.37	6
	t	2.77*	4.11*	2.83*	2.41*	2.59*	0.25	0.12	
9	χ^2	53.16*	51.46*	44.57	54.80*	78.87*	50.76*	82.30	7
	t	2.10*	1.88*	1.01	2.30*	5.31*	1.80*	5.56	
8	χ^2	58.36*	45.13	48.29	32.45	48.66	60.62*	33.48	8
	t	2.73*	1.06	1.40	0.49	1.54	3.05*	0.36	
7	χ^2	36.11	49.87	34.26	35.82	41.99	55.53*	46.51	7
	t	0.03	1.43	0.20	0.07	0.70	2.49*	1.26	
6	χ^2	43.88	30.56	47.26	25.27	33.52	44.70	33.52	6
	t	0.93	0.68	1.20	1.37	0.36	1.05	0.36	
5	χ^2	36.61	42.28	55.41*	41.56	24.22	40.54	28.64	5
	t	0.03	0.52	1.37	0.59	1.52	0.58	0.95	
4	χ^2	34.20	31.21	47.54	25.09	29.54	28.96	30.80	4
	t	0.27	0.60	1.21	1.39	0.85	0.94	0.69	
3	χ^2	38.80	40.14	35.17	55.10*	45.52	45.40	29.82	3
	t	0.29	0.42	0.12	2.27*	1.14	1.16	0.82	
2	χ^2	58.33*	36.63	59.76*	30.56	60.39*	35.40	57.00*	2
	t	2.71*	0.03	2.59*	0.72	3.00*	0.12	2.57*	
1	χ^2	48.22	35.30	25.11	35.40	31.36	51.80*	58.63*	1
	t	1.43	0.12	1.11	0.12	0.63	1.98*	2.77*	
		15	14	13	12	11	10	9	

* Significance at 5% if χ^2 exceeds 50.76 and t exceeds 1.645

ANALYTICAL TECHNIQUES

Chi-square contingency tables provide the capability to statistically examine polymodal distributions. The distributions considered in this study were of the harmonic amplitude values. Two-dimensional contingency tables allow only univariate analyses to be made, consequently each harmonic was analyzed separately. Tables were constructed for the first 15 harmonic amplitude values. Seven intervals were chosen for each harmonic amplitude value range. Frequencies in each interval for each sample were computed. In this manner, distributions of all samples were compared.

Referring to Appendix C, the general method of analysis may be illustrated. The total variation of all samples from both Stony and Coon Creeks is expressed in the 15 chi-square values which correspond to the first 15 harmonics (Appendix C-1). By lumping all samples from Coon Creek, chi-square values express all variation except that within the Coon Creek samples (Appendix C-2). By subtracting these values from the chi-square values of the total variation, the variation within Coon Creek samples can be determined (Table 9). This method is necessary in orthogonal breakdowns of contingency tables in order to satisfy the requirement that row and column totals remain constant. Similarly, Stony Creek samples are lumped and the chi-square

TABLE 9 CHI-SQUARE VALUES FOR VARIATION WITHIN COON CREEK SAMPLES

D.F. = (R-1)(C-1) = (20-1)(7-1) = 114 degrees of freedom
and = (17-1)(7-1) = 96 degrees of freedom

Tables		(APP. C-1) χ^2 Total Variation	-	(APP. C-2) χ^2 Coon Lumped	=	χ^2 Within Coon
d.f.		114	-	96	=	18
H	1	130.53	-	108.90	=	21.63
A	2	119.53	-	103.76	=	15.77
R	3	110.06	-	87.74	=	22.32
M	4	113.53	-	99.51	=	14.02
O	5	155.12	-	130.53	=	24.59
N	6	149.02	-	134.81	=	14.21
I	7	156.93	-	134.50	=	22.43
C	8	136.88	-	111.22	=	25.66
	9	165.47	-	131.83	=	33.64
V	10	198.63	-	157.98	=	40.65
A	11	185.74	-	153.10	=	32.64
L	12	208.60	-	174.75	=	33.85
U	13	164.01	-	130.61	=	33.40
E	14	182.07	-	150.43	=	31.64
S	15	198.93	-	170.98	=	27.95
Critical Values at 5%		139.72		119.66		28.87

values subtracted from the total variation to give the variation within Stony Creek samples (Table 10; Appendix C-3). The values from both runs of lumped samples, subtracted from the total variation chi-square values, gives the variation between Stony Creek and Coon Creek samples (Table 11). This may also be found by running both Stony and Coon Creek samples as two lumps, since row and column totals remain constant (Appendix C-4). The total variation then, can be represented by the summation of the variation between Stony Creek and Coon Creek samples, the variation within Coon Creek samples, and the variation within Stony Creek samples. This method is extended by orthogonally breaking down the total contingency table as far as individual samples (Tables 12 through 16, Appendix C-5).



TABLE 10 CHI-SQUARE VALUES FOR VARIATION WITHIN STONY CREEK SAMPLES

D.F. = (R-1)(C-1) = (20-1)(7-1) = 114 degrees of freedom and = (5-1)(7-1) = 24 degrees of freedom						
Tables		(APP. C-1) χ^a Total Variation	-	(APP. C-3) χ^a Stony Lumped	=	χ^a Within Stony
d.f.		114	-	24	=	90
H	1	130.53	-	23.41	=	107.12
A	2	119.53	-	21.71	=	97.82
R	3	110.06	-	34.58	=	75.48
M	4	113.53	-	20.55	=	92.98
O	5	155.12	-	33.04	=	122.08
N	6	149.02	-	17.18	=	131.84
I	7	156.93	-	29.89	=	127.04
C	8	136.88	-	31.24	=	105.64
	9	165.47	-	42.73	=	122.74
V	10	198.63	-	49.37	=	149.26
A	11	185.74	-	35.29	=	150.45
L	12	208.60	-	40.25	=	168.35
U	13	164.01	-	42.05	=	121.96
E	14	182.07	-	39.36	=	142.71
S	15	198.93	-	32.63	=	166.30
Critical Values at 5%		139.72		36.42		113.15

TABLE 11 CHI-SQUARE VALUES FOR VARIATION BETWEEN WATERSHED SAMPLES

D.F. = (R-1)(C-1) = (20-1)(7-1) = 114 degrees of freedom								
Tables		(APP. C-1) χ^a Total Variation	-	(TABLE 10) χ^a Within Stony	-	(TABLE 9) χ^a Within Coon	=	(APP. C-4) χ^a Between Watersheds
d.f.		114	-	90	-	18	=	6
H	1	130.53	-	107.12	-	21.63	=	1.79
A	2	119.53	-	97.82	-	15.77	=	5.94
R	3	110.06	-	75.48	-	22.32	=	12.26
M	4	113.53	-	92.98	-	14.02	=	6.53
O	5	155.12	-	122.08	-	24.59	=	8.44
N	6	149.02	-	131.84	-	14.21	=	2.97
I	7	156.93	-	127.04	-	22.43	=	7.46
C	8	136.88	-	105.64	-	25.66	=	5.57
	9	165.47	-	122.74	-	33.64	=	9.09
V	10	198.63	-	149.26	-	40.65	=	8.72
A	11	185.74	-	150.45	-	32.64	=	2.65
L	12	208.60	-	168.35	-	33.85	=	6.40
U	13	164.01	-	121.96	-	33.40	=	8.65
E	14	182.07	-	142.71	-	31.64	=	7.72
S	15	198.93	-	166.30	-	27.95	=	4.68
Critical Values at 5%		139.72		113.15		28.87		12.59

RESULTS

Chi-square contingency tables allow an orthogonal analysis of variation within and between the two drainage systems to be made for each harmonic. The results of this analysis (Table 17) indicate that only the higher order harmonics (i.e. 5 through 15) consistently produce significant results through the heirarchy of tests (Figure 4). Because the lower order harmonics control the crude shape of the particles, it may be inferred that the silt grains throughout the drainage basin have, to a first approximation, similar shapes. The higher order harmonics reflect relatively small-scale surface sculpture of the silt grains that gives rise to significant differences within the drainage basin heirarchy. Such small-scale variations could be the legacy of slight differences in provenance or process history during the Pleistocene. On the other hand, pre-Pleistocene soil-forming processes could conceivably cause such results.

As mentioned above, many of the harmonic orders are not statistically independent. According to Table 8, the tenth harmonic has significant association with harmonics 7 through 15. Since most significant differences fall within this range, discussion of the results will be confined to the pattern of significance of the tenth harmonic

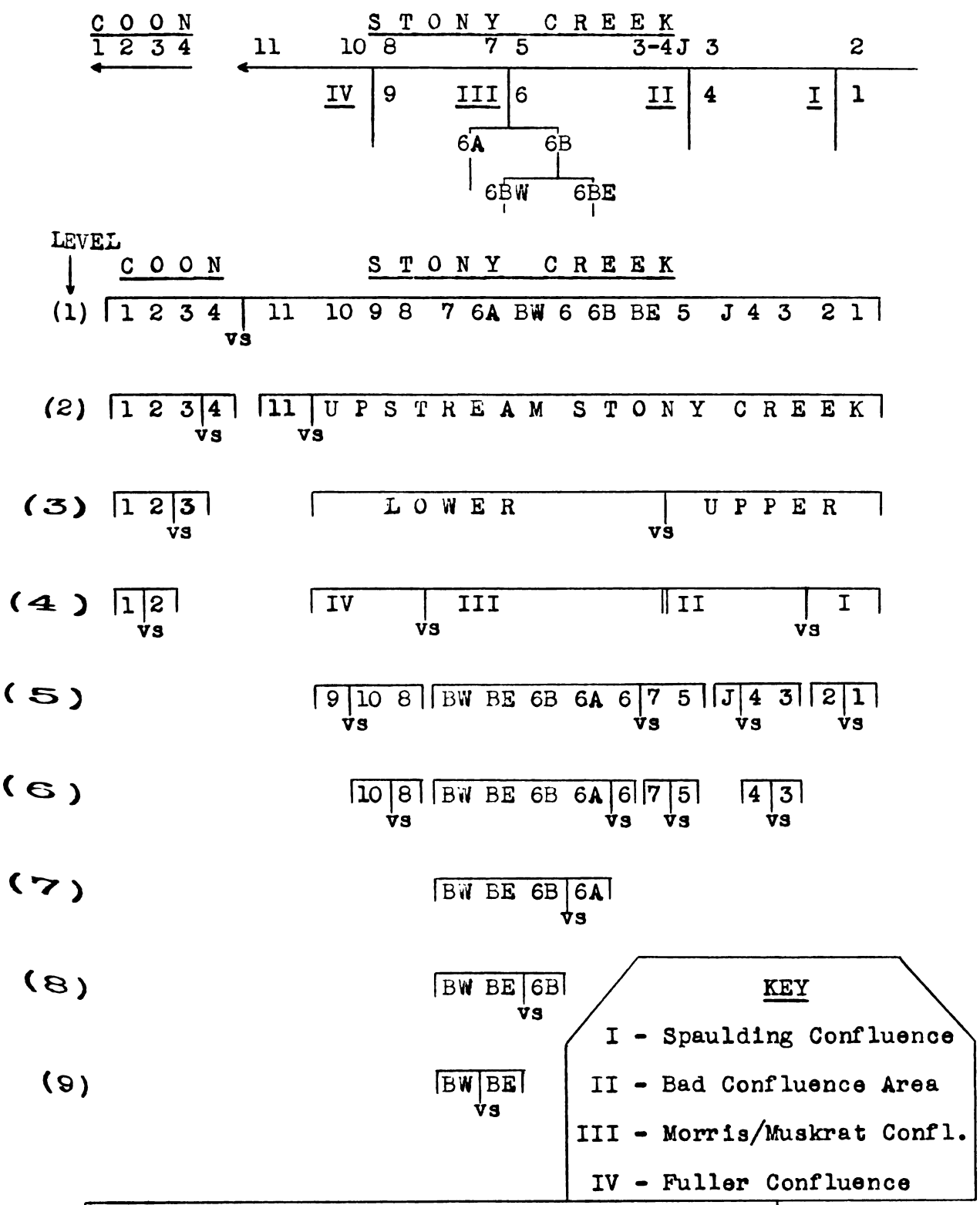


FIGURE 4 SCHEMATIC DIAGRAM OF CHI-SQUARE ANALYSIS ORTHOGONAL COMPARISONS

TABLE 17 SIGNIFICANCE OF CHI-SQUARE ANALYSES FOR ORTHOGONAL COMPARISONS OF HARMONICS 1 TO 15

Level*	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Stony Creek vs. Coon Creek															
	Within Stony															
2	Mouth vs. Upstream				*		*					*				
3	Upstream Half vs. Downstream												*		*	*
4	Up. Area I vs. Up. Area II					*		*				*		*	*	
4	Down. Area III vs. Down. Area IV					*	*		*	*	*	*	*		*	*
5	Sample 1 vs. (I) Sample 2												*			
5	Samples 3 & 4 vs. (II) Sample 3-4J									*						
5	Samples 5 & 7 vs. (III) Combined 6's		*				*	*	*		*		*	*	*	*
5	Samples 8 & 10 vs. (IV) Sample 9				*					*	*	*		*	*	*
6	Sample 3 vs. (II) Sample 4									*						
6	Sample 5 vs. (III) Sample 7							*			*		*		*	*

TABLE 17 cont'd.

Level	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
6	Sample 8 vs. (IV) Sample 10	*						*								
6	Sample 6 vs. (III) Other 6's	*						*								
7	Sample 6A vs. (III) Sixes B,BE,BW												*			*
8	Sample 6B vs. (III) Samples BE&BW															
9	Sample 6BE vs. (III) Sample 6BW															
	Within Coon															
2	Sample 4 vs. Samples 1,2,3													*		
3	Sample 3 vs. Samples 1 & 2								*	*	*	*	*	*	*	
4	Sample 1 vs. Sample 2															

Asterisks (*) denote significance at the 5% confidence level

* Levels, Roman numerals, and other numbers refer to Figure 4.

amplitudes. However, the general description is given below.

General Pattern of Variation

Referring to Table 17, it can be seen that no harmonic amplitude values indicate differences between watersheds. Many harmonics indicate significant differences within Stony Creek, between samples of the downstream portion of Stony Creek, and between samples of the Morris/Muskrat Creeks system and samples immediately upstream and downstream from the confluence. In most of these instances, harmonics 6 through 15 are involved. Orthogonal breakdown of the upper portion of Stony Creek exhibits sporadic significant differences centering around harmonics 7 through 14.

This general pattern, which in many respects is similar to that discussed below of the tenth, undoubtedly signifies that additional inferences can be drawn about silt provenance in the systems described. However, all chi-square results were evaluated with a probability of a Type II error set at the .05 level. In a large field of such tests, a value incorrectly declared significant would be expected about one time in 20. In this investigation, approximately 300 contingency tables were evaluated. Therefore, it can be expected that about 15 values would be incorrectly labeled significant. It is suspected that many of the scattered significant results centered on the lower harmonics fall into this category. Therefore, it is considered prudent to let the pattern of significant results in Table 17 suggest future investigations rather than to attempt to weave all

results into a unified explanation.

Pattern of Variation of the Tenth Harmonic

The orthogonal breakdown of the variation by contingency table analysis commences with comparisons between the two drainage basins -- Stony Creek and Coon Creek -- then procedes to examination of differences at progressively smaller scales within each of the basins (Table 18).

No significant difference could be observed between watersheds. That is, the spectrum of shape variation observed along Stony Creek could not be distinguished from that observed along Coon Creek. However, significant differences do occur between samples within each basin.

Pattern of Variation Within Stony Creek

Analysis of the heirarchy within Stony Creek indicates that the area investigated can be divided into an upstream and a downstream portion based upon shape response between samples within each portion. No significant differences could be detected between upstream samples whereas differences between downstream samples are found to be highly significant. When the pooled upstream samples (SC1 through SC4) are compared to the pooled downstream samples (SC5 through SC10), no significant differences arise.

The test that indicated lack of significant differences between upstream and downstream samples involved combining the data from all the upstream samples for comparison with the data from summation of the downstream samples. This mathematical summing is exactly the same as if the samples were physically mixed. The lack of significance between the

TABLE 18 TENTH HARMONIC CHI-SQUARE VALUES FOR ORTHOGONAL BREAKDOWN COMPARISONS

Level*	Descriptions of Comparisons	Value	Significance at 5%
1	Stony vs. Coon	8.72	Non-Sig.
	Within Stony		
2	Mouth vs. Upstream	6.47	Non-Sig.
3	Upstream Half vs. Downstream	9.83	Non-Sig.
4	Up. Area I vs. Up. Area II	5.66	Non-Sig.
4	Down. Area III vs. Down. Area IV	21.49	Sig.
5	Sample 1 vs. Sample 2 (I)	7.99	Non-Sig.
5	Samples 3 & 4 vs. Sample 3-4J (II)	3.64	Non-Sig.
5	Samples 5 & 7 vs. Combined 6's(III)	16.98	Sig.
5	Samples 8 & 10 vs. Sample 9 (IV)	16.73	Sig.
6	Sample 3 vs. Sample 4 (II)	1.98	Non-Sig.
6	Sample 5 vs. Sample 7 (III)	13.57	Sig.
6	Sample 8 vs. Sample 10 (IV)	11.60	Non-Sig.
6	Sample 6 vs. Other 6's (III)	10.88	Non-Sig.
7	Sample 6A vs. 6B,BE,BW (III)	8.19	Non-Sig.
8	Sample 6B vs. 6BE & 6BW (III)	7.34	Non-Sig.
9	Sample 6BE vs. 6BW (III)	6.91	Non-Sig.
	Within Coon		
2	Sample 4 vs. Samples 1,2,3	7.24	Non-Sig.
3	Sample 3 vs. Samples 1 & 2	24.59	Sig.
4	Sample 1 vs. Sample 2	8.82	Non-Sig.

* Levels, Roman numerals, and other numbers refer to Figure 4.

upstream samples reflects that this mathematical mixing did not result in an increase in shape variability. From this it can be concluded that the upstream samples were collected from a reasonably homogenous deposit occupying that portion of the drainage network.

An idea as to the size of such a homogenous portion of the drainage network may be indicated by the subdivided Morris/Muskrat tributary system. Within this system, no significant differences were observed. Yet samples from immediately above and below the confluence with the mainstream are found to be significantly different from the grouped samples of the tributary system. The size of this apparently homogenous area is about 25 square miles.

The downstream samples, when summed, do not differ from the upstream -- indicating that the range of shape variation and the proportions of grains occupying various parts of that range are similar. However, significant differences arise when these samples are compared one to another. In light of the lack of significant differences between upstream and downstream samples, these significant differences must be viewed as a "differentiation" with respect to shape of a highly variable shape population into a series of more narrowly-ranging shape classes.

There is little reason to believe that natural processes can effectively sort silt on the basis of shape. It is more likely that the upstream samples represent an actual physical mixing of grains belonging to many "shape-families". Lack of significant variation between Stony Creek and Coon Creek

basins as well as between upstream samples and downstream samples of Stony Creek, suggest that the source of these shape-families cannot be areally large nor can it be regionally restricted. That is, they must lie in the realm of soil type or general glacial drift varieties.

Pattern of Variation Within Lower Stony Creek

Heirarchical analysis of the pattern of variation within the lower portions of Stony Creek centers on sample SC5. SC5 was taken near the confluence of Stony Creek and a southward-flowing tributary in the center of the basin (Figure 2). In the past, this creek, established in an old glacial outwash through-channel, has transported sediment to Stony Creek from the Hayworth Creek drainage basin. To this extent, grains in sample SC5 could have been derived from a much wider variety of soil and sediment types than other samples in the basin. Results of the analysis of the samples involving the next lower tributary (Morris/Muskrat system), indicate that silt in the tributary differs significantly in shape from silt collected immediately upstream or downstream in Stony Creek.

Lower Stony Creek therefore, appears to have input of significantly differently-shaped silt grains from its tributaries in contrast to the upper portions of the Creek.

Pattern of Variation Within Coon Creek

Coon Creek is much shorter than Stony Creek from headwaters to mouth, and has no tributaries. Analysis of the pattern of differences observed within the Coon Creek heirarchy of comparisons, indicates that the significant

differences most probably arise from the presence of sample CC3. Location of this sample is analagous to sample SC5 in the Stony Creek basin, that is, it lies at the confluence of Coon Creek and a glacial outwash through-channel.



SUMMARY AND CONCLUSIONS

Shape was evaluated as an indicator of provenance in a terrane incised in glacial drift of central Michigan. Analysis indicates that for the silt sizes, shape differences do exist for the higher order harmonics. Whereas, for the lower order harmonics -- which affect the gross shape of the grain -- few differences were observed.

Analysis of the higher order harmonics, centering on the tenth harmonic, indicate that samples with differently-shaped silt grains are being derived from relatively small areas -- probably less than 25 square miles. Variation from sample to sample indicates that some samples can be considered as composites of the simpler shape-families found in others. Some of this variation is undoubtedly due to differences in provenance relating to Pleistocene history. Other variation may arise from geochemical processes related to soil genesis.

Further investigations therefore should concentrate on investigation of shape-families of silt taken directly from the soil or streambanks. In addition, repeated sampling at the same site, through time, should resolve some of the squestions concerning the differential response of the drainage basin through time.

LIST OF REFERENCES

LIST OF REFERENCES

References Cited

Cleary & Conolly, 1971, "Distribution and Genesis of Quartz in a Piedmont Coastal Plain Environment", GSA Bull., Vol.82, No.10, pp.2755-2766.

Ehrlich & Weinberg, 1970, "An Exact Method for Characterization of Grain Shape", Jour.Sed.Pet., Vol.40, No.1, pp.205-212.

Maxwell,A.E.,1961, Analysing Qualitative Data, Chapman & Hall Ltd, London, England

Redmond, Brian T., 1969, The Utility of Fourier Estimates of Grain Shape in Sedimentological Studies, Master's Thesis, Michigan State University, East Lansing, Michigan.

APPENDICES



APPENDICES

APPENDIX A

AN EXAMPLE OF FOURIER PRINTOUT

Note of explanation:

"Harmonics" refers to harmonic amplitude values.

"Angle" refers to the phase angle, phi.

Individual roughness coefficients are incorrect.

Average roughness coefficients at the end of individual data are correct.

"Dropped Digits" refers to mechanical digitization errors corrected by the computer program.

Shapes are rejected if periphery intersections occur more than once per radial line from the center.

Condensed data following individual data contains harmonic amplitude values and mean phi diameter values.

Two runs were necessary to provide first, harmonics 1 through 10 and second, harmonics 6 through 15.

SEQUENCE 1 POINTS 35 XCEN 2684.81 YCEN 1207.60 RADIUS .00480 MM DIAMETER .00960 MM (6.70 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00512	.03933	.08752	.02203	.03879	.01462	.01101	.00612	.00969	.00267
ANGLE	160.1	0.0	32.7	113.6	172.0	174.2	285.5	90.7	157.7	261.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .1760 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .2966

SEQUENCE 2 POINTS 53 XCEN 2762.22 YCEN 1506.95 RADIUS .00819 MM DIAMETER .01637 MM (5.93 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02709	.22280	.09603	.08441	.03816	.03561	.02848	.00706	.01179	.01224
ANGLE	176.1	0.0	-5.6	86.9	166.8	46.8	126.4	239.6	57.4	171.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 162.9261 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.0257

SEQUENCE 3 POINTS 45 XCEN 2682.76 YCEN 1873.00 RADIUS .00604 MM DIAMETER .01208 MM (6.37 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.03628	.24783	.14566	.07042	.03719	.05356	.03038	.00410	.01432	.00873
ANGLE	120.8	0.0	38.5	41.9	275.8	284.2	40.1	73.1	298.2	357.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 187.5820 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.6846

SEQUENCE 4 POINTS 48 XCEN 2497.14 YCEN 2038.50 RADIUS .00802 MM DIAMETER .01604 MM (5.96 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00438	.05078	.04905	.02137	.03407	.04064	.02128	.00702	.00371	.00803
ANGLE	121.6	0.0	145.4	183.4	14.1	155.8	211.3	254.8	336.9	334.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.8725 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.3915

SEQUENCE 5 POINTS 31 XCEN 2608.21 YCEN 1721.73 RADIUS .00488 MM DIAMETER .00976 MM (6.68 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00313	.09502	.03319	.08937	.02640	.00953	.02731	.01396	.00499	.01208
ANGLE	16.5	0.0	346.5	281.9	178.8	173.4	313.4	263.4	54.4	43.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .9188 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .6778

SEQUENCE 6 POINTS 45 XCEN 2798.08 YCEN 1501.66 RADIUS .00801 MM DIAMETER .01602 MM (5.96 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00930	.18626	.09337	.09840	.02508	.01529	.01881	.00951	.00317	.00969
ANGLE	357.9	0.0	21.4	147.9	130.8	249.3	109.9	273.7	163.2	43.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 15.8979 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.8194

IN SEQUENCE 7 POINT 38 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 37 VALUE 1968 PLUS ITS DIFFERENCE WITH POINT 39 VALUE 2031 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 38

SEQUENCE 7 POINTS 41 XCEN 2816.32 YCEN 2001.83 RADIUS .00900 MM DIAMETER .01800 MM (5.80 PHI)

HARMONICS	,04515	,25163	,14713	,07211	,05139	,01952	,00266	,00850	,00982	,00633
ANGLE	134.0	0.0	232,4	352,0	98.5	193.3	222,2	319.8	5.8	88,3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED381.2592 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 13.8069

SEQUENCE 8	POINTS 49	XCEN 2703.16	YCEN 2063,79	RADIUS ,01235 MM	DIAMETER ,02470 MM (5.34 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,02084	,13470	,11789	,03646	,05735	,01672	,01711	,00296	,01813	,00979
ANGLE	271.8	0.0	279,6	102,4	70.9	238.0	92,0	85.0	179,1	55,7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 39.3710 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.4368

SEQUENCE 9	POINTS 51	XCEN 2339.38	YCEN 2025,92	RADIUS ,01174 MM	DIAMETER ,02348 MM (5.41 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,00699	,10490	,07477	,02600	,03841	,04196	,01159	,01152	,01090	,01093
ANGLE	330,2	0.0	245,9	46,8	97.1	41.6	185,2	72.7	106,1	27,2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19.5360 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.1254

SEQUENCE 10	POINTS 44	XCEN 2474.43	YCEN 2144,24	RADIUS ,00600 MM	DIAMETER ,01199 MM (6.38 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,01593	,15375	,15487	,04734	,03208	,02062	,02472	,00594	,01331	,00390
ANGLE	46.3	0.0	261,5	50,7	184.7	282.0	339,9	154,7	235,9	286,0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .4311 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4643

SEQUENCE 11	POINTS 57	XCEN 2907.47	YCEN 2091,28	RADIUS ,01218 MM	DIAMETER ,02436 MM (5.36 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,00389	,25366	,01212	,00884	,05314	,04187	,02895	,01301	,00582	,00300
ANGLE	254.1	0,0	198,8	219,9	69,8	245,6	192,7	331,5	299,9	254,4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.9049 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.3973

SEQUENCE 12	POINTS 53	XCEN 2698.05	YCEN 1922,27	RADIUS ,00725 MM	DIAMETER ,01450 MM (6.11 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,07223	,36899	,14300	,11315	,04420	,06057	,02717	,02757	,01360	,01012
ANGLE	55.7	0,0	321,7	289,2	350.2	290,7	318,3	288,5	21.9	210,3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED220.6859 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10.5044

SEQUENCE 13	POINTS 49	XCEN 2695.26	YCEN 1885,95	RADIUS ,00514 MM	DIAMETER ,01028 MM (6.60 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,00576	,03761	,11793	,02542	,05194	,01598	,04438	,01830	,01506	,00644
ANGLE	94.0	0,0	293,0	314,3	129,3	295,0	281,9	153,3	80,0	253,2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.4875 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .8624

SEQUENCE 14 POINTS 51 XCEN 2706.33 YCEN 2178.02 RADIUS .00959 MM DIAMETER .01918 MM (5.70 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00318	.03790	.07956	.01772	.06275	.00805	.01662	.01469	.00988	.00383
ANGLE	208.8	0.0	121.5	182.6	81.0	174.7	31.3	253.3	151.9	290.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .0123 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .0785

IN SEQUENCE 15 POINT 2 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 1 VALUE 2021 PLUS ITS DIFFERENCE WITH POINT 3 VALUE 1985 DIVIDED BY 2 GIVES A NEW Y-VALUE 2003 FOR POINT 2

SEQUENCE 15 POINTS 53 XCEN 2771.70 YCEN 2032.70 RADIUS .00947 MM DIAMETER .01895 MM (5.72 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.04300	.37040	.08209	.07713	.09332	.02067	.03268	.00946	.00608	.01076
ANGLE	304.2	0.0	295.2	220.9	75.5	322.9	199.0	66.6	147.4	172.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.9089 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9770

IN SEQUENCE 16 POINT 52 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 51 VALUE 2013 PLUS ITS DIFFERENCE WITH POINT 53 VALUE 1984 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 52

SEQUENCE 16 POINTS 58 XCEN 2695.20 YCEN 1808.40 RADIUS .01175 MM DIAMETER .02350 MM (5.41 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02077	.11690	.16573	.05191	.03077	.02287	.01658	.01333	.00220	.01884
ANGLE	7.5	0.0	332.2	30.6	272.2	201.9	319.3	101.1	165.3	326.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .3912 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4423

SEQUENCE 17 POINTS 53 XCEN 2831.90 YCEN 1952.88 RADIUS .01485 MM DIAMETER .02971 MM (5.07 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00812	.15757	.04552	.04698	.03915	.04561	.03882	.01522	.01163	.00122
ANGLE	102.4	0.0	37.1	106.1	29.2	167.0	123.6	225.0	171.2	164.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19.2483 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.1023

SEQUENCE 18 POINTS 56 XCEN 2985.40 YCEN 2047.45 RADIUS .01809 MM DIAMETER .03618 MM (4.79 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01481	.21958	.07495	.07824	.05678	.03412	.00943	.01204	.00965	.00529
ANGLE	272.7	0.0	265.1	282.2	.0	61.0	346.0	262.4	22.9	118.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED146.9008 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 8.5703

SEQUENCE 19 POINTS 57 XCEN 2994.98 YCEN 2426.02 RADIUS .02120 MM DIAMETER .04239 MM (4.56 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02537	.14224	.14936	.05781	.06580	.03343	.01677	.02635	.01292	.00753
ANGLE	205.8	0.0	124.2	5.0	85.6	276.5	321.9	121.3	104.6	67.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.0318 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2312

BEGINNING HARMONIC 13 CONTINGENCY TABLE

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 13	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.	24.	32.	16.	11.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	4.	27.	31.	19.	8.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	8.	32.	30.	25.	0.	1.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	11.	36.	23.	16.	6.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	4.	38.	25.	18.	8.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	1.	17.	27.	12.	6.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	8.	38.	31.	12.	2.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	11.	40.	24.	13.	6.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	10.	46.	27.	12.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	8.	33.	29.	14.	7.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	9.	37.	27.	16.	5.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	35.	25.	19.	8.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	4.	18.	20.	5.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	7.	26.	25.	15.	12.	5.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	7.	39.	26.	14.	6.	4.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	10.	39.	26.	13.	6.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	3.	32.	26.	9.	9.	6.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	5.	33.	27.	15.	11.	3.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	11.	41.	28.	10.	4.	1.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	10.	41.	32.	11.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	143.	672.	541.	284.	121.	65.	62.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 164.011

TABLE OF EXPECTED VALUES

INTERVALS .0010 .0030 .0050 .0070 .0090 .0110 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	5.45	25.63	20.63	10.83	4.61	2.48	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	7.27	34.17	27.51	14.44	6.15	3.31	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	7.20	33.81	27.22	14.29	6.09	3.27	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	3.86	18.15	14.61	7.67	3.27	1.76	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	7.12	33.46	26.94	14.14	6.02	3.24	3.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	143.0	672.0	541.0	284.0	121.0	65.0	62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13											
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.044	3.776	.391	.061	3.289	1.339	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.616	SC1
2	1.687	2.075	.192	1.041	.395	1.839	.897	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.186	SC2
3	.034	.297	.094	6.861	6.345	1.702	.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.352	SC3
4	1.724	.836	.920	.107	.013	.784	1.529	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.112	SC34J
5	1.525	.350	.281	.736	.512	.537	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.442	SC4
6	3.637	2.904	1.966	.126	.416	2.564	1.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.745	SC5
7	.043	.279	.303	.510	2.918	.116	.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.185	SC6
8	1.724	.751	.593	.206	.013	.041	1.529	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.857	SC6A
9	1.024	4.096	.009	.413	4.315	3.305	3.153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.315	SC6B
10	.058	.067	.052	.024	.099	.131	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.872	SC6BE
11	.301	.088	.066	.082	.285	.743	3.251	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.817	SC6BW
12	.670	.042	.181	1.552	.600	1.576	.402	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.024	SC7
13	.005	.001	1.985	.930	.022	.325	1.675	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.944	SC8
14	.044	2.586	.466	.000	4.878	.704	13.736	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.413	SC9
15	.044	.326	.246	.072	.026	.090	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.960	SC10
16	.958	.580	.116	.174	.008	1.639	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.915	SC11A2
17	2.384	.064	.032	1.868	1.470	2.360	11.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.505	CC1
18	.832	.142	.066	.001	3.416	.049	.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.447	CC2
19	1.635	.942	.005	1.607	.867	1.702	.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.930	CC3
20	.835	.942	.465	1.017	2.975	.582	1.559	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.375	CC4
SUBTOT.	19.21	20.34	8.43	17.45	32.86	22.75	42.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	164.01	TOTAL

END OF HARMONIC 13 CONTINGENCY TABLE

BEGINNING HARMONIC 14 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 14	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	5.	7.	10.	25.	33.	5.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	2.	8.	11.	15.	32.	15.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	6.	7.	16.	24.	26.	14.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	2.	5.	20.	28.	28.	8.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	2.	3.	20.	18.	31.	13.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	2.	1.	10.	16.	17.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	0.	8.	27.	18.	29.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	6.	9.	21.	19.	28.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	2.	6.	27.	31.	21.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	4.	9.	25.	22.	21.	7.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	3.	8.	18.	28.	25.	11.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	4.	9.	16.	20.	29.	12.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	3.	13.	11.	14.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	1.	3.	14.	17.	30.	21.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	1.	10.	26.	13.	21.	19.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	1.	8.	18.	18.	32.	12.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	3.	6.	16.	8.	35.	16.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	1.	4.	15.	21.	36.	14.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	4.	7.	26.	24.	24.	6.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	0.	4.	30.	17.	28.	16.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	51.	125.	379.	393.	540.	233.	162.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 182.071

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	1.94	4.77	14.45	15.18	20.59	8.89	6.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	2.59	6.36	19.27	20.24	27.46	11.85	8.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	2.57	6.29	19.07	20.03	27.17	11.72	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	1.38	3.38	10.24	10.75	14.59	6.29	4.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	2.54	6.22	18.87	19.82	26.89	11.60	8.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	51.0	125.0	379.0	398.0	540.0	233.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS / ROWS	1	2	3	4	5	6	7	.8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	1.956	.022	5.056	.729	.676	4.367	4.803	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.608	SC1
2	.182	.287	4.102	1.754	.404	.573	8.261	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.563	SC2
3	4.135	.050	.755	.470	.189	.260	.733	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.573	SC3
4	.158	.341	.005	2.609	.000	1.386	.236	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.736	SC34J
5	.147	1.824	.014	.293	.382	.088	.338	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.086	SC4
6	.002	2.977	1.372	.045	.627	1.092	9.904	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.017	SC5
7	2.647	.352	2.729	.342	.034	1.386	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.510	SC6
8	4.246	.972	.090	.133	.000	.363	1.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.186	SC6A
9	.136	.020	3.100	5.724	1.519	1.963	4.723	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.204	SC6B
10	.727	1.035	1.569	.118	1.633	2.064	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.207	SC6BE
11	.040	.319	.177	2.436	.388	.121	.733	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.213	SC6BW
12	.801	1.168	.494	.000	.123	.006	1.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.811	SC7
13	.281	.042	.745	.035	.024	.079	2.605	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.782	SC8
14	1.071	1.980	1.033	.790	.068	6.075	3.423	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.246	SC9
15	1.071	1.725	1.749	.450	2.020	3.593	1.434	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.103	SC10
16	1.002	.388	.111	.293	.653	.000	.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.460	SC11A2
17	.084	.008	.436	7.045	2.449	1.668	.464	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.155	CC1
18	1.048	.996	1.195	.001	2.085	.260	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.614	CC2
19	.657	.030	1.389	.470	.658	3.154	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.897	CC3
20	2.574	.996	5.160	.718	.004	1.171	2.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.100	CC4
SUBTOT.	23.07	15.51	32.59	24.42	13.94	29.70	42.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	182.07	TOTAL

END OF HARMONIC 14 CONTINGENCY TABLE

BEGINNING HARMONIC 15 CONTINGENCY TABLE

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	3.	8.	23.	21.	27.	11.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	3.	3.	21.	24.	29.	8.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	5.	6.	24.	14.	38.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	4.	11.	23.	16.	26.	11.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	3.	7.	21.	26.	31.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	1.	5.	14.	18.	13.	10.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	3.	10.	24.	31.	19.	7.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	1.	7.	22.	37.	23.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	3.	11.	38.	20.	20.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	4.	9.	36.	21.	16.	5.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	4.	8.	37.	19.	20.	7.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	4.	18.	28.	27.	9.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	2.	20.	10.	13.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	4.	6.	15.	20.	24.	13.	18.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	4.	8.	19.	30.	27.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	3.	7.	22.	31.	26.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	1.	9.	17.	22.	23.	13.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	1.	8.	26.	18.	30.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	3.	12.	35.	19.	18.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	6.	11.	21.	25.	28.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	63.	152.	476.	451.	478.	155.	113.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 198.928

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	2.40	5.80	18.15	17.20	18.23	5.91	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	3.20	7.73	24.21	22.93	24.31	7.88	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	3.17	7.65	23.95	22.69	24.05	7.80	5.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	1.70	4.11	12.85	12.18	12.91	4.19	3.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	3.14	7.57	23.70	22.45	23.80	7.72	5.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	65.0	152.0	476.0	451.0	478.0	155.0	113.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.034	.000	.194	.349	.112	.948	.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810	SC1
2	.034	3.169	.704	.001	.536	.005	6.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.492	SC2
3	.871	.487	.037	3.937	6.676	.156	.145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.309	SC3
4	.163	1.226	.118	2.345	.057	1.085	.219	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.214	SC34J
5	.017	.084	.488	.345	1.690	1.103	.562	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.289	SC4
6	.819	.109	.950	.037	1.500	2.829	10.338	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.632	SC5
7	.022	.564	.020	2.461	1.361	.136	.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.158	SC6
8	1.576	.100	.297	7.889	.132	.136	4.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.166	SC6A
9	.013	1.385	7.864	.375	.763	3.023	3.920	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.342	SC6B
10	.130	.182	5.450	.203	2.982	1.103	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.106	SC6BE
11	.147	.000	5.808	.914	1.023	.156	.626	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.674	SC6BW
12	1.056	1.740	1.473	1.241	.361	.185	.506	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.562	SC7
13	.052	1.080	3.967	.391	.001	.008	3.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.552	SC8
14	.132	.522	4.136	.633	.063	2.795	24.119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.406	SC9
15	.132	.000	1.531	1.564	.112	.390	2.653	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.382	SC10
16	.017	.084	.247	2.645	.085	.117	3.978	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.172	SC11A2
17	1.455	.271	1.894	.009	.027	3.516	2.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.296	CC1
18	1.606	.000	.043	1.349	.972	.002	.726	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.699	CC2
19	.028	2.037	4.039	.914	1.991	.557	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.567	CC3
20	2.201	1.152	.623	.234	.344	2.096	1.444	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.099	CC4
SUBTOT.	10.56	14.19	39.89	27.84	20.79	20.45	65.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.93	TOTAL

END OF HARMONIC 15 CONTINGENCY TABLE

END OF CONTINGENCY TABLES FOR

SC1	SC2	SC3	SC34J	SC4	SC5	SC6	SC6A	SC6B	SC6BE
SC6BW	SC7	SC8	SC9	SC10	SC11A2	CC1	CC2	CC3	CC4

CHISQUARE AT THE 5 PERCENT LEVEL OF SIGNIFICANCE IS 139.72 (THIS IS COMPUTED USING THE FORMULA GIVEN BELOW)

(NORMAL DEVIATE) . THE SQUARE ROOT OF 2 CHISQUARE MINUS THE SQUARE ROOT OF TWICE THE DEGREES OF FREEDOM MINUS 1

CHISQUARE VALUES FOR EACH HARMONIC. DEGREES OF FREEDOM ARE 114.

FOR HARMONIC 1 CHISQUARE IS 130.53

FOR HARMONIC 2 CHISQUARE IS 119.53

FOR HARMONIC 3 CHISQUARE IS 110.06

FOR HARMONIC 4 CHISQUARE IS 113.53

FOR HARMONIC 5 CHISQUARE IS 155.12 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 6 CHISQUARE IS 149.02 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 7 CHISQUARE IS 156.93 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 8 CHISQUARE IS 136.88

FOR HARMONIC 9 CHISQUARE IS 165.47 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 10 CHISQUARE IS 198.63 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 11 CHISQUARE IS 185.74 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 12 CHISQUARE IS 208.60 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 13 CHISQUARE IS 164.01 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 14 CHISQUARE IS 182.07 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 15 CHISQUARE IS 193.93 SIGNIFICANT AT 5 PERCENT

APPENDIX B

SCATTER PLOTS OF HARMONIC AMPLITUDE VALUES VERSUS SIZE

DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 1 (X)
MEAN =	6,020	0,013
STD.DEV. =	0,602	0,011
VARIANCE =	0,363	0,000

COVARIANCE = -0,000

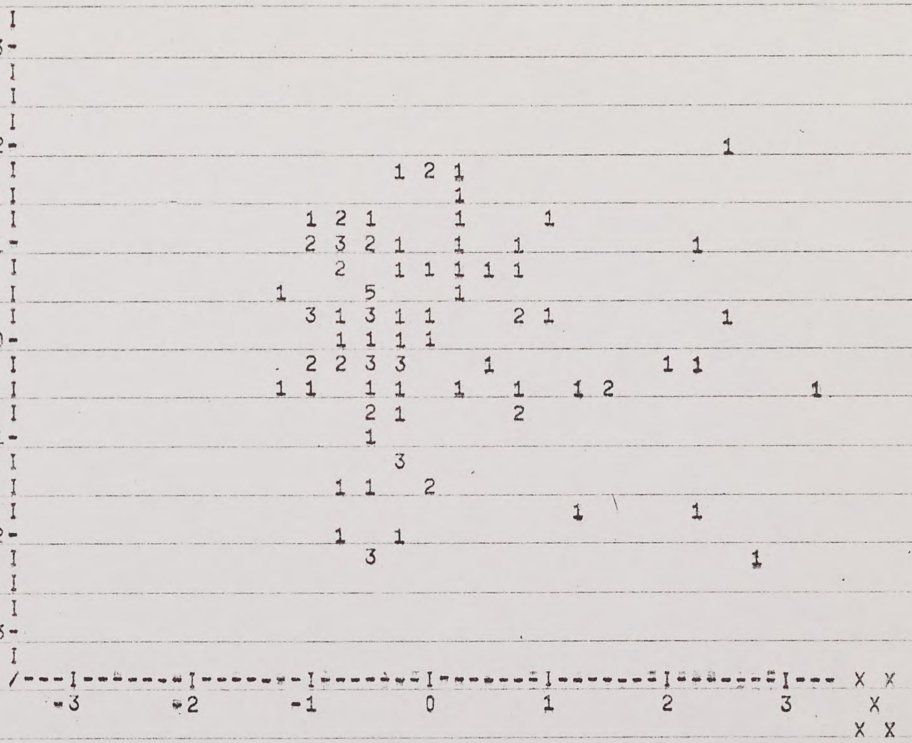
R = -0,070748

ETA(Y,X) =0,47499 ETA(X,Y) =0.47731

REGR. COEFS.

