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MASTER

FIXED TIME ESTIMATION OF COUNTING RATES
WITH BACKGROUND CORRECTIONS

W. L. NICHOLSON

SEPTEMBER 1963

HANFORD LABORATORIES

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FIXED TIME ESTIMATION OF COUNTING RATES
WITH BACKGROUND CORRECTIONS

By

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Applied Mathematics Operation
Hanford Laboratories

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TABLE OF CONTENTS

	Page
I. INTRODUCTION.	1
II. RECOMMENDATIONS	6
III. STATISTICAL CONCEPTS	10
IV. HYPOTHESIS TESTS.	16
Normal Approximation Decision Rules - D_1, D_2, D_3	16
Uniformly Most Powerful Similar Decision Rule - D_e	24
Comparison of Power Surfaces	26
Asymptotic Power Surfaces	31
V. CONFIDENCE INTERVAL ESTIMATES	33
Intervals Based on Normal Approximation - I_1, I_4	34
Asymptotic Expected Lengths	37
VI. THE IMPORTANCE OF GOOD BACKGROUND ESTIMATION	39
Hypothesis Testing	39
Confidence Intervals	45
Multiple Use of Background Estimates	49
VII. ACKNOWLEDGMENTS.	56
REFERENCES	57
APPENDIX	
A. TABLES OF CRITICAL POINTS AND RANDOMIZATION PROBABILITIES FOR UNIFORMLY MOST POWERFUL SIMILAR RULE D_e	A. 1
B. GRAPHS OF POWER SURFACE SECTIONS FOR RULE D_3	B. 1
C. MATHEMATICAL DERIVATION OF RULE I_4	C. 1
D. TABLES OF CONFIDENCE INTERVAL END POINTS FOR RULE I_4	D. 1
TABLES OF EXACT CONFIDENCE COEFFICIENTS AND EXPECTED LENGTHS FOR RULES I_1 AND I_4	D. 100
E. GRAPHS OF LIMITING POWER SURFACE SECTIONS FOR RULES D_1, D_2, D_3 , AND D_e	E. 1
GRAPH OF LIMITING NORMALIZED EXPECTED LENGTH FOR RULES I_1 AND I_4	E. 4

FIXED TIME ESTIMATION OF COUNTING RATES
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I INTRODUCTION

A routine method for estimating the total radioactivity in a long-lived sample involves monitoring the sample with a detector for a fixed time period t , recording the total number of counts x , and calculating a counting rate x/t . A background counting rate estimate y/s is also calculated for the same detector from a background count y recorded over a fixed time period s . The background estimate, which supposedly represents all spurious activity, is subtracted to give the sample net counting rate estimate

$$\tilde{c} = x/t - y/s \quad (1)$$

The interpretation of the estimate $\tilde{c}$ must now be considered. Let C be the true net counting rate of the sample and let B be the true background counting rate during the period over which the sample was counted. So, x/t is an estimate of $C + B$, and y/s is an estimate of B . Within this framework several questions are pertinent. The first of these is

- Q_1 Does the estimate $\tilde{c}$ imply that $C > 0$; i.e., does the net sample counting rate imply the existence of "something" in the sample in addition to background activity?

An answer of "NO" to question Q_1 actually is a decision that C is less than some nominal threshold C_0 . The second of these logically follows.

- Q_2 What is the threshold C_0 ; i.e., what is the minimum C which can be detected as positive a reasonable portion of the time? Here, "reasonable" is open to definition by the economics of the situation.

An answer of "YES" to question Q_1 leads to the refinement.

- Q_3 How good an estimate of C is $\tilde{c}$, and are there others that are better in some sense?

This paper considers the answers to the above questions and related topics for the case of appreciable background. In terms of expected total net sample count tC and expected total background count tB in the sample gross count, appreciable background means

$$0 \leq (tC)/(tB)^{1/2} < 15.$$

The specific recommendations in the form of hypotheses testing and confidence interval estimation rules for answering questions Q_1 , Q_2 , and Q_3 are stated in Section II. A short discussion of the statistical concepts used in the paper is contained in Section III. Those interested only in the application and interpretation of the rules should read Sections I, II, and possibly III, plus referenced appendix material. The investigations supporting these recommendations are the subjects of Sections IV, V, and VI plus additional appendix material.

To answer the above questions some information about the distributional properties of x and y must be available. In the sequel we assume that the two counts x and y are random observations on Poisson distributions* with mean value parameters $(C + B)t$ and Bs , respectively. With these assumptions, x/t is an unbiased estimate of $C + B$ with variance $(C + B)/t$, and y/s is an unbiased estimate of B with variance B/s .

Questions Q_1 and Q_2 can be answered within the framework of classical statistical theory by setting up the null hypothesis H_0 that $C = 0$

* The assumption that x is a Poisson distribution random quantity imposes the restriction that the total counting period t is much less than the half-life $t_{1/2}$ of the sample. If this condition is not satisfied, the Poisson variance $(C + B)t$ appreciably overestimates the actual variance of x , which in turn, leads to unnecessarily broad confidence statements. For example, with $t = 0.19 t_{1/2}$, confidence intervals based on the Poisson distribution are about 10% wider than the correct ones, and with $t = 0.43 t_{1/2}$ they are about 25% wider than the correct ones.

and testing it against the composite alternative hypothesis H_C that $C > 0$. For any decision rule D for deciding between H_0 and H_C , the power function provides the answers to Q_1 , and Q_2 . In Section IV, four decision rules D_1 , D_2 , D_3 , and D_e are compared in detail. The first three of these rules are:

- D_1 . Decide H_C is true if $\tilde{c} > n_\alpha [x/t^2 + y/s^2]^{1/2}$,
Otherwise, decide H_0 is true.
- D_2 . Decide H_C is true if $\tilde{c} > n_\alpha [(1/t + 1/s)(y/s)]^{1/2}$, (2)
Otherwise, decide H_0 is true.
- D_3 . Decide H_C is true if $\tilde{c} > n_\alpha [(x+y)/(st)]^{1/2}$,
Otherwise, decide H_0 is true.

Here, n_α is the $100(1-\alpha)$ percentile of the unit normal distribution. Customarily an investigator uses a 1%, 5%, or 10% level of significance decision rule to test the null hypothesis H_0 . The corresponding n_α values are $n_{0.01} = 2.326$, $n_{0.05} = 1.645$, and $n_{0.10} = 1.282$, respectively.

All three of the rules in (2) are based upon asymptotic theory; specifically, that for large expected value in the Poisson distribution is approximately normal. In the limit as $(C + B)t$ and Bs approach infinity, $\tilde{c}$ divided by the bracketed quantity on the right of each inequality in (2) has a unit normal distribution, so the rules all have exactly $100\alpha\%$ significance levels. In Section IV the behavior of the rules is investigated for finite expected values. Previous observations of a number of authors, e.g. (1, 2), concerning the goodness of the normal approximation to the distribution of the difference of the two Poisson variables for small expected values are substantiated. This goodness carries over to the distribution of the decision rules in (2).

Rules D_1 and D_2 are common methods of answering questions Q_1 and Q_2 familiar to users of counting instruments. D_3 , while probably

not so familiar, turns out to be more robust than the others. Power surface calculations show that the stated D_3 level of significance is closest to the true one over a reasonable range of B , t and s values.

The differences in D_1 , D_2 , and D_3 are in the handling of the variance estimate of $\tilde{C}$. D_1 uses the obvious unbiased estimate with no restriction on C , while D_2 and D_3 variance estimates are only unbiased if $C = 0$. The advantage of the D_3 estimate is that it optimally weights the information about B in both x and y . The D_1 approach is reasonable for confidence interval estimation, but clearly conservative, and not in the Neyman and Pearson⁽³⁾ spirit for hypothesis testing.

The fourth rule D_e , defined in Section IV, is the uniformly most powerful similar decision rule based on similar critical regions so that the significance level is always $100\alpha\%$ independent of the true background counting rate B . The exact rule D_e is more complicated to use than the normal approximation rules. Tables of critical points and randomization probabilities are included in Appendix A.

Power surfaces of D_1 , D_2 , D_3 and D_e are plotted in Figures 2, 3, and 4 for selected values of $\rho = t/s$ and B . These show the robustness of D_3 and compare D_1 , D_2 , and D_3 with the exact rule D_e . An extensive set of D_3 power surface sections is graphed in Appendix B. The limiting power of all four rules as $(C + B)t$ and Bs approach infinity is also derived in Section IV. Graphs of the limiting power surface sections are included in Appendix E.

Section V considers the answer to question Q_3 from the standpoint of confidence interval estimation. Two different confidence interval rules I_1 and I_4 for C are described and compared in detail. The approximate $100(1-\alpha)\%$ confidence forms of these rules are:

I_1 . Decide that C satisfies

$$\tilde{C} - n_{\alpha/2} [x/t^2 + y/s^2]^{1/2} \leq C \leq \tilde{C} + n_{\alpha/2} [x/t^2 + y/s^2]^{1/2};$$

I_4 . Decide that C satisfies

$$L_4(x, y, \rho, \alpha) / t \leq C \leq U_4(x, y, \rho, \alpha) / t.$$

For the customary confidences of 90%, 95%, and 99%, the $n_{\alpha/2}$ values are $n_{0.05} = 1.645$, $n_{0.025} = 1.960$, and $n_{0.005} = 2.576$, respectively. The L_4 and U_4 endpoint functions of I_4 are tabled in Appendix D for appropriate $x, y, \rho = t/s$ and $1-\alpha$ values. Both the rules are based on the normal approximation to the Poisson distribution, so the stated confidence coefficients are not exact.* Rule I_1 is the symmetric confidence interval formulation of rule D_1 of (2). Rule I_4 is based on a joint confidence region for B and C approach. The mathematical details of the argument constitute Appendix C.

In Section V the two rules are compared with respect to exact confidence coefficients and expected interval lengths. Tables are contained in Appendix D. Rule I_4 is seen to be robust against the departures from normality resulting from very small expected total counts. An asymptotic length formula for both rules when $(C + B)t$ and Bs are large is derived in Section V. A graph is included in Appendix E.

The importance of the background estimate y/s for good inference is considered in Section VI. Graphs show the effect on both power of hypothesis tests and expected length of confidence intervals of varying the background information parameter $\rho = t/s$ and the expected total background count Bt . Asymptotic results are also included.

In the first half of Section VI it is assumed that a background estimate is only used once. The remainder of the Section considers the average value characteristics of rules when the same background

* It is not possible to construct an exact confidence interval for C (except in the trivial instance when it is known that $b = B$) based on Poisson variables x and y . Alternative approaches do exist. Probably the best solution to the whole area of statistical inference based on a few counts is to change the fundamental counting procedure from one of monitoring the random number of counts in a fixed time period to one of monitoring the random time to accumulate a fixed number of counts. This latter procedure based on random time does not suffer from the discreteness limitation of the Poisson distribution. Statistical techniques for random time counting are not discussed here. A discussion of random time procedures and related sequential techniques is included in Reference(4)

estimate is used to correct a number of different sample gross counts.

II. RECOMMENDATIONS

The mathematical and numerical investigations into the three questions Q_1 , Q_2 , and Q_3 raised in Section I are reported in detail in later sections of this paper. The specific recommendations resulting from this work are presented below in the form of several rules of thumb. These recommendations are meant to cover a gamut of possible combinations of expected background count tB , sample to background counting times ratio ρ and level of significance $100\alpha\%$ (or confidence coefficient $1-\alpha$). As such they will have deficiencies in specific circumstances. If a priori information is available concerning tB (a range, or upper, or lower bound, for example), a specific set of ρ values is under consideration, and/or a particular α is to be used, detailed reading of later text material will undoubtedly produce a rule superior to the rules of thumb below.

The choice of a hypothesis testing rule to answer question Q_1 could best be based on ρ , sB , and the discrepancy between stated $100\alpha\%$ level of significance and true level of significance that the experimenter can tolerate. Since sB is unknown, y is substituted as a choice parameter. The rule D_3 has the smallest such discrepancy if $\rho \leq 1$ (Table I). The discrepancy is positive and decreases as tB increases for fixed ρ . Power surface sections (Appendix B) suggest the following rule of thumb:

$$\text{RT}_1: \text{ For stated } \alpha \text{ equal to } \begin{Bmatrix} 0.10 \\ 0.05 \\ 0.01 \end{Bmatrix}^* \text{ use decision rule } D_3 \text{ when } \rho \leq 1 \text{ and } y > \begin{Bmatrix} 5 \\ 10 \\ 15 \end{Bmatrix} ; \text{ use exact decision rule } D_e \text{ when } \rho > 1 \text{ and/or } y \leq \begin{Bmatrix} 5 \\ 10 \\ 15 \end{Bmatrix} .$$

* In the remainder of the statement, use the top quantity in each bracket with 0.10, the second with 0.05, etc.

In using RT_1 almost all applications of D_3 when H_0 is true will have the

true type I error $\bar{\alpha}$ satisfying $\begin{Bmatrix} 0 & 10 \\ 0.05 & \\ 0.01 & \end{Bmatrix} \leq \alpha \leq \begin{Bmatrix} 0.12 \\ 0.07 \\ 0.02 \end{Bmatrix}$. This discrepancy

range would seem to be acceptable under most conditions. Tighter or looser bounds on the discrepancy are best accomplished by increasing or decreasing, respectively, the y bound for use of D_3 .

The threshold C_0 of question Q_2 is definable in terms of power (Section III). Thus, C_0 as a function of $1 - \beta$ is the smallest expected net sample counting rate for which a particular decision rule (with specified level of significance) has power not less than $1 - \beta$. For large x and y the asymptotic power function (28) and power curves of Appendix B suggest the following rule of thumb.

RT_2 . For stated $100\alpha\%$ level of significance, power $(1 - \beta) \geq 1/2$, and expected background contribution to sample count tB the threshold C_0 for decision rule D_3 satisfies

$$C_0 \geq \sqrt{tB(1 + \rho)} (n_\alpha + n_\beta)/t.$$

Equality is approximately satisfied for $tB \geq 50$.

The asymptotic curves of Appendix E, Figures E.1, E.2, and E.3, give the equality form of this threshold relationship. For finite x and y the inequality is strict. The approach to the limiting form for fixed ρ is depicted in the families of power sections of Appendix B. In each figure the limiting power section is the straight line on the far left of the family of curves. The first curve to the right of the straight line corresponds to $tB = 50$.

A common practice when different counting systems are being compared is the basing of the selection of the best system on the "signal to noise ratio", or, in previously defined symbols, the ratio C/B . The present investigation suggests the alternative rule of thumb.

RT'_2 . The probability of detecting a net sample counting rate C in the presence of a known average background counting rate B based on a counting period of time t increases with $(tC)/(tB)^{1/2}$.

If the expected background rate is unknown and estimated over a period of time s the detection probability increases with $(tC)/[tB(1 + \rho)]^{1/2}$.

Our rule of thumb RT_2' is quite close to the "figure of merit" C^2/B suggested by Arnold.⁽⁵⁾ To think in terms of counting rates can be misleading if alternatives involve different counting schedules. The expected total count attributed to the sample tC and the expected total background count in the gross sample count tB are the fundamental quantities which control detection and also precision of estimating C , the subject of question Q_3 .

To answer question Q_3 , a confidence interval estimate of C can be constructed around $\tilde{C}$ as a "center." For $tB > 1$ and $\rho \leq 1$, both confidence intervals I_1 and I_4 have true confidence coefficients close to the stated ones. In this region I_4 is conservative in the sense that its confidence coefficient is never less than the stated one. I_1 confidence coefficients fluctuate around the stated one, being significantly low most of the time for small tB . The differences in the two confidence coefficients become negligible for $tB > 10$. Rephrasing in terms of y gives the following rule of thumb:

RT_3 : For any of the confidence coefficients 0.90, 0.95, and 0.99 and $\rho \leq 1$ use confidence interval rule I_4 if $2 + 3/2\rho \leq y \leq 6 + 12/\rho$ and use I_1 if $6 + 12/\rho < y$. Use of either I_1 or I_4 is questionable if $y < 2 + 3/2\rho$.

The conservative nature of rule I_4 is compromised somewhat by expected confidence interval lengths that are longer than those for I_1 . The greatest differences are for $\rho = 1/10$ and tC and tB small. (Using the net count form of the intervals, the greatest difference is about 4 with $1 - \alpha = 0.99$, about 2.5 with $1 - \alpha = 0.95$, and about 1.3 with $1 - \alpha = 0.90$). As either $1/\rho$, tC , or tB increases the differences decrease. The rule of thumb RT_3 is the result of the author's preference for a rigid lower bound on the confidence over a shorter expected length.

The theoretical and numerical results of Sections IV and V were reevaluated in Section VI to determine the importance of the background estimate for high power in hypothesis tests and for short confidence intervals. The results are summarized in the following rule of thumb:

RT₄: If a choice is available as to the allocation of a fixed total counting time between sample and background (where the background is not to be used for other samples), split the counting time equally between sample and background ($\rho = 1$). If a background count is needed to match a sample counted for a fixed time t , the background counting time s should always satisfy $s \geq t$; only in extreme situations should $s > 3t$.

In the last part of Section VI it is shown that the average value properties of hypothesis tests and confidence intervals do not change when backgrounds are used to correct several samples. However, the variance of the fraction of correct decisions and the average confidence interval length both increase with the number of times the background is used, because answers tend to be blocked on background. Numerical investigation of the asymptotic variance for hypothesis tests suggests the following rule of thumb for combating this effect by increasing the precision of the background estimate:

RT₅: Suppose each background estimate, based on a count over time s , is to be used to correct M independent samples, each based on count over time t . ρ and M should be inversely related in agreement with the following:

For $M \leq 10$, have $\rho \leq 1$;
 For $M = 25$, have $\rho \approx 1/4$;
 For $M = 75$, have $\rho \approx 1/10$.

As indicated in Section I the investigations reported in the paper are concerned with the region of appreciable background correction, defined as $0 \leq k = (tC)/(tB)^{1/2} < 15$. The above rules of thumb only apply in this region. For large k background is a nominal problem. A reasonable rule of thumb which insures sufficient background information without being overly conservative is the familiar rule which minimizes the variance of $\tilde{C}$:

RT₆: For $k \geq 15$ and either hypothesis testing or confidence interval applications select

$$\rho \approx (B + C)^{1/2} / B^{1/2}.$$

III. STATISTICAL CONCEPTS

To insure that the reader is familiar with the statistical concepts needed to discuss the questions raised in the introduction, the following description of hypothesis testing and confidence interval estimation is included. For a more detailed treatise of these concepts the reader is referred to any of a number of standard statistical tests; e. g., (6, 7, 8). The description below is purposely couched in terms of the specific application dealt with in the paper.

Let x and y be independent Poisson chance variables with mean values $(B + C)t$ and Bs , respectively. The sample space S for x and y , the set of all possible experimental values that can be taken on by x and y , is the infinite lattice of points (x, y) with x and y non-negative integers. The joint probability density function (p. d. f.) for x and y defined on the points of S has the form

$$\{\exp[-(B + C)t - Bs]\} [(B + C)t]^x (Bs)^y / x! y!. \quad (3)$$

Let Ω be the closed first quadrant of two-dimensional space. With t and s fixed by the experimental situation there is a one-one correspondence between the possible p. d. f. 's for x and y and the points (B, C) of Ω . The set Ω is called the "parameter space." Let ω be the subset of Ω consisting of all points of the form $(B, 0)$.

The null hypothesis H_0 of Section I now states that the true p.d.f. in (3) for x and y corresponds to a point of ω , or simply "is a point of ω ." The alternative hypothesis H_C states that the true p.d.f. is a point of $\Omega - \omega$. A decision rule for answering question Q_1 is a mapping of the sample space S on to the parameter space Ω . S is divided into two sets, say S_0 and S_C . If the experimental point (x, y) falls in S_0 decision H_0 or ω is made. However, if it falls in S_C decision H_C or $\Omega - \omega$ is made.

In the Neyman and Pearson theory of hypothesis testing⁽³⁾ the goodness of a decision rule is measured by the probability with which it makes wrong decisions. Two different wrong decisions are possible depending upon the true value of C . However, in any given application it is only possible to make one of these errors. If H_0 is true, the only possible error is to decide H_C is true. This error is called "alpha" or "type I." The probability of an alpha error occurring is designated by a lower case α . Symbolically,

$$\begin{aligned}\alpha(B, t, s) &= \Pr \{(x, y) \in S_C | C = 0, B, t, s\} \\ &= \Pr \{H_C | \omega\}.\end{aligned}\tag{4}$$

Here, the mathematical notation $\Pr\{A|B\}$ stands for the probability that the event A will occur given that the state of affairs is B . The familiar term "level of significance" refers to α expressed in percent; i.e., the level of significance is $100\alpha\%$. In general, the alpha error for a decision rule will depend upon B, t , and s . This dependence is indicated in (4) above. If H_C is true, an error is committed only when decision H_0 is made. Such an error is called "beta" or "type II." The probability of a beta error occurring is analogously designated by a lower case β . As above

$$\begin{aligned}\beta(C, B, t, s) &= \Pr \{(x, y) \in S_0 | C, B, t, s\} \\ &= \Pr \{H_0 | \Omega - \omega\}.\end{aligned}\tag{5}$$

In addition to depending on B, t , and s , β is a function of C . For a reasonable decision rule, β would be a decreasing function of C ; i.e., the larger that C is, the less likely that a beta error would be committed. Also, one would expect that as $C \rightarrow +\infty$, $\beta(C, B, t, s) \rightarrow 0$ for every fixed set (B, t, s) . The complement of β , $1 - \beta$, is called the "power" of the decision rule. Clearly,

$$1 - \beta(0, B, t, s) = \alpha(B, t, s). \quad (6)$$

The complete picture of the probabilities of errors, both types I and II, is depicted by a three-dimensional plot of the power surface over Ω . A typical power surface appears in Figure 1.

FIGURE 1

Typical Power Surface for a Decision
Rule Test of H_0 Against H_C

For the moment suppose that the background counting rate in our problem is known to be $B = B_0$, i.e., the parameter space is one-dimensional consisting of all points (B_0, C) . The structures of the two hypotheses H_0 and H_C are quite different. H_0 completely specifies the distribution of the chance variables x and y . As such it is called a "simple" hypothesis. H_C merely states that the distribution of x is one of an infinite family with C positive. Or in other words, H_C is the union of an infinite number of simple hypotheses. The distinction is made by calling H_C a "composite" hypothesis. The Neyman and Pearson selection criterion for a best decision rule is that both alpha and beta errors be nominal in the following sense.

First, a tolerable alpha error α is specified, say $\alpha = 0.05$, a 5% level of significance. Usually an infinite family of decision rules will have an alpha error not greater than 0.05. Second, from among this family of rules one is selected which makes β small. Since β is a function of C , one particular value of C , say C_1 , is considered. Any rule which minimizes $\beta(C_1, B, t, s)$ over the entire family is called a "most powerful" decision rule for C_1 at level α , since minimizing β is equivalent to maximizing power at C_1 . Usually, the most powerful rule changes with C_1 . The cases when the Neyman and Pearson approach is really fruitful are those for which the most powerful rule is independent of C_1 . Such a rule is called "uniformly most powerful." Referring to Figure 1 the depicted decision rule would be uniformly most powerful for $B = B_0$ if above the line $B = B_0$ in Ω the surface were the envelope of all possible decision rules with the same type I error. If one accepts the thesis that minimizing alpha and beta errors is the correct way to select a decision rule and, if the rule most suffice for a range of C values, a uniformly most powerful rule would seem to be the best that one could hope for.

Our problem is complicated because the parameter space Ω is two dimensional. The uniformly most powerful rule for $B = B_0$ is a function of B_0 . So, with B unknown, a uniformly most powerful rule does not exist. In general, the level of significance of any decision rule changes with B . For our problem there are rules which have constant level of significance independent of B . (The power surface in Figure 1 is for such a rule.) These rules are called "similar rules" or "rules with Neyman structure" after Neyman who first discussed their existence⁽⁹⁾. For each type I error α there is a unique uniformly most powerful similar rule for our problem.

In Section IV four different decisions rules D_1 , D_2 , D_3 and D_e are described and their power surfaces compared. The first three rules, D_1 , D_2 , and D_3 , are based on the normal approximation to the Poisson distribution. Nominal levels of significance, 1%, 5%, and 10%, are set for these rules using normal distribution theory. The actual levels fluctuate around the nominal ones as B , t , and s vary. The selection of a best rule from among the set of three entails not only a comparison of the power surfaces but also a comparison of the degree of fluctuation of the actual significance levels about the nominal ones.

The attraction of rules based on a normal approximation is that of simplicity. Tables are not needed for application. As a reference the exact significance level rule D_e is evaluated also. Since D_e is the uniformly most powerful similar rule for all alternative hypotheses H_C ($C > 0$), an optimum standard is provided against which to measure the power characteristics of the simple rules D_1 , D_2 , and D_3 .

In confidence interval estimation a random interval $I(x, y, t, s)$ is constructed with the property that the probability that $I(x, y, s, t)$ covers the true net sample counting rate C is a fixed fraction $1 - \alpha$, independent of the actual value of C . It is important to realize that it is the interval, not the unknown count rate C , which is random. After

an experimental observation (x, y, t, s) has been taken and a particular interval $I(x, y, t, s)$ has been constructed there is no probability involved. The parameter C , though unknown, is an absolute quantity, not subject to random fluctuations. Either it has been covered by I or it has not. The term "confidence" describes the goodness of the covering I in an average frequency sense. In a large number of independent applications of the random interval technique approximately $100(1 - \alpha)\%$ of the intervals will actually cover the true value of C . While a definite statement concerning coverage on a particular application is impossible, it can be said that on the average coverage occurs about $100(1 - \alpha)\%$ of the time. This average frequency property of the coverage interval is described on a single application by the statement that one is $100(1 - \alpha)\%$ confident that the parameter C lies in the interval, or that I is a $100(1 - \alpha)\%$ confidence interval for the true value of C . Here, $(1 - \alpha)$ is termed the "confidence coefficient."

Confidence interval decision rules and hypothesis testing decision rules are closely related. In fact, every confidence interval rule I defines a hypothesis testing rule D . The definition is set up in the following manner.

For every experimental data point (x, y, t, s) , D makes decision " H_0 is true" if and only if I covers 0.

Thus, type I error and confidence coefficient are numerically complementary fractions for I and the corresponding D .

In general, there will be an infinite number of confidence interval rules with the same confidence coefficient. The goodness of a rule can be measured by the average length of the interval. This average length will usually increase with C . A best rule for fixed $C = C_1$ would be one which gives the shortest average length. It would be uniformly best if it gave the shortest average length for all $C \geq 0$.

As for hypothesis testing rules the fact that the background counting rate B is unknown complicates the evaluation of confidence interval rules. Two rules I_1 and I_4 are discussed in Section V. Both are based on the normal approximation to the Poisson distribution. Stated confidence coefficients of 0.90, 0.95, and 0.99 define the rules. Evaluation consists of investigating the true confidence and average length as functions of B , C , t and s .

It is not possible to construct an exact confidence interval rule for C when B is unknown so there is no optimum standard with which to compare I_1 and I_4 . An exact rule for the ratio C/B does exist (see Chapman⁽¹⁰⁾) which is the confidence interval rule that defines the hypothesis testing rule D_e discussed in Section IV.

IV. HYPOTHESIS TESTS

Let x and y be independent Poisson chance variables with mean values $t(B + C)$ and sB , respectively. With t and s known there is a one-one correspondence between the possible p.d.f.'s for x and y and the parameter space Ω consisting of all points (B, C) in the closure of the first quadrant of the two-dimensional Cartesian plane. Let ω be the subset of Ω consisting of all points of the form $(B, 0)$. The problem is to construct a decision rule, based only on the knowledge of x, y, t , and s to test the null hypothesis,

$$H_O : C = 0, \quad (7)$$

(i.e., that the true parameter point lies in ω) against the alternative hypothesis,

$$H_C : C > 0, \quad (8)$$

(i.e., that the true parameter point lies in $\Omega - \omega$).

Normal Approximation Decision Rules

The simplest approach to the solution of the above problem is to assume that x and y are normally distributed, construct a standard normal

zero-one statistic, substitute estimates for parameters where needed, and test whether the resulting statistic is significantly larger than zero assuming a normal zero-one distribution. This approach gives a decision rule of the form

$$D: \text{Decide } H_C \text{ is true if } x - \rho y > n_\alpha \tilde{\sigma}; \quad (9)$$

Otherwise, decide H_O is true.

Here, $\rho = t/s$, the ratio of the means when H_O is true. The quantity n_α is the $100(1 - \alpha)$ percentile of the normal distribution with mean zero and variance one; i.e., n_α satisfies $F(n_\alpha) = 1 - \alpha$, where F is the cumulative normal distribution function defined as

$$F(u) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^u e^{-a^2/2} da. \quad (10)$$

The quantity $\tilde{\sigma}$ is an estimate of the standard deviation σ of $x - \rho y$.

It is well known (e.g., Feller⁽¹¹⁾, p. 230) that the normality assumption is valid in the limit as $t(B + C) \rightarrow +\infty$ and $sB \rightarrow +\infty$. If both means $t(B + C)$ and sB are sufficiently large and if $\tilde{\sigma}$ is a good estimate of σ , the normal approximation approach should be almost exact in the sense that the actual type I error will be about equal to the stated one α . In addition, the test should have uniformly high power since the corresponding normal distribution test is uniformly most powerful. In the sequel three normal approximation tests are considered, each based on a different $\tilde{\sigma}$ estimate. Their power surfaces are investigated to determine the goodness of the type I error approximation for small mean values and to determine the regions of the parameter space Ω where one test is powerwise superior to the others.

$$\begin{aligned} \text{The variance } \sigma^2 \text{ of } x - \rho y \text{ is} \\ \sigma^2 &= t(B + C) + \rho^2(sB) = (tC) + \rho(1 + \rho)(sB) \\ &= (tC) + (1 + \rho)(tB). \end{aligned} \quad (11)$$

From the first line of (11) the most obvious unbiased estimate of σ^2 is

$$\tilde{\sigma}_1^2 = x + \rho^2 y. \quad (12)$$

The estimate $\tilde{\sigma}_1$ gives the decision rule

$$D_1. \text{ Decide } H_C \text{ is true if } x - \rho y > n_\alpha [x + \rho^2 y]^{1/2}; \quad (13)$$

Otherwise, decide H_0 is true.

Statement (13) will be called a "net count" formulation of the decision rule D_1 because in the physical application $x - \rho y$ is the sample net count estimate. Division of the inequality in D_1 by t gives the "net count rate" form of the rule. The net count rate forms of all the rules are stated in (2) of the introduction.

Use of the variance estimate $\tilde{\sigma}_1^2$ in a decision rule with null hypothesis H_0 is not in agreement with the classical Neyman and Pearson theory of hypothesis testing.⁽³⁾ Strictly speaking, the null hypothesis variance of $x - \rho y$ belongs in the decision rule. In lieu of this, an estimate should be used which is not seriously affected by the introduction of a positive sample ($C > 0$) into the null background-only distribution. For $\rho \leq 1$, the case of practical interest, D_1 places most of the weight in the variance estimate on x which causes C to affect the decision rule in the worst possible manner. Accordingly, the power of D_1 suffers.

From (11) the simplest estimate of σ^2 when $C = 0$ is

$$\tilde{\sigma}_2^2 = \rho(1 + \rho)y, \quad (14)$$

which gives the decision rule

$$D_2. \text{ Decide } H_C \text{ is true if } x - \rho y > n_\alpha [\rho(1 + \rho)y]^{1/2}; \quad (15)$$

Otherwise, decide H_0 is true.

When $C = 0$, x by itself possesses information about B , in fact, the mean of x is just tB . The proper linear combination of x and y will give a better estimate of σ than either $\tilde{\sigma}_1$ or $\tilde{\sigma}_2$. Now, x and ρy are independent unbiased estimates of tB with variances (tB) and $\rho(tB)$, respectively. Thus,

$$\left[\frac{x}{tB} + \frac{\rho y}{\rho(tB)} \right] \bigg/ \left[\frac{1}{tB} + \frac{1}{\rho(tB)} \right] = \frac{\rho(x+y)}{1+\rho}, \quad (16)$$

is the minimum variance, unbiased, linear estimate of tB based on x and y . The result (16) gives

$$\tilde{\sigma}_3^2 = \rho(x+y) \quad (17)$$

as the minimum variance, unbiased, linear estimate of σ^2 based on x and y when $C = 0$. The net count form of the corresponding decision rule is

$$D_3. \text{ Decide } H_C \text{ is true if } x - \rho y > n_\alpha [\rho(x+y)]^{1/2}; \quad (18)$$

Otherwise, decide H_0 is true.

An interesting property of D_3 is its symmetric treatment of sample and background information - a property not shared by either D_1 or D_2 . Of course, this symmetry is a direct consequence of the optimum weighting of the two counts as illustrated in (16).

If the background count is taken over a very long time period so that y and s dominate the variance calculation (i.e., $y \xrightarrow{\text{Pr}} +\infty, s \rightarrow +\infty, y/s \xrightarrow{\text{Pr}} B$), the rule D_3 reduces to a test of whether the sample counting rate x/t is a normal variable with mean B and variance B/t . Or, in other words, it is a test of whether x/t is too large to be an observation from the known background distribution. On the other hand, if the sample count dominates (i.e., $x \xrightarrow{\text{Pr}} +\infty, t \rightarrow +\infty, x/t \xrightarrow{\text{Pr}} B+C$), D_3 reduces to a test of whether the background counting rate y/s is too small to be an observation from the known sample total count distribution.

For a given value of ρ , tB and α the exact significance levels of the decision rule D_i ($i = 1, 2, 3$), say $\alpha_i(\rho, tB, \alpha)$, is

$$\begin{aligned} \alpha_i(\rho, tB, \alpha) &= \Pr \{ (x, y) \in S_i \mid \rho, tB, \alpha, C = 0 \} , \\ &= [\exp -(1 + \rho)tB] \sum_{(x, y) \in S_i} (tB)^x (\rho tB)^y / x! y! . \end{aligned} \quad (19)$$

The set S_i is the subset of the sample space where the points (x, y) satisfy $x - \rho y > n_{\alpha} \tilde{\sigma}_i$. The calculation (19) was done on an IBM 7090 for a representative set of ρ , tB and α values. Some of these results for the three decision rules D_1 , D_2 , and D_3 and stated significance levels of 1%, 5%, and 10% are reported in Table I. For each significance level the $\rho = 0$ entries are the limiting probabilities when the background counting rate B is known exactly. (This is mathematically equivalent to a background estimate based on an infinite counting period.) In the limit D_2 and D_3 are identical. D_1 neglects the variance information in B , using $x^{1/2}$ as a variance estimate.

The comparison of the significance levels of D_1 , D_2 , and D_3 in Table I clearly shows the robustness of D_3 . The pattern of the exact levels is similar for all three levels, $\alpha = 0.01$, 0.05 , and 0.10 . Dropping the argument of the α_i functions defined in (19), the fundamental characteristics of the patterns seem to be:

1. For $0 < \rho \leq 1/2$, α_3 is uniformly closer to α than either α_1 or α_2 . The ordering of the errors is $\alpha_1 < \alpha < \alpha_3 < \alpha_2$. The biases in α_1 and α_2 are extreme for small tB and $\alpha = 0.01$; both biases decrease as tB increases, while α_1 bias decreases and α_2 increases as α and/or ρ increases. Only for isolated instances with $tB = 1, 2$ is α_3 badly biased.

TABLE I

EXACT SIGNIFICANCE LEVELS FOR DECISION RULES D_1 , D_2 , AND D_3 Stated Level of Significance: $1\%(n_\alpha = 2.326)$ Expected Total Background Contribution - (tB)

$\rho = t/s$		<u>1</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>
0	D_1	0.000	0.000	0.000	0.001	0.002	0.002	0.003	0.004	0.004	0.004
	D_2	0.018	0.017	0.012	9.014	0.014	0.019	0.013	0.015	0.014	0.012
	D_3	0.018	0.017	0.012	0.014	0.014	0.019	0.013	0.015	0.014	0.012
1/10	D_1	0.000	0.000	0.000	0.001	0.002	0.003	0.003	0.004	0.005	0.005
	D_2	0.042	0.029	0.025	0.022	0.018	0.017	0.016	0.014	0.014	0.013
	D_3	0.024	0.022	0.020	0.017	0.015	0.014	0.014	0.013	0.013	0.012
1/5	D_1	0.000	0.000	0.001	0.001	0.003	0.003	0.004	0.005	0.005	0.006
	D_2	0.041	0.038	0.031	0.023	0.020	0.018	0.017	0.016	0.015	0.014
	D_3	0.019	0.017	0.018	0.017	0.014	0.013	0.013	0.012	0.012	0.012
1/3	D_1	0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.006	0.006
	D_2	0.094	0.051	0.036	0.029	0.021	0.020	0.018	0.017	0.016	0.015
	D_3	0.021	0.019	0.016	0.014	0.012	0.013	0.012	0.012	0.012	0.012
1/2	D_1	0.000	0.001	0.002	0.003	0.005	0.005	0.006	0.007	0.007	0.007
	D_2	0.113	0.072	0.052	0.037	0.026	0.022	0.020	0.018	0.017	0.016
	D_3	0.012	0.013	0.013	0.013	0.012	0.012	0.011	0.011	0.011	0.011
1	D_1	0.000	0.003	0.006	0.009	0.009	0.010	0.010	0.010	0.010	0.010
	D_2	0.234	0.133	0.083	0.058	0.036	0.031	0.027	0.022	0.020	0.019
	D_3	0.000	0.003	0.006	0.009	0.009	0.010	0.010	0.010	0.010	0.010
2	D_1	0.000	0.006	0.019	0.033	0.022	0.021	0.019	0.016	0.016	0.015
	D_2	0.383	0.319	0.216	0.109	0.058	0.046	0.039	0.030	0.027	0.025
	D_3	0.000	0.000	0.000	0.001	0.005	0.006	0.006	0.007	0.008	0.008

TABLE I (Continued)

EXACT SIGNIFICANCE LEVELS FOR DECISION RULES D_1 , D_2 , AND D_3 Stated Level of Significance: $5\%(n_\alpha = 1.645)$ Expected Total Background Contribution - (tB)

$\rho = t/s$		<u>1</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>
0	D_1	0.004	0.005	0.012	0.014	0.027	0.033	0.034	0.032	0.039	0.032
	D_2	0.080	0.053	0.084	0.068	0.049	0.053	0.052	0.046	0.053	0.056
	D_3	0.080	0.053	0.084	0.068	0.049	0.053	0.052	0.046	0.053	0.056
1/10	D_1	0.005	0.011	0.015	0.020	0.027	0.030	0.032	0.035	0.037	0.038
	D_2	0.086	0.076	0.071	0.066	0.061	0.060	0.059	0.057	0.056	0.055
	D_3	0.067	0.064	0.063	0.060	0.058	0.056	0.055	0.054	0.054	0.054
1/5	D_1	0.007	0.015	0.018	0.023	0.030	0.034	0.034	0.037	0.038	0.040
	D_2	0.107	0.086	0.077	0.069	0.065	0.065	0.060	0.958	0.057	0.057
	D_3	0.069	0.062	0.059	0.057	0.054	0.055	0.055	0.054	0.053	0.053
1/3	D_1	0.009	0.016	0.023	0.029	0.032	0.035	0.037	0.040	0.041	0.042
	D_2	0.111	0.095	0.084	0.078	0.069	0.064	0.062	0.060	0.059	0.058
	D_3	0.094	0.059	0.056	0.057	0.055	0.054	0.054	0.053	0.052	0.052
1/2	D_1	0.017	0.028	0.030	0.031	0.037	0.039	0.040	0.042	0.043	0.044
	D_2	0.166	0.122	0.107	0.083	0.071	0.069	0.066	0.063	0.061	0.060
	D_3	0.063	0.070	0.062	0.053	0.052	0.053	0.052	0.053	0.052	0.052
1	D_1	0.030	0.050	0.050	0.052	0.049	0.050	0.050	0.050	0.051	0.050
	D_2	0.240	0.160	0.122	0.098	0.087	0.079	0.073	0.070	0.068	0.065
	D_3	0.030	0.050	0.050	0.052	0.049	0.050	0.050	0.050	0.051	0.050
2	D_1	0.049	0.110	0.133	0.101	0.073	0.069	0.065	0.063	0.061	0.060
	D_2	0.383	0.320	0.224	0.139	0.116	0.095	0.090	0.081	0.076	0.072
	D_3	0.000	0.006	0.019	0.038	0.040	0.042	0.046	0.047	0.046	0.047

TABLE I (Continued)

EXACT SIGNIFICANCE LEVELS FOR DECISION RULES D_1 , D_2 , AND D_3 Stated Level of Significance: $10\%(n_\alpha = 1.282)$ Expected Total Background Contribution - (tB)

$\rho = t/s$		1	2	3	5	10	15	20	30	40	50
0	D_1	0.019	0.053	0.034	0.068	0.083	0.083	0.078	0.089	0.092	0.092
	D_2	0.080	0.143	0.084	0.133	0.083	0.125	0.112	0.089	0.092	0.092
	D_3	0.080	0.143	0.084	0.133	0.083	0.125	0.112	0.089	0.092	0.092
1/10	D_1	0.031	0.042	0.050	0.060	0.071	0.075	0.078	0.082	0.084	0.086
	D_2	0.117	0.120	0.113	0.111	0.108	0.107	0.106	0.105	0.105	0.104
	D_3	0.114	0.113	0.113	0.107	0.106	0.105	0.103	0.103	0.102	0.102
1/5	D_1	0.033	0.050	0.059	0.064	0.074	0.079	0.082	0.084	0.087	0.087
	D_2	0.129	0.127	0.128	0.118	0.116	0.109	0.109	0.107	0.107	0.106
	D_3	0.116	0.112	0.106	0.106	0.104	0.104	0.103	0.102	0.102	0.102
1/3	D_1	0.048	0.055	0.059	0.074	0.080	0.081	0.085	0.088	0.090	0.090
	D_2	0.154	0.127	0.118	0.124	0.115	0.115	0.111	0.110	0.108	0.108
	D_3	0.112	0.115	0.115	0.105	0.104	0.101	0.103	0.102	0.101	0.101
1/2	D_1	0.063	0.072	0.075	0.079	0.085	0.089	0.090	0.091	0.092	0.093
	D_2	0.183	0.155	0.146	0.134	0.121	0.117	0.114	0.111	0.111	0.110
	D_3	0.116	0.102	0.108	0.108	0.104	0.101	0.102	0.101	0.101	0.101
1	D_1	0.104	0.124	0.115	0.101	0.101	0.101	0.101	0.101	0.100	0.099
	D_2	0.263	0.220	0.185	0.148	0.133	0.125	0.123	0.119	0.116	0.114
	D_3	0.104	0.124	0.115	0.101	0.101	0.101	0.101	0.101	0.100	0.099
2	D_1	0.160	0.220	0.190	0.136	0.122	0.122	0.119	0.114	0.111	0.111
	D_2	0.384	0.324	0.241	0.179	0.155	0.141	0.140	0.134	0.127	0.123
	D_3	0.012	0.053	0.083	0.091	0.093	0.097	0.097	0.097	0.098	0.099

2. For $\rho = 1$, $\alpha_3(\alpha_1)$ is uniformly closer to α than α_2 . With $\alpha = 0.01$ or 0.05 the ordering is $\alpha_3(\alpha_1) < \alpha < \alpha_2$, while for $\alpha = 0.10$ it is $\alpha < \alpha_3(\alpha_1) < \alpha_2$. The bias in α_2 is increased in the same monotone pattern stated above. Only for $tB = 1, 2$ and $\alpha = 0.01$ is $\alpha_3(\alpha_1)$ badly biased.
3. For $\rho = 2$, the picture is not so orderly. The bias in α_1 is decreased over that for $\rho = 1$, and that in α_2 increased. α_3 has an extreme negative bias for small tB .

From a practical standpoint, since tB is not known exactly, background and counting time ratio ranges must be determined over which the exact significance level does not deviate excessively from the stated one. Of course, what constitutes an excessive deviation must be left to the judgment of the user. A reasonable scale of acceptability would seem to be that for $\alpha = 0.01$ exact levels in the range 0.005 to 0.02 are acceptable, for $\alpha = 0.05$ exact levels in the range 0.035 to 0.065 are acceptable and for $\alpha = 0.10$ exact levels in the range 0.08 to 0.12 are acceptable. Based on this scale of acceptability and on the fact that negative bias in the significance level is coupled with a general depression in the power function (see Figures 2, 3, 4), D_3 is certainly superior to D_1 and D_2 .

Uniformly Most Powerful Similar Decision Rule

When x and y are independent Poisson chance variables with mean values $t(B + C)$ and sB , respectively, the conditional distribution of x given the sum $x + y$ is binomial on $x + y$ trials and success probability $\rho(R + 1) / [\rho(R + 1) + 1]$, where $R = C/B$ and $\rho = t/s$ (e.g., Chapman⁽¹⁰⁾). Since the parameters of this binomial distribution depend only on the sample information x, y, s , and t and the true counting rate ratio C/B , an exact decision rule for the null hypothesis H_0 can be constructed from tables of the binomial distribution.

The mathematical details are contained in Reference⁽¹⁰⁾ and will not be discussed here. This decision rule D_e has the form

$$\begin{aligned} D_e. \text{ Decide } H_C \text{ is true if } x > X_\alpha(x+y, \rho); \\ \text{Decide } H_C \text{ is true with probability} \\ P_\alpha(x+y, \rho) \text{ if } x = X_\alpha(x+y, \rho); \\ \text{Otherwise, decide } H_O \text{ is true.} \end{aligned} \quad (20)$$

The critical point $X_\alpha(x+y, \rho)$ and the probability $P_\alpha(x+y, \rho)$ are fixed numbers which are determined by α , $x+y$, and ρ .

D_e is an example of a randomized decision rule. When $x = X_\alpha$ the decision is based on a random experiment. Figuratively, a coin is tossed with the probability of heads equal to P_α . If the coin lands heads, decision H_C is made; if it lands tails decision H_O is made. Randomization is an academic device to assure that the significance level of the rule is exactly equal to $100\alpha\%$. Since the binomial distribution is discrete, in general, the best that can be done is to select a critical point X_α which brackets the stated type I error α ; i.e., X_α satisfies

$$\Pr\{x > X_\alpha | H_O\} < \alpha < \Pr\{x \geq X_\alpha | H_O\}. \quad (21)$$

When (21) is the case, the rule D_e with

$$P_\alpha(x+y, \rho) = [\alpha - \Pr\{x > X_\alpha | H_O\}] / \Pr\{x = X_\alpha | H_O\} \quad (22)$$

has a type I error equal to α .

The conditional distribution of x given $x+y$ and $C=0$ does not depend upon B . So, the rule D_e has a type I error identical to α on ω . The conditional binomial test on each diagonal $x+y = \text{constant}$ is the uniformly most powerful test of the null hypothesis that the success probability is $\rho/(1+\rho)$ against the one sided alternative that it is larger

than $\rho/(1 + \rho)$. Therefore, the rule D_e is the uniformly most powerful similar decision rule for testing the null hypothesis H_0 against alternative H_C ($C > 0$). Appendix A lists the critical points X_α and the randomization probabilities P_α for $\alpha = 0.01, 0.05$, and 0.10 , and a representative range of $x + y$ and ρ values.

Since the binomial distribution with success probability q and trial parameter m is approximated by a normal distribution with mean mq and variance $mq(1 - q)$ for m large, the exact rule D_e is asymptotically equivalent to the rule D'_e .

D'_e . Decide H_C is true

$$\text{if } x > (x + y) \frac{\rho}{\rho + 1} + n_\alpha \left[\frac{\rho}{\rho + 1} \left(1 - \frac{\rho}{\rho + 1} \right) (x + y) \right]^{1/2}; \quad (23)$$

Otherwise, decide H_0 is true.

Here, n_α is the $100(1 - \alpha)$ percentile of the unit normal distribution. Rewriting the inequality of (23) shows that D'_e is identical to D_3 of (18). Thus, D_3 is the asymptotic form of the uniformly most powerful similar rule D_e for $t(B + C)$ and sB large.

Comparison of Power Surfaces

The exact power surface for the Rule D_i ($i = 1, 2, 3, e$), say $1 - \beta_i(\rho, tB, C, \alpha)$, is

$$\begin{aligned} 1 - \beta_i(\rho, tB, C, \alpha) &= \Pr\{(x, y) \in S_i | \rho, tB, C, \alpha\} \\ &= \{ \exp[-t(B + C) - \rho tB] \} \times \\ &\quad \sum_{\substack{x=0 \\ y=0}}^{\infty} M_i(x, y | \rho, \alpha) [t(B + C)]^x (\rho tB)^y / x! y!. \end{aligned} \quad (24)$$

For rules D_1 , D_2 , D_3 , the function $M_i(x, y, \rho, \alpha)$ satisfies

$$\begin{aligned} M_i(x, y, \rho, \alpha) &= 1 \text{ if } (x - \rho y) > n_{\alpha} \tilde{\sigma}_i; \\ &= 0 \text{ Otherwise.} \end{aligned} \quad (25)$$

Because of the randomization nature of D_e , M_e satisfies

$$\begin{aligned} M_e(x, y, \rho, \alpha) &= 1 \text{ if } x > X_{\alpha}(x + y, \rho); \\ &= P_{\alpha}(x + y, \rho) \text{ if } x = X_{\alpha}(x + y, \rho); \\ &= 0 \text{ Otherwise.} \end{aligned} \quad (26)$$

Table I gives selected values of $1 - \beta_i(\rho, tB, 0, \alpha)$ for $i = 1, 2, 3$. By construction $1 - \beta_e(\rho, tB, 0, \alpha) \equiv \alpha$. These power surfaces were also evaluated numerically at selected points of $\Omega - \omega$ using an IBM 7090 to calculate the series in (24). Specifically, for each of the four decision rules 18 power surfaces, the (ρ, α) pairs for $\rho = 1/10, 1/5, 1/3, 1/2, 1$, and 2 and $\alpha = 0.01, 0.05$, and 0.10 , were investigated numerically. For each surface enough points were calculated to construct ten background constant graphical sections. Figures 2, 3, and 4 compare similar power surface sections of the four decision rules for a representative set of (ρ, α, tB) triples. The entire set of 180 power surface sections for rule D_3 appears in Appendix B.

For direct comparison with the asymptotic portion of the power surface with $t(B + C)$ and sB large the abscissa scales for all power surface sections are expressed in standardized total net sample count units k where

$$k = (tC)/(tB)^{1/2}. \quad (27)$$

FIGURE 2

Power Surface Sections for Stated 1% Level
of Significance Decision Rules D_1 , D_2 , D_3 , and D_e
for Selected tB
and ρ

FIGURE 3
Power Surface Sections for Stated 5% Level
of Significance Decision Rules D_1 , D_2 , D_3 , and D_e
for Selected tB
and ρ

FIGURE 4
Power Surface Sections for Stated 10% Level
of Significance Decision Rules D₁, D₂, D₃, and D_e
for Selected tB
and ρ

Thus, k is the ratio of the expected total net sample count to the square root of the expected total background count in the gross sample count.

The comparisons in Figures 2, 3, and 4 illustrate clearly the relationships among the four power surface sections which are evident for all 180 (ρ, α, tB) triples investigated numerically. First, all four curves are nearly parallel (excluding the region near $C = 0$) for a fixed (ρ, α, tB) triple. This means that the ordering of the powers of the four rules at specific (B_0, C_0) point is the same as the ordering of the exact type I errors at $(B_0, 0)$. Because of the vertical normal probability scale the power increments between the curves do not remain fixed. All curves approach one as C increases. This ordering of the powers points out the importance of keeping the exact type I error close to the stated one. When one of the rules D_1 , D_2 , and D_3 has a large negative bias in α , the power is depressed over the full range of positive C values. On the other hand, the power is uniformly high for a rule with a large positive bias in α . Since the rule D_3 has the exact type I errors closest to the stated ones over a large range of (ρ, α, tB) triples it is superior to D_1 because of less type I error bias and superior D_2 because of higher power.

Second, with $\rho \leq 1$ and tB not too small there does not seem to be any advantage in using the uniformly most powerful similar rule D_e unless it is essential that the type I error be known exactly. For $\rho > 1$ and/or tB small the type I errors of the normal approximation rules are quite erratic. For these cases the rule D_e should be used.

Asymptotic Power Surfaces

When $t(B + C)$ and sB increase without bound the power functions of the four decision rules D_1 , D_2 , D_3 , and D_e all approach the same limiting form. This asymptotic power function is derived below for D_3 . With trivial changes the same argument applies for D_1 and D_2 . It has already been noted above that D_3 and D_e are asymptotically equivalent rules.

