

**ELECTION  
FRAUD**

PRIMARY  
DOCUMENTS

# PROBLEMS WITH BALLOT COUNTING DEVICE

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## Synopsis for “Problems with Ballot Counting Device”

A ballot paper sorting machine, which is an electronic ballot counting machine, was used in the April 15<sup>th</sup> general election in South Korea. The ballot paper sorter system is composed of a sorter, a control computer, and a printer. A number of problems have been reported related to this type of system. Among these problems are alleged vulnerabilities owing to the specific chipsets that are integrated inside the electronic ballot counting machine, and a communication device that connects externally. Also, in a certain district during the April 15, 2020 election, a computer showed evidence of malfunction.

Also, Korean-made ballot counting machines have a certain reputation owing their use overseas in elections that have been marred by claims of electoral irregularities.

To address such concerns that raised doubts about the South Korean electoral process, the National Election Commission (NEC) held a press conference on May 28, 2020. Although the National Election Commission made an effort to explain the system that includes the ballot sorter the control computer, and the attached printer, some observers claimed the event was staged for the media – rather than an effort for real transparency.

This paper closely examines the varied issues of concerns with the ballot paper sorting machines, to include the potential for manipulation and other questionable performance during the April 15, 2020 election that would raise concerns over the election outcome and the electoral process.

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# Problems with the Ballot Paper Sorting System<sup>1</sup>

## (Electronic Ballot Counting Machines)

### 1. A ballot paper sorting machine is an electronic ballot counting machine.

The term ‘ballot paper sorter’ is one used by the National Election Commission (NEC) of the Republic of Korea; this system is comprised of a sorter, a control computer, and a printer – this makes up one set of the ballot paper sorter system. As a system (the ballot paper sorter machine) that supports the manual counting of ballots, classifying or calculating the ballots into valid, invalid ballots or by the candidate, the ballot paper that comes out of the ballot box is first divided by each candidate’s vote as either valid or unclassified, and this system plays the role of allowing a convenient way to carry out the next level of manual counting of ballots such the examination, aggregation etc. of the ballots.<sup>2</sup> However, there are allegations now that this system is not just a simple sorting machine, but rather an ‘electronic ballot counting machine’, and therefore, it is what would be termed a ‘suspicion of the ballot sorter machine’s diversion’, which will be described in detail.



### 2. Set-up/configuration of an electronic ballot counting machine.

The electronic ballot counting machine system is comprised of a sorter, a control computer, and a printer – this makes up one set of the system and operates on a set-level configuration.

Classification	Photo	Configuration and Function
<b>Ballot paper sorting machine</b>	<p>(From L to R) * <b>Main unit;</b>  <b>Image recognition</b>            * <b>Connections; Sort slot 1; Sort slot 2, Sort slot 3</b>            * <b>Ballot paper insert slot; Power switch, ballot length adjuster</b></p>	<ul style="list-style-type: none"> <li>* <b>Composed of image recognition, connections, and classifications (loads);</b></li> <li>* <b>Sorting and/or calculating ballots by validity or by candidate (party);</b></li> <li>* <b>Load sorted ballots into specified sort boxes.</b></li> </ul>

<sup>1</sup> There are some doubts regarding the official term for the ballot paper sorting machine; henceforth the term ‘electronic ballot counting machine’ will be used to describe the system.

<sup>2</sup> “Regarding the ballot sorting machine”, National Election Commission, November 2012

<p><b>Control computer</b></p>		<p>* <b>Configured with a monitor and main body with computing components;</b>  * <b>‘Reads’ the image of the ballot paper sent by the sorter, and orders classification of the ballot paper by the candidate (party).</b></p>
<p><b>Printer</b></p>		<p>* <b>Printing of the sorting results by ballot box or town, township, and county/neighborhood (provisional ballot count status table)</b></p>

