

STATE OF LOUISIANA
Department of Revenue



NON-STATISTICAL SAMPLING GUIDELINES

Effective:

NON-STATISTICAL SAMPLING GUIDELINES

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LOUISIANA DEPARTMENT OF REVENUE NON-STATISTICAL SAMPLING GUIDELINES

INTRODUCTION

The purpose of this paper is to provide the audit staff with guidelines in performing a sales and use tax audit using sampling procedures. It will assist the auditor in determining whether a sample audit is feasible, what to consider in making a decision about the type of sample, and discusses some of the aspects of performing sample audits. The law relating to sampling is also covered. This is not intended to be a training manual where all eventualities of sampling are covered. There is no intention to establish rigid rules; rather, these guidelines will set forth general goals for sampling and will allow the auditor discretion in the implementation of an appropriate sampling plan.

A separate document will define in detail the department's policy on stratified random sampling and the use of computer assisted audit techniques (CAATs).

WHAT IS SAMPLING?

Audit sampling is the application of an audit procedure to less than 100% of the transactions within a particular population for the purpose of drawing a conclusion about the entire population. There are two general approaches to sampling: non-statistical and statistical. Both approaches require that the auditor use professional judgment in planning, performing, and evaluating a sample. This guideline applies to non-statistical sampling. The primary difference between non-statistical and statistical sampling is that non-statistical sampling relies more on the auditor's judgment while statistical sampling relies on quantitative measurements to determine the sampling risk. Sampling risk is the chance that the sample audit findings are significantly different from the amount that would be attained had every item in the population been tested. Sampling risk is inevitable whenever less than 100% of the population is examined. Good sampling procedures are designed to reduce sampling risk.

WHY SAMPLE?

Sales and use taxes are transaction taxes, meaning that tax is determined on a transaction-by-transaction basis. Therefore, verification must be done at the source document level. Since in many cases it is economically impractical to audit all transactions, the department encourages the use of sampling whenever feasible.

Sampling allows the auditor to reach conclusions about a large amount of data (the population) by collecting and examining a portion of the data (a sample). More time can be spent examining

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each item in a sample than if every item in the population is examined. It also allows for increased audit coverage by allowing the auditor to perform more audits. Sampling is necessary when the volume of transactions is so large that a detailed examination of all transactions is not practical. Sampling is a more efficient use of time for the department and the taxpayer. There is a reduction in audit hours and document retrieval by both the department and the taxpayer. It allows the auditor to determine, with the least possible expenditure of time for both the taxpayer and the department, the accuracy of reported tax.

LOUISIANA'S SAMPLING LAW

Though the department has always used some form of sampling in the audit process, in 2001 the statute at R.S. 47:1541 was amended by the Louisiana legislature to authorize the secretary to use auditing methods which use sampling for the purpose of projecting audit findings when the taxpayer and the secretary agree to this method of audit. R.S. 47:1541(C)(2) states, "The sampling procedure used shall produce a sample which shall reflect as nearly as possible the normal conditions under which the business was operated during the period to which the audit applies. If either the taxpayer or the secretary can demonstrate that a transaction in a sample for a particular time period is not representative of the taxpayer's business operations during that time period, the transaction shall be eliminated from the sample and shall be separately determined in the audit." The statute states that the taxpayer must be notified of the sampling procedures. It also states that generally recognized sampling techniques must be followed as set forth by the AICPA. Act No. 201 became effective May 31, 2001. See Appendix 1 for a copy of Act No 201.

A related law enacted in the 2001 regular legislative session adds the requirement that the taxpayer provide the auditor with computerized data if their records are maintained that way. R.S. 47:1542.2(A) provides, "If a taxpayer retains records required to be maintained in regard to a tax levied pursuant to this Subtitle in machine-sensible and hard-copy formats, the taxpayer shall make the records available to the secretary or his designee in the machine-sensible format used by the taxpayer upon request of the secretary or his designee." This act became effective on May 24, 2001. Often, an audit is done more efficiently using sampling if computerized records are used. Computerized records frequently facilitate a detailed audit. See Appendix 2 for a copy of Act No. 104.

GENERALLY RECOGNIZED SAMPLING TECHNIQUES

R.S. 47:1541(C)(4) provides, "Generally recognized sampling techniques and standards set forth by the American Institute of Certified Public Accountants shall be used as guidance in developing audit sampling techniques for purposes of this Section." Statement of Auditing Standards No. 39, issued by the AICPA on June 25, 1982, is the primary source of professional standards and guidance on sampling. Although the material is primarily intended to apply to audits of financial statements, it is nonetheless applicable to tax compliance auditing. Sampling is merely an audit procedure, but for an audit assessment to be defensible it must be based on sufficient competent evidential matter, however obtained.

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In 1983 the AICPA published the Audit and Accounting Guide, Audit Sampling that provides a more detailed discussion of the technical and mechanical aspects of sampling.

Generally, SAS No. 39 defines sampling, relates some of the Generally Accepted Auditing Standards to sampling, and provides the framework for a sampling program. Appendix 3 includes the Generally Accepted Auditing Standards for reference. Both SAS No. 39 and the Audit and Accounting Guide discuss the validity of statistical as well as non-statistical sampling and address the importance of auditor judgment. These guidelines refer to some of the items addressed in SAS No. 39. Also discussed is SAS No. 41, which addresses working papers and is referred to in the Audit and Accounting Guide.

PRE-PLANNING / PRE-AUDIT

Define Audit Objective

For sales and use tax audits, typically the primary audit objective is determining errors and educating the taxpayer. This includes the estimation of a tax amount to determine the amount of underpaid (or overpaid) tax dollars for a specified time period in a particular area of the examination such as sales, expense purchases, or asset purchases. Occasionally, the objective is to test for compliance where testing is made only in areas where errors are more likely to occur. Other objectives may include the examination of non-taxed sales, to determine if the correct amount of tax was collected, or to examine expenses to determine proper handling.

