HEBER LIGHT & POWER

IMPACT FEES FACILITIES PLAN

FINAL

April 26, 2023

IFFP Written Certification

I certify that the attached impact fee facilities plan:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on
2. which each impact fee is paid;
3. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for the
4. facilities, through impact fees, above the level of service that is supported
5. by existing residents; or
    a. an expense for overhead, unless the expense is calculated pursuant to a
6. methodology that is consistent with generally accepted cost accounting
7. practices and the methodological standards set forth by the federal Office
8. of Management and Budget for federal grant reimbursement; and
9. 3. complies in each and every relevant respect with the Impact Fees Act

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Jason Norlen, General Manager
Heber Light & Power

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Adam S. Long, General Counsel
Heber Light & Power

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1. Introduction.

Heber Light & Power (HLP) staff, with the assistance of outside consultants, have prepared this Impact Fee Facilities Plan (IFFP) and the corresponding Impact Fee Analysis (IFA) in anticipation of updating HLP's electrical impact fees, which were last modified in 2021. In 2021, the impact fees were modified based on a report by Utility Financial Solutions ("UFS") and UFS has again been engaged to perform the impact fee analysis for HLP. UFS has conducted significant investigation and analysis of HLP's business and expected future growth. This forecast provides the basis for expected future growth and need for system improvements. In preparing this IFFP, HLP has relied on information from UFS, HLP's own internal data on growth, demand, and energy usage, and a variety of publicly available information. The conclusions reached in this document rely on certain assumptions and projects regarding future events and actual future events may differ from our predictions.

2. Impact Fees Overview.

Generally speaking, impact fees are used by government agencies (e.g., city and county governments) to fund certain capital-related costs (e.g., new buildings) incurred in providing governmental services to "new" development as mandated by law or ordinance. The basic philosophy behind the implementation of impact fees is that "new" development should bear the additional or "incremental" capital cost incurred in order to provide services to the "new" development. This establishes a cost causation or "nexus" requirement between the cost incurred in providing the service and those who benefit from the service. To be clear however, impact fees are not intended to recover annual operating expenses (e.g., utility costs) or to pay for capital expenditures related to the correction of an existing deficiency in the service(s) provided.

3. The Impact Fee Facilities Plan.

The Impact Fee Facilities Plan (IFFP) determines which public facilities required to serve additional electrical needs resulting from new development activity with HLP's service territory. This IFFP must first identify the existing level of service, identify excess capacity to accommodate future growth, and identify demands placed upon existing facilities by new development. The Impact Fee Facilities Plan (IFFP) is the first step toward calculating an equitable impact fee rate table. The IFFP aggregates existing facilities with excess power capacity and planned capital projects which will require added capacity during the six-year period of study.

It is important that the IFFP only include existing facilities with excess capacity and capital projects that add to system capacity. Any existing facilities without spare capacity should not be included in the plan since their capital costs have already been allocated to the rate base. Likewise, any future expenditure which addresses maintenance, or which add capacity needed after the six-year period cannot be included in the IFFP.

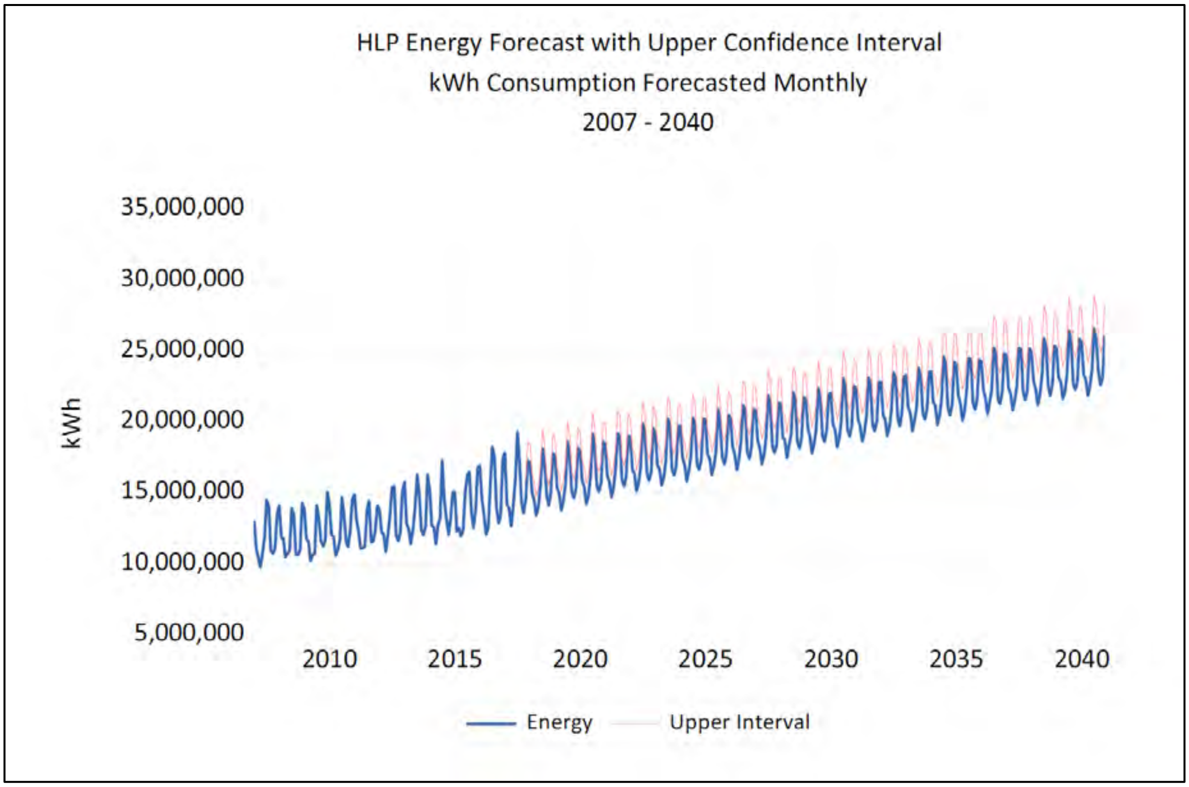
This IFFP considers improvements to power lines and substations necessary to serve expected future growth, expansion of buildings due to new growth, and investments in internal power generation facilities that are necessary to maintain the health and stability of the HLP system. Any costs associated with the Utah Associated Municipal Power Systems (UAMPS) will be excluded from the IFFP as they do not contribute to overall system capacity.

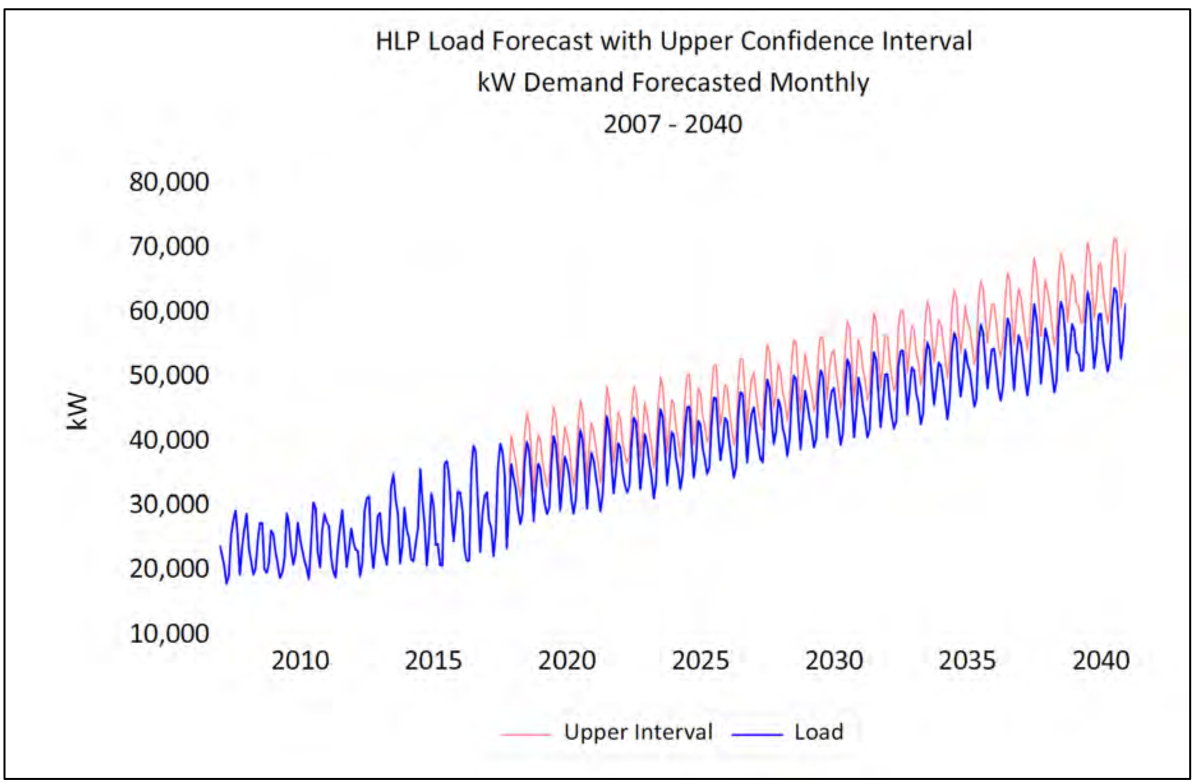
4. Population and Load Growth.

The Heber Valley continues to experience significant growth, driven in large measure by new residential development. Indeed, Wasatch County is one of the fastest-growing counties in the United States. In order to obtain the best possible predictions about future load growth, HLP engaged UFS to prepare a study of expected load growth for HLP based on econometric modeling and long-term forecasting. This study is attached to this IFFP as **Exhibit A**.

The UFS study projects load growth (in kilowatt hours sold) of 2.3 percent annually over the next five years and demand growth (in kilowatts of demand) of 2.2 percent annually. These growth estimates have been used to identify the facilities likely to be needed within the next six years and to develop HLP's capital plan.

The two charts below illustrate the long-term projected growth in HLP's load and demand, respectively.


HLP Energy Forecast with Upper Confidence Interval
kWh Consumption Forecasted Monthly
2007 - 2040
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
kWh
2010
2015
2020
2025
2030
2035
2040
Energy
Upper Interval


HLP Load Forecast with Upper Confidence Interval
kW Demand Forecasted Monthly
2007 - 2040
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
kW
2010
2015
2020
2025
2030
2035
2040
Upper Interval
Load

5. **Existing Level of Service.**

Residents and businesses within HLP's service area currently experience a level of service and reliability from the electrical power grid. This level of service includes:

- Adequate system capacity capable of handling peak as well as off-peak loading conditions without overloading or damaging capital equipment such as transformers, distribution feeders, or transmission lines.
- Voltages will be within certain ranges of nominal, per industry standards. Voltages outside this range (either high or low) can cause equipment damage.
- Voltage fluctuations (i.e. "flicker") will be within industry frequency and magnitude limits.
- System N-1 redundancy is present for transmission and distribution backbone assets to allow for sustained service during periods of maintenance as well as faster restoration during unplanned outages or failure conditions.

In order to provide this level of service, HLP has invested in the existing transmission and distribution capital infrastructure. However, as populations, hence households and businesses, grow and develop with the HLP's service area, the current capital equipment will not be adequate to provide the current level of service.

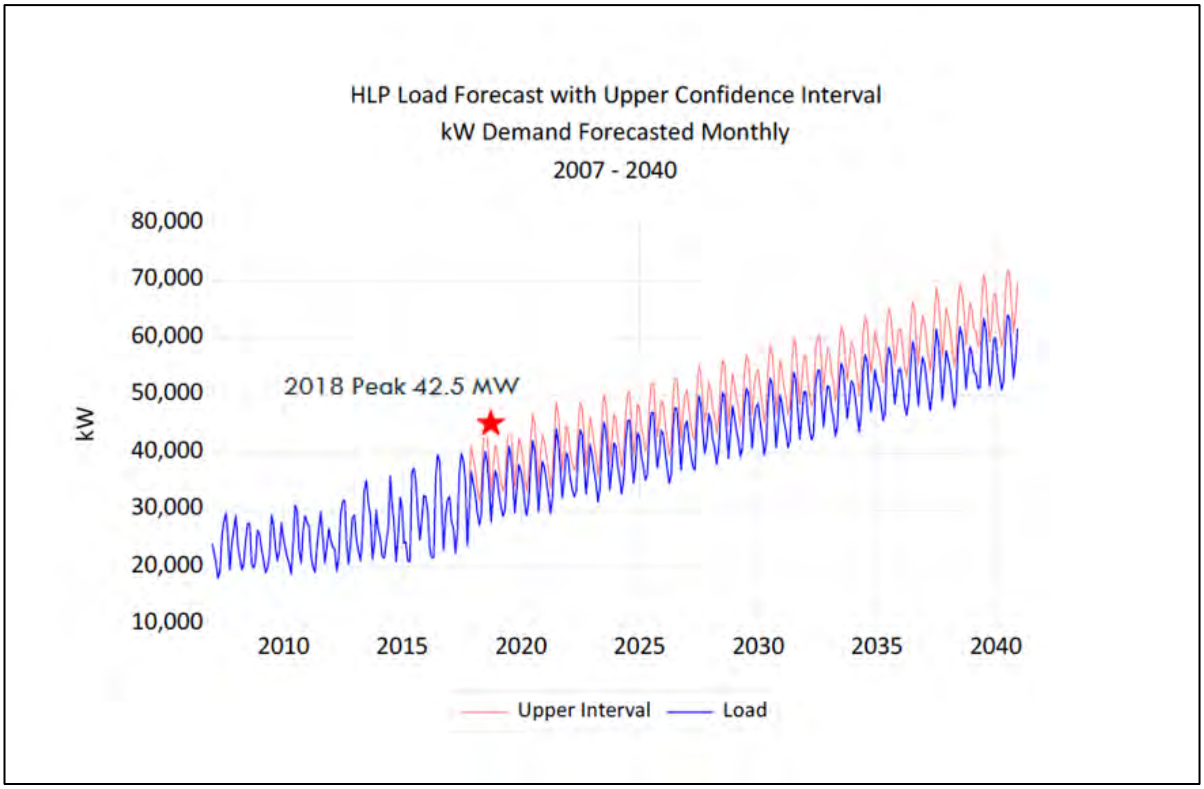
Based on analysis of the current electrical system and project growth in the future, HLP has developed its Capital Facilities Plan. This Plan proposes and number of capital projects to maintain the existing level of service for both current and future customers. Some of these projects add to the existing capital base, while others only replace or maintain a depreciated asset. Only those projects (or portions of projects) adding to the capital base as required to serve new development over the next six years are included in this IFFP.

6. **Proposed Level of Service.**

The proposed level of service for future growth is the same as the existing level of service, as explained above. HLP’s obligation to provide safe, reliable, and const-effective electrical service is the same for all customers. HLP determines its future facilities needs based upon this level of service and load growth over a particular planning horizon.

7. **Excess Capacity of Current System.**

HLP’s electrical transmission and distribution system operates as a single system to provide for the power needs of all HLP customers. As such, identification of excess capacity on a granular level is impractical. While certain segments of the overall system may have excess capacity, it is impractical to identify excess capacity within individual circuits or portions of a transmission line. Instead, excess capacity in the context of an electrical system is better understood as the peak demand in comparison with the total capacity of the system. For HLP, the peak demand during 2022 was 49.008 MW. The grid connection for the HLP electrical system can currently handle a peak demand of approximately 49 MW, meaning very little excess capacity exists within the system as a whole. The electricity demands of growth due to new development cannot be met with existing infrastructure. For the purposes of calculating impact fees, HLP is not accounting for the small amount of excess capacity within the current system, which in turn decreases the amounts of the impact fees.



8. Demands on Existing Facilities.

To accurately assess the demands placed on current facilities and the expected future facilities needs, HLP engaged Intermountain Consumer Professional Engineers (ICPE) to conduct load flow studies for HLP's 12 kV distribution system and HLP's 46 kV internal transmission system. These studies are attached to this document as **Exhibit B** and **Exhibit C**, respectively. Each ICPE study analyzes the current system and the demands placed on it by current HLP customers as well as the suggested improvements to handle the load growth as projected by the UFS study.

9. Capital Improvement Projects.

Based on the ICPE studies and HLP's internal analysis of the electrical system, the capital projects outlined below are impact fee eligible and planned to be built within the timeframe covered by this IFFP. These capital projects are also shown on the table attached as **Exhibit D**.

Project Name: New Office Building
Project Category: Buildings
Impact Fee Eligibility: 43%
Total Cost: $11,400,000

Purpose & Necessity:
Heber Light & Power has outgrown the existing work space for administrative operations. In addition, the building is older and not ADA compliant. Furthermore the division of Administration from Operations has made communications less-effective between departments. The building is currently surrounded on all four sides with rights-of-ways for other entities which causes expansion limitations. Parking for employees and customers is extremely limited. Finally, numerous secondary elements such as IT structure, and building security cannot be adequately addressed in the current state.

Risk Assessment:
Efficiency is the main advantage to combining all of the administrative functions under one roof. In addition, by remaining noncompliant with appropriate ADA standards, the company remains at risk of not accommodating customer needs. Furthermore the transition to 138kV service in the valley also opens the company to additional cyber-security scrutiny and controls. The current building set-up will require extensive adjustments to obtain compliance with NERC CIPS requirements.

Project Name: New Office Building (Phase 3)
Project Category: Buildings
Impact Fee Eligibility: 43%
Total Cost: $1,200,000

Purpose & Necessity:

The new building project does not include the completion of the site improvements for the entire site. This project has been delayed to provide ample time to make additional infrastructure adjustments so as to minimize disruptions to the new site during that adjustment period.

Risk Assessment:
Site adjustments will need to be made so as to limit the risk of fleet vehicles becoming mired in the muck. Additional mobility of certain equipment necessary to move equipment and materials around will be impacted.

<u>Project Name: Unit UREA Systems</u>
Project Category: Generation
Impact Fee Eligibility: 100%
Total Cost: $1,200,000

Purpose & Necessity:
The most recent Emissions Analysis undertaken by the State has shown that UREA systems need to be installed on certain units to comply with the Company Operating Air Permit. This project will see that these are completed and the Company is in full compliance with the State requirements.

Risk Assessment:
Heber Light & Power will be unable to meet the required air quality permit, thus shutting down the internal production undertaken by HLP.

<u>Project Name: New Generations</u>
Project Category: Generation
Impact Fee Eligibility: 100%
Total Cost: $5,715,000

Purpose & Necessity:
The current generation portfolio will be heavily strained by 2025 without the procurement of other generating sources. Load growth is projected to be regular and consistent. The generator portfolio is used regularly to defer the market risk that is inherent with the increasing resource needs of the company. The company is working with the Caterpillar and Wheeler organizations to install a battery bank in 2022/2023, as well as looking at a new test engine in 2023. These combined with Unit 5 replacement will potentially come out of the test window and need to be paid for at said time.

Risk Assessment:
Heber Light & Power is regularly attempting to diversify the generation portfolio. Without the acquisition of additional resources, the Company will be forced to purchase more energy from the market at the prevailing rates which may not favor the Company.

<u>Project Name: Annexation Asset Purchase</u>
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $175,000

Purpose & Necessity:
Heber city has undertaken an annexation plan that will encompass a large tract of land North of the existing HLP system. As such, existing assets will need to be purchased from PacifiCorp when an entity requests annexation. This is a blanket project to ensure annual funding exists for such asset purchases.

Risk Assessment:
HLP has no choice other than purchase the assets when an entity requests annexation into the City of Heber.

<u>Project Name: Install Voltage Regulators at Timber Lakes Gate</u>
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $100,000

Purpose & Necessity:
The continual growth in the Timber Lakes Subdivision along with the relative distance from the Jailhouse substation has the voltage within the subdivision subject to irregular fluctuations. These irregularities create a power quality issue for HLP customers.

Risk Assessment:
By refusing to correct the installation issues in the Timber Lakes Subdivision, customer satisfaction will decrease. In addition, customer equipment stands the chance of being damaged thus driving up insurance claims and premiums.

Project Name: Heber Substation Additional Circuits (South & West)
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $300,000

Purpose & Necessity:
The system continues to grow and require additional feeders out of the substation. The recent addition of the 2nd transformer will facilitate the future energization of these feeders. These feeders will also facilitate the switching efforts required during outages, thus minimizing customer inconvenience.

Risk Assessment:
Stranded energy as a result of the excess capacity brought on by the 2nd transformer in 2016/2017. Lengthened outages due to lack of looped feed on different circuits. Overloaded circuits of existing feeders as a result of continued growth in the area.

Project Name: Tie From 305 to 402 to 303
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $350,000

Purpose & Necessity:
This tie will provide the company with additional looped feeders for future redundant system needs.

Risk Assessment:
Without completing this tie, an outage could drive an extended outage in particular sections of the system as redundant loops would not be in place to allow for switching efforts.

Project Name: Reconductor Provo River 201 (Main Street to Burgi Lane)
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $1,471,000

Purpose & Necessity:

The current circuit engineering study has demonstrated that the stretch of Provo River 201 from Main Street to Burgi Lane will be undersized after 2021. In order to remedy this issue, the circuit will need to be reconductored through this section of the line.

Risk Assessment:
Failure of the existing assets will result in outages with a high likelihood of a prolonged outage.

Project Name: Provo River Substation Get Aways Reconnect to New Site
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $450,000

Purpose & Necessity:
By building a new distribution substation within the Southfield's Substation, HLP is able to decommission the Provo River substation, once the loads have been transferred over. This project will extend the existing get aways from the current Provo River feeders to the new get aways.

Risk Assessment:
An old substation that is a bit of a hazard to HLP will need to remain in-service.

Project Name: Additional Circuits out of College to South and East
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $1,554,000

Purpose & Necessity:
The development of the North end of Heber City has necessitated additional circuits out of the College Substation.

Risk Assessment:
Insufficient capacity to serve the numerous additional customers seeking service on the North side of Heber City. This project is 100% customer driven and thus it has slipped from year to year as the development is still pending.

Project Name: Additional Circuits out of Jailhouse to the East

Project Category: Lines

Impact Fee Eligibility: 100%

Total Cost: $300,000

Purpose & Necessity:

The development of the South end of Heber City, and the East side of Wasatch County require additional circuits out of the Jailhouse Substation.

Risk Assessment:

Insufficient capacity to serve the numerous additional customers seeking service on the South side of Heber City and the East side of Wasatch County. This project is 100% customer driven and thus it has slipped from year to year as the development is still pending.

Project Name: Eastern Bypass – Cemetery

Project Category: Lines

Impact Fee Eligibility: 100%

Total Cost: $750,000

Purpose & Necessity:

The development of the South end of Heber City, and the East side of Wasatch County require additional circuits out of the Jailhouse Substation.

Risk Assessment:

Insufficient capacity to serve the numerous additional customers seeking service on the South side of Heber City and the East side of Wasatch County.

Project Name: Reconductor Heber City Main 600 S to 1000 S

Project Category: Lines

Impact Fee Eligibility: 50%

Total Cost: $160,000

Purpose & Necessity:

The development of the South end of Heber City, and the East side of Wasatch County require additional circuits out of the Jailhouse Substation.

Risk Assessment:
Insufficient capacity to serve the numerous additional customers seeking service.

Project Name: New Circuit to Hwy 32
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $720,000

Purpose & Necessity:
The development of in this area requires additional circuits.

Risk Assessment:
Insufficient capacity to serve the numerous additional customers seeking service in this area.

Project Name: Reconductor Pine Canyon Road - Midway
Project Category: Lines
Impact Fee Eligibility: 60%
Total Cost: $180,000

Purpose & Necessity:
Growth in the vicinity of Pine Canyon Road has begun to exceed the acceptable conductor size for the existing assets. In order to continue to provide uninterrupted service along this feeder, the conductor needs to be upgraded.

Risk Assessment:
Failure of the existing assets will result in outages with a high likelihood of a prolonged outage.

Project Name: Airport Road Rebuild and Loop
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $550,000

Purpose & Necessity:

Growth in and around the Airport Road area has reached a point in which the system is becoming undersized and therefore needs to be reconductored with a larger conductor. In addition, the growth needs a redundant feed and as such a looped line will be constructed to remove the inherent risks associated with a radial feed.

Risk Assessment:
Outages due to overloading the conductor will soon be happening and critical customers will be negatively affected by these frequent and prolonged outages.

Project Name: Reconductor Jailhouse 502/503 (Old Mill Drive from 800 S to 1200 S)
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $529,000

Purpose & Necessity:
The current circuit engineering study has demonstrated that the stretch of Jailhouse 502/503 along Old Mill Drive from 800 South to 1200 South will be undersized in the near future. In order to remedy this issue, the circuit will need to be reconductored through this section of the line.

Risk Assessment:
Failure of the existing assets will result in outages with a high likelihood of a prolonged outage.

Project Name: New Circuit to Highway 32
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $720,000

Purpose & Necessity:
With the annexation of the North Village area, an additional circuit will need to be taken North out of the College substation until the new North Substation can be constructed and tapped off of the 138kV system.

Risk Assessment:
Without this line, the developments North cannot be energized until a new point of delivery substation is permitted and built.

Project Name: Jailhouse Tap Transmission Line and East Extension
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $3,900,000

Purpose & Necessity:
An additional substation is now needed on the South/East sector of the HLP service territory. This project will be the interconnection project that will tie the new substation in with the rest of the system.

Risk Assessment:
Without this transmission line, the substation cannot be energized, thus stranding the costs of the substation.

Project Name: Reconductor Midway 101/102 from 4/0 to 477
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $938,000

Purpose & Necessity:
The current circuit engineering study has demonstrated that the Midway 101/102 circuits will be undersized after 2024. In order to remedy this issue, the circuit will need to be reconductored.

Risk Assessment:
Failure of the existing assets will result in outages with a high likelihood of a prolonged outage. This project will achieve N-1 standard on this circuit. It is currently below this standard and as such the system reliability is at risk.

Project Name: Reconductor Cloyes 402 (600 West to Tate Lane)
Project Category: Lines
Impact Fee Eligibility: 100%
Total Cost: $1,296,000

Purpose & Necessity:

The current circuit engineering study has demonstrated that the stretch of Cloyes 402 from 600 West to Tate Lane will be undersized in the near future. In order to remedy this issue, the circuit will need to be reconductored through this section of the line.

Risk Assessment:
Failure of the existing assets will result in outages with a high likelihood of a prolonged outage.

Project Name: 2nd Point of Interconnect Substation (POI)
Project Category: Substation
Impact Fee Eligibility: 70%
Total Cost: $23,258,000

Purpose & Necessity:
Growth within the system has been steadily increasing for numerous years. This substation will increase the reliability of the current system and also provide additional capacity to serve new customers. The system is currently fed off of a single point of interconnect to the RMP system. This point of interconnect is fed from a radial (meaning single line) service line. In addition, the transformer at the end of the radial line is quickly becoming undersized for the local load on our system. This project will provide a second interconnect substation thus reducing the loading on the existing substation transformer. Numerous engineering studies have been conducted on the system and each has drawn the conclusion that the current system will be over-capacity by 2022 at the latest.

Risk Assessment:
This point of interconnect has two significant risks associated with it; 1) risk of damage to the radial feed thus causing immediate outages to all customers, and 2) interconnect site is currently sized to be out of capacity by 2022. If the single interconnect transformer becomes overloaded, RMP will begin to remove load form the transformer which will result in regular prolonged rolling brown-outs. All customers in the system will have a daily outage lasting up to 6 hours during peak load windows.

Project Name: Midway Substation - High Side Rebuild
Project Category: Substation
Impact Fee Eligibility: 90%
Total Cost: $2,656,000

Purpose & Necessity:
The Midway Substation has slowly taken on more load until it has reached its capacity on the high-side of the transformer. It is estimated that by 2022 the high-side will need to be rebuilt to serve the loads being placed on the transformer by new development.

Risk Assessment:
The high side of the transformer is the side receiving energy from the grid. If the feed to the transformer is compromised, a prolonged outage will be experienced on the substation thus affecting all of the circuits from this substation.

Project Name: Northeast Point of Delivery Substation
Project Category: Substation
Impact Fee Eligibility: 100%
Total Cost: $5,012,000

Purpose & Necessity:
The annexation by Heber City has presented a need for a new point of delivery substation on the Northeast part of the system. A direct tap off of the PacifiCorp 138kV system will be required to serve the loads brought on by the large development that is being planned for that area. Other projects in this capital plan are being undertaken to connect the early development stages of this master plan but the ultimate need for energy in this area will require a new point of interconnect.

Risk Assessment:
Without this substation, HLP will be unable to serve the proposed 6,500 units for this area.

Project Name: East Substation
Project Category: Substation
Impact Fee Eligibility: 100%
Total Cost: $11,400,000

Purpose & Necessity:
Due to the regular growth and the planned development on the East side of the valley, additional capacity will be required in the next several years. This project will include the siting, permitting, design, and construction of a new system load substation.

Risk Assessment:
Lack of substation capacity in the Lake Creek area will put the system at risk of overloaded circuits and existing equipment ultimately leading to rolling brown outs across the valley.

Project Name: AMI North Tower
Project Category: Information Technology
Impact Fee Eligibility: 100%
Total Cost: $210,000

Purpose & Necessity:
The recent annexation plan approval by Heber City Corporation has also expanded the potential customer territory for Heber Light & Power. As developers begin to establish buildable lots within this annexed area, HLP will begin to deploy meters for the collection and relay of usage data. In order to have these meters communicate the data, a new AMI tower will need to be erected with the appropriate equipment. In conducting the meter study, Sensus has communicated that two additional towers will be required on the system in 2025.

Risk Assessment:
Without installing this critical antenna, HLP will not be able to read the meter data within the newly annexed service territory.

10. Funding Sources.

Utility Rate Revenues. Utility rate revenues serve as the primary funding mechanism for HLP. Rates are established to ensure appropriate coverage of all operations and maintenance expenses, debt service coverage, non-growth-related capital project needs, and regular distributions to HLP's owner cities.

Grants and Donations. HLP does not anticipate receiving grants or donations to fund improvements currently contemplated in this IFFP. HLP expects that assets and infrastructure installed as part of a new development will be project improvements rather than system improvement. However, a developer would be entitled to a credit for the value of necessary system improvements donated to HLP rather than funded through impact fees.

Impact Fee Revenues. Impact fees have become a logical mechanism for funding growth-related infrastructure. Impact fees are charged to ensure that new growth pays its proportionate share of the costs for the development of the necessary electrical infrastructure. Impact fee revenues are generally considered nonoperating revenues and help offset future capital costs.

Debt Financing. HLP expects to finance a portion of future capital project with new debt. The Impact Fees Act allows for the costs related to the financing of future capital projects to be legally included in the impact fee. This allows HLP to finance and quickly construct infrastructure for new development and reimburse itself later from impact fee revenues for the costs of issuing debt. However, no financing costs are included in expected costs of future capital facilities in this IFFP.

Exhibit A

Load Forecast Study

Exhibit B

12 kV Load Flow Study

Exhibit C

46 kV Load Flow Study

Exhibit D

Impact-Fee Eligible Capital Projects

Exhibit A

Load Forecast Study

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Project Overview

Utility Financial Solutions completed two long-term econometric projections over the forecast period of 2018 through 2040 for Heber Light & Power. UFS forecasts included:

1) projection of peak monthly demands (kW), and
2) projection of monthly energy consumption (kWh)

An econometric model identifies relationships between demographic and/or weather variables (such as population, employment, temperature and degree days) and demand and energy consumption of customers served by Heber Light and Power. The average growth results of the forecast are listed in the table below and summarize the increases in peak demand and energy consumption.

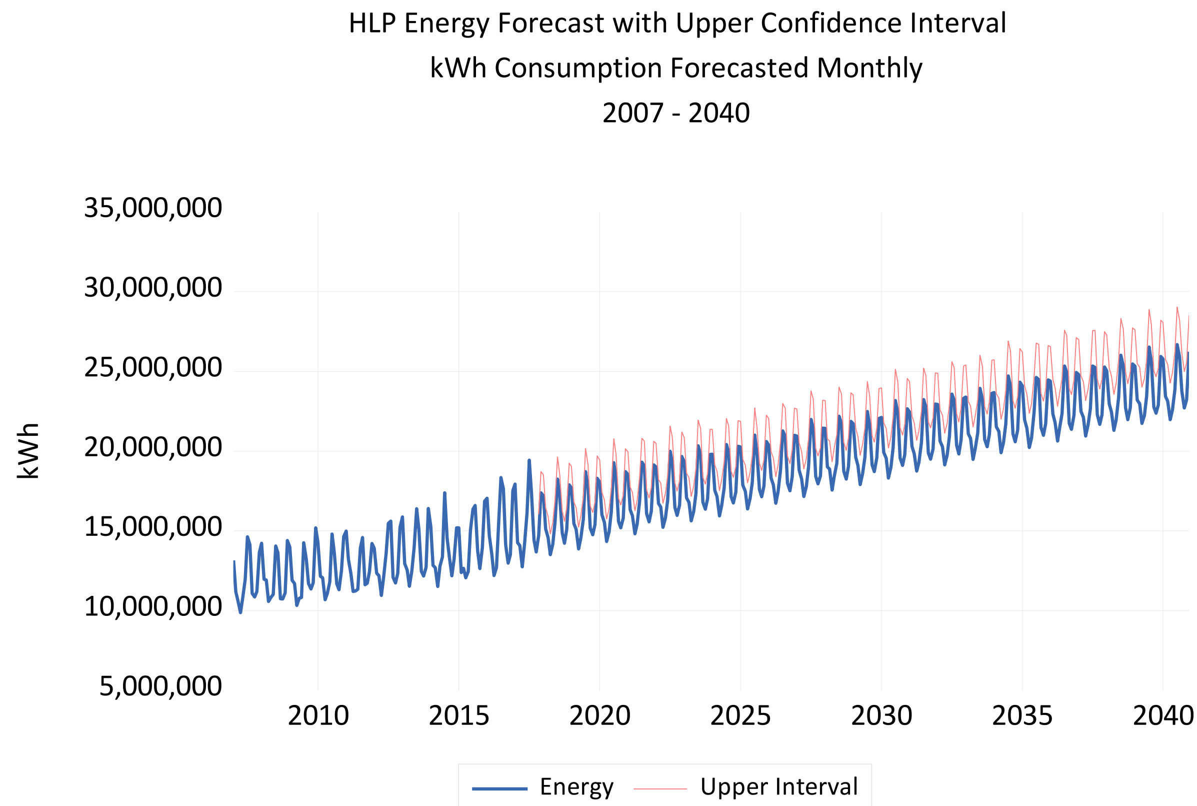
Growth	*Energy*	*Peak*
5 Year	2.3%	2.2%
10 Year	2.0%	1.8%
Forecast Period	1.9%	2.1%

Energy Projection (kWh's)

HL&P energy sales are projected to grow at a rate of 2.3% for the period between 2018 – 2023; 2.0% between 2018 and 2028, and 1.9% between 2018 and 2040. The table below shows annual energy sales projections.

Historical		Projected		Projected	
Year	Energy Sales	Year	Energy Sales	Year	Energy Sales
2007	143,066,024	2018	187,608,548	2029	235,944,145
2008	145,186,521	2019	192,456,491	2030	237,727,372
2009	146,974,529	2020	197,990,881	2031	241,774,042
2010	150,620,753	2021	202,380,723	2032	247,197,983
2011	152,661,690	2022	208,194,718	2033	251,945,813
2012	157,350,395	2023	212,418,254	2034	258,185,221
2013	164,297,115	2024	216,718,733	2035	262,603,752
2014	163,683,387	2025	216,390,455	2036	267,783,141
2015	168,834,254	2026	222,103,662	2037	271,271,500
2016	178,512,044	2027	227,156,443	2038	276,129,112
2017	184,198,041	2028	231,944,495	2039	279,958,365
				2040	284,202,479

The historical and projected data was based on monthly observations. The graph below depicts monthly energy consumption with 2007 – 2017 historical data and 2018 – 2040 forecasted values. The table below shows projected energy and the upper boundary. One standard deviation (96% confidence level) from the mean was used to identify the upper boundary.



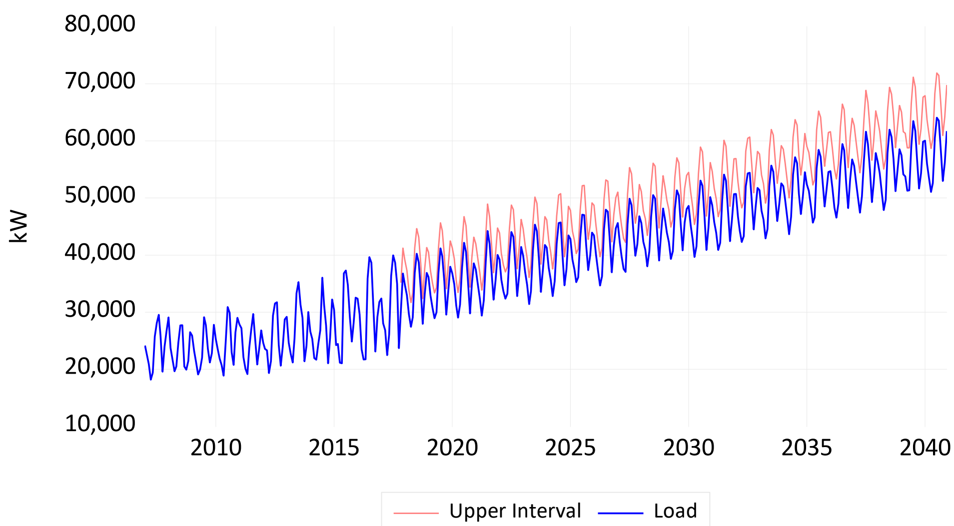
Peak Demand Projection (kW's)

HL&P demands are projected to grow at a rate of 2.2% for the period between 2018 – 2023; 1.8% between 2018 and 2028, and 2.1% average growth rate between 2018 and 2040. The table below is the projected annual peak demands.

Historical		Projected		Projected	
Year	Peak Demand	Year	Peak Demand	Year	Peak Demand
2007	29,558	2018	40,244	2029	49,737
2008	29,102	2019	41,188	2030	51,511
2009	29,111	2020	42,169	2031	52,634
2010	30,909	2021	42,642	2032	53,141
2011	29,683	2022	43,864	2033	54,369
2012	31,725	2023	45,132	2034	55,944
2013	35,205	2024	45,565	2035	57,354
2014	35,863	2025	45,420	2036	58,437
2015	37,025	2026	46,191	2037	60,646
2016	39,302	2027	47,208	2038	61,074
2017	39,408	2028	48,829	2039	62,609
				2040	63,198

The historical and projected data was based on monthly observations. The graph below depicts monthly peak demand with 2007 – 2017 historical data and 2018 – 2040 forecasted values. The upper boundary is one standard deviation from the mean representing a 96% confidence level.

HLP Load Forecast with Upper Confidence Interval
kW Demand Forecasted Monthly
2007 - 2040



The following sections include the statistical tests and results of the forecasts.

Statistical Tests

To ensure statistical validity of the models, several tests were performed. The following tests substantiate that changes occurring in dependent variables (Energy Sales and Peak Demand) are properly explained with changes in the independent variables (population, cooling degree days, etc). Gauss-Markov assumptions are parameters used to confirm the coefficients in the model are the best linear unbiased estimates[1]. The first four assumptions ensure unbiasedness, while the last provides the lowest variance.

Gauss-Markov Assumptions

1. **Linearity in the parameters** – A linear relationship between the independent and dependent variables must exist to ensure integrity in the resulting models. The linear relationships are tested using observations and the **Ramsay Test.**
2. **Error Term Expected Value is 0** – To ensure an unbiased relationship exists between variables the error terms expected value must be zero. To help ensure an unbiased relationship exists a constant is used to absorb any differentials between the independent variables.
3. **Homoskedasticity** - Variance in error terms between actual and projected observations implies uncertainty in the model. If substantial variations occur, it may imply an omitted variable exists. An **ARCH** test was used to test homoscedasticity.
4. **Error Term is Independently Distributed** – If an independent variable is highly correlated with previous values of itself it signals serial or auto correlation exists. A **Serial Correlation LM test** was used to identify if serial correlation exists.
5. **Each variable is uncorrelated with the error term** – If independent variables are correlated with the error term, it implies omission of an important variable, or an incorrect functional form. A **Ramsay Test** was used to test for this error.

Multicollinearity

Multicollinearity is an inefficiency that occurs when two independent variables are highly correlated with each other, which can lead to unreliable and unstable regression coefficients. To test for this inefficiency, we used the Variance Inflation Indicators (VIFs). These indicators measure how much of the variance of a coefficient is inflated due to linear dependence on other predictors. These measurements may be safely ignored for monthly dummy variables. Lower VIFs are desired.

[1] Best linear unbiased estimates mean the estimated coefficients on the independent variables have the lowest variance (best) and the expected value of the sample mean is equal to the true value of the population mean (unbiased).

Four additional statistics are important to note:

1. Adjusted R-Squared: This statistic measures how well the independent variables measure the dependent variable. Adjusted R-Squared adjusts for the number of independent variables used.
2. Akaike Info Criterion (AIC): A predictor of forecasting capability of the model. We want to minimize this value.
3. Schwarz Criterion (SIC): Another predictor of forecasting capability, but SIC penalizes models that include independent variables of little explanatory power. We also want to minimize this value.
4. Durbin-Watson Stat: In addition to the LM test for Serial Correlation, Durbin-Watson is another measure of the relationship between the dependent variable and previous lags of itself within the residuals. We look for a DW statistic of 2, implying no serial correlation exists.

The additional statistics are found on the bottom portion of the output data for each model.

Model Specification

To build each model, historical data from 2007 through 2017 was used. Independent variables were tested against historical data and included based on t-statistic and significance level. Specific listings of independent variables used in each model can be found on pages 7 and 8.

To provide a statistically valid forecast, various model-types were tested for relevance. One aspect of ordinary least squares regressions and time series models is stationarity, meaning, the mean and variance do not vary based on time. When data is not stationary, regression results may be invalid. Testing for stationarity was done using the augmented Dickey-Fuller test and the data was found to be non-stationary. Differencing the data (observation 2 – observation 1), provided a stationary dataset. Therefore, modeling was performed in differences and transformed after forecasting.

Due to the nature of energy and demand data, auto-regressive and moving-average terms were required to alleviate serial correlation (correlation to previous lags of the dependent variable). This issue can cause statistically invalid results. The subsequent models are referred to as ARIMA(p,I,q) models and are described in more detail on page 9.

Additionally, manual adjustments were made for both the historical data sets and the forecasted values to properly account for the effects of energy efficiency programs and distributed generation. After providing HL&P with an initial set of models for both energy and demand, modifications were made to better reflect market knowledge of HL&P. These adjustments are explained in detail on page 10.

Energy Projection Output

Dependent Variable: D(ENERGY)
Method: ARMA Generalized Least Squares (Gauss-Newton)
Date: 03/19/18 Time: 16:01
Sample: 2007M02 2016M12
Included observations: 119
Failure to improve objective (non-zero gradients) after 16 iterations
Coefficient covariance computed using outer product of gradients
d.f. adjustment for standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2615162.	226291.9	11.55659	0.0000
D(CDD)	89959.33	27841.83	3.231085	0.0017
D(UNIPOP)	335.1930	138.8350	2.414326	0.0176
D(TLOW)	-13167.52	7395.389	-1.780504	0.0780
@MONTH=1	-2818516.	339090.6	-8.311987	0.0000
@MONTH=2	-4748734.	314513.4	-15.09867	0.0000
@MONTH=3	-2885877.	369315.4	-7.814126	0.0000
@MONTH=4	-3700245.	318030.5	-11.63487	0.0000
@MONTH=5	-1956779.	324832.3	-6.023965	0.0000
@MONTH=6	-1599460.	300340.2	-5.325496	0.0000
@MONTH=7	-361681.7	350545.3	-1.031769	0.3047
@MONTH=8	-3153735.	305912.6	-10.30927	0.0000
@MONTH=9	-4876065.	368044.0	-13.24859	0.0000
@MONTH=10	-3185531.	267016.3	-11.93010	0.0000
@MONTH=11	-2115004.	317294.9	-6.665736	0.0000
AR(1)	0.435609	0.102788	4.237930	0.0001
AR(2)	0.135758	0.109107	1.244268	0.2163
AR(3)	-0.346021	0.099026	-3.494229	0.0007
MA(1)	-1.000000	261.5563	-0.003823	0.9970

R-squared	0.930931	Mean dependent var	36931.40
Adjusted R-squared	0.918499	S.D. dependent var	1749901.
S.E. of regression	499569.5	Akaike info criterion	29.26711
Sum squared resid	2.50E+13	Schwarz criterion	29.71084
Log likelihood	-1722.393	Hannan-Quinn criter.	29.44729
F-statistic	74.87934	Durbin-Watson stat	1.970120
Prob(F-statistic)	0.000000		

The Energy Model Independent variables are as follows:

- D(CDD): Differenced Cooling Degree Days
- D(UNIPOP): Differenced Population forecast from the University
- D(TLOW): Differenced Low Temperature
- Monthly Dummy Variables January through November (December is omitted with the inclusion of constant, C to avoid perfect collinearity)
- Auto-Regressive Terms (AR): AR(1), AR(2), AR(3)
- Moving-Average Terms (MA): MA(1)

Demand Projection Output

Dependent Variable: D(LOAD)
Method: ARMA Generalized Least Squares (Gauss-Newton)
Date: 03/18/18 Time: 16:53
Sample: 2007M02 2017M10
Included observations: 129
Failure to improve objective (non-zero gradients) after 26 iterations
Coefficient covariance computed using outer product of gradients
d.f. adjustment for standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5042.038	1035.185	4.870662	0.0000
D(TLOW)	-58.14182	26.00985	-2.235377	0.0274
D(THIGH)	92.17468	35.45799	2.599546	0.0106
D(ROLLING)*(MAY+JUN)	147.0292	49.17176	2.990116	0.0034
@MONTH=1	-5738.083	1294.025	-4.434289	0.0000
@MONTH=2	-8144.681	1522.676	-5.348926	0.0000
@MONTH=3	-8034.103	1613.772	-4.978462	0.0000
@MONTH=4	-7575.825	1496.893	-5.061034	0.0000
@MONTH=5	-5801.371	1446.960	-4.009352	0.0001
@MONTH=6	370.1844	1489.260	0.248569	0.8042
@MONTH=7	-852.3507	1438.413	-0.592563	0.5547
@MONTH=8	-6092.369	1230.351	-4.951731	0.0000
@MONTH=9	-9976.629	1038.404	-9.607658	0.0000
@MONTH=10	-9798.718	1023.068	-9.577776	0.0000
@MONTH=11	-799.1807	1134.258	-0.704585	0.4826
AR(1)	0.345951	0.100629	3.437885	0.0008
AR(2)	0.022169	0.107778	0.205692	0.8374
AR(3)	0.003914	0.105419	0.037128	0.9705
AR(4)	-0.198800	0.102224	-1.944754	0.0544
MA(1)	-1.000000	378.5755	-0.002641	0.9979

R-squared	0.868163	Mean dependent var	-3.441860
Adjusted R-squared	0.845182	S.D. dependent var	4462.070
S.E. of regression	1755.686	Akaike info criterion	17.95786
Sum squared resid	3.36E+08	Schwarz criterion	18.40125
Log likelihood	-1138.282	Hannan-Quinn criter.	18.13802
F-statistic	37.77783	Durbin-Watson stat	1.945943
Prob(F-statistic)	0.000000		

The Demand Model independent variables are as follows:

- D(THIGH): Differenced High Temperature
- D(TLOW): Differenced Low Temperature
- D(ROLLING)*(MAY+JUN): Differenced rolling average of high temperatures, multiplied by May and June dummy variables – this variable models the spike due to irrigation pumping in the summer months.
- Monthly Dummy Variables January through November (December is omitted with the inclusion of constant, C to avoid perfect collinearity)
- Auto-Regressive Terms (AR): AR(1), AR(2), AR(3), AR(4)
- Moving-Average Terms (MA): MA(1)

When evaluating the regression equation, the farthest column on the right gives the p-value for the significance of our parameters. A highly significant parameter typically shows a p-value of less than .05, however, the effect of an insignificant variable on forecasting capability (AIC/SIC criterion) are also considered. For example, despite the insignificance of differenced low temperature in the energy model, low temperature lowered the AIC and SIC when included – indicating a valid relationship when forecasting. Additionally, concern over insignificance of a few monthly dummy variables is also safely ignored. It would not make economic sense to remove them, therefore despite their insignificance, they will remain in the model as to not jeopardize theoretical validity.

Independent Variables

Independent variable data sets were generated through the following sources:

Woods & Poole Economics Inc.: An independent firm that specializes in long-run economic and demographic data projections by county in the U.S..

University of Utah, Policy Institute: In 2017 the University issued long-term demographic and economic projects for the counties in Utah.

HLP Staff: Historical weather data, such as temperatures and cooling degree days, were provided by HLP staff. Additional variables such as savings due to energy efficiency and distributed generation were also supplied by HLP.

Mathematical Explanation of ARIMA Terms:

ARIMA(p,i,q) Model

$$d_i(Y_t) = C + \sum_{n=1}^{p} \varphi_P Y_{t-p} + a_t - \sum_{n=1}^{p} \theta_p a_{t-p}$$

p: Number of AR terms used (i.e. AR(1) … AR(5))
q: Number of MA terms used (i.e. MA(1))
Yt: Current Energy Value
C: Constant term
φ: Coefficient on AR term
a_t: Current Residual value

The Auto Regressive portion of this model corresponds to the first mathematical sum and the Moving Average component refers to the second sum. Auto Regressive (AR) components make slight adjustments to the forecasted values by modeling a relationship between the dependent variable and previous lags of itself. The Moving Average (MA) component makes a slight adjustment for dependent variable correlation to error terms. Please note that the error terms were estimated with the Gauss-Newton method. The "I" term within the ARIMA model stands for "Integration." We would consider this model i=1 because the energy data was first differenced. First differencing the data creates a stationary time-series process, which is essential for the use of ARMA terms in forecasting.

To not model ARMA relationships can cause severe model misspecification, serial correlation, and data inefficiencies.

Manual Adjustments

The models were generated using data from 2007 through 2017. To adjust for the exclusion of energy efficiency and distributed generation data within the original dataset, actual kWh and kW savings were added back to the energy and demand for modeling and forecasting. Following the forecast, kWh and kW savings were subtracted from the data sets from 2007 through 2040. Savings from energy efficiency and distributed generation programs were estimated with growth assumptions provided by HL&P.

Temperature Forecast

The temperature forecast is performed following the Double Season Block Bootstrap Resampling method, outlined in Rob J Hyndman and Shu Fan's research in forecasting for long-term peak electricity demand. Using hourly historic temperature observations, seasonal blocks of length 240 (20 days) were allotted for the years of historical data, thus breaking each year into approximately 36 blocks.

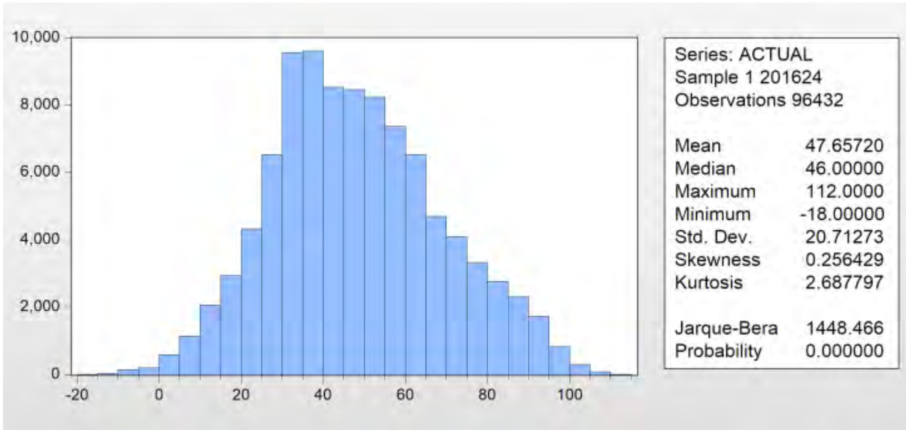
Year 2007	B1: 2007	B2:2007	B3:2007	…	B36: 2007
Year 2008	B1: 2008	B2:2008	B3:2008	…	B36: 2008
Year 2009	B1: 2009	B2:2009	B3:2009	…	B36: 2009
.					
.					
.					
Year 2017	B1: 2017	B2:2017	B3:2017	…	B36: 2017

To forecast, the sample blocks are contained within block number, but come from a randomly selected year. For example, in year 2019, block 1 temperatures may come from 2007, block 2 temperatures 2015, block 3 from 2009, and so on. Since the years are randomly selected, we have a large range of possible series combinations. A series may comprise the following:

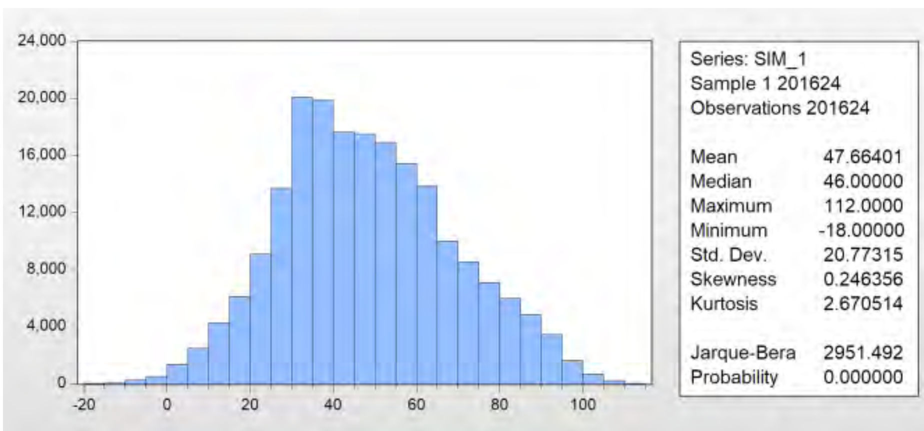
Forecast Y1	B1: 2007	B2:2015	B3:2009	…	B36: 2013
Forecast Y2	B1: 2015	B2:2009	B3:2015	…	B36: 2010
Forecast Y3	B1: 2014	B2:2014	B3:2013	…	B36: 2009
.					
.					
.					
Forecast Y20	B1: 2008	B2:2017	B3:2016	…	B36: 2015

Related cooling and heating degree days were calculated from the resulting sample. This method ensures integrity of seasonality and allows for a probability distribution that more closely mirrors actual temperature data opposed to other methods of weather forecasting, such as moving average. This is shown with HL&P data in the charts on the following page.

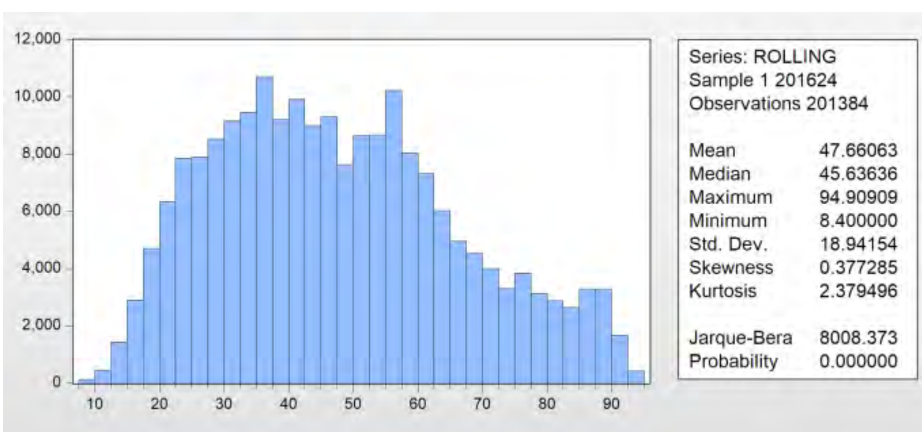
HL&P historic temperature distribution is shown below:



HL&P double season block bootstrap temperature forecast closely mirrors the distribution above:



HL&P Moving average forecast does not closely mirror the actual historical distribution:



Discussion with Board of Directors

Utility Financial Solutions discussed the results of the econometric modeling study with HL&P Board of Directors. Attached are questions asked with formal answers provided by UFS.

1. **Explain what an econometric model is and what statistical tests are performed.**

An econometric model summarizes patterns in data, specifically HLP Energy usage and Load. The models provide a picture of how various factors (such as weather) affect an outcome (such as load growth). Examples of factors used are population growth, temperature, degree days, and seasonality.

Statistical tests are performed to ensure the model is fitted correctly for the historical data. There are specific tests important for all forecasters to perform.

a. Coefficients are linear – or if not linear, the non-linearity is modeled.
   TEST: Ramsey Reset Test
b. Expected value of error is 0
   TEST: Constant included in model
c. Homoskedasticity – no variance in the error term
   TEST: ARCH test
d. Error Term is Independently Distributed – Error term should not be correlated to previous values of itself, i.e. "it's just noise"
   TEST: Serial Correlation LM Test
e. Variables are not correlated with the Error term – again, the error is just random noise
   TEST: Ramsey Reset Test

Additional Statistics Used

Adjusted R-Squared – estimates goodness of fit of the model
Akaike Information Criterion (AIC) – Estimates forecasting capability of model
Schwarz Information Criterion (SIC) – Estimates forecasting capability of model with adjustments for insignificant variables
Durbin – Watson Statistic – measures relationship between current observation of the dependent variable and past observations (serial correlation). This statistic should be close to 2.
Mean Absolute Percentage Error (MAPE) – Forecasting error when testing the model values against the actual values

2. **Why is an econometric model and good fit for a load forecast?**
Examples of simplistic models would include increasing load by expected growth or by a statistical measure such as Consumer Price Index. While these models might approximate the change in load, they do little to help us understand what affects load in different ways. An econometric model takes multiple variables such as weather and population and allows us to summarize patterns and form links.

3. **Explain why the ARMA model was used?**
In forecasting it is important to be as simple as possible. The statistical tests noted above drive choices on included variables and type of model.

The nature of load and energy consumption is seasonal and weather dependent. It is also dependent on community activity and customer patterns. These items are continuous in nature, such that yesterday's weather or activity often affects our usage today.

The dependency of usage and load on previous values is what causes the need for an ARMA model. After attempting to model load without the inclusion of the ARMA terms, the model failed the Serial Correlation LM test. This indicates that the relationship between yesterday's load and today's load Is not being reflected in the model. ARMA terms capture this relationship.

AR and MA are two separate types of variables. I will briefly describe each.

AR (Auto Regressive) can be thought of as a relationship to a previous value, for example, January usage is similar to December usage because of cold weather patterns. The number of AR terms needed in the models indicated strong seasonal relationships in the data.

MA (Moving Average) occurs when the error term is correlated to previous error terms. This can happen when data is continuous, but we are forecasting specific points. Including the MA term helps model the continuity missing from our data.

4. **What are the independent variables used in the model?**
Demand Model:

- Independent Variables
    - Differenced high temp
    - Differenced low temp
    - Rolling average temp * (may + June)
    - Monthly Dummy Variables
    - Constant
    - ARMA Terms
        - AR(1) – 1st lag of load
        - AR(2) – 2nd lag of load
        - AR(3) – 3rd lag of load
        - AR(4) – 4th lag of load
        - MA(1) – 1st lag of residuals (errors)

Energy Model

- Independent Variables
    - Differenced Population
    - Differenced Cooling Degree Days
    - Differenced Low Temp
    - Monthly Dummy Variables
    - Constant
    - ARMA Terms
        - AR(1) – 1st lag of energy
        - AR(2) – 2nd lag of energy
        - AR(3) – 3rd lag of energy
        - MA(1) – 1st lag of residuals (errors)

5. **Provide a brief description of the data sources (*e.g.*, Woods and Pool data, weather, demographic data, energy efficiency).**
   Demographic data was provided by Woods & Poole and University of Utah. Woods & Poole is a small independent economics firm in Washington D.C.. Woods & Poole's database contains more than 900 variables of economic data and demographic data for the U.S. and all states, regions, counties, and Core Based Statistical Areas for every year from 1970 to 2050. Woods & Poole has been making county forecasts since 1983. This comprehensive database is updated annually.
   Weather data was provided by HLP (2009 – current) and weather underground (2007 – 2009). Weather data was forecasted using historical weather data.
   Energy efficiency data was provided by HLP. Data was forecasted with a modest growth and maximum capacity assumption reviewed with HLP staff.

6. **What are the strongest factors contributing to load growth for HL&P system load and demand?**
   HLP Usage increases are largely driven by the growth in population expected. System Load growth is driven by the patterns picked up through the ARMA terms such as historical swings and previous load growth. The historical ten-year average load growth is 3.0%, five-year average is 4.5% and historical three-year average is 3.2%. These strong growth factors are driving the future trend.

7. **What is the confidence level of the forecast? (One of our customers has specifically requested an explanation of the confidence interval, and asked, "What is the probability that growth could be outside of the confidence band?")**
   The confidence interval provides a range of values (higher and lower) with a probability of 96% that the forecasted value lies within the range. The probability that growth could be outside the bands is 4%. When compared to historic values, the forecast produces a margin of error that is used to calculate upper and lower confidence intervals.

Exhibit B

12 kV Load Flow Study

Heber Light & Power
12.47 kV Load Flow Study

March 2019

Intermountain Consumer
Professional Engineers, Inc.
1145 East South Union Avenue
Midvale, Utah 84047
(801) 255-1111

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SYSTEM STUDY

System Study Overview

This electrical system study report addresses study methods and results of load flow analysis of the Heber Light & Power 12.47 kV distribution system. The 46 kV portion of the system is not covered in this report, but was studied as part of a separate report. Substations include Midway Substation, Provo River Substation, Heber Substation, Cloyes Substation, Jailhouse Substation and College Substation. Generators are located at Snake Creek Hydro, Lake Creek Hydro, Jordanelle Hydro and the Heber Plant. A total of seventeen circuits were modeled.

The primary goal of the load flow was to study system loading including during N-1 outage conditions to help the Company to plan for future growth requirements including substation upgrades and 12.47 kV line upgrades. Recommendations for system improvements have been provided.

System Models and Assumptions

To perform load flow analysis a system computer model was developed. Model development is discussed in the System Modeling section of this report. System model development and analysis were performed on Paladin DesignBase 4.0 software.

System modeling data was developed from Heber Light & Power provided system data. Circuit models are based on the assumption that provided circuit maps and data (conductor sizes, circuit configurations, line lengths, etc.) are reflective of actual field conditions.

Summary

The system load flow provides insight on substation transformer loading, line loading, and system voltage drop. The study includes analyzing N-1 outage conditions. An N-1 outage condition is the loss of a major system component such as a section of 12.47 kV line. Results and recommendations are discussed in the System Load Flow Analysis and Results section of this report.

SYSTEM LOAD FLOW ANALYSIS AND RESULTS

System load flow studies were performed for years 2018 and 2022. Overall system load projections are based on load projections done in 2018 by Utility Financial Solutions LLC. The load flow studies were utilized to assess line and transformer loading conditions and system voltage conditions. Tables shown below contain projected Heber Light & Power system load and projected circuit loads for years that were analyzed. The 2018 circuit and transformer load levels shown below are based on current circuit configuration.

Heber Light & Power– Projected System Peak Load		
Year	**Heber Light & Power Load**	
	MW	**MVA**
2018	44.63 MW	46.0 MVA
2022	48.86 WM	49.4 MVA

Substation Transformer	**Recloser**	**2018**		**2022**	
		Amps	**kVA**	**Amps**	**kVA**
Midway Transformer 10/12.5/14 MVA 46 kV – 12.47 kV	**MW101**	87	1,885	91	1,966
	MW102	215	4,644	219	4,726
	MW104	38	827	42	913
	Sub Total	**341**	**7,355**	**352**	**7,605**
Provo River 5 MVA (with fans) 46 kV – 12.47 kV	**PR201**	233	5,036	237	5,117
	PR202	26	556	30	638
	Sub Total	**259**	**5,591**	**266**	**5,755**
Heber T1 12/16/20 MVA 46 kV – 12.47 kV	**HB302**	275	5,930	298	6,435
	HB303	114	2,462	137	2,957
	Sub Total	**389**	**8,392**	**435**	**9,392**
Heber T2 12/16/20 MVA 46 kV – 12.47 kV	**HB304**	178	3,848	201	4,343
	HB305	79	1,710	83	1,792
	Sub Total	**257**	**5,558**	**284**	**6,135**
Cloyes 7.5/9.375 MVA 46 kV – 4.16 kV	**CL401**	34	737	38	829
	CL402	108	2,338	112	2,422
	CL403	-	-	-	-
	Sub Total	**142**	**3,075**	**151**	**3,251**
Jailhouse T1 10/12.5/14 MVA 46 kV – 12.47 kV	**JH501**	172	3,706	175	3,787
	JH503	44	954	48	1,036
	JH505	6	134	30	649
	Sub Total	**216**	**4,659**	**223**	**4,823**
Jailhouse T2 12/16/20 MVA 46 kV – 12.47 kV	**JH502**	382	8,252	405	8,752
	JH504	145	3,136	170	3,663
	JH506	6	124	30	649
	Sub Total	**527**	**11,389**	**575**	**12,415**
College (2) 12/16/120 MVA 46 kV – 12.47 kV	**CO Circuits**	**-**	**-**	**-**	**-**
	-	**-**	**-**	**-**	**-**
	Sub Total	**-**	**-**	**-**	**-**
Total	**Amps**	**2,131**	**-**	**2,286**	**-**
	kVA	**-**	**46,019**	**-**	**49,376**

The following table shows approximate transformer loading. The College Substation transformers are not included in the Total City numbers due to College Substation currently being out of service. When College Substation will be put back into service is unknown at this time. Loading on most transformers is at an acceptable level. It is not anticipated that new substations will be required over the next five years.

The Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. The Provo River transformer will need to be upgraded to a larger transformer. Until this can happen, Heber Light & Power may be able to decrease the load on the Provo River transformer by moving load to Midway circuits. This would only be a temporary solution.

Substation Transformer	2018		2022	
	%Base	%Total	%Base	%Total
Midway Transformer 10/12.5/14 MVA 46 kV – 12.47 kV	74%	53%	76%	54%
Provo River 5 MVA (with fans) 46 kV – 12.47 kV	112%	112%	115%	115%
Heber T1 12/16/20 MVA 46 kV – 12.47 kV	70%	42%	78%	47%
Heber T2 12/16/20 MVA 46 kV – 12.47 kV	46%	28%	51%	31%
Cloyes 7.5 MVA 46 kV – 4.16 kV	41%	33%	43%	35%
Jailhouse T1 10 MVA 46 kV – 12.47 kV	47%	33%	48%	34%
Jailhouse T2 10/12.5/14 MVA 46 kV – 12.47 kV	95%	57%	103%	62%
College (2) 12/16/120 MVA 46 kV – 12.47 kV	0%	0%	0%	0%
Total City (Not Counting College)	70%	47%	75%	50%

Proposed Improvements

Proposed system improvements are summarized by year in the following tables. A brief description and explanation of each improvement are given. A system map showing proposed improvements is in the appendix. For a more detailed explanation of load flow results see the Load Flow – Outage Cases section of the report.

Proposed System Improvements		
Proposed Improvement	**Reason/Explanation**	Approximate Cost
1. Install a larger 12/16/20 MVA transformer at Provo River substation.	Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. During an outage of Midway transformer the Provo River transformer needs to have more capacity in order to be able to restore power to MW101 and MW102 circuits. It is proposed to replace the transformer with a larger 12/16/20 MVA transformer.	$2,717,516
2. Rebuild part of PR201 circuit with 477 ACSR conductor to improve capacity and help reduce voltage drop.	During an outage of Midway transformer upgrades to PR201 circuit are needed to be able to restore power to MW101 and MW102 circuits. This upgrade will improve capacity and help reduce voltage drop. It is proposed to upgrade PR201 from Provo River substation to approximately 600 East Main Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.	$126,679
3. Rebuild part of PR201 circuit with 477 ACSR conductor to improve capacity and help reduce voltage drop.	When Snake Creek Hydro generation is off, part of the PR201 main truck line is overloaded during peak load. During an outage of Midway transformer upgrades to PR201 circuit are needed to be able to restore power to MW101 and MW102 circuits. This upgrade will improve capacity and help reduce voltage drop. It is proposed to upgrade PR201 along River Road from Main Street to Burgi Lane. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.	$184,357
4. Rebuild part of CL402 circuit with 477 ACSR conductor to improve capacity and help reduce voltage drop.	During an outage of Midway transformer upgrades to circuit CL402 are needed so that circuit CL402 can be used to restore power to circuit MW104. During an outage of Cloyes transformer upgrades to circuit CL402 are needed so that circuit HB303 can be used to restore power to circuit CL402. It is proposed to upgrade CL402 from Cloyes substation to Tate Lane Hwy 113, from 1900 South Casperville Road to 2400 South 2650 West and from 600 West 800 South to 600 West 1000 South. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.	$544,036

Proposed System Improvements		
Proposed Improvement	**Reason/Explanation**	Approximate Cost
5. Rebuild part of MW101 and MW102 circuits with 477 ACSR conductor to improve capacity and help reduce voltage drop.	During an outage of Provo River transformer upgrades to circuit MW101 are needed so that circuit MW101 can be used to restore power to circuit PR201. It is proposed to upgrade MW101 from Midway substation to Main Street Center Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR. It is proposed to upgrade MW101 and MW102 circuits from 220 W Main Street to 300 East Main Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR. It is proposed to upgrade MW102 circuit from 300 W Main Street to 200 N 300 W. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.	$348,874
6. Install line voltage regulators on JH502 circuit	Model shows voltage issues at the end of JH502 circuit during peak load (4% drop). Propose to install line voltage regulators on JH502 at approximately 8000 East Lake Creek Road.	$94,600
7. Rebuild part of HB305 circuit with 477 ACSR conductor to improve capacity.	During an outage of Heber T1 transformer upgrades to circuit HB305 are needed so that circuit HB305 can be used to restore power to circuit HB303. It is proposed to upgrade HB305 circuit from 600 W 200 S to 600 W 300 S. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.	$23,058
8. Rebuild part of JH501 circuit with 1100 kcmil underground cable to improve capacity.	During an outage of Jailhouse T2 transformer upgrades to circuit JH501 are needed so that circuit JH501 can be used to restore power to circuit JH504. It is proposed to upgrade JH501 circuit from 1500 S Providence Drive to 450 E 1500 S. Existing conductor is 4/0 underground cable and it is proposed to upgrade to 1100 kcmil underground cable.	$72,245
9. Rebuild part of JH502 and JH503 circuits with 1100 kcmil underground cable to improve capacity.	During an outage of Jailhouse T2 transformer upgrades to circuits JH502 and JH503 are needed so that circuit JH503 can be used to restore power to half of circuit JH502. Power to the other half of JH502 circuit can be restored by circuit HB304. It is proposed to upgrade JH502 and JH503 circuits from 800 South Old Mill Drive to 2200 South Old Mill Drive Mill Drive. Existing conductor is #2 underground cable and it is proposed to upgrade to 1100 kcmil underground cable.	$299,189
	Total	$4,410,554

Potential New Substation

This study covers the next five years. Looking past that another 5 years shows that it may be necessary to add an additional substation to the east of Jailhouse substation within the next 10 years. The need for the additional new substation is beyond the five years considered in this study so specific details of what would be required have not been determined. It should be noted that locations for a potential new substation and 46 kV line routes to feed it should be considered well in advance of its need. This will allow Heber time to purchase substation land, obtain necessary line easements, and plan financially. Also substation and transmission line projects can take significant time from start to finish due to material lead times and permitting requirements.

System Power Factor

Heber Light & Power power factor for each circuit is shown below. Keeping a high power factor helps support voltage during system peak loading and during outage conditions. The need for power factor correction becomes more important as transformer and line loading levels increase. Improving power factor also reduces system losses. Heber Light & Power power factor is currently at acceptable levels.

Substation Transformer	Recloser	Power Factor
Midway Transformer	**MW101**	0.98
	MW102	0.97
	MW104	0.93
Provo River	**PR201**	0.98
	PR202	0.98
Heber T1	**HB302**	0.74 (Assumed 0.95 without generation)
	HB303	0.95
Heber T2	**HB304**	0.99
	HB305	0.98
Cloyes	**CL401**	0.87
	CL402	0.95
	CL403	-
Jailhouse T1	**JH501**	0.98
	JH503	0.97
	JH505	Assumed 0.97
Jailhouse T2	**JH502**	0.96
	JH504	0.95
	JH506	Assumed 0.97
College	**CO Circuits**	**-**

Load Flow – Outage Cases

Loss of substation transformers and reclosers was considered. Load flows were ran with substation transformers taken out of service one at a time. Loads from the transformer that was out of service were transferred to adjacent transformers or substations. Doing this also covered the case of a failed recloser since similar load switching would be required. Loss of important distribution lines was also considered. In a few outage cases, it became apparent that system improvements were necessary. The table below lists the results and discusses required system improvements. Results are based on projected peak (summer) load levels. During winter load levels the outages would not have as great of an effect.

Failures of a 46 kV transmission line or loss of Heber Light & Power generation was considered in a separate report.

The Comments/Results column of the following tables lists ways to restore load during a line or transformer outage. It also discusses proposed solutions if the outage creates problems. In some cases more than one option of restoring load could be possible. Heber may have developed load transfer schemes that differ from the ones shown.

2018 **Outage Cases**	**Comments/Results**
Midway Outage Conditions	Midway transformer out of service: MW104 circuit can be picked up by CL402 circuit. **Line is nearing ampacity. There are voltage issues at the end of the line (almost 6% drop).** **Power cannot be restored to MW101 and MW102 circuits. MW101 and MW102 connect to PR201, but Provo River transformer and PR201 lines would be overloaded. MW101 connects to CL402, but CL402 lines would be overloaded.**
Midway Proposed Solutions	**It is proposed to replace the Provo River transformer with a larger 12/16/20 MVA transformer.** **It is proposed to upgrade PR201 circuit from Provo River substation to approximately 600 East Main Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade PR201 circuit along River Road from Main Street to Burgi Lane. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade CL402 from Cloyes substation to Tate Lane Hwy 113. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade MW101 and MW102 circuits from 220 West Main Street to 300 East Main Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade MW102 circuit from 300 West Main Street to 200 North 300 West. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.**

2018 Outage Cases	Comments/Results
Provo River Outage Conditions	**Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much.**
	When Snake Creek Hydro generation is off, part of the PR201 main truck line is overloaded during peak load.
	Model shows voltage issues at the end of PR201 circuit (almost 7% drop) when Snake Creek generation is off. When generation is on the voltage is better, but there are still issues.
	Provo River transformer out of service: PR201 circuit can be picked up by MW101 circuit. **Line is nearing ampacity. There are voltage issues at the end of the line (almost 7% drop).** **PR201 also connects to MW102, but it would overload lines and have voltage issues (over 5%).** PR202 circuit can be picked up by MW101 circuit.
Provo River Proposed Solutions	**Provo River transformer will need to be replaced. It is proposed to replace the transformer with a larger 12/16/20 MVA transformer.** **Until the transformer can be replaced, Heber Light & Power may be able to move some load to Midway circuits to help reduce the load on the Provo River transformer. This is only a temporary solution.** **It is proposed to upgrade PR201 circuit along River Road from Main Street to Burgi Lane. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade MW101 circuit from Midway substation to 300 East Main Street. Existing conductor is 4/0 ACSR and it is proposed to upgrade to 477 ACSR.**
Heber T1 Outage Conditions	Heber T1 transformer out of service: HB302 circuit can be picked up by HB304 circuit. HB303 circuit can be picked up by HB305 circuit. **One line section of #2 ACSR is approximately at capacity. By 2022 it will be over capacity.**
Heber T1 Proposed Solutions	**It is proposed to upgrade HB305 circuit from 600 West 200 South to 600 West 300 South. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.**
Heber T2 Outage Conditions	Heber T2 transformer out of service: HB304 circuit can be picked up by HB303. HB305 circuit can be picked up by CL403 circuit.
Heber T2 Proposed Solutions	None

2018 **Outage Cases**	**Comments/Results**
Cloyes Outage Conditions	Cloyes transformer out of service: CL401 circuit can be picked up by HB304. CL402 circuit can be picked up by HB303. **There are voltage issues at the end of the line (5% drop).**
Cloyes Proposed Solutions	**It is proposed to upgrade CL402 circuit from Cloyes substation to 2400 South 2650 West. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.** **It is proposed to upgrade CL402 circuit from 600 West 800 South to 600 West 1000 South. Existing conductor is #2 ACSR and it is proposed to upgrade to 477 ACSR.**
Jailhouse T1 Outage Conditions	Jailhouse T1 transformer out of service: JH501 circuit can be picked up by HB303. JH503 circuit can be picked up by CL401.
Jailhouse T1 Proposed Solutions	None
Jailhouse T2 Outage Conditions	**Model shows voltage issues at the end of JH502 circuit during peak load (4% drop).**
	JH502 load is approximately 382 amps when Lake Creek generation is off. Consider moving some load to another circuit. Possibly some load could be moved to a new JH505 or JH506 circuit. At some point in the future a new substation to the west of Jailhouse will probably be required. Much of the area currently fed by JH502 could then be fed from the new substation.
	About half of the JH502 circuit can only be fed from one direction. Loss of a line in that part of the circuit would result in loss of power that cannot be quickly restored.
	Jailhouse T2 transformer out of service: The top half of JH502 circuit can be picked up by HB304. The bottom half can be picked up by JH503**.** No single circuit can pick up the entire JH502 circuit. **Part of JH502 and JH503 circuits will be overloaded. The bottom half of JH502 circuit picked up by JH503 circuit has voltage issues unless line voltage regulators are installed.** JH504 circuit can be picked up by JH501. **A portion of the line is at ampacity and will be overloaded by 2022.**
Jailhouse T2 Proposed Solutions	**Propose to install line voltage regulators on JH502 at approximately 8000 East Lake Creek Road.** **It is proposed to upgrade JH502 and JH503 circuits from 800 South Old Mill Drive to 2200 South Old Mill Drive Mill Drive. Existing conductor is #2 underground cable and it is proposed to upgrade to 1100 kcmil underground cable.** **It is proposed to upgrade JH501 circuit from 1500 South Providence Drive to 450 East 1500 South. Existing conductor is 4/0 underground cable and it is proposed to upgrade to 1100 kcmil underground cable.**
College Outage Conditions	College Substation is currently not in service. In the future a portion of HB302 circuit may be able to be fed from College substation.

2018 Outage Cases	Comments/Results
College Proposed Solutions	None

2022 Outage Cases (After Upgrades)	Comments/Results
Midway Outage Conditions	Midway transformer out of service: MW104 circuit can be picked up by CL402 circuit. MW101 and MW102 circuits can be picked up by PR201.
Midway Proposed Solutions	None
Provo River Outage Conditions	Provo River transformer out of service: PR201 circuit can be picked up by MW101 circuit. PR202 circuit can be picked up by MW101 circuit.
Provo River Proposed Solutions	None
Heber T1 Outage Conditions	Heber T1 transformer out of service: HB302 circuit can be picked up by HB304 circuit. HB303 circuit can be picked up by HB305 circuit.
Heber T1 Proposed Solutions	None
Heber T2 Outage Conditions	Heber T2 transformer out of service: HB304 circuit can be picked up by HB303. HB305 circuit can be picked up by CL403 circuit.
Heber T2 Proposed Solutions	None
Cloyes Outage Conditions	Cloyes transformer out of service: CL401 circuit can be picked up by HB304. CL402 circuit can be picked up by HB303.
Cloyes Proposed Solutions	None
Jailhouse T1 Outage Conditions	Jailhouse T1 transformer out of service: JH501 circuit can be picked up by HB303. JH503 circuit can be picked up by CL401. It is assumed that JH505 circuit will tie into the rest of the system and be able to be backed up, but details are not known at this time.
Jailhouse T1 Proposed Solutions	None

<table>
<tr><th>2022
Outage Cases
(After Upgrades)</th><th>Comments/Results</th></tr>
<tr><td rowspan="3">Jailhouse T2
Outage Conditions</td><td>JH502 load is approximately 405 amps when Lake Creek generation is off. Consider moving some load to another circuit. Possibly some load could be moved to a new JH505 or JH506 circuit. At some point in the future a new substation to the west of Jailhouse will probably be required. Much of the area currently fed by JH502 could then be fed from the new substation.</td></tr>
<tr><td>About half of the JH502 circuit can only be fed from one direction. Loss of a line in that part of the circuit would result in loss of power that cannot be quickly restored.</td></tr>
<tr><td>Jailhouse T2 transformer out of service:

The top half of JH502 circuit can be picked up by HB304. The bottom half can be picked up by JH503. No single circuit can pick up the entire JH502 circuit.