A(Y,X) = 6,07 A(X,Y) = 0,02

B(Y,X) = -3,8950 B(X,Y) = -0,0013



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 2 (X)
MEAN =	6,020	0,152
STD.DEV. =	0,602	0,079
VARIANCE =	0,363	0,006

COVARIANCE = -0,002

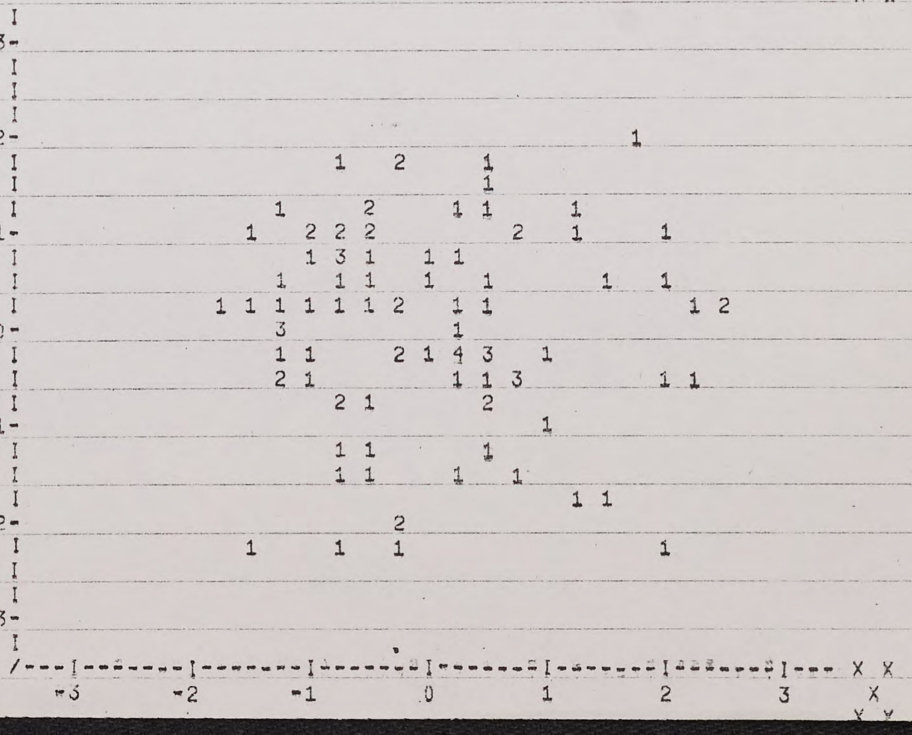
R = -0,041747

ETA(Y,X) =0,30954 ETA(X,Y) =0.39472

REGR. COEFS.

A(Y,X) = 6,07 A(X,Y) = 0.18

B(Y,X) = -0,3165 B(X,Y) = -0.0055



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 3 (X)
MEAN =	6,020	0,084
STD.DEV. =	0,602	0,043
VARIANCE =	0,363	0,002

COVARIANCE = -0,001

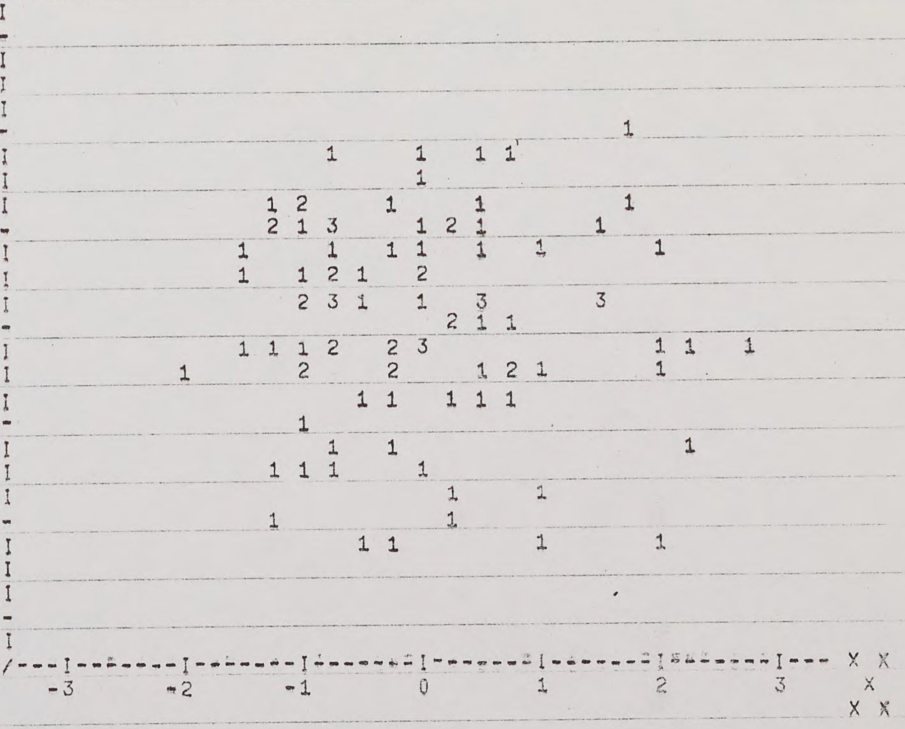
R = -0,032718

ETA(Y,X) =0,45482 ETA(X,Y) =0,38701

REGR. COEFS.

A(Y,X) = 6,06 A(X,Y) = 0,10

B(Y,X) = -0,4564 B(X,Y) = -0,0023



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 4 (X)
MEAN =	6,020	0,054
STD.DEV. =	0,602	0,030
VARIANCE =	0,363	0,001

COVARIANCE = -0,000

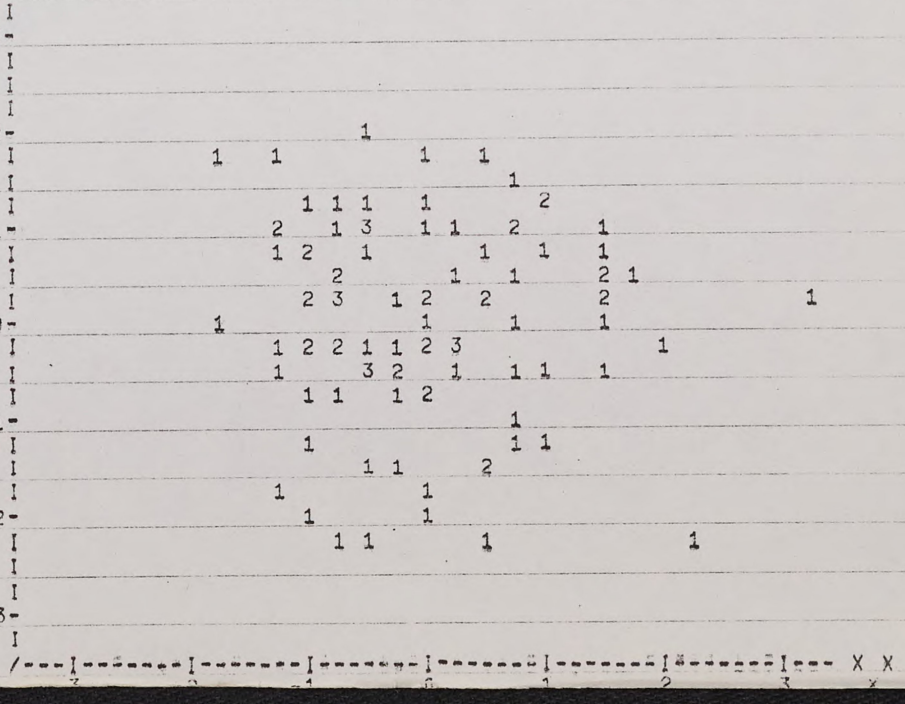
R = -0,026014

ETA(Y,X) =0,34696 ETA(X,Y) =0,33362

REGR. COEFS.

A(Y,X) = 6,05 A(X,Y) = 0,06

B(Y,X) = -0,5140 B(X,Y) = -0,0013



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 5 (X)
MEAN =	6,020	0,036
STD,DEV, =	0,602	0,020
VARIANCE =	0,363	0,000

COVARIANCE = -0,001

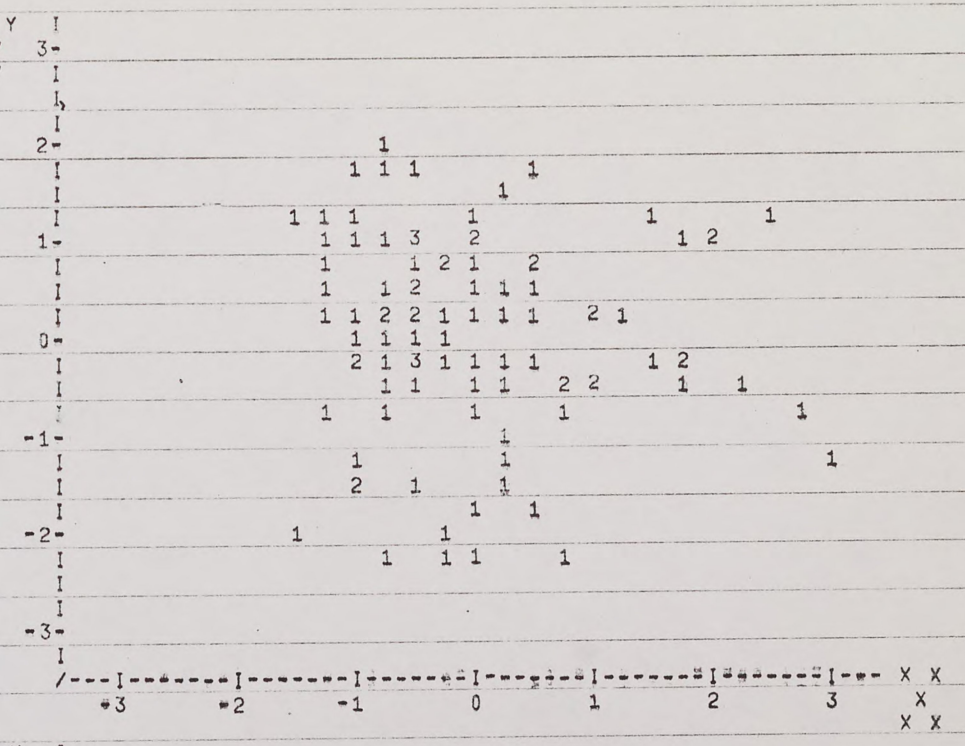
R = -0,052596

ETA(Y,X) =0,40207 ETA(X,Y) =0,37469

REGR, COEFS,

A(Y,X) = 6,08 A(X,Y) = 0,05

B(Y,X) = -1,5720 B(X,Y) = -0,0018



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 6 (X)
MEAN =	6,020	0,023
STD,DEV, =	0,602	0,014
VARIANCE =	0,363	0,000

COVARIANCE = -0,001

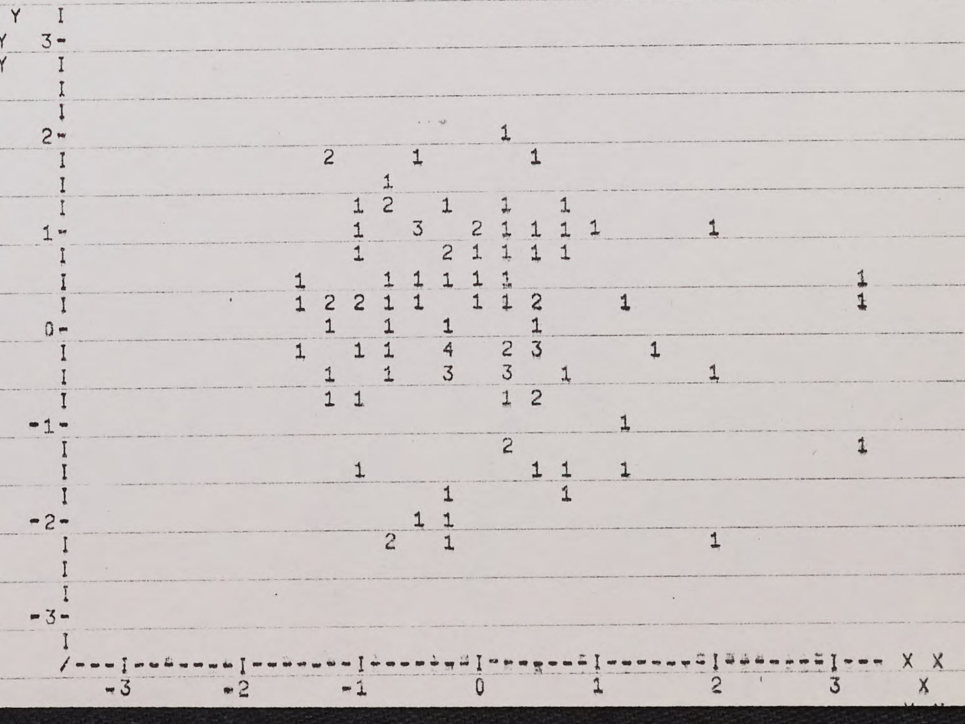
R = -0,121501

ETA(Y,X) =0,33531 ETA(X,Y) =0,35295

REGR, COEFS,

A(Y,X) = 6,14 A(X,Y) = 0,04

B(Y,X) = -5,1176 B(X,Y) = -0,0029



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 7 (X)
MEAN =	6,020	0,020
STD.DEV. =	0,602	0,010
VARIANCE =	0,363	0,000

COVARIANCE = -0,001

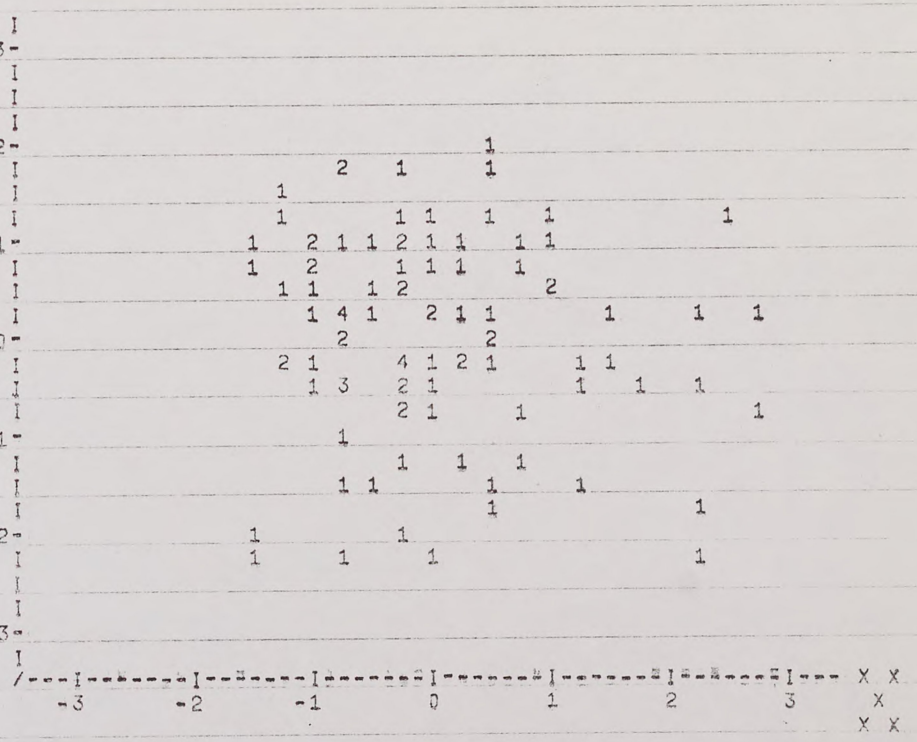
R = -0,095441

ETA(Y,X) =0,39636 ETA(X,Y) =0,38240

REGR. COEFS.

A(Y,X) = 6,13 A(Y,Y) = 0,03

B(Y,X) = -5,5931 B(X,Y) = -0,0016



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 8 (X)
MEAN =	6,020	0,013
STD.DEV. =	0,602	0,007
VARIANCE =	0,363	0,000

COVARIANCE = 0,000

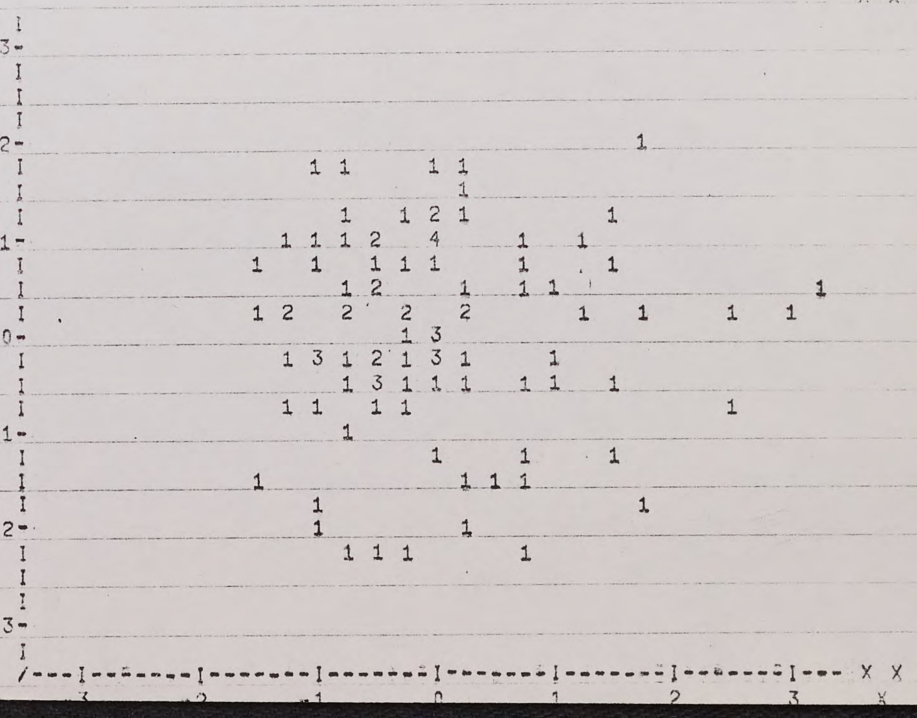
R = 0,027525

ETA(Y,X) =0,29507 ETA(X,Y) =0,35390

REGR. COEFS.

A(Y,X) = 5,99 A(Y,Y) = 0,01

B(Y,X) = 2,3563 B(X,Y) = 0,0003



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 9 (X)
MEAN =	6,020	0,011
STD,DEV, =	0,602	0,007
VARIANCE =	0,363	0,000

COVARIANCE = -0,001

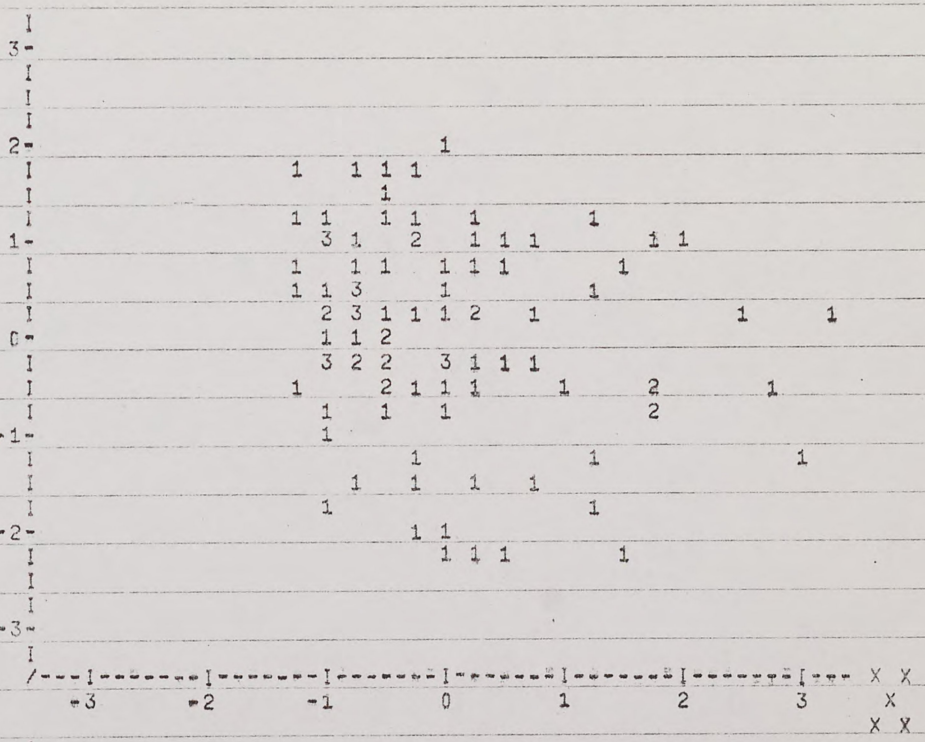
R = -0,196998

ETA(Y,X) =0,33051 ETA(X,Y) =0,42826

REGR, COEFS,

A(Y,X) = 6,20 A(X,Y) = 0,02

B(Y,X) = -17,3671 B(X,Y) = -0,0022



DATA SET 1

N = 98

	VARIABLE 11 (Y)	VARIABLE 10 (X)
MEAN =	6,020	0,008
STD,DEV, =	0,602	0,006
VARIANCE =	0,363	0,000

COVARIANCE = -0,000

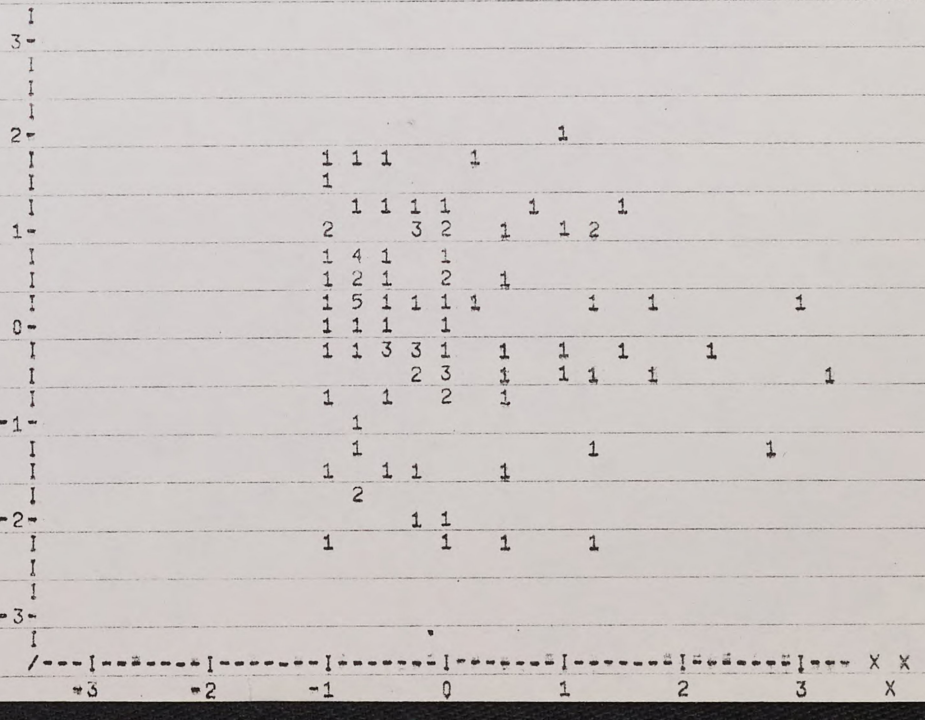
R = -0,085119

ETA(Y,X) =0,33025 ETA(X,Y) =0,48175

REGR, COEFS,

A(Y,X) = 6,09 A(X,Y) = 0,01

B(Y,X) = -9,0475 B(X,Y) = -0,0008



APPENDICES C

Note of explanation:

Divisions of the amplitude scales are the upper limits of the interval formed.

Columns 8 through 16 are zero and unused due to the less-than-maximum number of intervals desired (7).

Each chi-square computation is given as a set of three tables. The first table of each set gives the observed frequencies. The second table gives the expected frequencies. The third table gives individual cell contributions to the total chi-square value. Chi-square is computed by squaring the difference of the observed and expected values and dividing by the expected value.

APPENDIX C-1

CHI-SQUARE CONTINGENCY TABLES FOR THE TOTAL VARIATION

CONTINGENCY TABLES

THE SIMPLE CHISQUARE EQUATION IS USED IN COMPUTATIONS EXPECTED,CONTRIBUTION,OBSERVED VALUES ARE LISTED IN TABLES

THE SUM OF THE DIFFERENCE OF THE OBSERVED AND EXPECTED VALUES SQUARED, DIVIDED BY THE EXPECTED VALUE, GIVES CHISQUARE

THE EXPECTED VALUE FOR EACH CELL IS GIVEN BY THE PRODUCT OF THE ROW AND COLUMN SUMS, DIVIDED BY THE CELL TOTAL

CONTINGENCY TABLES FOR	SC1	SC2	SC3	SC34J	SC4	SC5	SC6	SC6A	SC6B	SC6BE
	SC6BW	SC7	SC8	SC9	SC10	SC11A2	CC1	CC2	CC3	CC4

THIS SET HAS 20 ROWS OR SAMPLES AND 7 COLUMNS OR DIVISIONS. THE METHOD REQUEST IS 5. THE SUPPRESS REQUEST IS 3

THE FOLLOWING HARMONICS AND DIVISIONS WERE REQUESTED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HARMONIC 1 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 2 DIVISIONS	.0500	.1000	.1500	.2000	.2500	.3000	.8000									
HARMONIC 3 DIVISIONS	.0300	.0600	.0900	.1200	.1500	.1800	.5000									
HARMONIC 4 DIVISIONS	.0250	.0500	.0750	.1000	.1250	.1500	.5000									
HARMONIC 5 DIVISIONS	.0150	.0300	.0450	.0600	.0750	.0900	.5000									
HARMONIC 6 DIVISIONS	.0100	.0200	.0300	.0400	.0500	.0600	.5000									
HARMONIC 7 DIVISIONS	.0050	.0100	.0150	.0200	.0300	.0400	.5000									
HARMONIC 8 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 9 DIVISIONS	.0030	.0060	.0090	.0120	.0150	.0180	.5000									
HARMONIC 10 DIVISIONS	.0030	.0050	.0070	.0090	.0110	.0140	.5000									
HARMONIC 11 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 12 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 13 DIVISIONS	.0010	.0030	.0050	.0070	.0090	.0110	.5000									

HARMONIC 14 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

HARMONIC 15 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	2.40	5.80	18.15	17.20	18.23	5.91	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	3.20	7.73	24.20	22.93	24.31	7.88	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	3.17	7.65	23.95	22.69	24.05	7.80	5.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	1.70	4.11	12.86	12.18	12.91	4.19	3.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	13.05	31.48	98.58	93.40	98.99	32.10	23.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	63.0	152.0	476.0	451.0	478.0	155.0	113.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	13.77	17.77	13.31	9.69	5.76	4.12	7.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	18.36	23.69	17.75	12.92	7.68	5.49	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	18.16	23.45	17.56	12.78	7.60	5.43	10.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	9.75	12.59	9.43	6.86	4.08	2.92	5.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	17.97	23.20	17.38	12.65	7.52	5.38	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	361.0	466.0	349.0	254.0	151.0	108.0	199.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.040	.019	.013	.447	3.128	.091	.225	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.964	SC1
2	.066	.115	.334	.886	.493	4.873	2.828	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.601	SC2
3	.046	.084	.398	.212	1.939	.316	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.025	SC3
4	.273	1.396	2.064	1.759	.431	2.319	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.414	SC34J
5	.016	.157	.924	.069	.980	.432	.308	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.888	SC4
6	.043	.085	.544	.745	.268	.003	.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.021	SC5
7	.746	7.886	.247	2.039	.172	1.211	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.472	SC6
8	.161	1.113	.196	.050	4.845	.028	.525	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.918	SC6A
9	.381	.020	.004	.284	.228	.047	.444	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.407	SC6B
10	.016	1.020	.048	.069	.199	7.501	.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.337	SC6BE
11	.040	.243	.092	5.658	.148	.438	1.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.806	SC6BW
12	.038	.009	.139	.385	.888	.035	.394	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.888	SC7
13	10.771	.532	2.079	.003	.285	.402	2.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.191	SC8
14	.040	1.308	1.103	1.474	.499	.517	6.790	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.732	SC9
15	.066	2.391	1.103	.022	.000	.286	.574	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.442	SC10
16	.114	2.712	.208	.084	.074	1.171	1.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.380	SC11A2
17	.878	1.166	2.525	.033	.292	.490	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.385	CC1
18	1.857	.853	.092	.212	1.075	.316	.631	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.036	CC2
19	2.641	.100	1.535	.212	1.075	1.252	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.847	CC3
20	1.284	1.267	.027	.404	2.105	.488	.197	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.772	CC4
SUBTOT.	19.52	22.48	13.68	15.05	19.13	22.27	18.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	130.53	TOTAL

END OF HARMONIC 1 CONTINGENCY TABLE

BEGINNING HARMONIC 2 CONTINGENCY TABLE

INTERVALS	.1500	.1000	.1500	.2000	.2500	.3000	.8000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 2	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	17.	25.	21.	11.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	8.	15.	26.	15.	12.	7.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	9.	22.	24.	17.	16.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	10.	19.	27.	18.	13.	8.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	9.	18.	18.	22.	11.	9.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	5.	15.	14.	18.	6.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	22.	24.	23.	9.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	4.	23.	24.	16.	21.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	5.	20.	26.	24.	11.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	6.	18.	24.	20.	17.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	7.	18.	29.	18.	13.	7.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	10.	15.	23.	13.	17.	13.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	6.	18.	14.	8.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	5.	27.	21.	15.	12.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	17.	25.	25.	9.	8.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	11.	22.	22.	22.	13.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	12.	15.	15.	23.	11.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	5.	14.	30.	19.	14.	10.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	11.	22.	18.	15.	15.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	10.	17.	23.	17.	18.	8.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	160.	374.	452.	370.	253.	150.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 119.529

TABLE OF EXPECTED VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.10	14.26	17.24	14.11	9.65	5.72	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	8.14	19.02	22.98	18.81	12.86	7.63	6.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	8.05	18.82	22.74	18.62	12.73	7.55	6.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.32	10.10	12.21	9.99	6.83	4.05	3.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	7.97	18.62	22.50	18.42	12.60	7.47	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	160.0	374.0	452.0	370.0	253.0	150.0	129.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

SEQUENCE 20 POINTS 57 XCEN 2649.98 YCEN 1853.08 RADIUS .01790 MM DIAMETER .03580 MM (4.80 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00705	.08222	.06782	.04447	.02669	.00831	.01442	.00694	.00971	.00909
ANGLE	28.9	0.0	20.7	199.3	147.5	20.2	262.7	220.3	189.7	240.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 61.9620 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.5661

SEQUENCE 21 POINTS 49 XCEN 2784.84 YCEN 2088.94 RADIUS .01337 MM DIAMETER .02673 MM (5.23 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01599	.19317	.16988	.06816	.06760	.02693	.01575	.03173	.00475	.00807
ANGLE	162.1	0.0	11.1	189.4	358.3	357.9	189.6	5.2	344.1	84.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.2601 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.7692

SEQUENCE 22 POINTS 48 XCEN 2666.64 YCEN 1999.72 RADIUS .01344 MM DIAMETER .02688 MM (5.22 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02381	.15641	.12606	.03441	.03022	.03951	.02779	.01578	.00115	.01605
ANGLE	100.0	0.0	327.5	331.9	48.5	300.6	40.7	351.1	85.3	7.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED306.6503 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.3825

SEQUENCE 23 POINTS 55 XCEN 2566.14 YCEN 2111.49 RADIUS .01352 MM DIAMETER .02703 MM (5.21 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02412	.09660	.16266	.10402	.06758	.01431	.04456	.01352	.01367	.00360
ANGLE	313.5	0.0	291.3	223.8	16.7	100.1	257.2	254.7	330.5	221.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED322.6132 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.7007

SEQUENCE 24 POINTS 33 XCEN 2931.16 YCEN 2139.76 RADIUS .00674 MM DIAMETER .01349 MM (6.21 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00815	.16811	.05337	.04382	.00504	.02101	.00524	.01034	.00271	.01000
ANGLE	57.6	0.0	324.6	121.9	297.3	351.5	170.0	7.3	279.4	71.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 11.7000 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.4187

SEQUENCE 25 POINTS 56 XCEN 2970.92 YCEN 1921.42 RADIUS .01267 MM DIAMETER .02533 MM (5.30 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02664	.24080	.07752	.05847	.04964	.03904	.02837	.00416	.01337	.03305
ANGLE	308.0	0.0	72.1	336.4	246.2	162.6	263.7	103.6	121.8	342.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED269.1857 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 11.6014

SEQUENCE 26 POINTS 41 XCEN 2902.63 YCEN 1808.48 RADIUS .01094 MM DIAMETER .02188 MM (5.51 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01676	.22065	.05311	.10020	.04689	.03279	.02037	.02360	.00919	.01111
ANGLE	338.1	0.0	228.5	98.0	350.2	123.7	42.3	168.1	72.1	231.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 2.9080 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2058

BEGINNING HARMONIC 14 CONTINGENCY TABLE

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	5.	7.	10.	25.	33.	5.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	2.	8.	11.	15.	32.	15.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	6.	7.	16.	24.	26.	14.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	2.	5.	20.	28.	28.	8.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	2.	3.	20.	18.	31.	13.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	2.	1.	10.	16.	17.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	0.	8.	27.	18.	29.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	6.	9.	21.	19.	28.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	2.	6.	27.	31.	21.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	4.	9.	25.	22.	21.	7.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	3.	8.	18.	28.	25.	11.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	4.	9.	16.	20.	29.	12.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	3.	13.	11.	14.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	1.	3.	14.	17.	30.	21.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	1.	10.	26.	18.	21.	19.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	1.	8.	18.	13.	32.	12.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	8.	21.	87.	70.	123.	52.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	51.	125.	379.	398.	540.	233.	162.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 150.427

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	1.94	4.77	14.45	15.18	20.59	8.89	6.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	2.65	6.49	19.67	20.66	28.03	12.09	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	2.59	6.36	19.27	20.24	27.46	11.85	8.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	2.57	6.29	19.07	20.03	27.17	11.72	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	1.38	3.38	10.24	10.75	14.59	6.29	4.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	2.70	6.62	20.07	21.08	28.60	12.34	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	2.62	6.42	19.47	20.45	27.74	11.97	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	10.56	25.89	78.49	82.42	111.83	48.25	33.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	51.0	125.0	379.0	398.0	540.0	233.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	1.956	.022	5.05[illegible]	.729	.676	4.367	4.803	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.608	SC1
2	.182	.287	4.102	1.754	.404	.573	8.261	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.563	SC2
3	4.136	.030	.755	.470	.189	.260	.733	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.573	SC3
4	.158	.341	.005	2.609	.000	1.386	.235	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.736	SC34J
5	.147	1.824	.014	.293	.382	.088	.338	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.086	SC4
6	.002	2.977	1.372	.045	.627	1.092	9.904	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.017	SC5
7	2.647	.352	2.729	.342	.034	1.386	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.510	SC6
8	4.246	.972	.090	.133	.000	.363	1.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.186	SC6A
9	.136	.020	3.100	5.724	1.519	1.983	4.723	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.204	SC6B
10	.727	1.035	1.569	.118	1.639	2.064	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.207	SC6BE
11	.040	.319	.177	2.436	.383	.121	.733	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.213	SC6BW
12	.801	1.168	.494	.000	.123	.006	1.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.811	SC7
13	.281	.042	.745	.006	.024	.079	2.605	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.782	SC8
14	1.071	1.980	1.838	.790	.068	6.075	3.423	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.246	SC9
15	1.071	1.725	1.749	.450	2.020	3.593	1.494	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.103	SC10
16	1.002	.388	.111	.293	.653	.000	.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.460	SC11A2
17	.621	.923	.923	1.873	1.115	.291	.376	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.121	COON
SUBTOT.	19.22	14.40	24.33	18.06	9.86	23.73	40.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.43	TOTAL

END OF HARMONIC 14 CONTINGENCY TABLE

BEGINNING HARMONIC 15 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 15	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	3.	8.	23.	21.	27.	11.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	3.	3.	21.	24.	29.	8.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	5.	6.	24.	14.	38.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	4.	11.	23.	16.	26.	11.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	3.	7.	21.	26.	31.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	1.	5.	14.	18.	13.	10.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	3.	10.	24.	31.	19.	7.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	1.	7.	22.	37.	23.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	3.	11.	38.	20.	20.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	4.	9.	36.	21.	16.	5.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	4.	8.	37.	19.	20.	7.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	4.	18.	23.	27.	9.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	2.	20.	10.	13.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	4.	6.	15.	20.	24.	13.	18.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	4.	8.	19.	33.	27.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	3.	7.	22.	31.	26.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	11.	40.	39.	85.	99.	31.	26.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	63.	152.	476.	451.	478.	155.	113.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 170.979

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	2.40	5.80	18.15	17.20	18.23	5.91	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	3.27	7.89	24.71	23.41	24.81	8.05	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	3.20	7.73	24.20	22.93	24.31	7.88	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	3.17	7.65	23.95	22.69	24.05	7.80	5.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	1.70	4.11	12.86	12.18	12.91	4.19	3.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	3.34	8.05	25.21	23.89	25.32	8.21	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	3.24	7.81	24.46	23.17	24.56	7.96	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	13.05	31.48	98.58	93.40	98.99	32.10	23.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	63.0	152.0	476.0	451.0	478.0	155.0	113.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.034	.000	.194	.349	.112	.948	.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810	SC1
2	.034	3.168	.704	.001	.536	.005	6.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.492	SC2
3	.371	.487	.037	3.937	6.676	.156	.145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.309	SC3
4	.163	1.226	.118	2.345	.057	1.085	.219	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.214	SC34J
5	.017	.084	.488	.345	1.690	1.103	.562	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.289	SC4
6	.319	.103	.950	.037	1.500	2.329	10.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.632	SC5
7	.022	.564	.020	2.461	1.361	.136	.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.158	SC6
8	1.576	.100	.297	7.889	.132	.136	4.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.166	SC6A
9	.013	1.335	7.364	.375	.763	3.023	3.920	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.342	SC6B
10	.130	.182	5.450	.233	2.982	1.103	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.106	SC6BE
11	.147	.000	5.303	.914	1.023	.156	.626	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.674	SC6BW
12	1.056	1.740	1.479	1.241	.361	.185	.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.562	SC7
13	.052	1.080	3.967	.331	.001	.068	3.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.552	SC8
14	.132	.522	4.136	.633	.069	2.795	24.119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.406	SC9
15	.132	.000	1.531	1.564	.112	.390	2.653	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.382	SC10
16	.017	.034	.247	2.645	.085	.117	3.978	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.172	SC11A2
17	.321	2.307	.002	.756	.000	.036	.288	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.711	COON
SUBTOT.	5.59	13.04	33.29	26.09	17.46	14.21	61.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	170.98	TOTAL

END OF HARMONIC 15 CONTINGENCY TABLE

END OF CONTINGENCY TABLES FOR

SC1 SC2 SC3 SC34J SC4 SC5 SC6 SC6A SC6B SC6BE

SC6BW SC7 SC8 SC9 SC10 SC11A2 COON

CHISQUARE AT THE 5 PERCENT LEVEL OF SIGNIFICANCE IS 119.66 (THIS IS COMPUTED USING THE FORMULA GIVEN BELOW)

(NORMAL DEVIATE) . THE SQUARE ROOT OF 2 CHISQUARE MINUS THE SQUARE ROOT OF TWICE THE DEGREES OF FREEDOM MINUS 1

CHISQUARE VALUES FOR EACH HARMONIC. DEGREES OF FREEDOM ARE 95.