Suppose $t(B + C)$ and $sB \rightarrow +\infty$ in such a manner that k of (27) is a fixed positive constant. The limiting power function of the rule D_3 is

$$\lim_{\substack{sB \rightarrow +\infty \\ t(B + C) \rightarrow +\infty}} \Pr\{x - \rho y > n_\alpha [\rho(x + y)]^{1/2} \mid H_C\} = F[k(1 + \rho)^{-1/2} n_\alpha], \quad (28)$$

where F is the cumulative unit normal distribution function defined by (10).

The proof of (28) is straightforward. Let u and v be chance quantities defined as

$$u = (x - \rho y) (tC)^{-1} \text{ and } v = \rho(x + y) (tC)^{-2}. \quad (29)$$

Since x and y are mutually independent Poisson variables with means $t(B + C)$ and tB/ρ , respectively, from (29) we know

$$\begin{aligned} \text{Ave}(u) &= 1; \\ \text{Ave}(v) &= \rho(tC)^{-1} + (1 + \rho)k^{-2} \rightarrow (1 + \rho)k^{-2}; \\ \text{Var}(u) &= (tC)^{-1} + (1 + \rho)k^{-2} \rightarrow (1 + \rho)k^{-2}; \\ \text{Var}(v) &= \rho(tC)^{-3} + (1 + \rho)(ktC)^{-2} \rightarrow 0. \end{aligned} \quad (30)$$

The limits in (30) are approached as $t(B + C)$, $sB \rightarrow +\infty$ consistent with (27). Now u as a linear function of mutually independent Poisson variables which individually in the limit are normally distributed also becomes a normal variable in the limit. From (30) $v \rightarrow (1 + \rho)k^{-2}$ in probability. By a version of Slutsky's theorem (see ⁽⁶⁾, p. 254),

$$\begin{aligned} \lim_{\substack{sB \rightarrow +\infty \\ t(B + C) \rightarrow +\infty}} \Pr\{x - \rho y > n_\alpha [\rho(x + y)]^{1/2} \mid H_C\} \\ &= \lim_{\substack{sB \rightarrow +\infty \\ t(B + C) \rightarrow +\infty}} \Pr\{u > n_\alpha v^{1/2} \mid H_C\} \\ &= \Pr\{u_\infty > n_\alpha (1 + \rho)^{1/2} k^{-1}\}, \end{aligned} \quad (31)$$

where u_{∞} is a normal chance variable with mean 1 and variance $(1 + \rho)k^{-2}$. Evaluation of the last probability in (31) in terms of the unit normal cumulative function gives the desired result in (28).

The sets of asymptotic power surface sections for $\alpha = 0.01$, 0.05, and 0.10, respectively, are included in Appendix D. Each set contains curves for $\rho = 0, 1/10, 1/5, 1/3, 1/2, 1, 2, 3, 5, 10, 25$, and 100.

V. CONFIDENCE INTERVAL ESTIMATES

Let x and y be independent Poisson change variables with mean values $t(B + C)$ and sB , respectively. As for the hypothesis testing problem with t and s known there is a one - one correspondence between the possible p.d.f.'s for x and y and the parameter space Ω consisting of all points (B, C) in the closure of the first quadrant of the two-dimensional Cartesian plane. The problem is to construct a confidence interval estimate of C based only on the knowledge of x, y, s , and t .

Two solutions to the confidence interval problem are described in the sequel. The primary distinction between them is the treatment of the unknown background parameter B . The first interval I_1 is the confidence interval formulation of the symmetric form of the hypothesis testing rule D_1 . I_1 replaces B by the unbiased estimate y/s . The second interval I_4 is an example of a familiar method of eliminating a nuisance parameter (see^(12, 13)) based on joint confidence region estimation of the pair (B, C) . The interval I_1 is classical, the method suggested in most texts on radiochemistry. The interval I_4 has not appeared in print before. Both are based on the normal approximation to the Poisson distribution. For small $t(B + C)$ and sB I_4 is superior to I_1 in some aspects to be explained below. To date, no exact, much less best in any sense, confidence interval for C has appeared in the literature so there is no absolute standard against which these normal approximation procedures can be measured.

Intervals Based on Normal Approximation

With the assumption that x and y are normally distributed, an approximate $100(1 - \alpha)\%$ confidence interval for either the net count tC , or the net count rate C , can be constructed using the two unbiased statistics, the sample net count,

$$t\tilde{C} = x - \rho y, \quad (32)$$

and the estimate of the variance σ^2 in (11) of the sample net count,

$$\tilde{\sigma}_1^2 = x + \rho^2 y. \quad (33)$$

The net count form of this confidence interval I_1 is

I_1 . Decide that C satisfies

$$x - \rho y - n_{\alpha/2}(x + \rho^2 y)^{1/2} \leq tC \leq x - \rho y + n_{\alpha/2}(x + \rho^2 y)^{1/2}. \quad (34)$$

Here, $\rho = t/s$ and $n_{\alpha/2}$ is the $100(1 - \alpha/2)$ percentile of the unit normal distribution (see the discussion leading up to (10)). The rule I_1 is the confidence interval formulation of the symmetric decision rule version of the one-sided rule D_1 .

An alternative interval can be constructed using a joint confidence region approach. With x and y independent normally distributed chance variables the chance function

$$\chi^2 = (x - u)^2/u + (y - v)^2/v, \quad (35)$$

where $u = t(B + C)$ and $v = sB$, has a chi-square distribution with two degrees of freedom. Since $C \geq 0$, the pair (u, v) must satisfy $u \geq \rho v$. Let χ_β^2 be the 100β percentile on this chi-square distribution. Then,

$$\Pr\{\chi^2 \leq \chi^2_{1-\alpha}\} = 1 - \alpha. \quad (36)$$

independently of u and v . The random set $S(x, y)$ of points in the first quadrant of the uv -plane, which is the intersection of the bracketed statement of (36), and the half-plane $\{u \geq \rho v\}$ is a $100(1 - \alpha)\%$ confidence region for the true parameter pair (u, v) . It can be represented as

$$S(x, y) = \{(u, v) \mid (x - u)^2/u + (y - v)^2/v \leq \chi^2_{1-\alpha}, u \geq \rho v \geq 0\}. \quad (37)$$

The set $S(x, y)$ is closed and strictly bounded. As such, any real, continuous function of (u, v) takes on a maximum and minimum value on S . (See Appendix C for the mathematics to justify this argument.) The expected net sample count, $tC = u - \rho v$, is such a function. With t and s fixed the interval (L, U) , where

$$L = \min_{(u, v) \in S(x, y)} (u - \rho v), \quad (38)$$

$$\text{and } U = \max_{(u, v) \in S(x, y)} (u - \rho v),$$

is a confidence interval for the true expected net count with confidence coefficient greater than $(1 - \alpha)$. The equivalent interval for count rate is $(L/t, U/t)$. The calculation of L and U given x, y, ρ , and α is quite tedious. L and U must be approximated by numerical means as they are functions of the roots of an irreducible sixth degree polynomial.

Instead of tabling the conservative interval endpoints in (38), the normal percentile point $n_{\alpha/2}$ was substituted for $(\chi^2_{1-\alpha})^{1/2}$ to give the confidence interval

I_4 . Decide that C satisfies

$$L_4 \leq tC \leq U_4. \quad (39)$$

That is, L_4 and U_4 are defined as L and U in (38) with the set $S(x, y)$ of (37) modified by replacing $\chi_1 - \alpha$ with $n_{\alpha/2}$. Tables of the rule I_4 are given in Appendix D. Because the set $S(x, y)$ is contained in the half-plane $\{u \geq \rho v\}$ both L_4 and U_4 are necessarily nonnegative. For comparison of expected lengths the rule I_1 was also forced to give a nonnegative interval by replacing each endpoint with the maximum of the endpoint and zero.

To compare the performance of the two confidence interval rules I_1 and I_4 the exact probability of covering the true expected net sample count and the expected length of the interval were computed for each rule at all 972 possible combinations of the following parameters:

$$\begin{aligned} tC &= 0, 1, 2, 3, 5, 10, 20, 30, 50; \\ tB &= 1, 2, 3, 5, 10, 20; \\ \rho &= 1/10, 1/5, 1/3, 1/2, 1, 2; \\ 1 - \alpha &= 0.90, 0.95, 0.99 \end{aligned}$$

These calculations generally show that I_1 gives confidence intervals of shorter expected length, and that I_4 has an exact confidence coefficient closer to the stated one. Also, that for I_4 the exact coefficient errs on the conservative side (is greater than the stated one), while for I_1 the exact coefficient errs on both sides of the stated one.

Table II gives a typical comparison of the two rules for a stated confidence coefficient of 0.90 and $\rho = 1/5$. The four columns of the table give exact confidence coefficients and expected lengths for an expected background count of 2 and various expected net sample counts. Rule I_1 exact coefficients vary between 0.985 and 0.867 while those for I_4 between 0.938 and 0.906. For larger background counts the discrepancies between the rules are not as great. Examination of similar tables for the range of $(1 - \alpha, \rho)$ pairs investigated numerically indicate that the major differences between the two rules occur for expected background count of less than ten.

TABLE II
COMPARISON OF CONFIDENCE INTERVAL RULES I_1 AND I_4
FOR STATED 0.90 CONFIDENCE COEFFICIENT, $\rho = 1/5$,
AND EXPECTED BACKGROUND $tB = 2$

<u>tC</u>	<u>Probability of Covering</u> <u>True Expected Net Sample Count tC</u>		<u>Expected Length</u> <u>of Confidence Interval</u>	
	<u>I_1</u>	<u>I_4</u>	<u>I_1</u>	<u>I_4</u>
0	.985	.938	2.7	4.0
1	.869	.906	4.0	5.3
2	.871	.909	5.2	6.5
3	.867	.908	6.4	7.5
5	.878	.913	8.3	9.1
10	.889	.911	11.4	11.9
20	.894	.907	15.5	15.9
30	.894	.906	18.7	19.1
50	.896	.906	23.8	24.2

Appendix D lists the confidence interval endpoints L_4 and U_4 for rule I_4 for all combinations of $1 - \alpha$, ρ , x , and y compatible with an expected background count of not more than ten during the recording of the sample count. For x and/or y beyond the range of the table, the simple rule I_1 can be used. Also in Appendix D the complete set of exact confidence coefficient expected length tables are listed for both rules I_1 and I_4 .

Asymptotic Expected Lengths

When $t(B + C)$ and sB increase without bound the expected lengths of the two confidence interval rules I_1 and I_4 approach the same limiting form. Suppose $t(B + C)$, $sB \rightarrow +\infty$ in such a manner that the standardized expected net sample total count k is constant. This is the same limiting process discussed for hypothesis testing, (see (28)). Let E be the expected length of either I_1 or I_4 . Then,

$$\lim_{\substack{t(B+C) \rightarrow +\infty \\ sB \rightarrow +\infty}} (E/ct) = 2n_{\alpha/2} (1 + \rho)^{1/2} / k. \quad (40)$$

Clearly, when the expected net sample total count $Ct \rightarrow +\infty$, the length of the confidence interval must also approach $+\infty$. The result (40) shows that the ratio of these two quantities approaches a limit. Figure D.1 in Appendix D is a plot of this limiting ratio as a function of ρ and k . The ratio is normalized by division with $2n_{\alpha/2}$ so a single graph suffices for all confidence coefficients.

The proof of (40) for I_1 is straightforward. Let u be the chance quantity defined as

$$u = (x + \rho^2 y)^{1/2} / (tC). \quad (41)$$

Rewrite (41) to give

$$\left| u^2 - \frac{1+\rho}{k^2} \right| = \left| \frac{1}{k^2} \frac{x - t(B+C)}{t(B+C)} + \frac{1}{tC} \frac{x}{t(B+C)} + \frac{\rho}{k^2} \frac{y - sB}{sB} \right|. \quad (42)$$

Using the triangle inequality and taking expectations of both sides of (42)

$$\begin{aligned} \text{Ave} \left| u^2 - \frac{1+\rho}{k^2} \right| &\leq \frac{1}{k^2} \text{Ave} \left| \frac{x - t(B+C)}{t(B+C)} \right| + \frac{1}{tC} \text{Ave} \frac{|x|}{t(B+C)} + \frac{\rho}{k^2} \text{Ave} \left| \frac{y - sB}{sB} \right| \\ &\leq \frac{1}{k^2} \left[\frac{1}{t(B+C)} \right]^{1/2} + \frac{1}{tC} + \frac{\rho}{k^2} \left[\frac{1}{sB} \right]^{1/2}. \end{aligned} \quad (43)$$

From (43) $u^2 - \frac{1+\rho}{k^2} \rightarrow 0$ in mean of order one when $t(B+C)$ and $sB \rightarrow +\infty$.

The inequality,

$$\left| u - \frac{(1+\rho)^{1/2}}{k} \right| \leq \frac{k}{(1+\rho)^{1/2}} \left| u^2 - \frac{1+\rho}{k^2} \right|, \quad (44)$$

(note $u \geq 0$) gives $u \rightarrow (1+\rho)^{1/2}/k$ in mean of order one. Now (40) follows since by definition

$$\text{Ave}(u) = E/2n_{\alpha/2} Ct \quad (45)$$

for rule I_1 .

VI. THE IMPORTANCE OF GOOD BACKGROUND ESTIMATION

In both the hypothesis testing and confidence interval problems discussed in Sections IV and V the goodness of the inference about the unknown net sample count rate C improves with more precise information about the background count rate B . For a fixed expected total background count tB contribution to the sample gross count, the importance of the background estimate can be investigated as a function of the total expected net sample count tC and the sample to background counting time ρ by reorganizing the results presented in Sections IV and V.

Hypothesis Testing

Consider the family of power surface sections for a given decision rule D with tB and α fixed and ρ varying over a set of non-negative values. The curve $\rho = 0$ represents the limiting case when the expected background count is known exactly. Positive ρ curves represent different degrees of information about the background where information increases as ρ decreases. Three of these families of power curves for rule D_3 and (tB, α) pairs of $(10, 0.10)$, $(2, 0.05)$, and $(50, 0.01)$ are plotted in Figures 5, 6, and 7 respectively. The limiting families for $\alpha = 0.01, 0.05, \text{ and } 0.10$ applicable for large $t(B + C)$ and sB , and all four decision rules D_1, D_2, D_3 , and D_e are plotted in Appendix B. The effect on power of increasing the length of the counting period for the background estimate is clearly seen in these plots. The power is very low compared to the optimum curve ($\rho = 0$) if $\rho > 1$. Good power demands at least $\rho = 1$ (i.e., counting the background at least as long as the sample). The economics of the particular application would undoubtedly determine what ρ in the interval $0 < \rho \leq 1$ is optimum. Certainly the potential increase in power hardly warrants a $\rho < 1/5$. A reasonable rule of thumb seems to call for a ρ in the range 1 to $1/3$.

FIGURE 5

Stated 10% Level of Significance Power Surface Sections
for Decision Rule D_3 and Expected Background $tB = 10$ Counts

FIGURE 6

Stated 5% Level of Significance Power Surface Sections
for Decision Rule D_3 and Expected Background $tB = 2$ Counts

FIGURE 7

Stated 1% Level of Significance Power Surface Sections
for Decision Rule D_3 and Expected Background $tB = 50$ Counts

A more intelligent decision can be made if good power is required for a particular alternative or short range of alternatives. For example, in the limiting power curve families the maximum difference between the power curve for $\rho = 0$ and curves for $0 < \rho \leq 1$ is for k near 2. The exact position of k shifts slightly with α and ρ . For good power near $k = 2$, $\rho < 1$ is needed, but at least on an absolute scale for large k say $k > 5$, $\rho = 1$ will suffice.

The above discussion applies when the sample count has already been taken or, at least, the decision has been made as to how long the sample is to be counted. A background count must now be taken which is of commensurate precision so that most of the information in the sample will be extracted. A different problem arises if a fixed time period is available in which both sample and background counts must be taken. In the asymptotic case when both B and C increase while $C/B^{1/2}$ remains bounded, splitting the allotted time equally to sample and background is optimum; i.e., $\rho = 1$ is optimum. This follows directly from the fact that the argument of the cumulative unit normal distribution of the limiting power function of (28) can be written as

$$\frac{k}{(1 + \rho)^{1/2}} - n_{\alpha} = \left(\frac{st}{s + t} \right)^{1/2} \frac{C}{B^{1/2}} - n_{\alpha}. \quad (46)$$

With $s + t = M$, a constant, (46) is a function of s and t only through the product st , which is a maximum for $s = t = M/2$. No formal proof is offered of the optimum allocation for the finite expected count exact theory. Numerical checks using the power surface sections for rule D_3 in Appendix B suggest that if the optimum is not $\rho = 1$, it is close to it. Figure 8 shows six plots of power versus ρ with $t + s$ fixed, three being limiting theory and three exact. Each curve is identified by a k value or k and tB values when $\rho = 1$. These curves are typical in that the optimum is quite loosely defined. From a practical standpoint, any ρ in the range $1/2 \leq \rho \leq 3/2$ gives power close to the maximum.

FIGURE 8

Power of Stated 5% Level of Significance Decision Rule D_3
 as a Function of $\rho = t/s$ for Fixed Total Counting Time
 $t + s = 2k^2B/C$

Confidence Intervals

In a manner similar to hypothesis testing, families of expected confidence interval length can be plotted for fixed confidence coefficient $(1 - \alpha)$ and background expected count tB , and a range of ρ values including $\rho = 0$. Three such families of curves for $(tB, 1 - \alpha)$ pairs of $(2, 0.95)$, $(10, 0.90)$ and $(20, 0.99)$ are plotted in Figures 9, 10, and 11, respectively. Since the rule I_4 was suggested for an expected background count of less than 10 and I_1 for greater than 10, Figure 9 is for I_4 . Figure 10 as the transition point includes both I_1 and I_4 and Figure 11 is for I_1 . The limiting family for large $t(B + C)$ and sB is plotted in Figure D.1 of Appendix D. These plots are normalized to include all confidence coefficients.

The conclusions for all these plots are similar to those for hypothesis testing. Here, improvement in the rule is measured by the incremental shortening of the expected length function in place of the incremental increasing of the power function. Clearly, short expected length demands $\rho \leq 1$. The exact value of $0 < \rho \leq 1$ would depend upon the application. A good rule of thumb seems to be, as above, a ρ in the range 1 to 1/3 depending on the economics of the particular application.

The picture is particularly clear for the limiting expected length function of (40). For a given sample and background the ratio of the expected length for a given ρ to the shortest expected length with $\rho = 0$ is just $(1 + \rho)^{1/2}$.

With a fixed total counting time for both sample and background, an argument identical to that for hypothesis testing shows that $\rho = 1$ gives the shortest expected length in the asymptotic case. Again numerical checks suggest a similar result for the exact theory.

At first glance the result of $\rho = 1$ being optimum may seem to contradict the familiar rule based on counting rates (see⁽¹⁶⁾, p. 269, prob. 6). Specifically, the rule is to select ρ so that

$$\rho^2 = (C + B) / B \quad (47)$$

FIGURE 9

Stated 95% Confidence Interval Expected Length
for Confidence Interval Rule I4 for Expected Background
 $t_B = 2$ Counts

FIGURE 10

Stated 90% Confidence Interval Expected Length
for Confidence Interval Rules I_1 and I_4 for Expected Background
 $tB = 10$ Counts

FIGURE 11

Stated 99% Confidence Interval Expected Length
for Confidence Interval Rule I_1 for Expected Background
 $t_B = 20$ Counts

when a fixed total counting time must be allocated to both sample and background. The rationale behind (47) is that such a ρ minimizes the variance of $\tilde{c}$. When the means $t(C + B)$ and sB are small both x and y as Poisson variables have distinctly non-normal distributions. As such, minimizing the variance of $\tilde{c}$ does not necessarily maximize the power of a decision rule and/or give the shortest confidence interval length. When both means are large, x and y are approximately normal and minimizing the variance of $\tilde{c}$ is the correct procedure. However, the limit of the count rate ratio in (47) is one when $t(B + C)$, $sB \rightarrow +\infty$ so that $k = (tC)/(tB)^{1/2}$ remains fixed. For the cases considered in this paper the above rule in the limit agrees with our recommendations.

Multiple Use of Background Estimates

Frequently in practice, the same background estimate may be used many times to correct sample total counts to net counts. For example, a radiochemical laboratory may check the background of a particular counting instrument once or twice daily. Either the latest background estimate or a long term average estimate is used with all samples analyzed on the instrument until another background check is made.

The average value characteristics of decision rules, both hypothesis testing and confidence interval, when multiple use is made of background estimates, are the same as those discussed above where an independent background estimate is provided for every sample. If a sample analysis is selected at random, the parameter triple (k, tB, ρ) defines the power of a hypothesis testing rule and/or the expected length of a confidence interval rule in the manner specified in Sections IV and V. Multiple use of background estimates does not influence the average behavior of rules on randomly selected samples or the long term behavior averaged over background estimates; but it does increase the variability of the characteristics of rules about the average value, since the decisions tend to be blocked on background.

To illustrate the situation consider a fixed number T of samples that are counted and background estimates supplied for each. The samples are grouped into R blocks of size $M_1, M_2, \dots, M_R$. All sample counts for a given block are paired with the same background estimate. Algebraic complexity hardly warrants a general treatment so it is assumed that all T sample counts and R background counts are mutually independent Poisson chance variables, the sample counts having expected value $t(B + C)$ and the background counts expected value sB . Let x_{vj} and y_v be the j^{th} sample count and the background count, respectively, for v^{th} block. The D_3 decision rule for the vj^{th} sample is

Decide H_C is true if $x_{vj} - y_v > n_\alpha [\rho(x_{vj} + y_v)]^{1/2}$;

Otherwise, decide H_O is true.

The I_4 rule is

Decide that C satisfies $L_4 \leq tC \leq U_4$,

where L_4 and U_4 are defined in terms of the set $S(x_{vj}, y_v)$ in Section V. Let $P(y)$ be the conditional probability that the decision " H_C is true" is made given that $y_v = y$. Let $E(y)$ be the conditional expected length of the confidence interval given that $y_v = y$. Symbolically,

$$\begin{aligned} P(y) &= \Pr \{x_{vj} - \rho y_v > n_\alpha [\rho(x_{vj} + y_v)]^{1/2} \mid y_v = y\}, \\ E(y) &= \text{Ave} \{U_4 - L_4 \mid y_v = y\}. \end{aligned} \quad (48)$$

Because the T sample counts are identically distributed, $P(y)$ and $E(y)$ do not depend upon v and/or j . Let n_v be the number of times decision " H_C is true" is made for the v^{th} block. Let e_v be the sum of the lengths of confidence intervals for the v^{th} block. Let

$$n = \sum_{v=1}^R n_v \text{ and } e = \sum_{v=1}^R e_v. \quad (49)$$

Then, n/T is the fraction of correct decisions by rule D_3 for the entire set of T samples. And, e/T is the average length of confidence intervals I_4 for the entire set of T samples. Each n_v and e_v conditional on fixed background count y is the sum of M_v mutually independent chance variables with average values $P(y)$ and $E(y)$, respectively. Using conditional probability calculus

$$\begin{aligned} \text{Ave } (n/T) &= (1/T) \sum_{v=1}^R \text{Ave } [\text{Ave}(n_v|y)] \\ &= (1/T) \sum_{v=1}^R \text{Ave } [M_v P(y)] \\ &= \text{Ave } [P(y)] = 1 - \beta_3(C). \end{aligned} \tag{50}$$

Here, $1 - \beta_3(C)$ is the power of rule D_3 for alternative hypothesis H_C discussed in Section IV. Similarly

$$\text{Ave } (e/T) = E_4, \tag{51}$$

where E_4 is the expected length of confidence interval rule I_4 discussed in Section V.

Each n_v conditional on fixed background count y is a binomial chance variable on M_v trials with success probability $P(y)$. Using this fact and the conditional variance formula (see Reference⁽¹⁴⁾, p. 65) the variance of n/T is

$$\begin{aligned}
 \text{Var}(n/T) &= (1/T)^2 \sum_{v=1}^R \text{Var}(n_v) \\
 &= (1/T)^2 \sum_{v=1}^R \{ \text{Ave} [\text{Var}(n_v|y)] + \text{Var} [\text{Ave}(n_v|y)] \} \\
 &= (1/T)^2 \sum_{v=1}^R \{ M_v \text{Ave}(P(y)[1 - P(y)]) + M_v^2 \text{Var}[P(y)] \} \\
 &= (1/T) \text{Ave} \{ P(y)[1 - P(y)] \} + (1/T)^2 \sum_{v=1}^R M_v^2 \text{Var} [P(y)] . \\
 &= (1/T) \text{Ave} [P(y)] \text{Ave} [1 - P(y)] + (1/T)^2 \sum_{v=1}^R M_v (M_v - 1) \text{Var} [P(y)] .
 \end{aligned} \tag{52}$$

The last line of (52) is obtained by adding $(1/T) \text{Var} [P(y)]$ to the first term and subtracting the same from the second term of the line above. A similar argument gives

$$\text{Var}(e/T) = (1/T) \text{Var}(U_4 - L_4) + (1/T)^2 \sum_{v=1}^R M_v (M_v - 1) \text{Var} [E(y)] . \tag{53}$$

Equation (50) and (51) show that the average value properties of the rules D_3 and I_4 are independent of the number R of background estimates used for and of the way in which these R estimates are allocated to the T samples. It must be remembered here that the averaging is over not only the population of sample counts for an expected total count of $t(B + C)$ but also over the population of background counts for a mean total count of sB . In the analysis of a single set of T samples the fraction of correct decisions n/T and the average confidence interval length e/T will in general deviate from their average values in (50) and (51) respectively. The deviation is measured in a mean square average sense by the variances in (52) and (53). Both variances have a first term which is the variance if an independent background is

supplied for each sample. The second term in each case is the additional variance because backgrounds are used for more than one sample. This term is a product of two factors which measure the contribution due to the variance of the background distribution and the way this distribution is sampled (block pattern). The second factor is a minimum of zero for $M_V = 1(R = T)$ and a maximum of $(T - 1)/T$ for $M_1 = T(R = 1)$.

The above example illustrates that the stability of the frequency of correct decisions for hypothesis testing and of the mean confidence interval length will decrease as the size of the blocks with common background correction increases. This effect can be offset by improving the precision of the background estimate.

An interesting and important question (which is not pursued here) is the relative economics associated with various analysis schedules obtained by varying background estimation precision and block size in the light of sample and background analysis cost and the importance of correct decisions.

The exact calculation of the variances in (52) and (53) for Poisson chance variables with finite mean values must be done numerically. Techniques such as those used to calculate $1 - \beta_3(C)$ and E_4 could be used for this purpose. The asymptotic variances can be calculated using tables of bivariate normal distribution probabilities.⁽¹⁵⁾ Asymptotic results are included below for hypothesis testing. An argument similar to that following (24) shows that

$$\lim_{\substack{sB \rightarrow +\infty \\ t(B+C) \rightarrow +\infty}} \text{Ave } [P^2(y)] = \text{BVN} [k(1+\rho)^{-1/2} - n_\alpha, \rho/(1+\rho)] \quad (54)$$

where the limit is taken with $k = (tC)/(tB)^{1/2}$ fixed. In (54) $\text{BVN}(h, r)$ is the joint probability that $u \leq h$ and $v \leq h$ where (u, v) has a bivariate normal distribution with means zero, variances one, and correlation coefficient r . With the results in (54) and (24) the limiting form of $\text{Var}(n/T)$, say $\text{LIMV}(n/t)$, satisfies

$$\begin{aligned}
\text{LIMV}(n/T) &= \lim_{\substack{sB \rightarrow +\infty \\ t(B+C) \rightarrow +\infty}} \text{Var}(n/T) \\
&= (1/T)F(h) [1 - F(h)] + (1/T)^2 \sum_{v=1}^R M_v (M_v - 1) [\text{BVN}(h, r) - F^2(h)],
\end{aligned} \tag{55}$$

where $h = k(1 + \rho)^{-1/2} - n_\alpha$, $r = \rho/(1 + \rho)$ and F is the cumulative normal distribution function defined in (10). An interesting property of $\text{LIMV}(n/T)$ is that it is a maximum for $h = 0$. Clearly, the first term is a maximum there for $F(0) = 1/2$. For the second term

$$\frac{d}{dh} [\text{BVN}(h, r) - F^2(h)] = 2 \{ F[(\frac{1-r}{1+r})^{1/2} h] - F(h) \} \frac{d}{dh} F(h). \tag{56}$$

This derivative is positive for $h < 0$, zero for $h = 0$ and negative for $h > 0$, which implies the maximum property for $h = 0$.

For fixed ρ maximizing $\text{LIMV}(n/T)$ over k gives

$$\begin{aligned}
\text{Max}_k \text{LIMV}(n/T) &= (1/4T) + (1/T)^2 \sum_{v=1}^R M_v (M_v - 1) [\text{BVN}(0, r) - 1/4].
\end{aligned} \tag{57}$$

Another way of looking at the location of the maximum is that $\text{LIMV}(n/T)$ is a maximum for the alternative k for which the power of the asymptotic test is $1/2$. This alternative is $k = n_\alpha(1 + \rho)^{1/2}$ or $tC = n_\alpha(1 + \rho)^{1/2} (tB)^{1/2}$.

For the simplest case where each background is used the same number of times ($M_v \equiv M$) the max function of (57) reduces to

$$\begin{aligned}
\text{Max}_k \text{LIMV}(n/T) &= (1/4T) + [(M - 1)/T] [\text{BVN}(0, r) - 1/4].
\end{aligned} \tag{58}$$

The normalized form of (58) [the ratio of (58) for arbitrary M to $1/4T$, (58) with $M = 1$] is plotted in Figure 12. The family of curves for various M values clearly shows that to keep $\text{LIMV}(n/T)$ small as M increases ρ must be pushed down toward zero.

FIGURE 12

Normalized LIMV(n/T) for 5% Level of Significance Decision Rule D_3
as a Function of Number M of Samples Corrected
with Same Background and Count Time Ratio ρ

Let $\text{msd}(M, \rho) = [\text{Max}_k \text{LIMV}(n/T)]^{1/2}$; i.e., $\text{msd}(M, \rho)$ is the maximum asymptotic standard deviation of n/T for fixed M and ρ .

Several useful benchmarks from Figure 12 are :

- I. With $M \leq 4$, $\text{msd}(M, \rho) \leq 2 \text{msd}(1, \rho)$ for all $\rho < +\infty$.
- II. With $M \leq 10$, $\text{msd}(M, \rho) \leq 2 \text{msd}(1, \rho)$ for $\rho \leq 1$.
- III. With $M \leq 75$, $\text{msd}(M, \rho) \leq 2 \text{msd}(1, \rho \leq 1/10)$.

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APPENDIX A

TABLES OF CRITICAL POINTS AND RANDOMIZATION PROBABILITIES
FOR UNIFORMLY MOST POWERFUL SIMILAR RULE D_e

TABLE A. 1

1% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.01}$
AND RANDOMIZATION PROBABILITIES $P_{.01}$ FOR DECISION RULE D_e

ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		1/2		1/3		1/5		1/10	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
1	1	.011	1	.012	1	.013	1	.015	1	.020	1	.030	1	.040	1	.060	1	.110
2	2	.012	2	.014	2	.017	2	.022	2	.040	2	.090	2	.160	2	.359	1	.010
3	3	.013	3	.017	3	.023	3	.033	3	.080	3	.270	3	.640	2	.077	2	.410
4	4	.014	4	.020	4	.031	4	.050	4	.160	4	.810	3	.130	3	.597	2	.175
5	5	.016	5	.024	5	.042	5	.075	5	.320	4	.143	4	.616	3	.207	2	.055
6	6	.017	6	.029	6	.056	6	.113	6	.640	5	.524	4	.162	3	.024	3	.807
7	7	.019	7	.035	7	.074	7	.170	6	.040	5	.081	5	.750	4	.511	3	.450
8	8	.021	8	.042	8	.099	8	.256	7	.194	6	.434	5	.250	4	.206	3	.247
9	9	.023	9	.051	9	.133	9	.384	8	.457	6	.050	5	.000	4	.026	3	.114
10	10	.025	10	.061	10	.177	10	.576	9	.924	7	.405	6	.400	5	.580	3	.018
11	11	.028	11	.074	11	.236	11	.864	9	.154	7	.039	6	.091	5	.270	4	.709
12	12	.031	12	.089	12	.315	11	.049	10	.423	8	.412	7	.629	5	.072	4	.453
13	13	.034	13	.106	13	.420	12	.145	11	.870	8	.045	7	.233	6	.740	4	.276
14	14	.037	14	.128	14	.561	13	.274	11	.158	9	.445	8	.962	6	.393	4	.145
15	15	.041	15	.154	15	.748	14	.450	12	.454	9	.067	8	.443	6	.163	4	.044
16	16	.045	16	.184	16	.997	15	.696	13	.925	10	.500	8	.128	7	.991	5	.839
17	17	.050	17	.221	16	.058	15	.010	13	.200	10	.103	9	.743	7	.582	5	.581
18	18	.055	18	.266	17	.128	16	.124	14	.533	11	.578	9	.328	7	.304	5	.389
19	19	.061	19	.319	18	.215	17	.272	14	.017	11	.154	9	.055	7	.104	5	.241
20	20	.067	20	.383	19	.323	18	.468	15	.276	12	.678	10	.610	8	.850	5	.124
21	21	.074	21	.460	20	.457	19	.731	16	.659	12	.221	10	.251	8	.508	5	.028
22	22	.081	22	.552	21	.628	19	.026	16	.087	13	.802	10	.001	8	.260	6	.811
23	23	.089	23	.662	22	.844	20	.164	17	.389	13	.305	11	.524	8	.073	6	.586
24	24	.098	24	.795	22	.031	21	.341	18	.834	14	.952	11	.198	9	.790	6	.408
25	25	.108	25	.954	23	.118	22	.570	18	.187	14	.408	12	.900	9	.479	6	.265
26	26	.119	25	.027	24	.222	23	.872	19	.543	14	.051	12	.466	9	.245	6	.147
27	27	.131	26	.069	25	.349	23	.091	19	.025	15	.531	12	.160	9	.062	6	.048
28	28	.144	27	.115	26	.503	24	.260	20	.322	15	.137	13	.834	10	.777	7	.883
29	29	.158	28	.168	27	.694	25	.474	21	.742	16	.676	13	.429	10	.480	7	.661
30	30	.174	29	.229	28	.930	26	.750	21	.145	16	.239	13	.135	10	.251	7	.481

TABLE A. 1

1% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.01}$
AND RANDOMIZATION PROBABILITIES $P_{.01}$ FOR DECISION RULE D_e

ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		$1/2$		$1/3$		$1/5$		$1/10$	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
31	31	.192	30	.298	28	.070	26	.040	22	.496	17	.846	14	.793	10	.068	7	.332
32	32	.211	31	.377	29	.178	27	.207	23	.995	17	.360	14	.407	11	.797	7	.207
33	33	.232	32	.470	30	.307	28	.415	23	.300	17	.019	14	.121	11	.504	7	.101
34	34	.255	33	.576	31	.461	29	.678	24	.717	18	.502	15	.772	11	.274	7	.008
35	35	.281	34	.701	32	.648	29	.006	24	.137	18	.123	15	.398	11	.088	8	.793
36	36	.309	35	.845	33	.875	30	.174	25	.495	19	.667	15	.115	12	.844	8	.601
37	37	.340	35	.004	33	.054	31	.381	26	.994	19	.243	16	.766	12	.549	8	.440
38	38	.374	36	.057	34	.170	32	.639	26	.312	20	.858	16	.398	12	.314	8	.303
39	39	.411	37	.116	35	.306	33	.965	27	.739	20	.383	16	.117	12	.122	8	.185
40	40	.452	38	.182	36	.467	33	.157	27	.155	20	.037	17	.774	13	.914	8	.083
41	41	.498	39	.257	37	.660	34	.366	28	.529	21	.545	17	.409	13	.612	9	.981
42	42	.548	40	.341	38	.891	35	.624	28	.019	21	.159	17	.126	13	.369	9	.770
43	43	.602	41	.437	38	.065	36	.947	29	.352	22	.732	18	.792	13	.169	9	.590
44	44	.663	42	.546	39	.191	36	.152	30	.798	22	.299	18	.427	13	.002	9	.437
45	45	.729	43	.671	40	.338	37	.366	30	.199	23	.948	18	.142	14	.693	9	.304
46	46	.802	44	.814	41	.510	38	.627	31	.594	23	.461	19	.821	14	.439	9	.189
47	47	.882	45	.978	42	.714	39	.951	31	.064	23	.098	19	.454	14	.230	9	.087
48	48	.971	45	.054	43	.957	39	.160	32	.419	24	.647	19	.164	14	.054	10	.992
49	48	.013	46	.122	43	.101	40	.379	33	.891	24	.240	20	.860	15	.793	10	.789
50	49	.035	47	.198	44	.239	41	.647	33	.266	25	.860	20	.488	15	.526	10	.614
51	50	.057	48	.282	45	.399	42	.976	34	.688	25	.402	20	.193	15	.304	10	.462
52	51	.081	49	.377	46	.586	42	.178	34	.130	25	.054	21	.908	15	.117	10	.330
53	52	.106	50	.483	47	.806	43	.406	35	.511	26	.589	21	.529	16	.911	10	.213
54	53	.133	51	.603	47	.029	44	.681	35	.008	26	.198	21	.227	16	.628	10	.110
55	54	.162	52	.739	48	.161	44	.008	36	.356	27	.802	22	.964	16	.393	10	.017
56	55	.193	53	.893	49	.313	45	.207	37	.810	27	.364	22	.578	16	.194	11	.841
57	56	.226	53	.025	50	.489	46	.443	37	.217	27	.024	22	.268	16	.023	11	.665
58	57	.262	54	.097	51	.694	47	.729	38	.629	28	.552	22	.015	17	.748	11	.512
59	58	.300	55	.176	52	.934	47	.038	38	.092	28	.172	23	.634	17	.497	11	.377
60	59	.341	56	.264	52	.098	48	.245	39	.470	29	.767	23	.316	17	.284	11	.257

TABLE A. 2

5% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.05}$
 AND RANDOMIZATION PROBABILITIES $P_{.05}$ FOR DECISION RULE D_e
 ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		1/2		1/3		1/5		1/10	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
1	1	.055	1	.060	1	.066	1	.075	1	.100	1	.150	1	.200	1	.300	1	.550
2	2	.060	2	.072	2	.088	2	.112	2	.200	2	.450	2	.800	1	.079	1	.252
3	3	.066	3	.086	3	.118	3	.168	3	.400	2	.058	2	.244	2	.653	1	.118
4	4	.073	4	.103	4	.158	4	.253	4	.800	3	.381	3	.983	2	.291	1	.022
5	5	.080	5	.124	5	.210	5	.379	4	.120	3	.028	3	.391	2	.090	2	.700
6	6	.088	6	.149	6	.280	6	.569	5	.366	4	.390	3	.094	3	.770	2	.446
7	7	.097	7	.179	7	.374	7	.854	6	.771	4	.036	4	.643	3	.414	2	.279
8	8	.107	8	.214	8	.499	7	.070	6	.135	5	.444	4	.262	3	.185	2	.155
9	9	.117	9	.257	9	.665	8	.204	7	.433	5	.073	4	.009	3	.015	2	.055
10	10	.129	10	.309	10	.887	9	.376	8	.893	6	.533	5	.518	4	.636	3	.882
11	11	.142	11	.371	10	.050	10	.604	8	.214	6	.136	5	.195	4	.358	3	.633
12	12	.156	12	.445	11	.144	11	.914	9	.571	7	.655	6	.890	4	.153	3	.447
13	13	.172	13	.534	12	.254	11	.114	9	.044	7	.222	6	.459	5	.969	3	.301
14	14	.189	14	.641	13	.387	12	.289	10	.348	8	.810	6	.159	5	.619	3	.182
15	15	.208	15	.770	14	.548	13	.510	11	.778	8	.333	7	.831	5	.362	3	.080
16	16	.229	16	.924	15	.747	14	.794	11	.173	8	.000	7	.436	5	.161	4	.971
17	17	.252	16	.032	16	.997	14	.067	12	.539	9	.471	7	.146	6	.989	4	.740
18	18	.278	17	.091	16	.109	15	.251	12	.026	9	.103	8	.815	6	.657	4	.555
19	19	.305	18	.157	17	.236	16	.475	13	.352	10	.637	8	.436	6	.403	4	.403
20	20	.336	19	.229	18	.383	17	.756	14	.792	10	.227	8	.149	6	.198	4	.275
21	21	.370	20	.309	19	.558	17	.051	14	.195	11	.834	9	.826	6	.027	4	.164
22	22	.407	21	.400	20	.767	18	.244	15	.584	11	.375	9	.454	7	.734	4	.065
23	23	.447	22	.502	20	.009	19	.477	15	.058	11	.033	9	.166	7	.473	5	.940
24	24	.492	23	.619	21	.135	20	.762	16	.411	12	.549	10	.860	7	.261	5	.739
25	25	.541	24	.753	22	.279	20	.057	17	.879	12	.168	10	.488	7	.081	5	.570
26	26	.595	25	.908	23	.444	21	.262	17	.262	13	.753	10	.195	8	.843	5	.426
27	27	.655	25	.033	24	.638	22	.505	18	.683	13	.326	11	.910	8	.571	5	.300
28	28	.721	26	.108	25	.866	23	.801	18	.131	14	.989	11	.534	8	.346	5	.189
29	29	.793	27	.190	25	.064	23	.083	19	.516	14	.509	11	.235	8	.156	5	.089
30	30	.872	28	.279	26	.207	24	.300	19	.012	14	.140	12	.977	9	.981	6	.997

TABLE A. 2

5% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.05}$
AND RANDOMIZATION PROBABILITIES $P_{.05}$ FOR DECISION RULE D_e

ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		1/2		1/3		1/5		1/10	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
31	31	.959	29	.378	27	.370	25	.557	20	.370	15	.720	12	.594	9	.694	6	.804
32	31	.017	30	.488	28	.556	26	.866	21	.830	15	.308	12	.286	9	.454	6	.637
33	32	.048	31	.611	29	.773	26	.127	21	.240	16	.963	12	.031	9	.251	6	.492
34	33	.081	32	.749	29	.014	27	.357	22	.664	16	.500	13	.665	9	.074	6	.363
35	34	.115	33	.904	30	.158	28	.628	22	.121	16	.136	13	.348	10	.842	6	.248
36	35	.151	33	.035	31	.321	29	.954	23	.516	17	.720	13	.083	10	.585	6	.144
37	36	.189	34	.120	32	.505	29	.186	23	.012	17	.314	14	.748	10	.367	6	.049
38	37	.229	35	.212	33	.717	30	.431	24	.384	18	.972	14	.419	10	.177	7	.915
39	38	.271	36	.311	34	.961	31	.719	25	.851	18	.516	14	.145	10	.009	7	.744
40	39	.315	37	.421	34	.127	31	.035	25	.263	18	.151	15	.842	11	.740	7	.592
41	40	.363	38	.541	35	.290	32	.261	26	.700	19	.746	15	.501	11	.503	7	.457
42	41	.413	39	.674	36	.475	33	.522	26	.152	19	.339	15	.215	11	.298	7	.336
43	42	.468	40	.823	37	.684	34	.828	27	.564	19	.005	16	.948	11	.117	7	.226
44	43	.525	41	.988	38	.925	34	.110	27	.049	20	.552	16	.592	12	.920	7	.125
45	44	.587	41	.082	38	.108	35	.351	28	.439	20	.182	16	.294	12	.663	7	.031
46	45	.654	42	.177	39	.275	36	.629	29	.923	21	.793	16	.038	12	.440	8	.886
47	46	.725	43	.280	40	.461	37	.956	29	.324	21	.382	17	.693	12	.244	8	.726
48	47	.802	44	.391	41	.671	37	.199	30	.780	21	.041	17	.382	12	.070	8	.582
49	48	.885	45	.513	42	.910	38	.456	30	.217	22	.606	17	.115	13	.846	8	.452
50	49	.974	46	.646	42	.102	39	.753	31	.649	22	.229	18	.805	13	.603	8	.334
51	49	.028	47	.793	43	.272	39	.061	31	.117	23	.859	18	.479	13	.390	8	.225
52	50	.068	48	.955	44	.460	40	.301	32	.529	23	.440	18	.200	13	.201	8	.125
53	51	.109	48	.069	45	.672	41	.576	32	.023	23	.090	19	.928	13	.031	8	.032
54	52	.153	49	.168	46	.912	42	.894	33	.417	24	.676	19	.586	14	.789	9	.892
55	53	.198	50	.274	46	.106	42	.161	34	.897	24	.289	19	.293	14	.557	9	.737
56	54	.246	51	.389	47	.279	43	.418	34	.312	25	.941	19	.038	14	.351	9	.596
57	55	.297	52	.513	48	.471	44	.712	35	.769	25	.512	20	.702	14	.167	9	.468
58	56	.350	53	.649	49	.686	44	.033	35	.213	25	.152	20	.395	14	.000	9	.350
59	57	.405	54	.798	50	.928	45	.275	36	.650	26	.761	20	.128	15	.746	9	.242
60	58	.464	55	.961	50	.118	46	.550	36	.120	26	.363	21	.829	15	.522	9	.141

TABLE A. 3

10% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.10}$
 AND RANDOMIZATION PROBABILITIES $P_{.10}$ FOR DECISION RULE D_e
 ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		1/2		1/3		1/5		1/10	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
1	1	.110	1	.120	1	.133	1	.150	1	.200	1	.300	1	.400	1	.599	0	.010
2	2	.121	2	.144	2	.177	2	.225	2	.400	2	.900	1	.100	1	.259	1	.554
3	3	.133	3	.172	3	.237	3	.337	3	.800	2	.283	2	.600	1	.074	1	.340
4	4	.146	4	.207	4	.316	4	.506	3	.150	3	.887	2	.233	2	.723	1	.205
5	5	.161	5	.248	5	.421	5	.759	4	.440	3	.332	3	.960	2	.401	1	.101
6	6	.177	6	.298	6	.561	5	.046	5	.900	4	.998	3	.473	2	.187	1	.009
7	7	.194	7	.358	7	.749	6	.202	5	.228	4	.427	3	.170	2	.018	2	.743
8	8	.214	8	.429	8	.998	7	.390	6	.592	4	.070	4	.840	3	.665	2	.538
9	9	.235	9	.515	8	.110	8	.632	6	.061	5	.562	4	.437	3	.399	2	.382
10	10	.259	10	.619	9	.232	9	.953	7	.386	5	.171	4	.149	3	.195	2	.256
11	11	.285	11	.743	10	.373	9	.156	8	.835	6	.735	5	.817	3	.024	2	.149
12	12	.313	12	.891	11	.539	10	.362	8	.223	6	.301	5	.441	4	.716	2	.053
13	13	.345	12	.026	12	.740	11	.613	9	.617	7	.948	5	.157	4	.456	3	.905
14	14	.379	13	.101	13	.988	12	.931	9	.083	7	.461	6	.841	4	.248	3	.703
15	15	.417	14	.180	13	.127	12	.158	10	.444	7	.102	6	.472	4	.072	3	.539
16	16	.459	15	.265	14	.273	13	.381	11	.924	8	.653	6	.185	5	.822	3	.400
17	17	.505	16	.358	15	.439	14	.647	11	.299	8	.254	7	.894	5	.555	3	.280
18	18	.555	17	.461	16	.631	15	.975	12	.732	9	.881	7	.524	5	.337	3	.174
19	19	.611	18	.577	17	.858	15	.195	12	.171	9	.432	7	.231	5	.150	3	.077
20	20	.672	19	.708	17	.065	16	.434	13	.572	9	.082	8	.970	6	.971	4	.969
21	21	.740	20	.857	18	.217	17	.717	13	.055	10	.641	8	.594	6	.689	4	.782
22	22	.814	20	.013	19	.386	17	.034	14	.434	10	.251	8	.292	6	.456	4	.622
23	23	.895	21	.101	20	.578	18	.258	15	.914	11	.883	8	.036	6	.257	4	.482
24	24	.984	22	.194	21	.800	19	.515	15	.310	11	.466	9	.680	6	.081	4	.359
25	24	.033	23	.294	21	.032	20	.818	16	.757	11	.095	9	.367	7	.856	4	.248
26	25	.073	24	.403	22	.190	20	.104	16	.198	12	.670	9	.102	7	.605	4	.146
27	26	.115	25	.522	23	.364	21	.344	17	.619	12	.280	10	.780	7	.389	4	.051
28	27	.157	26	.653	24	.559	22	.620	17	.094	13	.926	10	.454	7	.200	5	.923
29	28	.202	27	.799	25	.780	23	.945	18	.496	13	.491	10	.179	7	.031	5	.757
30	29	.248	28	.961	25	.020	23	.194	19	.995	13	.134	11	.895	8	.783	5	.611

TABLE A. 3

10% LEVEL OF SIGNIFICANCE CRITICAL POINTS $X_{.10}$
AND RANDOMIZATION PROBABILITIES $P_{.10}$ FOR DECISION RULE D_e

ρ = Sample - Background Counting Time Ratio (t/s)

Total Count $x + y$	10		5		3		2		1		1/2		1/3		1/5		1/10	
	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P	X	P
31	30	.296	28	.074	26	.184	24	.452	19	.383	14	.730	11	.555	8	.548	5	.480
32	31	.347	29	.174	27	.363	25	.748	20	.854	14	.334	11	.267	8	.343	5	.361
33	32	.400	30	.281	28	.562	25	.059	20	.279	14	.001	11	.015	8	.161	5	.252
34	33	.457	31	.396	29	.786	26	.303	21	.727	15	.560	12	.668	9	.991	5	.151
35	34	.517	32	.520	29	.025	27	.579	21	.181	15	.194	12	.367	9	.735	5	.057
36	35	.580	33	.656	30	.194	28	.898	22	.610	16	.815	12	.104	9	.511	6	.937
37	36	.648	34	.804	31	.379	28	.169	22	.089	16	.410	13	.794	9	.313	6	.780
38	37	.721	35	.968	32	.584	29	.430	23	.503	16	.066	13	.478	9	.134	6	.638
39	38	.798	35	.083	33	.812	30	.727	23	.002	17	.651	13	.202	10	.950	6	.510
40	39	.881	36	.189	33	.044	30	.045	24	.403	17	.274	14	.933	10	.705	6	.391
41	40	.970	37	.303	34	.219	31	.295	25	.882	18	.922	14	.600	10	.488	6	.282
42	40	.032	38	.424	35	.410	32	.576	25	.309	18	.504	14	.311	10	.294	6	.180
43	41	.080	39	.554	36	.621	33	.895	26	.769	18	.149	14	.055	10	.117	6	.085
44	42	.129	40	.696	37	.855	33	.171	26	.220	19	.761	15	.734	11	.926	7	.989
45	43	.180	41	.849	37	.074	34	.439	27	.664	19	.371	15	.430	11	.688	7	.834
46	44	.233	41	.010	38	.256	35	.740	27	.136	19	.033	15	.162	11	.476	7	.693
47	45	.288	42	.118	39	.453	35	.056	28	.566	20	.617	16	.880	11	.284	7	.564
48	46	.345	43	.231	40	.671	36	.313	28	.055	20	.248	16	.560	11	.109	7	.444
49	47	.405	44	.350	41	.911	37	.600	29	.473	21	.890	16	.278	12	.915	7	.333
50	48	.468	45	.479	41	.116	38	.924	30	.968	21	.485	16	.026	12	.683	7	.229
51	49	.534	46	.616	42	.304	38	.196	30	.385	21	.133	17	.701	12	.474	7	.131
52	50	.603	47	.764	43	.508	39	.471	31	.863	22	.746	17	.405	12	.283	7	.038
53	51	.676	48	.925	44	.733	40	.779	31	.302	22	.362	17	.140	12	.108	8	.913
54	52	.753	48	.061	45	.981	40	.087	32	.765	22	.026	18	.854	13	.916	8	.770
55	53	.835	49	.174	45	.168	41	.352	32	.221	23	.614	18	.541	13	.686	8	.639
56	54	.922	50	.294	46	.362	42	.646	33	.672	23	.248	18	.264	13	.479	8	.516
57	54	.007	51	.421	47	.574	43	.976	33	.145	24	.893	18	.012	13	.289	8	.402
58	55	.059	52	.556	48	.805	43	.240	34	.583	24	.492	19	.689	13	.114	8	.295
59	56	.113	53	.701	48	.041	44	.523	34	.071	24	.141	19	.397	14	.925	8	.194
60	57	.168	54	.858	49	.228	45	.839	35	.499	25	.760	19	.133	14	.698	8	.099

APPENDIX B

GRAPHS OF POWER SURFACE SECTIONS FOR RULE D₃

FIGURE B. 1
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 1/10$

FIGURE B 2
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 1/5$

FIGURE B. 3
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 1/3$

FIGURE B. 4
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 1/2$

FIGURE B.5
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 1$

B 6

FIGURE B 6
 Power Surface Sections
 for Stated 1% Level of Significance Decision Rule D_3
 with $\rho = 2$

FIGURE B. 7

Power Surface Sections
for Stated 5% Level of Significance Decision Rule D_3
with $\rho = 1/10$

FIGURE B. 8

Power Surface Sections
for Stated 5% Level of Significance Decision Rule D_3
with $\rho = 1/5$

FIGURE B. 9

Power Surface Sections
for Stated 5% Level of Significance Decision Rule D_3
with $\rho = 1/3$

FIGURE B. 10

Power Surface Sections
for Stated 5% Level of Significance Decision Rule D_3
with $\rho = 1/2$

FIGURE B. 11
 Power Surface Sections
 for Stated 5% Level of Significance Decision Rule D_3
 with $\rho = 1$

FIGURE B 12
 Power Surface Sections
 for Stated 5% Level of Significance Decision Rule D_3
 with $\rho = 2$

FIGURE B. 13

Power Surface Sections
for Stated 10% Level of Significance Decision Rule D_3
with $\rho = 1/10$

FIGURE B. 14

Power Surface Sections
for Stated 10% Level of Significance Decision Rule D_3
with $\rho = 1/5$

FIGURE B. 15

Power Surface Sections
for Stated 10% Level of Significance Decision Rule D_3
with $\rho = 1/3$

FIGURE B. 16

Power Surface Sections
for Stated 10% Level of Significance Decision Rule D_3
with $\rho = 1/2$

FIGURE B. 17
 Power Surface Sections
 for Stated 10% Level of Significance Decision Rule D_3
 with $\rho = 1$

FIGURE B. 18
 Power Surface Sections
 for Stated 10% Level of Significance Decision Rule D_3
 with $\rho \approx 2$

APPENDIX C
MATHEMATICAL DERIVATION OF RULE I₄

Let $x \geq 0$, $y \geq 0$, $\rho > 0$, and $k > 0$ be constants. Let $S = S(x, y)$ be the subset of the positive quadrant of the uv -plane defined as

$$S = \{(u, v) \mid \frac{(u-x)^2}{u} + \frac{(v-y)^2}{v} \leq k, u \geq \rho, v \geq 0\}. \quad (C.1)$$

Clearly, the point (x, y) is an element of S if $x \geq \rho y$. S is strictly bounded, since it is bounded by the coordinate axes and by the two lines,

$$u = 2x + k \text{ and } v = 2y + k. \quad (C.2)$$

Also, S is convex. To show convexity let (u_1, v_1) and (u_2, v_2) be two points of the first quadrant which satisfy the first defining condition of S . Consider an arbitrary point (u, v) on the line segment joining these points, i.e., for some fixed ϵ ($0 < \epsilon < 1$)

$$(u, v) = \epsilon(u_1, v_1) + (1 - \epsilon)(u_2, v_2). \quad (C.3)$$

Then,

$$\begin{aligned} \frac{(u-x)^2}{u} + \frac{(v-y)^2}{v} &\leq \epsilon \frac{(u_1-x)^2}{u_1} + (1-\epsilon) \frac{(u_2-x)^2}{u_2} + \\ &\quad \epsilon \frac{(v_1-y)^2}{v_1} + (1-\epsilon) \frac{(v_2-y)^2}{v_2} \leq \epsilon k + (1-\epsilon)k = k. \end{aligned} \quad (C.4)$$

The first inequality of (C.4) follows from Jensen's inequality for convex functions, since the function $(z-a)^2/z$ is a convex function of z on the half-line $z > 0$ for fixed a . The second inequality follows from the first defining property of the set S . So, by (C.4) S is the intersection of a convex set and a half-plane, which implies that S is convex.