JH504 circuit can be picked up by JH501.

It is assumed that JH506 circuit will tie into the rest of the system and be able to be backed up, but details are not known at this time.</td></tr>
<tr><td>Jailhouse T2
Proposed Solutions</td><td>None</td></tr>
<tr><td>College
Outage Conditions</td><td>College Substation is currently not in service. In the future a portion of HB302 circuit may be able to be fed from College substation.</td></tr>
<tr><td>College
Proposed Solutions</td><td>None</td></tr>
</table>

SYSTEM MODELING

To perform a comprehensive load flow, fault analysis, and protective device coordination study, system computer modeling is necessary. System modeling data was developed from Heber Light & Power provided system data. The model is based on the assumption that provided transformer data, generator data, system maps and data (conductor sizes, system configurations, line lengths, etc.) are reflective of actual field conditions.

Overhead and underground distribution circuit impedance values as developed for this study are presented in tables shown below. Transformer and generator data is also shown below. Detailed model input data is shown in the appendix.

Heber Light & Power - 12.47 kV Overhead						
Conductor Size	Ampacity (Amps)	Z(+) Ohms/1000'		Z(0) Ohms/1000'		1/2 Bpu mmho/1000'
		R	X	R	X	
#8 CU	90	0.71972	0.15564	0.83921	0.56057	0.00000
#6 CU	130	0.41860	0.14619	0.55504	0.50731	0.00000
#4 CU	180	0.26297	0.16106	0.39011	0.47674	0.00000
#4	140	0.42430	0.14280	0.56133	0.50536	0.00000
#2 CU	230	0.16695	0.13922	0.28220	0.41123	0.00000
#2	180	0.26712	0.13784	0.40331	0.45241	0.00000
4/0	340	0.08369	0.12443	0.16195	0.35568	0.00000
477 AAC	646	0.03756	0.15419	0.07778	0.39644	0.00000

Heber Light & Power - 12.47 kV Underground						
Conductor Size	Ampacity (Amps)	Z(+) Ohms/1000'		Z(0) Ohms/1000'		1/2 Bpu mmho/1000'
		R	X	R	X	
#2	130	0.35100	0.05700	0.66900	0.22000	0.00841
4/0	255	0.11000	0.04700	0.32400	0.09600	0.01271
500	415	0.04700	0.04400	0.14900	0.03700	0.01634
750	510	0.03010	0.04090	0.19400	0.06000	0.02541
1000	585	0.02270	0.03700	0.15000	0.04000	0.02600
1100	620	0.02280	0.03880	0.11400	0.03000	0.02782

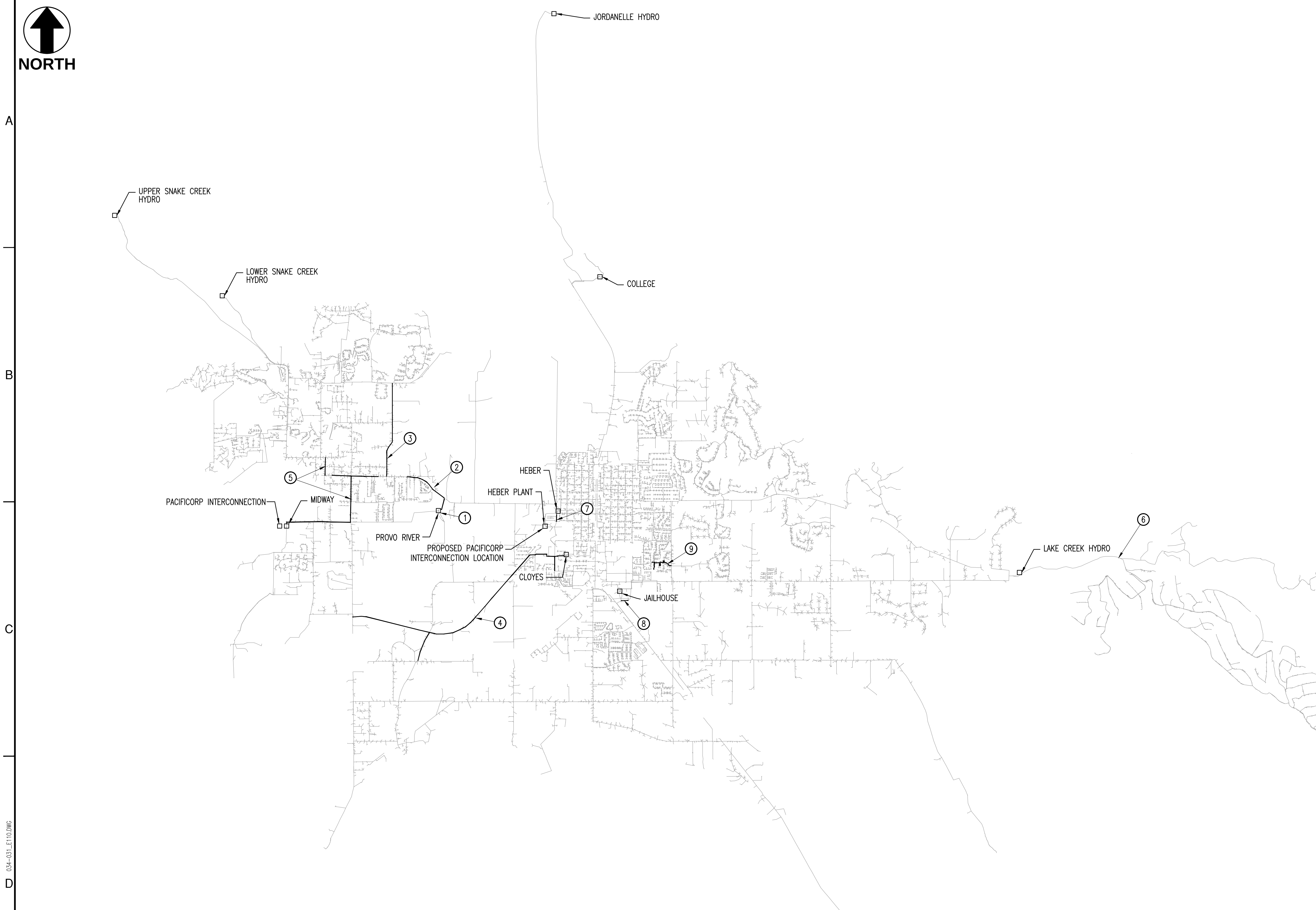
Heber Light & Power – Substation Transformer Data			
Transformer	MVA Rating	Voltage Rating	%Z @ Nominal
Midway	10/12.5/14 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.91%
Provo River	5 MVA (with fans)	46-12.47 kV Delta-Gnd-Y	Z1 = 6.55%
Heber T1	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.7%
Heber T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.05%
Cloyes	7.5/9.375 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.7%
Jailhouse T1	10/12.5/14 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 8.15%
Jailhouse T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 8.12%
College T1	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.67%
College T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.67%

Generator	Generator Rating	System Connection
Snake Creek Hydro	1.98 MW	To circuit PR201 at 12.47 kV
Lake Creek Hydro	1.5 MW	To Circuit JH502 at 12.47 kV
Jordanelle Hydro	13 MW	To Circuit HB302 at 12.47 kV
Heber Plant	13.756 MW	To 46 kV System

APPENDICES

1. System Map
2. Cost Estimates
3. Load Flow Studies
4. Model Input Data

APPENDIX 1 – SYSTEM MAP



KEYED NOTES:

1. INSTALL A LARGER 12/16/20 MVA TRANSFORMER AT PROVO RIVER.
2. UPGRADE PART OF PR201 CIRCUIT TO 477 ACSR.
3. UPGRADE PART OF PR201 CIRCUIT TO 477 ACSR.
4. UPGRADE PART OF CL402 CIRCUIT TO 477 ACSR.
5. UPGRADE PART OF MW101 AND MW102 CIRCUITS TO 477 ACSR.
6. INSTALL LINE VOLTAGE REGULATORS ON JH502 CIRCUIT.
7. UPGRADE PART OF HB305 CIRCUIT TO 477 ACSR.
8. UPGRADE PART OF JH501 CIRCUIT TO 1100 kcmil.
9. UPGRADE PART OF JH502 AND JH503 CIRCUITS TO 750 kcmil.

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CONSULTING ENGINEERS
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CONFIDENTIAL

No.	Description	By	Date	App.
A	PROPOSED IMPROVEMENTS	RF	09/13/18	CBM

REVISIONS

Title: HEBER LIGHT & POWER
ELECTRICAL
12.47kV SYSTEM STUDY
PROPOSED IMPROVEMENTS

Dwn.	RF	Date	09/13/18	Engr.	MTF	Date	09/13/18
Chk.	MTF	Date	09/13/18	App.	CBM	Date	09/13/18
Proj. No:	034-031	Scale	NONE				

Drawing No. E110 Rev. A

9/17/18 rferderber 034-031_E110.DWG

APPENDIX 2 – COST ESTIMATES

COST ESTIMATE

PROJECT:	DATE PREPARED: 1/31/2019
Provo River Substation - Map ID 1	BASIS FOR ESTIMATE
DESCRIPTION:	CODE A (Schematic Design)
	CODE B (Preliminary Design)
	CODE C (Final Design) 100%
ENGINEER : ICPE	OTHER--Conceptual Configuration
ESTIMATOR: Mac Fillingim	CHECKED: Craig Michaelis
Avg. Labor Rate: $100.00	

DESCRIPTION	QUANTITY		LABOR			MATERIAL ($)		
	NO. UNITS	UNIT MEAS	PER UNIT	TOTAL Man Hr.	TOTAL LABOR ($)	PER UNIT	TOTAL MATERIAL	TOTAL ESTIMATE
Major Equipment								
46 kV - 12.47kV Transformer 20/26.67/33.33 MVA w/LTC	1	EA	80	80.00	$8,000.00	$700,000.00	$700,000.00	$708,000.00
46 kV Breaker	1	EA	45	45.00	$4,500.00	$55,500.00	$55,500.00	$60,000.00
46 kV Group Operated Switch	1	EA	60	60.00	$6,000.00	$12,000.00	$12,000.00	$18,000.00
46 kV Disconnect Switch	6	EA	12	72.00	$7,200.00	$2,500.00	$15,000.00	$22,200.00
15 kV Reclosers	3	EA	32	96.00	$9,600.00	$25,000.00	$75,000.00	$84,600.00
15 kV Group Operated Switch	1	EA	40	40.00	$4,000.00	$7,500.00	$7,500.00	$11,500.00
							Total	**$904,300.00**
Metering / Relaying / SCADA								
15 kV Metering (PTs & CTs)	1	LS	40	40.00	$4,000.00	$18,000.00	$18,000.00	$22,000.00
Relay Panel - Transformer Diff (Installation & Wire Terminations)	1	LS	80	80.00	$8,000.00	$35,000.00	$35,000.00	$43,000.00
Relay Panel - Recloser Control (Installation & Wire Terminations)	2	LS	100	200.00	$20,000.00	$30,000.00	$60,000.00	$80,000.00
Relay Panel - Meter Panel (Installation & Wire Terminations)	1	LS	40	40.00	$4,000.00	$20,000.00	$20,000.00	$24,000.00
SCADA Equipment & Programming	1	LS	200	200.00	$20,000.00	$75,000.00	$75,000.00	$95,000.00
							Total	**$264,000.00**
Steel Structures								
46 kV Deadend Structure	1	EA	40.00	40.00	$4,000.00	$29,700.00	$29,700.00	$33,700.00
46 kV Switch Structure	1	EA	16.00	16.00	$1,600.00	$12,375.00	$12,375.00	$13,975.00
15 kV Metering Structure	1	EA	16.00	16.00	$1,600.00	$8,250.00	$8,250.00	$9,850.00
15 kV Switch Structure	1	EA	16.00	16.00	$1,600.00	$4,193.75	$4,193.75	$5,793.75
15 kV Recloser Structure	3	EA	16.00	48.00	$4,800.00	$4,950.00	$14,850.00	$19,650.00
Static Wire Pole	1	EA	8.00	8.00	$800.00	$7,975.00	$7,975.00	$8,775.00
Switch Platform	2	EA	4.00	8.00	$800.00	$1,100.00	$2,200.00	$3,000.00
							Total	**$94,743.75**
Concrete Foundations								
46 kV Deadend Structure	2	EA	16	32.00	$3,200.00	$6,270.00	$12,540.00	$15,740.00
15 kV Switch Structure	2	EA	8	16.00	$1,600.00	$2,640.00	$5,280.00	$6,880.00
15 kV Recloser Structure	3	EA	8	24.00	$2,400.00	$2,860.00	$8,580.00	$10,980.00
Static Wire Pole	1	EA	4	4.00	$400.00	$4,730.00	$4,730.00	$5,130.00
Transformer Containment	1	EA	80	80.00	$8,000.00	$99,400.00	$99,400.00	$107,400.00
46 kV Breaker Pad	1	EA	8	8.00	$800.00	$4,200.00	$4,200.00	$5,000.00
Control Building	1	EA	24	24.00	$2,400.00	$14,000.00	$14,000.00	$16,400.00
							Total	**$167,530.00**
Control Building								
Prefabricated Control Building	1	EA	80	80.00	$8,000.00	$67,200.00	$67,200.00	$75,200.00
Control Building Equipment	1	LS	16	16.00	$1,600.00	$12,500.00	$12,500.00	$14,100.00
125 VDC Battery System	1	EA	32	32.00	$3,200.00	$18,000.00	$18,000.00	$21,200.00
Control Building AC Systems	1	LS	80	80.00	$8,000.00	$11,750.00	$11,750.00	$19,750.00
							Total	**$130,250.00**
Substation Bus & Material								
46 kV Bus & Fittings	1	LS	80	80.00	$8,000.00	$25,000.00	$25,000.00	$33,000.00
15 kV Bus & Fittings	1	LS	240	240.00	$24,000.00	$50,000.00	$50,000.00	$74,000.00
Recloser Bypass Switches	18	EA	4	72.00	$7,200.00	$800.00	$14,400.00	$21,600.00
Recloser Fused Switches	9	EA	4	36.00	$3,600.00	$2,100.00	$18,900.00	$22,500.00
Station Lightning Protection	1	LS	32	32.00	$3,200.00	$2,500.00	$2,500.00	$5,700.00
46 kV Lightning Arresters	3	EA	4	12.00	$1,200.00	$1,500.00	$4,500.00	$5,700.00
9 kV Lightning Arresters	9	EA	1	9.00	$900.00	$500.00	$4,500.00	$5,400.00
							Total	**$167,900.00**
Substation Conduit & Cable								
600 Volt Conduit & Cable	1	LS	240	240.00	$24,000.00	$32,500.00	$32,500.00	$56,500.00
15 kV 6" Conduit (15 kV cable not included)	1	LS	120	160.00	$16,000.00	$17,750.00	$17,750.00	$33,750.00
Station Service (Transformer, Disconnect, Conduit/Cable)	1	LS	60	60.00	$6,000.00	$17,500.00	$17,500.00	$23,500.00
							Total	**$113,750.00**
Substation Grounding								
Station Ground Grid	1	LS	320	320.00	$32,000.00	$50,000.00	$50,000.00	$82,000.00
							Total	**$82,000.00**
Substation Site Work								
Site Grubbing & Fill	1	LS	80	80.00	$8,000.00	$25,000.00	$25,000.00	$33,000.00
Site Surface gravel	1	LS	80	80.00	$8,000.00	$15,000.00	$15,000.00	$23,000.00
Site Roads	1	LS	40	40.00	$4,000.00	$12,000.00	$12,000.00	$16,000.00
Substation Fence (Chain Link)	1	LS	80	80.00	$8,000.00	$30,000.00	$30,000.00	$38,000.00
Substation Land	0	LS	0	0.00	$0.00	$0.00	$0.00	$0.00
							Total	**$110,000.00**
Demolition								
Demolition and Removal of existing equipment	1	LS	450	450.00	$45,000.00	$0.00	$0.00	$45,000.00
							Total	**$45,000.00**
Miscellaneous								
Contractor Mobilization	1	LS	0	0.00	$0.00	$10,000.00	$10,000.00	$10,000.00
Contractor Bonding	1	LS	0	0.00	$0.00	$7,000.00	$7,000.00	$7,000.00
Substation Testing & Commissioning	1	LS	0	0.00	$0.00	$55,000.00	$55,000.00	$55,000.00
							Total	**$72,000.00**
	Subtotals			**3,492.0**	**$349,200.00**		**$1,802,273.75**	
Subtotal Labor + Material								**$2,151,473.75**
Equipment				698.4		70		**$48,888.00**
Contingency (10%)								**$220,036.18**
Engineering								**$125,000.00**
Tax (8%)								**$172,117.90**
TOTAL ESTIMATE								**$2,717,515.83**

Notes:
1 - Foundation estimate is based on the site having good soil conditions without water.
2 - Incoming 46 kV Line & 15kV Distribution Circuits are not included.
3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.
4 - Estimate assumes the substation land is owned by the City and initial site grading has been completed.

COST ESTIMATE								DATE PREPARED: 1/31/2019
PROJECT: Upgrade PR201 Circuit - Map ID 2								**BASIS OF ESTIMATE:**
DESCRIPTION: Cost Estimate Summary								CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%
ENGINEER: Mac Fillingim								OTHER - Conceptual Configuration
	ESTIMATOR: Mac Fillingim							**CHECKED:** Craig Michaelis
DESCRIPTION	**QUANTITY**		**LABOR**			**MATERIAL $**		**TOTAL COST ($)**
	QTY	**UNIT**	**UNIT MH(5.)**	**TOTAL MH**	**TOTAL LABOR $**	**PER UNIT**	**TOTAL MATERIAL**	
477 ACSR Dist Phase	12,645	Ft.	0.025	316.13	$31,612.50	$0.95	$12,012.75	$43,625.25
4/0 ACSR Dist Neut	4,215	Ft.	0.020	84.30	$8,430.00	$0.65	$2,739.75	$11,169.75
Set Out Exist Dist Cond	22	EA	5.0	110.00	$11,000.00	$0.00	$0.00	$11,000.00
Remove Exist Dist Cond	4,215	Ft.	0.020	84.30	$8,430.00	$0.00	$0.00	$8,430.00
Labor Rate			$100					
Subtotal Labor Hours/$				594.73	$59,472.50			$59,472.50
Subtotal Material							$14,752.50	$14,752.50
Sales and Use Tax (8%)								$5,938.00
TOTAL ESTIMATED CONSTRUCTION COST								**$80,163.00**
Engineering	1	LS						**$35,000.00**
CONTINGENCY	10	%						**$11,516.30**
TOTAL COST ESTIMATE								***$126,679***

Notes & Comments:

1 - The above estimate is based on preliminary information.

2 - No engineering has been conducted.

3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

4 - Right of way costs are not included in cost estimate.

5 - Cost estimate assumes that existing wood poles are adequate for new conductor and can be reused.

COST ESTIMATE	DATE PREPARED: 1/31/2019
PROJECT: Upgrade PR201 Circuit - Map ID 3	**BASIS OF ESTIMATE:**
DESCRIPTION: Cost Estimate Summary	CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%
ENGINEER: Mac Fillingim	OTHER - Conceptual Configuration
ESTIMATOR: Mac Fillingim	**CHECKED:** Craig Michaelis

DESCRIPTION	QUANTITY		LABOR			MATERIAL $		TOTAL COST ($)
	QTY	UNIT	UNIT MH(5.)	TOTAL MH	TOTAL LABOR $	PER UNIT	TOTAL MATERIAL	
477 ACSR Dist Phase	20,955	Ft.	0.025	523.88	$52,387.50	$0.95	$19,907.25	$72,294.75
4/0 ACSR Dist Neut	6,985	Ft.	0.020	139.70	$13,970.00	$0.65	$4,540.25	$18,510.25
Set Out Exist Dist Cond	36	EA	5.0	180.00	$18,000.00	$0.00	$0.00	$18,000.00
Remove Exist Dist Cond	6,985	Ft.	0.020	139.70	$13,970.00	$0.00	$0.00	$13,970.00
Labor Rate			$100					
Subtotal Labor Hours/$				983.28	$98,327.50			$98,327.50
Subtotal Material							$24,447.50	$24,447.50
Sales and Use Tax (8%)								$9,822.00
TOTAL ESTIMATED CONSTRUCTION COST								**$132,597.00**
Engineering	1	LS						**$35,000.00**
CONTINGENCY	10	%						**$16,759.70**
TOTAL COST ESTIMATE								***$184,357***

Notes & Comments:

1 - The above estimate is based on preliminary information.

2 - No engineering has been conducted.

3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

4 - Right of way costs are not included in cost estimate.

5 - Cost estimate assumes that existing wood poles are adequate for new conductor and can be reused.

COST ESTIMATE	DATE PREPARED: 1/31/2019
PROJECT: Upgrade CL402 Circuit - Map ID 4	**BASIS OF ESTIMATE:**
DESCRIPTION: Cost Estimate Summary	CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%
ENGINEER: Mac Fillingim	OTHER - Conceptual Configuration
ESTIMATOR: Mac Fillingim	**CHECKED:** Craig Michaelis

DESCRIPTION	QUANTITY		LABOR			MATERIAL $		TOTAL COST ($)
	QTY	UNIT	UNIT MH(5.)	TOTAL MH	TOTAL LABOR $	PER UNIT	TOTAL MATERIAL	
477 ACSR Dist Phase	65,070	Ft.	0.025	1,626.75	$162,675.00	$0.95	$61,816.50	$224,491.50
4/0 ACSR Dist Neut	21,690	Ft.	0.020	433.80	$43,380.00	$0.65	$14,098.50	$57,478.50
Set Out Exist Dist Cond	80	EA	5.0	400.00	$40,000.00	$0.00	$0.00	$40,000.00
Remove Exist Dist Cond	21,690	Ft.	0.020	433.80	$43,380.00	$0.00	$0.00	$43,380.00
Labor Rate			$100					
Subtotal Labor Hours/$				2,894.35	$289,435.00			$289,435.00
Subtotal Material							$75,915.00	$75,915.00
Sales and Use Tax (8%)								$29,228.00
TOTAL ESTIMATED CONSTRUCTION COST								**$394,578.00**
Engineering	1	LS						**$100,000.00**
CONTINGENCY	10	%						**$49,457.80**
TOTAL COST ESTIMATE								***$544,036***

Notes & Comments:

1 - The above estimate is based on preliminary information.

2 - No engineering has been conducted.

3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

4 - Right of way costs are not included in cost estimate.

5 - Cost estimate assumes that existing wood poles are adequate for new conductor and can be reused.

COST ESTIMATE									DATE PREPARED: 1/31/2019
PROJECT: Upgrade MW101 & MW102 Circuit - Map ID 5									**BASIS OF ESTIMATE:**
DESCRIPTION: Cost Estimate Summary									CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%
ENGINEER: Mac Fillingim									OTHER - Conceptual Configuration
	ESTIMATOR: Mac Fillingim								**CHECKED:** Craig Michaelis

DESCRIPTION	**QUANTITY**		**LABOR**			**MATERIAL $**		**TOTAL COST ($)**
	QTY	**UNIT**	**UNIT MH(5.)**	**TOTAL MH**	**TOTAL LABOR $**	**PER UNIT**	**TOTAL MATERIAL**	
477 ACSR Dist Phase	39,270	Ft.	0.025	981.75	$98,175.00	$0.95	$37,306.50	$135,481.50
4/0 ACSR Dist Neut	13,090	Ft.	0.020	261.80	$26,180.00	$0.65	$8,508.50	$34,688.50
Set Out Exist Dist Cond	65	EA	5.0	325.00	$32,500.00	$0.00	$0.00	$32,500.00
Remove Exist Dist Cond	13,090	Ft.	0.020	261.80	$26,180.00	$0.00	$0.00	$26,180.00
Labor Rate			$100					
Subtotal Labor Hours/$				1,830.35	$183,035.00			$183,035.00
Subtotal Material							$45,815.00	$45,815.00
Sales and Use Tax (8%)								$18,308.00
TOTAL ESTIMATED CONSTRUCTION COST								**$247,158.00**
Engineering	1	LS						**$70,000.00**
CONTINGENCY	10	%						**$31,715.80**
TOTAL COST ESTIMATE								***$348,874***

Notes & Comments:

1 - The above estimate is based on preliminary information.

2 - No engineering has been conducted.

3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

4 - Right of way costs are not included in cost estimate.

5 - Cost estimate assumes that existing wood poles are adequate for new conductor and can be reused.

COST ESTIMATE						DATE PREPARED:		1/31/2019
PROJECT: Voltage Regulators on JH502 Circuit - Map ID 6						**BASIS OF ESTIMATE:**		
DESCRIPTION: Cost Estimate Summary						CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%		
ENGINEER: Mac Fillingim						OTHER - Conceptual Configuration		
	ESTIMATOR: Mac Fillingim					**CHECKED:** Craig Michaelis		

DESCRIPTION	**QUANTITY**		**LABOR**			**MATERIAL $**		**TOTAL COST ($)**
	QTY	**UNIT**	**UNIT MH[5.]**	**TOTAL MH**	**TOTAL LABOR $**	**PER UNIT**	**TOTAL MATERIAL**	
Regulators	3	EA	10.0	30.00	$3,000.00	$21,000.00	$63,000.00	$66,000.00
Structure & Switches	1	EA	20.0	20.00	$2,000.00	$7,000.00	$7,000.00	$9,000.00
Labor Rate			$100					
Subtotal Labor Hours/$				50.00	$5,000.00			$5,000.00
Subtotal Material							$70,000.00	$70,000.00
Sales and Use Tax (8%)								$6,000.00
TOTAL ESTIMATED CONSTRUCTION COST								**$81,000.00**
Engineering	1	LS						**$5,000.00**
CONTINGENCY	10	%						**$8,600.00**
TOTAL COST ESTIMATE								***$94,600***

Notes & Comments:
1 - The above estimate is based on preliminary information.
2 - No engineering has been conducted.
3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

COST ESTIMATE	DATE PREPARED: 1/31/2019
PROJECT: Upgrade HB305 Circuit - Map ID 7	**BASIS OF ESTIMATE:**
DESCRIPTION: Cost Estimate Summary	CODE A - (Schematic Design) CODE B - (Preliminary Design) CODE C - (Final Design) 100%
ENGINEER: Mac Fillingim	OTHER - Conceptual Configuration
ESTIMATOR: Mac Fillingim	**CHECKED:** Craig Michaelis

DESCRIPTION	QUANTITY		LABOR			MATERIAL $		TOTAL COST ($)
	QTY	UNIT	UNIT MH(5.)	TOTAL MH	TOTAL LABOR $	PER UNIT	TOTAL MATERIAL	
477 ACSR Dist Phase	1,530	Ft.	0.025	38.25	$3,825.00	$0.95	$1,453.50	$5,278.50
4/0 ACSR Dist Neut	510	Ft.	0.020	10.20	$1,020.00	$0.65	$331.50	$1,351.50
Set Out Exist Dist Cond	5	EA	5.0	25.00	$2,500.00	$0.00	$0.00	$2,500.00
Remove Exist Dist Cond	510	Ft.	0.020	10.20	$1,020.00	$0.00	$0.00	$1,020.00
Labor Rate			$100					
Subtotal Labor Hours/$				83.65	$8,365.00			$8,365.00
Subtotal Material							$1,785.00	$1,785.00
Sales and Use Tax (8%)								$812.00
TOTAL ESTIMATED CONSTRUCTION COST								**$10,962.00**
Engineering	1	LS						**$10,000.00**
CONTINGENCY	10	%						**$2,096.20**
TOTAL COST ESTIMATE								***$23,058***

Notes & Comments:

1 - The above estimate is based on preliminary information.

2 - No engineering has been conducted.

3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.

4 - Right of way costs are not included in cost estimate.

5 - Cost estimate assumes that existing wood poles are adequate for new conductor and can be reused.

COST ESTIMATE				DATE PREPARED:		1/31/19		SHEET 1 of 1	
PROJECT: Upgrade JH501 Circuit - Map ID 8							**BASIS FOR ESTIMATE:**		
DESCRIPTION: Cost Estimate Summary							CODE A (Schematic Design) CODE B (Preliminary Design) CODE C (Final Design) 100%		
ENGINEER : Mac Fillingim							OTHER (NO DESIGN)___________		
	ESTIMATOR: Mac Fillingim						**CHECKED BY:** Craig Michaelis		
	QUANTITY		LABOR			$100.00	MATERIAL ($)		
DESCRIPTION	NO. UNITS	UNIT MEAS	PER UNIT	TOTAL MH		Labor ($)	PER UNIT	TOTAL	TOTAL COST
INSTALLATIONS									
UNDERGROUND									
Underground Primary									
600 amp Sectionalizer with (6) 1100 kcmil AL Terminations	2	EA	24.00	48.00		4,800.00	4,650.00	9,300.00	14,100.00
(2) - 6 inch PVC Conduit Ductbank	585	FT	0.03	17.55		1,755.00	9.00	5,265.00	7,020.00
Conduit Elbows & Fittings	1	LS	20.00	20.00		2,000.00	5,500.00	5,500.00	7,500.00
(3) 1100 kcmil AL Cables / Circuit	585	FT	0.03	17.55		1,755.00	27.00	15,795.00	17,550.00
Bore 6" conducit	585	FT	0.00	0.00		0.00	15.00	8,775.00	8,775.00
Remove 200 Amp Equipment	1	LS	20.00	20.00		2,000.00	0.00	0.00	2,000.00
Subtotal				123.10		12,310.00		44,635.00	
Avg. Labor Rate	100.00								
Subtotal Labor						$12,310.00			$12,310.00
Subtotal Material								$44,635.00	$44,635.00
Sales Tax Material	8.00%								$3,570.80
Subtotal Labor, Material & Tax									$60,515.80
Equipment & Trucks	41.03						$ 125.00		$5,129.17
Contingency	10.00%								$6,600.00
TOTAL ESTIMATE									$72,244.97

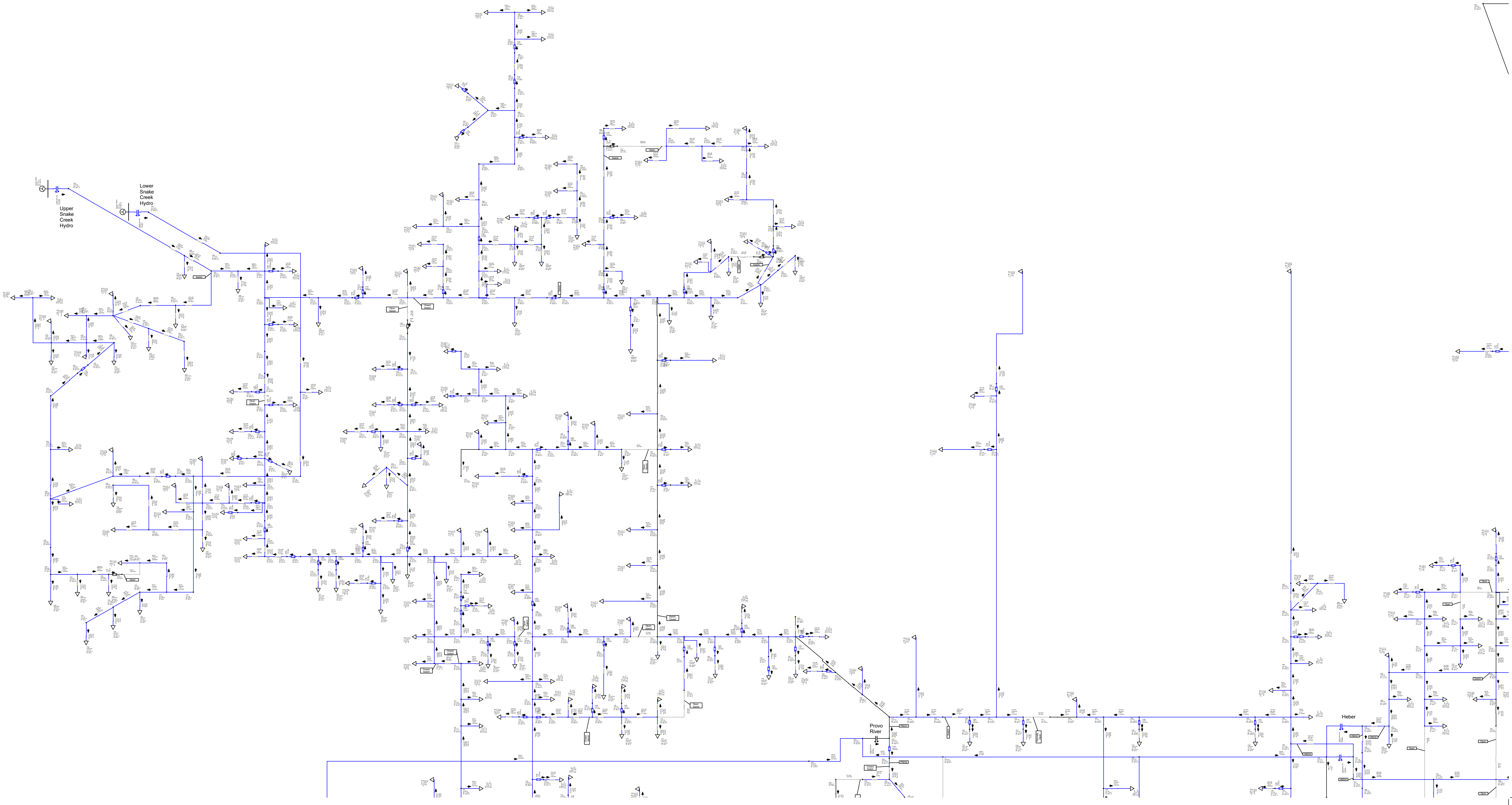
Notes & Comments:
1 - The above estimate is based on preliminary information.
2 - No engineering has been conducted.
3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.
4 - Right of way costs are not included in cost estimate.

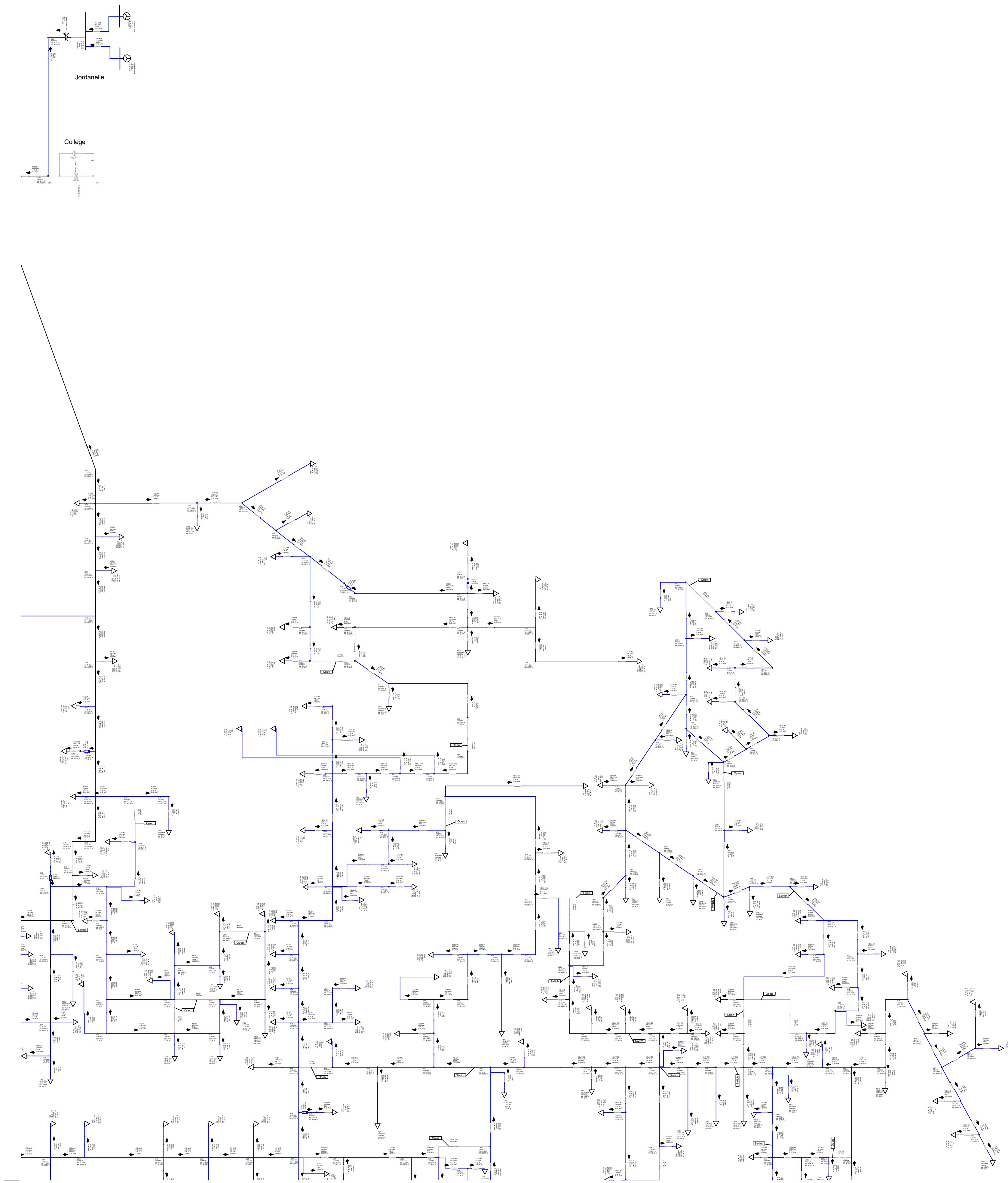
COST ESTIMATE				DATE PREPARED:		1/31/19		SHEET 1 of 1	
PROJECT: Upgrade JH502 & JH503 Circuit - Map ID 9							**BASIS FOR ESTIMATE:**		
DESCRIPTION: Cost Estimate Summary							CODE A (Schematic Design) CODE B (Preliminary Design) CODE C (Final Design) 100%		
ENGINEER : Mac Fillingim							OTHER (NO DESIGN)___________		
	ESTIMATOR: Mac Fillingim						**CHECKED BY:** Craig Michaelis		
	QUANTITY		LABOR			$100.00	MATERIAL ($)		
DESCRIPTION	NO. UNITS	UNIT MEAS	PER UNIT	TOTAL MH		Labor ($)	PER UNIT	TOTAL	TOTAL COST
INSTALLATIONS									
UNDERGROUND									
Underground Primary									
600 amp Sectionalizer with (6) 1100 kcmil AL Terminations	7	EA	24.00	168.00		16,800.00	4,650.00	32,550.00	49,350.00
(2) - 6 inch PVC Conduit Ductbank	2940	FT	0.03	88.20		8,820.00	9.00	26,460.00	35,280.00
Conduit Elbows & Fittings	1	LS	50.00	50.00		5,000.00	4,500.00	4,500.00	9,500.00
(3) 1100 kcmil AL Cables / Circuit	2940	FT	0.03	88.20		8,820.00	27.00	79,380.00	88,200.00
Bore 6" conducit	2940	FT	0.00	0.00		0.00	15.00	44,100.00	44,100.00
Remove 200 Amp Equipment	1	LS	100.00	100.00		10,000.00	0.00	0.00	10,000.00
Subtotal				494.40		49,440.00		186,990.00	
Avg. Labor Rate	100.00								
Subtotal Labor						$49,440.00			$49,440.00
Subtotal Material								$186,990.00	$186,990.00
Sales Tax Material	8.00%								$14,959.20
Subtotal Labor, Material & Tax									$251,389.20
Equipment & Trucks	164.80						$ 125.00		$20,600.00
Contingency	10.00%								$27,200.00
TOTAL ESTIMATE									$299,189.20

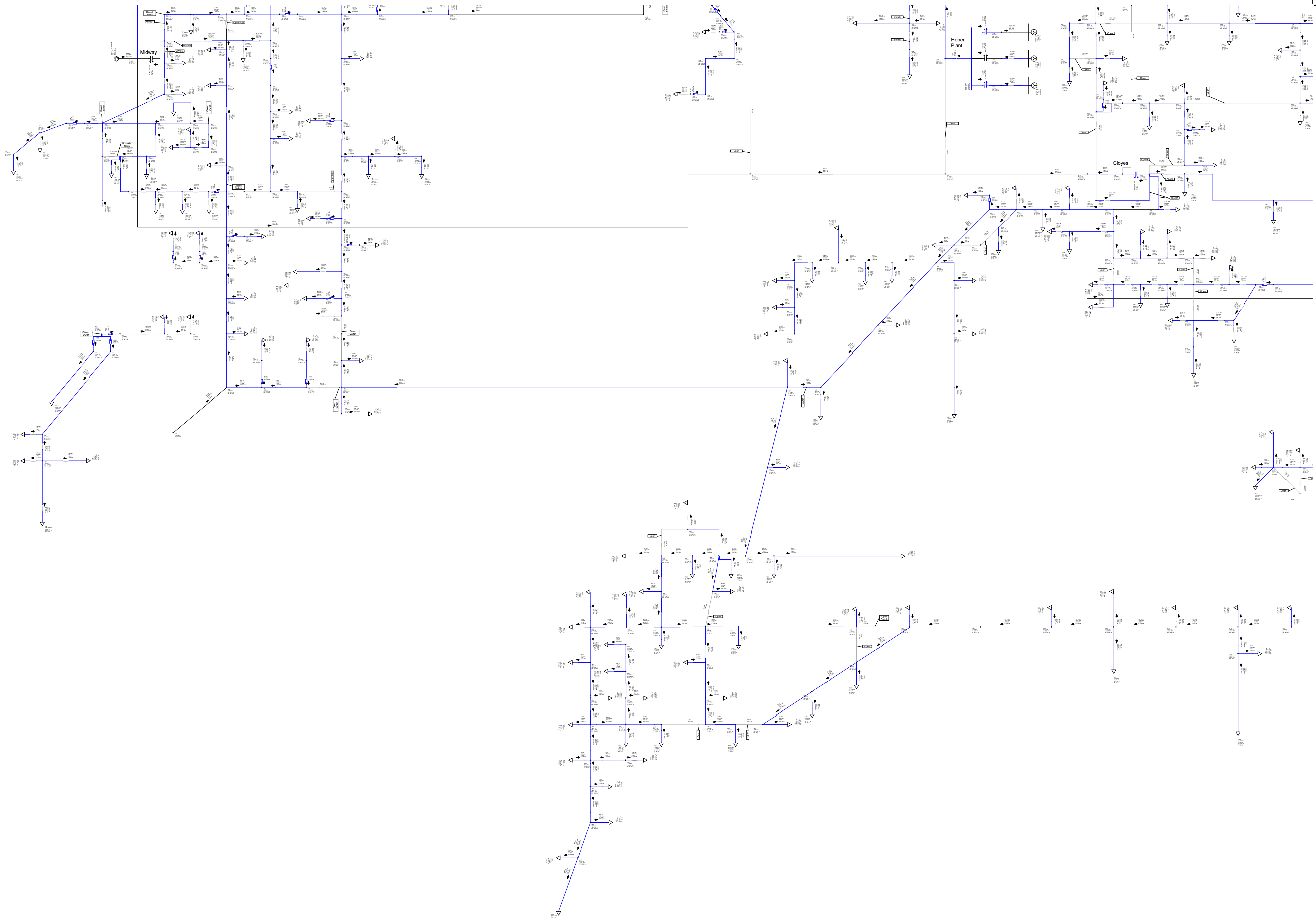
Notes & Comments:
1 - The above estimate is based on preliminary information.
2 - No engineering has been conducted.
3 - Costs shown are as of 1/31/19. Market conditions are volatile and can have a significant impact on actual costs at the time on construction.
4 - Right of way costs are not included in cost estimate.

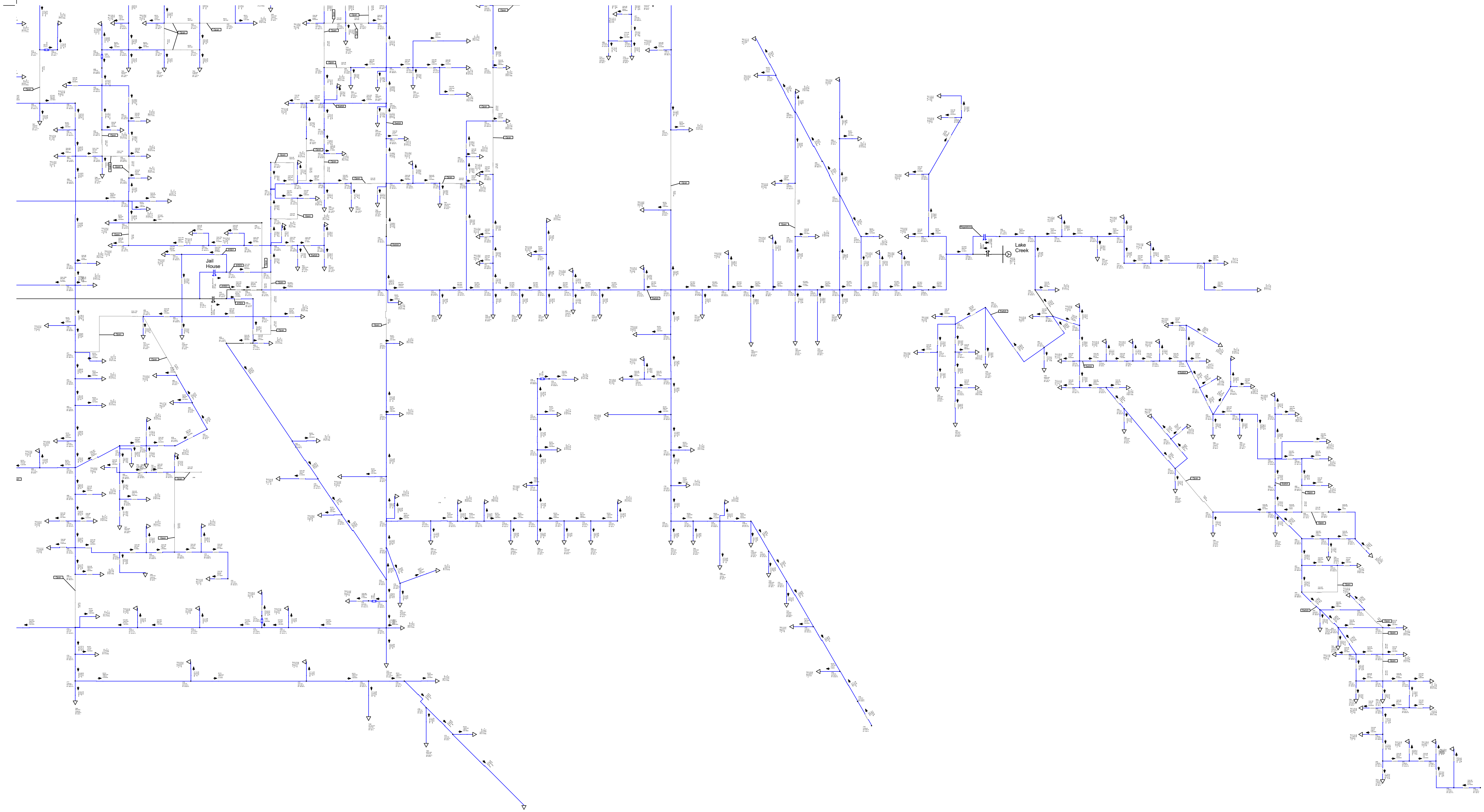
APPENDIX 3 – LOAD FLOW STUDIES

2018
Base Case




Jordanelle
College

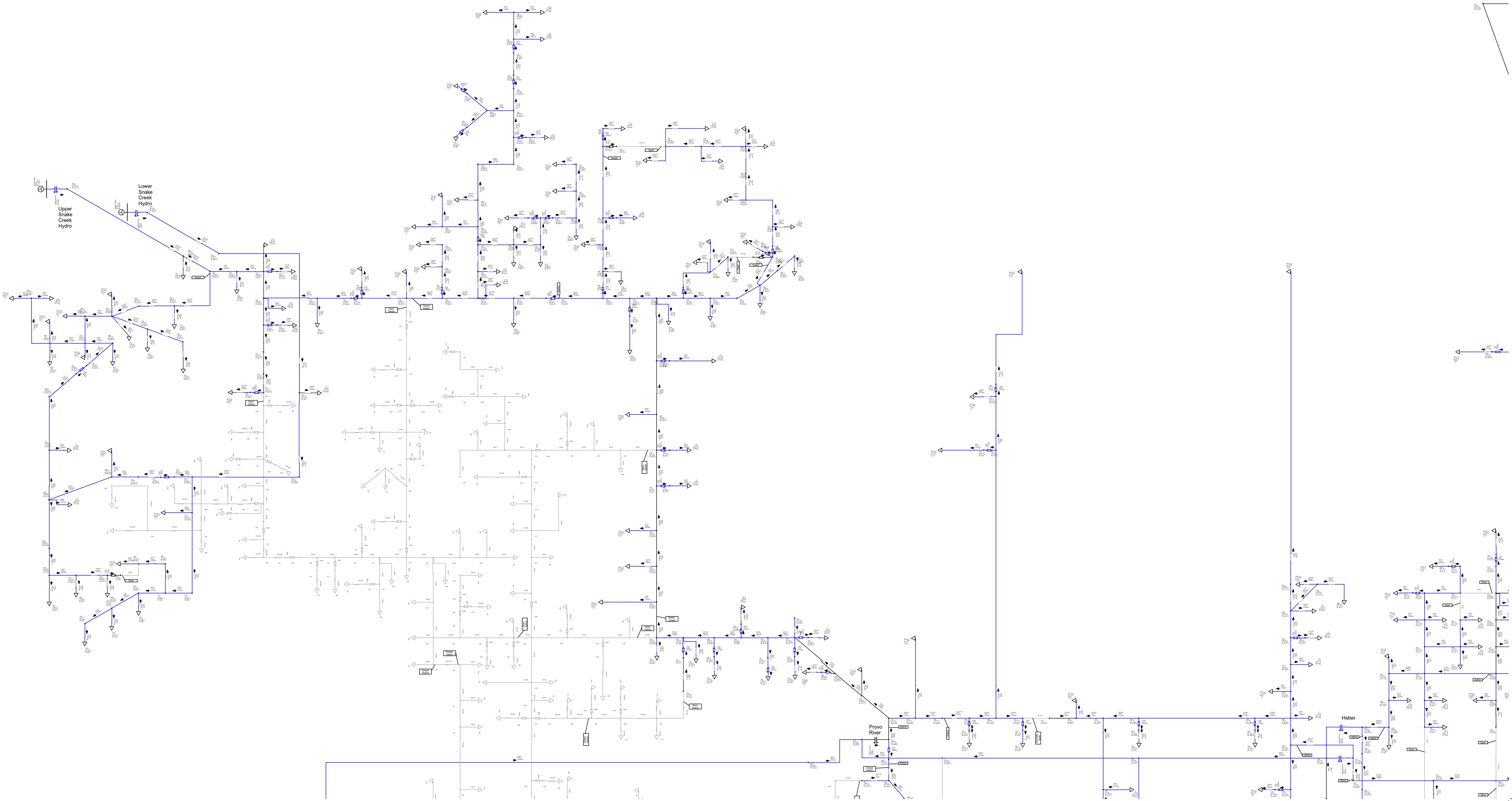

Midway
Heber Plant
Cloyes

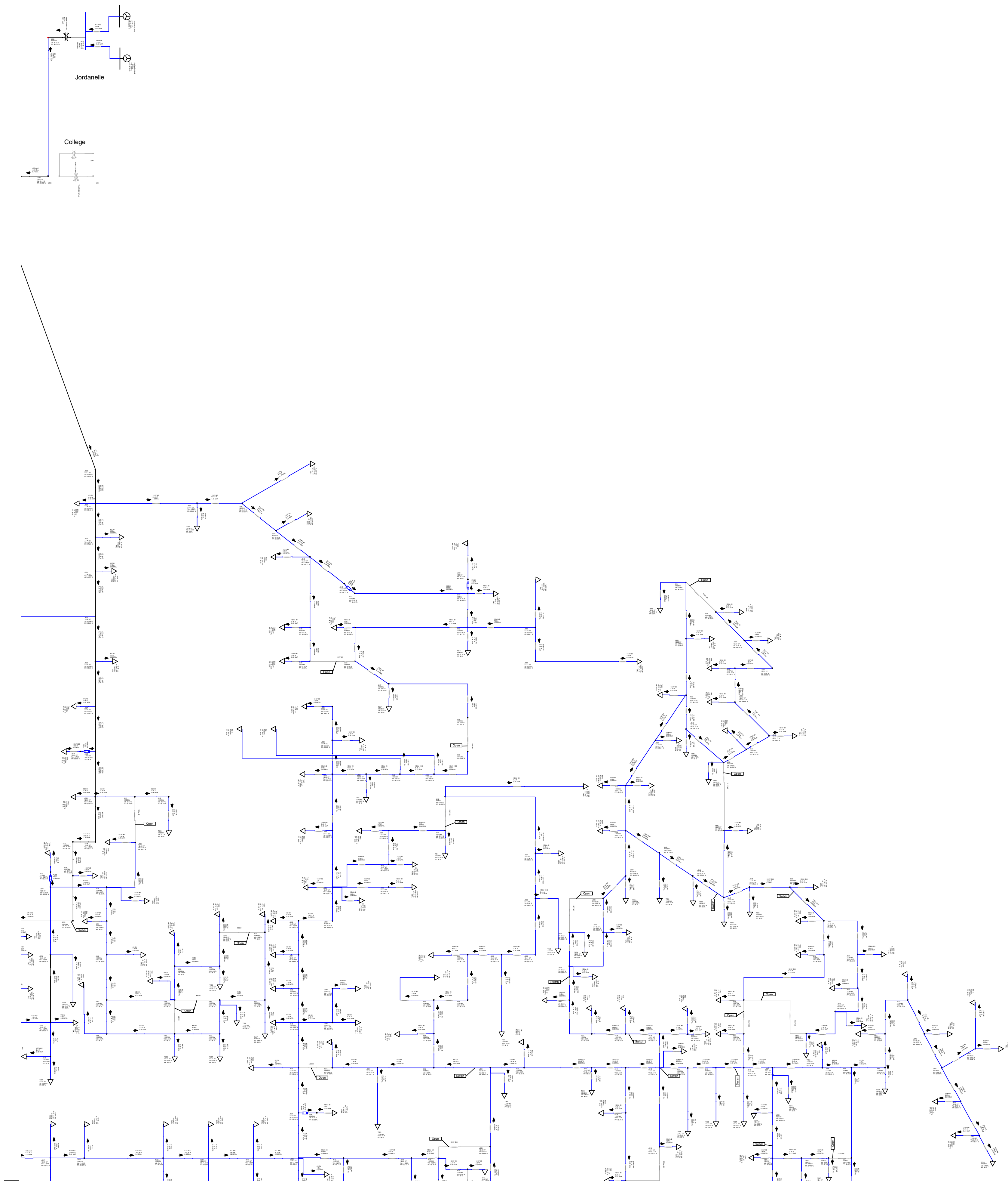

Jail House
Lake Creek

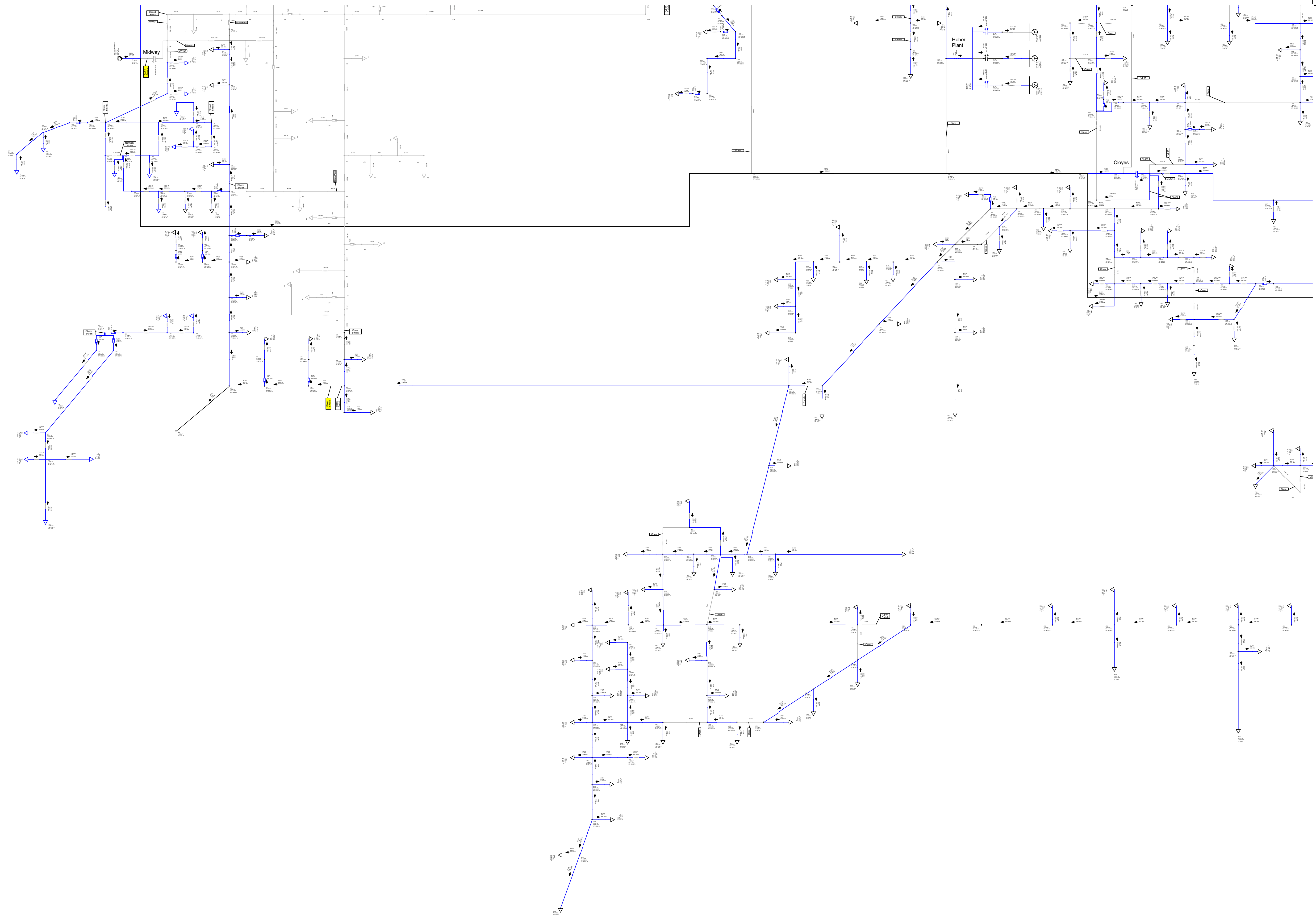
Heber 12.47 kV
2018 - Loss of Midway transformer

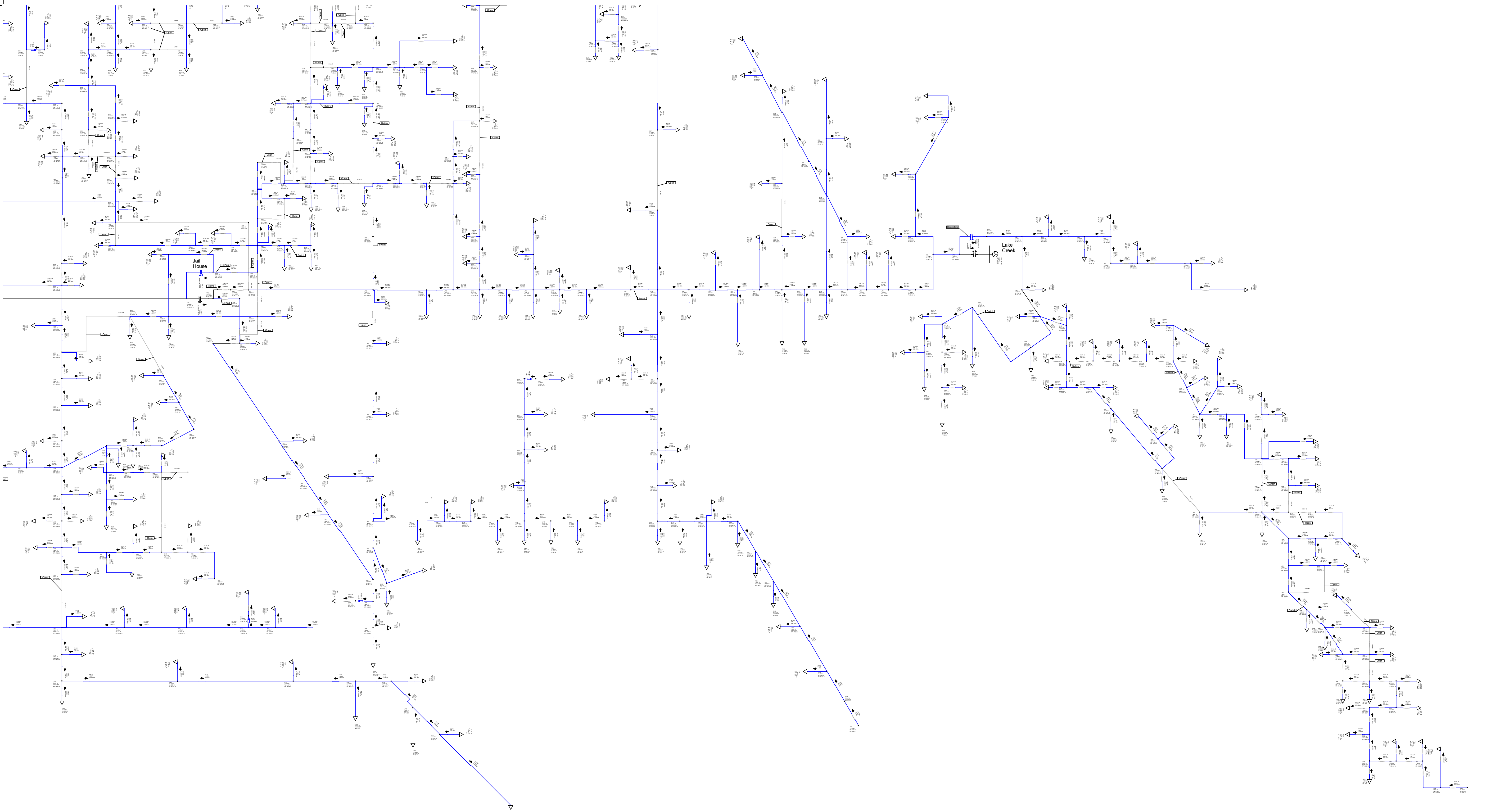
1. MW104 circuit can be picked up by CL402 circuit. Line will be nearing ampacity and there are voltage issues (almost 6% drop).

2. Power cannot be restored to MW101 and MW102 circuits.




Jordanelle
College


Midway
Heber Plant
Cloyes


Jail House
Lake Creek

Heber 12.47 kV
2018 - Loss of Midway transformer
(After Upgrades)

1. Upgrade Provo River transformer to larger 12/16/20 MVA transformer.

2. Upgrade PR201 circuit from Provo River substation to 600 East Main Street.

3. Upgrade PR201 circuit along River Road from Main Street to Burgi Lane.

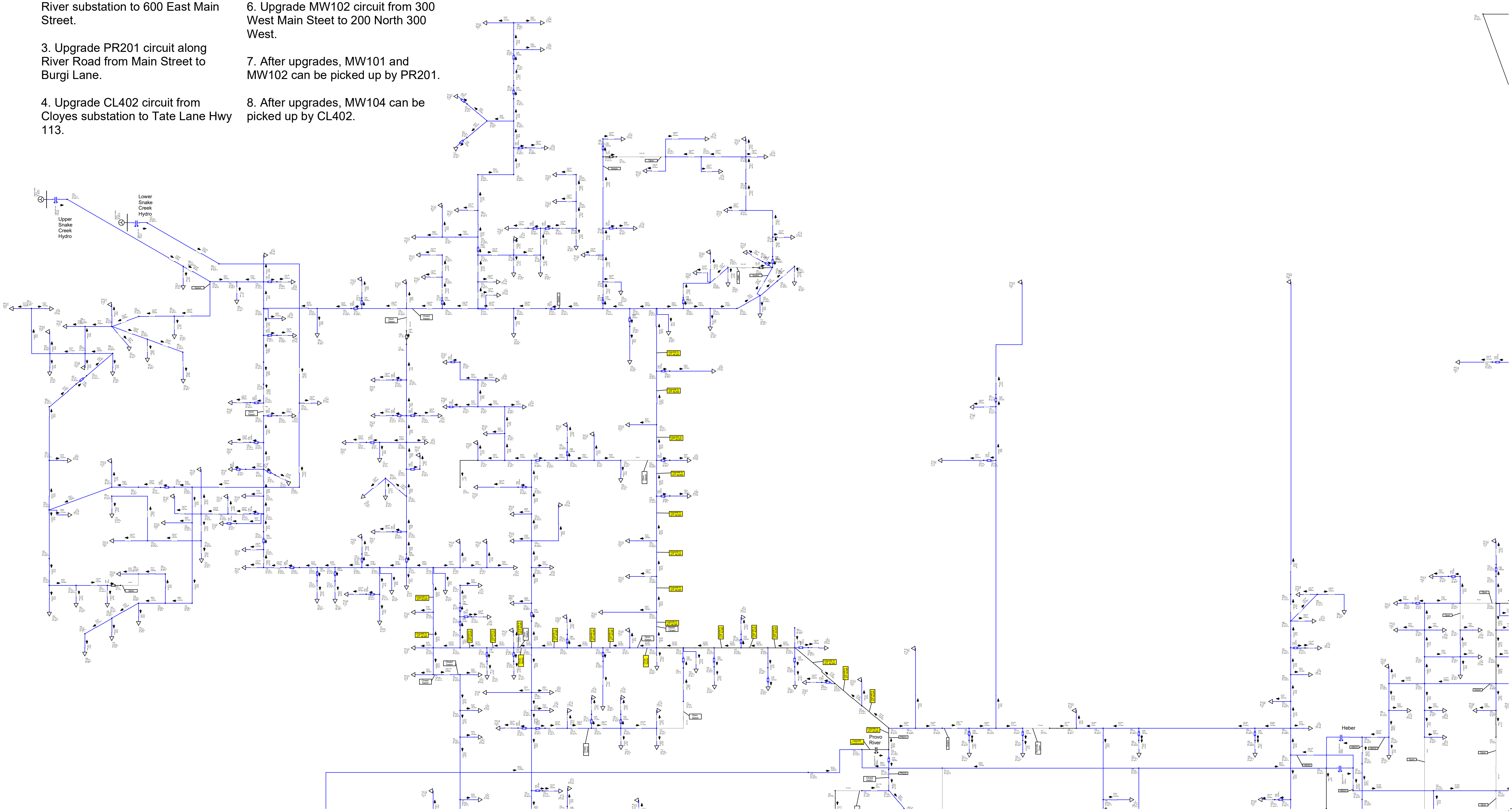
4. Upgrade CL402 circuit from Cloyes substation to Tate Lane Hwy 113.

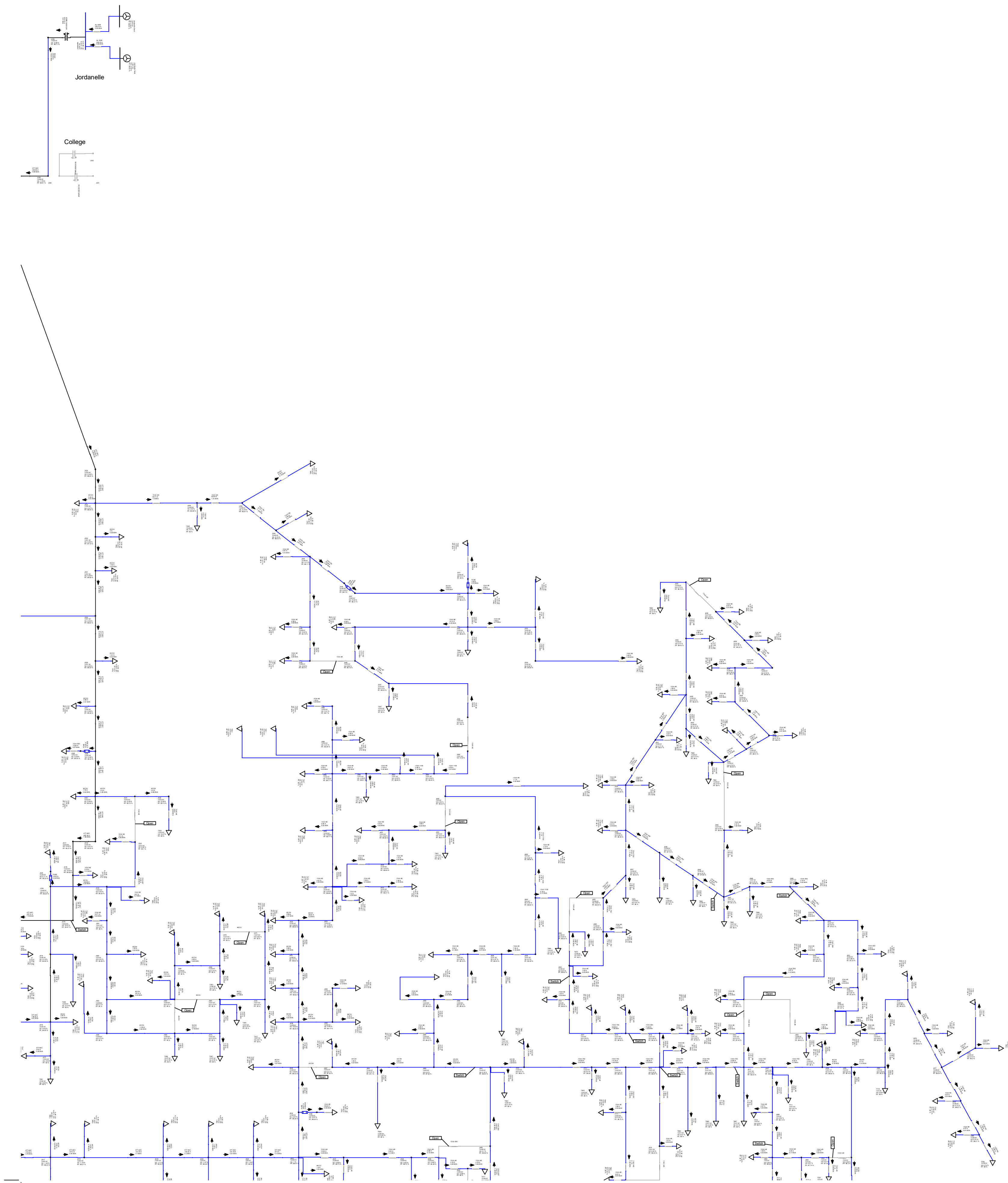
5. Upgrade MW101 and MW102 circuits from 220 West Main Street to 300 East Main Street.

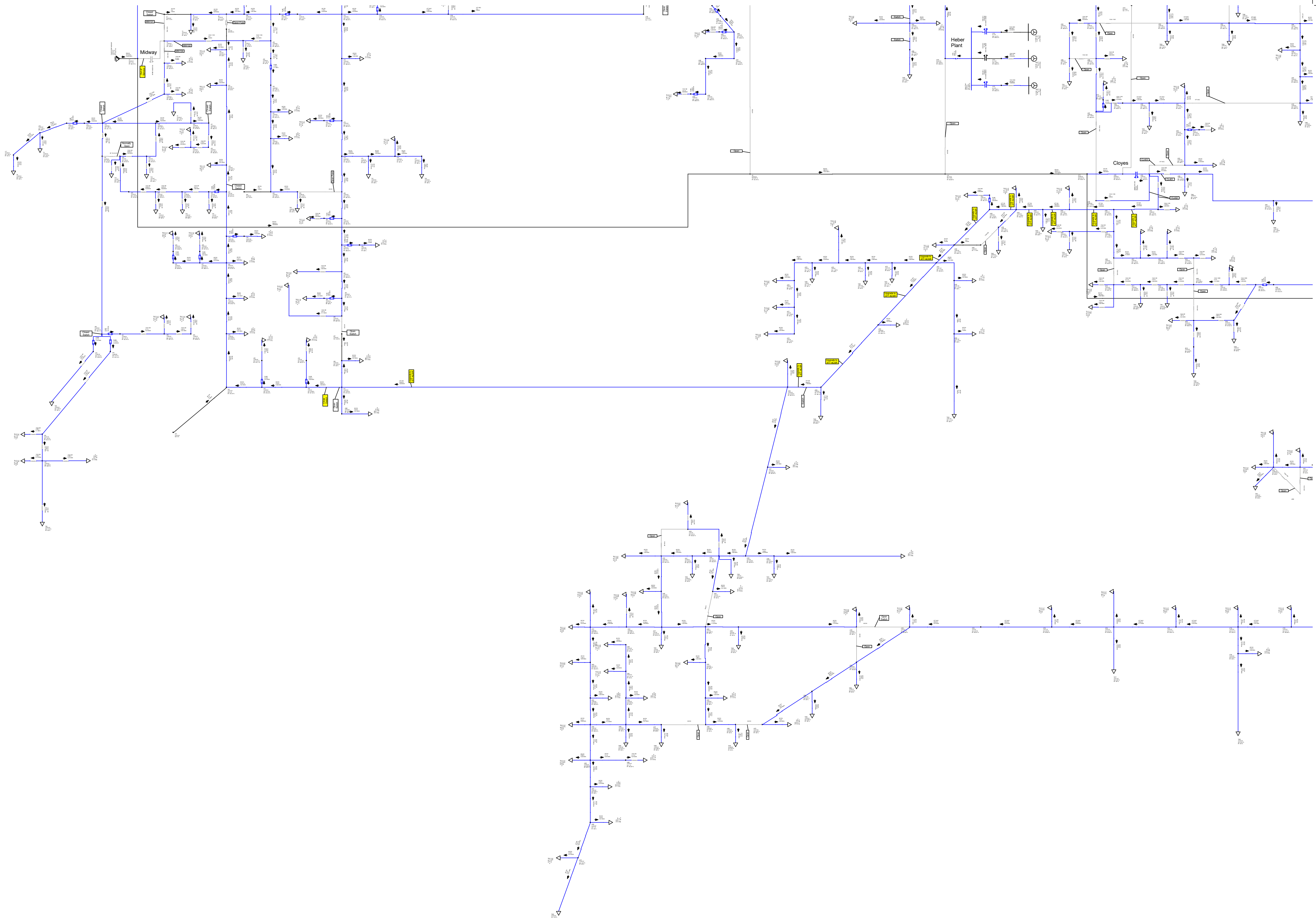
6. Upgrade MW102 circuit from 300 West Main Steet to 200 North 300 West.

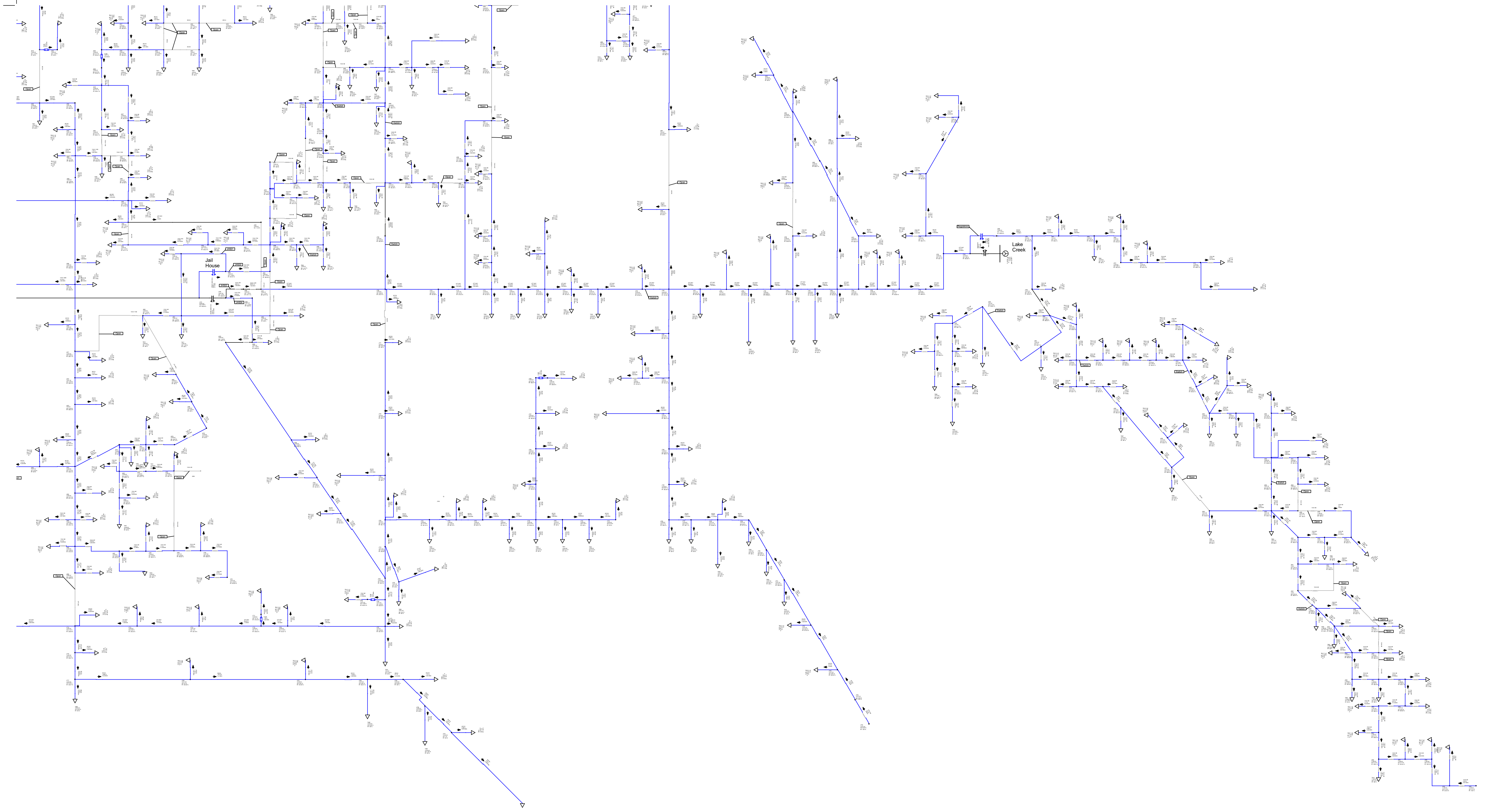
7. After upgrades, MW101 and MW102 can be picked up by PR201.