### 3. Problems with the electronic ballot counting machines.

#### 3.1 The problem with the chipset integrated inside the electronic ballot counting machine.

Professor Benjamin Wilkerson appeared on the YouTube channel called the Lee Bong Gyu TV, where he explained that the Xilinx ARM chipset integrated inside the electronic ballot counting machine is far superior than the CPU installed in an average household-use PC – a high-performance semiconductor that is fully able to control the counting machine externally with other various functions that can be implemented.<sup>3</sup>

In particular, whether it is an ARM chip or a Xilinx chip, just having either one of these chips is more than enough to carry out the task of sorting ballot papers as explained by the NEC, yet the intentional inclusion of two high-performance chips in a ballot counting machine allows the machine to use one chip to carry the processing work (counting of ballot papers) done by the other chip to be manipulated via firmware by using an external communication source or a USB. In other words, this means that a dual operating system is possible. Two programs can be run concurrently in order to manipulate in any way possible, the data collection that is carried out by the electronic ballot counting machine. Furthermore, with the additional, second chip installed, when the power is turned off to the machine, a reset can be initiated in order to destroy any evidence.

#### 3.2 An electronic ballot counting machine with a communication device that connects externally.

Article 278 of the Public Official Election Act refers to Voting and Counting of Votes by Computer Systems “in order to swiftly and correctly manage such election affairs as the voting, ballot-counting and others.” However, Article 5 of the Act stipulates that an electronic ballot counting machine can only be used in by-elections and smaller scale elections and is illegal for use in general and presidential elections. Regarding this, the NEC has not used the term, ‘electronic ballot counting machine’, but rather a ‘ballot sorter’ to simply help with the sorting of

<sup>3</sup> <https://www.youtube.com/watch?v=6HE0n47koeM&feature=youtu.be>) Lee Bong Kyu TV

ballots and has stated that there are no communications devices to allow for external connection.

However, on May 11, 2020, then-National Assemblyman Min, Kyung Wook said in a press conference at the National Assembly meeting hall that an internal whistleblower revealed that what the NEC called a simple ‘ballot sorter’, indeed had a DNS server address inputted into the machine, and had the testimony and evidence to back up this claim, which in effect means that the machine is indeed connected to a network to allow for remote control.

In response to this, the NEC claimed that since there is no connection via Wi-Fi, no outside intervention or hacking can be possible, but communications and IT experts have said that even without a Wi-Fi connection, the internal database of a public institution’s computer room can be easily accessed from the outside if there is only just one inside collaborator. This implies that it is possible that with the aid of China and its Central Election Commission, hacking and manipulation can be carried out with a small number of people.<sup>4</sup>

### **3.3 Computer function shown by the ballot sorter in the Seongbuk-Gu district election ballot counting process.**

#### **3.3.1. The process of downloading basic code No. 2905 when replacing a ballot paper sorting machine at the Seongbuk-Gu National Election Commission office.**

A YouTuber who goes by the name GIT4K posted a videoclip on May 19<sup>th</sup> titled, “[Exclusive] Confirmation of connection saved screen between an electronic ballot counting machine and an NEC server” and uploaded his analysis. GIT4K is an acronym for Global issue Tracker for Korea, and GIT4K was able to confirm this using video footage taken at a ballot counting office in the Seongbuk-Gu district in Seoul, as shown on the YouTube channel ‘Gong-sun-gam TV’, run by the civic group the ‘National People’s Monitoring Group for Fair Elections’.

#### **3.3.2. Evidence of miscellaneous, other computer specification introduced to the system.**

Prior to this, the inside of the electronic ballot counting machine, which is being stored at the Guri city NEC office, was discovered to have the ARM CPU chip and the Xilinx company’s FPGA memory array chip, and there is analysis by experts such as Prof. Benjamin Wilkerson that there may have been manipulation of the sorting machines by hackers, due to the presence of these chips.