To construct the confidence interval I_4 for C , or equivalently tC , the linear function,

$$z(u, v) = u - \rho v, \quad (C.5)$$

must be maximized and minimized over the set S . Since S is strictly bounded and convex, the extremes of the function (C.5) over S

C. 2

are the two finite values of z , say $\bar{z} > \underline{z}$, for which the lines in (C.5) support S on the right and left, respectively. Figure C.1 illustrates the situation for $x = 30$, $y = 10$, $\rho = 0.5$ and $k = 4$.

FIGURE C. 1

Graph of Set $S(30, 10)$ with $\rho = 0.5$ and $k = 4$
Showing Two Support Lines $z(u, v) = \underline{z}$ and $\bar{z}$

In general, if the line (C.5) intersects the boundary of S , there will be exactly two distinct intersections. The support lines are the limiting cases where two intersections are replaced by a single one. The exception to the general case occurs when a segment of the line $u = \rho v$ is part of the boundary.

Consider the system of equations

$$\frac{(u - x)^2}{u} + \frac{(v - y)^2}{v} = k, \quad u - \rho v = z, \quad (\text{C. 6})$$

where z is a fixed constant. In the following discussion $x, y > 0$ so that any solution to (C. 6) must have $u \neq 0$ and $v \neq 0$. Elimination of u gives the single cubic equation in v ,

$$\begin{aligned} \rho(\rho + 1)v^3 + [2\rho(z - x - y) - \rho k + z] v^2 + \\ [z(z - 2x - 2y - k) + x^2 + \rho y^2] v + y^2 z = 0. \end{aligned} \quad (\text{C. 7})$$

The number of positive roots of (C. 7) equals the number of intersections of the two curves of (C. 6) in the first quadrant. Here, a double positive root means that the line is tangent to the curve in (C. 6); the double root is the v coordinate of the point of tangency.

In general, the two values of z , say $\underline{z}$, say $\underline{z} < \bar{z}$, for which (C. 7) has a double positive root will define the endpoints of the confidence interval for tC . The exceptional case occurs when either $\underline{z} < 0 < \bar{z}$ or $\bar{z} \leq 0$. To find the conditions on x , y , and ρ which give the exceptional case, let $z = 0$ in (C. 7) to give

$$\rho(\rho + 1) v^3 - \rho(2x + 2y + k) v^2 + (x^2 + \rho y^2) v = 0. \quad (\text{C. 8})$$

The two nonvanishing roots of (C. 8) are equal, and incidentally positive, only if

$$(x - \rho y)^2 = \rho k(x + y + k/4) = A^2. \quad (\text{C. 9})$$

The exceptional cases are definable in terms of (C. 9) as follows.

$$\bar{z} \leq 0 \text{ when } x - \rho y \leq -A;$$

$$\underline{z} \leq 0 < \bar{z} \text{ when } -A < x - \rho y \leq A.$$

With $A < x - \rho y$, digital computer equipment was used to calculate $L_4 = \underline{z}$ and $U_4 = \bar{z}$ values appearing in Appendix D. The calculation was done by finding the largest root $\underline{z}$ less than $x - \rho y$ and the smallest root $\bar{z}$ greater than $x - \rho y$ of the equation

$$D(z) = 0, \quad (\text{C. 10})$$

where $D(z)$ is the discriminant of (C. 7). The discriminant is an irreducible sixth degree polynomial in z with coefficients that are functions of x , y , ρ , and k .

With $-A < x - \rho y \leq A$, $L_4 = 0$ and $U_4 = \bar{z}$ was calculated as above. With $x - \rho y \leq -A$, $L_4 = U = 0$.

If $x = 0$, automatically $L_4 = 0$ since $x - \rho y \leq A$. For $y \neq 0$ with $x = 0$ the system of equations in (C. 6) reduce to

$$u + \frac{(v - y)^2}{v} = k, \quad u - \rho v = z. \quad (C. 11)$$

Elimination of u gives the quadratic equation in v

$$(\rho + 1) v^2 + (z - k - 2y) v + y^2 = 0. \quad (C. 12)$$

Imposing the condition that (C. 12) has a positive double root leads to the unique value

$$\bar{z} = k - 2y (\sqrt{\rho + 1} - 1). \quad (C. 13)$$

For $y = 0$ and $x \neq 0$ a similar calculation gives

$$\begin{aligned} \bar{z} &= 2x [\sqrt{\rho(1 + \rho)} - \rho] - \rho k, \\ \bar{z} &= x + k/2 + \sqrt{k(x + k/4)}. \end{aligned} \quad (C. 14)$$

By convention when $x = y = 0$, I_4 is defined as $L_4 = U_4 = 0$ in agreement with I_1 .

APPENDIX D

TABLES OF CONFIDENCE INTERVAL END POINTS FOR RULE I_4

TABLES OF EXACT CONFIDENCE COEFFICIENTS
AND EXPECTED LENGTHS FOR RULES I_1 AND I_4

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT X	C		TOTAL		BACKGROUND		COUNT		Y	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	1.24	0	0	0	0	0	0
1	0	4.48	0	3.00	0	1.52	0	0.03	0	0
2	0	6.04	0	4.54	0	3.04	0	1.53	0	0.01
3	0	7.51	0	5.99	0	4.47	0	2.94	0	1.40
4	0	8.91	0	7.38	0	5.84	0	4.29	0	2.74
5	0	10.27	0	8.73	0	7.17	0	5.61	0	4.05
6	0	11.60	0	10.05	0	8.48	0	6.91	0	5.34
7	0.88	12.91	0	11.34	0	9.77	0	8.19	0	6.60
8	1.78	14.20	0	12.62	0	11.04	0	9.45	0	7.86
9	2.68	15.47	0	13.88	0	12.29	0	10.69	0	9.09
10	3.58	16.73	0.07	15.14	0	13.53	0	11.93	0	10.32
12	5.38	19.21	1.88	17.60	0	15.99	0	14.37	0	12.75
14	7.17	21.65	3.69	20.04	0.64	18.41	0	16.78	0	15.15
16	8.97	24.07	5.50	22.44	2.46	20.80	0	19.16	0	17.52
18	10.77	26.46	7.30	24.82	4.28	23.18	1.43	21.53	0	19.87
20	12.57	28.83	9.11	27.18	6.10	25.53	3.27	23.87	0.53	22.21
22	14.37	31.19	10.93	29.53	7.92	27.87	5.10	26.20	2.37	24.53
24	16.16	33.52	12.73	31.86	9.75	30.19	6.93	28.52	4.21	26.84
26	17.96	35.85	14.55	34.18	11.57	32.51	8.76	30.83	6.05	29.14
28	19.76	38.16	16.36	36.48	13.39	34.80	10.59	33.12	7.89	31.43
30	21.56	40.46	18.17	38.78	15.22	37.10	12.43	35.41	9.73	33.71
34	25.15	45.04	21.80	43.35	18.87	41.65	16.10	39.95	13.42	38.25
38	28.75	49.58	25.43	47.88	22.53	46.18	19.77	44.47	17.11	42.76
42	32.35	54.10	29.06	52.39	26.19	50.67	23.45	48.96	20.80	47.24
46	35.94	58.59	32.70	56.87	29.85	55.15	27.13	53.43	24.49	51.71
50	39.54	63.06	36.33	61.34	33.51	59.61	30.81	57.88	28.19	56.15
54	43.12	67.52	39.98	65.79	37.18	64.05	34.50	62.32	31.89	60.58
58	46.73	71.95	43.63	70.22	40.85	68.48	38.19	66.74	35.59	64.99
62	50.33	76.38	47.28	74.64	44.53	72.89	41.88	71.14	39.29	69.39
66	53.92	80.78	50.94	79.04	48.21	77.29	45.57	75.54	43.00	73.79

D 1

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	
4	0	1.18	0	0	0	0	0	0	0	0	
5	0	2.48	0	0.90	0	0	0	0	0	0	
6	0	3.75	0	2.17	0	0.60	0	0	0	0	
7	0	5.01	0	3.41	0	1.81	0	0.28	0	0	
8	0	6.25	0	4.65	0	3.04	0	1.42	0	0	
9	0	7.48	0	5.87	0	4.25	0	2.63	0	1.04	
10	0	8.70	0	7.08	0	5.46	0	3.82	0	2.19	
12	0	11.12	0	9.49	0	7.85	0	6.20	0	4.56	
14	0	13.51	0	11.86	0	10.21	0	8.56	0	6.90	
16	0	15.87	0	14.22	0	12.56	0	10.90	0	9.23	
18	0	18.22	0	16.55	0	14.89	0	13.22	0	11.54	
20	0	20.55	0	18.88	0	17.20	0	15.53	0	13.84	
22	0	22.86	0	21.19	0	19.51	0	17.82	0	16.14	
24	1.56	25.16	0	23.48	0	21.80	0	20.11	0	18.41	
26	3.41	27.46	0.81	25.77	0	24.08	0	22.38	0	20.69	
28	5.26	29.74	2.67	28.05	0.12	26.35	0	24.65	0	22.95	
30	7.10	32.02	4.52	30.32	1.98	28.62	0	26.91	0	25.20	
34	10.80	36.54	8.23	34.84	5.69	33.12	3.19	31.41	0.71	29.69	
38	14.50	41.04	11.94	39.33	9.41	37.61	6.91	35.89	4.44	34.16	
42	18.20	45.52	15.65	43.80	13.13	42.07	10.64	40.34	8.18	38.61	
46	21.91	49.98	19.37	48.25	16.85	46.51	14.37	44.78	11.91	43.04	
50	25.61	54.41	23.08	52.68	20.58	50.94	18.10	49.20	15.65	47.46	
54	29.33	58.84	26.80	57.10	24.31	55.35	21.84	53.61	19.40	51.86	
58	33.04	63.25	30.52	61.50	28.04	59.75	25.58	58.00	23.14	56.25	
62	36.75	67.65	34.25	65.89	31.77	64.14	29.32	62.38	26.88	60.62	
66	40.47	72.03	37.97	70.27	35.51	68.51	33.06	66.76	30.63	64.99	

D.2

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C C U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0.64	0	0	0	0	0	0	0	0
12	0	2.90	0	0	0	0	0	0	0	0
14	0	5.24	0	1.96	0	0	0	0	0	0
16	0	7.56	0	4.21	0	0.96	0	0	0	0
18	0	9.87	0	6.50	0	3.15	0	0	0	0
20	0	12.16	0	8.78	0	5.38	0	2.08	0	0
22	0	14.44	0	11.05	0	7.64	0	4.26	0	0.95
24	0	16.72	0	13.31	0	9.90	0	6.47	0	3.12
26	0	18.98	0	15.57	0	12.15	0	8.71	0	5.29
28	0	21.24	0	17.82	0	14.38	0	10.94	0	7.48
30	0	23.49	0	20.06	0	16.62	0	13.16	0	9.70
34	0	27.97	0	24.53	0	21.07	0	17.60	0	14.12
38	1.99	32.43	0	28.97	0	25.50	0	22.02	0	18.53
42	5.73	36.88	0.89	33.40	0	29.92	0	26.42	0	22.92
46	9.47	41.30	4.64	37.82	0	34.32	0	30.81	0	27.31
50	13.22	45.71	8.40	42.21	3.63	38.71	0	35.20	0	31.68
54	16.97	50.11	12.16	46.60	7.40	43.08	2.68	39.56	0	36.03
58	20.72	54.49	15.91	50.97	11.16	47.45	6.45	43.92	1.78	40.38
62	24.47	58.87	19.67	55.34	14.93	51.81	10.23	48.27	5.56	44.72
66	28.22	63.23	23.44	59.70	18.70	56.16	14.01	52.61	9.34	49.06

D.3

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	C		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	1.88	0	1.05	0	0.22	0	0
1	0	4.48	0	3.65	0	2.81	0	1.98	0	1.14
2	0	6.04	0	5.20	0	4.36	0	3.52	0	2.67
3	0	7.51	0	6.66	0	5.81	0	4.96	0	4.11
4	0.61	8.91	0	8.06	0	7.20	0	6.34	0	5.49
5	1.44	10.27	0	9.42	0	8.56	0	7.69	0	6.83
6	2.26	11.60	0.53	10.74	0	9.88	0	9.01	0	8.15
7	3.09	12.91	1.37	12.04	0	11.18	0	10.31	0	9.44
8	3.92	14.20	2.21	13.33	0.71	12.46	0	11.58	0	10.71
9	4.75	15.47	3.04	14.60	1.56	13.72	0.16	12.85	0	11.97
10	5.58	16.73	3.88	15.85	2.41	14.98	1.01	14.10	0	13.22
12	7.24	19.21	5.56	18.33	4.11	17.45	2.73	16.57	1.39	15.68
14	8.89	21.65	7.25	20.77	5.81	19.88	4.44	19.00	3.12	18.11
16	10.55	24.07	8.93	23.18	7.52	22.29	6.17	21.40	4.85	20.51
18	12.21	26.46	10.63	25.57	9.23	24.68	7.89	23.78	6.59	22.89
20	13.86	28.83	12.32	27.94	10.94	27.04	9.62	26.15	8.33	25.25
22	15.52	31.19	14.03	30.29	12.66	29.39	11.35	28.49	10.07	27.59
24	17.18	33.52	15.73	32.62	14.39	31.72	13.09	30.82	11.82	29.92
26	18.83	35.85	17.45	34.95	16.12	34.04	14.83	33.14	13.57	32.24
28	20.49	38.16	19.14	37.26	17.85	36.35	16.58	35.44	15.33	34.54
30	22.15	40.46	20.84	39.56	19.59	38.65	18.33	37.74	17.08	36.83
34	25.46	45.04	24.26	44.13	23.09	43.22	21.84	42.31	20.61	41.39
38	28.77	49.58	27.72	48.67	26.59	47.75	25.37	46.84	24.15	45.93
42	32.09	54.10	31.21	53.18	30.09	52.27	28.91	51.35	27.71	50.43
46	35.40	58.59	34.72	57.68	33.60	56.76	32.47	55.83	31.28	54.92
50	38.72	63.06	38.25	62.14	37.13	61.22	36.02	60.30	34.85	59.38
54	42.03	67.52	41.80	66.59	40.69	65.67	39.58	64.75	38.45	63.82
58	45.34	71.95	45.36	71.03	44.25	70.10	43.15	69.18	42.04	68.25
62	48.66	76.38	48.94	75.45	47.84	74.52	46.73	73.60	45.63	72.67
66	51.97	80.78	52.53	79.86	51.43	78.93	50.33	78.00	49.23	77.07

D.4

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0.31	0	0	0	0	0	0	0	0
2	0	1.83	0	0.98	0	0.14	0	0	0	0
3	0	3.26	0	2.40	0	1.55	0	0.70	0	0
4	0	4.63	0	3.77	0	2.91	0	2.05	0	1.19
5	0	5.97	0	5.11	0	4.24	0	3.38	0	2.51
6	0	7.28	0	6.41	0	5.54	0	4.67	0	3.80
7	0	8.57	0	7.70	0	6.83	0	5.95	0	5.08
8	0	9.84	0	8.96	0	8.09	0	7.21	0	6.34
9	0	11.10	0	10.22	0	9.34	0	8.46	0	7.58
10	0	12.34	0	11.46	0	10.58	0	9.70	0	8.81
12	0.09	14.80	0	13.91	0	13.03	0	12.14	0	11.25
14	1.83	17.22	0.55	16.33	0	15.44	0	14.55	0	13.66
16	3.57	19.62	2.30	18.73	1.05	17.83	0	16.94	0	16.04
18	5.31	21.99	4.05	21.10	2.81	20.20	1.58	19.31	0.36	18.41
20	7.06	24.35	5.81	23.45	4.57	22.55	3.35	21.65	2.13	20.75
22	8.81	26.69	7.57	25.79	6.34	24.89	5.12	23.99	3.91	23.08
24	10.57	29.01	9.33	28.11	8.11	27.21	6.89	26.30	5.69	25.40
26	12.33	31.33	11.10	30.42	9.88	29.52	8.67	28.61	7.47	27.70
28	14.09	33.63	12.87	32.72	11.65	31.82	10.45	30.91	9.25	30.00
30	15.85	35.92	14.63	35.01	13.43	34.11	12.23	33.19	11.04	32.28
34	19.40	40.48	18.19	39.57	16.99	38.66	15.80	37.75	14.62	36.83
38	22.95	45.01	21.75	44.09	20.56	43.18	19.38	42.27	18.20	41.35
42	26.51	49.52	25.33	48.60	24.15	47.68	22.97	46.76	21.80	45.84
46	30.09	53.99	28.91	53.07	27.74	52.15	26.57	51.23	25.41	50.31
50	33.68	58.46	32.51	57.53	31.34	56.61	30.18	55.69	29.03	54.76
54	37.28	62.90	36.11	61.98	34.95	61.05	33.80	60.12	32.65	59.20
58	40.89	67.33	39.73	66.40	38.57	65.47	37.43	64.55	36.28	63.62
62	44.50	71.74	43.35	70.81	42.20	69.89	41.06	68.96	39.92	68.03
66	48.13	76.14	46.98	75.21	45.84	74.28	44.70	73.35	43.57	72.42

D.5

TABLE D.1

CONFIDENCE INTERVAL I4 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0.33	0	0	0	0	0	0	0	0
5	0	1.64	0	0	0	0	0	0	0	0
6	0	2.94	0	1.19	0	0	0	0	0	0
7	0	4.20	0	2.46	0	0.70	0	0	0	0
8	0	5.46	0	3.70	0	1.95	0	0.18	0	0
9	0	6.70	0	4.94	0	3.17	0	1.41	0	0
10	0	7.93	0	6.16	0	4.39	0	2.63	0	0.85
12	0	10.37	0	8.59	0	6.81	0	5.03	0	3.25
14	0	12.77	0	10.99	0	9.20	0	7.41	0	5.62
16	0	15.15	0	13.36	0	11.57	0	9.77	0	7.98
18	0	17.51	0	15.71	0	13.91	0	12.11	0	10.31
20	0.93	19.85	0	18.05	0	16.25	0	14.44	0	12.64
22	2.71	22.18	0.32	20.37	0	18.56	0	16.76	0	14.94
24	4.49	24.49	2.11	22.69	0	20.87	0	19.06	0	17.24
26	6.28	26.80	3.91	24.98	1.56	23.16	0	21.35	0	19.53
28	8.06	29.09	5.70	27.27	3.36	25.45	1.03	23.63	0	21.81
30	9.85	31.38	7.50	29.55	5.16	27.73	2.84	25.90	0.54	24.08
34	13.44	35.92	11.10	34.09	8.77	32.26	6.46	30.43	4.17	28.60
38	17.03	40.43	14.70	38.60	12.39	36.76	10.09	34.92	7.80	33.09
42	20.64	44.92	18.32	43.08	16.02	41.24	13.73	39.40	11.45	37.56
46	24.25	49.39	21.95	47.55	19.65	45.70	17.37	43.86	15.10	42.01
50	27.87	53.84	25.58	51.99	23.29	50.14	21.02	48.29	18.75	46.44
54	31.50	58.27	29.21	56.42	26.94	54.57	24.68	52.72	22.42	50.86
58	35.14	62.69	32.86	60.84	30.59	58.98	28.33	57.13	26.08	55.27
62	38.78	67.10	36.51	65.24	34.25	63.38	32.00	61.52	29.76	59.66
66	42.43	71.49	40.17	69.63	37.92	67.77	35.67	65.91	33.44	64.04

D.6

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y											
	20		22		24		26		28			
X	L	U	L	U	L	U	L	U	L	U		
0	0	0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0	0		
6	0	0	0	0	0	0	0	0	0	0		
7	0	0	0	0	0	0	0	0	0	0		
8	0	0	0	0	0	0	0	0	0	0		
9	0	0	0	0	0	0	0	0	0	0		
10	0	0	0	0	0	0	0	0	0	0		
12	0	1.47	0	0	0	0	0	0	0	0		
14	0	3.83	0	2.04	0	0.24	0	0	0	0		
16	0	6.18	0	4.38	0	2.58	0	0.77	0	0		
18	0	8.51	0	6.70	0	4.89	0	3.09	0	1.28		
20	0	10.83	0	9.02	0	7.20	0	5.39	0	3.58		
22	0	13.13	0	11.32	0	9.50	0	7.68	0	5.86		
24	0	15.42	0	13.61	0	11.79	0	9.96	0	8.14		
26	0	17.71	0	15.88	0	14.06	0	12.24	0	10.41		
28	0	19.98	0	18.16	0	16.33	0	14.50	0	12.67		
30	0	22.25	0	20.42	0	18.59	0	16.76	0	14.93		
34	1.88	26.76	0	24.93	0	23.09	0	21.25	0	19.42		
38	5.53	31.25	3.26	29.41	1.00	27.57	0	25.73	0	23.88		
42	9.18	35.71	6.92	33.87	4.66	32.03	2.41	30.18	0.17	28.33		
46	12.84	40.16	10.58	38.31	8.33	36.47	6.09	34.61	3.85	32.76		
50	16.50	44.59	14.25	42.74	12.01	40.89	9.77	39.24	7.54	37.18		
54	20.17	49.01	17.92	47.15	15.69	45.30	13.46	43.44	11.23	41.58		
58	23.84	53.41	21.60	51.55	19.37	49.69	17.14	47.83	14.92	45.97		
62	27.52	57.80	25.29	55.94	23.06	54.08	20.84	52.22	18.62	50.35		
66	31.20	62.18	28.98	60.32	26.75	58.45	24.54	56.59	22.32	54.72		

D.7

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT X	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	2.26	0	1.81	0	1.36	0	0.91
1	0	4.48	0	4.03	0	3.58	0	3.13	0	2.68
2	0.11	6.04	0	5.59	0	5.14	0	4.68	0	4.23
3	0.84	7.51	0	7.05	0	6.60	0	6.14	0	5.68
4	1.58	8.91	0.73	8.45	0	8.00	0	7.54	0	7.08
5	2.31	10.27	1.48	9.82	0.76	9.35	0.07	8.89	0	8.44
6	3.04	11.60	2.23	11.14	1.52	10.68	0.84	10.22	0.19	9.76
7	3.77	12.91	2.98	12.45	2.29	11.99	1.62	11.52	0.97	11.06
8	4.50	14.20	3.74	13.74	3.06	13.27	2.40	12.81	1.76	12.34
9	5.24	15.47	4.49	15.01	3.84	14.54	3.19	14.08	2.56	13.61
10	5.97	16.73	5.23	16.26	4.62	15.80	3.98	15.33	3.35	14.87
12	7.43	19.21	6.74	18.75	6.18	18.28	5.57	17.81	4.96	17.34
14	8.90	21.65	8.29	21.19	7.73	20.72	7.18	20.25	6.58	19.78
16	10.36	24.07	9.87	23.60	9.31	23.13	8.76	22.67	8.21	22.20
18	11.82	26.46	11.47	25.99	10.92	25.52	10.37	25.05	9.83	24.58
20	13.29	28.83	13.09	28.36	12.55	27.89	12.00	27.42	11.46	26.95
22	14.75	31.19	14.74	30.72	14.19	30.24	13.65	29.77	13.11	29.30
24	16.22	33.52	16.40	33.05	15.85	32.58	15.31	32.11	14.77	31.63
26	17.68	35.85	18.07	35.38	17.53	34.91	16.99	34.43	16.45	33.96
28	19.14	38.16	19.75	37.69	19.21	37.21	18.68	36.74	18.14	36.27
30	20.61	40.46	21.45	39.99	20.91	39.52	20.37	39.04	19.84	38.56
34	23.54	45.04	24.87	44.56	24.33	44.09	23.80	43.61	23.26	43.14
38	26.47	49.58	28.32	49.11	27.79	48.63	27.26	48.15	26.72	47.68
42	29.39	54.10	31.80	53.62	31.27	53.15	30.74	52.67	30.21	52.19
46	32.32	58.59	35.31	58.12	34.78	57.63	34.25	57.16	33.72	56.68
50	35.25	63.06	38.84	62.59	38.31	62.11	37.78	61.63	37.25	61.15
54	38.18	67.52	42.38	67.04	41.85	66.56	41.32	66.08	40.80	65.60
58	41.11	71.95	45.94	71.48	45.42	71.00	44.89	70.51	44.36	70.04
62	44.03	76.38	49.52	75.90	48.99	75.42	48.47	74.94	47.94	74.45
66	46.96	80.78	53.11	80.31	52.58	79.82	52.06	79.35	51.53	78.86

D.8

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.46	0	0.01	0	0	0	0	0	0
1	0	2.23	0	1.77	0	1.32	0	0.87	0	0.42
2	0	3.77	0	3.32	0	2.87	0	2.41	0	1.96
3	0	5.23	0	4.77	0	4.31	0	3.86	0	3.40
4	0	6.62	0	6.16	0	5.70	0	5.24	0	4.78
5	0	7.98	0	7.51	0	7.05	0	6.59	0	6.13
6	0	9.30	0	8.84	0	8.38	0	7.91	0	7.45
7	0.34	10.60	0	10.14	0	9.67	0	9.21	0	8.75
8	1.13	11.88	0.51	11.42	0	10.96	0	10.49	0	10.03
9	1.93	13.15	1.32	12.69	0.71	12.22	0.10	11.76	0	11.29
10	2.73	14.40	2.12	13.94	1.52	13.47	0.92	13.01	0.32	12.54
12	4.35	16.88	3.75	16.41	3.15	15.94	2.56	15.47	1.96	15.01
14	5.98	19.31	5.38	18.85	4.79	18.38	4.21	17.91	3.62	17.44
16	7.62	21.73	7.03	21.26	6.45	20.79	5.87	20.31	5.29	19.85
18	9.28	24.11	8.69	23.64	8.11	23.17	7.53	22.70	6.96	22.23
20	10.91	26.48	10.37	26.01	9.79	25.53	9.22	25.06	8.65	24.59
22	12.56	28.83	12.02	28.36	11.48	27.88	10.91	27.41	10.34	26.94
24	14.23	31.16	13.69	30.69	13.15	30.21	12.61	29.74	12.04	29.27
26	15.91	33.48	15.37	33.01	14.83	32.54	14.29	32.06	13.75	31.59
28	17.60	35.79	17.06	35.32	16.52	34.84	15.99	34.37	15.45	33.89
30	19.30	38.09	18.76	37.62	18.23	37.14	17.69	36.67	17.15	36.19
34	22.73	42.66	22.20	42.19	21.66	41.71	21.13	41.24	20.59	40.76
38	26.19	47.20	25.66	46.72	25.13	46.25	24.59	45.77	24.06	45.30
42	29.68	51.71	29.15	51.24	28.62	50.76	28.09	50.28	27.55	49.80
46	33.19	56.20	32.66	55.72	32.13	55.25	31.60	54.77	31.07	54.29
50	36.72	60.67	36.19	60.19	35.66	59.71	35.13	59.23	34.61	58.75
54	40.27	65.12	39.74	64.64	39.21	64.16	38.69	63.68	38.16	63.20
58	43.83	69.56	43.31	69.07	42.78	68.59	42.25	68.12	41.73	67.64
62	47.41	73.98	46.89	73.49	46.36	73.02	45.84	72.53	45.31	72.05
66	51.01	78.38	50.48	77.90	49.96	77.42	49.43	76.94	48.91	76.46

TABLE C.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	1.50	0	0.59	0	0	0	0	0	0
3	0	2.94	0	2.03	0	1.12	0	0.20	0	0
4	0	4.33	0	3.41	0	2.49	0	1.57	0	0.66
5	0	5.67	0	4.75	0	3.83	0	2.91	0	1.99
6	0	6.99	0	6.07	0	5.14	0	4.22	0	3.29
7	0	8.28	0	7.36	0	6.43	0	5.51	0	4.58
8	0	9.56	0	8.64	0	7.71	0	6.78	0	5.85
9	0	10.82	0	9.89	0	8.96	0	8.03	0	7.10
10	0	12.07	0	11.14	0	10.21	0	9.28	0	8.35
12	1.38	14.54	0.21	13.61	0	12.67	0	11.74	0	10.80
14	3.04	16.97	1.88	16.04	0.72	15.10	0	14.16	0	13.22
16	4.71	19.38	3.56	18.44	2.41	17.50	1.27	16.56	0.14	15.62
18	6.39	21.76	5.24	20.82	4.11	19.87	2.98	18.93	1.85	17.99
20	8.08	24.12	6.94	23.18	5.81	22.23	4.68	21.29	3.56	20.34
22	9.77	26.47	8.64	25.52	7.52	24.58	6.40	23.63	5.28	22.69
24	11.48	28.80	10.36	27.85	9.24	26.90	8.12	25.96	7.01	25.01
26	13.19	31.11	12.08	30.17	10.96	29.22	9.85	28.27	8.74	27.32
28	14.91	33.42	13.80	32.47	12.69	31.52	11.58	30.57	10.48	29.62
30	16.62	35.72	15.53	34.77	14.42	33.82	13.32	32.87	12.22	31.92
34	20.06	40.28	18.99	39.33	17.92	38.38	16.82	37.43	15.72	36.48
38	23.53	44.82	22.46	43.86	21.40	42.91	20.33	41.96	19.25	41.00
42	27.02	49.32	25.96	48.37	24.90	47.42	23.84	46.46	22.78	45.51
46	30.54	53.81	29.48	52.85	28.42	51.90	27.36	50.94	26.31	49.98
50	34.08	58.28	33.02	57.32	31.96	56.36	30.91	55.40	29.85	54.44
54	37.63	62.72	36.58	61.77	35.52	60.81	34.47	59.85	33.42	58.89
58	41.20	67.15	40.15	66.19	39.10	65.24	38.04	64.28	36.99	63.32
62	44.79	71.57	43.73	70.61	42.68	69.65	41.63	68.69	40.58	67.73
66	48.38	75.98	47.33	75.02	46.28	74.05	45.23	73.09	44.18	72.13

D 10

TABLE D.1

CONFIDENCE INTERVAL 1 σ END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T										Y
	20		22		24		26		28		
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	
5	0	1.06	0	0.14	0	0	0	0	0	0	
6	0	2.37	0	1.45	0	0.52	0	0	0	0	
7	0	3.65	0	2.73	0	1.80	0	0.87	0	0	
8	0	4.92	0	3.99	0	3.06	0	2.13	0	1.20	
9	0	6.17	0	5.24	0	4.31	0	3.38	0	2.45	
10	0	7.41	0	6.48	0	5.54	0	4.61	0	3.68	
12	0	9.86	0	8.93	0	7.99	0	7.06	0	6.12	
14	0	12.28	0	11.35	0	10.41	0	9.47	0	8.53	
16	0	14.68	0	13.74	0	12.80	0	11.85	0	10.91	
18	0.72	17.05	0	16.11	0	15.16	0	14.22	0	13.28	
20	2.44	19.40	1.33	18.46	0.21	17.51	0	16.57	0	15.63	
22	4.16	21.74	3.05	20.79	1.94	19.85	0.84	18.90	0	17.96	
24	5.90	24.07	4.79	23.12	3.68	22.17	2.58	21.22	1.48	20.28	
26	7.63	26.37	6.53	25.43	5.43	24.48	4.33	23.53	3.23	22.58	
28	9.37	28.68	8.27	27.73	7.17	26.77	6.08	25.63	4.98	24.88	
30	11.12	30.97	10.02	30.02	8.93	29.06	7.83	28.11	6.74	27.16	
34	14.63	35.52	13.54	34.57	12.44	33.62	11.36	32.66	10.27	31.71	
38	18.16	40.05	17.07	39.09	15.98	38.14	14.90	37.18	13.81	36.23	
42	21.70	44.55	20.62	43.59	19.53	42.64	18.45	41.68	17.37	40.73	
46	25.25	49.03	24.18	48.07	23.10	47.11	22.02	46.16	20.95	45.20	
50	28.80	53.48	27.74	52.53	26.68	51.57	25.60	50.61	24.53	49.65	
54	32.36	57.93	31.31	56.97	30.25	56.01	29.20	55.05	28.13	54.09	
58	35.94	62.35	34.89	61.39	33.84	60.43	32.79	59.47	31.73	58.51	
62	39.53	66.77	38.48	65.81	37.43	64.85	36.38	63.88	35.33	62.92	
66	43.14	71.17	42.09	70.21	41.04	69.24	39.99	68.28	38.94	67.32	

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y											
	30		34		38		42		46			
X	L	U	L	U	L	U	L	U	L	U		
0	0	0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0	0		
6	0	0	0	0	0	0	0	0	0	0		
7	0	0	0	0	0	0	0	0	0	0		
8	0	0.27	0	0	0	0	0	0	0	0		
9	0	1.51	0	0	0	0	0	0	0	0		
10	0	2.74	0	0.88	0	0	0	0	0	0		
12	0	5.18	0	3.31	0	1.43	0	0	0	0		
14	0	7.59	0	5.71	0	3.83	0	1.95	0	0.07		
16	0	9.97	0	8.09	0	6.20	0	4.32	0	2.43		
18	0	12.33	0	10.45	0	8.56	0	6.67	0	4.78		
20	0	14.68	0	12.79	0	10.90	0	9.01	0	7.11		
22	0	17.01	0	15.12	0	13.22	0	11.33	0	9.43		
24	0.38	19.33	0	17.43	0	15.54	0	13.64	0	11.74		
26	2.13	21.63	0	19.73	0	17.84	0	15.93	0	14.04		
28	3.89	23.93	1.70	22.03	0	20.12	0	18.22	0	16.32		
30	5.65	26.21	3.47	24.31	1.29	22.41	0	20.50	0	18.60		
34	9.18	30.76	7.01	28.85	4.85	26.95	2.68	25.04	0.53	23.13		
38	12.73	35.28	10.57	33.37	8.41	31.46	6.26	29.55	4.10	27.64		
42	16.29	39.77	14.14	37.86	11.99	35.95	9.84	34.03	7.69	32.12		
46	19.87	44.24	17.72	42.33	15.57	40.41	13.43	38.49	11.29	36.58		
50	23.46	48.69	21.32	46.78	19.18	44.86	17.04	42.94	14.90	41.02		
54	27.06	53.13	24.92	51.21	22.79	49.29	20.65	47.37	18.52	45.45		
58	30.67	57.55	28.54	55.63	26.40	53.71	24.28	51.79	22.15	49.87		
62	34.28	61.96	32.16	60.04	30.03	58.11	27.91	56.19	25.79	54.27		
66	37.89	66.36	35.79	64.43	33.67	62.50	31.55	60.58	29.43	58.65		

D.12

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT X	C		T O T A L		B A C K G R O U N D		C O U N T		Y	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	2.40	0	2.09	0	1.78	0	1.47
1	0	4.48	0	4.17	0	3.86	0	3.55	0	3.24
2	0.43	6.04	0	5.73	0	5.42	0	5.11	0	4.80
3	1.10	7.51	0.54	7.20	0.06	6.88	0	6.57	0	6.26
4	1.76	8.91	1.23	8.60	0.76	8.28	0.32	7.97	0	7.66
5	2.43	10.27	1.93	9.96	1.47	9.64	1.04	9.33	0.61	9.02
6	3.10	11.60	2.60	11.29	2.20	10.98	1.77	10.66	1.35	10.34
7	3.76	12.91	3.28	12.60	2.91	12.28	2.51	11.97	2.10	11.65
8	4.43	14.20	3.98	13.88	3.61	13.57	3.25	13.25	2.85	12.93
9	5.10	15.47	4.70	15.16	4.33	14.84	3.97	14.52	3.61	14.21
10	5.76	16.73	5.43	16.41	5.07	16.10	4.71	15.78	4.35	15.46
12	7.10	19.21	6.94	18.89	6.58	18.58	6.22	18.26	5.86	17.94
14	8.43	21.65	8.48	21.34	8.13	21.02	7.77	20.70	7.41	20.38
16	9.76	24.07	10.06	23.75	9.70	23.44	9.35	23.12	8.99	22.79
18	11.10	26.46	11.66	26.14	11.31	25.82	10.95	25.50	10.60	25.18
20	12.43	28.83	13.29	28.52	12.93	28.20	12.58	27.87	12.23	27.55
22	13.76	31.19	14.93	30.87	14.58	30.55	14.22	30.23	13.87	29.90
24	15.10	33.52	16.59	33.20	16.23	32.89	15.88	32.56	15.53	32.24
26	16.43	35.85	18.26	35.53	17.91	35.21	17.56	34.89	17.20	34.57
28	17.76	38.16	19.94	37.84	19.59	37.52	19.24	37.20	18.89	36.88
30	19.10	40.46	21.64	40.14	21.29	39.82	20.94	39.50	20.59	39.18
34	21.76	45.04	25.06	44.72	24.71	44.40	24.36	44.08	24.01	43.75
38	24.43	49.58	28.51	49.26	28.16	48.94	27.81	48.62	27.46	48.30
42	27.10	54.10	31.99	53.78	31.64	53.46	31.29	53.13	30.95	52.81
46	29.76	58.59	35.49	58.27	35.15	57.95	34.80	57.62	34.45	57.30
50	32.43	63.06	39.02	62.74	38.67	62.42	38.33	62.09	37.98	61.77
54	35.10	67.52	42.56	67.19	42.22	66.87	41.87	66.55	41.53	66.22
58	37.76	71.95	46.12	71.63	45.78	71.31	45.43	70.98	45.09	70.66
62	40.43	76.38	49.70	76.05	49.35	75.73	49.01	75.40	48.66	75.08
66	43.10	80.78	53.29	80.46	52.94	80.14	52.60	79.81	52.25	79.49

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.16	0	0.85	0	0.54	0	0.23	0	0
1	0	2.93	0	2.62	0	2.31	0	2.00	0	1.69
2	0	4.49	0	4.17	0	3.87	0	3.55	0	3.24
3	0	5.94	0	5.63	0	5.32	0	5.01	0	4.69
4	0	7.34	0	7.03	0	6.72	0	6.40	0	6.09
5	0.20	8.70	0	8.39	0	8.07	0	7.76	0	7.44
6	0.94	10.03	0.53	9.71	0.13	9.40	0	9.08	0	8.77
7	1.69	11.34	1.29	11.02	0.89	10.70	0.50	10.39	0.11	10.07
8	2.45	12.62	2.06	12.30	1.66	11.99	1.27	11.67	0.88	11.35
9	3.22	13.89	2.82	13.57	2.43	13.26	2.05	12.94	1.66	12.62
10	3.99	15.14	3.60	14.83	3.22	14.51	2.83	14.19	2.44	13.87
12	5.50	17.62	5.14	17.30	4.78	16.98	4.41	16.67	4.03	16.35
14	7.05	20.06	6.70	19.74	6.34	19.43	5.98	19.11	5.63	18.79
16	8.64	22.48	8.28	22.16	7.93	21.84	7.57	21.52	7.21	21.20
18	10.24	24.86	9.89	24.54	9.53	24.22	9.18	23.91	8.83	23.59
20	11.87	27.23	11.52	26.92	11.16	26.59	10.81	26.27	10.46	25.95
22	13.52	29.59	13.16	29.26	12.81	28.94	12.46	28.62	12.11	28.30
24	15.18	31.92	14.83	31.60	14.47	31.28	14.12	30.96	13.77	30.64
26	16.85	34.24	16.50	33.92	16.15	33.60	15.80	33.28	15.45	32.96
28	18.54	36.56	18.19	36.23	17.84	35.91	17.49	35.59	17.14	35.27
30	20.24	38.86	19.89	38.53	19.54	38.21	19.19	37.89	18.84	37.57
34	23.66	43.43	23.31	43.11	22.96	42.79	22.61	42.46	22.26	42.14
38	27.12	47.97	26.77	47.65	26.42	47.33	26.07	47.01	25.72	46.68
42	30.60	52.49	30.25	52.16	29.90	51.84	29.56	51.52	29.21	51.19
46	34.11	56.97	33.76	56.65	33.41	56.33	33.07	56.01	32.72	55.68
50	37.63	61.45	37.29	61.12	36.94	60.80	36.60	60.47	36.25	60.15
54	41.18	65.90	40.83	65.58	40.49	65.25	40.14	64.93	39.80	64.60
58	44.74	70.33	44.40	70.01	44.05	69.69	43.71	69.36	43.36	69.04
62	48.32	74.76	47.97	74.43	47.63	74.11	47.28	73.78	46.94	73.46
66	51.91	79.16	51.57	78.84	51.22	78.51	50.88	78.19	50.53	77.87

D. 14

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	1.38	0	0.76	0	0.14	0	0	0	0
2	0	2.93	0	2.30	0	1.68	0	1.06	0	0.43
3	0	4.38	0	3.75	0	3.13	0	2.50	0	1.88
4	0	5.78	0	5.15	0	4.52	0	3.89	0	3.26
5	0	7.13	0	6.50	0	5.87	0	5.24	0	4.61
6	0	8.45	0	7.82	0	7.19	0	6.56	0	5.93
7	0	9.75	0	9.12	0	8.49	0	7.86	0	7.23
8	0.49	11.04	0	10.40	0	9.77	0	9.14	0	8.51
9	1.27	12.30	0.51	11.67	0	11.04	0	10.40	0	9.77
10	2.06	13.56	1.30	12.92	0.54	12.29	0	11.65	0	11.02
12	3.65	16.03	2.90	15.40	2.15	14.76	1.40	14.12	0.66	13.49
14	5.26	18.47	4.52	17.83	3.78	17.20	3.03	16.56	2.29	15.92
16	6.86	20.88	6.15	20.24	5.41	19.60	4.68	18.97	3.94	18.33
18	8.47	23.27	7.76	22.63	7.06	21.99	6.34	21.35	5.60	20.71
20	10.10	25.63	9.40	24.99	8.69	24.35	7.99	23.71	7.28	23.07
22	11.76	27.98	11.05	27.34	10.35	26.70	9.64	26.06	8.94	25.42
24	13.42	30.32	12.72	29.68	12.01	29.04	11.31	28.39	10.61	27.75
26	15.10	32.64	14.40	32.00	13.69	31.35	12.99	30.71	12.29	30.07
28	16.79	34.95	16.09	34.31	15.39	33.66	14.69	33.02	13.99	32.38
30	18.49	37.25	17.79	36.61	17.09	35.96	16.39	35.32	15.69	34.67
34	21.92	41.82	21.22	41.18	20.52	40.53	19.82	39.88	19.13	39.24
38	25.38	46.36	24.68	45.71	23.98	45.07	23.29	44.42	22.59	43.78
42	28.86	50.87	28.17	50.22	27.47	49.58	26.78	48.93	26.09	48.29
46	32.37	55.36	31.68	54.71	30.99	54.07	30.29	53.42	29.60	52.77
50	35.90	59.83	35.21	59.18	34.52	58.53	33.83	57.89	33.13	57.24
54	39.45	64.28	38.76	63.63	38.07	62.98	37.38	62.33	36.69	61.69
58	43.02	68.71	42.33	68.06	41.64	67.42	40.95	66.77	40.25	66.12
62	46.60	73.13	45.91	72.49	45.22	71.84	44.53	71.19	43.84	70.54
66	50.19	77.54	49.50	76.89	48.81	76.24	48.12	75.59	47.43	74.94

D.15

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	1.25	0	0.62	0	0	0	0	0	0
4	0	2.64	0	2.01	0	1.38	0	0.75	0	0.12
5	0	3.98	0	3.35	0	2.72	0	2.09	0	1.46
6	0	5.30	0	4.67	0	4.04	0	3.41	0	2.78
7	0	6.59	0	5.96	0	5.33	0	4.70	0	4.07
8	0	7.87	0	7.24	0	6.61	0	5.97	0	5.34
9	0	9.13	0	8.50	0	7.86	0	7.23	0	6.60
10	0	10.38	0	9.75	0	9.11	0	8.48	0	7.84
12	0	12.85	0	12.22	0	11.58	0	10.94	0	10.30
14	1.55	15.28	0.82	14.65	0.08	14.01	0	13.37	0	12.73
16	3.21	17.69	2.47	17.05	1.74	16.41	1.01	15.77	0.28	15.13
18	4.87	20.07	4.14	19.43	3.42	18.79	2.69	18.15	1.96	17.51
20	6.55	22.43	5.82	21.79	5.10	21.15	4.38	20.51	3.65	19.87
22	8.23	24.78	7.51	24.14	6.80	23.49	6.07	22.85	5.35	22.21
24	9.91	27.11	9.20	26.47	8.49	25.83	7.78	25.18	7.06	24.54
26	11.59	29.43	10.89	28.78	10.19	28.14	9.49	27.50	8.77	26.86
28	13.29	31.74	12.59	31.09	11.89	30.45	11.19	29.80	10.49	29.16
30	14.99	34.03	14.29	33.39	13.59	32.74	12.90	32.10	12.20	31.46
34	18.43	38.60	17.73	37.95	17.04	37.31	16.34	36.66	15.64	36.02
38	21.90	43.13	21.20	42.49	20.51	41.84	19.81	41.20	19.12	40.55
42	25.39	47.64	24.70	46.99	24.00	46.35	23.31	45.70	22.61	45.05
46	28.91	52.13	28.21	51.48	27.52	50.83	26.83	50.19	26.14	49.54
50	32.44	56.59	31.75	55.94	31.06	55.30	30.37	54.65	29.68	54.00
54	36.00	61.04	35.30	60.39	34.61	59.74	33.92	59.10	33.23	58.45
58	39.56	65.47	38.87	64.82	38.18	64.18	37.49	63.52	36.80	62.88
62	43.15	69.89	42.46	69.24	41.77	68.59	41.08	67.94	40.39	67.30
66	46.74	74.29	46.05	73.65	45.37	72.99	44.68	72.35	43.99	71.70

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T --- Y									
		30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	
5	0	0.83	0	0	0	0	0	0	0	0	
6	0	2.14	0	0.88	0	0	0	0	0	0	
7	0	3.43	0	2.17	0	0.90	0	0	0	0	
8	0	4.71	0	3.44	0	2.17	0	0.90	0	0	
9	0	5.96	0	4.69	0	3.42	0	2.16	0	0.88	
10	0	7.21	0	5.94	0	4.67	0	3.40	0	2.12	
12	0	9.67	0	8.40	0	7.12	0	5.85	0	4.57	
14	0	12.09	0	10.82	0	9.54	0	8.27	0	6.99	
16	0	14.49	0	13.22	0	11.94	0	10.66	0	9.38	
18	1.24	16.87	0	15.59	0	14.31	0	13.03	0	11.75	
20	2.93	19.23	1.49	17.95	0.05	16.67	0	15.38	0	14.10	
22	4.63	21.57	3.19	20.29	1.76	19.01	0.33	17.72	0	16.44	
24	6.34	23.90	4.91	22.61	3.48	21.33	2.05	20.05	0.62	18.76	
26	8.06	26.21	6.63	24.93	5.20	23.64	3.78	22.36	2.36	21.07	
28	9.78	28.52	8.36	27.23	6.93	25.94	5.51	24.66	4.09	23.37	
30	11.50	30.81	10.09	29.52	8.67	28.24	7.25	26.95	5.83	25.66	
34	14.95	35.37	13.55	34.09	12.16	32.80	10.75	31.51	9.34	30.22	
38	18.42	39.90	17.03	38.61	15.64	37.32	14.25	36.03	12.85	34.74	
42	21.92	44.41	20.53	43.12	19.15	41.83	17.76	40.53	16.37	39.24	
46	25.44	48.89	24.06	47.60	22.67	46.30	21.29	45.01	19.90	43.72	
50	28.98	53.35	27.60	52.06	26.22	50.76	24.83	49.47	23.45	48.17	
54	32.54	57.80	31.16	56.50	29.78	55.21	28.40	53.91	27.02	52.61	
58	36.11	62.23	34.73	60.93	33.35	59.64	31.97	58.34	30.60	57.04	
62	39.70	66.64	38.32	65.35	36.94	64.05	35.57	62.75	34.19	61.45	
66	43.30	71.05	41.92	69.75	40.55	68.45	39.17	67.15	37.79	65.85	