Determine Feasibility of a Sample Audit

An auditor will determine the best method to review the taxpayer's records based on the audit objective and knowledge obtained about the taxpayer's business and records. The following factors should be considered in determining whether a sample audit should be performed rather than a detailed audit and what method of sampling should be used:

Business Processes:

1. Business organization (divisions, locations, plants, stores, etc.)
2. Changes in business operations during the audit period (such as the closing of a plant, the acquisition of another division, or a business expansion)
3. A sufficient audit trail from financial statements to general or subsidiary ledgers to source documents
4. Economic cycles (busy/slow seasons, for instance)

Accounting System, Record Storage, and Tax Reporting :

1. Volume of the taxpayer's transactions
2. Arrangement of source documents (by voucher, by vendor, etc.)
3. Accounting system used
4. Location of the documents
5. Changes in the accounting or record-keeping system

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6. Products or services sold
7. Availability of electronic records
8. Availability of source document information and summary records
9. Significant changes in the tax data reported by the taxpayer
10. Significant changes in the tax or accounting staff
11. The existence of detail and summary records for all periods of the audit
12. Tax laws, rules and rates during the audit period for issues involved.

SAMPLE PLANNING AND PROCESS

Once the auditor has determined that the taxpayer's records and business activities are suitable for a sample audit, a sample plan must be developed to outline the procedures that comply with Louisiana law, meet the audit objectives, and best fit the taxpayer's situation. The correct course of action in sampling, as with any other area of auditing, is to do what is most appropriate under the circumstances and conditions encountered in each individual situation. Any sample procedure must be objective and defensible before the taxpayer, the court of law, and the audit review staff.

During the sample planning phase, the auditor gathers information about the taxpayer's accounting systems and tax issues. The auditor should discuss sampling with the taxpayer and encourage the taxpayer to offer suggestions on designing the sampling plan. The taxpayer may be able to share specialized knowledge of the accounting system and sampling techniques that could result in a more effective and efficient audit. The auditor should work with the taxpayer to find the best procedures for the given situation. The auditor is ultimately responsible for performing adequate tests that assure the auditor of the accuracy of the records. However, it is important that the taxpayer be in agreement with the sampling method.

Establish Controls – Data Integrity Tests

After the auditor has received the summarized data from the taxpayer, it must be tested to insure that all of the taxpayer's activities in a particular area are included. In other words, how do you know that you have received all of the data for the audit period? The auditor should assess the risks of any potentially missing data. Auditor judgment will be relied upon in this area; however, tests on the data's accuracy may include the following:

1. Trace and reconcile a random number of the taxpayer's source documents to the summarized data.
2. Vouch and reconcile a random number of transactions with the source documents.
3. Compare summary totals of the data to the general ledger balances, tax returns, or other appropriate financial reports.
4. Determine that data is provided for all divisions, locations, cost centers, accounts etc. for the entire audit period.
5. Determine that all dates are accounted for and that the activity (volume) is evenly distributed (or distributed as expected). Question any inconsistencies.
6. For sales, insure that there are no missing invoice numbers in a sequentially numbered system.

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7. For purchases, insure that there are no missing voucher numbers in a sequentially numbered system.
8. Analyze the transaction recording procedures.
9. Review of the taxpayer's retrieval methods.
10. Identify the recording procedures of transactions that would not typically be included in the purchases or sales records such as intercompany transactions and material transfers.
11. Determine that all known transaction types are included in the data or that the needed transactions types are included.
12. Compare account totals for one period with those for other periods (trend analysis).
13. Determine the reliability of internal controls by determining whether the taxpayer's financial statements have been examined by outside auditors.
14. Determine if the taxpayer maintains and follows a procedures manual for recording sales and purchase transactions and the related tax accruals.

Define the Population

The purpose of defining the population is to create a pool of transactions about which you want to obtain information. Specifically, the population represents the units from which the actual sample items are drawn and to which the results of the sample are projected. The populations are drawn from the entire scope of business operations called the universe.

Separate the universe into groups that will provide the most **homogeneous** populations. The populations should most closely fit the normal business activities or each component of the population should be represented proportionately. Some of the different ways to separate the universe into populations could include:

1. Stores or locations
2. Divisions
3. Departments
4. Product lines
5. Types of customers
6. Time periods
7. General ledger accounts (fixed assets vs. expenses)
8. Type of tax (sales vs. use)
9. Taxable vs. non-taxable items
10. Accrued vs. non-accrued purchases
11. Tax return categories (sales, services, rentals, accruals, tax credits, exemptions)
12. Dollar amounts (stratified)

Some questions to ask in considering a population include:

1. Does the population represent a good examination area?
2. Does the population being considered have a known error rate or can one be easily estimated?
3. Can the total number of units in the population be determined?
4. Can the total dollar value for the population be determined?

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5. Are there items in the population with little potential and can they be easily removed without creating problems in determining a count or generating random numbers?
6. Are there transactions that are known to have an adjustment and are they easily identified and computable?
7. Are there types of transactions or items that would be impossible to examine?

Identify the Sampling Unit

Once the population is defined, the auditor must consider what item will be sampled and evaluated. This item is referred to as the sampling unit. The sampling unit will be an invoice, a line-item transaction, a check, a voucher, a cluster or a block of transactions. The desired sampling unit is one that will provide an accurate assessment of its intended use and can be traced back to the source document. It will have the least variability between units and correspondence can be established between a random number generated and the unit. When choosing a sampling unit, select units which:

1. Have sufficient numbers to warrant sampling,
2. Simplify the random selection process,
3. Are easy to count and obtain a total value,
4. Minimize the time necessary to examine them.

The choice of the sampling unit is generally a function of what is available. It is preferable to choose the sampling unit that provides the lowest level of detail because these will have the smallest variability.

Determine Type of Sample

The identification of the sampling unit will assist the auditor in determining the type of sampling methods to use. Some of the questions to answer relating to how records are filed and the areas where sample and population bases might be pulled from will assist the auditor in determining the best sampling method to use. These questions include:

1. Are sequential invoice/voucher/document numbering systems available?
2. Can related journals or ledgers be used to trace source documents? Can they be used to obtain sample and population bases?
3. How are the source documents filed (i.e. by date, number, name, etc.)?
4. Will separate sampling procedures be necessary due to law changes, location, or dollar value stratification?
5. Are credit memos included in the population?

The following sampling methods are listed in the order of preference.

Stratified Random Sampling is the method to use when the data is provided in a manner that will facilitate stratifying the population. Usually, the records are available electronically and the auditor will obtain assistance from the Computer Audit Analyst. The more variable the population being sampled, the greater is the need for stratified random sampling. As stated earlier, stratified random sampling will not be discussed in detail in this procedure.