8. After upgrades, MW104 can be picked up by CL402.




Jordanelle
College


Midway
Heber Plant
Cloyes


Jail
House
Lake
Creek

Heber 12.47 kV
2018 - Loss of Provo River transformer

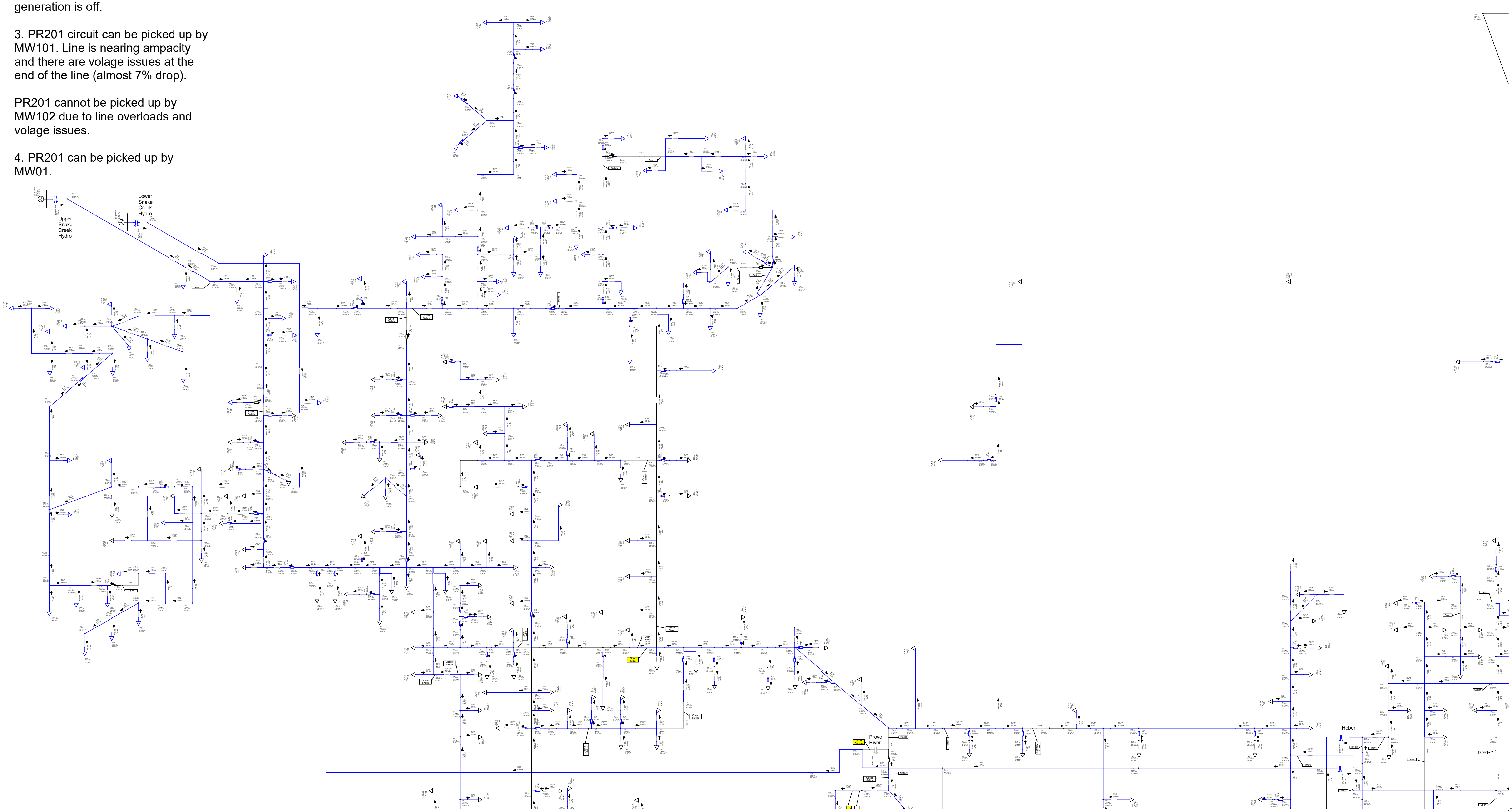
1. Provo River transformer is out of capacity during peak load when Snake Creek generation off.

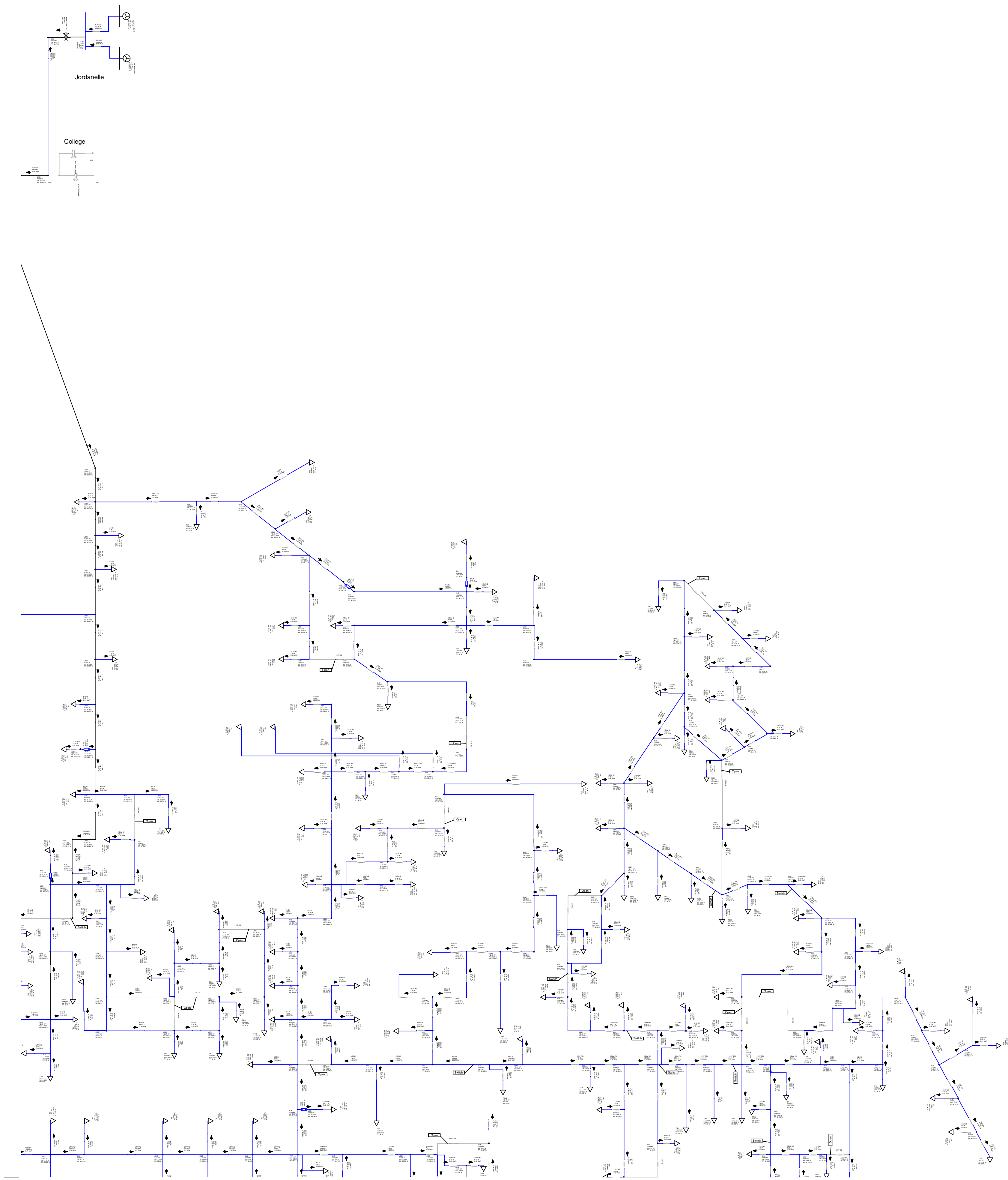
2. Part of PR201 circuit is overloaded when Snake Creek generation is off.

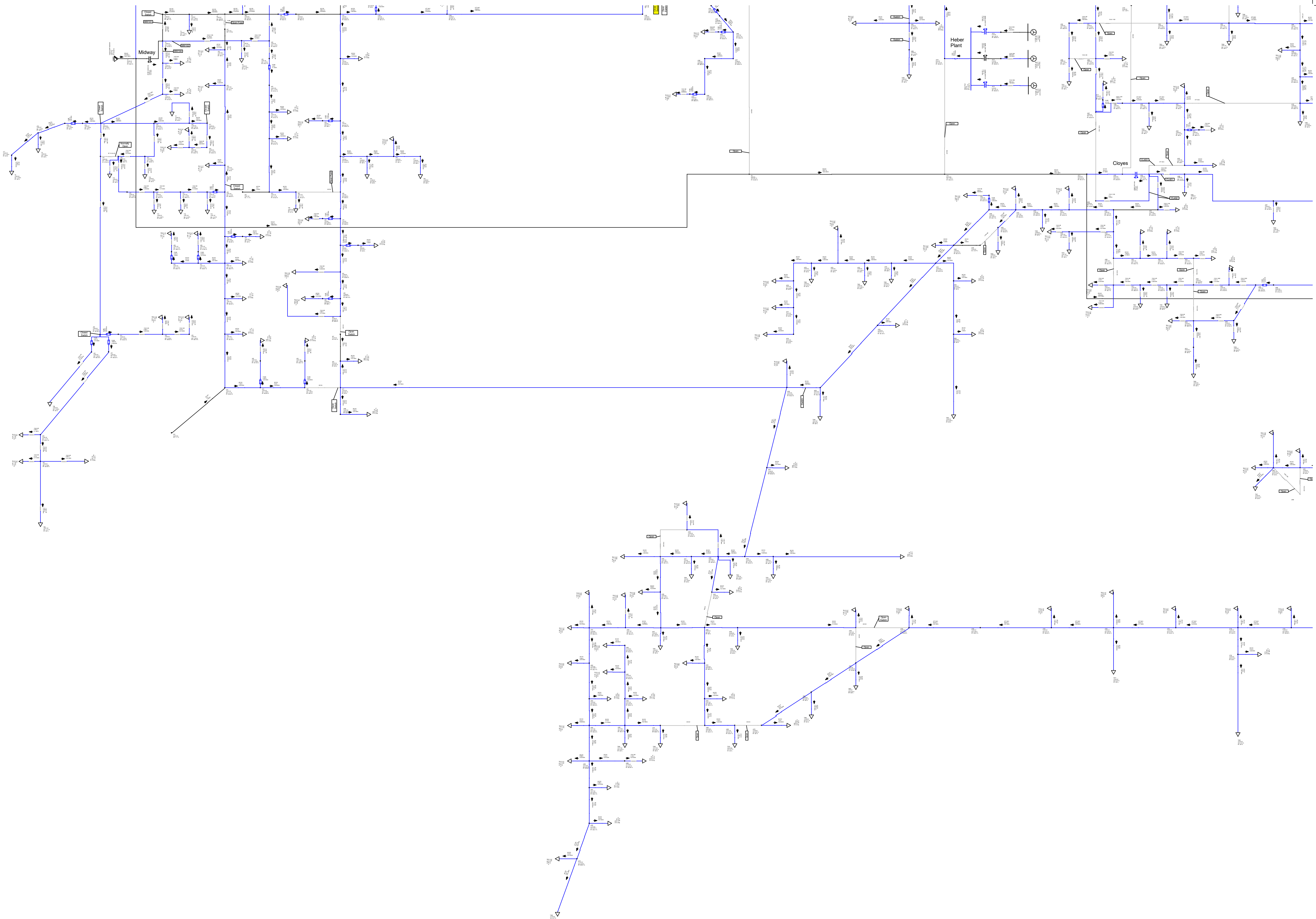
3. PR201 circuit can be picked up by MW101. Line is nearing ampacity and there are volage issues at the end of the line (almost 7% drop).

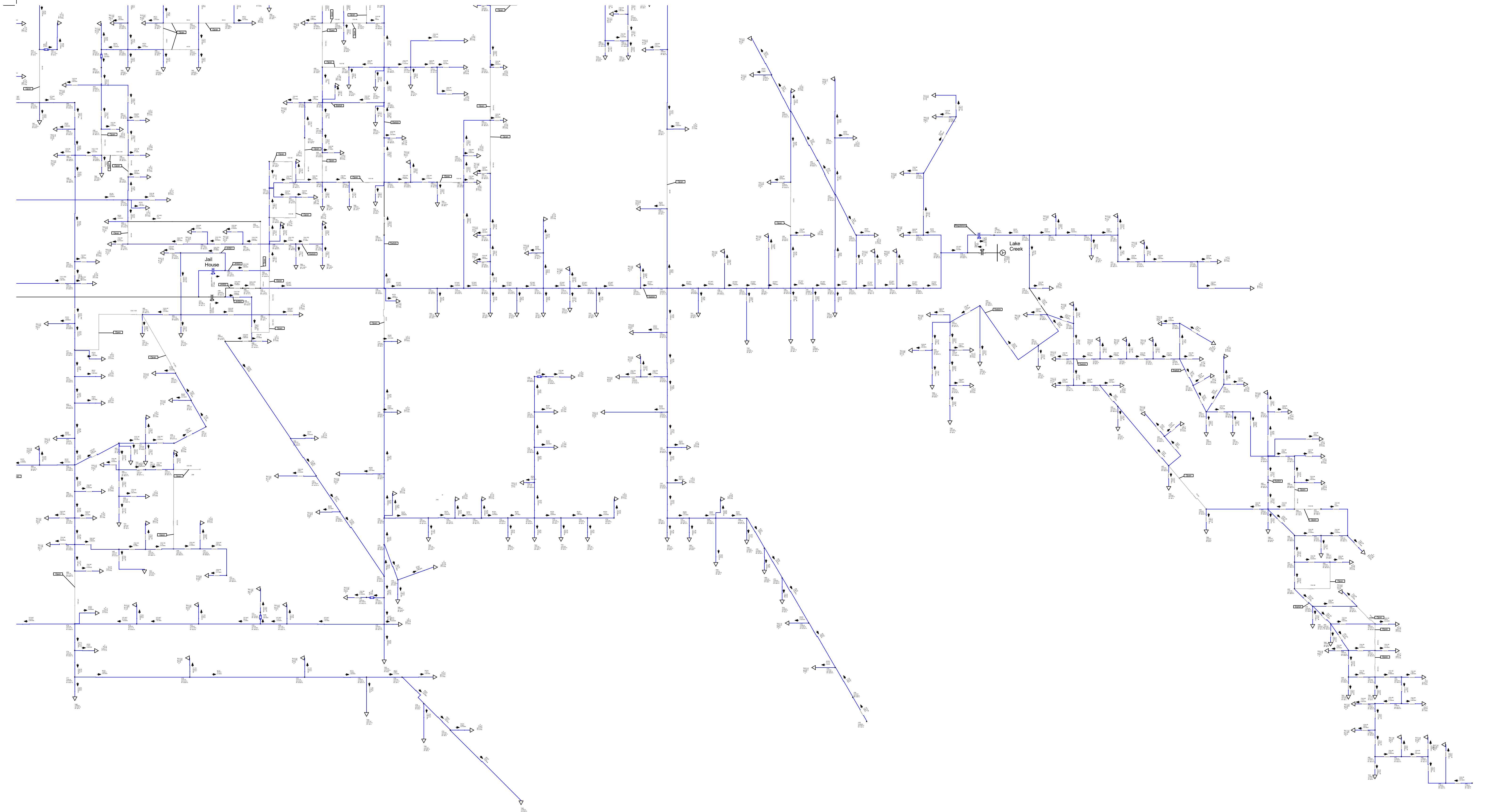
PR201 cannot be picked up by MW102 due to line overloads and volage issues.

4. PR201 can be picked up by MW01.




Jordanelle
College


Midway
Heber
Plant
Cloyes


Jail House
Lake Creek

Heber 12.47 kV
2018 - Loss of Provo River transformer
(After Upgrades)

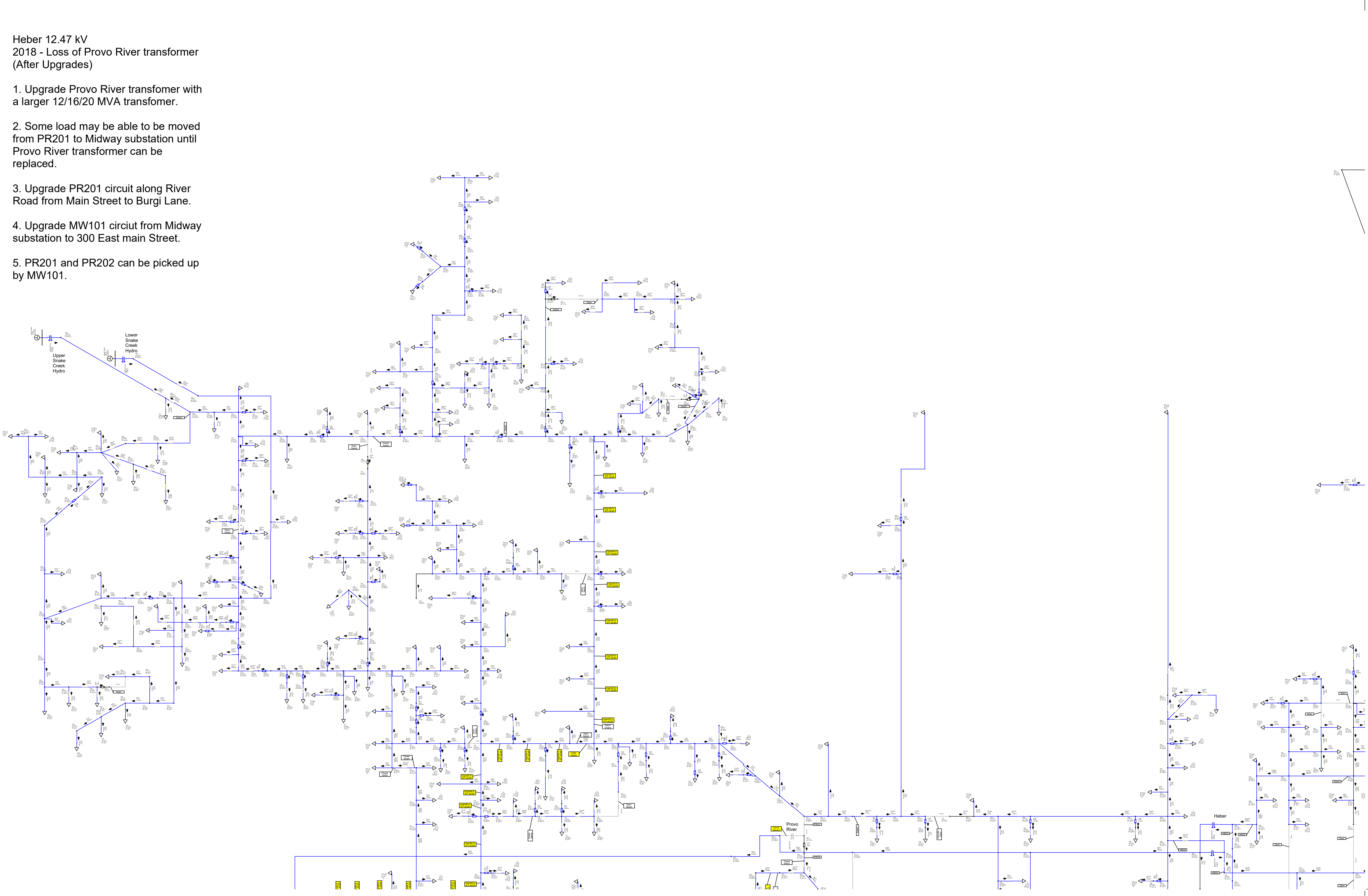
1. Upgrade Provo River transfomer with a larger 12/16/20 MVA transfomer.

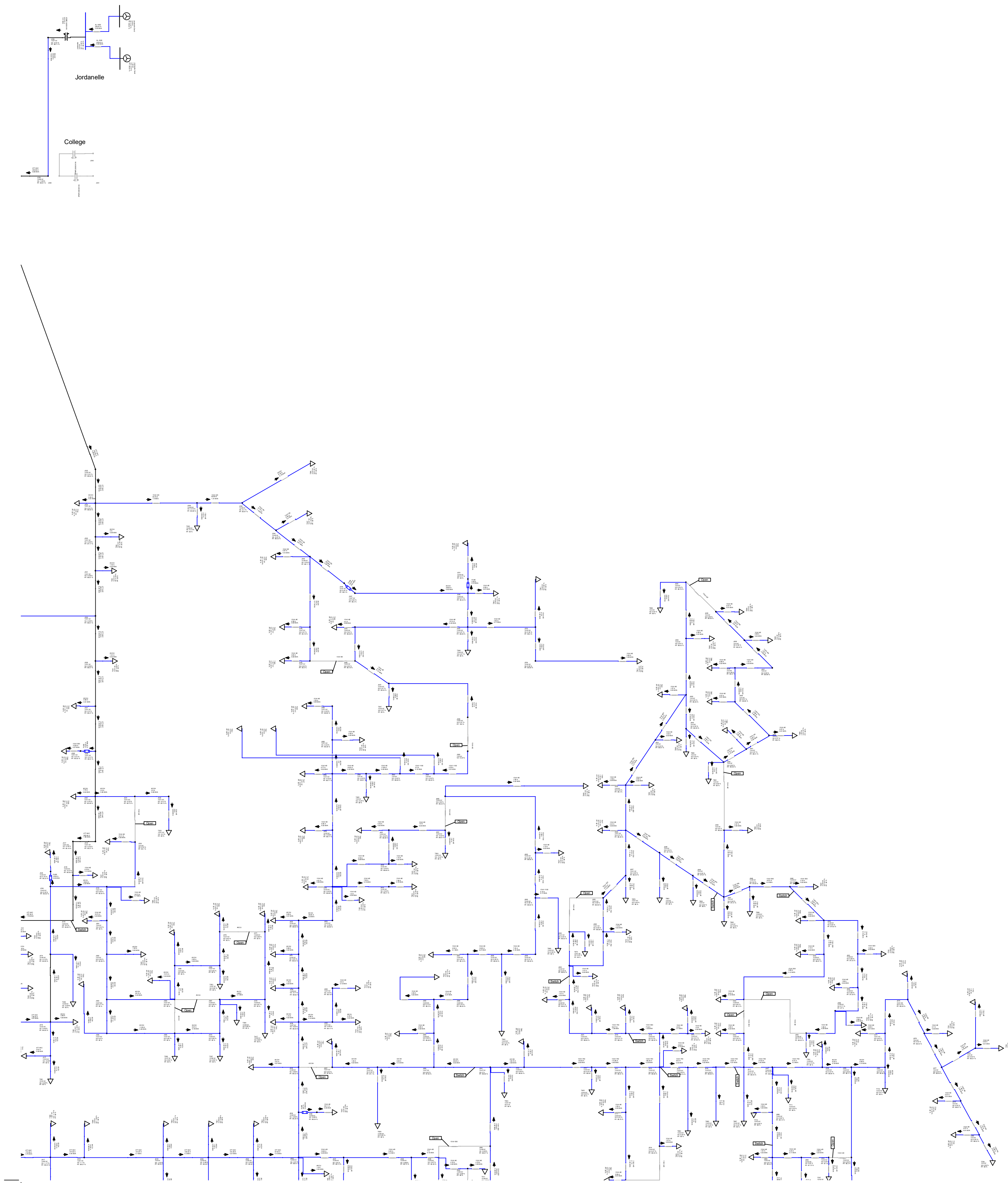
2. Some load may be able to be moved from PR201 to Midway substation until Provo River transformer can be replaced.

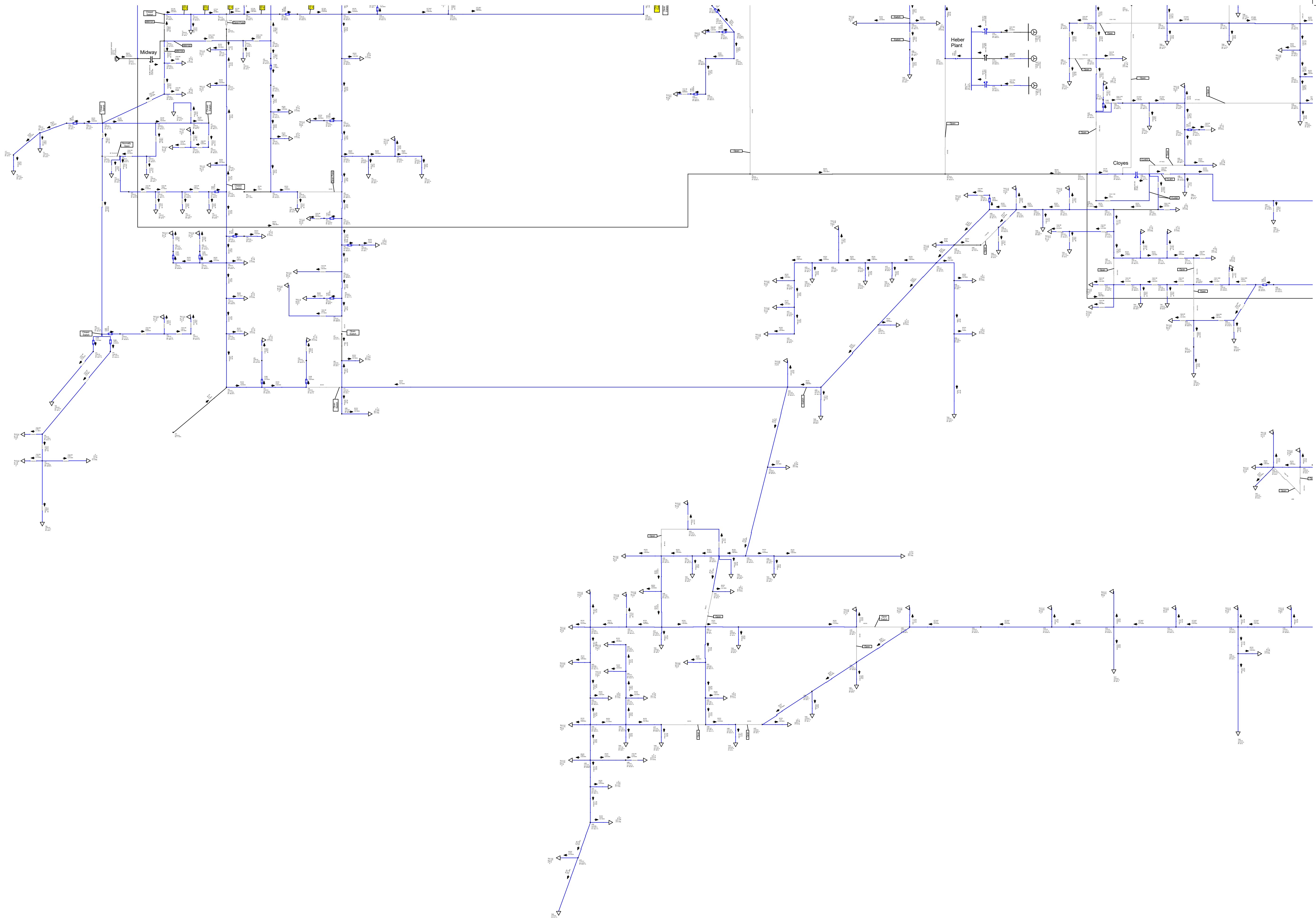
3. Upgrade PR201 circuit along River Road from Main Street to Burgi Lane.

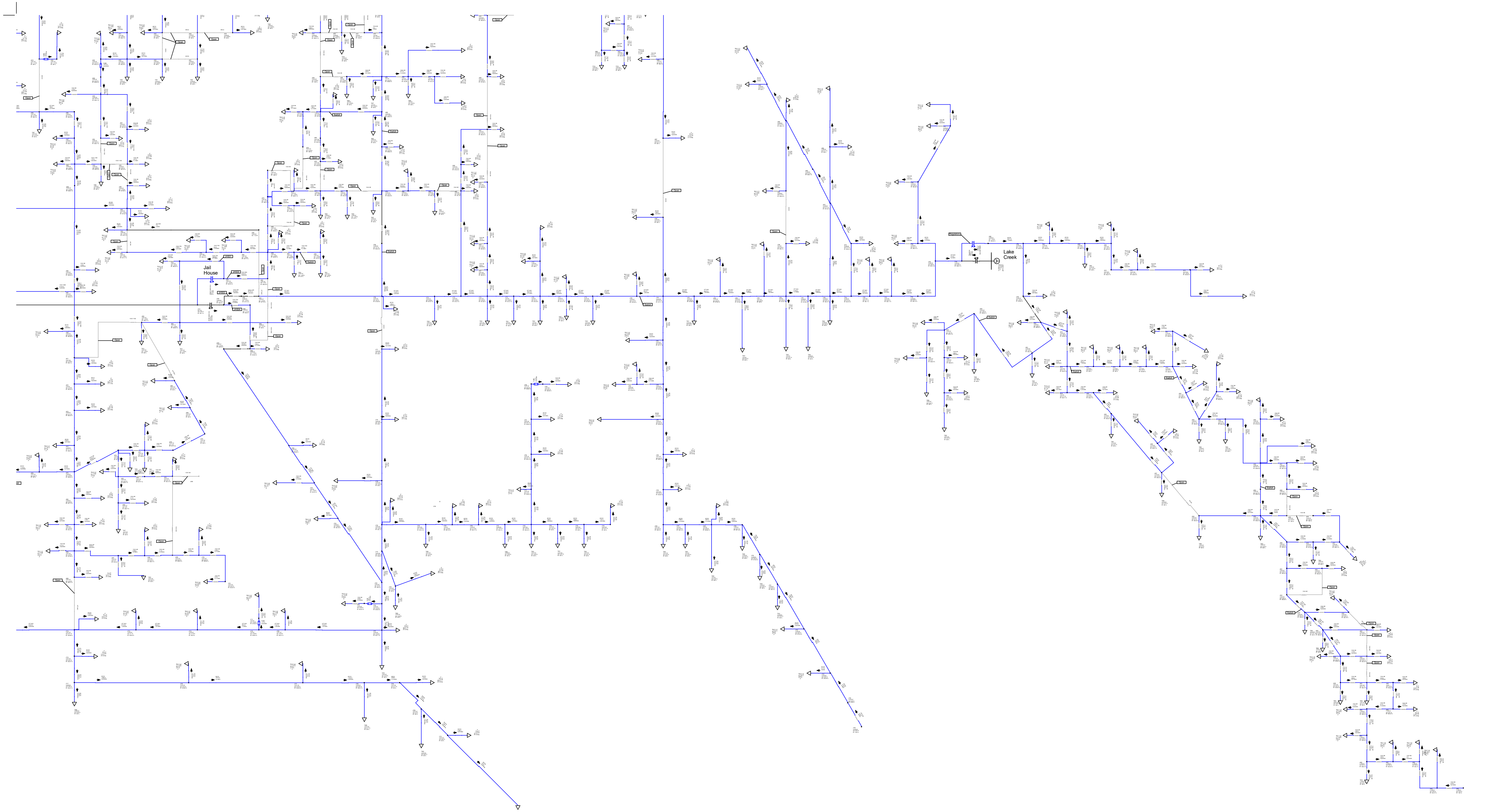
4. Upgrade MW101 circiut from Midway substation to 300 East main Street.

5. PR201 and PR202 can be picked up by MW101.




Jordanelle
College

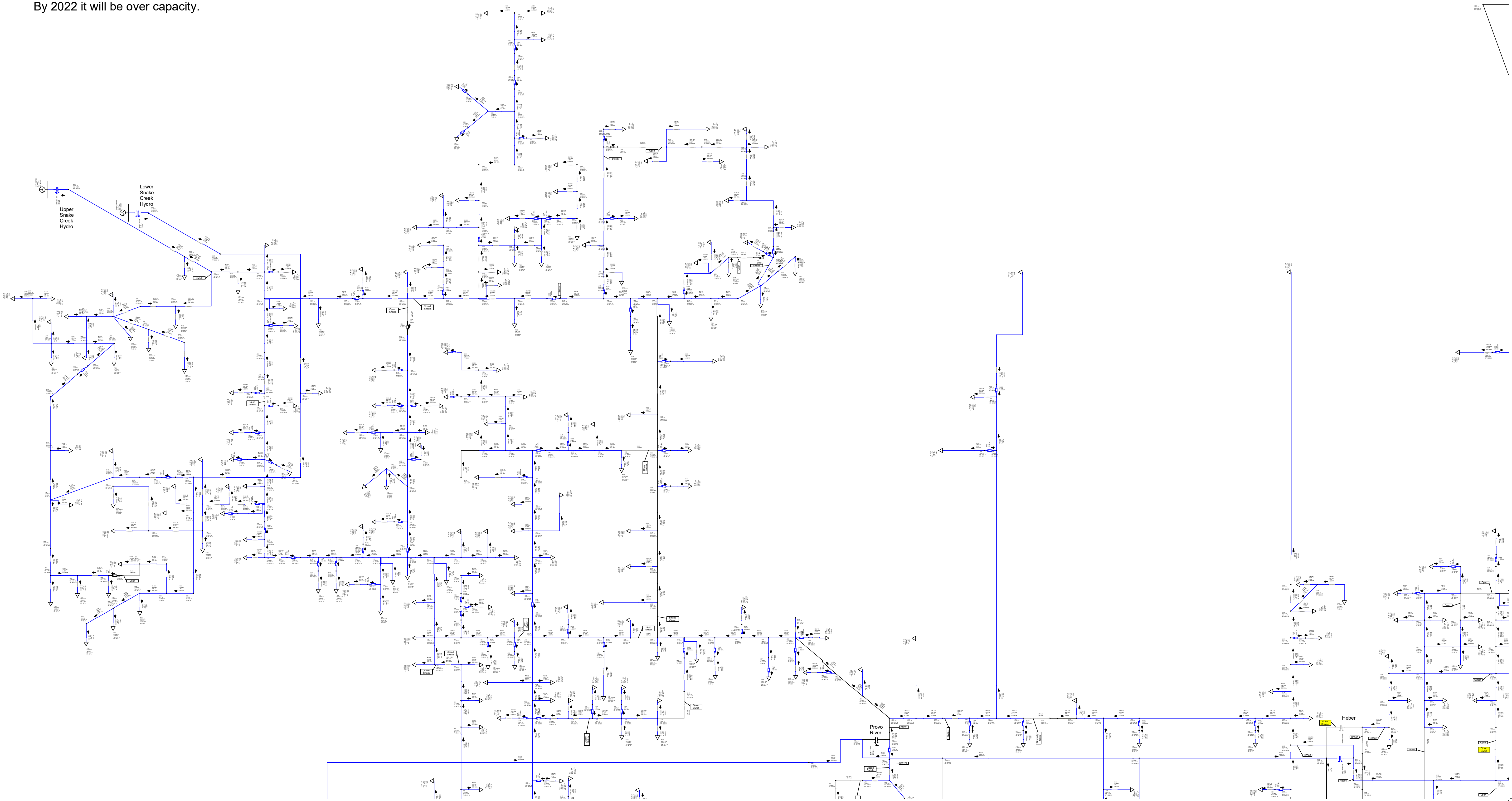

Midway
Heber
Plant
Cloyes

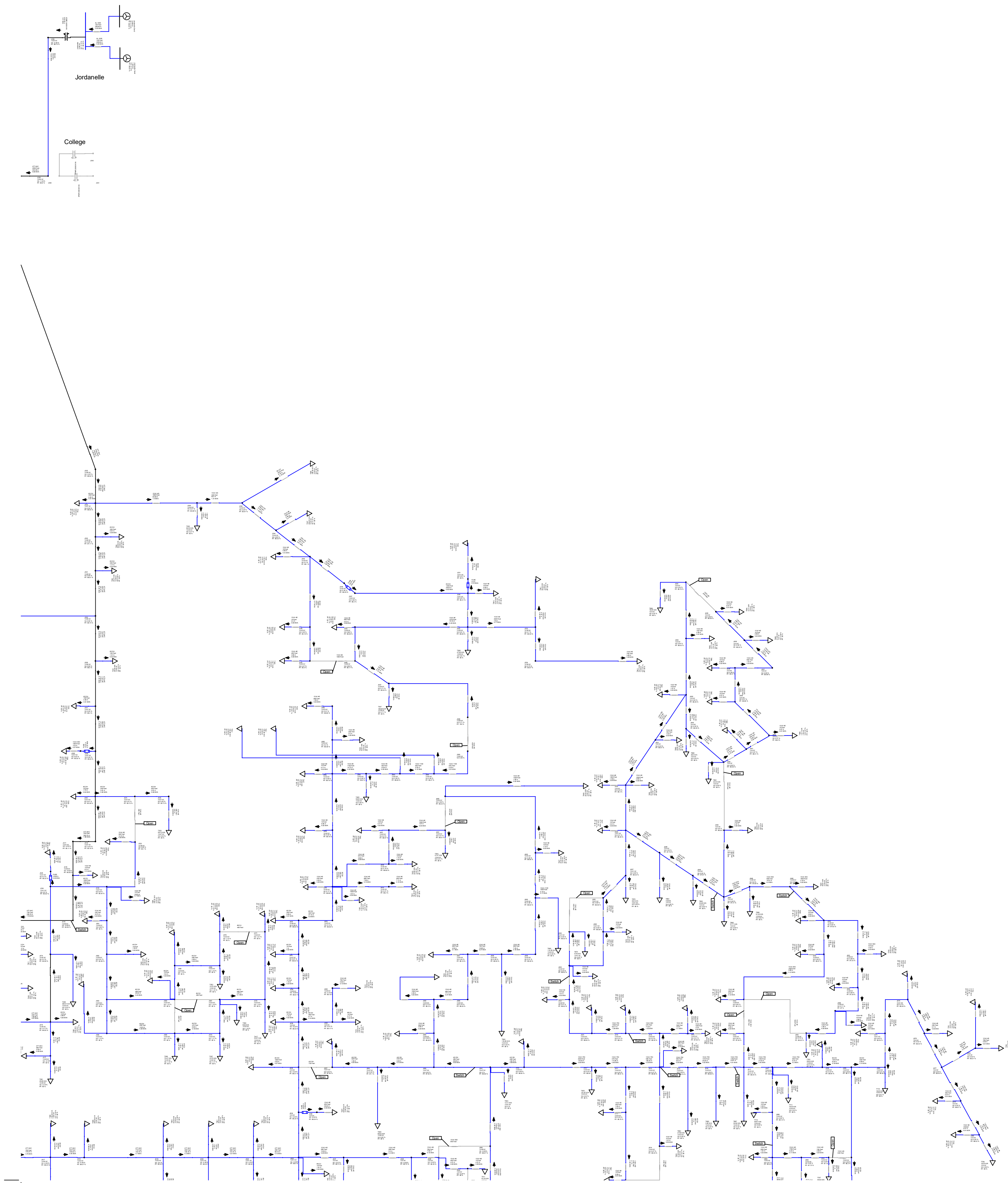

Jail House
Lake Creek

Heber 12.47 kV
2018 - Loss of Heber T1
transformer

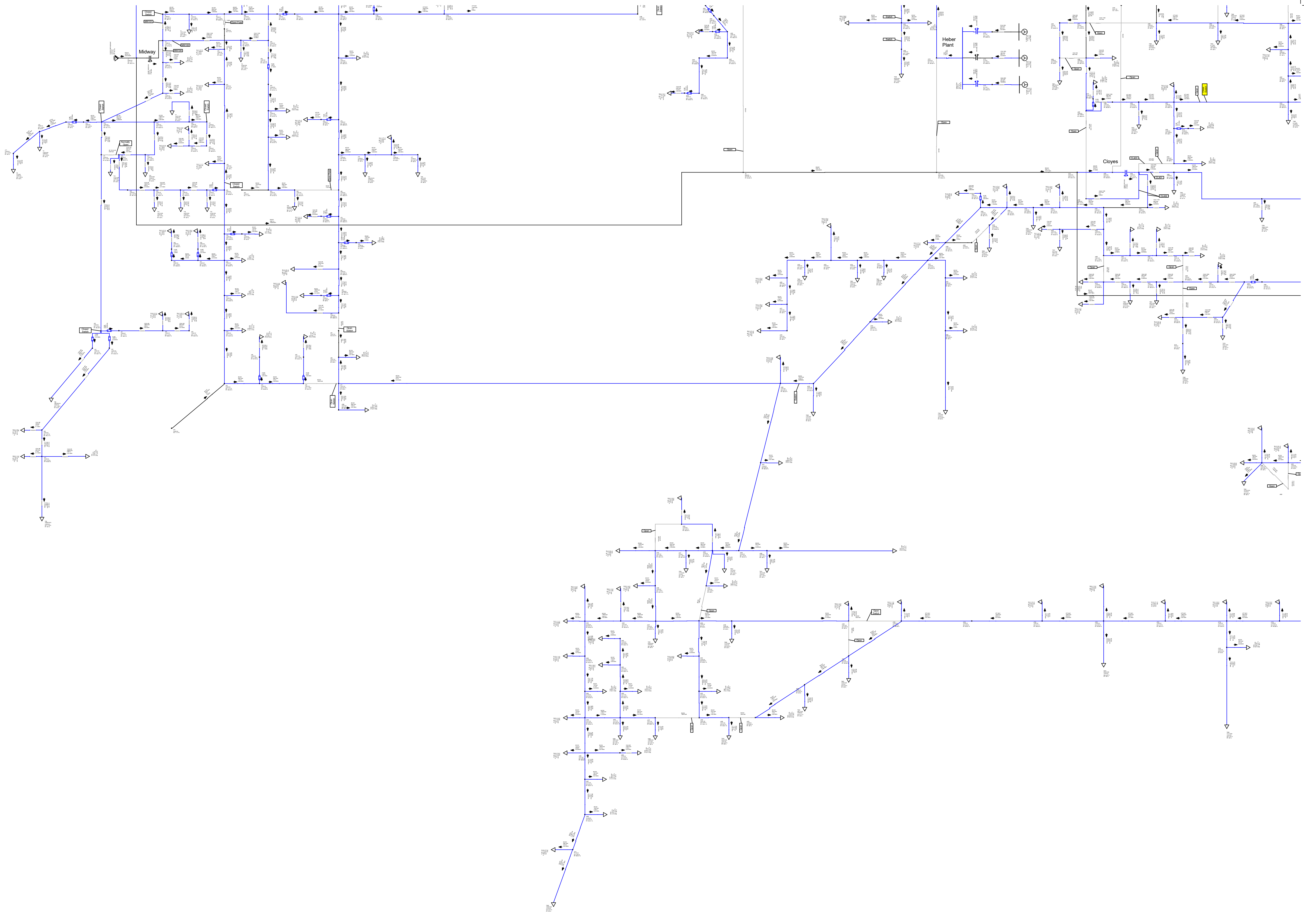
1. HB302 circuit can be picked up by
HB304 circuit.

2. HB303 circuit can be picked up by
HB305 circuit. One line section of #2
ACSR is approximately at capacity.
By 2022 it will be over capacity.

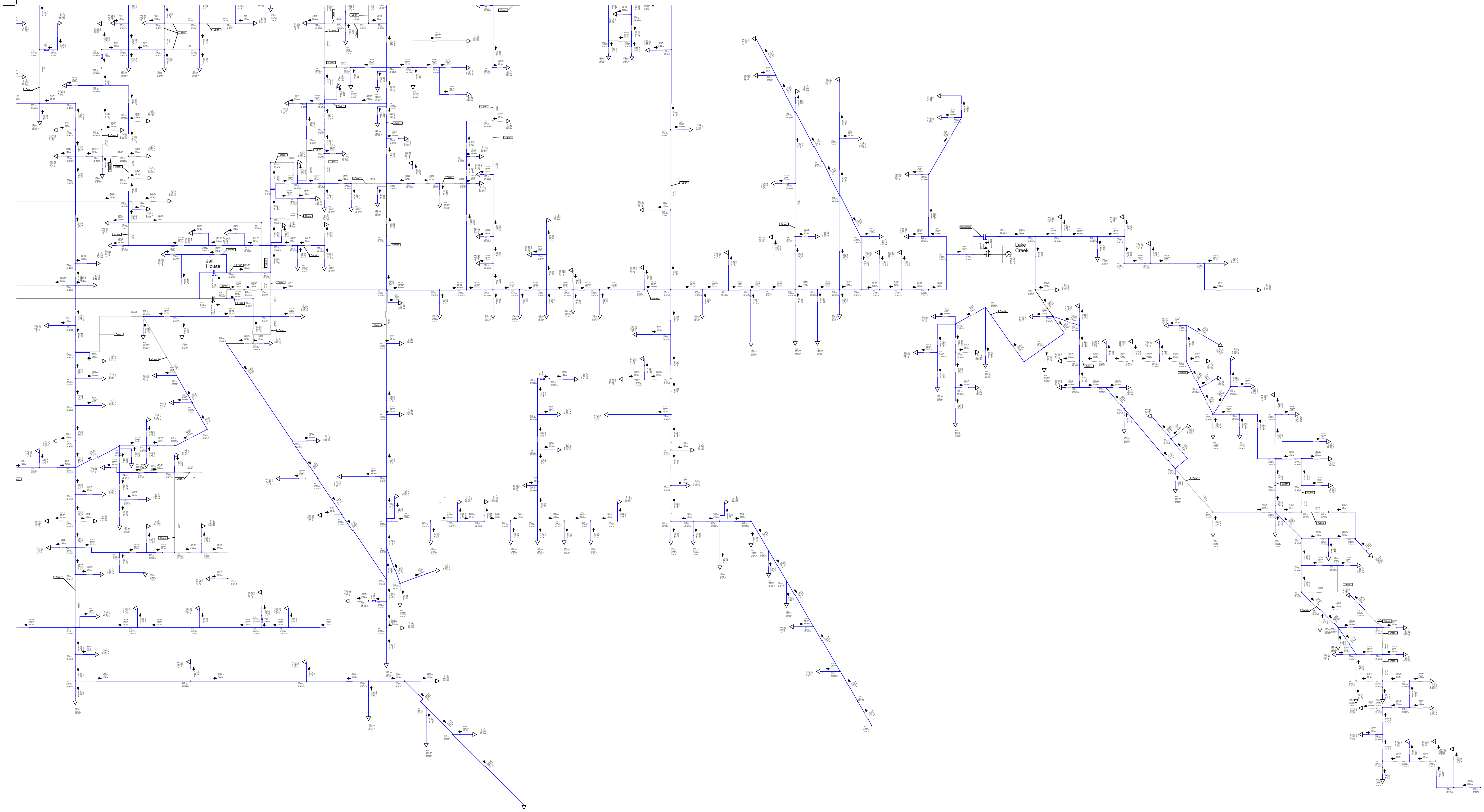




Jordanelle
College



Midway
Heber
Plant
Cloyes

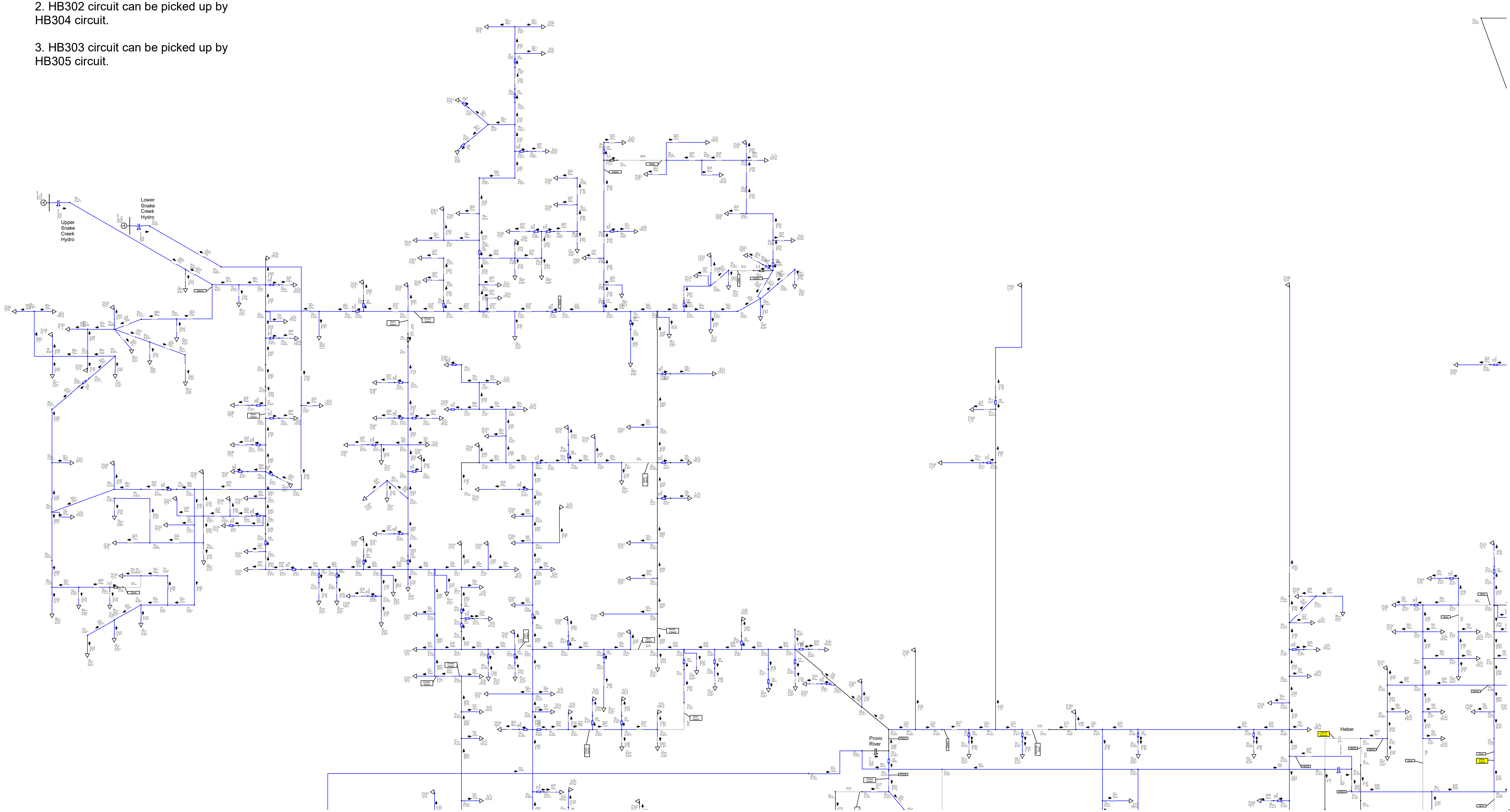

Jail House
Lake Creek

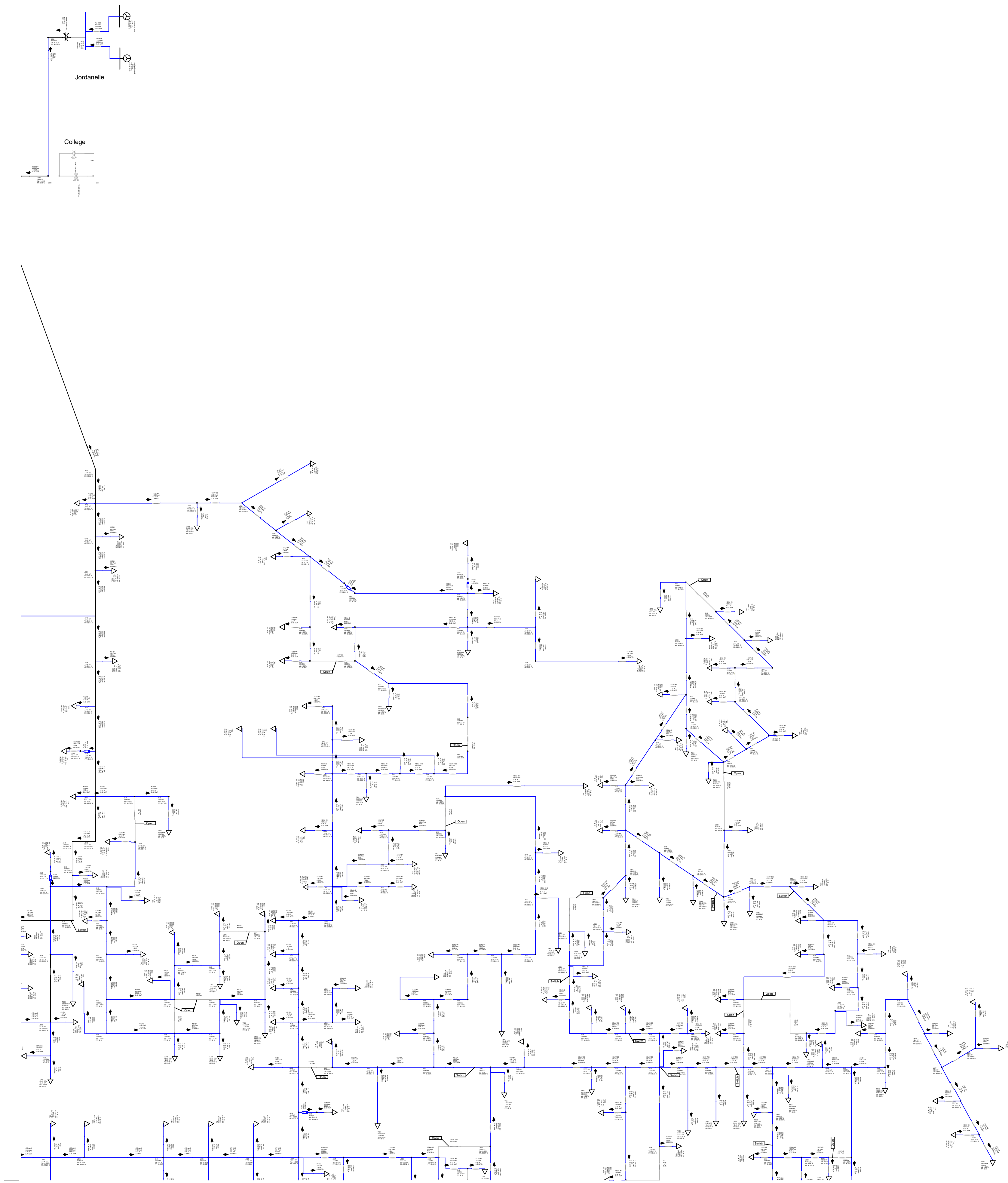
Heber 12.47 kV
2018 - Loss of Heber T1 transformer
(After Upgrades)

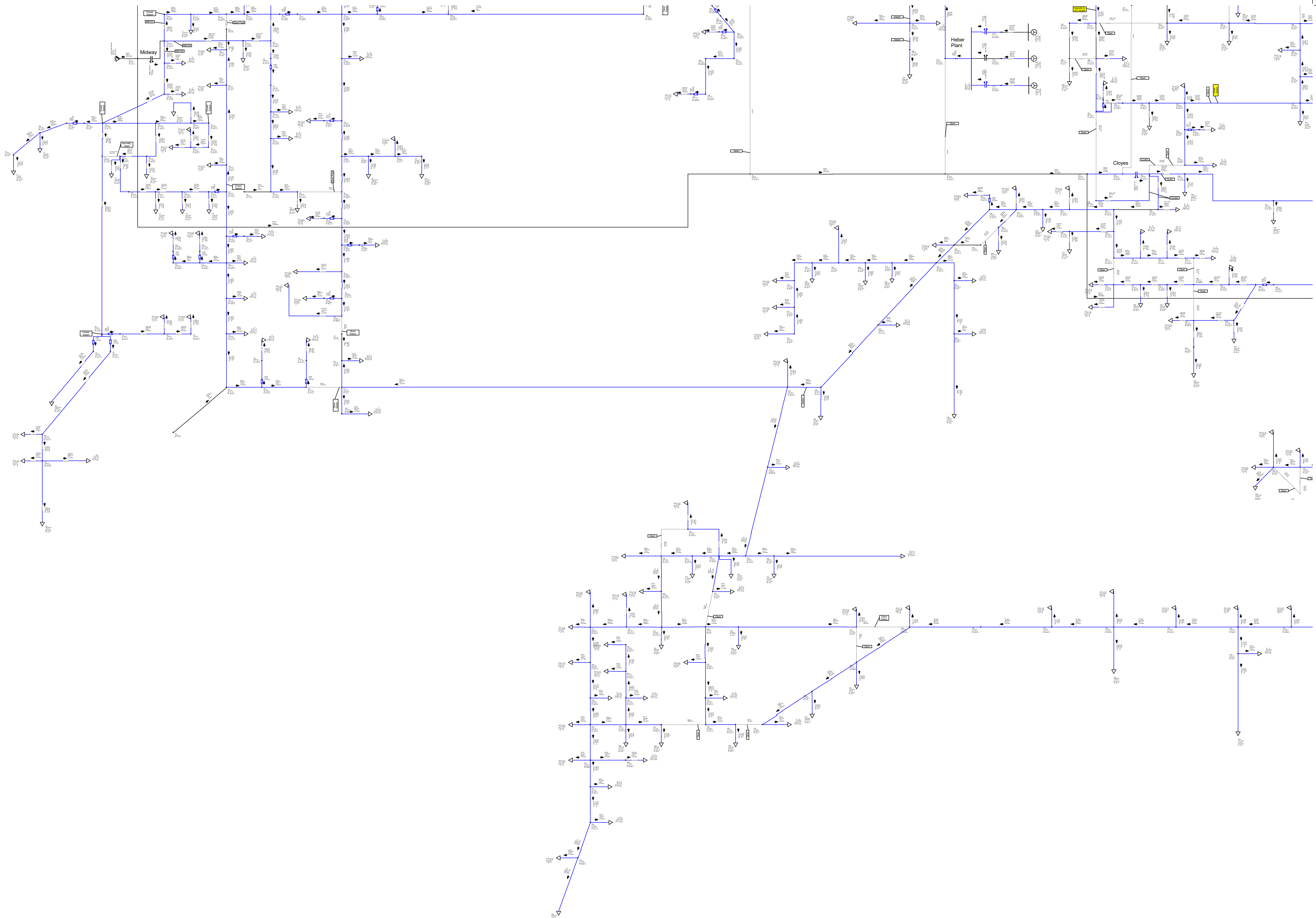
1. Upgrade HB305 circuit from 600 West 200 South to 600 West 300 South.

2. HB302 circuit can be picked up by HB304 circuit.

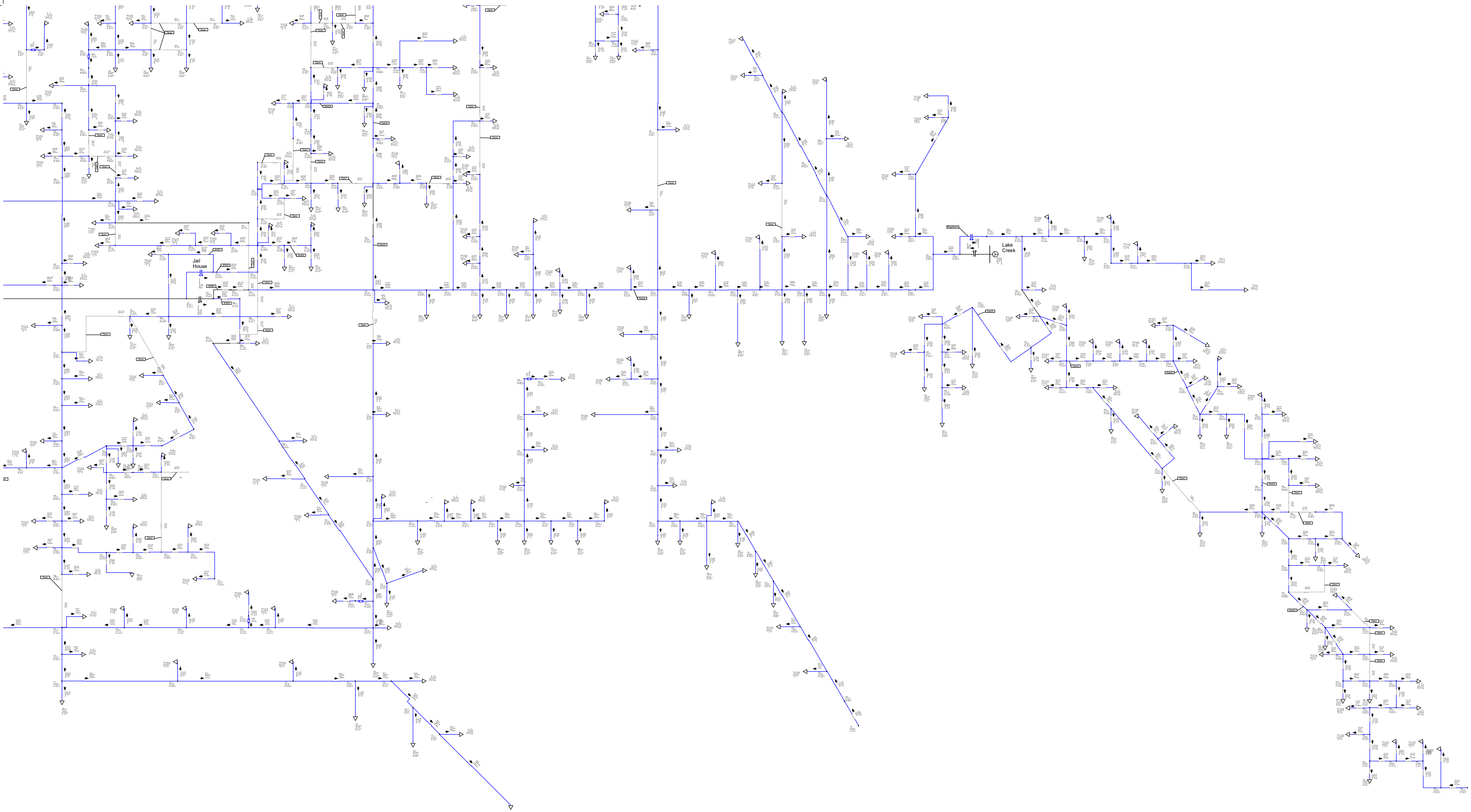
3. HB303 circuit can be picked up by HB305 circuit.




Jordanelle
College



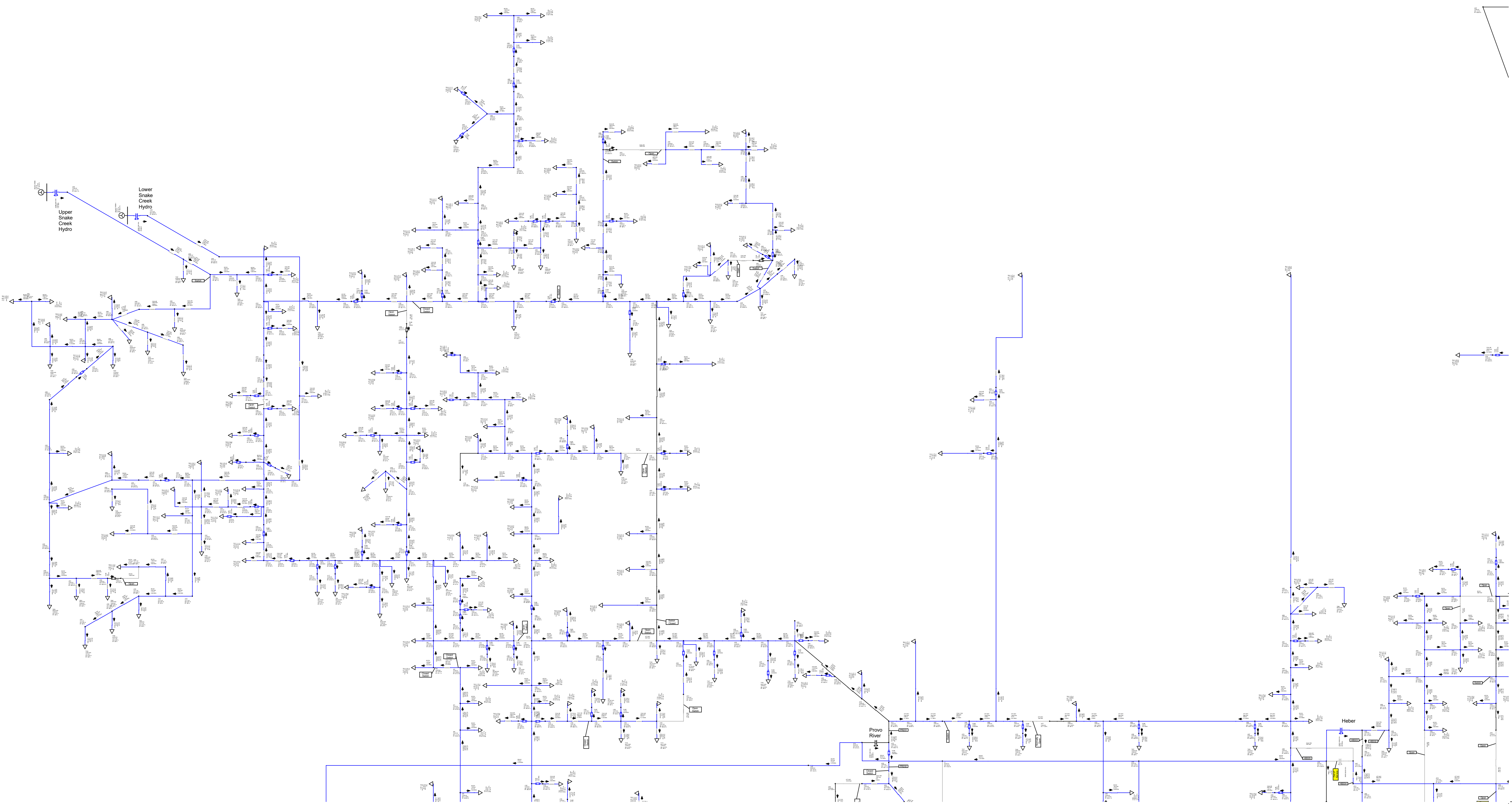
Midway
Heber Plant
Cloyes

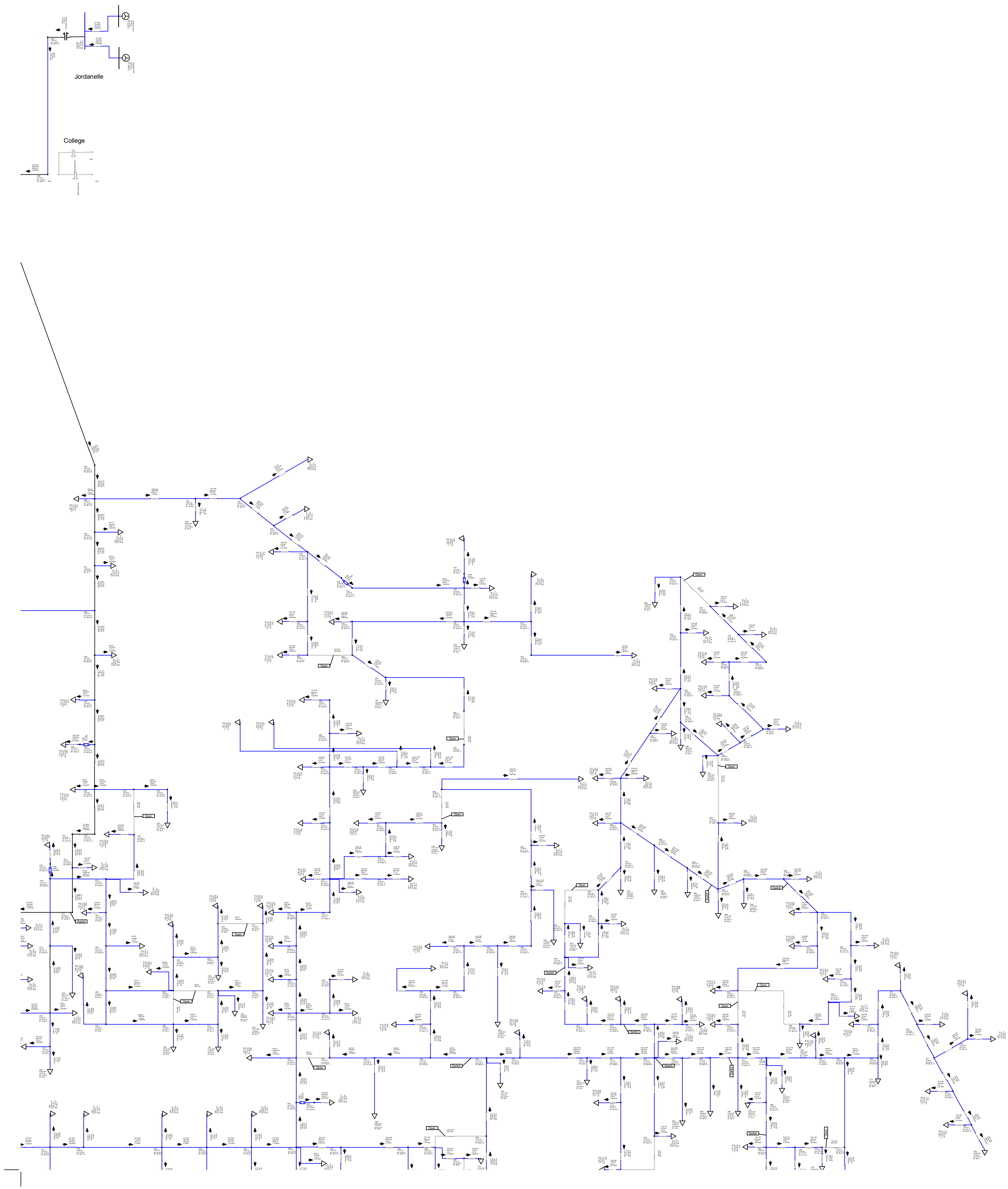

Jail House
Lake Creek

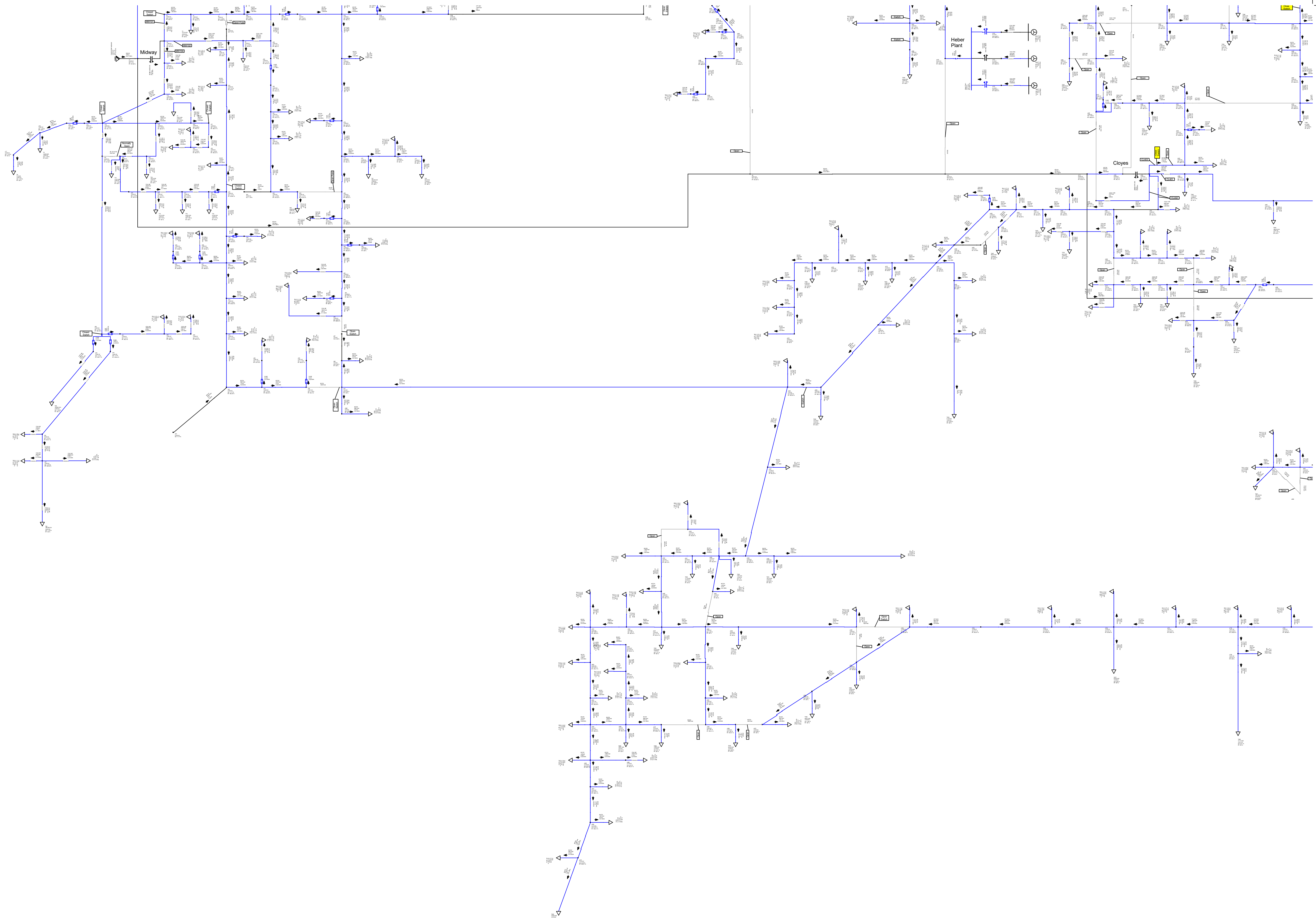
Heber 12.47 kV
2018 - Loss of Heber T2 Transformer

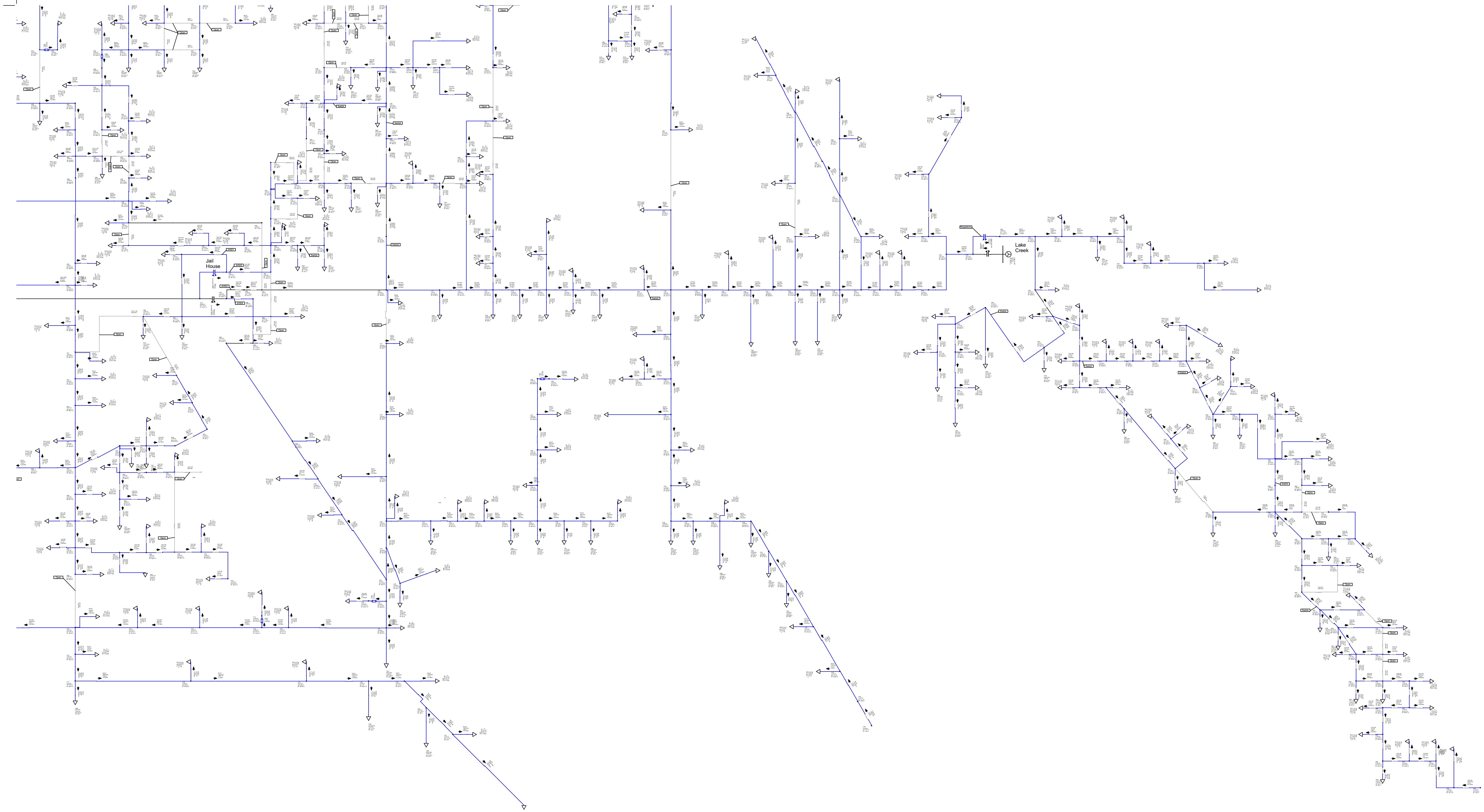
1. HB304 circuit can be picked up by HB303.