D 17

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0.85	0	0	0	0	0	0	0	0
12	0	3.30	0	2.03	0	0.75	0	0	0	0
14	0	5.71	0	4.43	0	3.16	0	1.88	0	0.61
16	0	8.10	0	6.82	0	5.55	0	4.27	0	2.98
18	0	10.47	0	9.19	0	7.91	0	6.63	0	5.35
20	0	12.82	0	11.54	0	10.25	0	8.97	0	7.69
22	0	15.16	0	13.87	0	12.59	0	11.30	0	10.02
24	0	17.48	0	16.19	0	14.91	0	13.62	0	12.34
26	0.93	19.78	0	18.50	0	17.21	0	15.93	0	14.64
28	2.67	22.08	1.25	20.79	0	19.51	0	18.22	0	16.93
30	4.42	24.37	3.00	23.08	1.59	21.80	0.17	20.51	0	19.22
34	7.92	28.92	6.51	27.63	5.10	26.35	3.69	25.05	2.28	23.76
38	11.45	33.45	10.04	32.16	8.63	30.86	7.23	29.57	5.83	28.28
42	14.99	37.95	13.59	36.65	12.19	35.36	10.79	34.07	9.38	32.77
46	18.52	42.42	17.13	41.13	15.75	39.83	14.35	38.54	12.95	37.24
50	22.07	46.88	20.69	45.58	19.30	44.29	17.92	42.99	16.54	41.70
54	25.64	51.32	24.25	50.02	22.87	48.72	21.49	47.43	20.11	46.13
58	29.22	55.74	27.84	54.44	26.46	53.15	25.08	51.85	23.70	50.55
62	32.81	60.15	31.43	58.86	30.05	57.56	28.68	56.26	27.30	54.96
66	36.42	64.55	35.04	63.25	33.66	61.96	32.29	60.66	30.91	59.36

D.18

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	2.51	0	2.32	0	2.13	0	1.94
1	0.04	4.48	0	4.29	0	4.10	0	3.91	0	3.72
2	0.62	6.04	0.29	5.85	0.01	5.66	0	5.47	0	5.28
3	1.20	7.51	0.90	7.32	0.63	7.12	0.37	6.93	0.12	6.74
4	1.78	8.91	1.49	8.72	1.27	8.53	1.03	8.33	0.78	8.14
5	2.36	10.27	2.10	10.08	1.89	9.89	1.67	9.70	1.46	9.50
6	2.94	11.60	2.75	11.41	2.54	11.22	2.33	11.02	2.11	10.83
7	3.52	12.91	3.43	12.72	3.22	12.52	3.01	12.33	2.79	12.14
8	4.10	14.20	4.13	14.01	3.92	13.81	3.71	13.62	3.50	13.43
9	4.68	15.47	4.85	15.28	4.64	15.08	4.43	14.89	4.22	14.70
10	5.26	16.73	5.58	16.54	5.37	16.34	5.16	16.15	4.95	15.95
12	6.42	19.21	7.09	19.02	6.88	18.82	6.67	18.63	6.46	18.44
14	7.58	21.65	8.63	21.46	8.42	21.27	8.22	21.07	8.01	20.88
16	8.74	24.07	10.21	23.88	10.00	23.68	9.79	23.49	9.58	23.29
18	9.90	26.46	11.81	26.27	11.60	26.07	11.39	25.88	11.19	25.68
20	11.05	28.83	13.43	28.64	13.23	28.44	13.02	28.25	12.81	28.05
22	12.21	31.19	15.07	30.99	14.87	30.80	14.66	30.60	14.45	30.41
24	13.37	33.52	16.73	33.33	16.52	33.14	16.32	32.94	16.11	32.75
26	14.53	35.85	18.40	35.65	18.20	35.46	17.99	35.26	17.78	35.07
28	15.69	38.16	20.09	37.97	19.88	37.77	19.67	37.58	19.47	37.38
30	16.85	40.46	21.78	40.27	21.57	40.07	21.37	39.88	21.16	39.68
34	19.17	45.04	25.20	44.85	24.99	44.65	24.79	44.45	24.58	44.26
38	21.45	49.58	28.65	49.39	28.45	49.19	28.24	49.00	28.03	48.80
42	23.81	54.10	32.13	53.90	31.93	53.71	31.72	53.51	31.52	53.31
46	26.13	58.59	35.63	58.39	35.43	58.20	35.23	58.00	35.02	57.81
50	28.45	63.06	39.16	62.87	38.96	62.67	38.75	62.47	38.55	62.28
54	30.77	67.52	42.70	67.32	42.50	67.13	42.30	66.93	42.09	66.73
58	33.09	71.95	46.26	71.76	46.06	71.56	45.86	71.37	45.65	71.17
62	35.41	76.38	49.84	76.18	49.64	75.98	49.43	75.79	49.23	75.59
66	37.73	80.78	53.43	80.59	53.22	80.39	53.02	80.20	52.82	80.00

TABLE D.1

CONFIDENCE INTERVAL 1 σ END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.75	0	1.56	0	1.37	0	1.18	0	0.99
1	0	3.53	0	3.33	0	3.14	0	2.95	0	2.76
2	0	5.09	0	4.89	0	4.70	0	4.51	0	4.32
3	0	6.55	0	6.35	0	6.16	0	5.97	0	5.78
4	0.54	7.95	0.30	7.76	0.06	7.57	0	7.37	0	7.18
5	1.23	9.31	0.99	9.12	0.76	8.92	0.53	8.73	0.30	8.54
6	1.90	10.64	1.69	10.44	1.47	10.25	1.24	10.06	1.01	9.87
7	2.58	11.94	2.37	11.75	2.16	11.56	1.95	11.37	1.73	11.17
8	3.29	13.23	3.07	13.04	2.86	12.84	2.65	12.65	2.44	12.46
9	4.01	14.50	3.80	14.31	3.59	14.11	3.37	13.92	3.16	13.73
10	4.74	15.76	4.53	15.57	4.32	15.37	4.11	15.18	3.90	14.98
12	6.25	18.24	6.04	18.05	5.83	17.85	5.62	17.66	5.41	17.46
14	7.80	20.68	7.59	20.49	7.38	20.30	7.17	20.10	6.96	19.91
16	9.38	23.10	9.17	22.91	8.96	22.71	8.75	22.51	8.54	22.32
18	10.98	25.49	10.77	25.29	10.56	25.10	10.36	24.91	10.15	24.71
20	12.60	27.86	12.40	27.67	12.19	27.47	11.98	27.28	11.77	27.08
22	14.25	30.21	14.04	30.02	13.83	29.82	13.62	29.62	13.42	29.43
24	15.90	32.55	15.70	32.36	15.49	32.16	15.28	31.97	15.08	31.77
26	17.58	34.87	17.37	34.68	17.16	34.48	16.96	34.29	16.75	34.09
28	19.26	37.18	19.05	36.99	18.85	36.79	18.64	36.60	18.44	36.40
30	20.96	39.49	20.75	39.29	20.54	39.10	20.34	38.90	20.13	38.70
34	24.38	44.06	24.17	43.87	23.97	43.67	23.76	43.47	23.55	43.28
38	27.83	48.60	27.62	48.41	27.42	48.21	27.21	48.02	27.01	47.82
42	31.31	53.12	31.11	52.92	30.90	52.73	30.70	52.53	30.49	52.34
46	34.82	57.61	34.61	57.42	34.41	57.22	34.20	57.02	34.00	56.83
50	38.34	62.08	38.14	61.88	37.93	61.69	37.73	61.49	37.52	61.29
54	41.89	66.54	41.68	66.34	41.48	66.14	41.27	65.95	41.07	65.75
58	45.45	70.97	45.24	70.77	45.04	70.58	44.83	70.38	44.63	70.18
62	49.02	75.39	48.82	75.20	48.61	75.00	48.41	74.80	48.21	74.61
66	52.61	79.80	52.41	79.61	52.20	79.41	52.00	79.21	51.80	79.01

D. 20

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT — Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	2.51	0	2.32	0	2.13	0	1.94
1	0.04	4.48	0	4.29	0	4.10	0	3.91	0	3.72
2	0.62	6.04	0.29	5.85	0.01	5.66	0	5.47	0	5.28
3	1.20	7.51	0.90	7.32	0.63	7.12	0.37	6.93	0.12	6.74
4	1.78	8.91	1.49	8.72	1.27	8.53	1.03	8.33	0.78	8.14
5	2.36	10.27	2.10	10.08	1.89	9.89	1.67	9.70	1.46	9.50
6	2.94	11.60	2.75	11.41	2.54	11.22	2.33	11.02	2.11	10.83
7	3.52	12.91	3.43	12.72	3.22	12.52	3.01	12.33	2.79	12.14
8	4.10	14.20	4.13	14.01	3.92	13.81	3.71	13.62	3.50	13.43
9	4.68	15.47	4.85	15.28	4.64	15.08	4.43	14.89	4.22	14.70
10	5.26	16.73	5.58	16.54	5.37	16.34	5.16	16.15	4.95	15.95
12	6.42	19.21	7.09	19.02	6.88	18.92	6.67	18.63	6.46	18.44
14	7.58	21.65	8.63	21.46	8.42	21.27	8.22	21.07	8.01	20.88
16	8.74	24.07	10.21	23.88	10.00	23.68	9.79	23.49	9.58	23.29
18	9.90	26.46	11.81	26.27	11.60	26.07	11.39	25.88	11.19	25.68
20	11.05	28.83	13.43	28.64	13.23	28.44	13.02	28.25	12.81	28.05
22	12.21	31.19	15.07	30.99	14.87	30.80	14.66	30.60	14.45	30.41
24	13.37	33.52	16.73	33.33	16.52	33.14	16.32	32.94	16.11	32.75
26	14.53	35.85	18.40	35.65	18.20	35.46	17.99	35.26	17.78	35.07
28	15.69	38.16	20.09	37.97	19.88	37.77	19.67	37.58	19.47	37.38
30	16.85	40.46	21.78	40.27	21.57	40.07	21.37	39.88	21.16	39.68
34	19.17	45.04	25.20	44.85	24.99	44.65	24.79	44.45	24.58	44.26
38	21.45	49.58	28.65	49.39	28.45	49.19	28.24	49.00	28.03	48.80
42	23.81	54.10	32.13	53.90	31.93	53.71	31.72	53.51	31.52	53.31
46	26.13	58.59	35.63	58.39	35.43	58.20	35.23	58.00	35.02	57.81
50	28.45	63.06	39.16	62.87	38.96	62.67	38.75	62.47	38.55	62.28
54	30.77	67.52	42.70	67.32	42.50	67.13	42.30	66.93	42.09	66.73
58	33.09	71.95	46.26	71.76	46.06	71.56	45.86	71.37	45.65	71.17
62	35.41	76.38	49.84	76.18	49.64	75.98	49.43	75.79	49.23	75.59
66	37.73	80.78	53.43	80.59	53.22	80.39	53.02	80.20	52.82	80.00

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.75	0	1.56	0	1.37	0	1.18	0	0.99
1	0	3.53	0	3.33	0	3.14	0	2.95	0	2.76
2	0	5.09	0	4.89	0	4.70	0	4.51	0	4.32
3	0	6.55	0	6.35	0	6.16	0	5.97	0	5.78
4	0.54	7.95	0.30	7.76	0.06	7.57	0	7.37	0	7.18
5	1.23	9.31	0.99	9.12	0.76	8.92	0.53	8.73	0.30	8.54
6	1.90	10.64	1.69	10.44	1.47	10.25	1.24	10.06	1.01	9.87
7	2.58	11.94	2.37	11.75	2.16	11.56	1.95	11.37	1.73	11.17
8	3.29	13.23	3.07	13.04	2.86	12.84	2.65	12.65	2.44	12.46
9	4.01	14.50	3.80	14.31	3.59	14.11	3.37	13.92	3.16	13.73
10	4.74	15.76	4.53	15.57	4.32	15.37	4.11	15.18	3.90	14.98
12	6.25	18.24	6.04	18.05	5.83	17.85	5.62	17.66	5.41	17.46
14	7.80	20.68	7.59	20.49	7.38	20.30	7.17	20.10	6.96	19.91
16	9.38	23.10	9.17	22.91	8.96	22.71	8.75	22.51	8.54	22.32
18	10.96	25.49	10.77	25.29	10.56	25.10	10.36	24.91	10.15	24.71
20	12.60	27.86	12.40	27.67	12.19	27.47	11.98	27.28	11.77	27.08
22	14.25	30.21	14.04	30.02	13.83	29.82	13.62	29.62	13.42	29.43
24	15.90	32.55	15.70	32.36	15.49	32.16	15.28	31.97	15.08	31.77
26	17.58	34.87	17.37	34.68	17.16	34.48	16.96	34.29	16.75	34.09
28	19.26	37.18	19.05	36.99	18.85	36.79	18.64	36.60	18.44	36.40
30	20.96	39.49	20.75	39.29	20.54	39.10	20.34	38.90	20.13	38.70
34	24.38	44.06	24.17	43.87	23.97	43.67	23.76	43.47	23.55	43.28
38	27.83	48.60	27.62	48.41	27.42	48.21	27.21	48.02	27.01	47.82
42	31.31	53.12	31.11	52.92	30.90	52.73	30.70	52.53	30.49	52.34
46	34.82	57.61	34.61	57.42	34.41	57.22	34.20	57.02	34.00	56.83
50	38.34	62.08	38.14	61.88	37.93	61.69	37.73	61.49	37.52	61.29
54	41.89	66.54	41.68	66.34	41.48	66.14	41.27	65.95	41.07	65.75
58	45.45	70.97	45.24	70.77	45.04	70.58	44.83	70.38	44.63	70.18
62	49.02	75.39	48.82	75.20	48.61	75.00	48.41	74.80	48.21	74.61
66	52.61	79.80	52.41	79.61	52.20	79.41	52.00	79.21	51.80	79.01

D. 20

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.80	0	0.42	0	0.03	0	0	0	0
1	0	2.57	0	2.19	0	1.81	0	1.42	0	1.04
2	0	4.13	0	3.75	0	3.36	0	2.98	0	2.59
3	0	5.59	0	5.20	0	4.82	0	4.43	0	4.05
4	0	6.99	0	6.60	0	6.22	0	5.83	0	5.45
5	0.07	8.35	0	7.96	0	7.57	0	7.19	0	6.80
6	0.78	9.67	0.33	9.29	0	8.90	0	8.52	0	8.13
7	1.52	10.98	1.07	10.59	0.62	10.20	0.18	9.82	0	9.43
8	2.23	12.26	1.81	11.88	1.37	11.49	0.93	11.10	0.49	10.71
9	2.95	13.54	2.53	13.15	2.11	12.76	1.69	12.37	1.25	11.98
10	3.69	14.79	3.27	14.40	2.85	14.01	2.43	13.63	2.01	13.24
12	5.20	17.27	4.79	16.88	4.37	16.49	3.95	16.10	3.53	15.72
14	6.75	19.71	6.34	19.32	5.92	18.93	5.50	18.54	5.09	18.16
16	8.33	22.13	7.92	21.73	7.50	21.35	7.09	20.96	6.67	20.57
18	9.94	24.51	9.52	24.12	9.11	23.74	8.69	23.34	8.28	22.95
20	11.57	26.88	11.15	26.49	10.74	26.10	10.32	25.71	9.91	25.32
22	13.21	29.23	12.80	28.84	12.38	28.45	11.97	28.06	11.56	27.67
24	14.87	31.57	14.46	31.18	14.04	30.79	13.63	30.40	13.22	30.01
26	16.54	33.90	16.13	33.51	15.72	33.11	15.31	32.72	14.89	32.33
28	18.23	36.21	17.82	35.82	17.41	35.42	16.99	35.03	16.58	34.64
30	19.93	38.51	19.51	38.12	19.10	37.73	18.69	37.33	18.28	36.94
34	23.35	43.08	22.94	42.69	22.53	42.30	22.11	41.91	21.70	41.51
38	26.80	47.62	26.39	47.23	25.98	46.84	25.57	46.45	25.16	46.06
42	30.24	52.14	29.88	51.75	29.47	51.35	29.06	50.96	28.64	50.57
46	33.79	56.63	33.38	56.24	32.97	55.85	32.56	55.45	32.15	55.06
50	37.32	61.10	36.91	60.71	36.50	60.31	36.09	59.92	35.68	59.53
54	40.86	65.55	40.45	65.16	40.05	64.77	39.64	64.37	39.23	63.98
58	44.43	69.99	44.02	69.60	43.61	69.20	43.20	68.81	42.79	68.41
62	48.00	74.41	47.59	74.02	47.19	73.62	46.78	73.23	46.37	72.84
66	51.59	78.82	51.18	78.63	50.78	78.03	50.37	77.64	49.96	77.25

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T --- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0.66	0	0.28	0	0	0	0	0	0
2	0	2.21	0	1.83	0	1.44	0	1.06	0	0.67
3	0	3.66	0	3.28	0	2.90	0	2.51	0	2.13
4	0	5.06	0	4.68	0	4.29	0	3.90	0	3.52
5	0	6.41	0	6.03	0	5.64	0	5.26	0	4.87
6	0	7.74	0	7.36	0	6.97	0	6.58	0	6.20
7	0	9.04	0	8.65	0	8.27	0	7.88	0	7.50
8	0.05	10.33	0	9.94	0	9.55	0	9.16	0	8.78
9	0.82	11.59	0.38	11.21	0	10.82	0	10.43	0	10.04
10	1.59	12.85	1.15	12.46	0.72	12.08	0.28	11.69	0	11.30
12	3.11	15.33	2.69	14.94	2.27	14.55	1.86	14.16	1.43	13.77
14	4.67	17.77	4.25	17.38	3.83	16.99	3.42	16.60	3.00	16.21
16	6.25	20.18	5.84	19.79	5.42	19.40	5.01	19.01	4.59	18.62
18	7.86	22.57	7.45	22.18	7.03	21.78	6.62	21.40	6.20	21.01
20	9.49	24.93	9.08	24.54	8.67	24.15	8.25	23.76	7.84	23.37
22	11.14	27.28	10.73	26.89	10.31	26.50	9.90	26.11	9.49	25.72
24	12.80	29.62	12.39	29.23	11.98	28.84	11.57	28.45	11.15	28.05
26	14.48	31.94	14.07	31.55	13.66	31.16	13.24	30.77	12.83	30.38
28	16.17	34.25	15.76	33.86	15.34	33.47	14.93	33.08	14.52	32.69
30	17.87	36.55	17.46	36.16	17.04	35.77	16.63	35.38	16.22	34.99
34	21.29	41.12	20.88	40.73	20.47	40.34	20.06	39.95	19.65	39.56
38	24.75	45.66	24.34	45.27	23.93	44.88	23.52	44.49	23.11	44.09
42	28.23	50.18	27.82	49.79	27.41	49.39	27.00	49.00	26.59	48.61
46	31.74	54.67	31.33	54.27	30.92	53.88	30.51	53.49	30.10	53.10
50	35.27	59.13	34.86	58.74	34.45	58.35	34.04	57.96	33.64	57.56
54	38.82	63.59	38.41	63.20	38.00	62.80	37.59	62.41	37.18	62.01
58	42.38	68.02	41.97	67.63	41.57	67.24	41.16	66.84	40.75	66.45
62	45.96	72.44	45.55	72.05	45.14	71.66	44.74	71.26	44.33	70.87
66	49.55	76.85	49.14	76.46	48.74	76.06	48.33	75.67	47.92	75.27

D. 22

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.29	0	0	0	0	0	0	0	0
3	0	1.74	0	0.97	0	0.20	0	0	0	0
4	0	3.13	0	2.36	0	1.59	0	0.82	0	0.05
5	0	4.49	0	3.72	0	2.94	0	2.17	0	1.40
6	0	5.81	0	5.04	0	4.26	0	3.49	0	2.72
7	0	7.11	0	6.33	0	5.56	0	4.79	0	4.01
8	0	8.39	0	7.62	0	6.84	0	6.07	0	5.29
9	0	9.66	0	8.88	0	8.11	0	7.33	0	6.56
10	0	10.91	0	10.13	0	9.36	0	8.58	0	7.80
12	1.00	13.38	0.14	12.61	0	11.83	0	11.05	0	10.27
14	2.58	15.82	1.75	15.04	0.90	14.26	0.05	13.48	0	12.71
16	4.17	18.23	3.34	17.45	2.51	16.67	1.68	15.89	0.84	15.11
18	5.79	20.62	4.96	19.84	4.13	19.06	3.30	18.28	2.47	17.50
20	7.42	22.98	6.59	22.20	5.77	21.42	4.94	20.64	4.11	19.86
22	9.07	25.33	8.25	24.55	7.42	23.77	6.59	22.99	5.76	22.21
24	10.74	27.66	9.91	26.88	9.09	26.10	8.26	25.32	7.43	24.54
26	12.42	29.99	11.59	29.20	10.77	28.42	9.94	27.64	9.12	26.86
28	14.11	32.29	13.28	31.51	12.46	30.73	11.63	29.95	10.81	29.16
30	15.81	34.59	14.98	33.81	14.16	33.03	13.34	32.25	12.51	31.46
34	19.24	39.17	18.41	38.38	17.59	37.60	16.77	36.81	15.95	36.03
38	22.70	43.70	21.88	42.92	21.06	42.14	20.23	41.35	19.41	40.57
42	26.18	48.21	25.36	47.43	24.54	46.65	23.72	45.86	22.90	45.07
46	29.70	52.70	28.88	51.92	28.06	51.13	27.24	50.35	26.42	49.56
50	33.23	57.17	32.41	56.39	31.59	55.60	30.77	54.82	29.95	54.03
54	36.78	61.62	35.96	60.84	35.14	60.05	34.32	59.26	33.50	58.48
58	40.34	66.05	39.52	65.27	38.71	64.48	37.89	63.70	37.07	62.91
62	43.92	70.48	43.10	69.69	42.29	68.90	41.47	68.12	40.65	67.33
66	47.51	74.88	46.70	74.09	45.88	73.31	45.06	72.52	44.25	71.73

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0.63	0	0	0	0	0	0	0	0
6	0	1.94	0	1.17	0	0.40	0	0	0	0
7	0	3.24	0	2.46	0	1.69	0	0.92	0	0.14
8	0	4.52	0	3.74	0	2.97	0	2.19	0	1.42
9	0	5.78	0	5.00	0	4.23	0	3.45	0	2.68
10	0	7.03	0	6.25	0	5.48	0	4.70	0	3.93
12	0	9.49	0	8.72	0	7.94	0	7.16	0	6.39
14	0	11.93	0	11.15	0	10.37	0	9.59	0	8.81
16	0	14.33	0	13.55	0	12.78	0	12.00	0	11.22
18	1.64	16.72	0.81	15.94	0	15.16	0	14.38	0	13.60
20	3.28	19.08	2.45	18.30	1.62	17.52	0.79	16.74	0	15.96
22	4.94	21.43	4.11	20.64	3.28	19.86	2.46	19.08	1.63	18.30
24	6.61	23.76	5.78	22.98	4.96	22.19	4.13	21.41	3.31	20.63
26	8.29	26.08	7.47	25.29	6.64	24.51	5.82	23.73	4.99	22.95
28	9.99	28.38	9.16	27.60	8.34	26.82	7.51	26.04	6.69	25.25
30	11.69	30.68	10.87	29.90	10.04	29.11	9.22	28.33	8.40	27.55
34	15.13	35.24	14.30	34.46	13.48	33.68	12.66	32.89	11.84	32.11
38	18.59	39.78	17.77	39.00	16.95	38.21	16.13	37.43	15.31	36.65
42	22.09	44.29	21.27	43.51	20.45	42.72	19.63	41.94	18.81	41.15
46	25.60	48.78	24.78	47.99	23.96	47.21	23.14	46.42	22.32	45.64
50	29.13	53.24	28.32	52.46	27.50	51.67	26.68	50.88	25.86	50.10
54	32.69	57.69	31.87	56.91	31.05	56.12	30.23	55.33	29.42	54.55
58	36.25	62.12	35.44	61.34	34.62	60.55	33.80	59.76	32.99	58.98
62	39.84	66.54	39.02	65.75	38.20	64.97	37.39	64.18	36.57	63.39
66	43.43	70.95	42.62	70.16	41.80	69.37	40.98	68.58	40.17	67.80

D. 24

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y											
	70		75		80		85		90			
X	L	U	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0.64	0	0	0	0	0	0	0	0	0	0
9	0	1.90	0	0.93	0	0	0	0	0	0	0	0
10	0	3.15	0	2.18	0	1.21	0	0.24	0	0	0	0
12	0	5.61	0	4.64	0	3.67	0	2.69	0	1.72	0	0
14	0	8.04	0	7.06	0	6.09	0	5.12	0	4.14	0	0
16	0	10.44	0	9.46	0	8.49	0	7.51	0	6.54	0	0
18	0	12.82	0	11.84	0	10.87	0	9.89	0	8.92	0	0
20	0	15.17	0	14.20	0	13.22	0	12.25	0	11.27	0	0
22	0.80	17.52	0	16.54	0	15.57	0	14.59	0	13.61	0	0
24	2.48	19.85	1.45	18.87	0.42	17.90	0	16.91	0	15.94	0	0
26	4.17	22.16	3.14	21.19	2.11	20.21	1.08	19.23	0.05	18.25	0	0
28	5.87	24.47	4.84	23.49	3.81	22.51	2.78	21.53	1.75	20.56	0	0
30	7.58	26.76	6.55	25.79	5.52	24.81	4.49	23.83	3.46	22.85	0	0
34	11.02	31.33	9.99	30.35	8.96	29.37	7.94	28.39	6.91	27.41	0	0
38	14.49	35.86	13.46	34.88	12.44	33.90	11.41	32.92	10.39	31.94	0	0
42	17.99	40.37	16.96	39.39	15.94	38.40	14.91	37.42	13.89	36.44	0	0
46	21.51	44.85	20.48	43.87	19.46	42.89	18.43	41.90	17.41	40.92	0	0
50	25.04	49.31	24.02	48.33	23.00	47.35	21.98	46.37	20.95	45.38	0	0
54	28.60	53.76	27.58	52.78	26.56	51.80	25.53	50.81	24.51	49.83	0	0
58	32.17	58.19	31.15	57.21	30.13	56.22	29.11	55.24	28.09	54.26	0	0
62	35.75	62.61	34.73	61.62	33.71	60.64	32.69	59.65	31.67	58.67	0	0
66	39.35	67.01	38.33	66.03	37.31	65.04	36.29	64.06	35.27	63.07	0	0

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	C		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	2.61	0	2.51	0	2.41	0	2.32
1	0.19	4.48	0.03	4.39	0	4.29	0	4.19	0	4.09
2	0.66	6.04	0.53	5.95	0.40	5.85	0.28	5.75	0.16	5.65
3	1.12	7.51	1.04	7.41	0.94	7.31	0.83	7.22	0.73	7.12
4	1.58	8.91	1.60	8.82	1.50	8.72	1.39	8.62	1.29	8.52
5	2.05	10.27	2.21	10.18	2.11	10.08	2.01	9.98	1.90	9.88
6	2.51	11.60	2.86	11.51	2.76	11.41	2.66	11.31	2.55	11.21
7	2.97	12.91	3.54	12.81	3.44	12.72	3.33	12.62	3.23	12.52
8	3.44	14.20	3.22	14.10	4.14	14.01	4.03	13.90	3.93	13.81
9	3.90	15.47	3.69	15.37	4.86	15.28	4.75	15.18	4.65	15.08
10	4.36	16.73	5.69	16.63	5.59	16.53	5.49	16.43	5.38	16.34
12	5.29	19.21	7.20	19.11	7.09	19.01	6.99	18.92	6.89	18.82
14	6.22	21.65	8.74	21.56	8.64	21.46	8.53	21.36	8.43	21.26
16	7.14	24.07	10.31	23.97	10.21	23.88	10.11	23.78	10.01	23.68
18	8.07	26.46	11.92	26.37	11.81	26.27	11.71	26.17	11.61	26.07
20	9.00	28.83	13.54	28.73	13.44	28.64	13.33	28.54	13.23	28.44
22	9.92	31.19	15.18	31.09	15.08	30.99	14.98	30.89	14.87	30.79
24	10.85	33.52	16.84	33.43	16.73	33.33	16.63	33.23	16.53	33.13
26	11.78	35.85	18.51	35.75	18.41	35.65	18.30	35.55	18.20	35.45
28	12.70	38.16	20.19	38.07	20.09	37.96	19.99	37.87	19.89	37.77
30	13.63	40.46	21.89	40.37	21.78	40.27	21.68	40.17	21.58	40.07
34	15.48	45.04	25.30	44.94	25.20	44.84	25.10	44.74	25.00	44.65
38	17.34	49.58	28.75	49.49	28.65	49.39	28.55	49.29	28.45	49.19
42	19.19	54.10	32.23	54.00	32.13	53.90	32.03	53.80	31.93	53.70
46	21.04	58.59	35.74	58.49	35.64	58.40	35.54	58.30	35.43	58.19
50	22.90	63.06	39.26	62.97	39.16	62.87	39.06	62.77	38.96	62.67
54	24.75	67.52	42.81	67.42	42.71	67.32	42.61	67.22	42.50	67.12
58	26.60	71.95	46.37	71.86	46.27	71.76	46.17	71.66	46.06	71.56
62	28.46	76.38	49.94	76.27	49.84	76.18	49.74	76.08	49.64	75.98
66	30.31	80.78	53.53	80.69	53.43	80.59	53.33	80.49	53.23	80.39

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	2.22	0	2.12	0	2.02	0	1.92	0	1.83
1	0	3.99	0	3.90	0	3.80	0	3.70	0	3.61
2	0.04	5.56	0	5.46	0	5.36	0	5.26	0	5.17
3	0.62	7.02	0.50	6.92	0.39	6.82	0.27	6.72	0.16	6.63
4	1.19	8.42	1.08	8.32	0.98	8.22	0.87	8.13	0.77	8.03
5	1.80	9.78	1.70	9.69	1.59	9.59	1.49	9.49	1.39	9.39
6	2.45	11.11	2.35	11.02	2.24	10.92	2.14	10.82	2.04	10.72
7	3.13	12.42	3.03	12.32	2.92	12.22	2.82	12.13	2.72	12.03
8	3.83	13.71	3.73	13.61	3.62	13.51	3.52	13.41	3.42	13.31
9	4.55	14.98	4.44	14.88	4.34	14.78	4.24	14.68	4.14	14.59
10	5.28	16.24	5.18	16.14	5.08	16.04	4.97	15.94	4.87	15.84
12	6.79	18.72	6.68	18.62	6.58	18.52	6.48	18.42	6.38	18.32
14	8.33	21.16	8.23	21.06	8.13	20.97	8.02	20.87	7.92	20.77
16	9.91	23.58	9.80	23.48	9.70	23.38	9.60	23.28	9.50	23.18
18	11.51	25.97	11.41	25.87	11.30	25.77	11.20	25.67	11.10	25.58
20	13.13	28.34	13.03	28.24	12.93	28.14	12.83	28.04	12.72	27.95
22	14.77	30.69	14.67	30.59	14.57	30.50	14.47	30.40	14.37	30.30
24	16.43	33.03	16.33	32.93	16.23	32.83	16.12	32.74	16.02	32.64
26	18.10	35.36	18.00	35.26	17.90	35.16	17.80	35.06	17.69	34.96
28	19.78	37.67	19.68	37.57	19.58	37.47	19.48	37.37	19.38	37.28
30	21.48	39.97	21.38	39.87	21.28	39.77	21.17	39.67	21.07	39.58
34	24.90	44.55	24.80	44.45	24.69	44.35	24.59	44.25	24.49	44.15
38	28.35	49.09	28.25	48.99	28.15	48.89	28.05	48.79	27.94	48.69
42	31.83	53.60	31.73	53.51	31.63	53.41	31.53	53.31	31.42	53.21
46	35.33	58.10	35.23	58.00	35.13	57.90	35.03	57.80	34.93	57.70
50	38.86	62.57	38.76	62.47	38.66	62.37	38.56	62.27	38.45	62.17
54	42.40	67.02	42.30	66.92	42.20	66.83	42.10	66.73	42.00	66.63
58	45.96	71.46	45.86	71.36	45.76	71.26	45.66	71.16	45.56	71.06
62	49.54	75.88	49.44	75.78	49.34	75.69	49.24	75.58	49.13	75.48
66	53.13	80.29	53.03	80.19	52.93	80.09	52.82	79.99	52.72	79.89

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.73	0	1.53	0	1.34	0	1.14	0	0.95
1	0	3.51	0	3.31	0	3.12	0	2.92	0	2.73
2	0	5.07	0	4.87	0	4.67	0	4.48	0	4.28
3	0.05	6.53	0	6.33	0	6.14	0	5.94	0	5.75
4	0.67	7.93	0.46	7.74	0.24	7.54	0.02	7.34	0	7.15
5	1.28	9.29	1.07	9.10	0.87	8.90	0.66	8.70	0.45	8.51
6	1.93	10.62	1.73	10.43	1.52	10.23	1.31	10.03	1.11	9.84
7	2.61	11.93	2.41	11.73	2.20	11.53	1.99	11.34	1.79	11.14
8	3.31	13.22	3.11	13.02	2.90	12.82	2.70	12.63	2.49	12.43
9	4.03	14.49	3.83	14.29	3.62	14.09	3.42	13.90	3.21	13.70
10	4.77	15.74	4.56	15.55	4.36	15.35	4.15	15.15	3.95	14.96
12	6.27	18.23	6.07	18.03	5.86	17.83	5.66	17.64	5.46	17.44
14	7.82	20.67	7.62	20.47	7.41	20.28	7.21	20.08	7.00	19.88
16	9.40	23.08	9.19	22.89	8.99	22.69	8.78	22.49	8.58	22.30
18	11.00	25.47	10.79	25.28	10.59	25.08	10.39	24.89	10.18	24.69
20	12.62	27.85	12.42	27.65	12.21	27.45	12.01	27.25	11.81	27.06
22	14.26	30.20	14.06	30.00	13.86	29.80	13.65	29.61	13.45	29.41
24	15.92	32.54	15.72	32.34	15.51	32.14	15.31	31.95	15.11	31.75
26	17.59	34.86	17.39	34.66	17.19	34.47	16.98	34.27	16.78	34.07
28	19.28	37.17	19.07	36.98	18.87	36.78	18.67	36.58	18.46	36.39
30	20.97	39.48	20.77	39.28	20.57	39.08	20.36	38.88	20.16	38.69
34	24.39	44.05	24.19	43.85	23.99	43.66	23.78	43.46	23.58	43.26
38	27.84	48.59	27.64	48.40	27.44	48.20	27.23	48.00	27.03	47.80
42	31.32	53.11	31.12	52.91	30.92	52.72	30.72	52.52	30.51	52.32
46	34.83	57.60	34.63	57.40	34.42	57.21	34.22	57.01	34.02	56.81
50	38.35	62.07	38.15	61.87	37.95	61.68	37.75	61.48	37.54	61.28
54	41.90	66.53	41.70	66.33	41.49	66.13	41.29	65.93	41.09	65.73
58	45.46	70.96	45.26	70.77	45.05	70.57	44.85	70.37	44.65	70.17
62	49.03	75.38	48.83	75.19	48.63	74.99	48.43	74.79	48.23	74.59
66	52.62	79.80	52.42	79.60	52.22	79.40	52.02	79.20	51.81	79.00

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T — Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.75	0	0.56	0	0.36	0	0.17	0	0
1	0	2.53	0	2.34	0	2.14	0	1.94	0	1.75
2	0	4.09	0	3.89	0	3.70	0	3.50	0	3.30
3	0	5.55	0	5.35	0	5.16	0	4.96	0	4.76
4	0	6.95	0	6.75	0	6.56	0	6.36	0	6.17
5	0.25	8.31	0.04	8.11	0	7.92	0	7.72	0	7.53
6	0.90	9.64	0.69	9.45	0.49	9.25	0.28	9.05	0.07	8.85
7	1.58	10.94	1.38	10.75	1.17	10.55	0.96	10.36	0.76	10.16
8	2.29	12.23	2.08	12.04	1.87	11.84	1.67	11.64	1.46	11.44
9	3.01	13.50	2.80	13.31	2.60	13.11	2.39	12.91	2.19	12.71
10	3.74	14.76	3.54	14.56	3.33	14.37	3.13	14.17	2.92	13.97
12	5.25	17.24	5.05	17.04	4.84	16.85	4.64	16.65	4.43	16.45
14	6.80	19.68	6.59	19.49	6.39	19.29	6.18	19.09	5.98	18.90
16	8.38	22.10	8.17	21.90	7.97	21.71	7.76	21.51	7.56	21.31
18	9.98	24.49	9.77	24.29	9.57	24.09	9.37	23.90	9.16	23.70
20	11.60	26.86	11.40	26.66	11.20	26.47	10.99	26.27	10.79	26.07
22	13.25	29.21	13.04	29.01	12.84	28.82	12.64	28.62	12.43	28.42
24	14.90	31.55	14.70	31.35	14.50	31.16	14.29	30.95	14.09	30.76
26	16.58	33.87	16.37	33.68	16.17	33.48	15.97	33.28	15.76	33.08
28	18.26	36.18	18.06	35.99	17.85	35.79	17.65	35.59	17.45	35.40
30	19.96	38.49	19.75	38.29	19.55	38.09	19.35	37.89	19.14	37.70
34	23.38	43.06	23.17	42.86	22.97	42.67	22.77	42.47	22.57	42.27
38	26.83	47.60	26.63	47.41	26.42	47.21	26.22	47.01	26.02	46.81
42	30.31	52.12	30.11	51.92	29.91	51.72	29.70	51.53	29.50	51.33
46	33.82	56.61	33.61	56.41	33.41	56.22	33.21	56.02	33.01	55.82
50	37.34	61.08	37.14	60.88	36.94	60.68	36.73	60.49	36.53	60.29
54	40.89	65.54	40.68	65.34	40.48	65.14	40.28	64.94	40.08	64.74
58	44.45	69.97	44.25	69.77	44.04	69.57	43.84	69.38	43.64	69.18
62	48.02	74.39	47.82	74.20	47.62	74.00	47.42	73.80	47.21	73.60
66	51.61	78.80	51.41	78.60	51.21	78.41	51.01	78.21	50.80	78.01

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	1.55	0	1.16	0	0.77	0	0.38	0	0
2	0	3.11	0	2.72	0	2.33	0	1.94	0	1.54
3	0	4.57	0	4.18	0	3.79	0	3.39	0	3.00
4	0	5.97	0	5.58	0	5.19	0	4.79	0	4.40
5	0	7.33	0	6.94	0	6.54	0	6.15	0	5.76
6	0	8.66	0	8.27	0	7.87	0	7.48	0	7.08
7	0.55	9.96	0.14	9.57	0	9.18	0	8.78	0	8.39
8	1.26	11.25	0.85	10.85	0.43	10.46	0.02	10.07	0	9.68
9	1.98	12.52	1.57	12.13	1.16	11.73	0.75	11.34	0.34	10.94
10	2.72	13.78	2.31	13.38	1.90	12.99	1.49	12.59	1.08	12.20
12	4.23	16.26	3.82	15.86	3.41	15.47	3.00	15.07	2.59	14.68
14	5.78	18.70	5.37	18.31	4.96	17.91	4.55	17.52	4.14	17.12
16	7.36	21.11	6.95	20.72	6.54	20.32	6.13	19.93	5.72	19.53
18	8.96	23.50	8.55	23.11	8.14	22.71	7.74	22.32	7.33	21.92
20	10.58	25.87	10.18	25.48	9.77	25.08	9.36	24.69	8.96	24.29
22	12.23	28.22	11.82	27.83	11.41	27.43	11.01	27.04	10.60	26.64
24	13.89	30.56	13.48	30.16	13.07	29.77	12.67	29.38	12.26	28.98
26	15.56	32.88	15.15	32.49	14.75	32.09	14.34	31.70	13.93	31.30
28	17.25	35.20	16.84	34.80	16.43	34.40	16.03	34.01	15.62	33.62
30	18.94	37.50	18.54	37.10	18.13	36.71	17.72	36.31	17.32	35.92
34	22.36	42.07	21.96	41.68	21.55	41.28	21.15	40.88	20.74	40.49
38	25.82	46.61	25.41	46.22	25.01	45.82	24.60	45.43	24.20	45.03
42	29.30	51.13	28.89	50.73	28.49	50.34	28.08	49.94	27.68	49.54
46	32.80	55.62	32.40	55.22	31.99	54.83	31.59	54.43	31.18	54.04
50	36.33	60.09	35.93	59.70	35.52	59.30	35.12	58.90	34.71	58.51
54	39.88	64.54	39.47	64.15	39.07	63.75	38.66	63.36	38.26	62.96
58	43.44	68.98	43.03	68.59	42.63	68.19	42.22	67.79	41.82	67.39
62	47.01	73.40	46.61	73.01	46.20	72.61	45.80	72.21	45.40	71.81
66	50.60	77.81	50.20	77.42	49.79	77.02	49.39	76.62	48.99	76.22

D. 30

TABLE D.1

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	1.15	0	0.76	0	0.37	0	0	0	0
3	0	2.61	0	2.22	0	1.82	0	1.43	0	1.04
4	0	4.01	0	3.62	0	3.22	0	2.83	0	2.44
5	0	5.37	0	4.97	0	4.58	0	4.19	0	3.79
6	0	6.69	0	6.30	0	5.91	0	5.51	0	5.12
7	0	8.00	0	7.61	0	7.21	0	6.82	0	6.43
8	0	9.28	0	8.89	0	8.49	0	8.10	0	7.71
9	0	10.55	0	10.16	0	9.76	0	9.37	0	8.98
10	0.67	11.81	0.26	11.41	0	11.02	0	10.63	0	10.23
12	2.18	14.28	1.77	13.89	1.36	13.50	0.95	13.10	0.54	12.71
14	3.73	16.73	3.32	16.33	2.92	15.94	2.51	15.54	2.10	15.15
16	5.31	19.14	4.91	18.75	4.50	18.35	4.09	17.96	3.68	17.56
18	6.92	21.53	6.51	21.14	6.11	20.74	5.70	20.34	5.29	19.95
20	8.55	23.90	8.14	23.50	7.73	23.11	7.33	22.71	6.92	22.32
22	10.19	26.25	9.79	25.85	9.38	25.46	8.97	25.06	8.57	24.67
24	11.85	28.59	11.45	28.19	11.04	27.80	10.63	27.40	10.23	27.01
26	13.53	30.91	13.12	30.51	12.72	30.12	12.31	29.72	11.90	29.33
28	15.21	33.22	14.81	32.83	14.40	32.43	14.00	32.03	13.59	31.64
30	16.91	35.52	16.51	35.12	16.10	34.73	15.69	34.33	15.29	33.94
34	20.33	40.10	19.93	39.70	19.52	39.30	19.12	38.91	18.71	38.51
38	23.79	44.64	23.38	44.24	22.98	43.84	22.57	43.45	22.17	43.05
42	27.27	49.15	26.87	48.75	26.46	48.36	26.06	47.96	25.65	47.57
46	30.78	53.64	30.37	53.24	29.97	52.85	29.56	52.45	29.16	52.05
50	34.31	58.11	33.90	57.71	33.50	57.32	33.09	56.92	32.69	56.53
54	37.85	62.56	37.45	62.17	37.04	61.77	36.64	61.37	36.23	60.98
58	41.42	67.00	41.01	66.60	40.61	66.20	40.20	65.81	39.80	65.41
62	44.99	71.42	44.59	71.02	44.18	70.63	43.78	70.23	43.38	69.83
66	48.58	75.83	48.18	75.43	47.77	75.03	47.37	74.64	46.97	74.24

TABLE D.1

CONFIDENCE INTERVAL I4 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		70		75		80		85		90	
X		L	U	L	U	L	U	L	U	L	U
0		0	0	0	0	0	0	0	0	0	0
1		0	0	0	0	0	0	0	0	0	0
2		0	0	0	0	0	0	0	0	0	0
3		0	0.65	0	0.16	0	0	0	0	0	0
4		0	2.05	0	1.55	0	1.06	0	0.58	0	0.08
5		0	3.40	0	2.91	0	2.42	0	1.93	0	1.44
6		0	4.73	0	4.24	0	3.75	0	3.25	0	2.76
7		0	6.03	0	5.54	0	5.05	0	4.56	0	4.06
8		0	7.32	0	6.82	0	6.33	0	5.84	0	5.35
9		0	8.58	0	8.09	0	7.60	0	7.11	0	6.62
10		0	9.84	0	9.35	0	8.85	0	8.36	0	7.87
12		0.13	12.32	0	11.82	0	11.33	0	10.84	0	10.35
14		1.69	14.76	1.18	14.26	0.67	13.77	0.16	13.28	0	12.78
16		3.27	17.17	2.76	16.67	2.25	16.18	1.74	15.69	1.23	15.20
18		4.88	19.55	4.37	19.06	3.86	18.57	3.35	18.08	2.85	17.58
20		6.51	21.92	6.00	21.43	5.49	20.94	4.99	20.44	4.48	19.95
22		8.16	24.27	7.65	23.78	7.14	23.28	6.63	22.79	6.12	22.30
24		9.82	26.61	9.31	26.11	8.80	25.62	8.30	25.13	7.79	24.63
26		11.50	28.93	10.99	28.44	10.48	27.94	9.97	27.45	9.46	26.95
28		13.18	31.24	12.68	30.75	12.17	30.25	11.66	29.76	11.15	29.26
30		14.88	33.54	14.37	33.05	13.87	32.55	13.36	32.06	12.85	31.57
34		18.31	38.12	17.80	37.62	17.29	37.13	16.79	36.63	16.28	36.14
38		21.76	42.65	21.26	42.16	20.75	41.66	20.24	41.17	19.74	40.68
42		25.25	47.17	24.74	46.67	24.23	46.18	23.73	45.68	23.22	45.19
46		28.76	51.66	28.25	51.16	27.74	50.67	27.24	50.17	26.73	49.68
50		32.28	56.13	31.78	55.63	31.27	55.14	30.77	54.64	30.26	54.15
54		35.83	60.58	35.32	60.09	34.82	59.59	34.31	59.09	33.81	58.60
58		39.39	65.02	38.89	64.52	38.38	64.02	37.88	63.53	37.37	63.03
62		42.97	69.44	42.47	68.94	41.96	68.45	41.46	67.95	40.95	67.45
66		46.56	73.84	46.06	73.35	45.55	72.85	45.05	72.36	44.54	71.86

D. 32

TABLE D.1

CONFIDENCE INTERVAL 1 σ END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .90 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	100		110		120		130		140	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0.45	0	0	0	0	0	0	0	0
6	0	1.78	0	0.80	0	0	0	0	0	0
7	0	3.08	0	2.10	0	1.12	0	0.13	0	0
8	0	4.36	0	3.38	0	2.40	0	1.41	0	0.43
9	0	5.63	0	4.65	0	3.66	0	2.68	0	1.70
10	0	6.89	0	5.90	0	4.92	0	3.93	0	2.94
12	0	9.36	0	8.37	0	7.39	0	6.40	0	5.42
14	0	11.80	0	10.81	0	9.83	0	8.84	0	7.85
16	0.21	14.21	0	13.22	0	12.24	0	11.25	0	10.26
18	1.83	16.59	0.81	15.61	0	14.62	0	13.63	0	12.65
20	3.46	18.96	2.44	17.97	1.42	16.98	0.40	16.00	0	15.01
22	5.11	21.31	4.09	20.32	3.07	19.33	2.06	18.35	1.04	17.36
24	6.77	23.65	5.76	22.66	4.74	21.67	3.72	20.68	2.71	19.69
26	8.45	25.97	7.43	24.98	6.42	23.99	5.40	23.00	4.39	22.01
28	10.14	28.28	9.12	27.29	8.11	26.30	7.09	25.31	6.08	24.32
30	11.84	30.58	10.82	29.59	9.81	28.60	8.79	27.61	7.78	26.62
34	15.26	35.15	14.25	34.16	13.24	33.17	12.22	32.18	11.21	31.19
38	18.72	39.69	17.71	38.70	16.70	37.70	15.68	36.71	14.67	35.73
42	22.21	44.20	21.20	43.21	20.18	42.22	19.17	41.23	18.16	40.23
46	25.72	48.69	24.71	47.70	23.70	46.71	22.68	45.72	21.67	44.72
50	29.25	53.16	28.24	52.16	27.23	51.17	26.21	50.18	25.20	49.19
54	32.80	57.61	31.79	56.62	30.78	55.62	29.76	54.63	28.75	53.64
58	36.36	62.04	35.35	61.05	34.34	60.06	33.33	59.07	32.32	58.08
62	39.94	66.46	38.93	65.47	37.92	64.48	36.91	63.49	35.90	62.50
66	43.53	70.87	42.52	69.88	41.51	68.89	40.50	67.50	39.49	66.90

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT X	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
	L	U	L	U	L	U	L	U	L	U
0	0	0	C	2.38	0	0.91	0	0	0	0
1	0	5.67	C	4.19	0	2.72	0	1.24	0	0.09
2	0	7.29	0	5.80	0	4.32	0	2.82	0	1.32
3	0	8.82	C	7.32	0	5.81	0	4.31	0	2.79
4	0	10.29	C	8.77	0	7.25	0	5.73	0	4.21
5	0	11.71	C	10.18	0	8.65	0	7.12	0	5.58
6	0	13.09	0	11.56	0	10.02	0	8.47	0	6.92
7	0	14.45	C	12.91	0	11.36	0	9.81	0	8.25
8	0	15.79	C	14.23	0	12.68	0	11.12	0	9.55
9	0.41	17.11	C	15.55	0	13.98	0	12.41	0	10.84
10	1.31	18.41	C	16.84	0	15.27	0	13.69	0	12.12
12	3.10	20.98	C	19.40	0	17.81	0	16.22	0	14.63
14	4.90	23.50	1.29	21.91	0	20.31	0	18.71	C	17.11
16	6.70	25.99	3.10	24.39	0	22.79	0	21.18	0	19.56
18	8.50	28.46	4.90	26.85	1.72	25.23	0	23.61	0	21.99
20	10.30	30.89	6.71	29.27	3.53	27.65	0.55	26.02	0	24.39
22	12.09	33.31	8.51	31.69	5.35	30.06	2.37	28.42	0	26.78
24	13.89	35.71	10.32	34.08	7.16	32.44	4.19	30.80	1.34	29.15
26	15.69	38.10	12.12	36.46	8.97	34.81	6.02	33.16	3.16	31.51
28	17.49	40.47	13.93	38.82	10.79	37.17	7.84	35.52	4.99	33.86
30	19.29	42.83	15.74	41.17	12.61	39.52	9.66	37.86	6.82	36.20
34	22.88	47.51	19.35	45.85	16.24	44.18	13.31	42.51	10.49	40.84
38	26.48	52.15	22.96	50.48	19.87	48.81	16.96	47.13	14.15	45.45
42	30.07	56.77	26.58	55.09	23.51	53.40	20.61	51.72	17.82	50.03
46	33.67	61.35	30.20	59.66	27.14	57.97	24.26	56.28	21.48	54.59
50	37.27	65.91	33.82	64.22	30.78	62.52	27.92	60.82	25.15	59.12
54	40.86	70.45	37.44	68.75	34.43	67.05	31.58	65.34	28.82	63.63
58	44.46	74.97	41.06	73.27	38.07	71.56	35.24	69.84	32.49	68.13
62	48.05	79.47	44.68	77.76	41.72	76.05	38.90	74.33	36.17	72.61
66	51.65	83.96	48.31	82.24	45.37	80.52	42.56	78.80	39.85	77.08

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.20	0	0	0	0	0	0	0	0
3	0	1.40	0	0.19	0	0	0	0	0	0
4	0	2.68	0	1.38	0	0.09	0	0	0	0
5	0	4.04	0	2.56	0	1.26	0	0	0	0
6	0	5.37	0	3.82	0	2.43	0	1.09	0	0
7	0	6.68	0	5.12	0	3.60	0	2.24	0	0.86
8	0	7.98	0	6.41	0	4.83	0	3.40	0	2.01
9	0	9.26	0	7.68	0	6.09	0	4.55	0	3.15
10	0	10.53	0	8.94	0	7.35	0	5.75	0	4.30
12	0	13.03	0	11.43	0	9.83	0	8.22	0	6.61
14	0	15.50	0	13.89	0	12.28	0	10.66	0	9.04
16	0	17.94	0	16.32	0	14.70	0	13.07	0	11.44
18	0	20.36	0	18.73	0	17.10	0	15.46	0	13.82
20	0	22.76	0	21.12	0	19.48	0	17.84	0	16.19
22	0	25.14	0	23.50	0	21.85	0	20.20	0	18.55
24	0	27.51	0	25.86	0	24.20	0	22.55	0	20.89
26	0.40	29.86	0	28.20	0	26.54	0	24.88	0	23.22
28	2.23	32.20	0	30.54	0	28.87	0	27.21	0	25.54
30	4.07	34.53	1.37	32.86	0	31.20	0	29.52	0	27.85
34	7.74	39.16	5.05	37.49	2.41	35.81	0	34.13	0	32.45
38	11.42	43.77	8.73	42.08	6.10	40.39	3.50	38.70	0.93	37.01
42	15.09	48.34	12.42	46.65	9.79	44.95	7.20	43.26	4.64	41.55
46	18.77	52.89	16.11	51.19	13.49	49.49	10.90	47.78	8.35	46.07
50	22.45	57.41	19.80	55.71	17.19	54.00	14.61	52.29	12.06	50.57
54	26.13	61.97	23.49	60.21	20.89	58.49	18.32	56.78	15.77	55.06
58	29.81	66.41	27.18	64.69	24.59	62.98	22.03	61.25	19.49	59.53
62	33.50	70.89	30.88	69.16	28.29	67.44	25.74	65.71	23.21	63.99
66	37.19	75.35	34.57	73.62	32.00	71.89	29.45	70.16	26.92	68.43