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Transaction sampling is the method to use when the sampling unit is a line item or an individual invoice. This method allows for selected transactions to be dispersed throughout the audit period, which allows for a more representative sample. This is the preferred method of sampling because it is usually the smallest usable unit but is not always the most practical. For example, when invoices are filed in vendor order, locating the selected transactions requires more work.

Cluster sampling is applied when a contiguous group of transactions are present such as vouchers, boxes, and ledger pages. The clusters contain equal numbers of transactions in each group and are not overlapping. Cluster sampling may be feasible when there is a high cost of retrieving items randomly selected across the entire population or when there is a sample size of more than 1000 units. This method can save time because the sample is pulled from fewer locations within the population. To illustrate, a sample of 1000 transactions requires that the items be pulled from 1000 physical locations. A sample of 40 clusters of 25 items each requires the auditor or taxpayer pull records from only 40 different locations (boxes, files, etc.). Cluster samples are more efficient than block sampling (time period) because the auditor controls the size of each sample unit and all clusters contain the same number of individual transactions. Instead of reviewing all transactions falling in a given time period, the auditor may randomly select between 30 and 80 even clusters.

Block sampling (or time period sampling) applies to transactions that all fall within a unit (days, weeks, months, or years). While the block method is similar to the cluster method, block samples are normally not equal in size. Therefore, the number of blocks necessary for a reliable sample is difficult to know. This method produces a sample larger than necessary to produce reliable results because the blocks may vary in size by a considerable amount. In block sampling, the auditor assumes the sample time period is representative of the entire population. By not taking sample transactions over the entire audit period, block samples increase sampling risk. If the tax error ratio in the sample time period differs significantly from the time periods not sampled, the block sample will produce results that are not valid.

Determine Sample Size

Prior to conducting an audit, a commonly asked question is “How large a sample do we need?” A common myth is that “If I have a very large population, then I must get a very large sample in order to have a reliable result.” Sample efficiency is directly related to proper design and evaluation; not the number of sample units selected. The goal should be to audit the minimum number of transactions to produce sufficient verifiable evidence and be cost efficient.

Statistical formulas support the fact that the validity of a sample is directly affected by the number of units in the sample. This may lead the auditor to believe that “More is better”. However, it should also be noted that a point of diminishing return is reached. It is the point at which the increased efficiency of the sample results fails to increase proportionally by the examination of more units. In a simple sample of flipping a coin where the results are either heads or tails, thirty units are generally considered the point at which sample size no longer matters. However, in auditing for tax purposes, all invoices are not the same dollar value so

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variability is increased and therefore, the sample size should also be increased above the 30 units.

A sample of 1,000 transactions will be more defensible if the invoices are selected individually than if selected in clusters. The cluster sample will be more valid if selected in 40 clusters of 25 invoices than in 4 clusters of 250 invoices. If few blocks are used, the probability of obtaining a non-representative sample is too great, considering the possibility of such things as employee turnover, changes in accounting system, and the seasonal nature of the business.

Generally, a sample of individually selected transactions will be more defensible and more cost effective than any other option available. Simply stated, individual transactions are the preferred sampling unit because sample results are usually more representative and fewer transactions need to be examined. The transactions are dispersed throughout the audit period.

For **transactional samples**, if the computer assisted audit (CAA) staff is utilized, the sample size may be determined by the CAA using statistical formula.

For other transaction samples, 250 items of interest is the minimum number of transactions to be sampled. It is important to state that “250 items of interest” is not a magic number. It is a starting point. A sample with less than 250 items of interest could be just as valid. It is more important that the sample is representative of the population and the dollar value mix of the sample is proportional with the population.

“Items of interest” is determined by the audit objective. It is defined, for sales, as the non-taxed transactions assuming the audit objective is to examine non-taxed sales. For purchases, if the audit objective is to determine whether the correct tax has been collected, the taxed transactions are the items of interest. If the audit objective is to examine expenses, the items of interest are those items charged to accounts with potential tax implications such as repairs, supplies, etc.

In a sales audit the calculation is:

$$\frac{250}{\text{Percentage of Deductions}} = \text{Minimum number of invoices to examine}$$

For instance, if the taxpayer is reporting 40% of it's sales as non-taxed; the sample size will be 250/ 40% or 625 transactions. In a purchase audit, the ratio is:

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$$\frac{250}{\text{Percentage of Tax-Free Expense Purchases}} = \text{Minimum number of invoices to examine}$$

The percentage of tax-free expense purchases is calculated using the following formula:

$$\frac{\text{Dollars in accounts with tax consequences}}{\text{Dollars in the total expense accounts}}$$

If the formula results in a number that's less than one (for instance, 625.25), always round up the sample size (to 626).

Transactions sampling begins to lose its effectiveness when the minimum number of transactions to pull and examine exceeds 1000. This usually occurs when the percentage of items of interest in the population is less than 25% (i.e. when there are very few items of interest in the population). Therefore, it is recommended that **cluster sampling** be used when the percentage of items of interest in the population is less than 25%. The auditor should examine a minimum of 30 and a maximum of 80 clusters. Ideally, each cluster should contain 4 to 9 items of interest. The total of the items of interest in all clusters should be close to 250.

The optimum number of clusters is calculated as follows:

$$\frac{\text{Percentage of items of interest in the population}}{25\%} * 50 + 30$$

The number of transactions in each cluster is calculated using the following formula:

$$\frac{\text{Minimum Number of Transactions to Examine}}{\text{Number of Clusters.}}$$

For instance, if the reported deductions are 5%, the number of clusters is computed as follows:

$$\begin{aligned} \text{Minimum Sample Size} &= 250 / .05 = 5,000 \\ \text{Number of Clusters} &= 5\% / 25\% * 50 + 30 = 40 \text{ Clusters} \\ \text{Units per Cluster} &= 5000 / 40 = 125 \end{aligned}$$

Block or time period sampling should only be considered after transaction and cluster sampling have been eliminated as options. The method is frequently most practical for retail/cash businesses. Days are preferred over weeks, weeks are preferred over months, and months are preferred over years. The sample units should be randomly selected and the minimum sizes recommended below should be used.

