ON THE RANDOM MANUAL AUDIT
of the PCOS COUNT: AN ANALYSIS

1. **Republic Act 7936, Section 24** reads as follows:
   - A new Section 29 is hereby provided to read as follows:
     "Sec 29. *Random Manual Audit.* – Where the AES is used, there shall be a random manual audit in one precinct per congressional district randomly chosen by the COMELEC in each province and city. Any difference between the automated and manual count will result in the determination of root cause and initiate a manual count for these precincts affected by the computer or procedural error."

2. **Comment**: Oversampling in districts with small population. For example,
   - BATANES PROVINCE with 1 congressional district, 30 clustered precincts, and 10,194 registered voters. A clustered precinct in BATANES PROVINCE has 1/30 or 3.33% chance of being chosen in the Audit. Its House representative is Hon. Henedina R. Abad.
   - MUNTINLUPA CITY with 1 congressional district, 329 clustered precincts, and 291,333 registered voters. A clustered precinct in MUNTINLUPA CITY has 1/329 or 0.304% chance of being chosen in the Audit. Its House representative is Hon. Rodolfo G. Biazon.
   - PASIG CITY with 1 congressional district, 422 clustered precincts and 343,567 registered voters. A clustered precinct in PASIG CITY has 1/422 or 0.237% chance of being chosen in the Audit. Its House representative is Hon. Romulo T. Roman.
   - ANTIQUE PROVINCE with 1 congressional district, 656 clustered precincts, and 288,338 registered voters. Its clustered precinct has 1/656 or 0.152% chance of being chosen in the Audit. Its House representative is Hon. Paolo Everardo S. Javier.

3. In the Minute Resolution No. 10-0453, the COMELEC decided to increase the number of precincts to be audited per district. The resolution specified 5 clustered precincts.

4. **Comment.** The oversampling was worsened.
   - In BATANES, the probability of success of a clustered precinct to be chosen is now 5/30 or 16.667%
   - In MUNTINLUPA CITY, the probability of success of a clustered precinct in the city is 5/329 or 1.520%.
   - In PASIG CITY, the probability of success of a clustered precinct in the city is 5/422 or 1.185%.
   - In ANTIQUE, the probability of success of a clustered precinct in the province is 5/656 or 0.762%.

5. In a random manual audit, if the audit unit is a clustered precinct, then every clustered precinct has an equally likely chance of being chosen.

6. However, according to the Election Statistics of the COMELEC as shown in its webpage at http://www.comelec.gov.ph/statistics/2010natl_local/summary_by_region/national.html, there are 76,347 clustered precincts. Also, there are 229 congressional districts. Hence, the sample size is equal

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to 5 x 229 = 1,145 clustered precincts. Thus, a clustered precinct in the country had 1145/76347 or 1.49973% probability of being chosen. This means that a clustered precinct in BATANES had 11.11 times more likely to be chosen than a typical clustered precinct in the country and 21.87 times more likely to be chosen than a clustered precinct in Antique. Also, the sample precincts in BATANES represented 11.67% of the entire province, while in Antique, the sample precincts represented 0.76% of the province.

7. Therefore, the design of the COMELEC-commissioned Random Manual Audit is flawed.

8. The RMA that was conducted only examined the positions for president and vice-president in the national level and the positions for Mayor, Member of the House of Representatives, and the Governor in the local level. The Party-list Representatives and the Senators were not examined as well as the positions for the Vice-Mayor, Vice-Governor, etc.

9. According to COMELEC Resolution 8834, "the Random Manual Audit aims to discover if the cause of the error is attributable to the PCOS, and thereafter seeks to determine if – with the error accounted for – the PCOS count is still reliable."

10. If the RMA was conducted to determine whether the "PCOS count is reliable", then the RMA should examine all the positions in the last election.

11. Out of 1,145 selected clustered precincts, a total of 1,046 sample clustered precincts were finished. The sample clustered precincts involved a total of 540,942 persons who voted under the AES.

12. In the position of the President, the Technical Working Group (TWG) of the RMA reported a difference of **2,653** between the number of votes of the AES and the number of votes of the RMA. The difference is called "VARIANCE", and a variance is considered "LARGE" by the TWG if it is double-digit and if it exceeds more than 1% of the total actual votes in the said precinct. "Large Variances" were validated twice, on June 17, 2010 and on July 7, 2010. The TWG reported that the accuracy rate in the presidential level is (540,942 – 2,653)/540,942 = 0.9951 or 99.510%. Thus, the error rate is 0.49%. If the total number of voters who actually voted was 38,149,371 (National Canvass Report No. 10, July 22, 2010), then the margin of error is around **187,100 votes**.

13. In the position for the Vice-President, the total variance after the final validation was **2,180 votes**. This gives us an accuracy rate of (540,942 – 2,180)/540,942 = 0.99597 or 99.597%, an error rate of 0.403% and a margin of error of **153,742 votes**.

14. The TWG-RMA arbitrarily imposed an "allowable margin of variance" of one percent. This imposition is not supported by any document from the COMELEC. However, in the REQUEST FOR PROPOSAL of the COMELEC for the AUTOMATION OF THE 2010 SYNCHRONIZED NATIONAL AND LOCAL ELECTIONS, dated March 11, 2009, page 15, COMPONENT 1-B, PRECINCT COUNT OPTICAL SCAN (PCOS), we have "10. The system shall count the voter's vote as marked on the ballot with an accuracy rating of 99.995%" or an error rate of 0.005%. Hence, the "allowable margin of variance" is 0.005%. This is 1 error out of 20,000 trials. However, 1% is 200 errors out of 20,000 trials.

15. Hence, if there are 540,942 votes, then the allowable margin of variance at 0.005% is equal to 27 votes. Therefore, the actual variance **2,653 votes** in the presidential level is over 2,653/27 or over 98 times than the allowable limit. *EU-CenPEG Project 3030*