2. HB305 circuit can be picked up by CL403.




Jordanelle
College

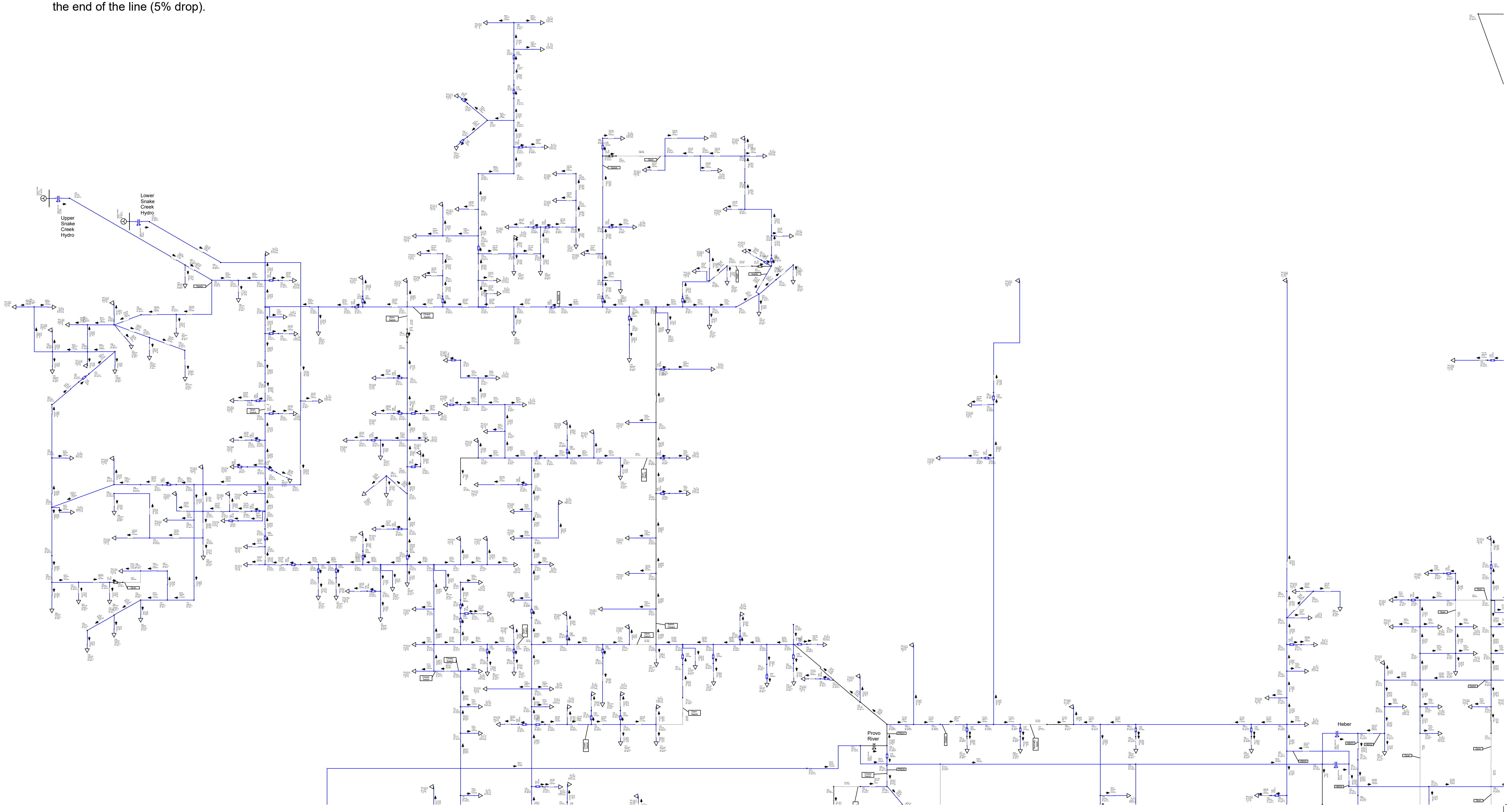

Midway
Heber Plant
Cloyes

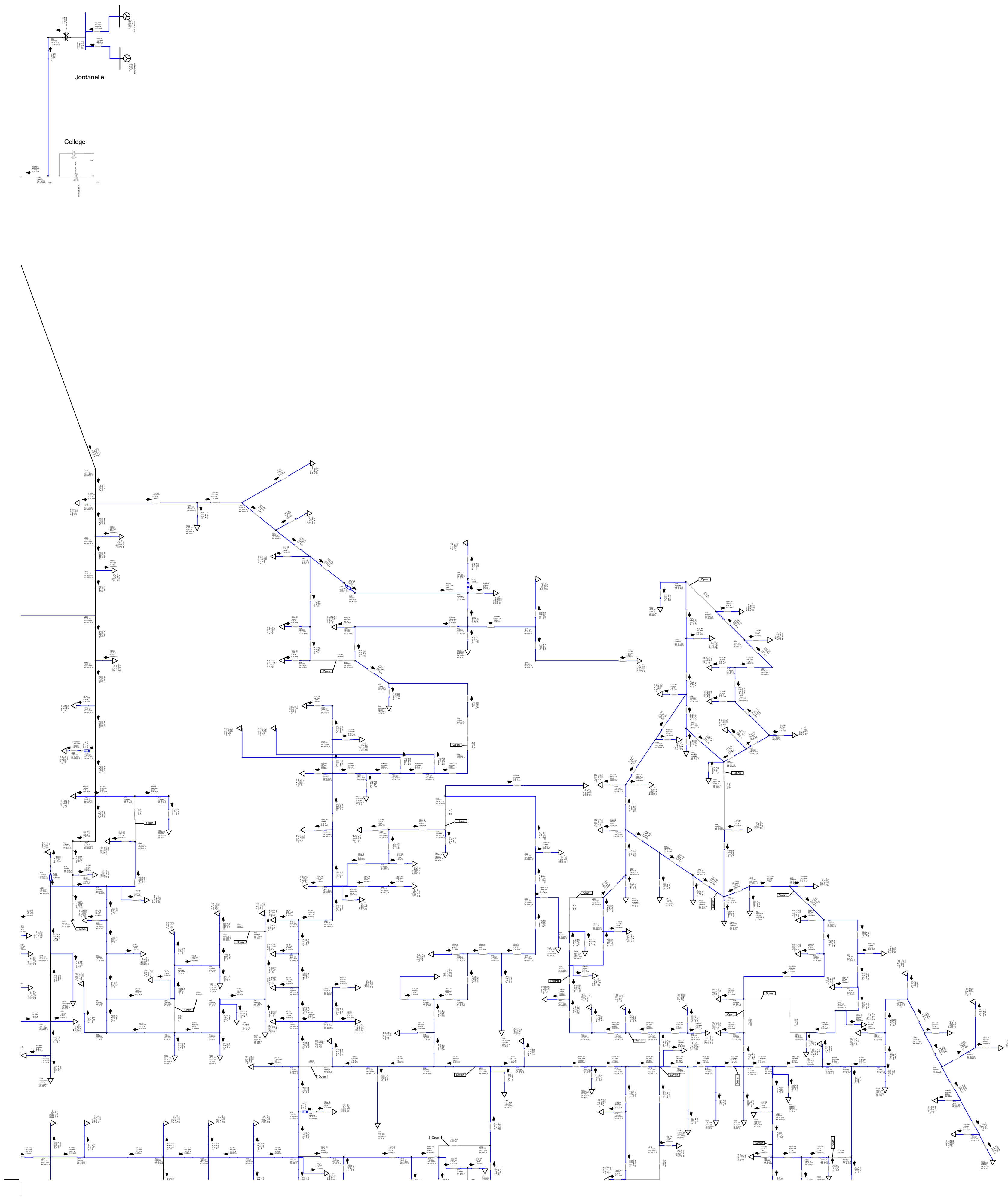

Jail House
Lake Creek

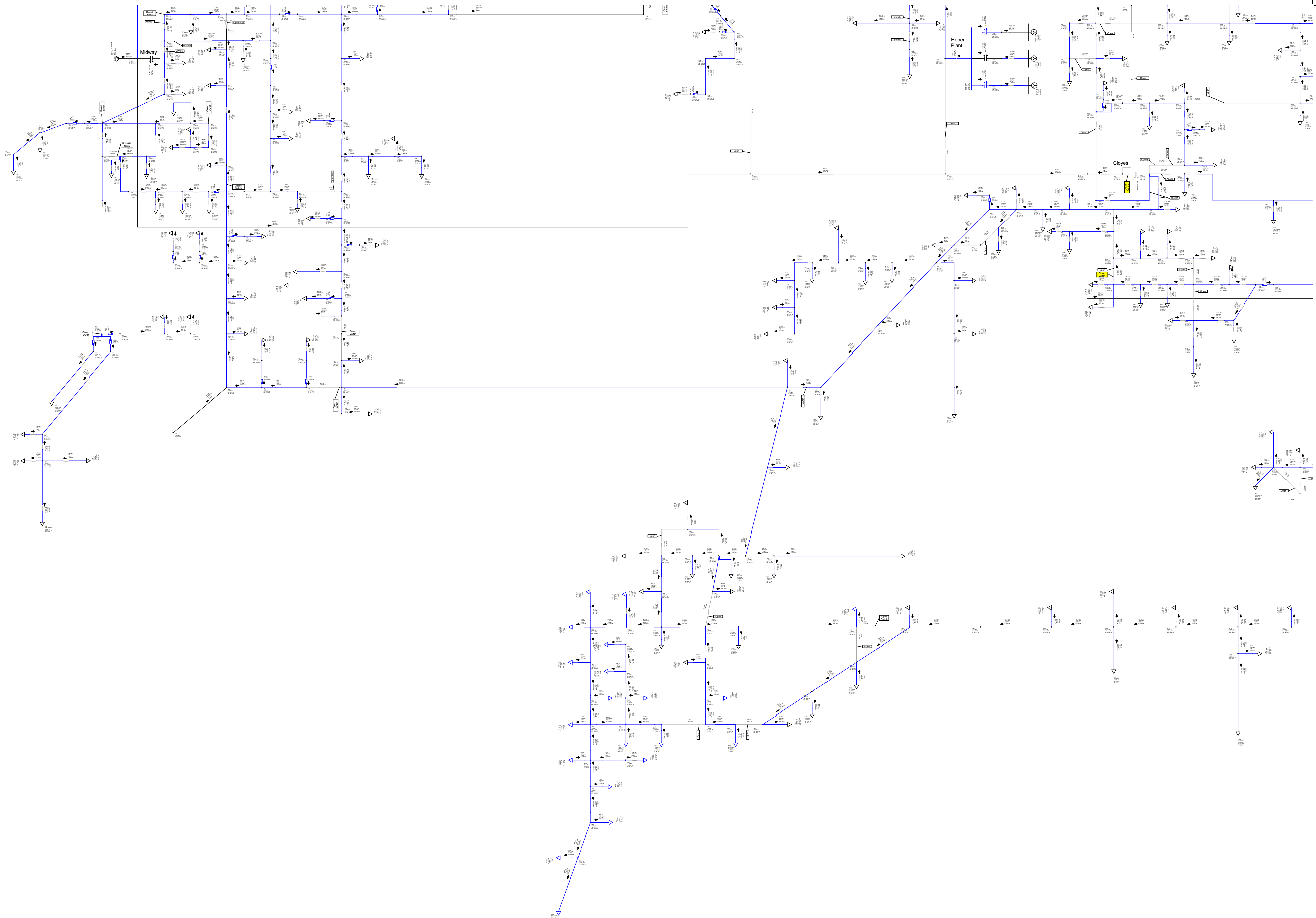
Heber 12.47 kV
2018 - Loss of Cloyes transformer

1. CL401 can be picked up by HB304.

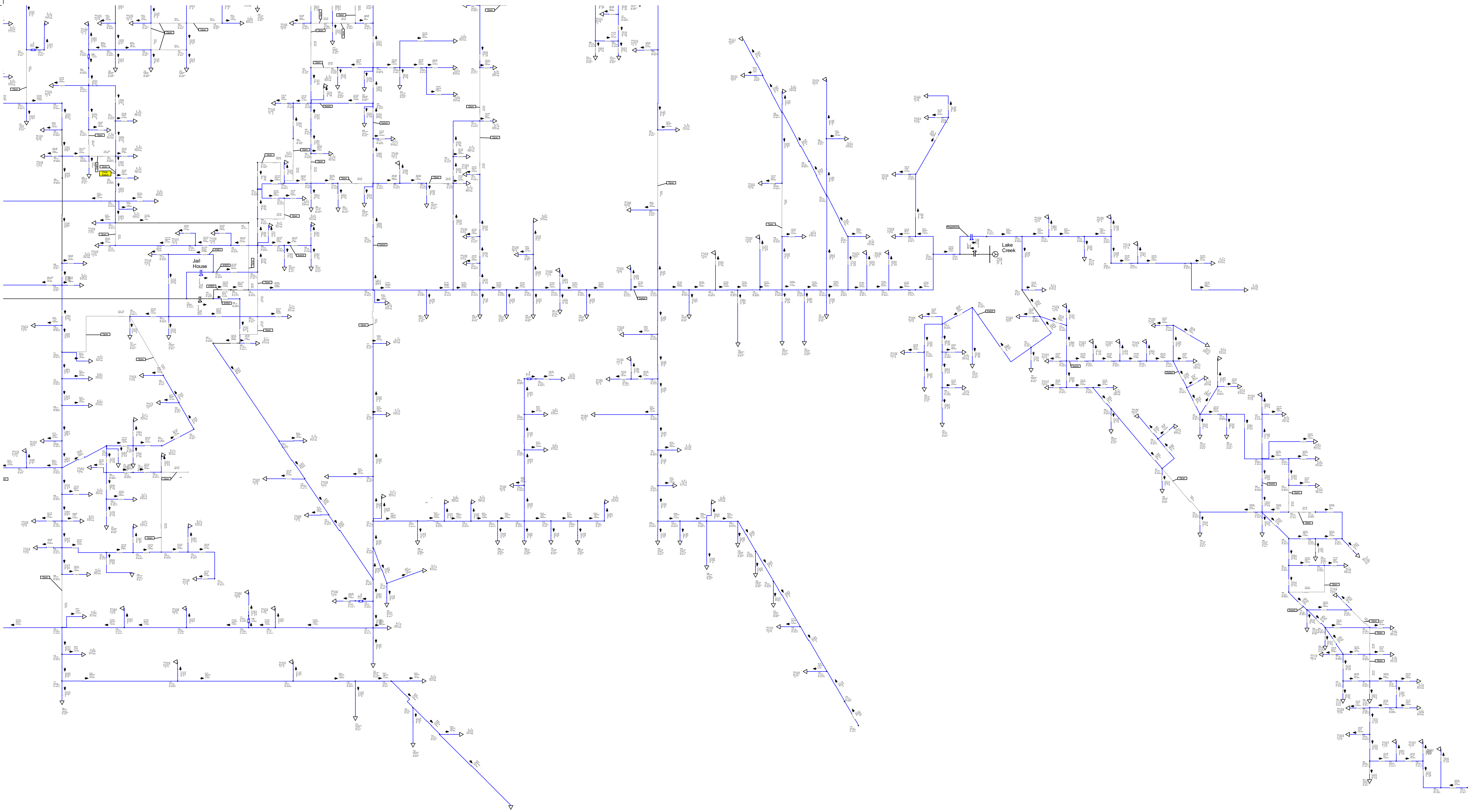
2. CL402 can be picked up by HB303. There are voltage issues at the end of the line (5% drop).




Jordanelle
College



Midway
Heber Plant
Cloyes


Jail House
Lake Creek

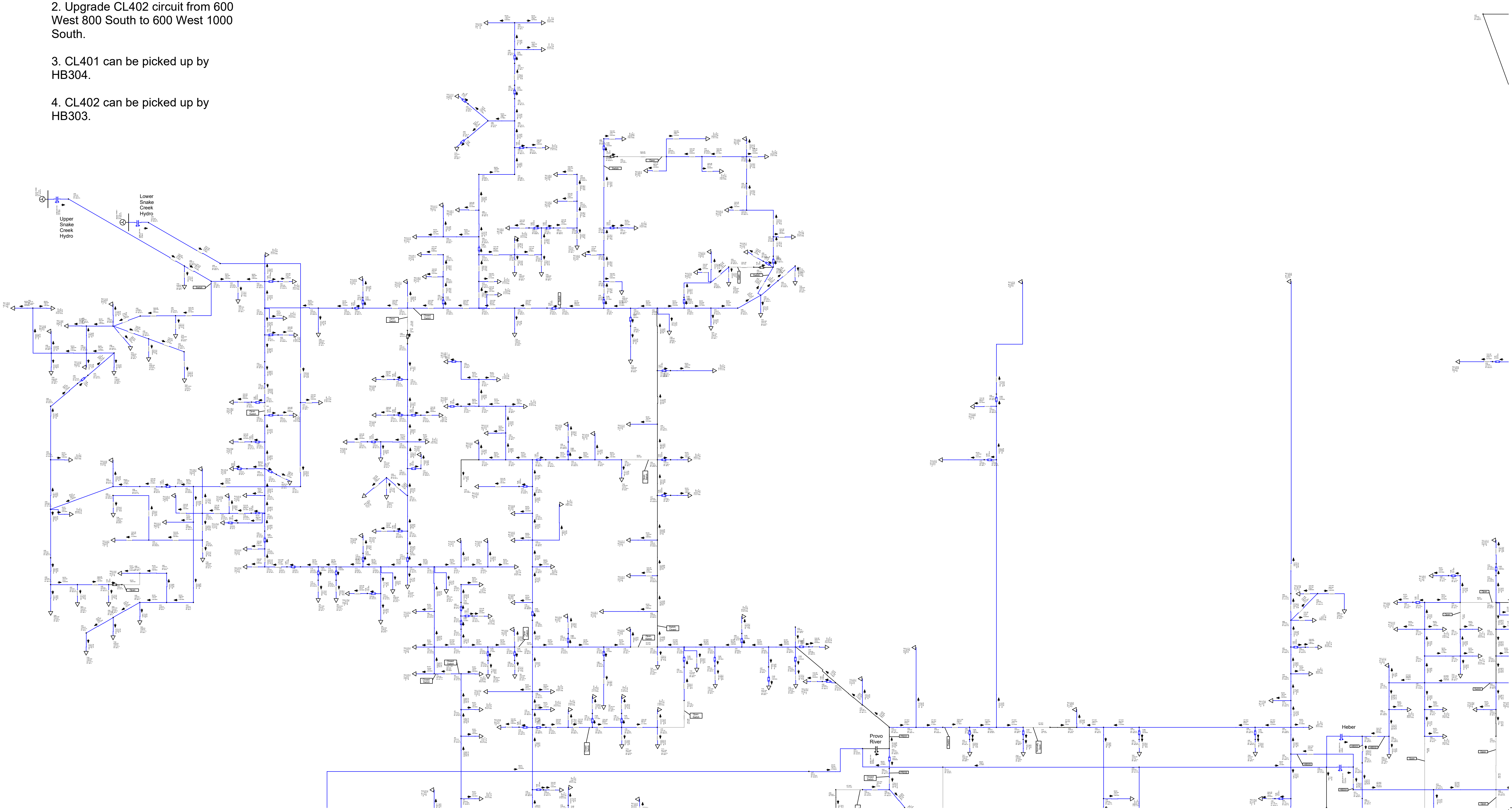
Heber 12.47 kV
2018 - Loss of Cloyes transformer
(After Upgrades)

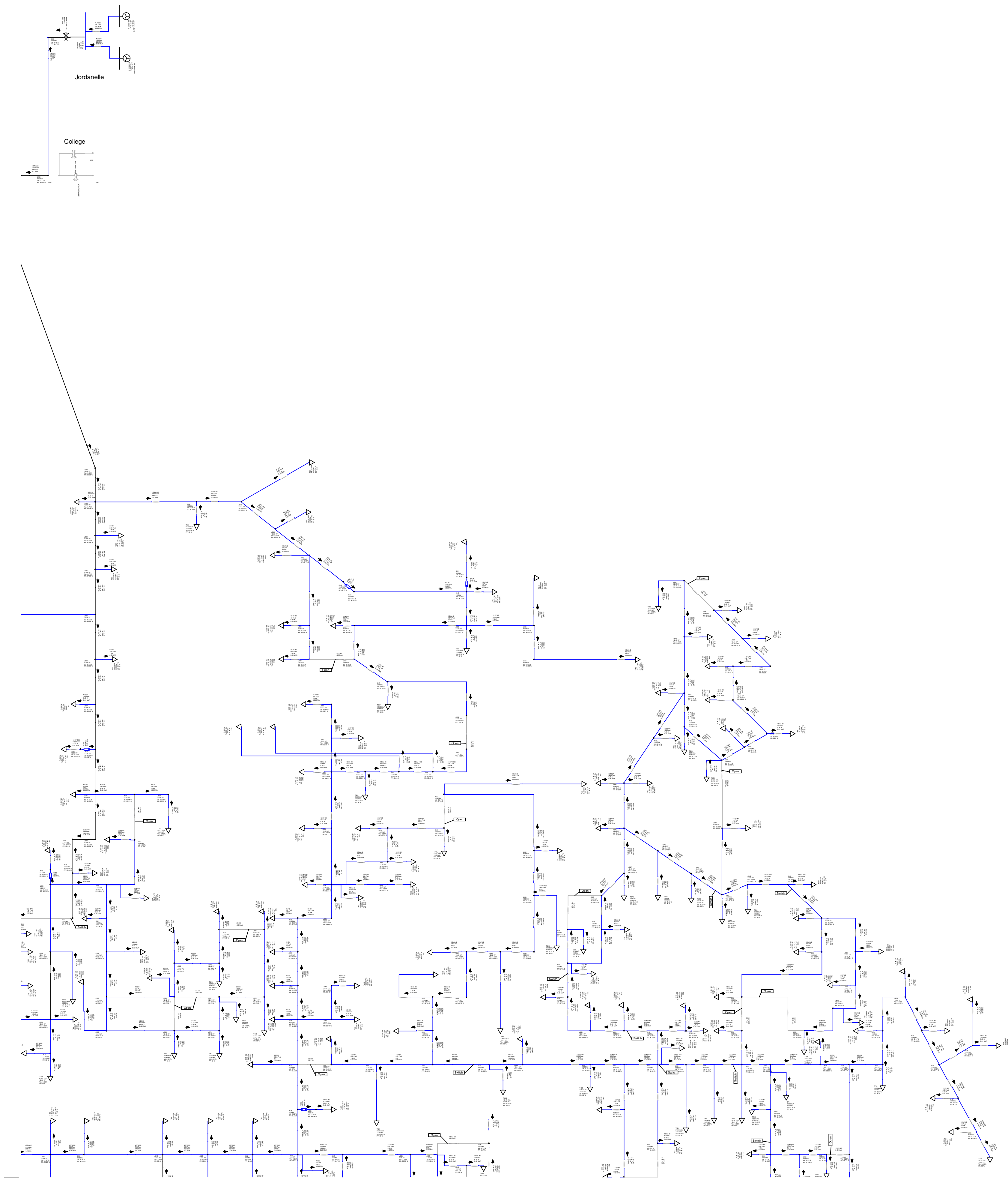
1. Upgrade CL402 circuit from Cloyes substation to 2400 South 2650 West.

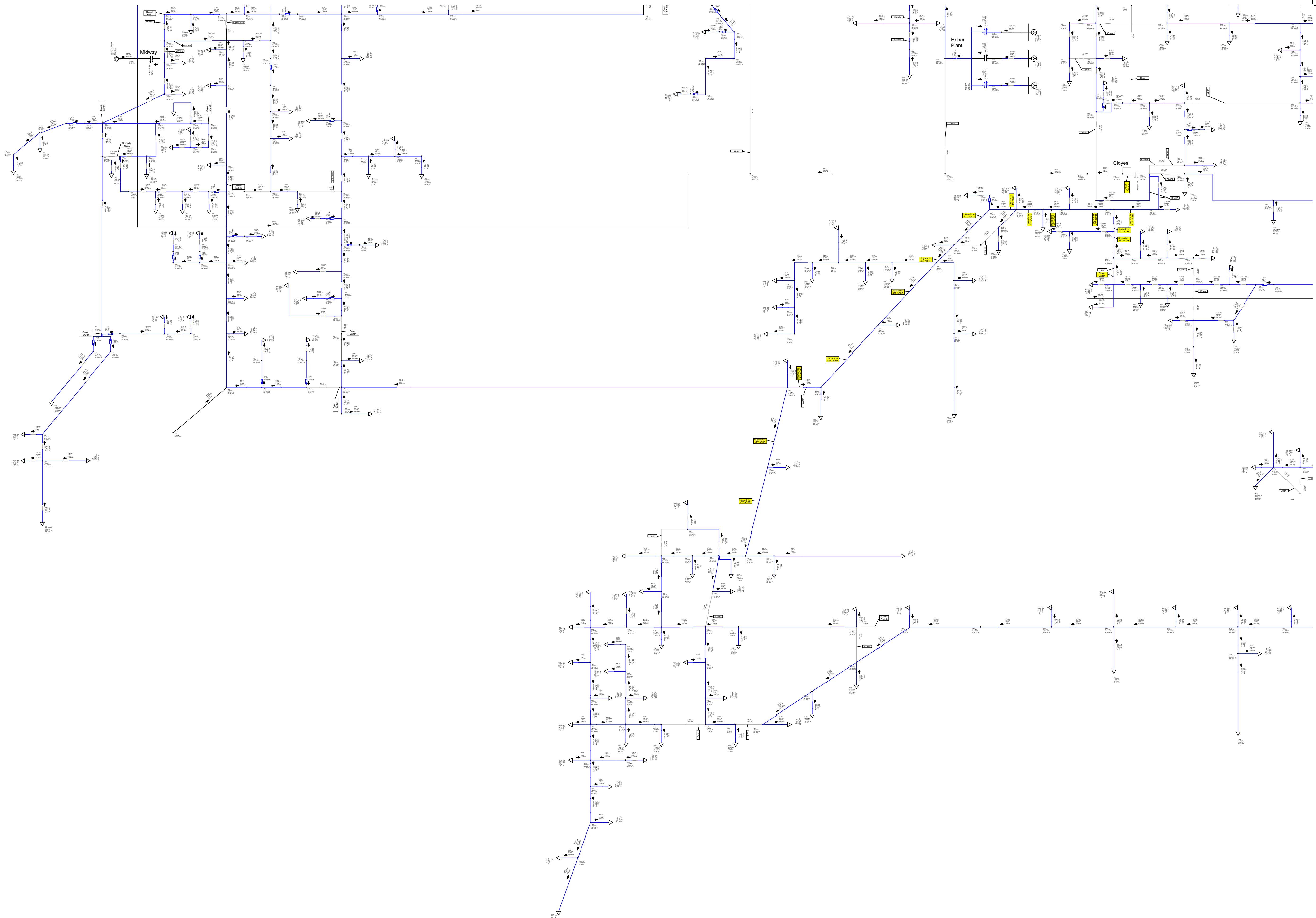
2. Upgrade CL402 circuit from 600 West 800 South to 600 West 1000 South.

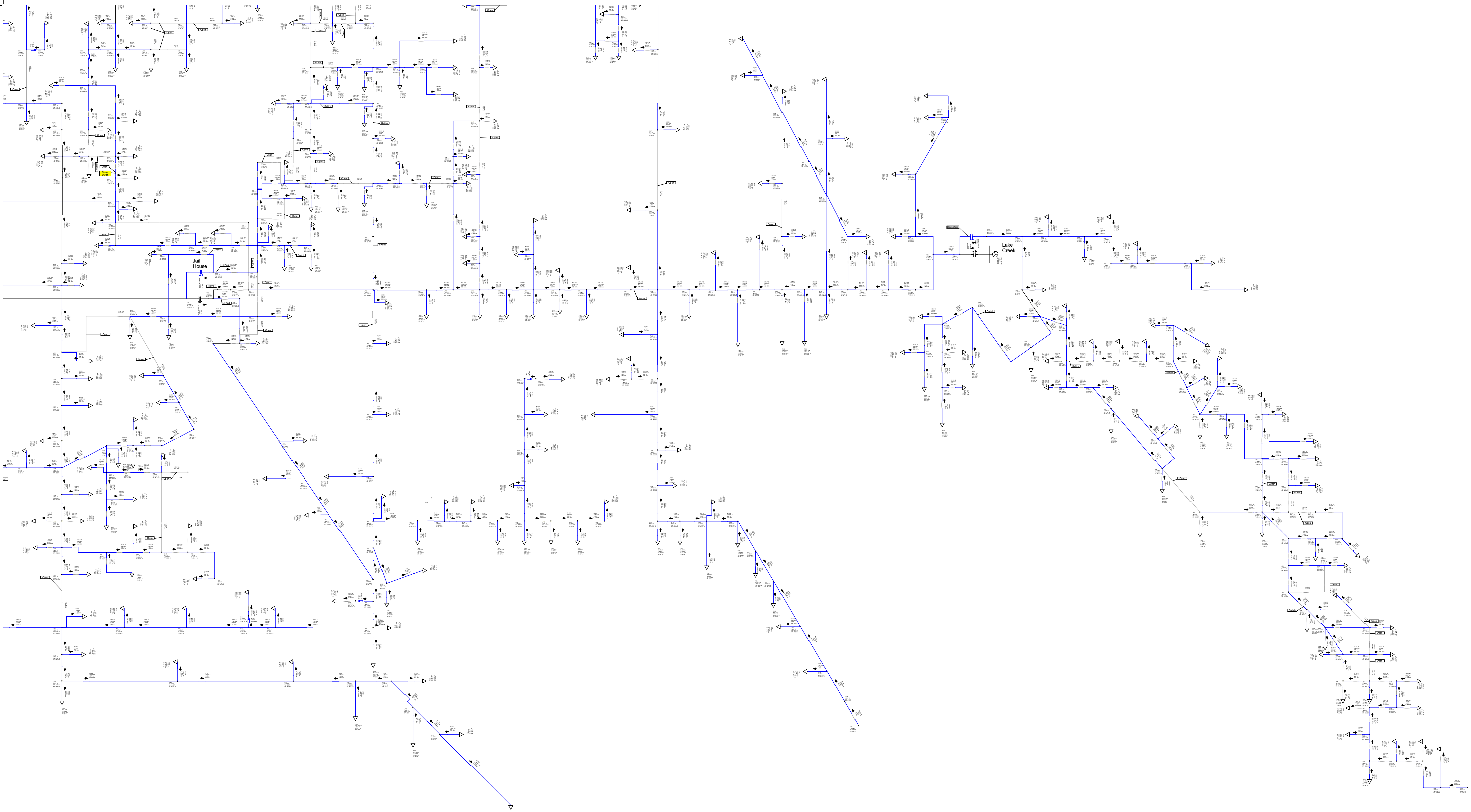
3. CL401 can be picked up by HB304.

4. CL402 can be picked up by HB303.




Jordanelle
College

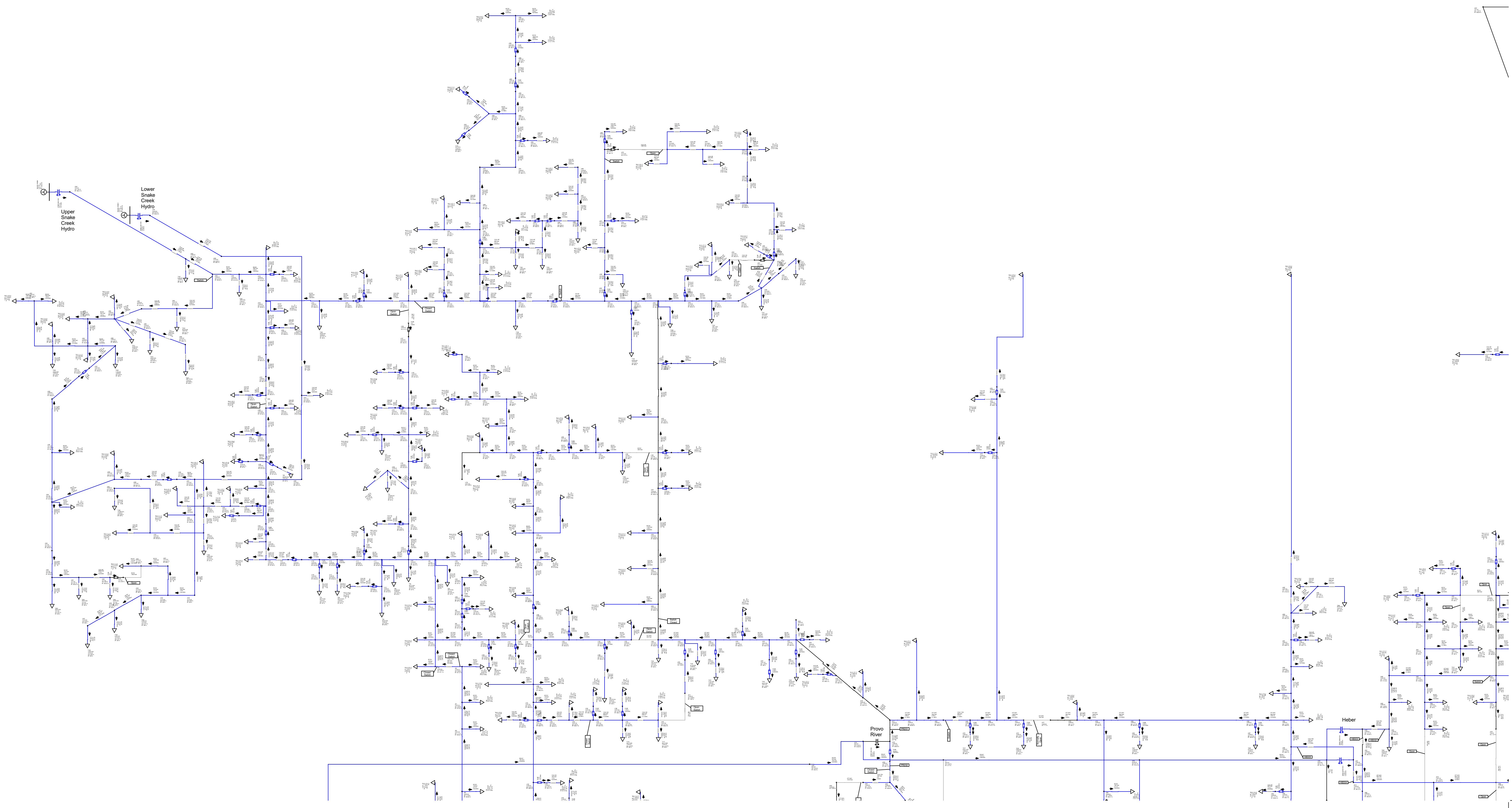

Midway
Heber Plant
Cloyes

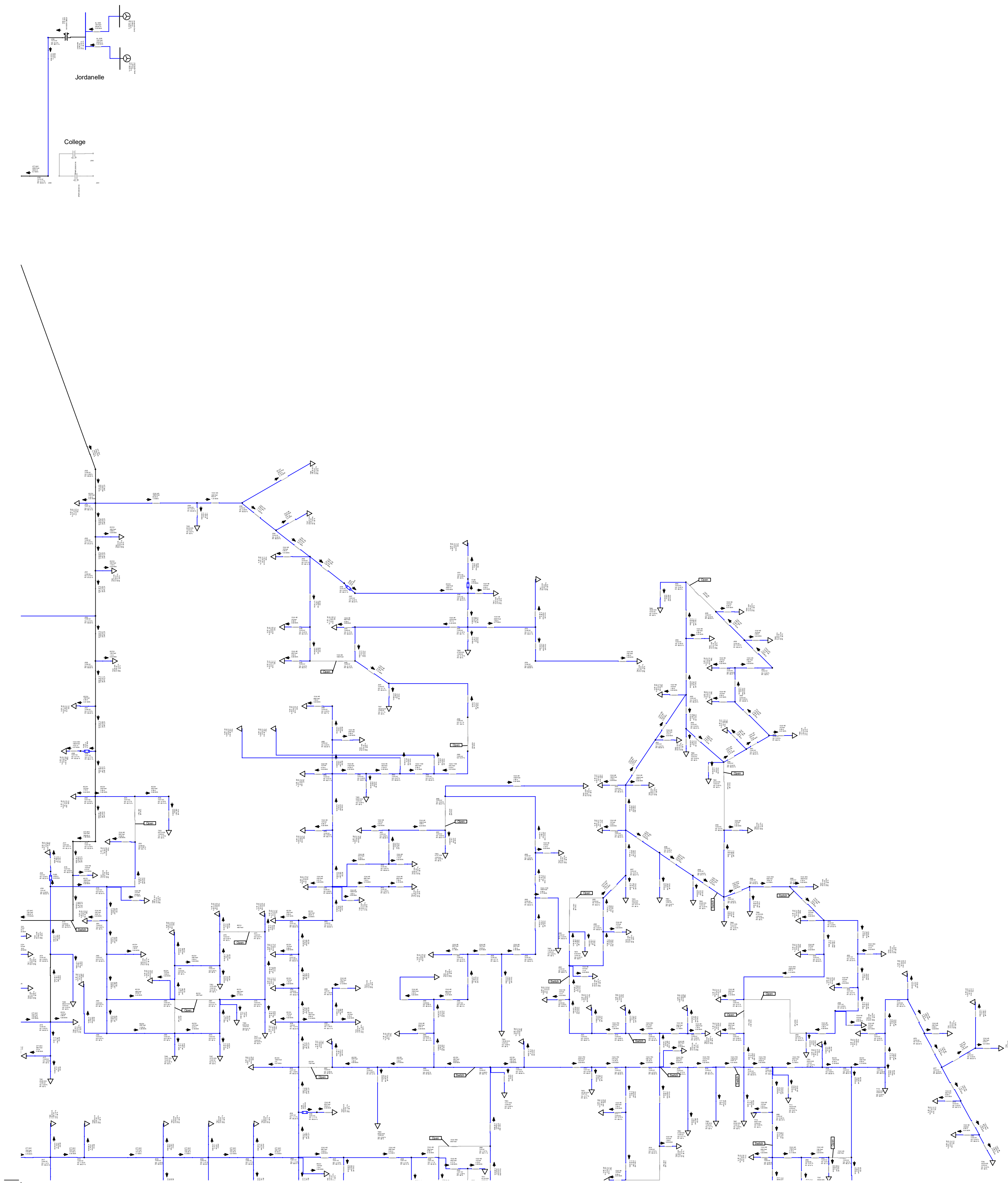

Jail House
Lake Creek

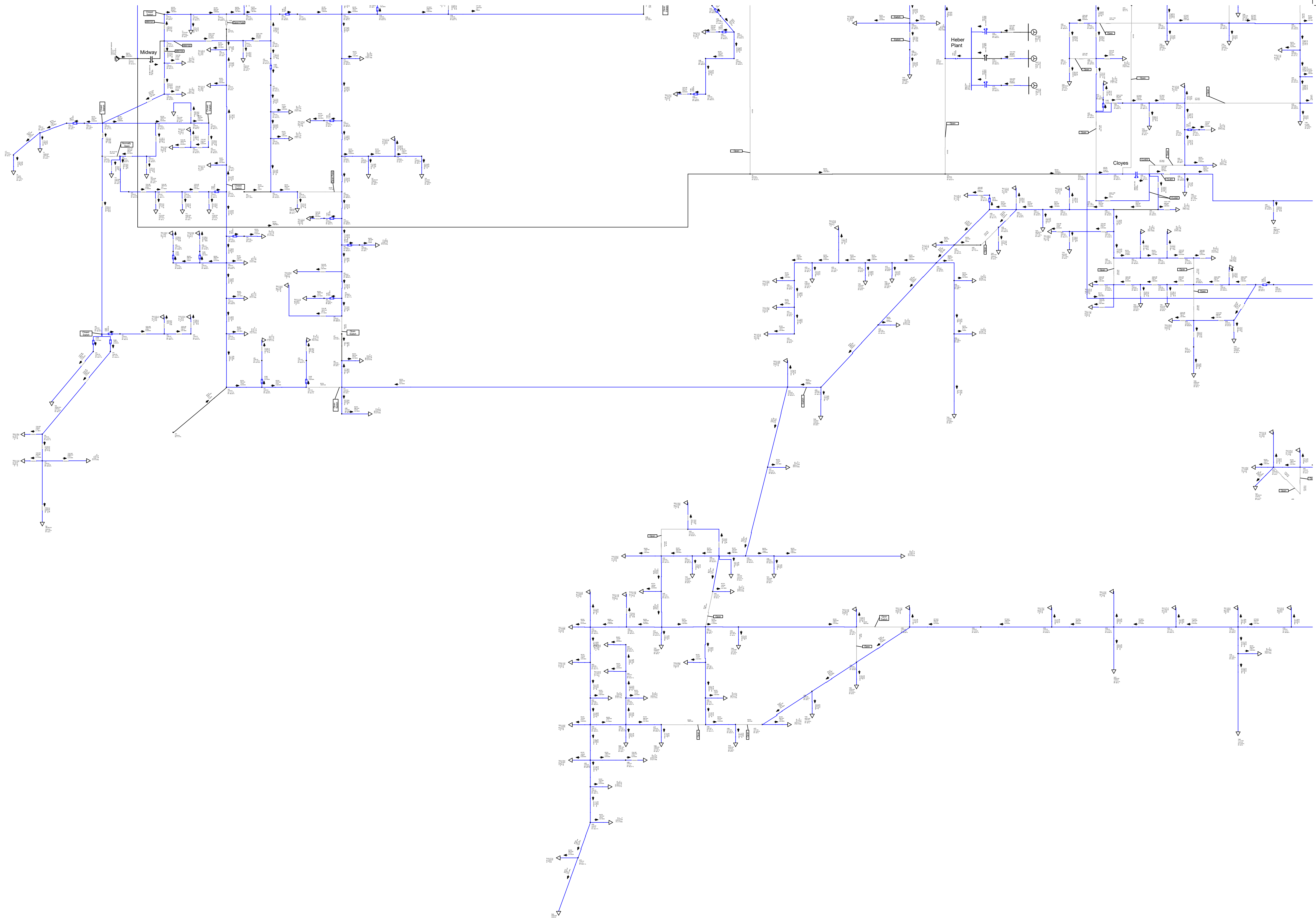
Heber 12.47 kV
2018 - Loss of Jailhouse T1 transformer

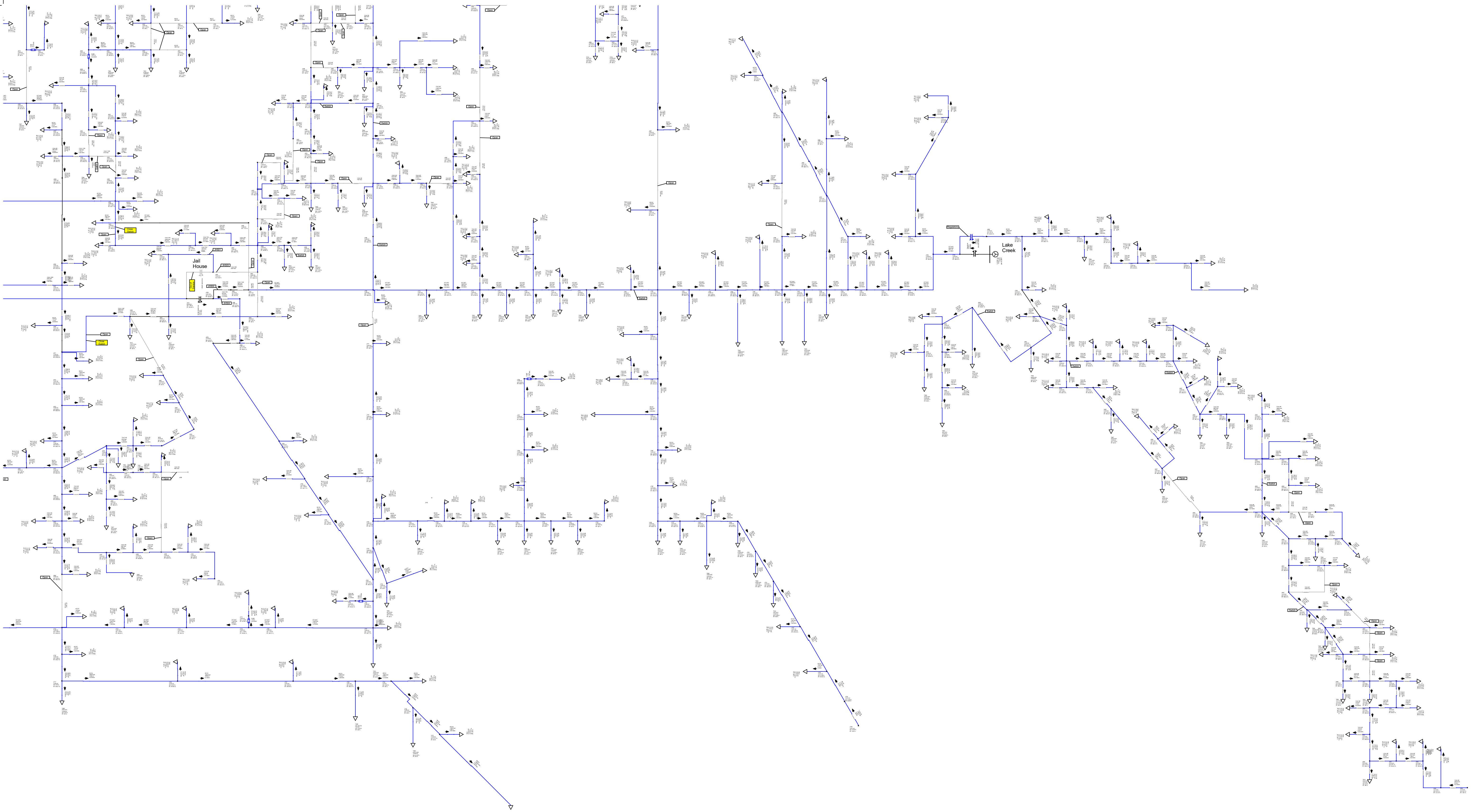
1. JH501 circuit can be picked up by HB303.

2. JH503 circuit can be picked up by CL401.




Jordanelle
College


Midway
Heber Plant
Cloyes


Jail House
Lake Creek

Heber 12.47 kV
2018 - Loss of Jailhouse T2 transformer

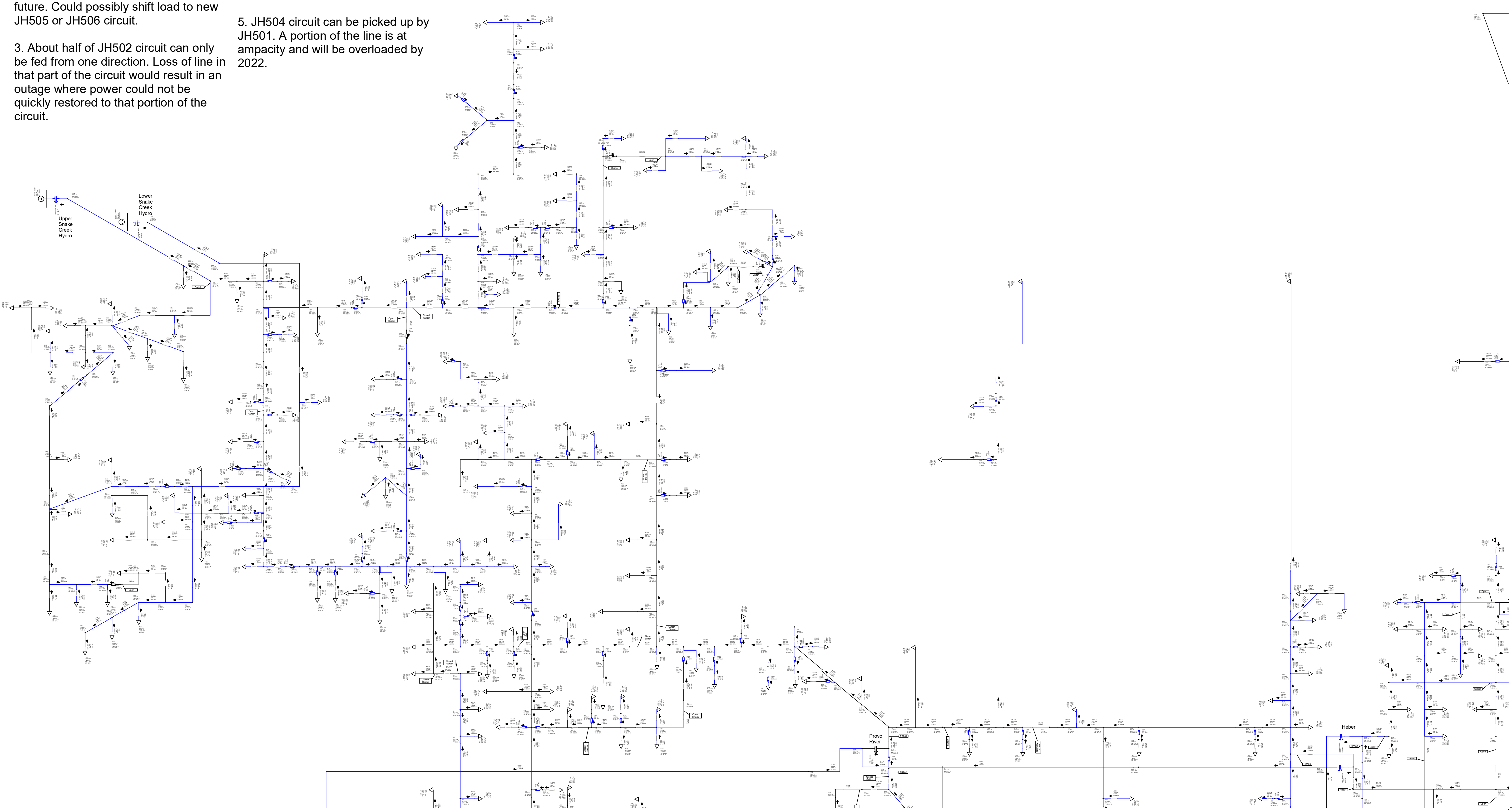
1. Model shows voltage issues on JH502 during peak load (4% drop).

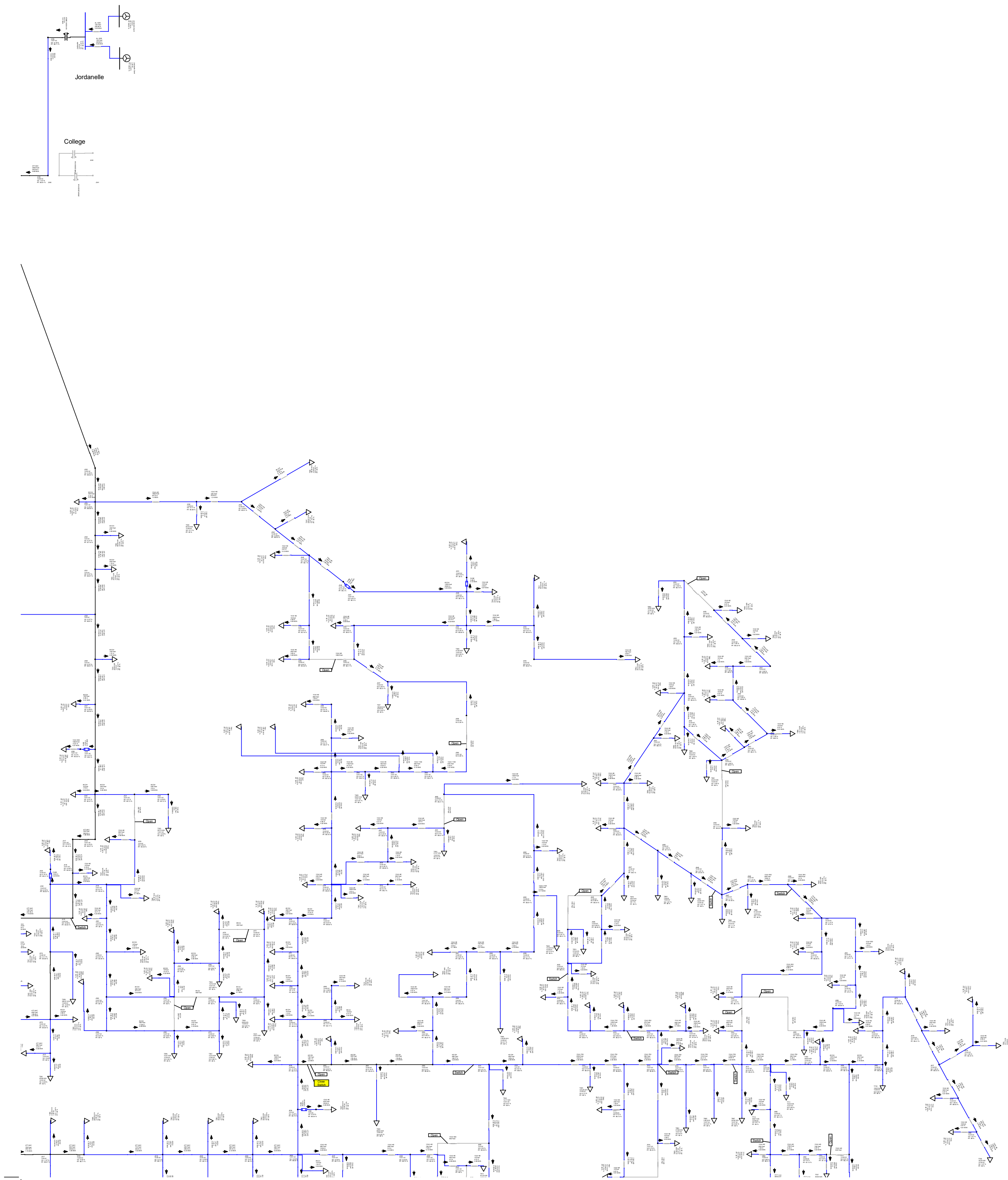
2. JH502 load is approximately 382 amps when Lake Creek generation is off. A new substation to the West of Jailhouse is probably necessary in the future. Could possibly shift load to new JH505 or JH506 circuit.

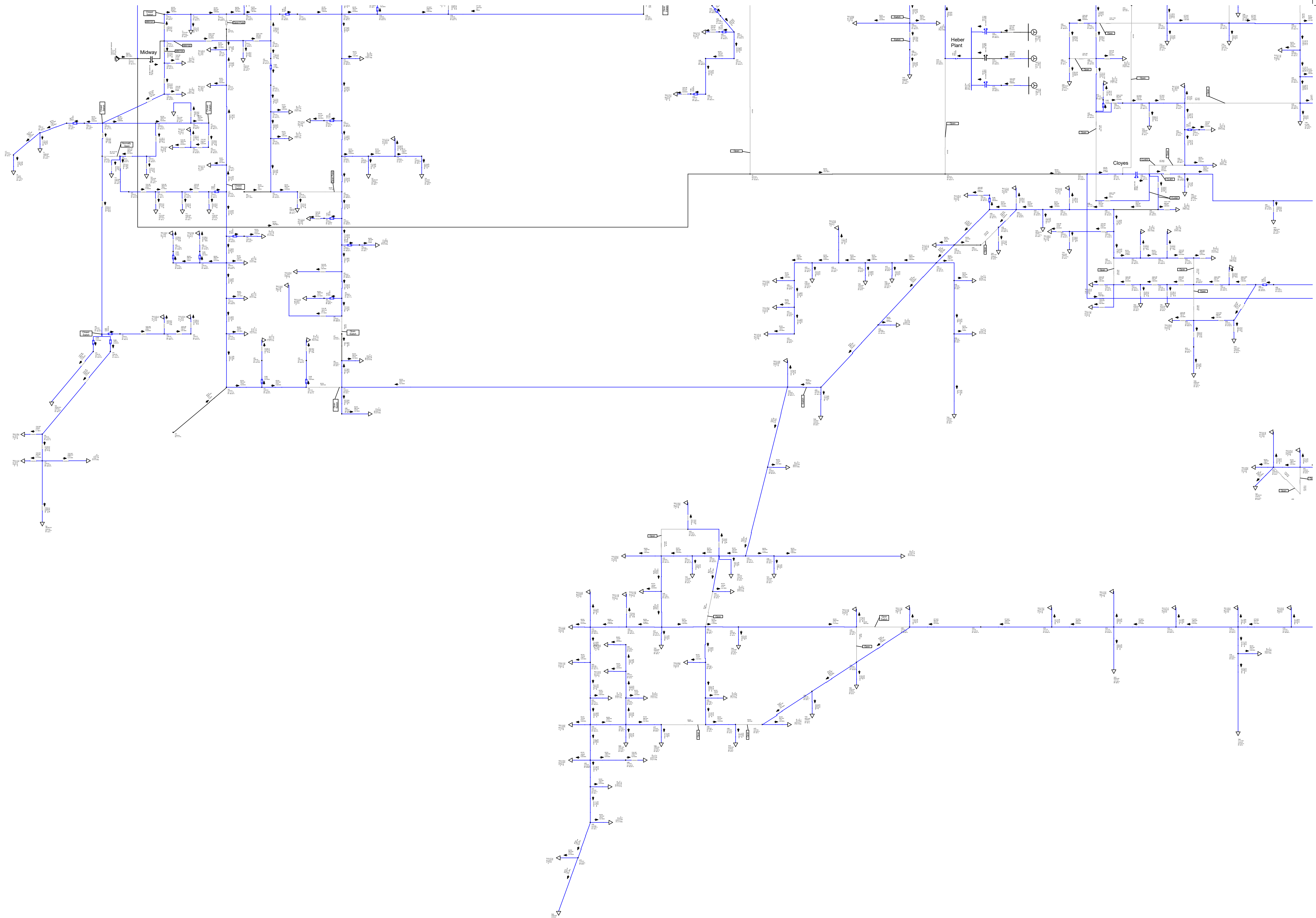
3. About half of JH502 circuit can only be fed from one direction. Loss of line in that part of the circuit would result in an outage where power could not be quickly restored to that portion of the circuit.

4. The top half of JH502 circuit can be picked up by HB304. The bottom half can be picked up by JH503. No single cicuit can pick up the entire JH502 circuit. Part of JH502 and JH503 circuits would be overloaded. There are voltage issues at the end of the line.

5. JH504 circuit can be picked up by JH501. A portion of the line is at ampacity and will be overloaded by 2022.




Jordanelle
College



Midway
Heber Plant
Cloyes


Jail House
Lake Creek

Heber 12.47 kV
2018 - Loss of Jailhouse T2 transformer
(After Upgrades)

1. Install voltage regulators on JH502 at approximately 8000 East Lake Creek Road.

2. Upgrade JH502 and JH503 circuits from 800 South Old Mill Drive to 2200 South Old Mill Drive.

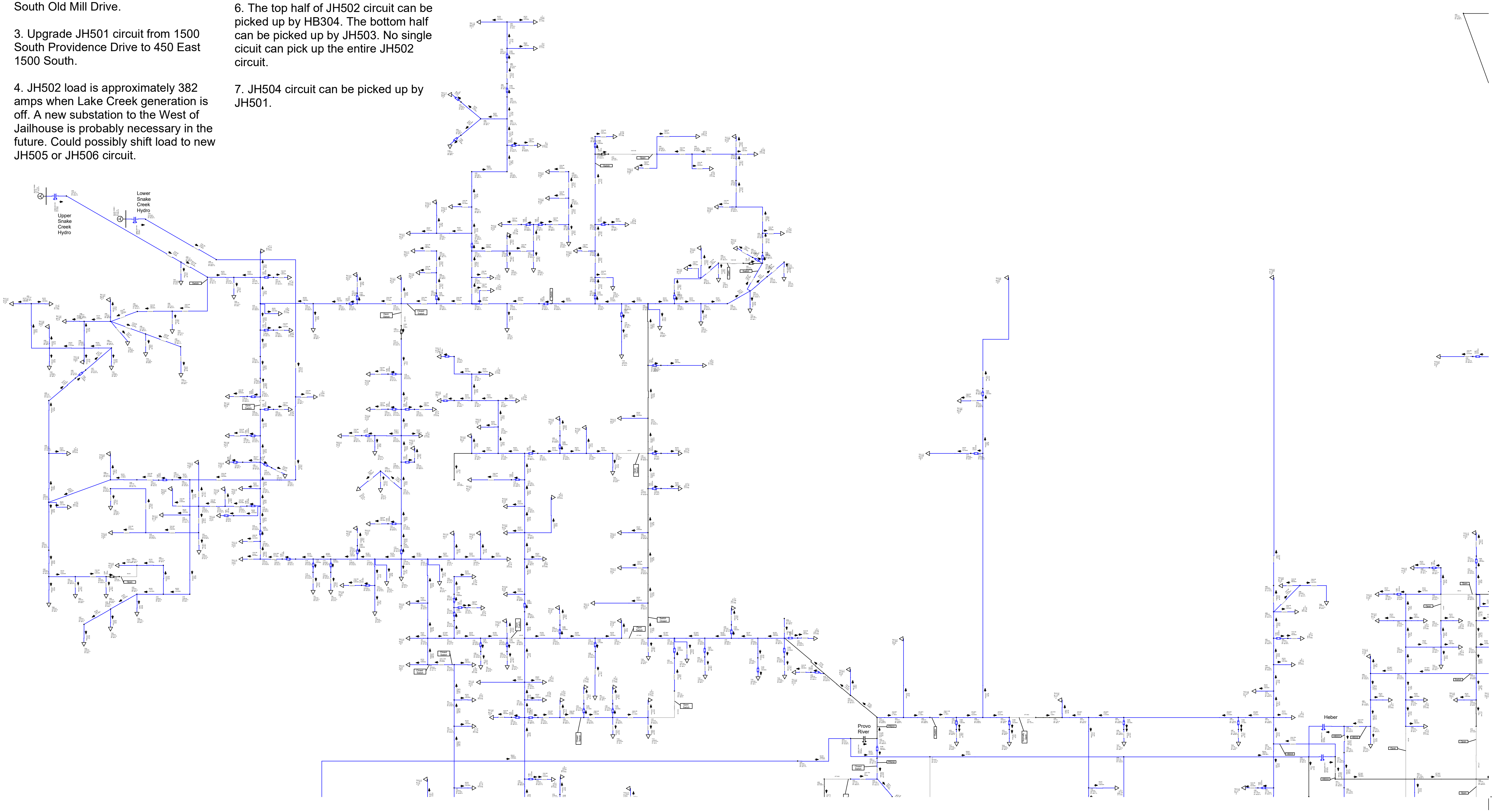
3. Upgrade JH501 circuit from 1500 South Providence Drive to 450 East 1500 South.

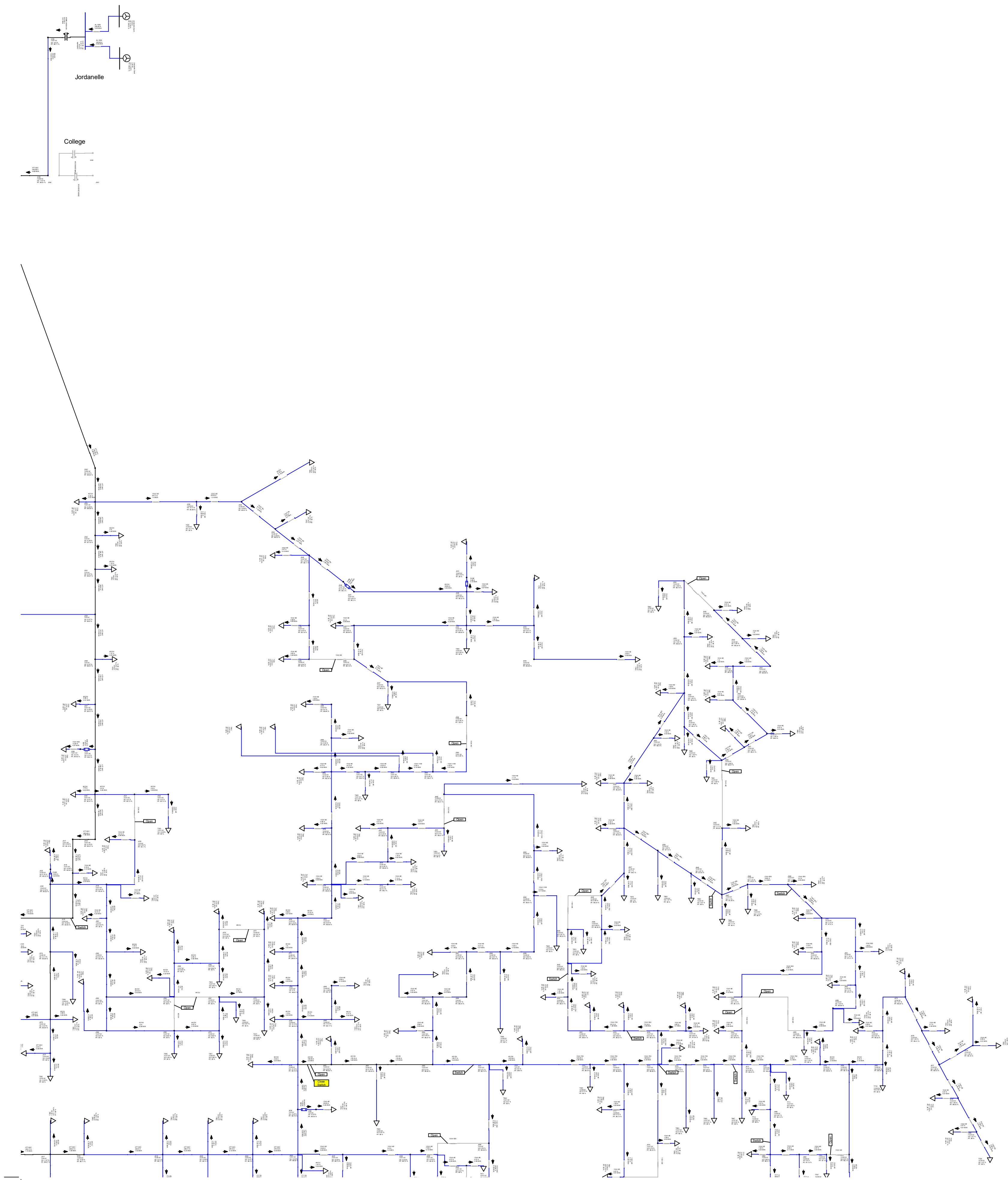
4. JH502 load is approximately 382 amps when Lake Creek generation is off. A new substation to the West of Jailhouse is probably necessary in the future. Could possibly shift load to new JH505 or JH506 circuit.

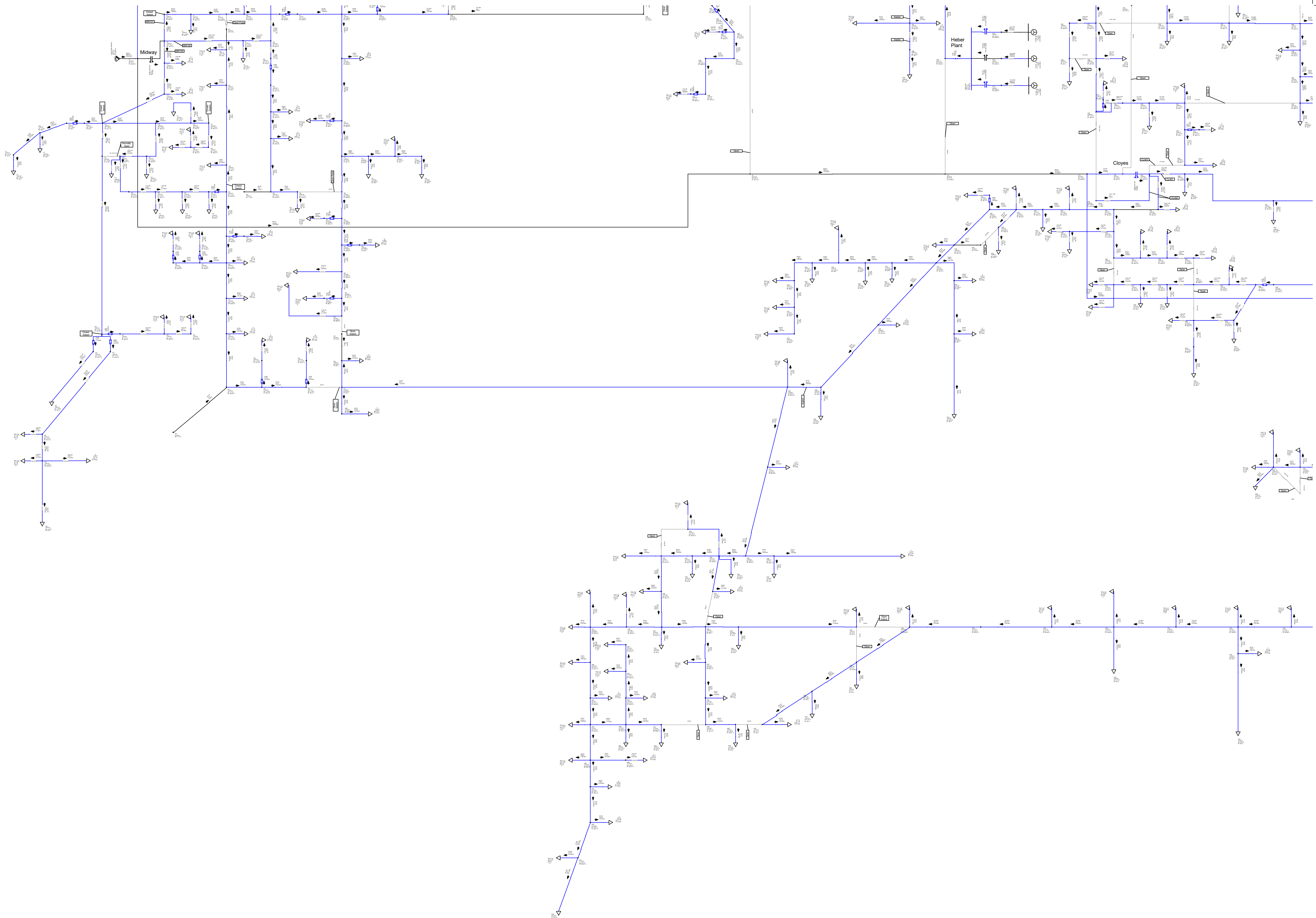
5. About half of JH502 circuit can only be fed from one direction. Loss of a line in that part of the circuit would result in an outage where power could not be quickly restored.

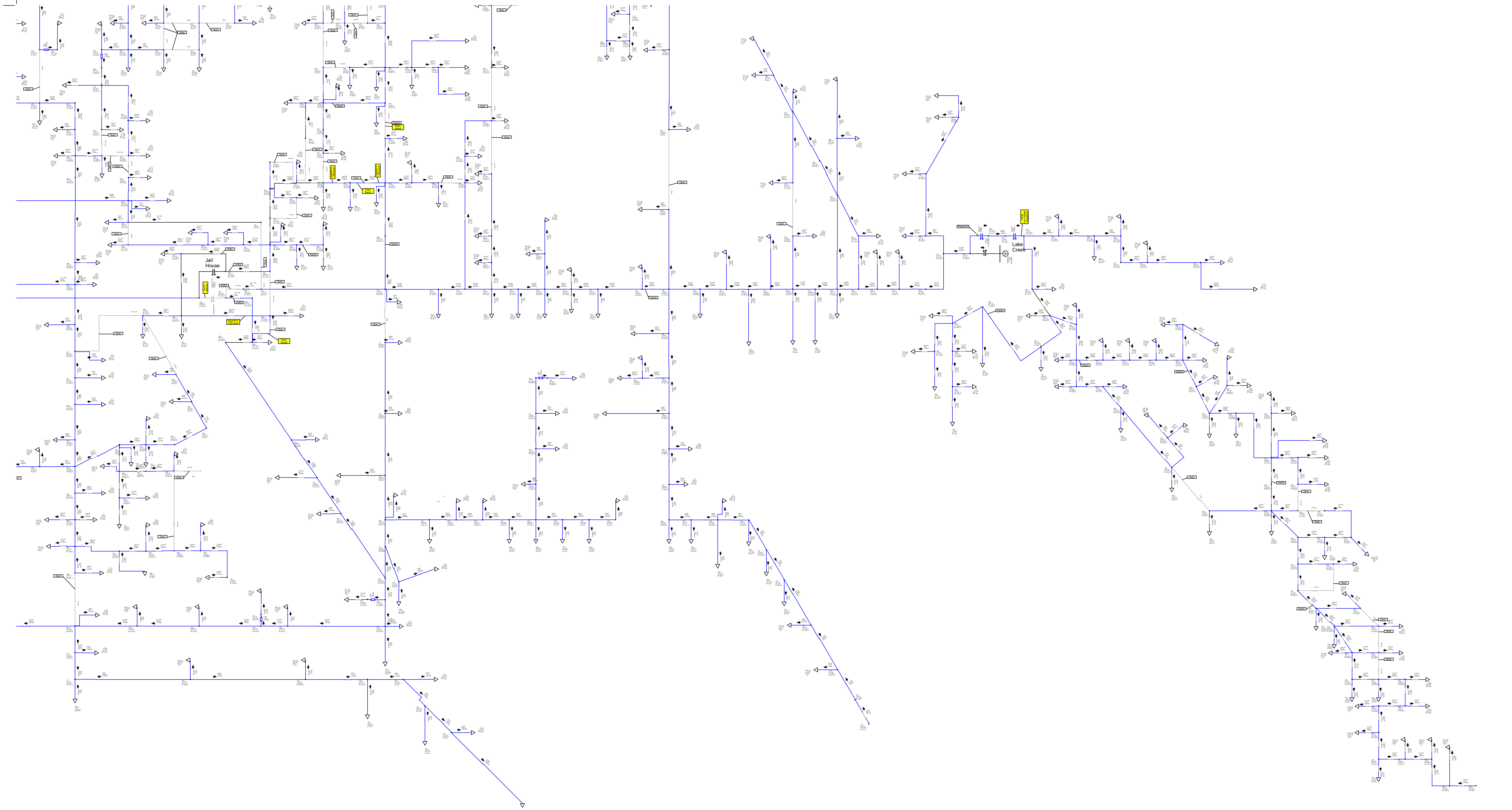
6. The top half of JH502 circuit can be picked up by HB304. The bottom half can be picked up by JH503. No single cicuit can pick up the entire JH502 circuit.

7. JH504 circuit can be picked up by JH501.



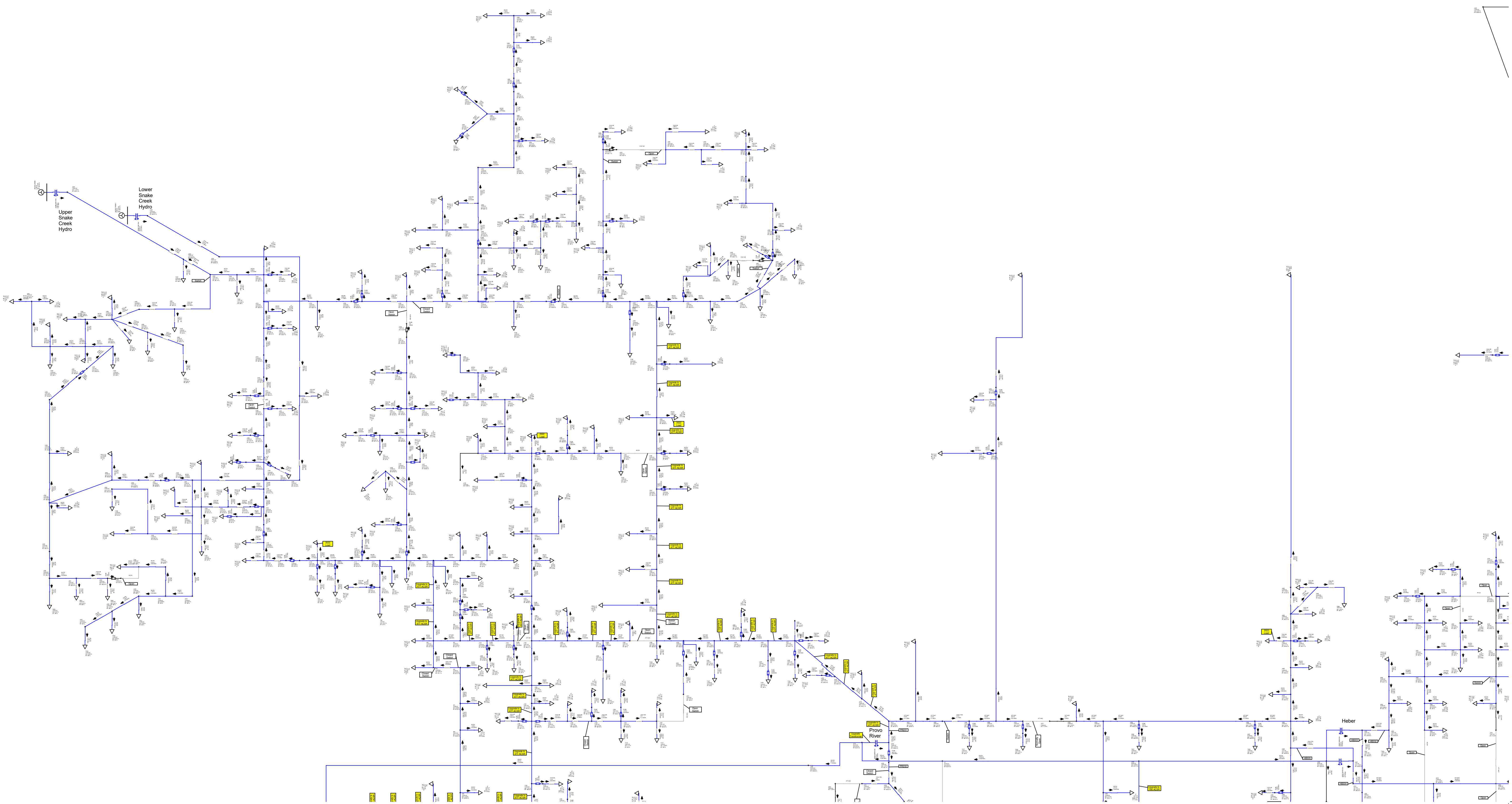

Jordanelle
College

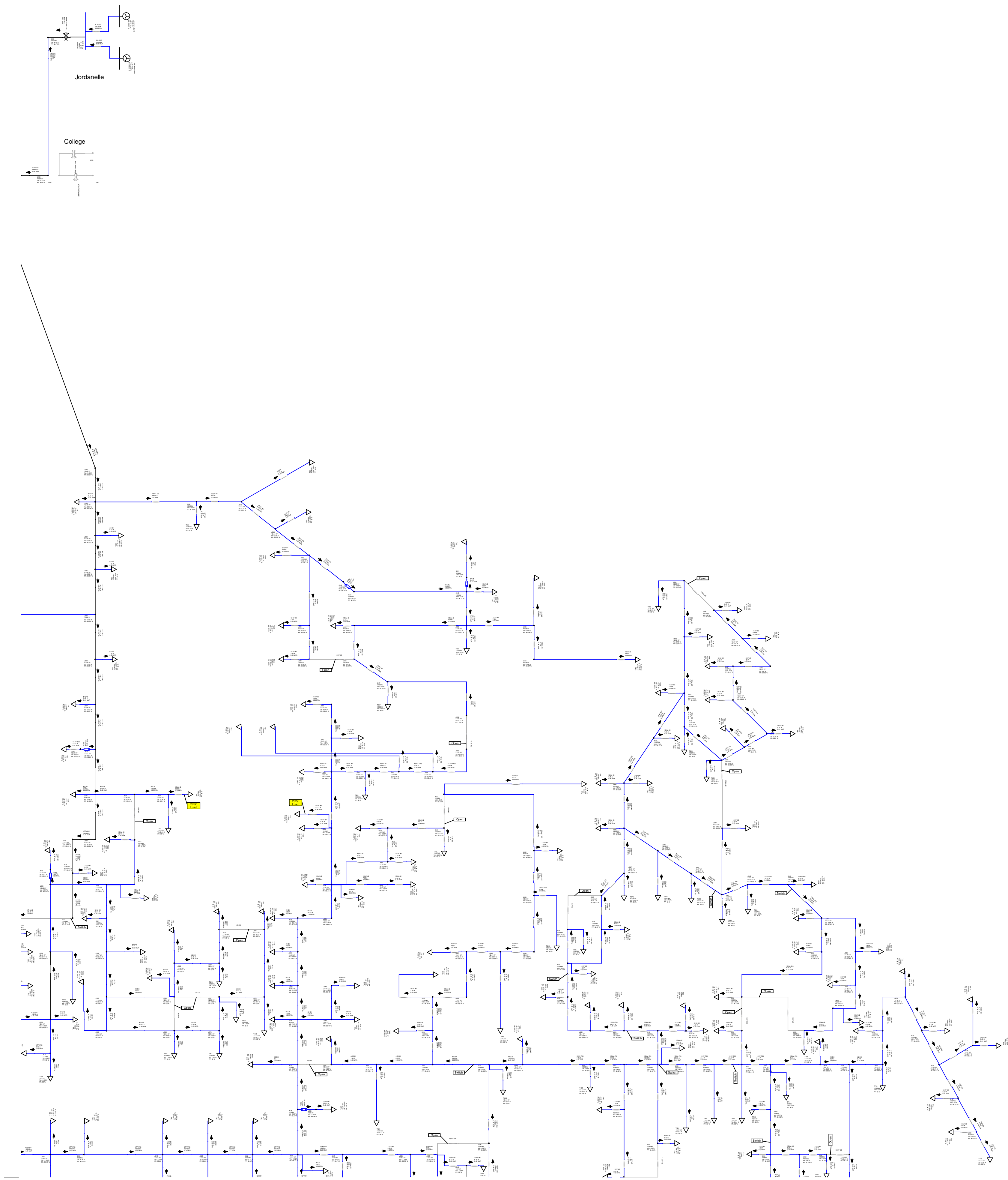

Midway
Heber Plant
Cloyes

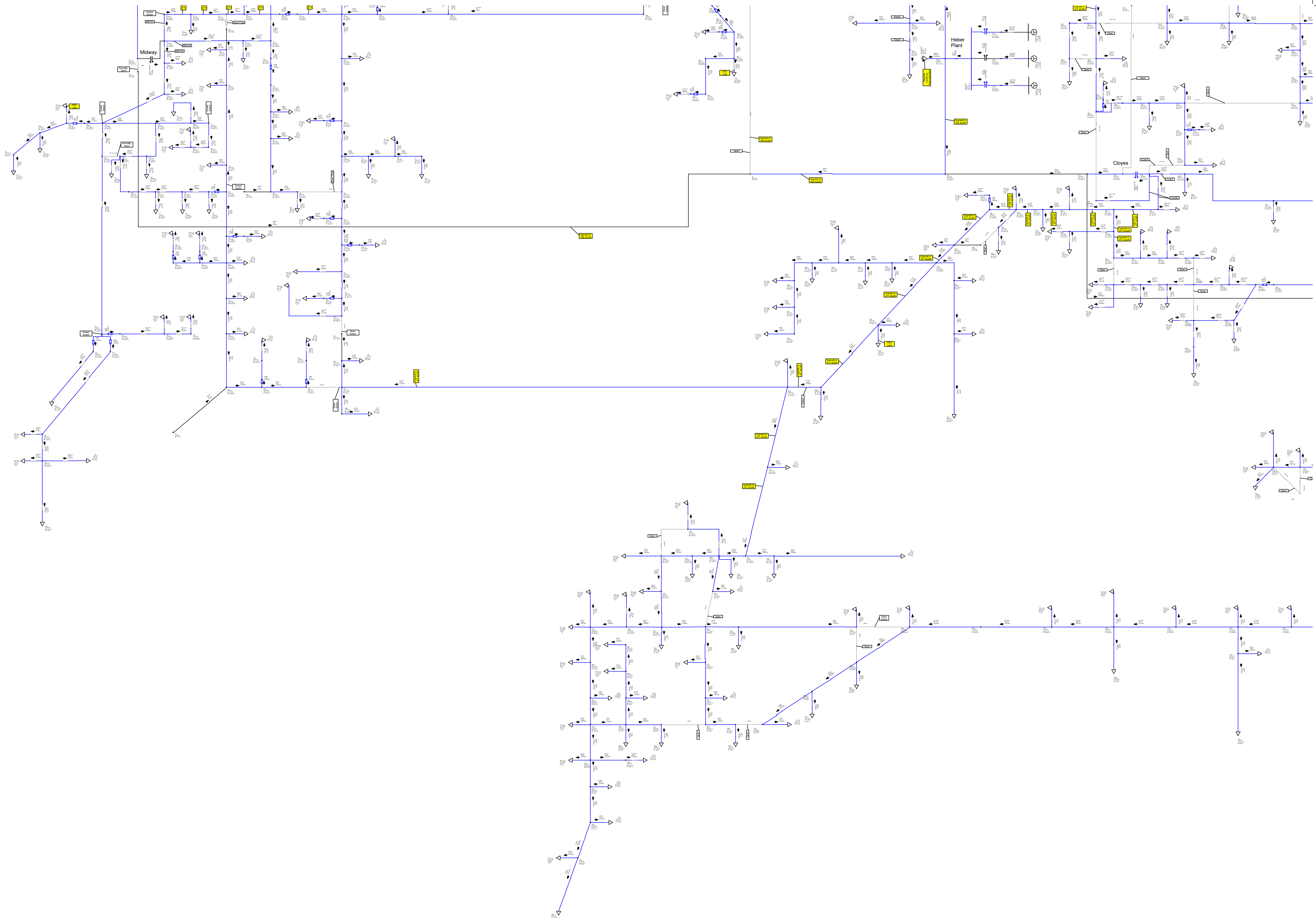

Jail House
Lake Creek

Heber 12.47 kV
2022 - Base

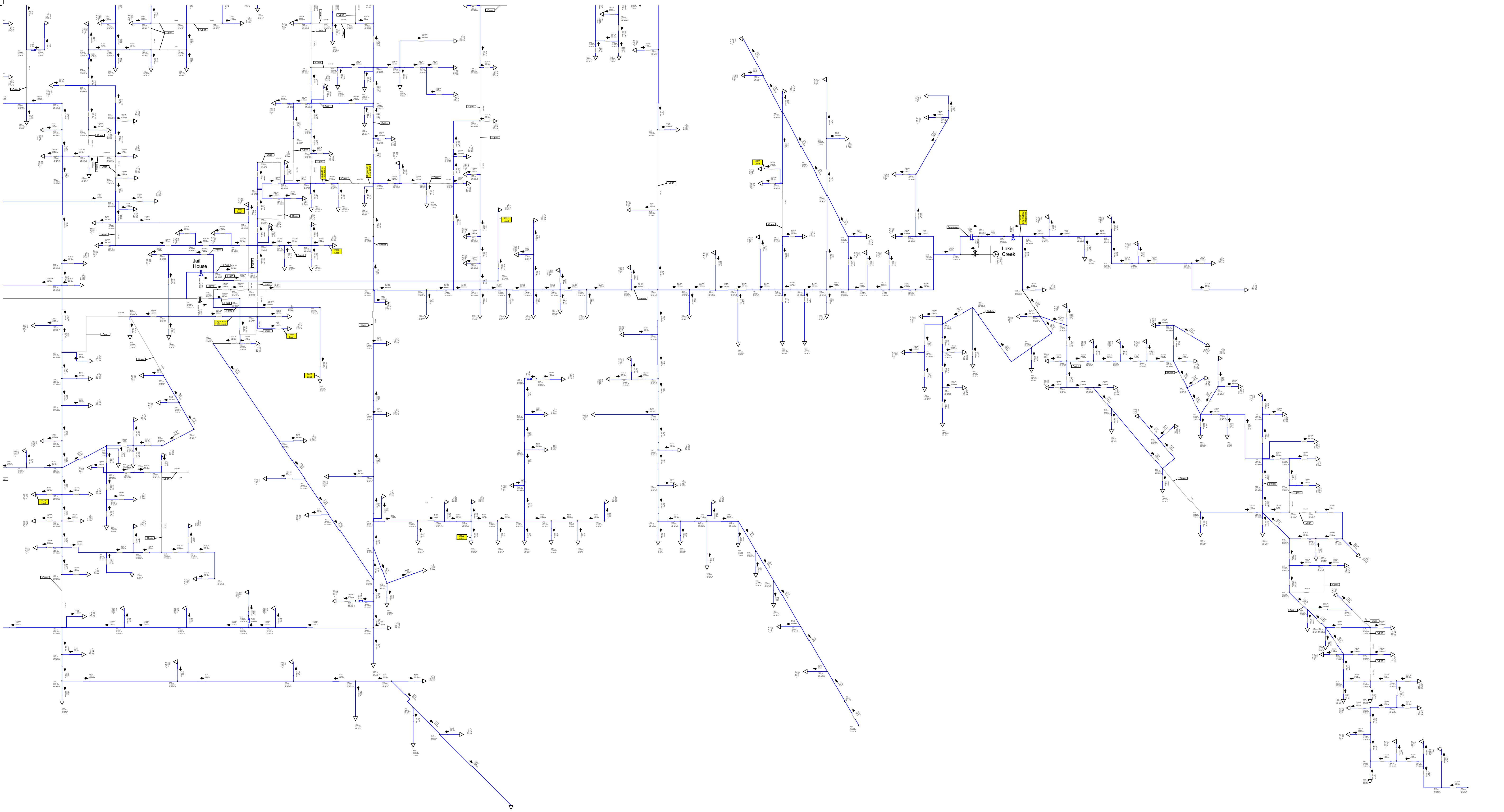
1. Includes all upgrades proposed in
2018 load flow runs.




