EUROPEAN COMMISSION
INTERNAL AUDIT SERVICE

Directorate B - Audit Process
Director and Head of the Audit Staff Pool

1 5 AVR. 2008

Brussels,

IAS/FMC/NK/so D(2008) 555

NOTE TO THE AUDIT SUPERVISORS AND AUDIT STAFF

SUBJECT: **Sampling methodology for the test of controls**

This note sets out the principles which underpin the selection of a sample of controls that need to be tested in order to evaluate its operating effectiveness, i.e. to assess if the control is operating as intended and mitigates the risk identified.

It provides guidance to the auditors for the population of controls to consider for testing, the minimum sample size to test, considering the nature of the control tested and the level of assurance expected, the different sample selection and test techniques and the basic principle for documenting the tests performed.

Finally, this note provides guidance on how the auditor should conclude regarding the operating effectiveness of the control tested, based on the test results.

1. DEFINITION OF THE SAMPLE SIZE

The extent of the sample to test is based on judgement and the level of assurance the auditor expects to derive from the test. The sample chosen should ensure coverage of the entire population. The sample sizes should be increased where there are greater risks that the control is not operating effectively.

1.1. Analysis of the population

While the sample size does not need to be a specified percentage of the population, identification of the total population and analysis of stratums within that population is critical to ensure adequate coverage of the entire population. The stratums of a population refer to the various characteristics of that population e.g. samples are in different locations. The stratums are the layers by which the auditor can divide the population. Stratums are used as part of sample selection so that the important layers of the population can be identified and sample items chosen on this basis if necessary.

The criteria for stratifying the population can depend on any number of factors related to the control including, the objective of the control, the risks being mitigated, the significant accounts, control locations, control operators, approval levels, escalation levels.

In addition, the samples selected should be dispersed across the audit period or at least that part of the audit period for which the control being tested has been operating.

Similarly, the sample should be extracted judgementally to cover the various control periods throughout the population. As an example for a daily control, the sample should be stratified to ensure that samples are taken from each working day (Monday, Tuesday, etc.).

This analysis should provide indication of how many samples are required to be tested to ensure full population coverage across the full period. Further considerations should also be given to:

- Complexity of the control;

- Importance (or level of reliance) of the control, i.e.

- Significance of judgement in the control operation;

- Level of competence necessary to perform the control;

- Impact of changes in volume or personnel performing the control.

1.2. Minimum Sample Size

Minimum sample sizes need to be considered together with the above factors and considering the test technique that will be used, and should not be applied blindly.

For highly critical controls or where a single manual control provides the sole support for a significant account, the auditor should consider increasing the sample size above the minimum guidelines set out below.

Manual Controls

The following table represents the minimum extent of testing necessary to support a conclusion that a manual control is operating effectively:

Frequency of Performance of Control	Assumed population of control occurrences	Minimum Sample size[1]
Continuous (multiple times per day)	Over 250	25
Daily	250	20
Frequently but less than daily	53-249	15
Weekly	52	5 to 10
Monthly	12	2 to 5
Quarterly	4	2
Annually	1	1

Automated Controls

For an automated control, the minimum sample size is considered to be ONE.

However, this sample size is acceptable only if the Information Technology General Computer Controls (IT GCC) that support that automated control are reliable, i.e. IT GCC controls are designed effectively and operating effectively.

If this is not the case then additional testing of automated controls may be required.

As with Manual Controls, other factors need to be considered before deciding on the sample size.

---

[1] Source: E&Y

In addition to the factors outlined for manual controls, the auditor needs to remember that the minimum sample size of ONE may need to be applied to each stratification within an automated control (e.g. *if a control is that approval thresholds are set in the system, then each stratification of the threshold values need to be tested. For example: Up to 50,000; 50,000 to 250,000, Over 250,000, each need to be tested*).

1.3. Sample selection

Once the auditor has determined the appropriate sample size, a sample of items from the population must be taken. Methods for selecting sample items include the following:

Nonprobabilistic Sample Selection:

In the non probabilistic sample selection method, the auditor will select items to test based on judgmental criteria. The auditor will select the items most likely to contain misstatements, with large materiality coverage, i.e. in the case of items with monetary value.