FOR HARMONIC 1 CHISQUARE IS 108.90

FOR HARMONIC 2 CHISQUARE IS 103.76

FOR HARMONIC 3 CHISQUARE IS 87.74

FOR HARMONIC 4 CHISQUARE IS 99.51

FOR HARMONIC 5 CHISQUARE IS 130.53 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 6 CHISQUARE IS 134.81 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 7 CHISQUARE IS 134.50 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 8 CHISQUARE IS 111.22

FOR HARMONIC 9 CHISQUARE IS 131.83 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 10 CHISQUARE IS 157.98 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 11 CHISQUARE IS 153.10 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 12 CHISQUARE IS 174.75 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 13 CHISQUARE IS 130.61 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 14 CHISQUARE IS 150.43 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 15 CHISQUARE IS 170.98 SIGNIFICANT AT 5 PERCENT

TABLE OF EXPECTED VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	185.54	440.06	397.24	226.77	134.79	74.53	38.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	11.65	27.63	24.94	14.24	8.46	4.68	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	234.0	555.0	501.0	286.0	170.0	94.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.300	.009	.098	.000	.011	.086	.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.615	STONY
2	1.144	.477	.000	.535	1.477	.372	.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.070	CC1
3	1.486	.124	.003	.056	.411	.870	4.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.780	CC2
4	.131	.522	.020	.000	.094	.755	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.629	CC3
5	.244	.578	1.250	.266	.411	.233	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.087	CC4
SUBTOT.	3.31	1.71	1.37	.87	2.40	2.32	5.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.18	TOTAL

END OF HARMONIC 6 CONTINGENCY TABLE

BEGINNING HARMONIC 7 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 7
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	95.	265.	284.	302.	342.	150.	59.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	3.	12.	20.	19.	21.	14.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	8.	11.	20.	17.	31.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	8.	19.	31.	14.	15.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	8.	20.	24.	18.	21.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	122.	327.	379.	370.	430.	190.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 29.888

TABLE OF EXPECTED VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	96.73	259.28	300.51	293.37	340.95	150.65	55.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00 STONY
2	6.07	15.28	18.87	18.42	21.41	9.46	3.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	122.0	327.0	379.0	370.0	430.0	190.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.031	.126	.907	.254	.003	.003	.220	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.544 STONY
2	1.556	1.126	.063	.018	.008	2.179	.658	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.613 CC1
3	.402	2.203	.001	.297	3.168	.000	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.832 CC2
4	.402	.200	6.229	1.504	2.527	.000	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.622 CC3
5	.402	.475	.857	.101	.106	1.576	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.277 CC4
SUBTOT.	2.79	4.13	8.06	2.17	5.81	3.76	3.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.89 TOTAL

END OF HARMONIC 7 CONTINGENCY TABLE

BEGINNING HARMONIC 8 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 8
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	184.	400.	374.	242.	143.	84.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	7.	20.	24.	19.	13.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	13.	29.	16.	23.	5.	6.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	14.	39.	25.	9.	5.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	10.	35.	20.	17.	8.	4.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	228.	523.	459.	310.	174.	104.	90.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 31.235

TABLE OF EXPECTED VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	180.78	414.69	363.94	245.80	137.97	82.46	71.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00 STONY
2	11.35	26.04	22.85	15.43	8.66	5.18	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	228.0	523.0	459.0	310.0	174.0	104.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.057	.520	.278	.059	.184	.029	.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.153 STONY
2	1.668	1.401	.058	.824	2.171	.131	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.312 CC1
3	.091	.091	2.705	2.799	1.864	.055	1.102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.706 CC2
4	.350	4.886	.036	3.238	1.864	.387	.626	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.388 CC3
5	.320	2.093	.688	.034	.133	.387	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.677 CC4
SUBTOT.	2.49	8.99	3.76	6.95	6.22	.99	1.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.24 TOTAL

END OF HARMONIC 8 CONTINGENCY TABLE

BEGINNING HARMONIC 9 CONTINGENCY TABLE

INTERVALS	.0030	.0060	.0090	.0120	.0150	.0180	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 9
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	122.	296.	318.	279.	190.	122.	170.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	9.	13.	17.	9.	13.	13.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	7.	20.	20.	11.	13.	15.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	14.	23.	23.	16.	10.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	15.	22.	20.	19.	10.	3.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	167.	374.	398.	334.	236.	158.	221.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 42.733

TABLE OF EXPECTED VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	132.41	296.55	315.58	264.83	187.12	125.28	175.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	8.31	18.62	19.82	16.63	11.75	7.87	11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	167.0	374.0	398.0	334.0	236.0	158.0	221.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.819	.001	.019	.758	.044	.086	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.883	STONY
2	.056	1.697	.400	3.500	.133	3.350	7.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.493	CC1
3	.352	.008	.036	2.423	.032	5.443	.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.465	CC2
4	3.139	.586	.217	.131	.456	1.302	1.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.943	CC3
5	4.451	.291	.036	.126	.456	3.371	.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.949	CC4
SUBTOT.	8.82	2.58	.71	6.94	1.12	13.55	9.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.73	TOTAL

END OF HARMONIC 9 CONTINGENCY TABLE

BEGINNING HARMONIC 10 CONTINGENCY TABLE

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 10	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	187.	278.	282.	227.	173.	154.	196.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	5.	11.	19.	20.	15.	9.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	13.	15.	6.	22.	19.	11.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	16.	28.	21.	13.	8.	6.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	20.	22.	13.	14.	15.	6.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	241.	354.	341.	296.	230.	186.	240.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 49.369

TABLE OF EXPECTED VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	191.03	280.69	270.38	234.70	182.37	147.48	190.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00 STONY
2	12.00	17.62	16.98	14.74	11.45	9.26	11.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	12.64	13.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	12.64	13.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	12.64	13.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	241.0	354.0	341.0	296.0	230.0	186.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.088	.026	.499	.253	.481	.288	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.806 STONY
2	4.082	2.490	.241	1.879	1.100	.007	.779	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.579 CC1
3	.010	.684	7.894	2.704	3.993	.159	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.459 CC2
4	.895	4.798	.544	.410	1.367	1.444	2.478	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.936 CC3
5	4.290	.637	1.332	.149	.717	1.444	1.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.590 CC4
SUBTOT.	9.37	8.63	10.51	5.39	7.66	3.34	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.37 TOTAL

END OF HARMONIC 10 CONTINGENCY TABLE

BEGINNING HARMONIC 11 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 11	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	145.	349.	323.	270.	173.	108.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	6.	17.	16.	17.	14.	11.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	4.	24.	26.	15.	10.	8.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	12.	35.	20.	18.	4.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	13.	26.	24.	17.	9.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	180.	451.	409.	337.	210.	138.	163.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 35.293

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	142.72	357.60	324.30	267.21	166.51	109.42	129.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001497.00	STONY
2	8.96	22.45	20.36	16.78	10.46	6.87	8.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	180.0	451.0	409.0	337.0	210.0	138.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.036	.207	.005	.029	.253	.018	.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.549 STONY
2	.979	1.325	.935	.003	1.202	2.482	2.940	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.865 CC1
3	3.134	.005	.967	.404	.093	.081	1.395	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.078 CC2
4	.695	5.448	.098	.006	4.465	1.447	.759	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.918 CC3
5	1.344	.234	.304	.025	.367	.008	3.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.882 CC4
SUBTOT.	6.19	7.22	2.31	.47	6.38	4.04	8.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.29 TOTAL

END OF HARMONIC 11 CONTINGENCY TABLE

BEGINNING HARMONIC 12 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	0.0000-0.0000	0.0000-0.0000	0.0000-0.0000	0.0000-0.0000	0.0000-0.0000	0.0000-0.0000	0.0000-0.0000	HARMONIC 12
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	223.	454.	372.	203.	114.	65.	66.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	13.	30.	15.	14.	9.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	16.	21.	27.	17.	7.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	24.	35.	24.	7.	2.	2.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	17.	37.	12.	21.	7.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	293.	577.	450.	262.	139.	84.	83.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 40.250

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	232.32	457.50	356.81	207.74	110.21	66.60	65.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	14.59	28.73	22.40	13.04	6.92	4.18	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	293.0	577.0	450.0	262.0	139.0	84.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.374	.027	.647	.108	.130	.039	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.325	STONY
2	.173	.056	2.447	.070	.625	1.899	.844	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.114	CC1
3	.026	2.832	.491	.774	.011	.578	.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.809	CC2
4	4.854	.744	.007	3.305	3.837	1.313	.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.157	CC3
5	.174	1.503	5.699	3.838	.011	.037	2.532	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.845	CC4
SUBTOT.	5.60	5.16	9.29	8.10	4.62	3.86	3.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.25	TOTAL

END OF HARMONIC 12 CONTINGENCY TABLE

BEGINNING HARMONIC 13 CONTINGENCY TABLE

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 13
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	114.	525.	428.	239.	95.	53.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	3.	32.	26.	9.	9.	6.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	5.	33.	27.	15.	11.	3.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	11.	41.	28.	10.	4.	1.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	10.	41.	32.	11.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	143.	672.	541.	284.	121.	65.	62.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 42.048

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	232.32	457.50	356.81	207.74	110.21	66.60	65.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	14.59	28.73	22.40	13.04	6.92	4.18	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	293.0	577.0	450.0	262.0	139.0	84.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.374	.027	.647	.108	.130	.039	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.325	STONY
2	.173	.056	2.447	.070	.625	1.899	.844	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.114	CC1
3	.026	2.832	.491	.774	.011	.578	.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.809	CC2
4	4.854	.744	.007	3.305	3.837	1.313	.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.157	CC3
5	.174	1.503	5.699	3.838	.011	.037	2.532	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.845	CC4
SUBTOT.	5.60	5.16	9.29	8.10	4.62	3.86	3.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.25	TOTAL

END OF HARMONIC 12 CONTINGENCY TABLE

BEGINNING HARMONIC 13 CONTINGENCY TABLE

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 13
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	114.	525.	428.	239.	95.	53.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	3.	32.	26.	9.	9.	6.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	5.	33.	27.	15.	11.	3.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	11.	41.	28.	10.	4.	1.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	10.	41.	32.	11.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	143.	672.	541.	284.	121.	65.	62.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 42.048

TABLE OF EXPECTED VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	113.39	532.83	428.96	225.18	95.94	51.54	49.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00 STONY
2	7.12	33.46	26.94	14.14	6.02	3.24	3.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	143.0	672.0	541.0	284.0	121.0	65.0	62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.003	.115	.002	.848	.009	.041	.772	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.791 STONY
2	2.384	.064	.032	1.868	1.470	2.360	11.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.505 CC1
3	.832	.142	.066	.001	3.416	.049	.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.447 CC2
4	1.635	.942	.005	1.007	.867	1.702	.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.930 CC3
5	.835	.942	.465	1.017	2.975	.582	1.559	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.375 CC4
SUBTOT.	5.69	2.21	.57	5.34	8.74	4.73	14.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.05 TOTAL

END OF HARMONIC 13 CONTINGENCY TABLE

BEGINNING HARMONIC 14 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 14
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	43.	104.	292.	328.	417.	181.	132.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	3.	6.	16.	8.	35.	16.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	1.	4.	15.	21.	36.	14.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	4.	7.	26.	24.	24.	6.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	0.	4.	30.	17.	28.	16.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	51.	125.	379.	398.	540.	233.	162.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 39.364

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	40.44	99.11	300.51	315.58	428.17	184.75	128.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	2.54	6.22	18.87	19.82	26.89	11.60	8.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	2.67	6.55	19.87	20.87	28.32	12.22	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	51.0	125.0	379.0	398.0	540.0	233.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 14

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.162	.241	.241	.489	.291	.076	.098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.599	STONY
2	.084	.008	.436	7.045	2.449	1.668	.464	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.155	CC1
3	1.048	.996	1.195	.001	2.085	.260	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.614	CC2
4	.657	.030	1.889	.470	.658	3.164	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.897	CC3
5	2.674	.996	5.160	.718	.004	1.171	2.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.100	CC4
SUBTOT.	4.63	2.27	8.92	8.72	5.49	6.34	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.36	TOTAL

END OF HARMONIC 14 CONTINGENCY TABLE

BEGINNING HARMONIC 15 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 15	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	52.	112.	377.	366.	379.	124.	87.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	1.	9.	17.	22.	23.	13.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	1.	8.	26.	18.	30.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	3.	12.	35.	19.	18.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	6.	11.	21.	26.	28.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	63.	152.	476.	451.	478.	155.	113.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 32.630

TABLE OF EXPECTED VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	49.95	120.52	377.42	357.60	379.01	122.90	89.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	3.14	7.57	23.70	22.45	23.80	7.72	5.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	3.30	7.97	24.96	23.65	25.06	8.13	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	63.0	152.0	476.0	451.0	478.0	155.0	113.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0005 .0010 .0020 .0030 .0050 .0070 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.084	.602	.000	.197	.000	.010	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.969	STONY
2	1.455	.271	1.894	.009	.027	3.616	2.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.296	CC1
3	1.606	.000	.043	1.349	.972	.002	.726	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.699	CC2
4	.028	2.037	4.039	.914	1.991	.557	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.567	CC3
5	2.201	1.152	.628	.234	.344	2.096	1.444	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.099	CC4
SUBTOT.	5.37	4.06	6.60	2.70	3.33	6.28	4.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.63	TOTAL

END OF HARMONIC 15 CONTINGENCY TABLE

BEGINNING HARMONIC 15 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 15	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	52.	112.	377.	366.	379.	124.	87.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	11.	40.	99.	85.	99.	31.	26.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	63.	152.	476.	451.	478.	155.	113.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 4.681

TABLE OF EXPECTED VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	49.95	120.52	377.42	357.60	379.01	122.90	89.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	13.05	31.48	98.58	93.40	98.99	32.10	23.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	63.0	152.0	476.0	451.0	478.0	155.0	113.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 15									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.084	.602	.000	.197	.000	.010	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.969	STONY
2	.321	2.307	.002	.756	.000	.038	.288	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.711	COON
SUBTOT.	.41	2.91	.00	.95	.00	.05	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68	TOTAL

END OF HARMONIC 15 CONTINGENCY TABLE

END OF CONTINGENCY TABLES FOR

STONY COON

CHISQUARE AT THE 5 PERCENT LEVEL OF SIGNIFICANCE IS 12.33 (THIS IS COMPUTED USING THE FORMULA GIVEN BELOW)

(NORMAL DEVIATE) THE SQUARE ROOT OF 2 CHISQUARE MINUS THE SQUARE ROOT OF TWICE THE DEGREES OF FREEDOM MINUS 1

CHISQUARE VALUES FOR EACH HARMONIC. DEGREES OF FREEDOM ARE 6.

FOR HARMONIC 1 CHISQUARE IS 1.79

FOR HARMONIC 2 CHISQUARE IS 5.94

FOR HARMONIC 3 CHISQUARE IS 12.26

FOR HARMONIC 4 CHISQUARE IS 6.53

FOR HARMONIC 5 CHISQUARE IS 8.44

FOR HARMONIC 6 CHISQUARE IS 2.97

FOR HARMONIC 7 CHISQUARE IS 7.46

FOR HARMONIC 8 CHISQUARE IS 5.57

FOR HARMONIC 9 CHISQUARE IS 9.09

FOR HARMONIC 10 CHISQUARE IS 8.72

FOR HARMONIC 11 CHISQUARE IS 2.65

FOR HARMONIC 12 CHISQUARE IS 6.40

FOR HARMONIC 13 CHISQUARE IS 8.65

FOR HARMONIC 14 CHISQUARE IS 7.72

FOR HARMONIC 15 CHISQUARE IS 4.68

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	1.316	.415	.057	.325	10.134	1.348	.443	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.038	SC1
2	1.316	1.012	.381	2.702	.018	4.655	4.821	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.504	SC2
3	.364	.052	.548	.116	3.045	.578	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.732	SC3
4	.003	.140	.238	.497	.006	.617	.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.166	SC34J
5	.619	3.138	4.222	4.223	3.702	.109	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.029	SC4
6	1.559	2.230	.079	.000	8.466	.452	14.758	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.544	SC5
7	.211	.030	.005	.026	.680	3.038	.397	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.389	SC6
8	2.535	.311	3.197	.188	.006	.094	4.308	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.639	SC6A
9	6.849	3.874	1.041	2.126	1.332	4.271	2.457	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.951	SC6B
10	.252	1.363	1.134	.159	.003	.401	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.327	SC6BE
11	2.856	.744	.108	.040	2.523	1.313	1.271	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.865	SC6BW
12	.345	.037	.006	.106	.141	1.320	1.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.589	SC7
13	.149	.374	.280	.164	.152	2.269	.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.075	SC8
14	1.363	2.991	2.154	.001	1.797	.068	2.954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.929	SC9
15	2.738	.195	2.797	4.471	.945	.472	1.542	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.161	SC10
16	1.035	.380	.153	.022	3.702	1.243	1.202	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.735	SC11A2
17	.173	.056	2.447	.070	.625	1.839	.344	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.114	CC1
18	.026	2.832	.491	.774	.011	.573	.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.809	CC2
19	4.854	.744	.007	3.305	3.837	1.313	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.157	CC3
20	.174	1.503	5.699	3.838	.011	.037	2.582	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.845	CC4
SUBTOT.	29.35	22.42	25.64	23.15	41.14	26.57	40.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	208.60	TOTAL

END OF HARMONIC 12 CONTINGENCY TABLE

TABLE 14A CHI-SQUARE VALUES FOR VARIATION BREAKDOWN OF A DOWNSTREAM TRIBUTARY AND AN UPSTREAM TRIBUTARY

1 -- within 3,4,and 3-4J
2 -- between 3-4J and 3 & 4
3 -- within 3 and 4
4 -- within 8,9, and 10
5 -- between 9 and 8 & 10
6 -- within 8 and 10

		χ^2_1 = χ^2_2 + χ^2_3	χ^2_4 = χ^2_5 + χ^2_6
d.f.		12 = 6 + 6	12 = 6 + 6
H	1	8.85 = 7.87 + 0.98	22.65 = 8.55 + 14.10
A	2	8.49 = 3.26 + 5.23	20.08 = 8.48 + 11.60
R	3	7.34 = 1.66 + 5.68	11.53 = 8.13 + 3.40
M	4	18.61 = 3.97 + 14.64	18.39 = 12.97 + 5.42
O	5	13.62 = 4.02 + 9.60	13.65 = 7.50 + 6.15
N	6	9.67 = 3.15 + 6.52	17.57 = 10.03 + 7.54
I	7	9.26 = 8.16 + 1.08	15.24 = 2.65 + 12.59
C	8	4.90 = 2.32 + 2.58	18.85 = 12.38 + 6.47
	9	23.46 = 17.27 + 6.19	15.27 = 13.14 + 2.13
V	10	5.62 = 3.64 + 1.98	28.33 = 16.73 + 11.60
A	11	8.82 = 3.82 + 5.00	22.57 = 17.51 + 5.06
L	12	18.92 = 5.45 + 13.47	13.85 = 7.65 + 6.20
U	13	16.39 = 7.42 + 8.97	21.69 = 17.02 + 4.67
E	14	11.39 = 4.48 + 6.91	19.89 = 16.14 + 3.75
S	15	12.05 = 6.90 + 5.15	41.15 = 33.00 + 8.15
Critical Values at 5%		21.03 | 12.59 | 12.59	21.03 | 12.59 | 12.59

TABLE 14B

CHI-SQUARE VALUES FOR VARIATION BREAKDOWN OF A MID-BASIN TRIBUTARY

1 - within 5,7, and 6's
2 - within 5 and 7
3 - between 5 & 7 and 6's
4 - within 6's

		χ^2_1	=	χ^2_2	+	χ^2_3	+	χ^2_4
d.f.		36	=	6	+	6	+	24
H	1	37.89	=	3.67	+	2.67	+	31.55
A	2	37.57	=	7.14	+	16.95	+	13.48
R	3	22.61	=	1.95	+	4.72	+	15.94
M	4	21.79	=	4.75	+	3.91	+	13.13
O	5	43.07	=	4.52	+	9.78	+	28.77
N	6	45.88	=	7.24	+	19.58	+	19.06
I	7	54.93	=	10.37	+	17.00	+	27.56
C	8	45.02	=	4.39	+	14.88	+	25.75
	9	38.12	=	4.57	+	5.32	+	28.23
V	10	63.87	=	13.57	+	16.98	+	33.32
A	11	49.35	=	9.50	+	11.96	+	27.89
L	12	74.01	=	24.72	+	17.60	+	31.69
U	13	42.58	=	10.53	+	15.86	+	16.19
E	14	53.59	=	15.38	+	13.33	+	24.88
S	15	66.16	=	13.66	+	22.79	+	29.71
Critical Values at 5%		51.00		12.59		12.59		36.42

TABLE 15 CHI-SQUARE VALUES FOR VARIATION BREAKDOWN OF A MID-BASIN SUB-TRIBUTARY SYSTEM

1 -- within all 6's
2 -- between 6 and 6A & 6B's
3 -- within 6A and 6B's
4 -- between 6A and 6B's
5 -- within 6B's
6 -- between 6B and 6BE & W
7 -- within 6BE and 6BW
( ) indicates breakdown

		$(\chi^2)_1$ =	χ^2_2 +	$(\chi^2)_3$ -->	χ^2_4 +	$(\chi^2)_5$ -->	χ^2_6 +	χ^2_7
d.f.		(24) =	6 +	(18) -->	6 +	(12) -->	6 +	6
H	1	(31.55) =	16.32 +	(15.23) -->	3.41 +	(11.82) -->	3.55 +	8.27
A	2	(13.48) =	4.00 +	(9.48) -->	5.44 +	(4.04) -->	2.61 +	1.43
R	3	(15.94) =	5.26 +	(10.68) -->	0.79 +	(9.89) -->	6.95 +	2.94
M	4	(13.13) =	1.42 +	(11.71) -->	6.99 +	(4.72) -->	3.23 +	1.49
O	5	(28.77) =	3.26 +	(25.51) -->	12.13 +	(13.38) -->	5.69 +	7.69
N	6	(19.06) =	5.35 +	(13.71) -->	1.47 +	(12.24) -->	4.13 +	8.11
I	7	(27.56) =	17.50 +	(10.06) -->	3.79 +	(6.27) -->	1.94 +	4.33
C	8	(25.75) =	6.13 +	(19.62) -->	3.76 +	(15.86) -->	5.14 +	10.72
	9	(28.23) =	9.63 +	(18.60) -->	7.32 +	(11.28) -->	8.68 +	2.60
V	10	(33.32) =	10.88 +	(22.44) -->	8.19 +	(14.25) -->	7.34 +	6.91
A	11	(27.89) =	5.88 +	(22.01) -->	10.55 +	(11.46) -->	8.37 +	3.09
L	12	(31.69) =	7.46 +	(24.23) -->	16.61 +	(7.62) -->	4.79 +	2.83
U	13	(16.19) =	3.41 +	(12.78) -->	1.21 +	(11.57) -->	10.04 +	1.53
E	14	(24.88) =	8.32 +	(16.56) -->	6.38 +	(10.18) -->	6.31 +	3.87
S	15	(29.71) =	4.89 +	(24.82) -->	20.23 +	(4.65) -->	3.57 +	1.08
Critical Values at 5%		36.42	12.59	28.87	12.59	21.03	12.59	12.59

APPENDIX C-2

CHI-SQUARE CONTINGENCY TABLES FOR LUMPED COON CREEK SAMPLES

CONTINGENCY TABLES

THE SIMPLE CHISQUARE EQUATION IS USED IN COMPUTATIONS EXPECTED,CONTRIBUTION,OBSERVED VALUES ARE LISTED IN TABLES

THE SUM OF THE DIFFERENCE OF THE OBSERVED AND EXPECTED VALUES SQUARED, DIVIDED BY THE EXPECTED VALUE, GIVES CHISQUARE

THE EXPECTED VALUE FOR EACH CELL IS GIVEN BY THE PRODUCT OF THE ROW AND COLUMN SUMS, DIVIDED BY THE CELL TOTAL

CONTINGENCY TABLES FOR STONY CC1 CC2 CC3 CC4

THIS SET HAS 5 ROWS OR SAMPLES AND 7 COLUMNS OR DIVISIONS. THE METHOD REQUEST IS 5. THE SUPPRESS REQUEST IS 3

THE FOLLOWING HARMONICS AND DIVISIONS WERE REQUESTED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HARMONIC 1 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 2 DIVISIONS	.0500	.1000	.1500	.2000	.2500	.3000	.8000									
HARMONIC 3 DIVISIONS	.0300	.0600	.0900	.1200	.1500	.1800	.5000									
HARMONIC 4 DIVISIONS	.0250	.0500	.0750	.1000	.1250	.1500	.5000									
HARMONIC 5 DIVISIONS	.0150	.0300	.0450	.0600	.0750	.0900	.5000									
HARMONIC 6 DIVISIONS	.0100	.0200	.0300	.0400	.0500	.0600	.5000									
HARMONIC 7 DIVISIONS	.0050	.0100	.0150	.0200	.0300	.0400	.5000									
HARMONIC 8 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 9 DIVISIONS	.0030	.0060	.0090	.0120	.0150	.0180	.5000									
HARMONIC 10 DIVISIONS	.0030	.0050	.0070	.0090	.0110	.0140	.5000									
HARMONIC 11 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 12 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 13 DIVISIONS	.0010	.0030	.0050	.0070	.0090	.0110	.5000									
HARMONIC 14 DIVISIONS	.0005	.0010	.0020	.0030	.0050	.0070	.5000									

IN SEQUENCE 27 POINT 17 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 16 VALUE 1984 PLUS ITS DIFFERENCE WITH POINT 18 VALUE 2015 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 17

IN SEQUENCE 27 POINT 38 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 37 VALUE 3029 PLUS ITS DIFFERENCE WITH POINT 39 VALUE 2971 DIVIDED BY 2 GIVES A NEW X-VALUE 3000 FOR POINT 38

SEQUENCE 27 POINTS 46 XCEN 3128.89 YCEN 2158.24 RADIUS .01139 MM DIAMETER .02278 MM (5.46 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01537	.29875	.06059	.02683	.02044	.01565	.02446	.00981	.00485	.01018
ANGLE	201.6	0.0	25.4	83.8	346.0	133.9	190.1	185.5	75.7	204.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 22.7013 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.3691

SEQUENCE 28 POINTS 60 XCEN 2891.80 YCEN 2178.05 RADIUS .01339 MM DIAMETER .02678 MM (5.22 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00182	.04062	.05715	.04327	.04430	.01703	.02721	.02482	.00144	.00100
ANGLE	206.0	0.0	175.6	321.0	65.8	4.3	55.3	269.0	305.9	24.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .6640 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .5762

SEQUENCE 29 POINTS 53 XCEN 2971.70 YCEN 1706.10 RADIUS .01369 MM DIAMETER .02738 MM (5.19 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01685	.11470	.11054	.04035	.02316	.02445	.00731	.01377	.00910	.00666
ANGLE	205.0	0.0	274.9	59.6	69.2	157.6	310.0	327.4	103.4	195.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 182.2786 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.5467

SEQUENCE 30 POINTS 65 XCEN 3079.09 YCEN 2130.40 RADIUS .01715 MM DIAMETER .03430 MM (4.87 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02462	.22081	.13750	.01894	.03537	.05821	.01877	.01701	.00780	.00797
ANGLE	228.4	0.0	326.8	285.1	287.3	160.9	76.9	87.4	110.5	346.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 231.6857 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10.7630

SEQUENCE 31 POINTS 54 XCEN 2624.69 YCEN 2188.84 RADIUS .02025 MM DIAMETER .04051 MM (4.63 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02311	.15106	.16688	.03456	.07048	.00822	.00523	.02641	.02125	.01424
ANGLE	353.3	0.0	43.5	224.0	251.5	87.5	287.6	324.8	130.1	107.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 738.3639 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 19.2141

SEQUENCE 32 POINTS 52 XCEN 3069.70 YCEN 2027.99 RADIUS .00947 MM DIAMETER .01893 MM (5.72 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.05445	.43382	.12166	.10587	.04765	.01201	.01566	.01416	.00792	.00199
ANGLE	132.9	0.0	233.4	23.9	109.7	198.2	28.2	322.8	318.2	139.1

SEQUENCE 33 POINTS 56 XCEN 2767.55 YCEN 2160.05 RADIUS .01680 MM DIAMETER .03360 MM (4.90 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00763	.17686	.08449	.09038	.03105	.05530	.00952	.02596	.01867	.00701
ANGLE	249.5	0.0	74.3	67.1	33.8	160.4	327.8	23.3	138.2	147.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 4.8254 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.5533

SEQUENCE 34 POINTS 50 XCEN 3096.89 YCEN 2001.80 RADIUS .01746 MM DIAMETER .03493 MM (4.84 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00114	.09520	.01811	.00057	.01104	.00136	.00535	.00912	.00152	.00318
ANGLE	23.8	0.0	194.7	54.2	165.1	267.1	193.5	93.9	337.7	319.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .5930 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .5445

SEQUENCE 35 POINTS 70 XCEN 3008.20 YCEN 2021.27 RADIUS .01867 MM DIAMETER .03734 MM (4.74 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01105	.09756	.20089	.04044	.04833	.03031	.00445	.00735	.00575	.01554
ANGLE	355.4	0.0	249.8	263.1	304.5	151.1	356.4	233.2	294.7	203.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 21.1166 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.2494

SEQUENCE 36 POINTS 50 XCEN 2856.03 YCEN 2125.46 RADIUS .01723 MM DIAMETER .03447 MM (4.86 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00548	.04438	.12817	.03729	.02778	.00603	.01607	.00131	.01458	.00126
ANGLE	144.9	0.0	287.5	337.1	234.0	250.7	275.1	334.1	334.5	249.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.4395 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2847

SEQUENCE 37 POINTS 48 XCEN 2752.61 YCEN 2110.46 RADIUS .01541 MM DIAMETER .03082 MM (5.02 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01566	.12570	.13160	.06476	.07134	.00909	.01407	.00455	.01578	.00679
ANGLE	229.3	0.0	85.7	179.6	278.8	344.7	78.2	303.6	261.0	192.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13.1065 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.5599

IN SEQUENCE 38 POINT 43 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 42 VALUE 1997 PLUS ITS DIFFERENCE WITH POINT 44 VALUE 1997 DIVIDED BY 2 GIVES A NEW Y-VALUE 1997 FOR POINT 43

SEQUENCE 38 POINTS 50 XCEN 2984.97 YCEN 1754.65 RADIUS .00967 MM DIAMETER .01933 MM (5.69 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02366	.19732	.14688	.06693	.03726	.03642	.01485	.00435	.00709	.00417
ANGLE	267.8	0.0	279.0	205.6	146.1	251.6	299.1	27.5	190.8	65.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 32.6271 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.0390

SEQUENCE 39 POINTS 56 XCEN 3036.75 YCEN 1895.68 RADIUS .01226 MM DIAMETER .02451 MM (5.35 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.03193	.29183	.07133	.07130	.08631	.00395	.04960	.03071	.01578	.01208
ANGLE	265.0	0.0	231.9	259.8	154.7	56.1	51.4	284.2	88.6	256.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED566.3038 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 16.8271

SEQUENCE 40 POINTS 65 XCEN 2812.04 YCEN 2012.82 RADIUS .01702 MM DIAMETER .03404 MM (4.88 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01276	.12978	.08621	.01515	.03471	.02411	.04094	.01844	.00255	.00948
ANGLE	341.7	0.0	341.2	190.1	39.4	260.7	191.3	260.2	255.5	119.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 78.8239 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.2779

SEQUENCE 41 POINTS 48 XCEN 2759.96 YCEN 2203.38 RADIUS .01373 MM DIAMETER .02747 MM (5.19 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01007	.21162	.04269	.06128	.04736	.01497	.01228	.03588	.01187	.00354
ANGLE	81.5	0.0	180.6	70.9	123.6	9.1	231.8	131.0	313.4	266.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.8833 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9704

SEQUENCE 42 POINTS 46 XCEN 2661.22 YCEN 2032.60 RADIUS .00863 MM DIAMETER .01725 MM (5.86 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02483	.17182	.10093	.05674	.06207	.01611	.01066	.00113	.00584	.00937
ANGLE	287.3	0.0	173.5	350.5	199.0	239.7	288.3	77.2	219.1	260.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 96.9212 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.9614

SEQUENCE 43 POINTS 52 XCEN 2842.80 YCEN 2138.15 RADIUS .01360 MM DIAMETER .02719 MM (5.20 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00358	.06080	.04662	.05166	.02720	.03035	.02740	.00489	.01105	.00478
ANGLE	86.1	0.0	180.2	268.3	314.9	245.9	152.9	74.5	87.7	233.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .4724 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4860

SEQUENCE 44 POINTS 50 XCEN 3016.24 YCEN 2186.29 RADIUS .00742 MM DIAMETER .01484 MM (6.07 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00609	.14885	.03857	.02188	.03584	.03712	.02162	.00446	.00499	.00337
ANGLE	253.9	0.0	236.4	274.9	312.9	156.7	37.4	123.2	358.2	280.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.9512 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8643

SEQUENCE 45 POINTS 52 XCEN 3051.44 YCEN 2129.19 RADIUS .01392 MM DIAMETER .02784 MM (5.17 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00251	.04803	.04628	.04719	.04446	.02077	.00813	.01540	.00336	.00795
ANGLE	77.1	0.0	343.8	330.3	272.9	300.2	264.0	314.9	173.3	254.6

SEQUENCE 46 POINTS 49 XCEN 3067.17 YCEN 2117.30 RADIUS .01054 MM DIAMETER .02108 MM (5.57 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00495	.14023	.01792	.05670	-.03825	.02132	.00469	.01779	.00455	.00907
ANGLE	335.9	0.0	219.1	177.5	127.6	144.0	293.7	76.8	268.1	61.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 7.4379 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.9285

SEQUENCE 47 POINTS 54 XCEN 2767.73 YCEN 2061.44 RADIUS .02092 MM DIAMETER .04183 MM (4.58 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00968	.16196	.09146	.06399	-.02525	.02549	.03299	.00502	.01839	.01093
ANGLE	316.9	0.0	8.5	69.9	204.5	154.3	67.1	128.4	304.3	275.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 35.0575 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.1867

SEQUENCE 48 POINTS 46 XCEN 2874.96 YCEN 1853.76 RADIUS .00886 MM DIAMETER .01772 MM (5.82 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02082	.20880	.09526	.01484	-.05327	.00665	.00395	.00986	.01331	.01886
ANGLE	145.0	0.0	57.4	75.3	20.8	168.1	60.8	342.1	303.1	346.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.6603 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9111

SEQUENCE 49 POINTS 41 XCEN 3048.05 YCEN 1961.93 RADIUS .00800 MM DIAMETER .01600 MM (5.97 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01418	.05082	.18276	.10980	-.01943	.04980	.02350	.01658	.01324	.01617
ANGLE	39.8	0.0	220.4	156.1	324.2	154.4	33.9	262.9	23.4	311.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 47.9440 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.8961

IN SEQUENCE 50 POINT 27 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 26 VALUE 1967 PLUS ITS DIFFERENCE WITH POINT 28 VALUE 2037 DIVIDED BY 2 GIVES A NEW Y-VALUE 2002 FOR POINT 27

SEQUENCE 50 POINTS 54 XCEN 2762.58 YCEN 2009.35 RADIUS .01269 MM DIAMETER .02539 MM (5.30 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01258	.17875	.10785	.05102	-.03009	.02808	.01175	.01218	.00496	.02009
ANGLE	126.6	0.0	340.7	240.2	129.1	104.8	256.1	80.7	101.0	113.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 94.5310 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.8750

SEQUENCE 51 POINTS 46 XCEN 2676.94 YCEN 1507.23 RADIUS .00996 MM DIAMETER .01992 MM (5.65 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00363	.27245	.02476	.03478	-.06016	.02620	.00761	.01602	.01689	.00746
ANGLE	16.9	0.0	49.2	304.2	77.4	102.1	343.0	336.9	214.5	192.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.1695 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6077

SEQUENCE 52 POINTS 43 XCEN 3187.77 YCEN 1756.91 RADIUS .00629 MM DIAMETER .01258 MM (6.31 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01433	.10271	.06181	.10467	.09880	.01617	.01813	.01590	.01774	.01521
ANGLE	116.3	0.0	232.3	204.9	183.2	127.0	175.0	64.1	30.2	347.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 14.6388 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.7054

IN SEQUENCE 53 POINT 14 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 13 VALUE 2971 PLUS ITS DIFFERENCE WITH POINT 15 VALUE 3033 DIVIDED BY 2 GIVES A NEW X-VALUE 3002 FOR POINT 14

SEQUENCE 53 POINTS 40 XCEN 3094.18 YCEN 1665.51 RADIUS .00722 MM DIAMETER .01444 MM (6.11 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01033	.10490	.08306	.05398	.08451	.01184	.01046	.01632	.01276	.00876
ANGLE	107.6	0.0	280.6	192.3	269.0	169.1	215.4	188.7	121.9	207.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19.5806 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.1289

SEQUENCE 54 POINTS 59 XCEN 3061.39 YCEN 1837.44 RADIUS .01947 MM DIAMETER .03895 MM (4.68 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00306	.04766	.02995	.02278	.01302	.03193	.00890	.02030	.01660	.00812
ANGLE	202.3	0.0	48.5	231.1	156.8	278.2	337.3	52.3	181.3	72.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.5988 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.3414

SEQUENCE 55 POINTS 41 XCEN 3095.56 YCEN 1532.61 RADIUS .00961 MM DIAMETER .01923 MM (5.70 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00088	.04317	.03112	.01458	.01012	.05227	.00732	.01132	.01295	.00847
ANGLE	205.1	0.0	6.4	28.9	275.0	8.5	334.5	261.2	175.5	273.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .2214 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .3327

SEQUENCE 56 POINTS 36 XCEN 3088.12 YCEN 1494.93 RADIUS .00936 MM DIAMETER .01872 MM (5.74 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00998	.10473	.07178	.02205	.06189	.01027	.02276	.00737	.00274	.00317
ANGLE	88.8	0.0	239.5	156.4	149.2	158.8	27.3	68.5	333.9	260.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.9373 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9842

SEQUENCE 57 POINTS 45 XCEN 3300.19 YCEN 1586.99 RADIUS .00946 MM DIAMETER .01892 MM (5.72 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00181	.06688	.05807	.03372	.06887	.02713	.04482	.01162	.00674	.00577
ANGLE	202.3	0.0	73.0	83.5	150.7	278.1	76.5	128.3	344.6	50.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.0164 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7129

IN SEQUENCE 58 POINT 8 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 7 VALUE 2973 PLUS ITS DIFFERENCE WITH POINT 9 VALUE 3017 DIVIDED BY 2 GIVES A NEW X-VALUE 2995 FOR POINT 8

SEQUENCE 58 POINTS 37 XCEN 3119.94 YCEN 1891.58 RADIUS .00722 MM DIAMETER .01445 MM (6.11 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01213	.10171	.09043	.04807	.04545	.01733	.01479	.01598	.00762	.00694
ANGLE	252.3	0.0	185.2	344.5	122.3	330.4	207.7	340.1	163.9	37.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.4711 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2881

SEQUENCE 59 POINTS 54 XCEN 3032.32 YCEN 1693.41 RADIUS .01673 MM DIAMETER .03346 MM (4.90 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00712	.07399	.10390	.03107	.01977	.03529	.04072	.01949	.02418	.01929
ANGLE	38.4	0.0	296.6	244.4	141.5	206.4	197.2	321.8	159.7	116.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 53.3298 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.1638

SEQUENCE 60 POINTS 40 XCEN 3017.93 YCEN 2036.23 RADIUS .00907 MM DIAMETER .01814 MM (5.78 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00871	.29504	.02531	.04858	.04020	.02464	.02647	.00757	.02100	.01120
ANGLE	202.6	0.0	33.9	354.2	353.7	52.6	353.9	144.8	23.2	221.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.6673 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6833

SEQUENCE 61 POINTS 49 XCEN 3025.34 YCEN 2013.13 RADIUS .01139 MM DIAMETER .02278 MM (5.46 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00721	.17552	.04694	.02593	.07985	.04208	.01609	.00414	.01357	.00472
ANGLE	313.8	0.0	9.5	312.5	91.5	48.5	188.4	321.2	9.6	131.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 7.2016 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8976

SEQUENCE 62 POINTS 39 XCEN 3000.71 YCEN 1967.44 RADIUS .00921 MM DIAMETER .01842 MM (5.76 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02525	.07795	.16284	.05551	.05289	.04123	.03634	.01201	.01229	.01007
ANGLE	235.2	0.0	173.9	64.9	190.7	43.2	223.5	62.7	243.9	66.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 76.2186 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.1733

SEQUENCE 63 POINTS 41 XCEN 2855.59 YCEN 1969.91 RADIUS .00833 MM DIAMETER .01665 MM (5.91 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02256	.15393	.10753	.05571	.01571	.02915	.02037	.02440	.00785	.00525
ANGLE	274.1	0.0	44.7	223.9	235.0	226.6	282.2	96.0	351.7	283.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 8.9378 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.1140

IN SEQUENCE 64 POINT 36 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 35 VALUE 3026 PLUS ITS DIFFERENCE WITH POINT 37 VALUE 2964 DIVIDED BY 2 GIVES A NEW X-VALUE 2995 FOR POINT 36

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,01658	,13300	,08588	,06705	,05019	,02979	,03421	,03269	,00280	,01606
ANGLE	18,8	0,0	357,8	41,2	25,6	217,5	79,9	98,3	345,5	76,6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6,8968 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1,8570

SEQUENCE 65 POINTS 42 XCEN 2926,66 YCEN 1968,09 RADIUS ,00703 MM DIAMETER ,01407 MM (6,15 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,00633	,06030	,04188	,10477	,00472	,02731	,01855	,01743	,00787	,00727
ANGLE	65,4	0,0	35,3	4,4	351,8	148,1	33,3	348,1	238,4	178,5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 4,4202 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1,4866

SEQUENCE 66 POINTS 42 XCEN 2973,12 YCEN 1957,12 RADIUS ,00647 MM DIAMETER ,01294 MM (6,27 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,04584	,26267	,17889	,11277	,08757	,01063	,03623	,02473	,00331	,00739
ANGLE	111,1	0,0	205,6	31,0	57,4	187,2	244,1	336,9	237,8	167,1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 59,6224 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5,4600

SEQUENCE 67 POINTS 44 XCEN 2934,25 YCEN 2058,58 RADIUS ,00750 MM DIAMETER ,01499 MM (6,06 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,01275	,21345	,04404	,06240	,06832	,07156	,03241	,01821	,00405	,00386
ANGLE	101,3	0,0	39,7	324,5	156,3	172,8	306,0	309,1	108,3	162,3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13,0803 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2,5574

SEQUENCE 68 POINTS 36 XCEN 3083,15 YCEN 2102,08 RADIUS ,00710 MM DIAMETER ,01421 MM (6,14 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,02368	,12524	,16418	,03229	,03758	,02845	,02039	,01601	,00548	,00689
ANGLE	237,0	0,0	131,3	299,1	299,8	311,0	86,6	341,2	55,7	291,5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13,3042 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2,5792

SEQUENCE 69 POINTS 37 XCEN 3110,70 YCEN 1636,60 RADIUS ,00802 MM DIAMETER ,01604 MM (5,96 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,02923	,26463	,11745	,06833	,07267	,03296	,01423	,01009	,00689	,00898
ANGLE	280,5	0,0	267,2	353,6	207,6	10,6	186,2	139,5	24,3	165,1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED216,8909 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10,4137

SEQUENCE 70 POINTS 40 XCEN 3084,37 YCEN 1634,76 RADIUS ,00986 MM DIAMETER ,01971 MM (5,66 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	,01928	,19634	,11515	,02078	,06154	,00558	,02395	,01138	,00442	,01423
ANGLE	320,4	0,0	241,6	332,2	191,0	351,7	163,2	97,2	165,9	43,9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED122,3124 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 7,8202

SEQUENCE 71 POINTS 46 XCEN 3099.78 YCEN 1949.33 RADIUS .01115 MM DIAMETER .02231 MM (5.49 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00819	.13760	.06142	.06983	.11457	.01112	.00289	.02661	.00730	.00877
ANGLE	155.9	0.0	231.5	257.7	69.8	270.9	109.7	196.5	245.3	136.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 30.0235 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.8745

SEQUENCE 72 POINTS 34 XCEN 3211.81 YCEN 2072.08 RADIUS .00639 MM DIAMETER .01279 MM (6.29 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00566	.15282	.06961	.04761	.00744	.01999	.00611	.00713	.00457	.00556
ANGLE	310.5	0.0	78.7	132.5	334.1	15.4	123.1	162.4	138.7	330.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.1528 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2556

SEQUENCE 73 POINTS 44 XCEN 2719.70 YCEN 2095.18 RADIUS .00920 MM DIAMETER .01840 MM (5.76 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00611	.14004	.02676	.05501	.07395	.00744	.01911	.00740	.01124	.00914
ANGLE	95.8	0.0	255.5	121.2	188.5	88.3	84.1	159.9	349.8	85.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.4505 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6508

SEQUENCE 74 POINTS 31 XCEN 2891.56 YCEN 1729.12 RADIUS .00636 MM DIAMETER .01273 MM (6.30 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02102	.15837	.11229	.06909	.00886	.01622	.01579	.00536	.00281	.00235
ANGLE	100.7	0.0	272.4	226.4	138.7	35.0	106.9	163.0	299.6	295.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 16.7762 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.8962

SEQUENCE 75 POINTS 48 XCEN 3076.99 YCEN 1822.45 RADIUS .01611 MM DIAMETER .03223 MM (4.96 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01289	.09354	.08170	.07252	.01753	.01090	.01676	.00980	.01286	.00561
ANGLE	183.3	0.0	148.1	304.7	140.6	113.5	74.3	123.7	29.6	27.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.5639 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8116

SEQUENCE 76 POINTS 44 XCEN 2964.69 YCEN 1801.03 RADIUS .01259 MM DIAMETER .02517 MM (5.31 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.03154	.26382	.09875	.02306	.05277	.01501	.01282	.01396	.01228	.00193
ANGLE	78.8	0.0	59.8	27.4	75.6	207.9	180.9	95.8	352.4	5.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED303.7974 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.3247

SEQUENCE 77 POINTS 48 XCEN 2717.41 YCEN 1760.51 RADIUS .01393 MM DIAMETER .02786 MM (5.17 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00338	.08467	.04833	.02208	.03125	.01893	.03449	.01206	.01625	.00270
ANGLE	20.8	0.0	62.9	358.5	144.8	131.5	252.4	283.4	310.0	2.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED [illegible] AND THE SQUARE ROOT OF ONE HALF OF C SQUARED [illegible]

SEQUENCE 78 POINTS 53 XCEN 2950.04 YCEN 1971.39 RADIUS .01902 MM DIAMETER .03805 MM (4.72 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01062	.14497	.04943	.02840	.06267	.01697	.02398	.01852	.03017	.00947
ANGLE	192.9	0.0	163.2	280.6	163.7	292.5	192.7	293.1	179.6	19.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.0280 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7169

SEQUENCE 79 POINTS 35 XCEN 2725.08 YCEN 2141.05 RADIUS .00920 MM DIAMETER .01841 MM (5.76 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01249	.12261	.07620	.03489	.04980	.02657	.00331	.01429	.00951	.00501
ANGLE	139.1	0.0	45.3	99.0	2.8	55.1	133.6	38.2	2.8	7.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.1883 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7708

SEQUENCE 80 POINTS 43 XCEN 3204.12 YCEN 2156.36 RADIUS .01078 MM DIAMETER .02156 MM (5.54 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00108	.03876	.03339	.00908	.03123	.00909	.02926	.01263	.01609	.00646
ANGLE	77.5	0.0	316.7	158.8	352.6	60.8	89.6	318.1	330.8	102.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .3484 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4174

SEQUENCE 81 POINTS 52 XCEN 2957.95 YCEN 1936.27 RADIUS .01739 MM DIAMETER .03478 MM (4.85 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01537	.27038	.06239	.02881	.01080	.02081	.02589	.00513	.02280	.01122
ANGLE	359.1	0.0	300.9	172.5	358.1	189.2	124.8	94.2	178.1	143.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 117.4147 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 7.6621

SEQUENCE 82 POINTS 36 XCEN 2731.58 YCEN 1964.40 RADIUS .00908 MM DIAMETER .01816 MM (5.78 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00628	.15047	.04194	.02175	.00480	.02412	.02979	.00965	.00501	.00253
ANGLE	333.7	0.0	198.3	299.8	289.1	82.0	17.3	274.4	46.0	167.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .9910 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7039