D. 35

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T — Y											
	10		12		14		16		18			
X	L	U	L	U	L	U	L	U	L	U		
0	0	0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0	0		
6	0	0	0	0	0	0	0	0	0	0		
7	0	0	0	0	0	0	0	0	0	0		
8	0	0.58	0	0	0	0	0	0	0	0		
9	0	1.72	0	0	0	0	0	0	0	0		
10	0	2.86	0	0	0	0	0	0	0	0		
12	0	5.14	0	2.19	0	0	0	0	0	0		
14	0	7.41	0	4.44	0	1.40	0	0	0	0		
16	0	9.80	0	6.68	0	3.64	0	0.53	0	0		
18	0	12.18	0	8.93	0	5.86	0	2.75	0	0		
20	0	14.55	0	11.23	0	8.09	0	4.97	0	1.80		
22	0	16.89	0	13.57	0	10.31	0	7.18	0	4.01		
24	0	19.23	0	15.89	0	12.55	0	9.39	0	6.21		
26	0	21.55	0	18.20	0	14.85	0	11.60	0	8.41		
28	0	23.87	0	20.51	0	17.15	0	13.80	0	10.60		
30	0	26.17	0	22.81	0	19.43	0	16.05	0	12.80		
34	0	30.76	0	27.38	0	23.98	0	20.59	0	17.18		
38	0	35.32	0	31.92	0	28.51	0	25.10	0	21.68		
42	2.10	39.85	0	36.44	0	33.02	0	29.60	0	26.16		
46	5.82	44.37	0.81	40.94	0	37.51	0	34.08	0	30.63		
50	9.53	48.86	4.54	45.43	0	41.99	0	38.54	0	35.08		
54	13.25	53.34	8.27	49.90	3.35	46.44	0	42.99	0	39.52		
58	16.98	57.81	12.00	54.35	7.09	50.89	2.23	47.42	0	43.95		
62	20.70	62.26	15.74	58.79	10.83	55.32	5.98	51.84	1.17	48.36		
66	24.42	66.70	19.47	63.22	14.58	59.74	9.73	56.26	4.93	52.77		

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	3.01	0	2.18	0	1.36	0	0.53
1	0	5.67	0	4.83	0	4.00	0	3.17	0	2.34
2	0	7.29	0	6.46	0	5.62	0	4.78	0	3.94
3	0	8.82	0	7.98	0	7.14	0	6.29	0	5.45
4	0	10.29	0	9.44	0	8.59	0	7.74	0	6.90
5	0.30	11.71	0	10.86	0	10.00	0	9.15	0	8.30
6	1.13	13.09	0	12.24	0	11.38	0	10.52	0	9.67
7	1.96	14.45	0.16	13.59	0	12.74	0	11.87	0	11.01
8	2.79	15.79	1.00	14.93	0	14.07	0	13.20	0	12.34
9	3.61	17.11	1.83	16.24	0.26	15.38	0	14.51	0	13.65
10	4.44	18.41	2.67	17.54	1.10	16.68	0	15.81	0	14.94
12	6.10	20.98	4.34	20.11	2.78	19.23	1.32	18.36	0	17.49
14	7.76	23.50	6.01	22.63	4.47	21.75	3.02	20.87	1.63	20.00
16	9.41	25.99	7.68	25.12	6.16	24.23	4.72	23.35	3.34	22.47
18	11.07	28.46	9.35	27.57	7.85	26.69	6.42	25.81	5.05	24.92
20	12.73	30.89	11.01	30.01	9.55	29.12	8.13	28.24	6.77	27.35
22	14.38	33.31	12.60	32.43	11.24	31.54	9.84	30.65	8.49	29.76
24	16.04	35.71	14.20	34.82	12.94	33.93	11.55	33.04	10.21	32.15
26	17.70	38.10	15.81	37.21	14.62	36.31	13.27	35.42	11.93	34.52
28	19.35	40.47	17.44	39.57	16.26	38.68	14.99	37.78	13.66	36.88
30	21.01	42.83	19.08	41.93	17.91	41.03	16.71	40.13	15.39	39.24
34	24.32	47.51	22.40	46.61	21.24	45.71	20.07	44.81	18.86	43.91
38	27.64	52.15	25.76	51.25	24.60	50.35	23.45	49.44	22.29	48.54
42	30.95	56.77	29.14	55.86	27.99	54.95	26.85	54.05	25.70	53.14
46	34.27	61.35	32.56	60.44	31.42	59.54	30.28	58.63	29.14	57.71
50	37.58	65.91	36.00	65.00	34.86	64.09	33.73	63.18	32.59	62.27
54	40.89	70.45	39.46	69.54	38.33	68.62	37.20	67.71	36.07	66.80
58	44.21	74.97	42.94	74.06	41.81	73.14	40.69	72.23	39.56	71.31
62	47.52	79.47	46.44	78.56	45.32	77.64	44.19	76.72	43.07	75.80
66	50.83	83.96	49.95	83.04	48.83	82.12	47.72	81.20	46.60	80.28

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT X	5		6		7		8		9	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	1.50	0	0.67	0	0	0	0	0	0
2	0	3.10	0	2.26	0	1.42	0	0.58	0	0
3	0	4.60	0	3.76	0	2.91	0	2.07	0	1.22
4	0	6.04	0	5.19	0	4.34	0	3.49	0	2.64
5	0	7.44	0	6.59	0	5.73	0	4.88	0	4.02
6	0	8.81	0	7.95	0	7.09	0	6.24	0	5.38
7	0	10.15	0	9.29	0	8.43	0	7.57	0	6.70
8	0	11.47	0	10.61	0	9.74	0	8.88	0	8.01
9	0	12.78	0	11.91	0	11.04	0	10.18	0	9.30
10	0	14.07	0	13.20	0	12.33	0	11.46	0	10.59
12	0	16.61	0	15.74	0	14.86	0	13.99	0	13.11
14	0.27	19.12	0	18.24	0	17.36	0	16.48	0	15.60
16	1.99	21.59	0.66	20.71	0	19.83	0	18.94	0	18.06
18	3.71	24.04	2.39	23.15	1.09	22.26	0	21.38	0	20.49
20	5.43	26.46	4.12	25.57	2.83	24.68	1.55	23.80	0.29	22.91
22	7.16	28.87	5.86	27.98	4.57	27.09	3.30	26.19	2.04	25.30
24	8.89	31.25	7.59	30.36	6.31	29.47	5.05	28.58	3.79	27.68
26	10.62	33.63	9.33	32.73	8.06	31.84	6.80	30.94	5.55	30.04
28	12.36	35.99	11.07	35.09	9.81	34.19	8.55	33.30	7.30	32.40
30	14.10	38.34	12.82	37.44	11.55	36.54	10.30	35.64	9.06	34.74
34	17.58	43.00	16.31	42.10	15.06	41.20	13.82	40.30	12.59	39.39
38	21.07	47.63	19.82	46.73	18.58	45.82	17.35	44.91	16.13	44.01
42	24.56	52.23	23.34	51.32	22.11	50.42	20.89	49.51	19.67	48.60
46	28.00	56.81	26.86	55.89	25.64	54.98	24.43	54.07	23.22	53.16
50	31.46	61.35	30.33	60.44	29.19	59.53	27.98	58.61	26.78	57.70
54	34.94	65.88	33.81	64.97	32.69	64.05	31.54	63.14	30.35	62.22
58	38.44	70.39	37.32	69.47	36.19	68.56	35.07	67.64	33.93	66.72
62	41.95	74.88	40.83	73.97	39.72	73.05	38.60	72.13	37.48	71.21
66	45.48	79.36	44.36	78.46	43.25	77.52	42.14	76.60	41.02	75.68

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	10		12		14		16		18	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0.37	0	0	0	0	0	0	0	0
4	0	1.79	0	0.08	0	0	0	0	0	0
5	0	3.17	0	1.45	0	0	0	0	0	0
6	0	4.52	0	2.79	0	1.07	0	0	0	0
7	0	5.84	0	4.11	0	2.38	0	0.65	0	0
8	0	7.14	0	5.41	0	3.67	0	1.93	0	0.19
9	0	8.44	0	6.70	0	4.95	0	3.21	0	1.46
10	0	9.71	0	7.97	0	6.22	0	4.47	0	2.72
12	0	12.24	0	10.48	0	8.72	0	6.97	0	5.20
14	0	14.72	0	12.96	0	11.20	0	9.43	0	7.66
16	0	17.17	0	15.41	0	13.64	0	11.86	0	10.09
18	0	19.61	0	17.83	0	16.06	0	14.28	0	12.50
20	0	22.02	0	20.24	0	18.46	0	16.67	0	14.89
22	0.79	24.41	0	22.62	0	20.84	0	19.05	0	17.26
24	2.55	26.78	0.09	24.99	0	23.20	0	21.41	0	19.62
26	4.31	29.15	1.86	27.36	0	25.56	0	23.76	0	21.97
28	6.07	31.50	3.62	29.70	1.20	27.90	0	26.10	0	24.30
30	7.83	33.84	5.40	32.04	2.98	30.24	0.59	28.43	0	26.63
34	11.37	38.49	8.94	36.68	6.55	34.87	4.16	33.06	1.80	31.25
38	14.91	43.10	12.50	41.29	10.11	39.47	7.75	37.66	5.39	35.84
42	18.46	47.69	16.07	45.87	13.69	44.05	11.33	42.23	8.99	40.40
46	22.02	52.25	19.64	50.42	17.27	48.60	14.92	46.77	12.59	44.95
50	25.59	56.79	23.22	54.96	20.86	53.13	18.52	51.30	16.19	49.47
54	29.16	61.30	26.80	59.47	24.46	57.64	22.12	55.80	19.81	53.97
58	32.75	65.80	30.40	63.97	28.06	62.13	25.74	60.29	23.42	58.46
62	36.34	70.29	33.99	68.45	31.67	66.61	29.35	64.77	27.05	62.93
66	39.91	74.76	37.60	72.92	35.29	71.07	32.98	69.23	30.68	67.39

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	20		22		24		26		28	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0.97	0	0	0	0	0	0	0	0
12	0	3.44	0	1.68	0	0	0	0	0	0
14	0	5.89	0	4.12	0	2.35	0	0.57	0	0
16	0	8.31	0	6.54	0	4.76	0	2.98	0	1.19
18	0	10.72	0	8.93	0	7.15	0	5.36	0	3.57
20	0	13.10	0	11.31	0	9.52	0	7.73	0	5.94
22	0	15.47	0	13.67	0	11.88	0	10.09	0	8.29
24	0	17.82	0	16.02	0	14.23	0	12.43	0	10.63
26	0	20.16	0	18.36	0	16.56	0	14.76	0	12.95
28	0	22.50	0	20.69	0	18.89	0	17.08	0	15.27
30	0	24.82	0	23.01	0	21.20	0	19.39	0	17.58
34	0	29.43	0	27.62	0	25.81	0	23.99	0	22.17
38	3.05	34.02	0.72	32.20	0	30.38	0	28.56	0	26.74
42	6.65	38.58	4.33	36.76	2.02	34.93	0	33.10	0	31.28
46	10.26	43.12	7.95	41.29	5.64	39.46	3.35	37.63	1.05	35.80
50	13.87	47.64	11.57	45.80	9.27	43.97	6.98	42.13	4.70	40.30
54	17.49	52.13	15.19	50.30	12.90	48.46	10.62	46.62	8.34	44.78
58	21.12	56.62	18.83	54.78	16.54	52.94	14.26	51.10	11.99	49.25
62	24.75	61.08	22.47	59.24	20.18	57.40	17.91	55.55	15.64	53.71
66	28.39	65.54	26.11	63.70	23.83	61.85	21.56	60.00	19.30	58.15

D.40

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	3.39	0	2.94	0	2.49	0	2.04
1	0	5.67	0	5.21	0	4.76	0	4.32	0	3.87
2	0	7.29	0	6.84	0	6.39	0	5.94	0	5.48
3	0.28	8.82	0	8.37	0	7.91	0	7.46	0	7.01
4	1.01	10.29	0.12	9.83	0	9.38	0	8.92	0	8.46
5	1.74	11.71	0.86	11.25	0.09	10.79	0	10.34	0	9.88
6	2.47	13.09	1.60	12.63	0.84	12.18	0.12	11.72	0	11.26
7	3.20	14.45	2.22	13.99	1.59	13.53	0.88	13.07	0.20	12.61
8	3.94	15.79	2.87	15.33	2.28	14.87	1.65	14.41	0.97	13.95
9	4.67	17.11	3.53	16.65	2.95	16.19	2.38	15.73	1.74	15.26
10	5.40	18.41	4.22	17.95	3.64	17.49	3.07	17.02	2.50	16.56
12	6.86	20.98	5.64	20.52	5.07	20.05	4.50	19.59	3.93	19.12
14	8.33	23.50	7.10	23.04	6.53	22.57	5.97	22.11	5.41	21.64
16	9.79	25.99	8.60	25.53	8.03	25.06	7.47	24.60	6.91	24.13
18	11.26	28.46	10.12	27.99	9.57	27.52	9.01	27.05	8.45	26.59
20	12.72	30.89	11.68	30.43	11.12	29.96	10.57	29.49	10.01	29.02
22	14.18	33.31	13.25	32.85	12.70	32.38	12.15	31.91	11.60	31.44
24	15.65	35.71	14.84	35.25	14.29	34.78	13.75	34.31	13.20	33.84
26	17.11	38.10	16.45	37.63	15.91	37.16	15.36	36.69	14.81	36.22
28	18.58	40.47	18.08	40.00	17.53	39.53	16.99	39.06	16.44	38.59
30	20.04	42.83	19.72	42.36	19.17	41.89	18.63	41.41	18.08	40.94
34	22.97	47.51	23.03	47.04	22.48	46.57	21.94	46.09	21.40	45.62
38	25.90	52.15	26.37	51.68	25.83	51.21	25.30	50.74	24.76	50.26
42	28.83	56.77	29.76	56.29	29.22	55.82	28.68	55.35	28.14	54.87
46	31.75	61.35	33.17	60.88	32.63	60.40	32.09	59.93	31.56	59.45
50	34.68	65.91	36.60	65.44	36.07	64.96	35.53	64.49	35.00	64.01
54	37.61	70.45	40.06	69.98	39.53	69.50	38.99	69.02	38.46	68.55
58	40.54	74.97	43.54	74.49	43.00	74.02	42.47	73.54	41.94	73.06
62	43.47	79.47	47.03	79.00	46.50	78.52	45.97	78.04	45.44	77.56
66	46.39	83.96	50.54	83.48	50.01	83.01	49.48	82.53	48.95	82.05

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT		TOTAL BACKGROUND COUNT — Y									
		5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U	
0	0	1.59	0	1.14	0	0.70	0	0.25	0	0	
1	0	3.41	0	2.96	0	2.51	0	2.06	0	1.61	
2	0	5.03	0	4.58	0	4.13	0	3.67	0	3.22	
3	0	6.55	0	6.10	0	5.64	0	5.19	0	4.73	
4	0	8.01	0	7.55	0	7.09	0	6.64	0	6.18	
5	0	9.42	0	8.96	0	8.51	0	8.05	0	7.59	
6	0	10.80	0	10.34	0	9.88	0	9.42	0	8.97	
7	0	12.15	0	11.69	0	11.24	0	10.77	0	10.31	
8	0.30	13.48	0	13.03	0	12.57	0	12.10	0	11.64	
9	1.09	14.80	0.44	14.34	0	13.88	0	13.41	0	12.95	
10	1.87	16.10	1.23	15.63	0.59	15.18	0	14.71	0	14.25	
12	3.36	18.66	2.79	18.19	2.19	17.73	1.56	17.27	0.95	16.80	
14	4.84	21.18	4.28	20.71	3.72	20.25	3.16	19.78	2.56	19.32	
16	6.36	23.66	5.80	23.20	5.24	22.73	4.68	22.26	4.12	21.79	
18	7.90	26.12	7.34	25.65	6.79	25.19	6.23	24.72	5.68	24.25	
20	9.46	28.55	8.91	28.09	8.36	27.62	7.80	27.15	7.25	26.68	
22	11.05	30.97	10.49	30.50	9.94	30.03	9.37	29.56	8.84	29.09	
24	12.65	33.36	12.10	32.90	11.55	32.43	11.00	31.96	10.45	31.49	
26	14.26	35.75	13.72	35.29	13.17	34.81	12.62	34.54	12.08	33.86	
28	15.90	38.12	15.35	37.64	14.81	37.17	14.26	36.70	13.72	36.23	
30	17.54	40.47	17.00	40.00	16.45	39.52	15.91	39.06	15.37	38.58	
34	20.86	45.15	20.32	44.67	19.78	44.20	19.24	43.73	18.70	43.26	
38	24.22	49.79	23.68	49.31	23.14	48.84	22.60	48.35	22.06	47.89	
42	27.61	54.40	27.07	53.92	26.53	53.45	25.99	52.97	25.46	52.50	
46	31.02	58.98	30.49	58.50	29.95	58.03	29.42	57.55	28.88	57.08	
50	34.46	63.54	33.93	63.06	33.40	62.58	32.86	62.11	32.33	61.63	
54	37.93	68.07	37.39	67.59	36.86	67.11	36.33	66.64	35.80	66.16	
58	41.41	72.59	40.88	72.11	40.35	71.63	39.81	71.15	39.28	70.68	
62	44.91	77.09	44.38	76.61	43.85	76.13	43.32	75.65	42.79	75.18	
66	48.42	81.57	47.89	81.09	47.36	80.61	46.82	80.14	46.30	79.66	

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T										Y	
		10		12		14		16		18			
X	L	U	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1.16	0	0.26	0	0	0	0	0	0	0	0	
2	0	2.77	0	1.86	0	0.96	0	0.05	0	0	0	0	
3	0	4.28	0	3.37	0	2.46	0	1.55	0	0.64	0	0	
4	0	5.73	0	4.81	0	3.90	0	2.99	0	2.07	0	0	
5	0	7.13	0	6.22	0	5.30	0	4.38	0	3.47	0	0	
6	0	8.51	0	7.59	0	6.67	0	5.75	0	4.83	0	0	
7	0	9.85	0	8.93	0	8.02	0	7.09	0	6.17	0	0	
8	0	11.18	0	10.26	0	9.34	0	8.41	0	7.49	0	0	
9	0	12.49	0	11.57	0	10.64	0	9.72	0	8.80	0	0	
10	0	13.79	0	12.86	0	11.94	0	11.01	0	10.08	0	0	
12	0.34	16.34	0	15.41	0	14.48	0	13.55	0	12.62	0	0	
14	1.96	18.85	0.75	17.92	0	16.99	0	16.06	0	15.13	0	0	
16	3.57	21.33	2.39	20.40	1.21	19.46	0.04	18.53	0	17.60	0	0	
18	5.12	23.78	4.01	22.85	2.87	21.91	1.70	20.97	0.54	20.04	0	0	
20	6.70	26.21	5.60	25.27	4.49	24.34	3.37	23.40	2.21	22.46	0	0	
22	8.29	28.62	7.20	27.68	6.10	26.75	5.00	25.81	3.89	24.87	0	0	
24	9.91	31.02	8.81	30.08	7.72	29.13	6.62	28.20	5.53	27.25	0	0	
26	11.53	33.39	10.44	32.45	9.35	31.51	8.26	30.57	7.17	29.63	0	0	
28	13.17	35.76	12.08	34.82	11.00	33.87	9.91	32.93	8.82	31.99	0	0	
30	14.82	38.11	13.74	37.17	12.65	36.22	11.57	35.28	10.48	34.33	0	0	
34	18.15	42.78	17.07	41.84	15.99	40.89	14.91	39.95	13.83	39.00	0	0	
38	21.52	47.42	20.45	46.47	19.37	45.52	18.29	44.57	17.22	43.63	0	0	
42	24.92	52.02	23.85	51.07	22.78	50.12	21.70	49.17	20.63	48.22	0	0	
46	28.35	56.60	27.28	55.65	26.21	54.70	25.14	53.75	24.07	52.80	0	0	
50	31.79	61.15	30.73	60.20	29.66	59.25	28.59	58.30	27.53	57.34	0	0	
54	35.26	65.69	34.20	64.73	33.13	63.78	32.07	62.83	31.00	61.87	0	0	
58	38.75	70.20	37.69	69.25	36.63	68.29	35.56	67.34	34.50	66.38	0	0	
62	42.25	74.70	41.19	73.74	40.13	72.78	39.07	71.83	38.01	70.87	0	0	
66	45.77	79.18	44.72	78.22	43.66	77.27	42.60	76.31	41.54	75.35	0	0	

D.43

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT X	20		22		24		26		28	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	1.16	0	0.24	0	0	0	0	0	0
5	0	2.55	0	1.64	0	0.72	0	0	0	0
6	0	3.91	0	2.99	0	2.07	0	1.16	0	0.23
7	0	5.25	0	4.33	0	3.41	0	2.49	0	1.56
8	0	6.57	0	5.64	0	4.72	0	3.80	0	2.87
9	0	7.87	0	6.94	0	6.02	0	5.09	0	4.17
10	0	9.15	0	8.23	0	7.30	0	6.38	0	5.45
12	0	11.69	0	10.77	0	9.84	0	8.90	0	7.97
14	0	14.19	0	13.26	0	12.33	0	11.40	0	10.46
16	0	16.66	0	15.73	0	14.79	0	13.86	0	12.92
18	0	19.10	0	18.17	0	17.23	0	16.30	0	15.36
20	1.06	21.53	0	20.59	0	19.65	0	18.71	0	17.77
22	2.75	23.93	1.61	22.99	0.47	22.05	0	21.11	0	20.17
24	4.44	26.31	3.30	25.37	2.17	24.43	1.04	23.49	0	22.55
26	6.08	28.69	5.00	27.74	3.88	26.80	2.75	25.86	1.63	24.92
28	7.74	31.04	6.65	30.10	5.57	29.16	4.47	28.21	3.35	27.27
30	9.40	33.39	8.32	32.44	7.24	31.50	6.15	30.56	5.07	29.61
34	12.76	38.05	11.68	37.10	10.60	36.16	9.52	35.21	8.45	34.26
38	16.14	42.68	15.07	41.73	13.99	40.78	12.92	39.83	11.85	38.88
42	19.56	47.27	18.49	46.32	17.42	45.38	16.35	44.42	15.28	43.47
46	23.00	51.84	21.93	50.89	20.86	49.94	19.79	48.99	18.73	48.04
50	26.46	56.39	25.39	55.44	24.33	54.49	23.26	53.53	22.20	52.58
54	29.94	60.92	28.88	59.96	27.81	59.01	26.75	58.06	25.69	57.10
58	33.44	65.43	32.38	64.47	31.32	63.52	30.25	62.56	29.19	61.61
62	36.95	69.92	35.89	68.96	34.83	68.01	33.77	67.05	32.72	66.09
66	40.48	74.39	39.42	73.44	38.34	72.48	37.31	71.52	36.25	70.57

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0.64	0	0	0	0	0	0	0	0
8	0	1.95	0	0.10	0	0	0	0	0	0
9	0	3.24	0	1.39	0	0	0	0	0	0
10	0	4.52	0	2.66	0	0.81	0	0	0	0
12	0	7.04	0	5.18	0	3.32	0	1.46	0	0
14	0	9.53	0	7.66	0	5.80	0	3.93	0	2.06
16	0	11.99	0	10.12	0	8.25	0	6.37	0	4.50
18	0	14.42	0	12.55	0	10.67	0	8.80	0	6.92
20	0	16.83	0	14.96	0	13.08	0	11.20	0	9.32
22	0	19.23	0	17.35	0	15.47	0	13.59	0	11.70
24	0	21.61	0	19.72	0	17.84	0	15.96	0	14.07
26	0.51	23.97	0	22.09	0	20.20	0	18.31	0	16.43
28	2.23	26.33	0.00	24.44	0	22.55	0	20.66	0	18.77
30	3.95	28.67	1.73	26.77	0	24.88	0	22.99	0	21.10
34	7.37	33.32	5.20	31.42	3.00	29.53	0.80	27.63	0	25.74
38	10.78	37.94	8.63	36.04	6.49	34.14	4.30	32.24	2.11	30.34
42	14.21	42.52	12.07	40.62	9.93	38.72	7.79	36.82	5.64	34.92
46	17.66	47.09	15.53	45.18	13.39	43.28	11.26	41.37	9.13	39.47
50	21.13	51.63	19.00	49.72	16.88	47.81	14.75	45.91	12.63	44.00
54	24.63	56.15	22.50	54.24	20.38	52.33	18.25	50.42	16.13	48.51
58	28.13	60.65	26.01	58.74	23.89	56.83	21.77	54.92	19.66	53.01
62	31.66	65.14	29.54	63.23	27.42	61.31	25.31	59.40	23.19	57.48
66	35.19	69.61	33.08	67.69	30.97	65.78	28.85	63.87	26.74	61.95

D.45

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT X	TOTAL		BACKGROUND		COUNT		Y	
	L	U	L	U	L	U	L	U
0	0	0	0	3.53	0	3.22	0	2.91
1	0	5.67	0	5.36	0	5.05	0	4.74
2	0.05	7.29	0	6.98	0	6.67	0	6.36
3	0.72	8.82	0.13	8.51	0	8.20	0	7.89
4	1.39	10.29	0.69	9.98	0.30	9.66	0	9.35
5	2.05	11.71	1.23	11.39	0.85	11.08	0.47	10.77
6	2.72	13.09	1.82	12.78	1.44	12.46	1.06	12.15
7	3.39	14.45	2.44	14.14	2.06	13.82	1.69	13.51
8	4.05	15.79	3.08	15.48	2.71	15.16	2.34	14.85
9	4.72	17.11	3.75	16.79	3.38	16.48	3.01	16.16
10	5.39	18.41	4.43	18.09	4.06	17.78	3.70	17.46
12	6.72	20.98	5.84	20.66	5.48	20.35	5.11	20.03
14	8.05	23.50	7.30	23.19	6.94	22.87	6.58	22.55
16	9.39	25.99	8.80	25.68	8.44	25.36	8.07	25.04
18	10.72	28.46	10.32	28.14	9.96	27.82	9.60	27.50
20	12.05	30.89	11.87	30.58	11.52	30.26	11.16	29.94
22	13.39	33.31	13.45	33.00	13.09	32.68	12.73	32.36
24	14.72	35.71	13.99	35.40	14.68	35.08	14.33	34.76
26	16.05	38.10	16.65	37.78	16.29	37.46	15.94	37.14
28	17.39	40.47	18.27	40.15	17.92	39.83	17.56	39.51
30	18.72	42.83	19.91	42.51	19.55	42.19	19.20	41.87
34	21.39	47.51	23.22	47.19	22.86	46.87	22.51	46.55
38	24.05	52.15	26.56	51.84	26.21	51.51	25.86	51.19
42	26.72	56.77	29.94	56.45	29.59	56.13	29.24	55.80
46	29.39	61.35	33.35	61.03	33.00	60.71	32.65	60.39
50	32.05	65.91	36.79	65.59	36.44	65.27	36.09	64.95
54	34.72	70.45	40.24	70.13	39.90	69.81	39.55	69.49
58	37.39	74.97	43.72	74.65	43.37	74.33	43.03	74.00
62	40.05	79.47	47.22	79.15	46.87	78.83	46.52	78.51
66	42.72	83.96	50.73	83.64	50.38	83.31	50.03	82.99

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	2.29	0	1.99	0	1.68	0	1.37	0	1.06
1	0	4.12	0	3.81	0	3.49	0	3.19	0	2.88
2	0	5.74	0	5.43	0	5.12	0	4.81	0	4.50
3	0	7.26	0	6.95	0	6.64	0	6.33	0	6.02
4	0	8.72	0	8.41	0	8.10	0	7.79	0	7.47
5	0	10.14	0	9.83	0	9.51	0	9.20	0	8.89
6	0.31	11.52	0	11.21	0	10.89	0	10.58	0	10.27
7	0.94	12.88	0.57	12.57	0.20	12.25	0	11.94	0	11.62
8	1.60	14.21	1.23	13.90	0.86	13.59	0.49	13.27	0.12	12.95
9	2.27	15.53	1.90	15.21	1.53	14.90	1.17	14.59	0.80	14.27
10	2.96	16.83	2.59	16.52	2.23	16.20	1.86	15.89	1.50	15.57
12	4.38	19.40	4.02	19.08	3.66	18.76	3.29	18.45	2.93	18.13
14	5.85	21.92	5.49	21.60	5.13	21.28	4.77	20.97	4.41	20.65
16	7.35	24.41	6.99	24.09	6.63	23.77	6.27	23.45	5.91	23.14
18	8.89	26.87	8.53	26.55	8.17	26.23	7.81	25.91	7.45	25.59
20	10.44	29.30	10.09	28.98	9.73	28.67	9.37	28.35	9.01	28.03
22	12.02	31.72	11.66	31.40	11.31	31.08	10.95	30.76	10.60	30.44
24	13.62	34.12	13.26	33.80	12.91	33.48	12.55	33.16	12.20	32.84
26	15.23	36.50	14.87	36.18	14.52	35.86	14.17	35.54	13.81	35.22
28	16.86	38.87	16.50	38.55	16.15	38.23	15.79	37.91	15.44	37.59
30	18.50	41.23	18.14	40.91	17.79	40.59	17.44	40.27	17.08	39.94
34	21.81	45.91	21.46	45.59	21.10	45.26	20.75	44.95	20.40	44.62
38	25.16	50.55	24.81	50.23	24.46	49.91	24.11	49.59	23.76	49.26
42	28.54	55.16	28.19	54.84	27.84	54.52	27.49	54.20	27.14	53.88
46	31.96	59.75	31.61	59.42	31.26	59.10	30.91	58.78	30.56	58.46
50	35.39	64.30	35.04	63.98	34.70	63.66	34.35	63.33	34.00	63.01
54	38.85	68.84	38.50	68.52	38.16	68.20	37.81	67.87	37.46	67.55
58	42.33	73.36	41.98	73.04	41.64	72.71	41.29	72.39	40.94	72.07
62	45.83	77.86	45.48	77.54	45.13	77.21	44.79	76.89	44.44	76.56
66	49.34	82.34	48.99	82.02	48.65	81.70	48.30	81.36	47.95	81.05

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT X	10		TOTAL		BACKGROUND		COUNT		Y	
	L	U	L	U	L	U	L	U	L	U
0	0	0.75	0	0.13	0	0	0	0	0	0
1	0	2.57	0	1.95	0	1.33	0	0.71	0	0.09
2	0	4.19	0	3.56	0	2.94	0	2.32	0	1.70
3	0	5.70	0	5.08	0	4.46	0	3.83	0	3.21
4	0	7.16	0	6.53	0	5.91	0	5.28	0	4.66
5	0	8.57	0	7.95	0	7.32	0	6.70	0	6.07
6	0	9.96	0	9.33	0	8.70	0	8.07	0	7.44
7	0	11.31	0	10.68	0	10.05	0	9.42	0	8.79
8	0	12.64	0	12.01	0	11.38	0	10.75	0	10.12
9	0.43	13.95	0	13.32	0	12.69	0	12.06	0	11.43
10	1.13	15.25	0.40	14.62	0	13.99	0	13.36	0	12.73
12	2.57	17.81	1.84	17.18	1.11	16.55	0.39	15.91	0	15.28
14	4.04	20.33	3.32	19.70	2.60	19.06	1.88	18.43	1.16	17.79
16	5.56	22.82	4.84	22.18	4.12	21.55	3.40	20.91	2.68	20.28
18	7.09	25.27	6.38	24.64	5.66	24.00	4.95	23.37	4.23	22.73
20	8.66	27.71	7.94	27.07	7.23	26.43	6.52	25.80	5.80	25.16
22	10.24	30.12	9.53	29.49	8.82	28.85	8.11	28.21	7.39	27.57
24	11.84	32.52	11.13	31.88	10.42	31.24	9.71	30.61	9.00	29.97
26	13.46	34.90	12.75	34.26	12.04	33.62	11.33	32.99	10.62	32.34
28	15.09	37.27	14.38	36.63	13.67	35.99	12.97	35.35	12.26	34.71
30	16.73	39.63	16.02	38.98	15.32	38.34	14.61	37.70	13.91	37.06
34	20.05	44.30	19.35	43.66	18.64	43.02	17.94	42.38	17.24	41.74
38	23.41	48.94	22.70	48.30	22.00	47.66	21.30	47.02	20.60	46.37
42	26.79	53.55	26.09	52.91	25.39	52.26	24.69	51.62	23.99	50.98
46	30.21	58.14	29.51	57.49	28.81	56.85	28.11	56.20	27.42	55.56
50	33.65	62.69	32.95	62.05	32.26	61.40	31.56	60.76	30.86	60.11
54	37.11	67.23	36.42	66.58	35.72	65.93	35.02	65.29	34.33	64.64
58	40.59	71.74	39.90	71.10	39.20	70.45	38.51	69.80	37.81	69.16
62	44.09	76.25	43.40	75.60	42.70	74.95	42.01	74.30	41.32	73.66
66	47.61	80.73	46.91	80.08	46.22	79.44	45.53	78.79	44.83	78.14

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	1.08	0	0.45	0	0	0	0	0	0
3	0	2.59	0	1.96	0	1.34	0	0.71	0	0.09
4	0	4.03	0	3.41	0	2.78	0	2.16	0	1.53
5	0	5.44	0	4.81	0	4.18	0	3.56	0	2.93
6	0	6.81	0	6.19	0	5.56	0	4.93	0	4.30
7	0	8.16	0	7.53	0	6.90	0	6.27	0	5.65
8	0	9.49	0	8.86	0	8.23	0	7.60	0	6.97
9	0	10.80	0	10.17	0	9.54	0	8.90	0	8.27
10	0	12.10	0	11.46	0	10.83	0	10.20	0	9.56
12	0	14.65	0	14.01	0	13.38	0	12.75	0	12.11
14	0.44	17.16	0	16.52	0	15.89	0	15.26	0	14.62
16	1.96	19.64	1.25	19.00	0.53	18.37	0	17.73	0	17.09
18	3.52	22.09	2.80	21.45	2.09	20.82	1.37	20.18	0.66	19.55
20	5.09	24.52	4.38	23.89	3.66	23.25	2.95	22.61	2.24	21.97
22	6.68	26.93	5.97	26.29	5.26	25.66	4.55	25.02	3.84	24.38
24	8.29	29.33	7.58	28.69	6.87	28.05	6.17	27.41	5.46	26.77
26	9.92	31.70	9.21	31.07	8.50	30.42	7.79	29.79	7.09	29.14
28	11.55	34.07	10.85	33.43	10.14	32.79	9.44	32.15	8.73	31.51
30	13.20	36.42	12.50	35.78	11.79	35.14	11.09	34.50	10.38	33.86
34	16.53	41.09	15.83	40.45	15.13	39.81	14.43	39.17	13.72	38.53
38	19.90	45.73	19.20	45.09	18.50	44.44	17.80	43.80	17.10	43.16
42	23.30	50.34	22.60	49.69	21.90	49.05	21.20	48.41	20.50	47.76
46	26.72	54.91	26.02	54.27	25.32	53.63	24.62	52.98	23.93	52.34
50	30.17	59.47	29.47	58.82	28.77	58.18	28.08	57.53	27.38	56.89
54	33.63	64.00	32.94	63.36	32.24	62.71	31.55	62.07	30.85	61.42
58	37.12	68.52	36.42	67.87	35.73	67.22	35.04	66.58	34.34	65.93
62	40.62	73.01	39.93	72.37	39.23	71.72	38.54	71.07	37.85	70.43
66	44.14	77.49	43.45	76.85	42.75	76.20	42.06	75.55	41.37	74.91

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		30		34		38		42		46	
X		L	U	L	U	L	U	L	U	L	U
0		0	0	0	0	0	0	0	0	0	0
1		0	0	0	0	0	0	0	0	0	0
2		0	0	0	0	0	0	0	0	0	0
3		0	0	0	0	0	0	0	0	0	0
4		0	0.91	0	0	0	0	0	0	0	0
5		0	2.30	0	1.05	0	0	0	0	0	0
6		0	3.67	0	2.42	0	1.16	0	0	0	0
7		0	5.02	0	3.75	0	2.50	0	1.24	0	0
8		0	6.34	0	5.08	0	3.81	0	2.55	0	1.29
9		0	7.64	0	6.38	0	5.12	0	3.86	0	2.59
10		0	8.93	0	7.67	0	6.40	0	5.14	0	3.88
12		0	11.48	0	10.21	0	8.95	0	7.68	0	6.41
14		0	13.98	0	12.72	0	11.45	0	10.18	0	8.91
16		0	16.46	0	15.19	0	13.92	0	12.64	0	11.37
18		0	18.91	0	17.63	0	16.36	0	15.09	0	13.81
20		1.53	21.33	0.11	20.06	0	18.78	0	17.51	0	16.23
22		3.13	23.74	1.71	22.47	0.29	21.19	0	19.91	0	18.63
24		4.75	26.13	3.33	24.85	1.92	23.57	0.50	22.29	0	21.02
26		6.38	28.51	4.97	27.23	3.55	25.95	2.14	24.67	0.73	23.39
28		8.02	30.87	6.61	29.59	5.20	28.31	3.79	27.03	2.38	25.74
30		9.68	33.22	8.27	31.94	6.86	30.65	5.46	29.37	4.05	28.09
34		13.02	37.89	11.62	36.60	10.21	35.32	8.81	34.04	7.41	32.75
38		16.40	42.52	14.99	41.23	13.59	39.94	12.19	38.66	10.79	37.38
42		19.80	47.12	18.40	45.83	17.00	44.55	15.61	43.26	14.21	41.97
46		23.23	51.69	21.83	50.41	20.44	49.11	19.04	47.83	17.65	46.54
50		26.68	56.24	25.29	54.95	23.90	53.66	22.50	52.37	21.11	51.08
54		30.16	60.77	28.76	59.48	27.37	58.19	25.98	56.90	24.59	55.61
58		33.65	65.28	32.26	63.99	30.87	62.70	29.48	61.41	28.09	60.12
62		37.15	69.78	35.77	68.49	34.38	67.19	32.99	65.90	31.61	64.61
66		40.68	74.26	39.29	72.96	37.90	71.67	36.52	70.38	35.13	69.09

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0.03	0	0	0	0	0	0	0	0
9	0	1.33	0	0.06	0	0	0	0	0	0
10	0	2.61	0	1.34	0	0.08	0	0	0	0
12	0	5.14	0	3.87	0	2.60	0	1.34	0	0.07
14	0	7.63	0	6.36	0	5.10	0	3.82	0	2.55
16	0	10.10	0	8.83	0	7.55	0	6.28	0	5.01
18	0	12.54	0	11.26	0	9.99	0	8.71	0	7.44
20	0	14.96	0	13.68	0	12.40	0	11.13	0	9.85
22	0	17.36	0	16.08	0	14.80	0	13.52	0	12.24
24	0	19.74	0	18.46	0	17.18	0	15.90	0	14.62
26	0	22.11	0	20.83	0	19.55	0	18.27	0	16.98
28	0.98	24.46	0	23.18	0	21.90	0	20.62	0	19.34
30	2.64	26.81	1.24	25.53	0	24.24	0	22.96	0	21.68
34	6.00	31.47	4.60	30.18	3.20	28.90	1.80	27.61	0.40	26.33
38	9.39	36.09	7.99	34.80	6.60	33.51	5.20	32.23	3.80	30.94
42	12.81	40.68	11.42	39.40	10.02	38.11	8.62	36.82	7.23	35.53
46	16.26	45.25	14.86	43.96	13.47	42.67	12.08	41.38	10.68	40.09
50	19.72	49.79	18.33	48.50	16.94	47.21	15.55	45.92	14.16	44.63
54	23.20	54.32	21.81	53.03	20.42	51.74	19.04	50.44	17.65	49.15
58	26.70	58.83	25.32	57.53	23.93	56.24	22.54	54.95	21.15	53.65
62	30.22	63.31	28.83	62.02	27.45	60.73	26.06	59.43	24.68	58.14
66	33.75	67.79	32.36	66.49	30.98	65.20	29.60	63.91	28.21	62.61

D.51

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT X	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	3.65	0	3.46	0	3.27	0	3.08
1	0	5.67	0	5.47	0	5.29	0	5.10	0	4.90
2	0.39	7.29	0	7.10	0	6.91	0	6.72	0	6.53
3	0.97	8.82	0.38	8.63	0.16	8.44	0	8.25	0	8.06
4	1.55	10.29	0.86	10.10	0.64	9.90	0.42	9.71	0.20	9.52
5	2.13	11.71	1.40	11.52	1.18	11.32	0.96	11.13	0.74	10.94
6	2.71	13.09	1.98	12.90	1.76	12.71	1.55	12.51	1.33	12.32
7	3.29	14.45	2.60	14.26	2.38	14.07	2.17	13.88	1.95	13.68
8	3.87	15.79	3.24	15.60	3.02	15.40	2.81	15.21	2.60	15.02
9	4.45	17.11	3.90	16.92	3.69	16.72	3.48	16.53	3.26	16.34
10	5.03	18.41	4.59	18.22	4.37	18.03	4.16	17.83	3.95	17.64
12	6.19	20.98	6.00	20.78	5.78	20.59	5.57	20.40	5.36	20.20
14	7.35	23.50	6.91	23.31	7.24	23.11	7.03	22.92	6.82	22.73
16	8.51	25.99	8.95	25.80	8.74	25.61	8.53	25.41	8.32	25.22
18	9.67	28.46	9.24	28.26	10.26	28.07	10.05	27.88	9.84	27.68
20	10.83	30.89	10.41	30.70	11.81	30.51	11.60	30.31	11.40	30.12
22	11.99	33.31	13.59	33.12	13.39	32.93	13.18	32.73	12.97	32.54
24	13.15	35.71	15.19	35.52	14.98	35.32	14.77	35.13	14.56	34.94
26	14.31	38.10	16.79	37.90	16.59	37.71	16.38	37.51	16.17	37.32
28	15.47	40.47	18.42	40.28	18.21	40.08	18.00	39.88	17.80	39.69
30	16.63	42.83	20.05	42.63	19.85	42.44	19.64	42.24	19.43	42.05
34	18.94	47.51	23.36	47.32	23.15	47.12	22.95	46.93	22.74	46.73
38	21.26	52.15	26.71	51.96	26.50	51.77	26.29	51.57	26.09	51.37
42	23.58	56.77	30.09	56.57	29.88	56.38	29.68	56.18	29.47	55.99
46	25.90	61.35	33.50	61.16	33.29	60.96	33.09	60.77	32.88	60.57
50	28.22	65.91	36.93	65.72	36.73	65.52	36.52	65.35	36.31	65.13
54	30.54	70.45	40.39	70.26	40.18	70.06	39.98	69.87	39.77	69.67
58	32.86	74.97	43.86	74.78	43.66	74.58	43.45	74.39	43.25	74.19
62	35.18	79.47	47.36	79.28	47.15	79.08	46.95	78.89	46.74	78.69
66	37.50	83.96	50.87	83.76	50.66	83.57	50.46	83.37	50.25	83.18

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	2.89	0	2.70	0	2.51	0	2.31	0	2.12
1	0	4.71	0	4.52	0	4.33	0	4.14	0	3.95
2	0	6.34	0	6.15	0	5.95	0	5.76	0	5.57
3	0	7.87	0	7.67	0	7.48	0	7.29	0	7.10
4	0	9.33	0	9.14	0	8.94	0	8.75	0	8.56
5	0.53	10.75	0.31	10.55	0.09	10.36	0	10.17	0	9.98
6	1.12	12.13	0.90	11.94	0.68	11.75	0.47	11.55	0.25	11.36
7	1.74	13.49	1.52	13.30	1.31	13.10	1.09	12.91	0.88	12.72
8	2.38	14.82	2.17	14.63	1.96	14.44	1.74	14.24	1.53	14.05
9	3.05	16.14	2.84	15.95	2.63	15.75	2.41	15.56	2.20	15.37
10	3.74	17.44	3.52	17.25	3.31	17.06	3.10	16.86	2.89	16.67
12	5.15	20.01	4.94	19.82	4.73	19.62	4.52	19.43	4.31	19.24
14	6.61	22.53	6.40	22.34	6.19	22.15	5.98	21.95	5.77	21.76
16	8.11	25.03	7.90	24.83	7.69	24.64	7.48	24.44	7.27	24.25
18	9.63	27.49	9.43	27.29	9.22	27.10	9.01	26.90	8.80	26.71
20	11.19	29.92	10.98	29.73	10.77	29.54	10.56	29.34	10.35	29.15
22	12.76	32.34	12.55	32.14	12.34	31.95	12.14	31.76	11.93	31.56
24	14.35	34.74	14.15	34.55	13.94	34.35	13.73	34.16	13.52	33.96
26	15.96	37.13	15.76	36.93	15.55	36.73	15.34	36.54	15.13	36.35
28	17.59	39.49	17.38	39.30	17.17	39.11	16.97	38.91	16.76	38.72
30	19.23	41.85	19.02	41.66	18.81	41.46	18.60	41.27	18.40	41.07
34	22.53	46.54	22.33	46.34	22.12	46.15	21.91	45.95	21.71	45.76
38	25.88	51.18	25.68	50.98	25.47	50.79	25.26	50.59	25.06	50.40
42	29.26	55.79	29.06	55.60	28.85	55.40	28.65	55.21	28.44	55.01
46	32.67	60.38	32.47	60.18	32.26	59.98	32.06	59.79	31.85	59.59
50	36.11	64.93	35.90	64.74	35.70	64.54	35.49	64.35	35.29	64.15
54	39.57	69.47	39.36	69.28	39.16	69.08	38.95	68.88	38.75	68.69
58	43.04	73.99	42.84	73.80	42.63	73.60	42.43	73.40	42.22	73.21
62	46.54	78.49	46.33	78.30	46.13	78.10	45.92	77.90	45.72	77.71
66	50.05	82.98	49.84	82.78	49.64	82.59	49.43	82.39	49.23	82.19

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT X	10		12		14		16		18	
	L	U	L	U	L	U	L	U	L	U
0	0	1.93	0	1.55	0	1.17	0	0.79	0	0.41
1	0	3.76	0	3.38	0	2.99	0	2.61	0	2.22
2	0	5.38	0	5.00	0	4.61	0	4.23	0	3.85
3	0	6.90	0	6.52	0	6.14	0	5.75	0	5.37
4	0	8.37	0	7.98	0	7.60	0	7.21	0	6.83
5	0	9.79	0	9.40	0	9.01	0	8.63	0	8.24
6	0.04	11.17	0	10.78	0	10.40	0	10.01	0	9.63
7	0.66	12.52	0.24	12.14	0	11.75	0	11.37	0	10.98
8	1.32	13.86	0.89	13.47	0.46	13.09	0.03	12.70	0	12.31
9	1.99	15.18	1.56	14.79	1.14	14.40	0.71	14.02	0.29	13.63
10	2.68	16.48	2.25	16.09	1.83	15.70	1.40	15.32	0.98	14.93
12	4.09	19.04	3.67	18.65	3.25	18.27	2.83	17.88	2.41	17.49
14	5.56	21.56	5.14	21.18	4.72	20.79	4.30	20.40	3.88	20.01
16	7.06	24.05	6.64	23.67	6.22	23.28	5.80	22.89	5.38	22.50
18	8.59	26.51	8.17	26.12	7.75	25.74	7.33	25.35	6.92	24.96
20	10.14	28.95	9.73	28.56	9.31	28.17	8.89	27.78	8.47	27.40
22	11.72	31.37	11.30	30.98	10.89	30.59	10.47	30.20	10.05	29.81
24	13.31	33.77	12.90	33.38	12.48	32.99	12.07	32.60	11.65	32.21
26	14.93	36.15	14.51	35.76	14.09	35.37	13.68	34.98	13.26	34.59
28	16.55	38.52	16.14	38.13	15.72	37.74	15.31	37.35	14.89	36.96
30	18.19	40.88	17.78	40.49	17.36	40.10	16.95	39.71	16.53	39.31
34	21.50	45.56	21.09	45.17	20.67	44.78	20.26	44.39	19.85	44.00
38	24.85	50.20	24.44	49.81	24.03	49.42	23.61	49.03	23.20	48.64
42	28.23	54.81	27.82	54.42	27.41	54.03	27.00	53.64	26.59	53.25
46	31.65	59.40	31.23	59.01	30.82	58.61	30.41	58.22	30.00	57.83
50	35.08	63.95	34.67	63.56	34.26	63.17	33.85	62.78	33.44	62.39
54	38.54	68.49	38.13	68.10	37.72	67.71	37.31	67.32	36.90	66.93
58	42.02	73.01	41.61	72.62	41.20	72.23	40.79	71.83	40.38	71.44
62	45.51	77.51	45.10	77.12	44.69	76.73	44.28	76.34	43.87	75.94
66	49.02	82.00	48.62	81.60	48.21	81.21	47.80	80.82	47.39	80.43

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.02	0	0	0	0	0	0	0	0
1	0	1.84	0	1.46	0	1.08	0	0.70	0	0.32
2	0	3.46	0	3.08	0	2.70	0	2.32	0	1.93
3	0	4.98	0	4.60	0	4.22	0	3.83	0	3.45
4	0	6.44	0	6.06	0	5.67	0	5.29	0	4.91
5	0	7.86	0	7.47	0	7.09	0	6.70	0	6.32
6	0	9.24	0	8.85	0	8.47	0	8.08	0	7.70
7	0	10.60	0	10.21	0	9.82	0	9.44	0	9.05
8	0	11.93	0	11.54	0	11.16	0	10.77	0	10.38
9	0	13.25	0	12.86	0	12.47	0	12.08	0	11.70
10	0.55	14.54	0.13	14.15	0	13.77	0	13.38	0	12.99
12	1.98	17.11	1.56	16.72	1.14	16.33	0.72	15.94	0.30	15.55
14	3.46	19.63	3.04	19.24	2.62	18.85	2.19	18.46	1.77	18.07
16	4.96	22.11	4.54	21.72	4.12	21.33	3.71	20.95	3.29	20.56
18	6.50	24.57	6.08	24.18	5.66	23.79	5.24	23.40	4.83	23.02
20	8.06	27.01	7.64	26.62	7.22	26.23	6.81	25.84	6.39	25.45
22	9.64	29.42	9.22	29.03	8.80	28.64	8.39	28.25	7.97	27.86
24	11.24	31.82	10.82	31.43	10.40	31.04	9.99	30.65	9.57	30.26
26	12.85	34.20	12.43	33.81	12.02	33.42	11.60	33.03	11.19	32.64
28	14.48	36.57	14.06	36.18	13.65	35.79	13.23	35.40	12.82	35.01
30	16.12	38.92	15.70	38.53	15.29	38.14	14.88	37.76	14.46	37.37
34	19.43	43.61	19.02	43.21	18.61	42.82	18.19	42.43	17.78	42.04
38	22.79	48.25	22.37	47.86	21.96	47.47	21.55	47.07	21.14	46.68
42	26.17	52.86	25.76	52.47	25.35	52.07	24.94	51.68	24.53	51.29
46	29.59	57.44	29.18	57.05	28.76	56.65	28.35	56.26	27.94	55.87
50	33.03	62.00	32.62	61.60	32.20	61.21	31.79	60.82	31.38	60.43
54	36.49	66.53	36.08	66.14	35.67	65.75	35.26	65.36	34.84	64.96
58	39.97	71.05	39.56	70.66	39.15	70.27	38.74	69.87	38.33	69.48
62	43.46	75.55	43.05	75.16	42.64	74.76	42.23	74.37	41.82	73.98
66	46.98	80.03	46.57	79.64	46.16	79.25	45.75	78.86	45.34	78.47