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Time Period	Recommended Minimum
Years	1 Year
Months	6 Months
Weeks	20 Weeks
Days	30 Days

Choose Method of Selecting Sample Units

Once the auditor has determined the proper sampling population, stratification, units and size, the next step is to identify the specific units that will be examined. Sample units must be selected in a manner that will allow them to be distributed across the entire audit period. The key element common to all valid selection methods is that the items to be included in the sample must be chosen at random. Three methods of sample selections are judgment (not valid for tax auditing), random, and systematic random selection. Regardless of the method selected, it is necessary to have proper documentation. This is beneficial as a means of rechecking and reviewing the selection of numbers, expanding the sample if additional items are desired, and defending the methodology if the quality of the audit is questioned. Minimum documentation would include sufficient information in the working papers to permit the reproduction of the sample units at a later date. This means the seed numbers used in the random number generator must be known and documented.

When the auditor goes through a population and selects items for the sample without regard to their size, source, or other distinguishing characteristics, he is attempting to select using **judgment sampling**. For instance, in the use of a month block sample, the auditor may decide that he would like to examine a particular month because there was a new employee hired that month that he suspects made numerous accrual errors. Another month was not selected because the volume was too high. **Selection of sample units by judgment alone should be avoided. It is not considered a valid selection method.** The most serious shortcoming of judgment sampling is the difficulty of remaining completely unbiased in the selection. Because of the auditor's experiences and training, certain population items are more likely than others to be included in the sample. This selection method could bias the sample selection, resulting in the sample being challenged.

Random selection is the most commonly used selection method because it removes auditor bias in the selection of the sample units. It is defined as one in which every possible combination of items in the population has an equal chance of being selected. This method allows for selected transactions to be dispersed throughout the entire audit period. The auditor must first establish correspondence between the items comprising the population and a sequence of random numbers. Correspondence is considered the bridge between the random number and the taxpayer's records. This may involve establishing a numbering system for the population, if none exists, before selecting the random numbers. Examples of items for which correspondence may be established include invoice number, check number, or voucher number. The random numbers may be selected using software such as Rat-Stat.

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In cluster sampling, if a natural cluster does not exist, an auditor must first divide the population into non-overlapping groups (clusters). The auditor will then establish correspondence between the clusters and the sequence of random numbers. The auditor will then randomly select the sample clusters from the population of clusters using numbers randomly selected using software such as Rat-Stat.

In the selection of a random sample, there is a distinction between replacement and non-replacement sampling. In replacement sampling, an element in the population can be included in the sample more than once. Using the random number function in Microsoft Excel produces a sample that uses replacement sampling. The only acceptable method in tax auditing is non-replacement sampling in which an element can be included only once. If a sample item is inadvertently selected more than once, the second item is discarded and a new sample item is selected.

Systematic random selection works well in situations where there are multiple invoice numbering sequences, there is no numbering system or there is no useable sequence at all. It involves selecting sample items at a given interval after establishing a random starting place. The steps in systematic sample selection are as follows:

1. Estimate the number of transactions in the population,
2. Calculate the minimum sample size,
3. Calculate the interval between sample units (n) by dividing the population size by the sample size,
4. Randomly select the starting point from within the first interval,
5. Select every nth item from that point.

For example, if the number of transactions is 10,000 items, the sample size is 500, the interval between sample units is computed as $10,000 / 500 = 20$. If the formula results in a number that's less than one (for instance, 20.25), always round down for the interval (to 20). The starting point is randomly selected from the numbers 1 to 20. If 5 is randomly selected, the first transaction to audit is number 5, then every 20th item thereafter (or 25, 45, 65, 85, etc.).

The advantage of systematic sampling is its ease of use. In most populations, a systematic sample can be drawn quickly, the approach automatically puts the numbers in sequential order, and documentation is easy. However, careful examination is needed of the way the population is listed to evaluate the possibility of systematic error resulting in bias. Because of the way in which systematic samples are selected, once the first item in the sample is selected, all other items are chosen automatically. This causes no problem if the characteristic of interest is distributed randomly throughout the population; however, in many cases it is not. If errors occurred at a certain time of the month or with certain types of documents, a systematic sample would have a high likelihood of failing to obtain a representative sample. A possible solution to this would be to have multiple starting points of between 3 and 7. If the auditor has reasonable assurance that no cyclical pattern exists in the filing arrangement, the systematic random selection can be used.

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Care must be taken with this method because the results may not be duplicated. The exact sample cannot be duplicated. Once an item is added or removed, the remaining sample units will be changed.

Evaluate the Sample

Even though a sample has been drawn from a population and each item has an equal chance of being selected, a bad sample can be drawn. After selecting the sample transactions, they must be evaluated before the sample documentation is pulled and examined. The formula is to compare the mean (average) of the sample items to the mean (average) of the population items. The ratio should not exceed 15%. A few of the reasons for a larger ratio include too many negatives, one large, extraordinary item, or too many small items. If this ratio is exceeded, evaluate the sample items and attempt to identify a problem. Solutions include removing any extraordinary items from the population and examining them separately, expanding the size of the current sample until it becomes more representative of the audit population, drawing a new, different sample, or stratifying the population.

The formula is:

$$\text{Total Dollar Value of Sample} / \# \text{ of Sample Units} = \text{Mean of Sample}$$

$$\text{Total Dollar Value of Population} / \# \text{ of Units in Population} = \text{Mean of Population}$$

$$\text{Absolute Value (Mean of Sample less Mean of Population)} / \text{Mean of Population} = \text{Variance Ratio}$$

If the ratio exceeds 15%, it can be concluded that the sample is not representative of the population. Further examination and correction may be necessary. A large ratio could mean that there are too many negatives in the sample, one large extraordinary item, or too many small items.

Prepare the Sampling Agreement

Before beginning the review of the sample transactions the auditor should request that the taxpayer sign the sampling agreement. An example of a sampling agreement is attached (Appendix 4). R.S. 47:1541(B) provides that “The taxpayer and the secretary or his designee *may enter into a binding agreement* to use a sampling procedure as a basis for projecting audit findings,....” (emphasis added). R.S. 47:1541(C) further says, “Before using a sampling procedure..., the secretary or his designee shall notify the taxpayer in writing of the sampling procedure he intends to use...”. The law gives examples of items that should be included:

1. How the tax will be computed
2. The population to be sampled
3. The type of tax for which the tax liability will be established

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Other items to include are:

1. The audit period
2. The method of sample selection (time period, random, block, etc)
3. How to handle issues specific to the taxpayer
4. The sampling unit (invoice, line item, etc.)
5. Accounts and scope (cost centers, locations, divisions, etc.)

