

MOZAMBIQUE  
POLITICAL PROCESS  
BULLETIN

Election e-mail special issue 10  
Sunday 28 November 2004

=====

IN THIS ISSUE

Computers and the count:  
Security increased  
Transparency refused  
Gaps remain

Polling station numbers

=====

AUDIT FORCES INCREASED  
COMPUTER SECURITY  
-- BUT ALSO CLEAR THAT  
TRANSPARENCY REFUSED  
& GAPS REMAIN

The computerised tabulation system and the audit of that system were presented to observers and the public on Saturday morning, 26 November. In presenting the audit, Carlos Garcia, director of Solucoes Lda, said that because of the inexperience of the software designers in STAE, the security of the system had been weak, and STAE had agreed to implement major changes to restrict unauthorised access and to limit access by senior STAE officials.

The audit report makes clear that opposition parties were right to fear that the data base could be manipulated and false data entered. But speaking to the Bulletin afterwards, Garcia said that with these changes, he was convinced that it was now not possible to tamper with the data base to change the results. The audit report is published this morning in

"Domingo".

The presentation of the computer system by Orlando Come, the STAE director of computing, unintentionally made clear just how much STAE has rejected demands for more transparency. Come confirmed that observers will only be able to see copies of the results sheets which are in the data base, but he went on to show a whole range of reports which will be available to STAE and provincial and national election commissions but not to observers and press. These provide exactly the sort of information that domestic and international observers have been demanding; there is no technical reason why these report should not be made public.

Meanwhile, the auditors made clear that their checks of the computer software did not cover the final tabulation steps and changes to the data that will be agreed at in Maputo by the National Election Commission. Thus the gaps noted here in the past, relating to corrections to the data base and inclusion of polling stations where there are problems with results sheets (editais) remain.

The following five sections explain:

- + the computer system,
- + the background to the audit,
- + the audit results,
- + missed opportunities for transparency, and
- + remaining problems.

## HOW THE COMPUTER SYSTEM WORKS

In each province, results sheets (editais) are put into a computer data base. The system is a standard one for accurate data input: every results sheet is typed in twice by two different people. If both are the same, the result is accepted; if there are differences due to typing errors, the edital is rejected and put in for entry again in the next shift.

After that, the results sheets are checked in various way and rejected if they violate a range of criteria -- for example if there are more votes than people who voted, or if a polling station number is wrong or duplicated. These editais are then returned to the provincial election commission (CPE) and provincial STAE, which will analyse the edital and

the more detailed minutes (acta) of the polling station to see if they can clean up and correct the edital. If they can, it is resubmitted in the normal way.

Every accepted edital goes into a data base. When all data has been input, a series of reports can be generated, giving the final count. This is also copied onto a CD-rom and sent to Maputo. And the result is announced in the provincial capital by the CPE.

A similar process takes place in Maputo. Copies of all editais are sent to Maputo where a provisional count is done by national STAE. This follows the same procedures as the provincial count.

In Maputo the provisional and provincial counts are compared and an attempt is made to adjust differences between the two. All editais which were excluded at provincial level are sent to the Maputo and the CNE and national STAE attempt to clean and include at least some of them. All invalid votes (nulos), more than 500,000 individual ballot papers, are sent to Maputo and reconsidered; up to one-third are normally accepted and included.

The final results announced by the CNE then are the provincial results, modified by changes based the provisional count, with additions of cleaned editais, and with additions of accepted nulos.

The data base software is Oracle, using Visual Basic for input and analysis and Crystal Reports to generate the various reports.

## BACKGROUND TO THE AUDIT

Writing of new tabulation software only began in September, which was very late, and was done entirely in-house by STAE staff. (The audit report comments that the programmers had only a limited knowledge of Oracle but a good knowledge of Visual Basic.) At the last minute it was decided that the software needed an independent audit and an urgent tender document was sent to five Maputo-based companies 10 days ago. Of those, only one, Solucoes Lda, said it was prepared to do the audit within four days. Their team worked night and day, made detailed recommendations to STAE for security changes, and reported to the CNE on Friday.

Although the audit seems to be the best that could be done in a short time and on short notice, many questions have been raised as to why STAE and the CNE, yet again, left the software writing and audit until the last minute. Surely it must have been obvious six months ago that such an audit would be needed.

## AUDIT DEMANDS MANY SECURITY CHANGES

Solucoes Lda has experience in banking systems and its audit concentrated on security. It exposed gaping holes in the security which would have allowed system administrators and unauthorised outsiders to change data and especially to add phantom polling stations.

It concentrated on the final data base and on making sure that data base could not be changed. The question was always asked by Renamo and observers: yes we can see on a computer screen the editais which has been input, but can we be sure that data is actually used in the final count? The answer was no; that data could have been changed afterwards. So the first step was to prevent tampering with the data base.

Solucoes demanded an end to unimpeded access by the system administrator. Instead, any access to the data base itself can only be made in the presence of three different people, each with their own password.

Furthermore, in the initial version both the system administrator and the next level down, the system supervisor, could insert editais into the system on their own. This has now been blocked; editais can only be entered by the double entry system set out above. Various other changes have been made to ensure that editais cannot be entered more than once, which appears to have been possible before and might have allowed these votes to be counted twice.

Two other important changes have been to prevent STAE programmers and others changing either the software itself or the programmes for producing reports. Various changes have increased password security throughout the system, making it harder for people with partial access to gain access to other more critical parts of the system.

Finally, based on Solucoes recommendations, the log system has been improved so that there will be detailed records of any critical interventions, showing what was done and by whom. This would, in principle, allow a later investigations of any possible fraud.

