EE 491 WEEKLY REPORT #4

10/28/19 – 11/4/19

Group number: Sdmay20-14

Project title:115kV /34.5kV Solar Power Plant & Substation Design Project

Client &/Advisor: Black and Veatch / Venkataramana Ajjarapu

Team Members/Role: (Roles are rotated on an as needed basis) Jake Ciccola (Scribe / Client communications), Ethan Curnutte (Chief engineer), Ada Lupa (Test engineer), Blake Danek (Meeting facilitator), Michael Lortz (Design engineer), Bashir Mohamed (Test engineer)

Weekly Summary: This week we finished our high level layout in Autocad and presented it to the client. In addition to this, we have been spending a lot of time working on the voltage drop calculations and trying to figure out what values to use in the excel sheet. We had some questions about the calculations, such as what the jumper was, what the function of the harness was, and what purpose the totals column serves. We discussed these questions with the client and they provided clarification. We also created a PV circuit diagram for our advisor and presented that to him during our weekly meeting.

Past Week Accomplishments: As a group we worked on:

- **Member 1: Jake Ciccola**
    - Sent meeting minutes and agenda to client. Helped fill out the voltage drop calculation.
- **Member 2: Ethan Curnutte**
    - Worked on voltage drop calculations, specifically the wire size aspect of the project. Instead of working with copper fused wire, we had to make the necessary switch to aluminum.
- **Member 3: Blake Danek**
    - Researched the National Electric Code tables that were provided to us by our client. Also filled in information on the voltage drop excel sheet with findings from array parameter tool. Worked on presentation of IV characteristics of PV cells for our advisor.
- **Member 4: Ada Lupa**
    - Worked on the voltage drop calculations and looked up components and equations that are necessary for the calculations. Got a good understanding of the data sheets that are necessary of the voltage drop calculations.

- **Member 5: Michael Lortz**
    - Assembled circuit diagram in AutoCAD, worked with group members to incorporate drawings intp the presentation.
- **Member 6: Bashir Mohamed**

  PV voltage drop VS current calculation, conductor sizing, jumper wire size and the circuit model for PV cells.

Individual Contributions: (Total hours only reflect hours accumulated from weekly reports)

Team Member	Contribution	Weekly Hours	Total Hours
Ethan Curnutte	Voltage drop calculations corrections, preparation of weekly agenda.	8	28
Ada Lupa	Worked on voltage drop calculation and prepared questions to ask Black and Veatch. Read into the data sheet and researched the wiring harness functions.	6	27
Jake Ciccola	Created and sent meeting agenda and minutes to client. Created Weekly report. Worked on the voltage drop calculation. Helped to create PV circuit presentation for advisor	8	28.5
Blake Danek	Researched the NEC tables and continued filling out the voltage drop calculations. Also thought of several questions to ask our client regarding clarification on the calculations. Worked on presentation for advisor which calculations and IV characteristics.	8.5	29
Michael Lortz	Researched jumpers and wiring harness for racks, assembled PV circuit in AutoCAD.	8	26.5
Bashir Mohamed	Helped with voltage drop calculation, conductor sizing and figuring out the relationship between PV voltage vs current.	6	25.5

<u>Plans For The Upcoming Week</u>:

- **Member 1: Jake Ciccola**
    - Continue researching information necessary for the voltage drop calculation, and filling in the necessary data in order to present it to the client. Fill our NDA forms in order to receive substation information.
- **Member 2: Ethan Curnutte**
    - Voltage drop calculations corrections (if necessary) from clients. Also research components and one line drawings for substation.
- **Member 3: Blake Danek**
    - Continue working on voltage drop calculations and enter new information. Get NDA and IP forms filled out so we can begin working on substation portion of project.
- **Member 4: Ada Lupa**
    - Help finish the voltage drop calculations and be able to explain what is happening and why in terms of the number to the actual model. Begin research into substation design.
- **Member 5: Michael Lortz**
    - Assist with voltage drop calculations using new knowledge from research and insight from clients.
- **Member 6: Bashir Mohamed**
    - Familiarize myself with the construction and the requirements of substation design.
    - Review of bus configuration, transformer types,protection and control required for substation as well.

<u>Summary Of Weekly Advisor Meeting</u>: This week we presented a PV circuit diagram slideshow to our advisor. This presentation included an overview of our strings, racks, combiner boxes, and inverters. This presentation also featured the circuits of each of these components in Autocad, as well as their sizing and voltage characteristics.