Jordanelle
College



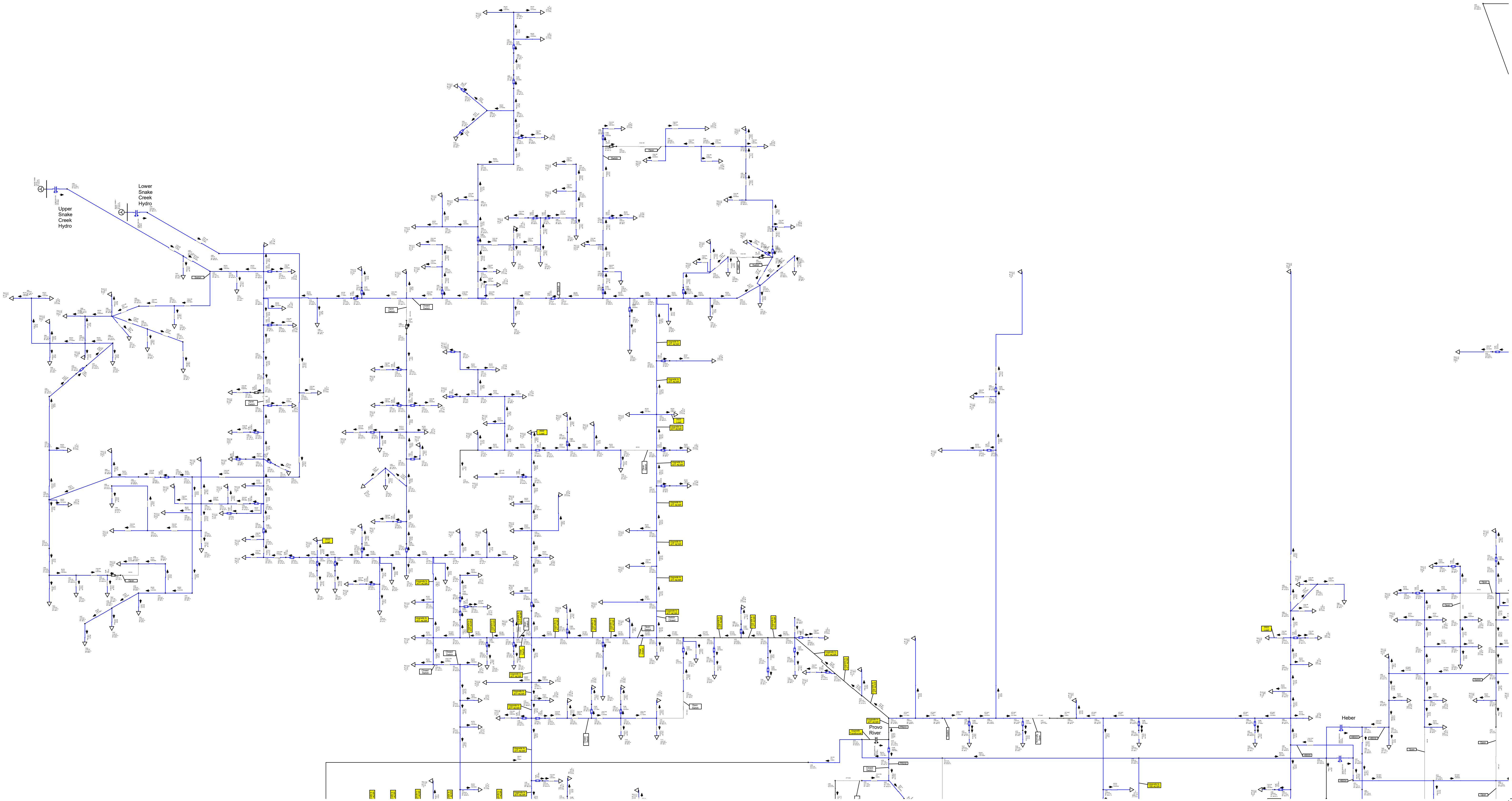
Midway
Heber Plant
Cloyes

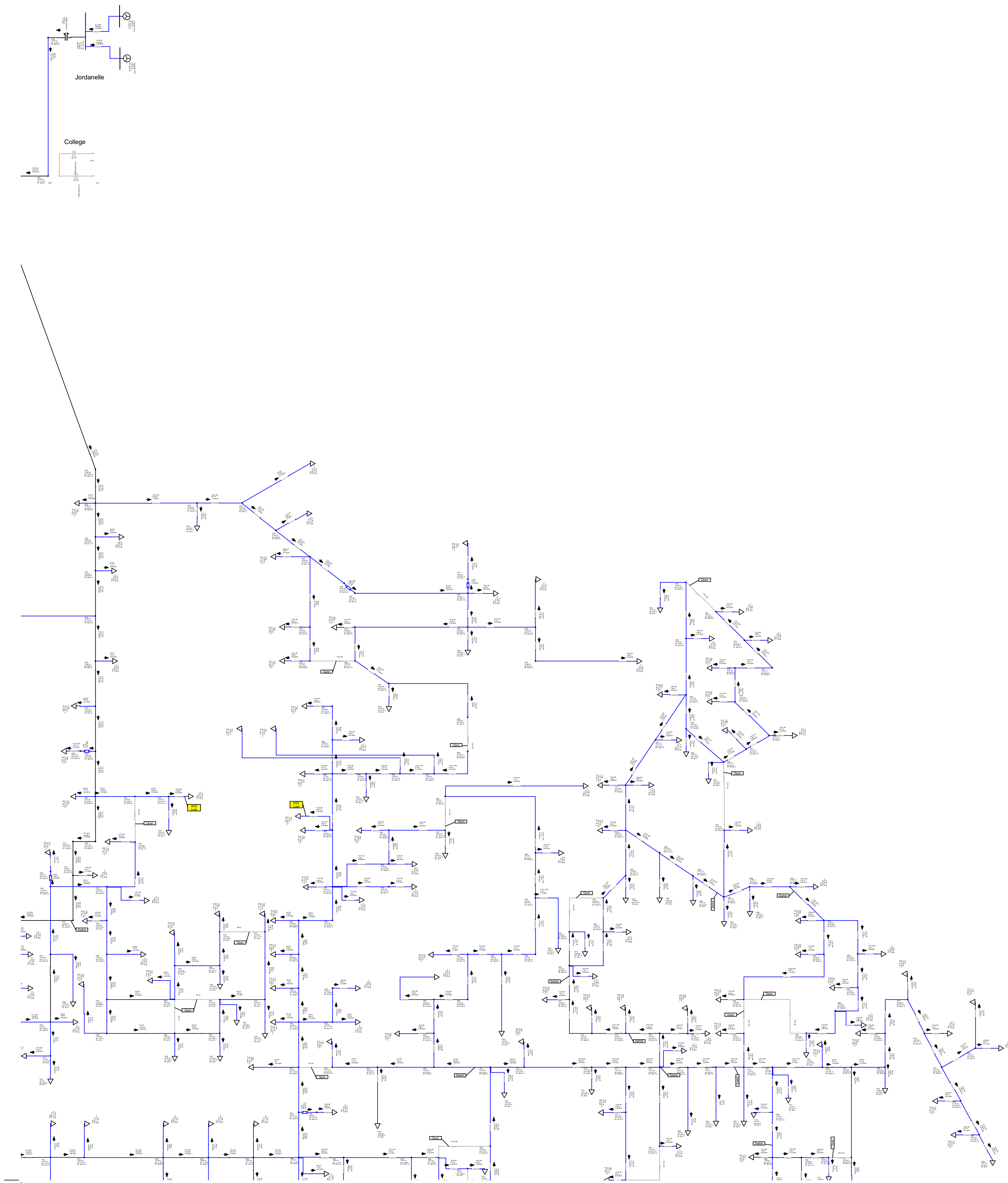

Jail House
Lake Creek

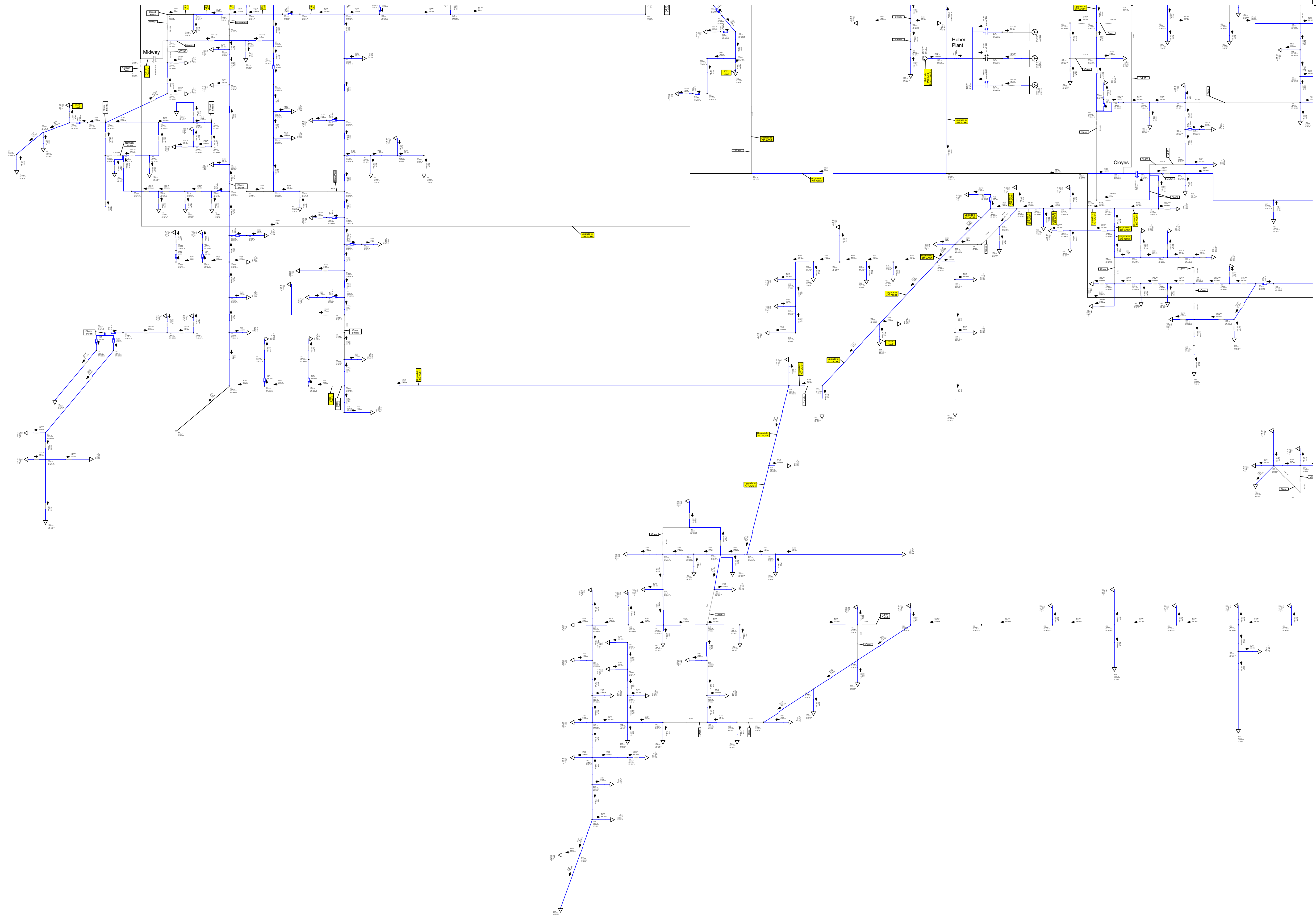
Heber 12.47 kV
2022 - Loss of Midway transformer
(After Upgrades)

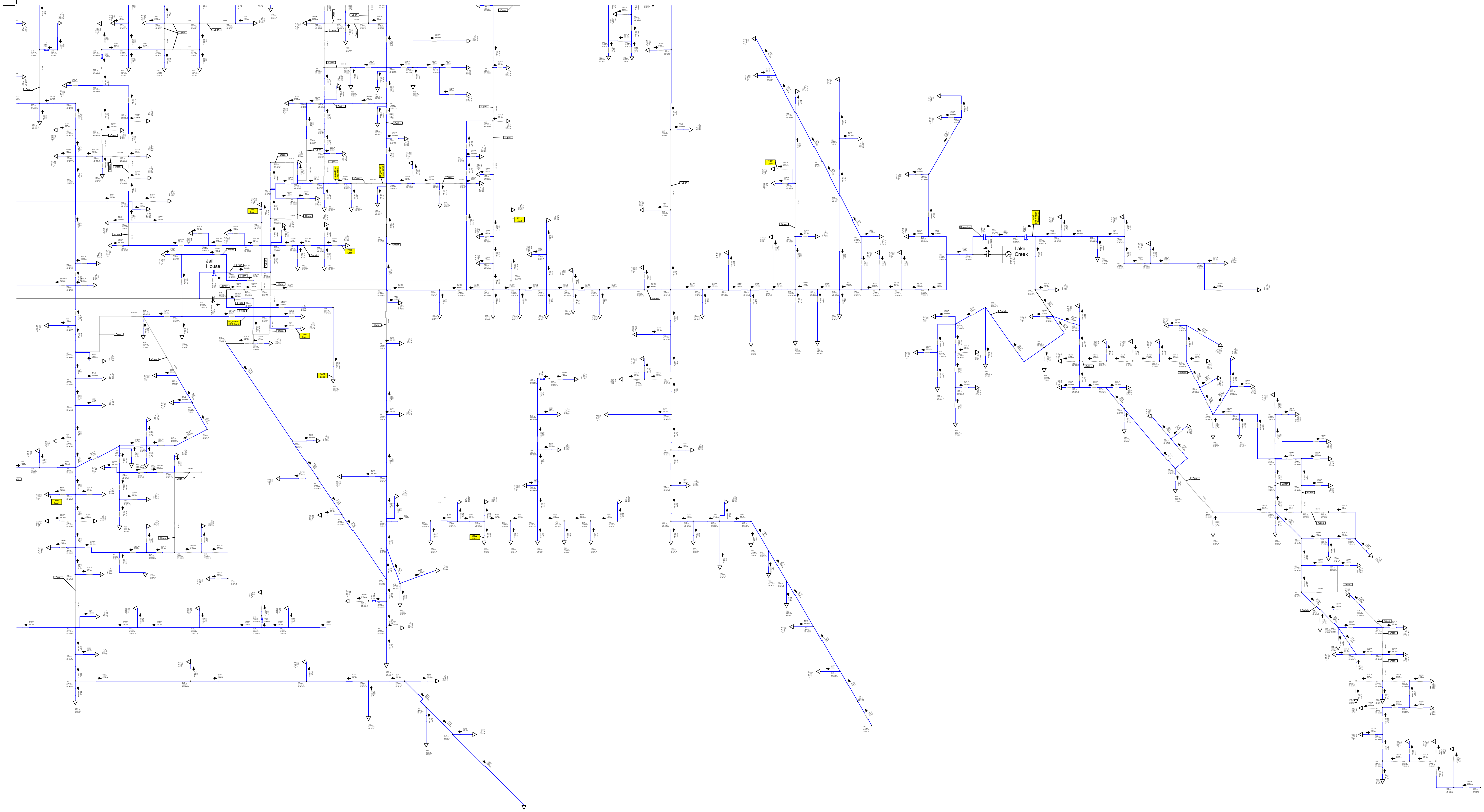
1. MW101 and MW102 circuits can be picked up by PR201.

2. MW104 can be picked up by CL402.




Jordanelle
College

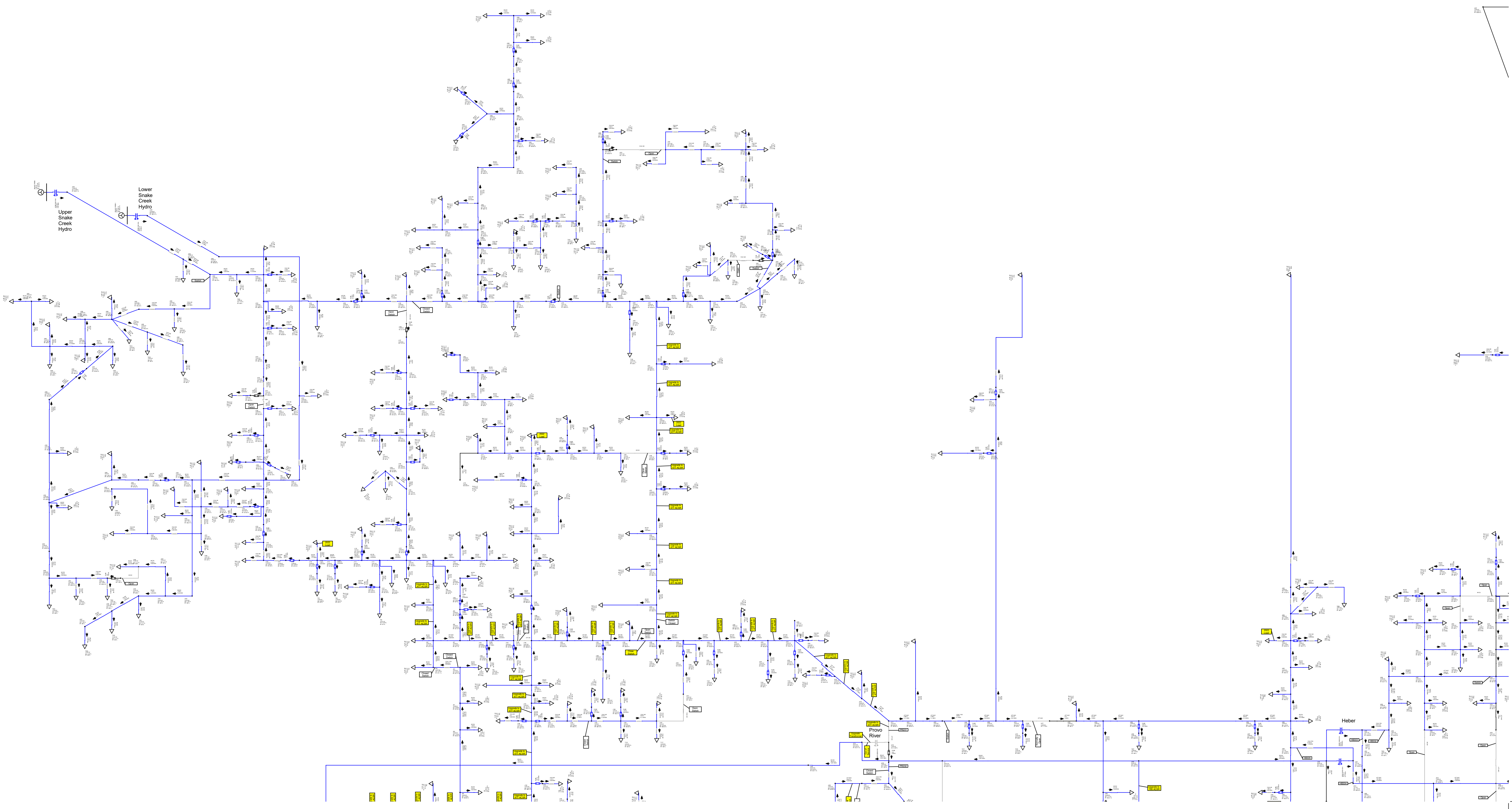

Midway
Heber Plant
Cloyes

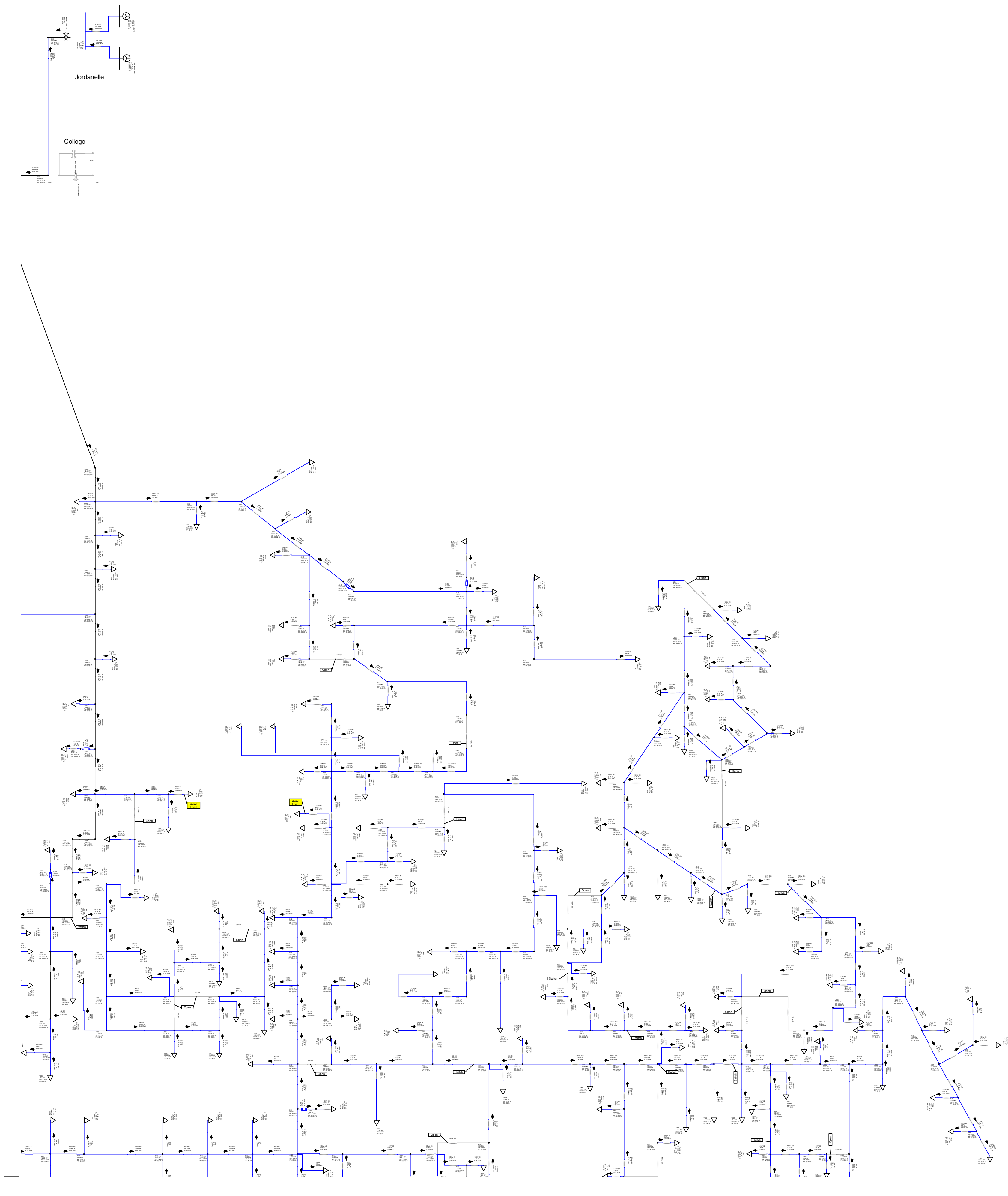

Jail House
Lake Creek

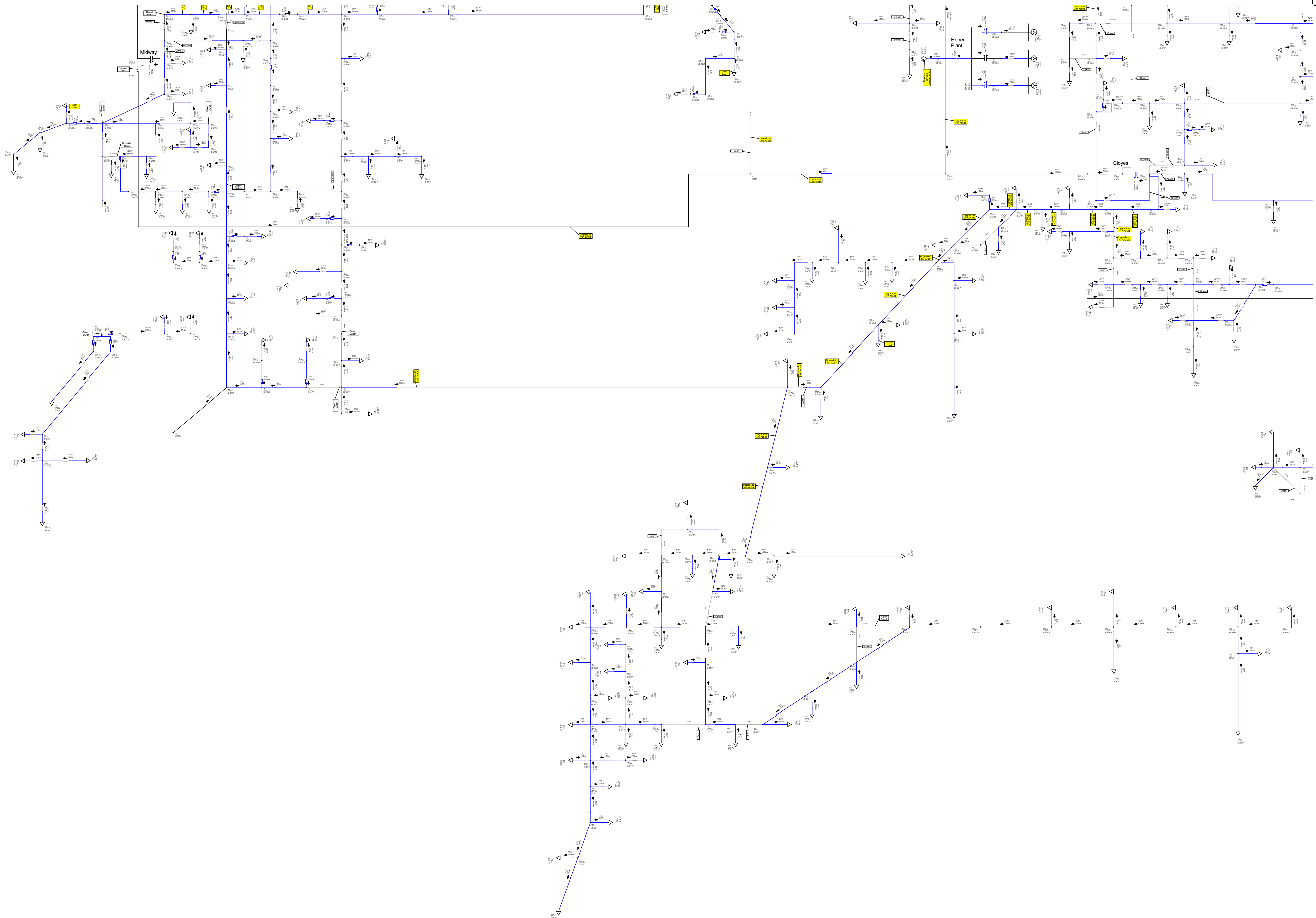
Heber 12.47 kV
2022 - Loss of Provo River transformer

1. PR201 can be picked up by MW101.

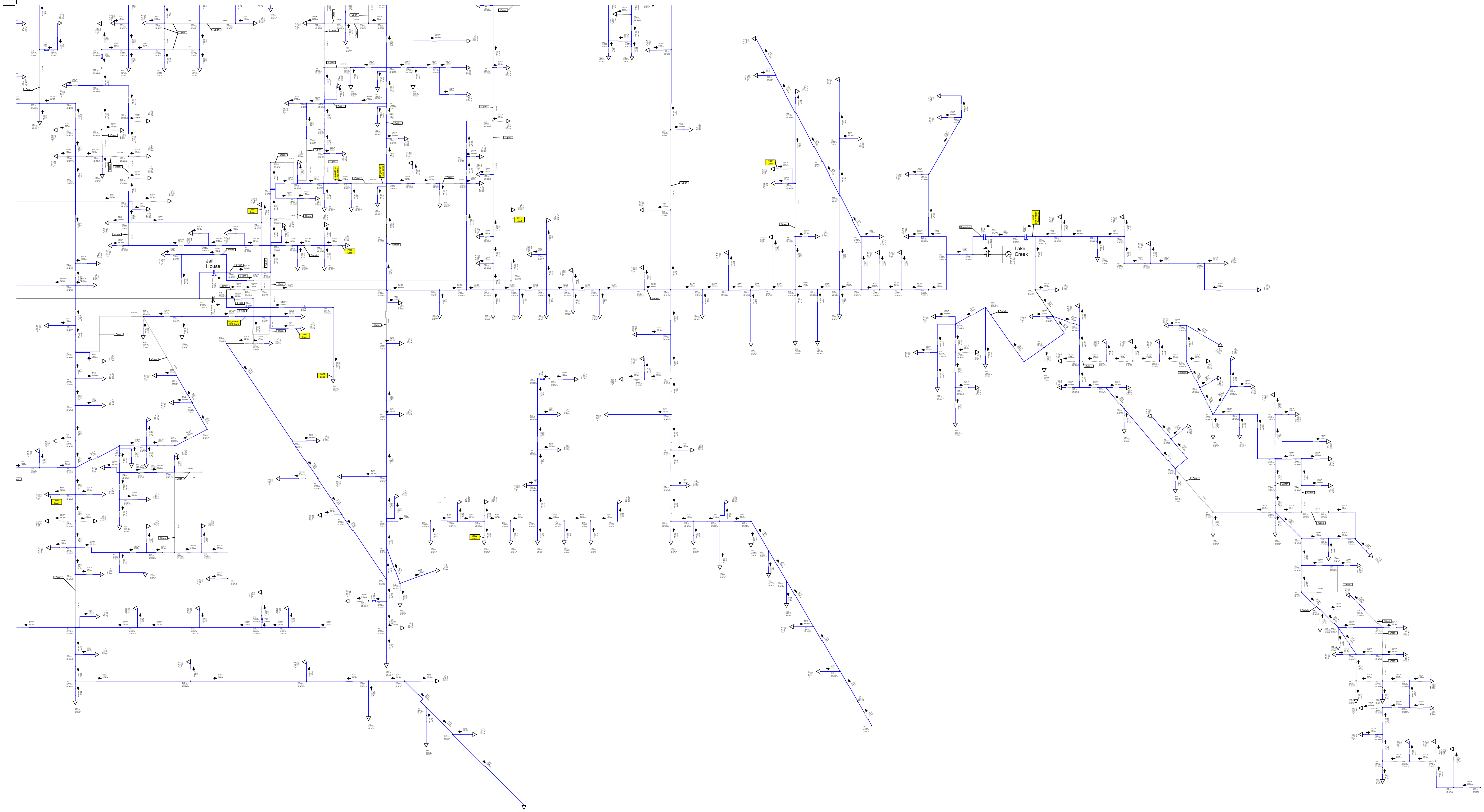
2. PR202 can be picked up by MW101.




Jordanelle
College



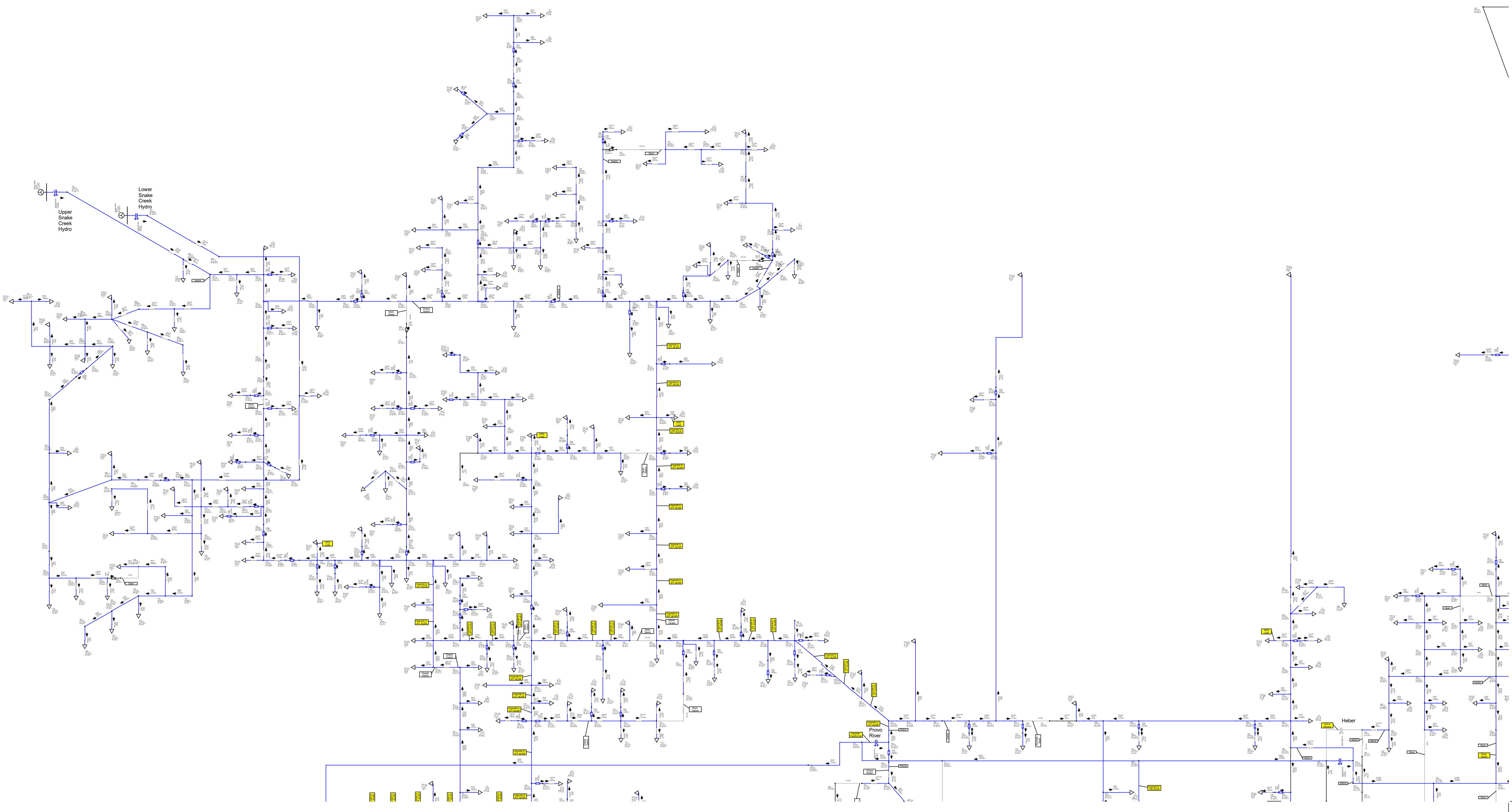
Midway
Heber
Plant
Cloyes

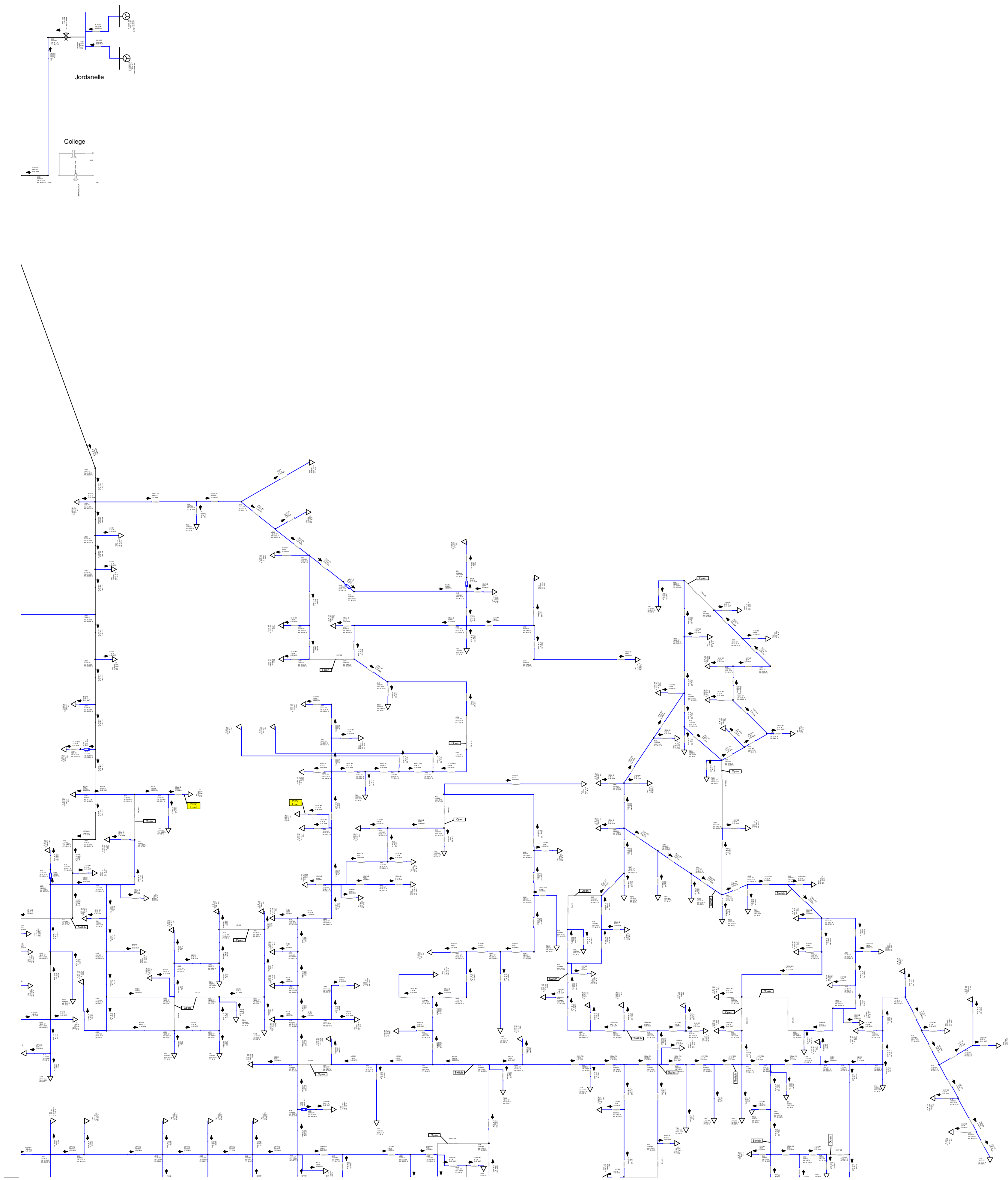

Jail House
Lake Creek

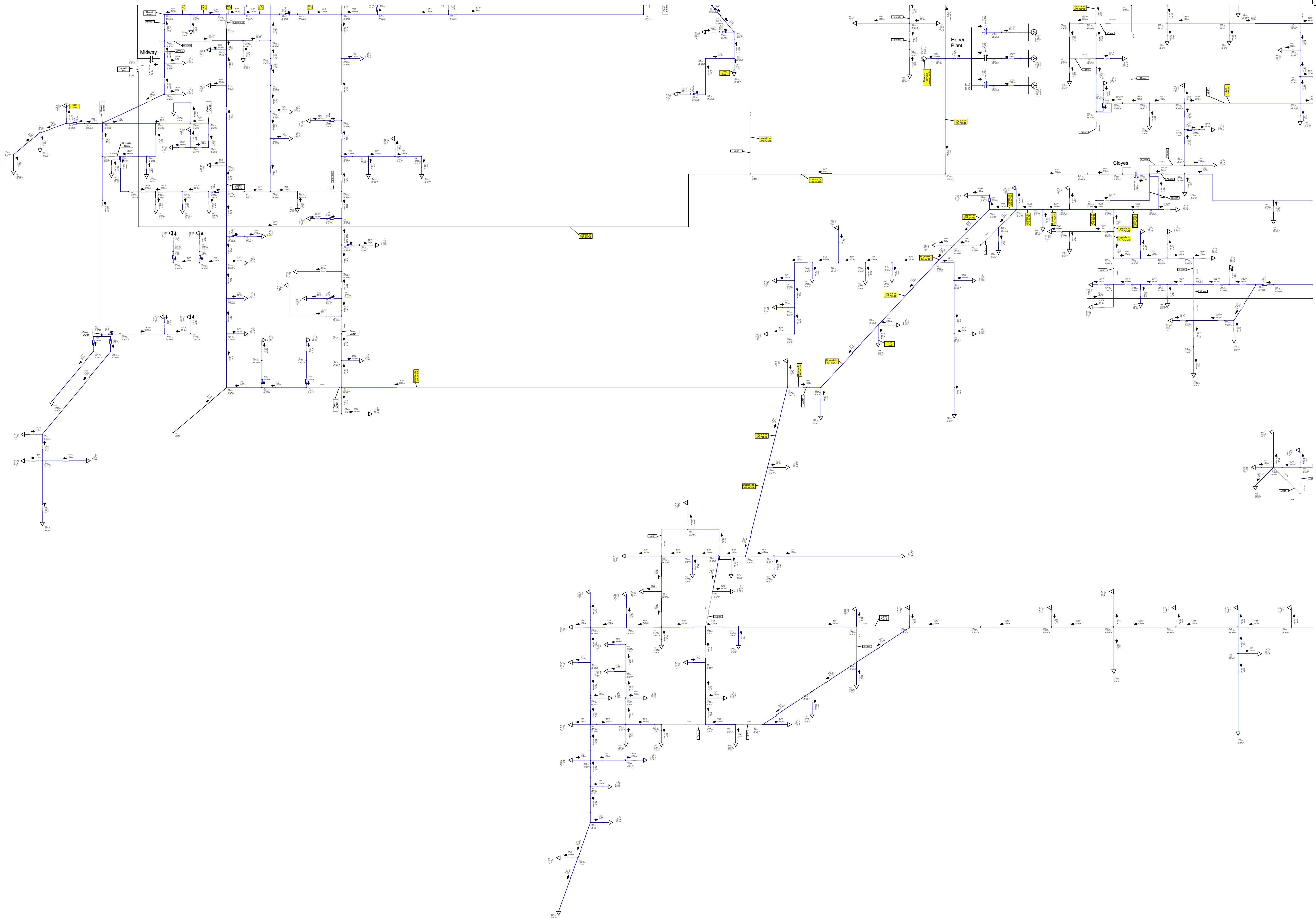
Heber 12.47 kV
2022 - Loss of Heber T1 transformer

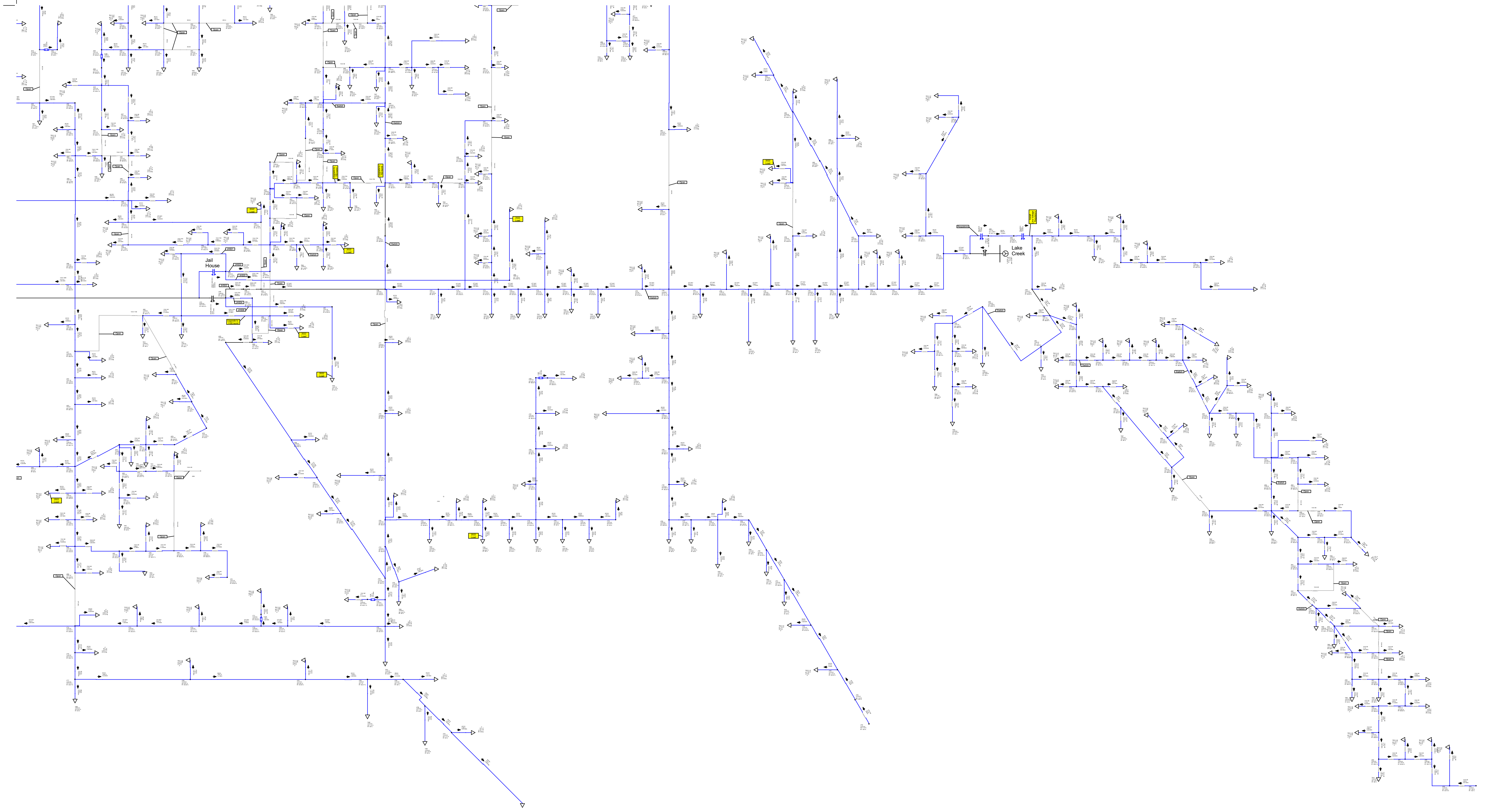
1. HB302 can be picked up by HB304.

2. HB303 can be picked up by HB305.




Jordanelle
College

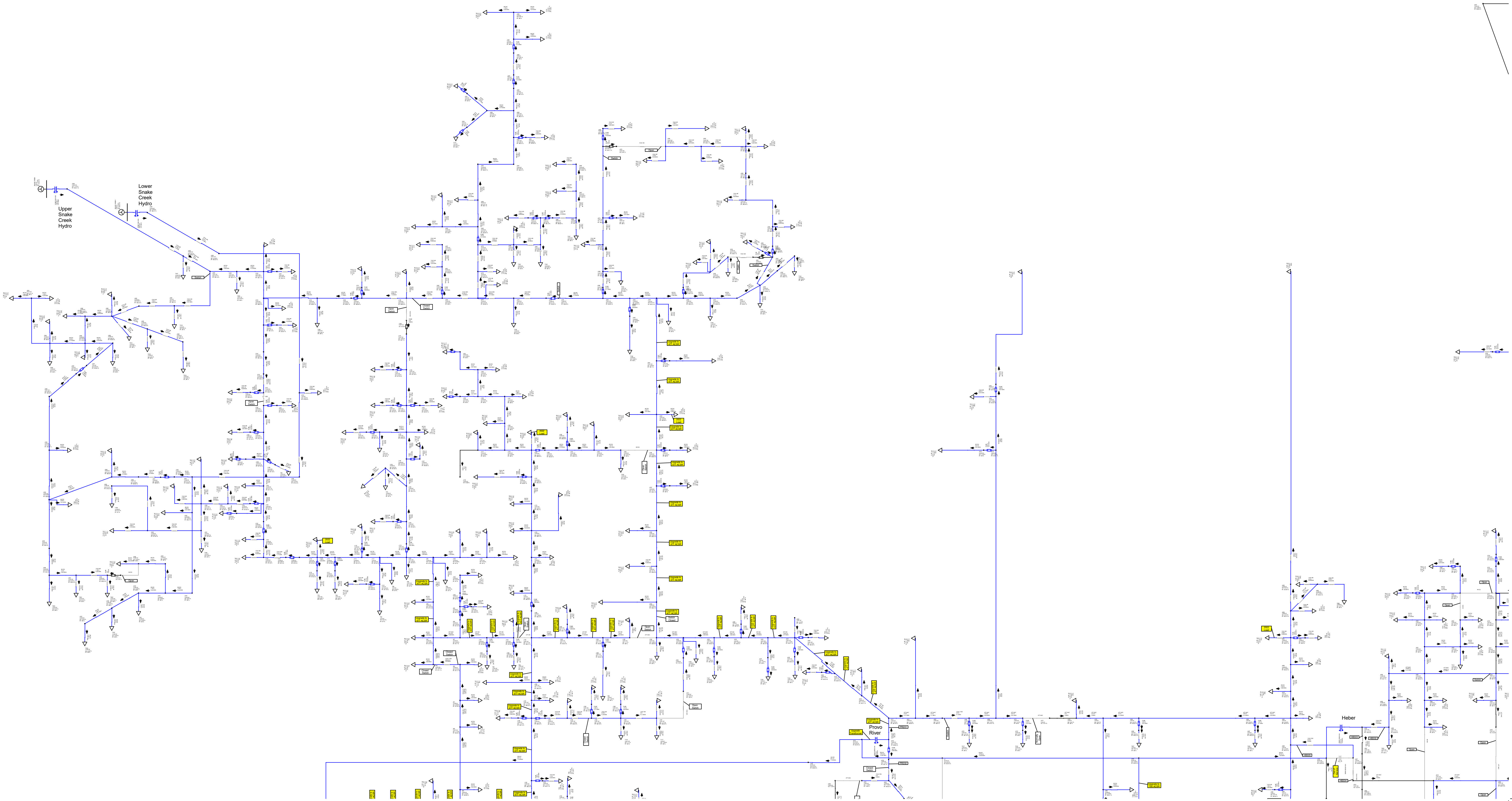

Midway
Heber Plant
Cloyes

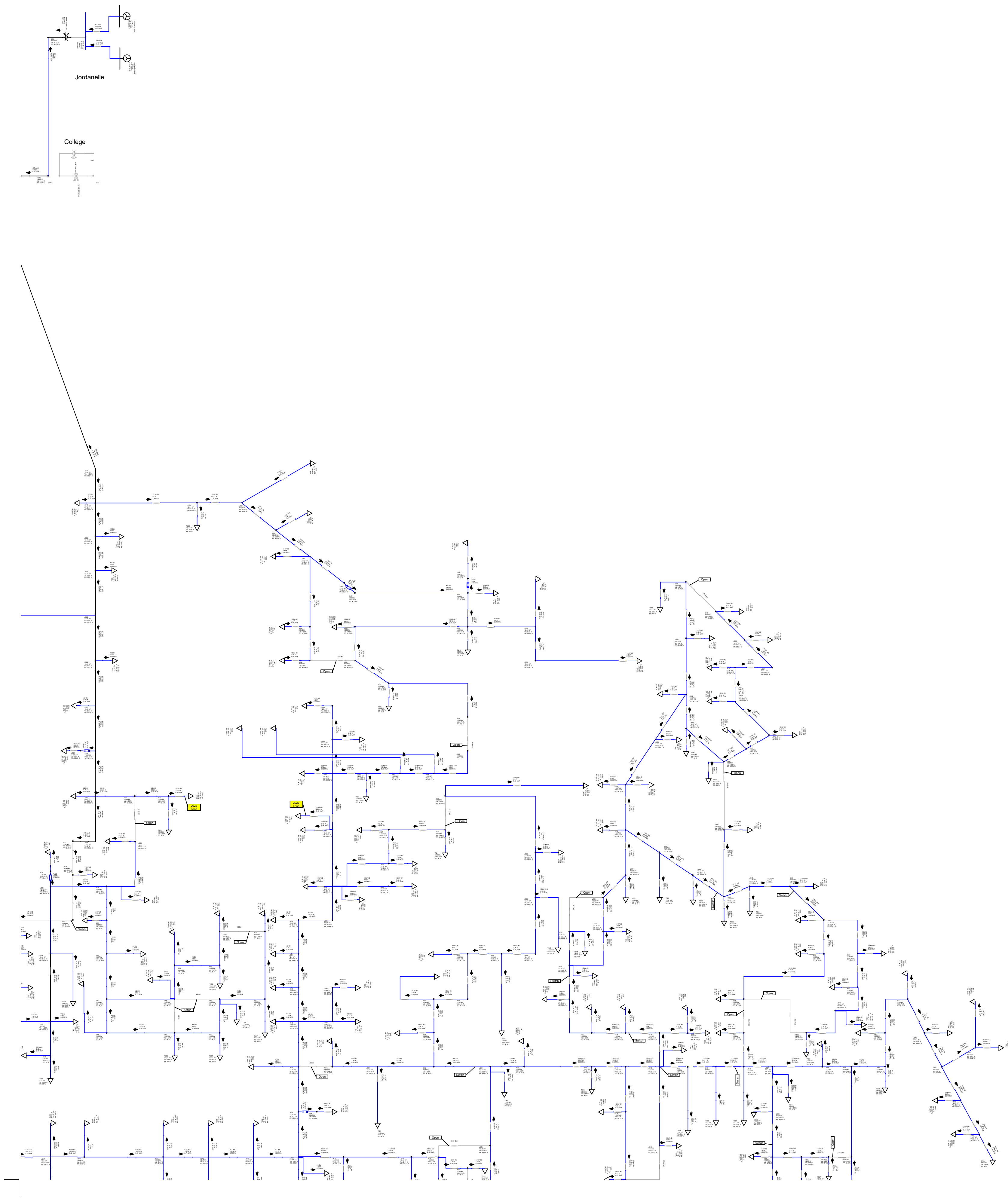

Jail House
Lake Creek

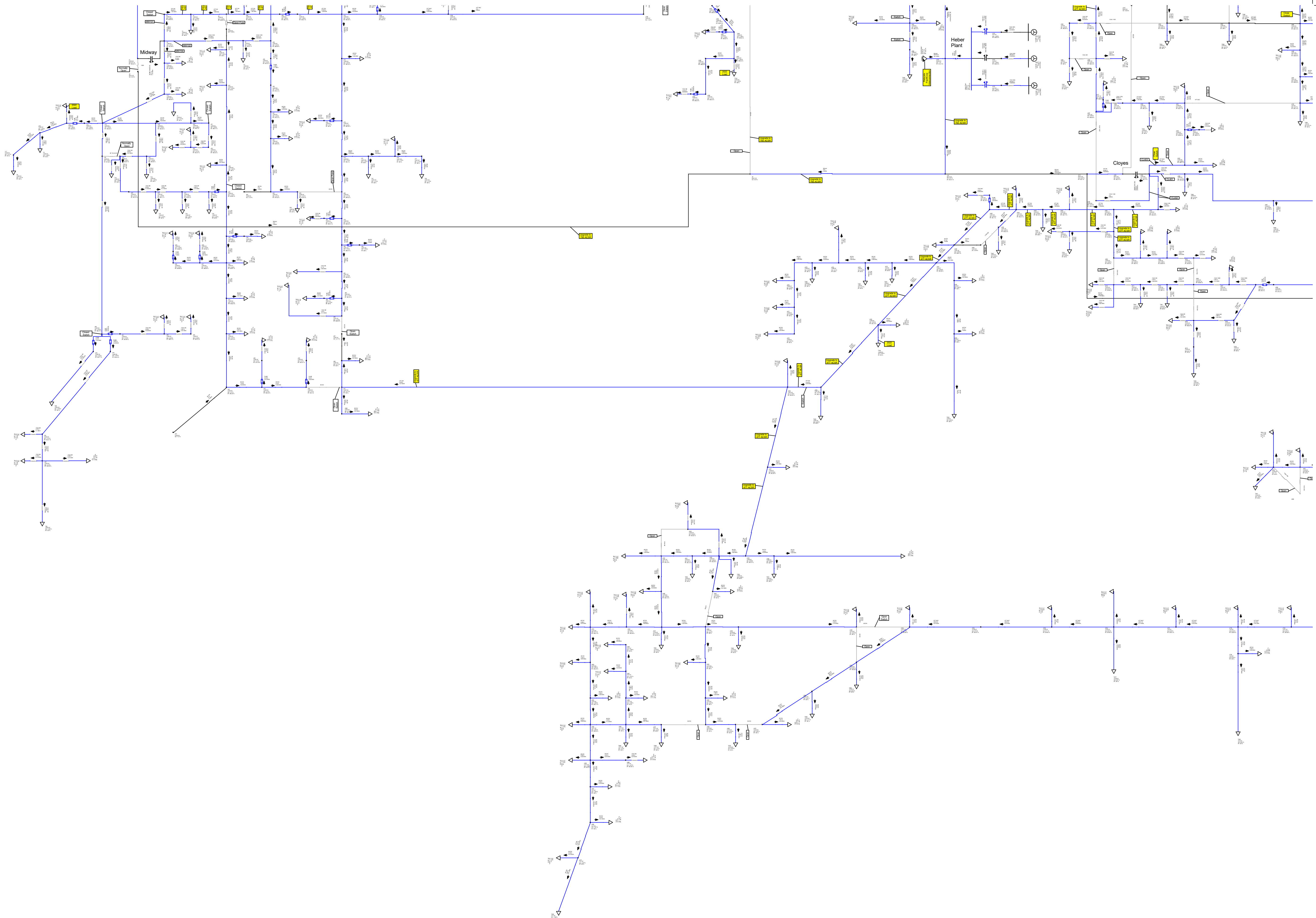
Heber 12.47 kV
2018 - Loss of Heber T2 Transformer

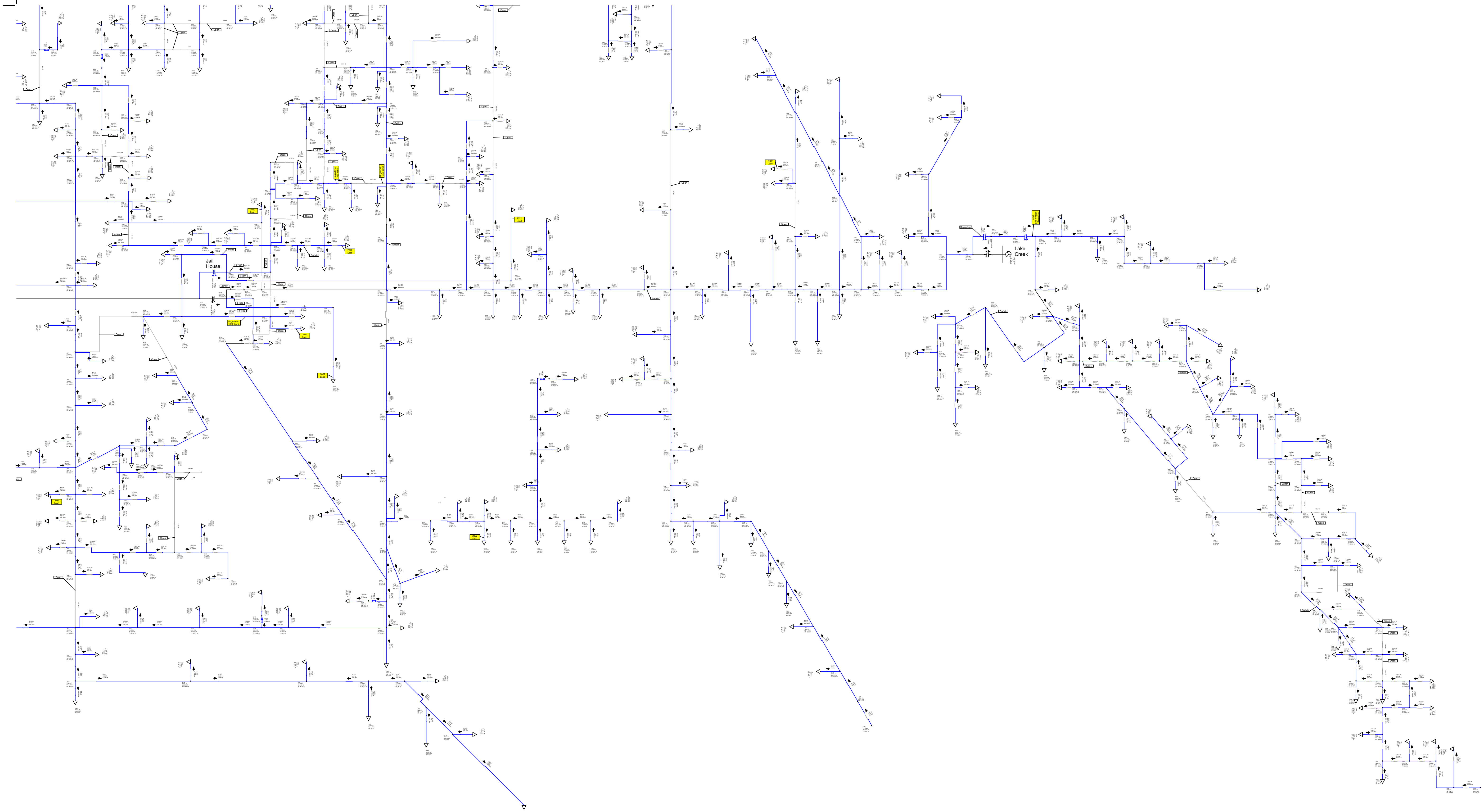
1. HB304 circuit can be picked up by HB303.

2. HB305 circuit can be picked up by CL403.




Jordanelle
College

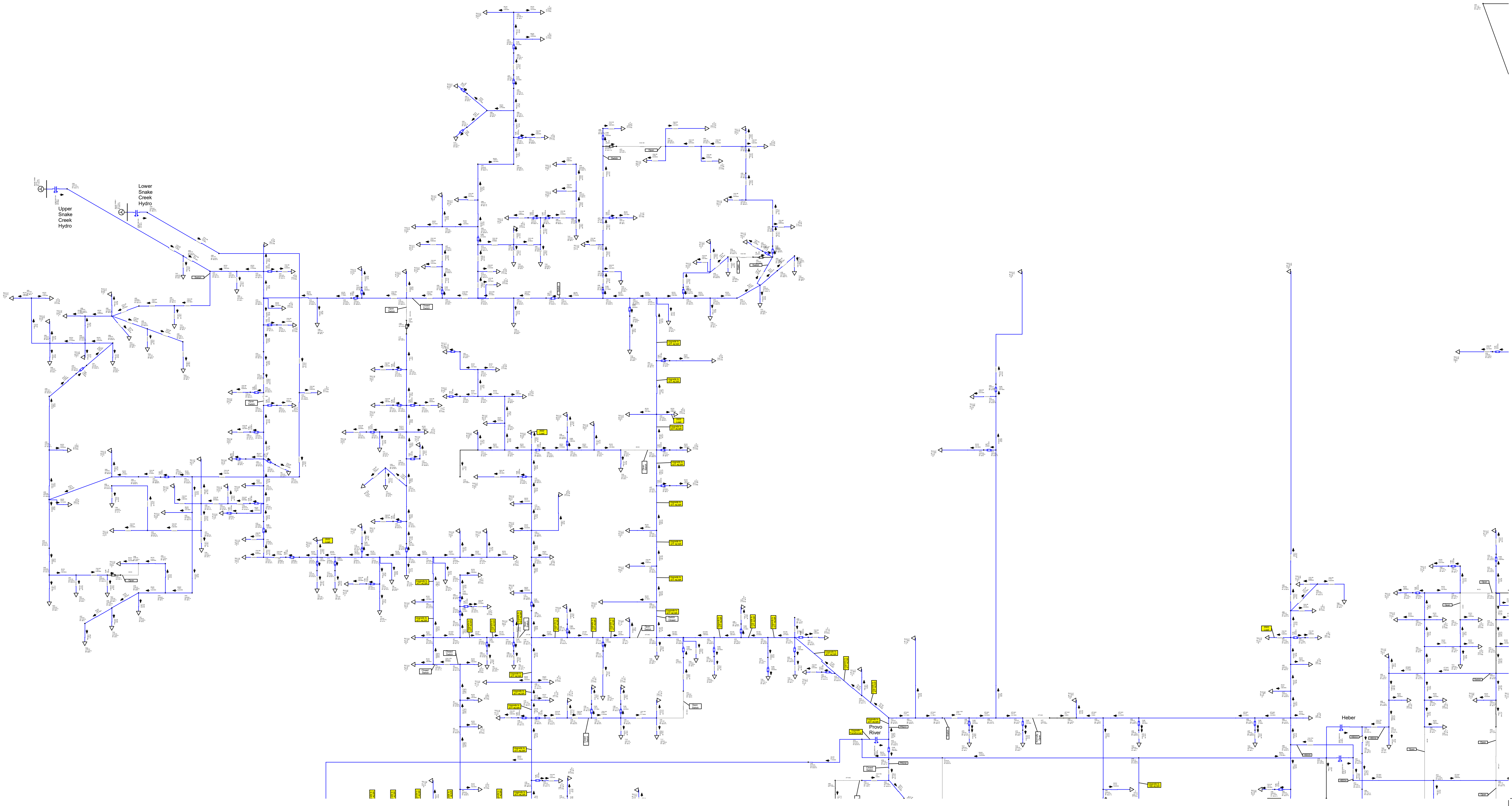

Midway
Heber Plant
Cloyes

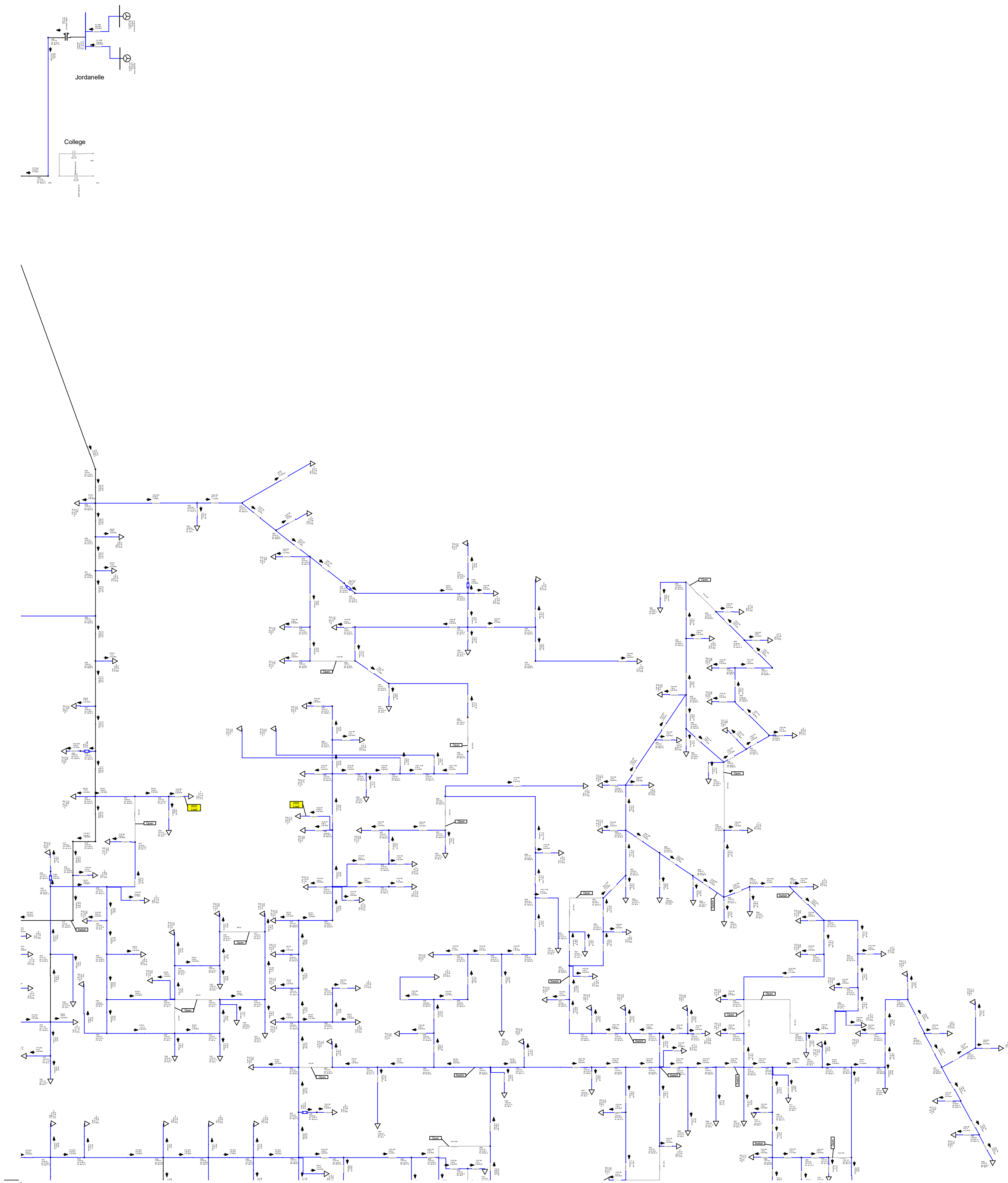

Jail House
Lake Creek

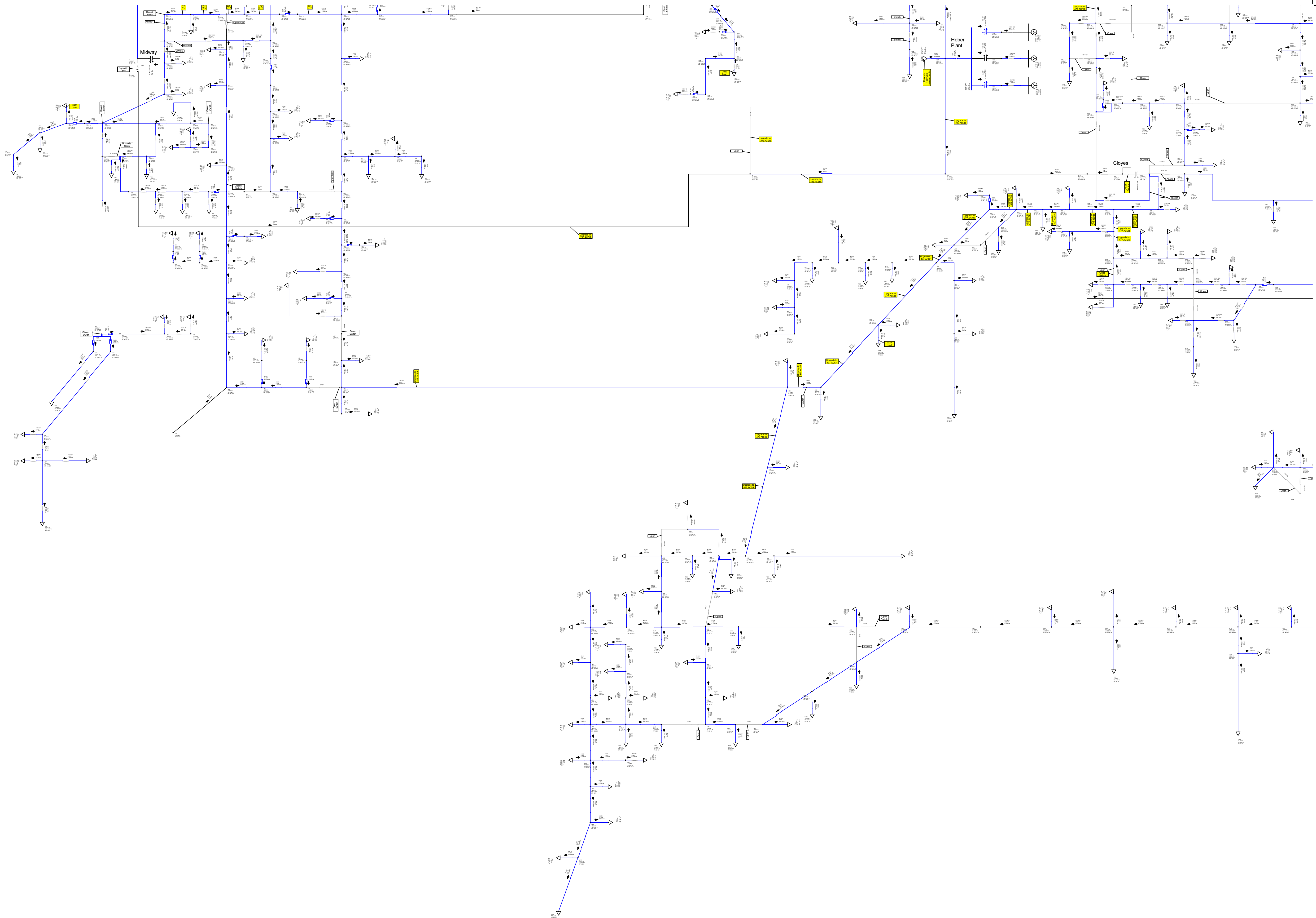
Heber 12.47 kV
2022 - Loss of Cloyes transformer

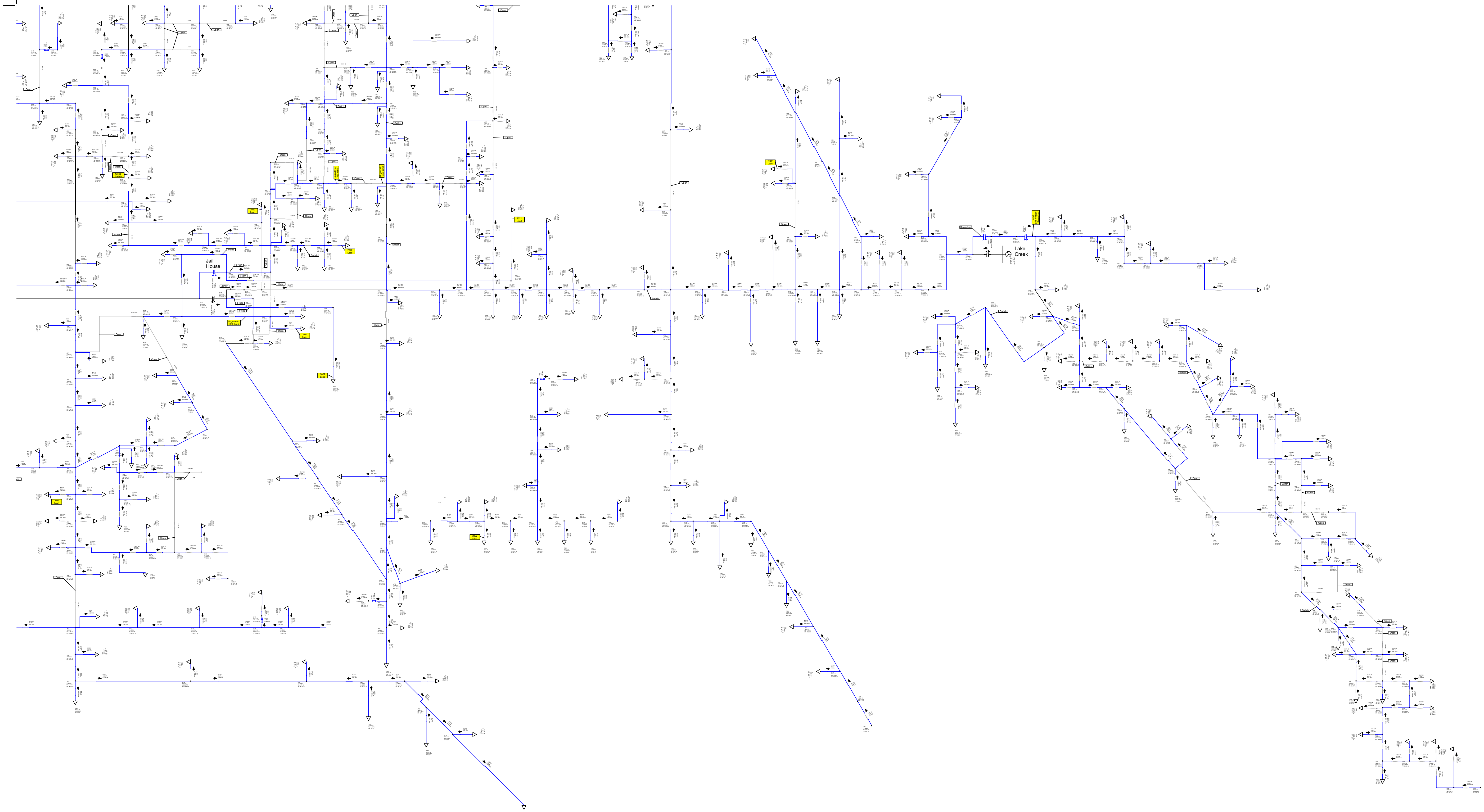
1. CL401 circuit can be picked up by HB304.

