

## Fw: Supplementary Information to the Investigating Committee on the 17th Aug 2020 Grid Failure

"Rahula Attalage" <rattalage@hotmail.com>

September 25, 2020 3:38 PM

To: "sulakshanajayawardena" <sulakshanajayawardena@gmail.com>, hsamarakoon@yahoo.com, janakawnl@gmail.com, janakaalu@yahoo.com, lavindi2003@yahoo.com, "lilantha" <lilantha@eng.pdn.ac.lk>, chandimadp@uom.lk

FWD..

**From:** Sanath Wijetunga <[eescphm@gmail.com](mailto:eescphm@gmail.com)>

**Sent:** Friday, September 25, 2020 1:01 PM

**To:** Rahula Attalage <[rattalage@hotmail.com](mailto:rattalage@hotmail.com)>; Sanath Wijetunga <[eescphm@gmail.com](mailto:eescphm@gmail.com)>

**Subject:** Re: Supplementary Information to the Investigating Committee on the 17th Aug 2020 Grid Failure

## Supplementary Information to the Investigating Committee on the 17th Aug 2020 Grid Failure

Q1	Clearly explain the planned steps from A to Z to be executed on the functional test of the Bus Coupler using two isolator switches (Q1 & Q2), two earth switches (Q51 & Q52), and the bus coupler breaker (Q0) {sequence of the functional test from the beginning to the completion of the job - No.265}
A1	<p>Get the clearance from NSCC to perform the job          Transfer all the loads/ lines to Bus Bar 2          Open the CB – Q0 of Bus coupler          Open the isolator switches Q1 and Q2          Close the earth switches Q51 and Q52          LCC: Turn the Local/Remote switch of the MIMIC panel, turn to Local position  <b>Functional test on Q1 and Q51</b>          Make sure Bus bar 1 at de-energize state          Open the earth switch Q51              Perform the Q1 functional tests by closing and opening                  Measure the motor current                  Measure the motor operating time                  Check for the indicator positions (GIS/MIMIC/BCU)                  Check for the limits of the operating mechanism                  Completed the functional tests on isolator Q1          Isolator Q1 keep Open State          Perform the Q51 functional tests by closing and opening              Measure the motor current              Measure the motor operating time              Check for the indicator positions (GIS/MIMIC/BCU)              Check for the limits of the operating mechanism              Completed the functional tests on isolator Q51          Earth switch Q51 close          Request NSCC to transfer the loads/ lines to Bus Bar 1 by the authorized person who has obtained the Work Permit              Load transferring steps (Coordinating with NSCC)              Open earth switches Q51 and Q52              Close isolator switches Q1 and Q2              Close the CB – Q0 of bus coupler              Transfer all lines/ loads to bus bar 1 following the instructions given by NSCC by CRO          Request NSCC to open the bus coupler for the functional tests on Q2 and Q52          Open Bus Coupler CB – Q0          Open bus coupler isolators Q1 and Q2          Close the earthing switch Q51 and Q52</p>

	<p><b>Functional tests on Q2 and Q52</b></p> <p>Make sure Bus bar 2 at de-energize state</p> <p>Open the earth switch Q52</p> <ul style="list-style-type: none"> <li>Perform the Q2 functional tests by closing and opening</li> <li>Measure the motor current</li> <li>Measure the motor operating time</li> <li>Check for the indicator positions (GIS/MIMIC/BCU)</li> <li>Check for the limits of the operating mechanism</li> <li>Completed the functional tests on isolator Q2</li> </ul> <p>Isolator Q2 keep Open State</p> <ul style="list-style-type: none"> <li>Perform the Q52 functional tests by closing and opening</li> <li>Measure the motor current</li> <li>Measure the motor operating time</li> <li>Check for the indicator positions (GIS/MIMIC/BCU)</li> <li>Check for the limits of the operating mechanism</li> <li>Completed the functional tests on isolator Q52</li> </ul> <p>Earth switch Q52 close</p> <p>LCC: Turn the Local/Remote switch to Remote position</p> <p>Inform NSCC that operational test is completed by the authorized person /CRO</p> <p>Note 1: During the load transferring from Bus Bar 2 to Bus Bar 1, functional tests on CB – Q0 is being performed (only the position indications on GIS/MIMIC/BCU).</p> <p>Note 2: After completion of the routine maintenance including functional tests, NSCC will be informed by the authorized person who has obtained the Work Permit, to release the bus coupler for normal operation.</p>
Q2	Apart from the email communications with SCC, there is a duly signed and authorized "Work Clearance" form to engage in the inspection/maintenance work - YES/NO
A2	After receiving the NSCC confirmation for a well-planned job through, email in advanced, on the request made by CE (Tr. O&M), to release a particular line/ feeder, the authorized person at the grid substation will request the outage through recordable system phone (recoding facility at NSCC) on the scheduled day. NSCC inform the Permit Work number to requested authorized person at the Grid and the CRO, and CRO record it on the data log sheet. The Permit to Work is issued with a specific no on the day, by NSCC and this specific job and PW no well recorded in voice in NSCC.
Q3	There is also a "Work Handing-Back" form related to above (1) - YES/NO
A3	After completion of the routine maintenance work, an authorized person who has obtained the Permit to Work, inform to the NSCC through the recordable System phone at Grid Substation and release the line/feeder for normal operation. Authorized person should cancel the permit number by communicating with NSCC and this will be recorded well in NCSS.
Q4	There is a Maintenance Instruction Manual in possession with all who are engaged in maintenance - YES/NO
A4	Manufacturer operation and maintenance manual and the schematic diagrams are available at the grid substation. The functional tests to be done during the routine maintenance works are included in the maintenance datasheet. All documents are with the authorized person and they refer the documents before commencing the works.
Q5	If, YES, Pl. provide the necessary section therein relevant to the maintenance/inspection related to the job No.265
A5	Documents attached Related schematic Diagrams Relevant section of the O&M manual (Chapter 6 and Chapter 7) Routine Maintenance Check List (Already given)
Q6	The job No.265 and No.247 are similar - YES/NO
A6	NO
Q7	If NO, Pl. indicate the difference
A7	Work Permit No: 265 – 220kV Bus Coupler on 17.08.2020 Work Permit No: 247 – 220kV Gen Tr 01 on 16.08.2020
Q8	Having the Interlock mechanism in ACTIVE STATE in the control panel relevant to the job