SEQUENCE 83 POINTS 46 XCEN 2989.90 YCEN 1863.73 RADIUS .01047 MM DIAMETER .02094 MM (5.58 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.04745	.33993	.11260	.12866	.04352	.06062	.01212	.02062	.01418	.01018
ANGLE	153.4	0.0	352.3	122.5	298.4	46.9	43.9	327.3	290.9	249.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 934.7588 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 21.6190

SEQUENCE 84 POINTS 46 XCEN 2767.29 YCEN 1557.87 RADIUS .01062 MM DIAMETER .02124 MM (5.56 PHI)

	1	2	3	4	5	6	7	8	9	10

ANGLE	8.6	0.0	196.3	163.6	3.1	58.1	7.2	222.8	9.7	235.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 70.5212 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.9381

SEQUENCE 85 POINTS 48 XCEN 3005.03 YCEN 1979.38 RADIUS .01243 MM DIAMETER .02486 MM (5.33 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00269	.13808	.00741	.09068	.03974	.02008	.01629	.00558	.00892	.00611
ANGLE	336.9	0.0	25.8	273.2	217.9	86.8	132.5	151.2	101.8	321.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.9291 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.4016

SEQUENCE 86 POINTS 45 XCEN 2291.81 YCEN 456.62 RADIUS .01651 MM DIAMETER .03303 MM (4.92 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00412	.17293	.02852	.06419	.01831	.01793	.01615	.01486	.01525	.01478
ANGLE	278.4	0.0	77.0	352.5	32.9	90.6	308.9	252.8	341.3	29.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.7796 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6999

SEQUENCE 87 POINTS 37 XCEN 2612.87 YCEN 1842.86 RADIUS .00907 MM DIAMETER .01814 MM (5.78 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00321	.09405	.03019	.04353	.02469	.00378	.02060	.01114	.00920	.00443
ANGLE	232.1	0.0	112.9	314.9	82.3	69.2	349.8	292.3	286.2	272.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.2446 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2737

SEQUENCE 88 POINTS 42 XCEN 2541.87 YCEN 1733.30 RADIUS .01548 MM DIAMETER .03096 MM (5.01 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00294	.06197	.03793	.02952	.02346	.00998	.01331	.01148	.01119	.00463
ANGLE	298.1	0.0	221.9	39.1	63.5	243.3	188.3	199.0	176.4	229.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.5743 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .8872

SEQUENCE 89 POINTS 52 XCEN 2527.79 YCEN 1694.94 RADIUS .01682 MM DIAMETER .03363 MM (4.89 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00509	.16403	.03172	.08033	.01203	.03627	.02889	.03331	.00931	.01384
ANGLE	82.0	0.0	88.1	172.7	138.7	233.8	234.3	307.8	154.4	50.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.2556 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2759

SEQUENCE 90 POINTS 47 XCEN 2465.45 YCEN 1706.28 RADIUS .01796 MM DIAMETER .03592 MM (4.80 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01987	.31451	.05983	.03586	.07763	.01720	.02204	.01033	.01827	.01871
ANGLE	191.1	0.0	345.6	114.5	143.2	251.6	333.4	254.0	63.5	162.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 377.8175 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 13.7444

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.02264	.20408	.12346	.08770	.05071	.02186	.02756	.00283	.00331	.01068
ANGLE	297.2	0.0	43.7	49.9	255.8	103.1	104.0	349.3	196.3	143.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 28.1519 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.7518

SEQUENCE 92 POINTS 52 XCEN 2687.53 YCEN 2182.27 RADIUS .02561 MM DIAMETER .05122 MM (4.29 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01345	.12459	.06518	.06187	.01216	.01592	.02197	.01202	.00682	.00536
ANGLE	312.2	0.0	29.0	239.6	137.8	37.4	267.3	112.7	264.9	257.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 152.2947 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 8.7262

SEQUENCE 93 POINTS 48 XCEN 2506.68 YCEN 2118.46 RADIUS .01363 MM DIAMETER .02725 MM (5.20 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00825	.22643	.02975	.05231	.05874	.01547	.02194	.02566	.00212	.01981
ANGLE	68.8	0.0	227.3	278.3	217.3	113.0	179.8	90.8	162.9	65.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 45.5539 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.7725

SEQUENCE 94 POINTS 39 XCEN 2666.28 YCEN 1571.26 RADIUS .01039 MM DIAMETER .02078 MM (5.59 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01071	.10445	.09651	.07293	.01057	.07005	.00822	.00293	.00946	.00711
ANGLE	12.0	0.0	217.5	234.7	348.8	145.4	24.7	224.4	196.4	24.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.1550 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2533

SEQUENCE 95 POINTS 36 XCEN 2660.69 YCEN 1688.29 RADIUS .00865 MM DIAMETER .01730 MM (5.85 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01353	.07060	.10951	.06016	.02239	.03594	.02226	.00947	.00524	.00851
ANGLE	264.3	0.0	63.1	263.1	237.8	75.5	324.2	57.6	213.5	338.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.0149 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.5835

SEQUENCE 96 POINTS 47 XCEN 3022.37 YCEN 1849.61 RADIUS .00896 MM DIAMETER .01793 MM (5.80 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01423	.11468	.09376	.08674	.04284	.00755	.00985	.02066	.00567	.00524
ANGLE	186.2	0.0	290.0	64.8	293.1	76.9	102.5	223.0	86.9	160.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 54.1051 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.2012

SEQUENCE 97 POINTS 48 XCEN 2968.96 YCEN 1397.72 RADIUS .01152 MM DIAMETER .02304 MM (5.44 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00226	.04590	.06406	.05193	.03872	.01201	.01898	.01995	.01102	.00656
ANGLE	224.4	0.0	321.2	215.6	29.0	141.3	312.5	138.0	49.7	75.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .0421 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .1451

SEQUENCE 98 POINTS 39 XCEN 3238.13 YCEN 1773.23 RADIUS .00633 MM DIAMETER .01266 MM (6.30 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.01022	.11150	.06387	.06700	.01522	.01506	.01976	.01315	.00648	.01018
ANGLE	284.3	0.0	193.4	96.2	183.3	318.0	21.0	220.9	331.7	328.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 15.4452 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.7790

SEQUENCE 99 POINTS 41 XCEN 3103.10 YCEN 1332.94 RADIUS .00807 MM DIAMETER .01614 MM (5.95 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00948	.10104	.10082	.04939	.01758	.02093	.02403	.00130	.00444	.00798
ANGLE	94.9	0.0	42.2	251.0	77.7	20.2	313.4	5.7	108.7	316.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 14.1118 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.6563

SEQUENCE 100 POINTS 52 XCEN 3116.70 YCEN 1510.20 RADIUS .00904 MM DIAMETER .01807 MM (5.79 PHI)

	1	2	3	4	5	6	7	8	9	10
HARMONICS	.00521	.17400	.02911	.06511	.04439	.01188	.01971	.00811	.00707	.00217
ANGLE	219.3	0.0	53.6	185.3	94.0	32.9	25.8	253.4	239.8	272.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .1252 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .2502

AVERAGE NUMBER OF POINTS 47.

ROUGHNESS COEFFICIENT IS .1365 THE SQUARE ROOT OF ONE HALF OF C SQUARED

ROUGHNESS COEFFICIENT IS .0373 C SQUARED

INPUTED SAMPLE SIZE 100

REJECTION RATIO IS 0 OUT OF 100

USABLE SAMPLE SIZE 100.

MEAN HARMONICS	1	2	3	4	5	6	7	8	9	10
	.01476	.15396	.08511	.05407	.04244	.02481	.02019	.01377	.00975	.008632

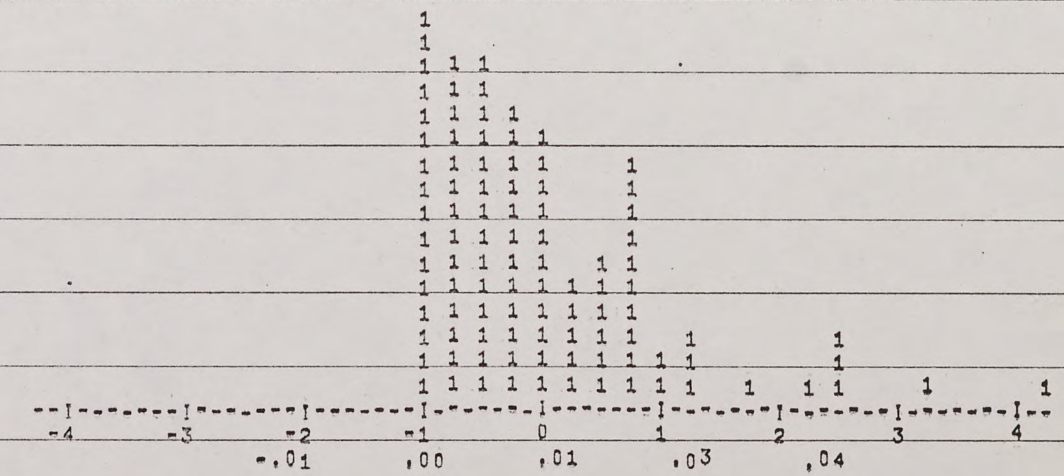
.005116	.039329	.087519	.022032	.038788	.014623	.011014	.006117	.009690	.002671	6,70
.027092	.222800	.096030	.084408	.038160	.035613	.028476	.007062	.011793	.012244	5,93
.036282	.247829	.145660	.070422	.037195	.053560	.030385	.004097	.014323	.008732	6,37
.004379	.050782	.049047	.021366	.034072	.040643	.021279	.007022	.003705	.008033	5,96
.003130	.095024	.033192	.089371	.026399	.009527	.027306	.013962	.004990	.012080	6,68
.009302	.186261	.093375	.098396	.025082	.015289	.018814	.009511	.003171	.009694	5,96
.045150	.251634	.147126	.072108	.051393	.019518	.002658	.008497	.009817	.006329	5,80
.020837	.134698	.117886	.036459	.057352	.016724	.017114	.002956	.018126	.009786	5,34
.006987	.104896	.074769	.026005	.038412	.041958	.011592	.011524	.010902	.010934	5,41
.015927	.153746	.154866	.047341	.032083	.020619	.024717	.005944	.013314	.003900	6,38
.003892	.253661	.012120	.008840	.053137	.041867	.028947	.013010	.005821	.003001	5,36
.072233	.368958	.142995	.113152	.044197	.060567	.027174	.027571	.013603	.010124	6,11
.005762	.037607	.117930	.025416	.051937	.015979	.044385	.018295	.015060	.006438	6,60
.003176	.037902	.079558	.017718	.062751	.008048	.016624	.014685	.009884	.003835	5,70
.042998	.370397	.082087	.077133	.093318	.020669	.032682	.009463	.006078	.010757	5,72
.020772	.116901	.165728	.051912	.030766	.022869	.016582	.013326	.002203	.018842	5,41
.008119	.157568	.045518	.046978	.039150	.045614	.038816	.015223	.011631	.001220	5,07
.014809	.219581	.074948	.078238	.056778	.034119	.009428	.012037	.009646	.005290	4,79
.025368	.142240	.149359	.057809	.065796	.033426	.016773	.026345	.012916	.007527	4,56
.007052	.082221	.067821	.044466	.026691	.008306	.014420	.006940	.009714	.009088	4,80
.015987	.193174	.169880	.068157	.067604	.026927	.015745	.031735	.004753	.008066	5,23
.023809	.156409	.126063	.034407	.030221	.039507	.027788	.015782	.001149	.016046	5,22
.024115	.096604	.162660	.104016	.067585	.014314	.044562	.013523	.013675	.003598	5,21
.008147	.168112	.053370	.043818	.005044	.021005	.005244	.010336	.002710	.009998	6,21
.026639	.240798	.077524	.058472	.049636	.039041	.028372	.004162	.013375	.033047	5,30
.016765	.220648	.053107	.100199	.046892	.032788	.020375	.023600	.009187	.011109	5,51
.015369	.298749	.060588	.026835	.020436	.015647	.024462	.009809	.004848	.010181	5,46
.001821	.040624	.057146	.043271	.044304	.017034	.027215	.024817	.001438	.001000	5,22
.016853	.114704	.110541	.040345	.023158	.024451	.007314	.013773	.009102	.006657	5,19
.024620	.220814	.137501	.018938	.035374	.058209	.018765	.017010	.007801	.007975	4,87
.023107	.151059	.166879	.034562	.070477	.008220	.005233	.026407	.021249	.014241	4,63
.054452	.433824	.121656	.105865	.047648	.012008	.015661	.014162	.007918	.001995	5,72
.007626	.176859	.084493	.090375	.031053	.055302	.009518	.025958	.018670	.007007	4,90
.001143	.095196	.018115	.000569	.011044	.001361	.005352	.009124	.001524	.003184	4,84
.011052	.097564	.200888	.040436	.048334	.030306	.004451	.007351	.005754	.015541	4,74
.005477	.044376	.128171	.037287	.027779	.006028	.016066	.001313	.014581	.001263	4,86
.015663	.125703	.131601	.064761	.071337	.009087	.014066	.004551	.015781	.006793	5,02
.023656	.197323	.146876	.066927	.037258	.036419	.014854	.004347	.007091	.004175	5,69
.031932	.291826	.071334	.071300	.086311	.003946	.049604	.030713	.015784	.012080	5,35
.012756	.129776	.086210	.015146	.034706	.024111	.040939	.018440	.002549	.009485	4,88
.010074	.211622	.042694	.061279	.047358	.014970	.012280	.035875	.011875	.003541	5,19
.024827	.171818	.100927	.056744	.062073	.016106	.010660	.001132	.005837	.009370	5,86
.003580	.060796	.046625	.051661	.027203	.030351	.027400	.004888	.011054	.004777	5,20
.006089	.148849	.038575	.021881	.035842	.037119	.021616	.004460	.004990	.003371	6,07
.002509	.048027	.046283	.047102	.044463	.020773	.008132	.015402	.003363	.007949	5,17
.004948	.140232	.017915	.056702	.038251	.021318	.004694	.017794	.004551	.009073	5,57
.009682	.161964	.091456	.063986	.025253	.025492	.032985	.005019	.018386	.010928	4,58
.020822	.208797	.095256	.014844	.053268	.006654	.003950	.009862	.013310	.018860	5,82
.014183	.050816	.182764	.109800	.019433	.049797	.023496	.016583	.013241	.016168	5,97
.012576	.178752	.107845	.051018	.030091	.028080	.011753	.012177	.004958	.020091	5,30
.003633	.272451	.024757	.034776	.060164	.026204	.007609	.016022	.016895	.007464	5,65
.014329	.102712	.061807	.104670	.096802	.016173	.018126	.015898	.017741	.015205	6,31
.010333	.104898	.083063	.053980	.084508	.011843	.010460	.016319	.012756	.008757	6,11
.003060	.047661	.029951	.022779	.013023	.031930	.008897	.020305	.016601	.008119	4,68
.000876	.043173	.031120	.014584	.010118	.052267	.007319	.011316	.012946	.008468	5,70
.009976	.104735	.071776	.022049	.061888	.010266	.022758	.007365	.002735	.003173	5,74
.001807	.066876	.058070	.033719	.068872	.027129	.044818	.011617	.006737	.005773	5,72

.025251 ,077950 .162841 ,055508 ,052894 ,041233 ,036343 ,012012 ,012289 ,010070 5,76
.022560 ,153927 .107532 ,055713 ,015709 ,029146 ,020367 .024400 ,007846 ,005247 5,91
.016575 ,132996 .085884 ,067053 ,050193 ,029793 ,034215 .032692 ,002804 ,016063 5,72
.006328 ,060296 .041881 ,104766 ,004723 ,027306 ,018553 .017430 ,007867 ,007274 6,15
.045843 ,262668 .178885 ,112769 ,087572 ,010634 ,036233 ,024732 ,003313 ,007387 6,27
.012747 ,213450 .044043 ,062399 ,068322 ,071561 ,032411 .018205 ,004052 ,003865 6,06
.023681 ,125241 .164175 ,032291 ,037584 ,028453 ,020387 .016008 ,005477 ,006888 6,14
.029225 ,264631 .117449 ,068335 ,072675 ,032964 ,014233 .010093 ,006888 ,008978 5,96
.019280 ,196339 .115153 ,020777 ,061538 ,005578 ,023947 .011379 ,004423 ,014229 5,66
.008192 ,137602 .061420 ,069825 ,114566 ,011119 ,002886 .026608 ,007298 ,008773 5,49
.005658 ,152824 .069607 ,047610 ,007440 .019988 ,006106 .007127 ,004573 ,005556 6,29
.006107 ,140038 .026758 ,055009 ,073953 ,007443 ,019112 .007400 ,011241 ,009141 5,76
.021023 ,158373 .112290 ,069090 ,008861 .016224 ,015792 .005365 ,002814 ,002352 6,30
.012885 ,093538 .081700 ,072518 ,017534 ,010904 ,016761 .009804 ,012860 ,005608 4,96
.031536 ,263820 .098750 ,023057 ,052769 ,015014 ,012824 .013957 ,012278 ,001933 5,31
.003379 ,084671 .048327 ,022077 ,031245 ,018932 ,034487 .012058 ,016246 ,002705 5,17
.010616 ,144971 .049427 ,028397 ,062673 ,016973 ,023984 .018521 ,030174 ,009474 4,72
.012486 ,122607 .076202 ,034886 ,049805 ,026566 ,003314 .014288 ,009511 ,005006 5,76
.001075 ,038760 .033395 ,009075 ,031228 ,009094 ,029263 .012625 ,016086 ,006458 5,54
.015372 ,270379 .062392 ,028814 ,010802 .020808 ,025886 .005130 ,022802 ,011222 4,85
.006284 ,150470 .041941 ,021754 ,004802 ,024122 ,029787 .009651 ,005012 ,002528 5,78
.047449 ,339934 .112602 ,128660 ,043522 ,060617 ,012120 ,020620 ,014185 ,010183 5,58
.016969 ,048872 .146676 ,086566 ,048531 ,033268 ,029036 .034000 ,001942 ,008960 5,56
.002687 ,138079 .007413 ,090682 ,039737 ,020078 ,016294 .005583 ,008918 ,006114 5,33
.004115 ,172935 .028518 ,064191 ,018310 ,017932 ,016151 ,014857 ,015246 ,014781 4,92
.003209 ,094054 .030187 ,043531 ,024692 ,003783 ,020602 ,011136 ,009205 ,004427 5,78
.002939 ,061974 .037931 ,029524 ,023465 ,009976 ,013314 .011480 ,011187 ,004632 5,01
.005086 ,164027 .031720 ,080328 ,012028 ,036272 ,028886 ,033309 ,009306 ,013842 4,89
.019865 ,314508 .059827 ,035861 ,077629 ,017196 ,022043 .010327 ,018268 ,018708 4,80
.022638 ,204080 .123465 ,087703 ,050711 ,021861 ,027559 .002829 ,003306 ,010676 6,14
.013446 ,124588 .065176 ,061875 ,012160 ,015922 ,021973 .012020 ,006824 ,005359 4,29
.008253 ,226427 .029748 ,052307 ,058735 ,015470 ,021944 ,025659 ,002117 ,019814 5,20
.010708 ,104454 .096515 ,072931 ,010569 ,070049 ,008225 ,002928 ,009462 ,007114 5,59
.013531 ,078603 .109511 ,060162 ,022387 ,035942 ,022257 .009467 ,005243 ,008511 5,85
.014233 ,114678 .093763 ,086739 ,042839 ,007554 ,009852 ,020661 ,005667 ,005238 5,80
.002257 ,045898 .064057 ,051927 ,038721 ,012014 ,018983 ,019952 ,011016 ,006560 5,44
.010225 ,111503 .063873 ,067004 ,015219 ,015062 ,019760 ,013149 ,006475 ,010185 6,30
.009404 ,101041 .100824 ,049393 ,017584 ,020935 ,024033 .001299 ,004437 ,007978 5,95
.005207 ,173999 .029108 ,065113 ,044387 ,011882 ,019708 .008111 ,007069 ,002172 5,79

VARIABLE: HARMONIC 1

N =	100.000		
MEAN =	.015		
STD. DEV. =	.013	(	.013)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	85.008	(	85.437)
SKEWNESS =	1.810	(	1.838)
KURTOSIS =	4.271	(	4.555)

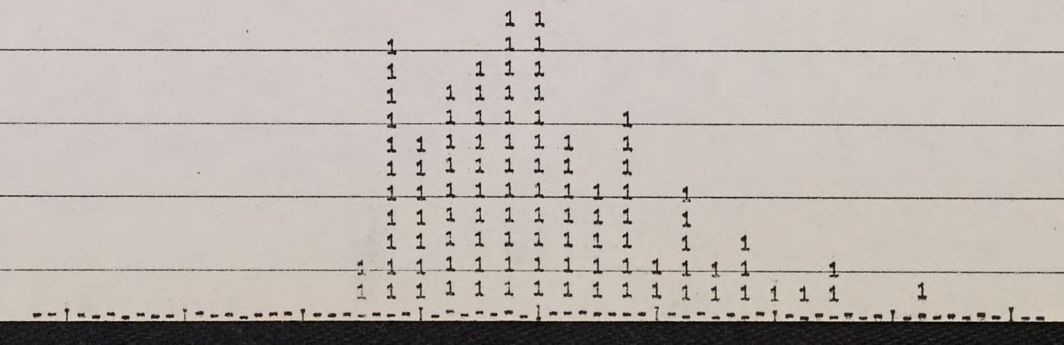
LOWER QUARTILE =	.006
MEDIAN =	.012
UPPER QUARTILE =	.021
RANGE =	.001 TO .072



VARIABLE: HARMONIC 2

N =	100.000		
MEAN =	.154		
STD. DEV. =	.084	(	.084)
VARIANCE =	.007	(	.007)
COEF. OF VAR. =	54.597	(	54.872)
SKEWNESS =	.827	(	.840)
KURTOSIS =	.469	(	.556)

LOWER QUARTILE =	.096
MEDIAN =	.142
UPPER QUARTILE =	.206
RANGE =	.038 TO .434

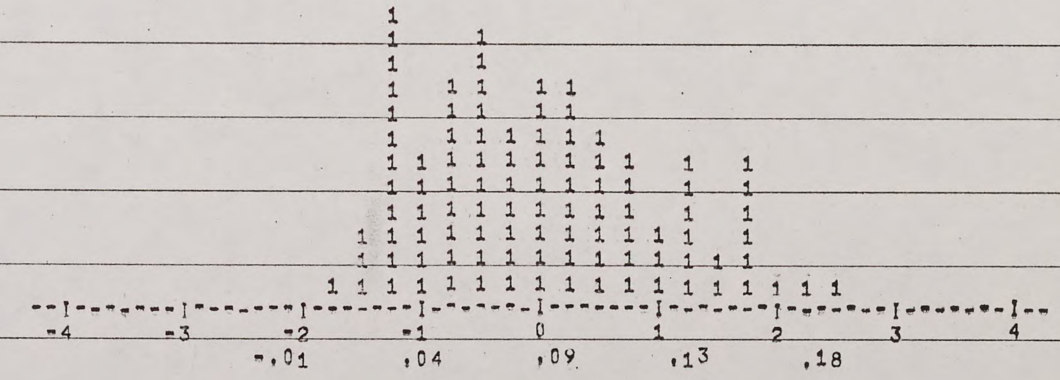


VARIABLE: HARMONIC 3

N =	100.000	
MEAN =	.085	
STD. DEV. =	.045	(.046)
VARIANCE =	.002	(.002)
COEF. OF VAR. =	53.425	(53.694)
SKEWNESS =	.452	(.459)
KURTOSIS =	-.657	(-.629)

LOWER QUARTILE =	.047
MEDIAN =	.082
UPPER QUARTILE =	.116

RANGE = .007 TO .201

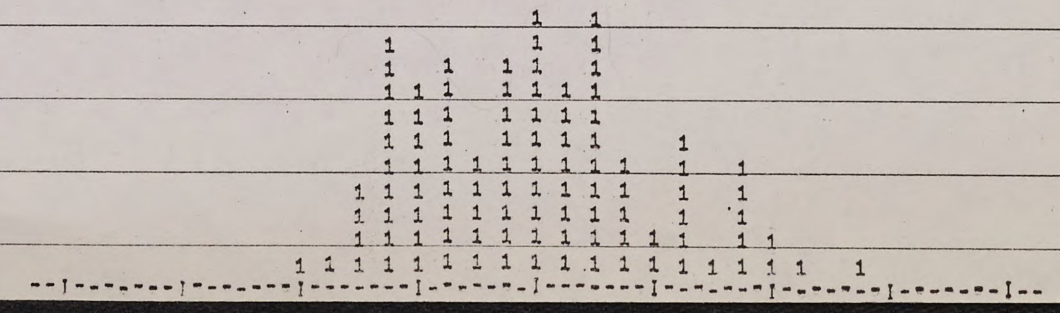


VARIABLE: HARMONIC 4

N =	100.000	
MEAN =	.054	
STD. DEV. =	.028	(.028)
VARIANCE =	.001	(.001)
COEF. OF VAR. =	51.299	(51.557)
SKEWNESS =	.445	(.452)
KURTOSIS =	-.418	(-.377)

LOWER QUARTILE =	.031
MEDIAN =	.052
UPPER QUARTILE =	.070

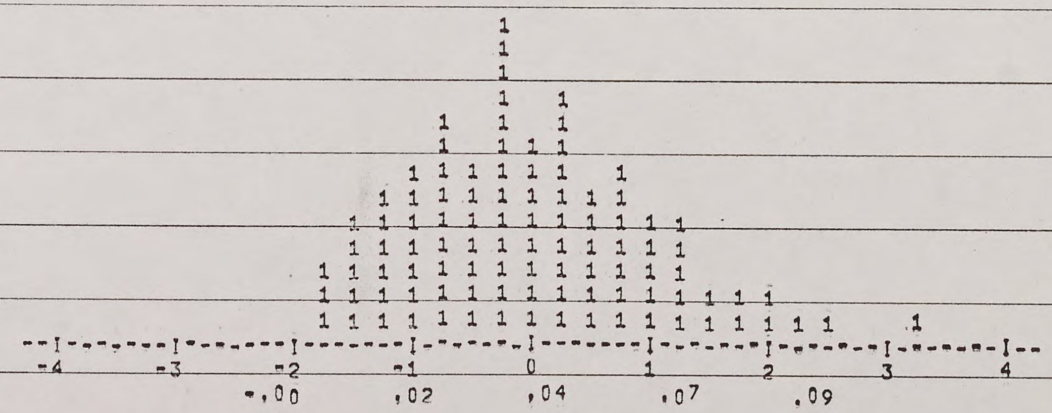
RANGE = .001 TO .129



VARIABLE: HARMONIC 5

N =	100.000		
MEAN =	.042		
STD. DEV. =	.023	(	.023)
VARIANCE =	.001	(	.001)
COEF. OF VAR. =	53.992	(	54.264)
SKEWNESS =	.539	(	.547)
KURTOSIS =	.046	(	.110)

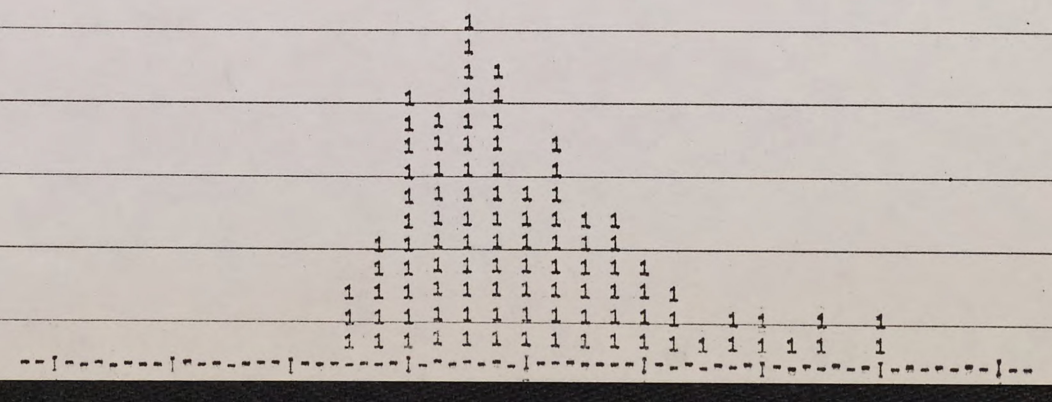
LOWER QUARTILE =	.025
MEDIAN =	.040
UPPER QUARTILE =	.057
RANGE =	.005 TO .115



VARIABLE: HARMONIC 6

N =	100.000		
MEAN =	.025		
STD. DEV. =	.015	(	.015)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	60.687	(	60.993)
SKEWNESS =	.996	(	1.011)
KURTOSIS =	.677	(	.774)

LOWER QUARTILE =	.015
MEDIAN =	.021
UPPER QUARTILE =	.033
RANGE =	.001 TO .072

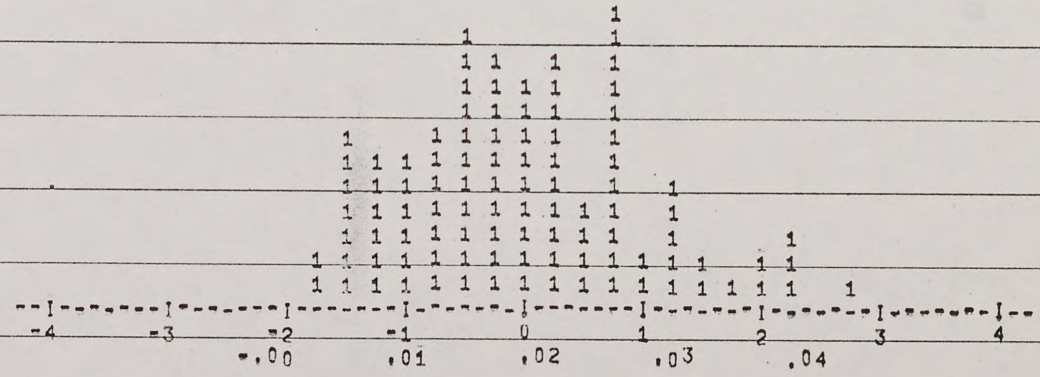


VARIABLE: HARMONIC 7

N =	100.000		
MEAN =	.020		
STD. DEV. =	.011	(	.011)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	52.268	(	52.532)
SKEWNESS =	.508	(	.516)
KURTOSIS =	-.156	(	-.102)

LOWER QUARTILE =	.012
MEDIAN =	.019
UPPER QUARTILE =	.027

RANGE = .003 TO .050

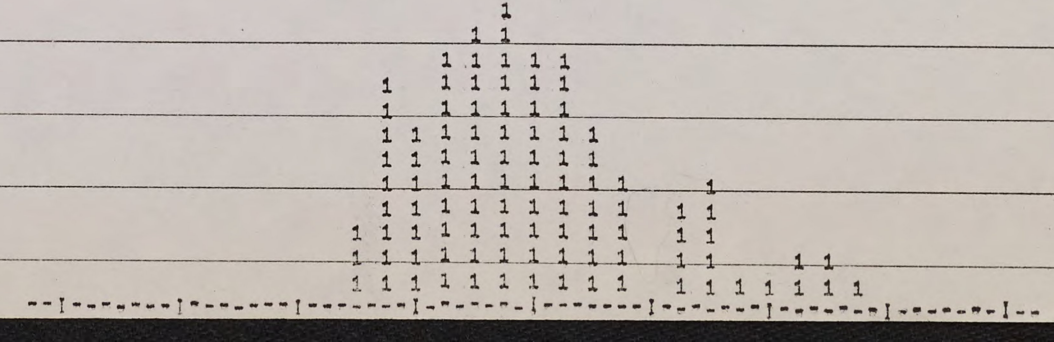


VARIABLE: HARMONIC 8

N =	100.000		
MEAN =	.014		
STD. DEV. =	.008	(	.008)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	58.667	(	58.962)
SKEWNESS =	.774	(	.786)
KURTOSIS =	.066	(	.132)

LOWER QUARTILE =	.007
MEDIAN =	.012
UPPER QUARTILE =	.018

RANGE = .001 TO .036

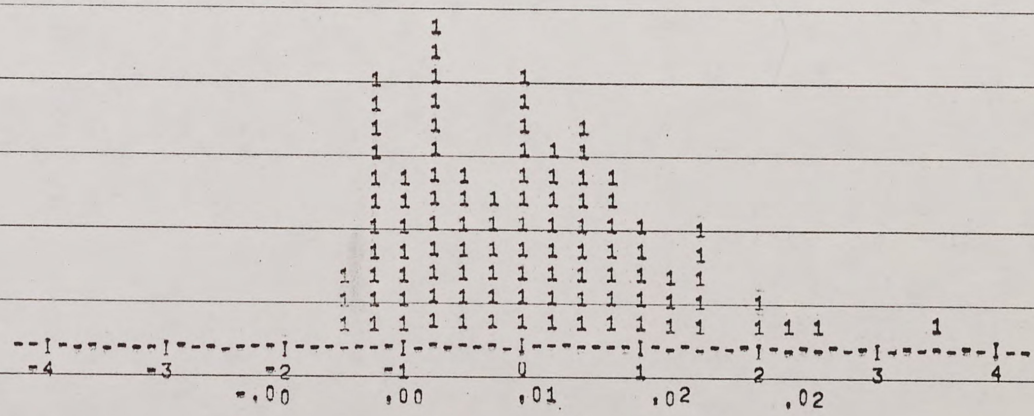


VARIABLE: HARMONIC 9

N =	100.000		
MEAN =	.010		
STD. DEV. =	.006	(	.006)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	58.648	(	58.943)
SKEWNESS =	.762	(	.774)
KURTOSIS =	.521	(	.611)

LOWER QUARTILE =	.005
MEDIAN =	.009
UPPER QUARTILE =	.013

RANGE = .001 TO .030

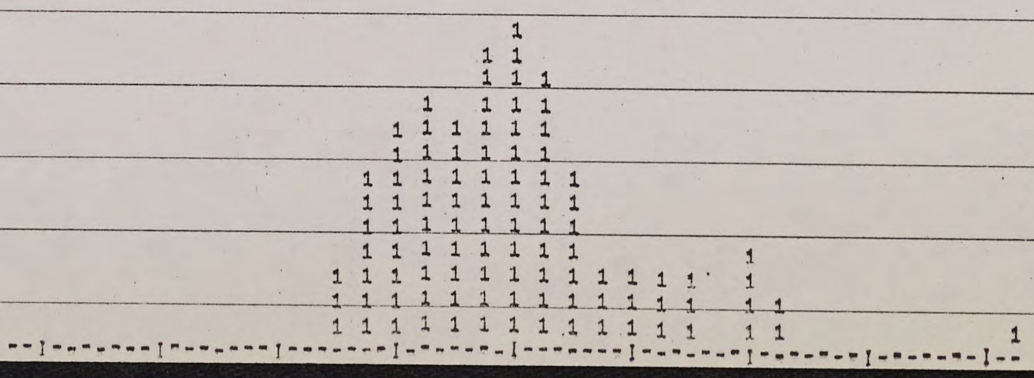


VARIABLE: HARMONIC10

N =	100.000		
MEAN =	.009		
STD. DEV. =	.005	(	.005)
VARIANCE =	.000	(	.000)
COEF. OF VAR. =	59.752	(	60.053)
SKEWNESS =	1.435	(	1.457)
KURTOSIS =	3.795	(	4.054)

LOWER QUARTILE =	.005
MEDIAN =	.008
UPPER QUARTILE =	.011

RANGE = .001 TO .033

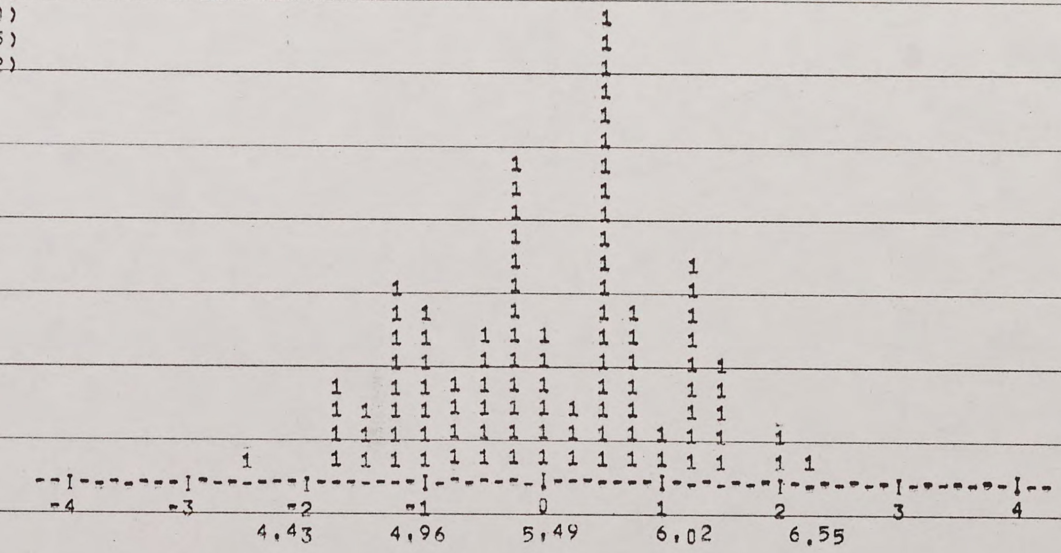


VARIABLE: MEANPHIDIA

N =	100.000	
MEAN =	5.491	
STD. DEV. =	.531	(.534)
VARIANCE =	.282	(.285)
COEF. OF VAR. =	9.671	(9.720)
SKEWNESS =	-.045	(-.045)
KURTOSIS =	-.603	(-.572)

LOWER QUARTILE =	5.093
MEDIAN =	5.495
UPPER QUARTILE =	5.880

RANGE = 4.200 TO 6.700



INDIVIDUAL FOURIER DATA

SEQUENCE 1 POINTS 35 XCEN 2684.81 YCEN 1207.60 RADIUS .00480 MM DIAMETER .00960 MM (6.70 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01463	.01099	.00613	.00967	.00268	.00345	.00242	.00303	.00178	.00072
ANGLE	320.1	35.5	165.1	196.5	264.7	19.0	64.6	176.6	140.7	326.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .1795 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .2996

SEQUENCE 2 POINTS 53 XCEN 2762.22 YCEN 1506.95 RADIUS .00819 MM DIAMETER .01638 MM (5.93 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03562	.02846	.00707	.01177	.01225	.01002	.00253	.00142	.00094	.00287
ANGLE	60.9	22.8	18.5	78.5	75.0	11.8	99.2	209.6	105.9	227.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 163.0605 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.0294

SEQUENCE 3 POINTS 45 XCEN 2682.76 YCEN 1873.00 RADIUS .00604 MM DIAMETER .01208 MM (6.37 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.05348	.03042	.00405	.01430	.00872	.01066	.00034	.00760	.00360	.00401
ANGLE	144.1	116.6	6.1	87.9	4.0	304.9	209.2	261.4	126.9	100.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 187.6504 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.6863

SEQUENCE 4 POINTS 48 XCEN 2497.14 YCEN 2038.50 RADIUS .00802 MM DIAMETER .01604 MM (5.96 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.04065	.02125	.00704	.00369	.00802	.00397	.00196	.00037	.00260	.00116
ANGLE	183.2	63.3	291.4	197.9	20.6	273.4	229.8	291.6	139.1	51.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.8784 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.3926

SEQUENCE 5 POINTS 31 XCEN 2608.21 YCEN 1721.73 RADIUS .00488 MM DIAMETER .00976 MM (6.68 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00954	.02720	.01387	.00501	.01201	.00477	.00275	.00436	.00125	.00199
ANGLE	107.6	175.7	54.8	133.7	52.4	267.6	65.7	295.1	119.2	303.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .8978 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .6700

SEQUENCE 6 POINTS 45 XCEN 2798.08 YCEN 1501.66 RADIUS .00801 MM DIAMETER .01602 MM (5.96 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01532	.01882	.00949	.00315	.00968	.00725	.00900	.00127	.00207	.00497
ANGLE	247.1	47.3	150.8	339.8	159.8	282.8	58.6	221.7	346.2	239.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 15.8668 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.8166

IN SEQUENCE 7 POINT 38 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 37 VALUE 1968 PLUS ITS DIFFERENCE WITH POINT 39 VALUE 2031 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 38

SEQUENCE 7 POINTS 41 XCEN 2816.32 YCEN 2001.83 RADIUS .00900 MM DIAMETER .01800 MM (5.80 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,01958	,00265	,00850	,00980	,00634	,00294	,00889	,00385	,00761	,00328
ANGLE	338,2	271,7	273,1	223,3	209,9	216,0	162,0	130,1	180,1	126,4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 381,0570 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 13,8032

SEQUENCE 8 POINTS 49 XCEN 2703,16 YCEN 2063,79 RADIUS ,01235 MM DIAMETER ,02471 MM (5,34 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,01676	,01712	,00298	,01810	,00976	,01334	,00619	,00628	,00211	,00576
ANGLE	200,9	348,8	275,3	303,5	113,9	280,2	140,7	260,7	49,8	294,1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 39,5121 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4,4448

SEQUENCE 9 POINTS 51 XCEN 2339,38 YCEN 2025,92 RADIUS ,01174 MM DIAMETER ,02348 MM (5,41 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,04195	,01158	,01152	,01090	,01094	,00197	,00581	,00581	,00309	,00608
ANGLE	216,6	209,4	306,1	188,6	319,0	186,6	326,1	90,5	229,0	67,3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19,5543 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3,1268

SEQUENCE 10 POINTS 44 XCEN 2474,43 YCEN 2144,24 RADIUS ,00600 MM DIAMETER ,01199 MM (6,38 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,02057	,02473	,00591	,01334	,00388	,00603	,00432	,00148	,00265	,00115
ANGLE	162,2	80,2	115,1	56,2	326,2	25,7	261,1	358,6	201,6	161,7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED ,4439 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED ,4711

SEQUENCE 11 POINTS 57 XCEN 2907,47 YCEN 2091,28 RADIUS ,01218 MM DIAMETER ,02437 MM (5,36 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,04186	,02895	,01300	,00582	,00300	,00932	,00955	,00665	,00495	,00379
ANGLE	218,9	101,6	175,9	80,0	330,0	32,4	258,6	358,9	211,7	296,5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3,8931 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1,3952

SEQUENCE 12 POINTS 53 XCEN 2698,05 YCEN 1922,27 RADIUS ,00725 MM DIAMETER ,01450 MM (6,11 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,06054	,02717	,02758	,01359	,01012	,01290	,00842	,00084	,00815	,00792
ANGLE	104,1	340,6	159,6	102,0	139,2	148,6	83,6	216,9	100,2	25,1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 220,7215 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10,5053

SEQUENCE 13 POINTS 49 XCEN 2695,26 YCEN 1885,95 RADIUS ,00514 MM DIAMETER ,01028 MM (6,60 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	,01599	,04436	,01829	,01505	,00645	,00283	,00482	,00633	,00182	,00428
ANGLE	253,4	113,5	217,8	17,7	63,9	148,6	303,1	95,2	238,8	9,4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1,4954 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED ,8647

SEQUENCE 14 POINTS 51 XCEN 2706.33 YCEN 2178.02 RADIUS .00959 MM DIAMETER .01919 MM (5.70 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00805	.01662	.01468	.00988	.00383	.00748	.00501	.00203	.00075	.00077
ANGLE	7.3	76.0	150.1	260.9	251.1	292.3	104.4	272.5	108.8	213.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .0123 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .0783

IN SEQUENCE 15 POINT 2 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 1 VALUE 2021 PLUS ITS DIFFERENCE WITH POINT 3 VALUE 1985 DIVIDED BY 2 GIVES A NEW Y-VALUE 2003 FOR POINT 2

SEQUENCE 15 POINTS 53 XCEN 2771.70 YCEN 2032.70 RADIUS .00948 MM DIAMETER .01895 MM (5.72 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02068	.03270	.00948	.00606	.01075	.00825	.00338	.00702	.00704	.00360
ANGLE	329.5	146.7	315.6	337.3	303.3	336.3	181.1	23.3	119.8	26.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.9099 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9772