2. CL402 circuit can be picked up by HB303.




Jordanelle
College


Midway
Heber
Plant
Cloyes

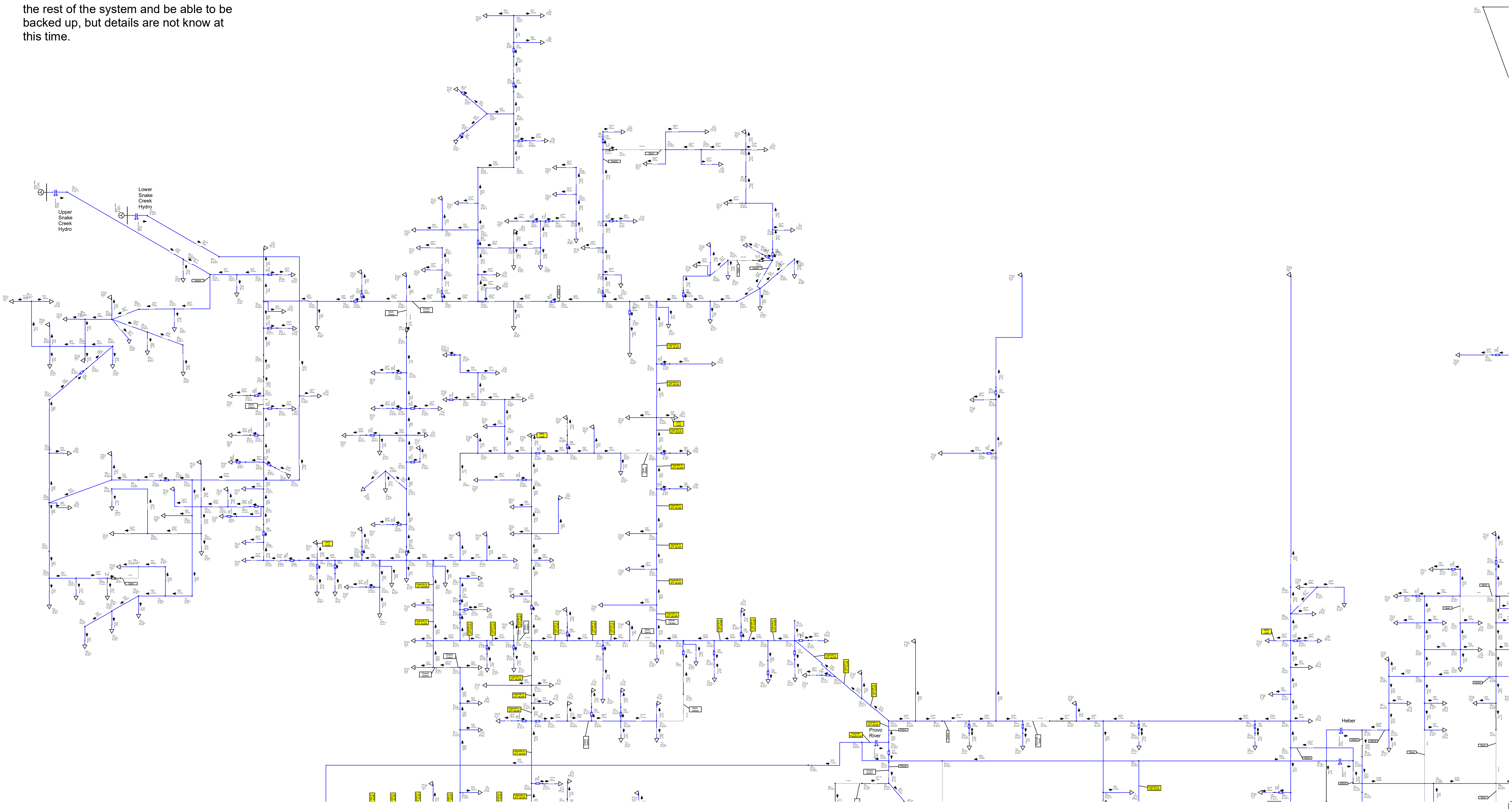

Jail House
Lake Creek

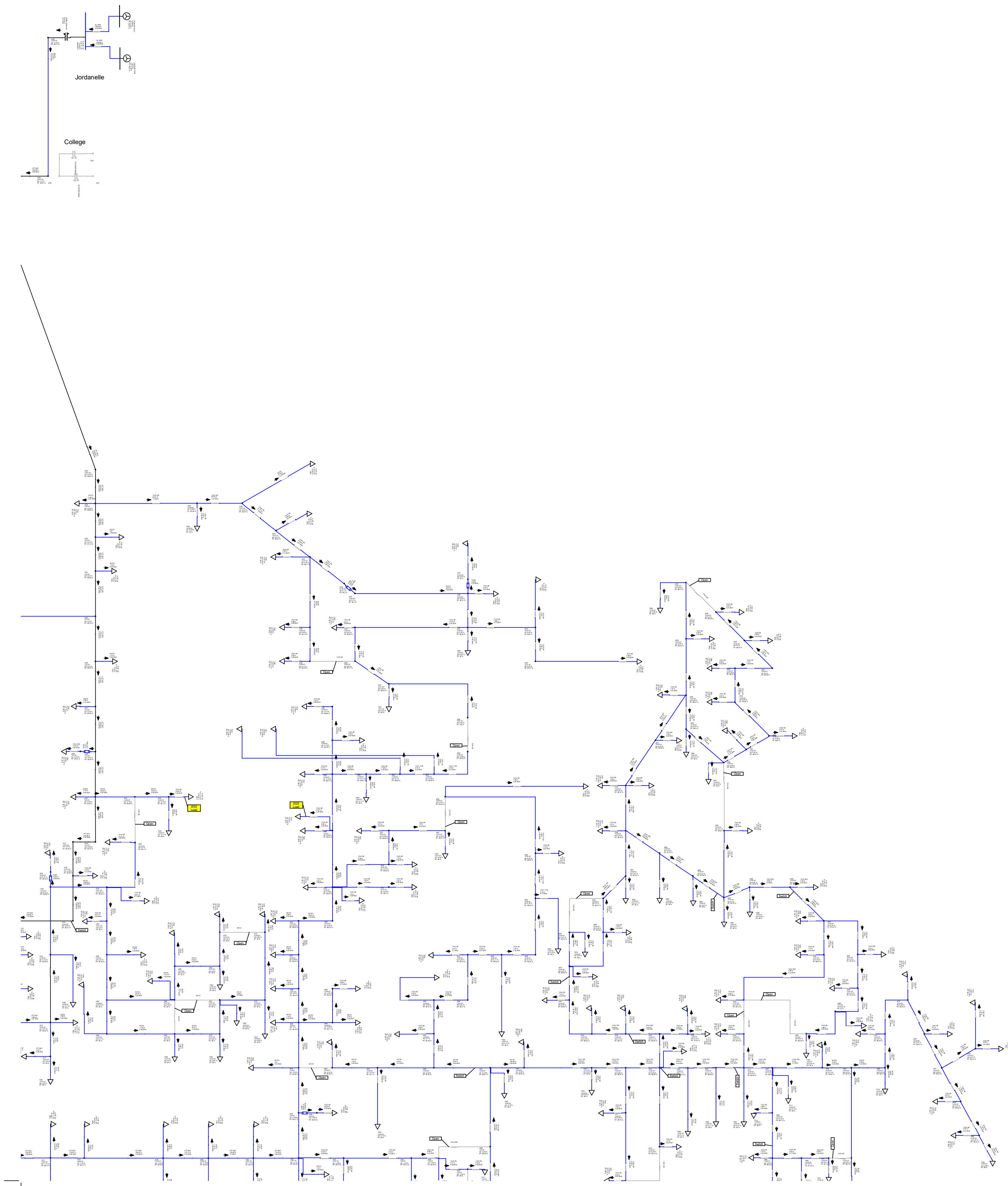
Heber 12.47 kV
2022 - Loss of Jailhouse T1 transformer

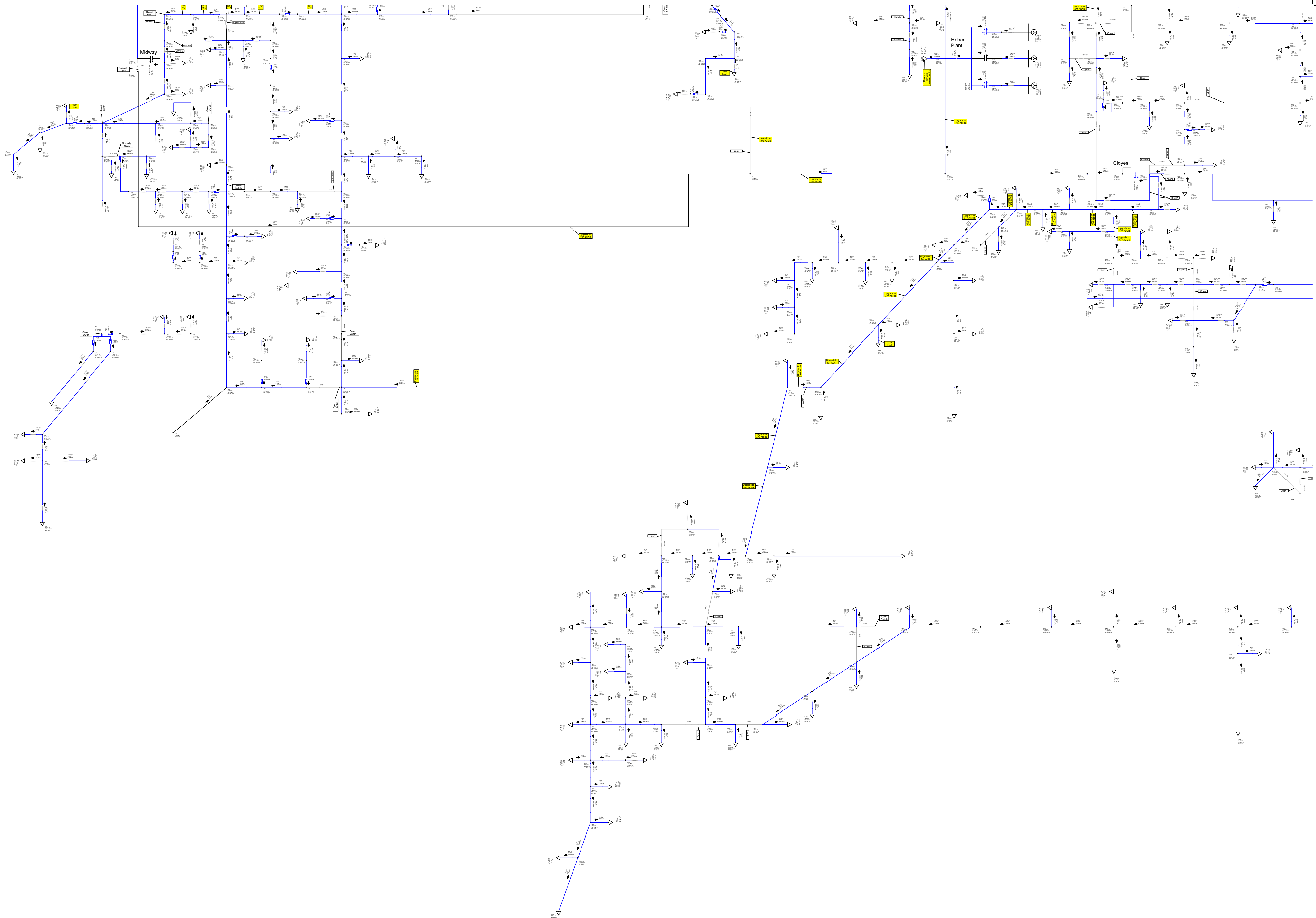
1. JH501 circuit can be picked up by HB303.

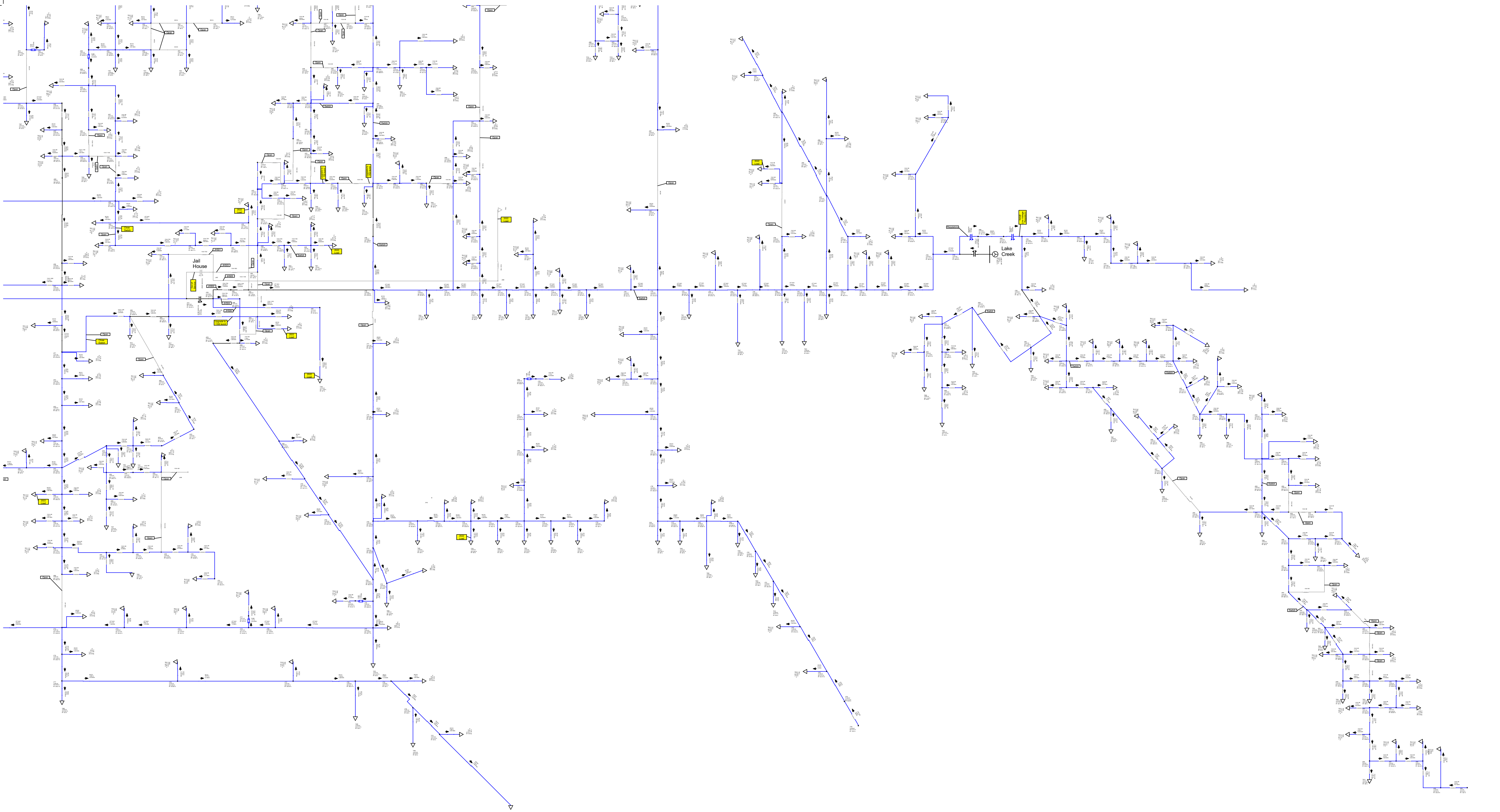
2. JH503 circuit can be picked up by CL401.

3. It is assumed that JH505 will tie into the rest of the system and be able to be backed up, but details are not know at this time.




Jordanelle
College


Midway
Heber Plant
Cloyes


Jail House
Lake Creek

Heber 12.47 kV
2022 - Loss of Jailhouse T2 transformer

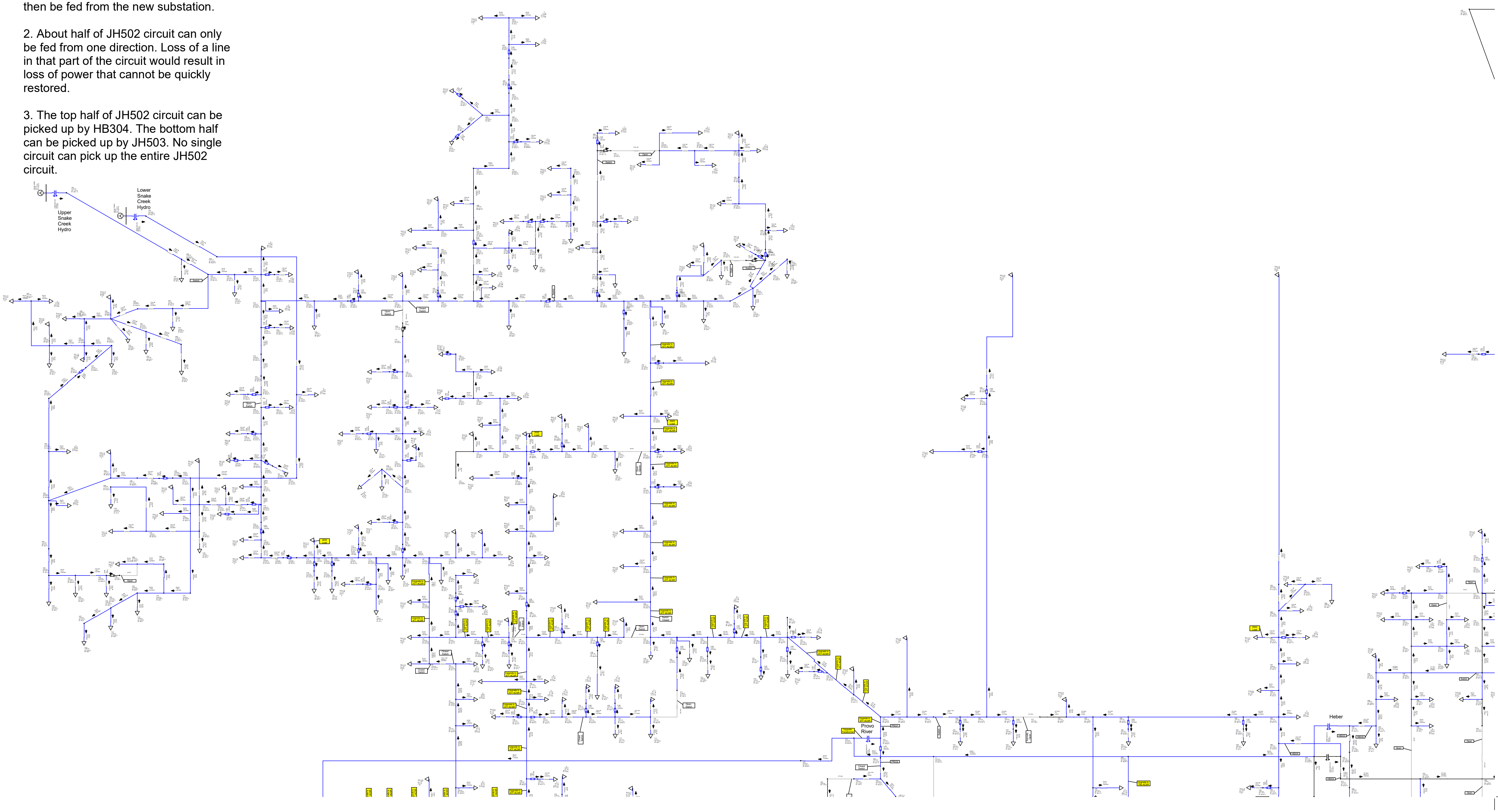
1. JH502 load is approximately 405 amps when Lake Creek generation is off. Consider moving some load to another circuit. As some point in the future a new substation to the West of Jailhouse will probably be required. Much of the area fed by JH502 could then be fed from the new substation.

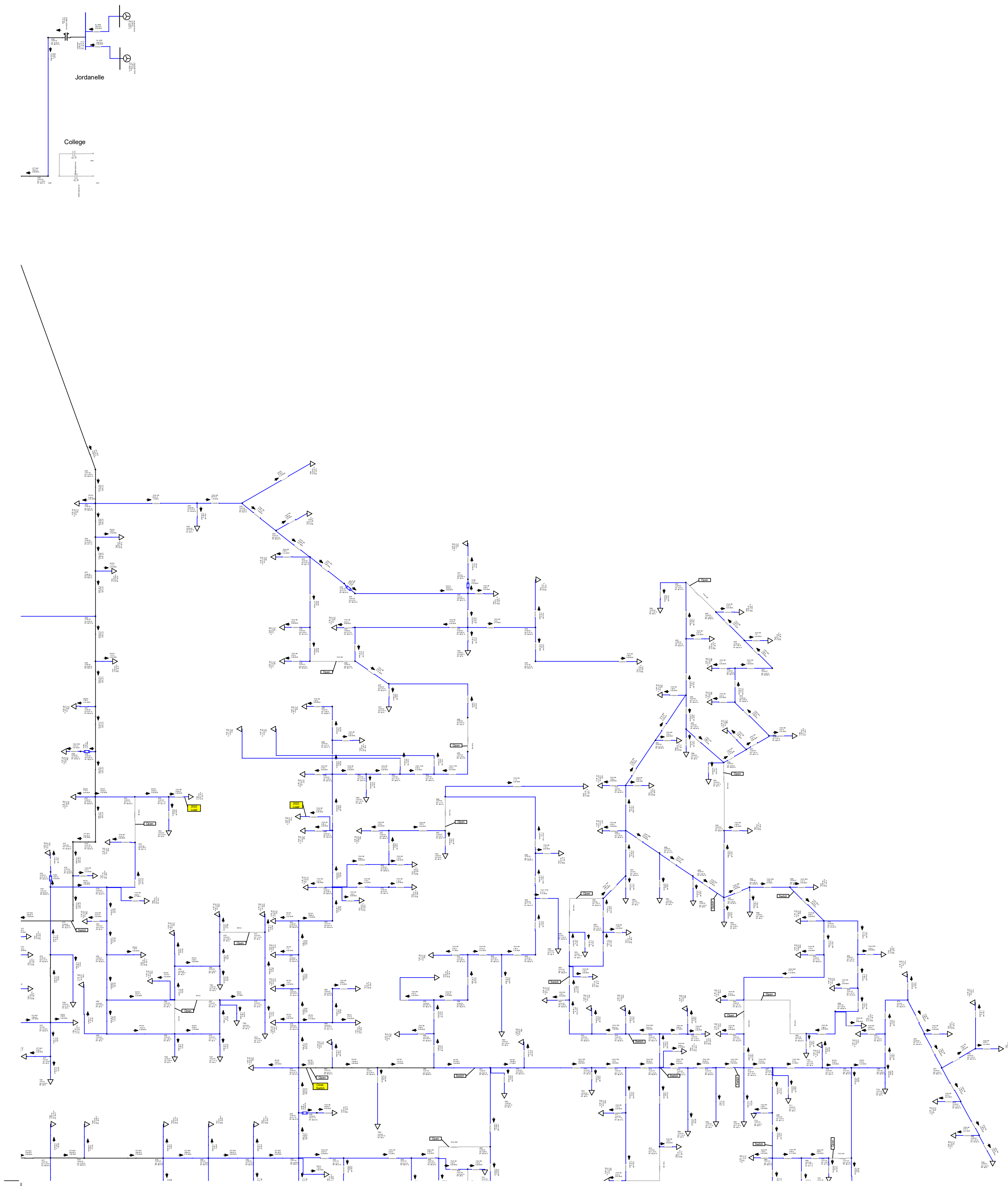
2. About half of JH502 circuit can only be fed from one direction. Loss of a line in that part of the circuit would result in loss of power that cannot be quickly restored.

3. The top half of JH502 circuit can be picked up by HB304. The bottom half can be picked up by JH503. No single circuit can pick up the entire JH502 circuit.

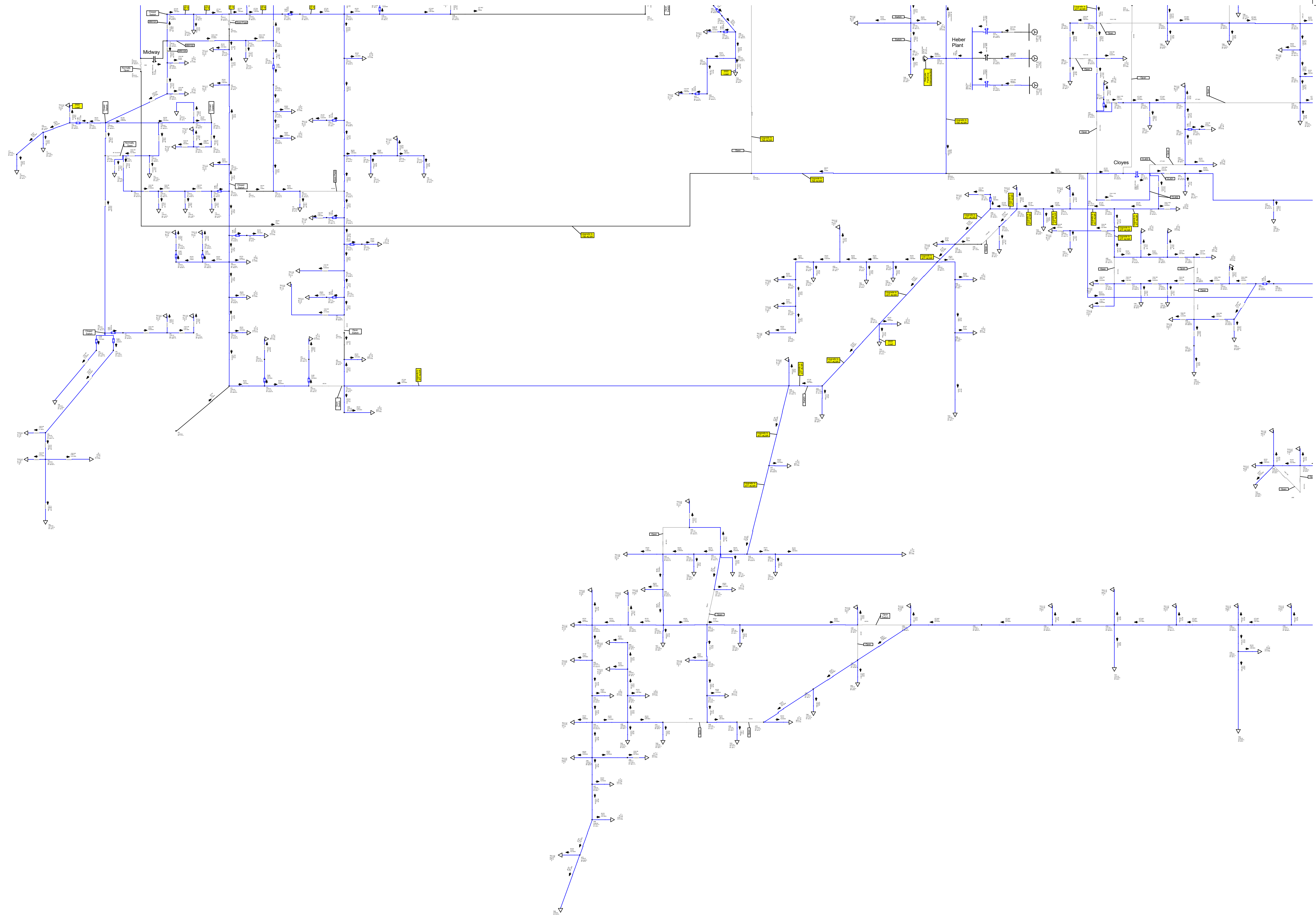
4. JH504 can be picked up by JH501.

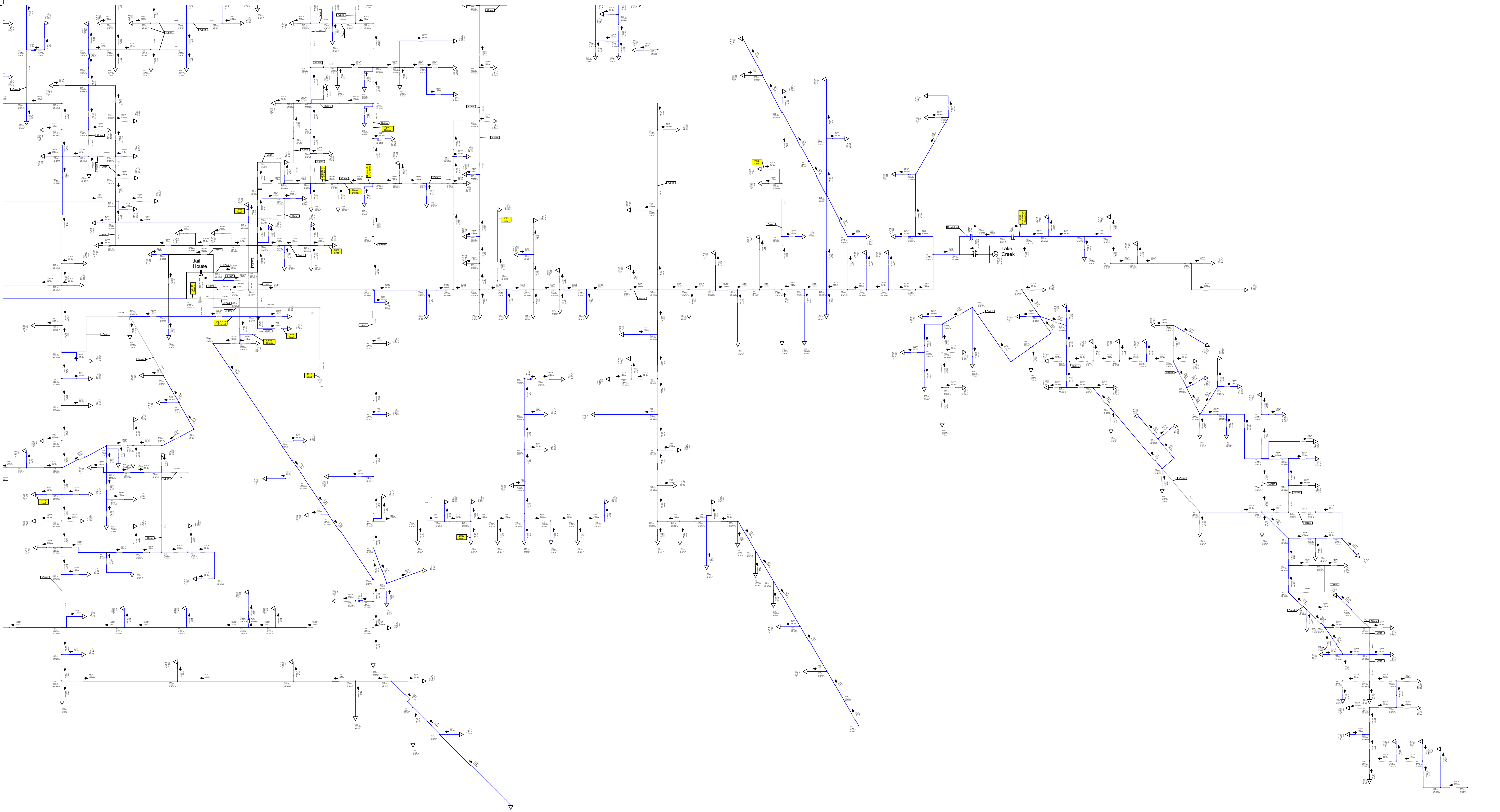
5. It is assumed that JH506 circuit will tie into the rest of the system and be able to be backed up, but details are not known at this time.





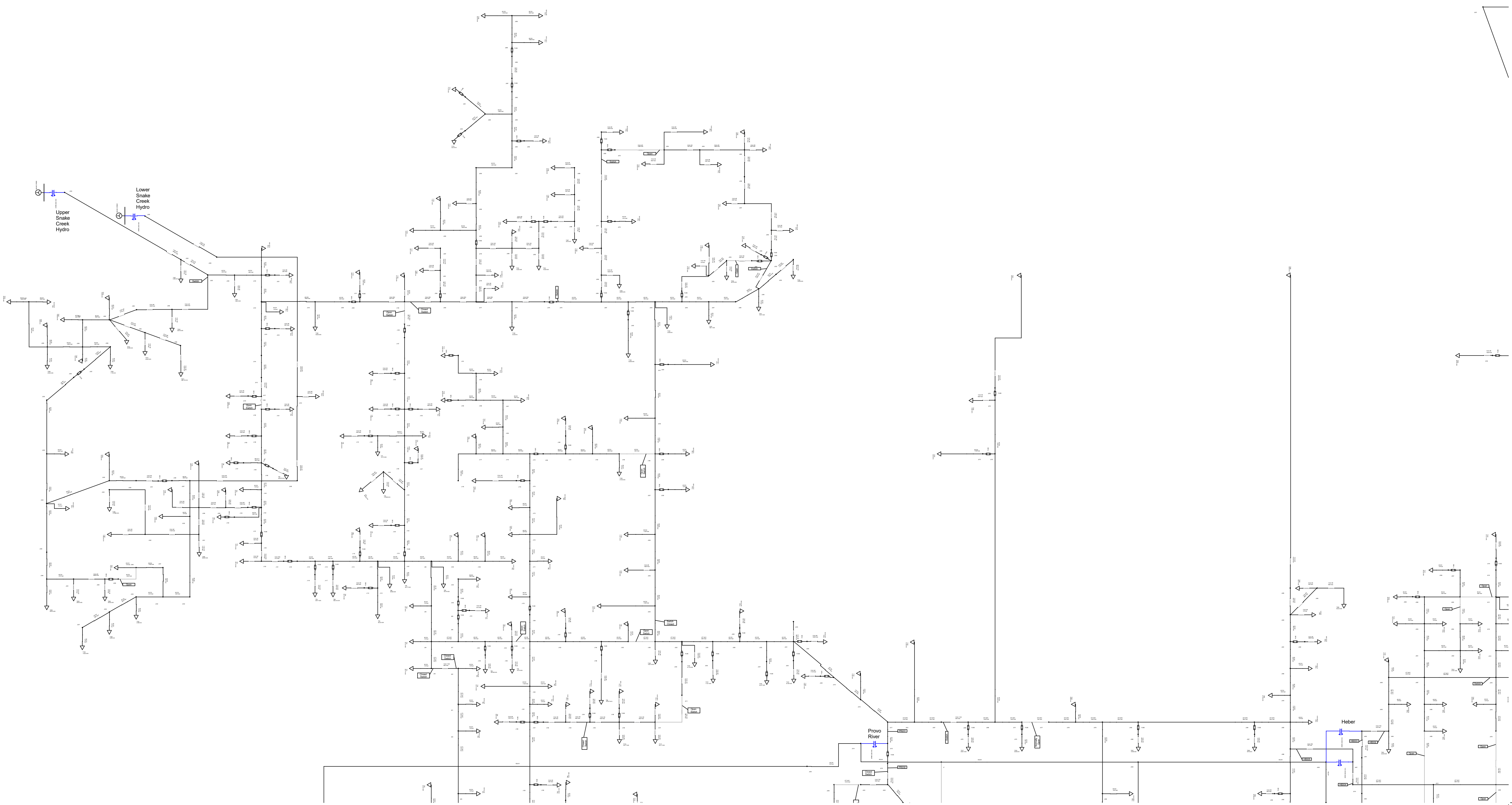
Jordanelle
College

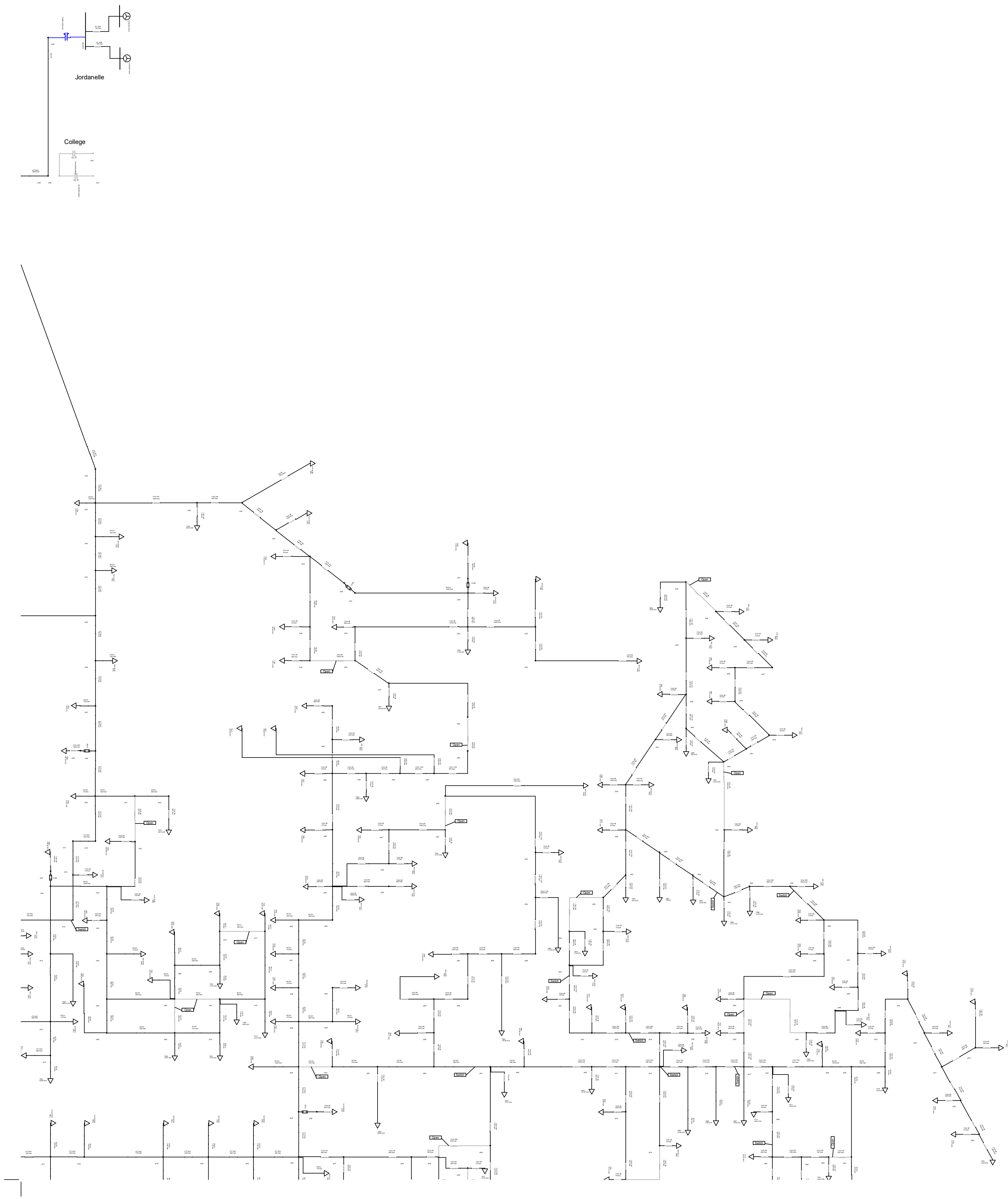

Midway
Heber
Plant
Cloyes

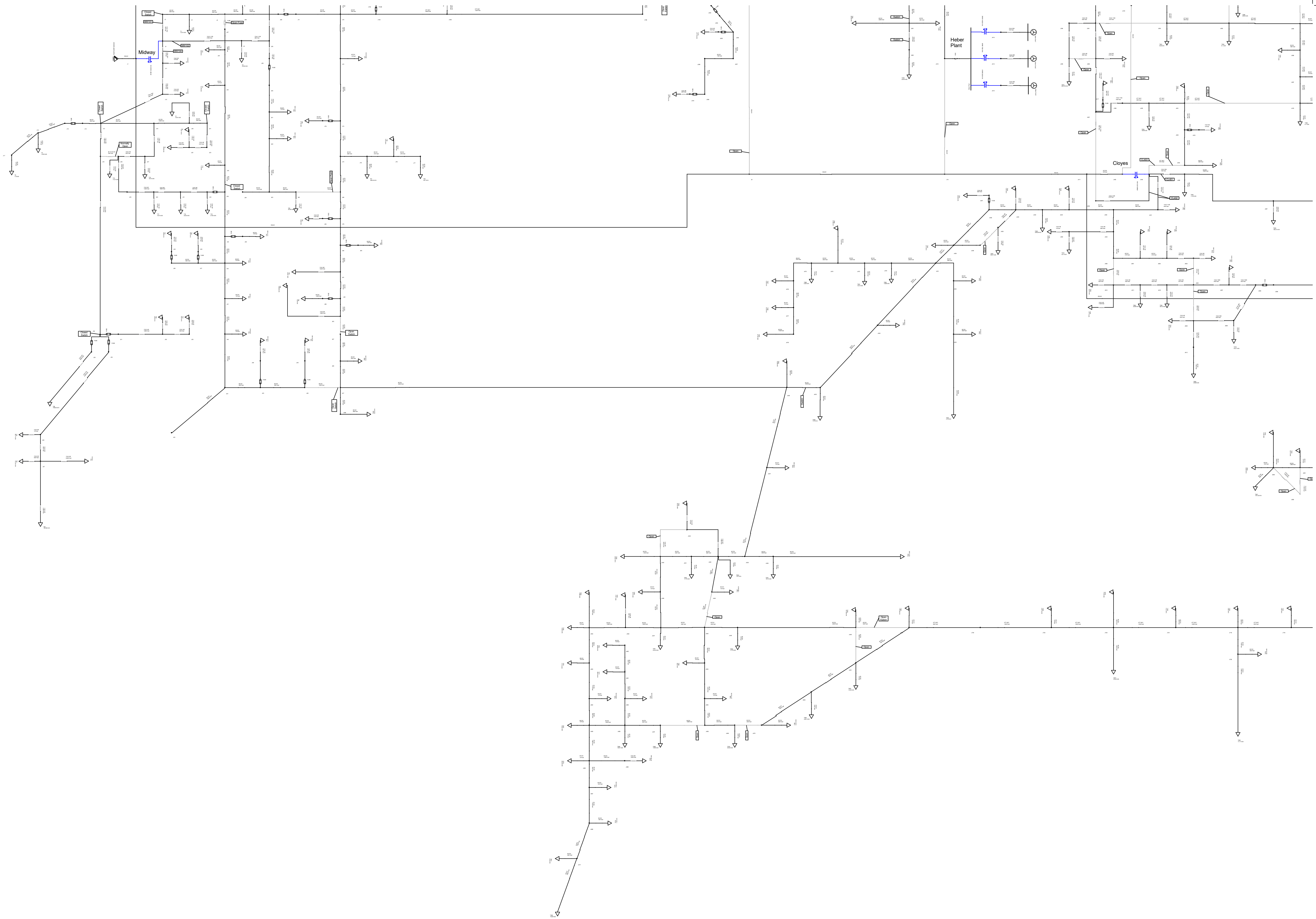

Jail House
Lake Creek

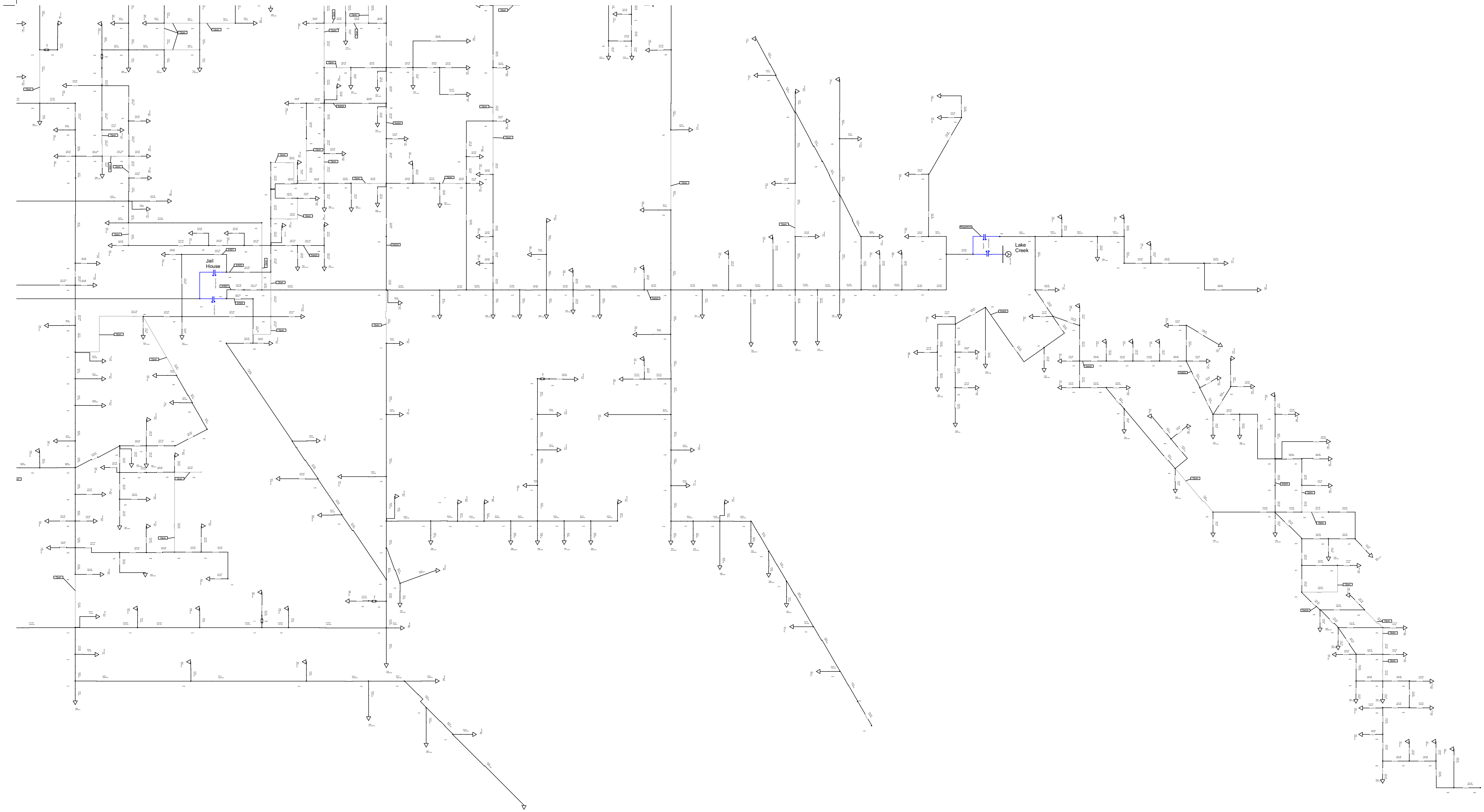
APPENDIX 4 – MODEL INPUT DATA

2018
Input Data




Jordanelle
College


Midway
Heber Plant
Cloyes
Closed Switch



Jail House
Lake Creek

Paladin DesignBase

3-Phase Short Circuit v6.70.00

Project No. :		Page :	1
Project Name:	Heber City	Date :	01/15/2019
Title :		Time :	10:25:37 am
Drawing No. :		Company :	ICPE
Revision No.:		Engineer:	MTF
Jobfile Name:	Heber_2018_Input_Data	Check by:	
Scenario :	1 :	Date :	

System Summary

Base MVA	:	100.000
System Frequence(Hz)	:	60
# of Total Buses	:	1733
# of Active Buses	:	1722
# of Total Branches	:	1727
# of Active Sources	:	9
# of Active Motors	:	0
# of Active Shunts	:	736
# of Transformers	:	17
Reference Temperature(°C)	:	20.0
Impedance Displaying Temperature(°C)	:	25.0

Calculation Options

Calculating All or Mult-Buses Fault with Fault Z = 0.00000 + j 0.00000 Ohms

Fault Phases:
    Phase A for Line-Ground Fault
    Phase B,C for Line-Line or Line-Line-Ground Fault

Classical Calculation:
    Complex Z for X/R and Fault Current

Transformer Phase Shift is not considered.
Generator and Motor X/R is constant.
Base Voltages : Adjusted by Tap/Turn Ratio
Prefault Voltages : Use System Voltages

Input Data Report

Utility/Power Company Data

Bus Name	System V	Cd	SCkVA	X"/R	Ground
PACIFICORP MIDWAY	46000	PC	889825.3-3P	19.901(+)	Solid
Actual V.->	46000		770965.6-LL	19.433(-)	
			1154882-LG	8.7569(0)	

Generator Data

Bus Name		System V	Cd	kVA	%X	X/R		Ground Ohms
Heber Gen1		4160	GS	6082.0	13.00	29.00	(+)"	Solid
	Actual V.->	4160			21.10	29.00	(+)'	
					267.0	29.00	(+)	
					12.50	29.00	(-)	
					2.600	29.00	(0)	
Heber Gen2		4160	GS	4486.0	13.00	29.00	(+)"	Solid
	Actual V.->	4160			21.10	29.00	(+)'	
					267.0	29.00	(+)	
					12.50	29.00	(-)	
					2.600	29.00	(0)	
Heber Gen3		4160	GS	3189.0	13.00	29.00	(+)"	Solid
	Actual V.->	4160			21.10	29.00	(+)'	
					267.0	29.00	(+)	
					12.50	29.00	(-)	
					2.600	29.00	(0)	
Jordanelle Gen3		12470	GS	7222.0	22.30	29.00	(+)"	R 713
	Actual V.->	12470			32.80	29.00	(+)'	X 0
					108.5	29.00	(+)	
					24.80	29.00	(-)	
					20.90	29.00	(0)	
Jordanelle Gen4		12470	GS	7222.0	22.30	29.00	(+)"	R 713
	Actual V.->	12470			32.80	29.00	(+)'	X 0
					108.5	29.00	(+)	
					24.80	29.00	(-)	
					20.90	29.00	(0)	
LAKE PLANT		480	GS	1500.0	22.30	29.00	(+)"	R 713
	Actual V.->	480			32.80	29.00	(+)'	X 0
					108.5	29.00	(+)	
					24.80	29.00	(-)	
					20.90	29.00	(0)	
SNAKE CREEK		480	GS	1180.0	22.30	29.00	(+)"	Solid
	Actual V.->	480			32.80	29.00	(+)'	
					108.5	29.00	(+)	
					24.80	29.00	(-)	
					20.90	29.00	(0)	
SNAKE CREEK1		480	GS	800.00	22.30	29.00	(+)"	Solid
	Actual V.->	480			32.80	29.00	(+)'	
					108.5	29.00	(+)	
					24.80	29.00	(-)	
					20.90	29.00	(0)	

Transformers Data

Branch Name	Cd	Device Type	kVA	%R	%X		Nameplt V	Ground Ohms
CLOYES	TR	XFMR 9375 KVA	9375.0	0	9.99	(+)	46000	Delta
				0	9.99	(0)	12470	Y-Solid
			%Z = 9.99	X/R =	-	(+)		
Heber Xfmr1	TR	XFMR 14000 KVA	14000	0	9.100	(+)	4160	Delta
				0	9.100	(0)	46000	Y-Solid
			%Z = 9.100	X/R =	-	(+)		
Heber Xfmr2	TR	XFMR 7500 KVA	5000.0	0	6.400	(+)	4160	Delta
				0	6.400	(0)	46000	Y-Solid
			%Z = 6.400	X/R =	-	(+)		
Heber Xfmr3	TR	XFMR 5000 KVA	5000.0	0	6.400	(+)	4160	Delta
				0	6.400	(0)	46000	Y-Solid
			%Z = 6.400	X/R =	-	(+)		
Heber Xfmr4	TR	XFMR 2000 KVA	2000.0	0	5.320	(+)	480	Delta
				0	5.320	(0)	12470	Y-Solid
			%Z = 5.320	X/R =	-	(+)		
Heber Xfmr5	TR	XFMR 2000 KVA	2000.0	0	5.320	(+)	480	Delta
				0	5.320	(0)	12470	Y-Solid
			%Z = 5.320	X/R =	-	(+)		
Heber Xfmr6	TR	XFMR 2000 KVA	2000.0	0	5.320	(+)	480	Delta
				0	5.320	(0)	12470	Y-Solid
			%Z = 5.320	X/R =	-	(+)		
Heber Xfmr7	TR	Regulators	10000	0	1.000	(+)	12470	Y-Solid
				0	1.000	(0)	12470	Y-Solid
			%Z = 1.000	X/R =	-	(+)		
HEBER1	TR	XFMR 20000 KVA	20000	0	12.83	(+)	46000	Delta
				0	12.83	(0)	12470	Y-Solid
			%Z = 12.83	X/R =	-	(+)		
HEBER2	TR	XFMR 20000 KVA	20000	0	11.75	(+)	46000	Delta
				0	11.75	(0)	12470	Y-Solid
			%Z = 11.75	X/R =	-	(+)		
JAIL HOUSE1	TR	XFMR 14000 KVA	14000	0	11.41	(+)	46000	Delta
				0	11.41	(0)	12470	Y-Solid
			%Z = 11.41	X/R =	-	(+)		
JAIL HOUSE2	TR	XFMR 20000 KVA	20000	0	13.53	(+)	46000	Delta
				0	13.53	(0)	12470	Y-Solid
			%Z = 13.53	X/R =	-	(+)		
Jordanelle Xfmr	TR	XFMR 14000 kVA	14000	0	9.400	(+)	12470	Delta
				0	9.400	(0)	12470	Y-Solid
			%Z = 9.400	X/R =	-	(+)		
MIDWAY	TR	XFMR 14000 KVA	14000	0	11.07	(+)	46000	Delta
				0	11.07	(0)	12470	Y-Solid
			%Z = 11.07	X/R =	-	(+)		
PROVO RIVER	TR	XFMR 5000 KVA	5000.0	0	6.550	(+)	46000	Delta
				0	6.550	(0)	12470	Y-Solid
			%Z = 6.550	X/R =	-	(+)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH1		EQUIV	1000	0.0002	0.0002	(+)		20.0
				0.0002	0.0002	(0)		
OH10		EQUIV	1000	0.6857	0.9552	(+)		20.0
				1.1773	3.2210	(0)		
OH100		#2 OH	330	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH101		4/0 OH	310	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH102		#2 OH	350	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH103		#2 OH	820	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH104		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH105		4/0 OH	680	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH106		4/0 OH	220	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH107		4/0 OH	690	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH108		4/0 OH	250	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH109		#2 CU	780	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH11		#2 OH	1400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH110		#2 CU	600	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH111		#2 CU	210	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH112		#2 CU	1200	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH113		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH114		#4 CU-1	710	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH115		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH116		#2 CU	450	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH117		#2 CU	1150	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH118		#2 CU	370	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH119		4/0 OH	450	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH12		#2 OH	1400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH120		#4 OH	860	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH121		4/0 OH	660	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH122		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH123		4/0 OH	730	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH124		#6 CU-2	360	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH125		4/0 OH	560	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH126		4/0 OH	370	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH127		4/0 OH	760	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH128		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH129		4/0 OH	500	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH13		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH130		4/0 OH	880	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH132		4/0 OH	500	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH133		4/0 OH	660	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH134		4/0 OH	540	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH135		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH136		#2 OH	530	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH137		#2 OH	1150	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH138		4/0 OH	850	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH139		4/0 OH	560	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH14		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH140		4/0 OH	415	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH142		#2 OH	50	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH143		#2 OH	420	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH144		#4 OH	750	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH145		#2 OH	50	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH146		#4 OH	50	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH147		#4 OH	420	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH148		#4 OH	450	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH149		#4 OH	1200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH15		4/0 OH	650	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH150		#4 OH	290	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH151		#4 OH	100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH152		#4 OH	50	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH153		#4 OH	50	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH154		#2 OH	310	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH155		#2 OH	650	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH156		#2 OH	1480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH157		#2 OH	390	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH158		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH159		#2 OH	800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH16		4/0 OH	1060	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH160		#2 OH	680	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH162		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH163		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH164		#2 OH	860	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH165		#2 OH	510	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH166		#2 OH	300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH167		#4 OH	370	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH168		#4 OH	300	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH169		#2 OH	670	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH17		4/0 OH	350	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH170		#2 OH	650	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH171		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH172		#2 OH	700	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH173		477 AAC	2000	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH174		477 AAC	1230	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH175		477 AAC	630	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH177		#2 OH	350	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH178		#2 OH	350	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH179		#2 OH	1420	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH18		#2 OH	1060	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH180		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH181		#2 OH	1330	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH182		4/0 OH	1080	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH183		4/0 OH	720	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH184		EQUIV	1000	0.0002	0.0002	(+)		20.0
				0.0002	0.0002	(0)		
OH185		#2 OH	150	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH186		4/0 OH	240	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH187		4/0 OH	240	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH188		4/0 OH	360	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH189		4/0 OH	310	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH19		#2 OH	530	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH190		#4 OH	1500	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH191		4/0 OH	200	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH192		477 AAC	230	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH193		#2 OH	3050	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH194		477 AAC	850	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH195		477 AAC	510	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH196		#2 OH	620	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH197		#4 OH	1160	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH198		#2 OH	530	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH199		#2 OH	850	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH2		4/0 OH	850	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH20		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH200		#2 OH	1000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH201		#4 OH	1130	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH202		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH203		#2 OH	710	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH204		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH205		#2 OH	530	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH206		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH207		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH208		#2 OH	1800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH209		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH21		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH210		4/0 OH	760	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH211		#2 OH	1900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH212		#2 OH	250	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH213		#2 OH	670	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH214		#2 OH	270	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH215		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH216		#6 CU	150	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH217		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH218		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH219		#2 OH	1620	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH22		#2 OH	440	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH220		4/0 OH	440	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH221		#2 OH	370	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH222		4/0 OH	830	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH223		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH224		#4 OH	510	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH225		#4 OH	1000	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH226		#4 OH	340	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH227		#4 OH	690	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH228		#4 OH	490	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH229		#4 OH	210	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH23		#2 OH	170	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH230		#4 OH	220	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH231		#4 OH	1100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH232		#4 OH	950	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH233		#4 OH	1600	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH234		#4 OH	1090	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH235		#4 OH	1400	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH236		#4 OH	1350	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH237		#4 OH	1200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH238		#4 OH	730	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH239		#4 OH	200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH24		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH240		4/0 OH	450	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH241		4/0 OH	1600	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH242		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH243		4/0 OH	300	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH244		#2 OH	770	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH245		#2 OH	340	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH246		#2 OH	810	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH247		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH248		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH249		#2 OH	1200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH25		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH250		#2 OH	430	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH251		#4 OH	870	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH252		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH253		#4 OH	1080	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH254		#4 OH	330	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH255		#4 OH	410	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH256		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH257		#4 OH	950	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH258		#4 OH	950	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH259		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH26		#2 OH	640	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH260		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH261		#4 OH	400	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH262		#4 OH	1160	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH263		#4 OH	1130	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH264		#4 OH	700	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH265		#4 OH	1530	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH266		#4 OH	230	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH267		#4 OH	850	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH268		#4 OH	900	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH269		#4 OH	830	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH27		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH270		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH272		#4 OH	370	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH273		#4 OH	630	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH274		#4 OH	840	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH275		#4 OH	1880	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH276		4/0 OH	50	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH277		#4 OH	800	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH278		#4 OH	1090	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH279		#4 OH	480	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH28		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH280		#2 OH	380	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH281		#4 OH	1800	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH282		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH283		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH284		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH285		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH286		#4 OH	800	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH287		#4 OH	1400	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH288		#4 OH	1300	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH289		#4 OH	600	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH29		#4 OH	900	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH290		#2 OH	550	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH291		#4 OH	400	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH292		477 AAC	200	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH293		477 AAC	1530	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH294		477 AAC	1250	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH295		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH296		#2 OH	5440	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH297		#2 OH	1140	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH298		#2 OH	1390	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH3		4/0 OH	890	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH30		#4 OH	690	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH300		477 AAC	400	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH301		#2 OH	560	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH302		477 AAC	1050	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH303		4/0 OH	2050	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH304		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH305		4/0 OH	940	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH306		#2 OH	2200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH307		#2 OH	360	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH308		#2 OH	700	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH309		477 AAC	950	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH31		#2 OH	1050	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH310		477 AAC	980	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH311		477 AAC	840	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH312		4/0 OH	460	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH313		4/0 OH	410	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH314		#2 OH	290	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH315		477 AAC	580	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH316		477 AAC	420	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH317		477 AAC	350	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH318		477 AAC	530	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH32		#2 OH	640	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH320		EQUIV	1000	0.0409	0.2476	(+)		20.0
				0.1894	0.9310	(0)		
OH321		4/0 OH	50	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH323		EQUIV	1000	0.2744	0.3821	(+)		20.0
				0.4711	1.2889	(0)		
OH324		4/0 OH	50	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH325		EQUIV	1000	0.6816	0.9497	(+)		20.0
				1.1705	3.2019	(0)		
OH326		#4 OH	600	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH328		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH329		#2 OH	690	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH33		#2 OH	470	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH330		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH331		#2 OH	520	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH332		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH333		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH334		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH335		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH336		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH337		#2 OH	210	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH338		#2 OH	530	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH339		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH34		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH340		#2 OH	890	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH341		#2 OH	1330	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH342		#2 OH	2210	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH343		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH344		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH345		#2 OH	2910	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH346		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH347		#2 OH	2090	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH348		#2 OH	1570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH349		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH35		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH350		#2 OH	560	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH351		#2 OH	700	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH352		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH353		#2 OH	1430	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH354		#4 OH	650	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH355		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH356		#4 OH	3050	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH357		#4 OH	150	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH358		#4 OH	680	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH359		#4 OH	840	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH36		#2 OH	2430	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH360		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH361		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH362		#4 OH	1100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH363		#2 OH	1360	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH364		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH366		#2 OH	1140	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH367		#2 OH	1500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH368		#2 OH	380	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH369		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH37		#2 OH	900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH370		#2 OH	2420	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH371		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH374		#2 OH	800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH375		#2 OH	1300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH376		#2 OH	1360	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH377		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH378		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH379		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH38		#2 OH	850	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH380		#2 OH	1460	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH381		#6 CU	950	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH382		#4 OH	1240	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH383		#4 OH	530	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH384		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH385		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH387		#4 OH	800	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH388		#4 OH	1030	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH389		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH390		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH391		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH392		#4 OH	510	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH393		#4 OH	980	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH394		#4 OH	540	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH395		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH396		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH397		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH398		#6 CU	550	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH399		#2 OH	1110	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH4		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH40		#2 OH	610	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH400		#2 OH	980	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH401		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH402		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH403		#4 OH	1380	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH404		#2 OH	1280	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH405		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH406		#4 OH	550	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH407		#4 OH	1100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH408		#4 OH	100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH409		#4 OH	100	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH41		#2 OH	590	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH410		#4 OH	870	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH412		#4 OH	300	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH413		#4 OH	1530	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH414		#4 OH	2250	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH415		#4 OH	660	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH416		#2 OH	2000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH417		#2 OH	720	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH418		#2 OH	650	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH419		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH42		#2 OH	1330	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH420		#2 OH	1330	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH421		#2 OH	940	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH422		#2 OH	1120	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH423		#2 OH	970	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH424		#2 OH	850	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH425		#2 OH	980	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH426		#2 OH	1150	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH427		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH428		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH429		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH43		#2 OH	1010	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH430		#2 OH	5250	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH431		#2 OH	650	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH432		4/0 OH	530	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH433		#2 OH	890	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH434		4/0 OH	530	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH435		#2 OH	1070	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH436		#2 OH	840	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH437		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH438		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH439		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH44		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH440		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH441		4/0 OH	1840	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH442		4/0 OH	1220	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH443		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH444		4/0 OH	370	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH445		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH446		4/0 OH	660	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH448		#2 OH	450	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH449		477 AAC	2510	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH45		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH450		477 AAC	790	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH451		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH452		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH453		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH454		477 AAC	420	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH455		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH456		#4 CU	600	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH457		#2 OH	710	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH459		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH46		#2 OH	680	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH460		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH461		#4 CU	490	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH462		#4 CU	410	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH463		#4 OH	410	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH464		#4 OH	480	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH465		#4 OH	600	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH467		477 AAC	960	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH468		#4 OH	200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH469		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH470		#4 CU	610	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH471		#4 CU	420	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH472		#4 OH	380	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH473		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH474		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH475		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH476		#4 OH	480	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH478		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH479		477 AAC	490	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH48		4/0 OH	320	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH480		#2 OH	270	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH481		477 AAC	750	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH482		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH483		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH484		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH485		477 AAC	520	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH486		477 AAC	370	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH487		#2 CU	1000	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH488		477 AAC	320	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH489		477 AAC	430	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH49		#2 OH	960	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH490		#2 OH	540	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH491		#2 OH	620	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH492		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH493		477 AAC	300	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH494		477 AAC	860	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH495		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH496		477 AAC	770	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH497		477 AAC	730	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH498		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH499		477 AAC	460	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH5		#2 OH	550	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH50		4/0 OH	1560	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH500		477 AAC	570	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH501		477 AAC	930	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH502		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH503		#2 OH	300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH504		477 AAC	1050	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH505		477 AAC	6760	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH506		477 AAC	2000	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH507		EQUIV	1000	0.4536	2.3047	(+)		20.0
				1.0851	6.4425	(0)		
OH508		#2 OH	1250	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH509		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH51		4/0 OH	640	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH510		#2 OH	300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH511		#2 OH	860	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH512		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH513		#2 OH	490	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH515		#2 OH	490	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH516		#2 OH	290	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH517		#2 OH	650	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH519		#4 CU	580	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH52		4/0 OH	530	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH520		#4 CU	460	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH521		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH522		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH523		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH525		#6 CU	960	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH526		#4 CU	480	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH527		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH528		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH529		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH53		4/0 OH	820	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH530		#2 OH	270	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH531		#4 OH	470	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH532		#4 CU	340	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH533		#2 OH	50	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH534		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH535		#2 CU	900	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH536		#2 CU	950	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH537		#4 CU	600	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH538		#2 CU	10	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH539		477 AAC	490	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH54		4/0 OH	560	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH540		477 AAC	950	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH541		#2 CU	740	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH542		#2 CU	10	0.1637	0.1392	(+)		20.0
				0.2768	0.4112	(0)		
OH543		477 AAC	580	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH544		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH545		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH546		477 AAC	610	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH547		#6 CU	590	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH548		477 AAC	610	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH549		477 AAC	60	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH55		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH550		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH551		477 AAC	960	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH552		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH553		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH556		477 AAC	410	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH557		#4 OH	480	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH558		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH559		477 AAC	410	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH56		4/0 OH	410	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH560		477 AAC	500	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH561		477 AAC	490	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH562		477 AAC	450	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH563		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH564		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH565		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH566		4/0 OH	360	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH567		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH568		4/0 OH	460	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH569		4/0 OH	790	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH57		4/0 OH	720	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH570		4/0 OH	490	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH571		#2 OH	450	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH572		#2 OH	270	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH573		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH574		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH575		#2 OH	1760	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH576		477 AAC	800	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH577		477 AAC	800	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH578		477 AAC	750	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH579		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH58		#2 OH	580	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH580		#2 OH	1300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH581		#2 OH	520	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH583		#2 OH	700	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH584		477 AAC	500	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH585		#4 CU	700	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH586		477 AAC	710	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH587		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH588		#6 CU	480	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH589		#6 CU	900	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH59		#2 OH	470	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH590		477 AAC	480	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH591		477 AAC	490	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH592		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH593		#4 OH	500	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH594		#6 CU	830	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH595		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH596		#2 OH	800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH597		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH598		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH6		EQUIV	1000	1.4389	2.0043	(+)		20.0
				2.4702	6.7581	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH60		#2 OH	270	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH602		#6 CU	1300	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH603		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH604		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH605		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH606		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH607		#4 OH	420	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH608		#4 OH	1300	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH61		#2 OH	590	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH610		#4 OH	1300	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH611		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH612		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH613		477 AAC	460	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH614		477 AAC	500	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH615		477 AAC	470	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH616		#2 OH	1000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH618		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH619		#6 CU	650	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH62		#2 OH	350	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH620		#6 CU	10	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH621		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH622		#2 OH	780	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH623		#2 OH	660	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH624		#2 OH	480	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH625		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH626		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH627		#2 OH	320	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH628		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH629		#2 OH	230	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH63		#2 OH	560	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH630		#2 OH	830	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH631		#2 OH	800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH632		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH633		4/0 OH	960	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH634		4/0 OH	770	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH635		#6 CU	1300	0.4105	0.1462	(+)		20.0
				0.5443	0.5073	(0)		
OH636		#2 OH	1000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH637		4/0 OH	620	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH638		4/0 OH	440	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH639		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH64		4/0 OH	270	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH640		#2 OH	980	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH641		#2 OH	680	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH642		#2 OH	300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH643		#2 OH	1280	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH644		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH645		#2 OH	660	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH646		#2 OH	2000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH647		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH648		4/0 OH	370	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH649		4/0 OH	490	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH65		4/0 OH	550	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH650		#2 OH	410	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH651		#2 OH	760	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH653		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH654		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH655		477 AAC	1040	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH656		477 AAC	1160	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH658		477 AAC	2180	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH659		477 AAC	960	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH66		4/0 OH	480	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH660		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH661		477 AAC	900	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH662		477 AAC	1990	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH663		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH664		477 AAC	650	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH665		477 AAC	1030	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH666		477 AAC	1180	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH667		477 AAC	720	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH668		477 AAC	1130	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH669		477 AAC	980	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH67		4/0 OH	330	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH670		477 AAC	1320	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH671		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH672		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH673		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH674		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH675		#4 OH	780	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH676		#4 OH	400	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH677		477 AAC	610	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH678		#4 CU	690	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH679		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH68		4/0 OH	210	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH680		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH681		477 AAC	1600	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH682		477 AAC	900	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH683		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH684		#2 OH	1160	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH685		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH686		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH687		477 AAC	1280	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH688		477 AAC	1530	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH689		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH69		#4 OH	130	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH690		#2 OH	1300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH691		#4 OH	1320	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH692		477 AAC	1630	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH693		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH694		477 AAC	1400	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH695		477 AAC	900	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH696		#2 OH	1440	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH697		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH698		#2 OH	930	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH699		#2 OH	1790	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH7		EQUIV	1000	0.2501	1.5144	(+)		20.0
				1.1586	5.6946	(0)		
OH70		#2 OH	1400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH700		#2 OH	900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH701		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH702		#2 OH	2400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH703		#4 CU	2690	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH704		#4 CU	10	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH705		#4 CU	1800	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH706		#4 CU	2350	0.2579	0.1611	(+)		20.0
				0.3826	0.4767	(0)		
OH707		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH708		#8 CU	1960	0.7059	0.1556	(+)		20.0
				0.8230	0.5606	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH709		#4 OH	1600	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH710		#4 OH	1200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH711		#4 OH	1040	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH712		#4 OH	1700	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH713		#4 OH	1520	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH714		#2 OH	1200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH715		#4 OH	12200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH716		#2 OH	560	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH717		#2 OH	460	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH718		#2 OH	1600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH719		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH72		4/0 OH	890	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH720		#4 OH	1700	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH721		#2 OH	1030	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH722		#4 OH	960	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH723		#2 OH	1120	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH724		#2 OH	1110	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH725		#2 OH	780	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH726		#2 OH	1340	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH727		#4 OH	200	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH728		#2 OH	1150	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH729		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH73		4/0 OH	690	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH730		#2 OH	1000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH731		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH732		#2 OH	1610	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH733		#2 OH	1300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH734		#2 OH	1200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH735		#2 OH	890	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH736		#2 OH	1240	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH738		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH739		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH74		477 AAC	440	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH740		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH741		#2 OH	870	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH742		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH743		#2 OH	1510	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH744		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH745		#2 OH	1120	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH746		#2 OH	1830	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH747		#2 OH	1450	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH748		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH749		#2 OH	780	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH75		477 AAC	1220	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH750		#2 OH	1300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH751		#2 OH	5460	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH752		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH753		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH754		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH755		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH756		#2 OH	4460	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH757		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH758		#2 OH	1770	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH759		#2 OH	550	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH76		477 AAC	670	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH760		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH761		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH762		#2 OH	780	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH763		#2 OH	630	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH764		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH765		#2 OH	1120	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH766		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH767		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH768		#2 OH	630	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH769		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH77		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH770		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH771		#2 OH	1360	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH772		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH773		477 AAC	950	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH774		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH775		477 AAC	1960	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH776		477 AAC	520	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH777		#2 OH	100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH778		#2 OH	1620	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH779		#2 OH	2180	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH78		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH781		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH782		#2 OH	500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH783		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH784		477 AAC	1840	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH785		477 AAC	850	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH786		477 AAC	1280	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH787		#2 OH	300	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH788		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH789		477 AAC	610	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH79		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH790		477 AAC	750	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH791		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH792		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH793		477 AAC	930	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH794		#2 OH	1080	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH795		#2 OH	1700	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH796		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH797		477 AAC	1540	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH798		477 AAC	1450	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH799		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH80		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH800		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH801		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH802		477 AAC	780	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH803		477 AAC	1050	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH804		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH805		477 AAC	820	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH806		477 AAC	1550	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH807		477 AAC	1090	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH808		#2 OH	1220	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH809		477 AAC	1250	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH81		477 AAC	540	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH810		477 AAC	1220	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH811		#2 OH	800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH812		477 AAC	1290	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH813		477 AAC	610	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH814		477 AAC	1190	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH815		477 AAC	890	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH816		477 AAC	650	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH817		#2 OH	940	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH818		477 AAC	250	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH819		#2 OH	7580	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH82		4/0 OH	590	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH820		#2 OH	760	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH821		#2 OH	1400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH822		#2 OH	2240	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH823		#2 OH	1320	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH824		#2 OH	1800	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH825		4/0 OH	520	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH826		4/0 OH	810	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH827		4/0 OH	480	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH828		4/0 OH	480	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH829		#2 OH	900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH83		4/0 OH	630	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH830		#2 OH	670	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH831		#2 OH	1000	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH832		#2 OH	1570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH833		#2 OH	830	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH834		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH835		#2 OH	1230	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH836		#2 OH	910	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH839		#2 OH	600	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH84		477 AAC	570	0.0368	0.1542	(+)		20.0
				0.0762	0.3964	(0)		
OH840		#2 OH	1630	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH841		#2 OH	1420	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH842		#2 OH	1100	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH843		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH844		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH846		#2 OH	470	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH847		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH848		#2 OH	750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH849		#2 OH	2170	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH85		#2 OH	410	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH850		#2 OH	490	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH851		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH852		#2 OH	1900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH853		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH854		#2 OH	1020	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH855		#2 OH	1450	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH856		#2 OH	400	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH857		#4 OH	10	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH858		EQUIV	1000	0.0440	0.2668	(+)		20.0
				0.2041	1.0034	(0)		
OH86		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH87		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
OH88		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH89		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH9		EQUIV	1000	0.1435	8.6862	(+)		20.0
				0.6646	3.2665	(0)		
OH90		4/0 OH	700	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH91		4/0 OH	700	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH92		4/0 OH	325	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH93		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH94		#2 OH	200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH95		4/0 OH	410	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
OH96		#2 OH	460	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH97		#4 OH	800	0.4159	0.1428	(+)		20.0
				0.5502	0.5054	(0)		
OH98		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
OH99		#2 OH	10	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG1		15 kV-750	160	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG10		15 kV-#2	750	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG100		15 kV-#2	1840	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG101		15 kV-#2	1400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG102		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG103		15 kV-#2	2000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG104		15 kV-4/0	1200	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG105		15 kV-#2	390	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG106		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG107		15 kV-#2	1600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG108		15 kV-#2	1130	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG109		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG11		15 kV-500	800	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG110		15 kV-4/0	1220	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG111		15 kV-4/0	1150	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG112		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG113		15 kV-4/0	1940	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG114		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG115		15 kV-4/0	1300	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG116		15 kV-4/0	1400	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG117		15 kV-4/0	900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG118		15 kV-4/0	870	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG119		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG12		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG120		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG121		15 kV-4/0	830	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG123		15 kV-#2	360	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG124		15 kV-#2	830	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG125		15 kV-4/0	1060	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG126		15 kV-4/0	730	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG127		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG128		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG129		15 kV-#2	1400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG13		15 kV-#2	1400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG131		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG132		15 kV-#2	1300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG133		15 kV-#2	570	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG134		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG135		15 kV-4/0	640	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG136		15 kV-4/0	540	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG137		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG138		15 kV-#2	2140	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG139		15 kV-500	640	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG14		15 kV-#2	610	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG140		15 kV-500	640	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG141		15 kV-#2	950	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG142		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG143		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG144		15 kV-4/0	370	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG145		15 kV-4/0	290	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG146		15 kV-4/0	800	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG147		15 kV-4/0	730	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG148		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG149		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG15		15 kV-4/0	940	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG150		15 kV-4/0	740	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG151		15 kV-4/0	900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG152		15 kV-#2	890	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG153		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG154		15 kV-#2	260	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG155		15 kV-#2	1260	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG156		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG157		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG158		15 kV-#2	50	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG159		15 kV-#2	350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG16		15 kV-4/0	530	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG160		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG161		15 kV-500	620	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG162		15 kV-500	900	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG163		15 kV-4/0	760	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG164		15 kV-4/0	730	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG165		15 kV-4/0	950	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG166		#2 OH	820	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG167		15 kV-500	520	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG168		#2 OH	1200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG169		15 kV-500	750	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG170		15 kV-#2	350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG171		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG172		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG173		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG174		15 kV-#2	350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG175		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG176		15 kV-#2	14000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG177		15 kV-#2	1300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG178		15 kV-#2	570	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG179		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG18		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG180		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG181		15 kV-4/0	1900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG182		15 kV-4/0	2540	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG183		15 kV-4/0	6190	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG184		15 kV-#2	950	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG185		15 kV-#2	660	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG186		15 kV-4/0	930	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG187		15 kV-#2	280	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG188		15 kV-#2	650	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG189		15 kV-#2	1150	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG19		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG190		15 kV-#2	1480	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG191		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG192		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG193		15 kV-#2	2950	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG194		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG195		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG196		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG197		15 kV-#2	51	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG198		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG199		15 kV-4/0	1950	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG2		15 kV-1100	2790	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG20		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG200		15 kV-#2	1370	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG201		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG202		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG203		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG204		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG205		15 kV-1100	240	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG206		15 kV-#2	250	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG207		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG208		15 kV-#2	3970	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG209		15 kV-#2	470	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG21		15 kV-#2	1350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG210		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG211		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG212		15 kV-750	100	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG213		15 kV-#2	380	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG215		15 kV-4/0	820	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG216		15 kV-4/0	280	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG218		15 kV-4/0	400	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG219		15 kV-#2	470	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG22		15 kV-#2	1800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG220		4/0 OH	10	0.0820	0.1244	(+)		20.0
				0.1588	0.3557	(0)		
UG221		15 kV-1100	1470	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG223		15 kV-1100	540	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG224	2	15 kV-500	125	0.0230	0.0220	(+)	0.00817	20.0
				0.0730	0.0185	(0)		
UG225	2	15 kV-500	125	0.0230	0.0220	(+)	0.00817	20.0
				0.0730	0.0185	(0)		
UG226	2	15 kV-500	125	0.0230	0.0220	(+)	0.00817	20.0
				0.0730	0.0185	(0)		
UG227		15 kV-#2	380	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG228		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG229		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG23		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG230		15 kV-1100	810	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG231		15 kV-1100	160	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG232		15 kV-1100	400	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG233		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG234		15 kV-#2	670	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG235		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG237		15 kV-#2	1360	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG238		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG239		15 kV-#2	1580	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG24		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG241		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG242		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG243		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG244		15 kV-#2	1600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG245		15 kV-#2	960	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
				0	0.0000	(+)		25.0
				0	0.0000	(0)		
UG247		15 kV-#2	540	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG248		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG249		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG25		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG250		15 kV-#2	6140	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG251		15 kV-500	165	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG252		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG254		15 kV-#2	50	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG255		15 kV-#2	1350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG256		15 kV-750	120	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG257		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG258		15 kV-#2	540	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG26		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG260		15 kV-#2	730	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG261		15 kV-#2	650	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG262		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG263		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG264		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG265		15 kV-500	1000	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG266		15 kV-#2	1300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG267		15 kV-4/0	1600	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG268		AL-1000	125	0.0202	0.0263	(+)		20.0
				0.0725	0.0530	(0)		
UG269		AL-1000	125	0.0202	0.0263	(+)		20.0
				0.0725	0.0530	(0)		
UG27		15 kV-#2	630	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG270		15 kV-4/0	320	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG271		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG272		#2 OH	3570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG273		15 kV-4/0	250	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG274		15 kV-4/0	460	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG275		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG276		15 kV-4/0	1190	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG277		#2 OH	1580	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG278		#2 OH	840	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG279		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG28		15 kV-#2	640	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG280		#2 OH	1500	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG281		15 kV-#2	960	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG282		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG283		15 kV-#2	2020	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG284		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG285		15 kV-#2	1650	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG286		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG287		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG288		15 kV-#2	1270	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG289		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG29		15 kV-#2	620	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG290		15 kV-#2	410	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG292		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG293		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG294		15 kV-#2	630	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG295		15 kV-#2	1370	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG296		15 kV-750	90	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG298		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG299		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG3		15 kV-#2	340	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG30		15 kV-#2	570	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG300		15 kV-750	100	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG301		15 kV-1100	310	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG302		15 kV-1100	140	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG303		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG306		15 kV-1000	420	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG307		15 kV-1000	300	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG308		15 kV-1000	560	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG309		15 kV-4/0	500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG31		15 kV-500	1570	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG310		15 kV-#2	330	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG311		15 kV-#2	150	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG312		15 kV-#2	680	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG313		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG314		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG315		15 kV-#2	850	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG317		15 kV-1000	450	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG318		15 kV-1000	840	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG319		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG32		15 kV-4/0	1280	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG320		15 kV-500	600	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG321		15 kV-500	600	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG322		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG324		15 kV-4/0	570	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG325		15 kV-4/0	850	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG326		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG327		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG328		15 kV-4/0	400	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG329		15 kV-4/0	300	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG33		15 kV-4/0	500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG331		15 kV-4/0	920	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG332		15 kV-4/0	1100	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG333		15 kV-500	1220	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG334		15 kV-1000	190	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG335		15 kV-1100	640	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG336		15 kV-1100	490	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG337		15 kV-1100	380	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG338		15 kV-#2	450	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG339		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG34		15 kV-#2	320	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG340		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG341		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG342		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG343		15 kV-1100	100	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG344		15 kV-#2	630	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG345		15 kV-4/0	560	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG346		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG347		15 kV-4/0	880	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG348		15 kV-4/0	760	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG349		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG35		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG351		15 kV-4/0	1220	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG352		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG354		15 kV-#2	560	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG358		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG359		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG36		15 kV-4/0	3820	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG360		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG361		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG362		15 kV-#2	250	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG363		15 kV-#2	960	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG364		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG365		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG366		15 kV-#2	810	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG367		15 kV-#2	610	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG368		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG369		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG37		15 kV-4/0	4430	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG370		15 kV-#2	510	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG371		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG372		15 kV-#2	1340	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG374		15 kV-#2	180	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG375		15 kV-1100	650	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG376		15 kV-1100	870	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG377		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG378		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG379		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG38		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG380		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG381		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG382		#2 OH	770	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG383		#2 OH	570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG384		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG385		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG386		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG387		15 kV-4/0	1500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG388		15 kV-1000	90	0.0223	0.0370	(+)	0.02600	20.0
				0.1470	0.0400	(0)		
UG389		15 kV-#2	180	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG39		15 kV-4/0	300	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG390		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG391		15 kV-4/0	1190	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG392		15 kV-4/0	610	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG393		15 kV-4/0	300	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG394		15 kV-4/0	860	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG395		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG398		15 kV-4/0	700	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG399		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG4		15 kV-500	10	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG40		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG400		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG401		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG402		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG403		15 kV-4/0	740	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG404		15 kV-#2	1010	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG405		15 kV-4/0	660	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG406		15 kV-4/0	740	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG407		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG409		15 kV-4/0	580	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG41		15 kV-#2	2000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG410		15 kV-4/0	940	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG411		15 kV-#2	2300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG412		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG413		15 kV-4/0	930	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG414		15 kV-4/0	930	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG415		15 kV-4/0	870	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG417		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG418		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG419		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG42		15 kV-#2	2240	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG420		15 kV-4/0	370	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG421		15 kV-#2	480	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG422		15 kV-4/0	770	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG423		15 kV-#2	50	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG424		15 kV-4/0	700	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG425		15 kV-#2	2300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG426		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG427		15 kV-#2	1600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG428		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG429		15 kV-4/0	1400	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG43		15 kV-1100	360	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG430		15 kV-4/0	1100	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG431		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG432		15 kV-750	1400	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG433		15 kV-1100	760	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG434		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG435		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG436		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG437		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG438		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG439		15 kV-4/0	900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG44		15 kV-4/0	110	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG440		15 kV-#2	3600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG441		15 kV-4/0	1900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG442		15 kV-#2	2210	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG443		15 kV-#2	2260	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG444		15 kV-#2	410	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG445		15 kV-#2	380	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG446		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG447		15 kV-#2	1960	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG448		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG449		15 kV-#2	2400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG45		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG450		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG451		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG452		15 kV-#2	530	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG453		15 kV-#2	2000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG454		15 kV-#2	1400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG455		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG456		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG457		15 kV-#2	2850	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG458		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG459		15 kV-#2	560	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG46		15 kV-#2	150	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG460		15 kV-#2	2150	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG461		15 kV-#2	1700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG462		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG463		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG464		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG465		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG466		15 kV-#2	2230	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG467		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG468		15 kV-#2	1800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG469		15 kV-#2	1660	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG47		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG470		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG471		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG472		15 kV-#2	720	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG473		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG474		15 kV-#2	3720	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG475		15 kV-#2	2230	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG476		15 kV-#2	4200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG477		15 kV-4/0	1720	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG478		15 kV-4/0	2100	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG479		15 kV-4/0	1310	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG48		15 kV-#2	1900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG480		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG481		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG482		15 kV-4/0	730	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG483		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG484		15 kV-4/0	1110	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG485		15 kV-4/0	1340	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG486		15 kV-#2	1610	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG487		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG488		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG489		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG49		15 kV-1100	160	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG490		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG491		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG492		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG493		#2 OH	2260	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG494		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG495		15 kV-#2	2100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG496		#2 OH	1900	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG497		#2 OH	1290	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG498		#2 OH	1200	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG499		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG5		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG50		15 kV-1100	480	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG500		#2 OH	1140	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG501		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG502		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG503		15 kV-4/0	960	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG504		15 kV-#2	1700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG505		#2 OH	2360	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG506		#2 OH	3570	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG507		#2 OH	1940	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG508		#2 OH	1750	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG509		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG51		15 kV-#2	380	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG510		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG511		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG512		15 kV-4/0	3380	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG513		15 kV-#2	2300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG514		#2 OH	2350	0.2618	0.1378	(+)		20.0
				0.3953	0.4524	(0)		
UG515		15 kV-#2	1900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG516		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG517		15 kV-#2	1040	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG518		15 kV-#2	690	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG519		15 kV-#2	1800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG52		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG520		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG521		15 kV-4/0	1090	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG522		15 kV-4/0	450	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG523		15 kV-#2	1140	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG526		15 kV-#2	2740	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG527		15 kV-4/0	570	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG528		15 kV-#2	1860	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG529		15 kV-#2	1290	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG53		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG530		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG531		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG532		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG533		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG535		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG536		15 kV-4/0	690	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG537		15 kV-4/0	740	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG538		15 kV-#2	2400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG54		15 kV-#2	510	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG540		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG541		15 kV-4/0	880	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG542		15 kV-4/0	600	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG543		15 kV-#2	1850	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG544		15 kV-#2	1790	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG546		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG547		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG548		15 kV-4/0	420	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG549		15 kV-4/0	1160	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG55		15 kV-#2	350	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG550		15 kV-#2	1260	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG553		15 kV-#2	830	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG554		15 kV-#2	1270	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG555		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG556		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG557		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG558		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG559		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG56		15 kV-500	170	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG560		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG561		15 kV-#2	1290	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG562		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG563		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG564		15 kV-#2	2110	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG565		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG566		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG567		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG568		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG569		15 kV-#2	850	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG57		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG570		15 kV-#2	615	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG571		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG572		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG573		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG574		15 kV-#2	2100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG575		15 kV-#2	1670	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG576		15 kV-#2	2970	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG577		15 kV-750	120	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG578		15 kV-750	410	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG579		15 kV-#2	250	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG58		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG580		15 kV-4/0	490	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG581		15 kV-4/0	490	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG583		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG584		15 kV-4/0	10	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG585		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG586		15 kV-500	850	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG588		15 kV-500	510	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG589		15 kV-750	340	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG59		15 kV-#2	440	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG590		15 kV-750	470	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG591		15 kV-750	1020	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG592		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG593		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG594		15 kV-4/0	700	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG595		15 kV-750	690	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG596		15 kV-750	530	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG597		15 kV-1100	1000	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG598		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG599		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG6		15 kV-500	1190	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG60		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG600		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG601		15 kV-4/0	500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG602		15 kV-4/0	700	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG603		15 kV-4/0	425	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG604		15 kV-#2	1260	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG606		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG607		15 kV-4/0	560	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG609		15 kV-4/0	750	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG61		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG612		15 kV-#2	1640	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG613		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG614		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG615		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG616		15 kV-500	560	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG618		15 kV-500	960	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG619		15 kV-500	640	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG62		15 kV-#2	1300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG620		15 kV-500	900	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG621		15 kV-4/0	850	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG622		15 kV-4/0	810	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG623		15 kV-4/0	650	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG624		15 kV-4/0	340	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG625		15 kV-4/0	1070	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG626		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG627		15 kV-4/0	670	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG628		15 kV-4/0	1220	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG63		15 kV-#2	1080	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG630		15 kV-4/0	1230	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG631		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG632		15 kV-4/0	200	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG633		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG634		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG635		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG636		15 kV-4/0	920	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG637		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG638		15 kV-4/0	1160	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG64		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG640		15 kV-#2	880	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG641		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG642		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG643		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG644		15 kV-500	170	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG645		15 kV-500	1370	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG646		15 kV-500	670	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG647		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG648		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG649		15 kV-#2	440	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG65		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG650		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG651		15 kV-#2	510	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG652		15 kV-#2	660	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG653		15 kV-#2	610	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG654		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG655		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG656		15 kV-#2	720	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG657		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG658		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG659		15 kV-#2	660	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG66		15 kV-#2	520	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG660		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG661		15 kV-#2	1220	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG662		15 kV-1100	970	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG663		15 kV-1100	450	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG664		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG665		15 kV-1100	1000	0.0223	0.0388	(+)	0.02782	20.0
				0.1117	0.0300	(0)		
UG666		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG667		15 kV-4/0	470	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG668		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG669		15 kV-4/0	450	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG67		15 kV-#2	520	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG670		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG671		15 kV-4/0	1070	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG672		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG674		15 kV-4/0	700	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG675		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG676		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG677		15 kV-4/0	500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG678		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG68		15 kV-#2	950	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG680		15 kV-4/0	1610	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG681		15 kV-#2	1300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG682		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG683		15 kV-4/0	930	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG684		15 kV-4/0	320	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG685		15 kV-750	370	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG686		15 kV-750	2030	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG687		15 kV-#2	720	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG688		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
				0	0.0000	(+)		25.0
				0	0.0000	(0)		
UG69		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG690		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG691		15 kV-#2	1100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG692		15 kV-750	580	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG693		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG695		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG696		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG697		15 kV-750	540	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG698		15 kV-750	1310	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG699		15 kV-750	1750	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG7		15 kV-#2	410	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG700		15 kV-#2	300	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG701		15 kV-500	400	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG702		15 kV-500	270	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG703		15 kV-#2	640	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG704		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG705		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG706		15 kV-750	1450	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG707		15 kV-4/0	1000	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG708		15 kV-#2	570	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG709		15 kV-750	1670	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG71		15 kV-500	170	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG710		15 kV-750	490	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG711		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG712		15 kV-#2	1830	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG714		15 kV-750	1220	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG715		15 kV-750	560	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG716		15 kV-750	310	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG717		15 kV-750	760	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG718		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG719		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG72		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG720		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG721		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG722		15 kV-500	950	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG723		15 kV-500	1350	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG724		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG725		15 kV-#2	1200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG726		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG727		15 kV-500	510	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG728		15 kV-500	910	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG729		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG73		15 kV-#2	1280	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG730		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG731		15 kV-4/0	1350	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG732		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG733		15 kV-4/0	1090	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG734		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG736		15 kV-4/0	900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG737		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG738		15 kV-4/0	1010	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG739		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG74		15 kV-#2	760	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG740		15 kV-4/0	900	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG741		15 kV-4/0	1020	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG742		15 kV-4/0	470	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG743		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG744		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG745		15 kV-4/0	500	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG746		15 kV-4/0	510	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG747		15 kV-#2	580	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG748		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG749		15 kV-4/0	650	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG75		15 kV-#2	250	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG750		15 kV-4/0	1350	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG752		15 kV-#2	1380	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG753		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG754		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG755		15 kV-500	830	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG756		15 kV-500	1340	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG757		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG758		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG759		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG76		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG760		15 kV-500	1200	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG761		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG762		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG763		15 kV-500	580	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG764		15 kV-500	1800	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG765		15 kV-500	470	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG766		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG767		15 kV-500	1370	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG768		15 kV-#2	1580	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG769		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG77		15 kV-#2	1020	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG770		15 kV-#2	420	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG771		15 kV-500	10	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG772		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG773		15 kV-500	550	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG775		15 kV-#2	200	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG776		15 kV-#2	900	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG777		15 kV-500	1000	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG779		15 kV-#2	1230	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG78		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG780		15 kV-#2	1230	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG781		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG782		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG783		15 kV-750	1340	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG784		15 kV-750	840	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG785		15 kV-4/0	740	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG787		15 kV-4/0	1780	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG788		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG789		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG79		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG790		15 kV-4/0	1570	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG791		15 kV-4/0	920	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG792		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG793		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG794		15 kV-#2	800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG795		15 kV-#2	1740	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG796		15 kV-#2	911	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG797		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG798		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG799		15 kV-4/0	720	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG8		15 kV-500	500	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG80		15 kV-4/0	1570	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG800		15 kV-4/0	1250	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG801		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG802		15 kV-#2	1120	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG803		15 kV-#2	1450	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG804		15 kV-#2	1530	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG805		15 kV-#2	1480	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG806		15 kV-#2	730	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG807		15 kV-#2	570	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG808		15 kV-#2	640	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG809		15 kV-#2	1540	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG81		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG810		15 kV-#2	700	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG811		15 kV-#2	250	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG812		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG813		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG814		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG815		15 kV-#2	600	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG816		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG817		15 kV-#2	1000	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG818		15 kV-#2	410	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Feeders/Cables Data