The other recommendation of Solucoes was much tighter control of the physical editais and the data input process, to prevent fake editais, to prevent editais disappearing, and to prevent the fraud which occurred in Nampula in 1999 when pairs of data input staff co-operated in order to shift the same number of votes on some editais from Frelimo to Renamo.

One gap in this part of the system remains: Solucoes recommended an additional system to log into the computer each edital as it arrives, and to print out a list of editais not input; because of shortages of computer equipment in the provinces, this will only be implemented in Maputo with the system for the provisional count. So there are still possibilities of editais disappearing, although this has been substantially reduced.

#### MANY REPORTS EXIST WHICH OBSERVERS CANNOT SEE

A surprise in the software presentation is that many of the reports of the progress of the tabulation are being done automatically, but are not being shown to observers and press. This must raise questions about CNE willingness to be transparent.

Data entry staff will work in two-and-a-half hour blocks and then take a break. During this break, the computer then does all its checks, and puts accepted editais into the data base. It also produces two reports: one lists editais accepted and rejected, and the other gives the total vote up to that time. These provide precisely the detailed up-to-date information national and foreign observers have been demanding, but under current plans, these reports remain secret.

The other key report which will be prepared automatically is the report of the comparison in Maputo of the CD-roms from the provinces against the provisional data base set up in Maputo. The report will list all differences between the two, on a polling station by polling station

basis. Differences are inevitable, but If differences are minor, having access to this list would clearly increase public confidence. If differences are significant, it would alert observers to possible problems. But it seems unlikely that this report will be made public.

So, information exists to allow considerably more transparency and calm observer concerns -- if the CNE were willing to release the reports as they are produced.

#### REMAINING PROBLEMS:

HASTE, SPLIT BOOKS, MAPUTO

Although the system is better, four problems remain, relating to passwords, haste, split registers, and final tabulation in Maputo.

In 1999 the system also required multiple passwords, but the holders of the keys were often CPE members who were not computer-literate, and the passwords became known. Also, in 1999 a record was kept of passwords in case of emergency, for example if a keyholder became ill and could not get to the computer centre. This is, perhaps, inevitable, but it does also compromise the security somewhat.

Also in 1999, as deadlines approached, many of the security systems were bypassed in order to meet the deadlines for results. This led to the inclusion of editais, for example, which did not meet the tight computer-imposed criteria for the data base. It is not clear if this will happen again. In some provinces and at national level, the final days were quite chaotic; poor records were kept and the chances of manipulation increased. There will also be problems because of errors in the original data base of polling stations, which is only being entered in haste as the last minute; there will be huge pressure to bypass security to correct these errors.

The auditors identified the problem of merged and transcribed register books, which they said had to be dealt with outside the normal system, but did not specify how. This refers to the situation where the same register book is used at several polling stations. Typically this is where a mobile registration brigade stopped at several villages, each stop will have a polling station, but all voters are registered in the same book. It seems that the computer system cannot handle this easily. One problem is that in

some cases the total number of voters in the register is listed as the number of eligible voters at each of the polling stations. For example, suppose one book has 300 people registered at each of three polling stations; the record may say each polling station has 900 voters, because that is the total number in the book. This confusion occurred in Xai-Xai last year in local elections. Of more than 80 polling stations, 13 were identified as having the same register book number as another polling station, and different lists gave the number of voters as ranging between 50,000 and 70,000. This will be a serious problem in many provinces where the use of mobile brigades has led to a very large increase in the number of polling stations. It is estimated that 2000 register books are being used for more than one polling station. It remains unclear how these will be dealt with in the tabulation, and leaves space for manipulation.

The audit of the computer software and the sharply increased security should at least reduce the possibility of manipulating the data. However the audit stops at the door of the CNE and it is there that fears about manipulation remain.

CNE with STAE in Maputo must make two sets of changes to the data. First, it must make decisions about problem editais which were not included in provincial counts. Adding in some of these editais may require access to the data base since the CNE could legitimately decide to accept some editais which violate the strict criteria set in the computer system. Will there be a clear a record of this and will it be made available early enough for observers to assess it? Second, there may changes made after the comparison of the provisional and provincial data bases. Will there be public statements on what changes are being made and will these be reported as corrections are made so that observers can monitor the changes?

In 1999, the final national edital was not produced by the main computer system, but was written on a laptop computer by senior STAE officials. Under immense pressure of time, the same thing is likely to happen this time.

There has been substantial discussion about observers initially wanting access to CNE and CPE meetings, which the CNE insists must remain closed. Access to meetings becomes much less important if there is prompt and regular information about decisions. But if meetings are in secret and decisions remain secret, the possibility of manipulating the final tabulation remains.

## POLLING STATION NUMBERS

The unwillingness of CNE to publish a full list of polling stations by number continues to make it more difficult to check on the process. The CNE published a list of how many polling stations will be in a particular place, such as an individual school, but has refused or been unable to give the number of the polling station and the number of the registers being used at that polling station. It was made clear at the briefing yesterday that the computer data base used by CNE uses these numbers, so there must eventually be an agreed list.

This creates difficulties for two groups of people. Voters cannot check in advance to see where their polling station is, and must trust CNE promises that it will be in the same place as they registered (which has not always happened in the past and is not required by law).

Similarly, the lack of a full list by number makes it much more difficult for parties and observers to set up their own data bases for parallel counts and to check to see that extra polling stations or additional voters have not been added.

=====

## MOZAMBIQUE POLITICAL PROCESS BULLETIN

Editor: Joseph Hanlon ([j.hanlon@open.ac.uk](mailto:j.hanlon@open.ac.uk))

Deputy editor: Adriano Nuvunga  
with reports from 50 correspondents

Material may be freely reprinted and circulated.  
Please cite the Bulletin.

Published by AWEPA, the  
European Parliamentarians for Africa

=====