The sampling agreement will include the audit procedure related only to the sample. Other areas may and probably will be examined during the audit but the agreement should be limited to a discussion of the sampling procedures.

If the taxpayer does not consent to sign the sampling agreement, and demands the audit of 100% of the records, the auditor should obtain the taxpayer's records in an electronic format pursuant to R.S. 47:1542.2(A) in order to expedite the audit of these records. In addition, the auditor should provide this information to a member of the Computer Assisted Audit team if the auditor believes that the sampling method is the best method of auditing this taxpayer. This information will be used to document the additional cost to the Department for auditing taxpayers who do not wish to use the sampling method of auditing. It can be presented to the legislature in the event we wish to change our law to *require* the use of sampling.

The taxpayer representative and the Audit Manager should sign the sampling agreement before the sample transactions are examined.

Examine the Sample Transactions

The auditor will examine the sample transactions. Any item on which no tax has been paid or accrued or on which too much tax has been paid or accrued will be scheduled. This will become the total dollar value of the errors to be used in calculating any additional tax due or refund due.

The auditor should not examine any item that has not been selected as a sample transaction. If a sample item is only a portion of a document examined, only that portion that is a sample item can be examined. One exception is if the item has not been included in the population from which the sample is drawn. For instance, if the auditor encounters an invoice for a fixed asset purchase that was accounted for as a journal entry and never appeared in the accounts payable register (from which the sample was drawn) the purchase could be scheduled independently of the sample errors. Other exceptions are discussed in the Special Situations section below (credit memorandums and corrected errors).

Once the sample is selected, the auditor should consider all items as material. In a detailed audit, seldom would an adjustment be made for a transaction that would only produce a few dollars. However, in sampling, a small dollar value item projected across the total dollar of the population could result in a material adjustment. If materiality is to be considered whether an item will be adjusted, such criteria should be considered when defining the population. Leaving the materiality issue pending until after the sample is selected and examination of the unit is undertaken, will adversely impact the sampling plan.

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Throughout the audit of the sample transactions, the auditor should continue to consider whether the sample is representative of the population. Does the sample include enough tax-free items or items of interest in the approximate ratio as in the population? If not, investigate the reason why. Expanding the sample may be necessary.

Each sample item should be examined until the auditor can definitively say that the item is either taxable or non-taxable and can determine the amount of any error. In other words, every sample item should be audited to its final conclusion. It is inappropriate for the auditor to discard a randomly selected sample item.

Special Situations / Decision Rules

The initial audit plan should specify the treatment of special situations so that the taxpayer and the department know in advance how they will be treated. By predetermining the treatment and by applying decision rules consistently, objections of personal bias can be avoided.

Tax Overpayments – It is important that underpayments and overpayments of tax be treated equally. Therefore, both overpayments (in certain situations) and underpayments need to be taken into account and treated the same when examining sample items, when analyzing the sample results, and when projecting the resulting errors to the population being tested.

Department policy provides that a reimbursement for sales tax paid to a vendor in error will be made to the taxpayer only in those instances where the auditor can determine that the vendor is registered and reporting sales tax. In addition, the auditor must closely examine the transaction and consider how the vendor is handling the tax. For instance, if the vendor is providing repairs to immovable property or non-taxable services, they may not pay tax to their vendor for parts used in the job but charge their customer the tax for these parts. In this instance, the credit will not be allowed on the audit of the customer even though it would appear that the service or repair is not taxable

Bad Debts – If sample transaction has been written off as a bad debt on the taxpayer's income tax return, it should be removed from both the sample and the population bases.

Credit Memos – Any credit memo issued against an accounting entry drawn as a sample item will be taken into account in determining the taxability and / or amount of the sample item. The sample population bases will be adjusted for the credit memo. The total population base will be adjusted only if credit memos are not included in the population base. It does not matter whether the credit memo occurred in the audit period.

Corrected Errors (Negative Items) – Occasionally, sample items may include adjusting entries that correct prior transactions. The complete transaction must be verified until it is determined whether the transactions were properly handled.

Multiple Items – Occasionally, an account may contain line items which are summaries of numerous items. The sample unit could consist of one entry or could have many detailed line

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items making up the total. The sampling unit chosen will dictate what should be examined and valued.

Extraordinary Items – An item is considered extraordinary or non-recurring in nature if it has a dollar value out of the normal range of the population. Because it is non-recurring, it may not be representative of the population. These items should be removed from the population and audited independently before the sample is selected. However, if this is not possible, extraordinary items may be removed from the sample with a corresponding adjustment to the sample and population bases. The auditor should then examine the population to search for every occurrence of similar transactions that should also be pulled from the population and audited independently. Both error and non-error extraordinary items should be treated similarly.

Missing Documentation for Sample Items – If the taxpayer is unable to locate the documentation relating to any sample item, the auditor should consider the item taxable and include the total amount of the sample item as an error. However, judgment should be used. Supporting evidence and reasonableness should be used to determine the taxability of the item. For instance, if the missing sample item is for freight, this should not be scheduled as an audit exception because this item would rarely be taxable. Or, the missing sample item is from a vendor that has consistently charged the taxpayer tax during the audit period. Chances are good that this item, if located, would also include the tax. Initially, the auditor should ascertain the reason for the missing documents. The auditor may also determine from other evidence that the item should be partially taxed.

VOIDS – Cancelled or Unused Invoices – The auditor must determine whether voids are included in the total population. If so, the auditor can leave the voids in the sample and consider each as a “zero” or non-error or take all voids out of the sample and replace it with a spare sample transaction.

Reduction Audits – The taxpayer should be queried about whether the audit period has been audited (or is in the process of being audited) by anyone other than the department or a parish. If it has, the details concerning the scope and focus should be obtained. Before selecting the sample, the auditor should make every attempt to isolate this issue from the population and perform alternate audit procedures on this area. After the sample has been selected, there should be no refunds or deficiencies for transactions within the population that were not selected for review.