D. 55

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T — Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	1.55	0	0.78	0	0.01	0	0	0	0
3	0	3.07	0	2.30	0	1.53	0	0.76	0	0
4	0	4.52	0	3.75	0	2.99	0	2.22	0	1.45
5	0	5.94	0	5.16	0	4.39	0	3.62	0	2.86
6	0	7.31	0	6.54	0	5.77	0	5.00	0	4.23
7	0	8.67	0	7.89	0	7.12	0	6.35	0	5.58
8	0	10.00	0	9.22	0	8.45	0	7.68	0	6.91
9	0	11.31	0	10.54	0	9.76	0	8.99	0	8.22
10	0	12.61	0	11.83	0	11.06	0	10.29	0	9.51
12	0	15.17	0	14.39	0	13.62	0	12.84	0	12.07
14	1.35	17.68	0.51	16.91	0	16.13	0	15.36	0	14.58
16	2.87	20.17	2.03	19.39	1.19	18.62	0.35	17.84	0	17.06
18	4.41	22.63	3.57	21.85	2.74	21.07	1.90	20.29	1.07	19.51
20	5.97	25.06	5.14	24.28	4.30	23.50	3.47	22.73	2.64	21.95
22	7.56	27.48	6.72	26.70	5.89	25.92	5.06	25.14	4.23	24.36
24	9.16	29.87	8.33	29.09	7.49	28.31	6.66	27.53	5.83	26.75
26	10.77	32.25	9.94	31.47	9.11	30.69	8.28	29.91	7.45	29.13
28	12.40	34.62	11.58	33.84	10.75	33.06	9.92	32.28	9.09	31.50
30	14.05	36.98	13.22	36.19	12.39	35.41	11.56	34.63	10.74	33.85
34	17.37	41.65	16.54	40.87	15.71	40.09	14.89	39.31	14.06	38.53
38	20.72	46.29	19.90	45.51	19.07	44.73	18.25	43.94	17.42	43.16
42	24.11	50.90	23.29	50.12	22.47	49.33	21.64	48.55	20.82	47.77
46	27.53	55.48	26.71	54.70	25.88	53.91	25.06	53.13	24.24	52.34
50	30.97	60.04	30.15	59.25	29.33	58.47	28.51	57.69	27.68	56.90
54	34.43	64.57	33.61	63.79	32.79	63.00	31.97	62.22	31.15	61.43
58	37.92	69.09	37.10	68.30	36.27	67.52	35.45	66.73	34.63	65.95
62	41.41	73.59	40.59	72.80	39.78	72.02	38.96	71.23	38.14	70.45
66	44.93	78.07	44.11	77.29	43.29	76.50	42.47	75.72	41.65	74.93

TABLE D.2

CONFIDENCE INTERVAL 1 σ END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0.68	0	0	0	0	0	0	0	0
5	0	2.08	0	1.32	0	0.54	0	0	0	0
6	0	3.46	0	2.69	0	1.92	0	1.14	0	0.37
7	0	4.81	0	4.03	0	3.26	0	2.49	0	1.72
8	0	6.14	0	5.36	0	4.59	0	3.82	0	3.04
9	0	7.44	0	6.67	0	5.90	0	5.12	0	4.35
10	0	8.74	0	7.96	0	7.19	0	6.42	0	5.64
12	0	11.29	0	10.52	0	9.74	0	8.97	0	8.19
14	0	13.80	0	13.03	0	12.25	0	11.48	0	10.70
16	0	16.28	0	15.51	0	14.73	0	13.96	0	13.18
18	0.23	18.74	0	17.96	0	17.18	0	16.41	0	15.63
20	1.80	21.17	0.97	20.39	0.14	19.61	0	18.83	0	18.06
22	3.39	23.58	2.56	22.80	1.73	22.02	0.90	21.24	0.07	20.46
24	5.00	25.97	4.17	25.19	3.34	24.42	2.51	23.64	1.68	22.86
26	6.62	28.35	5.80	27.57	4.97	26.79	4.14	26.01	3.31	25.23
28	8.26	30.72	7.43	29.94	6.60	29.16	5.78	28.37	4.95	27.59
30	9.91	33.07	9.08	32.29	8.25	31.51	7.43	30.73	6.60	29.95
34	13.24	37.74	12.41	36.96	11.58	36.18	10.76	35.40	9.93	34.62
38	16.60	42.38	15.78	41.60	14.95	40.81	14.13	40.04	13.30	39.25
42	19.99	46.99	19.17	46.20	18.35	45.42	17.52	44.64	16.70	43.85
46	23.42	51.56	22.59	50.78	21.77	50.00	20.95	49.21	20.13	48.43
50	26.86	56.12	26.04	55.33	25.22	54.55	24.40	53.77	23.58	52.98
54	30.33	60.65	29.51	59.86	28.69	59.08	27.87	58.30	27.05	57.51
58	33.81	65.17	32.99	64.38	32.17	63.60	31.35	62.81	30.53	62.03
62	37.32	69.66	36.50	68.88	35.68	68.09	34.86	67.31	34.04	66.52
66	40.83	74.14	40.01	73.36	39.20	72.57	38.38	71.79	37.56	71.00

D.57

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT X	70		75		80		85		90	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0.95	0	0	0	0	0	0	0	0
8	0	2.27	0	1.31	0	0.34	0	0	0	0
9	0	3.58	0	2.61	0	1.64	0	0.68	0	0
10	0	4.87	0	3.90	0	2.93	0	1.96	0	1.00
12	0	7.42	0	6.45	0	5.48	0	4.51	0	3.54
14	0	9.92	0	8.96	0	7.98	0	7.02	0	6.04
16	0	12.40	0	11.43	0	10.46	0	9.49	0	8.52
18	0	14.85	0	13.88	0	12.91	0	11.93	0	10.96
20	0	17.28	0	16.31	0	15.33	0	14.36	0	13.38
22	0	19.69	0	18.71	0	17.74	0	16.76	0	15.79
24	0.85	22.08	0	21.10	0	20.13	0	19.15	0	18.18
26	2.48	24.45	1.44	23.48	0.40	22.50	0	21.53	0	20.55
28	4.12	26.82	3.08	25.84	2.05	24.86	1.01	23.89	0	22.91
30	5.77	29.17	4.74	28.19	3.70	27.22	2.67	26.24	1.63	25.26
34	9.11	33.84	8.07	32.86	7.04	31.88	6.01	30.90	4.98	29.93
38	12.48	38.47	11.45	37.49	10.42	36.51	9.38	35.53	8.35	34.56
42	15.88	43.07	14.85	42.09	13.82	41.11	12.79	40.14	11.76	39.16
46	19.30	47.65	18.28	46.67	17.25	45.69	16.22	44.71	15.19	43.73
50	22.75	52.20	21.73	51.22	20.70	50.24	19.67	49.26	18.65	48.28
54	26.22	56.73	25.20	55.75	24.17	54.77	23.15	53.79	22.12	52.81
58	29.71	61.24	28.69	60.26	27.66	59.28	26.64	58.30	25.61	57.32
62	33.22	65.74	32.19	64.76	31.17	63.78	30.15	62.79	29.12	61.81
66	36.74	70.22	35.72	69.23	34.69	68.25	33.67	67.27	32.64	66.29

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT X	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	3.74	0	3.65	0	3.55	0	3.45
1	0.08	5.67	0	5.57	0	5.47	0	5.37	0	5.27
2	0.54	7.29	0.12	7.20	0.01	7.10	0	7.00	0	6.90
3	1.01	8.82	0.50	8.73	0.39	8.63	0.28	8.53	0.18	8.43
4	1.47	10.29	0.97	10.19	0.87	10.09	0.76	9.99	0.66	9.90
5	1.93	11.71	1.51	11.61	1.40	11.51	1.30	11.41	1.20	11.32
6	2.40	13.09	2.09	12.99	1.99	12.90	1.88	12.80	1.78	12.70
7	2.86	14.45	2.64	14.36	2.60	14.25	2.50	14.16	2.40	14.06
8	3.32	15.79	3.35	15.69	3.25	15.59	3.14	15.50	3.04	15.40
9	3.79	17.11	3.57	17.01	3.91	16.91	3.81	16.81	3.70	16.72
10	4.25	18.41	4.04	18.31	4.59	18.22	4.49	18.12	4.39	18.02
12	5.18	20.98	4.97	20.88	6.00	20.78	5.90	20.69	5.80	20.58
14	6.10	23.50	5.90	23.40	7.46	23.31	7.35	23.21	7.25	23.11
16	7.03	25.99	6.82	25.89	8.95	25.80	8.85	25.70	8.75	25.60
18	7.96	28.46	10.58	28.36	10.48	28.26	10.37	28.16	10.27	28.06
20	8.88	30.89	12.13	30.80	12.03	30.70	11.92	30.60	11.82	30.50
22	9.81	33.31	13.70	33.22	13.60	33.12	13.50	33.02	13.39	32.92
24	10.74	35.71	15.29	35.62	15.19	35.52	15.09	35.42	14.99	35.32
26	11.66	38.10	16.90	38.00	16.80	37.90	16.70	37.81	16.59	37.70
28	12.59	40.47	18.52	40.37	18.42	40.27	18.32	40.17	18.22	40.08
30	13.52	42.83	20.16	42.73	20.06	42.63	19.96	42.53	19.85	42.43
34	15.37	47.51	23.47	47.41	23.36	47.31	23.26	47.22	23.16	47.12
38	17.22	52.15	26.81	52.06	26.71	51.96	26.61	51.86	26.51	51.76
42	19.08	56.77	30.19	56.67	30.09	56.57	29.99	56.47	29.89	56.37
46	20.93	61.35	33.60	61.25	33.50	61.15	33.40	61.06	33.30	60.96
50	22.78	65.91	37.04	65.82	36.93	65.72	36.83	65.62	36.73	65.52
54	24.64	70.45	40.49	70.36	40.39	70.26	40.29	70.15	40.19	70.06
58	26.49	74.97	43.97	74.88	43.87	74.77	43.77	74.67	43.66	74.58
62	28.34	79.47	47.46	79.37	47.36	79.28	47.26	79.18	47.16	79.08
66	30.20	83.96	50.97	83.86	50.87	83.76	50.77	83.67	50.67	83.57

D. 59

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	3.35	0	3.26	0	3.16	0	3.06	0	2.96
1	0	5.18	0	5.08	0	4.98	0	4.89	0	4.79
2	0	6.81	0	6.71	0	6.61	0	6.51	0	6.41
3	0.07	8.33	0	8.23	0	8.14	0	8.04	0	7.94
4	0.55	9.80	0.45	9.70	0.34	9.60	0.24	9.50	0.13	9.41
5	1.09	11.22	0.99	11.12	0.88	11.02	0.78	10.92	0.67	10.83
6	1.68	12.60	1.57	12.51	1.47	12.41	1.36	12.31	1.26	12.21
7	2.29	13.96	2.19	13.87	2.08	13.77	1.98	13.67	1.88	13.57
8	2.94	15.30	2.83	15.20	2.73	15.10	2.62	15.01	2.52	14.91
9	3.60	16.62	3.50	16.52	3.39	16.42	3.29	16.32	3.19	16.22
10	4.28	17.92	4.18	17.82	4.08	17.72	3.97	17.63	3.87	17.53
12	5.69	20.49	5.59	20.39	5.49	20.29	5.38	20.19	5.28	20.09
14	7.15	23.01	7.05	22.91	6.94	22.82	6.84	22.71	6.74	22.62
16	8.64	25.50	8.54	25.40	8.44	25.31	8.34	25.21	8.23	25.11
18	10.17	27.96	10.07	27.87	9.96	27.77	9.86	27.67	9.76	27.57
20	11.72	30.40	11.62	30.30	11.52	30.21	11.41	30.11	11.31	30.01
22	13.29	32.82	13.19	32.72	13.09	32.63	12.99	32.53	12.88	32.43
24	14.88	35.22	14.78	35.12	14.68	35.03	14.58	34.93	14.48	34.83
26	16.49	37.61	16.39	37.51	16.29	37.41	16.19	37.31	16.08	37.21
28	18.12	39.98	18.01	39.88	17.91	39.78	17.81	39.68	17.71	39.58
30	19.75	42.33	19.65	42.24	19.55	42.14	19.45	42.04	19.34	41.94
34	23.06	47.02	22.96	46.92	22.86	46.82	22.75	46.72	22.65	46.62
38	26.41	51.66	26.30	51.56	26.20	51.46	26.10	51.37	26.00	51.27
42	29.79	56.28	29.68	56.18	29.58	56.08	29.48	55.98	29.38	55.88
46	33.20	60.86	33.09	60.76	32.99	60.66	32.89	60.56	32.79	60.46
50	36.63	65.42	36.53	65.32	36.43	65.22	36.33	65.12	36.22	65.02
54	40.09	69.96	39.99	69.86	39.88	69.76	39.78	69.66	39.68	69.56
58	43.56	74.48	43.46	74.38	43.36	74.28	43.26	74.18	43.16	74.08
62	47.06	78.98	46.96	78.88	46.85	78.78	46.75	78.68	46.65	78.58
66	50.57	83.46	50.47	83.37	50.36	83.27	50.26	83.17	50.16	83.07

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT X	10		12		14		16		18	
	L	U	L	U	L	U	L	U	L	U
0	0	2.87	0	2.67	0	2.47	0	2.28	0	2.08
1	0	4.69	0	4.50	0	4.30	0	4.10	0	3.91
2	0	6.32	0	6.12	0	5.92	0	5.73	0	5.54
3	0	7.85	0	7.65	0	7.45	0	7.26	0	7.06
4	0.03	9.31	0	9.11	0	8.92	0	8.72	0	8.52
5	0.57	10.73	0.36	10.53	0.15	10.34	0	10.14	0	9.94
6	1.16	12.11	0.95	11.92	0.74	11.72	0.53	11.52	0.32	11.33
7	1.77	13.47	1.57	13.28	1.36	13.08	1.15	12.88	0.94	12.69
8	2.42	14.81	2.21	14.61	2.00	14.41	1.80	14.22	1.59	14.02
9	3.08	16.13	2.88	15.93	2.67	15.73	2.46	15.54	2.26	15.34
10	3.77	17.43	3.56	17.23	3.35	17.04	3.15	16.84	2.94	16.64
12	5.18	19.99	4.97	19.80	4.77	19.60	4.56	19.41	4.36	19.21
14	6.64	22.52	6.43	22.32	6.23	22.13	6.02	21.93	5.82	21.73
16	8.13	25.01	7.93	24.81	7.72	24.61	7.52	24.42	7.31	24.22
18	9.66	27.47	9.45	27.28	9.25	27.08	9.04	26.88	8.84	26.68
20	11.21	29.91	11.00	29.71	10.80	29.52	10.60	29.32	10.39	29.12
22	12.78	32.33	12.58	32.13	12.37	31.93	12.17	31.74	11.97	31.54
24	14.37	34.73	14.17	34.53	13.97	34.34	13.76	34.14	13.56	33.94
26	15.98	37.11	15.78	36.91	15.58	36.72	15.37	36.52	15.17	36.32
28	17.61	39.48	17.40	39.29	17.20	39.09	17.00	38.89	16.79	38.69
30	19.24	41.84	19.04	41.64	18.84	41.45	18.63	41.25	18.43	41.05
34	22.55	46.52	22.35	46.33	22.14	46.13	21.94	45.93	21.74	45.73
38	25.90	51.17	25.69	50.97	25.49	50.77	25.29	50.57	25.09	50.38
42	29.28	55.78	29.08	55.58	28.87	55.39	28.67	55.19	28.47	54.99
46	32.69	60.37	32.49	60.17	32.28	59.97	32.08	59.77	31.88	59.57
50	36.12	64.92	35.92	64.73	35.72	64.53	35.51	64.33	35.31	64.13
54	39.58	69.46	39.38	69.27	39.17	69.07	38.97	68.87	38.77	68.67
58	43.06	73.98	42.85	73.79	42.65	73.59	42.45	73.39	42.25	73.19
62	46.55	78.48	46.35	78.29	46.15	78.09	45.94	77.89	45.74	77.69
66	50.06	82.97	49.86	82.77	49.66	82.58	49.45	82.38	49.25	82.18

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.89	0	1.69	0	1.50	0	1.30	0	1.11
1	0	3.71	0	3.52	0	3.32	0	3.13	0	2.93
2	0	5.34	0	5.14	0	4.95	0	4.75	0	4.56
3	0	6.87	0	6.67	0	6.48	0	6.28	0	6.08
4	0	8.33	0	8.13	0	7.94	0	7.74	0	7.54
5	0	9.75	0	9.55	0	9.36	0	9.16	0	8.96
6	0.12	11.13	0	10.93	0	10.74	0	10.54	0	10.35
7	0.74	12.49	0.53	12.29	0.32	12.10	0.11	11.90	0	11.70
8	1.38	13.83	1.18	13.63	0.97	13.43	0.76	13.24	0.56	13.04
9	2.05	15.14	1.84	14.95	1.64	14.75	1.43	14.56	1.23	14.36
10	2.74	16.45	2.53	16.25	2.32	16.05	2.12	15.86	1.91	15.66
12	4.15	19.01	3.94	18.82	3.74	18.62	3.53	18.42	3.33	18.22
14	5.61	21.53	5.41	21.34	5.20	21.14	4.99	20.95	4.79	20.75
16	7.11	24.03	6.90	23.83	6.70	23.63	6.49	23.43	6.29	23.24
18	8.63	26.49	8.43	26.29	8.23	26.09	8.02	25.90	7.82	25.70
20	10.19	28.93	9.98	28.73	9.78	28.53	9.57	28.33	9.37	28.14
22	11.76	31.34	11.56	31.14	11.35	30.95	11.15	30.75	10.94	30.55
24	13.35	33.74	13.15	33.54	12.95	33.35	12.74	33.15	12.54	32.95
26	14.96	36.13	14.76	35.93	14.56	35.73	14.35	35.53	14.15	35.34
28	16.59	38.49	16.38	38.30	16.18	38.10	15.98	37.91	15.77	37.71
30	18.23	40.85	18.02	40.66	17.82	40.46	17.61	40.26	17.41	40.06
34	21.53	45.54	21.33	45.34	21.13	45.14	20.92	44.94	20.72	44.75
38	24.88	50.18	24.68	49.98	24.48	49.78	24.27	49.59	24.07	49.39
42	28.26	54.79	28.06	54.59	27.86	54.40	27.65	54.20	27.45	54.00
46	31.67	59.38	31.47	59.18	31.27	58.98	31.07	58.78	30.86	58.58
50	35.11	63.93	34.91	63.74	34.70	63.54	34.50	63.34	34.30	63.14
54	38.57	68.47	38.36	68.28	38.16	68.08	37.96	67.88	37.76	67.68
58	42.04	72.99	41.84	72.79	41.64	72.60	41.44	72.40	41.23	72.20
62	45.54	77.49	45.34	77.30	45.13	77.10	44.93	76.90	44.73	76.70
66	49.05	81.98	48.85	81.78	48.64	81.58	48.44	81.39	48.24	81.19

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.91	0	0.52	0	0.13	0	0	0	0
1	0	2.73	0	2.35	0	1.96	0	1.57	0	1.17
2	0	4.36	0	3.97	0	3.58	0	3.19	0	2.80
3	0	5.89	0	5.49	0	5.10	0	4.71	0	4.32
4	0	7.35	0	6.96	0	6.56	0	6.17	0	5.78
5	0	8.77	0	8.38	0	7.98	0	7.59	0	7.20
6	0	10.15	0	9.76	0	9.37	0	8.97	0	8.58
7	0	11.51	0	11.12	0	10.72	0	10.33	0	9.94
8	0.35	12.84	0	12.45	0	12.06	0	11.66	0	11.27
9	1.02	14.16	0.61	13.77	0.19	13.37	0	12.98	0	12.59
10	1.71	15.46	1.29	15.07	0.88	14.67	0.47	14.28	0.06	13.89
12	3.12	18.03	2.71	17.63	2.30	17.24	1.89	16.85	1.48	16.46
14	4.58	20.55	4.17	20.15	3.76	19.76	3.35	19.37	2.94	18.97
16	6.08	23.04	5.67	22.64	5.26	22.25	4.85	21.86	4.44	21.47
18	7.61	25.50	7.20	25.11	6.79	24.71	6.38	24.32	5.97	23.92
20	9.17	27.94	8.76	27.55	8.35	27.15	7.94	26.75	7.53	26.36
22	10.74	30.36	10.33	29.96	9.92	29.57	9.52	29.17	9.11	28.78
24	12.33	32.76	11.93	32.36	11.52	31.97	11.11	31.57	10.70	31.18
26	13.94	35.14	13.54	34.75	13.13	34.35	12.72	33.95	12.31	33.56
28	15.57	37.51	15.16	37.11	14.75	36.72	14.35	36.32	13.94	35.93
30	17.21	39.87	16.80	39.47	16.39	39.08	15.99	38.68	15.58	38.28
34	20.52	44.55	20.11	44.15	19.70	43.76	19.30	43.36	18.89	42.97
38	23.87	49.19	23.46	48.79	23.05	48.40	22.65	48.00	22.24	47.61
42	27.25	53.80	26.84	53.41	26.44	53.01	26.03	52.62	25.62	52.22
46	30.66	58.39	30.25	57.99	29.85	57.60	29.44	57.20	29.04	56.80
50	34.10	62.94	33.69	62.55	33.28	62.15	32.88	61.76	32.47	61.36
54	37.55	67.48	37.15	67.09	36.74	66.69	36.34	66.29	35.93	65.90
58	41.03	72.00	40.63	71.61	40.22	71.21	39.82	70.81	39.41	70.42
62	44.53	76.51	44.12	76.11	43.72	75.71	43.31	75.32	42.91	74.92
66	48.04	80.99	47.63	80.59	47.23	80.20	46.82	79.80	46.42	79.41

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0.78	0	0.39	0	0	0	0	0	0
2	0	2.40	0	2.01	0	1.62	0	1.23	0	0.84
3	0	3.93	0	3.54	0	3.15	0	2.76	0	2.36
4	0	5.39	0	5.00	0	4.61	0	4.22	0	3.82
5	0	6.81	0	6.41	0	6.02	0	5.63	0	5.24
6	0	8.19	0	7.80	0	7.40	0	7.01	0	6.62
7	0	9.54	0	9.15	0	8.76	0	8.37	0	7.97
8	0	10.88	0	10.49	0	10.09	0	9.70	0	9.31
9	0	12.20	0	11.80	0	11.41	0	11.02	0	10.62
10	0	13.50	0	13.10	0	12.71	0	12.32	0	11.92
12	1.07	16.06	0.66	15.67	0.24	15.27	0	14.88	0	14.49
14	2.53	18.58	2.12	18.19	1.71	17.79	1.30	17.40	0.89	17.01
16	4.03	21.07	3.62	20.68	3.22	20.28	2.81	19.89	2.40	19.49
18	5.57	23.53	5.16	23.14	4.75	22.74	4.34	22.35	3.93	21.95
20	7.12	25.97	6.71	25.57	6.30	25.18	5.90	24.78	5.49	24.39
22	8.70	28.38	8.29	27.99	7.88	27.60	7.47	27.20	7.07	26.80
24	10.29	30.78	9.89	30.39	9.48	29.99	9.07	29.60	8.66	29.20
26	11.91	33.16	11.50	32.77	11.09	32.38	10.68	31.98	10.28	31.59
28	13.53	35.53	13.13	35.14	12.72	34.74	12.31	34.35	11.90	33.96
30	15.17	37.89	14.76	37.49	14.36	37.10	13.95	36.70	13.54	36.31
34	18.48	42.57	18.08	42.18	17.67	41.78	17.26	41.39	16.86	40.99
38	21.83	47.21	21.43	46.82	21.02	46.42	20.62	46.03	20.21	45.63
42	25.22	51.82	24.81	51.43	24.41	51.03	24.00	50.64	23.59	50.24
46	28.63	56.41	28.22	56.01	27.82	55.62	27.41	55.22	27.01	54.82
50	32.07	60.97	31.66	60.57	31.26	60.17	30.85	59.78	30.45	59.38
54	35.53	65.50	35.12	65.11	34.72	64.71	34.31	64.32	33.91	63.92
58	39.00	70.02	38.60	69.63	38.19	69.23	37.79	68.83	37.38	68.44
62	42.50	74.52	42.10	74.13	41.69	73.73	41.29	73.33	40.88	72.94
66	46.01	79.01	45.61	78.61	45.20	78.22	44.80	77.82	44.39	77.42

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T --- Y									
	70		75		80		85		90	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.45	0	0	0	0	0	0	0	0
3	0	1.97	0	1.48	0	0.99	0	0.50	0	0.02
4	0	3.43	0	2.94	0	2.45	0	1.96	0	1.47
5	0	4.84	0	4.36	0	3.86	0	3.37	0	2.89
6	0	6.23	0	5.74	0	5.24	0	4.75	0	4.27
7	0	7.58	0	7.09	0	6.60	0	6.11	0	5.62
8	0	8.91	0	8.42	0	7.93	0	7.44	0	6.95
9	0	10.23	0	9.74	0	9.25	0	8.76	0	8.26
10	0	11.53	0	11.04	0	10.55	0	10.06	0	9.56
12	0	14.09	0	13.60	0	13.11	0	12.62	0	12.13
14	0.48	16.61	0	16.12	0	15.63	0	15.14	0	14.64
16	1.99	19.10	1.47	18.61	0.96	18.12	0.45	17.62	0	17.13
18	3.52	21.56	3.01	21.07	2.50	20.57	1.99	20.08	1.48	19.59
20	5.08	24.00	4.57	23.50	4.06	23.01	3.55	22.52	3.04	22.02
22	6.66	26.41	6.15	25.92	5.64	25.43	5.13	24.93	4.62	24.44
24	8.26	28.81	7.75	28.31	7.24	27.82	6.73	27.33	6.22	26.84
26	9.87	31.19	9.36	30.70	8.85	30.21	8.34	29.71	7.83	29.22
28	11.50	33.56	10.99	33.06	10.48	32.57	9.97	32.08	9.46	31.58
30	13.14	35.91	12.63	35.42	12.12	34.93	11.61	34.43	11.10	33.94
34	16.45	40.60	15.94	40.10	15.43	39.61	14.93	39.11	14.42	38.62
38	19.80	45.24	19.30	44.74	18.79	44.25	18.28	43.76	17.77	43.26
42	23.19	49.85	22.68	49.35	22.17	48.86	21.67	48.36	21.16	47.87
46	26.60	54.43	26.09	53.93	25.59	53.44	25.08	52.95	24.57	52.45
50	30.04	58.99	29.53	58.49	29.03	58.00	28.52	57.50	28.01	57.01
54	33.50	63.52	32.99	63.03	32.49	62.53	31.98	62.04	31.47	61.55
58	36.98	68.04	36.47	67.55	35.97	67.05	35.46	66.56	34.95	66.06
62	40.48	72.54	39.97	72.05	39.46	71.55	38.96	71.06	38.45	70.56
66	43.99	77.03	43.48	76.53	42.98	76.03	42.47	75.54	41.96	75.05

D. 65

TABLE D.2

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .95 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	100		110		120		130		140	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0.49	0	0	0	0	0	0	0	0
5	0	1.90	0	0.92	0	0	0	0	0	0
6	0	3.28	0	2.30	0	1.32	0	0.34	0	0
7	0	4.64	0	3.66	0	2.67	0	1.69	0	0.71
8	0	5.97	0	4.99	0	4.00	0	3.02	0	2.04
9	0	7.28	0	6.30	0	5.32	0	4.33	0	3.35
10	0	8.58	0	7.60	0	6.61	0	5.63	0	4.65
12	0	11.14	0	10.16	0	9.17	0	8.19	0	7.21
14	0	13.66	0	12.67	0	11.69	0	10.71	0	9.72
16	0	16.14	0	15.16	0	14.18	0	13.19	0	12.20
18	0.45	18.60	0	17.62	0	16.63	0	15.65	0	14.66
20	2.01	21.04	0.99	20.05	0	19.06	0	18.08	0	17.09
22	3.60	23.45	2.58	22.46	1.56	21.48	0.54	20.49	0	19.50
24	5.20	25.85	4.18	24.86	3.16	23.87	2.14	22.89	1.12	21.90
26	6.81	28.23	5.79	27.24	4.77	26.26	3.76	25.27	2.74	24.28
28	8.44	30.60	7.42	29.61	6.40	28.62	5.39	27.64	4.37	26.65
30	10.08	32.95	9.07	31.97	8.05	30.98	7.03	29.99	6.01	29.00
34	13.40	37.63	12.38	36.64	11.37	35.66	10.35	34.66	9.33	33.68
38	16.76	42.27	15.74	41.28	14.72	40.29	13.71	39.31	12.69	38.32
42	20.14	46.88	19.13	45.89	18.11	44.90	17.10	43.91	16.08	42.92
46	23.56	51.46	22.54	50.47	21.53	49.48	20.52	48.49	19.50	47.50
50	27.00	56.02	25.99	55.03	24.97	54.04	23.96	53.05	22.94	52.06
54	30.46	60.56	29.45	59.56	28.43	58.57	27.42	57.58	26.41	56.59
58	33.94	65.07	32.93	64.08	31.92	63.09	30.90	62.10	29.89	61.11
62	37.44	69.57	36.43	68.58	35.41	67.59	34.40	66.60	33.39	65.61
66	40.95	74.06	39.94	73.06	38.93	72.08	37.92	71.08	36.90	70.09

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT		TOTAL BACKGROUND COUNT -- Y									
		1		2		3		4			
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	5.17	0	3.71	0	2.24	0	0.78	
1	0	8.52	0	7.05	0	5.58	0	4.11	0	2.64	
2	0	10.24	0	8.77	0	7.29	0	5.81	0	4.33	
3	0	11.88	0	10.39	0	8.91	0	7.42	0	5.93	
4	0	13.44	0	11.95	0	10.46	0	8.96	0	7.46	
5	0	14.96	0	13.47	0	11.96	0	10.46	0	8.95	
6	0	16.45	0	14.94	0	13.43	0	11.92	0	10.40	
7	0	17.90	0	16.38	0	14.87	0	13.35	0	11.83	
8	0	19.32	0	17.80	0	16.28	0	14.75	0	13.22	
9	0	20.73	0	19.20	0	17.67	0	16.14	0	14.61	
10	0	22.11	0	20.58	0	19.05	0	17.51	0	15.97	
12	0	24.84	0	23.30	0	21.75	0	20.20	0	18.65	
14	0	27.51	0	25.96	0	24.40	0	22.84	0	21.28	
16	1.11	30.14	0	28.58	0	27.02	0	25.45	0	23.88	
18	2.91	32.74	0	31.17	0	29.59	0	28.02	0	26.44	
20	4.71	35.30	0.97	33.73	0	32.15	0	30.56	0	28.98	
22	6.51	37.85	2.77	36.26	0	34.67	0	33.09	0	31.50	
24	8.31	40.36	4.57	38.77	1.17	37.18	0	35.58	0	33.99	
26	10.10	42.86	6.37	41.27	2.97	39.67	0	38.07	0	36.46	
28	11.90	45.35	8.17	43.74	4.78	42.14	1.58	40.53	0	38.92	
30	13.70	47.81	9.97	46.20	6.59	44.59	3.39	42.98	0.32	41.36	
34	17.30	52.70	13.57	51.08	10.20	49.46	7.01	47.84	3.95	46.21	
38	20.89	57.54	17.18	55.91	13.81	54.28	10.64	52.65	7.59	51.02	
42	24.49	62.34	20.70	60.70	17.43	59.07	14.26	57.42	11.22	55.78	
46	28.08	67.10	24.38	65.46	21.04	63.81	17.89	62.17	14.85	60.52	
50	31.68	71.83	27.99	70.15	24.66	68.53	21.51	66.88	18.49	65.22	
54	35.28	76.53	31.59	74.80	28.27	73.22	25.14	71.56	22.13	69.90	
58	38.87	81.21	35.19	79.55	31.89	77.89	28.77	76.22	25.76	74.56	
62	42.47	85.87	38.80	84.20	35.50	82.54	32.39	80.86	29.40	79.19	
66	46.05	90.5	42.41	88.83	39.12	87.16	36.02	85.48	33.04	83.81	

D.67

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	1.81	0	0.88	0	0	0	0	0	0
2	0	3.09	0	2.14	0	1.11	0	0.02	0	0
3	0	4.44	0	3.39	0	2.35	0	1.24	0	0.09
4	0	5.97	0	4.63	0	3.57	0	2.46	0	1.29
5	0	7.45	0	5.93	0	4.80	0	3.67	0	2.50
6	0	8.89	0	7.37	0	6.02	0	4.88	0	3.70
7	0	10.30	0	8.78	0	7.25	0	6.09	0	4.89
8	0	11.70	0	10.16	0	8.63	0	7.29	0	6.09
9	0	13.07	0	11.53	0	9.99	0	8.50	0	7.28
10	0	14.42	0	12.88	0	11.33	0	9.78	0	8.47
12	0	17.09	0	15.54	0	13.98	0	12.42	0	10.86
14	0	19.72	0	18.16	0	16.59	0	15.02	0	13.44
16	0	22.31	0	20.73	0	19.16	0	17.58	0	16.00
18	0	24.86	0	23.28	0	21.70	0	20.11	0	18.52
20	0	27.39	0	25.80	0	24.21	0	22.62	0	21.03
22	0	29.90	0	28.31	0	26.71	0	25.11	0	23.50
24	0	32.39	0	30.78	0	29.18	0	27.57	0	25.97
26	0	34.86	0	33.25	0	31.64	0	30.03	0	28.41
28	0	37.31	0	35.70	0	34.08	0	32.46	0	30.84
30	0	39.75	0	38.13	0	36.51	0	34.89	0	33.26
34	0.99	44.59	0	42.96	0	41.33	0	39.70	0	38.06
38	4.63	49.38	1.73	47.75	0	46.11	0	44.47	0	42.83
42	8.27	54.14	5.39	52.50	2.56	50.85	0	49.20	0	47.55
46	11.91	58.87	9.04	57.21	6.22	55.56	3.44	53.91	0.70	52.25
50	15.55	63.57	12.69	61.91	9.88	60.25	7.10	58.59	4.37	56.92
54	19.20	68.24	16.34	66.57	13.53	64.91	10.77	63.24	8.05	61.57
58	22.85	72.89	20.00	71.22	17.20	69.55	14.44	67.87	11.72	66.20
62	26.50	77.52	23.65	75.84	20.86	74.16	18.11	72.49	15.40	70.81
66	30.14	82.13	27.31	80.45	24.53	78.77	21.78	77.08	19.07	75.40

D.68

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	C	0	0	0	0	0	0	0
2	0	0	C	0	0	0	0	0	0	0
3	0	0	C	0	0	0	0	0	0	0
4	0	0.09	0	0	0	0	0	0	0	0
5	0	1.28	C	0	0	0	0	0	0	0
6	0	2.47	C	0	0	0	0	0	0	0
7	0	3.66	C	1.11	0	0	0	0	0	0
8	0	4.85	C	2.28	0	0	0	0	0	0
9	0	6.03	C	3.45	0	0.77	C	0	0	0
10	0	7.22	C	4.62	0	1.93	0	0	0	0
12	0	9.58	0	6.96	0	4.24	0	1.46	0	0
14	0	11.93	C	9.29	0	6.55	0	3.75	0	0.89
16	0	14.42	C	11.61	0	8.86	0	6.04	0	3.17
18	0	16.93	C	13.93	0	11.16	0	8.33	0	5.44
20	0	19.42	C	16.24	0	13.46	0	10.61	0	7.71
22	0	21.90	C	18.68	0	15.75	0	12.89	0	9.98
24	0	24.36	C	21.13	0	18.04	0	15.17	0	12.24
26	0	26.80	C	23.56	0	20.33	0	17.44	0	14.50
28	0	29.22	C	25.97	0	22.71	0	19.71	0	16.76
30	0	31.64	C	28.38	0	25.11	0	21.98	0	19.02
34	0	36.43	C	33.15	0	29.87	0	26.57	0	23.52
38	0	41.18	0	37.89	0	34.59	0	31.28	0	28.02
42	0	45.90	0	42.60	0	39.28	0	35.96	0	32.63
46	0	50.59	C	47.27	0	43.94	C	40.61	0	37.27
50	1.67	55.26	C	51.92	0	48.59	0	45.24	0	41.89
54	5.35	59.90	0.04	56.56	0	53.21	0	49.85	0	46.48
58	9.03	64.52	3.73	61.17	0	57.81	0	54.44	0	51.06
62	12.71	69.13	7.42	65.76	2.21	62.39	0	59.01	0	55.63
66	16.39	73.71	11.12	70.34	5.92	66.95	0.79	63.57	0	60.18

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT		TOTAL BACKGROUND COUNT -- Y									
		0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	5.81	0	4.98	0	4.15	0	3.32	
1	0	8.52	0	7.69	0	6.86	0	6.03	0	5.20	
2	0	10.24	0	9.41	0	8.58	0	7.75	0	6.91	
3	0	11.88	0	11.04	0	10.20	0	9.37	0	8.53	
4	0	13.44	0	12.61	0	11.77	0	10.93	0	10.09	
5	0	14.96	0	14.12	0	13.28	0	12.44	0	11.59	
6	0	16.45	0	15.60	0	14.76	0	13.91	0	13.06	
7	0	17.90	0	17.05	0	16.20	0	15.35	0	14.50	
8	0	19.32	0	18.47	0	17.62	0	16.77	0	15.92	
9	0.82	20.73	0	19.88	0	19.02	0	18.17	0	17.31	
10	1.65	22.11	0	21.26	0	20.40	0	19.55	0	18.69	
12	3.31	24.84	1.45	23.98	0	23.12	0	22.26	0	21.40	
14	4.96	27.51	3.11	26.65	1.43	25.79	0	24.92	0	24.06	
16	6.62	30.14	4.77	29.28	3.10	28.41	1.53	27.54	0.01	26.68	
18	8.28	32.74	6.43	31.87	4.77	31.00	3.20	30.13	1.70	29.27	
20	9.93	35.30	8.09	34.44	6.45	33.56	4.89	32.69	3.39	31.82	
22	11.59	37.85	9.64	36.97	8.12	36.10	6.57	35.23	5.08	34.35	
24	13.25	40.36	11.12	39.49	9.79	38.61	8.25	37.74	6.77	36.86	
26	14.90	42.86	12.61	41.99	11.37	41.11	9.93	40.23	8.46	39.35	
28	16.56	45.35	14.12	44.46	12.89	43.58	11.62	42.70	10.15	41.82	
30	18.22	47.81	15.65	46.93	14.43	46.05	13.20	45.16	11.85	44.28	
34	21.53	52.70	18.76	51.82	17.54	50.93	16.33	50.04	15.12	49.16	
38	24.85	57.54	21.91	56.65	20.71	55.76	19.50	54.87	18.30	53.98	
42	28.16	62.34	25.11	61.45	23.91	60.55	22.72	59.66	21.53	58.77	
46	31.47	67.10	28.34	66.21	27.15	65.31	25.97	64.42	24.78	63.52	
50	34.79	71.83	31.60	70.94	30.42	70.04	29.24	69.14	28.07	68.24	
54	38.10	76.53	34.89	75.64	33.72	74.74	32.55	73.84	31.38	72.94	
58	41.41	81.21	38.21	80.31	37.04	79.41	35.88	78.51	34.71	77.61	
62	44.73	85.87	41.55	84.97	40.39	84.06	39.23	83.16	38.07	82.26	
66	48.04	90.50	44.91	89.60	43.76	88.70	42.60	87.79	41.45	86.89	

D. 70

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT		TOTAL BACKGROUND COUNT -- Y									
		5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U	
0	0	2.49	C	1.66	0	0.84	0	0.01	0	0	
1	0	4.37	C	3.54	0	2.71	0	1.88	0	1.05	
2	0	6.08	C	5.25	0	4.41	0	3.58	0	2.74	
3	0	7.70	C	6.86	0	6.02	0	5.18	0	4.34	
4	0	9.25	0	8.41	0	7.57	0	6.72	0	5.88	
5	0	10.75	C	9.91	0	9.06	0	8.22	0	7.38	
6	0	12.22	C	11.37	0	10.53	0	9.68	0	8.83	
7	0	13.66	0	12.81	0	11.96	0	11.11	0	10.26	
8	0	15.07	0	14.22	0	13.37	0	12.51	0	11.66	
9	0	16.46	C	15.61	0	14.75	0	13.90	0	13.05	
10	0	17.84	C	16.98	0	16.12	0	15.27	0	14.41	
12	0	20.54	0	19.68	0	18.82	0	17.96	0	17.10	
14	0	23.20	C	22.33	0	21.47	0	20.61	0	19.74	
16	0	25.81	0	24.94	0	24.08	0	23.21	0	22.34	
18	0.24	28.40	C	27.53	0	26.65	0	25.78	0	24.91	
20	1.93	30.95	0.51	30.08	0	29.20	0	28.33	0	27.46	
22	3.63	33.48	2.21	32.60	0.82	31.73	0	30.85	0	29.97	
24	5.33	35.98	3.92	35.11	2.53	34.23	1.17	33.35	0	32.47	
26	7.03	38.47	5.62	37.59	4.24	36.71	2.88	35.83	1.54	34.95	
28	8.73	40.94	7.33	40.06	5.95	39.18	4.60	38.30	3.26	37.41	
30	10.43	43.40	9.04	42.52	7.67	41.63	6.32	40.75	4.98	39.86	
34	13.84	48.27	12.46	47.38	11.10	46.50	9.76	45.61	8.43	44.72	
38	17.11	53.09	15.88	52.20	14.54	51.31	13.21	50.42	11.89	49.53	
42	20.34	57.88	19.15	56.99	17.97	56.09	16.66	55.20	15.36	54.31	
46	23.60	62.63	22.42	61.73	21.24	60.84	20.07	59.94	18.82	59.05	
50	26.89	67.35	25.72	66.45	24.55	65.55	23.38	64.66	22.21	63.76	
54	30.21	72.04	29.04	71.14	27.88	70.24	26.71	69.34	25.55	68.44	
58	33.55	76.71	32.39	75.81	31.23	74.91	30.07	74.00	28.91	73.10	
62	36.91	81.36	35.76	80.45	34.60	79.55	33.45	78.64	32.29	77.74	
66	40.29	85.98	39.14	85.08	37.99	84.17	36.84	83.27	35.69	82.36	

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT --- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0.21	0	0	0	0	0	0	0	0
2	0	1.91	0	0.24	0	0	0	0	0	0
3	0	3.51	0	1.83	0	0.15	0	0	0	0
4	0	5.04	0	3.36	0	1.67	0	0	0	0
5	0	6.53	0	4.84	0	3.15	0	1.46	0	0
6	0	7.98	0	6.29	0	4.59	0	2.89	0	1.19
7	0	9.41	0	7.70	0	6.00	0	4.30	0	2.59
8	0	10.81	0	9.10	0	7.39	0	5.69	0	3.97
9	0	12.19	0	10.48	0	8.76	0	7.05	0	5.34
10	0	13.55	0	11.84	0	10.12	0	8.40	0	6.68
12	0	16.24	0	14.51	0	12.79	0	11.06	0	9.33
14	0	18.88	0	17.15	0	15.41	0	13.68	0	11.95
16	0	21.47	0	19.74	0	18.00	0	16.26	0	14.52
18	0	24.04	0	22.30	0	20.56	0	18.81	0	17.06
20	0	26.58	0	24.83	0	23.09	0	21.33	0	19.58
22	0	29.10	0	27.34	0	25.59	0	23.84	0	22.08
24	0	31.59	0	29.84	0	28.08	0	26.32	0	24.56
26	0.21	34.07	0	32.31	0	30.55	0	28.78	0	27.02
28	1.93	36.53	0	34.77	0	33.00	0	31.23	0	29.47
30	3.66	38.98	1.06	37.21	0	35.44	0	33.67	0	31.90
34	7.12	43.83	4.53	42.06	1.97	40.28	0	38.50	0	36.72
38	10.59	48.64	8.01	46.86	5.47	45.08	2.95	43.30	0.47	41.51
42	14.06	53.41	11.50	51.63	8.97	49.84	6.47	48.05	3.99	46.26
46	17.54	58.15	14.99	56.36	12.47	54.57	9.98	52.77	7.51	50.98
50	21.02	62.86	18.48	61.06	15.98	59.26	13.50	57.46	11.04	55.67
54	24.39	67.54	21.99	65.74	19.49	63.94	17.02	62.14	14.57	60.33
58	27.76	72.20	25.45	70.39	23.01	68.59	20.55	66.78	18.11	64.97
62	31.14	76.84	28.84	75.03	26.54	73.22	24.09	71.41	21.66	69.60
66	34.54	81.46	32.25	79.64	29.96	77.83	27.63	76.02	25.20	74.21

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y											
	20		22		24		26		28			
X	L	U	L	U	L	U	L	U	L	U		
0	0	0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0	0		
6	0	0	0	0	0	0	0	0	0	0		
7	0	0.89	0	0	0	0	0	0	0	0		
8	0	2.26	0	0.55	0	0	0	0	0	0		
9	0	3.62	0	1.90	0	0.18	0	0	0	0		
10	0	4.96	0	3.24	0	1.52	0	0	0	0		
12	0	7.61	0	5.87	0	4.15	0	2.41	0	0.68		
14	0	10.21	0	8.47	0	6.73	0	4.99	0	3.25		
16	0	12.78	0	11.03	0	9.29	0	7.54	0	5.80		
18	0	15.32	0	13.57	0	11.82	0	10.07	0	8.31		
20	0	17.83	0	16.08	0	14.32	0	12.56	0	10.81		
22	0	20.32	0	18.56	0	16.81	0	15.04	0	13.28		
24	0	22.80	0	21.03	0	19.27	0	17.50	0	15.74		
26	0	25.25	0	23.49	0	21.72	0	19.95	0	18.18		
28	0	27.69	0	25.92	0	24.15	0	22.38	0	20.61		
30	0	30.12	0	28.35	0	26.57	0	24.80	0	23.02		
34	0	34.94	0	33.16	0	31.38	0	29.60	0	27.82		
38	0	39.73	0	37.94	0	36.15	0	34.36	0	32.57		
42	1.53	44.47	0	42.68	0	40.88	0	39.09	0	37.30		
46	5.06	49.18	2.62	47.39	0.20	45.59	0	43.79	0	41.99		
50	8.60	53.87	6.17	52.07	3.76	50.26	1.36	48.46	0	46.66		
54	12.14	58.53	9.72	56.72	7.31	54.92	4.92	53.11	2.54	51.31		
58	15.69	63.17	13.27	61.36	10.88	59.55	8.49	57.74	6.11	55.93		
62	19.24	67.79	16.83	65.97	14.45	64.16	12.06	62.35	9.69	60.54		
66	22.80	72.39	20.40	70.57	18.01	68.76	15.64	66.94	13.28	65.13		

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT --- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	6.19	0	5.74	0	5.29	0	4.84
1	0	8.52	0	8.07	0	7.62	0	7.17	0	6.72
2	0	10.24	0	9.79	0	9.34	0	8.89	0	8.44
3	0	11.88	0	11.42	0	10.98	0	10.52	0	10.07
4	0	13.44	0	12.99	0	12.54	0	12.09	0	11.63
5	0.34	14.96	0	14.51	0	14.06	0	13.60	0	13.15
6	1.07	16.45	0.06	15.99	0	15.54	0	15.08	0	14.63
7	1.81	17.90	0.56	17.44	0	16.99	0	16.53	0	16.07
8	2.54	19.32	1.10	18.87	0.49	18.41	0	17.96	0	17.50
9	3.27	20.73	1.66	20.27	1.06	19.81	0.45	19.36	0	18.90
10	4.00	22.11	2.25	21.66	1.65	21.20	1.05	20.74	0.45	20.28
12	5.47	24.84	3.48	24.38	2.89	23.92	2.30	23.46	1.71	23.00
14	6.93	27.51	4.77	27.05	4.19	26.59	3.60	26.13	3.02	25.67
16	8.40	30.14	6.11	29.68	5.53	29.22	4.95	28.76	4.38	28.30
18	9.86	32.74	7.49	32.28	6.92	31.81	6.34	31.35	5.77	30.89
20	11.32	35.30	8.90	34.85	8.33	34.38	7.76	33.92	7.19	33.45
22	12.79	37.85	10.35	37.38	9.78	36.92	9.21	36.45	8.64	35.99
24	14.25	40.36	11.81	39.90	11.25	39.44	10.68	38.97	10.12	38.51
26	15.72	42.86	13.30	42.40	12.74	41.94	12.17	41.47	11.61	41.00
28	17.18	45.35	14.81	44.88	14.25	44.42	13.68	43.95	13.12	43.48
30	18.64	47.81	16.33	47.35	15.77	46.88	15.21	46.41	14.65	45.94
34	21.57	52.70	19.42	52.23	18.87	51.77	18.31	51.30	17.76	50.83
38	24.50	57.54	22.57	57.07	22.01	56.60	21.46	56.13	20.91	55.66
42	27.43	62.34	25.75	61.87	25.20	61.40	24.65	60.93	24.11	60.46
46	30.36	67.10	28.98	66.63	28.43	66.16	27.88	65.69	27.34	65.22
50	33.29	71.83	32.21	71.36	31.69	70.89	31.15	70.42	30.60	69.95
54	36.21	76.53	35.15	76.07	34.98	75.59	34.44	75.12	33.89	74.65
58	39.14	81.21	38.08	80.74	38.30	80.27	37.75	79.80	37.21	79.32
62	42.07	85.87	41.02	85.40	41.63	84.93	41.09	84.45	40.55	83.98
66	45.00	90.50	43.95	90.03	44.99	89.56	44.45	89.08	43.91	88.61

D.74

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		5	6		7		8		9		
X	L	U	L	U	L	U	L	U	L	U	
0	0	4.39	0	3.94	0	3.49	0	3.04	0	2.59	
1	0	6.27	0	5.82	0	5.37	0	4.92	0	4.47	
2	0	7.99	0	7.54	0	7.09	0	6.64	0	6.19	
3	0	9.62	0	9.17	0	8.71	0	8.26	0	7.81	
4	0	11.18	0	10.73	0	10.27	0	9.82	0	9.37	
5	0	12.69	0	12.24	0	11.79	0	11.33	0	10.88	
6	0	14.17	0	13.72	0	13.26	0	12.80	0	12.35	
7	0	15.62	0	15.16	0	14.71	0	14.25	0	13.79	
8	0	17.04	0	16.58	0	16.12	0	15.67	0	15.21	
9	0	18.44	0	17.98	0	17.52	0	17.07	0	16.61	
10	0	19.82	0	19.36	0	18.91	0	18.45	0	17.99	
12	1.12	22.54	0.53	22.08	0	21.62	0	21.16	0	20.70	
14	2.44	25.21	1.86	24.75	1.27	24.28	0.69	23.83	0.11	23.36	
16	3.80	27.83	3.22	27.37	2.64	26.91	2.07	26.45	1.49	25.99	
18	5.19	30.43	4.62	29.96	4.05	29.50	3.48	29.04	2.90	28.58	
20	6.62	32.99	6.05	32.53	5.48	32.06	4.91	31.60	4.35	31.13	
22	8.08	35.53	7.51	35.06	6.94	34.60	6.38	34.13	5.81	33.67	
24	9.55	38.04	8.99	37.58	8.43	37.11	7.86	36.65	7.30	36.18	
26	11.05	40.54	10.49	40.07	9.93	39.60	9.37	39.14	8.81	38.67	
28	12.57	43.02	12.01	42.55	11.45	42.08	10.89	41.62	10.33	41.15	
30	14.10	45.48	13.54	45.01	12.98	44.54	12.43	44.07	11.87	43.61	
34	17.20	50.36	16.65	49.89	16.10	49.42	15.54	48.95	14.99	48.49	
38	20.36	55.20	19.81	54.73	19.26	54.26	18.71	53.79	18.15	53.32	
42	23.56	59.99	23.01	59.52	22.46	59.05	21.91	58.58	21.36	58.11	
46	26.79	64.75	26.24	64.28	25.70	63.81	25.15	63.33	24.60	62.86	
50	30.06	69.48	29.51	69.00	28.97	68.53	28.42	68.06	27.88	67.59	
54	33.35	74.18	32.81	73.70	32.26	73.23	31.72	72.76	31.18	72.29	
58	36.67	78.85	36.13	78.38	35.59	77.91	35.04	77.43	34.50	76.96	
62	40.01	83.50	39.47	83.03	38.93	82.56	38.39	82.08	37.85	81.61	
66	43.37	88.14	42.83	87.66	42.29	87.19	41.76	86.72	41.22	86.24	