Resistance Displayed in Editor is at 25.0 °C.

Branch Name	#C	Device Type	Length Feet	R Ohms/K	X Ohms/K		1/2 Cap mMhos/K	Temp °C
UG819		15 kV-#2	10	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG82		15 kV-#2	340	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG820		15 kV-4/0	2230	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG821		15 kV-#2	500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG83		15 kV-#2	640	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG84		15 kV-4/0	660	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG85		15 kV-#2	290	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG86		15 kV-4/0	840	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG87		15 kV-#2	400	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG88		15 kV-4/0	800	0.1059	0.0463	(+)	0.01517	20.0
				0.3156	0.0950	(0)		
UG89		15 kV-#2	1080	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG9		15 kV-500	1620	0.0461	0.0440	(+)	0.01634	20.0
				0.1461	0.0370	(0)		
UG90		15 kV-#2	1800	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG91		15 kV-#2	1500	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG92		15 kV-#2	950	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG93		15 kV-750	160	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG94		15 kV-#2	100	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG95		15 kV-#2	225	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG97		15 kV-750	150	0.0295	0.0409	(+)	0.02541	20.0
				0.1902	0.0600	(0)		
UG98		15 kV-#2	1110	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		
UG99		15 kV-#2	650	0.3441	0.0570	(+)	0.00841	20.0
				0.6558	0.2200	(0)		

Control Devices Data

Branch Name	Cd	Device Type	R(Ohms)	X(Ohms)
S8	SW	1000	0.00010	0.00007
F1	FU	FUSE	0.00010	0.00080
F10	FU	FUSE	0.00010	0.00080
F100	FU	FUSE	0.00010	0.00080
F101	FU	FUSE	0.00010	0.00080
F102	FU	FUSE	0.00010	0.00080
F103	FU	FUSE	0.00010	0.00080
F104	FU	FUSE	0.00010	0.00080
F105	FU	FUSE	0.00010	0.00080
F106	FU	FUSE	0.00010	0.00080
F107	FU	FUSE	0.00010	0.00080
F108	FU	FUSE	0.00010	0.00080
F109	FU	FUSE	0.00010	0.00080
F11	FU	FUSE	0.00010	0.00080
F110	FU	FUSE	0.00010	0.00080
F111	FU	FUSE	0.00010	0.00080
F112	FU	FUSE	0.00010	0.00080
F113	FU	FUSE	0.00010	0.00080
F114	FU	FUSE	0.00010	0.00080
F115	FU	FUSE	0.00010	0.00080
F116	FU	FUSE	0.00010	0.00080
F117	FU	FUSE	0.00010	0.00080
F118	FU	FUSE	0.00010	0.00080
F119	FU	FUSE	0.00010	0.00080
F120	FU	FUSE	0.00010	0.00080
F121	FU	FUSE	0.00010	0.00080
F122	FU	FUSE	0.00010	0.00080
F123	FU	FUSE	0.00010	0.00080
F13	FU	FUSE	0.00010	0.00080
F14	FU	FUSE	0.00010	0.00080
F15	FU	FUSE	0.00010	0.00080
F16	FU	FUSE	0.00010	0.00080
F17	FU	FUSE	0.00010	0.00080
F18	FU	FUSE	0.00010	0.00080
F19	FU	FUSE	0.00010	0.00080
F2	FU	FUSE	0.00010	0.00080
F20	FU	FUSE	0.00010	0.00080
F21	FU	FUSE	0.00010	0.00080
F22	FU	FUSE	0.00010	0.00080
F23	FU	FUSE	0.00010	0.00080
F24	FU	FUSE	0.00010	0.00080
F25	FU	FUSE	0.00010	0.00080
F26	FU	FUSE	0.00010	0.00080
F27	FU	FUSE	0.00010	0.00080
F28	FU	FUSE	0.00010	0.00080
F29	FU	FUSE	0.00010	0.00080
F3	FU	FUSE	0.00010	0.00080
F30	FU	FUSE	0.00010	0.00080

Control Devices Data

Branch Name	Cd	Device Type	R(Ohms)	X(Ohms)
F31	FU	FUSE	0.00010	0.00080
F32	FU	FUSE	0.00010	0.00080
F33	FU	FUSE	0.00010	0.00080
F34	FU	FUSE	0.00010	0.00080
F35	FU	FUSE	0.00010	0.00080
F36	FU	FUSE	0.00010	0.00080
F37	FU	FUSE	0.00010	0.00080
F38	FU	FUSE	0.00010	0.00080
F39	FU	FUSE	0.00010	0.00080
F4	FU	FUSE	0.00010	0.00080
F40	FU	FUSE	0.00010	0.00080
F41	FU	FUSE	0.00010	0.00080
F42	FU	FUSE	0.00010	0.00080
F43	FU	FUSE	0.00010	0.00080
F44	FU	FUSE	0.00010	0.00080
F45	FU	FUSE	0.00010	0.00080
F46	FU	FUSE	0.00010	0.00080
F47	FU	FUSE	0.00010	0.00080
F48	FU	FUSE	0.00010	0.00080
F49	FU	FUSE	0.00010	0.00080
F5	FU	FUSE	0.00010	0.00080
F50	FU	FUSE	0.00010	0.00080
F51	FU	FUSE	0.00010	0.00080
F52	FU	FUSE	0.00010	0.00080
F53	FU	FUSE	0.00010	0.00080
F54	FU	FUSE	0.00010	0.00080
F55	FU	FUSE	0.00010	0.00080
F56	FU	FUSE	0.00010	0.00080
F57	FU	FUSE	0.00010	0.00080
F58	FU	FUSE	0.00010	0.00080
F59	FU	FUSE	0.00010	0.00080
F6	FU	FUSE	0.00010	0.00080
F60	FU	FUSE	0.00010	0.00080
F61	FU	FUSE	0.00010	0.00080
F62	FU	FUSE	0.00010	0.00080
F63	FU	FUSE	0.00010	0.00080
F64	FU	FUSE	0.00010	0.00080
F65	FU	FUSE	0.00010	0.00080
F66	FU	FUSE	0.00010	0.00080
F67	FU	FUSE	0.00010	0.00080
F68	FU	FUSE	0.00010	0.00080
F69	FU	FUSE	0.00010	0.00080
F7	FU	FUSE	0.00010	0.00080
F70	FU	FUSE	0.00010	0.00080
F71	FU	FUSE	0.00010	0.00080
F72	FU	FUSE	0.00010	0.00080
F73	FU	FUSE	0.00010	0.00080
F74	FU	FUSE	0.00010	0.00080

Control Devices Data

Branch Name	Cd	Device Type	R(Ohms)	X(Ohms)
F75	FU	FUSE	0.00010	0.00080
F76	FU	FUSE	0.00010	0.00080
F77	FU	FUSE	0.00010	0.00080
F78	FU	FUSE	0.00010	0.00080
F79	FU	FUSE	0.00010	0.00080
F8	FU	FUSE	0.00010	0.00080
F80	FU	FUSE	0.00010	0.00080
F81	FU	FUSE	0.00010	0.00080
F82	FU	FUSE	0.00010	0.00080
F83	FU	FUSE	0.00010	0.00080
F84	FU	FUSE	0.00010	0.00080
F85	FU	FUSE	0.00010	0.00080
F86	FU	FUSE	0.00010	0.00080
F87	FU	FUSE	0.00010	0.00080
F88	FU	FUSE	0.00010	0.00080
F89	FU	FUSE	0.00010	0.00080
F9	FU	FUSE	0.00010	0.00080
F90	FU	FUSE	0.00010	0.00080
F91	FU	FUSE	0.00010	0.00080
F92	FU	FUSE	0.00010	0.00080
F93	FU	FUSE	0.00010	0.00080
F94	FU	FUSE	0.00010	0.00080
F95	FU	FUSE	0.00010	0.00080
F96	FU	FUSE	0.00010	0.00080
F97	FU	FUSE	0.00010	0.00080
F98	FU	FUSE	0.00010	0.00080
F99	FU	FUSE	0.00010	0.00080

Exhibit C

46 kV Load Flow Study

Heber Light & Power
46 kV Load Flow Study

June 2018

**Intermountain Consumer
Professional Engineers, Inc.
1145 East South Union Avenue
Midvale, Utah 84047
(801) 255-1111**

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SYSTEM STUDY

System Study Overview

This electrical system study report addresses study methods and results of load flow analysis of the Heber Light & Power 46 kV System. The study scope includes the Heber Light & Power 46 kV sub-transmission system. The 12.47 kV distribution portion of the system is not covered in this report, but will be studied as part of a separate report. Substations include Midway Substation, Provo River Substation, Heber Substation, Cloyes Substation, Jailhouse Substation and College Substation. Generators are located at Snake Creek Hydro, Lake Creek Hydro, Jordanelle Hydro and the Heber Plant.

The primary goal of the load flow was to study system loading including during N-1 outage conditions to help the Company to plan for future growth requirements including substation upgrades and 46 kV line upgrades. Recommendations for system improvements have been provided.

System Models and Assumptions

To perform the load flow analysis a system computer model was developed. Model development is discussed in the System Modeling section of this report. System model development and analysis were performed on Paladin DesignBase 4.0 software.

System modeling data was developed from Heber Light & Power provided system data. The model is based on the assumption that provided transformer data, generator data, system maps and data (conductor sizes, system configurations, line lengths, etc.) are reflective of actual field conditions.

Summary

The system load flow provides insight on substation transformer loading, line loading, and system voltage drop. The study includes analyzing N-1 outage conditions. An N-1 outage condition is the loss of a major system component such as a section of 46 kV line. Results and recommendations are discussed in the System Load Flow Analysis and Results section of this report.

SYSTEM LOAD FLOW ANALYSIS AND RESULTS

System load flow studies were performed for years 2018 and 2022. Overall system load projections are based on load projections done in 2018 by Utility Financial Solutions LLC. The load flow studies were utilized to assess line and transformer loading conditions and system voltage conditions. Tables shown below contain projected Heber Light & Power system load and projected peak circuit loads for years that were analyzed. The circuit and transformer load levels shown below are based on current circuit configuration.

Heber Light & Power– Projected System Peak Load		
Year	Heber Light & Power Load	
	MW	MVA
2018	44.63 MW	47.7 MVA
2022	48.86 MW	51.2 MVA

Substation Transformer	Recloser	2018		2022	
		Amps	kVA	Amps	kVA
Midway Transformer 10/12.5/14 MVA 46 kV – 12.47 kV	MW101	87	1,885	91	1,966
	MW102	215	4,644	219	4,726
	MW104	38	827	42	913
	Sub Total	**341**	**7,355**	**352**	**7,605**
Provo River 5 MVA (with fans) 46 kV – 12.47 kV	PR201	233	5,036	237	5,117
	PR202	26	556	30	638
	Sub Total	**259**	**5,591**	**266**	**5,755**
Heber T1 12/16/20 MVA 46 kV – 12.47 kV	HB302	352	7,613	383	8,261
	HB303	114	2,462	137	2,957
	Sub Total	**466**	**10,075**	**519**	**11,218**
Heber T2 12/16/20 MVA 46 kV – 12.47 kV	HB304	178	3,848	201	4,343
	HB305	79	1,710	83	1,792
	Sub Total	**257**	**5,558**	**284**	**6,135**
Cloyes 7.5/9.375 MVA 46 kV – 4.16 kV	CL401	34	737	38	829
	CL402	108	2,338	112	2,422
	CL403	-	-	-	-
	Sub Total	**142**	**3,075**	**151**	**3,251**
Jailhouse T1 10/12.5/14 MVA 46 kV – 12.47 kV	JH501	172	3,706	175	3,787
	JH503	44	954	48	1,036
	JH505	6	134	30	649
	Sub Total	**216**	**4,659**	**223**	**4,823**
Jailhouse T2 12/16/20 MVA 46 kV – 12.47 kV	JH502	382	8,252	405	8,752
	JH504	145	3,136	170	3,663
	JH505	6	124	30	649
	Sub Total	**527**	**11,389**	**575**	**12,415**
College (2) 12/16/120 MVA 46 kV – 12.47 kV	CO Circuits	-	-	-	-
	-	-	-	-	-
	Sub Total	-	-	-	-
Total	**Amps**	**2,209**	-	**2,371**	-
	kVA	-	**47,702**	-	**51,202**

The following table shows approximate transformer loading. The College Substation transformers are not included in the Total City numbers due to College Substation currently being out of service. When College Substation will be put back into service is unknown at this time. Loading on most transformers is at an acceptable level. It is not anticipated that new substations will be required over the next five years.

The Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. The Provo River transformer will need to be upgraded to a larger transformer. Until this can happen, Heber Light & Power may be able to decrease the load on the Provo River transformer by moving load to Midway circuits. This would only be a temporary solution.

Substation Transformer	**2018**		**2022**	
	%Base	**%Total**	**%Base**	**%Total**
Midway Transformer 10/12.5/14 MVA 46 kV – 12.47 kV	74%	53%	76%	54%
Provo River 5 MVA (with fans) 46 kV – 12.47 kV	112%	112%	115%	115%
Heber T1 12/16/20 MVA 46 kV – 12.47 kV	84%	50%	93%	56%
Heber T2 12/16/20 MVA 46 kV – 12.47 kV	46%	28%	51%	31%
Cloyes 7.5/9.375 MVA 46 kV – 4.16 kV	41%	33%	43%	35%
Jailhouse T1 10/12.5/14 MVA 46 kV – 12.47 kV	47%	33%	48%	34%
Jailhouse T2 12/16/20 MVA 46 kV – 12.47 kV	95%	57%	103%	62%
College (2) 12/16/120 MVA 46 kV – 12.47 kV	-	-	-	-
Total City (Excluding College which is currently out of service)	70%	47%	75%	50%

Proposed Improvements

Proposed system improvements are summarized in the following tables. A brief description and explanation of each improvement are given. A system map showing proposed improvements is in the appendix. For a more detailed explanation of load flow results see the Load Flow – Outage Cases section of the report.

Proposed System Improvements	
Proposed Improvement	**Reason/Explanation**
1. Rebuild 46 kV lines with 795 ACSR or larger conductor to improve capacity.	Outages of the North 46 kV line near Midway Substation require substations normally fed from the North 46 kV line to be fed across a 46 kV tie line from the South 46 kV line. The South 46 kV line and the 46 kV tie lines are 4/0 ACSR. The 4/0 ACSR line becomes overloaded during peak load in these cases. For 2018 this is only the case if generation is also offline. By 2022 the line will be overloaded during peak load any time the North 46 kV line near Midway substation is out of service. The following line sections are proposed to be rebuilt: 1. South 46 kV line from Midway Substation to the Heber Plant 46 kV tie line 2. Heber Plant 46 kV tie line 3. Heber Plant to College Substation (This portion has already been started) 4. Provo River 46 kV tie line The portion of the line work that has been started on the line to College Substation has 795 ACSR conductor. Heber Light & Power may want to install a larger conductor when rebuilding the South 46 kV and tie lines. Utility Financial Solutions, LLC created a Heber Light & Power load forecast in 2018 that showed approximately 70 MW of load by the year 2040. Installing a 795 ACSR line would not provide any future load growth beyond the 2040 load projection.
2. Rebuild PacifiCorp Interconnection to improve capacity and reliability.	The PacifiCorp Interconnection is limited by 477 ACSR conductor. By 2022 the 477 ACSR conductor will be overloaded during peak load any time Heber Light & Power generation is offline. Any time there is an outage by PacifiCorp the Heber Light & Power generation has to come offline because it is not large enough to carry the Heber Light & Power load. PacifiCorp must be able to serve Heber Light & Power's entire load after an outage since it takes time for Heber Light & Power Generation to be brought back into service. A detailed study of the PacifiCorp system that feeds Heber Light & Power should be performed by PacifiCorp. An outage of the PacifiCorp line that feeds Heber Light & Power will result in loss of power to the Heber Light & Power System. Heber Light & Power is fed from a single PacifiCorp 46 kV line out of Hales Substation. Heber Light & Power does not have enough generation to provide power on its own. A separate 46 kV line connecting Heber Light & Power to PacifiCorp's Silver Creek Substation would be required to ensure power was available during such an outage. Both PacifiCorp lines should connect to a ring bus at the new PacifiCorp Interconnection. It has been proposed to move the PacifiCorp Interconnection to a new substation location. The proposed location is shown on the system map in the appendix.

Proposed System Improvements	
Proposed Improvement	**Reason/Explanation**
3. Install a new 795 ACSR or larger 46 kV tie line between Jailhouse and College Substations.	For a loss of the South 46 kV line to the east of Cloyes Substation there is no way to restore power to the Jailhouse Substation. It is proposed to build a new 46 kV tie line between Jailhouse Substation and College Substation. This would create a loop so that these substations could be fed from the North 46 kV line or the South 46 kV line.
4a. Install a larger 12/16/20 MVA transformer at Provo River substation.	Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. It is proposed to replace the transformer with a larger 12/16/20 MVA transformer.
4b. Move load from the Provo River Substation to Midway Substation.	Until the transformer can be replaced, it is proposed that Heber Light & Power may be able to move some load to Midway circuits to help reduce the load on the Provo River transformer. This is only a temporary solution.

System Power Factor

Power factor for each Heber Light & Power circuit is shown below. Keeping a high power factor helps support voltage during system peak loading and during outage conditions. The need for power factor correction becomes more important as transformer and line loading levels increase. Improving power factor also reduces system losses. Power factor correction was not studied as part of this report. Any power factor correction necessary will be studied and discussed as part of a separate report studying the 12.47 kV distribution system.

Substation Transformer	Recloser	Power Factor
Midway Transformer	**MW101**	0.98
	MW102	0.97
	MW104	0.93
Provo River	**PR201**	0.98
	PR202	0.98
Heber T1	**HB302**	0.74
	HB303	0.95
Heber T2	**HB304**	0.99
	HB305	0.98
Cloyes	**CL401**	0.87
	CL402	0.95
	CL403	-
Jailhouse T1	**JH501**	0.98
	JH503	0.97
	JH505	Assumed 0.97
Jailhouse T2	**JH502**	0.96
	JH504	0.95
	JH505	Assumed 0.97
College	**CO Circuits**	**-**

Load Flow – Outage Cases

Loss of 46 kV line sections and loss of Heber Light & Power generation was considered. Load flows were ran with 46 kV line sections out of service and with Heber Light & Power generation offline. The table below lists the results and discusses proposed system improvements. Results are based on projected peak (summer) load levels. During winter load levels the outages would not have as great of an effect.

An outage of the PacifiCorp system that feeds Heber Light & Power will result in loss of power. There is only one connection to the PacifiCorp 46 kV system and Heber Light & Power does not have enough generation to provide power for the city on its own.

This study only focuses on the Heber Light & Power 46 kV system. The ability of PacifiCorp to be able to provide power to Heber Light & Power during peak loads or outage conditions was not studied. The load flow results for the 12.47 kV distribution portion of the system will be detailed in a separate report.

The Comments/Results column of the following tables lists ways to restore load, if possible, during a line or generation outage. It also discusses proposed solutions if the outage creates problems. This study does not address the ability to move load from circuit to circuit at the 12.47 kV level. This will be studied in a separate report.

2018 Base Case Line/Generation Out of Service	**Comments/Results**
No Outage	System operates without issues.
Loss of all Generation	The Pacificorp Interconnection is limited by 477 ACSR conductor. This is nearing capacity during peak load and loss of all generation. **Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. The transformer will need to be replaced. It is proposed to replace the transformer with a larger 12/16/20 MVA transformer.** **Until the transformer can be replaced, Heber Light & Power may be able to move some load to Midway circuits to help reduce the load on the Provo River transformer. This is only a temporary solution.**
Loss of the North 46 kV line near Midway Substation	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the North 46 kV line from the South 46 kV line. The system can operate with this outage. Voltage drop on the 46 kV system is more severe. Voltage regulation on the 12.47 kV side of transformers will have to tap higher to correct for this. The South 46 kV line is 4/0 ACSR. This line is nearing capacity up to where the tie line connects the North and South 46 kV lines.

2018 Base Case Line/Generation Out of Service	Comments/Results
Loss of the North 46 kV line near Midway Substation and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the North 46 kV line from the South 46 kV line. **Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV may not be able to correct the voltage completely.** **The South 46 kV line is 4/0 ACSR. This line is overloaded up to where the tie line connects the North and South 46 kV lines. The South 46 kV line would need to be rebuilt with a larger conductor to allow the system to run with these outages.** See notes above for the case of loss of all generation concerning the Provo River transformer.
Loss of the South 46 kV line near Midway Substation	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the South 46 kV line from the North 46 kV line. There are no issues running with this outage.
Loss of the South 46 kV line near Midway Substation and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the South 46 kV line from the North 46 kV line. System can be run with these outages. See notes above for the case of loss of all generation concerning the Provo River transformer.
Loss of the North 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line at Cloyes Substation that can be closed to feed Heber and College substations. **Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV may not be able to correct the voltage completely.** **The South 46 kV line is 4/0 ACSR. This line is overloaded up to Cloyes Substation. The South 46 kV line would need to be rebuilt with a larger conductor to allow the system to run with these outages.**
Loss of the South 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line at Cloyes Substation that can be closed to feed Cloyes and Jailhouse substations. There are no issues running with this outage.
Loss of the South 46 kV line to the east of Cloyes Substation	**There is no way to restore power to Jailhouse Substation. Consider adding a new 46 kV tie line between Jailhouse Substation and College Substation.**
Loss of the 46 kV line to College Substation	**A load flow for this case was not run due to College Substation currently being out of service. College Substation will come back into service in the future. There will be no way to restore power to College Substation for this outage. Consider adding a new 46 kV tie line between Jailhouse Substation and College Substation.**

2022 Line/Generation Out of Service	**Comments/Results**
No Outage	System operates without issues. Voltage drop on the 46 kV system is higher than in the 2018 case due to the higher loads. Voltage regulation on the 12.47 kV side of transformers will have to tap higher to correct for this.
Loss of all Generation	**The Pacificorp Interconnection is limited by 477 ACSR conductor. The 477 ACSR conductor is overloaded. The PacifiCorp Interconnection would need to be rebuilt with a larger ampacity to allow the system to run with loss of all generation.** **Provo River transformer is out of capacity according to nameplate rating during peak load when Snake Creek Hydro generation is off. Transformer fans have been added that are not reflected on the nameplate which increases the transformer capacity, but it is unknown by how much. The transformer will need to be replaced. It is proposed to replace the transformer with a larger 12/16/20 MVA transformer.** **Until the transformer can be replaced, Heber Light & Power may be able to move some load to Midway circuits to help reduce the load on the Provo River transformer. This is only a temporary solution.**
Loss of the North 46 kV line near Midway Substation	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the North 46 kV line from the South 46 kV line. **Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV may not be able to correct the voltage completely.** **The South 46 kV line is 4/0 ACSR. This line is overloaded up to where the tie line connects the North and South 46 kV lines. The South 46 kV line would need to be rebuilt with a larger conductor to allow the system to run with these outages.**
Loss of the North 46 kV line near Midway Substation and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the North 46 kV line from the South 46 kV line. **Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV may not be able to correct the voltage completely.** **The PacifiCorp Interconnection is limited by 477 ACSR conductor. The 477 ACSR conductor is overloaded. The PacifiCorp Interconnection would need to be rebuilt with a larger ampacity to allow the system to run with loss of all generation.** **The South 46 kV line is 4/0 ACSR. This line is overloaded up to where the tie line connects the North and South 46 kV lines. The South 46 kV line would need to be rebuilt with a larger conductor to allow the system to run with these outages.** See notes above for the case of loss of all generation concerning the Provo River transformer.

2022 Line/Generation Out of Service	Comments/Results
Loss of the South 46 kV line near Midway Substation	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the South 46 kV line from the North 46 kV line. There are no issues running with this outage.
Loss of the South 46 kV line near Midway Substation and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. Alternatively, there is a tie line at the Heber Plant that can be closed to feed the South 46 kV line from the North 46 kV line. **The PacifiCorp Interconnection is limited by 477 ACSR conductor. The 477 ACSR conductor is overloaded. The PacifiCorp Interconnection would need to be rebuilt with a larger ampacity to allow the system to run with loss of all generation.** See notes above for the case of loss of all generation concerning the Provo River transformer.
Loss of the North 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line at Cloyes Substation that can be closed to feed Heber and College substations. **Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV may not be able to correct the voltage completely.** **The South 46 kV line is 4/0 ACSR. This line is overloaded up to Cloyes Substation. The South 46 kV line would need to be rebuilt with a larger conductor to allow the system to run with these outages.**
Loss of the South 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line at Cloyes Substation that can be closed to feed Cloyes and Jailhouse substations. The system can be run with this outage. Voltage drop on the 46 kV system is very high. Voltage regulation at 12.47 kV will have to work harder to correct the voltage.
Loss of the South 46 kV line to the east of Cloyes Substation	**There is no way to restore power to Jailhouse Substation. Consider adding a new 46 kV tie line between Jailhouse Substation and College Substation.**
Loss of the 46 kV line to College Substation	**A load flow for this case was not run due to College Substation currently being out of service. College Substation will come back into service in the future. There will be no way to restore power to College Substation for this outage. Consider adding a new 46 kV tie line between Jailhouse Substation and College Substation.**

2022 After Improvements Line/Generation Out of Service	Comments/Results
No Outage	System operates without issues.
Loss of all Generation	There are no issues operating with this outage.
Loss of the North 46 kV line out of the new PacifiCorp Interconnection	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. There are no issues operating with this outage.
Loss of the North 46 kV line out of the new PacifiCorp Interconnection and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the North 46 kV line from the South 46 kV line. **This tie line would need to be rebuilt with larger conductor to keep it from becoming overloaded during this outage.**
Loss of the South 46 kV line out of the new PacifiCorp Interconnection	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. There are no issues running with this outage.
Loss of the South 46 kV line out of the new PacifiCorp Interconnection and loss of all generation	There is a tie line at the Provo River Substation that can be closed to feed the South 46 kV line from the North 46 kV line. There are no issues operating with this outage.
Loss of the North 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line between the Heber Substation and the rebuilt line to College Substation that can be closed to feed Heber Substation. There are no issues operating with this outage.
Loss of the South 46 kV line to the east of the tie line at the Heber Plant	There is a 46 kV tie line at Cloyes Substation that can be closed to feed Cloyes and Jailhouse substations. There are no issues operating with this outage.
Loss of the South 46 kV line to the east of Cloyes Substation	There is a new tie line between the Jailhouse and College Substations that can be closed to feed Jailhouse Substation. There are no issues operating with this outage.
Loss of the 46 kV line to College Substation	There is a new tie line between the Jailhouse and College Substations that can be closed to feed College Substation. **A load flow for this case was not run due to College Substation currently being out of service. College Substation will come back into service in the future.**

SYSTEM MODELING

To perform a comprehensive load flow a system computer model is necessary. System modeling data was developed from Heber Light & Power provided system data. The model is based on the assumption that provided transformer data, generator data, system maps and data (conductor sizes, system configurations, line lengths, etc.) are reflective of actual field conditions.

Substation transformer and generator data is shown below. Detailed model input data is shown in the appendix.

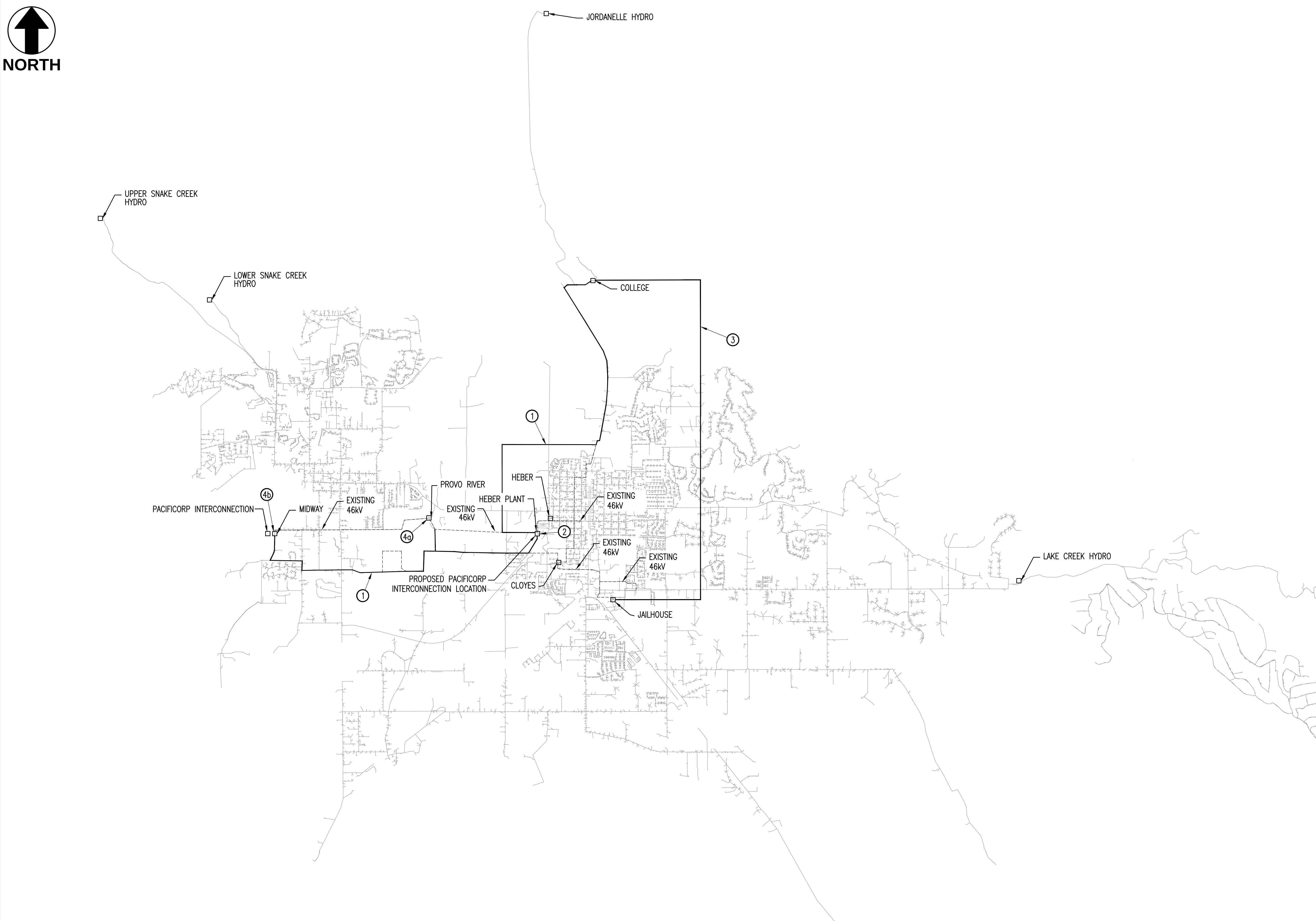
Heber Light & Power – Substation Transformer Data			
Transformer	**MVA Rating**	**Voltage Rating**	**%Z @ Nominal**
Midway	10/12.5/14 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.91%
Provo River	5 MVA (with fans)	46-12.47 kV Delta-Gnd-Y	Z1 = 6.55%
Heber T1	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.7%
Heber T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.05%
Cloyes	7.5/9.375 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.7%
Jailhouse T1	10/12.5/14 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 8.15%
Jailhouse T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 8.12%
College T1	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.67%
College T2	12/16/20 MVA	46-12.47 kV Delta-Gnd-Y	Z1 = 7.67%

Generator	**Generator Rating**	**System Connection**
Snake Creek Hydro	1.98 MW	To circuit PR201 at 12.47 kV
Lake Creek Hydro	1.5 MW	To Circuit JH502 at 12.47 kV
Jordanelle Hydro	13 MW	To Circuit HB302 at 12.47 kV
Heber Plant	13.756 MW	To 46 kV System

APPENDICES

1. System Map
2. Load Flow Studies
3. Model Input Data

APPENDIX 1 – SYSTEM MAP



KEYED NOTES:

(1) REBUILD THE FOLLOWING 46kV LINES WITH 795 ACSR OR LARGER CONDUCTOR TO IMPROVE CAPACITY:
1. SOUTH 46kV LINE FROM THE MIDWAY SUBSTATION TO THE HEBER PLANT 46kV TIE LINE.
2. HEBER PLANT 46kV TIE LINE.
3. HEBER PLANT TO COLLEGE SUBSTATION.
4. PROVO RIVER 46kV TIE LINE.

(2) REBUILD PACIFICORP INTERCONNECTION TO IMPROVE CAPACITY AND RELIABILITY. PROPOSED LOCATION OF NEW PACIFICORP INTERCONNECTION IS SHOWN.

(3) INSTALL A NEW 795 ACSR OR LARGER 46kV TIE LINE BETWEEN JAILHOUSE SUBSTATION AND COLLEGE SUBSTATION.

(4a) INSTALL A LARGER 12/16/20 MVA TRANSFORMER AT PROVO RIVER SUBSTATION.

(4b) LOAD MAY BE MOVED FROM THE PROVO RIVER SUBSTATION TO THE MIDWAY SUBSTATION TO TEMPORARILY REDUCE THE LOADING ON THE PROVO RIVER TRANSFORMER. THIS WOULD ONLY BE A TEMPORARY FIX. THE TRANSFORMER WOULD STILL NEED TO BE REPLACED.

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CONFIDENTIAL

No.	Description	By	Date	App.
A	PROPOSED IMPROVEMENTS	RF	05/18/18	CBM

REVISIONS

Title: HEBER LIGHT & POWER
ELECTRICAL
46kV SYSTEM STUDY
PROPOSED IMPROVEMENTS

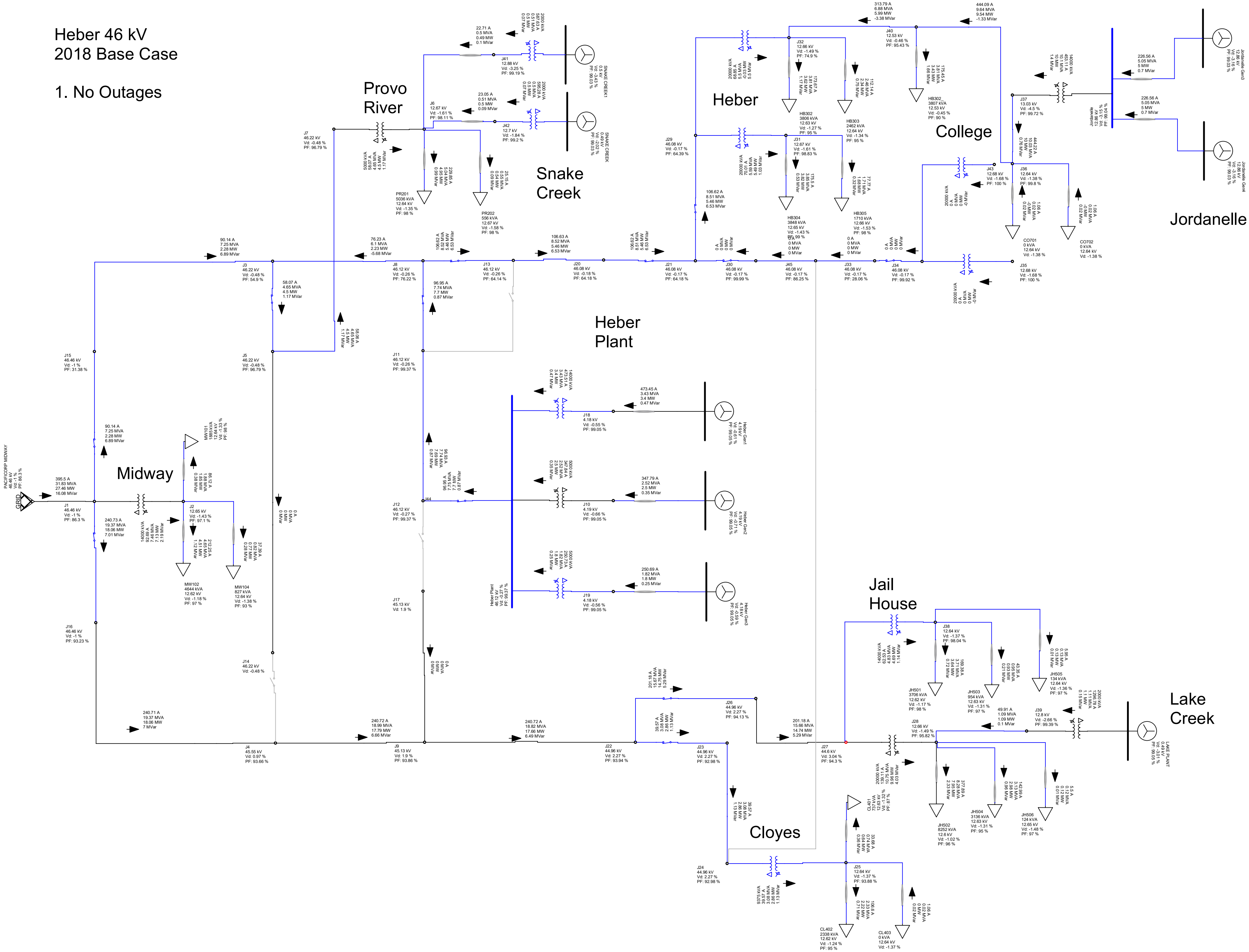
Dwn. RF	Date 05/18/18	Engr. MTF	Date 05/18/18	Drawing No.	Rev.
Chk. MTF	Date 05/18/18	App. CBM	Date –	E100	A
Proj. No: 034-031	Scale NONE				

6/11/18 rferderber
034-031_E100.DWG

APPENDIX 2 – LOAD FLOW STUDIES

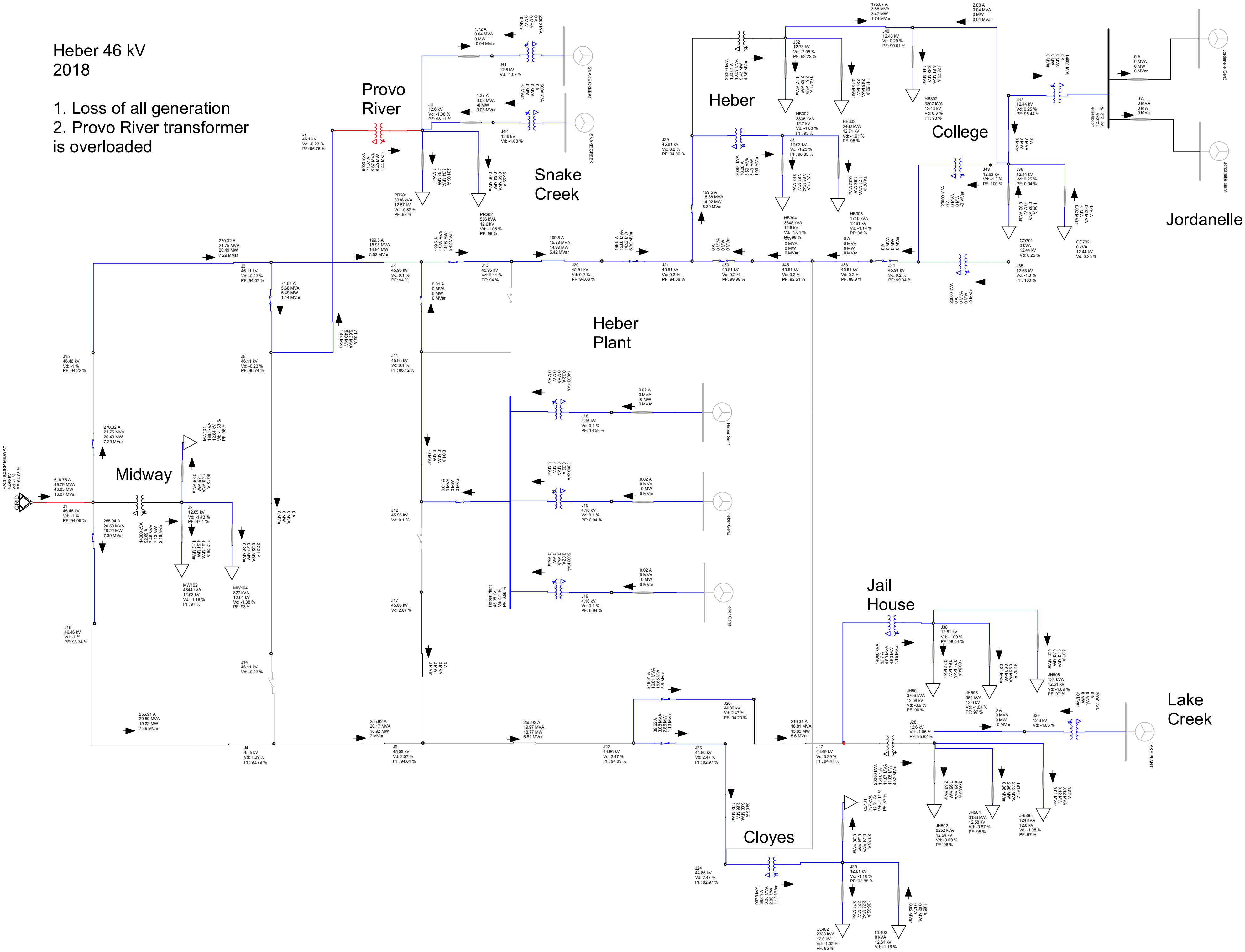
Heber 46 kV
2018 Base Case

1. No Outages



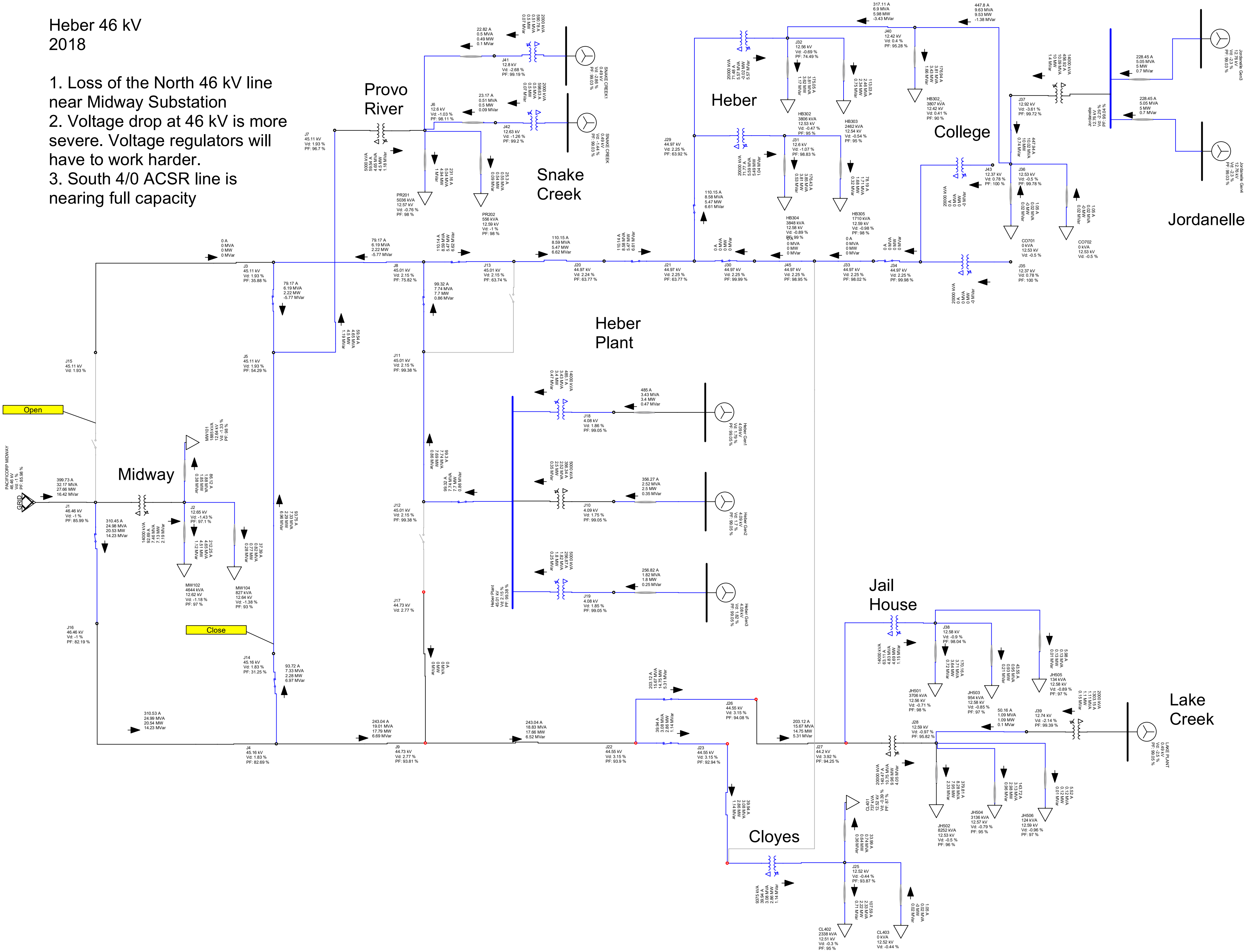
Heber 46 kV
2018

1. Loss of all generation
2. Provo River transformer is overloaded



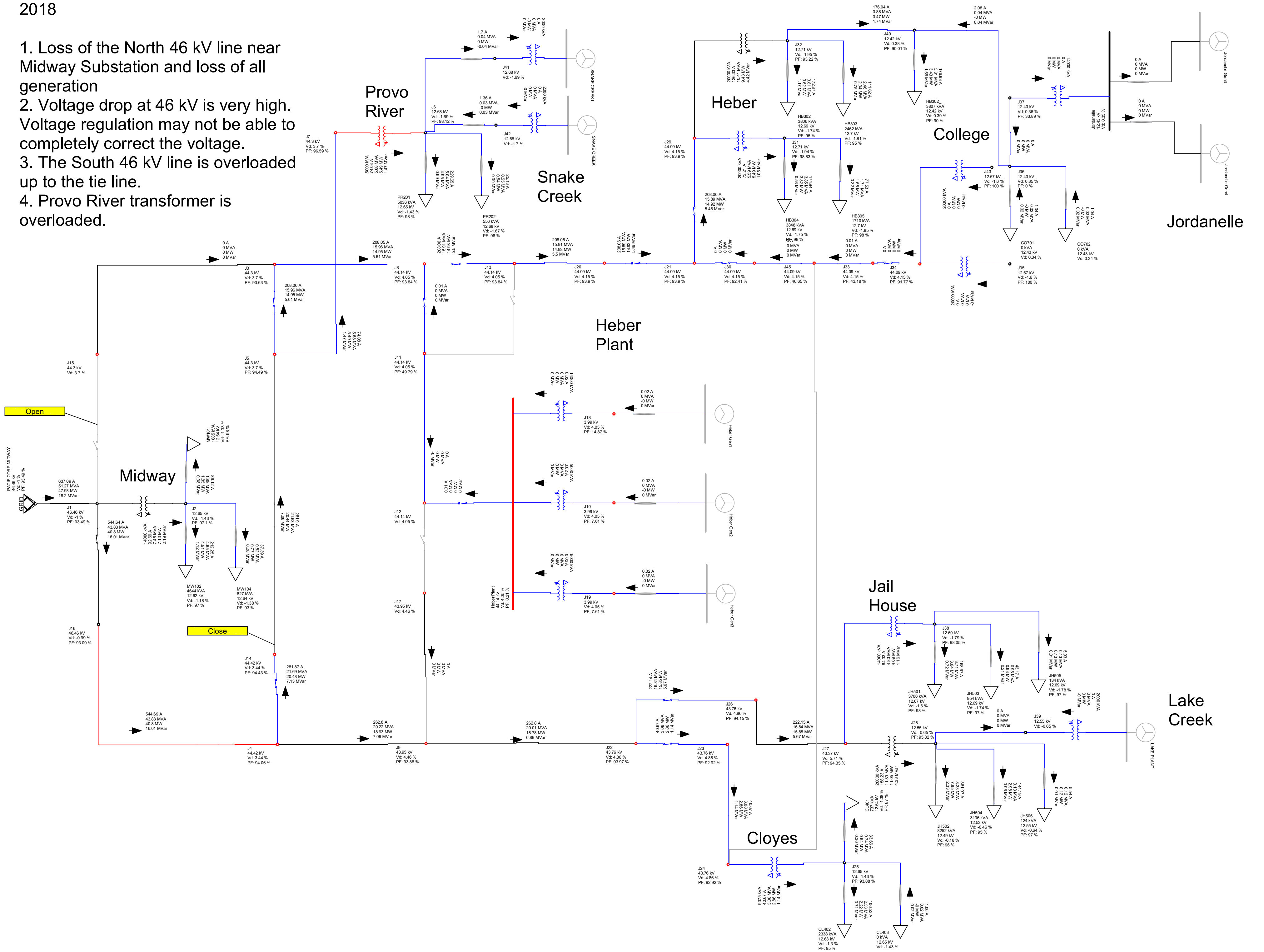
Heber 46 kV
2018

1. Loss of the North 46 kV line near Midway Substation
2. Voltage drop at 46 kV is more severe. Voltage regulators will have to work harder.
3. South 4/0 ACSR line is nearing full capacity



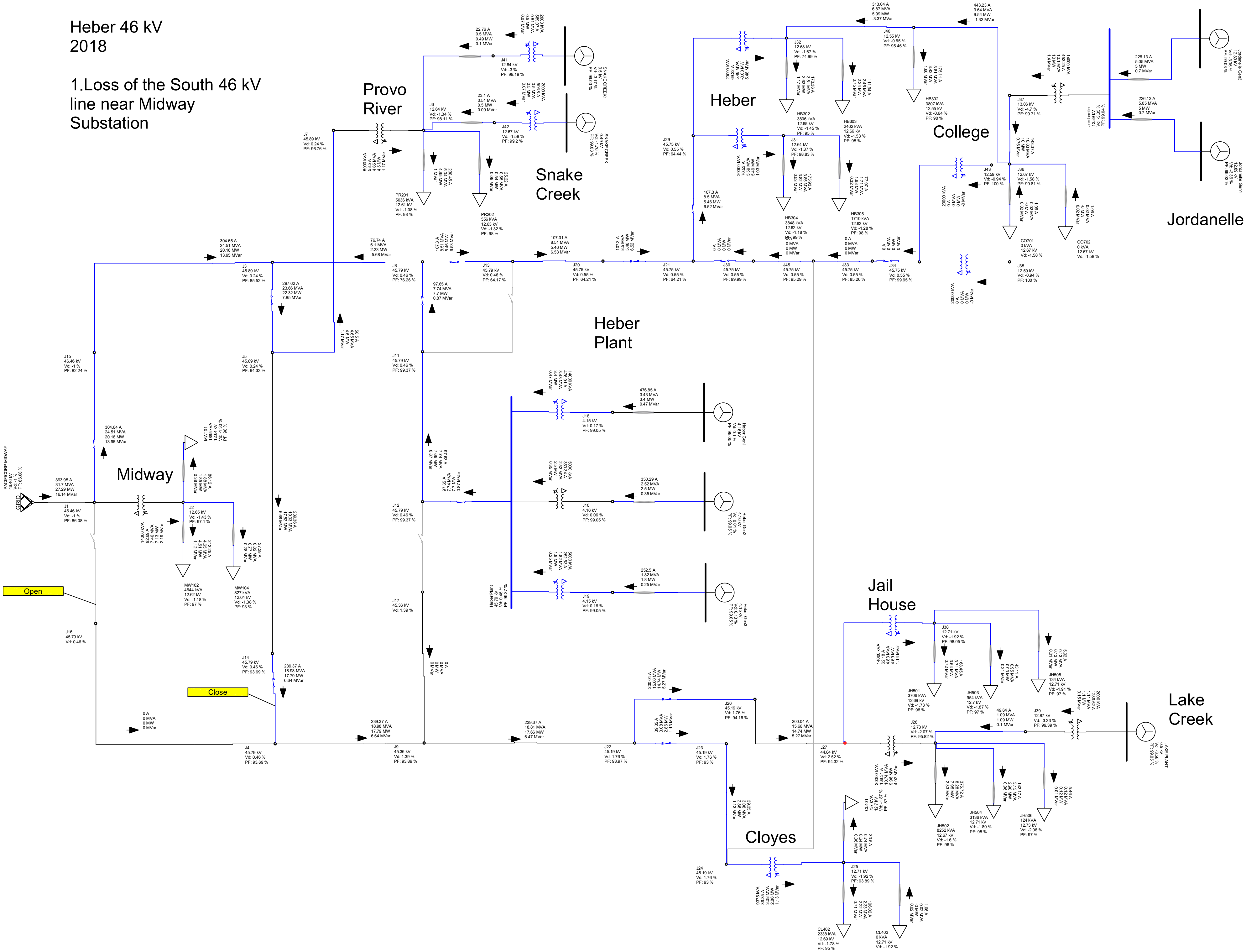
Heber 46 kV
2018

1. Loss of the North 46 kV line near Midway Substation and loss of all generation
2. Voltage drop at 46 kV is very high. Voltage regulation may not be able to completely correct the voltage.
3. The South 46 kV line is overloaded up to the tie line.
4. Provo River transformer is overloaded.



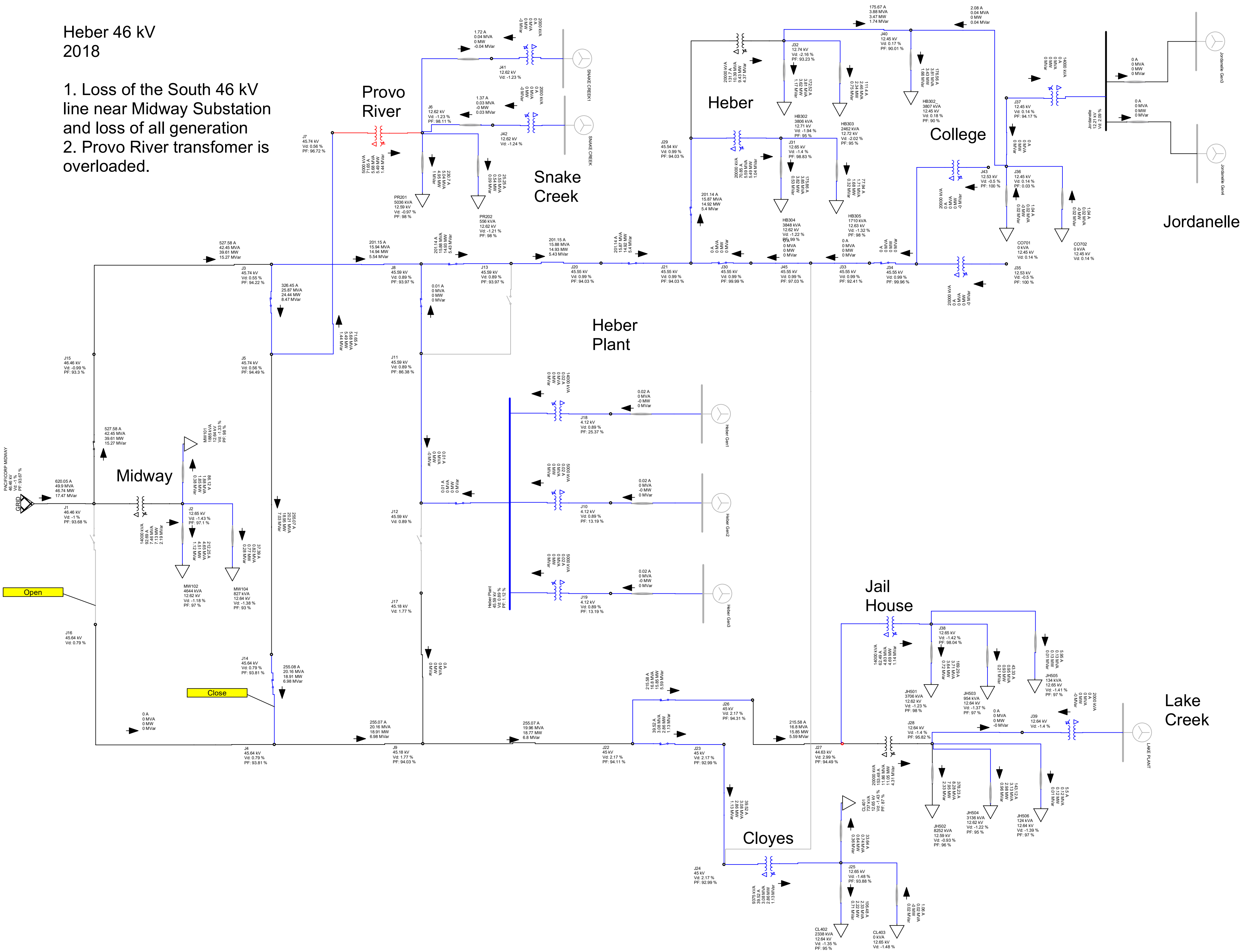
Heber 46 kV
2018

1.Loss of the South 46 kV line near Midway Substation



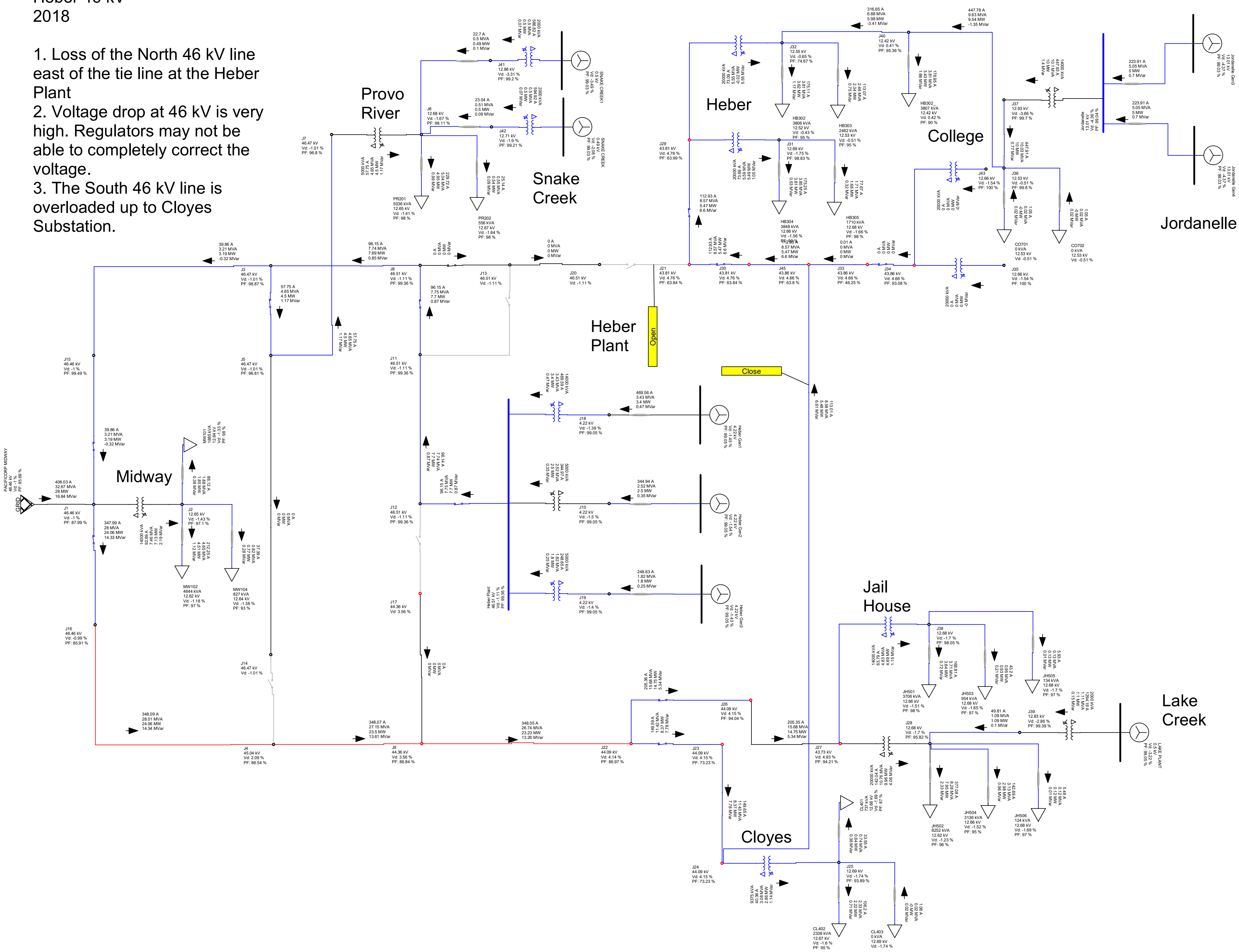
Heber 46 kV
2018

1. Loss of the South 46 kV line near Midway Substation and loss of all generation
2. Provo River transfomer is overloaded.



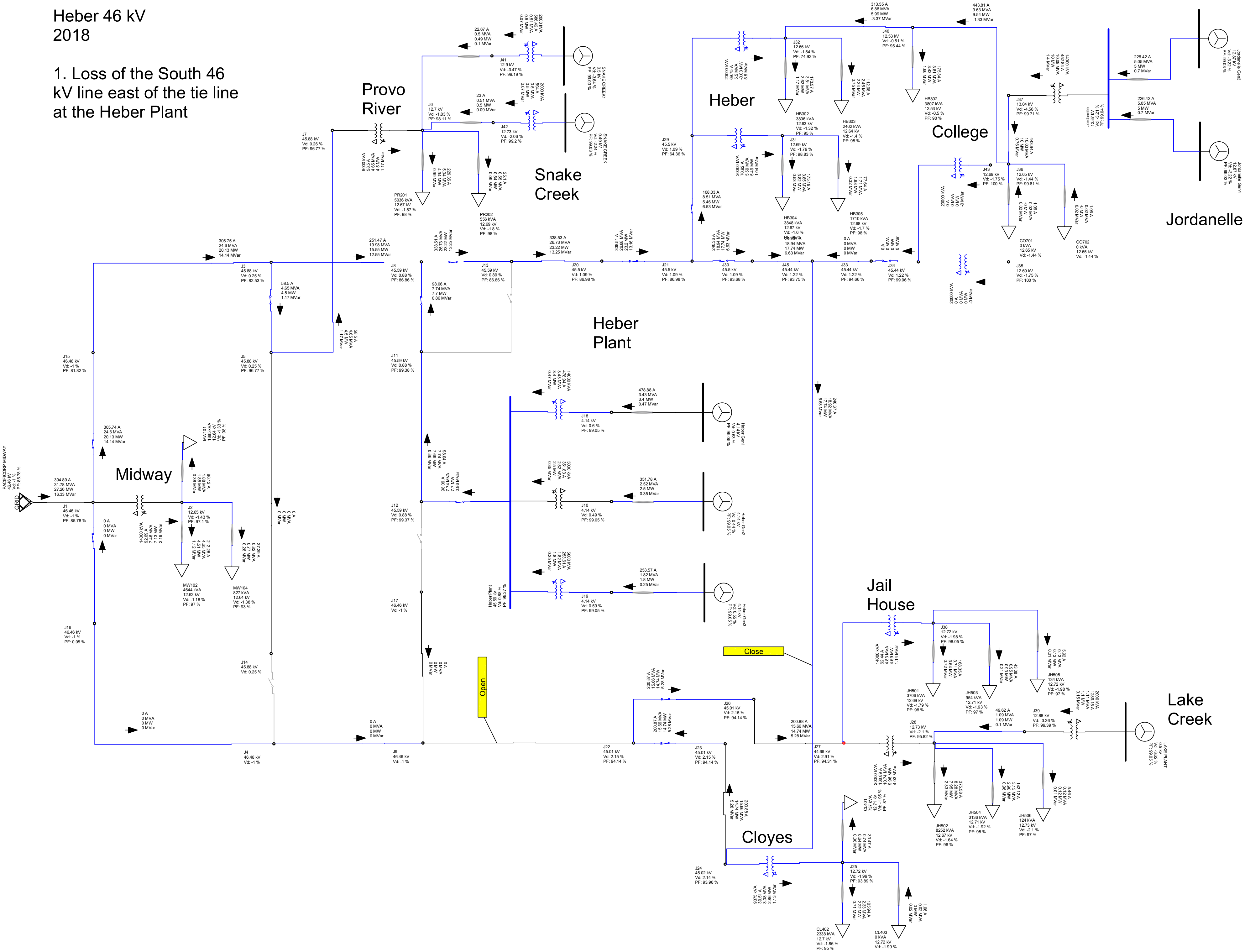
Heber 46 kV
2018

1. Loss of the North 46 kV line east of the tie line at the Heber Plant
2. Voltage drop at 46 kV is very high. Regulators may not be able to completely correct the voltage.
3. The South 46 kV line is overloaded up to Cloyes Substation.