Subsequent Accruals in Error – Any selected sample item that the taxpayer can show had tax accrued to Louisiana in error will be included in the audit as a credit. It does not matter whether the accrual occurred in the audit period. However, an examination should be made to insure that the taxpayer has routinely accrued tax on non-taxable items. If so, any over accruals found in the sample should be included as a credit.

Subsequent Accruals – Typically, if the taxpayer provides information that tax has been accrued correctly on sample items, the auditor will allow this accrual even though it has been made after the transaction date or outside of the audit period. If the taxpayer repeatedly makes accruals in a period later than the transaction date, the auditor may consider calculating interest on the late

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accruals. Each of these accruals should be examined to insure that they were made prior to the commencement of the audit and the selection of the sample transactions. If it has been made after the sample was selected, credit will be allowed **only** on that one transaction and the error should remain in the calculation of the error ratio.

Accounting / Reporting Changes – Changes in accounting or reporting procedures during an audit period may lead to inconsistencies that should be considered in sampling. Examples include changes in accounting software, chart of accounts, or key accounting personnel. Depending on the volume of records and the significance and timing of the change, a separate population may or may not be created.

Installments – When a sample item is an installment sale or progress billing, examine only the portion sampled. However, this may require the use of other documentation to determine the taxability.

Sample vs. Estimate

A distinction should be made between a sample and an estimate. When a taxpayer has missing records for a portion of the audit period due to situations such as the records being destroyed by fire or flood, an estimate may be performed for the periods in which records are unavailable or inadequate. The sample of the period when records are available may be used as a basis to estimate the tax due for the missing period. However, all estimates should be separated from any periods in which valid samples were performed. The legal guidelines that apply to valid samples and those applying to estimates when records are inadequate or not available are different and necessitate that those issues be clearly separated. Also, the sampling agreement should separately address the period of the sample and the estimate. The following wording could be used for the estimate agreement: “The periods xxxxx to xxxxx are being estimated based on the best available information due to the taxpayer’s failure to maintain/provide adequate records for a sample to be performed in compliance with law.” There should also be an explanation of the basis used for the estimate of the liability assessed.

If the estimate results in an overpayment of tax, no credits should be allowed.

Calculate the Results

Generally recognized sampling techniques require that the results of a sample be applied only to the population from which the sample is selected. The results of the sample, when projected to the population, should match as closely as possible the errors identified to the population that generated them.

The most frequently used projection method by the department is the **ratio estimation** (percentage of error). The process is: The dollar value of the errors found in the sample is divided by the total dollar value of the items comprising the sample (sample base) to obtain a ratio or percent of error. The percent of error is multiplied by the dollar value of the items comprising the entire population (population base) to determine the total error subject to tax.

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The total error must be expressed on a period-by-period basis in order that penalty and interest may be applied to each month. Stated another way, the formula is:

$$\frac{\text{Total Dollar Value of the Sample Errors} / \text{Total Dollar Value of Selected Transactions in Sample Times}}{\text{Total Dollar Value Per Month of the Population}} = \text{Total Projected Taxable Amount Per Month}$$

The percent of error should be calculated to 2 decimal places, for instance 6.23%.

This amount will be added to any deficiency or refund relating to issues audited independently of this sample to determine the total tax due or refund due. The exception to this formula is that for block sampling, if the auditor has used months as a block, the errors for each month audited will be considered the taxable amount for that month rather than the projection amount. The projected ratio will be applied to every other month. In a block sample, the total errors for all months are divided by the total dollars in all sample months. Only one error ratio will be applied against the entire audit period. Calculate a different ratio for each year **only** in those rare circumstances that necessitate a ratio for each year. These circumstances may include situations where one year is inconsistent from the other due to a change in accounting system, change in activities from one year to the next, etc.

Other evaluation methods may be appropriate but should be determined before the audit of the sample transactions is begun and discussed with the taxpayer. A situation that the **difference estimator** may be appropriate is when the total dollar value of the population is not known but the record count is available. The formula is:

$$\frac{\text{Total Dollar Value of the Sample Errors} / \text{Sample Count Times}}{\text{Population Count Per Month}} = \text{Total Projected Taxable Amount Per Month}$$

SAMPLE DOCUMENTATION

Documentation is vital. SAS No. 41, Working Papers, provides guidance on documentation of audit procedures. Neither SAS No. 41 nor SAS No. 39 require specific documentation of audit sampling applications, but both offer recommendations as to the type of items the auditor might consider. Examples of those items are:

1. A description of the control procedure followed
2. The objectives of the sample
3. The definition of the population and the sampling unit
4. The method of sample size determination
5. The method of sample selection including the seed numbers generated
6. The evaluation of the sample
7. A description of how the sampling procedure was performed

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8. A listing of the sample items

A complete discussion of the sampling plan should be included in the confidential comments and include, at a minimum, the above items. See Appendix 5 for an example of the sample plan to include with confidential comments. The auditor should clearly describe the choices, assumptions, and methodologies used in the sample.

CONCLUSION

These guidelines were designed to provide the auditors with the basic fundamentals of sampling as they apply in tax compliance audits, to promote consistency within Field Audit Services, and to help develop individual auditor judgment on sampling issues. Many other areas exist within the scope of sampling and should be addressed on a case-by-case basis. Special consideration should be given to the Louisiana law at R.S. 47:1541 and to SAS No. 39 issued by the AICPA.

An auditor is expected to use his or her professional judgment to select the best possible method of sampling. Auditors should consider defensibility, accuracy, efficiency and practicality when making their sampling decisions. Convenience alone should not be the deciding factor. This paper does not preclude the auditor from choosing to perform a detailed review of records as the best course of action.

Some important sampling considerations warrant repeating:

1. The sample results and any transactions included in the sample must be representative of the normal condition of the taxpayer's business.
2. In drawing a sample, **every** item in the population must have an equal chance of being selected.
3. The sample procedures must follow SAS 39.
4. The sample results must be supported by sufficient verifiable evidence, must be defensible, and must be properly documented.
5. The results of the sample must be applied only to the population from which the sample is selected.
6. Nonrecurring, extraordinary items should not be projected.
7. Method of sample and sample size should be reviewed by both parties. Projection methods and bases should be agreed upon.

GLOSSARY OF SAMPLING TERMS

Attribute Sampling – Statistical sampling that reaches a conclusion about a population in terms of a rate of occurrence of some kind of event or type of item (attribute). For instance, it determines whether an item is taxable or not taxable. Usually not done in tax auditing. The question of “how many” as opposed to “how much” (variable sampling) is answered).