IN SEQUENCE 16 POINT 52 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 51 VALUE 2013 PLUS ITS DIFFERENCE WITH POINT 53 VALUE 1984 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 52

SEQUENCE 16 POINTS 58 XCEN 2695.20 YCEN 1808.40 RADIUS .01175 MM DIAMETER .02351 MM (5.41 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02287	.01656	.01334	.00219	.01885	.01499	.00966	.00736	.00843	.00659
ANGLE	233.1	175.6	142.6	31.8	18.2	256.3	39.5	226.4	42.7	256.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .3882 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4406

SEQUENCE 17 POINTS 53 XCEN 2831.90 YCEN 1952.88 RADIUS .01486 MM DIAMETER .02972 MM (5.07 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.04560	.03881	.01521	.01162	.00122	.00793	.00411	.00412	.00369	.00217
ANGLE	273.2	187.5	246.6	150.5	102.1	145.9	236.9	107.6	200.2	134.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19.2556 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.1029

SEQUENCE 18 POINTS 56 XCEN 2985.40 YCEN 2047.45 RADIUS .01809 MM DIAMETER .03619 MM (4.79 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03402	.00935	.01196	.00970	.00525	.00637	.00952	.01099	.00820	.00820
ANGLE	173.0	56.7	291.9	10.8	65.2	182.5	195.7	250.5	274.8	342.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED147.1825 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 8.5785

SEQUENCE 19 POINTS 57 XCEN 2994.98 YCEN 2426.02 RADIUS .02120 MM DIAMETER .04240 MM (4.56 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03335	.01682	.02630	.01293	.00756	.00351	.00222	.00322	.00467	.00140
ANGLE	53.6	301.9	304.0	130.3	295.9	20.5	218.3	54.2	111.2	221.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.0706 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2391

SEQUENCE 20 POINTS 57 XCEN 2649.98 YCEN 1853.08 RADIUS .01790 MM DIAMETER .03581 MM (4.80 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00830	.01442	.00693	.00970	.00909	.01144	.00363	.00859	.00493	.00137
ANGLE	56.5	245.0	148.7	64.2	60.8	332.0	112.4	1.7	281.1	309.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 62.0066 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.5681

SEQUENCE 21 POINTS 49 XCEN 2784.84 YCEN 2088.94 RADIUS .01337 MM DIAMETER .02674 MM (5.22 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02693	.01576	.03172	.00477	.00805	.00966	.00285	.00593	.00385	.00570
ANGLE	314.7	139.3	307.7	279.6	12.9	270.3	49.6	353.4	166.4	339.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.2831 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.7724

SEQUENCE 22 POINTS 48 XCEN 2666.64 YCEN 1999.72 RADIUS .01344 MM DIAMETER .02688 MM (5.22 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03953	.02776	.01577	.00116	.01605	.00299	.00643	.00078	.00196	.00214
ANGLE	183.4	264.0	194.9	268.9	172.4	39.3	190.1	131.4	142.9	157.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 307.0156 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.3898

SEQUENCE 23 POINTS 55 XCEN 2566.14 YCEN 2111.49 RADIUS .01352 MM DIAMETER .02703 MM (5.21 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01431	.04455	.01352	.01368	.00360	.00741	.00944	.00922	.00715	.00596
ANGLE	188.1	179.9	11.9	282.5	7.8	127.5	142.4	293.5	86.8	192.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 322.5730 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.6999

SEQUENCE 24 POINTS 33 XCEN 2931.16 YCEN 2139.76 RADIUS .00675 MM DIAMETER .01349 MM (6.21 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02100	.00526	.01034	.00271	.00999	.00210	.00721	.00103	.00176	.00063
ANGLE	204.8	359.0	171.9	59.7	187.1	322.1	151.4	14.1	122.6	4.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 11.6863 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.4173

SEQUENCE 25 POINTS 56 XCEN 2970.92 YCEN 1921.42 RADIUS .01267 MM DIAMETER .02534 MM (5.30 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03902	.02836	.00419	.01335	.03304	.02074	.01735	.01149	.00609	.00659
ANGLE	267.0	265.4	2.6	278.2	36.4	216.9	89.8	228.9	136.0	310.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 269.0598 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 11.5987

SEQUENCE 26 POINTS 41 XCEN 2902.63 YCEN 1808.48 RADIUS .01094 MM DIAMETER .02188 MM (5.51 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03279	.02038	.02360	.00919	.01110	.00992	.00595	.00505	.00353	.00274
ANGLE	301.2	189.4	284.8	158.4	287.2	149.6	260.4	143.1	277.5	126.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 2.9232 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2090

IN SEQUENCE 27 POINT 17 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 16 VALUE 1984 PLUS ITS DIFFERENCE WITH POINT 18 VALUE 2015 DIVIDED BY 2 GIVES A NEW Y-VALUE 1999 FOR POINT 17

IN SEQUENCE 27 POINT 38 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 37 VALUE 3029 PLUS ITS DIFFERENCE WITH POINT 39 VALUE 2971 DIVIDED BY 2 GIVES A NEW X-VALUE 3000 FOR POINT 38

SEQUENCE 27 POINTS 46 XCEN 3128.89 YCEN 2158.24 RADIUS .01139 MM DIAMETER .02278 MM (5.46 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01565	.02445	.00980	.00484	.01018	.00759	.00169	.00454	.00250	.00099
ANGLE	159.5	161.6	153.1	39.2	163.5	17.2	345.0	334.0	317.5	264.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 22.7453 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.3723

SEQUENCE 28 POINTS 60 XCEN 2891.80 YCEN 2178.05 RADIUS .01340 MM DIAMETER .02679 MM (5.22 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01703	.02720	.02481	.00144	.00100	.01019	.00460	.00504	.00358	.00178
ANGLE	352.4	281.4	13.1	288.3	244.9	188.6	156.4	225.2	85.0	2.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .6601 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .5745

SEQUENCE 29 POINTS 53 XCEN 2971.70 YCEN 1706.10 RADIUS .01369 MM DIAMETER .02738 MM (5.19 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02444	.00731	.01377	.00910	.00666	.00636	.00321	.00605	.00415	.00276
ANGLE	358.8	64.6	355.6	45.1	51.2	48.5	79.1	63.5	100.4	104.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 182.3332 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 9.5481

SEQUENCE 30 POINTS 65 XCEN 3079.09 YCEN 2130.40 RADIUS .01716 MM DIAMETER .03432 MM (4.86 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.05819	.01876	.01701	.00780	.00797	.00804	.00610	.00721	.01192	.00481
ANGLE	300.9	120.3	34.1	320.5	99.5	329.9	63.0	278.5	19.7	124.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 231.7096 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10.7636

SEQUENCE 31 POINTS 54 XCEN 2624.69 YCEN 2188.84 RADIUS .02026 MM DIAMETER .04052 MM (4.63 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00810	.00520	.02635	.02119	.01417	.01386	.00847	.00608	.00904	.00435
ANGLE	2.5	127.4	91.6	182.4	85.5	221.2	10.5	255.6	345.2	260.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 737.9696 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 19.2090

SEQUENCE 32 POINTS 52 XCEN 3069.70 YCEN 2027.99 RADIUS .00947 MM DIAMETER .01894 MM (5.72 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01198	.01569	.01417	.00789	.00201	.01314	.00322	.00730	.00380	.00150
ANGLE	357.1	93.7	294.9	196.8	283.6	271.9	329.1	286.6	304.9	248.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED551.2369 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 16.6018

SEQUENCE 33 POINTS 56 XCEN 2767.55 YCEN 2160.05 RADIUS .01681 MM DIAMETER .03362 MM (4.89 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.05536	.00956	.02592	.01870	.00702	.00970	.00988	.01110	.00809	.00256
ANGLE	122.8	164.2	93.2	82.0	325.0	206.3	226.3	207.1	198.4	60.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 4.8571 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.5584

SEQUENCE 34 POINTS 50 XCEN 3096.89 YCEN 2001.80 RADIUS .01747 MM DIAMETER .03494 MM (4.84 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00133	.00533	.00910	.00151	.00318	.00342	.00298	.00126	.00188	.00182
ANGLE	277.8	85.0	227.0	352.2	215.9	10.6	97.8	257.6	117.7	270.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .6018 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .5486

SEQUENCE 35 POINTS 70 XCEN 3008.20 YCEN 2021.27 RADIUS .01868 MM DIAMETER .03735 MM (4.74 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03030	.00449	.00735	.00575	.01554	.01369	.00501	.01386	.01208	.00598
ANGLE	359.5	179.4	31.0	67.3	310.5	223.8	5.7	130.4	44.0	173.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 21.1226 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.2498

SEQUENCE 36 POINTS 50 XCEN 2856.03 YCEN 2125.46 RADIUS .01724 MM DIAMETER .03447 MM (4.86 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00604	.01607	.00131	.01458	.00127	.00631	.01002	.00106	.00342	.00365
ANGLE	238.3	260.5	317.7	315.9	229.1	262.5	239.0	352.8	198.3	175.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.4660 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2876

SEQUENCE 37 POINTS 48 XCEN 2752.61 YCEN 2110.46 RADIUS .01541 MM DIAMETER .03083 MM (5.02 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00908	.01406	.00456	.01578	.00679	.01215	.00861	.00494	.00887	.00450
ANGLE	3.2	339.5	87.9	288.4	102.6	302.4	307.3	270.9	324.8	308.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13.0980 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.5591

IN SEQUENCE 38 POINT 43 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 42 VALUE 1997 PLUS ITS DIFFERENCE WITH POINT 44 VALUE 1997 DIVIDED BY 2 GIVES A NEW Y-VALUE 1997 FOR POINT 43

SEQUENCE 38 POINTS 50 XCEN 2984.97 YCEN 1754.65 RADIUS .00967 MM DIAMETER .01934 MM (5.69 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03648	.01480	.00439	.00705	.00413	.00563	.00976	.00444	.00243	.00027
ANGLE	198.6	177.1	197.2	291.5	97.6	33.8	37.2	329.9	139.2	318.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 32.8427 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.0523

SEQUENCE 39 POINTS 56 XCEN 3036.75 YCEN 1895.68 RADIUS .01226 MM DIAMETER .02452 MM (5.35 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00392	.04957	.03068	.01579	.01210	.01043	.00437	.00751	.00854	.00377
ANGLE	114.3	299.8	2.3	356.3	354.4	58.5	88.4	42.5	55.1	125.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 566.4904 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 16.8299

SEQUENCE 40 POINTS 65 XCEN 2812.04 YCEN 2012.82 RADIUS .01702 MM DIAMETER .03405 MM (4.88 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02416	.04097	.01839	.00255	.00946	.01947	.00849	.00829	.00202	.00387
ANGLE	267.7	139.5	149.6	86.9	251.8	26.8	295.4	92.6	190.0	206.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 78.5973 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.2689

SEQUENCE 41 POINTS 48 XCEN 2759.96 YCEN 2203.38 RADIUS .01374 MM DIAMETER .02748 MM (5.19 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01497	.01226	.03585	.01186	.00352	.01237	.01050	.01340	.00648	.00486
ANGLE	192.7	326.0	135.7	228.6	92.2	172.8	318.7	191.4	344.8	222.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.8803 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9696

SEQUENCE 42 POINTS 46 XCEN 2661.22 YCEN 2032.60 RADIUS .00863 MM DIAMETER .01726 MM (5.86 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01611	.01066	.00114	.00582	.00938	.00949	.00484	.00608	.00253	.00089
ANGLE	85.3	107.9	231.9	347.4	3.4	44.3	24.8	28.7	.2	76.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 96.7983 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.9570

SEQUENCE 43 POINTS 52 XCEN 2842.80 YCEN 2138.15 RADIUS .01360 MM DIAMETER .02720 MM (5.20 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03029	.02735	.00485	.01106	.00475	.00770	.00114	.00191	.00012	.00162
ANGLE	325.8	125.2	300.1	206.6	245.1	270.8	313.4	278.7	151.4	320.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .4548 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4768

SEQUENCE 44 POINTS 50 XCEN 3016.24 YCEN 2186.29 RADIUS .00742 MM DIAMETER .01485 MM (6.07 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03712	.02162	.00445	.00498	.00337	.00543	.00609	.00081	.00082	.00129
ANGLE	191.6	258.1	169.6	230.5	338.8	58.8	92.0	72.0	282.0	152.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.9433 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8632

SEQUENCE 45 POINTS 52 XCEN 3051.44 YCEN 2129.19 RADIUS .01393 MM DIAMETER .02785 MM (5.17 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02077	.00813	.01540	.00336	.00795	.00459	.00536	.00165	.00334	.00409
ANGLE	43.2	264.2	212.2	327.8	306.3	18.6	332.9	227.0	353.1	5.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .0000 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .0020

SEQUENCE 46 POINTS 49 XCEN 3067.17 YCEN 2117.30 RADIUS .01054 MM DIAMETER .02108 MM (5.57 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02133	.00469	.01778	.00455	.00908	.00516	.00281	.00186	.00167	.00118
ANGLE	336.9	339.0	334.0	17.4	22.8	110.8	83.6	133.3	54.6	109.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 7.4194 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.9261

SEQUENCE 47 POINTS 54 XCEN 2767.73 YCEN 2061.44 RADIUS .02092 MM DIAMETER .04185 MM (4.58 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02549	.03298	.00500	.01835	.01090	.01324	.00791	.00750	.00349	.00397
ANGLE	89.9	292.0	283.0	27.8	288.4	93.4	257.4	134.8	271.3	149.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 35.2477 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.1981

SEQUENCE 48 POINTS 46 XCEN 2874.96 YCEN 1853.76 RADIUS .00886 MM DIAMETER .01773 MM (5.82 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00664	.00394	.00985	.01331	.01886	.01681	.00837	.00637	.00025	.00421
ANGLE	356.5	220.6	113.1	45.4	60.1	24.9	2.9	43.7	128.9	136.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.6677 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9131

SEQUENCE 49 POINTS 41 XCEN 3048.05 YCEN 1961.93 RADIUS .00800 MM DIAMETER .01601 MM (5.97 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.04981	.02353	.01661	.01321	.01614	.00254	.00565	.00220	.00340	.00114
ANGLE	296.4	139.7	332.4	56.5	308.6	54.6	300.9	14.3	254.2	120.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 47.8637 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.8920

IN SEQUENCE 50 POINT 27 HAS A Y COORDINATE WITH DROPPED DIGITS(2000)

POINT 26 VALUE 1967 PLUS ITS DIFFERENCE WITH POINT 28 VALUE 2037 DIVIDED BY 2 GIVES A NEW Y-VALUE 2002 FOR POINT 27

SEQUENCE 50 POINTS 54 XCEN 2762.58 YCEN 2009.35 RADIUS .01270 MM DIAMETER .02539 MM (5.30 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02803	.01176	.01221	.00495	.02006	.00916	.00800	.00127	.00484	.00716
ANGLE	50.5	72.4	128.2	19.1	262.6	353.1	318.4	79.5	17.4	80.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 94.5580 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.8760

SEQUENCE 51 POINTS 46 XCEN 2676.94 YCEN 1507.23 RADIUS .00996 MM DIAMETER .01993 MM (5.65 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02611	.00755	.01598	.01684	.00745	.00077	.00127	.00214	.00226	.00076
ANGLE	27.6	195.8	117.7	282.8	188.2	306.0	253.4	285.7	231.2	350.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.2207 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6157

SEQUENCE 52 POINTS 43 XCEN 3187.77 YCEN 1756.91 RADIUS .00629 MM DIAMETER .01258 MM (6.31 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01614	.01817	.01594	.01776	.01519	.00530	.00476	.00464	.00223	.00240
ANGLE	359.9	26.5	254.5	199.2	135.0	93.7	64.5	343.1	286.4	150.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 14.5838 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.7004

IN SEQUENCE 53 POINT 14 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 13 VALUE 2971 PLUS ITS DIFFERENCE WITH POINT 15 VALUE 3033 DIVIDED BY 2 GIVES A NEW X-VALUE 3002 FOR POINT 14

SEQUENCE 53 POINTS 40 XCEN 3094.18 YCEN 1665.51 RADIUS .00722 MM DIAMETER .01445 MM (6.11 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01183	.01046	.01631	.01275	.00876	.00767	.00255	.00398	.00318	.00137
ANGLE	158.4	202.8	174.3	105.8	189.6	70.7	162.8	46.2	29.4	358.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 19.5425 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.1259

SEQUENCE 54 POINTS 59 XCEN 3061.39 YCEN 1837.44 RADIUS .01948 MM DIAMETER .03896 MM (4.68 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03191	.00890	.02029	.01660	.00812	.00322	.00521	.00920	.00411	.00095
ANGLE	234.3	166.1	113.8	115.4	239.0	102.4	326.5	81.7	203.8	45.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.5837 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.3386

SEQUENCE 55 POINTS 41 XCEN 3095.56 YCEN 1532.61 RADIUS .00962 MM DIAMETER .01923 MM (5.70 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.05224	.00729	.01129	.01293	.00848	.00740	.00341	.00604	.00230	.00193
ANGLE	174.6	48.4	242.8	64.7	70.1	218.4	134.0	295.0	149.8	111.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .2263 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .3364

SEQUENCE 56 POINTS 36 XCEN 3088.12 YCEN 1494.93 RADIUS .00936 MM DIAMETER .01873 MM (5.74 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01026	.02275	.00737	.00274	.00317	.00231	.00322	.00344	.00209	.00201
ANGLE	249.4	13.0	309.2	109.7	291.3	307.1	263.5	329.9	266.5	145.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.9420 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .9854

SEQUENCE 57 POINTS 45 XCEN 3300.19 YCEN 1586.99 RADIUS .00946 MM DIAMETER .01893 MM (5.72 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02711	.04480	.01161	.00673	.00578	.00794	.00142	.01073	.00303	.00354
ANGLE	110.5	181.0	144.9	273.2	251.4	235.8	40.4	323.2	114.8	19.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.0134 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7118

IN SEQUENCE 58 POINT 8 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 7 VALUE 2973 PLUS ITS DIFFERENCE WITH POINT 9 VALUE 3017 DIVIDED BY 2 GIVES A NEW X-VALUE 2995 FOR POINT 8

SEQUENCE 58	POINTS 37	XCEN 3119.94	YCEN 1891.58	RADIUS .00723 MM	DIAMETER .01445 MM (6.11 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01738	.01476	.01598	.00763	.00695	.00151	.00426	.00294	.00017	.00286
ANGLE	188.3	281.9	270.5	310.7	40.7	357.7	110.8	170.9	25.3	251.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.4537 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2862

SEQUENCE 59	POINTS 54	XCEN 3032.32	YCEN 1693.41	RADIUS .01673 MM	DIAMETER .03347 MM (4.90 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03534	.04080	.01944	.02409	.01922	.01471	.00603	.00491	.00469	.00903
ANGLE	332.6	284.2	10.1	168.7	86.9	320.2	280.6	328.4	221.9	112.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 53.2311 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.1590

SEQUENCE 60	POINTS 40	XCEN 3017.93	YCEN 2036.23	RADIUS .00907 MM	DIAMETER .01814 MM (5.78 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02463	.02645	.00758	.02100	.01120	.01334	.00797	.00417	.00295	.00376
ANGLE	16.2	311.5	96.4	328.7	160.7	345.1	197.2	21.8	250.8	163.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.6666 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6832

SEQUENCE 61	POINTS 49	XCEN 3025.34	YCEN 2013.13	RADIUS .01139 MM	DIAMETER .02279 MM (5.46 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.04208	.01614	.00413	.01360	.00471	.00390	.00787	.00364	.00319	.00390
ANGLE	303.4	5.8	61.9	32.1	76.6	181.5	100.7	164.3	111.5	214.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 7.1259 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8876

SEQUENCE 62	POINTS 39	XCEN 3000.71	YCEN 1967.44	RADIUS .00921 MM	DIAMETER .01843 MM (5.76 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.04125	.03630	.01198	.01230	.01009	.00739	.00137	.00331	.00355	.00198
ANGLE	154.1	172.9	210.5	230.2	251.3	330.9	31.3	28.8	88.9	197.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 76.1873 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 6.1720

SEQUENCE 63	POINTS 41	XCEN 2855.59	YCEN 1969.91	RADIUS .00833 MM	DIAMETER .01666 MM (5.91 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02913	.02036	.02438	.00783	.00523	.00698	.00617	.00249	.00156	.00222
ANGLE	343.5	298.7	11.9	167.1	357.9	196.3	268.2	291.7	296.2	113.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 8.9185 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.1117

IN SEQUENCE 64 POINT 36 HAS A X COORDINATE WITH DROPPED DIGITS(3000)

POINT 35 VALUE 3026 PLUS ITS DIFFERENCE WITH POINT 37 VALUE 2964 DIVIDED BY 2 GIVES A NEW X-VALUE 2995 FOR POINT 36

SEQUENCE 64	POINTS 46	XCEN 2774.03	YCEN 1890.78	RADIUS .00951 MM	DIAMETER .01902 MM (5.72 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02977	.03422	.03265	.00278	.01608	.00896	.00710	.00598	.00326	.00447
ANGLE	237.9	283.7	125.6	195.8	110.8	350.5	132.4	296.2	174.8	1.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.9351 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8621

SEQUENCE 65	POINTS 42	XCEN 2926.66	YCEN 1968.09	RADIUS .00704 MM	DIAMETER .01407 MM (6.15 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02725	.01849	.01740	.00783	.00726	.00668	.00205	.00233	.00179	.00171
ANGLE	112.4	291.7	180.5	4.9	239.1	349.8	303.0	67.7	3.8	126.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 4.4437 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.4906

SEQUENCE 66	POINTS 42	XCEN 2973.12	YCEN 1957.12	RADIUS .00647 MM	DIAMETER .01295 MM (6.27 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01059	.03621	.02472	.00332	.00737	.00149	.00733	.00386	.00237	.00720
ANGLE	347.1	311.4	310.6	117.3	314.1	232.6	60.1	72.5	131.0	51.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 59.4291 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.4511

SEQUENCE 67	POINTS 44	XCEN 2934.25	YCEN 2058.58	RADIUS .00750 MM	DIAMETER .01500 MM (6.06 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.07150	.03232	.01808	.00403	.00382	.01085	.00367	.00724	.00280	.00352
ANGLE	282.4	13.5	335.3	90.8	106.3	269.8	205.8	10.8	8.0	98.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13.1346 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.5627

SEQUENCE 68	POINTS 36	XCEN 3083.15	YCEN 2102.08	RADIUS .00711 MM	DIAMETER .01421 MM (6.14 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02840	.02040	.01602	.00545	.00686	.00634	.00340	.00022	.00250	.00261
ANGLE	172.2	164.5	276.0	207.6	300.0	311.8	22.3	277.0	165.0	169.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 13.2472 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.5736

SEQUENCE 69	POINTS 37	XCEN 3110.70	YCEN 1636.60	RADIUS .00802 MM	DIAMETER .01604 MM (5.96 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03296	.01423	.01009	.00689	.00898	.00813	.00866	.00494	.00847	.00249
ANGLE	77.5	84.2	228.7	304.5	276.5	318.2	.3	359.5	22.5	28.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 216.8968 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 10.4139

SEQUENCE 70	POINTS 40	XCEN 3084.37	YCEN 1634.76	RADIUS .00986 MM	DIAMETER .01971 MM (5.66 PHI)				
	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00558	.02393	.01137	.00443	.01423	.00323	.00396	.00543	.00224	.00139
ANGLE	160.9	180.5	322.8	239.5	325.8	136.7	14.4	130.4	45.0	139.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 122.4496 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 7.8246

SEQUENCE 71 POINTS 46 XCEN 3099.78 YCEN 1949.33 RADIUS .01116 MM DIAMETER .02232 MM (5.49 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01113	.00289	.02660	.00730	.00877	.00617	.01322	.00398	.00167	.00254
ANGLE	51.0	153.3	143.3	95.5	250.4	17.3	26.4	287.4	211.1	326.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 30.0473 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.8760

SEQUENCE 72 POINTS 34 XCEN 3211.81 YCEN 2072.08 RADIUS .00640 MM DIAMETER .01279 MM (6.29 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01999	.00610	.00712	.00458	.00555	.00149	.00228	.00100	.00276	.00169
ANGLE	131.8	137.7	76.6	312.1	42.8	335.6	55.6	207.8	114.3	170.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.1502 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2550

SEQUENCE 73 POINTS 44 XCEN 2719.70 YCEN 2095.18 RADIUS .00920 MM DIAMETER .01841 MM (5.76 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00745	.01911	.00739	.01124	.00914	.00457	.00486	.00236	.00236	.00551
ANGLE	55.0	285.3	235.5	299.7	270.3	236.3	265.5	257.4	269.4	217.0

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.4617 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6525

SEQUENCE 74 POINTS 31 XCEN 2891.56 YCEN 1729.12 RADIUS .00637 MM DIAMETER .01273 MM (6.30 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01621	.01580	.00536	.00282	.00235	.00122	.00148	.00237	.00079	.00229
ANGLE	104.2	67.8	15.2	43.5	290.3	241.3	102.3	263.4	152.1	5.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 16.7988 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.8982

SEQUENCE 75 POINTS 48 XCEN 3076.99 YCEN 1822.45 RADIUS .01612 MM DIAMETER .03224 MM (4.96 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01098	.01676	.00980	.01286	.00561	.00997	.00377	.00390	.00282	.00145
ANGLE	201.0	356.5	240.5	341.0	173.7	357.2	159.7	22.5	169.6	127.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 6.5637 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.8116

SEQUENCE 76 POINTS 44 XCEN 2964.69 YCEN 1801.03 RADIUS .01259 MM DIAMETER .02518 MM (5.31 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01501	.01283	.01396	.01228	.00193	.00664	.00200	.00454	.00615	.00041
ANGLE	226.2	142.1	.1	199.8	156.0	239.7	51.8	337.6	331.0	346.9

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 303.7731 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 12.3242

SEQUENCE 77 POINTS 48 XCEN 2717.41 YCEN 1760.51 RADIUS .01393 MM DIAMETER .02786 MM (5.17 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01891	.03448	.01204	.01625	.00270	.00620	.00765	.00459	.00403	.00441
ANGLE	23.3	66.0	19.0	327.6	301.7	332.7	191.6	52.1	76.3	351.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 8.5466 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.0672

SEQUENCE 78 POINTS 53 XCEN 2950.04 YCEN 1971.39 RADIUS .01903 MM DIAMETER .03806 MM (4.72 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01699	.02400	.01850	.03015	.00946	.01518	.01945	.00881	.01424	.01162
ANGLE	342.8	71.3	.2	75.1	102.8	113.5	168.3	199.7	208.7	246.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.0112 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7111

SEQUENCE 79 POINTS 35 XCEN 2725.08 YCEN 2141.05 RADIUS .00921 MM DIAMETER .01841 MM (5.76 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02656	.00332	.01429	.00951	.00500	.00696	.00255	.00472	.00236	.00395
ANGLE	221.7	267.9	140.2	72.6	44.8	14.6	309.1	293.6	236.1	208.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.1865 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7702

SEQUENCE 80 POINTS 43 XCEN 3204.12 YCEN 2156.36 RADIUS .01078 MM DIAMETER .02157 MM (5.53 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00918	.02925	.01263	.01608	.00646	.00568	.00365	.00399	.00257	.00337
ANGLE	201.3	73.5	145.4	1.6	336.8	5.2	13.0	316.1	313.8	277.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .3473 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .4167

SEQUENCE 81 POINTS 52 XCEN 2957.95 YCEN 1936.27 RADIUS .01740 MM DIAMETER .03479 MM (4.85 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02081	.02591	.00518	.02275	.01119	.00485	.00527	.00082	.00042	.00371
ANGLE	303.1	197.6	125.8	168.7	93.5	184.2	100.6	351.0	105.4	358.8

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 117.5417 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 7.6662

SEQUENCE 82 POINTS 36 XCEN 2731.58 YCEN 1964.40 RADIUS .00908 MM DIAMETER .01817 MM (5.78 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02407	.02975	.00962	.00502	.00254	.00364	.00530	.00115	.00224	.00100
ANGLE	21.1	306.3	193.2	314.3	66.1	315.6	201.1	9.4	267.4	66.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.0099 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .7106

SEQUENCE 83 POINTS 46 XCEN 2989.90 YCEN 1863.73 RADIUS .01047 MM DIAMETER .02095 MM (5.58 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.06062	.01216	.02065	.01419	.01017	.01560	.00727	.00989	.00589	.00876
ANGLE	356.7	225.4	20.4	215.6	45.8	192.9	129.6	191.6	182.6	197.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 935.8364 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 21.6314

SEQUENCE 84 POINTS 46 XCEN 2767.29 YCEN 1557.87 RADIUS .01062 MM DIAMETER .02124 MM (5.56 PHI)

	6	7	8	9	10	11	12	13	14	15

HARMONICS	.03328	.02905	.03401	.00193	-.00895	.01812	.00422	.00394	.00412	.00214
ANGLE	36.3	221.8	313.8	337.2	79.1	147.1	214.9	357.2	355.9	63.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 70.5768 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.9404

SEQUENCE 85 POINTS 48 XCEN 3005.03 YCEN 1979.38 RADIUS .01243 MM DIAMETER .02486 MM (5.33 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02005	.01630	.00559	.00891	-.00612	.00552	.00106	.00465	.00330	.00137
ANGLE	12.9	286.3	172.5	350.9	78.0	344.1	34.4	51.9	103.0	96.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.9272 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.4013

SEQUENCE 86 POINTS 45 XCEN 2291.81 YCEN 456.62 RADIUS .01652 MM DIAMETER .03304 MM (4.92 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01796	.01616	.01487	.01522	-.01478	.00597	.00910	.00180	.00739	.00528
ANGLE	116.1	218.8	46.8	19.5	312.0	294.3	182.8	157.2	113.8	100.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.7211 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.6913

SEQUENCE 87 POINTS 37 XCEN 2612.87 YCEN 1842.86 RADIUS .00907 MM DIAMETER .01815 MM (5.78 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00376	.02057	.01111	.00919	-.00444	.00724	.00154	.00269	.00056	.00163
ANGLE	262.5	155.8	70.5	36.9	355.2	169.6	170.8	2.3	139.5	138.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.1955 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2640

SEQUENCE 88 POINTS 42 XCEN 2541.87 YCEN 1733.30 RADIUS .01548 MM DIAMETER .03097 MM (5.01 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00996	.01330	.01148	.01119	-.00463	.00057	.00430	.00176	.00303	.00222
ANGLE	27.7	296.9	271.8	213.2	229.8	97.3	204.5	156.4	152.8	55.3

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 1.5729 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .8868

SEQUENCE 89 POINTS 52 XCEN 2527.79 YCEN 1694.94 RADIUS .01682 MM DIAMETER .03365 MM (4.89 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03631	.02890	.03327	.00927	-.01381	.00858	.00558	.00395	.00679	.00585
ANGLE	123.4	45.3	40.6	168.6	346.0	202.2	191.3	266.7	74.5	253.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 3.2401 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.2728

SEQUENCE 90 POINTS 47 XCEN 2465.45 YCEN 1706.28 RADIUS .01797 MM DIAMETER .03594 MM (4.80 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01719	.02204	.01033	.01826	-.01870	.00720	.00558	.01095	.00499	.00508
ANGLE	318.8	290.8	102.5	163.0	153.4	130.4	109.3	77.5	59.4	66.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 377.8197 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 13.7444

SEQUENCE 91 POINTS 29 XCEN 2829.33 YCEN 2040.85 RADIUS .00708 MM DIAMETER .01416 MM (6.14 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02182	.02755	.00282	.00329	.01066	.00281	.00240	.00176	.00392	.00386
ANGLE	255.8	162.2	313.3	65.5	278.4	190.1	191.2	31.2	320.3	28.4

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 28.1542 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 3.7519

SEQUENCE 92 POINTS 52 XCEN 2687.53 YCEN 2182.27 RADIUS .02562 MM DIAMETER .05123 MM (4.29 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01588	.02196	.01205	.00683	.00538	.00824	.00807	.00680	.00453	.00456
ANGLE	261.9	49.2	172.1	242.0	151.3	188.1	334.2	122.6	261.1	87.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 151.9777 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 8.7172

SEQUENCE 93 POINTS 48 XCEN 2506.68 YCEN 2118.46 RADIUS .01363 MM DIAMETER .02726 MM (5.20 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01544	.02196	.02568	.00210	.01980	.00606	.00560	.00362	.00324	.00046
ANGLE	90.0	152.9	60.1	128.2	27.2	288.6	40.6	236.2	134.9	207.5

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 45.5817 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 4.7740

SEQUENCE 94 POINTS 39 XCEN 2666.28 YCEN 1571.26 RADIUS .01039 MM DIAMETER .02079 MM (5.59 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.07003	.00822	.00292	.00946	.00711	.00808	.00309	.00603	.00225	.00158
ANGLE	19.7	118.0	176.6	7.7	54.3	67.6	185.5	82.5	223.4	108.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 10.1566 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.2535

SEQUENCE 95 POINTS 36 XCEN 2660.69 YCEN 1688.29 RADIUS .00865 MM DIAMETER .01731 MM (5.85 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.03588	.02222	.00949	.00522	.00852	.00531	.00442	.00312	.00079	.00293
ANGLE	114.9	250.2	230.3	272.8	283.6	20.5	54.0	9.2	83.1	154.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 5.0167 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 1.5838

SEQUENCE 96 POINTS 47 XCEN 3022.37 YCEN 1849.61 RADIUS .00897 MM DIAMETER .01793 MM (5.80 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.00758	.00984	.02067	.00566	.00524	.00702	.00630	.00371	.00073	.00223
ANGLE	153.4	71.5	84.9	201.7	167.6	78.1	182.8	210.1	214.9	131.6

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 54.1244 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 5.2021

SEQUENCE 97 POINTS 48 XCEN 2968.96 YCEN 1397.72 RADIUS .01152 MM DIAMETER .02305 MM (5.44 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01201	.01898	.01995	.01101	.00656	.00628	.00548	.00149	.00394	.00246
ANGLE	90.7	133.4	190.5	333.8	231.1	9.5	219.3	70.6	234.7	41.2

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .0421 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .1452

SEQUENCE 98 POINTS 39 XCEN 3238.13 YCEN 1773.23 RADIUS .00633 MM DIAMETER .01266 MM (6.30 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01504	.01978	.01317	.00645	.01018	.00679	.00243	.00383	.00299	.00113
ANGLE	133.6	45.7	94.9	55.0	260.8	333.3	203.9	34.9	205.5	242.1

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 15.4946 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.7834

SEQUENCE 99 POINTS 41 XCEN 3103.10 YCEN 1332.94 RADIUS .00807 MM DIAMETER .01614 MM (5.95 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.02089	.02398	.00132	.00441	.00799	.00538	.00308	.00434	.00012	.00239
ANGLE	181.3	81.5	102.6	170.2	345.2	267.0	18.8	294.3	324.0	149.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED 14.0488 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED 2.6504

SEQUENCE 100 POINTS 52 XCEN 3116.70 YCEN 1510.20 RADIUS .00904 MM DIAMETER .01808 MM (5.79 PHI)

	6	7	8	9	10	11	12	13	14	15
HARMONICS	.01188	.01971	.00811	.00707	.00217	.00648	.00201	.00431	.00362	.00222
ANGLE	309.9	169.0	262.7	115.3	13.9	127.9	150.5	126.7	136.2	157.7

THE ROUGHNESS COEFFICIENTS ARE, C SQUARED .1250 AND THE SQUARE ROOT OF ONE HALF OF C SQUARED .2500

AVERAGE NUMBER OF POINTS 47.

ROUGHNESS COEFFICIENT IS .1367 THE SQUARE ROOT OF ONE HALF OF C SQUARED

ROUGHNESS COEFFICIENT IS .0374 C SQUARED

INPUTED SAMPLE SIZE 100

REJECTION RATIO IS 0 OUT OF 100

USABLE SAMPLE SIZE 100.

MEAN HARMONICS	6	7	8	9	10	11	12	13	14	15
	.02479	.02019	.01376	.00975	.00863	.00761	.00546	.00470	.00377	.003272

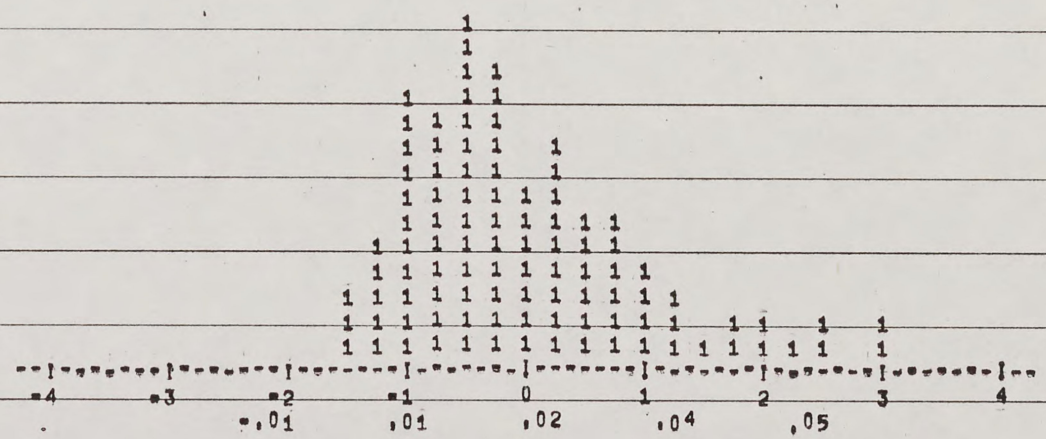
.014629	.010993	.006132	.009669	.002684	.003453	.002422	.003034	.001780	.000719	6,70
.035617	.028459	.007074	.011771	.012251	.010024	.002525	.001418	.000936	.002871	5,93
.053481	.030418	.004055	.014305	.008721	.010657	.000338	.007598	.003598	.004015	6,37
.040647	.021250	.007040	.003688	.008021	.003971	.001962	.000370	.002601	.001162	5,96
.009545	.027202	.013866	.005007	.012009	.004767	.002752	.004362	.001253	.001987	6,68
.015320	.018824	.009485	.003150	.009675	.007252	.008998	.001267	.002069	.004965	5,96
.019498	.002651	.008497	.009803	.006337	.002939	.008885	.003846	.007615	.003283	5,80
.016756	.017124	.002980	.018101	.009762	.013337	.006189	.006280	.002112	.005762	5,34
.041954	.011584	.011517	.010903	.010935	.001967	.005809	.005815	.003088	.006083	5,41
.020574	.024730	.005915	.013336	.003882	.006033	.004324	.001478	.002650	.001153	6,38
.041861	.028945	.012999	.005819	.003003	.009320	.009548	.006647	.004949	.003702	5,36
.060540	.027175	.027575	.013591	.010120	.012902	.008423	.000837	.008151	.007921	6,11
.015994	.044361	.018291	.015050	.006451	.002833	.004820	.006325	.001816	.004275	6,60
.008045	.016622	.014684	.009883	.003832	.007481	.005007	.002027	.000747	.000769	5,70
.020683	.032699	.009481	.006059	.010752	.008253	.003382	.007015	.007038	.003602	5,72
.022869	.016564	.013340	.002189	.018847	.014991	.009662	.007357	.008427	.006591	5,41
.045596	.038811	.015211	.011618	.001216	.007933	.004107	.004116	.003690	.002168	5,07
.034022	.009345	.011964	.009696	.005245	.006370	.009519	.010990	.008198	.008201	4,79
.033351	.016818	.026300	.012931	.007563	.003510	.002224	.003221	.004670	.001403	4,56
.008301	.014420	.006933	.009703	.009090	.011442	.003634	.008588	.004928	.001369	4,80
.026928	.015764	.031724	.004766	.008051	.009657	.002845	.005932	.003846	.005698	5,22
.039525	.027759	.015765	.001161	.016051	.002986	.006433	.000778	.001962	.002143	5,22
.014307	.044554	.013517	.013676	.003600	.007413	.009443	.009219	.007148	.005962	5,21
.020999	.005259	.010339	.002715	.009986	.002104	.007212	.001035	.001764	.000632	6,21
.039017	.028360	.004190	.013351	.033038	.020744	.017348	.011489	.006094	.006587	5,30
.032791	.020376	.023597	.009187	.011097	.009919	.005954	.005047	.003535	.002742	5,51
.015649	.024448	.009802	.004841	.010181	.007590	.001685	.004536	.002503	.000993	5,46
.017031	.027202	.024806	.001438	.001001	.010189	.004602	.005041	.003579	.001781	5,22
.024444	.007308	.013769	.009097	.006658	.006365	.003205	.006046	.004152	.002758	5,19
.058187	.018758	.017009	.007796	.007972	.008043	.006098	.007215	.011920	.004814	4,86
.008100	.005197	.026352	.021187	.014172	.013858	.008468	.006080	.009044	.004351	4,63
.011981	.015691	.014174	.007885	.002009	.013140	.003219	.007304	.003795	.001505	5,72
.055298	.009564	.025925	.018698	.007018	.009702	.009883	.011102	.008087	.002561	4,89
.001332	.005329	.009101	.001505	.003176	.003421	.002977	.001263	.001879	.001819	4,84
.030296	.004445	.007347	.005753	.015538	.013685	.005010	.013859	.012082	.005982	4,74
.006036	.016065	.001306	.014582	.001267	.006310	.010015	.001062	.003424	.003654	4,86
.009079	.014063	.004562	.015776	.006787	.012146	.008609	.004939	.008869	.004502	5,02
.036485	.014797	.004393	.007055	.004131	.005635	.009762	.004439	.002430	.000268	5,69
.003916	.049571	.030679	.015787	.012097	.010431	.004367	.007507	.008536	.003771	5,35
.024158	.040969	.018395	.002552	.009462	.019468	.008489	.008286	.002018	.003871	4,88
.014968	.012260	.035846	.011858	.003523	.012369	.010502	.013396	.006477	.004864	5,19
.016114	.010661	.001143	.005820	.009375	.009485	.004845	.006084	.002531	.000894	5,86
.030291	.027348	.004849	.011064	.004747	.007697	.001145	.001912	.000117	.001624	5,20
.037115	.021618	.004452	.004983	.003365	.005430	.006091	.000809	.000818	.001291	6,07
.020770	.008129	.015395	.003359	.007949	.004592	.005364	.001655	.003341	.004088	5,17
.021328	.004695	.017777	.004555	.009077	.005159	.002814	.001858	.001665	.001181	5,57
.025492	.032978	.004997	.018353	.010899	.013241	.007913	.007499	.003493	.003971	4,58
.006644	.003936	.009850	.013310	.018862	.016813	.008367	.006369	.000245	.004207	5,82
.049814	.023526	.016609	.013210	.016141	.002540	.005648	.002201	.003396	.001141	5,97
.028029	.011757	.012206	.004950	.020063	.009160	.008003	.001272	.004837	.007164	5,30
.026113	.007547	.015978	.016838	.007454	.000767	.001265	.002138	.002259	.000758	5,65
.016136	.018169	.015935	.017757	.015193	.005305	.004764	.004640	.002225	.002402	6,31
.011846	.010461	.014307	.012745	.008762	.007670	.002547	.003982	.003183	.001371	6,11
.031909	.008905	.020290	.016603	.008124	.003216	.005207	.009204	.004115	.000951	4,68
.052241	.007294	.011294	.012927	.008477	.007398	.003413	.006043	.002302	.001925	5,70
.010263	.022749	.007367	.002737	.003175	.002311	.003222	.003443	.002094	.002010	5,74
.027112	.044803	.011610	.006729	.005776	.007939	.001423	.010731	.003027	.003542	5,72
.017303	.014757	.015984	.007631	.006948	.001514	.004261	.002939	.000174	.002858	6,11
.035344	.040801	.019436	.024093	.019223	.014709	.006027	.004913	.004686	.009031	4,90
.024625	.026450	.007576	.021002	.011203	.013344	.007971	.004172	.002951	.003756	5,78
.042002	.016138	.004128	.013604	.004708	.003897	.007867	.003637	.003188	.003899	5,46