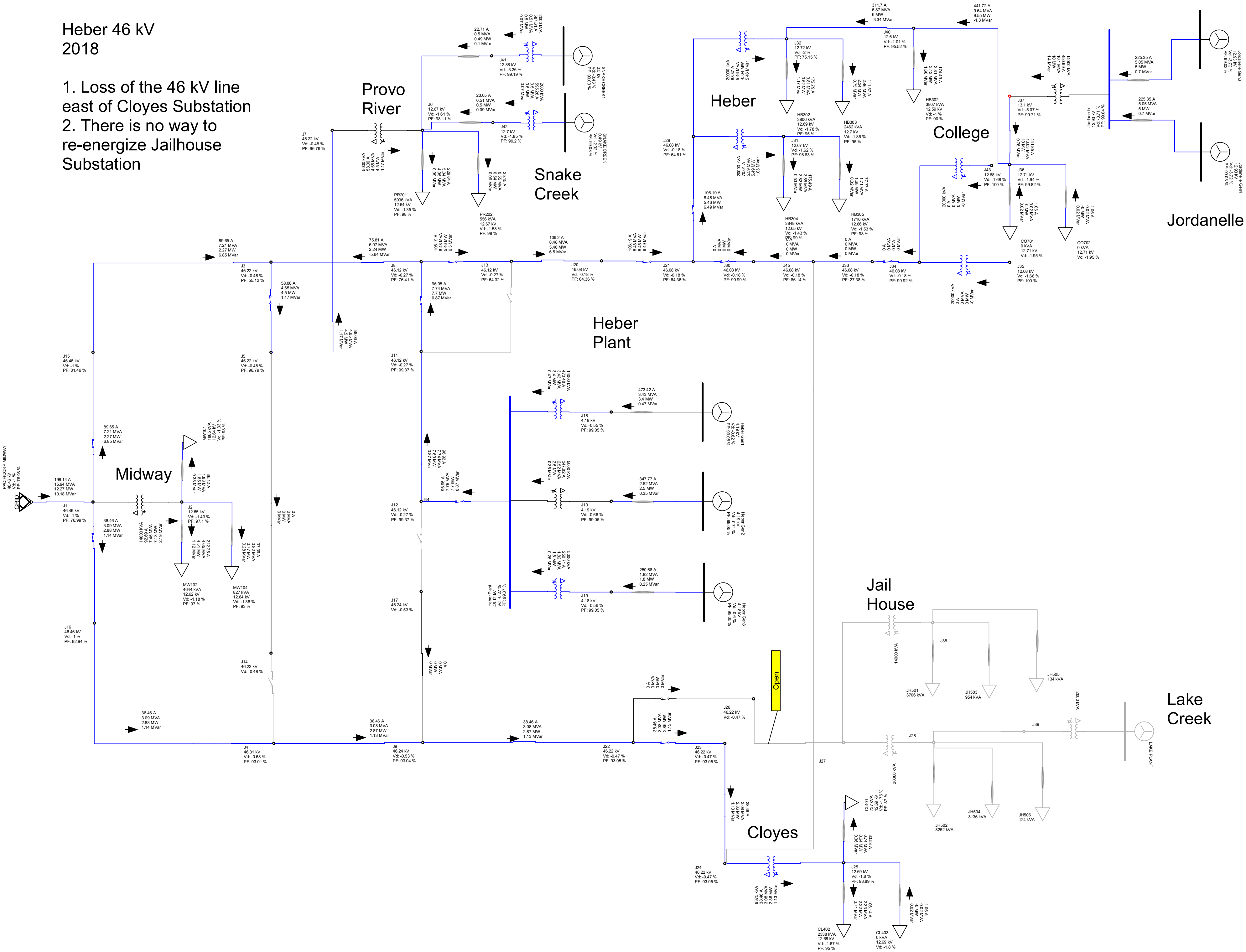
Heber 46 kV
2018

1. Loss of the South 46 kV line east of the tie line at the Heber Plant



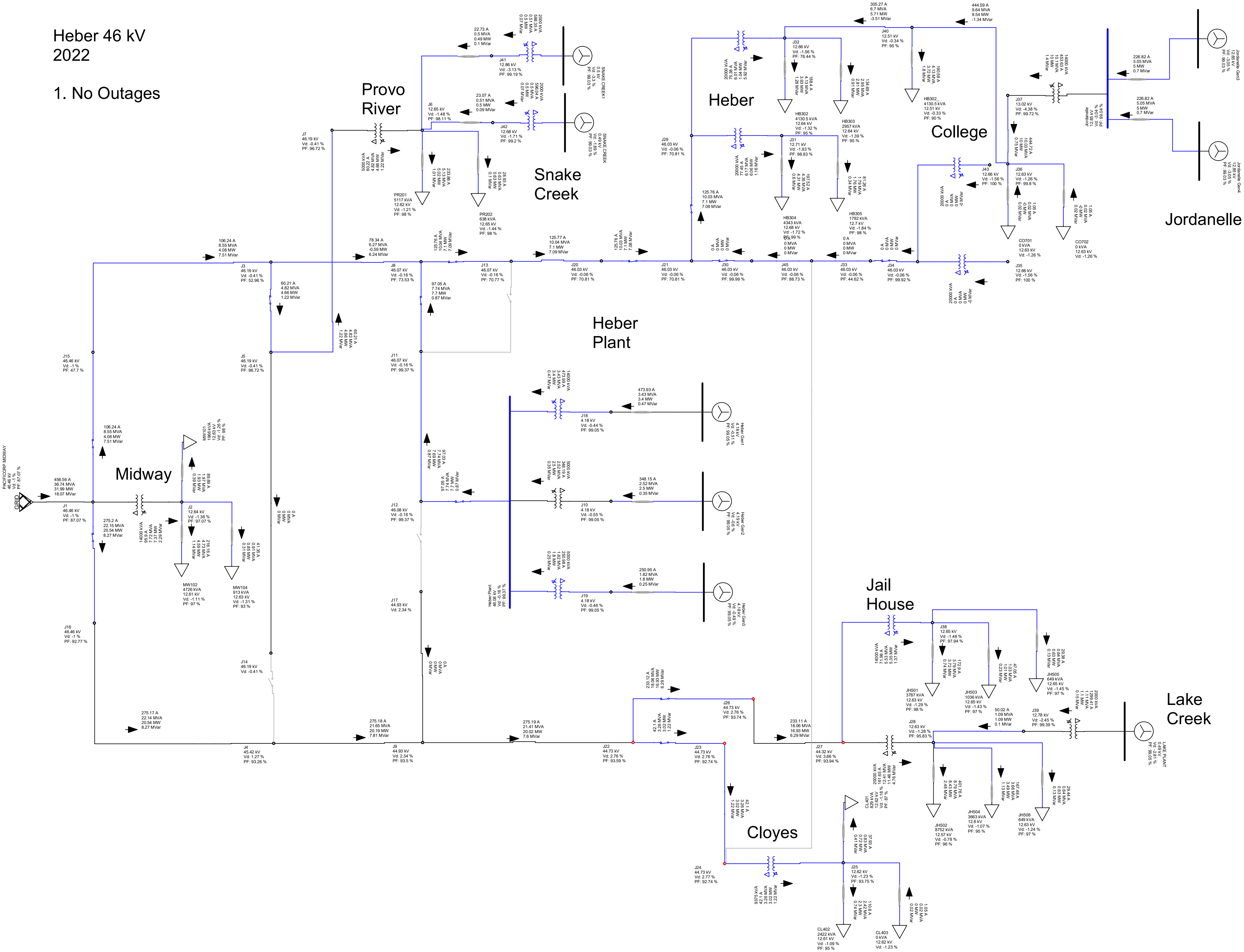
Heber 46 kV
2018

1. Loss of the 46 kV line east of Cloyes Substation
2. There is no way to re-energize Jailhouse Substation



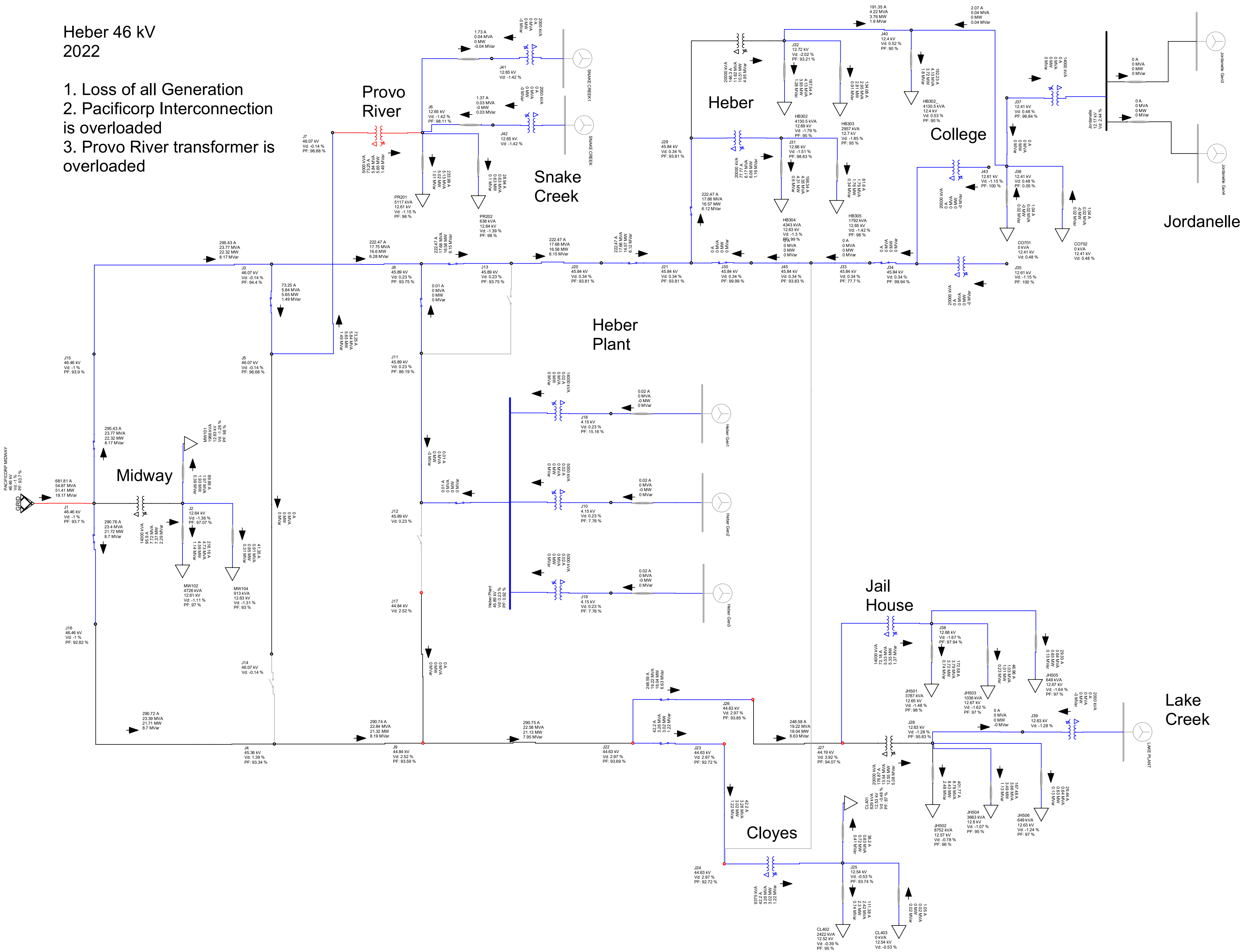
Heber 46 kV
2022

1. No Outages



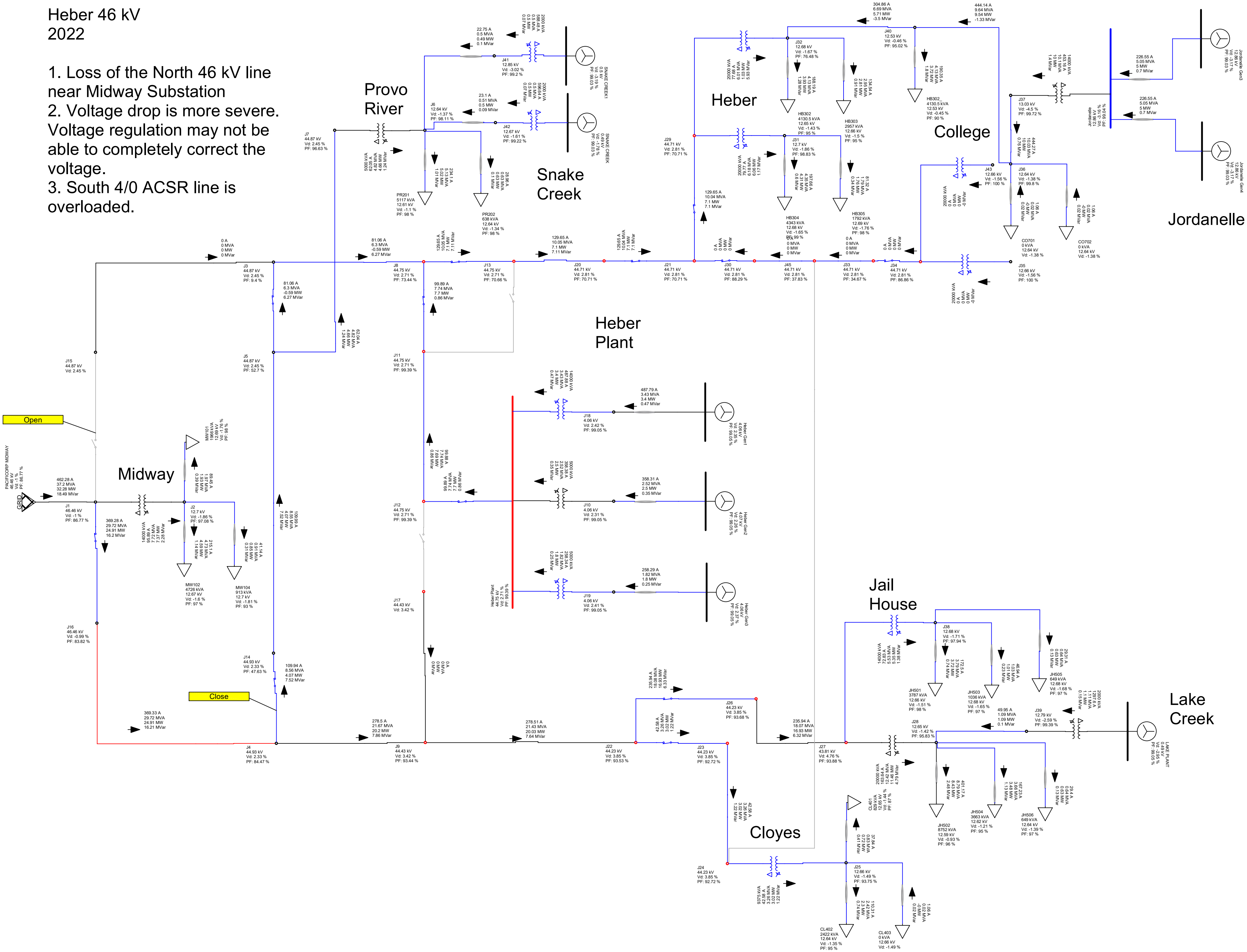
Heber 46 kV
2022

1. Loss of all Generation
2. Pacificorp Interconnection is overloaded
3. Provo River transformer is overloaded



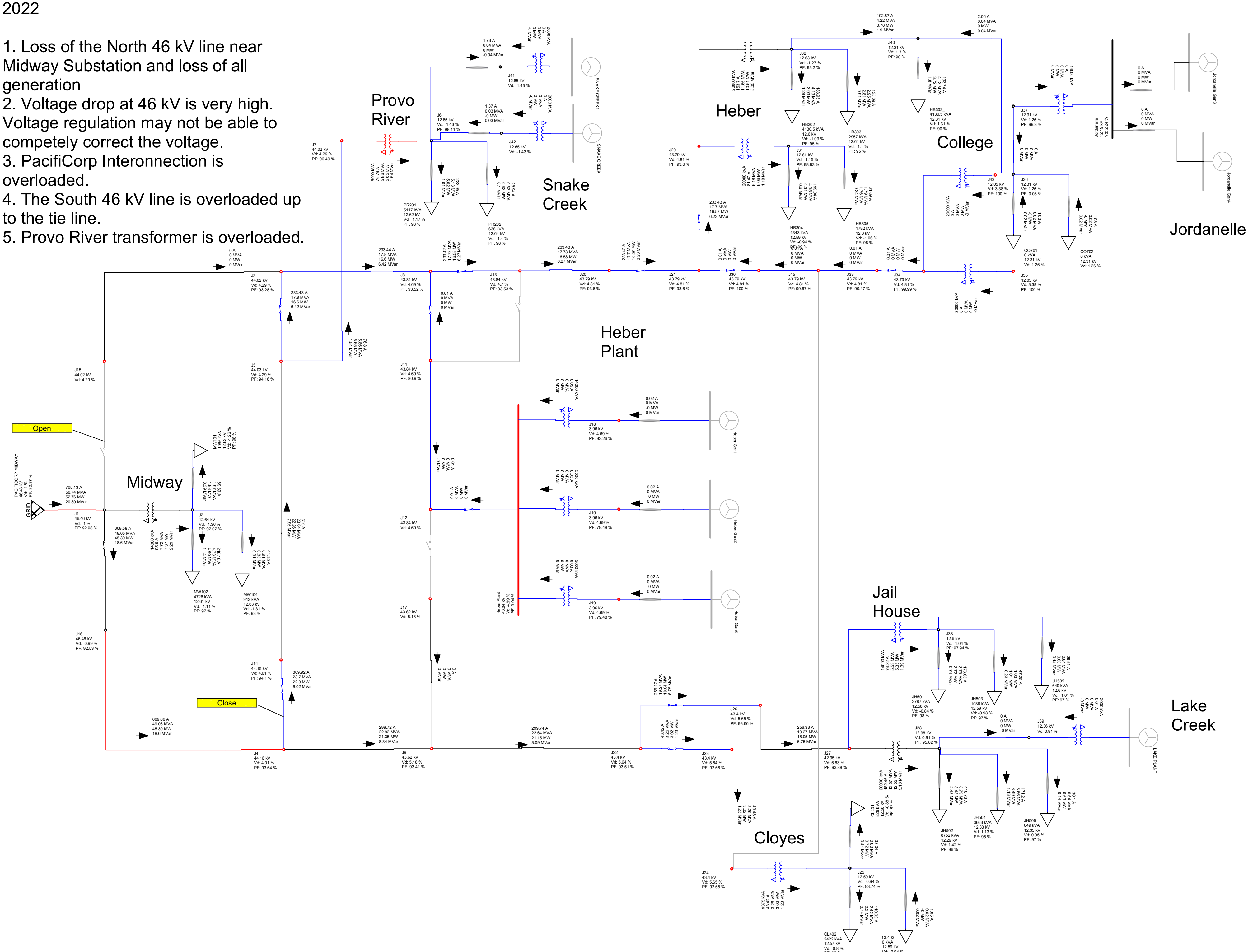
Heber 46 kV
2022

1. Loss of the North 46 kV line near Midway Substation
2. Voltage drop is more severe. Voltage regulation may not be able to completely correct the voltage.
3. South 4/0 ACSR line is overloaded.



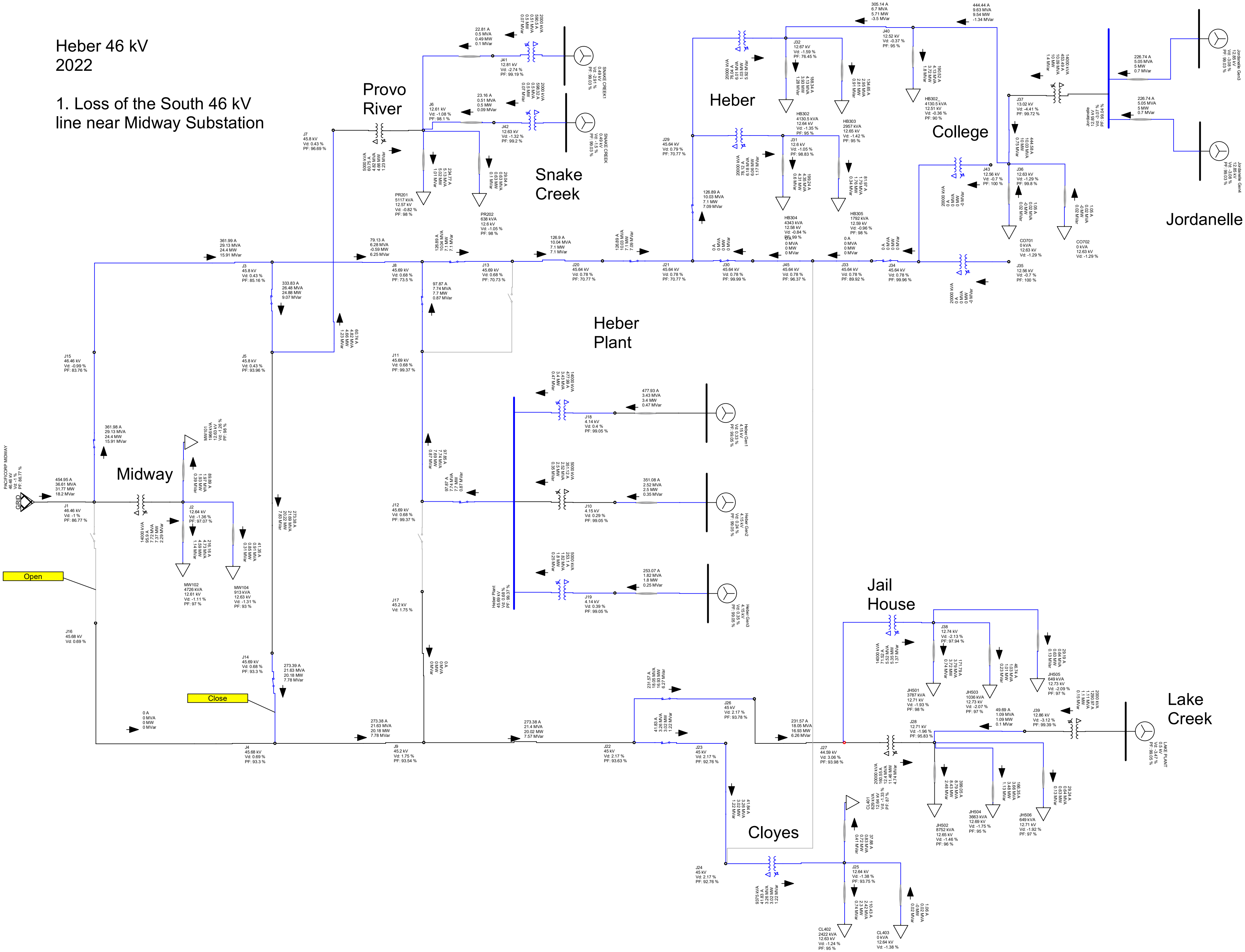
Heber 46 kV
2022

1. Loss of the North 46 kV line near Midway Substation and loss of all generation
2. Voltage drop at 46 kV is very high. Voltage regulation may not be able to competely correct the voltage.
3. PacifiCorp Interonnection is overloaded.
4. The South 46 kV line is overloaded up to the tie line.
5. Provo River transformer is overloaded.



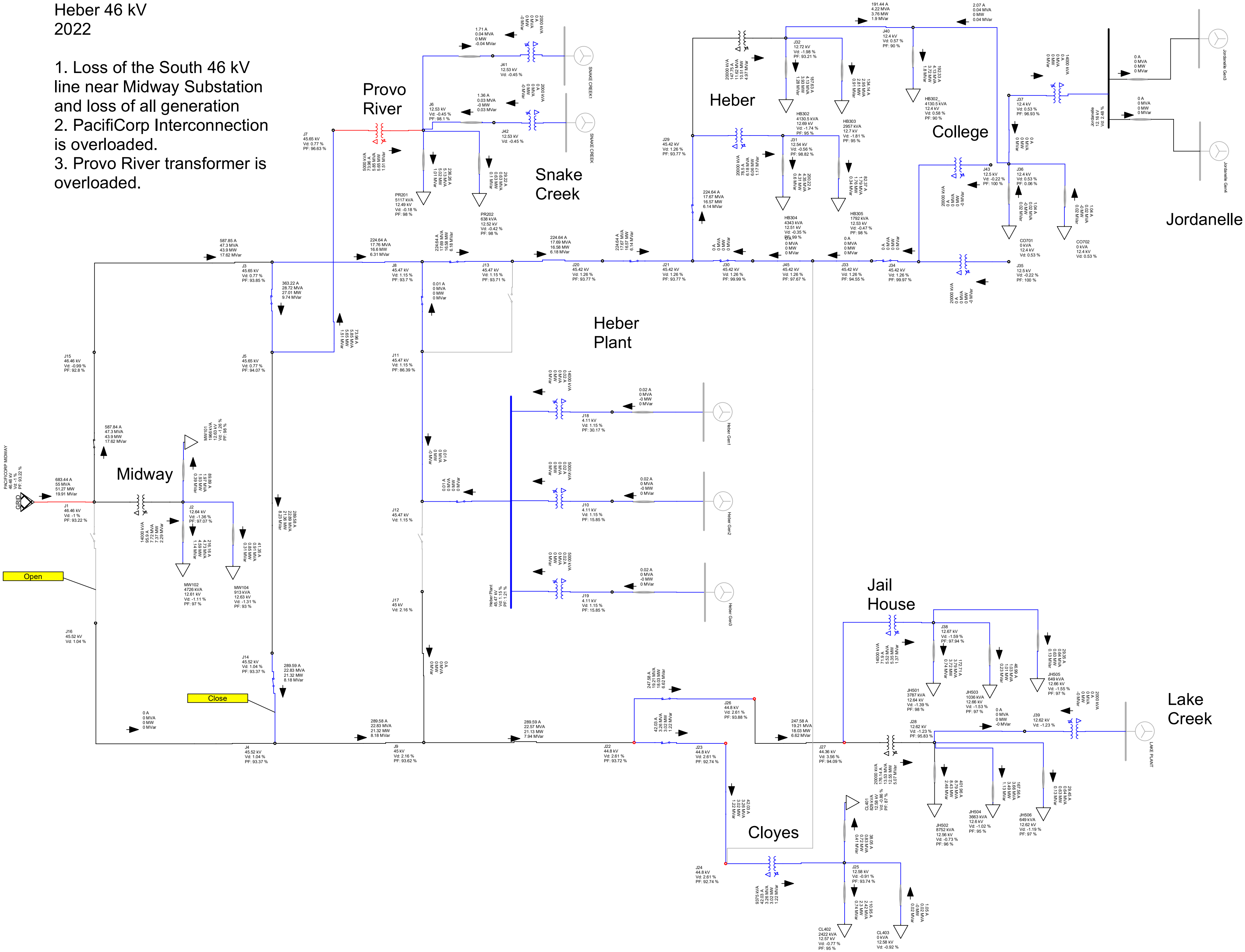
Heber 46 kV
2022

1. Loss of the South 46 kV line near Midway Substation



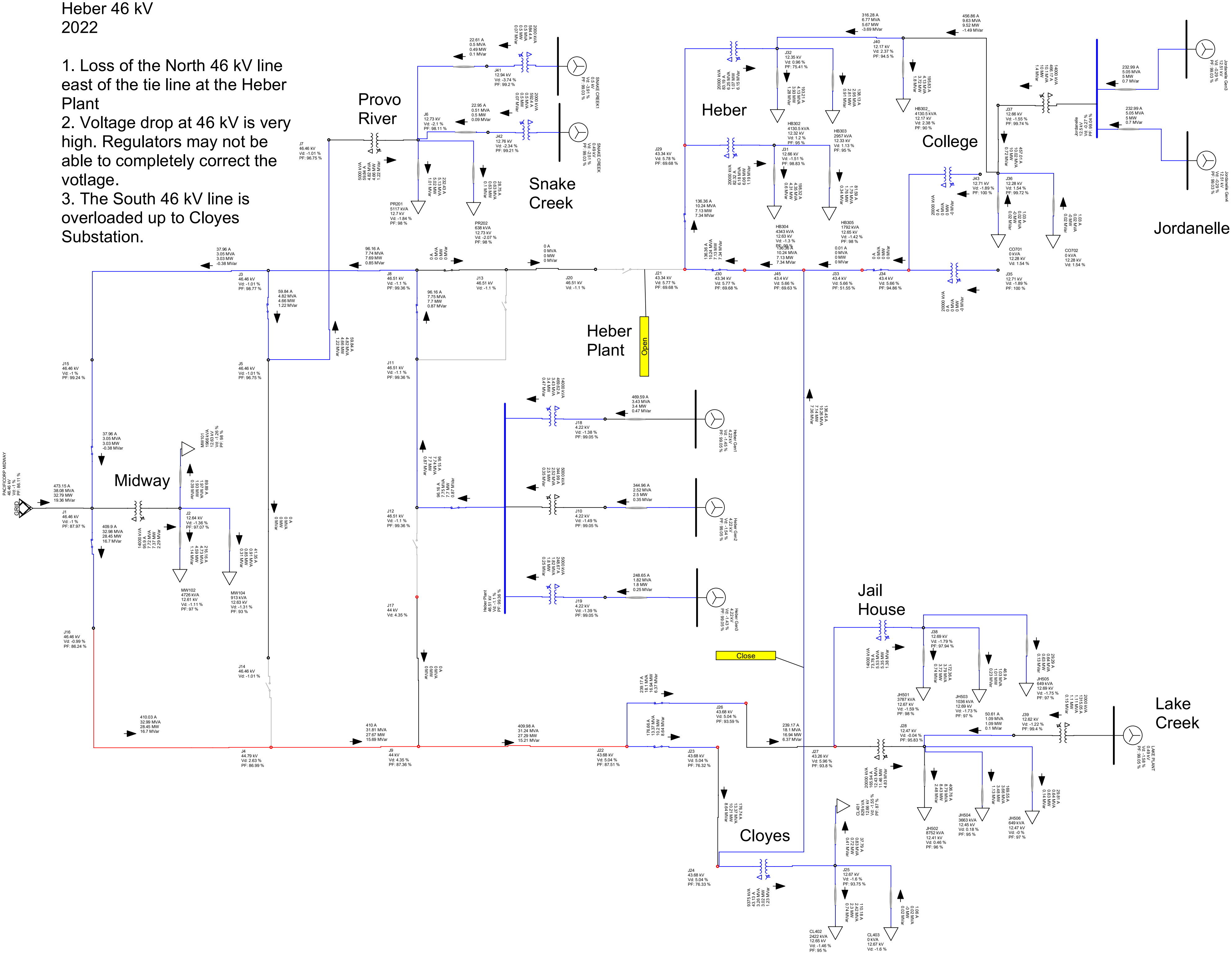
Heber 46 kV
2022

1. Loss of the South 46 kV line near Midway Substation and loss of all generation
2. PacifiCorp Interconnection is overloaded.
3. Provo River transformer is overloaded.



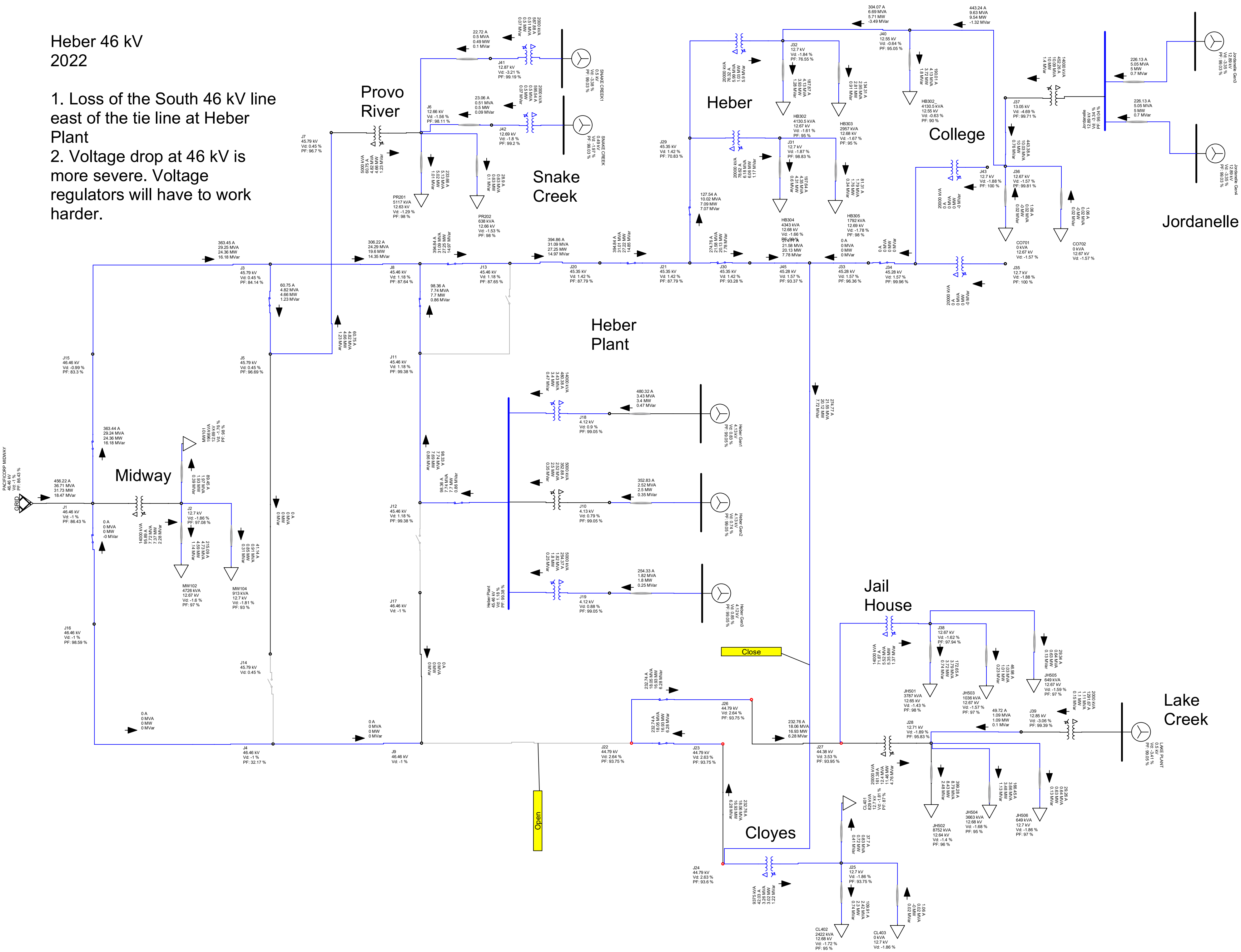
Heber 46 kV
2022

1. Loss of the North 46 kV line east of the tie line at the Heber Plant
2. Voltage drop at 46 kV is very high. Regulators may not be able to completely correct the votlage.
3. The South 46 kV line is overloaded up to Cloyes Substation.



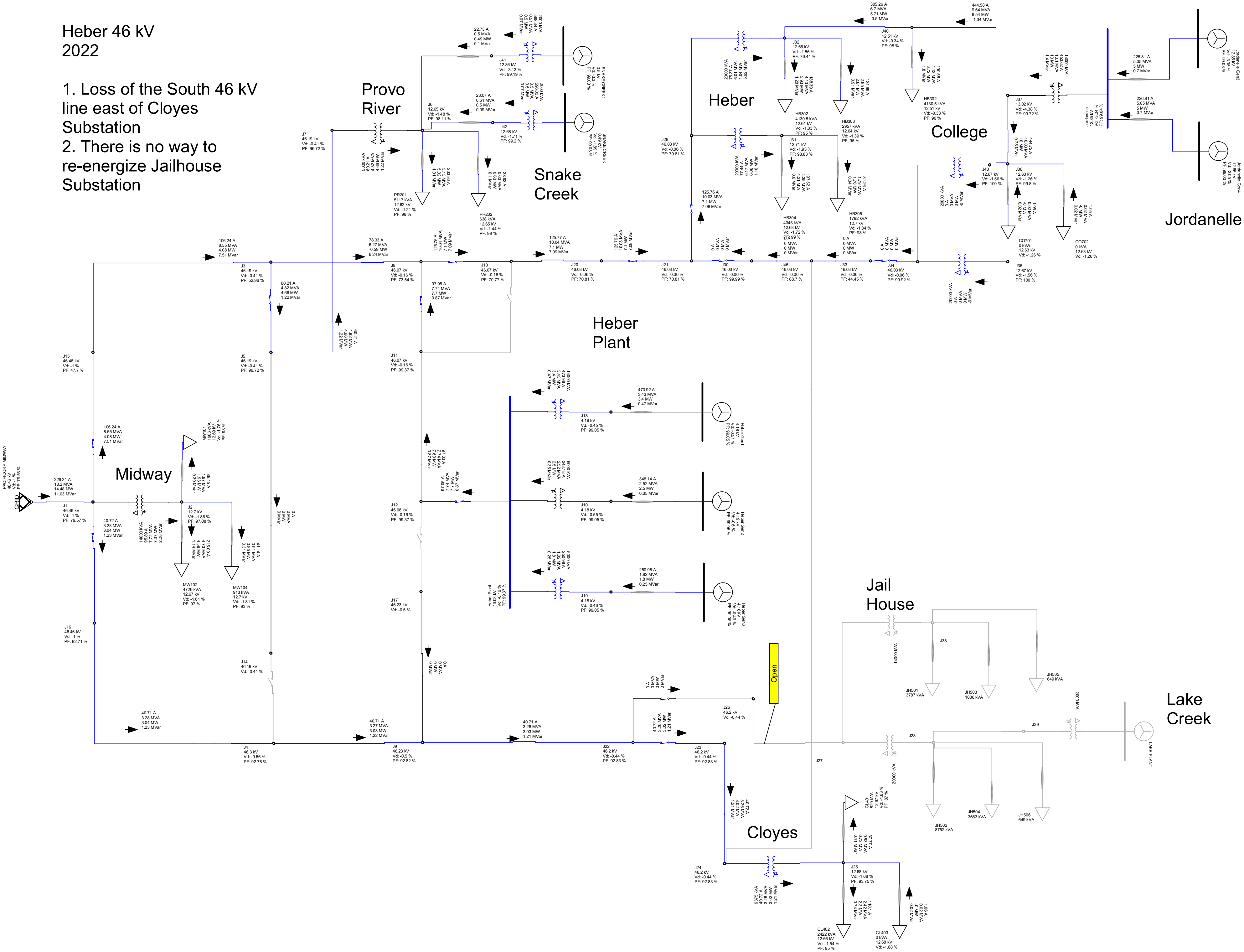
Heber 46 kV
2022

1. Loss of the South 46 kV line east of the tie line at Heber Plant
2. Voltage drop at 46 kV is more severe. Voltage regulators will have to work harder.



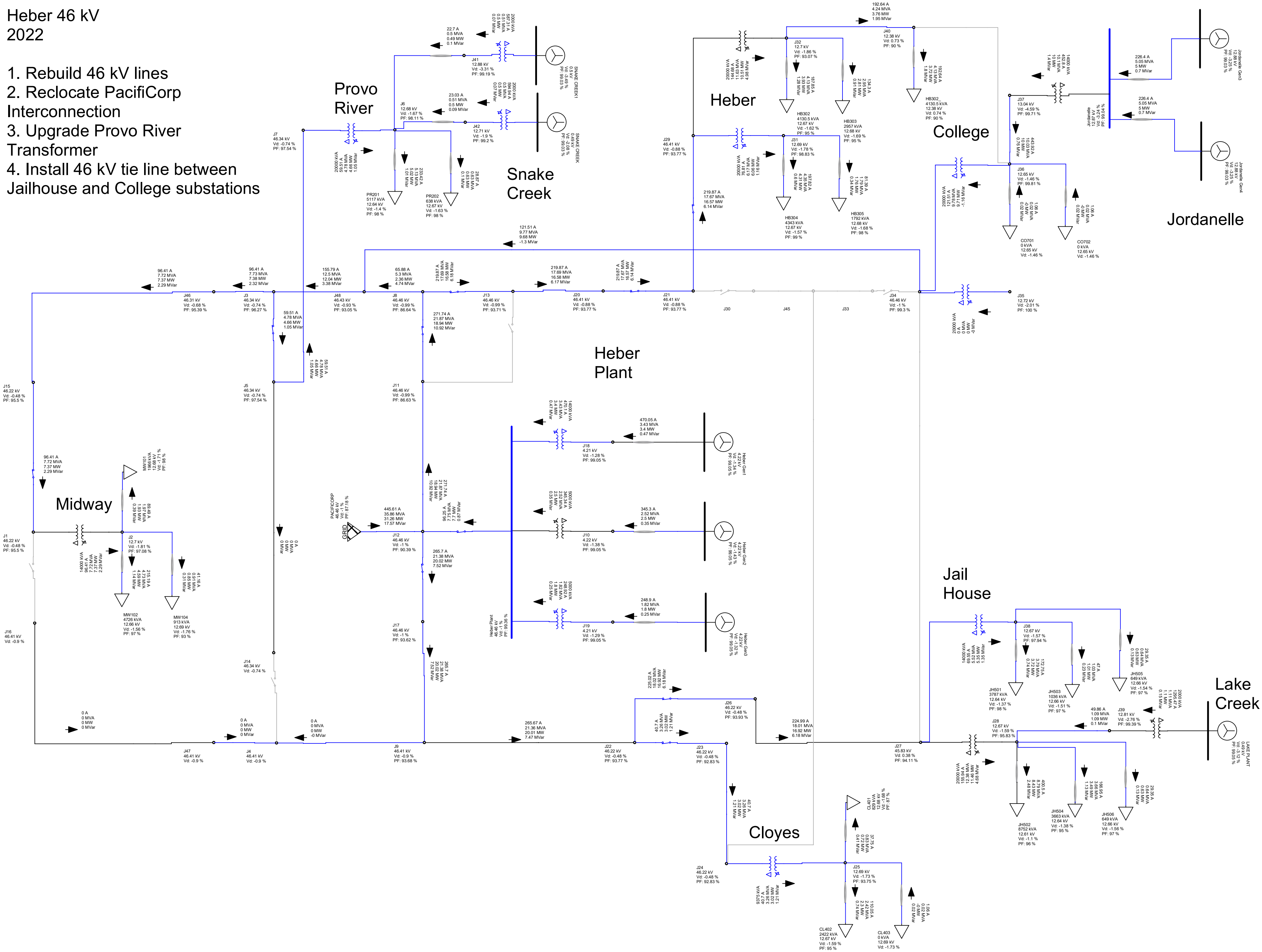
Heber 46 kV
2022

1. Loss of the South 46 kV line east of Cloyes Substation
2. There is no way to re-energize Jailhouse Substation



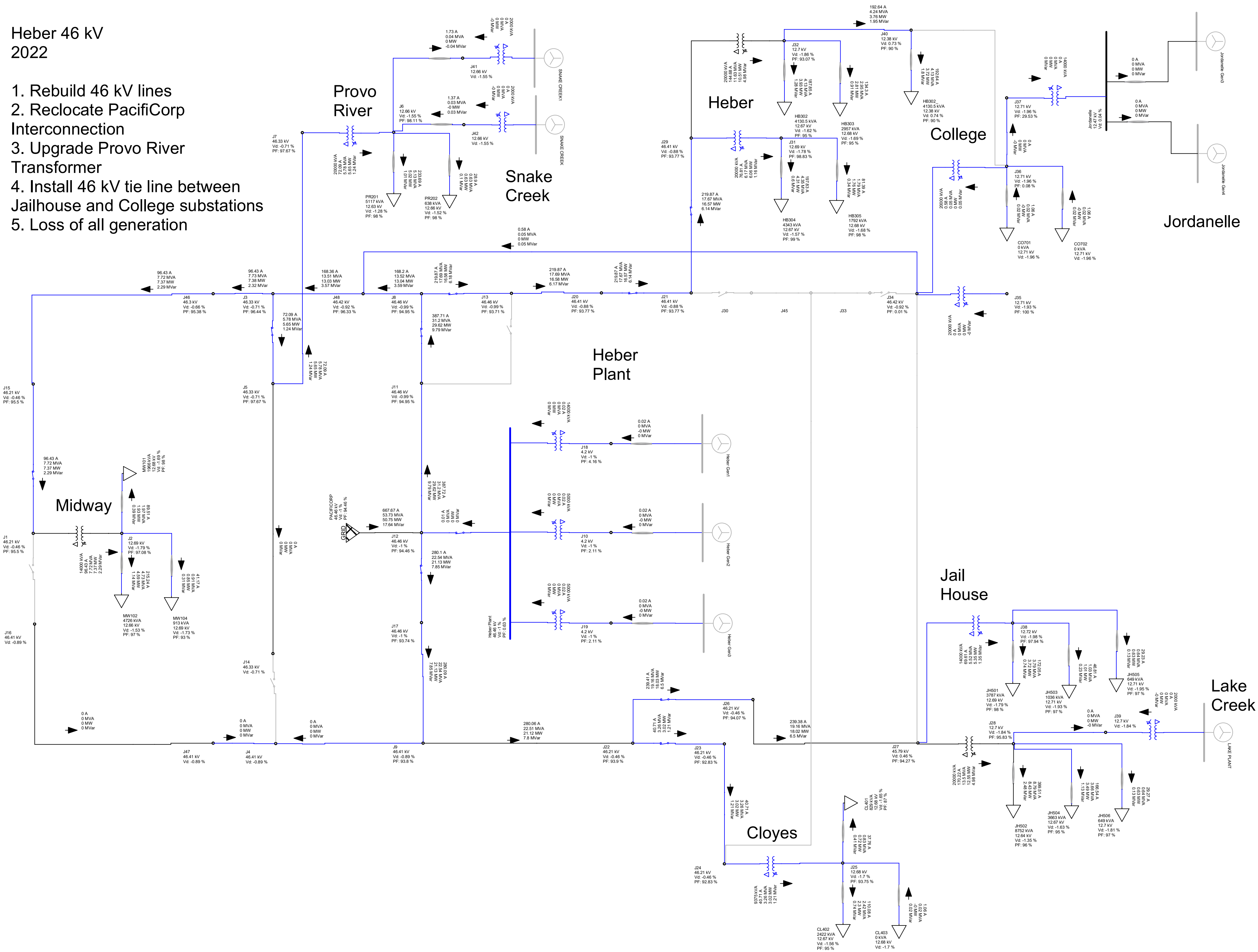
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations



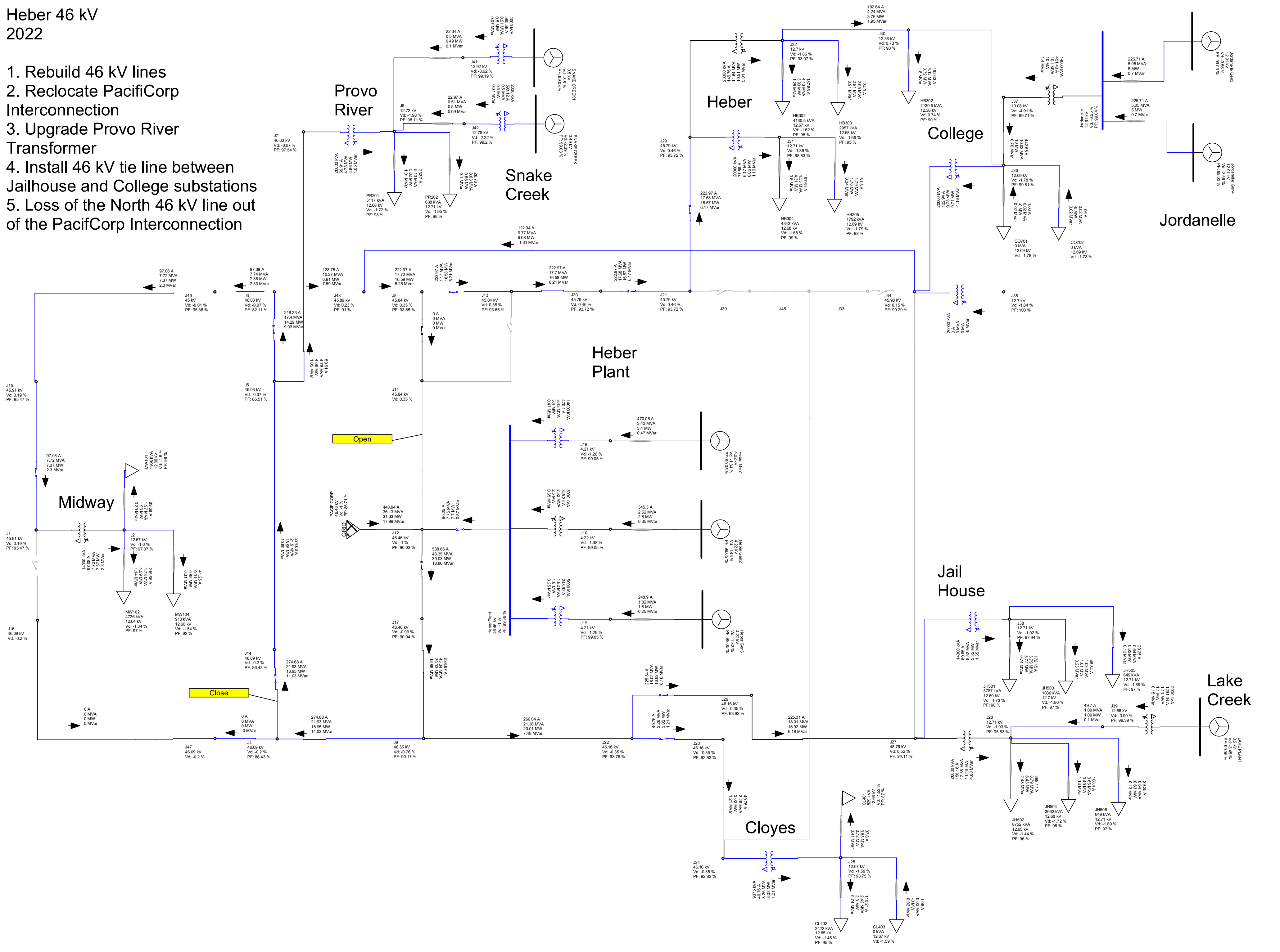
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of all generation



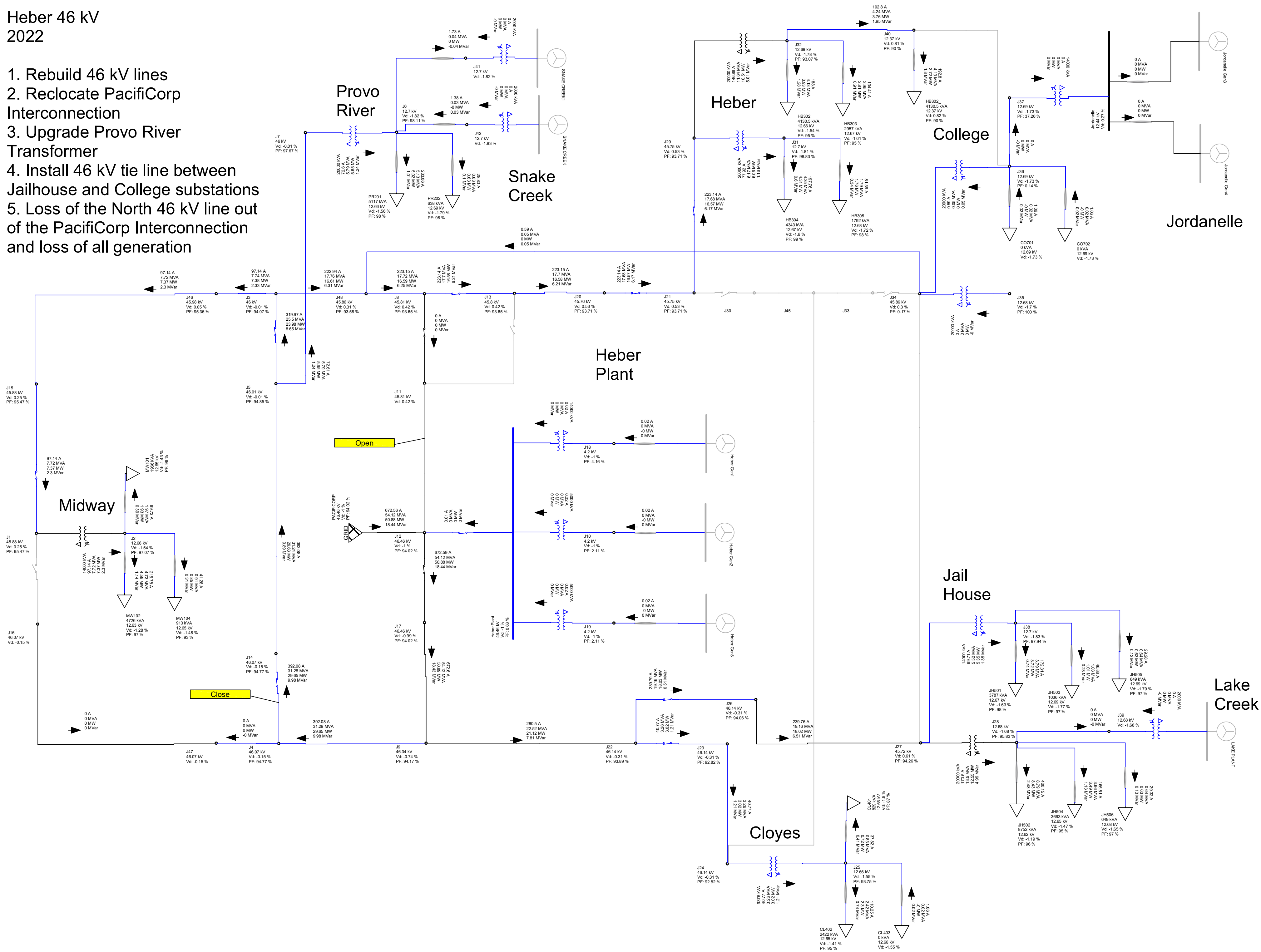
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the North 46 kV line out of the PacifCorp Interconnection



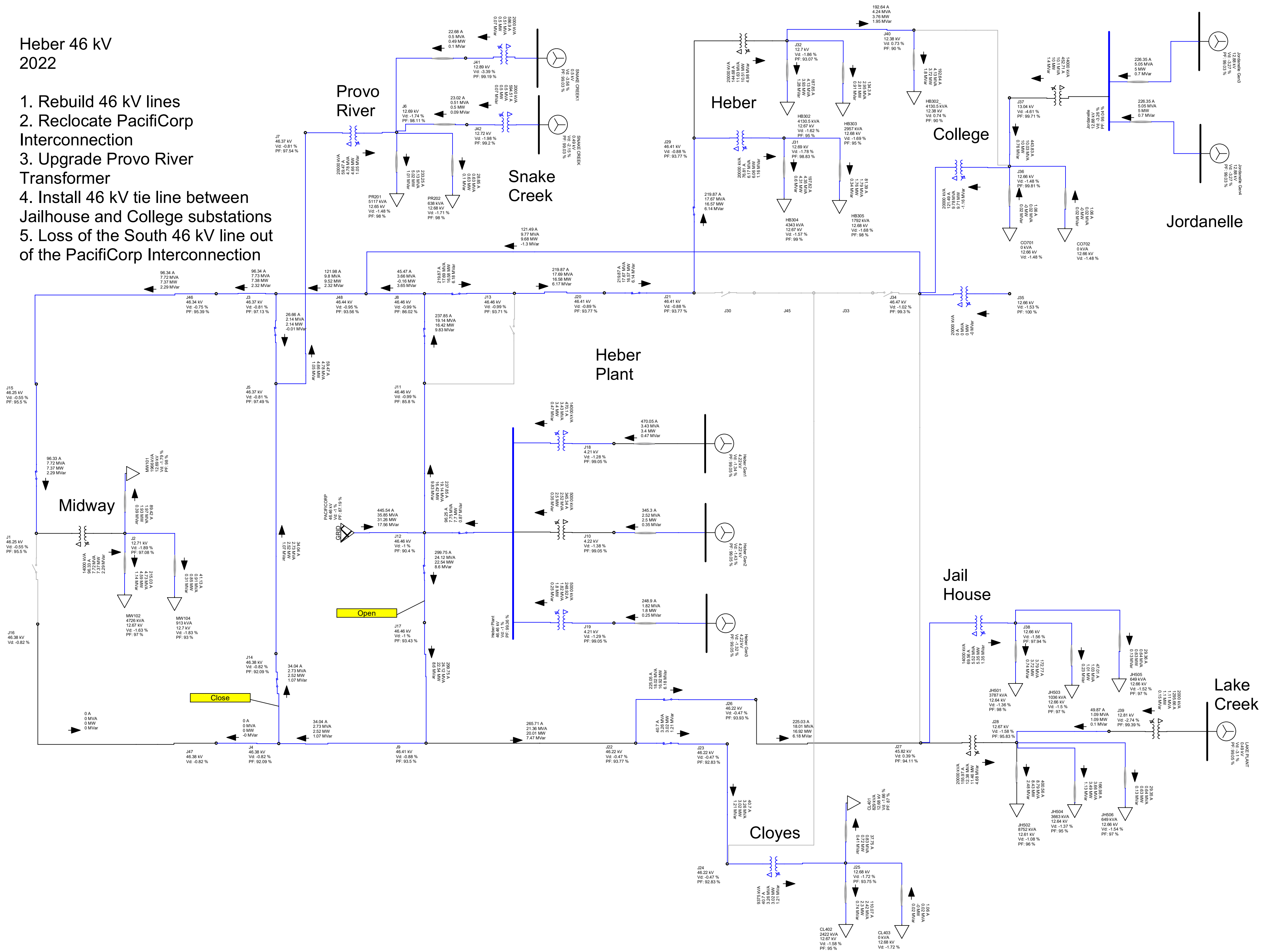
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the North 46 kV line out of the PacifiCorp Interconnection and loss of all generation



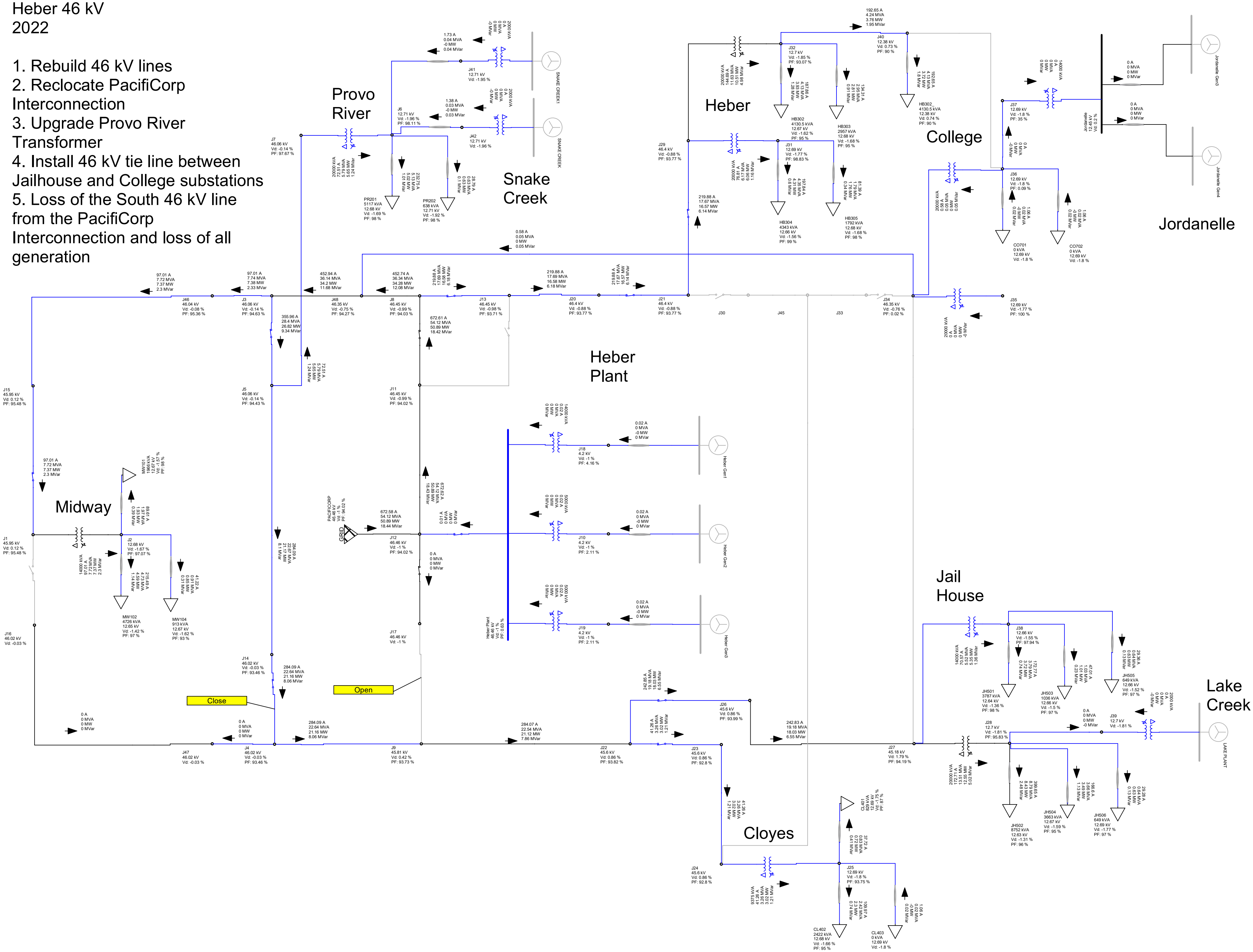
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the South 46 kV line out of the PacifiCorp Interconnection



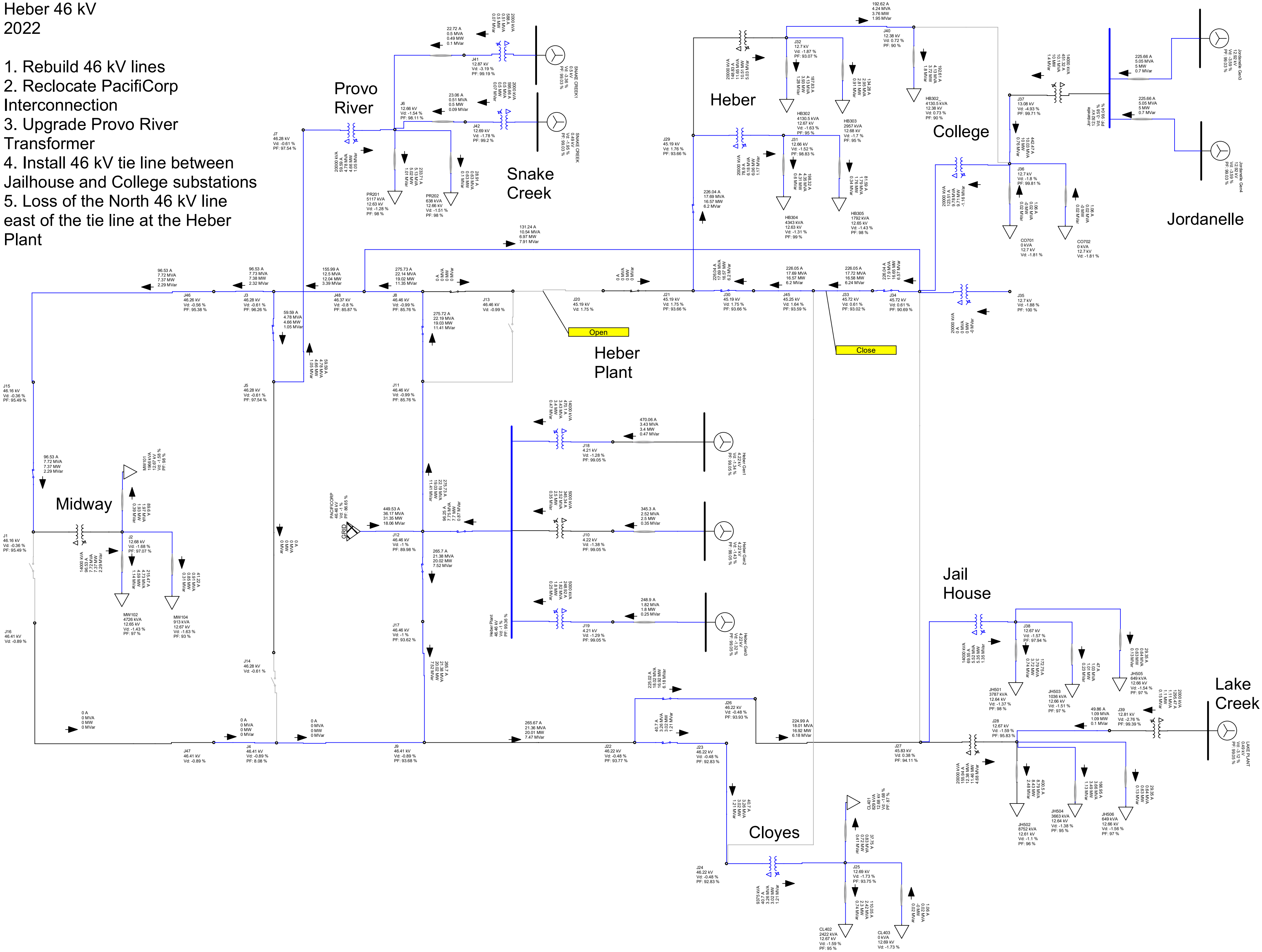
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the South 46 kV line from the PacifiCorp Interconnection and loss of all generation



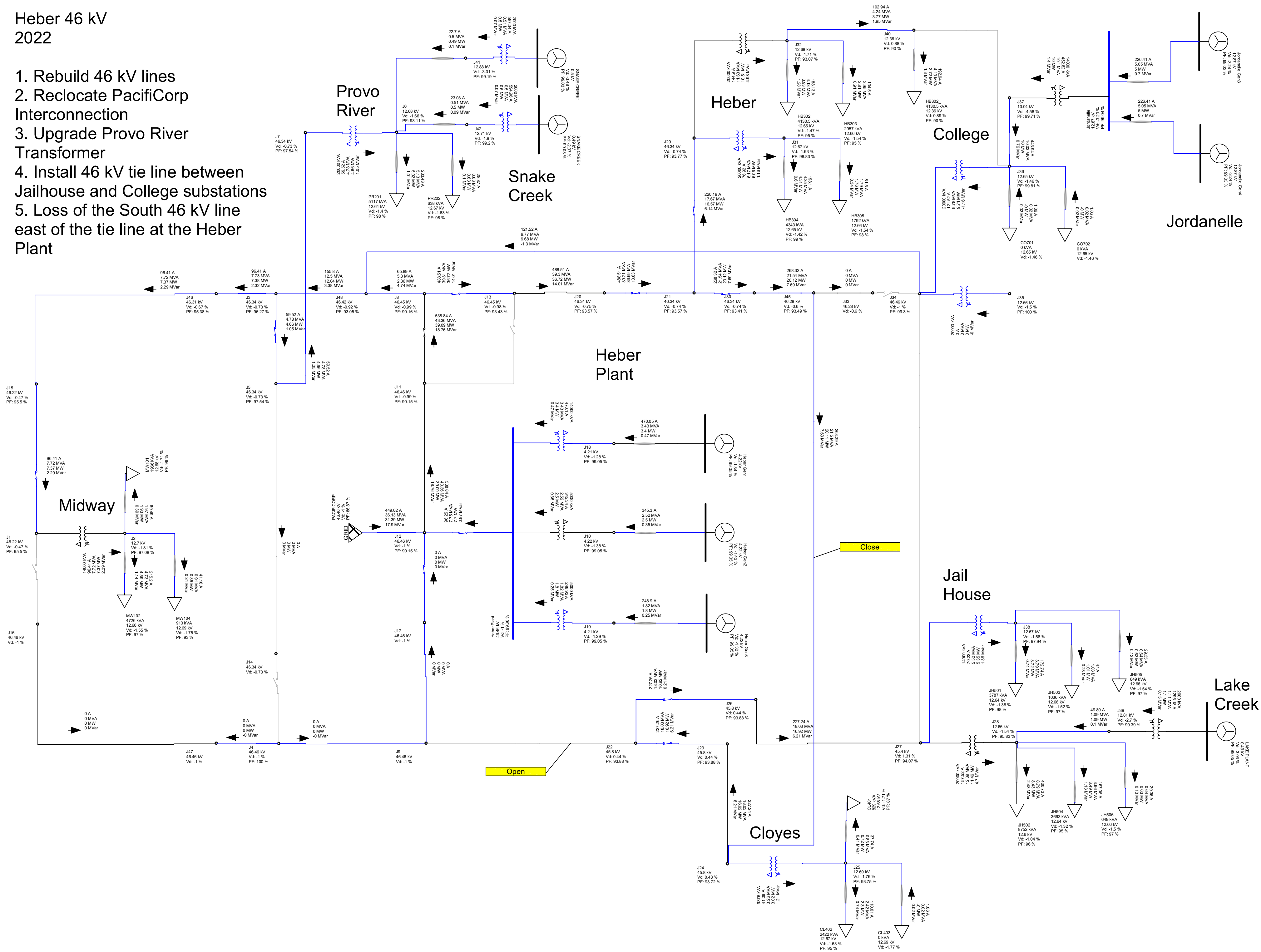
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the North 46 kV line east of the tie line at the Heber Plant



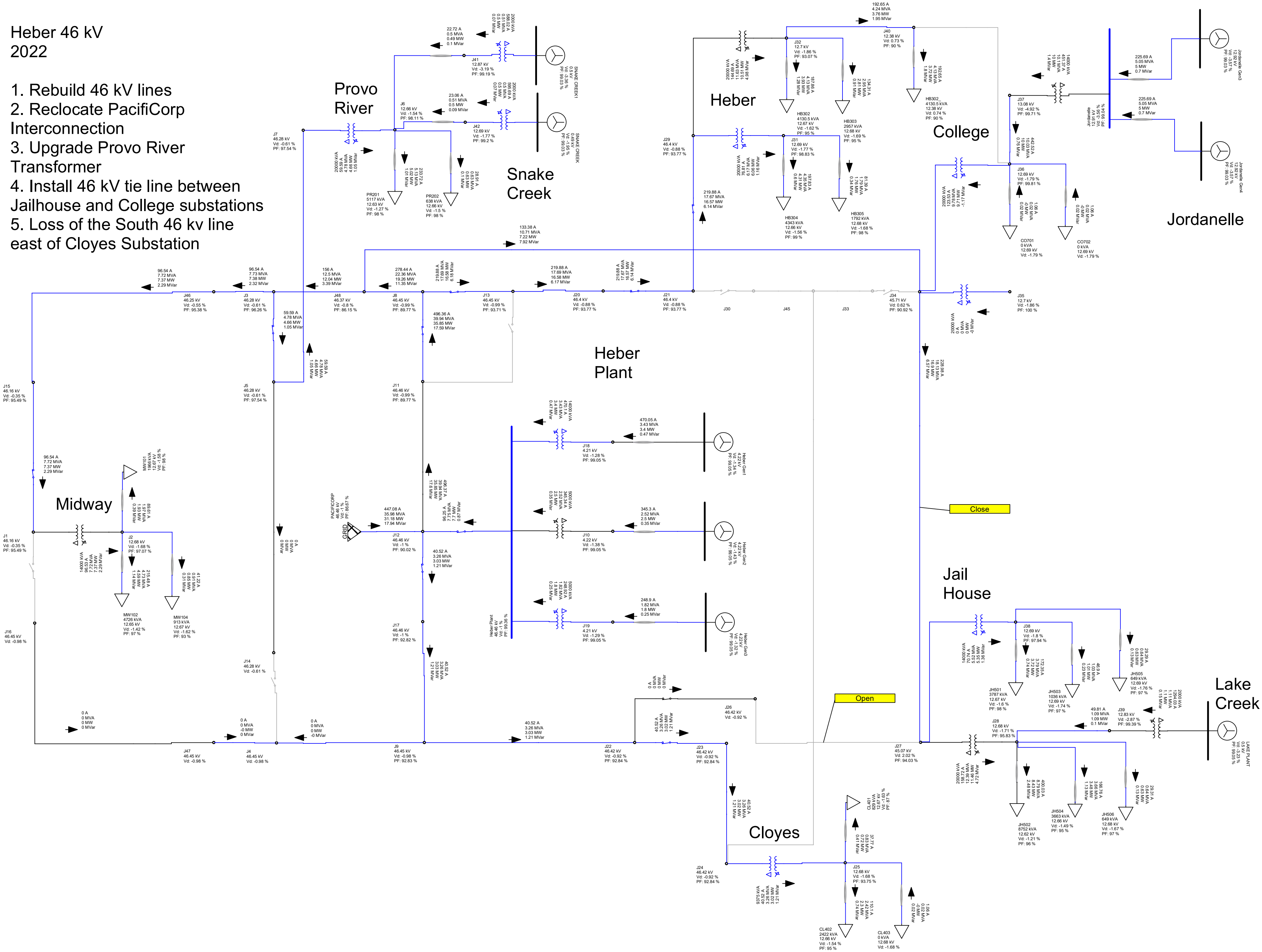
Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the South 46 kV line east of the tie line at the Heber Plant



Heber 46 kV
2022

1. Rebuild 46 kV lines
2. Reclocate PacifiCorp Interconnection
3. Upgrade Provo River Transformer
4. Install 46 kV tie line between Jailhouse and College substations
5. Loss of the South 46 kv line east of Cloyes Substation



APPENDIX 3 – MODEL INPUT DATA

Heber 46 kV
2018 Base Case

1. Input Data

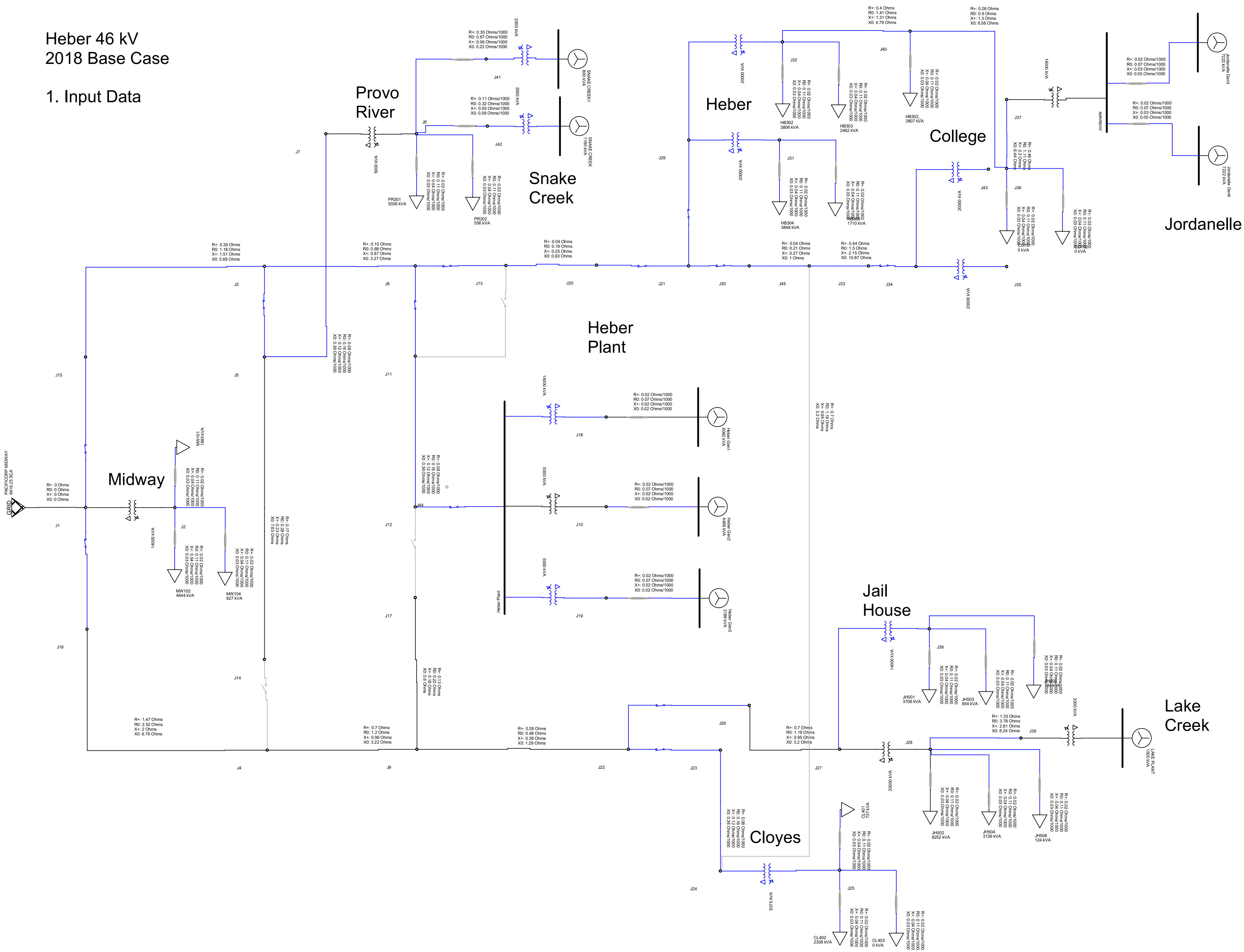


Exhibit D

Impact-Fee Eligible Capital Projects

Heber Light & Power - Five Year Forecast and Capital Improvement Plan
(Impact Fee Eligible Projects Only)

Upcoming Projects	Prior	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	*Total*	Related %	Related $	Additions
Buildings															**kWh**
2 New Office Building - Phase 1 (Building)	376	8,500	2,500	-	-	-	-	-	-	-	-	***11,376***	43%	**4,892**	0
105 New Office Building - Phase 3 (Site)	-	-	-	-	-	1,200	-	-	-	-	-	***1,200***	43%	**516**	0
	1,902	*8,911*	*3,710*	*800*	*50*	*1,200*	-	-	-	-	-	***16,573***		**5,408**	0
Generation															
106 Unit UREA Systems	15	800	385	-	-	-	-	-	-	-	-	***1,200***	100%	**1,200**	0
13 New Generation (Battery, Engine)	-	2,200	3,515	-	-	-	-	-	-	-	-	***5,715***	100%	**5,715**	5,000
109 Plant 1	-	-	-	7,000	3,000	2,500	-	2,500	-	2,500	2,500	***15,000***	100%	**15,000**	0
	15	*3,859*	*4,213*	*7,708*	*3,065*	*2,565*	*65*	*2,565*	*65*	*2,565*	*2,565*	***24,055***		**21,915**	5,400
Lines															
110 Annexation Asset Purchase	-	25	25	25	25	25	25	25	25	25	25	***175***	100%	**175**	0
22 Install Voltage Regulators at Timber Lakes Gate	-	100	-	-	-	-	-	-	-	-	-	***100***	100%	**100**	0
23 Heber Substation Additional Circuits (South & West)	-	300	-	-	-	-	-	-	-	-	-	***300***	100%	**300**	25,000
33 Tie line from 305 to 402 to 303	-	350	-	-	-	-	-	-	-	-	-	***350***	100%	**350**	5,000
19 Rebuild PR201_Main Street to Burgi Lane	771	700	-	-	-	-	-	-	-	-	-	***1,471***	100%	**1,471**	15,900
112 Provo River Substation Get Aways Reconnect to New Site	-	-	450	-	-	-	-	-	-	-	-	***450***	100%	**450**	0
20 Additional Circuits out of Jailhouse to the East	-	-	300	-	-	-	-	-	-	-	-	***300***	100%	**300**	25,000
113 Eastern Bypass - Cemetery	-	-	750	-	-	-	-	-	-	-	-	***750***	100%	**750**	5,000
21 Additional Circuits out of College to South and East	-	-	-	204	350	1,000	-	-	-	-	-	***1,554***	100%	**1,554**	25,800
26 Reconductor Heber City Main 600 S to 1000 S	-	-	-	-	100	-	-	-	-	-	-	***100***	100%	**100**	5,000
24 Midway Substation - Get Aways	-	-	-	-	160	-	-	-	-	-	-	***160***	50%	**80**	0
114 Airport Road Rebuild & Loop	-	-	-	-	550	-	-	-	-	-	-	***550***	100%	**550**	5,000
29 Reconductor JH502/503_Old Mill Drive - 800 South to 1200 South	-	-	-	-	-	529	-	-	-	-	-	***529***	100%	**529**	8,000
32 New Circuit to Hwy 32	-	-	-	-	-	-	720	-	-	-	-	***720***	100%	**720**	0
27 Jailhouse Tap Transmission Line and East Extension	-	-	-	-	-	1,000	2,900	-	-	-	-	***3,900***	100%	**3,900**	9,500
30 Reconductor MW101/102 from 4/0 to 477	-	-	-	-	-	-	938	-	-	-	-	***938***	100%	**938**	8,100
28 Reconductor Pine Canyon Road - Midway	-	-	-	-	-	-	-	180	-	-	-	***180***	60%	**108**	0
31 Rebuild CL402_600 West to Tate Lane	-	-	-	-	-	-	-	1,296	-	-	-	***1,296***	100%	**1,296**	6,400
	771	*1,785*	*1,880*	*539*	*1,695*	*2,864*	*4,893*	*1,811*	*335*	*335*	*335*	***16,238***		13,671	148,700
Substations															
115 Southfield Substation	7,196	16,062	-	-	-	-	-	-	-	9,000	-	***23,258***	70%	**16,281**	100,000
37 Midway Substation - High Side Rebuild	-	-	-	-	-	2,656	-	-	-	-	-	***2,656***	90%	**2,390**	0
122 Northeast POD Substation	-	-	-	-	-	12	-	5,000	10,000	-	-	***5,012***	100%	**5,012**	100,000
123 Southern Substation	-	2,400	-	-	-	-	3,228	5,772	-	-	-	***11,400***	100%	**11,400**	40,000
	7,196	*18,526*	*135*	*215*	*83*	*2,668*	*3,228*	*10,772*	*10,000*	*9,000*	-	***42,823***		**35,083**	240,000
												-			
205 AMI Tower - North Village	-	70	-	140	-	-	-	-	-	-	-	***210***	100%	**210**	0
	-	*580*	*160*	*415*	*250*	*100*	*100*	*100*	*100*	*100*	*100*	***1,705***		210	0
304 Generation		-	-	-	-	-	-	-	-	-	-	***-***			0
	9,884	**34,425**	**11,380**	**10,671**	**5,507**	**9,741**	**9,555**	**15,587**	**11,164**	**12,644**	**3,359**	***105,952***	**-**	**76,287**	**394,100**