Audited Amount – The amount established by the auditor as representing the amount that *should* be in the taxpayer’s records relative to the particular sources of misstatement tested by the audit procedure. Generally, it is the amount upon which tax has been correctly paid.

Bias – Sample selection is biased whenever any sampling unit has a probability of being selected that is different from the planned probability.

Block Sampling – Testing in which samples are based on periods of time or consecutive groupings (batches). Block sampling should not be confused with cluster sampling (equal size sample units) since the block sample units are normally not equal in size.

CAATs – Computer Assisted Audit Techniques – Any automated audit techniques using computer programs or series of programs designed to perform functions such as reading computer files, selecting data, manipulating data, sorting data, summarizing data, performing calculations, selecting samples, and printing reports.

Cluster Sample – The sample selected by randomly choosing contiguous groups of sampling units. The groups or clusters will all contain the same number of items in each group or cluster.

Correspondence – Establishing a relationship between the sampling units and the numbers in a random number table or the relationship about how the records are filed and how they will be pulled.

Data – Factual information used as a basis for analysis.

Difference Estimator - A projection method that calculates the average dollar value of the error then multiplies it by the population count to determine the estimated additional taxable amount.

Extraordinary Items – An item in the sample or population that is extraordinary or non-recurring in nature. Normally it is a purchase of a high dollar item on an irregular basis. Because it is non-recurring, it may not be representative of the population.

Homogeneous – A sample or population where the individual items have much in common.

Items of Interest (or Target Population) – Items that have potential for containing error specified to be of interest by the audit objective. For sales, non-taxed or incorrectly taxed Louisiana transactions. For purchases, items of interest could be items charged to accounts with potential tax implications such as repairs, supplies, etc.

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Judgmental Sample – A sampling decision made solely by the subjective decision of an individual. It differs from statistical sampling primarily in the lack of objectivity in selecting the sample items and the inability to measure sampling risk.

Materiality – An expression of the relative significance or importance of a particular matter in the context of the audit as a whole.

Mean – The sum of the sample values divided by the number of items in the sample. The arithmetic average of the sample.

Non-Sampling Error – An error that is encountered whether a sample is done or not. The misinterpretation of the tax law or the failure to detect an error on a sample item could introduce such errors.

Non-Statistical Sampling – A sampling technique for which the auditor considers sampling risk in evaluating an audit sample without using statistical theory to measure that risk.

Population (or Projection Base) – The aggregate or entirety of the homogeneous items or units about which the auditor wishes to form an estimate or draw a conclusion. The total units from which the sample is drawn. (Compare to Universe)

Population Base – The total dollar amount of the items from which the sample has been drawn. Should be equivalent to the sample base. Stated another way: the total of the items about which information is desired.

Random Numbers – A set of numbers that depends on the use of a computerized (or tabulated) procedure of generating values having no predictable or traceable patterns.

Random Selection – A selection that is governed wholly by the laws of chance, in which each of the items in the population must have an equal chance of being selected in relation to all other items in the population.

Ratio Estimate – A projection method that calculates the ratio of the errors found in the sample and multiplies this by the total population base.

Representative – Said of a sample. If a sample is representative of the population from which it is drawn, its characteristics are the same as those of the population within the stated limits of the confidence level and precision.

Sample – Any number of units drawn from a population from which observations will be drawn.

Sample Base – The dollar value of all items examined. Should be included in the population base.

Sample Size - The number of sampling units used to make a projection to the entire population. The size of a sample is not by itself a criterion of the sample's precision, accuracy, or usefulness.

NON-STATISTICAL SAMPLING GUIDELINES

Sampling – Selecting a part of the quantity of data for review and reaching a conclusion about the entire quantity of data based on that review.

Sampling Plan – A sampling plan should show in detail the information and procedural steps necessary to stratify, randomly select, and evaluate the results. The plan defines the population, the characteristics to be evaluated, and the criteria and judgments to be exercised. It also indicates the method of sample selection, sample sizes, and the sampling assurance desired.

Sampling Risk – A risk arising from the possibility that, when restricted to a sample, the auditor's conclusions may be different from the conclusions he would reach if the test were applied in the same way to all items in the class of transactions. While sampling risk can be reduced to an acceptably low level by using an appropriate sample size and selection method, it can never be eliminated.

Sampling Unit – The individual element or item selected for examination. If the initial selection is a group or cluster, then that is the sampling unit. The individual items in the cluster are termed elementary units.

Seed Number – The number created by a computerized random number generator which designates the starting point for its calculation of subsequent random numbers. Since the random number generator uses mathematical algorithms, inputting a particular seed number will result in identical random numbers with each attempt.

Selection Method – What will the sample unit be and how will it be pulled (sometimes determined by correspondence).

Simple Random Sample – A sample drawn so that each sample item has the same probability of being selected. Such a sample is always obtained using sampling without replacement.

Standard Deviation – The measure of the variability within a population or sample. This measure captures the variation (or dispersion) of the items about the population mean or the sample mean.

Statistical Sampling – Audit sampling that uses the laws of probability for selecting and evaluating a sample from a population for the purpose of reaching a conclusion about the population.

Stratum – A statistical sub-population. Usually dividing a population into sub-populations based on dollar values. (Plural: Strata).

Stratified Sample – A method of sampling consisting of dividing the population into mutually exclusive groups (strata) and obtaining independent random samples within each group (stratum).

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Systematic Sampling – This sampling method involves the selection of every k-th item in the population, for some integer k. The interval to be used is established by dividing the desired sample size into the population size. The starting point within the first interval should be randomly selected.

Universe – The entire body of the taxpayer's records from which the population (or populations) will be selected. For instance, the universe may include the accounts payable file but a population that will be sampled includes only specific accounts within that file. (Compare to Population).

Variable Sampling – Provides a quantitative measure that is used to estimate an average or total dollar value of a given population. Compare to Attribute Sampling.

APPENDIX 1

ACT 201 – R.S. 47:1541 AND R.S. 47:1562(B)



APPENDIX 2

ACT 104 – R.S. 47:1542.2



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GENERALLY ACCEPTED AUDITING STANDARDS

General Standards

The examination is to be performed by a person or persons having adequate technical training and proficiency as an auditor.