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	2.14	0	1.24	0	0.34	0	0	0	0
1	0	4.02	0	3.12	0	2.22	0	1.32	0	0.42
2	0	5.73	0	4.83	0	3.93	0	3.03	0	2.13
3	0	7.36	0	6.45	0	5.55	0	4.64	0	3.74
4	0	8.91	0	8.01	0	7.10	0	6.19	0	5.29
5	0	10.42	0	9.52	0	8.60	0	7.70	0	6.79
6	0	11.90	0	10.99	0	10.07	0	9.16	0	8.25
7	0	13.34	0	12.43	0	11.51	0	10.60	0	9.69
8	0	14.76	0	13.84	0	12.93	0	12.01	0	11.10
9	0	16.15	0	15.24	0	14.32	0	13.40	0	12.49
10	0	17.53	0	16.62	0	15.69	0	14.78	0	13.86
12	0	20.24	0	19.32	0	18.40	0	17.48	0	16.56
14	0	22.90	0	21.98	0	21.06	0	20.14	0	19.22
16	0.92	25.52	0	24.60	0	23.68	0	22.75	0	21.83
18	2.33	28.11	1.19	27.19	0.05	26.26	0	25.34	0	24.41
20	3.78	30.67	2.64	29.74	1.51	28.81	0.38	27.89	0	26.96
22	5.25	33.20	4.12	32.27	2.99	31.35	1.86	30.42	0.74	29.49
24	6.74	35.72	5.61	34.78	4.49	33.86	3.37	32.92	2.25	31.99
26	8.25	38.21	7.12	37.27	6.01	36.34	4.89	35.41	3.77	34.48
28	9.77	40.68	8.65	39.75	7.54	38.82	6.43	37.88	5.31	36.95
30	11.31	43.14	10.20	42.21	9.09	41.27	7.98	40.34	6.87	39.40
34	14.43	48.02	13.33	47.08	12.22	46.14	11.12	45.21	10.01	44.27
38	17.60	52.85	16.50	51.91	15.40	50.97	14.30	50.03	13.20	49.10
42	20.81	57.64	19.72	56.70	18.62	55.76	17.53	54.82	16.43	53.88
46	24.06	62.40	22.97	61.45	21.87	60.51	20.78	59.57	19.69	58.63
50	27.33	67.12	26.24	66.17	25.16	65.23	24.07	64.29	22.98	63.34
54	30.63	71.81	29.55	70.87	28.46	69.93	27.38	68.98	26.30	68.04
58	33.96	76.49	32.88	75.54	31.80	74.59	30.71	73.65	29.63	72.70
62	37.31	81.14	36.23	80.19	35.15	79.24	34.07	78.30	32.99	77.35
66	40.68	85.77	39.60	84.82	38.52	83.87	37.45	82.93	36.37	81.98

D.76

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	0	
2	0	1.22	0	0.32	0	0	0	0	0	0	
3	0	2.83	0	1.93	0	1.02	0	0.11	0	0	
4	0	4.38	0	3.47	0	2.56	0	1.66	0	0.75	
5	0	5.88	0	4.97	0	4.06	0	3.15	0	2.24	
6	0	7.34	0	6.43	0	5.52	0	4.61	0	3.69	
7	0	8.77	0	7.86	0	6.95	0	6.03	0	5.12	
8	0	10.18	0	9.27	0	8.35	0	7.44	0	6.52	
9	0	11.57	0	10.66	0	9.74	0	8.82	0	7.90	
10	0	12.94	0	12.03	0	11.11	0	10.19	0	9.27	
12	0	15.64	0	14.72	0	13.80	0	12.88	0	11.96	
14	0	18.29	0	17.37	0	16.45	0	15.53	0	14.60	
16	0	20.90	0	19.98	0	19.05	0	18.13	0	17.20	
18	0	23.48	0	22.55	0	21.63	0	20.70	0	19.77	
20	0	26.03	0	25.10	0	24.17	0	23.25	0	22.32	
22	0	28.56	0	27.63	0	26.70	0	25.77	0	24.84	
24	1.12	31.06	0.01	30.13	0	29.20	0	28.27	0	27.34	
26	2.65	33.54	1.54	32.61	0.43	31.68	0	30.75	0	29.82	
28	4.20	36.02	3.09	35.08	1.98	34.15	0.87	33.22	0	32.28	
30	5.76	38.47	4.65	37.53	3.54	36.60	2.43	35.66	1.33	34.73	
34	8.91	43.34	7.81	42.40	6.71	41.46	5.60	40.53	4.50	39.59	
38	12.11	48.16	11.01	47.22	9.91	46.28	8.81	45.34	7.72	44.40	
42	15.34	52.94	14.24	52.00	13.15	51.06	12.06	50.11	10.97	49.18	
46	18.60	57.68	17.51	56.74	16.42	55.80	15.33	54.86	14.24	53.92	
50	21.89	62.40	20.81	61.46	19.72	60.51	18.63	59.57	17.55	58.63	
54	25.21	67.09	24.13	66.15	23.04	65.20	21.96	64.26	20.88	63.31	
58	28.55	71.76	27.47	70.81	26.39	69.87	25.31	68.92	24.23	67.97	
62	31.91	76.40	30.83	75.46	29.76	74.51	28.68	73.56	27.60	72.61	
66	35.29	81.03	34.22	80.08	33.14	79.13	32.06	78.19	30.99	77.24	

TABLE D.3

CONFIDENCE INTERVAL 1 σ END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/2

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T --- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	1.33	0	0	0	0	0	0	0	0
6	0	2.78	0	0.96	0	0	0	0	0	0
7	0	4.21	0	2.38	0	0.55	0	0	0	0
8	0	5.61	0	3.78	0	1.95	0	0.11	0	0
9	0	6.99	0	5.15	0	3.32	0	1.48	0	0
10	0	8.35	0	6.52	0	4.68	0	2.84	0	1.00
12	0	11.04	0	9.20	0	7.35	0	5.51	0	3.67
14	0	13.68	0	11.83	0	9.99	0	8.14	0	6.29
16	0	16.28	0	14.43	0	12.58	0	10.72	0	8.87
18	0	18.85	0	16.99	0	15.14	0	13.28	0	11.43
20	0	21.39	0	19.53	0	17.67	0	15.82	0	13.96
22	0	23.91	0	22.05	0	20.19	0	18.32	0	16.46
24	0	26.41	0	24.54	0	22.68	0	20.81	0	18.95
26	0	28.89	0	27.02	0	25.15	0	23.28	0	21.42
28	0	31.35	0	29.48	0	27.61	0	25.74	0	23.87
30	0.22	33.79	0	31.92	0	30.05	0	28.18	0	26.31
34	3.40	38.65	1.20	36.78	0	34.90	0	33.02	0	31.15
38	6.62	43.46	4.43	41.58	2.24	39.71	0.06	37.83	0	35.95
42	9.87	48.24	7.69	46.35	5.51	44.47	3.33	42.59	1.16	40.70
46	13.16	52.97	10.98	51.09	8.81	49.20	6.63	47.32	4.46	45.43
50	16.46	57.68	14.30	55.79	12.13	53.91	9.96	52.02	7.80	50.13
54	19.80	62.37	17.63	60.48	15.47	58.59	13.31	56.70	11.15	54.81
58	23.15	67.03	20.99	65.14	18.83	63.24	16.68	61.35	14.52	59.46
62	26.52	71.67	24.37	69.77	22.22	67.88	20.06	65.98	17.91	64.09
66	29.91	76.29	27.76	74.39	25.61	72.49	23.47	70.60	21.32	68.70

D-78

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	6.33	0	6.02	0	5.71	0	5.40
1	0	8.52	0	8.21	0	7.90	0	7.59	0	7.28
2	0	10.24	0	9.94	0	9.63	0	9.32	0	9.01
3	0	11.88	0	11.57	0	11.26	0	10.94	0	10.63
4	0.46	13.44	0	13.14	0	12.83	0	12.51	0	12.20
5	1.12	14.96	0	14.65	0	14.34	0	14.03	0	13.72
6	1.79	16.45	0.30	16.14	0	15.82	0	15.51	0	15.20
7	2.46	17.90	0.79	17.59	0.41	17.28	0.02	16.96	0	16.65
8	3.12	19.32	1.33	19.01	0.94	18.70	0.56	18.38	0.18	18.07
9	3.79	20.73	1.89	20.41	1.51	20.10	1.13	19.79	0.75	19.47
10	4.46	22.11	2.47	21.80	2.09	21.49	1.72	21.17	1.34	20.86
12	5.79	24.84	3.70	24.53	3.32	24.21	2.95	23.90	2.58	23.58
14	7.12	27.51	4.99	27.20	4.62	26.88	4.24	26.57	3.87	26.25
16	8.46	30.14	6.32	29.83	5.95	29.51	5.59	29.20	5.22	28.88
18	9.79	32.74	7.70	32.43	7.33	32.11	6.97	31.79	6.60	31.48
20	11.12	35.30	9.11	34.99	8.75	34.67	8.38	34.36	8.02	34.04
22	12.46	37.85	10.55	37.53	10.19	37.21	9.82	36.90	9.46	36.58
24	13.79	40.36	12.01	40.05	11.65	39.73	11.29	39.42	10.93	39.10
26	15.12	42.86	13.50	42.55	13.14	42.23	12.78	41.91	12.42	41.60
28	16.46	45.35	15.01	45.03	14.65	44.71	14.29	44.39	13.93	44.08
30	17.79	47.81	16.53	47.49	16.17	47.18	15.81	46.86	15.45	46.54
34	20.46	52.70	19.62	52.38	19.26	52.06	18.90	51.75	18.55	51.43
38	23.12	57.54	22.42	57.22	22.40	56.90	22.05	56.58	21.69	56.26
42	25.79	62.34	25.09	62.02	25.59	61.70	25.24	61.38	24.88	61.06
46	28.46	67.10	27.76	66.78	28.82	66.46	28.46	66.14	28.11	65.82
50	31.12	71.83	30.43	71.51	32.08	71.19	31.72	70.87	31.37	70.55
54	33.79	76.53	33.10	76.22	35.36	75.89	35.01	75.58	34.66	75.25
58	36.46	81.21	35.77	80.89	38.68	80.57	38.32	80.25	37.97	79.93
62	39.12	85.87	38.44	85.55	42.01	85.23	41.66	84.91	41.31	84.59
66	41.79	90.50	45.72	90.18	45.37	89.86	45.02	89.54	44.67	89.22

D.79

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T --- Y									
	5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U
0	0	5.09	0	4.78	0	4.47	0	4.16	0	3.85
1	0	6.97	0	6.66	0	6.35	0	6.04	0	5.73
2	0	8.70	0	8.39	0	8.07	0	7.77	0	7.45
3	0	10.33	0	10.01	0	9.70	0	9.39	0	9.08
4	0	11.89	0	11.58	0	11.27	0	10.96	0	10.65
5	0	13.41	0	13.10	0	12.78	0	12.47	0	12.16
6	0	14.89	0	14.57	0	14.26	0	13.95	0	13.64
7	0	16.34	0	16.02	0	15.71	0	15.40	0	15.09
8	0	17.76	0	17.45	0	17.13	0	16.82	0	16.51
9	0.37	19.16	0	18.85	0	18.53	0	18.22	0	17.91
10	0.96	20.55	0.58	20.23	0.21	19.92	0	19.60	0	19.29
12	2.20	23.27	1.83	22.95	1.46	22.64	1.08	22.32	0.71	22.01
14	3.50	25.94	3.13	25.62	2.76	25.31	2.39	24.99	2.02	24.68
16	4.85	28.57	4.48	28.25	4.11	27.94	3.74	27.62	3.38	27.30
18	6.23	31.16	5.87	30.84	5.50	30.53	5.13	30.21	4.77	29.90
20	7.65	33.73	7.29	33.41	6.92	33.09	6.56	32.78	6.19	32.46
22	9.10	36.27	8.73	35.95	8.37	35.63	8.01	35.31	7.64	35.00
24	10.57	38.78	10.20	38.46	9.84	38.15	9.48	37.83	9.12	37.51
26	12.06	41.28	11.69	40.96	11.33	40.64	10.97	40.33	10.61	40.01
28	13.57	43.76	13.20	43.44	12.84	43.12	12.48	42.81	12.12	42.49
30	15.09	46.22	14.73	45.90	14.37	45.59	14.01	45.27	13.65	44.95
34	18.19	51.11	17.83	50.79	17.47	50.47	17.11	50.15	16.76	49.83
38	21.34	55.94	20.98	55.63	20.62	55.31	20.27	54.99	19.91	54.67
42	24.53	60.74	24.17	60.42	23.82	60.10	23.46	59.78	23.11	59.46
46	27.75	65.50	27.40	65.18	27.05	64.86	26.69	64.54	26.34	64.22
50	31.01	70.23	30.66	69.91	30.31	69.59	29.95	69.27	29.60	68.95
54	34.30	74.93	33.95	74.61	33.60	74.29	33.25	73.97	32.89	73.65
58	37.62	79.61	37.27	79.29	36.91	78.97	36.56	78.65	36.21	78.33
62	40.96	84.26	40.61	83.95	40.25	83.62	39.90	83.30	39.55	82.98
66	44.32	88.90	43.96	88.58	43.61	88.26	43.26	87.93	42.91	87.62

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	3.54	0	2.92	0	2.30	0	1.68	0	1.07
1	0	5.42	0	4.80	0	4.19	0	3.57	0	2.95
2	0	7.14	0	6.52	0	5.90	0	5.28	0	4.66
3	0	8.77	0	8.15	0	7.53	0	6.91	0	6.28
4	0	10.33	0	9.71	0	9.09	0	8.47	0	7.84
5	0	11.85	0	11.22	0	10.60	0	9.98	0	9.35
6	0	13.32	0	12.70	0	12.08	0	11.45	0	10.83
7	0	14.77	0	14.15	0	13.52	0	12.90	0	12.27
8	0	16.20	0	15.57	0	14.94	0	14.31	0	13.69
9	0	17.60	0	16.97	0	16.34	0	15.71	0	15.09
10	0	18.98	0	18.35	0	17.72	0	17.09	0	16.47
12	0.34	21.69	0	21.07	0	20.44	0	19.81	0	19.18
14	1.65	24.36	0.91	23.73	0.17	23.10	0	22.47	0	21.84
16	3.01	26.99	2.27	26.36	1.54	25.73	0.80	25.09	0.07	24.46
18	4.40	29.58	3.67	28.95	2.94	28.32	2.21	27.68	1.48	27.05
20	5.83	32.14	5.10	31.51	4.37	30.88	3.64	30.25	2.91	29.61
22	7.28	34.68	6.55	34.05	5.83	33.41	5.10	32.78	4.38	32.15
24	8.76	37.20	8.03	36.56	7.31	35.93	6.58	35.29	5.86	34.66
26	10.25	39.69	9.53	39.06	8.81	38.47	8.09	37.79	7.37	37.15
28	11.77	42.17	11.05	41.53	10.33	40.90	9.61	40.26	8.89	39.63
30	13.30	44.63	12.58	44.00	11.86	43.36	11.14	42.72	10.43	42.09
34	16.40	49.52	15.69	48.88	14.97	48.24	14.26	47.60	13.54	46.97
38	19.55	54.35	18.84	53.71	18.13	53.07	17.42	52.44	16.71	51.80
42	22.75	59.15	22.04	58.51	21.33	57.87	20.62	57.23	19.91	56.59
46	25.98	63.90	25.27	63.26	24.57	62.67	23.86	61.98	23.15	61.35
50	29.25	68.63	28.54	67.99	27.83	67.35	27.13	66.71	26.42	66.07
54	32.54	73.33	31.84	72.69	31.13	72.05	30.43	71.41	29.72	70.77
58	35.86	78.01	35.16	77.36	34.45	76.72	33.75	76.08	33.04	75.44
62	39.20	82.66	38.50	82.02	37.79	81.38	37.09	80.73	36.39	80.09
66	42.56	87.30	41.86	86.60	41.16	86.01	40.46	85.36	39.76	84.72

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.45	0	0	0	0	0	0	0	0
1	0	2.32	0	1.70	0	1.08	0	0.47	0	0
2	0	4.04	0	3.42	0	2.80	0	2.18	0	1.56
3	0	5.66	0	5.04	0	4.42	0	3.80	0	3.17
4	0	7.22	0	6.60	0	5.97	0	5.35	0	4.73
5	0	8.73	0	8.10	0	7.48	0	6.86	0	6.23
6	0	10.20	0	9.58	0	8.95	0	8.33	0	7.70
7	0	11.64	0	11.02	0	10.40	0	9.77	0	9.14
8	0	13.06	0	12.44	0	11.81	0	11.18	0	10.56
9	0	14.46	0	13.83	0	13.20	0	12.58	0	11.95
10	0	15.84	0	15.21	0	14.58	0	13.96	0	13.33
12	0	18.55	0	17.92	0	17.29	0	16.66	0	16.04
14	0	21.21	0	20.58	0	19.95	0	19.32	0	18.69
16	0	23.83	0	23.20	0	22.57	0	21.94	0	21.31
18	0.75	26.42	0.02	25.79	0	25.16	0	24.52	0	23.89
20	2.19	28.98	1.46	28.35	0.73	27.71	0.01	27.08	0	26.45
22	3.65	31.51	2.93	30.88	2.20	30.25	1.48	29.61	0.76	28.98
24	5.14	34.02	4.42	33.39	3.69	32.75	2.97	32.12	2.25	31.48
26	6.65	36.52	5.93	35.88	5.20	35.25	4.48	34.61	3.77	33.97
28	8.17	38.99	7.45	38.36	6.73	37.72	6.01	37.08	5.30	36.45
30	9.71	41.45	8.99	40.81	8.27	40.18	7.56	39.54	6.84	38.91
34	12.83	46.33	12.11	45.69	11.40	45.05	10.68	44.42	9.97	43.78
38	15.99	51.16	15.28	50.52	14.57	49.88	13.86	49.25	13.15	48.61
42	19.20	55.95	18.49	55.31	17.78	54.67	17.07	54.03	16.36	53.39
46	22.44	60.70	21.73	60.06	21.03	59.43	20.32	58.78	19.61	58.15
50	25.72	65.43	25.01	64.79	24.30	64.15	23.60	63.51	22.89	62.87
54	29.02	70.13	28.31	69.49	27.61	68.84	26.90	68.20	26.20	67.56
58	32.34	74.80	31.64	74.16	30.93	73.52	30.23	72.87	29.53	72.23
62	35.69	79.45	34.98	78.81	34.28	78.17	33.58	77.52	32.88	76.88
66	39.05	84.08	38.35	83.44	37.65	82.79	36.95	82.15	36.25	81.51

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.94	0	0	0	0	0	0	0	0
3	0	2.56	0	1.31	0	0.07	0	0	0	0
4	0	4.11	0	2.86	0	1.61	0	0.37	0	0
5	0	5.61	0	4.36	0	3.12	0	1.87	0	0.62
6	0	7.08	0	5.83	0	4.58	0	3.33	0	2.08
7	0	8.52	0	7.26	0	6.01	0	4.76	0	3.51
8	0	9.93	0	8.68	0	7.42	0	6.17	0	4.92
9	0	11.32	0	10.07	0	8.81	0	7.56	0	6.30
10	0	12.70	0	11.44	0	10.19	0	8.93	0	7.68
12	0	15.40	0	14.14	0	12.89	0	11.63	0	10.37
14	0	18.06	0	16.80	0	15.54	0	14.28	0	13.02
16	0	20.68	0	19.41	0	18.15	0	16.89	0	15.63
18	0	23.26	0	22.00	0	20.73	0	19.47	0	18.20
20	0	25.81	0	24.55	0	23.28	0	22.02	0	20.75
22	0.03	28.34	0	27.08	0	25.81	0	24.54	0	23.27
24	1.53	30.85	0.09	29.58	0	28.31	0	27.05	0	25.78
26	3.05	33.34	1.61	32.07	0.17	30.80	0	29.53	0	28.26
28	4.58	35.81	3.14	34.54	1.71	33.27	0.27	32.00	0	30.73
30	6.12	38.27	4.69	37.00	3.26	35.73	1.83	34.45	0.40	33.18
34	9.26	43.14	7.83	41.87	6.40	40.59	4.98	39.32	3.55	38.04
38	12.44	47.97	11.01	46.69	9.59	45.41	8.17	44.14	6.75	42.86
42	15.65	52.75	14.24	51.48	12.82	50.20	11.40	48.92	9.98	47.64
46	18.90	57.51	17.49	56.23	16.08	54.95	14.66	53.67	13.25	52.39
50	22.19	62.23	20.77	60.95	19.36	59.66	17.95	58.38	16.54	57.10
54	25.49	66.92	24.08	65.64	22.68	64.35	21.27	63.07	19.86	61.79
58	28.82	71.59	27.42	70.31	26.01	69.02	24.61	67.74	23.20	66.46
62	32.18	76.24	30.77	74.95	29.37	73.67	27.96	72.39	26.56	71.10
66	35.55	80.87	34.15	79.58	32.74	78.30	31.34	77.01	29.94	75.72

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/3

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U	
0	0	0	0	0	0	0	0	0	0	0	
1	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	
6	0	0.83	0	0	0	0	0	0	0	0	
7	0	2.26	0	1.01	0	0	0	0	0	0	
8	0	3.66	0	2.41	0	1.16	0	0	0	0	
9	0	5.05	0	3.79	0	2.54	0	1.28	0	0.03	
10	0	6.42	0	5.16	0	3.90	0	2.65	0	1.39	
12	0	9.11	0	7.85	0	6.59	0	5.33	0	4.07	
14	0	11.76	0	10.50	0	9.23	0	7.97	0	6.71	
16	0	14.36	0	13.10	0	11.83	0	10.57	0	9.31	
18	0	16.94	0	15.67	0	14.41	0	13.14	0	11.87	
20	0	19.48	0	18.22	0	16.95	0	15.68	0	14.42	
22	0	22.00	0	20.74	0	19.47	0	18.20	0	16.93	
24	0	24.50	0	23.24	0	21.96	0	20.70	0	19.43	
26	0	26.99	0	25.72	0	24.45	0	23.18	0	21.90	
28	0	29.45	0	28.18	0	26.91	0	25.64	0	24.37	
30	0	31.91	0	30.63	0	29.36	0	28.09	0	26.81	
34	2.13	36.77	0.71	35.49	0	34.22	0	32.94	0	31.67	
38	5.33	41.59	3.91	40.31	2.49	39.03	1.07	37.76	0	36.48	
42	8.57	46.36	7.15	45.08	5.73	43.81	4.32	42.53	2.90	41.25	
46	11.83	51.11	10.42	49.83	9.01	48.55	7.60	47.27	6.19	45.99	
50	15.13	55.82	13.72	54.54	12.31	53.26	10.90	51.98	9.49	50.70	
54	18.45	60.51	17.04	59.23	15.64	57.94	14.23	56.66	12.82	55.38	
58	21.79	65.17	20.39	63.89	18.98	62.61	17.58	61.32	16.18	60.04	
62	25.16	69.82	23.76	68.53	22.35	67.25	20.95	65.96	19.55	64.68	
66	28.54	74.44	27.14	73.15	25.74	71.87	24.34	70.58	22.94	69.30	

D.84

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	0		1		2		3		4	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	6.44	0	6.25	0	6.06	0	5.87
1	0	8.52	0	8.33	0	8.14	0	7.95	0	7.76
2	0	10.24	0	10.05	0	9.87	0	9.67	0	9.48
3	0.41	11.88	0	11.69	0	11.50	0	11.31	0	11.11
4	0.99	13.44	0	13.25	0	13.06	0	12.87	0	12.68
5	1.57	14.96	0.01	14.77	0	14.58	0	14.39	0	14.20
6	2.15	16.45	0.47	16.26	0.24	16.06	0.02	15.87	0	15.68
7	2.73	17.90	0.96	17.70	0.74	17.52	0.52	17.32	0.30	17.13
8	3.31	19.32	1.49	19.13	1.27	18.94	1.06	18.75	0.84	18.55
9	3.89	20.73	2.05	20.54	1.83	20.34	1.62	20.15	1.40	19.96
10	4.47	22.11	2.63	21.92	2.42	21.73	2.20	21.54	1.99	21.34
12	5.63	24.84	3.86	24.65	3.64	24.45	3.43	24.26	3.21	24.07
14	6.79	27.51	5.14	27.32	4.93	27.12	4.72	26.93	4.50	26.74
16	7.95	30.14	6.48	29.95	6.27	29.76	6.05	29.56	5.84	29.37
18	9.11	32.74	7.86	32.55	7.64	32.35	7.43	32.16	7.22	31.97
20	10.27	35.30	9.27	35.11	9.05	34.92	8.84	34.73	8.63	34.53
22	11.43	37.85	10.70	37.65	10.49	37.46	10.28	37.27	10.07	37.07
24	12.59	40.36	12.17	40.17	11.70	39.98	11.75	39.78	11.54	39.59
26	13.75	42.86	13.33	42.67	12.87	42.48	13.23	42.28	13.02	42.09
28	14.91	45.35	14.49	45.15	14.95	44.96	14.74	44.77	14.53	44.57
30	16.07	47.81	15.66	47.62	15.21	47.42	16.26	47.23	16.05	47.03
34	18.39	52.70	17.97	52.51	19.56	52.31	19.35	52.12	19.14	51.92
38	20.71	57.54	20.30	57.35	22.70	57.15	22.49	56.96	22.28	56.76
42	23.02	62.34	22.61	62.15	25.89	61.95	25.68	61.75	25.47	61.56
46	25.34	67.10	24.94	66.91	29.11	66.71	28.90	66.52	28.70	66.32
50	27.66	71.83	27.25	71.64	32.37	71.44	32.16	71.25	31.95	71.05
54	29.98	76.53	29.58	76.34	35.65	76.14	35.45	75.95	35.24	75.75
58	32.30	81.21	32.17	81.02	38.97	80.82	38.76	80.63	38.55	80.43
62	34.62	85.87	42.51	85.67	42.30	85.48	42.19	85.23	41.99	85.09
66	36.94	90.50	42.86	90.31	42.66	90.12	42.46	89.92	42.24	89.73

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT		T O T A L B A C K G R O U N D C O U N T -- Y									
		5		6		7		8		9	
X	L	U	L	U	L	U	L	U	L	U	
0	0	5.68	0	5.49	0	5.30	0	5.11	0	4.92	
1	0	7.56	0	7.37	0	7.18	0	6.99	0	6.80	
2	0	9.29	0	9.10	0	8.91	0	8.72	0	8.52	
3	0	10.92	0	10.73	0	10.54	0	10.35	0	10.16	
4	0	12.49	0	12.30	0	12.10	0	11.91	0	11.72	
5	0	14.01	0	13.81	0	13.62	0	13.43	0	13.24	
6	0	15.49	0	15.30	0	15.10	0	14.91	0	14.72	
7	0.08	16.94	0	16.75	0	16.55	0	16.36	0	16.17	
8	0.62	18.36	0.40	18.17	0.18	17.98	0	17.79	0	17.59	
9	1.18	19.77	0.97	19.58	0.75	19.38	0.53	19.19	0.32	18.99	
10	1.77	21.15	1.55	20.96	1.34	20.76	1.12	20.57	0.91	20.38	
12	3.00	23.88	2.78	23.68	2.57	23.49	2.36	23.30	2.14	23.10	
14	4.29	26.55	4.08	26.35	3.86	26.16	3.65	25.97	3.44	25.77	
16	5.63	29.18	5.42	28.98	5.20	28.79	4.99	28.60	4.78	28.40	
18	7.01	31.77	6.80	31.58	6.58	31.39	6.37	31.19	6.16	31.00	
20	8.42	34.34	8.21	34.15	8.00	33.95	7.78	33.76	7.57	33.56	
22	9.86	36.88	9.65	36.69	9.44	36.49	9.23	36.30	9.02	36.10	
24	11.32	39.40	11.11	39.20	10.90	39.01	10.69	38.81	10.48	38.62	
26	12.81	41.90	12.60	41.70	12.39	41.51	12.18	41.31	11.97	41.12	
28	14.32	44.38	14.11	44.18	13.90	43.99	13.69	43.80	13.48	43.60	
30	15.84	46.84	15.63	46.65	15.42	46.45	15.21	46.26	15.00	46.06	
34	18.93	51.73	18.72	51.53	18.52	51.34	18.31	51.15	18.10	50.95	
38	22.08	56.57	21.87	56.37	21.66	56.18	21.45	55.98	21.24	55.79	
42	25.26	61.37	25.06	61.17	24.85	60.97	24.64	60.78	24.43	60.59	
46	28.49	66.13	28.28	65.93	28.07	65.74	27.87	65.54	27.66	65.35	
50	31.75	70.86	31.54	70.66	31.33	70.47	31.12	70.27	30.92	70.08	
54	35.03	75.56	34.83	75.36	34.62	75.17	34.41	74.97	34.20	74.78	
58	38.35	80.24	38.14	80.04	37.93	79.85	37.73	79.65	37.52	79.46	
62	41.68	84.89	41.48	84.70	41.27	84.50	41.06	84.31	40.86	84.11	
66	45.04	89.53	44.83	89.33	44.63	89.14	44.42	88.94	44.21	88.75	

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T — Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	4.73	0	4.34	0	3.96	0	3.58	0	3.20
1	0	6.61	0	6.23	0	5.85	0	5.46	0	5.08
2	0	8.33	0	7.95	0	7.57	0	7.19	0	6.80
3	0	9.96	0	9.58	0	9.20	0	8.82	0	8.43
4	0	11.53	0	11.15	0	10.76	0	10.38	0	10.00
5	0	13.05	0	12.66	0	12.28	0	11.90	0	11.51
6	0	14.53	0	14.15	0	13.76	0	13.37	0	12.99
7	0	15.98	0	15.59	0	15.21	0	14.82	0	14.44
8	0	17.40	0	17.01	0	16.63	0	16.25	0	15.86
9	0.10	18.80	0	18.42	0	18.04	0	17.65	0	17.26
10	0.69	20.19	0.26	19.80	0	19.42	0	19.03	0	18.65
12	1.93	22.91	1.50	22.52	1.07	22.14	0.64	21.75	0.21	21.37
14	3.22	25.58	2.79	25.19	2.37	24.81	1.94	24.42	1.51	24.04
16	4.56	28.21	4.14	27.82	3.71	27.44	3.29	27.05	2.86	26.66
18	5.95	30.81	5.52	30.42	5.10	30.03	4.68	29.64	4.25	29.26
20	7.36	33.37	6.94	32.98	6.52	32.59	6.09	32.21	5.67	31.82
22	8.81	35.91	8.38	35.52	7.96	35.13	7.54	34.75	7.12	34.36
24	10.27	38.43	9.85	38.04	9.43	37.65	9.01	37.27	8.59	36.87
26	11.76	40.93	11.34	40.54	10.92	40.15	10.50	39.76	10.08	39.37
28	13.27	43.41	12.85	43.02	12.43	42.63	12.01	42.24	11.59	41.85
30	14.79	45.87	14.38	45.48	13.96	45.09	13.54	44.70	13.12	44.31
34	17.89	50.76	17.47	50.37	17.05	49.98	16.64	49.59	16.22	49.20
38	21.03	55.59	20.62	55.20	20.20	54.82	19.78	54.42	19.37	54.04
42	24.22	60.39	23.81	60.00	23.39	59.61	22.98	59.22	22.56	58.83
46	27.45	65.15	27.04	64.76	26.62	64.37	26.21	63.98	25.79	63.59
50	30.71	69.88	30.30	69.49	29.82	69.11	29.47	68.71	29.05	68.32
54	34.00	74.58	33.58	74.19	33.17	73.80	32.76	73.41	32.34	73.02
58	37.31	79.26	36.90	78.87	36.48	78.48	36.07	78.19	35.66	77.70
62	40.65	83.92	40.24	83.52	39.82	83.14	39.41	82.74	39.05	82.35
66	44.01	88.55	43.59	88.16	43.18	87.77	42.77	87.38	42.36	86.99

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	2.82	0	2.44	0	2.05	0	1.67	0	1.29
1	0	4.70	0	4.32	0	3.94	0	3.55	0	3.17
2	0	6.42	0	6.04	0	5.66	0	5.28	0	4.89
3	0	8.05	0	7.67	0	7.28	0	6.90	0	6.52
4	0	9.61	0	9.23	0	8.85	0	8.47	0	8.08
5	0	11.13	0	10.74	0	10.36	0	9.98	0	9.60
6	0	12.61	0	12.22	0	11.84	0	11.45	0	11.07
7	0	14.05	0	13.67	0	13.29	0	12.90	0	12.52
8	0	15.48	0	15.09	0	14.71	0	14.32	0	13.94
9	0	16.88	0	16.49	0	16.11	0	15.72	0	15.34
10	0	18.26	0	17.88	0	17.49	0	17.10	0	16.72
12	0	20.98	0	20.59	0	20.21	0	19.82	0	19.44
14	1.09	23.65	0.66	23.26	0.23	22.88	0	22.49	0	22.10
16	2.44	26.28	2.01	25.89	1.59	25.50	1.16	25.12	0.74	24.73
18	3.83	28.87	3.40	28.48	2.98	28.10	2.56	27.71	2.13	27.32
20	5.25	31.43	4.83	31.05	4.40	30.66	3.98	30.27	3.56	29.89
22	6.70	33.97	6.28	33.58	5.85	33.20	5.43	32.81	5.01	32.42
24	8.17	36.49	7.75	36.10	7.33	35.71	6.91	35.33	6.49	34.93
26	9.66	38.98	9.24	38.60	8.82	38.21	8.40	37.82	7.98	37.43
28	11.17	41.46	10.75	41.08	10.33	40.69	9.92	40.30	9.50	39.91
30	12.70	43.93	12.28	43.54	11.86	43.15	11.45	42.76	11.03	42.37
34	15.80	48.81	15.38	48.42	14.97	48.03	14.55	47.65	14.13	47.25
38	18.95	53.65	18.53	53.26	18.12	52.87	17.70	52.48	17.29	52.09
42	22.14	58.44	21.73	58.05	21.31	57.66	20.90	57.27	20.48	56.88
46	25.37	63.20	24.96	62.81	24.54	62.42	24.13	62.03	23.71	61.64
50	28.64	67.93	28.22	67.54	27.81	67.15	27.39	66.76	26.98	66.37
54	31.93	72.63	31.51	72.24	31.10	71.85	30.69	71.46	30.27	71.07
58	35.24	77.31	34.83	76.92	34.42	76.53	34.00	76.13	33.59	75.74
62	38.58	81.96	38.17	81.57	37.76	81.18	37.34	80.79	36.93	80.40
66	41.94	86.60	41.53	86.20	41.12	85.81	40.71	85.42	40.29	85.03

D.88

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	0.91	0	0.14	0	0	0	0	0	0
1	0	2.79	0	2.02	0	1.26	0	0.50	0	0
2	0	4.51	0	3.75	0	2.98	0	2.21	0	1.45
3	0	6.13	0	5.37	0	4.60	0	3.84	0	3.07
4	0	7.70	0	6.93	0	6.16	0	5.40	0	4.63
5	0	9.21	0	8.44	0	7.68	0	6.91	0	6.14
6	0	10.69	0	9.92	0	9.15	0	8.38	0	7.61
7	0	12.13	0	11.36	0	10.59	0	9.83	0	9.06
8	0	13.55	0	12.78	0	12.02	0	11.25	0	10.48
9	0	14.95	0	14.18	0	13.41	0	12.64	0	11.87
10	0	16.34	0	15.57	0	14.79	0	14.02	0	13.25
12	0	19.05	0	18.28	0	17.51	0	16.74	0	15.96
14	0	21.72	0	20.95	0	20.17	0	19.40	0	18.63
16	0.31	24.34	0	23.57	0	22.80	0	22.02	0	21.25
18	1.71	26.94	0.86	26.16	0.02	25.39	0	24.61	0	23.84
20	3.14	29.50	2.29	28.72	1.45	27.95	0.60	27.17	0	26.40
22	4.59	32.04	3.75	31.26	2.90	30.48	2.06	29.71	1.22	28.93
24	6.07	34.55	5.22	33.77	4.38	33.00	3.54	32.22	2.70	31.44
26	7.56	37.04	6.72	36.27	5.88	35.49	5.04	34.71	4.21	33.94
28	9.08	39.52	8.24	38.75	7.40	37.97	6.56	37.19	5.73	36.41
30	10.61	41.99	9.77	41.21	8.93	40.43	8.10	39.65	7.26	38.87
34	13.71	46.86	12.88	46.09	12.04	45.31	11.21	44.53	10.38	43.76
38	16.87	51.70	16.04	50.92	15.20	50.14	14.37	49.36	13.54	48.59
42	20.07	56.49	19.23	55.72	18.40	54.94	17.57	54.15	16.74	53.38
46	23.30	61.25	22.47	60.47	21.64	59.69	20.81	58.91	19.98	58.13
50	26.57	65.98	25.74	65.20	24.91	64.42	24.08	63.64	23.25	62.86
54	29.86	70.68	29.03	69.91	28.20	69.12	27.38	68.34	26.55	67.56
58	33.18	75.35	32.35	74.57	31.52	73.79	30.70	73.01	29.87	72.23
62	36.52	80.01	35.69	79.23	34.87	78.44	34.04	77.66	33.22	76.88
66	39.88	84.64	39.06	83.86	38.23	83.08	37.41	82.29	36.58	81.51

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	50		54		58		62		66	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.69	0	0	0	0	0	0	0	0
3	0	2.31	0	1.54	0	0.77	0	0.01	0	0
4	0	3.86	0	3.10	0	2.33	0	1.56	0	0.80
5	0	5.37	0	4.60	0	3.84	0	3.07	0	2.30
6	0	6.84	0	6.08	0	5.31	0	4.54	0	3.77
7	0	8.29	0	7.52	0	6.75	0	5.98	0	5.21
8	0	9.71	0	8.94	0	8.17	0	7.40	0	6.63
9	0	11.10	0	10.33	0	9.56	0	8.79	0	8.02
10	0	12.48	0	11.71	0	10.94	0	10.17	0	9.40
12	0	15.19	0	14.42	0	13.65	0	12.88	0	12.11
14	0	17.86	0	17.08	0	16.31	0	15.54	0	14.76
16	0	20.48	0	19.70	0	18.93	0	18.16	0	17.39
18	0	23.07	0	22.29	0	21.52	0	20.74	0	19.97
20	0	25.62	0	24.85	0	24.07	0	23.30	0	22.52
22	0.38	28.16	0	27.38	0	26.61	0	25.83	0	25.05
24	1.86	30.67	1.02	29.89	0.18	29.12	0	28.34	0	27.57
26	3.37	33.16	2.53	32.38	1.69	31.61	0.85	30.83	0.01	30.06
28	4.89	35.64	4.05	34.86	3.21	34.08	2.38	33.31	1.54	32.53
30	6.43	38.10	5.59	37.32	4.75	36.54	3.92	35.76	3.08	34.99
34	9.54	42.97	8.71	42.20	7.87	41.42	7.04	40.64	6.20	39.86
38	12.71	47.81	11.87	47.03	11.04	46.25	10.21	45.47	9.38	44.69
42	15.91	52.60	15.08	51.82	14.25	51.04	13.42	50.26	12.59	49.48
46	19.15	57.35	18.32	56.57	17.49	55.79	16.66	55.01	15.83	54.23
50	22.42	62.08	21.59	61.30	20.76	60.52	19.94	59.74	19.11	58.96
54	25.72	66.78	24.89	66.00	24.07	65.21	23.24	64.43	22.41	63.65
58	29.04	71.45	28.22	70.67	27.39	69.89	26.56	69.10	25.74	68.32
62	32.39	76.10	31.56	75.32	30.74	74.53	29.91	73.75	29.09	72.97
66	35.76	80.73	34.93	79.95	34.11	79.17	33.28	78.38	32.46	77.60

D 90

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/5

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y										
	70		75		80		85		90		
	X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0.03	0	0	0	0	0	0	0	0	0
5	0	1.54	0	0.57	0	0	0	0	0	0	0
6	0	3.00	0	2.04	0	1.08	0	0.12	0	0	0
7	0	4.44	0	3.48	0	2.52	0	1.56	0	0.60	0
8	0	5.86	0	4.89	0	3.93	0	2.97	0	2.01	0
9	0	7.25	0	6.29	0	5.33	0	4.36	0	3.40	0
10	0	8.63	0	7.67	0	6.70	0	5.74	0	4.77	0
12	0	11.34	0	10.37	0	9.41	0	8.44	0	7.47	0
14	0	13.99	0	13.03	0	12.06	0	11.10	0	10.13	0
16	0	16.61	0	15.64	0	14.68	0	13.71	0	12.74	0
18	0	19.19	0	18.23	0	17.26	0	16.29	0	15.32	0
20	0	21.75	0	20.78	0	19.81	0	18.84	0	17.88	0
22	0	24.28	0	23.31	0	22.34	0	21.37	0	20.40	0
24	0	26.79	0	25.82	0	24.85	0	23.88	0	22.91	0
26	0	29.28	0	28.31	0	27.34	0	26.37	0	25.40	0
28	0.70	31.75	0	30.78	0	29.81	0	28.84	0	27.87	0
30	2.24	34.21	1.20	33.24	0.15	32.27	0	31.30	0	30.33	0
34	5.37	39.09	4.33	38.11	3.29	37.14	2.24	36.17	1.20	35.19	0
38	8.54	43.91	7.50	42.94	6.46	41.97	5.42	40.99	4.38	40.02	0
42	11.76	48.70	10.72	47.72	9.68	46.75	8.64	45.78	7.60	44.80	0
46	15.00	53.45	13.97	52.48	12.93	51.50	11.89	50.53	10.86	49.55	0
50	18.28	58.17	17.24	57.20	16.21	56.22	15.17	55.25	14.14	54.27	0
54	21.58	62.97	20.55	61.89	19.52	60.92	18.48	59.94	17.45	58.96	0
58	24.91	67.54	23.88	66.56	22.85	65.59	21.81	64.91	20.78	63.93	0
62	28.26	72.19	27.23	71.21	26.20	70.24	25.17	69.26	24.13	68.28	0
66	31.63	76.82	30.60	75.84	29.57	74.86	28.54	73.8	27.51	72.91	0

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	TOTAL		BACKGROUND		COUNT		Y		Y	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	6.54	0	6.44	0	6.34	0	6.24
1	0	8.52	0	8.42	0	8.32	0	8.23	0	8.13
2	0.26	10.24	0	10.15	0	10.05	0	9.95	0	9.86
3	0.73	11.88	0	11.78	0	11.68	0	11.59	0	11.49
4	1.19	13.44	0	13.35	0	13.25	0	13.15	0	13.05
5	1.65	14.96	0.13	14.87	0.02	14.77	0	14.67	0	14.57
6	2.12	16.45	0.58	16.35	0.48	16.25	0.37	16.15	0.27	16.06
7	2.58	17.90	1.08	17.80	0.97	17.70	0.87	17.60	0.76	17.51
8	3.04	19.32	1.61	19.23	1.50	19.13	1.40	19.03	1.29	18.93
9	3.51	20.73	2.16	20.63	2.06	20.53	1.96	20.44	1.85	20.34
10	3.97	22.11	2.75	22.02	2.64	21.92	2.54	21.82	2.43	21.72
12	4.90	24.84	3.97	24.74	3.87	24.64	3.76	24.54	3.66	24.45
14	5.82	27.51	5.25	27.41	5.15	27.32	5.05	27.22	4.94	27.12
16	6.75	30.14	6.54	30.05	6.32	29.95	6.38	29.85	6.28	29.75
18	7.68	32.74	7.47	32.64	7.25	32.54	7.76	32.45	7.66	32.35
20	8.60	35.30	8.40	35.21	8.18	35.11	7.95	35.01	9.07	34.91
22	9.53	37.85	9.32	37.75	9.11	37.65	10.61	37.55	10.50	37.45
24	10.46	40.36	10.25	40.27	10.04	40.17	12.07	40.07	11.97	39.97
26	11.38	42.86	11.18	42.77	10.97	42.67	13.55	42.57	13.45	42.47
28	12.31	45.35	12.10	45.25	15.16	45.15	15.06	45.05	14.96	44.95
30	13.24	47.81	13.03	47.71	16.68	47.62	16.58	47.52	16.48	47.42
34	15.09	52.70	14.89	52.60	19.77	52.50	19.67	52.41	19.57	52.31
38	16.94	57.54	16.74	57.44	22.91	57.34	22.81	57.24	22.71	57.15
42	18.80	62.34	18.59	62.24	26.10	62.14	26.00	62.04	25.90	61.95
46	20.65	67.10	20.45	67.00	29.32	66.90	29.22	66.80	29.12	66.71
50	22.50	71.83	22.30	71.73	32.58	71.63	32.48	71.54	32.38	71.44
54	24.36	76.53	35.97	76.44	35.86	76.34	35.76	76.24	35.66	76.14
58	26.21	81.21	39.28	81.12	39.18	81.02	39.07	80.92	38.97	80.82
62	28.06	85.87	42.61	85.77	42.51	85.67	42.41	85.58	42.31	85.47
66	29.92	90.50	45.97	90.41	45.87	90.31	45.77	90.21	45.66	90.11

D.32

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	5	6	7	8	9					
X	L	U	L	U	L	U	L	U	L	U
0	0	6.15	0	6.05	0	5.95	0	5.85	0	5.76
1	0	8.03	0	7.93	0	7.84	0	7.74	0	7.64
2	0	9.76	0	9.66	0	9.56	0	9.47	0	9.37
3	0	11.39	0	11.29	0	11.20	0	11.10	0	11.00
4	0	12.96	0	12.86	0	12.76	0	12.66	0	12.57
5	0	14.48	0	14.38	0	14.28	0	14.18	0	14.09
6	0.16	15.96	0.06	15.86	0	15.76	0	15.66	0	15.57
7	0.66	17.41	0.55	17.31	0.45	17.21	0.34	17.12	0.24	17.02
8	1.19	18.84	1.08	18.74	0.98	18.64	0.87	18.54	0.77	18.44
9	1.75	20.24	1.64	20.14	1.54	20.04	1.43	19.95	1.33	19.85
10	2.33	21.62	2.23	21.53	2.12	21.43	2.02	21.33	1.91	21.23
12	3.55	24.35	3.45	24.25	3.35	24.15	3.24	24.05	3.14	23.95
14	4.84	27.02	4.74	26.92	4.63	26.83	4.53	26.72	4.43	26.63
16	6.18	29.65	6.07	29.55	5.97	29.45	5.87	29.36	5.76	29.26
18	7.55	32.25	7.45	32.15	7.35	32.05	7.24	31.95	7.14	31.86
20	8.96	34.81	8.86	34.72	8.76	34.62	8.65	34.52	8.55	34.42
22	10.40	37.36	10.30	37.26	10.20	37.16	10.09	37.06	9.99	36.96
24	11.86	39.87	11.76	39.78	11.66	39.68	11.56	39.58	11.45	39.48
26	13.35	42.37	13.25	42.28	13.14	42.18	13.04	42.08	12.94	41.98
28	14.85	44.85	14.75	44.76	14.65	44.66	14.55	44.56	14.44	44.46
30	16.38	47.32	16.27	47.22	16.17	47.12	16.07	47.02	15.97	46.92
34	19.47	52.21	19.36	52.11	19.26	52.01	19.16	51.91	19.06	51.82
38	22.61	57.05	22.51	56.95	22.40	56.85	22.30	56.75	22.20	56.65
42	25.79	61.84	25.69	61.75	25.59	61.65	25.49	61.55	25.39	61.45
46	29.02	66.61	28.91	66.51	28.81	66.41	28.71	66.31	28.61	66.21
50	32.27	71.34	32.17	71.24	32.07	71.14	31.97	71.04	31.87	70.94
54	35.56	76.04	35.46	75.94	35.36	75.85	35.25	75.74	35.15	75.65
58	38.87	80.72	38.77	80.62	38.67	80.52	38.57	80.42	38.46	80.33
62	42.21	85.38	42.10	85.28	42.00	85.18	41.90	85.08	41.80	84.98
66	45.56	90.01	45.46	89.91	45.36	89.82	45.26	89.72	45.16	89.62

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T — Y									
	10		12		14		16		18	
X	L	U	L	U	L	U	L	U	L	U
0	0	5.66	0	5.46	0	5.27	0	5.07	0	4.88
1	0	7.54	0	7.35	0	7.15	0	6.96	0	6.76
2	0	9.27	0	9.07	0	8.88	0	8.68	0	8.49
3	0	10.90	0	10.71	0	10.51	0	10.31	0	10.12
4	0	12.47	0	12.27	0	12.08	0	11.88	0	11.68
5	0	13.99	0	13.79	0	13.60	0	13.40	0	13.20
6	0	15.47	0	15.27	0	15.08	0	14.88	0	14.69
7	0.13	16.92	0	16.72	0	16.53	0	16.33	0	16.14
8	0.67	18.34	0.46	18.15	0.25	17.95	0.04	17.76	0	17.56
9	1.23	19.75	1.02	19.55	0.81	19.36	0.60	19.16	0.39	18.97
10	1.81	21.14	1.60	20.94	1.39	20.74	1.19	20.54	0.98	20.35
12	3.04	23.86	2.83	23.66	2.62	23.47	2.41	23.27	2.21	23.07
14	4.32	26.53	4.12	26.33	3.91	26.14	3.70	25.94	3.50	25.74
16	5.66	29.16	5.45	28.97	5.25	28.77	5.04	28.57	4.84	28.37
18	7.04	31.76	6.83	31.56	6.63	31.36	6.42	31.17	6.21	30.97
20	8.45	34.32	8.24	34.13	8.04	33.93	7.83	33.73	7.63	33.54
22	9.89	36.86	9.68	36.67	9.48	36.47	9.27	36.28	9.07	36.08
24	11.35	39.38	11.15	39.18	10.94	38.99	10.74	38.79	10.53	38.60
26	12.84	41.88	12.63	41.68	12.43	41.49	12.22	41.29	12.02	41.09
28	14.34	44.36	14.14	44.17	13.93	43.97	13.73	43.77	13.52	43.57
30	15.86	46.83	15.66	46.63	15.45	46.43	15.25	46.24	15.05	46.04
34	18.95	51.71	18.75	51.52	18.55	51.32	18.34	51.12	18.14	50.93
38	22.10	56.56	21.89	56.36	21.69	56.16	21.48	55.96	21.28	55.76
42	25.28	61.35	25.08	61.15	24.88	60.96	24.67	60.76	24.47	60.56
46	28.51	66.11	28.30	65.92	28.10	65.72	27.90	65.52	27.69	65.33
50	31.76	70.85	31.56	70.65	31.36	70.45	31.15	70.25	30.95	70.06
54	35.05	75.55	34.85	75.35	34.64	75.15	34.44	74.95	34.24	74.76
58	38.36	80.23	38.16	80.03	37.96	79.83	37.75	79.63	37.55	79.44
62	41.70	84.88	41.49	84.68	41.29	84.49	41.09	84.29	40.88	84.09
66	45.05	89.52	44.85	89.32	44.65	89.12	44.44	88.93	44.24	88.73

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	TOTAL BACKGROUND COUNT -- Y									
	20		22		24		26		28	
X	L	U	L	U	L	U	L	U	L	U
0	0	4.68	0	4.49	0	4.29	0	4.10	0	3.90
1	0	6.57	0	6.37	0	6.18	0	5.98	0	5.79
2	0	8.29	0	8.09	0	7.90	0	7.71	0	7.51
3	0	9.92	0	9.73	0	9.53	0	9.34	0	9.14
4	0	11.49	0	11.29	0	11.10	0	10.90	0	10.71
5	0	13.01	0	12.81	0	12.62	0	12.42	0	12.22
6	0	14.49	0	14.29	0	14.10	0	13.90	0	13.71
7	0	15.94	0	15.74	0	15.55	0	15.35	0	15.15
8	0	17.36	0	17.17	0	16.97	0	16.78	0	16.58
9	0.18	18.77	0	18.57	0	18.38	0	18.18	0	17.98
10	0.77	20.15	0.56	19.96	0.35	19.76	0.15	19.56	0	19.37
12	2.00	22.88	1.79	22.68	1.58	22.48	1.38	22.29	1.17	22.09
14	3.29	25.55	3.08	25.35	2.88	25.16	2.67	24.96	2.46	24.76
16	4.63	28.18	4.42	27.98	4.22	27.78	4.01	27.59	3.80	27.39
18	6.01	30.77	5.80	30.58	5.60	30.38	5.39	30.18	5.18	29.99
20	7.42	33.34	7.21	33.14	7.01	32.95	6.80	32.75	6.60	32.55
22	8.86	35.88	8.65	35.68	8.45	35.49	8.24	35.29	8.04	35.09
24	10.32	38.40	10.12	38.20	9.91	38.00	9.71	37.81	9.50	37.61
26	11.81	40.90	11.61	40.70	11.40	40.50	11.20	40.31	10.99	40.11
28	13.32	43.38	13.11	43.18	12.91	42.98	12.70	42.78	12.50	42.59
30	14.84	45.84	14.64	45.64	14.43	45.45	14.23	45.25	14.02	45.05
34	17.93	50.73	17.73	50.53	17.52	50.34	17.32	50.14	17.12	49.94
38	21.08	55.57	20.87	55.37	20.67	55.17	20.46	54.98	20.26	54.78
42	24.26	60.37	24.06	60.17	23.86	59.97	23.65	59.77	23.45	59.58
46	27.49	65.13	27.28	64.93	27.08	64.73	26.88	64.54	26.67	64.34
50	30.75	69.86	30.54	69.66	30.34	69.46	30.14	69.27	29.93	69.07
54	34.03	74.56	33.83	74.36	33.63	74.16	33.42	73.97	33.22	73.77
58	37.35	79.24	37.14	79.04	36.94	78.84	36.74	78.65	36.53	78.45
62	40.68	83.89	40.48	83.70	40.28	83.50	40.07	83.30	39.87	83.10
66	44.04	88.53	43.84	88.33	43.63	88.13	43.43	87.94	43.23	87.74