	No.265 is essential during the job - YES/NO					
A8	There are some tests, the interlocking scheme is to be inactive state, but for the above mentioned functional tests under permit no. 265 is not necessary.					
A9	If NO, pl. indicate the appropriate engineering explanation to the decision					
Q9	It is not necessarily to deactivate the interlocking scheme for the functional tests mentioned under item 1. However, it is engineering practice to perform the functional tests on de-energized sections only. Under the de-energized condition, interlocking scheme status are not come into the picture.					
Q10	Duties assigned to Grid Operator and Electrical Superintendent as per SOR or other legal docs, Basic Qualifications of these two categories at the time of recruitment					
A10	<p><b>Electrical Superintendent:</b> Basic qualification is Diploma in Electrical Engineering (NDT or equivalent) and then the candidate has to sit for a written examination. Those who are through the written examination will be called for viva and from them required number of Electrical Superintendents will be recruited.</p> <p><b>Control Room Operator (CRO) – Grid Operator:</b> Basic qualifications STS II or TM with 4 years' experience completed is eligible to apply for the CRO post and they have to face viva and practical examination.</p>					
Q11	Any monitoring mechanism available to oversee work carried out by GO and ES – YES/NO					
A11	<p>Knowledgeable Electrical Engineer and Electrical Superintendent are assigned to the maintenance work, if any person feels that the operations are risky. Supervision of all operational activities are done online by NSCC and are recorded in particular Bay Controller unit, SCADA. After job completion, following activities are carrying out.</p> <table border="1"> <tr> <td><a href="#">220kv busbar earthing Bus Coupler interlocking...</a></td> </tr> <tr> <td><a href="#">220kv busbar earthing Bus Coupler SLD.PDF</a></td> </tr> <tr> <td><a href="#">220kv Genarala Transformer interlocking.PDF</a></td> </tr> <tr> <td><a href="#">Chapter 6.pdf</a></td> </tr> <tr> <td><a href="#">Letter-25092020121109.pdf</a></td> </tr> </table> <p>Regular Grid visits Monthly progress meeting EE &amp; ESS Log sheets Maintenance logbook/ sheets Communications through mobile phone given to ES/Grid Substation Monitoring of RM checklists</p>	<a href="#">220kv busbar earthing Bus Coupler interlocking...</a>	<a href="#">220kv busbar earthing Bus Coupler SLD.PDF</a>	<a href="#">220kv Genarala Transformer interlocking.PDF</a>	<a href="#">Chapter 6.pdf</a>	<a href="#">Letter-25092020121109.pdf</a>
<a href="#">220kv busbar earthing Bus Coupler interlocking...</a>						
<a href="#">220kv busbar earthing Bus Coupler SLD.PDF</a>						
<a href="#">220kv Genarala Transformer interlocking.PDF</a>						
<a href="#">Chapter 6.pdf</a>						
<a href="#">Letter-25092020121109.pdf</a>						

W.L.S.K.Wijetunga  
Chief Engineer

## Transmission Operation & Maintenance

### Western North



Ceylon Electricity Board

විදුලිබලයෙන් සසිරිමත් දිවියක්

வளமான வாழ்விற்கு மின்சாரம்

Enrich Life through Power



Inline image 3

St Francis Lane,

Kelaniya  
Sri Lanka

Tel/Fax- +94 (011) 2905261, 2905262

Mob- [+94 715212334](tel:+94715212334)

On Wed, Sep 23, 2020 at 1:20 PM Rahula Attalage <[rattalage@hotmail.com](mailto:rattalage@hotmail.com)> wrote:

Dear Mr. Wijetunga,

This is further to the clarification extended by you and your team (both verbally and in writing) to the Investigation Committee on the 17th Aug incident while appreciating the cooperation already provided.

Please provide the necessary responses to the following elements:

1. Clearly explain the planned steps from A to Z to be executed on the functional test of the Bus Coupler using two isolator switches (Q1 & Q2), two earth switches (Q51 & Q52), and the bus coupler breaker (Q0) {sequence of the functional test from the beginning to the completion of the job - No.265}
2. Apart from the email communications with SCC, there is a duly signed and authorized "Work Clearance" form to engage in the inspection/maintenance work - YES/NO
3. There is also a "Work Handing-Back" form related to above (1) - YES/NO
4. There is a Maintenance Instruction Manual in possession with all who are engaged in maintenance - YES/NO
5. If, YES, Pl. provide the necessary section therein relevant to the maintenance/inspection related to the job No.265
6. The job No.265 and No.247 are similar - YES/NO
7. If NO, Pl. indicate the difference
8. Having the Interlock mechanism in ACTIVE STATE in the control panel relevant to the job No.265 is essential during the job - YES/NO
9. If NO, pl. indicate the appropriate engineering explanation to the decision
10. Duties assigned to Grid Operator and Electrical Superintendent as per SOR or other legal doc, Basic Qualifications of these two categories at the time of recruitment
11. Any monitoring mechanism available to oversee work carried out by GO and ES – YES/NO

Pl. do not hesitate to contact for any clarifs in this regard.

Thanks in advance for a speedy response.

On behalf of the committee