### **3.4 Truth revealed during the National Election Commission demonstration (press conference) on May 28, 2020.**

#### **3.4.1. Details of admitting during the demonstration, the voluntary removal of the laptop computer’s LAN card.**

The laptop computer shown during the demonstration (presumed to be an LG Electronics product) is a 2014 model, as announced by the male NEC employee. However, the laptop is an older 2014 model, and the laptops used for the April 15 general elections is a model that cannot have parts separated from the integrated body. That is to say, the LG Gram model laptops

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<sup>4</sup> <https://youtu.be/V86G2Joudf4> Park Hoon Tak TV

starting from model year 2018 have the LAN card and the power switch as one integrated design, so the LAN card cannot be removed separately.<sup>5</sup> As a result, the NEC employee stated as if the voluntarily removed LAN card laptop was a model that never had a LAN card installed in the first place.

### **3.4.2. Professor Benjamin Wilkerson’s command computer testimony.<sup>6</sup>**

The control computer can be checked (the circuit board was confirmed to be built on December 14, 2017). The NEC came up with an excuse that they used 2 laptops to increase the control speed of the motor sensor. However, this was far from reality, and even though the surface is weathered down, it is quite certain that there was computer logic via the ARM CPU, and manipulation via the FPGA.

### **3.5 Instrumentation errors with the electronic vote counting machines.**

There is a video footage that captured a scene in a ballot sorting machine whereby ballot papers that clearly had votes for candidate number 2, or were not marked at all, going over to the candidate number 1 sorter slot. In the city of Buyeo voting district, the ruling party candidate had more votes when counted via the ballot sorter; however, when a manual count was done, the ruling party candidate trailed by over 100 votes. There was even a case in the Seongbuk district, Seoul ballot counting office where the electronic vote counting machine read 1810 votes as 1680 votes.

## **4. The National Election Commission’s explanations, and problems.**

### **4.1. Explanations**

In the afternoon of May 28, the Gyeonggi Province, Gwachun City National Election Commission large conference room, the “Open demonstration of the elimination of allegations of rigged elections was held. The NEC’s Election Bureau employees began to take apart a ballot sorting machine. The employees showed those gathered, the motors and other parts that are in a ballot sorting machine. Through this action, they were trying to confirm that there were no communication devices in these machines. Furthermore, they detached the command computer laptop and opened the cover. The LAN card that would normally be inside a notebook, was nowhere to be seen in this laptop. The NEC official said, “to take as many pictures as you want,” and further stated that “it is impossible to use wireless communication to manipulate the ballot sorting machine to change the votes.”<sup>7</sup>

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<sup>5</sup> <The White Paper on the April 15 Rigged Elections>, WoonamWiki, see details on the 5.2 LG Gram laptop.

<sup>6</sup> “Fully Refuting the NEC Demonstration/Press Conference,” Lee Bong Gyu TV, May 28, 2020

<sup>7</sup> Dong-A Ilbo; dongA.com – Contents from article (May 29, 2020, Reporter Yoon, Dabin)

## 4.2. Problems

There must be answers regarding the NEC's bidding announcement containing the communication function in machines, the question that laptops were not used during the April 15 general elections, the problem of using high-performance computer chips as mentioned earlier in this report, and whether this is cause for votes to be invalidated according to the Public Official Election Act.

## 5. The domestic, South Korean electronic ballot counting machines at the heart of international rigged election scandals.

The Association of World Election Bodies (A-WEB)) is an international civic organization founded in 2013 under the leadership of the National Election Commission to support the establishment of democratic electoral systems in developing countries. The National Election Commission supports the entire budget of the Association, and the NEC chairman is required by law to supervise the A-WEB overseas cooperation projects and manage and supervise the A-WEB. In this A-WEB overseas cooperation project, the fact that the National Election Commission has largely guaranteed the quality of the domestically made electronic ballot counting machine, which has recently been involved in election fraud scandal internationally, is putting more weight on the possibility of the manipulation of electronic voting machines introduced in domestic elections.