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	30		34		38		42		46	
X	L	U	L	U	L	U	L	U	L	U
0	0	3.71	0	3.32	0	2.93	0	2.53	0	2.14
1	0	5.59	0	5.20	0	4.81	0	4.42	0	4.03
2	0	7.32	0	6.92	0	6.53	0	6.14	0	5.75
3	0	8.94	0	8.55	0	8.16	0	7.77	0	7.38
4	0	10.51	0	10.12	0	9.73	0	9.34	0	8.95
5	0	12.03	0	11.64	0	11.25	0	10.86	0	10.47
6	0	13.51	0	13.12	0	12.73	0	12.33	0	11.94
7	0	14.96	0	14.57	0	14.17	0	13.79	0	13.39
8	0	16.39	0	15.99	0	15.60	0	15.21	0	14.82
9	0	17.79	0	17.39	0	17.00	0	16.61	0	16.22
10	0	19.17	0	18.78	0	18.39	0	17.99	0	17.60
12	0.96	21.89	0.55	21.50	0.13	21.11	0	20.72	0	20.32
14	2.26	24.56	1.84	24.17	1.43	23.78	1.01	23.39	0.60	23.00
16	3.60	27.20	3.18	26.80	2.77	26.41	2.36	26.01	1.95	25.62
18	4.98	29.79	4.57	29.40	4.15	29.00	3.74	28.61	3.33	28.22
20	6.39	32.36	5.98	31.96	5.57	31.57	5.16	31.17	4.75	30.78
22	7.83	34.90	7.42	34.50	7.01	34.11	6.60	33.72	6.19	33.32
24	9.30	37.41	8.89	37.02	8.48	36.63	8.07	36.23	7.66	35.84
26	10.79	39.91	10.38	39.52	9.97	39.13	9.56	38.73	9.15	38.34
28	12.29	42.39	11.88	42.00	11.47	41.61	11.06	41.21	10.65	40.82
30	13.82	44.86	13.41	44.46	13.00	44.07	12.59	43.67	12.18	43.28
34	16.91	49.74	16.50	49.35	16.09	48.96	15.68	48.56	15.28	48.17
38	20.06	54.58	19.65	54.19	19.24	53.79	18.83	53.40	18.42	53.00
42	23.24	59.38	22.84	58.99	22.43	58.59	22.02	58.19	21.61	57.80
46	26.47	64.14	26.06	63.74	25.65	63.35	25.25	62.95	24.84	62.56
50	29.73	68.87	29.32	68.48	28.91	68.08	28.51	67.68	28.10	67.29
54	33.02	73.57	32.61	73.18	32.20	72.78	31.79	72.39	31.39	71.99
58	36.33	78.25	35.92	77.86	35.52	77.46	35.11	77.07	34.70	76.67
62	39.67	82.91	39.26	82.51	38.85	82.11	38.45	81.72	38.04	81.32
66	43.02	87.54	42.62	87.15	42.21	86.75	41.80	86.35	41.40	85.96

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	50		54		58		62		66	
X	L	U	L	U	L	U	L	U	L	U
0	0	1.75	0	1.36	0	0.97	0	0.58	0	0.19
1	0	3.64	0	3.25	0	2.86	0	2.47	0	2.07
2	0	5.36	0	4.97	0	4.58	0	4.19	0	3.80
3	0	6.99	0	6.60	0	6.21	0	5.82	0	5.43
4	0	8.55	0	8.16	0	7.77	0	7.38	0	6.99
5	0	10.07	0	9.68	0	9.29	0	8.90	0	8.50
6	0	11.55	0	11.16	0	10.77	0	10.38	0	9.98
7	0	13.00	0	12.61	0	12.22	0	11.82	0	11.43
8	0	14.42	0	14.03	0	13.64	0	13.25	0	12.86
9	0	15.83	0	15.43	0	15.04	0	14.65	0	14.26
10	0	17.21	0	16.82	0	16.43	0	16.03	0	15.64
12	0	19.93	0	19.54	0	19.14	0	18.76	0	18.36
14	0.19	22.60	0	22.21	0	21.82	0	21.42	0	21.03
16	1.53	25.23	1.12	24.84	0.71	24.44	0.30	24.05	0	23.66
18	2.92	27.83	2.51	27.43	2.09	27.04	1.68	26.65	1.27	26.25
20	4.33	30.39	3.92	30.00	3.51	29.60	3.10	29.21	2.69	28.81
22	5.78	32.93	5.37	32.54	4.96	32.14	4.55	31.75	4.13	31.35
24	7.25	35.44	6.84	35.05	6.43	34.66	6.02	34.26	5.60	33.87
26	8.74	37.94	8.33	37.55	7.92	37.16	7.51	36.76	7.10	36.37
28	10.25	40.42	9.84	40.03	9.43	39.63	9.02	39.24	8.61	38.85
30	11.77	42.89	11.36	42.49	10.95	42.10	10.54	41.70	10.13	41.31
34	14.87	47.77	14.46	47.38	14.05	46.98	13.64	46.59	13.23	46.19
38	18.01	52.61	17.61	52.22	17.20	51.82	16.79	51.42	16.38	51.03
42	21.20	57.41	20.80	57.01	20.39	56.62	19.98	56.22	19.57	55.83
46	24.43	62.17	24.02	61.77	23.62	61.38	23.21	60.98	22.80	60.58
50	27.69	66.89	27.28	66.50	26.88	66.10	26.47	65.71	26.06	65.32
54	30.98	71.60	30.57	71.20	30.17	70.81	29.76	70.41	29.35	70.02
58	34.30	76.28	33.89	75.88	33.48	75.48	33.07	75.09	32.67	74.69
62	37.63	80.93	37.23	80.53	36.82	80.14	36.41	79.74	36.01	79.35
66	40.99	85.56	40.58	85.17	40.18	84.77	39.77	84.38	39.37	83.98

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT	T O T A L B A C K G R O U N D C O U N T -- Y									
	70		75		80		85		90	
X	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	1.68	0	1.20	0	0.71	0	0.22	0	0
2	0	3.41	0	2.92	0	2.43	0	1.94	0	1.45
3	0	5.04	0	4.55	0	4.06	0	3.57	0	3.08
4	0	6.60	0	6.11	0	5.62	0	5.13	0	4.64
5	0	8.11	0	7.63	0	7.14	0	6.65	0	6.16
6	0	9.59	0	9.10	0	8.62	0	8.12	0	7.63
7	0	11.04	0	10.55	0	10.06	0	9.57	0	9.08
8	0	12.46	0	11.97	0	11.48	0	10.99	0	10.50
9	0	13.87	0	13.37	0	12.88	0	12.39	0	11.91
10	0	15.25	0	14.76	0	14.27	0	13.78	0	13.29
12	0	17.97	0	17.48	0	16.98	0	16.50	0	16.01
14	0	20.64	0	20.15	0	19.66	0	19.16	0	18.67
16	0	23.26	0	22.77	0	22.28	0	21.79	0	21.30
18	0.86	25.86	0.34	25.36	0	24.88	0	24.38	0	23.89
20	2.28	28.42	1.76	27.93	1.25	27.44	0.73	26.95	0.22	26.46
22	3.72	30.96	3.21	30.47	2.70	29.98	2.18	29.48	1.67	28.99
24	5.19	33.48	4.68	32.98	4.17	32.49	3.66	32.00	3.14	31.51
26	6.69	35.97	6.17	35.48	5.66	34.99	5.15	34.50	4.64	34.00
28	8.20	38.45	7.68	37.96	7.17	37.47	6.66	36.98	6.15	36.48
30	9.72	40.92	9.21	40.42	8.70	39.93	8.19	39.44	7.68	38.94
34	12.82	45.80	12.31	45.31	11.80	44.81	11.29	44.32	10.78	43.83
38	15.97	50.64	15.46	50.14	14.95	49.65	14.44	49.16	13.93	48.66
42	19.16	55.43	18.65	54.94	18.14	54.45	17.63	53.95	17.13	53.46
46	22.39	60.19	21.88	59.70	21.37	59.20	20.87	58.71	20.36	58.22
50	25.66	64.92	25.15	64.43	24.64	63.93	24.13	63.44	23.62	62.95
54	28.95	69.62	28.44	69.13	27.93	68.63	27.42	68.14	26.91	67.65
58	32.26	74.30	31.75	73.81	31.24	73.31	30.74	72.81	30.23	72.32
62	35.60	78.95	35.09	78.46	34.58	77.96	34.08	77.47	33.57	76.98
66	38.96	83.59	38.45	83.09	37.94	82.60	37.44	82.10	36.93	81.61

D.98

TABLE D.3

CONFIDENCE INTERVAL 14 END POINTS L AND U FOR CONFIDENCE
COEFFICIENT .99 AND SAMPLE-BACKGROUND COUNTING TIME RATIO 1/10

TOTAL SAMPLE COUNT X	100		110		120		130		140	
	L	U	L	U	L	U	L	U	L	U
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0.48	0	0	0	0	0	0	0	0
3	0	2.10	0	1.13	0	0.15	0	0	0	0
4	0	3.67	0	2.68	0	1.71	0	0.73	0	0
5	0	5.18	0	4.20	0	3.22	0	2.24	0	1.26
6	0	6.65	0	5.68	0	4.70	0	3.72	0	2.74
7	0	8.10	0	7.12	0	6.14	0	5.16	0	4.18
8	0	9.52	0	8.54	0	7.56	0	6.58	0	5.60
9	0	10.92	0	9.94	0	8.96	0	7.98	0	7.00
10	0	12.30	0	11.32	0	10.34	0	9.36	0	8.38
12	0	15.02	0	14.04	0	13.06	0	12.08	0	11.10
14	0	17.69	0	16.71	0	15.73	0	14.74	0	13.76
16	0	20.32	0	19.34	0	18.35	0	17.37	0	16.39
18	0	22.91	0	21.93	0	20.94	0	19.96	0	18.97
20	0	25.47	0	24.49	0	23.50	0	22.52	0	21.54
22	0.64	28.01	0	27.02	0	26.04	0	25.05	0	24.07
24	2.12	30.52	1.09	29.54	0.07	28.56	0	27.57	0	26.59
26	3.61	33.02	2.59	32.03	1.56	31.05	0.54	30.06	0	29.08
28	5.12	35.50	4.10	34.51	3.08	33.53	2.05	32.54	1.03	31.56
30	6.65	37.96	5.63	36.97	4.61	35.99	3.59	35.00	2.56	34.02
34	9.76	42.84	8.74	41.86	7.71	40.87	6.69	39.89	5.67	38.90
38	12.91	47.68	11.89	46.69	10.87	45.71	9.85	44.72	8.83	43.73
42	16.11	52.47	15.09	51.48	14.07	50.50	13.05	49.51	12.03	48.52
46	19.34	57.23	18.32	56.24	17.30	55.25	16.28	54.27	15.26	53.28
50	22.60	61.96	21.58	60.97	20.57	59.98	19.55	59.00	18.53	58.01
54	25.89	66.66	24.88	65.67	23.86	64.68	22.84	63.69	21.82	62.71
58	29.21	71.34	28.19	70.34	27.18	69.36	26.16	68.37	25.14	67.38
62	32.55	75.99	31.54	75.00	30.52	74.01	29.50	73.02	28.49	72.03
66	35.91	80.62	34.90	79.63	33.88	78.64	32.87	77.65	31.85	76.67

D.99

TABLE D. 4
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 2$

		Expected Background Count tB in Gross Sample Count										D.100
		<u>I₁</u>					<u>I₄</u>					
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0	
Expected Net Sample Count tC												
0.		0.9999	0.9979	0.9516	0.9278	0.9349	0.9999	0.9983	0.9738	0.9600	0.9571	
		3.00	4.25	6.30	8.80	12.55	3.06	4.35	6.36	8.68	12.15	
1.0		0.9006	0.9456	0.9071	0.8908	0.8950	0.9006	0.9469	0.9298	0.9122	0.9033	
		4.86	5.67	7.43	9.84	13.55	4.98	5.85	7.58	9.80	13.19	
2.0		0.9339	0.9497	0.9253	0.8931	0.8939	0.9308	0.9381	0.9231	0.9099	0.9073	
		6.38	6.96	8.51	10.87	14.54	6.55	7.22	8.78	10.90	14.23	
3.0		0.9452	0.9480	0.9200	0.8974	0.8974	0.9648	0.9503	0.9163	0.9094	0.9066	
		7.70	8.14	9.54	11.87	15.52	7.92	8.47	9.92	11.99	15.27	
5.0		0.9415	0.9300	0.9040	0.8992	0.8973	0.9425	0.9338	0.9194	0.9076	0.9019	
		9.86	10.13	11.43	13.77	17.42	10.20	10.68	12.06	14.07	17.28	
10.0		0.9316	0.9215	0.9118	0.9036	0.8992	0.9441	0.9307	0.9105	0.9065	0.9018	
		13.08	13.45	15.10	17.77	21.68	13.81	14.53	16.30	18.53	21.87	
20.0		0.9125	0.9046	0.8962	0.8984	0.8969	0.9238	0.9191	0.9119	0.9104	0.9034	
		16.58	17.17	19.32	22.65	27.60	17.34	18.34	20.85	23.99	28.43	
30.0		0.9020	0.8975	0.8993	0.9008	0.8993	0.9128	0.9108	0.9087	0.9058	0.9028	
		19.34	19.95	22.02	25.33	30.77	19.92	20.87	23.35	26.70	31.90	
50.0		0.8942	0.8929	0.8938	0.8957	0.8994	0.8991	0.8993	0.8982	0.8990	0.9025	
		24.05	24.65	26.47	29.34	34.41	24.40	25.23	27.39	30.43	35.50	

TABLE D.4
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 1$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9928 2.73	0.9749 3.44	0.9490 5.14	0.9510 7.31	0.9503 10.37	0.9928 3.19	0.9758 4.21	0.9578 5.90	0.9513 7.88	0.9503 10.79
	1.0	0.9130 4.26	0.9165 4.73	0.8975 6.31	0.8946 8.39	0.9012 11.40	0.9171 4.91	0.9300 5.62	0.9064 7.11	0.9064 9.01	0.9035 11.85
	2.0	0.8743 5.57	0.8817 5.94	0.8956 7.43	0.9023 9.46	0.9011 12.42	0.9019 6.31	0.9040 6.89	0.9110 8.28	0.9067 10.11	0.9029 12.89
	3.0	0.8786 6.69	0.8836 7.04	0.8929 8.50	0.8965 10.50	0.9004 13.43	0.9103 7.47	0.9033 8.02	0.9025 9.39	0.9024 11.17	0.9012 13.92
	5.0	0.8892 8.50	0.8846 8.91	0.8909 10.43	0.8983 12.44	0.8997 15.36	0.9242 9.30	0.9150 9.92	0.9125 11.36	0.9055 13.16	0.9023 15.89
	10.0	0.8835 11.48	0.8837 12.12	0.8987 13.99	0.9000 16.32	0.9010 19.56	0.9088 12.14	0.9051 13.00	0.9029 14.90	0.9045 17.10	0.9016 20.16
	20.0	0.8914 15.45	0.8920 16.07	0.8981 17.93	0.8996 20.61	0.9002 24.77	0.9055 15.83	0.9050 16.62	0.9020 18.62	0.9017 21.31	0.9012 25.39
	30.0	0.9028 18.67	0.8977 19.16	0.8977 20.74	0.8997 23.20	0.8990 27.41	0.9088 18.95	0.9028 19.57	0.9013 21.27	0.9031 23.78	0.9011 27.98
	50.0	0.9043 24.10	0.9003 24.28	0.8978 25.44	0.8982 27.47	0.8985 31.16	0.9138 24.34	0.9103 24.61	0.9025 25.81	0.9013 27.89	0.9008 31.61

TABLE D 4
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 1/2$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9580	0.9666	0.9686	0.9627	0.9600	0.9574	0.9566	0.9486	0.9489	0.9481
		2.50	2.95	4.50	6.39	9.04	3.34	4.10	5.59	7.35	9.91
	1.0	0.9227	0.8877	0.8947	0.8985	0.8978	0.9230	0.9195	0.9116	0.9046	0.9029
		3.77	4.23	5.70	7.50	10.09	4.86	5.47	6.80	8.48	10.97
	2.0	0.8763	0.8804	0.8879	0.8938	0.8983	0.9018	0.9089	0.9097	0.9025	0.9007
		5.00	5.46	6.86	8.59	11.13	6.12	6.68	7.95	9.57	12.01
	3.0	0.8584	0.8780	0.8936	0.8968	0.8995	0.9091	0.9047	0.9017	0.9060	0.9012
		6.12	6.60	7.96	9.65	12.15	7.17	7.74	9.02	10.62	13.03
	5.0	0.8793	0.8813	0.8851	0.8953	0.8983	0.9070	0.9088	0.9050	0.9044	0.9024
		7.96	8.51	9.91	11.62	14.11	8.79	9.45	10.86	12.53	14.97
	10.0	0.8900	0.8941	0.8949	0.8955	0.8986	0.9084	0.9061	0.9019	0.9013	0.9003
		11.07	11.69	13.33	15.38	18.23	11.56	12.27	13.97	16.06	18.94
	20.0	0.9001	0.8949	0.8929	0.8966	0.8980	0.9093	0.9063	0.9039	0.9028	0.9010
		15.30	15.71	17.17	19.36	22.93	15.69	16.14	17.58	19.76	23.35
	30.0	0.9002	0.8957	0.8973	0.8964	0.8985	0.9109	0.9040	0.9015	0.9016	0.9014
		18.66	18.87	20.08	22.01	25.42	19.04	19.28	20.45	22.34	25.74
	50.0	0.9032	0.8974	0.8971	0.8973	0.8974	0.9133	0.9055	0.9031	0.9022	0.9018
		24.19	23.98	24.89	26.47	29.38	24.56	24.39	25.26	26.78	29.63

TABLE D. 4
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 1/3$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9822 2.43	0.9829 2.79	0.9707 4.26	0.9679 6.04	0.9626 8.54	0.9516 3.39	0.9452 4.05	0.9429 5.46	0.9469 7.14	0.9464 9.56
	1.0	0.9486 3.62	0.8927 4.08	0.8856 5.47	0.8964 7.16	0.8974 9.60	0.9173 4.84	0.9125 5.40	0.9108 6.68	0.9023 8.27	0.9022 10.63
	2.0	0.8612 4.85	0.8723 5.34	0.8909 6.64	0.8933 8.27	0.8975 10.65	0.9126 6.05	0.9093 6.59	0.9016 7.82	0.9033 9.36	0.9028 11.67
	3.0	0.8626 5.99	0.8737 6.48	0.8876 7.75	0.8916 9.33	0.8972 11.68	0.9115 7.06	0.9073 7.62	0.9061 8.87	0.9040 10.40	0.9017 12.69
	5.0	0.8815 7.85	0.8793 8.40	0.8883 9.71	0.8968 11.31	0.8975 13.65	0.9076 8.64	0.9069 9.27	0.9035 10.65	0.9044 12.27	0.9022 14.60
	10.0	0.8880 10.97	0.8851 11.55	0.8923 13.08	0.8933 15.01	0.8974 17.72	0.9084 11.47	0.9108 12.07	0.9073 13.64	0.9020 15.64	0.9008 18.44
	20.0	0.8954 15.20	0.8937 15.58	0.8924 16.91	0.8947 18.90	0.8967 22.23	0.9115 15.64	0.9079 16.03	0.9040 17.30	0.9041 19.26	0.9023 22.58
	30.0	0.8964 18.52	0.8949 18.74	0.8954 19.85	0.8971 21.59	0.8968 24.70	0.9091 18.95	0.9058 19.17	0.9053 20.25	0.9030 21.94	0.9023 24.98
	50.0	0.8987 23.89	0.8954 23.84	0.8964 24.71	0.8968 26.13	0.8978 28.75	0.9094 24.30	0.9052 24.26	0.9042 25.10	0.9035 26.48	0.9018 29.05

TABLE D.4
 EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
 AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
 WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 1/5$

		Expected Background Count tB in Gross Sample Count										D 104
		<u>I₁</u>					<u>I₄</u>					
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0	
Expected Net Sample Count tC	0.	0.9889 2.37	0.9850 2.66	0.9774 4.06	0.9702 5.74	0.9657 8.11	0.9307 3.40	0.9382 4.00	0.9434 5.35	0.9444 6.95	0.9453 9.26	
	1.0	0.9686 3.53	0.8687 3.97	0.8800 5.28	0.8892 6.87	0.8955 9.18	0.9263 4.82	0.9055 5.34	0.9058 6.57	0.9017 8.09	0.9021 10.33	
	2.0	0.8365 4.76	0.8714 5.24	0.8821 6.46	0.8895 7.99	0.8953 10.24	0.9059 6.00	0.9093 6.52	0.9038 7.71	0.9023 9.18	0.9030 11.38	
	3.0	0.8718 5.91	0.8667 6.39	0.8841 7.58	0.8923 9.07	0.8946 11.28	0.9125 6.98	0.9075 7.53	0.9060 8.74	0.9032 10.21	0.9026 12.40	
	5.0	0.8678 7.77	0.8784 8.30	0.8827 9.54	0.8935 11.05	0.8943 13.25	0.9150 8.55	0.9128 9.14	0.9059 10.48	0.9058 12.05	0.9030 14.29	
	10.0	0.8890 10.88	0.8893 11.43	0.8899 12.86	0.8938 14.69	0.8946 17.29	0.9133 11.40	0.9111 11.95	0.9068 13.40	0.9050 15.31	0.9030 18.03	
	20.0	0.8943 15.08	0.8935 15.48	0.8927 16.69	0.8955 18.52	0.8962 21.63	0.9079 15.55	0.9071 15.94	0.9058 17.12	0.9051 18.92	0.9034 22.01	
	30.0	0.8939 18.34	0.8940 18.65	0.8946 19.67	0.8967 21.25	0.8969 24.11	0.9087 18.79	0.9063 19.10	0.9056 20.09	0.9041 21.64	0.9034 24.45	
	50.0	0.8958 23.56	0.8957 23.76	0.8967 24.56	0.8973 25.85	0.8978 28.24	0.9052 23.99	0.9059 24.19	0.9039 24.98	0.9040 26.24	0.9036 28.60	

TABLE D. 4
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.90 CONFIDENCE COEFFICIENT AND $\rho = 1/10$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9949	0.9887	0.9802	0.9731	0.9676	0.9331	0.9359	0.9430	0.9464	0.9481
		2.32	2.56	3.89	5.51	7.78	3.39	3.96	5.27	6.81	9.03
	1.0	0.9839	0.8466	0.8737	0.8861	0.8930	0.9412	0.9106	0.9094	0.9054	0.9050
		3.47	3.88	5.12	6.65	8.85	4.79	5.30	6.49	7.95	10.10
	2.0	0.8311	0.8683	0.8797	0.8874	0.8928	0.9046	0.9211	0.9103	0.9064	0.9050
		4.72	5.16	6.32	7.77	9.91	5.96	6.47	7.63	9.05	11.16
	3.0	0.8801	0.8629	0.8787	0.8895	0.8931	0.9233	0.9087	0.9105	0.9059	0.9048
		5.86	6.32	7.45	8.85	10.96	6.93	7.47	8.66	10.08	12.18
	5.0	0.8592	0.8775	0.8851	0.8887	0.8940	0.9142	0.9143	0.9076	0.9068	0.9049
		7.73	8.23	9.41	10.84	12.94	8.49	9.07	10.38	11.91	14.07
	10.0	0.8865	0.8847	0.8885	0.8918	0.8947	0.9117	0.9094	0.9082	0.9063	0.9045
		10.82	11.34	12.69	14.44	16.94	11.36	11.87	13.25	15.09	17.74
	20.0	0.8950	0.8918	0.8923	0.8935	0.8958	0.9058	0.9064	0.9067	0.9060	0.9044
		15.02	15.41	16.53	18.23	21.16	15.50	15.88	16.98	18.66	21.59
	30.0	0.8944	0.8937	0.8950	0.8957	0.8966	0.9091	0.9056	0.9062	0.9048	0.9040
		18.27	18.59	19.53	20.99	23.66	18.73	19.05	19.97	21.42	24.05
	50.0	0.8963	0.8954	0.8969	0.8972	0.8976	0.9038	0.9041	0.9049	0.9044	0.9037
		23.46	23.71	24.45	25.63	27.85	23.90	24.15	24.88	26.05	28.25

TABLE D.5
 EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
 AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
 WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 2$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	1.0000	0.9999	0.9873	0.9552	0.9595	1.0000	0.9999	0.9940	0.9856	0.9810
		3.82	5.22	7.57	10.55	15.01	3.99	5.53	7.83	10.51	14.57
	1.0	0.9056	0.9673	0.9758	0.9463	0.9454	0.9051	0.9643	0.9752	0.9644	0.9581
		5.87	6.75	8.80	11.67	16.08	6.14	7.16	9.17	11.72	15.69
	2.0	0.9648	0.9850	0.9712	0.9454	0.9491	0.9625	0.9779	0.9694	0.9635	0.9578
		7.52	8.16	10.00	12.78	17.15	7.86	8.65	10.47	12.93	16.81
	3.0	0.9742	0.9799	0.9704	0.9500	0.9494	0.9720	0.9721	0.9623	0.9600	0.9560
		9.00	9.49	11.16	13.87	18.20	9.38	10.06	11.75	14.11	17.92
	5.0	0.9716	0.9714	0.9629	0.9489	0.9476	0.9852	0.9805	0.9710	0.9603	0.9570
		11.62	11.92	13.31	15.96	20.26	12.11	12.65	14.17	16.42	20.12
	10.0	0.9711	0.9643	0.9545	0.9499	0.9488	0.9816	0.9754	0.9632	0.9583	0.9561
		16.15	16.26	17.70	20.57	25.03	17.08	17.69	19.34	21.63	25.29
	20.0	0.9562	0.9535	0.9537	0.9532	0.9494	0.9641	0.9619	0.9570	0.9560	0.9546
		20.48	20.87	23.01	26.71	32.23	21.75	22.82	25.47	28.76	33.40
	30.0	0.9425	0.9387	0.9434	0.9491	0.9497	0.9568	0.9567	0.9552	0.9561	0.9546
		23.65	24.13	26.30	30.14	36.42	24.67	25.75	28.58	32.40	38.18
	50.0	0.9451	0.9436	0.9471	0.9494	0.9500	0.9530	0.9527	0.9538	0.9548	0.9523
		29.02	29.58	31.58	34.97	41.00	29.68	30.65	33.23	36.83	42.82

TABLE D. 5
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 1$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9986 3.49	0.9916 4.22	0.9794 6.13	0.9740 8.71	0.9752 12.36	0.9986 4.23	0.9916 5.45	0.9801 7.36	0.9789 9.65	0.9768 13.06
	1.0	0.9401 5.13	0.9623 5.60	0.9477 7.40	0.9520 9.88	0.9507 13.46	0.9413 6.15	0.9707 6.99	0.9618 8.69	0.9559 10.87	0.9535 14.19
	2.0	0.9608 6.61	0.9558 6.93	0.9548 8.62	0.9472 11.04	0.9506 14.56	0.9723 7.74	0.9776 8.40	0.9649 9.98	0.9560 12.08	0.9533 15.32
	3.0	0.9302 7.93	0.9379 8.19	0.9480 9.31	0.9516 12.17	0.9506 15.65	0.9780 9.12	0.9746 9.71	0.9599 11.21	0.9559 13.25	0.9528 16.44
	5.0	0.9351 10.15	0.9343 10.41	0.9475 12.02	0.9511 14.34	0.9504 17.77	0.9650 11.38	0.9606 11.98	0.9563 13.48	0.9537 15.48	0.9530 18.61
	10.0	0.9378 13.86	0.9375 14.40	0.9447 16.37	0.9472 18.93	0.9504 22.56	0.9580 14.97	0.9566 15.86	0.9559 17.85	0.9541 20.18	0.9525 23.51
	20.0	0.9341 18.52	0.9364 19.18	0.9438 21.33	0.9483 24.44	0.9499 29.13	0.9535 19.25	0.9544 20.20	0.9531 22.54	0.9527 25.62	0.9525 30.15
	30.0	0.9398 22.23	0.9398 22.82	0.9454 24.71	0.9489 27.63	0.9491 32.59	0.9553 22.86	0.9571 23.68	0.9563 25.69	0.9520 28.63	0.9511 33.54
	50.0	0.9469 28.45	0.9457 28.83	0.9468 30.30	0.9482 32.73	0.9486 37.13	0.9576 29.07	0.9574 29.66	0.9547 31.15	0.9528 33.51	0.9511 37.90

TABLE D. 5
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 1/2$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9880 3.23	0.9866 3.60	0.9870 5.34	0.9843 7.58	0.9824 10.74	0.9829 4.48	0.9716 5.36	0.9744 7.04	0.9737 9.08	0.9734 12.09
	1.0	0.9589 4.49	0.9647 4.93	0.9402 6.64	0.9462 8.78	0.9485 11.87	0.9558 6.16	0.9718 6.84	0.9581 8.36	0.9557 10.31	0.9515 13.23
	2.0	0.9561 5.83	0.9347 6.28	0.9395 7.91	0.9479 9.97	0.9484 12.99	0.9661 7.59	0.9651 8.20	0.9572 9.63	0.9552 11.51	0.9524 14.36
	3.0	0.9027 7.12	0.9290 7.58	0.9389 9.14	0.9439 11.13	0.9476 14.10	0.9607 8.81	0.9618 9.42	0.9563 10.83	0.9524 12.66	0.9516 15.48
	5.0	0.9180 9.34	0.9266 9.86	0.9402 11.40	0.9463 13.35	0.9485 16.26	0.9637 10.78	0.9630 11.47	0.9564 12.98	0.9545 14.83	0.9519 17.62
	10.0	0.9276 13.17	0.9346 13.85	0.9416 15.67	0.9453 17.90	0.9480 21.05	0.9591 14.21	0.9591 15.02	0.9581 16.85	0.9551 19.10	0.9528 22.25
	20.0	0.9420 18.17	0.9412 18.71	0.9438 20.45	0.9461 23.02	0.9483 27.10	0.9626 19.11	0.9600 19.74	0.9570 21.40	0.9560 23.87	0.9527 27.90
	30.0	0.9461 22.11	0.9437 22.46	0.9443 23.93	0.9462 26.22	0.9479 30.27	0.9598 23.03	0.9585 23.48	0.9576 24.88	0.9560 27.06	0.9535 30.97
	50.0	0.9495 28.56	0.9467 28.54	0.9469 29.66	0.9469 31.54	0.9480 35.00	0.9606 29.46	0.9568 29.54	0.9552 30.62	0.9549 32.42	0.9537 35.75

TABLE D. 5
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 1/3$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9860	0.9945	0.9906	0.9873	0.9843	0.9691	0.9714	0.9706	0.9729	0.9740
		3.13	3.40	5.04	7.16	10.13	4.57	5.32	6.91	8.86	11.71
	1.0	0.9830	0.9671	0.9378	0.9418	0.9469	0.9698	0.9714	0.9607	0.9566	0.9540
		4.27	4.74	6.36	8.37	11.27	6.16	6.79	8.24	10.09	12.86
	2.0	0.9528	0.9243	0.9336	0.9416	0.9461	0.9678	0.9670	0.9617	0.9561	0.9536
		5.59	6.11	7.65	9.57	12.40	7.54	8.13	9.51	11.29	14.00
	3.0	0.9042	0.9178	0.9367	0.9437	0.9460	0.9637	0.9663	0.9623	0.9571	0.9545
		6.90	7.42	8.89	10.75	13.53	8.74	9.34	10.71	12.45	15.12
	5.0	0.9243	0.9302	0.9375	0.9427	0.9461	0.9662	0.9649	0.9604	0.9581	0.9546
		9.16	9.73	11.17	12.99	15.70	10.70	11.37	12.83	14.60	17.26
	10.0	0.9286	0.9337	0.9390	0.9446	0.9462	0.9634	0.9615	0.9607	0.9565	0.9547
		13.04	13.69	15.40	17.50	20.48	14.18	14.89	16.62	18.78	21.82
	20.0	0.9417	0.9416	0.9426	0.9446	0.9467	0.9628	0.9609	0.9580	0.9571	0.9547
		18.07	18.56	20.14	22.49	26.32	19.14	19.64	21.15	23.43	27.23
	30.0	0.9439	0.9424	0.9445	0.9452	0.9472	0.9600	0.9584	0.9574	0.9573	0.9547
		21.99	22.32	23.65	25.73	29.42	23.03	23.38	24.66	26.66	30.25
	50.0	0.9464	0.9454	0.9463	0.9467	0.9476	0.9590	0.9568	0.9565	0.9557	0.9546
		28.33	28.39	29.44	31.13	34.26	29.33	29.43	30.44	32.07	35.12

TABLE D. 5
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 1/5$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9975 3.05	0.9971 3.25	0.9930 4.79	0.9893 6.79	0.9854 9.62	0.9811 4.61	0.9778 5.27	0.9769 6.80	0.9765 8.67	0.9772 11.38
	1.0	0.9948 4.13	0.9469 4.60	0.9288 6.12	0.9379 8.02	0.9434 10.77	0.9822 6.17	0.9758 6.75	0.9646 8.14	0.9598 9.91	0.9559 12.54
	2.0	0.9358 5.46	0.9096 5.99	0.9284 7.42	0.9380 9.23	0.9444 11.91	0.9814 7.54	0.9719 8.10	0.9647 9.42	0.9598 11.11	0.9561 13.69
	3.0	0.9102 6.78	0.9183 7.31	0.9329 8.68	0.9398 10.42	0.9443 13.04	0.9695 8.74	0.9692 9.31	0.9636 10.61	0.9598 12.28	0.9569 14.81
	5.0	0.9204 9.07	0.9206 9.63	0.9323 10.98	0.9393 12.68	0.9442 15.23	0.9677 10.69	0.9662 11.31	0.9627 12.72	0.9596 14.43	0.9571 16.95
	10.0	0.9309 12.94	0.9326 13.57	0.9383 15.17	0.9425 17.16	0.9449 20.00	0.9652 14.16	0.9641 14.79	0.9610 16.43	0.9594 18.52	0.9566 21.46
	20.0	0.9415 17.96	0.9407 18.45	0.9423 19.89	0.9439 22.05	0.9461 25.65	0.9617 19.09	0.9600 19.55	0.9589 20.94	0.9585 23.06	0.9556 26.65
	30.0	0.9448 21.84	0.9437 22.22	0.9436 23.44	0.9450 25.32	0.9461 28.72	0.9593 22.92	0.9589 23.30	0.9584 24.48	0.9569 26.32	0.9561 29.65
	50.0	0.9464 28.05	0.9462 28.30	0.9467 29.26	0.9462 30.79	0.9473 33.65	0.9579 29.10	0.9576 29.35	0.9563 30.29	0.9564 31.79	0.9554 34.59

TABLE D. 5
 EXACT CONFIDENCE COEFFICIENTS (1 - β)
 AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
 WITH STATED 0.95 CONFIDENCE COEFFICIENT AND $\rho = 1/10$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9993 2.99	0.9978 3.13	0.9943 4.59	0.9907 6.51	0.9872 9.21	0.9829 4.60	0.9813 5.23	0.9805 6.71	0.9793 8.51	0.9782 11.12
	1.0	0.9980 4.06	0.9422 4.49	0.9223 5.93	0.9332 7.74	0.9416 10.37	0.9847 6.16	0.9812 6.72	0.9678 8.06	0.9627 9.75	0.9589 12.29
	2.0	0.9344 5.40	0.9087 5.89	0.9238 7.25	0.9349 8.97	0.9424 11.52	0.9836 7.54	0.9702 8.07	0.9679 9.34	0.9627 10.97	0.9589 13.44
	3.0	0.9101 6.72	0.9098 7.23	0.9258 8.51	0.9367 10.17	0.9423 12.66	0.9711 8.73	0.9733 9.27	0.9657 10.54	0.9615 12.13	0.9588 14.56
	5.0	0.9246 9.02	0.9158 9.55	0.9299 10.82	0.9379 12.43	0.9428 14.86	0.9673 10.66	0.9699 11.26	0.9655 12.63	0.9613 14.28	0.9586 16.70
	10.0	0.9265 12.88	0.9331 13.47	0.9359 14.98	0.9402 16.89	0.9439 19.61	0.9657 14.11	0.9638 14.71	0.9625 16.28	0.9605 18.30	0.9580 21.16
	20.0	0.9416 17.90	0.9394 18.36	0.9421 19.69	0.9428 21.71	0.9454 25.12	0.9604 19.03	0.9611 19.48	0.9598 20.78	0.9586 22.77	0.9573 26.19
	30.0	0.9448 21.77	0.9432 22.15	0.9432 23.27	0.9448 25.02	0.9461 28.18	0.9590 22.87	0.9593 23.24	0.9584 24.34	0.9580 26.05	0.9566 29.18
	50.0	0.9463 27.95	0.9457 28.25	0.9456 29.13	0.9462 30.54	0.9468 33.18	0.9576 29.01	0.9570 29.30	0.9568 30.17	0.9565 31.56	0.9558 34.18

TABLE D. 6
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 2$
Expected Background Count tB in Gross Sample Count

Expected Net Sample Count tC	<u>I_1</u>					<u>I_4</u>				
	1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
0.	1.0000 5.73	1.0000 7.37	0.9995 10.05	0.9899 13.94	0.9887 19.80	1.0000 6.24	1.0000 8.35	1.0000 11.13	0.9991 14.40	0.9978 19.52
1.0	0.9177 8.14	0.9807 9.03	0.9981 11.40	0.9894 15.17	0.9882 20.96	0.9177 8.87	0.9806 10.18	0.9982 12.59	0.9974 15.73	0.9950 20.73
2.0	0.9697 10.00	0.9929 10.56	0.9986 12.73	0.9910 16.39	0.9877 22.11	0.9697 10.84	0.9926 11.81	0.9982 14.03	0.9970 17.05	0.9949 21.94
3.0	0.9886 11.62	0.9968 12.02	0.9983 14.03	0.9904 17.59	0.9882 23.25	0.9885 12.53	0.9963 13.35	0.9978 15.43	0.9967 18.36	0.9947 23.15
5.0	0.9923 14.61	0.9949 14.84	0.9973 16.58	0.9915 19.96	0.9885 25.52	0.9980 15.59	0.9982 16.29	0.9965 18.19	0.9952 20.94	0.9945 25.55
10.0	0.9935 21.25	0.9938 21.13	0.9956 22.29	0.9919 25.49	0.9891 30.98	0.9988 22.49	0.9982 23.05	0.9965 24.66	0.9943 27.14	0.9937 31.44
20.0	0.9925 28.92	0.9912 28.56	0.9924 30.07	0.9916 34.08	0.9896 40.37	0.9974 31.34	0.9970 32.25	0.9954 34.53	0.9939 37.51	0.9927 42.10
30.0	0.9914 32.99	0.9895 32.85	0.9895 34.76	0.9907 39.34	0.9904 46.85	0.9960 35.38	0.9955 36.61	0.9945 39.79	0.9933 43.94	0.9919 49.97
50.0	0.9906 39.64	0.9893 39.77	0.9890 41.69	0.9896 45.97	0.9903 53.82	0.9936 41.37	0.9933 42.55	0.9929 45.74	0.9924 50.31	0.9914 57.84

TABLE D. 6
 EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
 AND CONFIDENCE INTERVAL EXPECTED LENGTHS(E) FOR RULES I_1 AND I_4
 WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 1$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	1.0000	0.9999	0.9979	0.9959	0.9951	1.0000	0.9999	0.9988	0.9969	0.9960
		5.25	5.87	8.08	11.45	16.24	6.72	8.37	10.66	13.48	17.77
	1.0	0.9502	0.9926	0.9924	0.9903	0.9910	0.9502	0.9928	0.9968	0.9936	0.9919
		6.99	7.31	9.47	12.72	17.43	8.99	10.06	12.13	14.82	19.01
	2.0	0.9814	0.9955	0.9925	0.9914	0.9903	0.9815	0.9967	0.9955	0.9937	0.9918
		8.63	8.79	10.84	13.99	18.62	10.82	11.65	13.56	16.15	20.25
	3.0	0.9914	0.9925	0.9894	0.9903	0.9909	0.9928	0.9976	0.9950	0.9932	0.9919
		10.20	10.25	12.19	15.25	19.81	12.45	13.16	14.96	17.46	21.48
	5.0	0.9848	0.9845	0.9881	0.9902	0.9908	0.9978	0.9978	0.9957	0.9930	0.9918
		13.09	13.03	14.79	17.71	22.15	15.39	15.99	17.65	20.02	23.90
	10.0	0.9824	0.9822	0.9880	0.9899	0.9901	0.9967	0.9958	0.9939	0.9926	0.9916
		18.57	18.64	20.51	23.42	27.77	20.88	21.65	23.50	25.91	29.69
	20.0	0.9841	0.9836	0.9871	0.9890	0.9898	0.9933	0.9938	0.9938	0.9925	0.9911
		24.86	25.36	27.88	31.58	36.91	26.69	27.86	30.65	34.13	39.03
	30.0	0.9850	0.9847	0.9871	0.9885	0.9896	0.9926	0.9933	0.9933	0.9924	0.9913
		29.53	30.10	32.48	36.26	42.45	31.15	32.28	34.87	38.56	44.55
	50.0	0.9861	0.9858	0.9873	0.9886	0.9894	0.9923	0.9930	0.9933	0.9926	0.9915
		37.30	37.86	39.82	43.02	48.79	38.88	39.98	42.08	45.05	50.60

TABLE D. 6

EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
 AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
 WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 1/2$

Expected Background Count tB in Gross Sample Count

Expected Net Sample Count tC	<u>I_1</u>					<u>I_4</u>				
	1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
0.	0.9995 4.86	0.9989 4.95	0.9988 6.99	0.9982 9.92	0.9974 14.07	0.9993 7.22	0.9976 8.34	0.9970 10.33	0.9958 12.86	0.9955 16.68
1.0	0.9794 5.96	0.9962 6.29	0.9861 8.43	0.9867 11.24	0.9889 15.30	0.9791 9.13	0.9958 9.96	0.9951 11.80	0.9939 14.22	0.9924 17.94
2.0	0.9909 7.40	0.9903 7.77	0.9834 9.85	0.9866 12.55	0.9882 16.52	0.9912 10.80	0.9974 11.51	0.9961 13.23	0.9939 15.55	0.9924 19.18
3.0	0.9708 8.90	0.9707 9.26	0.9813 11.24	0.9866 13.85	0.9885 17.73	0.9943 12.32	0.9974 12.98	0.9958 14.62	0.9941 16.86	0.9925 20.41
5.0	0.9690 11.73	0.9720 12.10	0.9823 13.93	0.9861 16.39	0.9882 20.14	0.9960 14.99	0.9969 15.67	0.9957 17.26	0.9940 19.40	0.9926 22.84
10.0	0.9766 17.20	0.9782 17.80	0.9825 19.73	0.9865 22.19	0.9883 25.86	0.9953 19.85	0.9962 20.79	0.9953 22.72	0.9941 25.06	0.9928 28.53
20.0	0.9819 23.88	0.9821 24.58	0.9837 26.82	0.9860 29.97	0.9879 34.68	0.9940 26.23	0.9949 27.19	0.9945 29.32	0.9938 32.34	0.9927 36.98
30.0	0.9840 28.94	0.9843 29.50	0.9859 31.44	0.9868 34.45	0.9882 39.63	0.9945 31.23	0.9944 32.06	0.9940 33.91	0.9935 36.74	0.9928 41.71
50.0	0.9872 37.18	0.9863 37.46	0.9866 38.98	0.9875 41.45	0.9882 46.00	0.9949 39.51	0.9941 40.00	0.9935 41.44	0.9931 43.78	0.9925 48.11

TABLE D. 6
EXACT CONFIDENCE COEFFICIENTS (1 - β)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 1/3$

		Expected Background Count tB in Gross Sample Count									
		I_1					I_4				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9990	0.9996	0.9995	0.9987	0.9980	0.9989	0.9986	0.9977	0.9965	0.9964
		4.70	4.68	6.59	9.35	13.27	7.40	8.29	10.19	12.62	16.25
	1.0	0.9906	0.9963	0.9777	0.9833	0.9868	0.9904	0.9985	0.9973	0.9950	0.9936
		5.58	6.02	8.05	10.69	14.50	9.17	9.91	11.67	13.98	17.51
	2.0	0.9940	0.9805	0.9760	0.9836	0.9869	0.9953	0.9985	0.9969	0.9951	0.9936
		6.95	7.51	9.49	12.01	15.74	10.80	11.46	13.10	15.31	18.76
	3.0	0.9541	0.9641	0.9777	0.9837	0.9867	0.9958	0.9983	0.9966	0.9953	0.9935
		8.45	9.02	10.90	13.33	16.96	12.31	12.94	14.50	16.63	20.00
	5.0	0.9574	0.9672	0.9779	0.9833	0.9867	0.9968	0.9978	0.9962	0.9949	0.9936
		11.35	11.91	13.63	15.90	19.39	14.98	15.63	17.14	19.18	22.43
	10.0	0.9712	0.9757	0.9807	0.9844	0.9866	0.9965	0.9968	0.9958	0.9946	0.9933
		16.94	17.62	19.45	21.74	25.16	19.87	20.71	22.55	24.81	28.12
	20.0	0.9822	0.9815	0.9836	0.9853	0.9873	0.9955	0.9953	0.9949	0.9943	0.9934
		23.72	24.39	26.43	29.35	33.82	26.33	27.09	29.03	31.87	36.32
	30.0	0.9841	0.9847	0.9849	0.9857	0.9874	0.9953	0.9947	0.9942	0.9937	0.9932
		28.82	29.34	31.09	33.81	38.58	31.38	31.98	33.64	36.23	40.85
	50.0	0.9862	0.9861	0.9867	0.9871	0.9878	0.9941	0.9938	0.9937	0.9933	0.9927
		37.04	37.31	38.69	40.91	45.02	39.82	39.92	41.21	43.34	47.31

TABLE D. 6
EXACT CONFIDENCE COEFFICIENTS $(1 - \beta)$
AND CONFIDENCE INTERVAL EXPECTED LENGTHS(E) FOR RULES I_1 AND I_4
WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 1/5$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	0.9994 4.59	0.9999 4.49	0.9996 6.24	0.9991 8.87	0.9984 12.58	0.9992 7.48	0.9993 8.24	0.9984 10.08	0.9977 12.40	0.9970 15.88
	1.0	0.9987 5.35	0.9959 5.83	0.9706 7.72	0.9796 10.22	0.9842 13.83	0.9983 9.19	0.9992 9.87	0.9978 11.55	0.9959 13.76	0.9944 17.14
	2.0	0.9970 6.70	0.9692 7.34	0.9704 9.18	0.9797 11.56	0.9847 15.08	0.9986 10.80	0.9991 11.42	0.9977 12.99	0.9959 15.10	0.9944 18.39
	3.0	0.9455 8.22	0.9623 8.87	0.9712 10.62	0.9804 12.89	0.9851 16.32	0.9988 12.32	0.9990 12.90	0.9972 14.39	0.9958 16.43	0.9944 19.63
	5.0	0.9517 11.17	0.9662 11.78	0.9748 13.37	0.9811 15.49	0.9851 18.77	0.9986 15.00	0.9981 15.59	0.9968 17.04	0.9955 18.98	0.9942 22.08
	10.0	0.9717 16.81	0.9740 17.50	0.9786 19.20	0.9824 21.35	0.9855 24.57	0.9972 19.89	0.9968 20.63	0.9960 22.40	0.9951 24.58	0.9940 27.76
	20.0	0.9796 23.59	0.9813 24.24	0.9827 26.11	0.9846 28.83	0.9864 33.08	0.9956 26.36	0.9954 26.98	0.9952 28.78	0.9945 31.45	0.9938 35.73
	30.0	0.9839 28.68	0.9840 29.21	0.9846 30.80	0.9858 33.28	0.9867 37.69	0.9951 31.43	0.9948 31.88	0.9944 33.41	0.9940 35.81	0.9934 40.12
	50.0	0.9861 36.82	0.9860 37.20	0.9864 38.46	0.9869 40.47	0.9874 44.23	0.9940 39.55	0.9939 39.80	0.9937 41.02	0.9935 42.98	0.9929 46.64

TABLE D. 6
EXACT CONFIDENCE COEFFICIENTS ($1 - \beta$)
AND CONFIDENCE INTERVAL EXPECTED LENGTHS (E) FOR RULES I_1 AND I_4
WITH STATED 0.99 CONFIDENCE COEFFICIENT AND $\rho = 1/10$

		Expected Background Count tB in Gross Sample Count									
		<u>I_1</u>					<u>I_4</u>				
		1.0	2.0	5.0	10.0	20.0	1.0	2.0	5.0	10.0	20.0
Expected Net Sample Count tC	0.	1.0000 4.51	0.9999 4.33	0.9997 5.97	0.9993 8.49	0.9987 12.04	0.9998 7.48	0.9995 8.20	0.9988 9.98	0.9981 12.22	0.9974 15.57
	1.0	1.0000 5.25	0.9966 5.68	0.9634 7.47	0.9759 9.85	0.9827 13.30	0.9997 9.18	0.9994 9.83	0.9984 11.46	0.9967 13.59	0.9951 16.83
	2.0	0.9978 6.61	0.9484 7.21	0.9657 8.94	0.9763 11.20	0.9830 14.56	0.9994 10.79	0.9993 11.38	0.9980 12.90	0.9966 14.93	0.9950 18.09
	3.0	0.9362 8.13	0.9632 8.75	0.9683 10.39	0.9776 12.54	0.9831 15.81	0.9993 12.31	0.9991 12.86	0.9977 14.30	0.9963 16.26	0.9949 19.34
	5.0	0.9500 11.10	0.9662 11.68	0.9723 13.17	0.9787 15.17	0.9835 18.28	0.9990 14.99	0.9981 15.56	0.9972 16.95	0.9960 18.82	0.9948 21.79
	10.0	0.9694 16.74	0.9751 17.40	0.9778 19.01	0.9812 21.05	0.9845 24.11	0.9973 19.85	0.9969 20.55	0.9963 22.27	0.9955 24.39	0.9945 27.46
	20.0	0.9798 23.52	0.9811 24.13	0.9822 25.86	0.9839 28.41	0.9855 32.48	0.9955 26.31	0.9956 26.89	0.9952 28.58	0.9947 31.11	0.9940 35.25
	30.0	0.9838 28.61	0.9833 29.12	0.9844 30.58	0.9851 32.88	0.9863 37.00	0.9950 31.32	0.9947 31.81	0.9945 33.23	0.9941 35.47	0.9936 39.54
	50.0	0.9862 36.73	0.9859 37.13	0.9862 38.28	0.9866 40.14	0.9872 43.61	0.9940 39.36	0.9939 39.74	0.9937 40.87	0.9934 42.69	0.9932 46.11

APPENDIX E

GRAPHS OF LIMITING POWER SURFACE SECTIONS

FOR RULES D_1 , D_2 , D_3 , AND D_e

GRAPH OF LIMITING NORMALIZED EXPECTED LENGTH FOR I_1 AND I_4

FIGURE E. 1

1% Level of Significance Limiting Power Surface Sections
For Decision Rules D_1 , D_2 , D_3 , and D_e

FIGURE E. 2

5% Level of Significance Limiting Power Surface Sections
For Decision Rules D_1 , D_2 , D_3 , and D_e

FIGURE E. 3

10% Level of Significance Limiting Power Surface Sections
For Decision Rules D_1 , D_2 , D_3 , and D_e

E . 4

FIGURE E . 4

Limiting Normalized Expected Length
of Confidence Interval Rules I_1 and I_4

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