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## EE/CprE/Se 492 WEEKLY REPORT 5

February 25, 2019- March 3, 2019

Group Number : sdmay19-17

Project Title: Substation Design

Client: Burns & McDonnell

Advisor: Manimaran Govindarasu

### Team Members:

Jacob Heiller- Controls Engineer

Rebecca Franzen- Studies Engineer

Connor Mislivec- Quality Control Specialist

Riley O'Donnell- Administrator

Tom Kelly- Project Manager

Wilson Pietruszewski- AutoCAD Engineer

Nicolaus Cory- AutoCAD Engineer

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### Weekly Summary:

This week, we focused on submitting the AC and DC studies that were due to Burns and McDonnell on March 1. After these studies were performed, we drafted a report to clearly state our results and the processes that we used. This week we also continued to work on the one-line drafting and the breaker and transformer schematics. We tried to better understand the scope of breaker and transformer schematics by looking at examples and having an extra meeting with Burns and McDonnell to ask questions. Finally, this week we worked on the 3D design of our substation. We determined a plan for the 3D printing and began to learn how to navigate in SolidWorks.

### Past Week Accomplishments:

- AC Study and Report- Nic
  - Tabulated AC loads to determine power consumption, demand factor and sizing of the station service transformer
  - Designed conductor going from the station service transformer to the AC panels
- 3D Model- Riley & Tom
  - Learned basic functions with SolidWorks
  - Began creating 3D model of substation
  - Determined equipment that was needed for 3D design
  - Determined design and dimensions of substation

- Breaker and Transformer Schematic Overview- Tom, Riley, Wilson
  - Went through example drawings of breaker and transformer schematics given to us by Burns and McDonnell
  - Determined inputs and outputs for relays
  - Went through one-line to better understand the protection requirements
    - Analyzed differences between protection requirements document and one-line to ensure schematics were done correctly
- Finished work on the first draft for Protection and Controls One-Line - Jake & Connor
  - Finalized the design in AutoCAD and sent to the client for comments and feedback
- DC Battery Sizing Study - Becca
  - Finished battery sizing calculations and report
  - Submitted DC Study report and calculations to Burns and McDonnell for review.

**Pending Issues:**

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**Individual Contributions:**

Name / Role	Individual Contribution	Hours this week	Cumulative Hours
Rebecca Franzen	Submitted DC Battery Sizing Study	5	114
Jacob Heiller	Finished AutoCAD first draft and sent to the client for feedback	5	114
Tom Kelly	Breaker and Transformer Schematic Overview & 3D Design	6	111
Connor Mislivec	Finished AutoCAD first draft and sent to the client for feedback	5	109.5
Riley O'Donnell	Breaker and Transformer Schematic Overview & 3D Design	6	114
Wilson Pietruszewski	XFMR DC Scheme draft completed in	6	115.5

	AutoCAD		
Nicolaus Cory	AC Study and Report (Additional Presentation for Advisor Meeting)	22	48.5

Comments and extended discussion:

Plan for the coming week:

- Nic will present his findings during the meeting on Monday to the faculty advisor and teammates
- Meeting with BMcD advisor to take place Wednesday March 6th, discuss first submittal comments and 3D model feedback
- Continue work on transformer Schemes - Riley & Wilson
  - Work through first draft of DC schemes
  - Begin draft on AC schemes following completion of three-line
  - Submit both AC & DC schemes to client for review
- Continue work on 3D model - Everyone
  - Decide on format for 3D model
  - Begin to place components on one drawing
  - Work on each individual component for individual printing
- Continue work on breaker schemes - Tom & Jake
- Continue work on Communications - Connor

Weekly Advisor Meeting Summary:

- Discussed progress of relay schemes, xfmr schemes & communications
- Rebecca gave presentation on DC battery sizing procedure
- Discussed upcoming meeting with client