.041251	.036304	.011982	.012300	.010088	.007394	.001374	.003307	.003546	.001980	5,76
.029125	.020358	.024377	.007832	.005233	.006985	.006166	.002491	.001556	.002218	5,91
.029768	.034223	.032650	.002780	.016079	.008963	.007104	.005976	.003264	.004471	5,72
.027251	.018493	.017402	.007832	.007259	.006684	.002054	.002326	.001790	.001715	6,15
.010589	.036211	.024724	.003320	.007369	.001493	.007327	.003857	.002373	.007199	6,27
.071500	.032319	.018080	.004028	.003816	.010855	.003666	.007242	.002799	.003525	6,06
.028405	.020398	.016025	.005451	.006864	.006339	.003399	.000218	.002499	.002608	6,14
.032957	.014232	.010092	.006888	.008976	.008126	.008664	.004944	.008466	.002494	5,96
.005584	.023933	.011372	.004427	.014231	.003232	.003961	.005428	.002239	.001390	5,66
.011126	.002891	.026596	.007296	.008768	.006171	.013224	.003979	.001668	.002542	5,49
.019986	.006096	.007118	.004581	.005547	.001490	.002281	.000997	.002757	.001686	6,29
.007445	.019110	.007393	.011236	.009140	.004568	.004863	.002362	.002364	.005510	5,76
.016207	.015796	.005360	.002821	.002354	.001217	.001475	.002375	.000793	.002288	6,30
.010902	.016756	.009801	.012856	.005606	.009973	.003768	.003902	.002823	.001454	4,96
.015014	.012827	.013959	.012280	.001931	.006640	.001996	.004538	.006150	.000411	5,31
.018910	.034482	.012040	.016249	.002704	.006201	.007650	.004593	.004027	.004412	5,17
.016989	.023996	.018503	.030151	.009463	.015183	.019448	.008806	.014241	.011621	4,72
.026556	.003315	.014286	.009509	.005003	.006956	.002548	.004723	.002360	.003949	5,76
.009101	.029254	.012626	.016076	.006461	.005680	.003647	.003989	.002567	.003373	5,53
.020809	.025910	.009181	.022750	.011191	.004849	.005272	.000822	.000421	.003709	4,85
.024071	.029750	.009620	.005018	.002536	.003636	.005295	.001151	.002242	.000996	5,78
.060616	.012160	.020649	.014191	.010168	.015595	.007274	.009892	.005893	.008762	5,58
.033282	.029048	.034006	.001928	.008946	.018116	.004218	.003940	.004124	.002135	5,56
.020049	.016302	.005589	.008912	.006120	.005520	.001064	.004646	.003297	.001371	5,33
.017963	.016157	.014873	.015223	.014777	.005972	.009098	.001801	.007394	.005278	4,92
.003758	.020574	.011107	.009189	.004439	.007236	.001540	.002692	.000556	.001628	5,78
.009963	.013301	.011480	.011192	.004626	.000572	.004297	.001762	.003035	.002293	5,01
.036309	.028902	.033267	.009268	.013809	.008580	.005576	.003953	.006793	.005850	4,89
.017187	.022038	.010326	.018261	.018702	.007195	.005579	.010950	.004990	.005081	4,80
.021825	.027553	.002824	.003288	.010663	.002806	.002401	.001756	.003918	.003860	6,14
.015882	.021961	.012046	.006826	.005385	.008240	.008074	.006798	.004533	.004562	4,29
.015437	.021965	.025675	.002099	.019796	.006063	.005598	.003622	.003237	.000465	5,20
.070026	.008216	.002923	.009455	.007111	.008075	.003087	.006029	.002248	.001584	5,59
.035881	.022216	.009494	.005216	.008519	.005309	.004424	.003123	.000795	.002930	5,85
.007584	.009845	.028670	.005662	.005244	.007021	.006302	.003711	.000729	.002229	5,80
.012009	.018976	.019948	.011015	.006557	.006280	.005482	.001489	.003935	.002462	5,44
.015044	.019778	.013172	.006449	.010184	.006785	.002430	.003827	.002989	.001131	6,30
.020892	.023978	.001319	.004410	.007989	.005377	.003076	.004337	.000118	.002387	5,95
.011882	.019707	.008113	.007068	.002168	.006480	.002006	.004314	.003616	.002220	5,79

VARIABLE: HARMONIC 6

N =	100,000		
MEAN =	,025		
STD. DEV. =	,015	(	,015)
VARIANCE =	,000	(	,000)
COEF. OF VAR. =	60,702	(	61,008)
SKEWNESS =	,995	(	1,010)
KURTOSIS =	,675	(	,772)

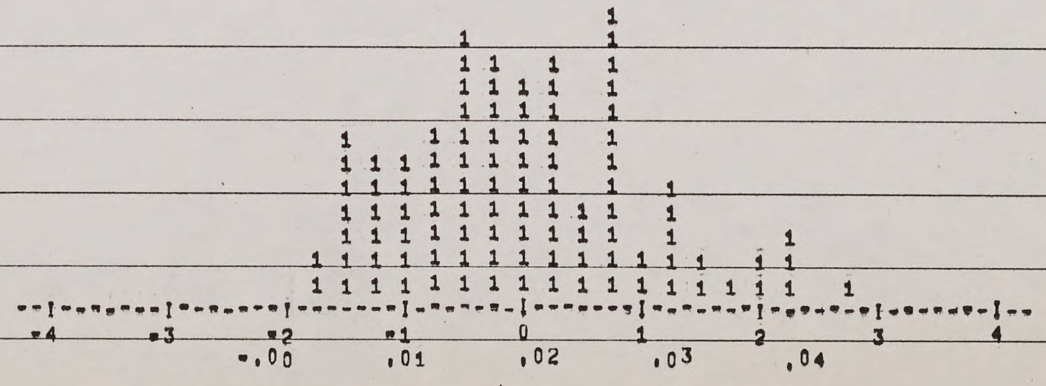
LOWER QUARTILE =	,015
MEDIAN =	,021
UPPER QUARTILE =	,033
RANGE =	,001 TO ,071



VARIABLE: HARMONIC 7

N =	100,000		
MEAN =	,020		
STD. DEV. =	,011	(	,011)
VARIANCE =	,000	(	,000)
COEF. OF VAR. =	52,282	(	52,545)
SKEWNESS =	,508	(	,516)
KURTOSIS =	-,156	(	-,101)

LOWER QUARTILE =	,012
MEDIAN =	,019
UPPER QUARTILE =	,027
RANGE =	,003 TO ,050

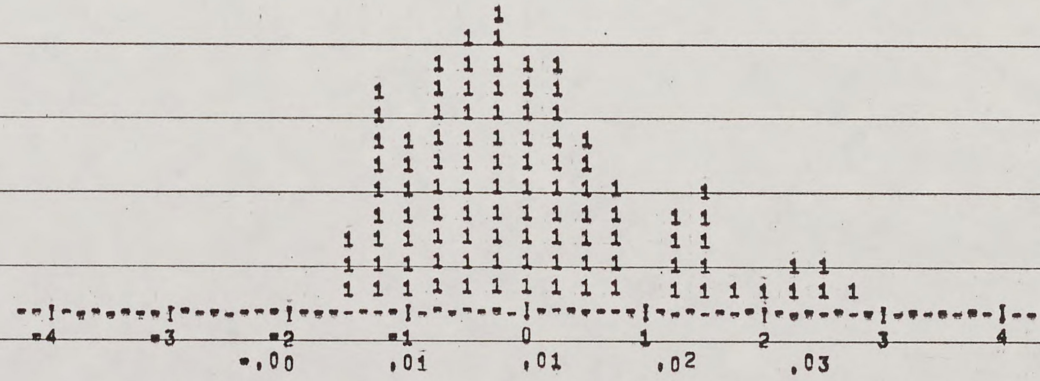


VARIABLE: HARMONIC 8

N =	100.000	
MEAN =	.014	
STD. DEV. =	.008	(.008)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	58.646	(58.941)
SKEWNESS =	.774	(.786)
KURTOSIS =	.067	(.133)

LOWER QUARTILE =	.007
MEDIAN =	.012
UPPER QUARTILE =	.018

RANGE = .001 TO .036

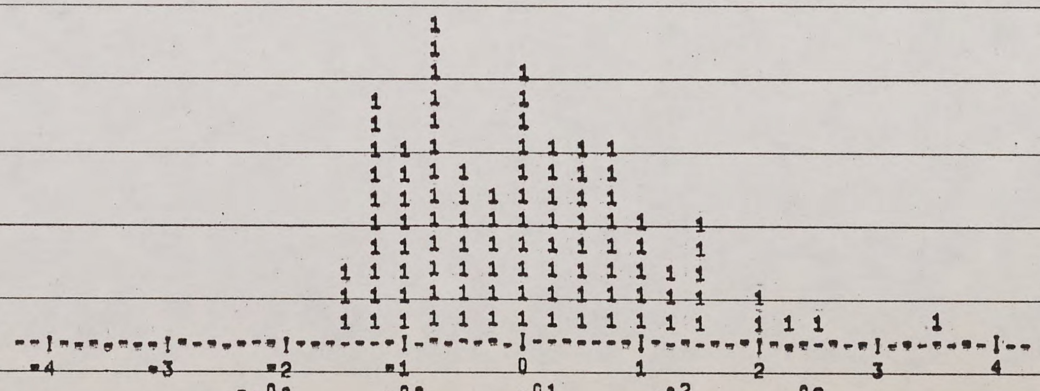


VARIABLE: HARMONIC 9

N =	100.000	
MEAN =	.010	
STD. DEV. =	.006	(.006)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	58.657	(58.953)
SKEWNESS =	.759	(.770)
KURTOSIS =	.512	(.601)

LOWER QUARTILE =	.005
MEDIAN =	.009
UPPER QUARTILE =	.013

RANGE = .001 TO .030

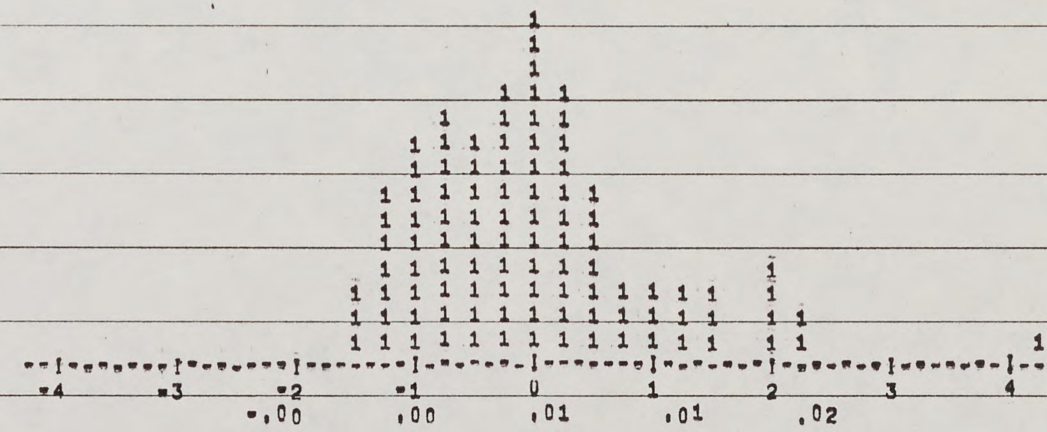


VARIABLE: HARMONIC10

N =	100.000	
MEAN =	.009	
STD. DEV. =	.005	(.005)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	59.757	(60.058)
SKEWNESS =	1.436	(1.458)
KURTOSIS =	3.805	(4.064)

LOWER QUARTILE =	.005
MEDIAN =	.008
UPPER QUARTILE =	.011

RANGE = .001 TO .033

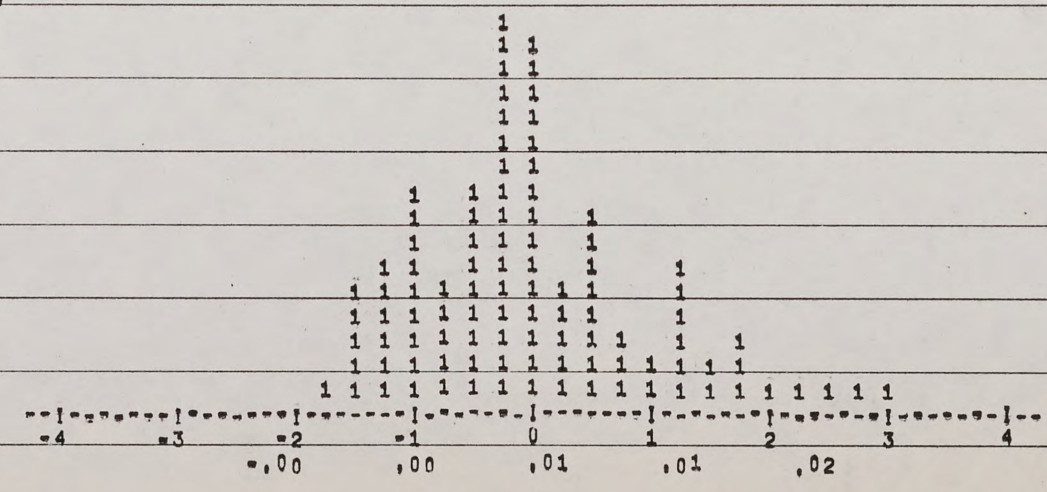


VARIABLE: HARMONIC11

N =	100.000	
MEAN =	.008	
STD. DEV. =	.004	(.004)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	55.496	(55.776)
SKEWNESS =	.791	(.803)
KURTOSIS =	.459	(.546)

LOWER QUARTILE =	.005
MEDIAN =	.007
UPPER QUARTILE =	.010

RANGE = .001 TO .021

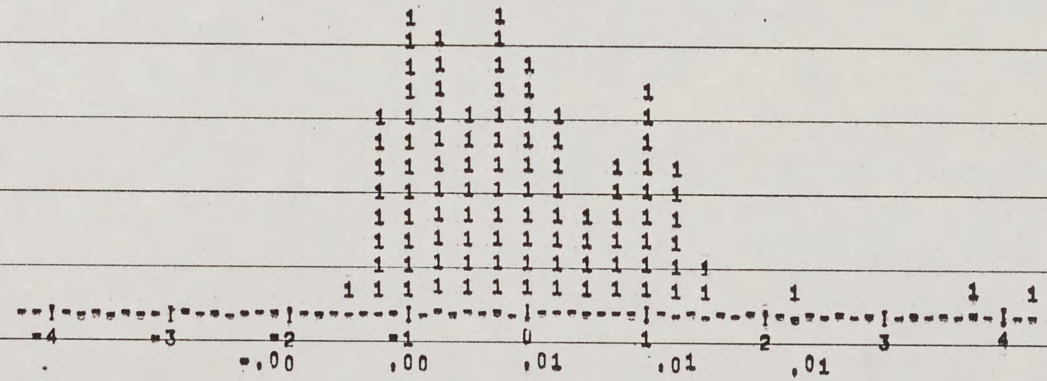


VARIABLE: HARMONIC12

N =	100,000		
MEAN =	,005		
STD. DEV. =	,003	(	,003)
VARIANCE =	,000	(	,000)
COEF. OF VAR. =	59,974	(	60,276)
SKEWNESS =	1,344	(	1,364)
KURTOSIS =	3,179	(	3,407)

LOWER QUARTILE =	,003
MEDIAN =	,005
UPPER QUARTILE =	,008

RANGE = ,800 TO ,019

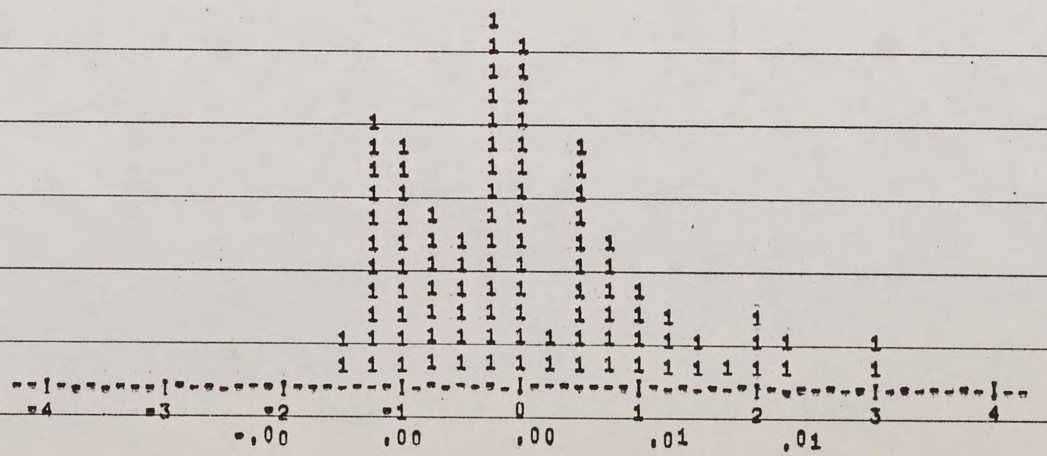


VARIABLE: HARMONIC13

N =	100,000		
MEAN =	,005		
STD. DEV. =	,003	(	,003)
VARIANCE =	,000	(	,000)
COEF. OF VAR. =	63,789	(	64,110)
SKEWNESS =	,848	(	,861)
KURTOSIS =	,395	(	,478)

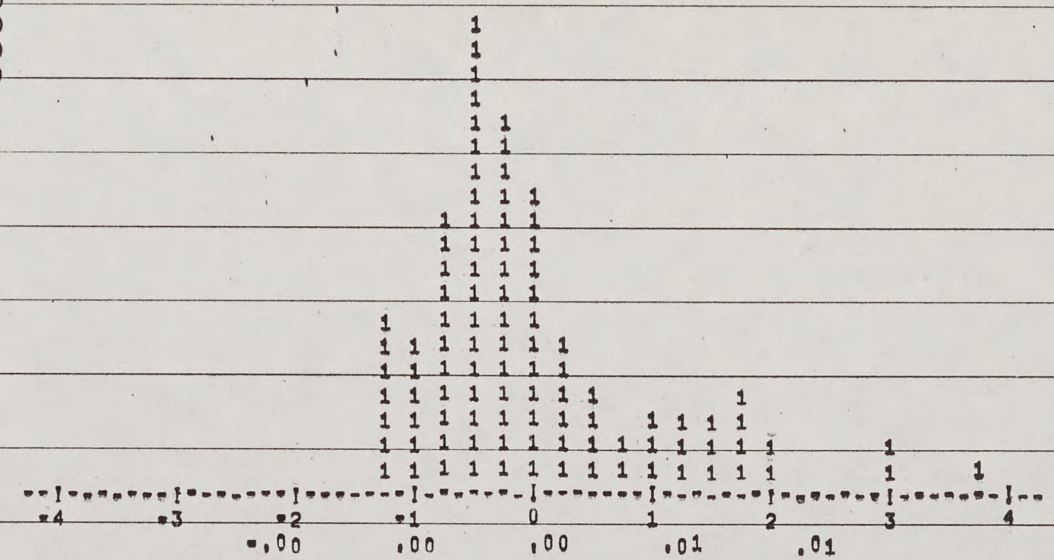
LOWER QUARTILE =	,002
MEDIAN =	,004
UPPER QUARTILE =	,006

RANGE = ,000 TO ,014



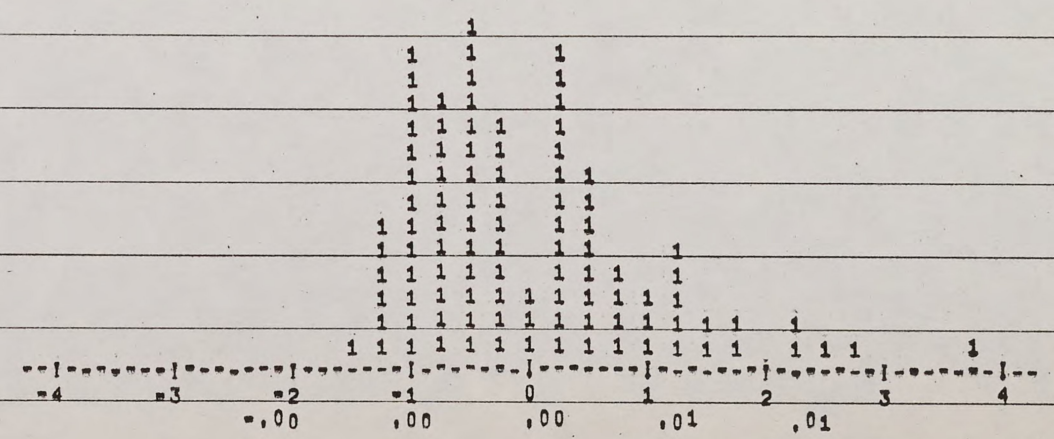
VARIABLE: HARMONIC14

N =	100.000	
MEAN =	.004	
STD. DEV. =	.003	(.003)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	71.710	(72.071)
SKEWNESS =	1.413	(1.435)
KURTOSIS =	2.177	(2.352)
LOWER QUARTILE =	.002	
MEDIAN =	.003	
UPPER QUARTILE =	.005	
RANGE =	.000 TO .014	



VARIABLE: HARMONIC15

N =	100.000	
MEAN =	.003	
STD. DEV. =	.002	(.002)
VARIANCE =	.000	(.000)
COEF. OF VAR. =	66.155	(66.488)
SKEWNESS =	1.156	(1.174)
KURTOSIS =	1.457	(1.595)
LOWER QUARTILE =	.002	
MEDIAN =	.003	
UPPER QUARTILE =	.004	
RANGE =	.000 TO .012	

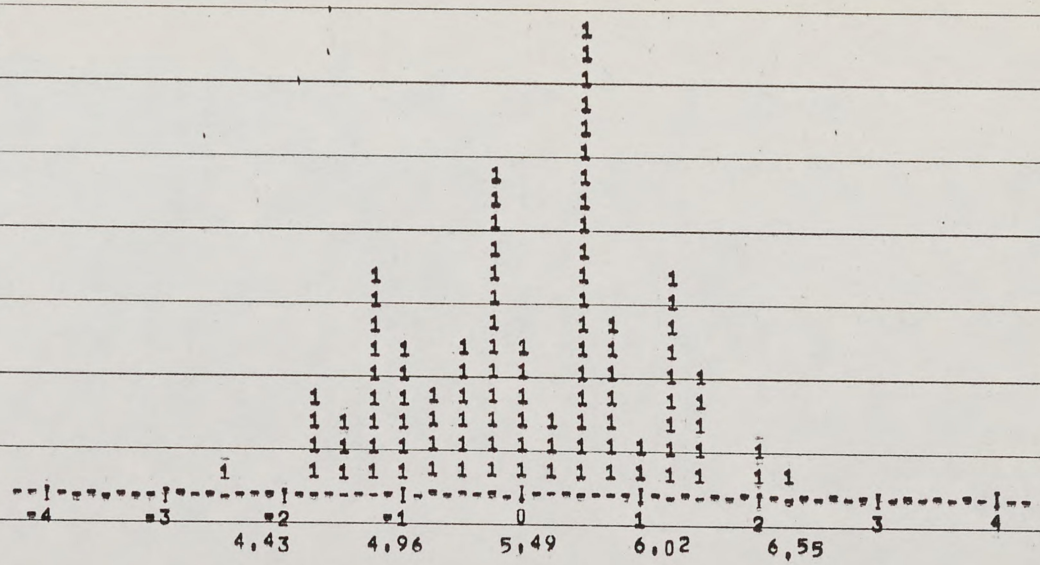


VARIABLE: MEANPHIDIA

N =	100,000	
MEAN =	5,490	
STD. DEV. =	,532	(,535)
VARIANCE =	,283	(,286)
COEF. OF VAR. =	9,695	(9,744)
SKEWNESS =	-,047	(-,048)
KURTOSIS =	-,612	(-,581)

LOWER QUARTILE =	5,091
MEDIAN =	5,494
UPPER QUARTILE =	5,880

RANGE = 4,200 TO 6,700



APPENDIX C-3

CHI-SQUARE CONTINGENCY TABLES FOR LUMPED STONY CREEK SAMPLES

CONTINGENCY TABLES

THE SIMPLE CHISQUARE EQUATION IS USED IN COMPUTATIONS EXPECTED,CONTRIBUTION,OBSERVED VALUES ARE LISTED IN TABLES

THE SUM OF THE DIFFERENCE OF THE OBSERVED AND EXPECTED VALUES SQUARED, DIVIDED BY THE EXPECTED VALUE, GIVES CHISQUARE

THE EXPECTED VALUE FOR EACH CELL IS GIVEN BY THE PRODUCT OF THE ROW AND COLUMN SUMS, DIVIDED BY THE CELL TOTAL

CONTINGENCY TABLES FOR SC1 SC6BW SC2 SC7 SC3 SC8 SC34J SC9 SC4 SC10 SC5 SC11A2 SC6 COON SC6A SC6B SC6BE

THIS SET HAS 17 ROWS OR SAMPLES AND 7 COLUMNS OR DIVISIONS. THE METHOD REQUEST IS 5. THE SUPPRESS REQUEST IS 3

THE FOLLOWING HARMONICS AND DIVISIONS WERE REQUESTED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HARMONIC 1 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 2 DIVISIONS	.0500	.1000	.1500	.2000	.2500	.3000	.8000									
HARMONIC 3 DIVISIONS	.0300	.0600	.0900	.1200	.1500	.1800	.5000									
HARMONIC 4 DIVISIONS	.0250	.0500	.0750	.1000	.1250	.1500	.5000									
HARMONIC 5 DIVISIONS	.0150	.0300	.0450	.0600	.0750	.0900	.5000									
HARMONIC 6 DIVISIONS	.0100	.0200	.0300	.0400	.0500	.0600	.5000									
HARMONIC 7 DIVISIONS	.0050	.0100	.0150	.0200	.0300	.0400	.5000									
HARMONIC 8 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 9 DIVISIONS	.0030	.0060	.0090	.0120	.0150	.0180	.5000									
HARMONIC 10 DIVISIONS	.0030	.0050	.0070	.0090	.0110	.0140	.5000									
HARMONIC 11 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 12 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 13 DIVISIONS	.0010	.0030	.0050	.0070	.0090	.0110	.5000									

HARMONIC 14 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

HARMONIC 15 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

BEGINNING HARMONIC 1 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 1	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	20.	24.	18.	11.	13.	5.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	18.	23.	15.	10.	6.	11.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	10.	23.	21.	15.	4.	7.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	21.	30.	12.	18.	6.	2.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	18.	22.	22.	14.	5.	4.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	13.	19.	16.	7.	7.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	15.	38.	16.	8.	9.	3.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	17.	19.	20.	14.	14.	6.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	21.	23.	18.	11.	9.	6.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	18.	19.	17.	14.	9.	12.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	18.	22.	17.	22.	9.	4.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	19.	23.	16.	16.	5.	5.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	20.	10.	5.	7.	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	20.	19.	23.	9.	6.	4.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	18.	17.	23.	14.	8.	7.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	20.	32.	16.	12.	7.	3.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	67.	103.	73.	53.	31.	21.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	361.	466.	349.	254.	151.	108.	199.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 108.903

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	13.77	17.77	13.31	9.69	5.76	4.12	7.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	18.74	24.19	18.12	13.18	7.84	5.61	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	18.36	23.69	17.75	12.92	7.68	5.49	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	18.16	23.45	17.56	12.78	7.60	5.43	10.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	9.75	12.59	9.43	6.86	4.08	2.92	5.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	19.12	24.68	18.49	13.45	8.00	5.72	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	18.55	23.94	17.93	13.05	7.76	5.55	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	74.76	96.51	72.28	52.60	31.27	22.37	41.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	361.0	466.0	349.0	254.0	151.0	108.0	199.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

BEGINNING HARMONIC 1 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0001	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 1
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	294.	363.	276.	201.	120.	87.	156.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	14.	18.	24.	12.	9.	7.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	13.	29.	17.	15.	5.	7.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	26.	26.	13.	15.	5.	3.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	14.	30.	19.	11.	12.	4.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	361.	466.	349.	254.	151.	108.	199.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 23.410

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	286.24	369.49	276.72	201.40	119.73	85.63	157.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	17.37	23.20	17.38	12.65	7.52	5.38	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	18.93	24.44	18.30	13.32	7.92	5.66	10.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	361.0	466.0	349.0	254.0	151.0	108.0	199.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.210	.114	.002	.001	.001	.022	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.370	STONY
2	.878	1.166	2.525	.033	.292	.490	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.385	CC1
3	1.857	.853	.092	.212	1.075	.316	.631	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.036	CC2
4	2.641	.100	1.535	.212	1.075	1.252	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.847	CC3
5	1.284	1.267	.027	.404	2.105	.488	.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.772	CC4
SUBTOT.	6.87	3.50	4.18	.86	4.55	2.57	.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.41	TOTAL

END OF HARMONIC 1 CONTINGENCY TABLE

BEGINNING HARMONIC 2 CONTINGENCY TABLE

INTERVALS	.0500	.1000	.1500	.2000	.2500	.3000	.8000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 2	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	122.	306.	366.	236.	195.	113.	99.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	12.	15.	15.	23.	11.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	5.	14.	30.	19.	14.	10.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	11.	22.	18.	15.	15.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	10.	17.	23.	17.	18.	8.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	160.	374.	452.	370.	253.	150.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 21.711

HARMONIC 15 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

APPENDIX C-4

CHI-SQUARE CONTINGENCY TABLES FOR BOTH STONY AND COON CREEK SAMPLES LUMPED

CONTINGENCY TABLES

THE SIMPLE CHISQUARE EQUATION IS USED IN COMPUTATIONS EXPECTED,CONTRIBUTION,OBSERVED VALUES ARE LISTED IN TABLES

THE SUM OF THE DIFFERENCE OF THE OBSERVED AND EXPECTED VALUES SQUARED, DIVIDED BY THE EXPECTED VALUE, GIVES CHISQUARE

THE EXPECTED VALUE FOR EACH CELL IS GIVEN BY THE PRODUCT OF THE ROW AND COLUMN SUMS, DIVIDED BY THE CELL TOTAL

CONTINGENCY TABLES FOR STONY COON

THIS SET HAS 2 ROWS OR SAMPLES AND 7 COLUMNS OR DIVISIONS. THE METHOD REQUEST IS 5. THE SUPPRESS REQUEST IS 3

THE FOLLOWING HARMONICS AND DIVISIONS WERE REQUESTED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HARMONIC 1 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 2 DIVISIONS	.0500	.1000	.1500	.2000	.2500	.3000	.8000									
HARMONIC 3 DIVISIONS	.0300	.0600	.0900	.1200	.1500	.1800	.5000									
HARMONIC 4 DIVISIONS	.0250	.0500	.0750	.1000	.1250	.1500	.5000									
HARMONIC 5 DIVISIONS	.0150	.0300	.0450	.0600	.0750	.0900	.5000									
HARMONIC 6 DIVISIONS	.0100	.0200	.0300	.0400	.0500	.0600	.5000									
HARMONIC 7 DIVISIONS	.0050	.0100	.0150	.0200	.0300	.0400	.5000									
HARMONIC 8 DIVISIONS	.0050	.0100	.0150	.0200	.0250	.0300	.5000									
HARMONIC 9 DIVISIONS	.0030	.0060	.0090	.0120	.0150	.0180	.5000									
HARMONIC 10 DIVISIONS	.0030	.0050	.0070	.0090	.0110	.0140	.5000									
HARMONIC 11 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 12 DIVISIONS	.0020	.0040	.0060	.0080	.0100	.0120	.5000									
HARMONIC 13 DIVISIONS	.0010	.0030	.0050	.0070	.0090	.0110	.5000									
HARMONIC 14 DIVISIONS	.0005	.0010	.0020	.0030	.0050	.0070	.5000									

HARMONIC 15 DIVISIONS .0005 .0010 .0020 .0030 .0050 .0070 .5000

BEGINNING HARMONIC 1 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5010-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 1	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	294.	363.	276.	201.	120.	87.	156.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	67.	103.	73.	53.	31.	21.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	361.	466.	349.	254.	151.	108.	199.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 1.786

TABLE OF EXPECTED VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 1
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	286.24	369.49	276.72	201.40	119.73	85.63	157.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	74.76	96.51	72.28	52.60	31.27	22.37	41.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	361.0	466.0	349.0	254.0	151.0	108.0	199.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 1
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.210	.114	.002	.001	.001	.022	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.370	STONY
2	.806	.437	.007	.003	.002	.083	.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.416	COON
SUBTOT.	1.02	.55	.01	.00	.00	.11	.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	TOTAL

END OF HARMONIC 1 CONTINGENCY TABLE

BEGINNING HARMONIC 2 CONTINGENCY TABLE

INTERVALS	.0500	.1000	.1500	.2000	.2500	.3000	.8000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 2	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	122.	306.	366.	296.	195.	113.	99.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	38.	68.	86.	74.	58.	37.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	160.	374.	452.	370.	253.	150.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 5.945

TABLE OF EXPECTED VALUES

INTERVALS	.0500	.1000	.1500	.2000	.2500	.3000	.8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 2
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	126.86	296.55	358.39	293.37	200.60	118.94	102.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	33.14	77.45	93.61	76.63	52.40	31.06	26.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	160.0	374.0	452.0	370.0	253.0	150.0	129.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0500	.1000	.1500	.2000	.2500	.3000	.3000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 2
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.137	.301	.162	.024	.157	.296	.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.231	STONY
2	.714	1.154	.618	.090	.599	1.134	.404	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.714	COON
SUBTOT.	.90	1.46	.78	.11	.76	1.43	.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94	TOTAL

END OF HARMONIC 2 CONTINGENCY TABLE

BEGINNING HARMONIC 3 CONTINGENCY TABLE

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 3	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	153.	358.	406.	284.	176.	86.	34.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	48.	102.	97.	53.	53.	22.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	201.	460.	503.	337.	229.	108.	50.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 12.264

TABLE OF EXPECTED VALUES

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 3	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	159.37	364.74	398.83	267.21	181.57	85.63	39.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	41.63	95.26	104.17	69.79	47.43	22.37	10.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	201.0	460.0	503.0	337.0	229.0	108.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 3	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.255	.124	.129	1.055	.171	.002	.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.540	STONY
2	.975	.476	.494	4.040	.655	.006	3.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.724	COON
SUBTOT.	1.23	.60	.62	5.10	.83	.01	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.26	TOTAL

END OF HARMONIC 3 CONTINGENCY TABLE

BEGINNING HARMONIC 4 CONTINGENCY TABLE

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 4	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	219.	529.	426.	210.	85.	22.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	52.	123.	115.	73.	21.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	271.	652.	541.	283.	106.	28.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 6.526

TABLE OF EXPECTED VALUES

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 4	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	214.88	515.97	428.96	224.39	84.05	22.20	5.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	56.12	135.03	112.04	58.61	21.95	5.80	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	271.0	652.0	541.0	283.0	106.0	28.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 4	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.079	.280	.020	.923	.011	.002	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.351	STONY
2	.303	1.071	.078	3.534	.041	.007	.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.174	COON
SUBTOT.	.38	1.35	.10	4.46	.05	.01	.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.53	TOTAL

END OF HARMONIC 4 CONTINGENCY TABLE

BEGINNING HARMONIC 5 CONTINGENCY TABLE

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	202.	424.	409.	255.	125.	52.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497. STONY
2	52.	131.	107.	64.	25.	9.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391. COON
SUBTOT.	254.	555.	516.	319.	150.	61.	33.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888. TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 8.445

TABLE OF EXPECTED VALUES

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC	5
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	201.40	440.06	409.14	252.94	118.94	48.37	26.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	52.60	114.94	106.86	66.06	31.06	12.63	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	254.0	555.0	516.0	319.0	150.0	61.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC	5
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.002	.586	.000	.017	.309	.273	.562	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.749	STONY
2	.007	2.244	.000	.064	1.184	1.045	2.151	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.696	COON
SUBTOT.	.01	2.83	.00	.08	1.49	1.32	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.44	TOTAL

END OF HARMONIC 5 CONTINGENCY TABLE

BEGINNING HARMONIC 6 CONTINGENCY TABLE

INTERVALS	.0100	.0200	.0300	.0400	.0500	.0600	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 6
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	193.	442.	391.	227.	136.	72.	36.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	41.	113.	110.	59.	34.	22.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	234.	555.	501.	286.	170.	94.	48.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 2.971

TABLE OF EXPECTED VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	185.54	440.06	397.24	226.77	134.79	74.53	38.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001497.00		STONY
2	48.46	114.94	103.76	59.23	35.21	19.47	9.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	234.0	555.0	501.0	286.0	170.0	94.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.300	.009	.098	.000	.011	.086	.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.615	STONY
2	1.149	.033	.375	.001	.041	.330	.427	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.356	COON
SUBTOT.	1.45	.04	.47	.00	.05	.42	.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	TOTAL

END OF HARMONIC 6 CONTINGENCY TABLE

BEGINNING HARMONIC 7 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 7
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	95.	265.	284.	302.	342.	150.	59.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	27.	62.	95.	68.	88.	40.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	122.	327.	379.	370.	430.	190.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 7.457

TABLE OF EXPECTED VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 7	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	96.73	253.28	300.51	293.37	340.95	150.65	55.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	25.27	67.72	78.49	76.63	89.05	39.35	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	122.0	327.0	379.0	370.0	430.0	190.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0300	.0400	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 7	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.031	.126	.907	.254	.003	.003	.220	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.544	STONY
2	.119	.483	3.473	.971	.012	.011	.843	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.913	COON
SUBTOT.	.15	.61	4.38	1.22	.02	.01	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.46	TOTAL

END OF HARMONIC 7 CONTINGENCY TABLE

BEGINNING HARMONIC 8 CONTINGENCY TABLE

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 8	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	184.	400.	374.	242.	143.	84.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	44.	123.	85.	68.	31.	20.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	228.	523.	459.	310.	174.	104.	90.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 5.566

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	180.78	414.69	363.94	245.80	137.97	82.46	71.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001497.00		STONY
2	47.22	108.31	95.06	64.20	36.03	21.54	18.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	228.0	523.0	459.0	310.0	174.0	104.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.057	.520	.278	.059	.184	.029	.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.153	STONY
2	.219	1.992	1.064	.225	.704	.110	.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.413	COON
SUBTOT.	.28	2.51	1.34	.28	.89	.14	.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.57	TOTAL

END OF HARMONIC 8 CONTINGENCY TABLE

BEGINNING HARMONIC 9 CONTINGENCY TABLE

INTERVALS	.0030	.0060	.0090	.0120	.0150	.0180	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 9	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	122.	296.	318.	279.	190.	122.	170.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	45.	78.	80.	55.	46.	36.	51.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	167.	374.	398.	334.	236.	158.	221.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 9.093

TABLE OF EXPECTED VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	132.41	296.55	315.58	264.83	187.12	125.28	175.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	34.59	77.45	82.42	69.17	48.87	32.72	45.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	167.0	374.0	398.0	334.0	236.0	158.0	221.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.819	.001	.019	.758	.044	.086	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.883	STONY
2	3.136	.004	.071	2.903	.169	.329	.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.210	COON
SUBTOT.	3.96	.00	.09	3.66	.21	.41	.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.09	TOTAL

END OF HARMONIC 9 CONTINGENCY TABLE

BEGINNING HARMONIC 10 CONTINGENCY TABLE

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 10
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	187.	278.	282.	227.	173.	154.	196.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	54.	76.	59.	69.	57.	32.	44.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	241.	354.	341.	296.	230.	186.	240.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 8.719

TABLE OF EXPECTED VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	191.09	280.69	270.38	234.70	182.37	147.48	190.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	49.91	73.31	70.62	61.30	47.63	38.52	49.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	241.0	354.0	341.0	296.0	230.0	186.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.088	.026	.499	.253	.481	.238	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.806	STONY
2	.335	.099	1.912	.967	1.842	1.104	.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.913	COON
SUBTOT.	.42	.12	2.41	1.22	2.32	1.39	.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.72	TOTAL

END OF HARMONIC 10 CONTINGENCY TABLE

BEGINNING HARMONIC 11 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 11	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	145.	349.	323.	270.	173.	108.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	35.	102.	86.	67.	37.	30.	34.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	180.	451.	409.	337.	210.	138.	163.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 2.653

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	142.72	357.60	324.30	267.21	166.51	109.42	129.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	37.28	93.40	84.70	69.79	43.49	28.58	33.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	180.0	451.0	409.0	337.0	210.0	138.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.036	.207	.005	.029	.253	.018	.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.549	STONY
2	.139	.792	.020	.112	.969	.071	.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.103	COON
SUBTOT.	.18	1.00	.03	.14	1.22	.09	.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.65	TOTAL

END OF HARMONIC 11 CONTINGENCY TABLE

BEGINNING HARMONIC 12 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 12
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	223.	454.	372.	203.	114.	65.	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	70.	123.	78.	59.	25.	19.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	293.	577.	450.	262.	139.	84.	83.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 6.399

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	232.32	457.50	356.81	207.74	110.21	66.60	65.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001497.00	STONY
2	60.68	119.50	93.19	54.26	28.79	17.40	17.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 391.00	COON
SUBTOT.	293.0	577.0	450.0	262.0	139.0	84.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.374	.027	.647	.108	.130	.039	.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.325	STONY
2	1.432	.103	2.477	.414	.498	.148	.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.074	COON
SUBTOT.	1.81	.13	3.12	.52	.63	.19	.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.40	TOTAL

END OF HARMONIC 12 CONTINGENCY TABLE

BEGINNING HARMONIC 13 CONTINGENCY TABLE

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 13
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	114.	525.	428.	239.	95.	53.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	29.	147.	113.	45.	26.	12.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	143.	672.	541.	284.	121.	65.	62.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 8.647

TABLE OF EXPECTED VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	113.39	532.83	428.96	225.18	95.94	51.54	49.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	29.61	139.17	112.04	58.82	25.06	13.46	12.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	143.0	672.0	541.0	284.0	121.0	65.0	62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.003	.115	.002	.848	.009	.041	.772	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.791	STONY
2	.013	.441	.008	3.245	.035	.159	2.955	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.856	COON
SUBTOT.	.02	.56	.01	4.09	.04	.20	3.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.65	TOTAL

END OF HARMONIC 13 CONTINGENCY TABLE

BEGINNING HARMONIC 14 CONTINGENCY TABLE

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 14	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	43.	104.	292.	328.	417.	181.	132.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	8.	21.	87.	70.	123.	52.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	51.	125.	379.	398.	540.	233.	162.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 6. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 7.720

TABLE OF EXPECTED VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 14
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	40.44	99.11	300.51	315.58	428.17	184.75	128.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	10.56	25.89	78.49	82.42	111.83	48.25	33.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	51.0	125.0	379.0	398.0	540.0	233.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0005	.0010	.0020	.0030	.0050	.0070	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000									HARMONIC 14
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.162	.241	.241	.489	.291	.076	.098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.599	STONY
2	.621	.923	.923	1.873	1.115	.291	.376	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.121	COON
SUBTOT.	.78	1.16	1.16	2.36	1.41	.37	.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.72	TOTAL

END OF HARMONIC 14 CONTINGENCY TABLE

TABLE 13B

CHI-SQUARE VALUES FOR VARIATION

BREAKDOWN OF DOWNSTREAM SAMPLES

1 - within 5 to 10
2 - within 5 to 7
3 - between 5 to 7 and 8 to 10
4 - within 8 to 10

		χ^2_1	=	χ^2_2	+	χ^2_3	+	χ^2_4
d.f.		54	=	36	+	6	+	12
H	1	72.08	=	37.89	+	11.54	+	22.65
A	2	62.94	=	37.57	+	5.29	+	20.08
R	3	43.38	=	22.61	+	9.24	+	11.53
M	4	43.79	=	21.79	+	3.61	+	18.39
O	5	74.05	=	43.07	+	17.33	+	13.65
N	6	80.12	=	45.88	+	16.67	+	17.57
I	7	81.19	=	54.93	+	11.02	+	15.24
C	8	77.07	=	45.02	+	13.20	+	18.85
	9	66.22	=	38.12	+	12.83	+	15.27
V	10	113.69	=	63.87	+	21.49	+	28.33
A	11	88.56	=	49.35	+	16.64	+	22.57
L	12	104.32	=	74.01	+	16.46	+	13.85
U	13	76.26	=	42.58	+	11.99	+	21.69
E	14	88.71	=	53.59	+	15.23	+	19.89
S	15	120.02	=	66.16	+	12.71	+	41.15
Critical Values at 5%		72.15		51.00		12.59		21.03

TABLE OF EXPECTED VALUES

INTERVALS .0020 .0040 .0060 .0080 .0100 .0120 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	11.17	22.00	17.16	9.99	5.30	3.20	3.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	14.90	29.34	22.88	13.32	7.07	4.27	4.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	14.74	29.03	22.64	13.18	6.99	4.23	4.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	7.91	15.59	12.16	7.08	3.75	2.27	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	14.59	28.73	22.40	13.04	6.92	4.18	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	293.0	577.0	450.0	262.0	139.0	84.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

END OF CONTINGENCY TABLES FOR

STONY CC1 CC2 CC3 CC4

CHISQUARE AT THE 5 PERCENT LEVEL OF SIGNIFICANCE IS 36.17 (THIS IS COMPUTED USING THE FORMULA GIVEN BELOW)

(NORMAL DEVIATE) THE SQUARE ROOT OF 2 CHISQUARE MINUS THE SQUARE ROOT OF TWICE THE DEGREES OF FREEDOM MINUS 1

CHISQUARE VALUES FOR EACH HARMONIC. DEGREES OF FREEDOM ARE 24.

