

EE 491 Weekly Report | May15-01 | Week 4 (10/6/14 -10/13/14)

Advisors: Adam Literski, Dr. Ajjarapu	Client: Black & Veatch Corporation
Members (roles): Matt Backes (Team Leader), Ryan Jerve (Communications Leader), Faran Malik (Communications Leader), Sohail Suryavanshi (Webmaster), Bhargav Gouni (Key Concept Holder), Kiran Rane (Key Concept Holder)	
Project Title: 69kV / 12kV Substation Design Project	

Weekly Summary:

This week we met as a group on 10/7 to prepare a presentation of our research for Dr. Ajjarapu and we also reviewed some panel control panel arrangement drawings and protection schemes as an entire group. On 10/8, we had a meeting with Dr. Ajjarapu and discussed the possibility of getting a tour of a substation nearby campus. We'll actually be visiting a transmission substation that is on campus today (10/13). In addition, we discussed our rough project plan with Dr. Ajjarapu and received feedback for our project plan from Adam Literski. The majority of time was spent presenting our research to Dr. Ajjarapu (which will be further discussed in the meeting notes).

Meeting Notes:

10/08 Group Meeting with Advisors

We met with Dr. Ajjarapu on 10/8 and presented some of our research. Our powerpoint presentation was over substation basics. Bhargav presented information over the physical layout of the substation. This included information such as layout considerations, bus configurations, and the advantageous/disadvantageous for the different types of bus. Faran presented information over the major types of equipment a substation is comprised. This included information over the power transformers, power circuit breakers, switchgears, surge arrestors, etc. Sohail presented information over the site, structure, and foundation. Kiran talked about Grounding. He covered the basic definition, ground fault currents, ground conductor, and the design of grounding system along with the raceway. Matt talking about protective relaying and the instruments, transducers and meters. Finally, Ryan presented information of AC and DC Auxiliary systems, Communications, along with the Control House and the design of the control house. Dr. Ajjarapu used this presentation to assess our knowledgebase over transmission substations. He also told us to include more diagrams and pictures in our presentation. Due to the length of the presentation, we were not able to accomplish other tasks besides running through our presentation. During the meeting, we briefly reviewed the project plan with Dr. Ajjarapu. We did not receive any feedback from Ajjarapu. However, we received feedback from Adam suggesting that we make the minor change of combining two separate steps into one step. Sohail will be leading the meeting this week.

9/21 Group Meeting

During our weekly team meeting (led by Matt), we went through our presentation slides and did a dry run of our presentation. At the end, each member modified their slides based on the teams feedback. During the meeting, we also gave feedback over each team members slides. After the dry run, we reviewed some panel arrangement drawings, control panel arrangements, and protection scheme as an entire group. We were really confused about the protection scheme since there were so many circuit breakers and other components that we were unsure about. We plan to go through these drawings as a group again and to also review the drawings on our own. We will also ask Adam to go through some of these drawing during our phone meeting as well.

Pending Issues:

1. Starting the entire design process
2. Need to continue to review all drawings in the folder sent by Adam
3. Not having the same version of AutoCAD as Adam (This might not be an issue)

Plans for Next Week:

1. Develop man-hour budget
2. Become familiar with the AutoCAD drawings and panel layout drawings

Tasks for each team member:

- 1.) Sohail and Matt: Develop/Research Engineering man-hour budget
- 2.) Bhargav and Kiran: Develop/Research One-line diagram
- 3.) Ryan and Faran: Develop/Research Control house Layout

Current Individual Contributions

- Matt Backes: Attended group meeting and weekly meeting with Dr. Ajjarapu, prepared presentation for protective relaying equipment (6 hours)
- Faran Malik: Attended group meeting and weekly meeting with Dr. Ajjarapu, worked on weekly report, prepared presentation major substation equipment. Reviewed Panel drawings. (5.5 hours)
- Ryan Jerve: Attended group meeting and weekly meeting with Dr. Ajjarapu, worked on weekly report, prepared presentation for AC & DC auxiliary systems, control house, and communications (5.5 hours)
- Sohail Suryavanshi: Attended group meeting and weekly meeting with Dr. Ajjarapu, prepared presentation on specifications and ratings for CTs, PTs, surge arresters, and transmission lines in the layout. (5 hours)
- Bhargav Gouni: Attended group meeting and weekly meeting with Dr. Ajjarapu, prepared presentation on physical layouts. Researched bus configuration, reviewed panel drawings. (5 hours)
- Kiran Rane: Attended weekly meeting with Dr. Ajjarapu. Prepared presentation on grounding, insulated cables and raceways. (6 hours)

Total contributions for the project:

- Matt Backes (24.5 hours)
- Ryan Jerve (21.5 hours)
- Faran Malik (21.5 hours)
- Kiran Rane (22.5 hours)

- Sohail Suryavanshi (22 hours)
- Bhargav Gouni (20.5 hours)