There is the well-known case of the May 2018 Iraqi parliamentary elections which used the A-WEB guaranteed electronic ballot counting machines and led to the entire election being embroiled in a shocking controversy over illegality and fraud. According to media outlets reporting on this, reports showed that the results of the electronic ballot counting, and the results of the manual balloting were up to 12 times the difference. As the allegations of fraud increased, the government of Iraq cancelled the results of the electronic counting and carried out a manual recount, and furthermore the Iraqi Parliament pushed through reforms of elections laws to prohibit the usage of electronic voting equipment in all future elections.

Also, in December of the same year, the Democratic Republic of the Congo (DRC) held presidential elections in which yet again, A-WEB-guaranteed electronic ballot counting machines were to be used; then-US Ambassador to the UN, Nikki Haley, said in an interview with the Washington Post upon hearing this news that, "trusted, tested, transparent and easy-to-use voting method," i.e., paper ballots, must be used for the elections. Furthermore, in late 2017, the Republic of Korea Ambassador to the DRC sent a private communique to Seoul regarding the introduction of electronic ballot counting machines and said, "Western nations including the US, and the UN, have this perception of electronic voting equipment being a vast, corrupt, and rigged project."<sup>8</sup>

## 6. Potential for manipulation and mixed-bundle ballot papers, due to electronic ballot counting machines.

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<sup>8</sup> <http://www.newdaily.co.kr/site/data/html/2018/11/09/2018110900177.html>



## 6.1. The problem with mixed-bundle ballot papers.

The NEC provided electronic ballot counting machines to developing countries to help with their democratic elections, and in the case of Iraq and its Parliamentary elections, there were 12 times the amount of mixed-bundle ballot paper situation that happened between two candidates in a voting district, leading to outright canceling of the ballot count; in the most recent general election on April 15 in South Korea, here too there were clear instances of mixed-bundle ballot papers.

The issue of this happening is not just a controversy in the most recent 21<sup>st</sup> general elections; in the past, the Deoburominjoondang, or the Democrat Party and its supporters strongly took the position of outlawing electronic ballot counting machines, claiming the potential manipulation and fraud that could happen; when actual verification resulted in mixed-bundle ballot papers to occur, such as in the case of the Yeonsugu-Eul district voting area for the 21<sup>st</sup> general elections to elect lawmakers for the National Assembly, where nothing was done to resolve the allegations, it is still the same problem, and the same allegations.

The National Election Commission claims that the ballot sorting system is not an electronic ballot counting machine, but a simple ballot counting system, and that the ballot sorting is accurate, and proven through the Supreme Court's verification of election lawsuits; however, there have not been any real satisfactory explanations regarding the mixed bundle ballot papers that have been discovered going back to the past to now. And the same position is repeated verbally by the NEC in that there is complete integrity in electronic ballot counting machines, that mixed bundle ballot papers and manipulation are impossible, and never once has the NEC provided a clear-cut answer or solution to the mixed bundle ballot paper situation occurring.

Looking at past cases, the 18<sup>th</sup> presidential elections that pitted Park Geun-hye against Moon Jae-in, in the 'Mok-Dong 4th Voting District' ballot counting, the Saenuri Party candidate Park Geun-hye received 2629 votes with ballots that passed through the electronic ballot counting machines, and were automatically sorted, to Moon Jae-in's 1530 votes. The results of the examination of the vote tally and aggregation confirmed through the inspection resulted in Park getting 1169 votes, as opposed to Moon's 1445 votes. Furthermore, in Mok-1-Dong, Shinjung-2, 3, 4, and 6-Dong, in Shinwol-1, 4, 5-Dong – in the Yangcheon-Gu district alone there were 14 voting areas (out of the entire Yangcheon-Gu district's 107 voting areas) that had a clear difference between the tally done by the electronic ballot counting machines, and by manual inspection and examination. This was a situation that called for a clear explanation, but the NEC at that time claimed that it was not an error function of the machines, but rather an operational mistake; the matter was closed up in this manner, and to this day there still remains a national-level suspicion regarding the electronic ballot counting machines.<sup>9</sup>