Probabilistic Sample Selection:

In this method, the auditor will select a sample such that each population item has a known probability of being included in the sample. In this case, the sample can be selected using the following techniques:

- Haphazard sampling techniques, where the selection is performed without regard to size, source, or distinguishing characteristics;

- Random number techniques, where every possible combination of elements in the population has an equal chance of constituting the sample;

- Systematic sampling techniques, where the auditor calculates an interval and then selects the items for the sample based on the size of the interval. The interval is determined by dividing the population size by the number of sample items desired.

2. TYPE OF TEST

The types of test techniques can be classified into four categories, by increasing level of assurance:

- inquiry

- observation

- examination and

- re-performance

Combining two or more of these tests can provide greater assurance than using only one technique.

Factors to consider when determining which testing technique to use include:

- Type of control i.e. manual or automated

- Materiality of the process and risk of control breakdown

- Likelihood of a control breakdown based on the complexity of the process and whether the control is automated (generally less likely) or manual (generally more likely)

- Significance of the control and how much reliance is being placed on it for comfort. A single key control for a material process needs to be tested with more rigor than if several overlapping controls are working together to provide assurance

2.1. Inquiry

Inquiry of a control's effectiveness does not, by itself, provide sufficient evidence of whether a control is operating effectively. Note, PCAOB Guidance states that inquiry alone is not sufficient evidence of a control's operational effectiveness. Inquiry means establishing whether a control is in place by asking oral or written questions. It is the weakest type of test and should be followed by another test.

2.2. Observation

Observation of the control provides a higher degree of assurance and may be an acceptable technique for assessing some controls, in particular some automated controls. It is more reliable than inquiry and involves observing the employee performing the control procedure. The audit evidence provided about the performance of a process or procedure is limited to the point in time at which the observation takes place.

2.3. Examination

Examination of evidence often is used to determine whether manual controls (e.g. the follow-up of exception reports) are being performed. This involves reviewing documentation and/or reports to verify that the control activity operated as intended. It provides assurance over certain aspects of the control; however, the quality of evidence needs to be considered.

2.4. Re-performance

Re-performance of the specific application of the control provides the highest degree of assurance that the procedure or process has operated correctly. This involves the auditor re-performing the control activity independently of the person who has already undertaken this activity. It is the best type of test to ensure that the risk mitigated by the control has not actually materialised. However it does not necessarily verify that this was due to the operational effectiveness of the control.

Commission européenne, B-1049 Bruxelles / Europese Commissie, B-1049 Brussel - Belgium. Telephone: (32-2) 299 11 11.
Office: MADO 27/043. Telephone: direct line (32-2) 2996730. Fax: (32-2) 2998363.

E-mail: francisco.merchan@ec.europa.eu

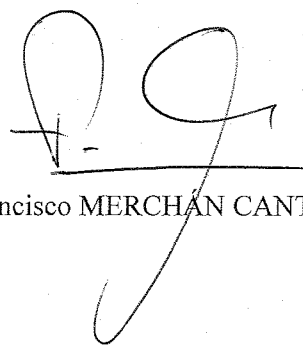## 3.   DOCUMENTATION OF THE TESTING

Documentation of the testing should provide sufficient detail to enable the exact test to be re-performed using the same sample, i.e. if the same sample item was selected again and the same test re-performed; it would produce the same result. This requires documenting detailed information about the sample chosen, providing enough information to allow identification of the exact same sample items as tested (e.g. the account number, account balance, date of report, contract reference, etc).

4.   EVALUATION OF TEST RESULTS

Once the sample items have been tested, the auditor should conclude on the actual operating effectiveness of the control. When no exception is identified, the auditor can conclude that the control is effectively operating as intended and can confirm the management reliance on the control to mitigate the risk the control is intended to cover.

If, when using the above table of minimum sample sizes, the auditor identifies one exception in the items tested, he can conclude that the test results can not support the assertion that the control is working properly, preventing him from issuing a clean audit opinion. However, given the fact that the sample sizes reflected in the table are minimum, the exception rate found in the sample can not be extrapolated to the whole population and serve as a basis to estimate the total population error rate, which, if required, would need increased sample sizes.

We consider that an exception rate exceeding 10% of the abovementioned minimum sample sizes indicates that the control is not working properly.

Francisco MERCHÁN CANTOS

Contact:
Nadia KICHAOUT, Telephone:(32-2) 2993550, nadia.kichaout@ec.europa.eu

C.c.:   Walter DEFFAA, Christophe DE LASSUS SAINT GENIES, Agnieszka KAZMIERCZAK, Fabienne LEVY