FOR HARMONIC 1 CHISQUARE IS 23.41

FOR HARMONIC 2 CHISQUARE IS 21.71

FOR HARMONIC 3 CHISQUARE IS 34.58

FOR HARMONIC 4 CHISQUARE IS 20.55

FOR HARMONIC 5 CHISQUARE IS 33.04

FOR HARMONIC 6 CHISQUARE IS 17.18

FOR HARMONIC 7 CHISQUARE IS 29.89

FOR HARMONIC 8 CHISQUARE IS 31.24

FOR HARMONIC 9 CHISQUARE IS 42.73 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 10 CHISQUARE IS 49.37 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 11 CHISQUARE IS 35.29

FOR HARMONIC 12 CHISQUARE IS 40.25 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 13 CHISQUARE IS 42.05 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 14 CHISQUARE IS 39.36 SIGNIFICANT AT 5 PERCENT

FOR HARMONIC 15 CHISQUARE IS 32.63

FIGURE 5 OPERATIONAL SCHEMATIC DIAGRAM OF CHI-SQUARE ORTHOGONAL BREAKDOWN

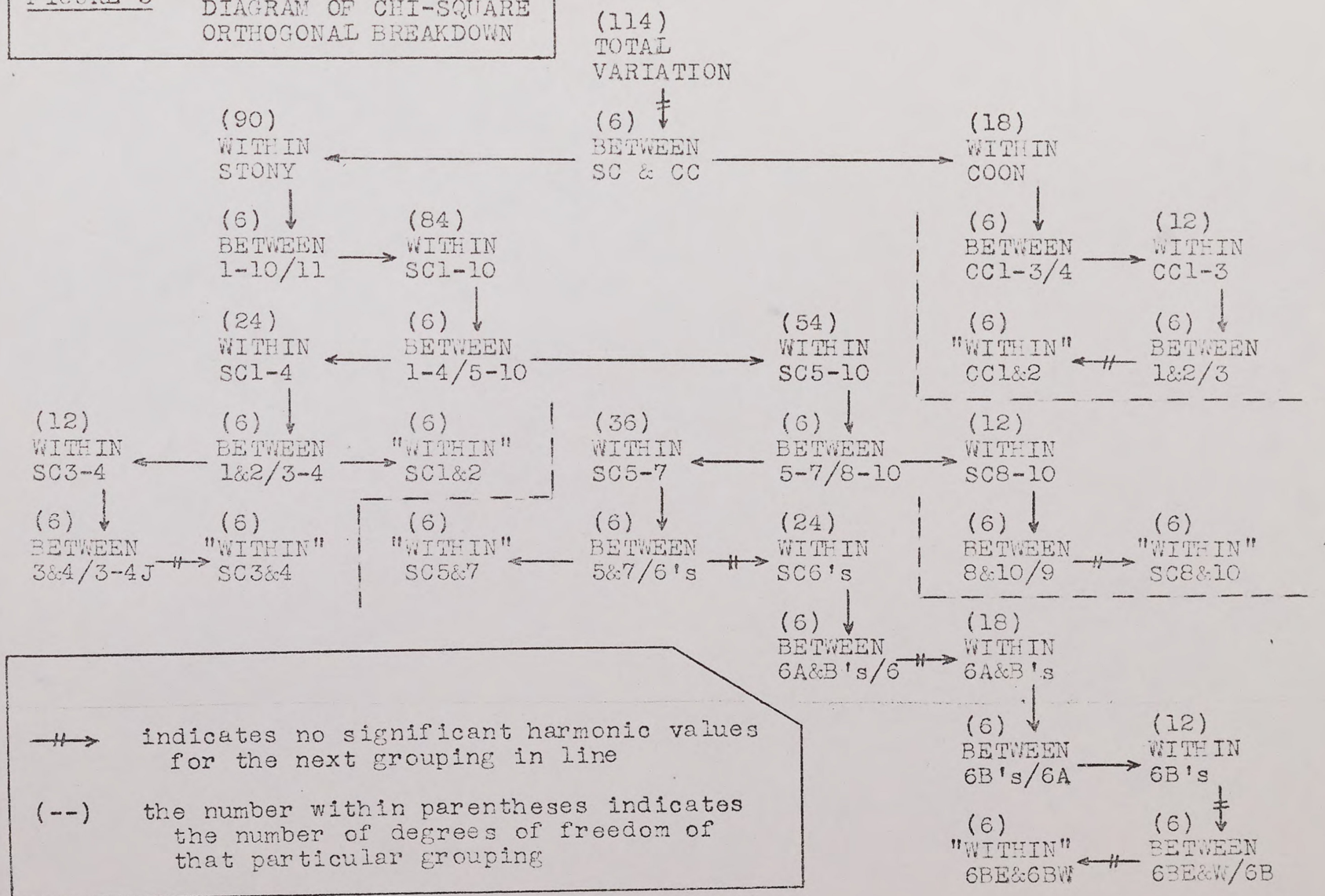


TABLE 12 CHI-SQUARE VALUES FOR VARIATION OF UPSTREAM AND DOWNSTREAM PORTIONS

χ^2 Within Stony = (90 degrees of freedom) (See TABLE 10)

		χ^2 = Within Sc1-11	χ^2 + Between 1-10&11	χ^2 = Within 1-10	χ^2 + Within 1-4	χ^2 + Between 1-4&5-10	χ^2 Within 5-10
d.f.	90	= 6	+ 84	= 24	+ 6	+	54
H	1	= 5.99	+ 101.13	= 26.54	+ 2.51	+	72.08
A	2	= 5.52	+ 92.30	= 24.29	+ 5.07	+	62.94
R	3	= 9.71	+ 65.77	= 19.16	+ 3.23	+	43.38
M	4	= 13.04	+ 79.94	= 30.97	+ 5.18	+	43.79
O	5	= 5.90	+ 116.18	= 37.40	+ 4.73	+	74.05
N	6	= 29.10	+ 102.74	= 21.73	+ 0.89	+	80.12
I	7	= 5.22	+ 121.82	= 29.10	+ 11.53	+	81.19
C	8	= 2.48	+ 103.16	= 13.64	+ 12.45	+	77.07
	9	= 9.50	+ 113.24	= 38.01	+ 9.01	+	66.22
V	10	= 6.47	+ 142.79	= 19.27	+ 9.83	+	113.69
A	11	= 20.58	+ 129.87	= 34.15	+ 7.16	+	88.56
L	12	= 8.88	+ 159.47	= 40.39	+ 15.16	+	104.32
U	13	= 4.44	+ 117.52	= 34.48	+ 6.78	+	76.26
E	14	= 3.17	+ 139.54	= 36.18	+ 14.65	+	88.71
S	15	= 6.96	+ 159.34	= 23.26	+ 16.06	+	120.02
Critical Values at 5%		12.59	+ 106.40	+ 36.42	+ 12.59	+	72.15

TABLE 16 CHI-SQUARE VALUES FOR VARIATION

BREAKDOWN OF COON CREEK SAMPLES

$\chi^2_{\text{Within Coon}}$ = (18 degrees of freedom) (See TABLE 9)

		$\chi^2_{\text{Within CCl-4}}$	=	$\chi^2_{\text{Between 1-3\&4}}$	+	$\chi^2_{\text{Within 1-3}}$	$\chi^2_{\text{Within 1-3}}$	=	$\chi^2_{\text{Between 1-2\&3}}$	+	$\chi^2_{\text{Within 1-2}}$
d.f.	18		=	6	+	12	12	=	6	+	6
H	1		=	5.86	+	15.77	15.77	=	10.12	+	5.65
A	2		=	2.25	+	13.52	13.52	=	4.55	+	8.97
R	3		=	4.24	+	18.08	18.08	=	9.17	+	8.91
M	4		=	3.19	+	10.83	10.83	=	4.80	+	6.03
O	5		=	11.45	+	13.14	13.14	=	8.43	+	4.71
N	6		=	4.26	+	9.95	9.95	=	4.19	+	5.76
I	7		=	4.38	+	18.05	18.05	=	11.72	+	6.33
C	8		=	1.28	+	24.38	24.38	=	15.62	+	8.76
	9		=	11.62	+	22.02	22.02	=	17.67	+	4.35
V	10		=	7.24	+	33.41	33.41	=	24.59	+	8.82
A	11		=	7.75	+	24.89	24.89	=	19.69	+	5.20
L	12		=	12.19	+	21.66	21.66	=	16.10	+	5.56
U	13		=	13.20	+	20.20	20.20	=	14.22	+	5.98
E	14		=	10.11	+	21.53	21.53	=	15.80	+	5.73
S	15		=	12.14	+	15.81	15.81	=	11.08	+	4.73
Critical Values at 5%				12.59		21.03	21.03		12.59		12.59

TABLE 13A

CHI-SQUARE VALUES FOR VARIATION

BREAKDOWN OF UPSTREAM SAMPLES

1 - within 1 to 4
2 - within 1 and 2
3 - between 1&2 and 3 to 4
4 - within 3 to 4

		χ^2_1	=	χ^2_2	+	χ^2_3	+	χ^2_4
d.f.		24	=	6	+	6	+	12
H	1	26.54	=	8.81	+	8.88	+	8.85
A	2	24.29	=	10.75	+	5.05	+	8.49
R	3	19.16	=	4.02	+	7.80	+	7.34
M	4	30.97	=	3.85	+	8.51	+	18.61
O	5	37.40	=	3.97	+	16.81	+	13.62
N	6	21.73	=	6.44	+	5.62	+	9.67
I	7	29.10	=	6.38	+	13.46	+	9.26
C	8	13.64	=	3.93	+	4.81	+	4.90
	9	38.01	=	8.35	+	6.20	+	23.46
V	10	19.27	=	7.99	+	5.66	+	5.62
A	11	34.15	=	8.89	+	16.44	+	8.82
L	12	40.39	=	16.50	+	4.97	+	18.92
U	13	34.48	=	1.89	+	17.90	+	16.39
E	14	36.18	=	8.44	+	16.20	+	11.39
S	15	23.26	=	4.54	+	6.67	+	12.05
Critical Values at 5%		36.42		12.59		12.59		21.03

APPENDIX C-5

COMPUTATION TABLES FOR FURTHER BREAKDOWN OF TOTAL CHI-SQUARE

(Tables 12 through 16)

BEGINNING HARMONIC 11 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 11	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.	15.	13.	28.	14.	6.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	8.	22.	15.	15.	14.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	8.	22.	28.	16.	13.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	10.	24.	24.	12.	11.	6.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	8.	25.	16.	20.	11.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	9.	11.	13.	17.	10.	3.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	27.	23.	20.	7.	5.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	13.	27.	17.	21.	4.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	17.	29.	24.	11.	8.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	10.	24.	25.	15.	15.	3.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	10.	26.	20.	21.	11.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	27.	16.	14.	13.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	14.	17.	9.	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	10.	19.	25.	13.	10.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	7.	20.	27.	15.	15.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	18.	26.	26.	11.	11.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	6.	17.	16.	17.	14.	11.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	4.	24.	26.	15.	10.	8.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	12.	35.	20.	13.	4.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	13.	26.	24.	17.	9.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	180.	451.	409.	337.	210.	138.	163.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 185.735

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	9.53	23.83	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	9.53	23.83	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.86	17.20	15.60	12.85	8.01	5.26	6.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	9.15	22.93	20.80	17.14	10.68	7.02	8.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	9.06	22.69	20.58	16.96	10.57	6.94	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.85	12.13	11.05	9.10	5.67	3.73	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	9.53	23.83	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	9.53	23.83	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	8.96	22.45	20.36	16.78	10.46	6.87	8.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	180.0	451.0	409.0	337.0	210.0	138.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.673	3.307	3.464	5.772	.744	.235	8.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.303	SC1
2	.247	.149	2.049	.455	.744	3.010	3.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.991	SC2
3	.219	.115	2.003	.158	.359	.008	1.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.334	SC3
4	.046	.015	.361	1.725	.001	.189	.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.099	SC34J
5	.168	.144	1.196	.417	.004	.515	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.461	SC4
6	.564	2.234	.433	1.339	.495	.973	1.247	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.385	SC5
7	.588	.551	.148	.359	1.396	.653	.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.728	SC6
8	1.431	.551	.843	.703	4.368	2.035	1.416	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.367	SC6A
9	6.728	1.606	.493	2.197	.672	.580	4.771	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.046	SC6B
10	.061	.030	.756	.309	1.643	2.359	1.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.519	SC6BE
11	.033	.234	.098	.627	.000	.211	1.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.675	SC6BW
12	1.817	.817	1.019	.516	.560	1.345	.394	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.469	SC7
13	1.685	.271	3.206	.001	1.259	.020	1.312	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.754	SC8
14	1.310	8.074	.327	2.864	.317	.990	8.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.991	SC9
15	.673	.633	1.315	.455	1.351	.065	.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.539	SC10
16	8.283	.345	1.183	2.303	.004	2.359	4.852	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.330	SC11A2
17	.979	1.325	.935	.003	1.202	2.482	2.940	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.865	CC1
18	3.134	.005	.967	.404	.093	.081	1.395	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.078	CC2
19	.595	5.448	.098	.006	4.465	1.447	.759	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.918	CC3
20	1.344	.234	.304	.025	.367	.008	3.630	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.882	CC4
SUBTOT.	30.78	26.09	21.20	20.64	20.05	19.58	47.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	185.74	TOTAL

END OF HARMONIC 11 CONTINGENCY TABLE

BEGINNING HARMONIC 12 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 12
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	27.	25.	16.	16.	2.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	11.	25.	19.	20.	7.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	13.	29.	20.	15.	12.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	15.	32.	21.	11.	7.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	12.	20.	33.	21.	2.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	15.	16.	10.	12.	2.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	17.	29.	23.	13.	5.	8.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	9.	33.	32.	12.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	25.	40.	18.	8.	4.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	17.	36.	18.	12.	7.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	22.	35.	22.	13.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	17.	28.	23.	12.	6.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	9.	18.	14.	6.	3.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	10.	21.	31.	14.	11.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	33.	32.	6.	10.	3.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	19.	33.	25.	14.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	13.	30.	15.	14.	9.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	16.	21.	27.	17.	7.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	24.	35.	24.	7.	2.	2.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	17.	37.	12.	21.	7.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	293.	577.	450.	262.	139.	84.	83.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 208.598

BEGINNING HARMONIC 5 CONTINGENCY TABLE

INTERVALS .0150 .0300 .0450 .0600 .0750 .0900 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.	18.	28.	19.	15.	5.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	6.	27.	26.	19.	12.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	21.	27.	25.	17.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	14.	25.	33.	17.	6.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	16.	27.	24.	15.	9.	1.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	10.	15.	23.	13.	10.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	12.	34.	27.	12.	7.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	6.	27.	34.	20.	8.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	18.	33.	29.	11.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	15.	38.	13.	20.	8.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	14.	33.	29.	16.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	9.	27.	25.	18.	10.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	10.	14.	14.	8.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	24.	24.	19.	13.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	13.	28.	24.	14.	8.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	15.	27.	31.	17.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	52.	131.	107.	64.	25.	9.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	254.	555.	516.	319.	150.	61.	33.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 130.526

TABLE OF EXPECTED VALUES

INTERVALS .0150 .0300 .0450 .0600 .0750 .0900 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	13.10	28.81	26.78	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	9.69	21.17	19.68	12.17	5.72	2.33	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	13.18	28.81	26.78	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	13.18	28.81	26.78	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	12.92	28.22	26.24	16.22	7.63	3.10	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	12.78	27.93	25.96	16.05	7.55	3.07	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.86	14.99	13.94	8.62	4.05	1.65	.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	52.60	114.94	106.86	66.06	31.06	12.63	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	254.0	555.0	516.0	319.0	150.0	61.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0150 .0300 .0450 .0600 .0750 .0900 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.157	4.418	.016	.262	6.266	.369	.837	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.984	SC1
2	4.129	.195	.065	.262	2.070	4.397	.837	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.015	SC2
3	4.430	.152	.156	.004	.442	.012	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.928	SC3
4	.050	.503	1.442	.012	.410	.430	.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.144	SC34J
5	.667	.080	.238	.118	.217	1.453	6.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.214	SC4
6	.010	1.796	.561	.057	3.202	.756	1.258	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.641	SC5
7	.106	.936	.002	1.255	.079	.220	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.646	SC6
8	3.015	.114	1.944	.715	.006	1.482	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.224	SC6A
9	2.002	.810	.291	1.680	1.725	1.424	1.678	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.609	SC6B
10	.291	3.156	6.385	.795	.011	.410	.235	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.835	SC6BE
11	.035	.522	.139	.032	3.010	.449	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.229	SC6BW
12	1.118	.031	.036	.237	.797	.282	.069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.570	SC7
13	1.436	.066	.000	.044	1.039	.075	.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.674	SC8
14	.447	.991	.406	.262	3.216	4.397	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.755	SC9
15	.015	.066	.406	.496	.000	4.397	10.344	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.725	SC10
16	.291	.080	.760	.023	1.783	.006	1.695	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.639	SC11A2
17	.007	2.244	.000	.064	1.184	1.045	2.151	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.696	COON
SUBTOT.	19.11	16.16	13.35	6.32	25.46	22.20	27.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	130.53	TOTAL

END OF HARMONIC 5 CONTINGENCY TABLE

BEGINNING HARMONIC 6 CONTINGENCY TABLE

INTERVALS	.0100	.0200	.0300	.0400	.0500	.0600	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 6	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	15.	30.	24.	16.	7.	4.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	23.	31.	18.	13.	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	13.	33.	23.	13.	9.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	14.	26.	24.	13.	9.	9.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	11.	22.	31.	17.	10.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	5.	16.	24.	10.	8.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	16.	27.	32.	15.	2.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	16.	30.	24.	16.	7.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	17.	37.	21.	11.	7.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	8.	34.	32.	14.	3.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	13.	32.	20.	15.	7.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	13.	24.	22.	13.	16.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	8.	12.	17.	4.	6.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	8.	23.	19.	21.	15.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	22.	29.	23.	8.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	9.	51.	18.	8.	9.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	41.	113.	110.	59.	34.	22.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	234.	555.	501.	286.	170.	94.	48.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 134.814

TABLE OF EXPECTED VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	8.92	21.17	19.11	10.91	6.48	3.58	1.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	11.90	28.22	25.47	14.54	8.64	4.78	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	11.77	27.93	25.21	14.39	8.55	4.73	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.32	14.99	13.53	7.73	4.59	2.54	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	48.46	114.94	103.76	59.23	35.21	19.47	9.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	234.0	555.0	501.0	286.0	170.0	94.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0100	.0200	.0300	.0400	.0500	.0600	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.548	.012	.242	.048	.446	.192	.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.325	SC1
2	.030	1.392	.751	.537	1.776	4.979	.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.577	SC2
3	.043	.522	.407	.266	.001	.870	.914	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.024	SC3
4	.283	.274	.155	.229	.004	3.480	.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.528	SC34J
5	.087	1.488	1.075	.362	.183	.693	.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.004	SC4
6	1.725	1.251	1.254	.075	.355	3.254	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.939	SC5
7	1.223	.114	1.382	.002	5.277	.724	.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.825	SC6
8	1.223	.049	.155	.090	.377	.724	.097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.714	SC6A
9	2.187	2.731	.786	.863	.313	1.617	.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.347	SC6B
10	1.346	1.055	1.522	.033	3.765	.006	.872	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.598	SC6BE
11	2.676	.289	1.497	.000	.411	.001	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.979	SC6BW
12	.128	.552	.409	.134	6.481	.113	.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.958	SC7
13	.446	.597	.388	1.797	.432	.114	.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.655	SC8
14	1.558	1.392	2.140	2.260	3.992	7.282	.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.707	SC9
15	.929	1.861	.229	4.070	.112	.209	.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.493	SC10
16	.760	17.732	2.327	3.049	.008	3.037	.872	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.784	SC11A2
17	1.149	.033	.376	.001	.041	.330	.427	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.356	COON
SUBTOT.	16.34	31.35	15.59	13.82	23.97	27.62	6.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	134.81	TOTAL

END OF HARMONIC 6 CONTINGENCY TABLE

BEGINNING HARMONIC 7 CONTINGENCY TABLE

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	6.	13.	14.	20.	32.	9.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	3.	15.	21.	17.	22.	15.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	7.	19.	14.	21.	22.	13.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	4.	27.	9.	29.	18.	9.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	5.	19.	15.	21.	19.	13.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	8.	6.	5.	15.	23.	12.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	2.	12.	19.	22.	26.	10.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	8.	22.	23.	17.	15.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	9.	22.	21.	20.	18.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	9.	25.	18.	19.	17.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	4.	21.	25.	21.	21.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	4.	14.	18.	24.	22.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	8.	15.	12.	9.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	10.	24.	14.	30.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	10.	14.	19.	13.	26.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	8.	18.	24.	17.	22.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	27.	62.	95.	63.	88.	40.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	122.	327.	379.	370.	430.	190.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 134.501

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	4.65	12.47	14.45	14.11	16.40	7.25	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	6.20	16.63	19.27	18.81	21.86	9.66	3.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	6.14	16.45	19.07	18.62	21.64	9.56	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	3.30	8.83	10.24	9.99	11.62	5.13	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	25.27	67.72	78.49	76.63	89.05	39.35	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	122.0	327.0	379.0	370.0	430.0	190.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.033	1.077	1.338	.038	3.736	.112	1.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.223	SC1
2	1.855	.311	.043	.344	.026	2.421	2.924	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.924	SC2
3	.057	.200	1.736	.132	.013	.926	.122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.186	SC3
4	.359	5.923	5.791	4.995	.836	.075	.734	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.213	SC34J
5	.257	.288	1.027	.208	.433	1.074	.548	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.835	SC4
6	2.408	3.357	6.183	.056	2.658	3.119	.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.823	SC5
7	2.364	1.457	.023	.407	.607	.002	3.119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.579	SC6
8	.439	1.489	.563	.253	2.401	.002	.110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.257	SC6A
9	1.261	1.736	.155	.075	.683	1.387	3.559	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.857	SC6B
10	1.131	4.002	.111	.000	1.174	1.450	.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.026	SC6BE
11	.498	.866	1.322	.132	.105	2.472	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.557	SC6BW
12	.745	.366	.060	1.556	.006	.020	.077	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.831	SC7
13	.509	.073	2.216	.402	.583	.003	1.891	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.689	SC8
14	.033	3.094	.768	1.599	2.292	.087	.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.322	SC9
15	1.937	.636	.057	2.221	.457	.000	4.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.278	SC10
16	.479	.086	1.053	.212	.000	1.450	.709	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.988	SC11A2
17	.113	.483	3.473	.971	.012	.011	.843	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.913	COON
SUBTOT.	16.04	25.45	26.42	13.57	16.03	14.61	22.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	134.50	TOTAL

END OF HARMONIC 7 CONTINGENCY TABLE

BEGINNING HARMONIC 8 CONTINGENCY TABLE

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	14.	23.	26.	18.	7.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	12.	24.	19.	17.	9.	9.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	10.	26.	22.	21.	10.	5.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	28.	21.	17.	7.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	5.	29.	23.	17.	10.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	19.	15.	10.	12.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	8.	31.	31.	14.	8.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	15.	27.	24.	17.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	19.	32.	27.	11.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	13.	29.	25.	9.	9.	1.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	12.	28.	27.	15.	6.	9.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	8.	23.	25.	18.	8.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	8.	14.	17.	7.	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	10.	17.	19.	22.	15.	8.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	11.	26.	25.	14.	15.	3.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	14.	24.	28.	15.	9.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	44.	123.	85.	68.	31.	20.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	228.	523.	459.	310.	174.	104.	90.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 111.215

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	11.71	26.87	23.58	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	8.69	19.94	17.50	11.82	6.64	3.97	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	11.59	26.59	23.34	15.76	8.85	5.29	4.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	11.71	26.87	23.58	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	11.47	26.32	23.10	15.60	8.76	5.23	4.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.16	14.13	12.40	8.37	4.70	2.81	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	11.71	26.87	23.53	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	47.22	108.31	95.06	64.20	36.03	21.54	18.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	228.0	523.0	459.0	310.0	174.0	104.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.306	.793	.117	.152	.533	.044	.319	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.269	SC1
2	.000	.495	1.160	.021	.005	2.213	5.745	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.639	SC2
3	.320	.074	.178	1.385	.084	.038	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.095	SC3
4	.002	.027	.336	.051	.457	1.254	.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.149	SC34J
5	3.848	.169	.014	.072	.125	1.321	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.581	SC4
6	.330	.045	.353	.281	4.337	1.043	.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.448	SC5
7	1.243	.547	2.161	.272	.118	1.065	.538	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.003	SC6
8	.847	.001	.001	.051	.104	.029	4.672	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.705	SC6A
9	4.732	1.099	.574	1.439	.916	3.477	4.576	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.815	SC6B
10	4.532	.163	.085	3.013	.000	3.530	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.360	SC6BE
11	.000	.012	.357	.097	1.070	2.307	1.567	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.409	SC6BW
12	1.051	.418	.157	.370	.065	1.463	.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.573	SC7
13	.550	.001	1.707	.225	1.551	1.165	.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.277	SC8
14	.357	4.134	1.160	1.897	3.633	1.127	3.759	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.064	SC9
15	.096	.104	.020	.357	3.630	1.142	.319	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.668	SC10
16	.446	.307	.328	.054	.003	1.028	.084	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.747	SC11A2
17	.219	1.992	1.064	.225	.704	.110	.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.413	COON
SUBTOT.	18.88	10.39	10.28	9.96	17.33	22.36	22.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.22	TOTAL

END OF HARMONIC 8 CONTINGENCY TABLE

BEGINNING HARMONIC 9 CONTINGENCY TABLE

INIERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	22.	14.	19.	16.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	1.	20.	18.	22.	17.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	10.	26.	14.	17.	15.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	15.	13.	24.	8.	7.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	11.	15.	23.	15.	16.	6.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	10.	14.	18.	6.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	6.	24.	18.	19.	10.	5.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	10.	14.	24.	15.	14.	8.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	14.	22.	25.	17.	9.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	5.	23.	28.	18.	12.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	5.	20.	25.	18.	11.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	8.	17.	21.	21.	15.	7.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	4.	11.	10.	7.	10.	2.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	2.	14.	23.	11.	15.	14.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	8.	20.	22.	18.	13.	7.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	10.	23.	26.	20.	9.	4.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	45.	78.	80.	53.	46.	36.	51.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	167.	374.	398.	334.	236.	158.	221.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 131.829

TABLE OF EXPECTED VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.37	14.26	15.18	12.74	9.00	6.03	8.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	8.49	19.02	20.24	16.98	12.00	8.03	11.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	8.40	18.82	20.03	16.81	11.87	7.95	11.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.51	10.10	10.75	9.02	6.37	4.27	5.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	34.59	77.45	82.42	69.17	48.87	32.72	45.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	167.0	374.0	398.0	334.0	236.0	158.0	221.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.525	.242	2.378	.097	.980	.048	.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.895	SC1
2	6.358	.002	.450	1.050	.020	1.576	.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.506	SC2
3	.176	2.081	2.261	.015	.557	.062	1.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.264	SC3
4	1.280	1.003	2.339	2.561	3.189	.176	7.915	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.963	SC34J
5	.683	.925	.318	.272	1.238	.552	.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.999	SC4
6	.063	1.274	.091	2.174	1.000	1.468	.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.093	SC5
7	.821	1.084	.342	.160	.413	1.250	1.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.858	SC6
8	.205	1.509	.540	.315	.250	.005	.204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.028	SC6A
9	3.573	.468	1.121	.000	.750	.133	7.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.638	SC6B
10	1.484	.746	2.789	.041	.001	.552	3.556	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.179	SC6BE
11	1.612	.008	.817	.013	.153	.355	.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.176	SC6BW
12	.687	.175	.047	1.047	.822	.114	.876	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.768	SC7
13	.053	.030	.052	.453	2.061	1.205	.178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.088	SC8
14	5.298	1.704	.175	2.530	.500	3.789	7.330	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.376	SC9
15	.081	.002	.043	.005	.020	.224	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.379	SC10
16	.235	.746	1.507	.470	.805	2.089	3.556	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.408	SC11A2
17	3.136	.004	.071	2.303	.169	.329	.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.210	COON
SUBTOT.	26.88	12.05	15.84	14.11	12.93	15.93	36.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	131.83	TOTAL

END OF HARMONIC 9 CONTINGENCY TABLE

BEGINNING HARMONIC 10 CONTINGENCY TABLE

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 10	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	14.	16.	19.	18.	7.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	16.	11.	14.	11.	15.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	12.	20.	18.	17.	9.	11.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	15.	20.	14.	11.	11.	11.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	10.	16.	18.	15.	8.	15.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	3.	8.	14.	16.	5.	14.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	12.	27.	14.	17.	8.	6.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	18.	15.	19.	13.	12.	4.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	15.	24.	27.	13.	10.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	21.	20.	15.	15.	10.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	11.	20.	24.	13.	13.	12.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	9.	22.	23.	12.	9.	7.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	3.	6.	16.	10.	8.	2.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	14.	14.	8.	15.	9.	29.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	12.	20.	16.	12.	13.	14.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	11.	16.	23.	16.	13.	12.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	54.	76.	59.	69.	57.	32.	44.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	241.	354.	341.	296.	230.	186.	240.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 157.981

TABLE OF EXPECTED VALUES

INTERVALS .0030 .0050 .0070 .0090 .0110 .0140 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	9.19	13.50	13.00	11.29	8.77	7.09	9.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	12.25	18.00	17.34	15.05	11.69	9.46	12.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	12.13	17.81	17.16	14.89	11.57	9.36	12.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.51	3.56	9.21	8.00	6.21	5.02	6.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	49.91	73.31	70.62	61.30	47.63	38.52	49.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	241.0	354.0	341.0	296.0	230.0	186.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.244	1.203	.235	.704	2.773	.825	.412	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.402	SC1
2	.004	.403	2.761	.180	.115	2.690	4.179	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.332	SC2
3	.032	.111	.001	.141	.777	.159	.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.248	SC3
4	.496	.144	.774	1.240	.074	.187	1.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.921	SC34J
5	.458	.263	.013	.003	1.233	3.101	.578	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.649	SC4
6	4.170	2.241	.076	1.967	1.621	6.725	.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.686	SC5
7	.021	4.048	.774	.174	1.299	1.383	.191	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.891	SC6
8	2.410	.620	.095	.860	.000	3.312	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.468	SC6A
9	.615	2.000	5.383	.279	.246	3.149	6.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.614	SC6B
10	5.938	.181	.362	.003	.279	.218	4.358	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.400	SC6BE
11	.212	.111	2.094	.410	.073	.518	3.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.863	SC6BW
12	.806	.984	1.989	.562	.572	.595	.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.579	SC7
13	1.893	1.327	5.003	.502	.514	1.820	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.096	SC8
14	.244	1.203	.913	3.760	.652	.074	20.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.717	SC9
15	.046	.083	.235	.863	.055	1.747	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.035	SC10
16	.154	.263	1.714	.041	.118	.625	3.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.167	SC11A2
17	.335	.099	1.912	.367	1.842	1.104	.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.913	COON
SUBTOT.	18.14	15.29	24.34	12.66	12.25	28.23	47.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	157.98	TOTAL

END OF HARMONIC 10 CONTINGENCY TABLE

BEGINNING HARMONIC 11 CONTINGENCY TABLE

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 11	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.	15.	13.	28.	14.	6.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	8.	22.	15.	15.	14.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	8.	22.	28.	16.	13.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	10.	24.	24.	12.	11.	6.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	8.	25.	16.	20.	11.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	9.	11.	13.	17.	10.	3.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	27.	23.	20.	7.	5.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	13.	27.	17.	21.	4.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	17.	29.	24.	11.	8.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	10.	24.	25.	15.	15.	3.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	10.	26.	20.	21.	11.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	27.	16.	14.	13.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	14.	17.	9.	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	10.	19.	25.	13.	10.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	7.	20.	27.	15.	15.	8.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	18.	26.	26.	11.	11.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	35.	102.	36.	67.	37.	30.	34.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	180.	451.	409.	337.	210.	138.	163.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 153.095

TABLE OF EXPECTED VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	9.53	23.89	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	9.53	23.89	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.86	17.20	15.60	12.85	8.01	5.26	6.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	9.34	23.41	21.23	17.49	10.90	7.16	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	9.15	22.93	20.80	17.14	10.68	7.02	8.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	9.44	23.65	21.45	17.67	11.01	7.24	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	9.06	22.69	20.58	16.96	10.57	6.94	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.86	12.18	11.05	9.10	5.67	3.73	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	9.53	23.89	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	9.53	23.89	21.66	17.85	11.12	7.31	8.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	9.25	23.17	21.01	17.31	10.79	7.09	8.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	37.28	93.40	84.70	69.79	43.49	28.58	33.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	180.0	451.0	409.0	337.0	210.0	138.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0020 .0040 .0060 .0080 .0100 .0120 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 11

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.673	3.307	3.464	5.772	.744	.235	8.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.303	SC1
2	.247	.149	2.049	.456	.744	3.010	3.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.991	SC2
3	.219	.115	2.003	.158	.359	.008	1.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.334	SC3
4	.046	.015	.361	1.725	.001	.189	.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.099	SC34J
5	.158	.144	1.196	.417	.004	.515	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.461	SC4
6	.664	2.234	.433	1.339	.495	.973	1.247	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.385	SC5
7	.588	.551	.148	.359	1.396	.553	.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.728	SC6
8	1.431	.551	.843	.703	4.368	2.055	1.416	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.367	SC6A
9	6.728	1.606	.493	2.137	.672	.580	4.771	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.046	SC6B
10	.051	.030	.756	.309	1.643	2.359	1.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.519	SC6BE
11	.033	.234	.098	.627	.000	.211	1.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.675	SC6BW
12	1.817	.817	1.019	.516	.560	1.345	.394	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.469	SC7
13	1.685	.271	3.205	.001	1.259	.020	1.312	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.754	SC8
14	1.310	8.074	.327	2.364	.317	.990	8.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.991	SC9
15	.673	.633	1.315	.455	1.351	.065	.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.539	SC10
16	8.233	.345	1.183	2.303	.004	2.359	4.852	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.330	SC11A2
17	.139	.792	.020	.112	.969	.071	.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.103	COON
SUBTOT.	24.77	19.87	18.92	20.31	14.89	15.64	38.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	153.10	TOTAL

END OF HARMONIC 11 CONTINGENCY TABLE

BEGINNING HARMONIC 12 CONTINGENCY TABLE

INTERVALS .0020 .0040 .0060 .0080 .0100 .0120 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	27.	25.	16.	16.	2.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	11.	25.	19.	20.	7.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	13.	29.	20.	15.	12.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	15.	32.	21.	11.	7.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	12.	20.	33.	21.	2.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	15.	16.	10.	12.	2.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	17.	29.	23.	13.	5.	8.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	9.	33.	32.	12.	7.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	25.	40.	18.	8.	4.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	17.	36.	18.	12.	7.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	22.	35.	22.	13.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	17.	28.	23.	12.	6.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	9.	18.	14.	6.	3.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	10.	21.	31.	14.	11.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	33.	32.	6.	10.	3.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	19.	33.	25.	14.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	70.	123.	78.	59.	25.	19.	17.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	293.	577.	450.	262.	139.	84.	83.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 174.747

TABLE OF EXPECTED VALUES

INTERVALS .0020 .0040 .0060 .0080 .0100 .0120 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	11.17	22.00	17.16	9.99	5.30	3.20	3.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	15.21	29.95	23.36	13.60	7.22	4.36	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	14.90	29.34	22.88	13.32	7.07	4.27	4.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	15.36	30.26	23.60	13.74	7.29	4.40	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	14.74	29.03	22.64	13.18	6.99	4.23	4.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	7.91	15.59	12.16	7.08	3.75	2.27	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	15.52	30.56	23.83	13.88	7.36	4.45	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	15.05	29.64	23.12	13.46	7.14	4.32	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	60.68	119.50	93.19	54.26	28.79	17.40	17.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	293.0	577.0	450.0	262.0	139.0	84.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0020	.0040	.0060	.0080	.0100	.0120	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 12										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	1.316	.415	.057	.325	10.134	1.348	.443	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.038 SC1
2	1.316	1.012	.981	2.702	.013	4.635	4.821	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.504 SC2
3	.364	.052	.548	.116	3.045	.578	.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.732 SC3
4	.003	.140	.233	.497	.006	.617	.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.166 SC34J
5	.619	3.138	4.222	4.223	3.702	.109	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.029 SC4
6	1.559	2.230	.079	.000	8.466	.452	14.758	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.544 SC5
7	.211	.030	.005	.026	.680	3.038	.397	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.389 SC6
8	2.535	.311	3.197	.188	.006	.094	4.308	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.639 SC6A
9	6.849	3.874	1.041	2.126	1.332	4.271	2.457	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.951 SC6B
10	.252	1.363	1.134	.159	.003	.401	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.327 SC6BE
11	2.366	.744	.108	.040	2.523	1.313	1.271	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.865 SC6BW
12	.345	.037	.006	.106	.141	1.820	1.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.589 SC7
13	.149	.374	.280	.164	.152	2.269	.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.075 SC8
14	1.963	2.991	2.154	.001	1.797	.068	2.954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.929 SC9
15	2.738	.195	2.797	4.471	.945	.472	1.542	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.161 SC10
16	1.035	.380	.153	.022	3.702	1.243	1.202	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.735 SC11A2
17	1.432	.103	2.477	.414	.498	.148	.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.074 COON
SUBTOT.	25.55	17.39	19.48	15.58	37.15	22.90	36.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	174.75 TOTAL

END OF HARMONIC 12 CONTINGENCY TABLE

BEGINNING HARMONIC 13 CONTINGENCY TABLE

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 13	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.	24.	32.	16.	11.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	4.	27.	31.	19.	8.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	8.	32.	30.	25.	0.	1.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	11.	36.	23.	16.	6.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	4.	38.	25.	13.	8.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	1.	17.	27.	12.	6.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	8.	38.	31.	12.	2.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	11.	40.	24.	13.	6.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	10.	46.	27.	12.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	8.	33.	29.	14.	7.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	9.	37.	27.	16.	5.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	5.	35.	25.	19.	8.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	4.	18.	20.	5.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	7.	26.	25.	15.	12.	5.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	7.	39.	26.	14.	6.	4.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	10.	39.	26.	13.	6.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	29.	147.	113.	45.	26.	12.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	143.	672.	541.	284.	121.	65.	62.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 130.610

TABLE OF EXPECTED VALUES

INTERVALS .0010 .0030 .0050 .0070 .0090 .0110 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	5.45	25.63	20.63	10.83	4.61	2.48	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	7.42	34.88	28.08	14.74	6.28	3.37	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	7.27	34.17	27.51	14.44	6.15	3.31	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	7.50	35.24	28.37	14.89	6.34	3.41	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	7.20	33.81	27.22	14.29	6.09	3.27	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	3.86	18.16	14.61	7.67	3.27	1.76	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	7.57	35.59	28.65	15.04	6.41	3.44	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	7.35	34.53	27.80	14.59	6.22	3.34	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	29.61	139.17	112.04	58.82	25.06	13.46	12.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	143.0	672.0	541.0	284.0	121.0	65.0	62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0010	.0030	.0050	.0070	.0090	.0110	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 13										
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.044	3.776	.391	.051	3.289	1.899	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.616	SC1
2	1.687	2.075	.192	1.041	.395	1.839	.897	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.186	SC2
3	.884	.297	.094	6.861	6.345	1.702	.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.352	SC3
4	1.724	.035	.921	.107	.013	.784	1.529	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.112	SC34J
5	1.525	.350	.281	.796	.512	.537	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.442	SC4
6	3.637	2.904	1.966	.126	.416	2.564	1.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.745	SC5
7	.045	.279	.303	.510	2.913	.116	.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.185	SC6
8	1.724	.751	.593	.206	.013	.041	1.529	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.857	SC6A
9	1.024	4.096	.009	.413	4.315	3.305	3.153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.315	SC6B
10	.058	.057	.052	.024	.093	.131	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.872	SC6BE
11	.301	.083	.066	.082	.285	.743	3.251	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.817	SC6BW
12	.670	.042	.181	1.552	.600	1.576	.402	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.024	SC7
13	.005	.001	1.385	.930	.022	.325	1.675	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.944	SC8
14	.044	2.586	.460	.000	4.878	.704	13.736	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.413	SC9
15	.044	.326	.240	.072	.026	.090	.156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.960	SC10
16	.958	.580	.116	.174	.003	1.639	.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.915	SC11A2
17	.013	.441	.008	3.245	.035	.159	2.955	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.856	COON
SUBTOT.	13.53	18.69	7.87	16.20	24.17	18.22	31.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	130.61	TOTAL

END OF HARMONIC 13 CONTINGENCY TABLE

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	11.71	26.87	23.58	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	8.69	19.94	17.50	11.82	6.64	3.97	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	11.83	27.15	23.83	16.09	9.03	5.40	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	11.59	26.59	23.34	15.76	8.85	5.29	4.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	11.71	26.87	23.58	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	11.47	26.32	23.10	15.60	8.76	5.23	4.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.16	14.13	12.40	8.37	4.70	2.81	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.08	27.70	24.31	16.42	9.22	5.51	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	11.71	26.87	23.58	15.93	8.94	5.34	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	11.35	26.04	22.85	15.43	8.66	5.18	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	11.96	27.42	24.07	16.26	9.12	5.45	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	228.0	523.0	459.0	310.0	174.0	104.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 8	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.305	.798	.117	.152	.533	.044	.319	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.269	SC1
2	.000	.495	1.160	.021	.005	2.213	5.745	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.639	SC2
3	.320	.074	.178	1.385	.084	.038	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.095	SC3
4	.002	.027	.335	.051	.457	1.254	.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.149	SC34J
5	3.848	.169	.014	.072	.126	1.321	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.581	SC4
6	.330	.045	.358	.281	4.337	1.043	.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.448	SC5
7	1.243	.547	2.161	.272	.113	1.065	.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.003	SC6
8	.847	.001	.001	.051	.104	.029	4.672	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.705	SC6A
9	4.732	1.099	.574	1.439	.916	3.477	4.576	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.815	SC6B
10	4.532	.169	.085	3.013	.000	3.530	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.360	SC6BE
11	.000	.012	.357	.097	1.070	2.307	1.567	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.409	SC6BW
12	1.051	.418	.157	.370	.065	1.463	.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.573	SC7
13	.550	.001	1.707	.225	1.551	1.165	.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.277	SC8
14	.357	4.134	1.160	1.897	3.630	1.127	3.759	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.064	SC9
15	.095	.104	.020	.357	3.630	1.142	.319	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.668	SC10
16	.446	.307	.823	.054	.000	1.028	.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.747	SC11A2
17	1.668	1.401	.058	.824	2.171	.131	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.312	CC1
18	.091	.091	2.705	2.799	1.864	.055	1.102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.706	CC2
19	.350	4.886	.035	3.238	1.864	.387	.626	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.388	CC3
20	.320	2.093	.688	.034	.133	.387	.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.677	CC4
SUBTOT.	21.09	16.87	12.70	16.63	22.66	23.21	23.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.88	TOTAL