## 6.2. The possibility of vote count manipulation.

In this regard, the documentary <The Plan> by Kim Eo-jun, a progressive figure who made the film to prove the operation of the electronic ballot counting machine, shows the results of

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<sup>9</sup> [https://newsis.com/ar\\_detail/view.html?ar\\_id=NISX20131028\\_0012468338&cID=10301&pID=10300](https://newsis.com/ar_detail/view.html?ar_id=NISX20131028_0012468338&cID=10301&pID=10300)

experiments that were carried out that show that the operation of the counting machine can be done so easily as soon as the software is accessed. And it strongly raises suspicions about the manipulation of the problem of unclassified votes that the ballot counting machine failed to recognize, and the download of a program that confirms the completion of the ballot counting by connecting the ballot counting machine to the network just before the ballot counting commences. In this way, from the past there have been problems of mistrust due to electronic counting machines and manipulation through software, but the NEC only repeats the same statement that manipulation is impossible, instead of trying to find out why it is impossible, and it is not even trying to persuade the citizens of South Korea from a technical perspective and thus, the NEC itself has fostered the growth of distrust between the people and the NEC.

These kinds of examples from the past, and of allegations that have been raised so far, we know that the possibility of manipulation through the electronic ballot counting machines is not one that does not have any basis or merit, nor is it a false claim without any grounds, and that this most recent 21<sup>st</sup> general elections were carried out without any solution or a fix to the issue of mixed bundle ballots that arises from the use of electronic ballot counting machines.<sup>10</sup>

## **7. Conclusion**

### **7.1. The questions that need to be raised.**

In addition to the above-mentioned points, the electronic ballot counting machine (ballot paper sorting machine) which has a wireless communication capability existing in the system (LAN card, etc.) to allow for communication with an external source; the manipulation of vote counting due to the electronic ballot counting machine (the machine sorting a ballot to a different sorting slot in the machine, e.g. a ballot that is not for candidate 1, going to candidate 2); the ballot paper screening equipment that has data transfer and printing ability in order to leak data and information; election equipment that are supposed to use business-only lines and not Internet lines/cables by law, but instead are connected via an Internet line or wireless communication line; Chinese nationals working on early voting equipment and potentially manipulating the voting results; the mixed bundle ballot paper situation occurring while the ballots were sorted, leading to confusion in the Buyeo city vote counting office; appointing Chinese nationals as vote counting office employees; problems with Hantle System's election equipment; finally we can see the importance and need for preserving all the parts that are associated with the electronic ballot counting machine such as the server, communication repeater, computerized equipment, etc.

### **7.2. Sub-conclusion**

This past May 28<sup>th</sup>, the National Election Commission (NEC) invited only members of the media and put on what can easily be called a 'show-off' show in putting together a demonstration in a one-time event, without addressing the allegations of election fraud, and then two days later on May 30<sup>th</sup>, the 21<sup>st</sup> National Assembly went into session.

The NEC held an on-site demonstration event to show that the electronic ballot counting

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<sup>10</sup> <https://www.youtube.com/watch?v=aGGikPMNn2w#action=share> <The Plan>YouTube clip

machines (the NEC uses the term, 'ballot counting machine') have no issues or problems, and regarding the 40 or so allegations that were raised before May 28, the NEC feels that it has sufficiently addressed those issues and provided materials as well, so the NEC's position is that they fully explained and clarified that the general elections were not rigged.

However, after May 28, there continues to be a steady stream of evidence (in the form of pictures of video clips) and circumstances that confirm that the April 15 general elections were fraudulent.

Just because there were similar cases in past presidential and general elections (such as statistical figures, etc.), does not mean that this most recent election on April 15 is without problems. Rather, even the past presidential or general elections may have been fraudulent ones as well.

Therefore, the National Election Commission has a duty and obligation to address each and every allegation that is coming out of places all over the country, and to thoroughly argue each point and explain that the general elections were not a fraudulent one. And should it be revealed that the elections were indeed fraudulent, the rigged elections need to be declared void and null, and a re-election should be carried out as soon as possible.