In all matters relating to the assignment, independence in mental attitude is to be maintained by the auditor or auditors.

Due professional care is to be exercised in the performance of the examination and the preparation of the report.

Standards of Field Work

The work is to be adequately planned and assistants, if any are to be properly supervised.

There is to be a proper study and evaluation of the existing internal control as a basis for reliance thereon and for determination of the resultant extent of the tests to which auditing procedures are to be restricted.

Sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmations to afford a reasonable basis for an opinion regarding the financial statements under examination.

Standards of Reporting

The report shall state whether the financial statements are presented in accordance with generally accepted accounting principles.

The report shall state whether such principles have been consistently observed in the current period in relation to the preceding period.

Informative disclosures in the financial statements are to be regarded as reasonably adequate unless otherwise stated in the report.

The report shall either contain an expression of opinion regarding the financial statements, taken as a whole, or an assertion to the effect that an opinion cannot be expressed. When an overall opinion cannot be expressed, the reasons therefore should be stated. In all cases where an auditor's name is associated with the financial statements, the report should contain a clear-cut indication of the character of the auditor's examination, if any, and the degree of responsibility he is taking.

NON-STATISTICAL SAMPLING GUIDELINES

APPENDIX 4

**AGREEMENT TO ACCEPT AUDIT SAMPLING PROCEDURES
BETWEEN THE LOUISIANA DEPARTMENT OF REVENUE
AND
SAMPLE TAXPAYER, INC.**

Pursuant to R.S. 47:1541 and R.S. 47:1542, the Louisiana Department of Revenue, hereinafter referred to as the Department, exercises its authority to audit or investigate the place of business, the books, records, papers, vouchers, accounts and other documents of the undersigned taxpayer for the purpose of determining the correct amount of tax.

In accordance therewith, the undersigned taxpayer enters into agreement with the Department to project the use tax liability based upon such examination for the January 1, 2000, through December 31, 2001, audit period. The method of sampling shall be agreed upon by the taxpayer, attached to, and made a part of this agreement.

Representing Sample Taxpayer, Inc.

Date

Representing Louisiana Department of Revenue

Date

If the signer is not an officer of the corporation, please attach written certification from an officer of the corporation or the Board of Directors verifying that the signer is authorized to act on behalf of the taxpayer in this matter.

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**SAMPLE TAXPAYER, INC.
SAMPLING OF ACCOUNTS PAYABLE TRANSACTIONS
AUDIT PERIOD: 1/1/00 THROUGH 12/31/02**

The population of accounting entries to be audited will be accounts payable transactions from selected general ledger accounts. The accounts determined to have no tax consequences that have been excluded are listed on the attached exhibit. Transactions greater than or equal to \$25,000 will be audited in detail. A computer generated random sample of transactions has been chosen for audit. The sampling unit is defined as an individual entry on the accounts payable journal. If this item does not represent all items on the invoice, only the sample unit will be reviewed unless other items on the invoice are also sample or detailed items or they are charged to non-selected accounts, which may be independently reviewed. The sample transactions have been analyzed to insure that they are representative of the population.

An error ratio will be developed as follows:

$$\frac{\text{Total Dollar Value of the Errors in the Sample}}{\text{Total Dollar Value of Selected Transactions in Sample}} = \text{Error \%}$$

The projection method will be based on the ratio estimator. An error ratio will be calculated for the population except for the detailed level (which will be audited 100%). The error ratio will be applied to the total dollar value per month of the population to calculate the total projected taxable amount for each month. This amount will be added to the audit exceptions for the transactions audited at 100% (the detailed level) and to any deficiency or refund relating to issues audited independently of this sample to determine the additional tax due for each month.

Any credit memo issued against an accounting entry drawn as a sample item will be taken into consideration in determining the taxability and/or amount of any exception. Missing transactions will be assessed. However, supporting evidence and reasonableness will be used to determine if the transactions should be taxed.

Each transaction is examined for overpayments as well as underpayments of tax. Therefore, no additional refund will be allowed for the selected accounts included in this sample audit. It is agreed that no other sample or detailed audit will be made by the Department or the taxpayer of the audit period for the transactions included in the population.

Acknowledgment: Taxpayer _____
LaDor _____

NON-STATISTICAL SAMPLING GUIDELINES

APPENDIX 5

SAMPLING PLAN FOR NON-STRATIFIED SAMPLE AUDIT

TAXPAYER NAME	BMF Number
AUDIT PERIOD	LEAD AUDITOR

This form should be included with the Audit File as documentation for all sampling procedures and all decisions made by the auditor concerning sampling.

1. **Define Objectives of the Test:**

2. **Define the Sampling Unit:**

3. **Explain which records for the sample periods are to be examined. New and additional information as discovered or reviewed should also be included.**

4. **Size of Population to be examined:**

NON-STATISTICAL SAMPLING GUIDELINES

5. Population Definition:

- A. Specifically describe the population to be sampled (i.e., certain general ledger expense accounts and certain asset accounts.)**

- B. Explain in detail all refinements made to the population (i.e., stratifications, items removed and treated separately.)**

6. Method used to Select the Sampling Unit:

A. The method and/or reason for determining sample size:

B. Sample Evaluation

7. Decision Rules - Explain in Detail:

A. Missing items

Missing items will be taxed. However, the auditor will make reasonable efforts to determine if the item and / or the vendor would be subject to tax if the invoice were

NON-STATISTICAL SAMPLING GUIDELINES

available.

B. Voids or canceled transactions

Credit will net the debit to eliminate the transactions from the errors and from the populations.

C. Sample unit is an error but transaction is corrected at a later date

Credit will be allowed even if it is outside of the audit period.

D. Duplicate items

There should not be duplicate sample items as the auditor used a random number selection method using “without replacement”. If a sample item is duplicated, the duplicate will be removed and another sample item chosen.

E. Credit items

Will attempt to verify that there are no reversing entries.

F. Installments

Will only tax the installment amount, unless other amounts are also sample items.

G. Sample Unit is for tax only

Will not tax.

H. Overpayment of Tax

Credit will be allowed. If tax has been paid to a vendor in error, the taxpayer must request a refund from the vendor.

I. Other

None

8. Sample Projection Method (s):

Indicate estimators used and the basis for selecting the one to be used.

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9. Other Relevant Items:

Auditor's Signature