END OF HARMONIC 8 CONTINGENCY TABLE

BEGINNING HARMONIC 9 CONTINGENCY TABLE

INTERVALS	.0030	.0060	.0090	.0120	.0150	.0180	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 9	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	22.	14.	19.	16.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	1.	20.	18.	22.	13.	12.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	10.	26.	14.	17.	15.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	15.	13.	24.	0.	7.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	11.	15.	23.	15.	16.	6.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	10.	14.	18.	6.	9.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	6.	24.	18.	19.	10.	5.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	10.	14.	24.	15.	14.	8.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	14.	22.	25.	17.	9.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	5.	23.	28.	18.	12.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	5.	20.	25.	18.	11.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	6.	17.	21.	21.	15.	7.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	4.	11.	10.	7.	10.	2.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	2.	14.	23.	11.	15.	14.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	8.	20.	22.	18.	13.	7.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	10.	23.	26.	20.	9.	4.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	9.	13.	17.	9.	13.	13.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	7.	20.	20.	11.	13.	15.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	14.	23.	23.	16.	10.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	15.	22.	20.	19.	10.	3.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	157.	374.	398.	334.	236.	158.	221.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 165.468

TABLE OF EXPECTED VALUES

INTERVALS .0030 .0060 .0090 .0120 .0150 .0180 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.37	14.26	15.18	12.74	9.00	6.03	8.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	8.67	19.41	20.66	17.34	12.25	8.20	11.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	8.49	19.02	20.24	16.98	12.00	8.03	11.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	8.40	18.82	20.03	16.81	11.87	7.95	11.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.51	10.10	10.75	9.02	6.37	4.27	5.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	8.85	19.81	21.08	17.69	12.50	8.37	11.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	8.58	19.22	20.45	17.16	12.12	8.12	11.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	8.31	18.62	19.82	16.63	11.75	7.87	11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	8.76	19.61	20.87	17.51	12.37	8.28	11.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	167.0	374.0	398.0	334.0	236.0	158.0	221.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0030	.0060	.0090	.0120	.0150	.0180	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 9										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.525	.242	2.378	.097	.980	.048	.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.895	SC1
2	6.958	.002	.450	1.050	.020	1.576	.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.506	SC2
3	.176	2.081	2.261	.015	.557	.062	1.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.264	SC3
4	1.280	1.003	2.339	2.561	3.189	.176	7.915	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.963	SC34J
5	.683	.925	.318	.272	1.238	.552	.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.999	SC4
6	.053	1.274	.091	2.174	1.000	1.468	.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.093	SC5
7	.821	1.084	.342	.160	.413	1.250	1.738	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.858	SC6
8	.205	1.509	.540	.315	.250	.005	.204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.028	SC6A
9	3.573	.468	1.121	.000	.750	.133	7.593	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.638	SC6B
10	1.494	.746	2.789	.041	.001	.552	3.556	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.179	SC6BE
11	1.612	.009	.817	.013	.153	.355	.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.176	SC6BW
12	.587	.176	.047	1.047	.822	.114	.876	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.768	SC7
13	.058	.080	.052	.453	2.061	1.205	.178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.088	SC8
14	5.298	1.704	.175	2.530	.500	3.789	7.330	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.376	SC9
15	.081	.002	.040	.005	.020	.224	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.379	SC10
16	.235	.746	1.507	.470	.805	2.089	3.556	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.408	SC11A2
17	.056	1.697	.400	3.500	.133	3.350	7.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.493	CC1
18	.352	.008	.036	2.423	.032	5.443	.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.465	CC2
19	3.139	.586	.217	.131	.456	1.302	1.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.943	CC3
20	4.451	.291	.036	.126	.456	3.371	.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.949	CC4
SUBTOT.	31.75	14.63	16.46	17.33	13.84	27.06	44.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	165.47	TOTAL

END OF HARMONIC 9 CONTINGENCY TABLE

BEGINNING HARMONIC 10 CONTINGENCY TABLE

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 10	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	14.	16.	19.	18.	7.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	16.	11.	14.	11.	15.	20.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	12.	20.	18.	17.	9.	11.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	15.	20.	14.	11.	11.	11.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	10.	16.	18.	15.	8.	15.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	3.	8.	14.	16.	5.	14.	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	12.	27.	14.	17.	8.	6.	14.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	18.	15.	19.	19.	12.	4.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	15.	24.	27.	13.	10.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	21.	20.	15.	15.	10.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	11.	20.	24.	13.	13.	12.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	9.	22.	23.	12.	9.	7.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	3.	6.	16.	10.	8.	2.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	14.	14.	8.	15.	9.	29.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	12.	20.	16.	12.	13.	14.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	11.	16.	23.	16.	13.	12.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	5.	11.	19.	20.	15.	9.	15.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	13.	15.	6.	22.	19.	11.	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	16.	28.	21.	13.	8.	6.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	20.	22.	13.	14.	15.	6.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	241.	354.	341.	296.	230.	186.	240.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 198.632

TABLE OF EXPLOTED VALUES

INTERVALS .0030 .0050 .0070 .0090 .0110 .0140 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 10

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	9.19	13.50	13.00	11.29	8.77	7.09	9.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	12.51	18.37	17.70	15.36	11.94	9.65	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	12.25	18.00	17.34	15.05	11.69	9.46	12.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	12.64	18.56	17.83	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	12.13	17.81	17.16	14.89	11.57	9.36	12.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.51	9.56	9.21	8.00	6.21	5.02	6.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.76	18.75	18.06	15.68	12.18	9.85	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	12.38	18.19	17.52	15.21	11.82	9.56	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	12.00	17.62	16.98	14.74	11.45	9.26	11.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	12.64	18.56	17.88	15.52	12.06	9.75	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	241.0	354.0	341.0	296.0	230.0	186.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0030	.0050	.0070	.0090	.0110	.0140	.5000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 10	
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.244	1.203	.235	.704	2.778	.825	.412	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.402	SC1
2	.004	.403	2.761	.180	.115	2.690	4.179	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.332	SC2
3	.032	.111	.001	.141	.777	.159	.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.248	SC3
4	.496	.144	.774	1.240	.074	.187	1.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.921	SC34J
5	.458	.263	.013	.003	1.233	3.101	.578	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.649	SC4
6	4.170	2.241	.076	1.967	1.621	6.725	.886	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.686	SC5
7	.021	4.048	.774	.174	1.299	1.383	.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.891	SC6
8	2.410	.620	.095	.860	.000	3.312	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.468	SC6A
9	.615	2.000	5.383	.279	.246	3.149	6.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.614	SC6B
10	5.998	.181	.362	.003	.279	.218	4.358	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.400	SC6BE
11	.212	.111	2.094	.410	.073	.518	3.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.863	SC6BW
12	.806	.984	1.989	.562	.572	.595	.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.579	SC7
13	1.893	1.327	5.303	.502	.514	1.820	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.096	SC8
14	.244	1.203	.913	3.760	.652	.074	20.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.717	SC9
15	.046	.083	.235	.863	.055	1.747	.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.035	SC10
16	.154	.263	1.714	.041	.118	.625	3.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.167	SC11A2
17	4.082	2.490	.241	1.879	1.100	.007	.779	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.579	CC1
18	.010	.684	7.894	2.704	3.993	.159	.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.459	CC2
19	.895	4.798	.544	.410	1.367	1.444	2.478	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.936	CC3
20	4.290	.637	1.332	.149	.717	1.444	1.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.590	CC4
SUBTOT.	27.08	23.80	32.43	16.83	17.58	30.19	50.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.63	TOTAL

END OF HARMONIC 10 CONTINGENCY TABLE

TABLE OF EXPECTED VALUES

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	159.37	364.74	398.83	267.21	181.57	85.63	39.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	10.01	22.90	25.04	16.78	11.40	5.38	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	201.0	460.0	503.0	337.0	229.0	108.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.255	.124	.129	1.055	.171	.002	.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.540	STONY
2	.403	1.135	1.458	1.990	3.819	.490	.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.399	CC1
3	2.829	.052	.432	1.235	.000	.078	7.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.936	CC2
4	3.960	.052	.811	1.235	.753	.438	.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.447	CC3
5	1.189	.624	.214	.158	.330	.020	.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.260	CC4
SUBTOT.	8.63	1.99	3.04	5.67	5.07	1.08	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.58	TOTAL

END OF HARMONIC 3 CONTINGENCY TABLE

BEGINNING HARMONIC 4 CONTINGENCY TABLE

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 4	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	219.	529.	426.	210.	85.	22.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	12.	30.	29.	14.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	15.	27.	23.	24.	6.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	14.	32.	33.	16.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	11.	34.	30.	19.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	271.	652.	541.	283.	106.	28.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 20.549

TABLE OF EXPECTED VALUES

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	214.88	516.97	428.96	224.39	84.05	22.20	5.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00 STONY
2	13.49	32.46	26.94	14.09	5.28	1.39	.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00 CC1
3	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC2
4	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC3
5	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00 CC4
SUBTOT.	271.0	652.0	541.0	283.0	106.0	28.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0 TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.079	.280	.020	.923	.011	.002	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.351 STONY
2	.165	.187	.158	.001	.562	.263	.349	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.685 CC1
3	.044	1.511	1.016	5.655	.035	1.598	1.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.951 CC2
4	.003	.140	.756	.091	1.177	.149	.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.684 CC3
5	.725	.001	.094	1.166	.056	1.468	.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.878 CC4
SUBTOT.	1.02	2.12	2.04	7.84	1.84	3.48	2.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.55 TOTAL

END OF HARMONIC 4 CONTINGENCY TABLE

BEGINNING HARMONIC 5 CONTINGENCY TABLE

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 5
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	202.	424.	409.	255.	125.	52.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	10.	23.	34.	14.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	11.	36.	26.	16.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	12.	40.	19.	21.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	19.	32.	28.	13.	2.	2.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	254.	555.	516.	319.	150.	61.	33.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 33.040

TABLE OF EXPECTED VALUES

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	201.40	449.06	409.14	252.94	118.94	48.37	26.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	12.65	27.63	25.69	15.88	7.47	3.04	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	254.0	555.0	516.0	319.0	150.0	61.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5									
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.002	.586	.000	.017	.309	.273	.562	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.749	STONY
2	.554	.777	2.688	.223	.853	.000	1.643	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.743	CC1
3	.414	1.635	.041	.032	.002	.449	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.293	CC2
4	.131	4.081	2.399	1.091	1.044	.449	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.926	CC3
5	2.423	.289	.033	.831	4.374	.449	.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.330	CC4
SUBTOT.	3.51	7.37	5.16	2.19	6.59	1.62	6.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.04	TOTAL

END OF HARMONIC 5 CONTINGENCY TABLE

BEGINNING HARMONIC 6 CONTINGENCY TABLE

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	193.	442.	391.	227.	136.	72.	36.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	8.	24.	25.	17.	12.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	8.	31.	26.	14.	7.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	11.	33.	27.	15.	8.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	14.	25.	32.	13.	7.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	234.	555.	501.	286.	170.	94.	43.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 17.181

TABLE OF EXPECTED VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	126.86	296.55	358.39	293.37	200.60	118.94	102.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1497.00	STONY
2	7.97	18.62	22.50	18.42	12.60	7.47	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
3	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
4	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
5	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	160.0	374.0	452.0	370.0	253.0	150.0	129.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.187	.301	.162	.024	.157	.296	.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.231	STONY
2	2.043	.704	2.502	1.138	.202	.314	1.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.938	CC1
3	1.370	1.606	1.674	.008	.041	.579	.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.285	CC2
4	.812	.291	1.371	.999	.227	.579	.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.505	CC3
5	.309	.348	.021	.297	1.689	.002	.086	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.752	CC4
SUBTOT.	4.72	3.25	5.73	2.47	2.31	1.77	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.71	TOTAL

END OF HARMONIC 2 CONTINGENCY TABLE

BEGINNING HARMONIC 3 CONTINGENCY TABLE

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 3
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	153.	358.	406.	284.	176.	86.	34.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1497.	STONY
2	8.	28.	19.	11.	18.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
3	16.	23.	23.	13.	12.	5.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
4	17.	23.	31.	13.	9.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
5	7.	28.	24.	16.	14.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	201.	460.	503.	337.	229.	108.	50.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 24. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 34.582

TABLE OF EXPECTED VALUES

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	7.67	17.54	19.18	12.85	8.73	4.12	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	10.22	23.39	25.58	17.14	11.64	5.49	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	10.11	23.15	25.31	16.96	11.52	5.43	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	5.43	12.43	13.59	9.10	6.19	2.92	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	10.01	22.90	25.04	16.78	11.40	5.38	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	201.0	460.0	503.0	337.0	229.0	108.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.012	.076	.498	.556	.001	.908	.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.211	SC1
2	.520	2.872	1.517	.259	.374	.908	2.648	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.099	SC2
3	1.189	.032	.261	.036	.000	.078	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.620	SC3
4	.235	.148	.370	2.421	.066	1.211	.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.515	SC34J
5	2.115	.480	.907	.417	.265	2.270	.126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.579	SC4
6	.058	1.133	.002	.056	.344	.304	.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.901	SC5
7	1.130	.712	.170	1.161	1.271	.028	.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.535	SC6
8	.197	.148	.047	.015	2.200	.028	.981	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.614	SC6A
9	.059	.244	.079	.203	.967	1.130	2.542	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.226	SC6B
10	1.072	.807	.571	.027	.889	.432	.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.871	SC6BE
11	.225	.032	.005	.404	.000	.964	.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.355	SC6BW
12	.824	.001	.068	.246	.552	1.090	.875	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.657	SC7
13	2.348	.164	.493	.001	.227	1.487	.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.811	SC8
14	2.028	.782	4.027	.001	.105	.014	.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.115	SC9
15	.255	.229	.005	.556	2.169	4.873	.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.134	SC10
16	.524	.017	3.245	3.090	.889	.054	.958	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.778	SC11A2
17	.403	1.135	1.458	1.990	3.819	.490	.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.399	CC1
18	2.829	.052	.432	1.235	.000	.078	7.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.936	CC2
19	3.360	.052	.811	1.235	.753	.438	.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.447	CC3
20	1.189	.624	.214	.158	.330	.020	.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.260	CC4
SUBTOT.	21.17	9.74	15.18	14.04	15.22	16.86	17.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.06	TOTAL

END OF HARMONIC 3 CONTINGENCY TABLE

BEGINNING HARMONIC 4 CONTINGENCY TABLE

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 4
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	17.	30.	33.	11.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	17.	30.	37.	11.	3.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	19.	31.	28.	18.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	20.	28.	26.	14.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	7.	35.	24.	17.	10.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	6.	30.	22.	10.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	15.	34.	26.	17.	4.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	13.	42.	21.	18.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	18.	35.	25.	12.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	15.	31.	28.	15.	5.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	14.	37.	29.	10.	6.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	14.	31.	26.	14.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	11.	18.	15.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	29.	36.	12.	8.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	13.	39.	24.	15.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	9.	49.	26.	10.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	12.	30.	29.	14.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	15.	27.	23.	24.	6.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	14.	32.	33.	16.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	11.	34.	30.	19.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	271.	652.	541.	283.	106.	28.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 113.534

TABLE OF EXPECTED VALUES

INTERVALS .0250 .0500 .0750 .1000 .1250 .1500 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	10.33	24.86	20.63	10.79	4.04	1.07	.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	13.78	33.15	27.51	14.39	5.39	1.42	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	13.64	32.81	27.22	14.24	5.33	1.41	.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	7.32	17.61	14.61	7.64	2.86	.76	.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	13.49	32.46	26.94	14.09	5.28	1.39	.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	271.0	652.0	541.0	283.0	106.0	28.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0250 .0500 .0750 .1000 .1250 .1500 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.488	.595	.659	1.062	1.014	.157	.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.346	SC1
2	.488	.595	2.430	1.062	1.217	.157	1.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.018	SC2
3	1.614	.297	.005	.673	2.278	.149	.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.384	SC3
4	2.503	1.009	.154	.032	1.134	.206	.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.401	SC34J
5	3.443	.067	.518	.416	3.808	4.561	.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.173	SC4
6	1.818	1.061	.091	.058	1.032	.814	.267	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.141	SC5
7	.062	.001	.154	.363	.410	.141	1.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.247	SC6
8	.081	1.966	1.786	.746	.410	1.453	.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.805	SC6A
9	1.293	.103	.229	.397	.023	.126	.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.531	SC6B
10	.083	.186	.002	.015	.057	.219	1.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.681	SC6BE
11	.003	.231	.014	1.578	.035	.193	1.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.146	SC6BW
12	.010	.100	.055	.004	1.333	.248	.352	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.101	SC7
13	1.849	.009	.010	.354	1.213	.756	.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.380	SC8
14	.784	.887	1.883	.596	1.014	.180	7.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.503	SC9
15	.128	.578	.756	.000	2.042	1.483	.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.357	SC10
16	1.741	7.174	.116	1.417	2.180	.134	.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.122	SC11A2
17	.165	.187	.158	.001	.562	.263	.349	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.685	CC1
18	.044	1.511	1.016	5.655	.035	1.598	1.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.951	CC2
19	.003	.140	.756	.001	1.177	.149	.357	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.684	CC3
20	.725	.001	.094	1.166	.056	1.468	.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.878	CC4
SUBTOT.	17.32	15.70	10.89	15.69	21.02	14.46	17.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.53	TOTAL

END OF HARMONIC 4 CONTINGENCY TABLE

BEGINNING HARMONIC 5 CONTINGENCY TABLE

INTERVALS	.0150	.0300	.0450	.0600	.0750	.0900	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 5	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.	18.	28.	19.	15.	5.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	6.	27.	26.	19.	12.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	21.	27.	25.	17.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	14.	25.	33.	17.	6.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	16.	27.	24.	15.	9.	1.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	10.	15.	23.	13.	10.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	12.	34.	27.	12.	7.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	6.	27.	34.	20.	8.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	18.	33.	29.	11.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	15.	38.	13.	20.	8.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	14.	33.	29.	16.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	9.	27.	25.	18.	10.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	10.	14.	14.	8.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	24.	24.	19.	13.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	13.	28.	24.	14.	8.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	15.	27.	31.	17.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	10.	23.	34.	14.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	11.	36.	26.	16.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	12.	40.	19.	21.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	19.	32.	28.	13.	2.	2.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	254.	555.	516.	319.	150.	61.	33.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 155.122

TABLE OF EXPECTED VALUES

INTERVALS .0150 .0300 .0450 .0600 .0750 .0900 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	13.18	28.81	26.78	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	9.69	21.17	19.68	12.17	5.72	2.33	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	13.18	28.81	26.73	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	13.18	28.81	26.78	16.56	7.79	3.17	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	12.92	28.22	26.24	16.22	7.63	3.10	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	12.78	27.93	25.96	16.05	7.55	3.07	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.86	14.99	13.94	8.62	4.05	1.65	.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	13.45	29.40	27.33	16.90	7.94	3.23	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	13.05	28.51	26.51	16.39	7.71	3.13	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	12.65	27.63	25.69	15.88	7.47	3.04	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	13.32	29.10	27.06	16.73	7.87	3.20	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	254.0	555.0	516.0	319.0	150.0	61.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0150 .0300 .0450 .0600 .0750 .0900 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 5

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.157	4.418	.016	.262	6.265	.969	.897	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.984	SC1
2	4.129	.195	.065	.262	2.070	4.397	.897	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.015	SC2
3	4.430	.152	.156	.004	.442	.012	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.928	SC3
4	.050	.503	1.443	.012	.410	.430	.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.144	SC34J
5	.667	.080	.238	.118	.217	1.453	6.441	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.214	SC4
6	.010	1.796	.561	.057	3.202	.756	1.258	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.641	SC5
7	.106	.936	.002	1.255	.079	.220	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.646	SC6
8	3.915	.114	1.944	.715	.006	1.482	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.224	SC6A
9	2.002	.810	.291	1.680	1.725	1.424	1.678	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.609	SC6B
10	.291	3.156	6.385	.795	.011	.410	.235	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.835	SC6BE
11	.035	.522	.133	.032	3.010	.449	.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.229	SC6BW
12	1.118	.031	.036	.237	.797	.282	.069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.570	SC7
13	1.436	.066	.000	.044	1.039	.075	.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.674	SC8
14	.447	.391	.406	.262	3.216	4.397	.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.755	SC9
15	.015	.066	.406	.496	.000	4.397	10.344	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.725	SC10
16	.291	.080	.760	.023	1.783	.006	1.695	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.639	SC11A2
17	.554	.777	2.688	.223	.858	.000	1.643	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.743	CC1
18	.404	1.535	.041	.032	.002	.449	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.293	CC2
19	.131	4.081	2.399	1.031	1.044	.449	1.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.926	CC3
20	2.423	.289	.033	.831	4.374	.449	.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.330	CC4
SUBTOT.	22.61	20.70	18.51	8.43	30.55	22.51	31.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	155.12	TOTAL

END OF HARMONIC 5 CONTINGENCY TABLE

BEGINNING HARMONIC 6 CONTINGENCY TABLE

INTERVALS	.0100	.0200	.0300	.0400	.0500	.0600	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 6	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	15.	30.	24.	16.	7.	4.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	23.	31.	19.	13.	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	13.	33.	23.	13.	9.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	14.	26.	24.	13.	9.	9.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	11.	22.	31.	17.	10.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	5.	16.	24.	10.	8.	7.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	16.	27.	32.	15.	2.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	16.	30.	24.	16.	7.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	17.	37.	21.	11.	7.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	8.	34.	32.	14.	3.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	18.	32.	20.	15.	7.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	13.	24.	22.	13.	16.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	8.	12.	17.	4.	6.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	8.	23.	19.	21.	15.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	22.	29.	23.	8.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	9.	51.	18.	8.	9.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	8.	24.	25.	17.	12.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	8.	31.	26.	14.	7.	7.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	11.	33.	27.	15.	8.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	14.	25.	32.	13.	7.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	234.	555.	501.	286.	170.	94.	48.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 149.025

TABLE OF EXPECTED VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	8.32	21.17	19.11	10.91	6.48	3.58	1.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	12.15	28.81	26.01	14.85	8.82	4.88	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	11.90	28.22	25.47	14.54	8.64	4.78	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	11.77	27.93	25.21	14.39	8.55	4.73	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	6.32	14.99	13.53	7.73	4.59	2.54	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	12.39	29.40	26.54	15.15	9.00	4.98	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	12.02	28.51	25.74	14.69	8.73	4.83	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	11.65	27.63	24.94	14.24	8.46	4.68	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	12.27	29.10	26.27	15.00	8.91	4.93	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	234.0	555.0	501.0	286.0	170.0	94.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0100 .0200 .0300 .0400 .0500 .0600 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 6

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.548	.012	.242	.048	.446	.192	.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.325	SC1
2	.030	1.392	.751	.537	1.773	4.979	.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.577	SC2
3	.043	.522	.407	.266	.001	.870	.914	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.024	SC3
4	.283	.274	.155	.229	.004	3.480	.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.528	SC34J
5	.087	1.488	1.075	.362	.183	.693	.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.004	SC4
6	1.725	1.261	1.254	.075	.355	3.254	.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.939	SC5
7	1.223	.114	1.382	.002	5.277	.724	.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.825	SC6
8	1.223	.049	.155	.090	.377	.724	.097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.714	SC6A
9	2.187	2.731	.786	.363	.313	1.617	.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.347	SC6B
10	1.346	1.055	1.522	.133	3.765	.006	.872	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.598	SC6BE
11	2.676	.289	1.497	.000	.411	.001	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.979	SC6BW
12	.128	.552	.409	.134	6.481	.113	.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.958	SC7
13	.446	.597	.388	1.737	.432	.114	.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.655	SC8
14	1.558	1.392	2.140	2.250	3.992	7.282	.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.707	SC9
15	.929	1.861	.229	4.070	.112	.209	.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.493	SC10
16	.760	17.732	2.327	3.049	.008	3.037	.872	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.784	SC11A2
17	1.144	.477	.000	.535	1.477	.372	.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.070	CC1
18	1.486	.124	.003	.066	.411	.870	4.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.780	CC2
19	.131	.522	.020	.000	.094	.755	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.629	CC3
20	.244	.578	1.250	.266	.411	.233	.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.087	CC4
SUBTOT.	18.20	33.02	16.49	14.63	26.32	29.52	10.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	149.02	TOTAL

END OF HARMONIC 6 CONTINGENCY TABLE

BEGINNING HARMONIC 7 CONTINGENCY TABLE

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	6.	13.	14.	20.	32.	9.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	3.	15.	21.	17.	22.	15.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	7.	19.	14.	21.	22.	13.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	4.	27.	9.	29.	18.	9.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	5.	19.	15.	21.	19.	13.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	8.	6.	5.	15.	23.	12.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	2.	12.	19.	22.	26.	10.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	8.	22.	23.	17.	15.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	9.	22.	21.	20.	18.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	9.	25.	18.	19.	17.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	4.	21.	25.	21.	21.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	4.	14.	18.	24.	22.	10.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	2.	8.	15.	12.	9.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	10.	24.	14.	30.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	10.	14.	19.	13.	26.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	8.	18.	24.	17.	22.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	3.	12.	20.	13.	21.	14.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	8.	11.	20.	17.	31.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	8.	19.	31.	14.	15.	10.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	8.	20.	24.	18.	21.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	122.	327.	379.	370.	430.	190.	70.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 156.932

TABLE OF EXPECTED VALUES

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	4.65	12.47	14.45	14.11	16.40	7.25	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	6.33	16.97	19.67	19.21	22.32	9.86	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	6.20	16.63	19.27	18.81	21.86	9.66	3.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	6.14	16.45	19.07	18.62	21.64	9.56	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	3.30	8.83	10.24	9.99	11.62	5.13	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	6.46	17.32	20.07	19.60	22.78	10.06	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	6.27	16.80	19.47	19.01	22.09	9.76	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	6.07	16.28	18.87	18.42	21.41	9.46	3.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.00	CC1
18	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC2
19	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC3
20	6.40	17.15	19.87	19.40	22.55	9.96	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	CC4
SUBTOT.	122.0	327.0	379.0	370.0	430.0	190.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0050 .0100 .0150 .0200 .0300 .0400 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 7

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.033	1.077	1.338	.008	3.736	.112	1.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.223	SC1
2	1.855	.311	.043	.344	.026	2.421	2.924	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.924	SC2
3	.057	.200	1.736	.132	.013	.926	.122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.186	SC3
4	.859	5.923	5.790	4.995	.836	.075	.734	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.213	SC34J
5	.257	.288	1.027	.208	.433	1.074	.548	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.835	SC4
6	2.408	3.357	6.183	.056	2.658	3.119	.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.823	SC5
7	2.964	1.457	.023	.407	.607	.002	3.119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.579	SC6
8	.439	1.489	.563	.253	2.401	.002	.110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.257	SC6A
9	1.261	1.736	.155	.075	.683	1.387	3.559	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.857	SC6B
10	1.191	4.002	.111	.000	1.174	1.450	.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.026	SC6BE
11	.898	.866	1.322	.132	.106	2.472	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.557	SC6BW
12	.745	.366	.060	1.556	.006	.020	.077	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.831	SC7
13	.509	.079	2.215	.402	.589	.003	1.891	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.689	SC8
14	.033	3.094	.768	1.599	2.292	.087	.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.322	SC9
15	1.937	.636	.057	2.221	.457	.000	4.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.278	SC10
16	.479	.086	1.053	.212	.000	1.450	.709	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.988	SC11A2
17	1.556	1.126	.063	.018	.008	2.179	.658	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.613	CC1
18	.402	2.203	.001	.297	3.168	.000	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.832	CC2
19	.402	.200	5.229	1.504	2.527	.000	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.622	CC3
20	.402	.475	.857	.101	.106	1.576	.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.277	CC4
SUBTOT.	18.69	28.97	30.10	14.52	21.83	18.36	24.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	156.93	TOTAL

END OF HARMONIC 7 CONTINGENCY TABLE

BEGINNING HARMONIC 8 CONTINGENCY TABLE

INTERVALS .0050 .0100 .0150 .0200 .0250 .0300 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 8

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	14.	23.	26.	18.	7.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	12.	24.	19.	17.	9.	9.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	10.	26.	22.	21.	10.	5.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	28.	21.	17.	7.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	5.	29.	23.	17.	10.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	19.	15.	10.	12.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	8.	31.	31.	14.	8.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	15.	27.	24.	17.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	19.	32.	27.	11.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	13.	29.	25.	9.	9.	1.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	12.	28.	27.	15.	6.	9.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	8.	23.	25.	13.	8.	8.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	8.	14.	17.	7.	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	10.	17.	19.	22.	15.	8.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	11.	26.	25.	14.	15.	3.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	14.	24.	28.	15.	9.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	7.	20.	24.	19.	13.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	13.	29.	16.	23.	5.	6.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	14.	39.	25.	9.	5.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	10.	35.	20.	17.	8.	4.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	228.	523.	459.	310.	174.	104.	90.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 136.885

TABLE OF CONTRIBUTING VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.753	.398	.047	.100	.430	.532	.432	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.751	SC1
2	.027	1.168	.177	.660	.146	.112	12.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.590	SC2
3	.044	.291	.004	.297	.553	.442	.460	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.102	SC3
4	.346	.009	.534	.076	.001	.006	2.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.011	SC34J
5	.074	.077	1.174	.470	.307	.217	1.716	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.036	SC4
6	.199	.038	.608	1.072	1.380	4.873	.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.919	SC5
7	.205	.345	.012	.750	1.300	.997	.254	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.863	SC6
8	2.232	.663	.012	.535	4.713	1.841	.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.068	SC6A
9	1.209	.051	.396	1.430	.270	1.725	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.128	SC6B
10	.600	.077	.025	.052	1.232	.378	.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.423	SC6BE
11	.230	.132	1.185	.101	.005	.095	.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.757	SC6BW
12	.472	.775	.003	1.095	1.432	3.939	.956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.271	SC7
13	.551	6.173	.262	.398	1.175	2.219	3.485	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.444	SC8
14	1.425	2.610	.361	1.079	.146	.532	1.468	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.621	SC9
15	.033	.398	.047	1.489	1.445	.000	.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.417	SC10
16	.940	.404	.064	.470	.000	1.783	1.986	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.647	SC11A2
17	2.043	.704	2.502	1.138	.202	.314	1.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.938	CC1
18	1.370	1.606	1.674	.008	.041	.579	.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.285	CC2
19	.312	.291	1.371	.999	.227	.579	.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.505	CC3
20	.309	.348	.021	.297	1.689	.002	.086	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.752	CC4
SUBTOT.	13.97	16.56	10.48	13.12	16.71	21.25	27.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	119.53	TOTAL

END OF HARMONIC 2 CONTINGENCY TABLE

BEGINNING HARMONIC 3 CONTINGENCY TABLE

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	-0.0000-0.0000	HARMONIC 3	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	23.	23.	21.	12.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	16.	33.	20.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	7.	25.	29.	18.	12.	5.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	22.	23.	24.	11.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	15.	27.	21.	20.	10.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	22.	19.	12.	7.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	28.	24.	22.	8.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	9.	22.	25.	18.	17.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	11.	21.	27.	19.	15.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	7.	28.	22.	18.	15.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	9.	25.	26.	15.	12.	8.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	13.	23.	24.	19.	9.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	9.	11.	11.	9.	5.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	20.	37.	18.	11.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	22.	27.	21.	7.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	8.	23.	35.	10.	15.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	8.	28.	19.	11.	18.	7.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	94.	CC1
18	16.	23.	23.	13.	12.	5.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC2
19	17.	23.	31.	13.	9.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC3
20	7.	28.	24.	16.	14.	6.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	CC4
SUBTOT.	201.	460.	503.	337.	229.	108.	50.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 114. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 110.061

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0050	.0100	.0150	.0200	.0250	.0300	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 1									
COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.040	.019	.013	.447	3.128	.091	.225	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.964	SC1
2	.066	.115	.334	.886	.499	4.873	2.828	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.601	SC2
3	.046	.084	.398	.212	1.939	.316	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.025	SC3
4	.273	1.396	2.064	1.759	.431	2.319	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.414	SC34J
5	.016	.157	.924	.069	.980	.432	.308	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.888	SC4
6	.043	.085	.544	.745	.268	.003	.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.021	SC5
7	.746	7.886	.247	2.039	.172	1.211	.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.472	SC6
8	.161	1.113	.196	.050	4.845	.028	.525	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.918	SC6A
9	.331	.020	.004	.284	.228	.047	.444	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.407	SC6B
10	.016	1.020	.048	.063	.193	7.501	.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.337	SC6BE
11	.046	.243	.092	5.558	.143	.488	1.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.306	SC6BW
12	.038	.009	.139	.335	.883	.035	.394	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.888	SC7
13	10.771	.532	2.079	.003	.285	.402	2.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.191	SC8
14	.040	1.308	1.103	1.474	.499	.517	6.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.732	SC9
15	.066	2.391	1.103	.022	.000	.286	.574	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.442	SC10
16	.114	2.712	.208	.084	.074	1.171	1.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.380	SC11A2
17	.806	.437	.007	.303	.002	.083	.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.416	COON
SUBTOT.	13.67	19.53	9.50	14.19	14.59	19.80	17.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	108.90	TOTAL

END OF HARMONIC 1 CONTINGENCY TABLE

BEGINNING HARMONIC 2 CONTINGENCY TABLE

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .3000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	17.	25.	21.	11.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	8.	15.	26.	16.	12.	7.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	9.	22.	24.	17.	16.	6.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	10.	19.	27.	18.	13.	8.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	9.	18.	18.	22.	11.	9.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	5.	15.	14.	18.	6.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	22.	24.	23.	9.	5.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	4.	23.	24.	16.	21.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	5.	20.	26.	24.	11.	4.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	6.	18.	24.	20.	17.	6.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	7.	18.	29.	18.	13.	7.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	10.	15.	23.	13.	17.	13.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	6.	18.	14.	8.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	5.	27.	21.	15.	12.	10.	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	17.	25.	25.	9.	8.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	11.	22.	22.	22.	13.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	38.	68.	86.	74.	58.	37.	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	160.	374.	452.	370.	253.	150.	129.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 103.763

TABLE OF EXPECTED VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	6.10	14.26	17.24	14.11	9.65	5.72	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	8.31	19.41	23.46	19.21	13.13	7.79	6.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	8.14	19.02	22.98	18.81	12.86	7.63	6.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	8.39	19.61	23.70	19.40	13.27	7.87	6.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	8.05	18.82	22.74	18.62	12.73	7.55	6.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	4.32	10.10	12.21	9.99	6.83	4.05	3.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	8.47	19.81	23.94	19.60	13.40	7.94	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	8.22	19.22	23.22	19.01	13.00	7.71	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	33.14	77.46	93.61	76.63	52.43	31.06	26.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	160.0	374.0	452.0	370.0	253.0	150.0	129.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0500 .1000 .1500 .2000 .2500 .3000 .8000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 2

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.753	.398	.047	.100	.430	.532	.492	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.751	SC1
2	.027	1.168	.177	.660	.146	.112	12.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.590	SC2
3	.044	.291	.004	.297	.563	.442	.460	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.102	SC3
4	.346	.009	.534	.076	.001	.006	2.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.011	SC34J
5	.074	.077	1.174	.470	.307	.217	1.716	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.036	SC4
6	.199	.038	.608	1.072	1.380	4.873	.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.919	SC5
7	.205	.745	.012	.750	1.300	.997	.254	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.863	SC6
8	2.232	.663	.012	.535	4.713	1.841	.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.068	SC6A
9	1.209	.051	.395	1.430	.270	1.725	.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.128	SC6B
10	.600	.077	.026	.052	1.232	.376	.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.423	SC6BE
11	.230	.132	1.185	.101	.005	.095	.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.757	SC6BW
12	.472	.775	.003	1.695	1.432	3.939	.956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.271	SC7
13	.551	6.173	.262	.398	1.173	2.239	3.485	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.444	SC8
14	1.425	2.610	.361	1.079	.146	.532	1.468	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.621	SC9
15	.033	.398	.047	1.489	1.445	.000	.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.417	SC10
16	.940	.404	.064	.470	.000	1.783	1.986	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.647	SC11A2
17	.714	1.154	.618	.090	.599	1.134	.404	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.714	COON
SUBTOT.	10.15	14.76	5.53	10.77	15.15	20.90	26.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103.76	TOTAL

END OF HARMONIC 2 CONTINGENCY TABLE

BEGINNING HARMONIC 3 CONTINGENCY TABLE

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	11.	23.	23.	21.	12.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	13.	16.	33.	20.	10.	8.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	7.	25.	29.	18.	12.	5.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	12.	22.	23.	24.	11.	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	15.	27.	21.	20.	10.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	7.	22.	19.	12.	7.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	7.	28.	24.	22.	8.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	9.	22.	25.	13.	17.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	11.	21.	27.	19.	15.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	7.	28.	22.	13.	15.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	9.	25.	26.	15.	12.	8.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	13.	23.	24.	19.	9.	3.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	9.	11.	11.	9.	5.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	6.	20.	37.	18.	11.	6.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	9.	22.	27.	21.	7.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	8.	23.	35.	10.	15.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	43.	102.	97.	53.	53.	22.	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	201.	460.	505.	337.	229.	108.	50.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1838.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 87.743

TABLE OF EXPECTED VALUES

INTERVALS .0300 .0600 .0900 .1200 .1500 .1800 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	7.67	17.54	19.18	12.85	8.73	4.12	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	10.43	23.88	26.11	17.49	11.89	5.61	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	10.22	23.39	25.58	17.14	11.64	5.49	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	10.54	24.12	26.38	17.67	12.01	5.66	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	10.11	23.15	25.31	16.96	11.52	5.43	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	5.43	12.43	13.59	9.10	6.19	2.92	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	10.65	24.36	26.64	17.85	12.13	5.72	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	10.33	23.63	25.84	17.31	11.77	5.55	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	41.63	95.26	104.17	69.79	47.43	22.37	10.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	201.0	460.0	503.0	337.0	229.0	108.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS	.0300	.0600	.0900	.1200	.1500	.1800	.5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 3										
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL
1	.012	.076	.498	.556	.001	.908	.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.211 SC1
2	.520	2.872	1.517	.259	.374	.908	2.648	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.099 SC2
3	1.189	.032	.261	.006	.000	.078	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.620 SC3
4	.235	.148	.378	2.421	.066	1.211	.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.515 SC34J
5	2.115	.480	.907	.417	.263	2.270	.126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.579 SC4
6	.058	1.133	.002	.056	.344	.304	.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.901 SC5
7	1.130	.712	.170	1.151	1.271	.028	.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.535 SC6
8	.197	.148	.047	.015	2.200	.028	.981	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.614 SC6A
9	.059	.244	.070	.203	.967	1.130	2.542	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.226 SC6B
10	1.072	.807	.571	.027	.889	.432	.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.871 SC6BE
11	.225	.032	.006	.404	.000	.964	.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.355 SC6BW
12	.824	.001	.068	.246	.552	1.090	.875	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.657 SC7
13	2.648	.164	.493	.001	.227	1.487	.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.811 SC8
14	2.028	.782	4.027	.001	.105	.014	.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.115 SC9
15	.255	.229	.005	.556	2.169	4.873	.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.134 SC10
16	.524	.017	3.245	3.090	.889	.054	.958	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.778 SC11A2
17	.976	.476	.494	4.040	.655	.006	3.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.724 COON
SUBTOT.	13.77	8.35	12.76	13.46	10.98	15.79	12.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.74 TOTAL

END OF HARMONIC 3 CONTINGENCY TABLE

BEGINNING HARMONIC 4 CONTINGENCY TABLE

INTERVALS	.0250	.0500	.0750	.1000	.1250	.1500	.5000-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	HARMONIC 4	
COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	17.	30.	33.	11.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC1
2	17.	30.	37.	11.	3.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC2
3	19.	31.	28.	18.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC3
4	20.	28.	26.	14.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC34J
5	7.	35.	24.	17.	10.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC4
6	6.	30.	22.	10.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	72.	SC5
7	15.	34.	26.	17.	4.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6
8	13.	42.	21.	18.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	98.	SC6A
9	18.	35.	25.	12.	5.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	SC6B
10	15.	31.	28.	15.	5.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC6BE
11	14.	37.	29.	10.	6.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	99.	SC6BW
12	14.	31.	26.	14.	8.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.	SC7
13	11.	18.	15.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	51.	SC8
14	11.	29.	36.	12.	8.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC9
15	13.	39.	24.	15.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.	SC10
16	9.	49.	26.	10.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	97.	SC11A2
17	52.	123.	115.	73.	21.	6.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	391.	COON
SUBTOT.	271.	652.	541.	283.	106.	28.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1888.	TOTAL

FOR 96. DEGREES OF FREEDOM, THE VALUE OF CHISQUARE IS 99.511

TABLE OF EXPECTED VALUES

INTERVALS .0250 .0500 .0750 .1000 .1250 .1500 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4

COLUMNS ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC1
2	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC2
3	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC3
4	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC34J
5	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC4
6	10.35	24.86	20.63	10.79	4.04	1.07	.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00	SC5
7	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6
8	14.07	33.84	28.08	14.69	5.50	1.45	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00	SC6A
9	13.78	33.15	27.51	14.39	5.39	1.42	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	SC6B
10	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC6BE
11	14.21	34.19	28.37	14.84	5.56	1.47	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.00	SC6BW
12	13.64	32.81	27.22	14.24	5.33	1.41	.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	SC7
13	7.32	17.61	14.61	7.64	2.86	.76	.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	SC8
14	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC9
15	14.35	34.53	28.65	14.99	5.61	1.48	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	SC10
16	13.92	33.50	27.80	14.54	5.45	1.44	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.00	SC11A2
17	56.12	135.03	112.04	58.61	21.95	5.80	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	391.00	COON
SUBTOT.	271.0	652.0	541.0	283.0	106.0	28.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1888.0	TOTAL

TABLE OF CONTRIBUTING VALUES

INTERVALS .0250 .0500 .0750 .1000 .1250 .1500 .5000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000-0.0000 HARMONIC 4

COLUMNS / ROWS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SUBTOTAL	
1	.488	.595	.659	1.052	1.014	.157	.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.346	SC1
2	.488	.595	2.430	1.062	1.217	.157	1.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.018	SC2
3	1.614	.297	.005	.673	2.278	.149	.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.384	SC3
4	2.503	1.009	.154	.032	1.134	.206	.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.401	SC34J
5	3.443	.067	.518	.416	3.908	4.561	.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.173	SC4
6	1.818	1.061	.091	.058	1.032	.814	.267	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.141	SC5
7	.062	.001	.154	.363	.410	.141	1.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.247	SC6
8	.081	1.966	1.786	.746	.410	1.453	.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.805	SC6A
9	1.233	.103	.229	.397	.028	.126	.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.531	SC6B
10	.083	.186	.002	.015	.037	.219	1.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.681	SC6BE
11	.003	.231	.014	1.578	.035	.193	1.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.146	SC6BW
12	.010	.100	.055	.004	1.333	.248	.352	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.101	SC7
13	1.849	.009	.010	.354	1.213	.756	.189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.380	SC8
14	.784	.887	1.883	.596	1.014	.180	7.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.503	SC9
15	.128	.578	.756	.000	2.042	1.483	.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.357	SC10
16	1.741	7.174	.116	1.417	2.180	.134	.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.122	SC11A2
17	.303	1.071	.078	3.534	.041	.007	.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.174	COON
SUBTOT.	16.69	15.93	8.94	12.31	18.23	10.99	15.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.51	TOTAL

END OF HARMONIC 4 CONTINGENCY TABLE

MICHIGAN STATE UNIV. LIBRARIES
31293102775958